rexroth
A Bosch Company

Reference Book

ctrlX DRIVE / eLION

Diagnostic Messages of Runtime A*S-V-06RS



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The data specified above only serve to describe the product. As our products are constantly being further developed, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

About this documentation

This documentation describes all the possible ways of diagnosing the states of devices of the ctrlX DRIVE and eLION product lines.

Furthermore, the documentation contains the descriptions of the diagnostic messages implemented in the FWA-XD1-AXS-V-06 (ctrlX DRIVE) and FWA-MX1-AMS-V-06 (eLION) firmwares to support machine operators and installation programmers with troubleshooting.

Editions of this documentation

Edition	Release date	Comment
01	2024-07-03	First edition for AXS-V-06RS / AMS-V-06RS
02	2024-11-11	Edition for AXS-V-0604 / AMS-V-0604

Feedback on this documentation

Your experience is an important part of the product and documentation improvement process.

In case of any errors or if you want to suggest changes to this documentation, please do not hesitate to contact us.

Please send your feedback to dokusupport@boschrexroth.de.

Intended use

Introduction

The products of Rexroth are developed and manufactured to the state-of-the-art. Prior to delivery, the products are checked for their fail-safe state.

WARNING!

Personal injury and property damage due to incorrect use of the products!

The products have been designed for use in an industrial environment and may only be used as intended. If the products are not used as intended, this may lead to situations resulting in property damage and personal injury.

NOTICE!

Damages resulting from unintended use

The user shall solely bear the risks for damages arising of unintended use of the products; Rexroth as manufacturer shall not assume any warranty, liability or compensation for damages.

Before using Rexroth products, make sure that all the prerequisites for an intended use of the products are satisfied:

- Anyone that in any way, shape or form uses our products must have read and understood the relevant safety instructions and the intended use.
- Do not change the original state of the hardware products, i.e., do not make any structural modifications. Software products must not be decompiled and their source codes must not be modified.
- Damaged or defective products must not be installed or commissioned.
- It has to be ensured that the products are installed according to the provisions specified in the documentation.

Areas of use and application

Drive controllers by Rexroth are designed to control electric motors and monitor their operation. Controlling and monitoring the Drive controllers may require additional sensors and actuators.



The Drive controllers may only be used with the accessories and attachments specified in this documentation. Components that are not expressly mentioned may neither be attached nor connected. The same applies to cables and lines.
Operation is only allowed in the specified configurations and combinations of the components using the software and firmware as specified in the relevant functional descriptions.

Drive controllers have to be programmed before commissioning to ensure that the motor executes the functions specific to the application.

Drive controllers of the ctrlX DRIVE series have been developed for use in single-axis and multi-axis drive and control tasks.

Device types with different drive power and interfaces are available for using the Drive controllers in specific applications.

Typical applications include, for example:

- Handling and assembly systems
- Packaging and food machines
- Printing and paper converting machines
- Machine tools

Drive controllers may only be operated under the assembly and installation conditions specified in this documentation, in the specified position of normal use and under the specified ambient conditions (temperature, degree of protection, humidity, EMC, etc.).

Unintended use

"Unintended use" refers to using the Drive controllers outside of the operating conditions, technical data and specifications described in this documentation.

- Drive controllers must not be used if they are exposed to operating conditions that do not meet the specified ambient conditions. This includes, for example, operation under water, under extreme temperature fluctuations or extreme maximum temperatures.
- Furthermore, Drive controllers may not be used in applications that have not been expressly authorized by Rexroth. Please refer to the specifications in the general safety instructions!



Components of the ctrlX DRIVE drive system are **products of category 3** (with limited availability) according to IEC 61800-3. This category comprises EMC limit values for conducted and radiated emission. To comply with this category (limit values), use appropriate measures to suppress inteferences in the drive system (e.g., mains filters, shielding measures).
These components are not intended for use in a public low voltage system for residential areas. If these components are operating in such a network, high frequency interferences are to be expected. Additional measures for interference suppression can be required.

Safety instructions for electric drive and control systems

Basic information

Using and passing on the safety instructions

Do not install and operate any components of the electric drive and control system before carefully reading all provided documents. These safety instructions and all other user instructions have to be read prior to working with these components. If you do not have the user documentation for the components, contact our Rexroth sales representative. Request the immediate delivery of these documents to the person or persons in charge of the safe operation of the components.

In the case of vending, rental and/or distribution of the components in any other form, include these safety

instructions in the national language of the user.

Improper use of these components, failure to follow the safety instructions in this document or tampering with the product, including disabling of safety devices, could result in property damage, personal injury, electric shock or even death.

Requirements for safe use

Prior to initial commissioning of the components of the electric drive and control system, read the following instructions to avoid personal injury and/or property damage. You must comply with these safety instructions.

- In the case of damage due to non-compliance with the safety instructions, Rexroth shall not assume any liability.
- Prior to commissioning, read the operating, maintenance and safety instructions. If you are not able to sufficiently understand the language used in the application documentation, please contact and inform your vendor.
- Appropriate and professional transport, storage, assembly and installation, as well as thorough operation and maintenance, are the basis of correct and safe operation of the component.
- Only qualified personnel may use components of the electric drive and control system or work in its close proximity.
- Only use accessories and spare parts approved by Rexroth.
- Comply with the safety instructions and regulations of the country in which the components of the electric drive and control system are operated.
- Only use components of the electric drive and control system as intended. Please refer to chapter **Intended use**.
- The ambient and operating conditions specified in this application documentation have to be complied with.
- Applications for functional safety are only allowed if they are explicitly and unambiguously specified in the application documentation "Integrated Safety Technology". If this is not the case, these applications are excluded. Functional safety includes parts of the overall safety in which measures of risk reduction for personal safety depend on electric, electronic or programmable controls.
- The specifications contained in the application documentation regarding the use of the provided components are only application examples and recommendations.
- For their individual application, the machine manufacturer and the system installer have to
  - verify the applicability of the provided components and the specifications made for their use in this application documentation,
  - synchronize the applicability with the safety regulations and standards applicable for their application and to execute the required measures, modifications and additions.
- Commissioning of the provided components is prohibited until is has been established that the machine or the system in which the components are installed corresponds to the country-specific provisions, safety regulations and standards of the application.
- Operation is only allowed when complying with the national EMC regulations for the relevant application.
- For information about EMC-compliant installation, refer to the section on EMC in the relevant application documentation.
- The system or machine manufacturer is responsible for compliance with the limit values specified in the national regulations.
- The technical data, connection and installation conditions of the components are contained in the relevant application documentations and must be complied with.
- Country-specific laws and regulations must be observed.

Hazards due to incorrect use

- High electrical voltage and high operating current! Danger to life or serious personal injury due to electric shock!
- High electrical voltage due to incorrect connection! Danger to life or personal injury due to electric shock!
- Dangerous movements! Danger to life, serious personal injury or property damage due to unintended motor movements!
- Health hazard for persons with heart pacemakers, metal implants and hearing aids in proximity to electric drive systems!
- Risk of burns by hot housing surfaces!

- Risk of injury by improper handling! Personal injury by crushing, shearing, cutting, hitting!
- Risk of injury by improper handling of batteries!
- Risk of injury by improper handling of pressurized lines!

Instructions with regard to specific dangers

Protection against contact with electrical parts and housings



This section concerns components of the electric drive and control system with voltages of **more than 50 volts**.

Contact with parts conducting voltages above 50 volts can cause personal danger and electric shock. When operating components of the electric drive and control system, it is unavoidable that some parts of these components conduct dangerous voltage.

High electrical voltage! Danger to life, risk of injury by electric shock or serious personal injury!

- Only qualified persons are allowed to operate, maintain and/or repair the components of the electric drive and control system.
- Follow the general installation and safety regulations when working on power installations.
- Before switching on, the equipment grounding conductor must have been permanently connected to all electrical components in accordance with the connection diagram.
- Even for short measurements or tests, operation is only allowed with the equipment grounding conductor permanently connected to the specified points of the components.
- Before accessing electrical parts with voltage potentials higher than 50 V, you must disconnect electrical components from the mains or from the power supply unit. Protect the electrical component against restart.
- Observe the following aspects in the case of electrical components:
  Prior to touching an electrical component, always wait for **30 minutes** after switching off power in order for live capacitors to discharge. Before beginning to work, measure the electrical voltage of live parts to make sure that the equipment is safe to touch.
- Install the provided covers and safety devices for protection against contact prior to switch-on.
- Do not touch any electrical connection points of the components while power is turned on.
- Do not connect or disconnect live parts.
- Under certain conditions, electric drive systems can be operated at mains protected by AC/DC sensitive residual-current-operated circuit breakers (RCDs/RCMs).
- Secure built-in devices from penetrating foreign objects and water, as well as from direct contact, by providing an external housing, for example a control cabinet.

High housing voltage and high leakage current! Danger to life, risk of injury by electric shock!

- Prior to switching on and commissioning, ground or connect the electric drive and control system components to the equipment grounding conductor at the grounding points.
- Connect the equipment grounding conductor of the electric drive and control system components permanently to the main power supply at all times. The leakage current is greater than 3.5 mA.
- Establish an equipment grounding connection with a minimum cross section according to the table below. With an outer conductor cross section smaller 10 mm^2 (8 AWG), the alternative connection of two equipment grounding conductors is allowed, each having the same cross section as the outer conductors.

Minimum cross section of equipment grounding connection

Cross section of outer conductor	Minimum cross section of equipment grounding conductor Leakage current ≥ 3.5 mA	
	1 equipment grounding conductor	2 equipment grounding conductors
1.5 mm^2 (16 AWG)	10 mm^2 (8 AWG)	2 × 1.5 mm^2 (16 AWG)
2.5 mm^2 (14 AWG)		2 × 2.5 mm^2 (14 AWG)

Cross section of outer conductor	Minimum cross section of equipment grounding conductor Leakage current ≥ 3.5 mA	
	1 equipment grounding conductor	2 equipment grounding conductors
4 mm^2 (12 AWG)		2 × 4 mm^2 (12 AWG)
6 mm^2 (10 AWG)		2 × 6 mm^2 (10 AWG)
10 mm^2 (8 AWG)		-
16 mm^2 (6 AWG)	16 mm^2 (6 AWG)	-
25 mm^2 (4 AWG)		-
35 mm^2 (2 AWG)		-
50 mm^2 (1/0 AWG)	25 mm^2 (4 AWG)	-
70 mm^2 (2/0 AWG)	35 mm^2 (2 AWG)	-

Protective extra-low voltage as protection against electric shock

Protective extra-low voltage is used to connect devices with basic insulation at extra-low voltage circuits.

At components of an electric drive and control system provided by Rexroth, all connections and terminals with voltages up to 50 volts are PELV (**Protective Extra-Low Voltage**) systems. It is allowed to connect devices equipped with basic insulation, such as programming devices, PCs, notebooks, display units, to these connections.

Danger to life, risk of injury by electric shock! High electrical voltage due to incorrect connection! If extra-low voltage circuits of devices containing voltages and circuits of more than 50 volts (e.g., the mains connection) are connected to Rexroth products, the connected extra-low voltage circuits must comply with the requirements for **Protective Extra Low Voltage - PELV**.

Protection against dangerous movements

Dangerous movements can be caused by incorrect control of connected motors. In the following, the different reasons are listed:

- Improper or wrong wiring or cable connection
- Operating errors
- Incorrect parameter input prior to commissioning
- Malfunction of sensors and encoders
- Defective components
- Errors in the software or firmware

These errors can occur immediately after switch-on or after an undefined time of operation.

As far as possible, the monitoring functions in the components of the electric drive and control system rule out malfunction in the connected drives. Regarding personal safety, in particular the danger of personal injury and/or property damage, this alone cannot be relied upon to ensure complete safety. Until the implemented monitoring functions are active, it must be assumed in any case that faulty drive movements will occur. The faulty movements depend on the type of control and the operating state.

Dangerous movements! Danger to life, risk of injury, serious injury or property damage!

Prepare a **risk assessment** for the system or machine, with their specific conditions, in which the components of the electric drive and control system are installed.

As specified in the risk assessment, the user has to provide monitoring functions and higher-level measures in the system for personal safety. The safety regulations applicable to the system or machine have to be included. Unintended machine movements or other malfunctions are possible if safety devices are disabled, bypassed or not

activated.

To avoid accidents, personal injury and/or property damage:

- Keep free and clear of the machine's range of motion and moving machine parts. Prevent personnel from accidentally entering the machine's range of motion by using, for example:
  - Safety fences
  - Safety guards
  - Protective covering
  - Light barriers
- Make sure the safety fences and protective coverings are strong enough to resist maximum possible kinetic energy.
- Mount emergency stop switches in the immediate reach of the operator. Before commissioning, verify that the emergency stop equipment works. Do not operate the machine if the emergency stop switch is not working.
- Prevent unintended start-up. Isolate the drive power connection by means of OFF switches/OFF buttons or use a safe starting lockout.
- Make sure that the drives are brought to safe standstill before accessing or entering the danger zone.
- Additionally secure vertical axes against falling or dropping after switching off the motor power by, for example,
  - mechanically securing the vertical axis,
  - adding an external braking/arrester/clamping mechanism or
  - ensuring sufficient counterweight for the axis.
- The standard equipment **motor holding brake** or an external holding brake controlled by the drive controller is **not sufficient to guarantee personal safety**!
- De-energize the components of the electric drive and control system using the master switch, and make sure they cannot be switched back on in the case of:
  - Maintenance and repairs
  - Cleaning work
  - Long service interruptions
- Avoid operating high-frequency, remote control and radio equipment in close proximity to components of the electric drive and control system and their supply leads. If the use of these devices cannot be avoided, check the machine or installation, at initial commissioning of the electric drive and control system, for possible malfunctions when operating such high-frequency, remote control and radio equipment in its possible positions of normal use. It might possibly be necessary to perform a special electromagnetic compatibility (EMC) test.

Protection against electromagnetic and magnetic fields during operation and mounting

Electromagnetic and magnetic fields!

Health hazard for persons with active implantable medical devices (AIMD) such as pacemakers or passive metallic implants.

- Hazards for the above-mentioned groups of persons by electromagnetic and magnetic fields in the immediate vicinity of drive controllers and the associated current-carrying conductors.
- Access to these areas can pose an increased risk to the above-mentioned groups of persons. They should seek advice from their attending doctor.
- If overcome by possible effects on above-mentioned persons during operation of drive controllers and accessories, remove the exposed persons from the vicinity of conductors and devices.

Protection against contact with hot parts

- Do not touch hot surfaces of, for example, braking resistors, heat sinks, supply units and drive controllers, motors, windings and laminated cores!
- According to the operating conditions, temperatures of the surfaces can be **higher than 60 °C** (140 °F) during or after operation.
- After having switched them off, allow the motors to cool down long enough before touching them. Cooling down may require **up to 140 minutes**! The time required for cooling down is approximately five times the thermal time constant specified in the technical data.

- After switching off chokes, supply units and drive controllers, wait **15 minutes** to allow them to cool down before touching them.
- Wear safety gloves or do not work at hot surfaces.
- For certain applications, and in accordance with the respective safety regulations, the manufacturer of the machine or system must take measures to avoid injuries caused by burns in the final application. Possible measures: warnings at the machine or system, guards (shieldings or barriers) or safety instructions in the application documentation.

Protection during handling and mounting

Risk of injury by improper handling! Personal injury by crushing, shearing, cutting, hitting!

- Comply with the relevant statutory regulations of accident prevention.
- Use suitable mounting and transport equipment.
- Avoid jamming and crushing by appropriate measures.
- Always use suitable tools. Use special tools if specified.
- Use lifting equipment and tools in the correct manner.
- Use suitable protective equipment (hard hat, safety goggles, safety shoes, safety gloves, for example).
- Do not stand under hanging loads.
- Immediately clean up any spilled liquids from the floor due to the risk of falling!

Battery safety

Batteries consist of active chemicals in a solid housing. Therefore, improper handling can cause injury or property damage. Risk of injury by improper handling!

- Do not attempt to reactivate low batteries by heating or other methods (risk of explosion and cauterization).
- Do not attempt to recharge the batteries since this may cause leakage or explosion.
- Do not throw batteries into open flames.
- Do not disassemble any batteries.
- When replacing the battery/batteries, do not damage the electrical parts installed in the devices.
- Only use the battery types specified for the product.



Environmental protection and disposal! The batteries contained in the product are considered dangerous goods during land, air, and sea transport (risk of explosion) in the sense of the legal regulations. Dispose of used batteries separately from other waste. Comply with the national regulations of your country.

Protection against pressurized systems

According to the information given in the Project Planning Manuals, motors and components cooled with liquids and compressed air can be partially supplied with externally fed, pressurized media, such as compressed air, hydraulics oil, cooling liquids and cooling lubricants. Improper handling of the connected supply systems, supply lines or connections can cause injuries or property damage.

Risk of injury by improper handling of pressurized lines!

- Do not attempt to disconnect, open or cut pressurized lines (risk of explosion).
- Comply with the respective manufacturer's operating instructions.
- Before dismounting lines, relieve pressure and empty medium.
- Use suitable protective equipment (safety goggles, safety shoes, safety gloves, for example).
- Immediately clean up any spilled liquids from the floor due to the risk of falling!



Environmental protection and disposal! The agents (e.g., fluids) used to operate the product might not be environmentally friendly. Dispose of agents harmful to the environment separately from other waste. Comply with the national regulations of your country.

Explanation of signal words and the safety alert symbol

The safety instructions in the available application documentation contain specific signal words (DANGER, WARNING, CAUTION, NOTICE) and, where required, a safety alert symbol (in accordance with ANSI Z535.6-2023).

The signal word is intended to draw the reader's attention to the safety instruction and describes the hazard severity.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words DANGER, WARNING and CAUTION, is used to alert the reader to personal injury hazards.



DANGER!
Non-compliance with this safety instruction **will** result in death or serious personal injury.



WARNING!
Non-compliance with this safety instruction **can** result in death or serious personal injury.



CAUTION!
Non-compliance with this safety instruction can result in moderate or minor personal injury.



NOTICE!
Non-compliance with this safety instruction can result in property damage.

A0000 Sercos: Communication phase 0

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific communication status	CP0
Generic communication status	Initialize



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0000
Long diagnostics no. (32 bits):	C30A0000

A0001 Sercos: Communication phase 1

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	CP1
Generic communication status	Initialize

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0001
Long diagnostics no. (32 bits):	C30A0001

A0002 Sercos: Communication phase 2

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	CP2
Generic communication status	Pre-Operational

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0002
Long diagnostics no. (32 bits):	C30A0002

A0003 Sercos: Communication phase 3

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	CP3
Generic communication status	Safe-Operational

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0003
Long diagnostics no. (32 bits):	C30A0003

A0004 Initialization

The field bus is in communication phase Init.

Master communication	EtherCAT
Bus-specific status	Init
Generic communication status	Init



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0004
Long diagnostics no. (32 bits):	000A0004

A0005 Pre-Operational

The field bus is in communication phase "Pre-Operational".

Master communication	EtherCAT
Bus-specific status	Pre-Operational
Generic communication status	Pre-Operational



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0005
Long diagnostics no. (32 bits):	000A0005

A0006 Safe-Operational

The field bus is in communication phase "Safe-Operational".

Master communication	EtherCAT

Bus-specific status	Safe-Operational
Generic communication status	Safe-Operational



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0006
Long diagnostics no. (32 bits):	000A0006

A0007 Operational

The field bus is in communication phase "Operational".

Master communication	EtherCAT
Bus-specific status	Operational
Generic communication status	Operational



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0007
Long diagnostics no. (32 bits):	000A0007

A0008 Sercos: NRT-Mode

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	NRT
Generic communication status	non real-time

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0008
Long diagnostics no. (32 bits):	C30A0008

A0010 Drive HALT

The "Drive Halt" function is indirectly activated by the master via the master communication interface by clearing the Drive Halt bit in the master control word (S-0-0134), or by interrupting a drive control command (e.g., drive-controlled homing procedure).

The "Drive Halt" function is used to decelerate an axis with defined acceleration and defined jerk.

The "Drive Halt" function can be executed as **quick stop** in **position control** or **velocity control**, or as **operating stop** in the active operation mode with velocity command value reset [see "Drive Halt: Configuration" (0x2808:01 / P-0-0558 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	A0010
Long diagnostics no. (32 bits):	C00A0010

A0011 STO active

The drive is in the special mode "Safe standstill". The safety function "Safe torque off" (STO) is active.

The operating state of the safety function is additionally displayed in "STO function: Operating status" (0x31F0:02 / P-0-0106 / --).

▼ Attributes

Short diagnostics no. (20 bits):	A0011
Long diagnostics no. (32 bits):	000A0011

A0012 Control and power sections ready for operation

The diagnostic message A0012 signals that the drive is supplied with control voltage and power has been switched on. The drive is ready for power output.

▼ Attributes

Short diagnostics no. (20 bits):	A0012

Long diagnostics no. (32 bits):	C00A0012

A0013 Ready for power on

The diagnostic message A0013 signals that the device is supplied with control voltage and there is no error present in the device.

The device is ready for power on.

▼ Attributes

Short diagnostics no. (20 bits):	A0013
Long diagnostics no. (32 bits):	C00A0013

A0014 Axis parked

The diagnostic message A0014 signals that the “parking axis” function is active.

The “parking axis” state implies the following:

- The monitoring functions for signals or the communication with encoder 1/encoder 2 have been deactivated.
- The encoder supply has been switched off.
- The motor data cannot be read from the encoder memory; therefore, the displayed motor data are not up-to-date.
- The temperature monitoring of the motor has been deactivated.
- The axis control has not been initialized and thus is not active.
- The motor control has not been initialized and thus is not active.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	A0014
Long diagnostics no. (32 bits):	000A0014

A0029 EtherCAT: Bootstrap

The device is in communication mode "Bootstrap".

In the communication mode "Bootstrap", the transmission of the cyclic process data as well as all mailbox services [except for file access via EtherCAT (FoE)] are **not available**. The FoE service for updating the firmware is available.

The communication mode "Bootstrap" can only be reached via the "Init" state and can only proceed to the "Init" state.

See also EtherCAT

▼ Attributes

Short diagnostics no. (20 bits):	A0029
Long diagnostics no. (32 bits):	030A0029

A0030 Sercos: Hot-plug phase 0

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	HP0
Generic communication status	Initialize



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0030
Long diagnostics no. (32 bits):	C30A0030

A0031 Sercos: Hot-plug phase 1

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	HP1
Generic communication status	Pre-Operational



The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0031
Long diagnostics no. (32 bits):	C30A0031

A0032 Sercos: Hot-plug phase 2

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	HP2
Generic communication status	Safe-Operational

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0032
Long diagnostics no. (32 bits):	C30A0032

A0035 Standby

After initialization, the J1939 communication starts in the "Standby" state.

"Standby" is a status of the J1939 State Machine. "Standby" basically is a state in which the system waits for a "wake-up trigger" to keep on running through the State Machine.

For further information, please see the description of the J1939 State Machine.

▼ Attributes

Short diagnostics no. (20 bits):	A0035
Long diagnostics no. (32 bits):	000A0035

A0040 Sercos: Communication phase 4

The diagnostic message displays a bus-specific Sercos III status. For details please see the Sercos specification.

Master communication	Sercos III
Bus-specific status	CP4
Generic communication status	Operational

The communication status is also displayed binarily in "MCI diagnostics: Interface status" (0x2C06:01 / S-0-0014 / --).

The communication status is also displayed by the diagnostic LED.

▼ Attributes

Short diagnostics no. (20 bits):	A0040
Long diagnostics no. (32 bits):	C30A0040

A0049 Parameterization mode active

The parameterization mode (PM) was activated [C1100 (0x2BD2:04 / P-0-0504 / --)].

In the parameterization mode, the configured function and peripherals of the axis may be adjusted without having to

stop the function or peripherals. For the basic configuration of the axis - defining the function/peripherals - it is necessary to go to the configuration mode (CM).

In the parameterization mode, values of parameters, that are read-only in the operating mode (OM) and can be written in the parameterization mode, may be changed.



The write protection of a parameter is linked to the "subdevice state machine". The write protection accounts for the editability of the operating data of a parameter, that has been defined as a parameter attribute. Parameters whose editability contains the values "Can always be edited" or "PM" may be modified in the parameterization mode.



The command C0200 (0x2BD2:06 / S-0-0422 / --) puts the application back to the operating mode (OM) without having to modify the state of the "master communication state machine".

▼ Attributes

Short diagnostics no. (20 bits):	A0049
Long diagnostics no. (32 bits):	000A0049

A0050 Configuration mode active

The drive is in the operating state "configuration mode". In this state, the monitoring functions of the position encoders and the motor temperature sensors have been deactivated. Although the master communication is in communication phase 4, the drive can be parameterized like in communication phase 3.



The operating state "configuration mode" is also called "CM".

See also Parking axis

See also "Subdevice STM: C0400 Activate configuration mode" [C0400 (0x2BD2:05 / S-0-0420 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	A0050
Long diagnostics no. (32 bits):	000A0050

A0051 Operating mode

The axis was switched to the operating mode, but the master communication is not yet in cyclic data exchange. Axis control is not yet possible in this state.

▼ Attributes

Short diagnostics no. (20 bits):	A0051
Long diagnostics no. (32 bits):	000A0051

A0052 STO not active

The drive is no longer in the special mode "Safe standstill".

The operating state of the safety function is additionally displayed in "STO function: Operating status" (0x31F0:02 / P-0-0106 / --).

▼ Attributes

Short diagnostics no. (20 bits):	A0052
Long diagnostics no. (32 bits):	000A0052

A0060 Firmware update active

The status message A0060 is displayed as soon as a firmware file is loaded to the drive or if the loaded firmware has not yet been activated by restarting the device.

Once the status message A0060 is displayed, it is no longer possible to exit the configuration mode (CM).

The flashing pattern of the “PFO” LED at the device shows whether the loading of the firmware file to the drive is still active, or whether the loading process has been completed and the device is waiting for restart.

Also see LED PFO1 (device state)

▼ Attributes

Short diagnostics no. (20 bits):	A0060
Long diagnostics no. (32 bits):	020A0060

A0100 Torque/force control

The drive controller is in the "torque/force control" mode. The drive controller follows the torque/force command value characteristic preset by the master.

See also Torque/force control

▼ Attributes

Short diagnostics no. (20 bits):	A0100
Long diagnostics no. (32 bits):	C00A0100

A0101 Velocity (open-loop/closed-loop control)

The drive is in the “velocity control“ mode. It follows the speed command value characteristic preset by the master. The speed control loop is closed in the drive.

See also Velocity control

▼ Attributes

Short diagnostics no. (20 bits):	A0101
Long diagnostics no. (32 bits):	C00A0101

A0102 Position mode, encoder 1

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic, the drive follows the command value with a lag distance.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0102
Long diagnostics no. (32 bits):	C00A0102

A0103 Position mode, encoder 2

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic, the drive follows the command value with a lag distance.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0103
Long diagnostics no. (32 bits):	C00A0103

A0104 Position mode lagless, encoder 1

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic, the drive follows the command value without a lag distance [prerequisite: "Velocity feedforward: Gain" (0x2224:01 / P-0-0040 / --) has been set to 100%].

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0104
Long diagnostics no. (32 bits):	C00A0104

A0105 Position mode lagless, encoder 2

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic, the drive follows the command value without a lag distance [prerequisite: "Velocity feedforward: Gain" (0x2224:01 / P-0-0040 / --) has been set to 100%].

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-

0078 / --) is used as the control encoder.

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0105
Long diagnostics no. (32 bits):	C00A0105

A0106 Drive-internal interpolation, encoder 1

From the master, the drive receives a position command value that is identical to the target position of the travel distance. The drive generates (interpolates) an internal position command value characteristic from the position command value. The position command value characteristic complies with the maximum values for the jerk, acceleration and velocity characteristics defined by the master.

The drive moves to the target position with a lag distance.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

▼ Attributes

Short diagnostics no. (20 bits):	A0106
Long diagnostics no. (32 bits):	C00A0106

A0107 Drive-internal interpolation, encoder 2

From the master, the drive receives a position command value that is identical to the target position of the travel distance. The drive generates (interpolates) an internal position command value characteristic from the position command value. The position command value characteristic complies with the maximum values for the jerk, acceleration and velocity characteristics defined by the master.

The drive moves to the target position with a lag distance.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

▼ Attributes

Short diagnostics no. (20 bits):	A0107
Long diagnostics no. (32 bits):	C00A0107

A0108 Drive-internal interpolation lagless, encoder 1

From the master, the drive receives a position command value that is identical to the target position of the travel distance. The drive generates (interpolates) an internal position command value characteristic from the position command value. The position command value characteristic complies with the maximum values for the jerk, acceleration and velocity characteristics defined by the master.

The drive moves to the target position without a lag distance [prerequisite: "Velocity feedforward: Gain" (0x2224:01 / P-0-0040 / --) has been set to 100%].

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

▼ Attributes

Short diagnostics no. (20 bits):	A0108
Long diagnostics no. (32 bits):	C00A0108

A0109 Drive-internal interpolation lagless, encoder 2

From the master, the drive receives a position command value that is identical to the target position of the travel distance. The drive generates (interpolates) an internal position command value characteristic from the position command value. The position command value characteristic complies with the maximum values for the jerk, acceleration and velocity characteristics defined by the master.

The drive moves to the target position without a lag distance [prerequisite: "Velocity feedforward: Gain" (0x2224:01 / P-0-0040 / --) has been set to 100%].

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

▼ Attributes

Short diagnostics no. (20 bits):	A0109
Long diagnostics no. (32 bits):	C00A0109

A0150 Drive-controlled positioning, encoder 1

The drive receives a position command value (0x2844:01 / S-0-0282 / --) from the master. If bit 0 of the positioning control word (0x2844:02 / S-0-0346 / --) changes its state, this position/distance is copied to the target position (0x2840:04 / S-0-0430 / --) or added in the case of relative input. Upon positioning command value acceptance, the drive generates (interpolates) an internal position command value characteristic to reach this target position from the current position. This is achieved taking into consideration the values parameterized for velocity (0x6081:00 / S-0-0259 / --), acceleration (0x2840:02 /S-0-0260 / --) or deceleration (0x2840:03 / S-0-0359 / --) and jerk (0x2840:08 / S-0-0193 / --).

The drive moves to the target position to be approached with a lag distance proportional to the velocity.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	A0150
Long diagnostics no. (32 bits):	C00A0150

A0151 Drive-controlled positioning lagless, encoder 1

The drive receives a position command value (0x2844:01 / S-0-0282 / --) from the master. If bit 0 of the positioning control word (0x2844:02 / S-0-0346 / --) changes its state, this position/distance is copied to the target position (0x2840:04 / S-0-0430 / --) or added in the case of relative input. Upon positioning command value acceptance, the drive generates (interpolates) an internal position command value characteristic to reach this target position from the current position. This is achieved taking into consideration the values parameterized for velocity (0x6081:00 / S-0-0259 / --), acceleration (0x2840:02 /S-0-0260 / --) or deceleration (0x2840:03 / S-0-0359 / --) and jerk (0x2840:08 / S-0-0193 / --).

The drive moves to the target position to be approached without a lag distance [prerequisite: Velocity feedforward evaluation (0x2224:01 / P-0-0040 / --)=100%].

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	A0151
Long diagnostics no. (32 bits):	C00A0151

A0152 Drive-controlled positioning, encoder 2

The drive receives a position command value (0x2844:01 / S-0-0282 / --) from the master. If bit 0 of the positioning control word (0x2844:02 / S-0-0346 / --) changes its state, this position/distance is copied to the target position (0x2840:04 / S-0-0430 / --) or added in the case of relative input. Upon positioning command value acceptance, the drive generates (interpolates) an internal position command value characteristic to reach this target position from the current position. This is achieved taking into consideration the values parameterized for velocity (0x6081:00 / S-0-0259 / --), acceleration (0x2840:02 /S-0-0260 / --) or deceleration (0x2840:03 / S-0-0359 / --) and jerk (0x2840:08 / S-0-0193 / --).

The drive moves to the target position to be approached with a lag distance proportional to the velocity.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	A0152
Long diagnostics no. (32 bits):	C00A0152

A0153 Drive-controlled positioning lagless, encoder 2

The drive receives a position command value (0x2844:01 / S-0-0282 / --) from the master. If bit 0 of the positioning control word (0x2844:02 / S-0-0346 / --) changes its state, this position/distance is copied to the target position (0x2840:04 / S-0-0430 / --) or added in the case of relative input. Upon positioning command value acceptance, the drive generates (interpolates) an internal position command value characteristic to reach this target position from the current position. This is achieved taking into consideration the values parameterized for velocity (0x6081:00 / S-0-0259 / --), acceleration (0x2840:02 /S-0-0260 / --) or deceleration (0x2840:03 / S-0-0359 / --) and jerk (0x2840:08 / S-0-0193 / --).

The drive moves to the target position to be approached without a lag distance [prerequisite: Velocity feedforward evaluation (0x2224:01 / P-0-0040 / --)=100%].

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	A0153
Long diagnostics no. (32 bits):	C00A0153

A0154 Position mode drive-controlled, encoder 1

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **with a lag distance**.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0154
Long diagnostics no. (32 bits):	000A0154

A0155 Position mode drive-controlled, encoder 2

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **with a lag distance**.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0155
Long diagnostics no. (32 bits):	000A0155

A0156 Position mode lagless, encoder 1 drive-controlled

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **without a lag distance**.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0156
Long diagnostics no. (32 bits):	000A0156

A0157 Position mode lagless, encoder 2 drive-controlled

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form **without a lag distance**.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0157
Long diagnostics no. (32 bits):	000A0157

A0160 Position control drive-controlled with axis control word

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

When the operation mode is activated, any possible difference between current actual position value and transmitted position command value is traveled in drive-controlled form.

Based on "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the drive uses encoder 1 or encoder 2 to control with regard to the target position to be approached, either lagless or with a lag distance (0x2224:01 / P-0-0040 / --).



Control with encoder 2 is only possible if encoder 2 is available.

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0160
Long diagnostics no. (32 bits):	000A0160

A0161 Drive-controlled positioning with axis control word

The drive receives a position command value (0x2844:01 / S-0-0282 / --) from the master. If bit 0 of the positioning control word (0x2844:02 / S-0-0346 / --) changes its state, this position/distance is copied to the target position (0x2840:04 / S-0-0430 / --) or added in the case of relative input. Upon positioning command value acceptance, the drive generates (interpolates) an internal position command value characteristic to reach this target position from the current position. This is achieved taking into consideration the values parameterized for velocity (0x6081:00 / S-0-0259 / --), acceleration (0x2840:02 /S-0-0260 / --) or deceleration (0x2840:03 / S-0-0359 / --) and jerk (0x2840:08 / S-0-0193 / --).

Based on "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the drive uses encoder 1 or encoder 2 to control with regard to the target position to be approached, either lagless or with a lag distance (0x2224:01 / P-0-0040 / --).



Control with encoder 2 is only possible if encoder 2 is available.

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	A0161
Long diagnostics no. (32 bits):	000A0161

A0162 Positioning block mode

The drive controller is in the “positioning block mode”.

The command value profile is generated in the drive controller. Target position, velocity, acceleration and jerk are determined by a preassigned positioning block.

▼ Attributes

Short diagnostics no. (20 bits):	A0162
Long diagnostics no. (32 bits):	000A0162

A0165 Position control with axis control word

The drive is in position control. The position control loop is closed in the drive via a position encoder. The master only presets the position command value characteristic.

Based on "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the drive uses encoder 1 or encoder 2 to control with regard to the target position to be approached, either lagless or with a lag distance (0x2224:01 / P-0-0040 / --).



Control with encoder 2 is only possible if encoder 2 is available.

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	A0165
Long diagnostics no. (32 bits):	000A0165

A0166 Drive-internal interpolation with axis control word

From the master, the drive receives a position command value that is identical to the target position of the travel distance. The drive now generates (interpolates) an internal position command value characteristic that complies with maximum values defined by the master for the jerk, acceleration and velocity characteristics.

Based on "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the drive uses encoder 1 or

encoder 2 to control with regard to the target position to be approached, either lagless or with a lag distance (0x2224:01 / P-0-0040 / --).

Control with encoder 2 is only possible if encoder 2 is available.

▼ Attributes

Short diagnostics no. (20 bits):	A0166
Long diagnostics no. (32 bits):	000A0166

A0180 DC bus voltage control

The converter is in the "DC bus voltage control" mode. Via an electrical machine (generator) or an accumulator, the voltage is generated at the common DC bus.

The "DC bus voltage control" mode is exclusively available in conjunction with converters of the "EDS1" type.

▼ Attributes

Short diagnostics no. (20 bits):	A0180
Long diagnostics no. (32 bits):	000A0180

A0206 Positioning block mode, encoder 1

The drive is in position control with a systematic lag distance.

Encoder 1 provides the actual value.

The command value profile is generated in the drive. Target position, velocity, acceleration, jerk,... are determined by a preassigned positioning block.

The parameterization of "Positioning block mode: Mode" (0x284E:06 / P-0-4019 / --) specifies how "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) is processed.

▼ Attributes

Short diagnostics no. (20 bits):	A0206
Long diagnostics no. (32 bits):	000A0206

A0207 Positioning block mode lagless, encoder 1

The drive is in position control without a lag distance.

Encoder 1 provides the actual value.

The command value profile is generated in the drive. Target position, velocity, acceleration, jerk... are determined by a preassigned positioning block.

The parameterization of "Positioning block mode: Mode" (0x284E:06 / P-0-4019 / --) specifies how "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) is processed.

▼ Attributes

Short diagnostics no. (20 bits):	A0207
Long diagnostics no. (32 bits):	000A0207

A0210 Positioning block mode, encoder 2

The drive is in position control with a systematic lag distance.

Encoder 2 provides the actual value.

The command value profile is generated in the drive. Target position, velocity, acceleration, jerk,... are determined by a preassigned positioning block.

The parameterization of "Positioning block mode: Mode" (0x284E:06 / P-0-4019 / --) specifies how "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) is processed.

▼ Attributes

Short diagnostics no. (20 bits):	A0210
Long diagnostics no. (32 bits):	000A0210

A0211 Positioning block mode lagless, encoder 2

The drive is in position control without a lag distance.

Encoder 2 provides the actual value.

The command value profile is generated in the drive. Target position, velocity, acceleration, jerk... are determined by a preassigned positioning block.

The parameterization of "Positioning block mode: Mode" (0x284E:06 / P-0-4019 / --) specifies how "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) is processed.

▼ Attributes

Short diagnostics no. (20 bits):	A0211
Long diagnostics no. (32 bits):	000A0211

A0255 PROFINET: Device name defined

The PROFINET Device name was written via the PROFINET network.

The PROFINET Device name is used to identify a PROFINET Device in the PROFINET network and is required to establish the connection.

▼ Attributes

Short diagnostics no. (20 bits):	A0255
Long diagnostics no. (32 bits):	0C0A0255
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

A0256 PROFINET: IP configuration specified

The IP configuration, consisting of IP address, subnet mask and gateway address, was written via the network.

The IP configuration is usually specified by the PROFINET Controller by means of the PROFINET Device name and written, if deviating from the current setting in the PROFINET Device.

▼ Attributes

Short diagnostics no. (20 bits):	A0256
Long diagnostics no. (32 bits):	0C0A0256
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

A0257 PROFINET: No AR to Controller

After the run-up of ctrlX CORE, the PROFINET connection [AR (Application Relation)] by a PROFINET Controller has not yet been established after 5 s.

▼ Attributes

Short diagnostics no. (20 bits):	A0257
Long diagnostics no. (32 bits):	0C0A0257
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

A0258 PROFINET: AR to Controller established

A PROFINET connection [AR (Application Relation)] to a PROFINET Controller was established.

Up to 4 connections are possible simultaneously.

▼ Attributes

Short diagnostics no. (20 bits):	A0258
Long diagnostics no. (32 bits):	0C0A0258
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

A0259 PROFINET: AR to Controller terminated

A PROFINET connection [AR (Application Relation)] to a PROFINET Controller was terminated.

▼ Attributes

Short diagnostics no. (20 bits):	A0259
Long diagnostics no. (32 bits):	0C0A0259
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

A0260 IP address not configured (NO IP)

Cause	Remedy
The IP address settings are not valid	It is necessary to configure an IP address

▼ Attributes

Short diagnostics no. (20 bits):	A0260
Long diagnostics no. (32 bits):	0C0A0260

A0261 IP configuration is set (SET IP)

The IP configuration is written via the network.

The IP configuration consists of the following components:

- IP address
- Subnet mask
- Gateway address

▼ Attributes

Short diagnostics no. (20 bits):	A0261
Long diagnostics no. (32 bits):	0C0A0261

A0262 No cyclic connection (NO CYCLIC CONNECTION)

The communication interface has run up and is for the connection setup with the EtherNet/IP scanner.

The EtherNet/IP scanner has not yet established the cyclic communication.

▼ Attributes

Short diagnostics no. (20 bits):	A0262
Long diagnostics no. (32 bits):	0C0A0262

A0263 Data exchange active (RUN)

Cyclic communication is active.

The cyclic data exchange is active and runs without error.

▼ Attributes

Short diagnostics no. (20 bits):	A0263
Long diagnostics no. (32 bits):	0C0A0263

A0264 Scanner in stop mode (IDLE)

Cyclic communication is active.

The EtherNet/IP scanner has set the cyclic communication to the stop mode (IDLE state).

▼ Attributes

Short diagnostics no. (20 bits):	A0264
Long diagnostics no. (32 bits):	0C0A0264

A0300 SMO not active: Output stage locked

"SafeMotion" has been deactivated.

- Output stage is locked (drive torque has been disabled)
- Safety status: "Axis not safe"
- Digital local outputs have been set to "0"
- Brake output has been deactivated, electrically releasing brake is applied

▼ Attributes

Short diagnostics no. (20 bits):	A0300
Long diagnostics no. (32 bits):	060A0300
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00530037

Condition as supplied SMO: Output stage locked

00540037

Condition as supplied SMO: Output stage locked

A0301 SMM1: Special mode Safe motion 1 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 1 (SMM1)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

• Safely-limited increment (SLI) and

• Safe motion direction (SDI) and
• Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0301
Long diagnostics no. (32 bits):	060A0301

Detailed diagnostics

00530038

Special mode “Safe motion 1” active

00540038

Special mode “Safe motion 1” active

A0302 SMM2: Special mode Safe motion 2 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 2 (SMM2)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration
• Safely-limited increment (SLI) and
• Safe motion direction (SDI) and
• Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0302
Long diagnostics no. (32 bits):	060A0302

Detailed diagnostics

00530039

Special mode “Safe motion 2” active

00540039

Special mode “Safe motion 2” active

A0303 SMM3: Special mode Safe motion 3 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 3 (SMM3)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

• Safely-limited increment (SLI) and
• Safe motion direction (SDI) and
• Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0303
Long diagnostics no. (32 bits):	060A0303

Detailed diagnostics

0053003A

Special mode “Safe motion 3” active

0054003A

Special mode “Safe motion 3” active

A0304 SMM4: Special mode Safe motion 4 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 4 (SMM4)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration
• Safely-limited increment (SLI) and
• Safe motion direction (SDI) and
• Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0304
Long diagnostics no. (32 bits):	060A0304

Detailed diagnostics

0053003B

Special mode “Safe motion 4” active

0054003B

Special mode “Safe motion 4” active

A0305 SMM5: Special mode Safe motion 5 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 5 (SMM5)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0305
Long diagnostics no. (32 bits):	060A0305

Detailed diagnostics

0053003C

Special mode “Safe motion 5” active

0054003C

Special mode “Safe motion 5” active

A0306 SMM6: Special mode Safe motion 6 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 6 (SMM6)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0306
Long diagnostics no. (32 bits):	060A0306

Detailed diagnostics

0053003D

Special mode “Safe motion 6” active

0054003D

Special mode “Safe motion 6” active

A0307 SMM7: Special mode Safe motion 7 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 7 (SMM7)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0307
Long diagnostics no. (32 bits):	060A0307

Detailed diagnostics

0053003E

Special mode “Safe motion 7” active

0054003E

Special mode “Safe motion 7” active

A0308 SMM8: Special mode Safe motion 8 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 8 (SMM8)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0308
Long diagnostics no. (32 bits):	060A0308

Detailed diagnostics

0053003F

Special mode “Safe motion 8” active

0054003F

Special mode “Safe motion 8” active

A0309 SMM9: Special mode Safe motion 9 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 9 (SMM9)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0309
Long diagnostics no. (32 bits):	060A0309

Detailed diagnostics

00530040

Special mode “Safe motion 9” active

00540040

Special mode “Safe motion 9” active

A0310 SMM10: Special mode Safe motion 10 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 10 (SMM10)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0310
Long diagnostics no. (32 bits):	060A0310

Detailed diagnostics

00530041

Special mode “Safe motion 10” active

00540041

Special mode “Safe motion 10” active

A0311 SMM11: Special mode Safe motion 11 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 11 (SMM11)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0311
Long diagnostics no. (32 bits):	060A0311

Detailed diagnostics

00530042

Special mode “Safe motion 11” active

00540042

Special mode “Safe motion 11” active

A0312 SMM12: Special mode Safe motion 12 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 12 (SMM12)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0312
Long diagnostics no. (32 bits):	060A0312

Detailed diagnostics

00530043

Special mode “Safe motion 12” active

00540043

Special mode “Safe motion 12” active

A0313 SMM13: Special mode Safe motion 13 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 13 (SMM13)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0313
Long diagnostics no. (32 bits):	060A0313

Detailed diagnostics

00530044

Special mode “Safe motion 13” active

00540044

Special mode “Safe motion 13” active

A0314 SMM14: Special mode Safe motion 14 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 14 (SMM14)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0314
Long diagnostics no. (32 bits):	060A0314

Detailed diagnostics

00530045

Special mode “Safe motion 14” active

00540045

Special mode “Safe motion 14” active

A0315 SMM15: Special mode Safe motion 15 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 15 (SMM15)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0315
Long diagnostics no. (32 bits):	060A0315

Detailed diagnostics

00530046

Special mode “Safe motion 15” active

00540046

Special mode “Safe motion 15” active

A0316 SMM16: Special mode Safe motion 16 active

The drive is in the configurable and selectable Safety technology operating state “Safe motion 16 (SMM16)“.

The active safety function is "Safely-limited speed (SLS)" and depends on the configuration

- Safely-limited increment (SLI) and
- Safe motion direction (SDI) and
- Safely-monitored transient oscillation (SLS-LT)

▼ Attributes

Short diagnostics no. (20 bits):	A0316
Long diagnostics no. (32 bits):	060A0316

Detailed diagnostics

00530047

Special mode “Safe motion 16” active

00540047

Special mode “Safe motion 16” active

A0320 SMES: EMERGENCY STOP active

The drive is in safety technology operating state "EMERGENCY STOP (SMES)". The active safety function is "Safe torque off (STO)".

The safety functions configured in "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --) remain active.

▼ Attributes

Short diagnostics no. (20 bits):	A0320
Long diagnostics no. (32 bits):	060A0320

Detailed diagnostics

00530048

EMERGENCY STOP active

00540048

EMERGENCY STOP active

A0321 SMST1: Special mode Safe standstill active with STO

The drive is in safety technology operating status Special mode Safe standstill (SMST1). The active safety function is "Safe torque off (STO)".

The safety functions configured in "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --) remain active.

▼ Attributes

Short diagnostics no. (20 bits):	A0321
Long diagnostics no. (32 bits):	060A0321

Detailed diagnostics

00530049

Special mode “Safe standstill” active with STO

00540049

Special mode “Safe standstill” active with STO

A0322 SMST2: Special mode Safe standstill active with SOS

The drive is in the safety technology operating state special mode "Safe standstill" (SMST2). The active safety function is "Safe operating stop" (SOS).



The safety functions configured in "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --) remain active.

▼ Attributes

Short diagnostics no. (20 bits):	A0322
Long diagnostics no. (32 bits):	060A0322

Detailed diagnostics

0053004A

Special mode “Safe standstill” active with SOS

0054004A

Special mode “Safe standstill” active with SOS

A0323 SMO: Configuration mode active

The drive is in the operating state "configuration mode" (CM).

In this status, the output stage is locked and brakes, if available, have been controlled for the purpose of applying.

When "SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468) has been entered, all safety technology parameters can be changed. Parameters for configuring the safety technology can only be changed in this operating state.

▼ Attributes

Short diagnostics no. (20 bits):	A0323
Long diagnostics no. (32 bits):	060A0323

A0324 SMO: Normal operation

The safety technology is in the operating status “Normal operation (NO)“.

▼ Attributes

Short diagnostics no. (20 bits):	A0324

Long diagnostics no. (32 bits):	060A0324

A0325 SMO: Parameter mode active

The drive is in the operating state "parameterization mode" (PM).

▼ Attributes

Short diagnostics no. (20 bits):	A0325
Long diagnostics no. (32 bits):	060A0325

A0327 SMO not active: Output stage functionally enabled

"SafeMotion" has been deactivated.

- Output stage has not been locked by "SafeMotion"
- Safety status: "Axis not safe"
- Digital local outputs have been set to "0"
- Brake output has not been deactivated by "SafeMotion" and can be controlled functionally

▼ Attributes

Short diagnostics no. (20 bits):	A0327
Long diagnostics no. (32 bits):	060A0327
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

005306A4

SMO not active. Output stage not locked!

005406A4

SMO not active. Output stage not locked!

A0328 Special mode 1 active

The drive is in safety technology operating state "Special mode 1 (SM1)". The active safety function is "Safe torque off (STO)" or "Safe motor phase short circuit (AKS)".

▼ Attributes

Short diagnostics no. (20 bits):	A0328
Long diagnostics no. (32 bits):	060A0328

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00533612

Special mode 1 active

00543612

Special mode 1 active

A0329 STO active

The drive is in a state with active safety function „Safe torque off (STO)“

The active SafeMotion profile is "Safety Drive Profile".

▼ Attributes

Short diagnostics no. (20 bits):	A0329
Long diagnostics no. (32 bits):	060A0329

Detailed diagnostics

00533626

STO active

00543626

STO active

A0500 Supply module in voltage control

The mains contactor has been connected, the DC bus has been charged and the DC bus voltage is controlled with regard to the command value (voltage control) or maintained in the command value range (voltage control, floating DC bus voltage).

▼ Attributes

Short diagnostics no. (20 bits):	A0500
Long diagnostics no. (32 bits):	070A0500

A0501 Supply module in current control

The mains contactor has been connected, the DC bus has been charged, the mains current is controlled with regard to a preset command value.



This operating state may only be used for manufacturer-side testing and development purposes!

▼ Attributes

Short diagnostics no. (20 bits):	A0501
Long diagnostics no. (32 bits):	070A0501

A0502 Supply module in operation

The mains contactor has been connected, the DC bus has been charged to the rectified value of the mains voltage.

The supply module is ready for DC bus voltage control to be enabled.

The supplied axes show “bb” (drive ready for power on).

▼ Attributes

Short diagnostics no. (20 bits):	A0502
Long diagnostics no. (32 bits):	070A0502

A0503 DC bus charging active

The DC bus is charged to the rectified value of the mains voltage (" Softstart").

Devices of XVR type: If it is the first charging process after the control voltage was switched on, the mains choke connection is also checked and the DC bus capacitance is determined.

Once the charging process is complete or after the check of the mains choke connection is complete, the device switches to the (A0502) “Supply module in operation status”.

▼ Attributes

Short diagnostics no. (20 bits):	A0503
Long diagnostics no. (32 bits):	070A0503

A0504 Power supply control section ready for operation



Up to AXS-V-0204, the diagnostic message is Control section ready for oper., mains voltage not available.

The control section of the supply module is error-free and ready for operation.

▼ Attributes

Short diagnostics no. (20 bits):	A0504

Long diagnostics no. (32 bits):	070A0504

A0505 Power supply module ready for operation

Supply unit

The control section and the power section of the supply module are ready for the DC bus to be charged.

A mains valid for the device has been connected.

The mains contactor has been switched off and the charging circuit has been disabled. The ready for operation relay is closed.

Supply unit in island grid mode and DC/DC converter

The control section and the power section of the supply unit are ready for voltage build-up, the DC bus voltage this requires has been applied.

▼ Attributes

Short diagnostics no. (20 bits):	A0505
Long diagnostics no. (32 bits):	070A0505

A0506 Supply module in rectifier mode

The mains contactor has been connected and the DC bus has been charged to the mains voltage peak value. The connected axes can request the specified DC bus power.

Devices of XVR type: The energy to the DC bus is usually only supplied via the diode bridge of the rectifier. In the case of high mains currents, the device is temporarily operated in active DC bus voltage control to protect the diode bridge.

▼ Attributes

Short diagnostics no. (20 bits):	A0506
Long diagnostics no. (32 bits):	070A0506

A0520 DC bus quick discharge active

The braking resistor has been switched on to reduce the DC bus voltage as quickly as possible. The DC bus is discharged until a voltage of approx. 35 V is reached. If the voltage has fallen below this value, the status bit 10 is set in "Power supply control: Status word" (0x2600:02 / S-0-1720.0.2 / S-0-2058).

▼ Attributes

Short diagnostics no. (20 bits):	A0520
Long diagnostics no. (32 bits):	070A0520

A0530 Island grid mode

The power of the supply unit has been enabled and the island grid contactor is closed.

The supply unit is ready for power output to the island grid.

▼ Attributes

Short diagnostics no. (20 bits):	A0530
Long diagnostics no. (32 bits):	070A0530

A0532 Island grid, ready for power output

The supply unit has built up the target voltage of the island grid and, where applicable, has synchronized with an already available island grid.

The supply unit is ready for power enable and for closing the island grid contactor.

▼ Attributes

Short diagnostics no. (20 bits):	A0532
Long diagnostics no. (32 bits):	070A0532

A0533 Island grid, voltage build-up

The supply unit builds up the device output voltage to the target voltage of the island grid and, where applicable, simultaneously synchronizes with an already available island grid.

If a transformer is available, magnetization takes place.

▼ Attributes

Short diagnostics no. (20 bits):	A0533
Long diagnostics no. (32 bits):	070A0533

A0534 Control section ready for operation



Up to AXS-V-0204, the diagnostic message is Control section ready for oper., DC bus voltage not available.

The supply unit is operated as DC/DC converter or as regenerative supply unit in island grid mode.

The control section of the supply unit is error-free.

▼ Attributes

Short diagnostics no. (20 bits):	A0534
Long diagnostics no. (32 bits):	070A0534

A0540 DC mode active

The inverter is operated as a DC/DC converter to convert a direct voltage (DC bus voltage) to a direct voltage of a different value.

The DC output voltage is available to the loads (power enable) which allows the device to be loaded.

▼ Attributes

Short diagnostics no. (20 bits):	A0540
Long diagnostics no. (32 bits):	070A0540

A0542 DC supply, ready for power output

The inverter is operated as a DC/DC converter to convert a direct voltage (DC bus voltage) to a direct voltage of a different value.

The DC output voltage build-up has been completed and the device is ready for power enable.

▼ Attributes

Short diagnostics no. (20 bits):	A0542
Long diagnostics no. (32 bits):	070A0542

A0543 DC voltage build-up

The inverter is operated as a DC/DC converter to convert a direct voltage (DC bus voltage) to a direct voltage of a different value.

The DC output voltage is slowly increased to the target command voltage to load a potentially existing output capacitor in a controlled manner.

▼ Attributes

Short diagnostics no. (20 bits):	A0543
Long diagnostics no. (32 bits):	070A0543

A2211 PLC message no. 1

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2211
Long diagnostics no. (32 bits):	0A0A2211

A2212 PLC message no. 2

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2212
Long diagnostics no. (32 bits):	0A0A2212

A2213 PLC message no. 3

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2213
Long diagnostics no. (32 bits):	0A0A2213

A2214 PLC message no. 4

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2214
Long diagnostics no. (32 bits):	0A0A2214

A2215 PLC message no. 5

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2215
Long diagnostics no. (32 bits):	0A0A2215

A2216 PLC message no. 6

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2216
Long diagnostics no. (32 bits):	0A0A2216

A2217 PLC message no. 7

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2217
Long diagnostics no. (32 bits):	0A0A2217

A2218 PLC message no. 8

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2218
Long diagnostics no. (32 bits):	0A0A2218

A2219 PLC message no. 9

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2219
Long diagnostics no. (32 bits):	0A0A2219

A2220 PLC message no. 10

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2220
Long diagnostics no. (32 bits):	0A0A2220

A2221 PLC message no. 11

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2221
Long diagnostics no. (32 bits):	0A0A2221

A2222 PLC message no. 12

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2222
Long diagnostics no. (32 bits):	0A0A2222

A2223 PLC message no. 13

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the

description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2223
Long diagnostics no. (32 bits):	0A0A2223

A2224 PLC message no. 14

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2224
Long diagnostics no. (32 bits):	0A0A2224

A2225 PLC message no. 15

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.

The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2225
Long diagnostics no. (32 bits):	0A0A2225

A2226 PLC message no. 16

In connection with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") offers the possibility to generate messages from the PLC program.

If the message is generated by a Technology App provided by Bosch Rexroth, its meaning can be found in the description of the Technology App.



The English diagnostic text is stored as the default text in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	A2226
Long diagnostics no. (32 bits):	0A0A2226

A4000 Automatic drive check and adjustment

The diagnostic message A4000 is a collective diagnostic message for different system states. It is used to check and adjust the drive. This diagnostics is automatically run when drive enable is switched on and off. The drive checks and drive adjustments include the system states that are run independently of the parameterization:

- Durations of the brake delays ["Axis delay time: On" (0x2804:01 / S-0-0206 / --), "Axis delay time: Off" (0x2804:02 / S-0-0207 / --)]
- Build-up of the air-gap field (if asynchronous motor)
- Automatic determination of the commutation offset (if synchronous motor with incremental measuring system)

▼ Attributes

Short diagnostics no. (20 bits):	A4000
Long diagnostics no. (32 bits):	C00A4000

A4001 Drive deceleration to standstill

The drive is decelerated according to the setting in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) **or** carries out a velocity command value reset.

▼ Attributes

Short diagnostics no. (20 bits):	A4001
Long diagnostics no. (32 bits):	C00A4001

A4002 Drive in automatic mode

The drive-integrated PLC (ctrlX DRIVE Technology Function) has permanent (or temporary) control over the axis; i.e. the drive is controlled by the drive-integrated PLC.

See also documentation Technology Function, Application Manual

▼ Attributes

Short diagnostics no. (20 bits):	A4002
Long diagnostics no. (32 bits):	000A4002

A4003 Setting-up mode is active

The "easy startup" mode is provided for controlling the drive manually.

The drive is in the internal operation mode selected via Easy Startup: Control word (0x280A:01 / P-0-0120 / --). The command values have to be input using the parameters belonging to the internal operation mode, e.g. for Easy Startup/techfunc mode velocity: Command value (0x2854:01 / P-0-1460 / --).



In the "easy startup" mode, all other motion commands are ignored, such as motion commands of the master communication.



When the "easy startup" mode has been activated, the display changes between the drive address and the "CM" (configuration mode) message, if a display is available.

▼ Attributes

Short diagnostics no. (20 bits):	A4003
Long diagnostics no. (32 bits):	000A4003

A4004 Drive without drive enable

A4004 is a diagnostic message that is only displayed in the diagnostic trace and not on the device display (if available).

If this diagnostic message is displayed in the diagnostic trace, the drive had performed an action causing the status “drive without drive enable“. If the communication is in the operating mode (e.g., phase 4 in the case of Sercos), the diagnostic message A4004 is followed by the diagnostic message A0012 (Control and power sections ready for operation) or A0013 (Ready for power on).

▼ Attributes

Short diagnostics no. (20 bits):	A4004
Long diagnostics no. (32 bits):	000A4004

A4005 Drive decelerated by motor phase short circuit

"Motor phase short circuit" has been parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) as the drive’s deceleration reaction to fatal errors (class F8xxx errors).

A fatal error had occurred, the drive was decelerated by a motor phase short circuit.

▼ Attributes

Short diagnostics no. (20 bits):	A4005
Long diagnostics no. (32 bits):	000A4005

A4006 Drive decelerated in a controlled way

Encoder 1 monitoring has triggered (F8022) and controlled deceleration was selected in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) as the deceleration reaction.

▼ Attributes

Short diagnostics no. (20 bits):	A4006
Long diagnostics no. (32 bits):	000A4006

A4007 "Drive On" delay time

When drive is switched on, the command value input is only applied after the “ Drive on“ delay time. For motors with an integrated brake, the “Drive on“ delay time corresponds to the brake delay that passes until the brake is released.

Control state of the drive:

- The drive is in **position control** if an operation mode with position control has been configured.
- The drive is in **velocity control with command value=”0”** if position control has not been configured in the operation mode.

▼ Attributes

Short diagnostics no. (20 bits):	A4007
Long diagnostics no. (32 bits):	000A4007

A4008 "Drive Off" delay time

When drive enable is switched off, drive enable is only removed after the “ Drive off“ delay time. For motors with an integrated brake, the “Drive off“ delay time corresponds to the brake delay that passes until the brake is applied.

The drive is in velocity control with command value="0".

▼ Attributes

Short diagnostics no. (20 bits):	A4008
Long diagnostics no. (32 bits):	000A4008

A4009 Motor phase short circuit with drive enable switched off

For synchronous motors without a brake, it may be useful to make motor motion difficult by motor phase short circuit with drive enable switched off.

The motor phases were short-circuited via the power semiconductors of the controller, so that the motor phase short circuit also takes effect with drive enable switched off.



Motor phase short circuit with drive enable switched off cannot be combined with the safety function “Safe torque off (STO)“.

▼ Attributes

Short diagnostics no. (20 bits):	A4009

Long diagnostics no. (32 bits):	000A4009

A4010 Drive control command active

A drive control command is active. A diagnostic command message is additionally present and shows which drive control command is active and what its status is.

▼ Attributes

Short diagnostics no. (20 bits):	A4010
Long diagnostics no. (32 bits):	000A4010

C0100 Safe-Operational transition check

The command C0100 for Safe-Operational transition check was started ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C0100
Long diagnostics no. (32 bits):	C30C0100
Related Sercos IDN:	S-0-0127.0.0

C0200 Activate operating mode procedure command

The command C0200 for activating the operating mode was started ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C0200
Long diagnostics no. (32 bits):	C20C0200
Related Sercos IDN:	S-0-0422.0.0

C0300 Set absolute position procedure command

The command C0300 for setting the absolute position was activated ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0300
Long diagnostics no. (32 bits):	C00C0300
Related Sercos IDN:	S-0-0447.0.0

C0400 Activate configuration mode procedure command

The command C0400 for switching to the configuration mode was started ["Subdevice STM: C0400 Activate configuration mode" (0x2BD2:05 / S-0-0420 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C0400
Long diagnostics no. (32 bits):	C20C0400
Related Sercos IDN:	S-0-0420.0.0

C0500 Reset class 1 diagnostics, error reset

The command C0500 for clearing errors ["Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --)] was activated. All device-internal errors are cleared.



An error can only be cleared when it was resolved! Errors still present after clearing cause the error messages to be generated again.



CAUTION!

Damage to the internal memory (flash) caused by too many write accesses!

⇒ Executing this command requires writing to the internal memory (flash). Since each flash memory allows only a limited number of write accesses before its cells are destroyed, such write accesses should not be made too often.

▼ Attributes

Short diagnostics no. (20 bits):	C0500
Long diagnostics no. (32 bits):	C20C0500
Related Sercos IDN:	S-0-0099.0.0

C0600 Drive-controlled homing procedure command

The command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)] was activated.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	C0600
Long diagnostics no. (32 bits):	C00C0600
Related Sercos IDN:	S-0-0148.0.0

C0700 Load defaults proced. command (motor-spec. controller val.)

Using the command C0700 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)], the motor-specific controller values can be loaded.

The command can only be executed for Bosch Rexroth motors with encoder data memory (e.g., motors of the MS2N and MSK series). With these motors, the controller parameters are loaded from the encoder data memory to the drive controller and some controller parameters are set to their default values.

NOTICE!

The command C0700 overwrites user-defined controller settings!

Only use this command if you want to load standard controller parameter values. For saving and then loading user-defined parameter values, there are specific commands available.

NOTICE!

Damage to the internal memory (flash) caused by too many write accesses!

Executing this command requires writing to the internal memory (flash) but only a limited number of write accesses is allowed. For this reason, make sure that such write access is not carried out too often (approx. 100,000 writing cycles at most).

The command can be started as follows:

- via the parameter "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)
- via the ctrlX DRIVE Panel
- if "RL" is displayed at the drive controller, by starting the command C0500 ["Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --)].
  ["RL" occurs if "Motor identification: Type" (0x2AD2:01 / S-0-0141 / --) and "Electronic type plate MOTOR: Device name" (0x2AE2:04 / S-0-1300.20.4 / S-0-3533) are not identical.]

Use "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --) to start other commands. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), it is possible to set which command is started.

See also Loading, storing and saving parameters

See also ctrlX DRIVE Panel

▼ Attributes

Short diagnostics no. (20 bits):	C0700
Long diagnostics no. (32 bits):	C20C0700
Related Sercos IDN:	S-0-0262.0.0

C0710 Command Load power-supply specific controller values

Using the command C0710 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)], the power-supply specific controller values can be loaded.

The command is only available for supply units with active DC bus voltage control (devices of XVR type).

The command causes the following supply unit-specific control loop parameters to be recalculated:

- DC bus voltage control (based on the DC bus capacitance)
- Control loop parameters for mains current control (based on the inductance of the commutation choke)
- DC bus voltage command values for "voltage control, floating DC bus voltage"

The command can be started as follows:

- 1. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), enter the value "0x0006".
- 2. Start "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --).

See also Power supply control at the mains



Use "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --) to start other commands. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), it is possible to set which command is started.

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	C0710
Long diagnostics no. (32 bits):	020C0710

C0720 SMO: Load defaults procedure command

Using the command C0720 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)], the parameters of safety technology can be reset to their default values.



CAUTION!

Command C0720 is used to deactivate the safety technology and the user-defined safety technology settings are overwritten!

Only use this command if you want to commission the safety technology again.

The command can be started as follows:

- 1. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), enter the value "0x0005".
- 2. Start "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --).



Use "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --) to start other commands. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), it is possible to set which command is started.

▼ Attributes

Short diagnostics no. (20 bits):	C0720
Long diagnostics no. (32 bits):	060C0720

C0750 Load defaults procedure command (factory settings)

By executing the command C0750, the parameters stored in non-volatile form are reset to the factory settings (default values). It is possible to exclude parameters of certain subfunctions from loading the default values [see "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --)].

NOTICE!

Damage to the internal memory (flash) caused by too many write accesses!

Executing this command requires writing to the internal memory (flash) but only a limited number of write accesses is allowed. For this reason, make sure that such write access is not carried out too often (approx. 100,000 writing cycles at most).

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	C0750
Long diagnostics no. (32 bits):	020C0750

C0760 Load defaults procedure command (application data)

The command C0760 for loading the default values of application data was started.

The command can be started as follows:

- 1. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), enter the value "0x0007".
- 2. Start "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --).

Use "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --) to start other commands. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), it is possible to set which command is started.

▼ Attributes

Short diagnostics no. (20 bits):	C0760
Long diagnostics no. (32 bits):	020C0760

C0770 Load defaults procedure command (all motor parameters)

The command C0770 for setting the motor parameters to factory settings was started.

The command can be started as follows:

- 1. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), enter the value "0x0008".
- 2. Start "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --).

Use "Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --) to start other commands. In "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --), it is possible to set which command is started.

▼ Attributes

Short diagnostics no. (20 bits):	C0770
Long diagnostics no. (32 bits):	020C0770

C0900 Position spindle command

The command "Spindle positioning: C0900 Procedure command" (0x29A0:01 / S-0-0152 / --) was activated.

See also Spindle positioning

▼ Attributes

Short diagnostics no. (20 bits):	C0900
Long diagnostics no. (32 bits):	C00C0900
Related Sercos IDN:	S-0-0152.0.0

C1100 Activate parameterization mode procedure command

The command "Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C1100
Long diagnostics no. (32 bits):	020C1100
Related Sercos IDN:	P-0-0504.0.0

C1200 Commutation offset setting command

The command "Ident. commutation offset: C1200 Command identification" (0x218C:01 / P-0-0524 / --) was activated.

The method that is to be active has to be previously set in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --).



Correctly setting the commutation offset is obligatory for operating synchronous motors!
For motors supplied by Bosch Rexroth with the encoder mounted, the commutation offset usually has been set already and has been stored in the encoder memory. For all kit motors and third-party motors, the user has to determine the commutation offset after the encoder was mounted.
For relative encoders, the commutation offset is automatically determined every time after the drive was switched to the operating mode and drive enable was switched on (prerequisite: the correct commutation settings were made during initial commissioning and the commutation offset was correctly determined).

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1200
Long diagnostics no. (32 bits):	000C1200
Related Sercos IDN:	P-0-0524.0.0

C1300 Fixed stop drive procedure command

The command "Fixed stop drive procedure" (C1300) was activated.

▼ Attributes

Short diagnostics no. (20 bits):	C1300
Long diagnostics no. (32 bits):	C00C1300
Related Sercos IDN:	S-0-0149.0.0

C1400 Command Get marker position

The command for getting the marker position (C1400) was started.

The correct detection of the reference mark is checked for incremental measuring systems.

▼ Attributes

Short diagnostics no. (20 bits):	C1400
Long diagnostics no. (32 bits):	000C1400
Related Sercos IDN:	P-0-0014.0.0

C1500 Cancel reference point procedure command

The command for cancelling the reference point (C1500) was started.

The reference of the selected encoder ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] is cleared.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	C1500
Long diagnostics no. (32 bits):	C00C1500
Related Sercos IDN:	S-0-0191.0.0

C1600 Parking axis procedure command

The command for bringing the axis to the "parking axis" state (C1600) was activated.

The command deactivates the following axis functions:

- The monitoring functions for signals and/or the communication with encoder 1/encoder 2 are deactivated.
- The encoder supply is switched off.
- Temperature monitoring of the motor is deactivated.
- Axis control is deactivated.
- Motor control is deactivated.



The command cannot be set when drive enable has been activated. It is not allowed to set drive enable while the axis has been parked.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1600
Long diagnostics no. (32 bits):	C00C1600
Related Sercos IDN:	S-0-0139.0.0

C1700 Disable Parking axis procedure command

The command for disabling the "parking axis" state (C1700) was activated.

After the "parking axis" state was disabled, the axis functions are reinitialized. Which axis functions are reinitialized depends on the state of the device management.

If the device management is in the **configuration mode (CM)**, the following axis functions are initialized:

- the encoder supply is switched on
- the communication with the encoder(s) is established

If the device management is in the **parameterization mode (PM)**, the following axis functions are initialized:

- the encoder supply is switched on
- the communication with the encoder is established
- any motor data available in the encoder are read out
- the position initialization is carried out
- the basic initialization of axis and motor control is carried out

If the device management is in the **operating mode (OM)**, the following axis functions are initialized:

- the initialization of the axis is completed
- all monitoring functions are activated

If initialization errors occur when the parking axis is disabled, the command error C1701 or C1702 is output, according to the state of the device management. In the case of error, the parameters causing conflicts are listed in "Parking axis: List of invalid parameters" (0x2380:03 / S-0-0139.0.151 / P-0-1743). For detailed error numbers and detailed diagnostics, terminate the command and then switch the device management from the configuration mode (CM) to the parameterization mode (PM) or the operating mode (OM). The same initializations will be carried out as when disabling the parking axis.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1700
Long diagnostics no. (32 bits):	000C1700
Related Sercos IDN:	S-0-0139.0.150

C1800 Drive optimization command

Executing the command C1800 starts the "automatic control loop setting" function.



DANGER!

Lethal injuries by controlling motors and moving parts!

⇒ If **drive enable** has been set, a motion can be triggered immediately after starting command C1800.
⇒ The drive **independently** (i.e. without external command value input) carries out **motions** within the two limits "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) and "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --) or the travel range defined by "Axis control optimization: Travel distance" (0x2206:09 / P-0-0169 / --).
The function of the emergency-stop circuit and the travel range limit switches **has to be** ensured and checked.

▼ Attributes

Short diagnostics no. (20 bits):	C1800
Long diagnostics no. (32 bits):	000C1800
Related Sercos IDN:	P-0-0162.0.0

C2000 Command Release brake

The command C2000 for releasing the brake was started.

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2000
Long diagnostics no. (32 bits):	000C2000
Related Sercos IDN:	P-0-0542.0.0

C2100 Brake test command

The command C2100 for testing the brake was activated.

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2100
Long diagnostics no. (32 bits):	000C2100
Related Sercos IDN:	P-0-0541.0.0

C2200 Backup working memory procedure command

The command "Application data: C2200 Backup procedure command" (0x2B60:08 / S-0-0264 / --) was activated.

CAUTION!

Damage to the internal memory (flash) caused by too many write accesses!

⇒ Executing this command requires writing to the internal memory (flash). Since each flash memory allows only a limited number of write accesses before its cells are destroyed, such write accesses should not be made too often.

▼ Attributes

Short diagnostics no. (20 bits):	C2200
Long diagnostics no. (32 bits):	C20C2200
Related Sercos IDN:	S-0-0264.0.0

C2300 Load working memory procedure command

The command "Application data: C2300 Load procedure command" (0x2B60:09 / S-0-0263 / --) has been activated.

▼ Attributes

Short diagnostics no. (20 bits):	C2300
Long diagnostics no. (32 bits):	C20C2300
Related Sercos IDN:	S-0-0263.0.0

C2400 Selectively backup working memory procedure command

The command for selectively backing up the working memory was activated.

The contents of all application parameters the IDNs of which are listed in "Application data: IDN list of data to be selectively backed up" (0x2B60:06 / S-0-0270 / --) are saved from the working memory (volatile memory) to the active non-volatile memory. The active non-volatile memory is the device-internal flash memory.

▼ Attributes

Short diagnostics no. (20 bits):	C2400
Long diagnostics no. (32 bits):	C20C2400
Related Sercos IDN:	S-0-0293.0.0

C2800 Analog input adjustment command

The command "Analog input function: C2800 Analog input adjustment command" (0x2A30:02 / P-0-2901.0.2 / P-0-1792) was started.

The command is controlled by the settings in "Analog input function: Control word adjustment" (0x2A30:01 / P-0-2901.0.1 / P-0-1791).
The execution of the command takes some time. The status of the command can be queried via the assigned command parameter.

See Analog Inputs

▼ Attributes

Short diagnostics no. (20 bits):	C2800
Long diagnostics no. (32 bits):	000C2800
Related Sercos IDN:	P-0-2901.0.2

C3200 Command Calculate motor data

The command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --) was started.

During the command execution, "Motor, type plate: Data" (0x2000:01 / P-0-4032 / --) is checked for validity and completeness. Afterwards, the motor parameters of the equivalent circuit diagram and the motor-specific control parameters are calculated from the type plate data.



The current setting of the switching frequency of the power output stage ["Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --)] is used as the basis for calculating the controller parameters. If the switching frequency is subsequently modified, the controller settings might possibly not be correct anymore. Using the command "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --), the controller settings may be adjusted.

▼ Attributes

Short diagnostics no. (20 bits):	C3200
Long diagnostics no. (32 bits):	000C3200
Related Sercos IDN:	P-0-4033.0.0

C3300 Set coordinate system procedure command

The command "Set/shift coordinate system: C3300 Command set procedure" (0x2518:01 / S-0-0197 / --) was activated.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	C3300
Long diagnostics no. (32 bits):	C00C3300
Related Sercos IDN:	S-0-0197.0.0

C3400 Shift coordinate system procedure command

The command "Set/shift coordinate system: C3400 Command shift procedure" (0x2518:03 / S-0-0199 / --) was activated.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	C3400

Long diagnostics no. (32 bits):	C00C3400
Related Sercos IDN:	S-0-0199.0.0

C3600 Command Motor data identification

WARNING!

Starting the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) may set the motor in motion! Danger to life, risk of injury, serious injury or property damage!

Before starting the command for motor data identification, make sure the following requirements have been met:

- with rotary motors, the motor shaft has to move freely
- with linear motors, the secondary part has to be in a collision-free initial position

Using "Motor data identification: Configuration" (0x2002:03 / P-0-0601 / --), the command C3600 can be configured.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3600
Long diagnostics no. (32 bits):	000C3600
Related Sercos IDN:	P-0-0565.0.0

C3700 Command Check direction of motion

The command C3700 (0x2110:03 / P-0-0581 / --) was started. The following can be checked using this command:

- In the case of sensorless control: the direction of motion visually
- In the case of control with an encoder:
  - the congruence of the rotational direction of the encoder and the direction of motion of the field
  - the validity of the number of lines of the encoder or the pole pair distance/number of pole pairs of the motor

WARNING!

Starting the command C3700 (0x2110:03 / P-0-0581 / --) may set the motor in motion! Danger to life, risk of injury, serious injury or property damage!

Before starting the command C3700 (0x2110:03 / P-0-0581 / --), make sure the following requirements have been met:

- with rotary motors, the motor shaft has to move freely
- with linear motors, the secondary part has to be in a collision-free initial position

Using "Motor control setting: Configuration" (0x2110:01 / P-0-0582 / --), the command for checking the direction of motion of the motor can be configured.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3700
Long diagnostics no. (32 bits):	000C3700
Related Sercos IDN:	P-0-0581

C3800 Command Apply brake

The command "Brake control: C3800 Apply command" (0x2032:06 / P-0-0543 / --) was started.

During the command execution, the brake is applied.

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C3800
Long diagnostics no. (32 bits):	000C3800
Related Sercos IDN:	P-0-0543.0.0

C4000 SMO: Safe homing procedure command

The "Safe homing procedure" command was activated [either directly or within the scope of drive-controlled homing (C0600)].

A Safe homing procedure is carried out at the command execution to achieve the "safely homed" status of the SMO encoder. The status is displayed in "SMO encoder function: Evaluation status" (0x310E:01 / P-0-3256 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C4000
Long diagnostics no. (32 bits):	060C4000
Related Sercos IDN:	P-0-3253.0.2

C4100 Switch parameter set command

The command for parameter set switching was started [C4100 (S-0-0216)].

The parameter set configured via S-0-0217 is activated by starting the command.

▼ Attributes

Short diagnostics no. (20 bits):	C4100
Long diagnostics no. (32 bits):	C00C4100
Related Sercos IDN:	S-0-0216

C4200 Drive-controlled oscillation command

The command "Spindle oscillation: C4200 Procedure command" (0x29A2:01 / S-0-0190 / --) was started.

See also Drive-controlled oscillation

▼ Attributes

Short diagnostics no. (20 bits):	C4200
Long diagnostics no. (32 bits):	C00C4200
Related Sercos IDN:	S-0-0190

C4300 NC-controlled homing procedure command

The command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --) was activated. The master inputs the command values for moving the axis to the dedicated point and controls the homing procedure via commands and the assigned parameters.



The control information for homing has to be defined in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --).

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4300
Long diagnostics no. (32 bits):	C00C4300
Related Sercos IDN:	S-0-0146.0.0

C4400 Calculate displacement procedure command

The command "NC-contr. homing: C4400 Command calculate displacement" (0x2520:04 / S-0-0171 / --) was activated.

During the command execution, the drive calculates the required actual position value displacement to establish the axis zero point reference of the actual position values. The displacement value is displayed in "Homing active data ENC_1: Shift value" (0x2503:01 / S-0-0175 / --) or "Homing active data ENC_2: Shift value" (0x2504:01 / S-0-0176 / --).

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4400
Long diagnostics no. (32 bits):	C00C4400
Related Sercos IDN:	S-0-0171.0.0

C4500 Displacement to referenced system procedure command

The command "NC-contr. homing: C4500 Command displacement to ref. system" (0x2520:05 / S-0-0172 / --) was activated.

With the command execution, the drive switches to the referenced actual position value system.

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4500
Long diagnostics no. (32 bits):	C00C4500
Related Sercos IDN:	S-0-0172.0.0

C4600 Command Calculate motor control parameters

The command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --) has been activated.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C4600
Long diagnostics no. (32 bits):	000C4600
Related Sercos IDN:	P-0-0566.0.0

C4700 Command Easy startup mode

The command "Easy Startup: C4700 Command activate mode" (0x280A:02 / P-0-4085 / --) was activated.

▼ Attributes

Short diagnostics no. (20 bits):	C4700
Long diagnostics no. (32 bits):	000C4700

C4800 Command Determine cogging torque/force compensation table

The command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C4800
Long diagnostics no. (32 bits):	000C4800
Related Sercos IDN:	P-0-1138.0.0

C5100 Clear extended error memory command

The command "Extended error memory: C5100 Reset command" (0x2B83:09 / P-0-0194.0.8 / P-0-1349) for deleting the extended error memory was activated. Upon successful execution of command, all data of the extended error memory have been deleted.

▼ Attributes

Short diagnostics no. (20 bits):	C5100
Long diagnostics no. (32 bits):	020C5100
Related Sercos IDN:	P-0-0194.0.8

C5200 Operational transition check

The command for Operational transition check was started ["MCI state machine: C5200 Op transition check" (0x2C04:02 / S-0-0128 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C5200
Long diagnostics no. (32 bits):	C30C5200
Related Sercos IDN:	S-0-0128.0.0

C5300 Sercos: SYNC delay measurement procedure command

The command "Sercos protocol: C5300 SYNC delay measuring command" (0x2D00:01 / S-0-1024 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C5300
Long diagnostics no. (32 bits):	C30C5300
Related Sercos IDN:	S-0-1024.0.0

C6100 Command Activate IP settings

The command "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534) was started.

If a modified IP configuration is applied, the IP communication is aborted via the interface. The new settings are activated and communication is started with the new settings.



Before the command is executed, IP communication with the interfaces should be terminated by the IP client. Otherwise, error messages can occur in the corresponding clients due to missing communication.

The command can be started in different ways:

- by means of ctrlX DRIVE Engineering
- by writing "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534)
- via the ctrlX DRIVE Panel

At the start of the command, the settings for the IP communication are first checked for verisimilar and changed values.

Parameters for IP communication

Interface	IP address	Network mask	Gateway address
Engineering over IP (master communication)	0x2C21:04 / S-0-1020 / --	0x2C21:05 / S-0-1021 / --	0x2C21:06 / S-0-1022 / --

▼ Attributes

Short diagnostics no. (20 bits):	C6100
Long diagnostics no. (32 bits):	000C6100
Related Sercos IDN:	S-0-1048.0.0

C6300 Generate type plate command

The command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --) was started.

Use this command to generate type plat data, e.g.:

- Configurable factory default values ["Application data default: Factory default values" (0x2B62:04 / P-0-0660.0.1 / P-0-2660)].
- Application data in encoder memory (with encoder memory version 7).
- Motor characteristics for third party motors (with encoder memory version 7).
- Motor characteristics for motors by Bosch Rexroth (with encoder memory version 4.x or 7).

▼ Attributes

Short diagnostics no. (20 bits):	C6300
Long diagnostics no. (32 bits):	000C6300
Related Sercos IDN:	P-0-0660.0.0

Detailed diagnostics

006E0141

Generate type plate: Error while buffering 0x2B62:04 / P-0-0660.0.1 / P-0-2660

Cause/Remedy 1: Cause: Unable to buffer the parameter 0x2B62:04 / P-0-0660.0.1 / P-0-2660 within the "Generate type plate" command. Remedy: Execute command again.

006E0142

Generate type plate: Error while buffering 0x2B62:04 / P-0-0660.0.1 / P-0-2660

Cause/Remedy 1: Cause: Unable to buffer the parameter 0x2B62:04 / P-0-0660.0.1 / P-0-2660 within the "Generate type plate" command. Remedy: Execute command again.

C6400 Reboot command

The command "Device reboot: C6400 Command" (0x2BD0:01 / S-0-1350 / --) was activated.

▼ Attributes

Short diagnostics no. (20 bits):	C6400
Long diagnostics no. (32 bits):	000C6400
Related Sercos IDN:	S-0-1350.0.0

C6900 Shutdown request

The command for switching off ("Shutdown") the eLION inverter was started ["J1939 application: C6900 Switch-off request" (0x28AE:01 / P-0-1934.0.10 / --)]. If the command is successfully executed, the device is put in the "Sleep" state. (The device can be reactivated using various options ("Wakeup").)

▼ Attributes

Short diagnostics no. (20 bits):	C6900
Long diagnostics no. (32 bits):	000C6900
Related Sercos IDN:	P-0-1934.0.10

C7400 DRIVElink: Activate configuration mode

The command "DRIVElink function: C7400 Activate configuration mode" (0x2DA0:09 / P-0-1837 / --) was started. If the command is successfully executed, the connections via ctrlX DRIVElink are deactivated ("Init" state) so that they can be reconfigured.



Reconfiguring the connections via ctrlX DRIVElink is only possible in the CM state of the subdevice state machine.

▼ Attributes

Short diagnostics no. (20 bits):	C7400
Long diagnostics no. (32 bits):	000C7400
Related Sercos IDN:	P-0-1837

C7800 SMO: Apply motor configuration command

The command "SMO motor properties: C7800 Command apply motor config." (0x315D:01 / P-0-3246.0.1 / P-0-3929) was started. If the command is executed successfully, the parameters for the torque are applied from the standard parameters to the SMO torque parameters.

▼ Attributes

Short diagnostics no. (20 bits):	C7800
Long diagnostics no. (32 bits):	060C7800
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Related Sercos IDN:	P-0-3246.0.1

C8000 SMO: Command Apply scaling

The command "SMO scaling function: C8000 Command apply scaling config." (0x302A:01 / P-0-3220 / --) was started. If the command is executed successfully, the scalings from the standard parameters are applied to the safety technology scaling parameters.

▼ Attributes

Short diagnostics no. (20 bits):	C8000
Long diagnostics no. (32 bits):	000C8000
Related Sercos IDN:	P-0-3220

C8100 SMO: Activate configuration mode procedure command

The command to activate the configuration mode was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8100
Long diagnostics no. (32 bits):	000C8100

C8120 SMO: Parking axis, procedure command 1

This command is an internal command* for switching the axis to the "Safe parking axis" state.

*(*transition from the configuration mode (CM) to the "Safe parking axis" state)*

▼ Attributes

Short diagnostics no. (20 bits):	C8120
Long diagnostics no. (32 bits):	060C8120
Related Sercos IDN:	P-0-3231.0.13

C8130 SMO: Parking axis, procedure command 2

This command is an internal command* for switching the axis to the "Safe parking axis" state.

*(*transition from the parameterization mode (PM) to the configuration mode (CM))*

▼ Attributes

Short diagnostics no. (20 bits):	C8130
Long diagnostics no. (32 bits):	060C8130
Related Sercos IDN:	P-0-3231.0.11

C8200 SMO: Command Exit configuration mode

The command to exit the configuration mode was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8200
Long diagnostics no. (32 bits):	060C8200
Related Sercos IDN:	P-0-3231.0.8

C8220 SMO: Disable Parking axis, procedure command 1

This command is an internal command* for switching off the "Safe parking axis" state.

*(*transition from the "Safe parking axis" state to the configuration mode (CM))*

▼ Attributes

Short diagnostics no. (20 bits):	C8220
Long diagnostics no. (32 bits):	060C8220
Related Sercos IDN:	P-0-3231.0.14

C8230 SMO: Disable Parking axis, procedure command 2

This command is an internal command* for switching off the "Safe parking axis" state.

*(*transition from the configuration mode (CM) to the parameterization mode (PM))*

▼ Attributes

Short diagnostics no. (20 bits):	C8230
Long diagnostics no. (32 bits):	060C8230
Related Sercos IDN:	P-0-3231.0.12

C8300 SMO: Command Activate parameter image

The command "SMO parameterization: C8300 Command Activate parameter image" (0x3012:02 / P-0-3231.0.3 / P-0-2467) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8300
Long diagnostics no. (32 bits):	060C8300
Related Sercos IDN:	P-0-3231.0.3

C8400 SMO: Apply encoder configuration command

The command "SMO encoder config.: C8400 Command apply encoder config." (0x3100:01 / P-0-3254 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8400
Long diagnostics no. (32 bits):	000C8400
Related Sercos IDN:	P-0-3254

C8500 SMO: Command Apply identification data

The command "SMO identification: C8500 Command Apply data" (0x3014:03 / P-0-3235.0.3 / P-0-2535) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8500
Long diagnostics no. (32 bits):	060C8500
Related Sercos IDN:	P-0-3235.0.3

C8600 SMO: Command Measure position difference

The command "SMO axis validation: C8600 Command Measure pos. difference" (0x302E:01 / P-0-3210 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8600
Long diagnostics no. (32 bits):	060C8600
Related Sercos IDN:	P-0-3210

C8700 SMO: Activate parameterization level procedure command

When the subdevice state machine is switched from the operating mode to the parameterization mode (C1100), the command C8700 is automatically started to switch the SafeMotion state machine from the operating mode to the parameterization mode.

▼ Attributes

Short diagnostics no. (20 bits):	C8700
Long diagnostics no. (32 bits):	060C8700
Related Sercos IDN:	P-0-3231.0.5

C8730 SMO: Parking axis, procedure command 3

This command is an internal command* for switching the axis to the "Safe parking axis" state.

*(*transition from the operating mode (OM) to the parameterization mode (PM))*

▼ Attributes

Short diagnostics no. (20 bits):	C8730
Long diagnostics no. (32 bits):	060C8730
Related Sercos IDN:	P-0-3231.0.9

C8800 SMO: Exit parameterization level procedure command

When the operating mode is activated (C0200) in the subdevice state machine, the command C8800 is automatically started to switch SafeMotion from the parameterization mode to the operating mode.

▼ Attributes

Short diagnostics no. (20 bits):	C8800
Long diagnostics no. (32 bits):	060C8800
Related Sercos IDN:	P-0-3231.0.6

C8830 SMO: Disable Parking axis, procedure command 3

This command is an internal command* for switching off the "Safe parking axis" state.

*(*transition from the parameterization mode (PM) to the operating mode(OM))*

▼ Attributes

Short diagnostics no. (20 bits):	C8830
Long diagnostics no. (32 bits):	060C8830
Related Sercos IDN:	P-0-3231.0.10

C8900 SMO: Apply communication configuration command

The command C8900 "SMO communication: Command apply configuration" (0x30B0:01 / P-0-3373.0.1 / --) was started.

▼ Attributes

Short diagnostics no. (20 bits):	C8900
Long diagnostics no. (32 bits):	060C8900
Related Sercos IDN:	P-0-3373.0.1

C9700 Servicing function command

The command C9700 ["Servicing function: C9700 Command" (0x2B0C:01 / P-0-1560.0.1 / P-0-3610)] was started.

Use "Servicing function: C9700 Command input" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611) to set which servicing function is carried out by the command execution.



Executing servicing functions is only allowed for instructed customers!

▼ Attributes

Short diagnostics no. (20 bits):	C9700
Long diagnostics no. (32 bits):	000C9700
Related Sercos IDN:	P-0-1560.0.1

C0101 Invalid parameters ->S-0-0423

When executing the command C0100 for the Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)], internal variables are initialized and the available parameters are checked (e.g., for validity). An error was detected in the process.

Cause	Remedy
Data block elements required from Safe-Operational onward are missing or invalid	Write allowed operating data to affected parameters. [For affected parameters, refer to "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).]

▼ Attributes

Short diagnostics no. (20 bits):	C0101
Long diagnostics no. (32 bits):	030C0101

C0104 Config. IDNs for MDT not configurable

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the telegram configuration of the cyclic command values.

Switching to Safe-Operational is not possible.

Cause	Remedy
The telegram type "7" (configurable telegram) was set in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).	Set "standard telegram" (telegram type = "0"..."6") in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).
In "SoE protocol: Configuration list of MDT" (0x2D24:05 / S-0-0024 / --), parameters were entered that are not contained in "MCI connection type 2: List of configurable data" (0x2C1B:01 / S-0-0188 / --).	Make sure that "SoE protocol: Configuration list of MDT" (0x2D24:05 / S-0-0024 / --) only contains parameters that are contained in "MCI connection type 2: List of configurable data" (0x2C1B:01 / S-0-0188 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0104
Long diagnostics no. (32 bits):	C30C0104

C0105 Maximum length for MDT exceeded

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state

machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the telegram configuration.

Switching to Safe-Operational is not possible.

Cause	Remedy
The telegram type "7" (configurable telegram) was set in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).	Set "standard telegram" (telegram type = "0"..."6") in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).
The length of the configured record in the MDT, that is set via "SoE protocol: Configuration list of MDT" (0x2D24:05 / S-0-0024 / --), exceeds the maximum allowed value specified in "SoE protocol: Max. length of data record in the MDT" (0x2D24:08 / S-0-0186 / --).	Reduce the number of configured parameters in the MDT ["SoE protocol: Configuration list of MDT" (0x2D24:05 / S-0-0024 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C0105
Long diagnostics no. (32 bits):	C30C0105

C0106 Config. IDNs for AT not configurable

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the telegram configuration.

Switching to Safe-Operational is not possible.

Cause	Remedy
The telegram type "7" (configurable telegram) was set in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).	Set "standard telegram" (telegram type = 0...6) in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).
In "SoE protocol: Configuration list of AT" (0x2D24:04 / S-0-0016 / --), parameters were entered that are not contained in "MCI connection type 1: List of configurable data" (0x2C1A:01 / S-0-0187 / --).	Make sure that "SoE protocol: Configuration list of AT" (0x2D24:04 / S-0-0016 / --) only contains parameters that are contained in "MCI connection type 1: List of configurable data" (0x2C1A:01 / S-0-0187 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0106
Long diagnostics no. (32 bits):	C30C0106

C0107 Maximum length for AT exceeded

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the telegram configuration.

Switching to Safe-Operational is not possible.

Cause	Remedy
The telegram type "7" (configurable telegram) was set in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).	Set "standard telegram" (telegram type = 0...6) in "SoE protocol: Telegram type parameter" (0x2D24:03 / S-0-0015 / --).
The length of the configured data record in the AT, specified in "SoE protocol: Configuration list of AT" (0x2D24:04 / S-0-0016 / --), exceeds the maximum allowed value specified in "SoE protocol: Max. length of data record in the AT" (0x2D24:07 / S-0-0185 / --).	In "SoE protocol: Configuration list of AT" (0x2D24:04 / S-0-0016 / --), reduce the number of configured parameters in the AT.

▼ Attributes

Short diagnostics no. (20 bits):	C0107
Long diagnostics no. (32 bits):	C30C0107

C0108 Incorrect timing parameterization

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the timing parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
Timing parameter is outside of a valid range (e.g., outside of the bus cycle time).	**The problem can only be solved by the master.** The faulty timing parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).
Timing parameter is within a forbidden range (e.g., within a jitter, UCC or telegram transmission window).	

▼ Attributes

Short diagnostics no. (20 bits):	C0108
Long diagnostics no. (32 bits):	C30C0108

C0109 Incorrect telegram parameterization

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the telegram parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
Telegram assignment parameter is outside of a telegram or in a nonexistent telegram.	**The problem can only be solved by the master.** The faulty timing parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03

Cause	Remedy
Configured telegram section exceeds end of telegram (e.g., end of a configured connection is outside of the end of the telegram).	/ S-0-0021 / --).
Configured telegram sections overlap (e.g., service channel is within a connection).	

▼ Attributes

Short diagnostics no. (20 bits):	C0109
Long diagnostics no. (32 bits):	C30C0109

C0112 Timing setting not allowed

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the timing parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
The parameters for bus cycle time or NC cycle time are outside of the possible pattern.	**The problem can only be solved by the master.** The faulty timing parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).
The relation of bus cycle time and NC cycle time is not possible.	

▼ Attributes

Short diagnostics no. (20 bits):	C0112
Long diagnostics no. (32 bits):	C30C0112

C0113 Relation TNcyc (S-0-0001) to TScyc (S-0-0002) error

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the timing parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy

Cause	Remedy
The setting of the parameter "Application synchronization: NC cycle time" (0x2BE0:01 / S-0-0001 / --) or "SoE protocol: Sercos cycle time (TScyc)" (0x2D24:01 / S-0-0002 / --) is wrong.	The value of "Application synchronization: NC cycle time" (0x2BE0:01 / S-0-0001 / --) has to be equal to the value of "SoE protocol: Sercos cycle time (TScyc)" (0x2D24:01 / S-0-0002 / --). Accordingly correct "Application synchronization: NC cycle time" (0x2BE0:01 / S-0-0001 / --) and "SoE protocol: Sercos cycle time (TScyc)" (0x2D24:01 / S-0-0002 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0113
Long diagnostics no. (32 bits):	030C0113

C0118 Order of cyclic command value configuration incorrect

The cyclic command value data in the drive are processed chronologically in the order in which the configured IDNs have been entered in a configuration list:

- **EtherCAT** configuration list: "SoE protocol: Configuration list of MDT" (0x2D24:05 / S-0-0024 / --)
- **Sercos** configuration list: "MCI connection 1: Configuration list (EIDN)" (0x2C10:06 / S-0-1050.0.6 / --)

The following parameters are available for using multiplex mode in the cyclic command value telegram:

- "MUX command 1: Value" (0x2C90:01 / S-0-0360 / --),
- "MUX control: List index command values" (0x2C9C:02 / S-0-0362 / --) and
- "MUX control: Addressing" (0x2C9C:01 / S-0-0368 / --)

If more than one of these parameters has been configured in the cyclic command value telegram, their correct order is checked in the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

Cause	Remedy
Incorrect order of relevant parameters in cyclic command value telegram	Observe correct order of parameters in cyclic command value telegram: **CoE:** The parameters 0x2C9C:02, 0x2C9C:03 and 0x2C9C:01 have to be before the parameters 0x2C90:01 and 0x2C91:01 to 0x2C97:01 in the cyclic command value telegram. **Sercos, SoE:** The parameters S-0-0362, S-0-0366 and S-0-0368 have to be before the parameters S-0-0360 and S-0-0450 to S-0-0456 in the cyclic command value telegram.

See Multiplex channel

▼ Attributes

Short diagnostics no. (20 bits):	C0118
Long diagnostics no. (32 bits):	030C0118

C0120 Coupled command C11 error ->S-0-0021

When executing the command C0100 for the Safe-Operational transition check ["MCI state machine: C0100 Safe-Op

transition check" (0x2C04:01 / S-0-0127 / --)], the command C1100 for switching to the parameterization mode (PM) is also started.

An error occurred when switching to the parameterization mode. The operation data still required and/or the invalid operation data were written to "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

Cause	Remedy
During the execution of the command C0100, an error occurred in the coupled command C1100. Therefore, see the subordinate command errors C11xx for the error cause of C0120; refer to the entries in the diagnostic trace that preceded C0120, or the content of "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --)	Remove the cause of the command error C11xx

▼ Attributes

Short diagnostics no. (20 bits):	C0120
Long diagnostics no. (32 bits):	030C0120

C0121 DRIVElink: Communication start not successful

When executing the command C0100 for the Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)], the command C1100 for switching to the parameterization mode (PM) is also started.

Cause	Remedy
The ctrlX DRIVElink communication was not started in CM	In the ctrlX DRIVElink master, check the preset target state of the ctrlX DRIVElink basic communication in CM ["DRIVElink function: Target State in CM" (0x2DA0:04 / P-0-1864 / --)].
It had been impossible to successfully complete the setting of the internal cycle times	Restart the drive controller
Expected slaves and detected slaves do not match	In the ctrlX DRIVElink master, check the list of expected slaves ["DRIVElink function: Expected slaves" (0x2DA0:06 / P-0-1869 / --)] (see also E4013)
The master-slave configuration in the group is not correct. There is no master or more than one master in the ctrlX DRIVElink group	Check the ctrlX DRIVElink configurations of all ctrlX DRIVElink nodes ["DRIVElink function: Configuration" (0x2DA0:01 / P-0-1862 / --)]. **Note:** Any change in configuration will only take effect after the drive controller has been restarted.

▼ Attributes

Short diagnostics no. (20 bits):	C0121
Long diagnostics no. (32 bits):	030C0121

Detailed diagnostics

00770002
DRIVElink: Communication not in CP04

C0122 Coupled command C11 could not be started

When executing the command C0100 for the Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)], the coupled command for switching to the parameterization mode (PM) C1100 could not be started.

Cause	Remedy
The coupled command C1100 is already executed. For example, the coupled command was simultaneously started via a Technology Function.	Make sure that the coupled command C1100 is not started simultaneously in different ways.
Another command is already executed.	Make sure that no other command is executed when the coupled command C1100 is started.

▼ Attributes

Short diagnostics no. (20 bits):	C0122
Long diagnostics no. (32 bits):	030C0122

C0132 Invalid settings for controller cycle times

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

Cause	Remedy
Parameterized switching frequency of the power output stage and type of PWM clocking of output stage are incompatible	Check "Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --) and set it in accordance with device and application
	Check type of PWM clocking in "Inverter power section: Configuration" (0x2120:01 / P-0-0016 / --) and set it in accordance with device and application

See also Clock rates

▼ Attributes

Short diagnostics no. (20 bits):	C0132
Long diagnostics no. (32 bits):	030C0132

C0133 Master communication: Address conflict

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected a Device ID conflict during slave addressing.

Switching to Safe-Operational is not possible.

Cause	Remedy
"SII Configured Station Alias" from slave/device and "Device Identification Value" from "MCI identification: Drive address" (0x2C02:01 / S-0-1040 / --) are both unequal "0". This causes a conflict. Therefore, the "SII Configured Station Alias" was set to "0" during the transition from "Init" to "Pre-Operational“.	Via the EtherCAT master, switch the EtherCAT phase back to "Init“ to delete the error flag.

▼ Attributes

Short diagnostics no. (20 bits):	C0133
Long diagnostics no. (32 bits):	000C0133

C0142 Multiple configuration of a parameter ->S-0-0423

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

Cause	Remedy
The parameters was configured simultaneously in different interfaces for cyclic writing. However, it is possible to write the same parameter simultaneously by different interfaces. **Note:** The term "interfaces" comprises analog and digital inputs as well as complete bus systems.	Read out the parameter numbers entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) to detect and fix the multiple configuration.



All multiple configurations/each conflict is listed and displayed as follows in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --):

- The 1st entry contains the parameter numbers of the parameter that was configured in a multiple way.
- The following entries contain the ident numbers of the parameters in which the parameter that was configured multiple times was configured for cyclic writing.
- In the IDN list, each conflict is concluded by the parameter number 0x2B6C:01 or S-0-0000. If several conflicts occur simultaneously, the conflicts are listed successively in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --), separated by the parameter number 0x2B6C:01 or S-0-0000.

Upon each conflict, the configurations of the involved interfaces have to be changed so that each parameter is only written by one interface.

▼ Attributes

Short diagnostics no. (20 bits):	C0142
Long diagnostics no. (32 bits):	030C0142

C0151 IDN for command value data container not allowed

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

An error regarding the command value configuration list was detected.

Switching to Safe-Operational is not possible.

Cause	Remedy
A command value configuration list contains one or multiple parameter numbers that do not exist or that are not contained in the list of data that can be configured in the cyclic command value data channel ("MCI connection type 2: List of configurable data" (0x2C1B:01 / S-0-0188 / --)]	Check the command value configuration lists for faulty parameters and correct them: ■ "MUX command 1: Configuration list" (0x2C90:02 / S-0-0370 / --) ■ "MUX command 2: Configuration list" (0x2C91:02 / S-0-0490 / --) to "MUX command 8: Configuration list" (0x2C97:02 / S-0-0496 / --)

See Multiplex channel

▼ Attributes

Short diagnostics no. (20 bits):	C0151
Long diagnostics no. (32 bits):	030C0151

C0152 IDN for actual value data container not allowed

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

An error regarding the actual value configuration list was detected.

Switching to Safe-Operational is not possible.

Cause	Remedy
An actual value configuration list contains one or multiple parameter numbers that do not exist or that are not contained in the list of data that can be configured in the cyclic actual value data channel ["MCI connection type 1: List of configurable data" (0x2C1A:01 / S-0-0187 / --)	Check the actual value configuration lists for faulty parameter numbers and correct them: ■ "MUX feedback 1: Configuration list" (0x2CA0:02 / S-0-0371 / --) ■ "MUX feedback 2: Configuration list" (0x2CA1:02 / S-0-0500 / --)

See Multiplex channel

▼ Attributes

Short diagnostics no. (20 bits):	C0152
Long diagnostics no. (32 bits):	030C0152

C0170 Config. IDNs for connection not configurable

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the connection parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
An unallowed IDN was configured in a connection. **TIP:** In parameters and (if possible) in device data sheets, the device shows which IDNs are allowed for which connection type.	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0170
Long diagnostics no. (32 bits):	C30C0170

C0171 Maximum length for connections exceeded

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the connection parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
The length of the configured IDN exceeds the maximum allowed length in a connection. **TIP:** In parameters and (if possible) in device data sheets, the device shows the allowed length for some field buses	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0171
Long diagnostics no. (32 bits):	C30C0171

C0172 Required function was not executed

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

Switching to Safe-Operational is not possible.

Cause	Remedy

Cause	Remedy
Required function was not executed. **Sercos:** Before executing command C0100 (0x2C04:01 / S-0-0127 / --), successfully execute command C5300 ["Sercos protocol: C5300 SYNC delay measuring command" (0x2D00:01 / S-0-1024 / --).	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0172
Long diagnostics no. (32 bits):	C30C0172

C0173 Configured connections exceed available resources

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the connection parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
The allowed quantity of a connection type was exceeded. – or – The configured connections exceed the logicware resources.	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0173
Long diagnostics no. (32 bits):	C30C0173

C0174 Basic configuration of a connection not allowed

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the basic settings of a connection.

Switching to Safe-Operational is not possible.

Cause	Remedy
The parameterized connection type is not allowed. – or – Connection parameters do not match the selected connection class.	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0174
Long diagnostics no. (32 bits):	C30C0174

C0175 Producer cycle time of a connection not correct

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the connection parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
In a connection, a producer cycle time has been set that is not supported by the drive controller/firmware.	**The problem can only be solved by the master.** The faulty parameters are listed in "MCI state machine: Invalid data Safe-Op transition" (0x2C04:03 / S-0-0021 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0175
Long diagnostics no. (32 bits):	C30C0175

C0180 Error in configuration of internal cycl. communication

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the connection parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
An unallowed IDN was configured in a connection. - or - Too many IDNs were configured in a connection. - or - The resulting connection length, that results from the data length of all IDNs, was exceeded. **TIP:** In parameters and (if possible) in device data sheets, the device shows which and how many IDNs are allowed for which connection type.	**The problem can only be solved by the master.** Delete surplus or unallowed IDNs from the connection.

▼ Attributes

Short diagnostics no. (20 bits):	C0180
Long diagnostics no. (32 bits):	030C0180

C0181 Error when activating internal cycl. communication

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

The command detected a problem when the internal communication between communication interface and axis controller had been established for transmitting the cyclic data.

Switching to Safe-Operational is not possible.

Cause	Remedy
This is an internal problem that occurs when the cyclic communication to the axis controller is established. It was impossible to activate the internal communication. Establishing the internal communication took too long.	Try switching to Safe-Operational again. If the command error occurs again, please contact the Bosch Rexroth service department.

▼ Attributes

Short diagnostics no. (20 bits):	C0181
Long diagnostics no. (32 bits):	030C0181

C0190 EtherCAT: Invalid Watchdog Configuration

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the configuration of the EtherCAT process data watchdog.

Switching to Safe-Operational is not possible.

Cause	Remedy
The timeout of the EtherCAT process data watchdog is outside of the valid range.	**The problem can only be solved by the master.** Correct the timeout in the EtherCAT master.

▼ Attributes

Short diagnostics no. (20 bits):	C0190
Long diagnostics no. (32 bits):	030C0190

C0191 EtherCAT: Freerun needs 3buffer mode

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the configuration of a process data Syncmanager.

Switching to Safe-Operational is not possible.

Cause	Remedy

Cause	Remedy
In the Freerun mode, the"Syncmanager 3" has to be operated in the "3 Buffer Mode“.	**The problem can only be solved by the master.** The EtherCAT master has to configure the "Syncmanager 3" in the "3 Buffer Mode“.

▼ Attributes

Short diagnostics no. (20 bits):	C0191
Long diagnostics no. (32 bits):	030C0191

C0192 EtherCAT: Sync0 Cycle Time does not fit

An error occurred during the execution of the command C0100 for Safe-Operational transition check ["MCI state machine: C0100 Safe-Op transition check" (0x2C04:01 / S-0-0127 / --)].

While checking the communication parameters, the command has detected an error in the timing parameters.

Switching to Safe-Operational is not possible.

Cause	Remedy
▪ The "Sync0 Cycle Time" is smaller than the minimum bus cycle time. ▪ The "Sync0 Cycle Time" is not a multiple of the controller cycle time.	**The problem can only be solved by the master.** The master has to set the "Sync0 Cycle Time" to a valid value.
The error was signaled on a double-axis converter XCD or double-axis inverter XMD The master communication settings of axis 1 and axis 2 are not identical	**The problem can only be solved by the master.** Make sure the following master communication settings of axis 1 and axis 2 are identical: ▪ "MCI timing: Cycle time (tScyc)" (0x2C0A:01 / S-0-1002 / --) ▪ "MCI connection 1: Setup" (0x2C10:01 / S-0-1050.0.1 / P-0-2188)

▼ Attributes

Short diagnostics no. (20 bits):	C0192
Long diagnostics no. (32 bits):	030C0192

C0193 EtherCAT: Device Identification Value Updated

While checking the communication parameters, the command has detected a conflict regarding the "Device Identification Value“.

Switching to Safe-Operational is not possible.

Cause	Remedy

Cause	Remedy
"SII Configured Station Alias" from slave/device and "Device Identification Value" from "MCI identification: Drive address" (0x2C02:01 / S-0-1040 / --) are both unequal "0". This causes a conflict. Therefore, the "SII Configured Station Alias" was set to "0" during the transition from "Init" to "Pre-Operational".	Via the EtherCAT master, switch the EtherCAT phase back to "Init" to delete the message.

▼ Attributes

Short diagnostics no. (20 bits):	C0193
Long diagnostics no. (32 bits):	030C0193

C0201 Invalid parameters ->S-0-0423

When the command C0200 for activating the operating mode is executed ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], internal variables are initialized and the available parameters are checked (e.g., for validity). An error was detected in the process.

Cause	Remedy
Data block elements required in operating mode are missing or invalid	Write allowed operating data to affected parameters. [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C0201
Long diagnostics no. (32 bits):	C20C0201

C0202 Parameter limit error ->S-0-0423

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], the limit values (minimum / maximum value) of some parameters are checked. An error was detected in the process.

Cause	Remedy
Parameter values required in operating mode are outside of their allowed range of values (minimum or maximum value)	Write allowed values to parameters (cf. minimum / maximum value). [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C0202
Long diagnostics no. (32 bits):	C20C0202

C0203 Parameter conversion error ->S-0-0423

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], the internal parameter formats are checked to ensure the internal processing. An error was detected in the process.

Cause	Remedy
Parameter values required in operating mode cannot be processed	Write allowed values to parameters. [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C0203
Long diagnostics no. (32 bits):	C20C0203

Detailed diagnostics

00040000

Not able to activate the travel range limit switch due to the configuration of the input signals

C0211 Error when activating the parameterization mode (C1100)

In the two-step transition command from the configuration mode (CM) to the operating mode (OM), the command C1100 for switching to the parameterization mode (PM) ["Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --)] was aborted.

Cause	Remedy
The subordinate command C1100 was aborted with an error	See command error of the command C1100

▼ Attributes

Short diagnostics no. (20 bits):	C0211
Long diagnostics no. (32 bits):	020C0211
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C0217 SMO: Error in transition command (PM -> OM)

The command for activating the operating mode was started, but it is not possible to execute the command due to an error in the SMO transition command C8800 (PM → OM).

If after C0217 one of the following SMO command errors is contained in the diagnostic trace, the error cause can be read out via the respective SMO command error:

- C8813 SMO: Incorrect parameterization
- C8814 SMO: Incorrect configuration
- C8816 SMO: Switching not allowed

▼ Attributes

Short diagnostics no. (20 bits):	C0217
Long diagnostics no. (32 bits):	060C0217
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00500100

Parameter not verisimilar: 0x290A:03 / S-0-0085, bit 0 versus 0x315B:03 / P-0-3247.0.1, bit 2

00670018

Parameter not verisimilar: 0x290A:03 / S-0-0085, bit 0 versus 0x315B:03 / P-0-3247.0.1, bit 2

C0222 PWM timer synchronization failed

An error was detected during the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)].

Cause	Remedy
The synchronization of the PWM timer (PWM="pulse width modulation") was not successful	Check PWM settings ["Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --), "Inverter power section: Configuration" (0x2120:01 / P-0-0016 / --)] and execute command C0200 again, if necessary restart the device (C6400). If the error occurs again, please contact our service department!

▼ Attributes

Short diagnostics no. (20 bits):	C0222
Long diagnostics no. (32 bits):	020C0222

C0223 Invalid settings for controller cycle times

An error was detected during the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)].

Cause	Remedy
Parameterized switching frequency of the power output stage and type of PWM clocking of output stage are incompatible	Check switching frequency ["Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --)] and set it in accordance with device and application
	Check type of PWM clocking ["Inverter power section: Configuration" (0x2120:01 / P-0-0016 / --)] and set it in accordance with device and application

See also Clock rates

▼ Attributes

Short diagnostics no. (20 bits):	C0223
Long diagnostics no. (32 bits):	020C0223

Detailed diagnostics

0042010E

Inverse PWM control not possible

Cause/Remedy 1: Cause: The device does not permit inverse PWM control. Remedy: Deselect the configuration "inverse PWM control" in parameter 0x2120:01 / P-0-0016.

C0242 Multiple configuration of a parameter ->S-0-0423

An error was detected during the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)].

Cause	Remedy
The parameters was configured simultaneously in different interfaces for cyclic writing. However, it is possible to write the same parameter simultaneously from different interfaces. **Note:** The term "interfaces" comprises analog and digital inputs as well as complete bus systems.	Read out the ident numbers entered in ["IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --)] to detect and fix the multiple configuration.

All multiple configurations/each conflict is listed and displayed as follows in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --):

- The 1st entry contains the IDN of the parameter that was configured in a multiple way.
- The following entries contain the ident numbers of the parameters in which the parameter that was configured multiple times was configured for cyclic writing.
- In the IDN list, each conflict is concluded by the IDN 0x2B6C:01 / S-0-0000. If several conflicts occur simultaneously, the conflicts are listed successively in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --), separated by ident number S-0-0000.

Upon each conflict, the configurations of the involved interfaces have to be changed so that each parameter is only written by one interface.

▼ Attributes

Short diagnostics no. (20 bits):	C0242
Long diagnostics no. (32 bits):	020C0242

C0247 Brake cannot be configured

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], the withstand voltage of the brake was detected to have been reduced, but the corresponding "Eco-Mode" functional package had not been enabled.

If the "Eco-Mode" functional package has been enabled, it is possible, after the rise time, to reduce the supply voltage of the holding brake (brake voltage) to the withstand voltage of the brake in order to reduce the losses in the brake and save energy.

Cause	Remedy
"Brake control economic: Release maintain voltage" (0x2038:02 / P-0-0540.0.2 / P-0-1677) is unequal "0", but "Eco-Mode" functional package has not been activated	Activate "Eco-Mode" functional package to use the "Eco-Mode" - or - Set "Brake control economic: Release maintain voltage" (0x2038:02 / P-0-0540.0.2 / P-0-1677) to "0"; thus, the holding brake is always supplied with full voltage. The "Eco-Mode" consequently is not active.

▼ Attributes

Short diagnostics no. (20 bits):	C0247
Long diagnostics no. (32 bits):	020C0247

C0250 Probe: Error in configuration

The configurationof the probe is incorrect, it is therefore impossible to progress to OM.

Cause	Remedy
An invalid parameter was entered in the signal selection for a probe	Enter valid parameter in the signal selection
Probe input incorrectly configured	Configure digital input as probe input

The exact cause for triggering the error can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C0250
Long diagnostics no. (32 bits):	020C0250

Detailed diagnostics

00510050

Error in signal selection for probe 1

00510051

Error in signal selection for probe 2

00510052

Probe 1: error in configuring dead time for rising edge

00510053

Probe 1: error in configuring dead time for falling edge

00510054

Probe 2: error in configuring dead time for rising edge

00510055

Probe 2: error in configuring dead time for falling edge

00510056

Error configuring extended control word

00510057

Probe: positive/negative edge is configured, but touch probe input is not set

00510058

Incorrect probe trigger signal selected

00510059

Error writing 0x60B8:00 / P-0-1901.0.65

0051005A

Touch probe input not configured

0051005B

Unable to activate probe

0051005C

Error writing 0x2960:01 / S-0-0169

0051005D

Incorrect configuration of digital inputs (possible probe inputs: 1 and 2)

C0255 Error during Init of sensorless control SVC ->S-0-0423

An error was detected during the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)]. An error has occurred in the parameterization of sensorless control.



The faulty parameter(s) is/are entered in S-0-0423.

Cause	Remedy
The current at standstill ["SVC control: Current at standstill" (0x2108:0E / P-0-0592.0.54 / P-0-1704)] parameterized for SVC is too small	In "SVC control: Current at standstill" (0x2108:0E / P-0-0592.0.54 / P-0-1704), set the start value to 30% of the nominal motor current. Afterwards, optimize the value by a run-up test.
Field weakening has not been activated for the motor	Activate field weakening in "Motor control function: Configuration 2" (0x210C:02 / P-0-3945 / --): bit 0="1"

▼ Attributes

Short diagnostics no. (20 bits):	C0255
Long diagnostics no. (32 bits):	020C0255

C0258 Invalid fine interpolation mode or TNcyc selected

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], a check is run, in the "cyclic position control" mode and when using the cubic fine interpolator or the fine interpolator according to contour, to find out whether the selected NC cycle time is supported by the fine interpolator.

<table>
<tr><th>Cause</th><th colspan="2">Remedy</th></tr>
<tr><td rowspan="5">Cycle time parameterized incorrectly
Sercos: S-0-0001
CoE: 0x60C2:01 and 0x60C2:02</td><td colspan="2">Parameterize cycle time with appropriate value.
When the cubic fine interpolator or the fine interpolator according to contour is used, the allowed cycle times depend on the ratio between cycle time and position controller clock.</td></tr>
<tr><td>Allowed clock ratios</td><td>Allowed cycle times
(Examples for a position controller clock of 125 µs)
(With CoE, the cycle time corresponds to the combination of 0x60C2:01 and 0x60C2:02)</td></tr>
<tr><td>From 1 to 8 in steps of one</td><td>125 µs to 1000 µs</td></tr>
<tr><td>From 10 to 16 in steps of two</td><td>1250 µs to 2000 µs</td></tr>
<tr><td></td><td></td></tr>
</table>

Cause	Remedy	
	From 20 to 32 in steps of four	2500 µs to 4000 µs
Position command value processing mode "cubic fine interpolation" or "fine interpolation according to contour" cannot be used with present cycle time	In "Cyclic position control: Mode" (0x2820:03 / P-0-0187 / --), change the setting to "linear fine interpolation"	

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	C0258
Long diagnostics no. (32 bits):	020C0258

C0260 Incremental enc. emulator resol. cannot be displayed

In the case of incremental encoder emulation, inadmissible overflow can occur for increment output. In order to avoid this overflow, "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) has to be parameterized accordingly.

In the case of modulo processing, the overflow occurs at the modulo value entered in Maximum travel range: Modulo format (0x2488:01 / S-0-0103 / --):

CoE:
0x29E1:03 = 0x2900:04 / 0x2488:01 ´ 2^{29}
Sercos:
P-0-0901.3.3 = S-0-0079 / S-0-0103 ´ 2^{29}
SoE:
P-0-2359 = S-0-0079 / S-0-0103 ´ 2^{29}

Position data scaling: Rotational resolution (0x2900:04 / S-0-0079 / --)
Maximum travel range: Modulo format (0x2488:01 / S-0-0103 / --)
Encoder emulation configuration OPT_3: Resolution (0x29E1:03 / P-0-0901.3.3 / P-0-2359)

Otherwise, the overflow occurs at the value entered in "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --):

CoE:
0x29E1:03 = 0x2900:04 / 0x2488:02 ´ 2^{29}
Sercos:
P-0-0901.3.3 = S-0-0079 / S-0-0278 ´ 2^{29}
SoE:
P-0-2359 = S-0-0079 / S-0-0278 ´ 2^{29}

Position data scaling: Rotational resolution (0x2900:04 / S-0-0079 / --)
Maximum travel range: Absolute format (0x2488:02 / S-0-0278 / --)
Encoder emulation configuration OPT_3: Resolution (0x29E1:03 / P-0-0901.3.3 / P-0-2359)

Cause	Remedy
Resolution of emulated signal does not match modulo range / travel range	Reduce resolution entered in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) – or – Reduce Maximum travel range: Absolute format (0x2488:02 / S-0-0278 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C0260
Long diagnostics no. (32 bits):	020C0260

Detailed diagnostics

00510060

Initialization of incremental encoder emulation: Controller cycle time not supported

00510061

Initialization of incremental encoder emulation: Invalid zero pulse offset value

00510062

Initialization of incremental encoder emulation: Error in calculation of modulo values

00510063

Initialization of incremental encoder emulation: Invalid scaling setting

C0264 Configuration of therm. motor model incorrect (->S-0-0423)

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], an error was detected in the configuration of the motor temperature model (also called "thermal motor model").

Cause	Remedy

Cause	Remedy
More than one motor temperature model has been configured; only one motor temperature model may be configured. The invalid parameters were entered in 0x2B64:06 / S-0-0423	Check the parameters entered in 0x2B64:06 / S-0-0423 and correct the parameters. Make sure you have only configured the motor temperature model that goes with the connected motor. ▪ **Motor temperature model for Bosch Rexroth motors without encoder memory and third party motors** ▪ Configuring the motor temperature model: – "Motor thermal model 1 config.: Time const., motor winding" (0x202A:02 / P-0-4034 / --) – "Motor thermal model 1 config.: Time const., motor housing" (0x202A:03 / P-0-4035 / --) – "Motor thermal model 1 config.: Intermittent overload factor" (0x202A:04 / P-0-4037 / --) ▪ Switching off the motor temperature model: – "Motor thermal model 1 config.: Time const., motor winding"="0" (0x202A:02 / P-0-4034 / --) and – "Motor thermal model 1 config.: Time const., motor housing"="0" (0x202A:03 / P-0-4035 / --) ▪ **Motor temperature model for motors of the MS2x type** ▪ Configuring the motor temperature model: "Motor thermal model 2 config.: Charact. values" (0x2028:03 / P-0-3060.0.10 / P-0-1737) ▪ Switching off the motor temperature model: "Motor thermal model 2 config.: Charact. values"="0" (0x2028:03 / P-0-3060.0.10 / P-0-1737) **Note:** When a motor type is replaced (e.g., a motor of the MS2N type is replaced by a third-party motor), the configuration parameters of the motor temperature model no longer used have to be written with "0" to switch it off.

▼ Attributes

Short diagnostics no. (20 bits):	C0264
Long diagnostics no. (32 bits):	020C0264
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C0269 Firmware function not enabled

The command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)] was started, it is not possible to execute the command.

Cause	Remedy
Settings for a non-activated firmware function were made in a parameter	Number of faulty parameter can be found in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --). Check setting in the faulty parameter. - or - Activate firmware function via "Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714)

Cause	Remedy
Hardware is not available for activated firmware function	Activate firmware function via "Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714) - or - Expand hardware

▼ Attributes

Short diagnostics no. (20 bits):	C0269
Long diagnostics no. (32 bits):	020C0269

Detailed diagnostics

0042010D

Function package required for PWM frequency switch

Cause/Remedy 1: Cause: In 0x2120:01 / P-0-0016, a PWM frequency switch is configured that requires a function to be enabled. Remedy: Activate the function enabling code 0x08320002 or deactivate the PWM frequency switch in 0x2120:01 / P-0-0016.

00420982

Enabling of functional packages is missing for SVC

00421E2E

Reference model is locked

Cause/Remedy 1: Cause: Velocity control with reference model function is not licensed. Remedy: License or deactivate function

00520002

Enabling of function packages is missing for controlled deceleration

00520003

“Return motion” not enabled

Cause/Remedy 1: Enable “Return motion” firmware function in productivity package

Cause/Remedy 2: Set another best possible shutdown

00520004

Unsupported firmware function “Torque zero shift with ramp” is parameterized

Cause/Remedy 1: Set another best possible shutdown

Cause/Remedy 2: Use a device with appropriate firmware that supports the parameterized firmware function

C0283 Error during initialization of motor control->S-0-0423

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], an error was detected during the initialization of motor control.

Cause	Remedy
The combination of the following parameters is invalid: ■ "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --) ■ "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) ■ "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --) The invalid parameters were entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).	Check the parameters entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) and correct the parameters. If motor encoder/encoder 1 has **not** been configured ["Encoder interface assignment ENC_1: Value"="0" (0x2480:01 / P-0-0077 / --)], only flux-controlled motor operation (SVC) is possible for synchronous motors, only V/Hz (U/f) operation is possible for asynchronous motors. Þ Check/correct parameterization: ■ "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --) ■ "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --) If a motor encoder/encoder 1 has been configured ["Encoder interface assignment ENC_1: Value"¹"0" (0x2480:01 / P-0-0077 / --)], it has to be used for control [Þ check/correct parameterization in "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	C0283
Long diagnostics no. (32 bits):	020C0283

C0289 Error at init. of synchr. motor with reluctance torque

During the execution of the command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --)], a validation error was detected during the initialization of a synchronous motor with reluctance torque.



The initialization of a synchronous motor with reluctance torque is only run through if this has been set in "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --).

Cause	Remedy

Cause	Remedy
Incomplete or invalid entries in the parameters for initializing a synchronous motor with reluctance torque or a reluctance motor	The following parameters are relevant for the initialization of a synchronous motor with reluctance torque or a reluctance motor. Check parameter contents and data provided by the motor manufacturer: ■ "Motor basic data: Peak current" (0x2010:08 / S-0-0109 / --) ■ "Motor basic data: Motor rated current" (0x6075:00 / S-0-0111 / --) ■ "Motor basic data: Maximum torque" (0x2010:06 / S-0-0534 / --) ■ "Motor basic data: Number of pole pairs / pole pair distance" (0x2010:03 / P-0-0018 / --) ■ "Motor basic data: Torque/force constant" (0x2010:02 / P-0-0051 / --) ■ "Reluctance motor data: Torque at nominal current" (0x200A:01 / P-0-3940 / -- ■ "Reluctance motor data: Torque at maximum current" (0x200A:02 / P-0-3941 / --) ■ "Reluctance motor data: Angle at nominal current" (0x200A:03 / P-0-3942 / --) ■ "Reluctance motor data: Angle at maximum current" (0x200A:04 / P-0-3943 / --) ■ "Synchron. motor data: Charact. of q-ind., factor inductances" (0x2008:05 / P-0-4002 / --) ■ "Synchron. motor data: Charact. of q-ind., factor currents" (0x2008:06 / P-0-4003 / --) ■ "Synchron. motor data: Direct current limit value" (0x2008:08 / P-0-4005 / --) ■ "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --) ■ "Synchron. motor data: Voltage constant" (0x2008:07 / P-0-4015 / --) ■ "Synchron. motor data: Direct-axis inductance" (0x2008:03 / P-0-4016 / --) ■ "Synchron. motor data: Q-inductance" (0x2008:04 / P-0-4017 / --) Please contact our service department, if error is generated in spite of correct data
Initialization for a synchronous motor **with** reluctance torque was run through although a synchronous motor **without** reluctance torque is used	Correct the setting in "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C0289
Long diagnostics no. (32 bits):	020C0289

C0298 Impossible to activate operating mode

The command C0200 for activating the operating mode ["Subdevice STM: C0200 Activate operation mode"

(0x2BD2:06 / S-0-0422 / --)] was started; however, it is not possible to execute the command.

Cause	Remedy
During firmware download there was an attempt to switch to operating mode	Wait until firmware download has been completed before switching to operating mode
After a boot error (F81xx error) there was an attempt to switch to operating mode	▪ Terminate command ▪ Clear boot error (F81xx error) ▪ Remove cause ▪ Reboot drive

▼ Attributes

Short diagnostics no. (20 bits):	C0298
Long diagnostics no. (32 bits):	020C0298

C0301 Measuring system unavailable, encoder 1

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the measuring system selected in the corresponding control word ["Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --)] was detected to be unavailable.

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Measuring system has not been parameterized	Use "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) to parameterize which encoder interface is to be evaluated as encoder 1

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0301
Long diagnostics no. (32 bits):	C00C0301

C0302 Absolute evaluation of measuring system impossible, encod. 1

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], it was detected that the selected measuring system cannot be evaluated in absolute form.



The command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --) can only be executed if an **absolute** measuring system is available. The properties of encoder 1 can be set in "Encoder function and properties ENC_1: Value" (0x24A2:01 / S-0-0277 / --).

Cause	Remedy

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Selected maximum travel range was too big [maximum travel range is greater than "Absolute encoder range ENC_1: Value" (0x24B0:01 / S-0-0378 / --)]	Check value for maximum travel range of encoder: ■ "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --) ■ "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --)
Specified measuring system does not use an absolute encoder	Equip the measuring system specified in "Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --) with an absolute encoder function

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0302
Long diagnostics no. (32 bits):	C00C0302

C0303 Absolute encoder offset cannot be saved, encoder 1

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the offset of the encoder zero point to the machine zero point is determined and saved in the data memory of the encoder. It had been impossible to successfully save the offset.

Cause	Remedy
The communication between encoder 1 and drive controller is disturbed	Check and, if necessary, repair encoder cable **- or -** Replace encoder

▼ Attributes

Short diagnostics no. (20 bits):	C0303
Long diagnostics no. (32 bits):	C00C0303

Detailed diagnostics

00440015

Encoder 1: Error: Unable to write absolute encoder offset to the OEM memory

00440040

Encoder[x]: Impossible to calculate CRC checksum to ensure the absolute encoder offset.

00440041

Encoder[x]: Configured encoder interface is not supported

00440044

Encoder[x]: OEM encoder memory is currently read-only Check if it can be written to and configure, if necessary.

C0304 Command cannot be executed under drive enable

An error occurred during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

Cause	Remedy
The command was started with drive enable activated	Deactivate drive enable. Then restart command. **- or -** If you want to execute command under drive enable, bit 2 has to be set in "Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --).

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0304
Long diagnostics no. (32 bits):	C00C0304

C0305 Unable to establish reference

An internal error was detected during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]. It had been impossible to establish the absolute position reference.

Cause	Remedy
It had been neither possible to identify and save the serial number of the encoder nor to set it valid or invalid ■ "Absolute encoder buffer ENC_1: Serial number" (0x24B4:04 / S-0-0611.1.136 / P-0-3884) ■ "Absolute encoder buffer ENC_2: Serial number" (0x24B6:04 / S-0-0611.2.136 / P-0-3886)	Again execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]

Cause	Remedy
It was not possible to update or save the current data of the absolute encoder (scaling and mechanics): ■ "Absolute encoder buffer ENC_1: Static data" (0x24B4:03 / P-0-0177.0.1 / P-0-3819) ■ "Absolute encoder buffer ENC_2: Static data" (0x24B6:03 / P-0-0178.0.1 / P-0-3919)	
It was not possible to set the status of the absolute encoder data invalid at the start of the command: ■ "Absolute encoder buffer ENC_1: Retain data" (0x24B4:02 / P-0-0177 / --) ■ "Absolute encoder buffer ENC_2: Retain data" (0x24B6:02 / P-0-0178 / --)	

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0305
Long diagnostics no. (32 bits):	C00C0305

Detailed diagnostics

00440013

Encoder[x]: Unable to write serial number of encoder to the non-volatile memory.

00440027

Encoder[x]: Unable to save encoder reference data (encoder evaluation not supported)

00440036

Encoder[x]: Error when saving serial number of encoder: Unknown encoder evaluation

00460005

Encoder 1: Error in parameter handling: Status of 0x24B4:02 / P-0-0177 could not be set to invalid

C0306 Unable to clear encoder 1 absolute offset status

An error in the parameter handling occurred during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

Cause	Remedy
It was not possible to set the status of the absolute encoder data invalid at the start of the command ["Absolute encoder buffer ENC_1: Retain data" (0x24B4:02 / P-0-0177 / --)]	Again execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0306
Long diagnostics no. (32 bits):	C00C0306

Detailed diagnostics

00460006

Encoder 1: Error in parameter handling: Status of 0x24B4:02 / P-0-0177 could not be set to invalid

C0307 Command not executable in current state of drive

An error occurred during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

Cause	Remedy
The command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)] cannot be executed in the current state of the drive	1. First terminate the execution of the command C0300. 2. Exit the conflict-prone state (e.g., parking axis active) before executing the command. 3. Execute command C0300 again.

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0307
Long diagnostics no. (32 bits):	000C0307

C0311 Measuring system unavailable, encoder 2

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the measuring system selected in the corresponding control word ["Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --)] was detected to be unavailable.

Cause	Remedy

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Measuring system has not been parameterized	Use "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) to parameterize which encoder interface is to be evaluated as encoder 2

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0311
Long diagnostics no. (32 bits):	C00C0311

C0312 Absolute evaluation of measuring system impossible, encod. 2

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], it was detected that the selected measuring system cannot be evaluated in absolute form.



The command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --) can only be executed if an **absolute** measuring system is available. The properties of encoder 2 can be set in "Encoder function and properties ENC_2: Value" (0x24A0:01 / S-0-0115 / --).

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Selected maximum travel range was too big [maximum travel range is greater than "Absolute encoder range ENC_2: Value" (0x24B2:01 / S-0-0379 / --)]	Check value for maximum travel range of encoder: ■ "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --) ■ "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --)
Specified measuring system does not use an absolute encoder	Equip the measuring system specified in "Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --) with an absolute encoder function

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0312
Long diagnostics no. (32 bits):	C00C0312

C0313 Absolute encoder offset cannot be saved, encoder 2

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the offset of the encoder zero point to the machine zero

point is determined and saved in the data memory of the encoder. It had been impossible to successfully save the offset.

Cause	Remedy
The communication between encoder 2 and drive controller is disturbed	Check and, if necessary, repair encoder cable **- or -** Replace encoder

▼ Attributes

Short diagnostics no. (20 bits):	C0313
Long diagnostics no. (32 bits):	C00C0313

C0316 Unable to clear encoder 2 absolute offset status

An error in the parameter handling occurred during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

Cause	Remedy
It was not possible to set the status of the absolute encoder data invalid at the start of the command ["Absolute encoder buffer ENC_2: Retain data" (0x24B6:02 / P-0-0178 / --)]	Again execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0316
Long diagnostics no. (32 bits):	C00C0316

C0321 Measuring system unavailable, measuring encoder

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the measuring system selected in the corresponding control word ["Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --)] was detected to be unavailable.

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
Measuring system has not been parameterized	Use "Encoder interface assignment MEAS: Value" (0x2483:01 / P-0-0079 / --) to parameterize which encoder interface is to be evaluated as measuring encoder

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0321
Long diagnostics no. (32 bits):	000C0321

C0322 Abs. evaluation of measuring system impossible, meas. enc.

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], it was detected that the selected measuring system cannot be evaluated in absolute form.



The command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --) can only be executed if an **absolute** measuring system is available. The properties of the measuring encoder can be set in "Encoder function and properties MEAS: Value" (0x24A3:01 / P-0-0328 / --).

Cause	Remedy
Command was activated by mistake	Prevent command from being activated
The value in "Measuring encoder function: Travel range" (0x24CE:05 / P-0-0765 / --) is greater than the value in "Absolute encoder range MEAS: Value" (0x24B3:01 / P-0-0334 / --)	Check "Measuring encoder function: Travel range" (0x24CE:05 / P-0-0765 / --)
Specified measuring system does not use an absolute encoder	Equip the measuring system specified in "Set absolute position function: Control word" (0x2510:02 / S-0-0448 / --) with an absolute encoder function

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0322
Long diagnostics no. (32 bits):	000C0322

C0323 Absolute encoder offset cannot be saved, measuring encoder

During the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)], the offset of the encoder zero point to the machine zero point is determined and saved in the data memory of the encoder. It had been impossible to successfully save the offset.

Cause	Remedy
The communication between measuring encoder and drive controller is disturbed	Check and, if necessary, repair encoder cable **- or -** Replace encoder

▼ Attributes

Short diagnostics no. (20 bits):	C0323
Long diagnostics no. (32 bits):	000C0323

Detailed diagnostics

00442200

Measuring encoder: Impossible to calculate CRC checksum to ensure the absolute encoder offset.

00442201

Measuring encoder: Configured encoder interface is not supported

00442221

Measuring encoder error: Unable to write absolute encoder offset to the OEM memory

00442222

Measuring encoder error: Unable to write absolute encoder offset to the OEM memory

C0325 Measuring encoder: Unable to establish reference

An internal error was detected during the execution of the command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]. It had been impossible to establish the absolute position reference.

Cause	Remedy
It had neither been possible to identify and save the serial number of the encoder ["Encoder extended in, config. MEAS: Serial number" (0x2493:04 / S-0-0611.3.136 / P-0-3680)] nor to set it valid or invalid	Again execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]
It was not possible to update or save the current data of the absolute encoder (scaling and mechanics) ["Absolute encoder buffer MEAS: Static data" (0x24B7:03 / P-0-0179.0.1 / P-0-3683)]	

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0325
Long diagnostics no. (32 bits):	000C0325

C0326 Unable to clear meas. enc. absolute position offset status

An error in the parameter handling occurred during the execution of the command C0300 for setting the absolute

position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)].

Cause	Remedy
It was not possible to set the status of the absolute encoder data invalid at the start of the command ["Absolute encoder buffer MEAS: Retain data" (0x24B7:02 / P-0-0179 / --)]	Again execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)]

See also Establishing position data reference for absolute measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0326
Long diagnostics no. (32 bits):	000C0326

C0401 Switching not allowed

An error was detected during the execution of command C0400 for switching to the configuration mode ["Subdevice STM: C0400 Activate configuration mode" (0x2BD2:05 / S-0-0420 / --)].

Cause	Remedy
Command for switching to configuration mode was started although drive enable had been activated	Terminate command and switch off drive enable, then command can be started again

▼ Attributes

Short diagnostics no. (20 bits):	C0401
Long diagnostics no. (32 bits):	020C0401

C0405 SMO: Error in transition command (PM -> CM)

The command for activating the configuration mode was started, but it is not possible to execute the command due to an error in the transition command (PM → CM) nicht möglich.

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C0405
Long diagnostics no. (32 bits):	060C0405
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C0411 Error when activating the parameterization mode (C1100)

In the two-step transition command from the configuration mode (CM) to the operating mode (OM), the command C1100 for switching to the parameterization mode (PM) ["Subdevice STM: C1100 Activate parameterization mode"

(0x2BD2:04 / P-0-0504 / --)] was aborted.

Cause	Remedy
The subordinate command C1100 was aborted with an error	See command error of the command C1100

▼ Attributes

Short diagnostics no. (20 bits):	C0411
Long diagnostics no. (32 bits):	020C0411
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C0601 Homing only possible with drive enable

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
Command was started without drive enable having been switched on. This is not allowed.	Switch on drive enable and restart the command.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	C0601
Long diagnostics no. (32 bits):	C00C0601

C0602 Distance home switch - reference mark erroneous

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
The home switch evaluation has been switched on ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)]. The distance between the selected home switch edge and the reference mark to be evaluated is outside of the allowed range.	Read out "Home switch: Proposed mechanical shift" (0x250A:02 / S-0-0298 / --) and apply it to "Home switch: Virtual shift" (0x250A:03 / S-0-0299 / --) **- or -** Shift the reference cam

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0602
Long diagnostics no. (32 bits):	C00C0602

C0603 Homing impossible with encoder 2

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
Encoder 2 has been parameterized as a homing encoder ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] although encoder 2 does not exist	Parameterize encoder 1 as homing encoder in ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)]
Encoder 2 has not been activated	Activate encoder 2 in "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C0603
Long diagnostics no. (32 bits):	C00C0603

C0604 Homing impossible with absolute encoder

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
An absolute measuring system had been selected ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)], but the absolute position was not set.	▪ Execute command C0300 for setting the absolute position ["Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)] ▪ Execute command C0600 for the drive-controlled homing procedure ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)] ⇒ Absolute position data reference has been established

▼ Attributes

Short diagnostics no. (20 bits):	C0604
Long diagnostics no. (32 bits):	C00C0604

C0605 Command not executable in current state of drive

Cause	Remedy

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command
At the time of command start, another command had already been active; only one command can be active at a time	1. Terminate command that had been active before (let it complete or reset it) 2. Restart new command

▼ Attributes

Short diagnostics no. (20 bits):	C0605
Long diagnostics no. (32 bits):	C00C0605

C0606 Reference mark not detected

An error regarding the reference mark detection was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

If the reference marks of the relative encoder to be homed (selected in 0x2500:02 / S-0-0147) occur cyclically over the travel range, the position difference of the reference marks detected by the controller is monitored.

Cause	Remedy
Reference marks do not occur in the expected position difference	Check measuring system to be homed and its wiring **- or -** Check and, if necessary, correct parameterization of distance between home switch and reference mark ["Home switch: Optimum distance to reference mark" (0x250A:01 / P-0-0153 / --)]
Parameterized value of distance between home switch and reference mark does not match the encoder used	Correct parameterization of distance between home switch and reference mark ["Home switch: Optimum distance to reference mark" (0x250A:01 / P-0-0153 / --)]

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C0606
Long diagnostics no. (32 bits):	C00C0606

Detailed diagnostics

00460000
Faulty reference mark

00460001
Faulty reference mark

00460002

Maximum travel distance exceeded

00460003

Limit switch evaluation faulty

00460004

Limit switch evaluation faulty

00460007

Faulty reference mark

00460008

Re-reversal of direction detected (only one is allowed)

00460009

Both limit switches active

0046000A

Re-reversal of direction detected (only one is allowed)

0046000B

Re-reversal of direction detected (only one is allowed)

0046000C

Error when starting referencing function

C0607 Home switch input not assigned

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy

Cause	Remedy
The home switch has neither been assigned to a digital input nor in a cyclic connection	In "Digital inputs: Assignment list" (0x2A20:02 / P-0-0300 / --) assign the "Home switch: Status" (0x250A:04 / S-0-0400 / --) to a digital input. – OR – In a cyclic connection, assign the "Home switch: Status" (0x250A:04 / S-0-0400 / --) as parameter in the MDT or as real-time control bit.
The travel range limit switch is used as home switch, but has neither been assigned to a digital input nor in a cyclic connection	In "Digital inputs: Assignment list" (0x2A20:02 / P-0-0300 / --) assign the "Travel range limitation: Switch inputs" (0x2308:02 / P-0-0222 / --) to a digital input. – OR – In a cyclic connection, assign the "Travel range limitation: Switch inputs" (0x2308:02 / P-0-0222 / --) as parameter in the MDT or as real-time control bit.

▼ Attributes

Short diagnostics no. (20 bits):	C0607
Long diagnostics no. (32 bits):	000C0607

C0608 Fixed stop and HW limit switch not allowed for modulo axes

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
“Drive-controlled homing at positive stop” or “drive-controlled homing at travel range limit switch” was parameterized for an axis with modulo scaling. These combinations do not make sense and thus are not allowed	Change control information for homing ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C0608
Long diagnostics no. (32 bits):	000C0608

C0609 Different travel directions parameterized

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy

Cause	Remedy
For an axis with modulo scaling, the parameterized direction for moving to the reference ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] and the parameterized direction for positioning a spindle ["Positioning profile: Command value mode" (0x2840:01 / S-0-0393 / --)] do not match	Parameterize directions for moving to the reference ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] and for positioning a spindle ["Positioning profile: Command value mode" (0x2840:01 / S-0-0393 / --)] in such a way that they match

▼ Attributes

Short diagnostics no. (20 bits):	C0609
Long diagnostics no. (32 bits):	000C0609

C0610 Absolute encoder offset could not be saved

An error occurred during the execution of the command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)]: In the case of a measuring system with encoder data memory evaluated in absolute form, it had been impossible to save the calculated absolute encoder offset in the encoder data memory.

Cause	Remedy
Defective cable	Check connection between encoder and drive controller
Defective encoder data memory	Replace the encoder

▼ Attributes

Short diagnostics no. (20 bits):	C0610
Long diagnostics no. (32 bits):	000C0610

C0611 Subcommand C4000 not executable (parameter write error)

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
Subcommand C4000 is not executable, a parameter write error is present. Command was activated by mistake.	Check settings for homing the safety technology: Homing function: Configuration" (0x2500:02 / S-0-0147 / --), bit 11.

▼ Attributes

Short diagnostics no. (20 bits):	C0611
Long diagnostics no. (32 bits):	C00C0611

Detailed diagnostics

00460021

Subcommand C4000 not executable. Error when writing 0x31B0:07 / P-0-3253.0.2 / P-0-2794

C0612 Subcommand C4000 not executable (parameter not available)

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
Subcommand C4000 is not executable, since the parameter "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794) is not available. Command was activated by mistake.	Check settings for homing the safety technology: Homing function: Configuration" (0x2500:02 / S-0-0147 / --), bit 11.

▼ Attributes

Short diagnostics no. (20 bits):	C0612
Long diagnostics no. (32 bits):	C00C0612

Detailed diagnostics

00460022

Subcommand C4000 not executable. Parameter 0x31B0:07 / P-0-3253.0.2 / P-0-2794 not available

C0613 Subcommand C4000 signals error (s. diagnostic trace)

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
Subcommand C4000 of command C0600 signals an error.	In this case, the command C4000 has to be stopped separately via parameter "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794). Remove cause, for details see "Diagnostic trace: Main diagnostics" (0x2B84:0A / S-0-1303.0.10 / S-0-1405). Execute the command C4000 again to set the status of the safe reference of the SMO encoder to "safely homed" again (0x310E:01 / P-0-3256 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0613
Long diagnostics no. (32 bits):	C00C0613

Detailed diagnostics

00460023
Subcommand C4000 signals an error (for further information see diagnostic trace)

C0614 Home switch transmission failed

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
During the transmission of the home switch, a telegram failure occurred in the connection of the master communication.	Check the connection state of the master communication and restart command execution.

▼ Attributes

Short diagnostics no. (20 bits):	C0614
Long diagnostics no. (32 bits):	000C0614

C0615 Travel range limit switch transmission failed

An error was detected during the execution of command C0600 for drive-controlled homing ["Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --)].

Cause	Remedy
During the transmission of the travel range limit switch, a telegram failure occurred in the connection of the master communication.	Check the connection state of the master communication and restart command execution.

▼ Attributes

Short diagnostics no. (20 bits):	C0615
Long diagnostics no. (32 bits):	000C0615

C0701 Impossible to change the motor control config. in OM

An error occurred during the execution of the command C0700 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
During the execution of the command for loading the motor-specific default controller values, configurations of motor control were changed that do not take effect in the operating mode (OM), e.g. the activation / deactivation of field weakening	If the command had been started in the operating mode (OM), it was necessary to first switch to CM and then back to OM - or - Start the command in the configuration mode (CM)

▼ Attributes

Short diagnostics no. (20 bits):	C0701
Long diagnostics no. (32 bits):	020C0701

C0702 Default parameters not available

An error occurred during the execution of the command C0700 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
In the case of motors with motor encoder data memory, the control loops in the drive are adjusted by activating the controller parameters stored in the motor encoder data memory. The connected motor does not feature a motor encoder data memory	It is impossible to load the motor-specific default controller values using the command. Manually enter the controller parameters from the motor data sheet. **TIP:** Data sheets of Bosch Rexroth motors can be procured from the service department.

See also Loading, storing and saving parameters

See also Rexroth motors

▼ Attributes

Short diagnostics no. (20 bits):	C0702
Long diagnostics no. (32 bits):	020C0702

C0704 Parameters not copyable

An error occurred during the execution of the command C0700 ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
It was impossible to load default values for motor-specific control loop parameters, available in encoder memory, to associated parameters. Firmware version is incompatible with motor or motor encoder	Load appropriate firmware version to controller; take motor type and motor encoder type into account

See also Loading, storing and saving parameters

See also Rexroth motors

▼ Attributes

Short diagnostics no. (20 bits):	C0704
Long diagnostics no. (32 bits):	020C0704

C0711 Loading requires determination of system parameters

An error occurred during the execution of the command C0710 for loading the power-supply specific controller values["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
The calculated parameter values are outside of the limit values and/or could not be saved.	Check and correct parameters for power-supply specific controller values

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	C0711
Long diagnostics no. (32 bits):	020C0711

C0712 Error while saving the system parameters

An error occurred during the execution of the command C0710 for loading the power-supply specific controller values ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
The DC bus capacitance value required for calculation has been parameterized with "0" ["Power supply DC bus: Capacitance measured value" (0x2610:02 / S-0-1732.0.1 / S-0-2064)]	After the control voltage has been switched on, the DC bus capacitance is determined when the DC bus is charged for the first time. ■ Activate mains choke check (0x2628:01 / P-0-0860, bit 4) ■ Charge the DC bus ■ Parameterize correct value for DC bus capacitance ["Power supply DC bus: Capacitance measured value" (0x2610:02 / S-0-1732.0.1 / S-0-2064)] ■ Restart the command for loading power-supply specific controller values [C0710 (0x2B62:01 / S-0-0262 / --)]
The commutation choke inductance value required for calculation has been parameterized with "0" ["Commutation choke: Inductance" (0x262A:02 / S-0-1731.0.20 / S-0-2061)]	After control voltage has been switched on, the inductance of the commutation choke is determined when the DC bus is charged for the first time. ■ Activate mains choke check (0x2628:01 / P-0-0860, bit 4) ■ Charge the DC bus ■ Parameterize a correct value for inductance ["Commutation choke: Inductance" (0x262A:02 / S-0-1731.0.20 / S-0-2061)] ■ Restart the command for loading power-supply specific controller values [C0710 (0x2B62:01 / S-0-0262 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C0712
Long diagnostics no. (32 bits):	020C0712

C0721 SMO: Load defaults procedure not possible

An error occurred during the execution of the command C0720 for loading the default values of the safety technology parameters ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)].

Cause	Remedy
The password-dependent write protection on parameters is active [see "SMO scaling function: C8000 Command apply scaling config." (0x302A:01 / P-0-3220 / --)]	By writing "SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468) remove password-dependent write-protection on parameters
Internal error	Cancel command and restart the command. If the error occurs again, contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	C0721
Long diagnostics no. (32 bits):	060C0721

Detailed diagnostics

00530264

Command C0720 cannot be executed at password level 2 (0x3018:01 / P-0-3230)

00540264

Command C0720 cannot be executed at password level 2 (0x3018:01 / P-0-3230)

006E0069

Error while loading SMO default values.

Cause/Remedy 1: Remedy: Switch SMO to parameterization mode or exclude SMO default values when loading the default values (0x2B62:02 / P-0-4090).

006E0071

Error while loading SMO default values.

Cause/Remedy 1: Remedy: Switch SMO to parameterization mode or exclude SMO default values when loading the default values (0x2B62:02 / P-0-4090).

C0722 SMO: Error in load defaults procedure

During the execution of the command C0720 for loading the default values of the safety technology parameters ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)], an error occurred when writing

a default value.

Cause	Remedy
Parameter incorrect. **Note:** The incorrect parameter is recorded in "SMO verification interface: List of non-verified parameters" (0x3016:06 / P-0-3233 / --).	▪ Check and correct the parameter ▪ Verify parameter ▪ Execute command again

▼ Attributes

Short diagnostics no. (20 bits):	C0722
Long diagnostics no. (32 bits):	060C0722

C0751 Parameter default value incorrect ->S-0-0423

During the execution of the command for loading the default values (factory settings) (C0750), an error occurred when a default value had been written.

The incorrect parameter is recorded in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C0751
Long diagnostics no. (32 bits):	020C0751

C0752 Locked with password

An error occurred during the execution of the command for loading the default values (factory settings) (C0750).

Cause	Remedy
Drive parameters were write-protected using a password ["Password: Value" (0x2B68:01 / S-0-0267 / --)]. Diagnostic message C0752 signals that command C0750 was started without first deactivating customer password.	Deactivate write protection by entering password. Then restart command.

▼ Attributes

Short diagnostics no. (20 bits):	C0752
Long diagnostics no. (32 bits):	020C0752

Detailed diagnostics

006E006C

Password locking time activated (0x2B68:01 / S-0-0267)

006E006D

Password locking time activated (telnet)

C0753 Loading default: Not possible with these groups

An error occurred during the execution of the command for loading the default values (factory settings) (C0750).

Cause	Remedy
The communication interface is in cyclic operation. Loading the communication parameter default values is not possible in this state	Exclude the communication parameters from the loading of the default values ["Application data default: Configuration" (0x2B62:02 / P-0-4090 / --)] - or - Terminate the cyclic operation of the communication interface

▼ Attributes

Short diagnostics no. (20 bits):	C0753
Long diagnostics no. (32 bits):	020C0753

Detailed diagnostics

006E0064

Internal error while loading the master communication default values

006E0065

Unable to load default values of the master communication parameters at the moment

006E0075

Unable to load SMO default values

Cause/Remedy 1: Remedy: Switch SMO to parameterization mode or exclude SMO default values when loading the default values (0x2B62:02 / P-0-4090).

006E0076

Unable to load SMO default values

Cause/Remedy 1: Remedy: Switch SMO to parameterization mode or exclude SMO default values when loading the default values (0x2B62:02 / P-0-4090).

006E0077

Unable to load default value for master communication parameter

Cause/Remedy 1: Remedy: Switch master communication to parameterization mode or exclude master communication default values when loading the default values (0x2B62:02 / P-0-4090).

006E0078

Unable to load default value for master communication parameter

Cause/Remedy 1: Remedy: Switch master communication to parameterization mode or exclude master communication default values when loading the default values (0x2B62:02 / P-0-4090).

006E0079

Unable to load default value for master communication parameter

Cause/Remedy 1: Remedy: Switch master communication to parameterization mode or exclude master communication default values when loading the default values (0x2B62:02 / P-0-4090).

C0754 Saving of the loaded values failed

An error occurred during the execution of the command for loading the default values (factory settings) (C0750). Saving of the loaded values failed.

Cause	Remedy
Accessing the persistent memory (flash) was temporarily impossible.	Execute command again. If the error occurs repeatedly, switch device off and on, and then execute the command again.

▼ Attributes

Short diagnostics no. (20 bits):	C0754
Long diagnostics no. (32 bits):	020C0754

C0761 Factory default values incorrect ->S-0-0423

An error occurred during the execution of the command C0760 for loading the application data default values.

Cause	Remedy
The content of parameter "Application data default: Factory default values" (0x2B62:04 / P-0-0660.0.1 / P-0-2660) could not be interpreted without error (data status valid, but content does not comply with required format, e.g. all list elements="0xffffffff").	Write content of a parameter backup to "Application data default: Factory default values" (0x2B62:04 / P-0-0660.0.1 / P-0-2660) to activate configurable factory default values. If there is no parameter backup available, "Application data default: Factory default values" (0x2B62:04 / P-0-0660.0.1 / P-0-2660) can be deleted (set actual length to "0"), but in this case the configurable factory default values are not active anymore!

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	C0761

Long diagnostics no. (32 bits):	020C0761

Detailed diagnostics

006E0073

Problem while loading factory default values

006E0074

Invalid parameters for loading the factory default values, contact service

C0762 Locked with password

An error occurred during the execution of the command C0760 for loading the application data default values.

Cause	Remedy
Drive parameters were write-protected using a password ["Password: Value" (0x2B68:01 / S-0-0267 / --)]. Diagnostic message C0762 signals that command C0760 was started without first deactivating customer password.	Deactivate write protection by entering password. Then restart command.

▼ Attributes

Short diagnostics no. (20 bits):	C0762
Long diagnostics no. (32 bits):	020C0762

C0763 Load defaults procedure (application data), invalid param.

An error occurred during the execution of the command C0760 for loading the application data default values.

Cause	Remedy
The parameter "Motor type plate data, compact: Application-specific data" (0x2050:05 / P-0-3075 / --) is not contained in encoder memory or data status of the parameter is invalid	Please contact the motor manufacturer. - or - Execute the command C6300 for generating the type plate ["Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --)] to save a valid "Motor type plate data, compact: Application-specific data" (0x2050:05 / P-0-3075 / --) in the encoder memory

Legend:
0x2050:05 / P-0-3075: *The parameter contains the application-specific default values of the motor stored in the motor data memory*

▼ Attributes

Short diagnostics no. (20 bits):	C0763
Long diagnostics no. (32 bits):	020C0763

C0771 Error when loading default settings

An error occurred during the execution of the command C0770 for setting the motor parameters to factory settings.



The incorrect parameters can be read from "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

Cause	Remedy
One of the motor parameters is not writeable since the drive is in the incorrect mode	Switch drive to configuration mode (CM)
One of the motor parameters is not writeable since the parameter is password-protected	Cancel password protection

▼ Attributes

Short diagnostics no. (20 bits):	C0771
Long diagnostics no. (32 bits):	020C0771

C0799 An invalid index was set

At the time when the command C0700 for loading the default values was started, no valid value for the command had been entered in "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --).



The function of the C0700 command can be set via "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --).
After the command was deleted, the value in "Application data default: Configuration" (0x2B62:02 / P-0-4090 / --) is automatically set to "0" again.

▼ Attributes

Short diagnostics no. (20 bits):	C0799
Long diagnostics no. (32 bits):	020C0799

Detailed diagnostics

006E0068

Unknown control value for “Load default value” command

Cause/Remedy 1: Remedy: Check value in 0x2B62:02 / P-0-4090 and set it to a permissible value.

C0902 Spindle positioning requires drive enable

An error was detected during the execution of the command "Spindle positioning: C0900 Procedure command" (0x29A0:01 / S-0-0152 / --).

Cause	Remedy

Cause	Remedy
Drive enable (AF) had not been set at the start of the command for spindle positioning	Set drive enable before starting the command

See also Spindle positioning

▼ Attributes

Short diagnostics no. (20 bits):	C0902
Long diagnostics no. (32 bits):	C00C0902

C0903 Error during initialization

An error was detected during the execution of the command "Spindle positioning: C0900 Procedure command" (0x29A0:01 / S-0-0152 / --).

Cause	Remedy
The appropriate encoder had not yet been initialized (homed) at the start of the command for spindle positioning	**Incremental measuring system evaluating the home point switch** Check whether "Home switch: Status" (0x250A:04 / S-0-0400 / --) has been assigned to a digital input. Home switch must have been assigned, connected and be functioning
	Absolute measuring system Check whether drive is in reference. If drive is not in reference, establish absolute position data reference, e.g. by executing the command "Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)
"Encoder 2" has been parameterized as a homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --) although encoder 2 does not exist	Parameterize "encoder 1" as homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)

See also Spindle positioning

▼ Attributes

Short diagnostics no. (20 bits):	C0903
Long diagnostics no. (32 bits):	000C0903

C0904 Inadmissible drive control configuration

An error was detected during the execution of the command "Spindle positioning: C0900 Procedure command" (0x29A0:01 / S-0-0152 / --).

Cause	Remedy
Positioning the spindle is impossible in sensorless motor operation (closed-loop SVC control or open-loop V/Hz (U/f) control)	In drive control, configure motor control with encoder (FOC)

See also Spindle positioning

▼ Attributes

Short diagnostics no. (20 bits):	C0904
Long diagnostics no. (32 bits):	000C0904

C0906 Error during search for zero pulse

An error was detected during the execution of the command "Spindle positioning: C0900 Procedure command" (0x29A0:01 / S-0-0152 / --).

Cause	Remedy
Since the drive had not been homed before the command for spindle positioning was executed, "drive-controlled homing" was executed first of all. The homing procedure was not successfully executed. The zero mark of the encoder was not found or could not be correctly assigned.	Check parameterization of spindle positioning and drive-controlled homing, especially the used combination of encoder and home point switch **- or -** Check encoder parameterization **- or -** Check distance between zero pulse and home point switch **- or -** Execute drive-controlled homing to check the homing procedure

See also Drive-controlled positioning

See also Spindle positioning

▼ Attributes

Short diagnostics no. (20 bits):	C0906
Long diagnostics no. (32 bits):	C00C0906

C1101 Invalid parameters ->S-0-0423

When the parameterization mode is activated (command C1100), internal variables are initialized and the available parameters are checked (e.g., for validity). An error was detected in the process.

Cause	Remedy
Data block elements required in parameterization mode are missing or invalid	Write allowed operating data to affected parameters. [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).]

▼ Attributes

Short diagnostics no. (20 bits):	C1101
Long diagnostics no. (32 bits):	020C1101

Detailed diagnostics

00770010

New DRIVElink configuration compared to boot time

Cause/Remedy 1: Activate the DRIVElink function and restart the device or deactivate DRIVElink.

C1102 Parameter limit error ->S-0-0423

When the parameterization mode is activated (command C1100), the limit values (minimum/maximum value) of some parameters are checked. An error was detected in the process.

Cause	Remedy
Parameter values required in parameterization mode are outside of their allowed range of values (minimum or maximum value)	Write allowed values to parameters (cf. minimum/maximum value). [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).]

▼ Attributes

Short diagnostics no. (20 bits):	C1102
Long diagnostics no. (32 bits):	020C1102

C1103 Parameter conversion error ->S-0-0423

When the parameterization mode is activated (command C1100), the internal parameter formats are checked to ensure the internal processing. An error was detected in the process.

Cause	Remedy
Parameter values required in parameterization mode cannot be processed	Write allowed values to parameters. [For affected parameters, refer to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).]

▼ Attributes

Short diagnostics no. (20 bits):	C1103
Long diagnostics no. (32 bits):	020C1103

C1104 Inadmissible motor-amplifier combination

An error was detected during the execution of the command "Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --).

Cause	Remedy
Drive recognized that a motor which is not supported was connected	Use supported motor type

See also Supported motors and measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C1104
Long diagnostics no. (32 bits):	020C1104

C1105 Invalid settings for controller cycle times

An error was detected during the execution of the command "Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --).

Cause	Remedy
Parameterized switching frequency of the power output stage and type of PWM clocking of output stage are incompatible	Check "Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --) and set it in accordance with device and application
	In "Inverter power section: Configuration" (0x2120:01 / P-0-0016 / --) check type of PWM clocking and set it in accordance with device and application

See also Clock rates

▼ Attributes

Short diagnostics no. (20 bits):	C1105
Long diagnostics no. (32 bits):	020C1105

C1106 Encoder Basic: Error during encoder initialization XG20.x.y

When the drive had been switched to the parameterization mode (PM) (command C1100), an error was detected in the encoder initialization at interface XG20.x.y.

Significance of “x” and “y” in the interface name:

- x: Axis 1 or axis 2 in axis module
- y: Axis module A or axis module B; other modules where applicable

Example: “XG20.2.A” means that an error was detected in the encoder initialization of the encoder connected at interface XG20 at axis 2 of axis module A.



Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1106
Long diagnostics no. (32 bits):	020C1106

Detailed diagnostics

0044C811
Timeout during initialization of ABG filter 1

0044C812

Timeout during initialization of ABG filter 2

C1108 Encoder Basic: Error during encoder initialization XG21.x.y

When the drive had been switched to the parameterization mode (command C1100), an error was detected in the encoder initialization at interface XG21.x.y.

Significance of “x” and “y” in the interface name:

- x: Axis 1 or axis 2 in axis module
- y: Axis module A or axis module B; other modules where applicable

Example: “XG21.2.A” means that an error was detected in the encoder initialization of the encoder connected at interface XG21 at axis 2 of axis module A.



Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1108
Long diagnostics no. (32 bits):	020C1108

Detailed diagnostics

0044C811

Timeout during initialization of ABG filter 1

0044C812

Timeout during initialization of ABG filter 2

C1109 Encoder Basic: Error during encoder initialization XG22.x.y

When the drive had been switched to the parameterization mode (command C1100), an error was detected in the encoder initialization at interface XG22.x.y.

Significance of "x" and "y" in the interface name:

- x: Axis 1 or axis 2 in axis module
- y: Axis module A or axis module B; other modules where applicable

Example: "XG22.2.A" means that an error was detected in the encoder initialization of the encoder connected at interface XG22 at axis 2 of axis module A.



Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1109
Long diagnostics no. (32 bits):	020C1109

Detailed diagnostics

0044C811

Timeout during initialization of ABG filter 1

0044C812

Timeout during initialization of ABG filter 2

C1110 Incorrect encoder 1 parameterization

When the drive had been switched to the parameterization mode (command C1100), an error was detected in the parameterization of encoder 1.

"Encoder 1" means that the encoder assigned via "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) is used as the control encoder.



Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1110
Long diagnostics no. (32 bits):	020C1110

Detailed diagnostics

0044008D

Encoder 1: Distance coding parameterized in different ways in position encoder type (0x24A2:01 / S-0-0277, bit 1) and physical encoder properties (0x241A:02 / S-0-0602.2.2 / S-0-2501, bit 4)

C1111 Incorrect encoder 1 parameterization (mechanics)

During the execution of the command "Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --), an error was detected regarding the scaling that had been set and the selected encoder type 1.

Cause	Remedy
“Encoder type 1" is incorrect ["Encoder function and properties ENC_1: Value" (0x24A2:01 / S-0-0277 / --)]	Check and, if necessary, correct "encoder type 1" ["Encoder function and properties ENC_1: Value" (0x24A2:01 / S-0-0277 / --)]

Cause	Remedy
Parameterized scaling is wrong ["Position data scaling: Type" (0x2900:01 / S-0-0076 / --)]	Check and, if necessary, correct scaling ["Position data scaling: Type" (0x2900:01 / S-0-0076 / --)]. In addition to this main diagnostics, a detailed diagnostics is output that specifies the non-supported parameterized scaling
The parameterized motor type is incorrect ["Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)]	Correct the motor type ["Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)]
Parameterized encoder resolution is "0"	Correct encoder resolution: ■ "Encoder basic interface ONBOARD: Resolution, position" (0x2410:15 / S-0-0601.10.21 / S-0-2470) ■ "Encoder basic interface OPT_2: Resolution, position" (0x2412:15 / S-0-0601.2.21 / S-0-2420) ■ "Encoder basic interface OPT_3: Resolution, position" (0x2414:15 / S-0-0601.3.21 / S-0-2445)

▼ Attributes

Short diagnostics no. (20 bits):	C1111
Long diagnostics no. (32 bits):	020C1111

Detailed diagnostics

00440028

Encoder 1: Load reference is only allowed for linear encoder if all gearbox parameters have the value 1

00440029

Encoder 1: Linear scaling is only supported for a rot. encoder if load reference has been configured

0044002A

Encoder 1: Rotary scaling is not supported for a linear encoder

0044006E

Scaling not supported (0x2900:01 / S-0-0076)

0044006F

Invalid ENCB resolution [ENC_1: 0x2490:15 / S-0-0611.1.21, ENC_2: 0x2492:15 / S-0-0611.2.21 (resolution, position="0")]

0044007A

Position data scaling incremental (0x2900:05 / P-0-0559), value not allowed

0044007B

Encoder gearbox not allowed with incremental scaling

0044008D

Encoder 1: Distance coding parameterized in different ways in position encoder type (0x24A2:01 / S-0-0277, bit 1) and physical encoder properties (0x241A:02 / S-0-0602.2.2 / S-0-2501, bit 4)

0044011A

Encoder[x]: Incorrect resolution (ENC_1: 0x2490:18 / S-0-0611.1.24 / S-0-2823, ENC_2: 0x2492:18 / S-0-0611.2.24 / S-0-2848="0")

C1112 Basic encoder evaluation not ready => encoder 1

When the parameterization mode had been activated (command C1100), an error was detected.

Cause	Remedy
Faulty parameterization of encoder assignment to the interface	Check and correct parameterizations so that the encoder is correctly assigned to the interface: ■ "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) and corresponding configuration ■ "Phys. encoder configuration ONBOARD: Type" (0x2418:01 / S-0-0602.10.1 / S-0-2550) ■ "Phys. encoder configuration OPT_2: Type" (0x241A:01 / S-0-0602.2.1 / S-0-2500) ■ "Phys. encoder configuration OPT_3: Type" (0x241C:01 / S-0-0602.3.1 / S-0-2525)
Axis is supposed to be operated without encoder, but sensorless operation has not been configured	Configure sensorless control as the motor mode (e.g., V/Hz (U/f) operation) ["Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --)]
Interference caused by incorrect shielding or defective encoder cable See also: ■ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder cable (incl. shielding) and replace it, if necessary, or run it correctly

Cause	Remedy
Encoder is defective See also: ▪ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder function and, if necessary, replace encoder
Optional encoder module at control section is defective See also: ▪ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Replace control section or entire drive controller
When a Sercos encoder or a master communication encoder is used as input for the virtual encoder: Error during initialization: “virtual encoder: no cyclic connection found or Sercos encoder or master communication encoder not ready for operation".	See Application Manual "Virtual encoder"



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	C1112
Long diagnostics no. (32 bits):	020C1112

Detailed diagnostics

00440004

Encoder[x] simulation mode (0x24CC:01 / P-0-0399="1") requires an encoder interface assignment !="0"

00440005

Invalid combination of encoder and motor operation mode

Cause/Remedy 1: Cause: A motor encoder is configured but sensorless motor control is set. Remedy: Check the encoder and encoder configuration. Check the setting of the motor control mode in 0x210C:01 / P-0-0045

00440016

Basic encoder evaluation (ENCB) not ready for operation (ENC_1: see 0x2484:01 / S-0-0610.1.1 / S-0-2700; ENC_2: see 0x2486:01 / S-0-0610.2.1 / S-0-2725)

00440106

Basic encoder evaluation (ENCB) not ready for operation (ENC_1: see 0x2484:01 / S-0-0610.1.1 / S-0-2700; ENC_2: see 0x2486:01 / S-0-0610.2.1 / S-0-2725) for position initialization

C1116 SMO: Inconsistent communication parameters

The command for activating the parameterization mode was started (command C1100), but it is not possible to execute the command due to inconsistent communication parameters.

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C1116
Long diagnostics no. (32 bits):	0C0C1116

C1117 SMO: Inconsistent motor parameters

The command for activating the parameterization mode was started (command C1100), but it is not possible to execute the command due to inconsistent motor parameters.

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C1117
Long diagnostics no. (32 bits):	060C1117
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1118 SMO: Error in transition command (CM -> PM)

The command for activating the parameterization mode was started (command C1100), but it is not possible to execute the command due to an error in the transition command (CM → PM).

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C1118
Long diagnostics no. (32 bits):	060C1118

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1119 SMO: Error in transition command (OM -> PM)

The command for activating the parameterization mode was started (command C1100), but it is not possible to execute the command due to an error in the transition command (OM → PM).

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C1119
Long diagnostics no. (32 bits):	060C1119
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1120 Inconsistent encoder configuration

During the execution of the command for switching to the parameterization mode (PM) (C1100), an error was detected concerning the encoder configuration.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C1120
Long diagnostics no. (32 bits):	060C1120
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00440250

Encoder type is different for the axis (OPT_2: 0x241A:01 / S-0-0602.2.1 / S-0-2500 or ONBOARD: 0x2418:01 / S-0-0602.10.1 / S-0-2550) and SMO (0x3100:09 / P-0-3242.1.1)

Cause/Remedy 1: Please adjust the affected parameters, e.g. for the SMO with command C8400.

00440251

Encoder resolution is different for the axis (OPT_2: 0x241A:16 / S-0-0602.2.22 / S-0-2521 or ONBOARD: 0x2418:16 / S-0-0602.10.22 / S-0-2571) and SMO (0x3100:03 / P-0-3242.1.4)

Cause/Remedy 1: Please adjust the affected parameters, e.g. for the SMO with command C8400.

00440252

Encoder resolution is different for the axis (OPT_2: 0x241A:16 / S-0-0602.2.22 / S-0-2521 or ONBOARD: 0x2418:16 / S-0-0602.10.22 / S-0-2571) and SMO (0x3100:04 / P-0-3242.1.6)

Cause/Remedy 1: Please adjust the affected parameters, e.g. for the SMO with command C8400.

00440253

Encoder is currently not supported

Cause/Remedy 1: Please connect an approved encoder

00440254

Encoder configuration, properties or inversion are different between axis and SMO (0x3100:08 / P-0-3242.1.2)

Cause/Remedy 1: Please adjust the affected parameters, e.g. for the SMO with command C8400.

00440255

Encoder resolution is different for the axis (0x241A:15 / S-0-0602.2.21 / S-0-2520) and SMO (0x3100:05 / P-0-3242.1.3)

00440256

Encoder resolution is different for the axis (0x241A:15 / S-0-0602.2.21 / S-0-2520) and SMO (0x3100:06 / P-0-3242.1.5)

00440257

Rotational direction is different (0x241A:02 / S-0-0602.2.2 / S-0-2501 or 0x2418:02 / S-0-0602.10.2 / S-0-2551 xor 0x24A0:01 / S-0-0115 to 0x3100:08 / P-0-3242.1.2)

00440258

Encoder phys. absolute position range is different for the axis (0x2412:17 / S-0-0601.2.23 / S-0-2422) and SMO (0x3100:07 / P-0-3242.1.9)

00440259

Encoder phys. zero point offset is different for the axis (0x242A:8C / S-0-0602.2.140) and SMO (0x3108:03 / P-0-3242.1.10)

00440261

Error when reading the parameter 0x241A:16 / S-0-0602.2.22 / S-0-2521 or 0x2418:16 / S-0-0602.10.22 / S-0-2571

00440262

Error when reading the parameter 0x241A:15 / S-0-0602.2.21 / S-0-2520 or 0x2418:15 / S-0-0602.10.21 / S-0-2570

00440263

Encoder configuration check: no encoder configured

00440264

Error when reading the parameter S-0-0115, S-0-0277, S-0-0602.2.2 or S-0-0602.10.2 (0x24A0:01 / 0x24A2:01 / 0x241A:02 or 0x2418:02)

00440265

Error when reading the parameter 0x2412:17 / S-0-0601.2.23 / S-0-2422

C1121 Incorrect encoder 2 parameterization (mechanics)

During the execution of the command for switching to the parameterization mode (PM) (C1100), an error was detected regarding the scaling that had been set and the selected "encoder type 2".

Cause	Remedy
The "encoder type 2" is incorrect ["Encoder function and properties ENC_2: Value" (0x24A0:01 / S-0-0115 / --)]	Check and, if necessary, correct "encoder type 2" ["Encoder function and properties ENC_2: Value" (0x24A0:01 / S-0-0115 / --)]
Parameterized scaling is wrong ["Position data scaling: Type" (0x2900:01 / S-0-0076 / --)]	Check and, if necessary, correct scaling ["Position data scaling: Type" (0x2900:01 / S-0-0076 / --)]. In addition to this main diagnostics, a detailed diagnostics is output that specifies the non-supported parameterized scaling
The parameterized motor type is incorrect ["Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)]	Correct the motor type ["Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)]
Parameterized encoder resolution is "0"	Correct encoder resolution: ■ "Encoder basic interface ONBOARD: Resolution, position" (0x2410:15 / S-0-0601.10.21 / S-0-2470) ■ "Encoder basic interface OPT_2: Resolution, position" (0x2412:15 / S-0-0601.2.21 / S-0-2420) ■ "Encoder basic interface OPT_3: Resolution, position" (0x2414:15 / S-0-0601.3.21 / S-0-2445)

▼ Attributes

Short diagnostics no. (20 bits):	C1121
Long diagnostics no. (32 bits):	020C1121

Detailed diagnostics

00440070

Translational scaling on load is not supported for linear encoder on linear actuator

00440071

Translational scaling on actuator is not supported for linear encoder and linear actuator

00440072

Translational scaling is not supported for rot. encoder and linear actuator

00440073

Rotary scaling for linear actuator not supported

00440074

Translational scaling on load is not supported for linear encoder on rot. actuator

00440075

Translational scaling on actuator is not supported for linear encoder and rot. actuator

00440076

Translational scaling on actuator is not supported for rot. encoder and rot. actuator

00440077

Rotary scaling is not supported for linear encoder and rot. actuator

00440078

Rotary scaling on actuator is not supported for rot. encoder on load and rot. actuator

00440079

Incremental scaling with encoder 2 not allowed

0044008C

Encoder 2 is parameterized as a redundant motor control encoder (0x24A6:01 / P-0-0185, bit 3), although only one encoder is configured

0044008E

Encoder 2: Distance coding parameterized in different ways in position encoder type (0x24A0:01 / S-0-0115, bit 1) and physical encoder properties (0x241A:02 / S-0-0602.2.2 / S-0-2501, bit 4)

C1122 Error when reading encoder data => encoder 2

During the execution of the command for switching to the parameterization mode (PM) (C1100), an error was detected when the encoder data of encoder 2 had been read.

Cause	Remedy
Faulty parameterization of encoder assignment to the interface	Check and correct parameterizations so that the encoder is correctly assigned to the interface: ■ "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) and ■ "Phys. encoder configuration ONBOARD: Type" (0x2418:01 / S-0-0602.10.1 / S-0-2550) ■ "Phys. encoder configuration OPT_2: Type" (0x241A:01 / S-0-0602.2.1 / S-0-2500) ■ "Phys. encoder configuration OPT_3: Type" (0x241C:01 / S-0-0602.3.1 / S-0-2525)
Axis is supposed to be operated without encoder, but sensorless operation has not been configured	Configure sensorless control as the motor mode (e.g., V/Hz (U/f) operation [see "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --)]
Interference caused by incorrect shielding or defective encoder cable See also: ■ "Encoder extended in ENC_2: Status" (0x2486:01 / S-0-0610.2.1 / S-0-2725) and ■ "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) ■ "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) ■ "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder cable (incl. shielding) and replace it, if necessary, or run it correctly

Cause	Remedy
Encoder is defective. See also: ■ "Encoder extended in ENC_2: Status" (0x2486:01 / S-0-0610.2.1 / S-0-2725) and ■ "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) ■ "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) ■ "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder function and, if necessary, replace encoder
Optional encoder module at control section is defective. See also: ■ "Encoder extended in ENC_2: Status" (0x2486:01 / S-0-0610.2.1 / S-0-2725) and ■ "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) ■ "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) ■ "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Replace control section or entire drive controller
When a Sercos encoder or a master communication encoder is used as input for the virtual encoder: Error during initialization: “virtual encoder: no cyclic connection found or Sercos encoder or master communication encoder not ready for operation".	See Application Manual "Virtual encoder"



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	C1122
Long diagnostics no. (32 bits):	020C1122

C1125 Incorrect encoder 2 parameterization

When the drive had been switched to the parameterization mode (command C1100), an error was detected in the parameterization of encoder 2.

"Encoder 2" means that the encoder assigned via "Encoder interface assignment ENC_2: Value" (0x2482:01 / P-0-0078 / --) is used as the control encoder.

Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1125
Long diagnostics no. (32 bits):	020C1125

Detailed diagnostics

0044008E

Encoder 2: Distance coding parameterized in different ways in position encoder type (0x24A0:01 / S-0-0115, bit 1) and physical encoder properties (0x241A:02 / S-0-0602.2.2 / S-0-2501, bit 4)

0044008F

Encoder[x]: Unsupported "FTS" functionality activated (0x2438:90 / S-0-0603.10.144, bit 0)

C1131 Incorr. parameterization of measuring enc. (mechanics)

During the execution of the command "Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --), an error was detected regarding the mechanics that had been set and the selected measuring encoder.

Cause	Remedy
"Measuring encoder type" is invalid (linear measuring system is not supported) ["Encoder function and properties MEAS: Value" (0x24A3:01 / P-0-0328 / --)]	Check and correct "measuring encoder type" ["Encoder function and properties MEAS: Value" (0x24A3:01 / P-0-0328 / --)]. If necessary, replace linear measuring system by rotary measuring system.
Parameterized encoder resolution is "0"	Correct encoder resolution ["Encoder extended in, config. MEAS: Resolution, position" (0x2493:15 / S-0-0611.3.21 / S-0-2870)]
Internal calculation error [gearbox cannot be displayed (see detailed diagnostics)]	Please contact the service department

▼ Attributes

Short diagnostics no. (20 bits):	C1131
Long diagnostics no. (32 bits):	020C1131

Detailed diagnostics

004421FF

ENCB resolution [0x2493:15 / S-0-0611.3.21 (resolution, position="0")]

00442216

Measuring encoder: Linear encoders are not supported

C1132 Basic encoder evaluation not ready => measuring encoder

When the parameterization mode had been activated (command C1100), an error was detected.

Cause	Remedy
Faulty parameterization of encoder assignment to the interface	Check and correct parameterizations so that the encoder is correctly assigned to the interface: ■ "Encoder interface assignment MEAS: Value" (0x2483:01 / P-0-0079 / --) and corresponding configuration ■ "Phys. encoder configuration ONBOARD: Type" (0x2418:01 / S-0-0602.10.1 / S-0-2550) ■ "Phys. encoder configuration OPT_2: Type" (0x241A:01 / S-0-0602.2.1 / S-0-2500) ■ "Phys. encoder configuration OPT_3: Type" (0x241C:01 / S-0-0602.3.1 / S-0-2525)
Interference caused by incorrect shielding or defective encoder cable See also: ■ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder cable (incl. shielding) and replace it, if necessary, or run it correctly
Encoder is defective See also: ■ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Check encoder function and, if necessary, replace encoder

Cause	Remedy
Optional encoder module at control section is defective See also: ■ "Encoder extended in ENC_1: Status" (0x2484:01 / S-0-0610.1.1 / S-0-2700) or "Encoder basic out ONBOARD: Status" (0x2420:01 / S-0-0600.10.1 / S-0-2350) "Encoder basic out OPT_2: Status" (0x2422:01 / S-0-0600.2.1 / S-0-2300) "Encoder basic out OPT_3: Status" (0x2424:01 / S-0-0600.3.1 / S-0-2325)	Replace control section or entire drive controller
When a Sercos encoder or a master communication encoder is used as input for the virtual encoder: Error during initialization: "virtual encoder: no cyclic connection found or Sercos encoder or master communication encoder not ready for operation".	See Application Manual "Virtual encoder"



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	C1132
Long diagnostics no. (32 bits):	020C1132

Detailed diagnostics

004421F6

Measuring encoder: Basic encoder evaluation not ready for operation (see 0x2487:1 / S-0-0610.3.1)

004421FA

Measuring encoder: Basic encoder evaluation (ENCB) not ready for operation

C1134 Travel range cannot be displayed internally => meas.enc

The configured travel range specifies the overflow limit of the position feedback values.

If this travel range cannot be correctly displayed internally so that error-free position generation is impossible, this error is generated.

Cause	Remedy
Unable to display mechanics. Internally, travel range (modulo range) cannot be displayed correctly.	Change encoder resolution, position resolution or encoder gearbox

▼ Attributes

Short diagnostics no. (20 bits):	C1134
Long diagnostics no. (32 bits):	020C1134

Detailed diagnostics

00442202
Encoder[x]: Unable to display the internal position range (modulo value > 2^62)

C1135 Incorr. parameterization of measuring enc.

When the drive had been switched to the parameterization mode (command C1100), an error was detected in the parameterization of the measuring encoder.

The cause of the error can be read via the detailed diagnostics.

"Measuring encoder" means that the encoder assigned via "Encoder interface assignment MEAS: Value" (0x2483:01 / P-0-0079 / --) is used as measuring encoder.



Faulty parameters are listed in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C1135
Long diagnostics no. (32 bits):	020C1135

Detailed diagnostics

0044008F
Encoder[x]: Unsupported "FTS" functionality activated (0x2438:90 / S-0-0603.10.144, bit 0)

C1141 Config. travel range cannot be displayed internally => enc.1

The configured travel range specifies the overflow limit of the position feedback values.

If this travel range cannot be correctly displayed internally so that error-free position generation is impossible, this error is generated.

Cause	Remedy
Travel range has been incorrectly parameterized	Check and, if necessary, reduce travel range ▪ **Absolute format:** Travel range is specified by "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --) ▪ **Modulo format:** Travel range is specified by "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --)

Cause	Remedy
Position resolution has been incorrectly parameterized (e.g., value "0")	Check and, if necessary, correct the position resolution ▪ "Encoder basic interface ONBOARD: Resolution, position" (0x2410:15 / S-0-0601.10.21 / S-0-2470) ▪ "Encoder basic interface OPT_2: Resolution, position" (0x2412:15 / S-0-0601.2.21 / S-0-2420) ▪ "Encoder basic interface OPT_3: Resolution, position" (0x2414:15 / S-0-0601.3.21 / S-0-2445
Load gear ratio "Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --) to "Gear ratio: Driving shaft revolutions" (0x6091:02 / S-0-0122 / --) is too big	Adjust the mechanics - or - Reduce the load gear ratio

▼ Attributes

Short diagnostics no. (20 bits):	C1141
Long diagnostics no. (32 bits):	020C1141

Detailed diagnostics

00440117

Encoder[x]: Unable to display the internal position range (modulo value = "0")

00440118

Encoder[x]: Unable to display the internal position range (modulo value > 2^62)

00440119

Encoder[x]: Unable to display the internal position range (modulo value fraction)

00440B3B

The configured travel range cannot be displayed internally

Cause/Remedy 1: Cause: The parameterized maximum travel range is too large. Remedy: Parameterize a smaller value for the maximum travel range, if possible.

C1142 Scaling with motor reference not allowed

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command due to forbidden scaling setting.

Cause	Remedy
For a rotary actuator, linear scaling was set at the actuator	Linear scaling is only possible at the load for a rotary actuator
For a linear actuator, rotary scaling was set at the actuator	Rotary scaling is only possible at the load for a linear actuator

▼ Attributes

Short diagnostics no. (20 bits):	C1142
Long diagnostics no. (32 bits):	020C1142

C1143 Scaling type at load not consistent

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command due to forbidden scaling setting.

Cause	Remedy
For position, velocity and acceleration scaling at the load, the scaling type (rotary / linear) has not been identically set	For position, velocity and acceleration scaling at the load, set the scaling type (rotary / linear) identically

▼ Attributes

Short diagnostics no. (20 bits):	C1143
Long diagnostics no. (32 bits):	020C1143

C1145 Mixed scaling units not allowed

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command due to forbidden scaling setting.

Cause	Remedy
Different scaling units (metric / inch) within the position, velocity, acceleration scalings	Set the scaling units (metric / inch) **identically within the scalings of** position, velocity, acceleration

▼ Attributes

Short diagnostics no. (20 bits):	C1145
Long diagnostics no. (32 bits):	020C1145

C1146 Incr. scaling with natural overflow and modulo not allowed

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command due to forbidden scaling setting.

Cause	Remedy
"Position data scaling: Type" (0x2900:01 / S-0-0076 / --) was set to “incremental" and "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --) to "0" (natural overflow); this is not allowed with modulo format	Set "Position data scaling: Type" to "Absolute format" (0x2900:01 / S-0-0076, bit 7)

▼ Attributes

Short diagnostics no. (20 bits):	C1146
Long diagnostics no. (32 bits):	020C1146

C1151 Config. travel range cannot be displayed internally => enc.2

The configured travel range specifies the overflow limit of the position feedback values.

If this travel range cannot be correctly displayed internally so that error-free position generation is impossible, this error is generated.

Cause	Remedy
Travel range has been incorrectly parameterized	Check and, if necessary, reduce travel range ■ **Absolute format:** Travel range is specified by "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --) ■ **Modulo format:** Travel range is specified by "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --)
Position resolution has been incorrectly parameterized (e.g., value "0")	Check and, if necessary, correct the position resolution ■ "Encoder basic interface ONBOARD: Resolution, position" (0x2410:15 / S-0-0601.10.21 / S-0-2470) ■ "Encoder basic interface OPT_2: Resolution, position" (0x2412:15 / S-0-0601.2.21 / S-0-2420) ■ "Encoder basic interface OPT_3: Resolution, position" (0x2414:15 / S-0-0601.3.21 / S-0-2445
Load gear ratio "Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --) to "Gear ratio: Driving shaft revolutions" (0x6091:02 / S-0-0122 / --) is too big	Adjust the mechanics - or - Reduce the load gear ratio

▼ Attributes

Short diagnostics no. (20 bits):	C1151
Long diagnostics no. (32 bits):	020C1151

C1160 Firmware update active

An error was detected during the execution of the command for switching to the parameterization mode (PM) (C1100).

Cause	Remedy
A firmware update is active. It is not possible to switch to the parameterization mode.	Wait until the firmware update has been completed. Afterwards, switch the control voltage off and back on.

▼ Attributes

Short diagnostics no. (20 bits):	C1160
Long diagnostics no. (32 bits):	020C1160

C1161 Firmware update carried out. Restart required

An error was detected during the execution of the command for switching to the parameterization mode (PM) (C1100).

Cause	Remedy
A firmware update was carried out, but without afterwards switching the device off and back on. It is not possible to switch to the parameterization mode.	Switch the control voltage off and back on to restart the device.

▼ Attributes

Short diagnostics no. (20 bits):	C1161
Long diagnostics no. (32 bits):	020C1161

C1168 Enabled firmware functions not allowed

When the parameterization mode is activated (command C1100), the activatability of firmware functions is checked to make sure that the processor’s computing power suffices for the activated firmware functions and that the hardware supports the firmware functions.

Cause	Remedy
More firmware functions than allowed have been activated	Reduce the number of activated firmware functions ["Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714)]. Make sure that the sum of performance points of activated firmware functions ["Optional firmware functions: Active" (0x2A00:02 / P-0-2003.0.2 / P-0-1715)] does not exceed the maximum value ["Optional firmware functions: Performance points, maximum" (0x2A00:07 / P-0-2003.0.7 / P-0-1720)].
The activated firmware function is not supported by the hardware	Deactivate the firmware function for which your device does not possess the required hardware ["Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714)]

▼ Attributes

Short diagnostics no. (20 bits):	C1168
Long diagnostics no. (32 bits):	020C1168

Detailed diagnostics

00020011

Maximum performance points exceeded due to enabled firmware functions

00020012

Enabled firmware function is not supported by hardware

C1169 Firmware function not enabled

The command for activating the parameterization mode was started (C1100), it is not possible to execute the command.

Cause	Remedy
Settings for a non-activated firmware function were made in a parameter	Number of faulty parameter can be found in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --). Check setting in the faulty parameter. - or - Activate firmware function via "Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714)
Hardware is not available for activated firmware function	Deactivate firmware function via "Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714) - or - Expand hardware

▼ Attributes

Short diagnostics no. (20 bits):	C1169
Long diagnostics no. (32 bits):	020C1169

Detailed diagnostics

00020003

High-performance control is not available

Cause/Remedy 1: Cause: High-performance control is only available as a B sample function; therefore, it is required to enable the function. Remedy: Add the value 0x00000002D in the parameter for enabling functions P-0-2005.

Cause/Remedy 2: Remedy: Switch off high-performance control (P-0-0556, bit 2="0").

00020004

Change of B sample activation detected -> Restart required

0044C7F3
Redundant motor encoder not enabled

0044C7F4
Measuring wheel mode not enabled

C1170 Maximum length of connection exceeded -> S-0-0423

When the parameterization mode had been activated (C1100), it was noted that the maximum connection length was exceeded.

Cause	Remedy
The resulting connection length, that results from the data length of all configured IDNs of a connection, has exceeded the maximum connection length. **NOTE:** A maximum of 8 IDNs with a resulting useful data length of 16 bytes can be configured.	For the IDN of the faulty parameter, see "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --). Correct the setting of the faulty parameter

▼ Attributes

Short diagnostics no. (20 bits):	C1170
Long diagnostics no. (32 bits):	020C1170
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1171 Invalid connection configuration -> S-0-0423

When the parameterization mode had been activated (C1100), it was noted that the configuration of ctrlX DRIVElink is invalid.

Cause	Remedy
In "DRIVElink connection 1: Configuration list" (0x2DA2:04 / P-0-1843 / --), IDNs were configured that are not allowed for the **Producer connection** of ctrlX DRIVElink.	For the allowed IDNs, see "DRIVElink function: List of config. actual value parameters" (0x2DA0:10 / P-0-1838 / --). Correct "DRIVElink connection 1: Configuration list" (0x2DA2:04 / P-0-1843 / --) so that it only contains IDNs from "DRIVElink function: List of config. actual value parameters" (0x2DA0:10 / P-0-1838 / --)

Cause	Remedy
In "DRIVElink connection 2: Configuration list 1" (0x2DA4:04 / P-0-1853 / --), IDNs were configured that are not allowed for the **Consumer connection** of ctrlX DRIVElink.	For the allowed IDNs, see "DRIVElink function: List of config. command value parameters" (0x2DA0:11 / P-0-1839 / --). Correct "DRIVElink connection 2: Configuration list 1" (0x2DA4:04 / P-0-1853 / --) so that it only contains IDNs from "DRIVElink function: List of config. command value parameters" (0x2DA0:11 / P-0-1839 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1171
Long diagnostics no. (32 bits):	020C1171
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1172 DRIVElink: Communication status not in Operational

When the parameterization mode had been activated (C1100), it was noted that the communication status is not in Operational.

Cause	Remedy
The ctrlX DRIVElink communication was not started in CM	In the ctrlX DRIVElink master, check the preset target state of the ctrlX DRIVElink basic communication in CM ["DRIVElink function: Target State in CM" (0x2DA0:04 / P-0-1864 / --)].
Expected slaves and detected slaves do not match	In the ctrlX DRIVElink master, check the list of expected slaves ["DRIVElink function: Expected slaves" (0x2DA0:06 / P-0-1869 / --)] (see also E4013)
The master-slave configuration in the group is not correct. There is no master or more than one master in the ctrlX DRIVElink group	Check the ctrlX DRIVElink configurations of all ctrlX DRIVElink nodes ["DRIVElink function: Configuration" (0x2DA0:01 / P-0-1862 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C1172
Long diagnostics no. (32 bits):	020C1172

C1173 DRIVElink: Connection configuration changed -> C7400

When the parameterization mode had been activated (C1100), it was noted that the connection configuration of ctrlX DRIVElink had been changed.

Cause	Remedy

Cause	Remedy
Connection configuration of ctrlX DRIVElink was changed	Start command C7400 to activate the DRIVElink configuration mode, deactivate the connections via ctrlX DRIVElink and apply the changed connection configuration.

▼ Attributes

Short diagnostics no. (20 bits):	C1173
Long diagnostics no. (32 bits):	020C1173

C1175 Error when writing to the non-volatile memory

An error occurred while writing to the non-volatile memory when activating the parameterization mode (C1100).

The parameters of the eLION AD options are stored in the non-volatile memory of the drive controller.

If the parameters are not written to the non-volatile memory, this error is triggered.

Cause	Remedy
The drive controller memory is not accessible	Restart the drive controller. If the problem persists, please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C1175
Long diagnostics no. (32 bits):	020C1175
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1176 Faulty communication with subsystem

When the parameterization mode had been activated (C1100), an error occurred regarding the communication to the subsystem.

Communication between the drive controller and the eLION AD option is faulty. The configuration of the pins of the eLION AD option is correct but cannot be reloaded.

Cause	Remedy
An error has occurred in the eLION AD option	Restart the drive controller. If the problem persists, please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C1176
Long diagnostics no. (32 bits):	020C1176

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1181 Commutation resolution too small

The commutation or commutation initialization via the encoder selected as commutation encoder is not possible.

Cause	Remedy
Parameterized mechanics does not allow unequivocal commutation via the selected encoder	▪ Reduce "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --) ▪ Adjust the gears ["Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --), "Gear ratio: Driving shaft revolutions"(0x6091:02 / S-0-0122 / --), ...] ▪ Use suitable encoder (e.g., multi-turn)
In case third-party motors are used: Number of pole pairs/pole pair distance is too low	Check number of pole pairs/pole pair distance of third-party motor (manufacturer's specification) and correct it, if necessary ["Motor basic data: Number of pole pairs / pole pair distance" (0x2010:03 / P-0-0018/ --)]

▼ Attributes

Short diagnostics no. (20 bits):	C1181
Long diagnostics no. (32 bits):	020C1181

C1183 Error during initialization of motor control->S-0-0423

When the parameterization mode had been activated (command C1100), an error was detected during the initialization of motor control.

Cause	Remedy
The combination of the following parameters is invalid: ▪ "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --) ▪ "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) ▪ "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --) The invalid parameters were entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).	Check the parameters entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) and correct the parameters

▼ Attributes

Short diagnostics no. (20 bits):	C1183
Long diagnostics no. (32 bits):	020C1183

C1184 Invalid motor data in encoder memory ->S-0-0423

During the switching from the configuration mode to the parameterization mode (CM to PM), an error was detected when reading the motor data from the data memory of the motor encoder.



The affected parameters are entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

Cause	Remedy
Data memory of motor encoder is defective	Replace measuring system
Motor data in encoder memory are invalid	Data memory of motor has to be written again by a Bosch Rexroth staff member

▼ Attributes

Short diagnostics no. (20 bits):	C1184
Long diagnostics no. (32 bits):	020C1184

C1185 No motor data in encoder memory ->S-0-0423

During the switching from the configuration mode to the parameterization mode (CM to PM), an error was detected in the parameterization of the type of construction of the motor.

Cause	Remedy
In "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --), the parameterization was such that a motor with encoder data memory is used. No encoder data memory was detected in the attempt to read the encoder data memory. A motor **without** encoder data memory has been connected	Correctly parameterize the type of construction of the motor ["Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --)] or connect a motor with encoder data memory

▼ Attributes

Short diagnostics no. (20 bits):	C1185
Long diagnostics no. (32 bits):	020C1185

C1187 Error during initialization of motor data ->S-0-0423

During the switching from the configuration mode to the parameterization mode (CM to PM), an error was detected during the initialization of the motor data.



The affected parameters are entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

Cause	Remedy

Cause	Remedy
Invalid motor data stored in motor data memory	Replace motor **- or -** Contact service department to get support with correction of motor data

▼ Attributes

Short diagnostics no. (20 bits):	C1187
Long diagnostics no. (32 bits):	020C1187

C1188 Combination of motor and encoder is incorrect

During the switching from the configuration mode to the parameterization mode (CM to PM), an error was detected regarding the motor and encoder used.

Cause	Remedy
Linear motor has been configured and rotary encoder is used	Linear motors can only be operated with linear encoders as motor encoders (encoder 1), and rotary motors only with rotary encoders
Rotary motor has been configured and linear encoder is used as motor encoder (encoder 1)	Linear motors can only be operated with linear encoders as motor encoders (encoder 1), and rotary motors only with rotary encoders. Linear encoder can be configured as external encoder (encoder 2) and then be operated as motor encoder; observe application-related restrictions.
Linear motor has been configured and external encoder (encoder 2) is to be used as motor encoder	With a linear motor, external encoder cannot be used as motor encoder. Configure the encoder as motor encoder (encoder 1)

▼ Attributes

Short diagnostics no. (20 bits):	C1188
Long diagnostics no. (32 bits):	020C1188
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

C1197 Impossible to activate parameterization mode => encoder 2

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command.

Cause	Remedy
The device is in an invalid state.	Reboot the device. If error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	C1197
Long diagnostics no. (32 bits):	020C1197

Detailed diagnostics

0044006C

0x24B6:02 / P-0-0178 could not be set to invalid

0044006D

Not all parameters (0x24B6:01 / S-0-0613.2.156, 0x24B6:02 / P-0-0178 and 0x24B6:03 / P-0-0178.0.1) could be set to invalid

C1198 Impossible to activate parameterization mode

The command for activating the parameterization mode was started (C1100), but it is not possible to execute the command.

Cause	Remedy
The device is in an invalid state	Reboot the device. If error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	C1198
Long diagnostics no. (32 bits):	020C1198

Detailed diagnostics

00400003

Transition command blocked by parking axis, timeout

Cause/Remedy 1: Cause: The "Parking axis" or "Stop parking axis" command is running and the CM->PM transition command was started.
Remedy: Wait for the parking axis commands to finish before starting the transition command.

0044002B

0x24B4:02 / P-0-0177 could not be set to invalid

0044002D

Encoder 1: Absolute encoder offset in OEM memory could not be set to invalid

00440113

Encoder 1: Not all parameters (0x24B4:01 / S-0-0613.1.156 / P-0-3888, 0x24B4:02 / P-0-0177 and 0x24B4:03 / P-0-0177.0.1 / P-0-3819) could be set to invalid

004421F5

Measuring encoder: Unable to set 0x24B7:02 / P-0-0179 to invalid

004421F7

Measuring encoder: Undocumented initialization error (InitPos)

004421FB

Measuring encoder: Not alle parameters (0x24B7:01 / S-0-0613.3.156, 0x24B7:02 / P-0-0179 and 0x24B7:03 / P-0-0179.0.1) could be set to invalid

00442208

Measuring encoder: Absolute encoder offset in encoder OEM memory could not be set to invalid (0x24B7:01 / S-0-0613.3.156)

00442223

Measuring encoder: Undocumented initialization error (InitData)

00670006

Release by resource still set

00670007

There is a fatal boot error

00670008

Scaling settings error

C1199 Configuration changed. Restart

When the parameterization mode had been activated (command C1100), the configuration was detected to have been changed without the drive having been restarted.

Cause	Remedy
"MCI configuration: Master communication, protocol" (0x2C00:01 / P-0-4089.0.1 / P-0-2310) was changed	Restart drive to apply changed selection of field bus protocol

Cause	Remedy
"Drive profile function: Selected" (0x2890:01 / P-0-4084 / --) was changed	Restart drive to apply changed selection of application profile

For enabling firmware functions see also Productivity package

See also Basic functions of master communication

▼ Attributes

Short diagnostics no. (20 bits):	C1199
Long diagnostics no. (32 bits):	020C1199

Detailed diagnostics

00770011

DRIVElink firmware function not activated

Cause/Remedy 1: Activate the DRIVElink firmware function or deactivate DRIVElink. Restart the device.

00770012

New DRIVElink configuration compared to boot time

Cause/Remedy 1: Reset the DRIVElink configuration or restart the device to activate the configuration.

C1208 Setting not possible for asynchronous motor

An error was detected during the execution of the command for commutation offset setting (C1200).

An attempt was made to determine the commutation offset for an asynchronous motor. The commutation offset cannot be determined for asynchronous motors.

▼ Attributes

Short diagnostics no. (20 bits):	C1208
Long diagnostics no. (32 bits):	000C1208

C1211 Commutation offset could not be determined

An error was detected during the execution of the command for commutation offset setting (C1200).



A more detailed diagnostics is possible through Fxxxx error messages that are simultaneously output.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1211
Long diagnostics no. (32 bits):	000C1211

C1212 Motion range exceeded during commutation

An error was detected during the execution of the command for commutation offset setting (C1200): the axis has left the allowed actual position value range.

Cause	Remedy
Command was started while axis had still been moving	Wait until axis has come to standstill and restart command
Axis was moved by mechanical force	Exclude influence of mechanical force
The parameter values are too large for angle acquisition. Possibly, mechanical axis conditions, such as friction and load due to weight, have changed	Reduce parameter values for angle acquisition ■ "Ident. commutation offset sine-wave method: Amplitude" (0x2184:01 / P-0-0514 / --) ■ "Ident. commutation offset sine-wave method: Frequency" (0x2184:02 / P-0-0520 / --)

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1212
Long diagnostics no. (32 bits):	000C1212

C1214 Command only possible with linear synchronous motor

An error was detected during the execution of the command for commutation offset setting (C1200).

Cause	Remedy
Connected motor is not a linear synchronous motor	-
Connected motor is a linear synchronous motor, but "Motor basic data: Type of construction" (0x2010:01 / P-0-4014 / --) was incorrectly set or "Motor basic data: Number of pole pairs / pole pair distance" (0x2010:03 / P-0-0018 / --) was set to "0"	Check parameterization
Selected method for determining the commutation offset (currentless) is only possible for linear synchronous motors with absolute encoder	Use method for determining the commutation offset that is suitable for the hardware used ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C1214
Long diagnostics no. (32 bits):	000C1214

C1215 Command only possible in 'bb'

An error was detected during the execution of the command for commutation offset setting (C1200).

Cause	Remedy
Determining the commutation offset with the currentless method [see "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --)] is only possible if drive is in "ready for operation" (bb) state. Drive is not yet ready for operation (bb) **- or -** Drive already is in drive enable (AF) state	Bring drive to "ready for operation" (bb) state

▼ Attributes

Short diagnostics no. (20 bits):	C1215
Long diagnostics no. (32 bits):	000C1215

C1216 Commutation determination not selected

An error was detected during the execution of the command for determining the commutation offset (C1200).

Cause	Remedy
No method was selected for determining the commutation offset	In "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --), set a method for determining the commutation offset

▼ Attributes

Short diagnostics no. (20 bits):	C1216
Long diagnostics no. (32 bits):	000C1216

C1217 Setting only possible in 'Ab'

An error was detected during the execution of the command for determining the commutation offset (C1200).

Cause	Remedy
The drive had not been ready for power output at the start of the command; the display did not show "Ab"	▪ Switch drive to communication phase 4 ⇒ If no error is present, the display shows "bb" (ready for operation) ▪ Switch on power ⇒ Drive goes to operating mode, the display shows"Ab" (drive ready) ▪ Start command C1200

▼ Attributes

Short diagnostics no. (20 bits):	C1217
Long diagnostics no. (32 bits):	000C1217

C1218 Automatic commutation: Current too low

The amplitude of the actual current value, that results from commutation setting using the saturation method, is monitored. During the execution of the command for determining the commutation offset (C1200), the amplitude of the actual current value has not reached the minimum threshold.

Cause	Remedy
Amplitude of actual current value does not suffice for safely determining the commutation offset	Increase "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or reduce "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) and restart the command for determining the commutation offset (C1200) **- or -** Enter value "0" for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting **- or -** If the commutation setting is repeated multiple times at different motor positions (drive remains in "Ab") and approx. 30 similar values are determined for "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --): **Iteratively** reduce "Ident. commutation offset saturation method: Harmonics rate" (0x2182:03 / P-0-0517 / --) until the command error C1218 no longer occurs. Finally, check the function multiple times!



If the error occurs repeatedly, please contact our service department.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1218
Long diagnostics no. (32 bits):	000C1218

C1219 Automatic commutation: Overcurrent

An error was detected during the execution of the command for determining the commutation offset (C1200).

Cause	Remedy
Amplitude of actual current value is higher than allowed maximum current	Reduce "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or increase "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --). **- or -** Enter value "0" in "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting.

▼ Attributes

Short diagnostics no. (20 bits):	C1219
Long diagnostics no. (32 bits):	000C1219

C1220 Automatic commutation: Timeout

An error was detected during the execution of the command for determining the commutation offset (C1200).

Cause	Remedy
Due to the commutation setting routine, the axis may slightly move away from its initial position. With the "return to start position" function [can be activated in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --)], the axis again moves to the position it had before the start of commutation setting. An error occurred in the process. Possible causes may be that the axis is blocked, the load is too big or that very high cogging torques exist.	To locate the source of the error, the return function may be switched off. It might be possible to entirely do without the return function (not recommended for sine-wave method). In the control unit then track the position during commutation setting, or apply the position at the end. Remove cause, if possible. Increase torque limitation, if necessary.
An error occurred in the signal generator	Switch drive off and then back on. If the error continues to occur, contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C1220
Long diagnostics no. (32 bits):	000C1220

C1221 Automatic commutation: Iteration without result

The determination of the commutation offset (command C1200) failed. It had been impossible to find appropriate values for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) and "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) or "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --) used to achieve sufficient magnetic saturation effects in the motor. Therefore, it had been impossible to determine a suitable value for the commutation offset.

Cause	Remedy

Cause	Remedy
Test current generated in the motor is too low	*Only if bit 2-0="010" has been set in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --):* Increase "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or reduce "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) or "Ident. commutation offset saturation method: Factor current" so that a higher test current is achieved. Enter value "0" for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting. **Iteratively** reduce "Ident. commutation offset saturation method: Harmonics rate" (0x2182:03 / P-0-0517 / --). **Note:** Afterwards, check at multiple different motor positions that the commutation offset is determined correctly! If changing the values was unsuccessful, check whether it is possible to use a different method for setting the commutation offset.
The current level for determining the commutation offset does not match	*Only if bit 2-0="101" has been set in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --):* The current level is specified via "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --). The appropriate current level could not be determined correctly. Proceed as described: 1. Manually specify a value in "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --). If "0" has been specified or if the initial commissioning mode has been selected, enter half the value displayed in 0x2182:04 / P-0-0518 / -- in 0x2182:04 / P-0-0518 / --. 2. Restart C1200.
Type current of controller is too low for using saturation method to set the commutation offset	Check whether it is possible to use a different method for setting the commutation offset - or - Use a controller that is able to supply the motor with sufficiently high current (for Bosch Rexroth kit motors, the required minimum current for magnetic saturation effects is approx. the 2.0...2.5-fold continuous current at standstill)
Motor has no or only very low saturation effects ("ironless motor")	Check whether it is possible to use a different method for setting the commutation offset
Motor not correctly connected	Check connections of motor phases to controller. Check all motor phases from controller to motor for interruptions

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1221
Long diagnostics no. (32 bits):	000C1221

C1222 Error when writing offset parameters

During the execution of the command for determining the commutation offset (C1200), the following parameters are written with the determined value of the commutation offset:

- "Commutation offset: Value" (0x218A:01 / P-0-0508 / --) and
- "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --)

An error or a malfunction occurred when the parameters had been written.

Cause	Remedy
At least one of the parameters "Commutation offset: Value" (0x218A:01 / P-0-0508 / --) or "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --) could not be written with the determined value of the commutation offset	Execute command C1200 again **- or -** Check wiring for noise immunity **- or -** Replace sensor of the encoder **- or -** If necessary, inform our service department
No compatible encoder available for saving of offset	Do not use the "zero point shifting" (commutation offset) function
No compatible encoder available for saving of offset but access to encoder memory is not possible	There is a defect in the encoder. Replace the encoder, the encoder electronics or the evaluation electronics of the encoder.

▼ Attributes

Short diagnostics no. (20 bits):	C1222
Long diagnostics no. (32 bits):	000C1222

Detailed diagnostics

00420701

Access to manufacturer code of motor not possible

Cause/Remedy 1: Cause/Remedy: The manufacturer code of the motor cannot be read. Without a master password, the zero offset is only possible for non-Bosch-Rexroth motors.

00420702

Commutation could not be initialized correctly

Cause/Remedy 1: Cause: For the zero offset to be performed on a commutation basis, the commutation adjustment must be initialized correctly. Remedy: Perform the commutation adjustment first and then the zero offset.

00420703

Commutation offset could not be saved

Cause/Remedy 1: Cause: For the zero point offset, the commutation offset must be defined with "0". The commutation offset could not be saved. Remedy: Repeat the commutation adjustment and zero offset.

00420704

Encoder 1: Absolute encoder offset in OEM memory could not be set to invalid

Cause/Remedy 1: Cause: Following the zero offset, the absolute dimension must be re-set. The absolute encoder offset in the encode is initially set to invalid, but this has failed. Remedy: Repeat the zero offset.

00420705

The configured motor slot is not available

Cause/Remedy 1: Cause/Remedy: Only the on-board slot (slot 10) or slot 2 can be used as the motor encoder.

00420706

Position resolution of the motor encoder is not initialized

Cause/Remedy 1: Cause: The position resolution of the motor encoder is "0". Remedy: Initialize the position resolution of the motor encoder.

00420707

Offset of encoder position not possible

Cause/Remedy 1: Cause: The zero offset of the encoder position could not be completed. Remedy: Repeat the commutation adjustment and zero offset.

00420708

Encoder position offset is not supported for this encoder type

Cause/Remedy 1: Cause: The command "offset encoder position" command is not supported for this encoder

C1223 Command execution impossible

An error was detected during the execution of the command for determining the commutation offset (C1200).

Cause	Remedy
An attempt was made to start command while safety function "Safe torque off" (STO) or "Safe brake control" (SBC) had been active	Only start command execution if safety function STO or SBC is not active
In calculation method for linear motors with relative encoder, the switch required for commutation setting had not been correctly activated	Check switch; if necessary, move motor manually to the correct position

▼ Attributes

Short diagnostics no. (20 bits):	C1223
Long diagnostics no. (32 bits):	000C1223

C1224 Zero point shifting only possible in parameter mode

Cause	Remedy
The command for setting the commutation offset (C1200) was started in the operating mode. In the operating mode, it is impossible to execute the command “zero point/commutation offset shifting" ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --, bit 13="1")]	**Zero point shifting:** Switch the drive controller to parameterization mode, enter the master password and restart the command. **Determining the commutation offset:** Set bit 13="0" in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --) and restart the command.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1224
Long diagnostics no. (32 bits):	000C1224

C1225 Zero point shifting only possible with master password

Cause	Remedy
The command for setting the commutation offset (C1200) was started to shift the zero point/commutation offset ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --, bit 13="1")]. Shifting the zero point is only possible with the master password.	**Zero point shifting:** Enter the master password and restart the command. **Determining the commutation offset:** Set bit 13="0" in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --), switch the drive controller to the operating mode and restart the command.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	C1225
Long diagnostics no. (32 bits):	000C1225

C1301 Class 1 diagnostics error at command start

Cause	Remedy
The "fixed stop drive procedure" command (C1300) cannot be executed, since a class 1 diagnostics error is present	▪ 1. Cancel "fixed stop drive procedure" command (C1300) ▪ 2. Remove class 1 diagnostics error ▪ 3. Restart "fixed stop drive procedure" (C1300) command

▼ Attributes

Short diagnostics no. (20 bits):	C1301
Long diagnostics no. (32 bits):	C00C1301

C1302 Command execution impossible

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command

▼ Attributes

Short diagnostics no. (20 bits):	C1302
Long diagnostics no. (32 bits):	000C1302

C1401 Command not executable in current state of drive

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command
At the time of command start, another command had already been active; only one command can be active at a time	1. Terminate command that had been active before (let it complete or reset it) 2. Restart new command

▼ Attributes

Short diagnostics no. (20 bits):	C1401
Long diagnostics no. (32 bits):	000C1401

C1402 Faulty reference mark signal

An error occurred during the execution of the command for detecting the marker position (C1400). The reference mark signal does not have the allowed signal width or the assignment to the track signals is incorrect.

Cause	Remedy
Encoder sensor incorrectly installed	Correct the installation of the encoder sensor
Reference mark signal disturbed	Check and, if necessary, correct wiring and shielding of the reference mark signal

▼ Attributes

Short diagnostics no. (20 bits):	C1402
Long diagnostics no. (32 bits):	000C1402

C1403 Get marker position encoder 2 impossible

An error was detected during the execution of the command for detecting the marker position (C1400).

Cause	Remedy
Encoder 2 has been parameterized as a homing encoder ["Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] although encoder 2 does not exist	Parameterize encoder 1 as homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)
Encoder 2 has not been activated	Activate encoder 2 in "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1403
Long diagnostics no. (32 bits):	000C1403

C1601 Parking axis not possible with drive enable set

An error occurred during the execution of the command for bringing the axis to the "parking axis" state (C1600).

Cause	Remedy
The command was started when control had been active	Remove drive enable and restart the command

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1601
Long diagnostics no. (32 bits):	000C1601
Related Sercos IDN:	S-0-0139.0.0

C1602 Error when activating parking axis ->S-0-139.0.151

An error occurred during the execution of the command for bringing the axis to the "parking axis" state (C1600).

Cause	Remedy
It is impossible to execute the command because one or multiple parameters are invalid	Read "Parking axis: List of invalid parameters" (0x2380:03 / S-0-0139.0.151 / P-0-1743) and correct the invalid parameters

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1602
Long diagnostics no. (32 bits):	000C1602
Related Sercos IDN:	S-0-0139.0.0

Detailed diagnostics

00400001

"Parking axis" command blocked

Cause/Remedy 1: Cause: The "Parking axis" command was started while the "Stop parking axis" command was still running. Remedy: Start the command only once the "Stop parking axis" command has finished.

Cause/Remedy 2: Cause: The "Parking axis" command was started while the CM->PM or PM->OM transition command was still running. Remedy: Start the command only once the transition commands have finished.

C1604 Parking axis on eLION device not available

It is impossible to execute the command because the "Parking axis" state is not available for eLION inverters.

▼ Attributes

Short diagnostics no. (20 bits):	C1604
Long diagnostics no. (32 bits):	000C1604
Related Sercos IDN:	S-0-0139.0.0

C1605 Error on SafeMotion when activating "Parking axis"

It is impossible to activate "Parking axis" because the safety technology detected and signaled an error.



For more detailed information, please see the diagnostics and detailed diagnostics that the safety technology signals.

▼ Attributes

Short diagnostics no. (20 bits):	C1605
Long diagnostics no. (32 bits):	000C1605
Related Sercos IDN:	S-0-0139.0.0

Detailed diagnostics

00400004

Error when switching to/from parking axis in the safety technology

Cause/Remedy 1: Switch from CM<->PM and PM<->OM with the "parking axis" switched off. Check the configuration of the safety technology.

C1701 Initialization error of axis (CM->PM) ->S-0-0139.0.151

During the execution of the command for disabling the "parking axis" state (C1700), axis control has to be completely reinitialized. An error occurred in the process. For advanced diagnostics, proceed as described:

1. Switch to the configuration mode (CM).
2. Restart the command C1700.
3. Try switching to the parameterization mode (PM); more error details will be generated during the command execution.
4. Remove the error causes with the aid of the error details.



The parameters causing conflicts are listed in "Parking axis: List of invalid parameters" (0x2380:03 / S-0-0139.0.151 / P-0-1743).

Cause	Remedy
The "parking axis" command is often used for replacing the motor. The most frequent error cause is that the motor is not connected correctly or the encoder is not yet ready for communication with the drive controller.	Before disabling the "parking axis" command, make sure that the motor is connected correctly and the encoder is ready for communication with the controller.
The new encoder or motor does not comply with the configuration in the drive controller; therefore, it is impossible to initialize the encoder and motor control correctly.	Switch to the configuration mode (CM) and adjust the motor or axis control parameters to the actually connected motor and encoder.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1701
Long diagnostics no. (32 bits):	000C1701
Related Sercos IDN:	S-0-0139.0.150

C1702 Initialization error of axis (PM->OM) ->S-0-0139.0.151

During the execution of the command for disabling the "parking axis" state (C1700), axis control has to be completely reinitialized. An error occurred in the process. For advanced diagnostics, proceed as described:

1. Switch to the parameterization mode (PM).
2. Restart the command C1700.
3. Try switching to the configuration mode (CM); more error details will be generated during the command execution.
4. Remove the error causes with the aid of the error details.



The parameters causing conflicts are listed in "Parking axis: List of invalid parameters" (0x2380:03 / S-0-0139.0.151 / P-0-1743).

Cause	Remedy

Cause	Remedy
The "parking axis" command is often used for replacing the motor. The most frequent error cause is that the motor is not connected correctly or the encoder is not yet ready for communication with the drive controller.	Before disabling the "parking axis" command, make sure that the motor is connected correctly and the encoder is ready for communication with the controller.
The motor or axis control parameters are not allowed with the motor; therefore, it is impossible to initialize the motor or axis control parameters correctly.	Switch to the parameterization mode (PM) and adjust the motor or axis control parameters to the actually connected motor and encoder.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1702
Long diagnostics no. (32 bits):	000C1702
Related Sercos IDN:	S-0-0139.0.150

Detailed diagnostics

00400002

"Stop parking axis" command blocked

Cause/Remedy 1: Cause: The "Stop parking axis" command was started while the "Parking axis" command was still running. Remedy: Start the command only once the parking axis has been activated.

Cause/Remedy 2: Cause: The "Stop parking axis" command was started while a transition command was still running. Remedy: Start the command only once the transition commands have finished.

C1703 Safety technology cannot disable parking axis

An error occurred during the execution of the command for disabling the "parking axis" state (C1700).

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from disabling the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1700.

See also Parking axis

▼ Attributes

Short diagnostics no. (20 bits):	C1703
Long diagnostics no. (32 bits):	000C1703

Related Sercos IDN:	S-0-0139.0.150

Detailed diagnostics

00400004

Error when switching to/from parking axis in the safety technology

Cause/Remedy 1: Switch from CM<->PM and PM<->OM with the "parking axis" switched off. Check the configuration of the safety technology.

C1801 Start requires drive enable

Cause	Remedy
Impossible to start the command C1800, because drive enable not set	Set drive enable and restart command C1800

▼ Attributes

Short diagnostics no. (20 bits):	C1801
Long diagnostics no. (32 bits):	000C1801

C1802 No useful motor data

The motor data are checked for validity when starting the automatic setting of axis control (C1800).

For drive systems with Rexroth motors, while the controller is powering up, the parameter values are loaded from encoder data memory and power section memory.

Cause	Remedy
One of the following parameters has a value ≤ "0", which would result in incorrect calculation of controller parameters: ■ "Motor basic data: Torque/force constant" (Motor basic data: Torque/force constant / 0x2010:02 / P-0-0051 / --) ■ "Motor basic data: Number of pole pairs / pole pair distance" (0x2010:03 / P-0-0018 / --) ■ "Inverter type data: Peak current" (0x2314:02 / S-0-0110 / --)	**For Rexroth motors with encoder data memory:** Service staff writes saved motor parameters or motor is replaced **For Rexroth motors without encoder data memory and for third-party motors:** User writes motor parameters with correct values **For faulty "Inverter type data: Peak current" (0x2314:02 / S-0-0110 / --):** Service staff writes parameter saved in power section or device is replaced

▼ Attributes

Short diagnostics no. (20 bits):	C1802
Long diagnostics no. (32 bits):	000C1802

C1803 Inertia detection failed

Automatic setting of axis control was aborted. The mass inertia (sum of rotor inertia and load inertia) could not be determined.

"Axis control optimization: Control word" (0x2206:05 / P-0-0165 / --) may be used to parameterize whether or not the mass inertia is to be determined with a measuring run, **or** if the values from "Motor basic data: Rotor inertia" (0x2010:04 / P-0-0510 / --) and "Axis mechanical data: Load inertia" (0x2204:01 / P-0-4010 / --) are to be applied.

Mass inertia is determined with a measuring run

Cause	Remedy
Drive acceleration too low	Increase the travel velocity that takes effect during drive optimization ["Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --)] - or - In ctrlX DRIVE Engineering, increase "Axis control optimization: Periodic time" (0x2206:01 / P-0-0161 / --) by using the automatic setting of axis control
Load inertia too high	Increase "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) - or - Check and, if necessary, correct the drive sizing
Motor speed too low	Increase the travel velocity that takes effect during drive optimization ["Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --)] - or - Increase "Feedrate override: Value" (0x282E:01 / S-0-0108 / --)
Inadequate motion profile for measuring run	In ctrlX DRIVE Engineering, increase "Axis control optimization: Periodic time" (0x2206:01 / P-0-0161 / --) by using the automatic setting of axis control
Sum of "Motor basic data: Rotor inertia" (0x2010:04 / P-0-0510 / --) and "Axis mechanical data: Load inertia" (0x2204:01 / P-0-4010 / --) is equal to "0"	Parameterize "Motor basic data: Rotor inertia" (0x2010:04 / P-0-0510 / --) and "Axis mechanical data: Load inertia" (0x2204:01 / P-0-4010 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1803
Long diagnostics no. (32 bits):	000C1803

C1804 Automatic controller setting failed

The automatic setting of axis control has failed.

In exceptional cases, with automatic setting of axis control it is not possible to find suitable control loop parameters that guarantee sufficient system stability.
In this case, the default or standard values are loaded to the drive.

Cause	Remedy
Oscillating mechanical systems (resonances) **- or -** Highly noisy encoder signals	In many cases, a stable result can be achieved by restarting command C1800 with an increased "Axis control optimization: Damping factor" (0x2206:03 / P-0-0163 / --), and thus, lower dynamics. The damping factor can then still be reduced until control loop behaves as desired. If resonance frequencies of system are known, resonance points are to be damped with filters ["Velocity control loop filter: Filter type" (0x2222:01 / P-0-1120/ --)] before starting command C1800. Using a filter in velocity control loop can be advantageous even with very noisy encoder signals.
Test velocity equal to "0"	Parameterize "Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1804
Long diagnostics no. (32 bits):	000C1804

C1805 Travel range invalid

When the automatic setting of axis control (C1800) is started, a check is made to find out whether the defined travel range is sufficient or not.

Cause	Remedy
Defined travel range is too small	Define travel range such that it is greater than or equal to minimum required travel range: ■ Rotary motors: 90 degrees of an electrical revolution (electrical revolution = mechanical revolution / number of pole pairs) ■ Linear motors: a quarter of a pole pair distance **Parameters for travel range during drive optimization:** "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --) "Axis control optimization: Travel distance" (0x2206:09 / P-0-0169 / --)
The value for "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) is greater than "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --)	Enter useful values for "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) and "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1805
Long diagnostics no. (32 bits):	000C1805

C1806 Travel range exceeded

During automatic setting of axis control, the defined travel range is continuously monitored. This travel range can be set as follows:

- Enter the limits in "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) and "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --)
  - or -
- Enter a relative travel distance in "Axis control optimization: Travel distance" (0x2206:09 / P-0-0169 / --) (required for modulo axes).

The travel range was exceeded, the drive is positioned at the start position in a position-controlled way (position at command start). [For positioning to the start position, the motion data of "Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --) and "Axis control optimization: Acceleration" (0x2206:0A / P-0-0170 / --) are used.]

Cause	Remedy
Actual position has exceeded defined travel range	Increase defined travel range
Defined travel range is insufficient for measuring run	Increase the travel velocity that takes effect during drive optimization ["Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --)]
	In ctrlX DRIVE Engineering, increase "Axis control optimization: Periodic time" (0x2206:01 / P-0-0161 / --) by using the automatic setting of axis control

▼ Attributes

Short diagnostics no. (20 bits):	C1806
Long diagnostics no. (32 bits):	000C1806

C1807 Determining travel range only via travel distance

Cause	Remedy
Axis has modulo scaling. An attempt was made to parameterize the travel range for drive optimization via end positions ["Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --), "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --)]. However, the unequivocal assignment of absolute end positions is not possible due to the periodic, recurring position range in the case of modulo scaling.	Set travel range for automatic setting of axis control by parameterizing "Axis control optimization: Travel distance" (0x2206:09 / P-0-0169 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C1807
Long diagnostics no. (32 bits):	000C1807

C1808 Drive has not been homed

An error occurred during the execution of the command for drive optimization (C1800).

Cause	Remedy
Drive had not been homed	Establish reference and execute command C1800 again

▼ Attributes

Short diagnostics no. (20 bits):	C1808
Long diagnostics no. (32 bits):	000C1808

C1809 Command start only possible with active position limits

Cause	Remedy
Command C1800 was started without the position limits being active	Activate position limits [e.g., via "Axis polarity: Position" (0x290A:01 / S-0-0055 / --, bit 4)] and restart command C1800

▼ Attributes

Short diagnostics no. (20 bits):	C1809
Long diagnostics no. (32 bits):	000C1809

C1810 Drive optimization incorrectly configured

The command for drive optimization (C1800) was started with an incorrect configuration.

Cause	Remedy
The configuration of at least one of the following parameters was changed since the command for drive optimization (C1800) had been started the last time: ■ "Axis control optimization: Periodic time" (0x2206:01 / P-0-0161 / --) ■ "Axis control optimization: Application" (0x2206:04 / P-0-0164 / --) ■ "Axis control optimization: Control word" (0x2206:05 / P-0-0165 / --) ■ "Axis control optimization: End position negative" (0x2206:06 / P-0-0166 / --) ■ "Axis control optimization: End position positive" (0x2206:07 / P-0-0167 / --) ■ "Axis control optimization: Travel distance" (0x2206:09 / P-0-0169 / --) ■ "Axis control optimization: Acceleration" (0x2206:0A / P-0-0170 / --) ■ "Axis control optimization: Velocity" (0x2206:0B / P-0-0171 / --) Starting the automatic control loop setting via the control panel for subsequent optimization is only possible if the configuration of the mentioned parameters was not changed since the command had been started the last time.	Execute command again via "Axis control optimization: C1800 Command" (0x2206:02 / P-0-0162 / --) or ctrlX DRIVE Engineering

▼ Attributes

Short diagnostics no. (20 bits):	C1810

Long diagnostics no. (32 bits):	000C1810

C1811 Unexpected interruption of command execution

The command for drive optimization (C1800) was interrupted unexpectedly.

Drive enable is permanently required for successful command execution. The proper termination or cancellation of the command execution should be carried out via "Axis control optimization: C1800 Command" (0x2206:02 / P-0-0162 / --) or ctrlX DRIVE Engineering.

Cause	Remedy
An error or fatal warning occurred during the command execution, consequently, an error reaction of the drive was triggered	Eliminate the cause of the error depending on the corresponding diagnostics, subsequently execute command C1800 again via "Axis control optimization: C1800 Command" (0x2206:02 / P-0-0162 / --) or ctrlX DRIVE Engineering
During the command execution, drive enable was switched off	Switch on drive enable, subsequently execute command C1800 again via "Axis control optimization: C1800 Command" (0x2206:02 / P-0-0162 / --) or ctrlX DRIVE Engineering

▼ Attributes

Short diagnostics no. (20 bits):	C1811
Long diagnostics no. (32 bits):	000C1811

C2001 Command not enabled

The execution of the command C2000 for releasing the brake was aborted by an error.

Cause	Remedy
The command can only be executed if the parameterization is such that a brake is available	If a brake is available, set "Brake control: Configuration" (0x2032:01 / P-0-0525 / --) bit 2="1"

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2001
Long diagnostics no. (32 bits):	000C2001

Detailed diagnostics

00410001

"Release brake" command not activated or configured incorrectly (0x2032:01 / P-0-0525)

Cause/Remedy 1: Remedy: Check 0x2032:01 / P-0-0525, bit 2="1" (brake present)

Cause/Remedy 2: Remedy: Check 0x2032:01 / P-0-0525, bit 5="1" (brake release permitted)

Cause/Remedy 3: Remedy: Check drive status (no F2026 pending)

Cause/Remedy 4: Remedy: Switch drive to PM or higher

C2002 Command not allowed

The execution of the command "Brake control: C2000 Release command" (0x2032:05 / P-0-0542 / --) was aborted by an error.

Cause	Remedy
An attempt was made to start the command while safety function "Safe brake control" (SBC) had been active	**When using an optional module "Safe Torque Off" (optional safety technology module T0):** While safety function "Safe brake control" (SBC) is active, the command cannot be executed
	When using an optional module "Safe Motion" (optional safety technology module Mx): ▪ In "SMO safe braking and holding function: Configuration" (0x315C:02 / P-0-3265.0.1 / P-0-2544), enable the releasing of the holding brake while safety function "Safe brake control" is active. ▪ ▪ Restart command C2000.
An attempt was made to start the command while the "parking axis" function had been active	Terminate "parking axis" function by executing command "Parking axis: C1700 Disable procedure command" (0x2380:02 / S-0-0139.0.150 / P-0-1742) and then execute command C2000 again

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2002
Long diagnostics no. (32 bits):	000C2002
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00410000

"Release brake" command cannot be executed (SBC active)

Cause/Remedy 1: Remedy: Deselect SBC

Cause/Remedy 2: Remedy: Deactivate SBC

Cause/Remedy 3: Remedy: Exiting the operating mode CM

C2101 Brake test requires drive enable

An error occurred during the execution of the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --).

Cause	Remedy
Command C2100 was activated without drive enable ("AF") having been set	▪ Switch drive to "AF" ▪ Restart command C2100

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2101
Long diagnostics no. (32 bits):	000C2101

C2103 Torque/force of brake too low

When the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --) had been executed, the torque or the force of the brake was detected to be too low.

Cause	Remedy
Due to storage, brake is covered with an oxide layer	By again starting the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --), it might be possible to rub off the oxide layer so that the brake is fully operational again
Brake is wetted with oil or grease **- or -** Brake is worn	If braking torque is still too low after several attempts to reestablish it, brake or motor must be replaced.

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2103
Long diagnostics no. (32 bits):	000C2103

C2104 Command execution impossible

It was not impossible to start the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --).

Cause	Remedy
Brake control has not been activated	Activate brake control ["Brake control: Configuration" (0x2032:01 / P-0-0525 / --)]
Value for torque/force of the brake is "0"	In "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --), enter the correct value for torque/force of the brake

Cause	Remedy
In case integrated safety technology is used: Drive is in a safe operating state [cf. "SMO state machine: Operating status" (0x3082:04 / P-0-3231 / --)]	Deselect safe operating state and execute C2100 again
An attempt was made to start the command while the "parking axis" function had been active	Terminate "parking axis" function by executing command "Parking axis: C1700 Disable procedure command" (0x2380:02 / S-0-0139.0.150 / P-0-1742) and then execute command C2100 again

See brake

See also SafeMotion documentation

▼ Attributes

Short diagnostics no. (20 bits):	C2104
Long diagnostics no. (32 bits):	000C2104

C2105 Load of holding system greater than test torque/force

It was not impossible to start the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --). The current load due to weight of the axis was detected to be greater than the force or the torque with which the blocking of the axis is checked on the drive side.



To reliably block the axis, the holding torque or the holding force has to be greater than the load due to weight of the axis. Therefore, the test torque or the test force also has to be greater than the load due to weight.

The test torque depends on the value in "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --):

If "Brake check: Nominal load of holding system"="0", the test torque corresponds to the value entered in "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --).

Cause	Remedy
Load due to weight is greater than the entered nominal load (if "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is unequal to "0")	*Remedy during initial commissioning:* Determine load due to weight of axis and compare it to value entered in "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --). If necessary, correct (increase) value.
	Remedy during operation of axis drive: **DANGER!** Dangerous movements! Danger to life, risk of injury, serious injury or property damage! Check why load due to weight of axis is increased compared to initial commissioning. Reduce load due to weight **- or -** Determine load due to weight of axis and compare it to value entered in "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --). If necessary, increase the value in 0x2034:06 / P-0-0547. Check drive sizing!

Cause	Remedy
Load due to weight is greater than the holding torque or holding force of the brake [if "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is equal to "0"]	*Remedy during initial commissioning:* Determine load due to weight of axis and compare it to value of "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --). Mount stronger brake, if necessary.
	Remedy during operation of axis drive: **DANGER!** Dangerous movements! Danger to life, risk of injury, serious injury or property damage! Check why load due to weight of axis compared to initial commissioning is higher than "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --). Reduce load due to weight **- or -** Determine load due to weight of axis and compare it to value of "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --). Mount stronger brake, if necessary. Check drive sizing!

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2105
Long diagnostics no. (32 bits):	000C2105

C2106 Test torque of brake not reached

It was not impossible to start the command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --). The system detected that it is impossible to generate the test torque required on the drive side with which the blocking of the axis is to be tested.

The test lasts for one second with regard to the 1.3-fold value of the following values depending on "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --)

- "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) (if 0x2034:06 / P-0-0547 / -- is **unequal to** "0") or
- "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --) (if 0x2034:06 / P-0-0547 / -- is **equal to** "0").

Cause	Remedy
Static limitation of drive torque or drive force is active	Check and increase static torque or force limit values so that the 1.3-fold value of "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) (if 0x2034:06 / P-0-0547 / -- is **unequal to** "0") or the 1.3 fold value of "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --) (if 0x2034:06 / P-0-0547 / -- is **equal to** "0") is possible. By way of trial, set maximum values, if necessary: ▪ "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) ▪ "Torque/force limitation: Limit value, positive" (0x230C:04 / S-0-0082 / --) ▪ "Torque/force limitation: Limit value, negative" (0x230C:05 / S-0-0083 / --) ▪ "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --)

Cause	Remedy
Dynamic limitation of drive torque or drive force is active and "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is **unequal to** "0"	Check dynamic limitations (static limit values should not be effective!). If a value is displayed in "Torque/force limitation: Effective peak value" (0x230C:06 / P-0-0444 / --) that does not allow the 1.3-fold of "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --), drive is underdimensioned! Check thermal load of motor and controller. Replace overloaded component(s) by appropriate component(s), if necessary.
Dynamic limitation of drive torque or drive force is active and "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is **equal to** "0"	Check dynamic limitations (static limit values should not be effective!). If a value is displayed in "Torque/force limitation: Effective peak value" (0x230C:06 / P-0-0444 / --) that does not allow the 1.3-fold of "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --), check whether a value depending on the axis load can be entered for "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --). If not, controller is underdimensioned! Replace controller by an appropriate one, if necessary.
If "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) has been parameterized **unequal to** "0": "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is greater than actual load due to weight. This means that load current demanded from controller cannot be made available for test duration. Dynamic limitation of drive torque or drive force is active	*Remedy during initial commissioning:* Determine force due to weight of axis and compare it to value entered for "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --). If "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) is greater and no check is to be run for "increased holding torque or holding force", set (reduce) "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) according to the load due to weight. If check is to be run for entered value, controller is underdimensioned; see remedy for "**Dynamic** limitation of drive torque or drive force is active"
	Remedy during operation of axis drive: **DANGER!** Dangerous movements! Danger to life, risk of injury, serious injury or property damage! Check is run for holding torque or holding force of brake. Controller is underdimensioned. If possible, carry out remedy during initial commissioning (see above) **- or -** Mount controller with sufficiently high continuous current; see remedy for "**Dynamic** limitation of drive torque or drive force is active"
If "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --) has been parameterized **equal to** "0": Holding torque or holding force of brake is greater than actual load due to weight of axis. This means that load	*Remedy during initial commissioning:* Determine load due to weight of axis and compare it to value for "Brake control: Nominal brake torque" (0x2032:04 / P-0-0540 / --). If load due to weight requires less holding torque than the torque/force of brake displays and no check is to be run for "increased holding torque or holding force", enter actual load due to weight in "Brake check: Nominal load of holding system" (0x2034:06 / P-0-0547 / --). In this way, actual axis load is checked in the future. Otherwise, controller is underdimensioned, see remedy for "**Dynamic** limitation of drive torque or drive force is active"!

Cause	Remedy
current demanded from controller cannot be made available for test duration! Dynamic limitation of drive torque or drive force is active	*Remedy during operation of axis drive:* **DANGER!** Dangerous movements! Danger to life, risk of injury, serious injury or property damage! Check is run for holding torque or holding force of brake. Controller is underdimensioned. If possible, carry out remedy during initial commissioning (see above) **- or -** Mount controller with sufficiently high continuous current; see remedy for "**Dynamic** limitation of drive torque or drive force is active"

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2106
Long diagnostics no. (32 bits):	000C2106

C2108 Error when releasing the brake

The command "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --) was aborted. An error was detected when the brake had been released.

Cause	Remedy
Faulty control of the brake	Check wiring **- or -** If third-party brake was connected: Check parameterization
Test torque/force parameterized for releasing brake is too low	Increase value for "Brake check: Maximum static friction at released brake" (0x2034:04 / P-0-0545 / --)
Increased breakaway torque of axis due to increased friction within installation, etc.	Remove malfunction in installation

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C2108
Long diagnostics no. (32 bits):	000C2108

C2202 Error when writing data to non-volatile memory

An error occurred during the execution of the command "Application data: C2200 Backup procedure command" (0x2B60:08 / S-0-0264 / --).

Cause	Remedy

Cause	Remedy
It was impossible to address active, non-volatile memory (internal flash memory) without error.	Restart command. If error occurs again, contact our service department. Have control section checked for functional safety.

▼ Attributes

Short diagnostics no. (20 bits):	C2202
Long diagnostics no. (32 bits):	000C2202

C2301 Error when reading non-volatile memory

An error occurred during the execution of the command "Application data: C2300 Load procedure command" (0x2B60:09 / S-0-0263 / --).

Cause	Remedy
It was impossible to read active, non-volatile memory (internal flash memory) without error.	Restart command. If error occurs again, contact our service department. Have control section checked for functional safety.

▼ Attributes

Short diagnostics no. (20 bits):	C2301
Long diagnostics no. (32 bits):	000C2301

C2302 Error when converting parameters

An error occurred during the execution of the command "Application data: C2300 Load procedure command" (0x2B60:09 / S-0-0263 / --).

Cause	Remedy
An error occurred when the parameters had been read from the active, non-volatile memory. At least one parameter value is invalid.	Manually enter invalid parameter values correctly and save them in non-volatile memory by again executing command "Application data: C2300 Load procedure command" (0x2B60:09 / S-0-0263 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C2302
Long diagnostics no. (32 bits):	000C2302

C2402 Error when saving parameters

An error occurred during the execution of the command for selectively backing up the working memory ["Application data: C2400 Selectively backup working memory" (0x2B60:10 / S-0-0293 / --)].

Cause	Remedy

Cause	Remedy
It was impossible to address active, non-volatile memory (internal flash memory) without error.	Restart command. If the error occurs again, contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	C2402
Long diagnostics no. (32 bits):	000C2402

C2801 Analog input not configured

An error was detected during the execution of the command "Analog input function: C2800 Analog input adjustment command" (0x2A30:02 / P-0-2901.0.2 / P-0-1792). The command execution was aborted.

Cause	Remedy
The command was started although no analog input had been configured for the adjustment	Check "Analog input function: Control word adjustment" (0x2A30:01 / P-0-2901.0.1 / P-0-1791). Here, an analog input has to be assigned for the selected analog input assignment

See Analog Inputs

▼ Attributes

Short diagnostics no. (20 bits):	C2801
Long diagnostics no. (32 bits):	000C2801

C2802 Oscillations of input signal outside tolerance range

An error was detected during the execution of the command "Analog input function: C2800 Analog input adjustment command" (0x2A30:02 / P-0-2901.0.2 / P-0-1792). The quality of the reference signal used is insufficient.

Cause	Remedy
The reference voltage used for **amplification adjustment** fluctuates by more than 1 % of the input voltage range	Check the input signal used for adjustment with regard to its accuracy; use a different calibration signal, if necessary
The input voltage for **zero point adjustment** is not exactly "0" and fluctuates by more than 1 % of the input voltage range	Short-circuit analog inputs using a wire jumper

See Analog Inputs

▼ Attributes

Short diagnostics no. (20 bits):	C2802

Long diagnostics no. (32 bits):	000C2802

C2803 Measured values at zero point and max. value identical

An error was detected during the execution of the command "Analog input function: C2800 Analog input adjustment command" (0x2A30:02 / P-0-2901.0.2 / P-0-1792). The command execution was aborted.

Cause	Remedy
The same voltage value had been applied to the analog input for zero point adjustment and for amplification adjustment	Between the steps of adjustment change the voltage applied to the input (voltage value for zero point adjustment: 0 V, voltage value for amplification adjustment: maximum input voltage)

See Analog Inputs

▼ Attributes

Short diagnostics no. (20 bits):	C2803
Long diagnostics no. (32 bits):	000C2803

C3202 Incorrect input for voltage

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
Value for rated voltage is outside of useful limits	Enter a value between 10 V and 2000 V for the rated voltage ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --, list element 1)]

▼ Attributes

Short diagnostics no. (20 bits):	C3202
Long diagnostics no. (32 bits):	000C3202

C3203 Incorrect input for frequency

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
Value for rated frequency is outside of useful limits	Enter a value between 5 Hz and 3000 Hz for the rated frequency ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --, list element 2)]

▼ Attributes

Short diagnostics no. (20 bits):	C3203

Long diagnostics no. (32 bits):	000C3203

C3204 Incorrect input for speed

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
Relationship between value for rated speed and rated frequency is not useful, i.e. number of pole pairs cannot be calculated	Correct the rated speed ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --, list element 3)]

▼ Attributes

Short diagnostics no. (20 bits):	C3204
Long diagnostics no. (32 bits):	000C3204

C3205 Incorrect input for power factor

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
Value for power factor "cos φ" of motor is outside of useful limits	Enter a value between 0.5 and 0.99 for the power factor "cos φ" of the motor ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --, list element 4)]

▼ Attributes

Short diagnostics no. (20 bits):	C3205
Long diagnostics no. (32 bits):	000C3205

C3206 Incorrect input for power

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
Relationship between value for rated power ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --, list element 5)] and electrical power is not useful. (The electrical power results from the other rated data). Nominal power is higher than 99.9% or lower than 40% of the active power	Correct the characteristic values of the motor ["Motor, type plate: Data" (0x2000:01 / P-0-4032 / --)]. Mechanical power output must be less than electrical active power of the motor at rated point because an efficiency of less than 1 is assumed. Likewise, mechanical power output of less than 40% of electrical active power is invalid.

▼ Attributes

Short diagnostics no. (20 bits):	C3206
Long diagnostics no. (32 bits):	000C3206

C3207 Type plate list incomplete

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy
"Motor, type plate: Data" (0x2000:01 / P-0-4032 / --) is not complete, at least one motor characteristic has the value "0"	Make sure that all motor characteristics have correct values and no motor characteristic has the value "0”.

▼ Attributes

Short diagnostics no. (20 bits):	C3207
Long diagnostics no. (32 bits):	000C3207

C3208 Error when writing parameters -> P-0-0567

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --). A motor parameter or a parameter for motor control could not be calculated or saved.

Cause	Remedy
At least one motor type plate data does not have a useful value so that at least one motor parameter or one parameter for motor control is outside of the allowed limits in the calculation of the motor data.	Correct the values "Motor, type plate: Data" (0x2000:01 / P-0-4032 / --) and restart command for calculating the motor data [C3200 (P-0-4033)]
Parameters for motor control could not be saved. Affected parameters are displayed in "Motor data identification: List of invalid parameters" (0x2002:02 / P-0-0567 / --)	Switch off the controller and restart the command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C3208
Long diagnostics no. (32 bits):	000C3208

C3209 Command execution impossible

An error was detected during the execution of command "Motor, type plate: Command calculate basic data" (0x2000:02 / P-0-4033 / --).

Cause	Remedy

Cause	Remedy
The command cannot be executed, since the axis is in the wrong operating phase.	1. Terminate command 2. Switch drive to CM or PM 3. Restart command
The command is to be executed for a linear motor. Linear motors are not supported by the command.	Calculate equivalent circuit diagram parameters and other required motor parameters, or take them from the data sheet of the motor manufacturer and enter them in the corresponding parameters. For this purpose, the ""“Motor type”"" dialog can be used in ctrlX DRIVE Engineering.

▼ Attributes

Short diagnostics no. (20 bits):	C3209
Long diagnostics no. (32 bits):	000C3209

C3601 Motor not or not correctly connected

During the execution of the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --), the test current could not be generated or could not be generated correctly.

Cause	Remedy
The motor is not connected to the drive controller - or - Motor phase(s) is (are) not connected or broken	Check motor connection Check the conductor connection from the drive controller to the motor
Motor not part of the axis not connected to the drive controller (e.g. motor for axis 1 is connected at XZ03.**2** instead of at XZ03.**1** at the double axis device)	Ensure that the motor associated with the axis is connected
Motor defective - or - Single motor winding defective - or - Individual motor windings deviate considerable with regard to inductivity or resistance	Replace motor
Drive controller defective	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	C3601
Long diagnostics no. (32 bits):	000C3601

C3603 Device current limit too low

The continuous current of the drive controller is lower than the current required to execute the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy

Cause	Remedy
The drive controller cannot supply the required level of measurement current	If possible, reduce "Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --) - or - Use a controller with a higher type current

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3603
Long diagnostics no. (32 bits):	000C3603

C3604 Error when calculating the motor parameters -> P-0-0567

Not all required motor and control parameters could be calculated from the measurement data during the execution of the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy
Motor parameters / control parameters could not be saved. Affected parameters are displayed in "Motor data identification: List of invalid parameters" (0x2002:02 / P-0-0567 / --)	Switch off the controller and restart the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --)
Error in the calculation of the motor parameters from the measured values. - or - Error in parameter conversion. Affected parameters are displayed in "Motor data identification: List of invalid parameters" (0x2002:02 / P-0-0567 / --)	Check the specified motor parameters (type plate data or motor data sheet), correct them if required and execute command C32 in the case of changes in the type plate data. Subsequently, restart the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3604
Long diagnostics no. (32 bits):	000C3604

C3605 Motor turning

The command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) may only be

started when the motor does not move. Motor motion is detected by the motor encoder, if available.

Cause	Remedy
Command C3600 was started when the motor had been moving	Stop motor motion before start of command
The motor is moved by external forces on the axis	Fix cause of external motor motion

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3605
Long diagnostics no. (32 bits):	000C3605

C3607 Motor revolution/motion impeded

The command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) was configured for a freely moving motor ["Motor data identification: Configuration" (0x2002:03 / P-0-0601 / --)]. The command was aborted unsuccessfully since the motor could not be set in motion or did not reach the desired velocity.

Cause	Remedy
Motor jammed because it is coupled to an axis/load - or - Axis friction too large	Operate motor as decoupled - or - Check and enable mobility
Closed brake at the axis	Check brake control and open brake
Due to high inertia, drive cannot follow the acceleration command value	Operate motor as decoupled
The parameterized value of "Motor basic data: Rated speed" (0x2010:05 / P-0-4036 / --) is too high or too low	Check "Motor basic data: Rated speed" (0x2010:05 / P-0-4036 / --) and adjust it to the level of the DC bus voltage, if necessary

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3607
Long diagnostics no. (32 bits):	000C3607

C3611 Test velocity not reached

The command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) was aborted because the required test speed (half the nominal motor speed) could not be reached.

Cause	Remedy

Cause	Remedy
With uncontrolled supply: The nominal motor voltage and/or nominal speed is too high as compared to mains connection voltage (requirement: U_{motor_nom} < 150% U_{LN}).	If possible, adjust mains connection voltage until U_{motor_nom} < 150% U_{LN} has been complied with. Comply with allowed mains connection voltage range! **- or -** Reduce nominal motor data until U_{motor_nom} < 150% U_{LN} has been complied with. Comply with the corresponding motor data (nominal speed, nominal voltage, nominal power)!
With controlled supply: The nominal motor voltage and/or nominal speed is too high as compared to maximum output voltage of controller (requirement: U_{motor_nom} < 100% DC voltage of DC bus).	Reduce nominal motor data until U_{motor_nom} < 100% DC voltage of DC bus has been complied with. Comply with the corresponding motor data (nominal speed, nominal voltage, nominal power)!
The minimum velocity required for a measurement cannot be achieved since "Motor basic data: Rated speed" (0x2010:05 / P-0-4036 / --) is too small.	Check "Motor basic data: Rated speed" (0x2010:05 / P-0-4036 / --) and adjust it to the level of the DC bus voltage, if necessary
Incorrect motor data was entered during the drive parameterization (also ensure the correct use of the motor data for star connection/delta connection)	Check motor parameters (type plate data or motor data sheet), correct them if required and execute command C32 in the case of changes in the type plate data. Subsequently, restart "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3611
Long diagnostics no. (32 bits):	000C3611

C3612 Command execution impossible

It was not impossible to start the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy
An attempt was made to start command while safety function "Safe torque off" (STO) had been active	Deselect safety function STO
Axis in "PM" or "CM"	Switch axis to "OM"
Control section ready for operation ("bb")	Switch on power supply

Cause	Remedy
The command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) was started for a linear motor using the configuration "with motor motion". This configuration is not possible for linear motors	Execute the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) using the configuration "without motor motion" ["Motor data identification: Configuration" (0x2002:03 / P-0-0601 / --)]
Another commissioning command is still active	Terminate or cancel other pending commands and ensure that only C3600 is executed

▼ Attributes

Short diagnostics no. (20 bits):	C3612
Long diagnostics no. (32 bits):	000C3612

C3613 Error during command execution

An error occurred during the execution of the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy
The check signals were not within the expected range	Check the specified motor parameters (type plate data or motor data sheet), correct them if required and execute command C32 in the case of changes in the type plate data. Subsequently, restart the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --). If the specified motor parameters are parameterized correctly, if required, use a lower PWM frequency
The motor has moved during the measurement	Check for unintentional axis movements and avoid axis movements
Motor defective	Replace motor
Drive controller defective	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	C3613
Long diagnostics no. (32 bits):	000C3613
Related Sercos IDN:	P-0-0565.0.0

C3615 Error during initialization of motor control

After the motor data have been identified "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --), the motor control has to be re-initialized in the drive controller. An error occurred in the process.

Cause	Remedy
Error during reinitialization of motor control	Switch drive to CM and subsequently to OM. If the drive controller reports an error during switching, try to debug the error.

▼ Attributes

Short diagnostics no. (20 bits):	C3615
Long diagnostics no. (32 bits):	000C3615
Related Sercos IDN:	P-0-0565.0.0

C3616 Overcurrent in power section

Current that was too high was detected in the power section during the execution of the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy
The actual current exceeded the device peak current	- Check for short circuit in motor line - Check for insulation error - Check the specified motor parameters (type plate data or motor data sheet), correct them if required and execute command C32 in the case of changes in the type plate data. Subsequently, restart the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).
Motor defective	Replace motor
Drive controller defective	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	C3616
Long diagnostics no. (32 bits):	000C3616
Related Sercos IDN:	P-0-0565.0.0

C3617 Overvoltage in power section

The DC bus voltage rose to impermissibly high values during the execution of the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --).

Cause	Remedy
DC bus voltage control oscillation	Check the power supply of drive controller
Overvoltage threshold parameterized too low	Adjust parameterization for power supply

Cause	Remedy
The DC bus voltage rises above the switch-off threshold due to the deceleration of the motor. -or- Malfunction of the braking resistor	- Check the function and parameterization of braking resistor - Check braking resistor - Activate braking resistor in parameterization
The power supply of the drive controller cannot absorb any regenerative energy	- Adjust power supply - Execute the command "Motor data identification: C3600 Identification command" (0x2002:01 / P-0-0565 / --) using the configuration " **without** motor motion" ["Motor data identification: Configuration" (0x2002:03 / P-0-0601 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C3617
Long diagnostics no. (32 bits):	000C3617
Related Sercos IDN:	P-0-0565.0.0

C3701 Motor revolution/motion impeded

The command C3700 (0x2110:03 / P-0-0581 / --) was configured for a freely moving motor (P-0-0601). The command was aborted unsuccessfully because the motor could not be put into motion.

The motor does not reach the target velocity.

Cause	Remedy
The motor is jammed because it is coupled to an axis/load	Check and enable mobility
The motor connection is incorrect or an incorrect motor is connected	Check motor connection
The motor has run against a stop or against a resistance after an initial motion	Ensure free movement of the motor. The motor has to be able to move for at least 2 revolutions or 2 pole pair widths plus acceleration and braking distance. For linear axes, try to invert the direction of motion of the command C3700 so that the axis slide moves away from the mechanical end position due to the motion triggered by C3700.
The parameterization of the number of encoder lines or pole pair number or pole pair width is grossly incorrect so that motor standstill is detected	Check parameterization
The drive detects a velocity of "0" as the motor is held in place by high cogging torques. Motion may have already taken place previously, but was subsequently stopped.	The verification has to be performed manually
Very high inertia of the drive. The torque required for acceleration exceeds the rated torque of the motor.	Check whether the motor can be commissioned in an uncoupled state

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3701
Long diagnostics no. (32 bits):	000C3701
Related Sercos IDN:	P-0-0581

C3702 Incorrect motor phases or rotational direction of encoder

An error occurred during the execution of the command C3700 (0x2110:03 / P-0-0581 / --). The motor does not move in the expected direction. The encoder signals a direction of motion that is opposite to the motor motion.

Cause	Remedy
2 motor phases interchanged	Check motor connection; if necessary, exchange 2 motor phases
The direction of rotation or motion of the encoder is inverted with respect to the motor motion	Change the sense of rotation/motion of the encoder, either via the corresponding encoder output data configuration: ■ "Encoder basic interface ONBOARD: Data out" (0x2410:01 / S-0-0601.10.1 / S-0-2450, bit 3) ■ "Encoder basic interface OPT_2: Data out" (0x2412:01 / S-0-0601.2.1 / S-0-2400, bit 3) ■ "Encoder basic interface OPT_3: Data out" (0x2414:01 / S-0-0601.3.1 / S-0-2425, bit 3) – or – ■ by interchanging the connection of the encoder tracks. **NOTES:** ■ If an encoder gear is available, also check the direction of rotation characteristics of the encoder gear. ■ When using an external encoder / encoder 2 for motor control, also check the direction of rotation of the load gear, if available.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3702
Long diagnostics no. (32 bits):	000C3702
Related Sercos IDN:	P-0-0581

C3703 Incorrect number of pole pairs or number of encoder lines

The command C3700 (0x2110:03 / P-0-0581 / --) was terminated unsuccessfully due to lack of plausibility of motor and motor encoder.

With synchronous motors, the distance returned by the encoder does not match the specified motor motion. For asynchronous motors, the actual speed does not correspond to the target speed.

Cause	Remedy
Incorrectly parameterized encoder resolution	Check values for encoder resolution and correct them, if necessary: ■ "Phys. encoder configuration ONBOARD: Resolution (analog)" (0x2418:15 / S-0-0602.10.21 / S-0-2570) / "Phys. encoder configuration ONBOARD: Resolution (digital)" (0x2418:16 / S-0-0602.10.22 / S-0-2571) ■ "Phys. encoder configuration OPT_2: Resolution (analog)" (0x241A:15 / S-0-0602.2.21 / S-0-2520) / "Phys. encoder configuration OPT_2: Resolution (digital)" (0x241A:16 / S-0-0602.2.22 / S-0-2521) ■ "Phys. encoder configuration OPT_3: Resolution (analog)" (0x241C:15 / S-0-0602.3.21 / S-0-2545) / "Phys. encoder configuration OPT_3: Resolution (digital)" (0x241C:16 / S-0-0602.3.22 / S-0-2546)
Incorrectly parameterized pole pair number or pole pair width	Check and, if necessary, correct "Motor basic data: Number of pole pairs / pole pair distance" (0x2010:03 / P-0-0018 / --)
When using an encoder gearbox: Gear ratio incorrectly parameterized	Check parameters of the encoder gearbox or when using encoder 2 / external encoder as motor control encoder, and correct them, if necessary Parameters of the encoder gearbox: ■ "Gearbox encoder ENC_1: Revolutions, mechanical side" (0x24A8:01 / P-0-0121 / --) ■ "Gearbox encoder ENC_1: Revolutions, encoder side" (0x24A8:02 / P-0-0122 / --) When using encoder 2 / external encoder as motor control encoder: ■ "Gearbox encoder ENC_2: Revolutions, mechanical side" (0x24AA:01 / P-0-0124 / --) ■ "Gearbox encoder ENC_2: Revolutions, encoder side" (0x24AA:02 / P-0-0125 / --)
When using encoder 2 / external encoder as motor control encoder: Incorrectly parameterized load gear	Check parameterization of the load gear and correct it, if necessary: ■ "Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --) ■ "Gear ratio: Driving shaft revolutions" (0x6091:02 / S-0-0122 / --)
When using a load-side linear encoder as a motor control encoder for a rotary motor: Incorrectly parameterized feed constant	Check and, if necessary, correct "Feed constant: Value" (0x2390:01 / S-0-0123 / --)
The motor has run against a stop or has been stopped after an initial motion. As a result, the determined distance traveled was too short.	Ensure free movement. The motor has to be able to move for at least 2 revolutions or 2 pole pair widths plus acceleration and braking distance. For linear axes, invert the direction of movement of command C3700 if necessary, so that the axis slide moves away from the mechanical end position as a result of the movement triggered by C3700.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3703
Long diagnostics no. (32 bits):	000C3703
Related Sercos IDN:	P-0-0581

C3704 No encoder: Validation check impossible

The command C3700 (0x2110:03 / P-0-0581 / --) for checking the coupling of motor and encoder was aborted since no encoder was detected.

Cause	Remedy
No encoder for motor control / no motor encoder available on the system side	The command can only be used to visually check the direction of rotation ["Motor control setting: Configuration" (0x2110:01 / P-0-0582 / --, bit 0="0")]
Encoder not parameterized / activated	Check and, if necessary, correct the encoder parameterization and the assignment of the interface to the encoder ["Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --) and others]
The method for motor control has been set to sensorless control or V/Hz (U/f)	Check and, if necessary, correct parameterization of motor control ["Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --, bits 15/14)]

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3704
Long diagnostics no. (32 bits):	000C3704
Related Sercos IDN:	P-0-0581

C3705 Command execution only possible in 'Ab'

An error was detected during the execution of the command C3700 (0x2110:03 / P-0-0581 / --), it is impossible to execute the command.

Cause	Remedy

Cause	Remedy
The drive has not been supplied with control voltage / power has not been switched on. The drive is not ready for power output	Switch drive to operating mode Ab as follows (the operating state may be easily read from the display if a panel is available): 1. Switch drive to communication phase 4 ⇒ If no error is present, the display shows bb (ready for operation) 2. Switch on power ⇒ Drive goes to operating mode, the display shows Ab (drive ready) 3. Start command C3700
Drive is in operating state AF	1. Remove drive enable ⇒ Drive goes to operating mode, the display shows Ab (drive ready) 2. Start command C3700

▼ Attributes

Short diagnostics no. (20 bits):	C3705
Long diagnostics no. (32 bits):	000C3705
Related Sercos IDN:	P-0-0581

C3706 Motor turning

The command for checking the direction of rotation [C3700 (0x2110:03 / P-0-0581 / --)] may only be started when the motor does not move. Motor motion is detected by the motor encoder, if available.

Cause	Remedy
Command C3700 was started when the motor was moving	Stop motor motion before start of command
The motor is moved by external forces on the axis	Fix cause of external motor motion

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C3706
Long diagnostics no. (32 bits):	000C3706
Related Sercos IDN:	P-0-0581

C3801 Command Apply brake not possible

An error occurred during the execution of the command "Brake control: C3800 Apply command" (0x2032:06 / P-0-0543 / --).

Cause	Remedy

Cause	Remedy
The brake has been designed as a short circuit relay, and drive enable has been set. Command execution is not allowed, since with drive enable having been set, the controller output stage would be short-circuited	Remove drive enable before starting the command
An attempt was made to start the command while the "parking axis" function had been active	Terminate "parking axis" by executing command "Parking axis: C1700 Disable procedure command" (0x2380:02 / S-0-0139.0.150 / P-0-1742), and then execute command "Brake control: C3800 Apply command" (0x2032:06 / P-0-0543 / --) again

See brake

▼ Attributes

Short diagnostics no. (20 bits):	C3801
Long diagnostics no. (32 bits):	000C3801
Related Sercos IDN:	P-0-0543.0.0

C4001 Encoder evaluation error during Safe homing procedure

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).



The command was not or incorrectly executed so that there is no safe reference or position.

Cause	Remedy
"SMO encoder function: Evaluation status" (0x310E:01 / P-0-3256 / --) shows the current SMO encoder evaluation status: The encoder evaluation has not been commissioned, is not active or signals an error.	Evaluate "SMO encoder function: Evaluation status" (0x310E:01 / P-0-3256 / --), eliminate cause of error and execute command C4000 again

▼ Attributes

Short diagnostics no. (20 bits):	C4001
Long diagnostics no. (32 bits):	060C4001
Related Sercos IDN:	P-0-2931.0.53

Detailed diagnostics

004606F1

Safe reference: The requirements for executing the command C4000 have not been fulfilled

C4002 Incorrect SMO position feedback value

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).

Cause	Remedy
SMO reference signal activated outside of expected position window; i.e. position feedback value ["SMO encoder function: Position" (0x310E:02 / P-0-3257 / --)] at that point of time was unequal the reference position ± tolerance window. **CoE:** 0x310E:02≠0x31B0:03 ± 0x31B0:04 **Sercos:** P-0-3257≠P-0-3253.0.3 ± P-0-3253.0.4 **SoE:** P-0-3257≠P-0-2795 ± P-0-2796	Eliminate cause of error and execute command C4000 again
Standard firmware has incorrect position data reference	
Position feedback value of standard firmware incorrectly applied (wrong point in time / wrong value) At the time when SMO within the scope of command C4000 detects that standard firmware has been homed (0x2508:01 / S-0-0403 / --), it applies the position feedback value of the standard firmware (0x310E:02/ P-0-3257 / -- with the value of 0x24C0:01 / S-0-0051 / -- or 0x24C2:01 / S-0-0053 / --, maximum deviation: 0x31B0:04 / P-0-3253.0.4 / P-0-2796).	

▼ Attributes

Short diagnostics no. (20 bits):	C4002
Long diagnostics no. (32 bits):	060C4002

Detailed diagnostics

004606F2

Safe reference: Actual position value of SMO reference signal invalid with regard to 0x31B0:03 / P-0-3253.0.3 / P-0-2795

C4003 Home switch distance below minimum value

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).

Cause	Remedy
Minimum distance between home switch of standard firmware and SMO reference position was not observed	Change parameterization or home switch arrangement so that distance between home switch of standard firmware and SMO reference position is at least as big as Safe homing procedure tolerance window (0x31B0:04 / P-0-3253.0.4 / P-0-2796), multiplied by the factor 2. Then execute command C4000 again.

▼ Attributes

Short diagnostics no. (20 bits):	C4003

Long diagnostics no. (32 bits):	060C4003

Detailed diagnostics

004606F3

Safe reference: Distance of dedicated points in standard firmware of SMO < P-0-3253.0.4 * 2 (CoE: 0x31B0:04 / * 2)

C4004 Faulty SMO reference signal

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).

Cause	Remedy
SMO reference signal too short	Reduce homing velocity and/or increase SMO home switch range
SMO home switch bounces	Reduce bouncing of SMO home switch, e.g. by replacing the switch and/or modifying the homing velocity
SMO reference signal disturbed	Check line routing or shield line
Oscillations on the SMO reference signal	Eliminate cause of error (check wiring / connections)

▼ Attributes

Short diagnostics no. (20 bits):	C4004
Long diagnostics no. (32 bits):	060C4004

Detailed diagnostics

004606F4

Safe reference: No valid SMO reference signal detected (too short or disturbed)

004606F5

Safe reference, static SMO reference signal evaluation: Signal was not at high level during standstill > 100 ms and < 300 ms

C4006 SMO: Error when executing the command C4000

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).



The command was not or incorrectly executed so that there is no safe reference or position.

Cause	Remedy
While the command C4000 is started, another command is active.	Wait until the other command has been completed. Execute the command C4000 again to set the status of the safe reference of the SMO encoder to "safely homed" again (0x310E:01 / P-0-3256 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C4006
Long diagnostics no. (32 bits):	060C4006

Detailed diagnostics

004606F6

Safe reference: Command C4000 cannot be started due to simultaneous execution of another command

Cause/Remedy 1: The execution of command C4000 has to wait until the execution of the other commands has been completed.

C4010 Command not executable, parameter not available

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).

The command was not or incorrectly executed so that there is no safe reference or position.

Cause	Remedy
The command cannot be executed, because the parameter for an internal command is not available. The command C4000 was started although the optional safety technology module "SafeMotion" is not available. Command was activated by mistake.	Check settings for homing the safety technology: Homing function: Configuration" (0x2500:02 / S-0-0147 / --), bit 11.

▼ Attributes

Short diagnostics no. (20 bits):	C4010
Long diagnostics no. (32 bits):	060C4010
Related Sercos IDN:	P-0-3253.0.2

Detailed diagnostics

00460024

Command C4000 not executable. Parameter P-0-2931.0.53 not available.

C4011 Command not executable, parameter cannot be written

An error occurred during the execution of the command "SMO safe homing: C4000 Safe homing procedure command" (0x31B0:07 / P-0-3253.0.2 / P-0-2794).

The command was not or incorrectly executed so that there is no safe reference or position.

Cause	Remedy
The command cannot be executed, because the parameter for an internal command cannot be written. Command was activated by mistake.	Check settings for homing the safety technology: Homing function: Configuration" (0x2500:02 / S-0-0147 / --), bit 11.

▼ Attributes

Short diagnostics no. (20 bits):	C4011
Long diagnostics no. (32 bits):	060C4011
Related Sercos IDN:	P-0-3253.0.2

Detailed diagnostics

00460025
Command C4000 not executable. Error when writing P-0-2931.0.53

C4104 Error during parameter set switching

An error was detected during the execution of the command for parameter set switching [C4100 (S-0-0216)]. It had been impossible to successfully complete the command due to errors in the configuration.

Cause	Remedy
Invalid parameter set selection	Make sure that the parameter set selection is valid (S-0-0217); the parameter sets 0...3 are supported
Functional package has not been activated	Make sure that the functional package for parameter set switching has been activated
Invalid configuration of the selected parameters for parameter set switching	Make sure that the configuration list of the parameters selected for parameter set switching is valid (S-0-0219)

▼ Attributes

Short diagnostics no. (20 bits):	C4104
Long diagnostics no. (32 bits):	C00C4104

C4201 Oscillation requires drive enable

An error was detected during the execution of the command "Spindle oscillation: C4200 Procedure command" (0x29A2:01 / S-0-0190 / --).

Cause	Remedy
Drive had not yet been ready for power output at the start of the command	Switch on power and set drive enable before starting C4200

See also Drive-controlled oscillation

▼ Attributes

Short diagnostics no. (20 bits):	C4201
Long diagnostics no. (32 bits):	C00C4201

C4202 Oscillation command speed cannot be reached

Five seconds after the start of the command "Spindle oscillation: C4200 Procedure command" (0x29A2:01 / S-0-0190 / --), the deviation of the actual velocity value from the oscillation start speed still is greater than or equal to the value of "Velocity status: Static window" (0x2212:08 / S-0-0157 / --).

Cause	Remedy
Value of "Velocity status: Static window" (0x2212:08 / S-0-0157 / --) is zero	Set "Velocity status: Static window" (0x2212:08 / S-0-0157 / --) to valid value greater than zero
Motor is blocked or speed is too low due to high degree of friction	Check drive mechanics for blocking or stiffness

See also Drive-controlled oscillation

▼ Attributes

Short diagnostics no. (20 bits):	C4202
Long diagnostics no. (32 bits):	C00C4202

C4301 Command not executable in current state of drive

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command
At the time of command start, another command had already been active; only one command can be active at a time	1. Terminate command that had been active before (let it complete or reset it) 2. Restart new command

▼ Attributes

Short diagnostics no. (20 bits):	C4301
Long diagnostics no. (32 bits):	000C4301

C4302 Distance home switch - reference mark erroneous

An error was detected during the execution of the command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --).

Cause	Remedy
The home switch evaluation in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --) has been switched on. The distance between the selected home switch edge and the reference mark to be evaluated is outside of the allowed range.	Read out "Home switch: Proposed mechanical shift" (0x250A:02 / S-0-0298 / --) and apply it to "Home switch: Virtual shift" (0x250A:03 / S-0-0299 / --) **- or -** Shift the reference cam

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4302
Long diagnostics no. (32 bits):	C00C4302

C4303 Homing impossible with encoder 2

An error was detected during the execution of the command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --).

Cause	Remedy
Encoder 2 has been parameterized as a homing encoder although encoder 2 does not exist	Parameterize encoder 1 as homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)
Encoder 2 has not been activated	Activate encoder 2 in "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C4303
Long diagnostics no. (32 bits):	000C4303

C4304 Homing impossible with absolute encoder

An error was detected during the execution of the command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --): NC-controlled homing is not possible with an absolute measuring system.

▼ Attributes

Short diagnostics no. (20 bits):	C4304
Long diagnostics no. (32 bits):	000C4304

C4306 Reference mark not detected

An error regarding the reference mark detection was detected during the execution of command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --).

If the reference marks of the relative encoder to be homed [selected in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)] occur cyclically over the travel range, the position difference of the reference marks detected by the controller is monitored.

Cause	Remedy
Reference marks do not occur in the expected position difference	Check measuring system to be homed and its wiring - or - Check and, if necessary, correct "Home switch: Optimum distance to reference mark" (0x250A:01 / P-0-0153 / --)
Parameterized value of distance between home switch and reference mark does not match the encoder used	Correct "Home switch: Optimum distance to reference mark" (0x250A:01 / P-0-0153 / --)

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4306
Long diagnostics no. (32 bits):	C00C4306

C4307 Home switch input not assigned

An error was detected during the execution of the command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --).

Cause	Remedy
The home switch has not been assigned to a digital input	In "Digital inputs: Assignment list" (0x2A20:02 / P-0-0300 / --), assign the "Home switch: Status" (0x250A:04 / S-0-0400 / --) to a digital input
The home switch has been connected to the NC, but "Homing function: Configuration" (0x2500:02 / S-0-0147 / --) was incorrectly parameterized	Correctly set relevant bit of "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4307
Long diagnostics no. (32 bits):	C00C4307

C4308 Fixed stop and HW limit switch not allowed for modulo axes

An error was detected during the execution of the command "NC-contr. homing: C4300 Command procedure" (0x2520:01 / S-0-0146 / --).

Cause	Remedy

Cause	Remedy
NC-controlled homing at fixed stop or travel range limit switches with modulo axes does not make sense in this combination and thus is not allowed	Change control information for homing in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C4308
Long diagnostics no. (32 bits):	C00C4308

C4401 Command not executable in current state of drive

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command
At the time of command start, another command had already been active; only one command can be active at a time	1. Terminate command that had been active before (let it complete or reset it) 2. Restart new command

▼ Attributes

Short diagnostics no. (20 bits):	C4401
Long diagnostics no. (32 bits):	000C4401

C4403 Homing impossible with encoder 2

An error was detected during the execution of the command "NC-contr. homing: C4400 Command calculate displacement" (0x2520:04 / S-0-0171 / --).

Cause	Remedy
Encoder 2 has been parameterized as a homing encoder although encoder 2 does not exist	Parameterize encoder 1 as homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)
Encoder 2 has not been activated	Activate encoder 2 in "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C4403
Long diagnostics no. (32 bits):	000C4403

C4410 Overflow in displacement calculation

An error was detected during the execution of the command "NC-contr. homing: C4400 Command calculate displacement" (0x2520:04 / S-0-0171 / --).

Cause	Remedy
Overflow in numeric range when calculating the displacement	Reduce position resolution

▼ Attributes

Short diagnostics no. (20 bits):	C4410
Long diagnostics no. (32 bits):	000C4410

C4501 Command not executable in current state of drive

Cause	Remedy
The command cannot be executed, since the device has not been completely initialized	1. Terminate command 2. Switch device to OM 3. Restart command
At the time of command start, another command had already been active; only one command can be active at a time	1. Terminate command that had been active before (let it complete or reset it) 2. Restart new command

▼ Attributes

Short diagnostics no. (20 bits):	C4501
Long diagnostics no. (32 bits):	000C4501

C4503 Homing impossible with encoder 2

An error was detected during the execution of the command "NC-contr. homing: C4500 Command displacement to ref. system" (0x2520:05 / S-0-0172 / --). With this command, the drive switches to the referenced actual position value system.

Cause	Remedy
Encoder 2 has been parameterized as a homing encoder although encoder 2 does not exist	Parameterize encoder 1 as homing encoder in "Homing function: Configuration" (0x2500:02 / S-0-0147 / --)
Encoder 2 has not been activated	Activate encoder 2 in "Encoder interface assignment ENC_1: Value" (0x2480:01 / P-0-0077 / --)

▼ Attributes

Short diagnostics no. (20 bits):	C4503
Long diagnostics no. (32 bits):	000C4503

C4601 Error when writing parameters ->P-0-0567

During the execution of the command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --), the calculation or writing of at least one parameter caused an error.

Cause	Remedy
Motor data were not entered correctly in the motor parameters	Check values and, if necessary, correct them. Then restart the command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --)
Incorrect motor data	Check motor data; if necessary, contact the motor manufacturer. After entering the corrected values, restart the command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --)
The parameters for motor control could not be saved. Affected parameters are displayed in "Motor data identification: List of invalid parameters" (0x2002:02 / P-0-0567 / --)	Switch off the controller and restart the command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --)

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	C4601
Long diagnostics no. (32 bits):	000C4601

C4602 Procedure command at this time not executable

An error was detected during the execution of the command C4600 "Motor control setting: Command calculate control data" (0x2110:02 / P-0-0566 / --).

Cause	Remedy
The command cannot be executed, since the axis is in control (AF).	1. Terminate command 2. Switch off drive enable 3. Restart command

▼ Attributes

Short diagnostics no. (20 bits):	C4602
Long diagnostics no. (32 bits):	000C4602

C4701 Command Easy startup mode not possible

The command "Easy Startup: C4700 Command activate mode" (0x280A:02 / P-0-4085 / --) was started, but could not be executed.

Cause	Remedy
The drive had been active when the command "Easy Startup: C4700 Command activate mode" (0x280A:02 / P-0-4085 / --) was started	Remove drive enable before starting the command

▼ Attributes

Short diagnostics no. (20 bits):	C4701
Long diagnostics no. (32 bits):	000C4701

C4801 Cogging torque/force comp.: Measuring velocity too high

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
Position command value characteristic specified by control master or drive controller caused measuring velocity at motor to be **too high**	Check position command value characteristic of control master or drive controller and, if necessary, reduce time-dependent position command value increase; if applicable, take gear ratio into account.

▼ Attributes

Short diagnostics no. (20 bits):	C4801
Long diagnostics no. (32 bits):	000C4801

C4802 Cogging torque/force comp.: Measuring velocity too low

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
Position command value characteristic specified by control master or drive controller caused measuring velocity at motor to be **too low**	Check position command value characteristic of control master or drive controller and, if necessary, increase time-dependent position command value increase; if applicable, take gear ratio into account.

▼ Attributes

Short diagnostics no. (20 bits):	C4802
Long diagnostics no. (32 bits):	000C4802

C4803 Cogging torque/force comp.: Inadmissible acceleration

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
Position command value characteristic specified by control master or drive controller caused acceleration to be too high during measured value recording for cogging torque/force compensation	Check position command value characteristic of control master or drive and, if necessary, change it so that motor moves at constant velocity in measured value recording range [see "Cogging compensation: Status word" (0x2340:02 / P-0-1133 / --)]

Cause	Remedy
Travel distance specified by control master does not suffice to record complete cogging torque/force compensation table	Make sure that control master specifies a sufficient travel distance so that it is possible to record the complete cogging torque/force compensation table

▼ Attributes

Short diagnostics no. (20 bits):	C4803
Long diagnostics no. (32 bits):	000C4803

C4804 Cogging torque/force comp.: Error when storing table

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
It was impossible to address active non-volatile memory without error	Restart command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --). If the error occurs more often, please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C4804
Long diagnostics no. (32 bits):	000C4804

C4805 Cogging torque/force comp.: Motor measuring system not homed

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
The relative motor encoder of a **rotary motor** had no position data reference	▪ Let the motor turn until the reference mark of the motor encoder is read in. ▪ Subsequently, start the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).
The relative motor encoder of a **linear motor** had no position data reference	▪ Establish the position data reference for the relative motor encoder of the **linear motor**. ▪ Subsequently, start the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

See also Establishing position data reference for relative measuring systems

▼ Attributes

Short diagnostics no. (20 bits):	C4805
Long diagnostics no. (32 bits):	000C4805

C4806 Cogging torque/force comp.: Invalid measuring range

An error in the calculation of the measuring range occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
With absolute position reference: Incorrect position limits were entered for the travel range for recording the cogging torque/force compensation table	For the lower position limit of the travel range parameterize a smaller value than for the upper position limit ["Cogging compensation: Lower position limit" (0x2340:0C / P-0-1145 / --) < "Cogging compensation: Upper position limit" (0x2340:0D / P-0-1146 / --)].
With relative position reference: Overflow when calculating the measuring range	Encoder resolution and major gear ratio of the encoder gearbox cause the overflow

▼ Attributes

Short diagnostics no. (20 bits):	C4806
Long diagnostics no. (32 bits):	000C4806

C4807 Cogging torque/force comp.: No modulo axis w abs. posit. ref

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
Cogging torque/force compensation for modulo axis with absolute position reference selected	For modulo axes, only cogging torque/force compensation with relative position reference is possible. ⇒ Select cogging torque/force compensation with relative position reference ["Cogging compensation: Control word" (0x2340:01 / P-0-1131 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C4807
Long diagnostics no. (32 bits):	000C4807

C4808 Cogging torque/force comp.: Command requires drive enable

An error occurred during the execution of the command "Cogging compensation: C4800 Command recording table" (0x2340:0A / P-0-1138 / --).

Cause	Remedy
Drive enable (AF) had not been set at the start of the command	Set drive enable before starting the command

▼ Attributes

Short diagnostics no. (20 bits):	C4808
Long diagnostics no. (32 bits):	000C4808

C5220 Coupled command C02 error ->S-0-0022

With the check for transition to "Operational" ["MCI state machine: C5200 Op transition check" (0x2C04:02 / S-0-0128 / --)], the command "Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --) is also started.

An error occurred when the operating mode had been activated. The communication parameters still required or invalid were written to "MCI state machine: Invalid data Op transition" (0x2C04:04 / S-0-0022 / --).

Cause	Remedy
An error occurred in the coupled command C0200.	See descriptions of command C0200 and of diagnostic messages C02xx displayed.

▼ Attributes

Short diagnostics no. (20 bits):	C5220
Long diagnostics no. (32 bits):	030C5220

C5222 Coupled command C02 could not be started

With the check for transition to "Operational" ["MCI state machine: C5200 Op transition check" (0x2C04:02 / S-0-0128 / --)], the coupled command "Subdevice STM: C0200 Activate operation mode" (0x2BD2:06 / S-0-0422 / --) could not be started.

Cause	Remedy
The coupled command C0200 is already executed. For example, the coupled command was simultaneously started via a Technology Function.	Make sure that the coupled command C0200 is not started simultaneously in different ways.
Another command is already executed.	Make sure that no other command is executed when the coupled command C0200 is started.

▼ Attributes

Short diagnostics no. (20 bits):	C5222
Long diagnostics no. (32 bits):	030C5222

C5251 Error during synchronization to master communication

With the check for transition to "Operational" "MCI state machine: C5200 Op transition check" (0x2C04:02 / S-0-0128 / --), a check is run to find out whether drive control has been synchronized with the bus interface (Sercos, PROFIBUS, ...) via two phase control loops. Synchronization must be completed by the end of the command. If the synchronization has not been completed by the end of the command, this error message is generated.

Switching to "Operational" is not possible.

Cause	Remedy
Synchronization to the master communication is not possible as no valid value is parameterized for the communication cycle time	Assign a valid value for the communication cycle time ["MCI timing: Cycle time (tScyc)" (0x2C0A:01 / S-0-1002 / --)] **NOTE:** With EtherCAT, the value for the communication cycle time is internally derived from the cycle time of the Distributed Clock that has been set!
Hardware defect on control section	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	C5251
Long diagnostics no. (32 bits):	030C5251

C5301 Sercos: Delay measurement - parameterization error

An attempt was made to start the command "Sercos protocol: C5300 SYNC delay measuring command" (0x2D00:01 / S-0-1024 / --).

Cause	Remedy
The command cannot be started due to a parameterization error. At the start of the command, the parameterized "Sercos protocol: Ring delay" (0x2D00:02 / S-0-1015 / --) was invalid.	Only the master can set a useful value for "Sercos protocol: Ring delay" (0x2D00:02 / S-0-1015 / --), all other inputs can cause bus failures later on in operation.

▼ Attributes

Short diagnostics no. (20 bits):	C5301
Long diagnostics no. (32 bits):	C30C5301

C5302 Sercos: Delay measurement - too many MST failures

An attempt was made to start the command "Sercos protocol: C5300 SYNC delay measuring command" (0x2D00:01 / S-0-1024 / --).

Cause	Remedy
The command cannot be executed because too many master synchronization telegrams (MST) failed. ■ The master does not comply with its own telegram jitter input. ■ The bus is disturbed so that telegrams too often do not reach the device or do not reach it without errors.	The problem can only be solved by the master.

▼ Attributes

Short diagnostics no. (20 bits):	C5302
Long diagnostics no. (32 bits):	C30C5302

C5303 Sercos: Delay measurement - too many measuring errors

An attempt was made to start the command "Sercos protocol: C5300 SYNC delay measuring command" (0x2D00:01 / S-0-1024 / --).

Cause	Remedy
The command cannot be executed because the telegram jitter is too large. ■ The master does not comply with its own telegram jitter input. ■ The bus is disturbed so that telegrams too often do not get to the device without errors.	The problem can only be solved by the master.

▼ Attributes

Short diagnostics no. (20 bits):	C5303
Long diagnostics no. (32 bits):	C30C5303

C6101 Incorrect IP settings

During the execution of the command "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534), an error was detected in the IP settings.

Cause	Remedy
The first element of the IP address (0x2C21:04 / S-0-1020 / --) contains the value "0", "127" (loopback) or "224" (multicast)	■ Set the IP address (0x2C21:04 / S-0-1020 / --) to an allowed value ■ Again execute command "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534)
The setting for the IP address (0x2C21:04 / S-0-1020 / --) is outside of the address range that was defined via the network mask (0x2C21:05 / S-0-1021 / --)	■ Adjust the network mask (0x2C21:05 / S-0-1021 / --) in such a way that network mask and IP address (0x2C21:04 / S-0-1020 / --) are in the same network ■ Again execute command "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534)
The setting for the gateway address (0x2C21:06 / S-0-1022 / --) is outside of the address range that was defined via the network mask (0x2C21:05 / S-0-1021 / --)	■ Adjust the gateway address (0x2C21:06 / S-0-1022 / --) or network mask (0x2C21:05 / S-0-1021 / --) in such a way that gateway address, IP address and network mask are in the same network ■ Again execute command "IP target setting FIELD: C6100 Command Activate IP settings" (0x2C21:07 / S-0-1048 / P-0-1534)

▼ Attributes

Short diagnostics no. (20 bits):	C6101
Long diagnostics no. (32 bits):	000C6101

C6301 Command is password-protected

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
When generating type plate data ("Configurable factory default values" or “Application data in encoder memory" or "Motor characteristics for third party motor"), the **control password** was not entered	Enter control password. (The control password is defined by the manufacturer and is valid for the respective firmware; the password is only available from the manufacturer upon request)
When generating the type plate data "Motor characteristics for a Bosch Rexroth motor", the **master password** was not entered	Enter master password. (The master password is defined by the manufacturer; it is exclusively available to the Bosch Rexroth development and service staff)

▼ Attributes

Short diagnostics no. (20 bits):	C6301
Long diagnostics no. (32 bits):	000C6301
Related Sercos IDN:	P-0-0660.0.0

C6302 IDN not permissible ->S-0-0423

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
An inadmissible manufacturer code has been entered in "Electronic type plate MOTOR: Sercos Vendor Code" (0x2AE2:03 / S-0-1300.20.3 / S-0-3532) (has to be >"0")	Enter the allowed manufacturer code in "Electronic type plate MOTOR: Sercos Vendor Code" (0x2AE2:03 / S-0-1300.20.3 / S-0-3532)
The ident number of a type plate parameter has been entered in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)	Using "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) determine the incorrect ident number and remove it from "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)
The ident number of a parameter which does not exist has been entered in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)	Using "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) determine the incorrect ident number and remove it from "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)

Cause	Remedy
The ident number of a parameter which is read-only has been entered in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)	Using "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) determine the incorrect ident number and remove it from "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)
The ident number of a parameter which is not buffered has been entered in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)	Using "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) determine the incorrect ident number and remove it from "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)
More ident numbers than can be processed have been entered in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)	Using "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) determine the incorrect ident number and remove it and the following one from "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)
A general error occurred when generating the type plate	Check configuration in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738). "Generate application data type plate: Instance param. diag." (0x2B67:05 / P-0-0660.0.129 / P-0-2412) might contain information about the problem

▼ Attributes

Short diagnostics no. (20 bits):	C6302
Long diagnostics no. (32 bits):	000C6302
Related Sercos IDN:	P-0-0660.0.0

Detailed diagnostics

006E00CB

Generate type plate: Type plate contains type plate parameter

Cause/Remedy 1: Cause: When generating the type plate, a type plate parameters was found in the type plate configuration list (P-0-0660.0.3). This is not allowed. Remedy: Correct the list

006E00CC

Generate type plate: Type plate contains write-protected parameter

Cause/Remedy 1: Cause: A write-protected parameter was detected in the type plate configuration list (0x2B67:03 / P-0-0660.0.3 / P-0-2738) during type plate generation. This is not allowed. Remedy: Correct the list.

006E00CD

Generate type plate: Type plate contains unbuffered parameter

Cause/Remedy 1: Cause: A non-buffered parameter was detected in the type plate configuration list (0x2B67:03 / P-0-0660.0.3 / P-0-2738) during type plate generation. This is not allowed. Remedy: Correct the list.

006E00CE

Generate type plate: Type plate contains unknown parameter

Cause/Remedy 1: Cause: A parameter that is nonexistent or masked in the present configuration was detected in the type plate configuration list (0x2B67:03 / P-0-0660.0.3 / P-0-2738) during type plate generation. Remedy: Correct the list.

006E00CF

Generate type plate: Type plate generation error

Cause/Remedy 1: Cause: A type plate generation error was detected. To diagnose the problem, see 0x2B67:05 / P-0-0660.0.129 / P-0-2412.

006E00D0

Generate type plate: Non-local parameters are not allowed

Cause/Remedy 1: Cause: A non-local parameter was detected in the type plate configuration list (0x2B67:03 / P-0-0660.0.3 / P-0-2738) during type plate generation. This is not allowed. Remedy: Correct the list.

006E00D4

Generate type plate: Unknown type plate parameter.

Cause/Remedy 1: Cause: A parameter that does not correspond to a valid type plate was detected in the type plate configuration list (0x2B67:03 / P-0-0660.0.3 / P-0-2738) during type plate generation. Remedy: Correct the list.

006E00D5

Generate type plate: No content defined for type plate

C6303 Insufficient memory

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
The data volume of the type plate to be generated is greater than what the selected type plate parameter can accept.	Reduce number of parameters in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738). **TIP:** The size of the type plate memory can be determined on the basis of the maximum length of the type plate parameter (e.g., encoder with HIPERFACE® interface: 600 bytes, encoder with EnDat® 2.1, 2.2 and ACURO®link: 2.3 kB at most, application data 1 kB)

▼ Attributes

Short diagnostics no. (20 bits):	C6303
Long diagnostics no. (32 bits):	000C6303
Related Sercos IDN:	P-0-0660.0.0

C6304 Type plate unknown

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
An invalid encoder memory version has been entered in "Motor type plate: Version of data structure" (0x2052:01 / P-0-3100 / --)	An invalid encoder memory version has been entered in "Motor type plate: Version of data structure" (0x2052:01 / P-0-3100 / --); currently only encoder memory versions 4.1 to 4.6 and 7.1 are allowed
The encoder memory version 7.1 has been entered in "Motor type plate: Version of data structure" (0x2052:01 / P-0-3100 / --), but in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738), the parameter "Motor type plate data, compact: Identification data" (0x2050:01 / P-0-3071 / --) has not been entered as the first parameter	Correct the order of the configuration parameters in "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)
Version 4.1 bis 4.6 has been entered in "Motor type plate: Version of data structure" (0x2052:01 / P-0-3100 / --). The list "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738) contains parameters which cannot be assigned to this memory version	Read out "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --) and remove the relevant parameter from the list "Generate application data type plate: Command config. list" (0x2B67:03 / P-0-0660.0.3 / P-0-2738)

▼ Attributes

Short diagnostics no. (20 bits):	C6304
Long diagnostics no. (32 bits):	000C6304

C6305 General type plate generation error

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
Internal problem when saving parameters	Execute command C6300 again. If the error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	C6305
Long diagnostics no. (32 bits):	000C6305

C6310 Command not possible with this encoder type

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
Encoder type plate data can only be stored for encoders with one of the following interfaces: ■ HIPERFACE® ■ EnDat® 2.2 ■ ACURO®link ■ ctrlX SENSEmotor	Check parameterization. Use appropriate encoder.

▼ Attributes

Short diagnostics no. (20 bits):	C6310
Long diagnostics no. (32 bits):	000C6310
Related Sercos IDN:	P-0-0660.0.0

C6311 Error when accessing encoder memory

An error occurred during the execution of the command "Generate application data type plate: C6300 Generate command" (0x2B67:01 / P-0-0660 / --).

Cause	Remedy
An error occurred when the encoder memory was accessed.	Check parameterization. Replace encoder.

▼ Attributes

Short diagnostics no. (20 bits):	C6311
Long diagnostics no. (32 bits):	000C6311
Related Sercos IDN:	P-0-0660.0.0

C6401 Reboot command impossible

When the command "Device reboot: C6400 Command" (0x2BD0:01 / S-0-1350 / --) is started, a check is run to find out whether the requirements for executing the command (restarting the device) have been met.

This diagnostic message is set if the requirement for restart is not given at the single-axis device, supply unit or multi-axis devices at the slave/sub-device at which the command was started.

Cause	Remedy
The DC bus voltage U_{DC} is ≥50 V	Discharge DC bus and make sure that the DC bus voltage is smaller than 50 V
The actual velocity of the axis is greater than "0"	Switch off axis and wait until axis is in standstill
The axis is not in "AF"	Switch off axis

Cause	Remedy
The switching of the subdevice state machine is active	Make sure that switching of the subdevice state machine is not active [C0200 (OM), C0400 (CM), C1100 (PM)]

▼ Attributes

Short diagnostics no. (20 bits):	C6401
Long diagnostics no. (32 bits):	000C6401

C6402 Reboot command: Othe components not ready

When the command "Device reboot: C6400 Command" (0x2BD0:01 / S-0-1350 / --) is started, a check is run to find out whether the requirements for executing the command (restarting the device) have been met.

This diagnostic message is set if the requirements for executing a restart are not given at axes available in the same multi-axis device and at which the command was **not directly** started.

Cause	Remedy
Requirements for restarting the multi-axis device have not been met	1. Reset command 2. Switch off multi-axis device / supply unit 3. Wait until all axes of multi-axis device are in standstill 4. Restart command

▼ Attributes

Short diagnostics no. (20 bits):	C6402
Long diagnostics no. (32 bits):	000C6402

C6901 Shutdown currently not possible

An error occurred during the execution of the command for switching off the eLION inverter ["J1939 application: C6900 Switch-off request" (0x28AE:01 / P-0-1934.0.10 / --)].

Cause	Remedy
The DC bus voltage U_{DC} is ≥60 V	Discharge DC bus and make sure that the DC bus voltage is smaller than 60 V
The actual velocity of the axis is greater than "0"	Switch off axis and wait until axis is in standstill
The axis is not in "AF"	Switch off axis

▼ Attributes

Short diagnostics no. (20 bits):	C6901
Long diagnostics no. (32 bits):	000C6901

C6902 Shutdown failed

An error occurred during the execution of the command for switching off the eLION inverter ["J1939 application: C6900 Switch-off request" (0x28AE:01 / P-0-1934.0.10 / --)].

Cause	Remedy
It had been impossible to switch off the device, because CAN telegrams were still received	Terminate CAN communication
The DC bus voltage U_{DC} has increased to a value ≥60 V	Discharge DC bus and make sure that the DC bus voltage is smaller than 60 V

▼ Attributes

Short diagnostics no. (20 bits):	C6902
Long diagnostics no. (32 bits):	000C6902

C7401 DRIVElink: Configuration mode not possible

An error occurred during the execution of the command "DRIVElink function: C7400 Activate configuration mode" (0x2DA0:09 / P-0-1837 / --).

It was impossible to switch the connections via ctrlX DRIVElink to the configuration mode (CM), since the subdevice state machine is not in CM.

▼ Attributes

Short diagnostics no. (20 bits):	C7401
Long diagnostics no. (32 bits):	000C7401

C7801 SMO: Parameter application invalid

An error occurred during the execution of the command "SMO motor properties: C7800 Command apply motor config." (0x315D:01 / P-0-3246.0.1 / P-0-3929).

One or more parameters are invalid. The faulty parameters were written to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C7801
Long diagnostics no. (32 bits):	060C7801
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00190261

Array parameter to be copied is longer than available buffer.

Cause/Remedy 1: The copy buffer must be enlarged in the software source code.

00190262

Error while transferring functional parameter to safety control. Possible causes: Write protection, parameter length is zero, or source parameter is longer than space in destination parameter.

Cause/Remedy 1: Unlock SMO. If this does not help, contact manufacturer.

C7802 SMO: Impossible to apply motor configuration

An error occurred during the execution of the command "SMO motor properties: C7800 Command apply motor config." (0x315D:01 / P-0-3246.0.1 / P-0-3929).

Applying the parameters for torque is currently not allowed.

Cause	Remedy
SMO operating state is not "configuration mode"	Check "SMO state machine: Operating status" (0x3082:04 / P-0-3231 / --) and, if necessary, activate configuration mode (execute C0400)
Incorrect SMO password level (≠"1")	Check "SMO password: Level" (0x3018:01 / P-0-3230 / --) and, if necessary, deactivate password-dependent write protection of password-protected safety technology parameters ["SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468)]

▼ Attributes

Short diagnostics no. (20 bits):	C7802
Long diagnostics no. (32 bits):	060C7802
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00190265

Transfer of parameters to SMO failed. No SMO present.

Cause/Remedy 1: Command can be used only if SMO is present in drive.

00190266

Transfer of parameters to SMO failed. SMO is disabled.

Cause/Remedy 1: Enable SMO.

00190267

Command failed. Can only be executed in CM mode.

Cause/Remedy 1: Change to configuration mode and rerun command.

C8001 SMO: Invalid scaling parameters ->S-0-0423

An error occurred during the execution of the command "SMO scaling function: C8000 Command apply scaling config." (0x302A:01 / P-0-3220 / --).

One or more scaling parameters are invalid. The faulty parameters were written to "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 / --).

▼ Attributes

Short diagnostics no. (20 bits):	C8001
Long diagnostics no. (32 bits):	000C8001

C8002 SMO: Not allowed to apply scaling

An error occurred during the execution of the command "SMO scaling function: C8000 Command apply scaling config." (0x302A:01 / P-0-3220 / --).

The scaling parameters cannot currently be accepted.

Cause	Remedy
SMO operating state is not "configuration mode"	Check "SMO state machine: Operating status" (0x3082:04 / P-0-3231 / --) and, if necessary, activate configuration mode (execute C0400)
Incorrect password level (≠"1")	Check "SMO password: Level" (0x3018:01 / P-0-3230 / --) and, if necessary, deactivate password-dependent write protection of password-protected safety technology parameters ["SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468)]

▼ Attributes

Short diagnostics no. (20 bits):	C8002
Long diagnostics no. (32 bits):	000C8002

C8101 SMO: Command execution impossible

An error occurred when executing the command to activate the configuration mode [C8100 (host command C0400)].

Configuration mode could not be activated.

Cause	Remedy
Standstill not reached	Restart the **host command** C0400 in standstill
Safety door open	Close safety door and restart the **host command** C0400

▼ Attributes

Short diagnostics no. (20 bits):	C8101
Long diagnostics no. (32 bits):	060C8101

C8121 SMO: Parking axis, command 1 cannot be executed

An error occurred during the execution of the internal command for activating the "Safe parking axis" state.

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from being switched to the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1600.

▼ Attributes

Short diagnostics no. (20 bits):	C8121
Long diagnostics no. (32 bits):	060C8121
Related Sercos IDN:	P-0-3231.0.13

Detailed diagnostics

00400011

Safe parking axis is not supported for this option

00400013

Command cannot be started

Cause/Remedy 1: A command is already active, and this command must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel Restart the device. If error persists, please contact customer support.

C8131 SMO: Parking axis, command 2 cannot be executed

An error occurred during the execution of the internal command for activating the "Safe parking axis" state.

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from being switched to the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1600.

▼ Attributes

Short diagnostics no. (20 bits):	C8131
Long diagnostics no. (32 bits):	060C8131
Related Sercos IDN:	P-0-3231.0.9

Detailed diagnostics

0040000D

Command cannot be started

Cause/Remedy 1: A command is already active. It must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel Restart the device. If error persists, please contact customer support.

00400012

Safe parking axis is not supported for this option

C8213 SMO: Incorrect parameterization

When executing the command to exit the configuration mode (C8200), an error was detected when checking the safety technology configuration parameters.

Cause	Remedy
Configuration parameters not verified.	Verify parameters [(list of unverified parameters: "SMO verification interface: List of non-verified parameters" (0x3016:06 / P-0-3233 / --)]
Configuration parameters outside of allowed value range	▪ Check and correct value ▪ Verify parameters [(list of unverified parameters: "SMO verification interface: List of non-verified parameters" (0x3016:06 / P-0-3233 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	C8213
Long diagnostics no. (32 bits):	060C8213
Related Sercos IDN:	P-0-3231.0.8

C8214 SMO: Incorrect configuration

An error occurred when executing the command to exit the configuration mode (C8200).

The parameterization mode was not reached.



An incorrect configuration might have caused the error to be triggered, see description in detailed diagnostics. To find out, please call the “Diagnostic trace” in ctrlX DRIVE Engineering as follows:

- In the function tree select the drive for which an error has been diagnosed.
- Open the context menu of the axis: „*Diagnostics* ➔ *Diagnostic trace*”.
  ⇒ The “Diagnostic trace” is opened.
- Filter for "detailed diagnostics".

Cause	Remedy
Scaling: The **data reference** for position, velocity and acceleration data is not equally parameterized	Make sure that the **data reference** is the same ■ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --) ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)
The **scaling type** for velocity and acceleration data is not equally parameterized	Make sure that the **scaling type** is the same ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)
The **scaling unit** for position, velocity and acceleration data is not equally parameterized (mixed inch/metric)	Make sure that the **scaling unit** is the same ■ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --) ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)
Scaling: The selection "Data reference at the motor shaft" - with load encoder – is not allowed	Select an allowed data reference
Scaling: The rotation position resolution is not correct	The rotation position resolution has to be entered as the value 360×10^{Exp} (Exp="0..7")
Signal control of outputs: The source IDN is not allowed - or - The source bit is not allowed	Check the "discrete outputs": Use ident number from "SMO signal control, discrete outputs: Possible source IDNs" (0x305A:03 / P-0-3335.0.3 / --) or Use bit from "SMO signal control, discrete outputs: Possible source bits" (0x305A:04 / P-0-3335.0.4 / --)
	Check the signal sources for the "safety bus status word": Use ident number from "SMO safety bus, signal control: Possible source IDNs" (0x3054:03 / P-0-3336.0.3 / P-0-2521) or Use bit from "SMO safety bus, signal control: Possible source bits" (0x3054:04 / P-0-3336.0.4 / P-0-2522)

Cause	Remedy
IO mapper inputs: The maximum possible number of instances of an IO mapper block type has been exceeded	One connection type is used too often. Check the I/O mapper block types and their individually possible maximum number of instances: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: A target signal (target IDN / target bit) is used multiple times	Make sure a target IDN / a target bit is only used once. **Target IDNs:** ■ "SMO IO mapper 1: IDN target" (0x3030:04 / P-0-3330.0.4 / --) ■ "SMO IO mapper 2: IDN target" (0x3031:04 / P-0-3330.1.4 / --) ■ ... ■ "SMO IO mapper 16: IDN target" (0x303F:04 / P-0-3330.15.4 / --) **Target bits:** ■ "SMO IO mapper 1: Bit target" (0x3030:05 / P-0-3330.0.5 / --) ■ "SMO IO mapper 2: Bit target" (0x3031:05 / P-0-3330.1.5 / --) ■ ... ■ "SMO IO mapper 16: Bit target" (0x303F:05 / P-0-3330.15.5 / --)
IO mapper inputs: The **target IDN** is not allowed	Check the I/O mapper block types and their individually possible target IDNs: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: The **target bits** are not allowed	Check the I/O mapper block types and their individually possible target bits: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)

Cause	Remedy
IO mapper inputs: Input signals not in order	I/O mapper block "Binary-to-bit decoder": Check the list of source IDNs for gaps: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)
IO mapper inputs: Only safety bus allowed	"Binary-to-bit decoder": Check the source IDN for "SMO safety bus function: Control word" (0x3052:02 / P-0-3340 / --): ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)
IO mapper inputs: The IO mapper block type is not allowed	Check the IO mapper block types. Only values from "0" to "7" are allowed. ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: The source IDN is not allowed	Use an IDN from the list of possible source IDNs: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)
IO mapper inputs: The list of source IDNs is incomplete	Make sure that the required inputs of the IO mapper block type have been entered: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)

Cause	Remedy
If the auxiliary function "Safe homing procedure" is used: "SMO Safe homing procedure: Tolerance window" (0x31B0:04 / P-0-3253.0.4 / P-0-2796) has been parameterized with "0"	Assign a value unequal zero to "SMO Safe homing procedure: Tolerance window" (0x31B0:04 / P-0-3253.0.4 / P-0-2796)

Also see I/O mapper block types

▼ Attributes

Short diagnostics no. (20 bits):	C8214
Long diagnostics no. (32 bits):	060C8214
Related Sercos IDN:	P-0-3231.0.8

Detailed diagnostics

00110211

ctrlX SENSE: Error when setting the configuration data

00110212

ctrlX SENSE: Overflow/error when calculating the internal resolution

00110213

ctrlX SENSE: Linear encoder systems not supported

00110214

ctrlX SENSE: Encoder properties not defined

00110215

Encoder evaluation start: Timeout (sync problems "WaitForStart" ctrlX SENSE)

00110216

Encoder evaluation start: Inadmissible state ("eval state" or "position state" unequal inactive ctrlX SENSE)

001C000F

SafetyLink: Combination of source IDN and bit number not permitted

Cause/Remedy 1: Verify that the selected source IDNs (0x3060:0D / P-0-3337.0.1) and bit numbers (0x3060:0E / P-0-3337.0.2) are permissible

001C0017

SafetyLink: Different length of lists 0x3060:0D / P-0-3337.0.1 and 0x3060:0E / P-0-3337.0.2

Cause/Remedy 1: Verify that the entries in the list for the source IDNs (0x3060:0D / P-0-3337.0.1) match the entries in the list with the source bit numbers (0x3060:0E / P-0-3337.0.2).

001C001A

SafetyLink: Safe address not configured

Cause/Remedy 1: Configure the safe address for SafetyLink.

001C002C

Safe local output: Different length of lists 0x305A:01 / P-0-3335.0.1 and 0x305A:02 / P-0-3335.0.2

Cause/Remedy 1: Verify that the entries in the list for the source IDNs (0x305A:01 / P-0-3335.0.1) match the entries in the list with the source bit numbers (0x305A:02 / P-0-3335.0.2).

001C002D

Safe local output: Too many elements in the list 0x305A:01 / P-0-3335.0.1 or 0x305A:02 / P-0-3335.0.2

Cause/Remedy 1: Verify that no more than one element is configured in the source identification number (0x305A:01 / P-0-3335.0.1) and source bit number (0x305A:02 / P-0-3335.0.2) lists.

001C0030

Safe bus: Source IDN 0x3058:06 / P-0-3343.0.4 not allowed for this assembly

Cause/Remedy 1: Signal control of outputs: The source IDN is not allowed. Remedy: Check the signal sources for the "safety bus status word": Use an IDN from the list of possible source IDNs (0x3054:03 / P-0-3336.0.3).

001C0034

Safe bus: Source IDN is not allowed for safe value 1

Cause/Remedy 1: Signal control of outputs: The source IDN is not allowed. Remedy: Check the signal source for the "safe value 1": Use an IDN from the list of possible source IDNs (0x3054:07 / P-0-3336.0.7).

001C0038

Safe bus: Source IDN is not allowed for safe value 2

Cause/Remedy 1: Signal control of outputs: The source IDN is not allowed. Remedy: Check the signal source for the "safe value 2": Use an IDN from the list of possible source IDNs (0x3054:0A / P-0-3336.0.10)

001C003C

Safe bus: Source IDN is not allowed for safe value 3

Cause/Remedy 1: Signal control of outputs: The source IDN is not allowed. Remedy: Check the signal sources for the "safe value 3": Use an IDN from the list of possible source IDNs (0x3054:0D / P-0-3336.0.13).

001C0040

Safe local output: Too many elements in the list 0x305A:01 / P-0-3335.0.1 or 0x305A:02 / P-0-3335.0.2

001C0047

IO mapper: SDL IO mapper block not allowed

Cause/Remedy 1: Check compatibility of SDL IO mapper block with optional safety technology module that is used

Cause/Remedy 2: Check configuration of local zone in 0x3062:02 / P-0-3268.0.2

001C0050

Safety bus: Source IDN 0x31B1:02 / P-0-3300.0.1 / P-0-3103 not allowed for this assembly

Cause/Remedy 1: Cause: Source IDN is not allowed with the selected producer assembly. Remedy: Check the signal sources for the "safety bus status word". Use an IDN from the list of possible source IDNs (0x3054:03 / P-0-3336.0.3 / P-0-2521).

Cause/Remedy 2: Source IDN is not allowed with the selected producer assembly. Remedy: Check selected producer assembly (0x3058:02 / P-0-3343.0.1 / P-0-2551). Source IDN 0x31B1:02 / P-0-3300.0.1 / P-0-3103 is only allowed with producer assembly 796.

001C0051

IO mapper: Target IDN 0x31B1:01 / P-0-3300 is not allowed for this assembly

Cause/Remedy 1: The target IDN is not allowed for the safe connector in combination with the selected consumer assembly. Remedy: Check the target signal for the safe connector. Only use target signals from the list P-0-3331.1.2.

Cause/Remedy 2: The target IDN is not allowed for the safe connector in combination with the selected consumer assembly. Remedy: Check selected consumer assembly (P-0-3342.0.1). Target IDN 0x31B1:01 / P-0-3300 is only allowed with assembly 791.

001D0007

SMO: Incorrect configuration (M8)

001D0008

SMO: Output 3 cannot be used as dynamization source in push-pull mode

Cause/Remedy 1: Remedy: Do not use output 3 as dynamization source in push-pull mode

001D0022

Local zone: Configuration of local zone not allowed

Cause/Remedy 1: The local zone cannot be activated with the optional safety technology module used => 0x3062:02 / P-0-3268.0.2 has to be set to "0"

0040047F

System state machine: Transition CM->PM; timeout during sync. with other channel, II

004606D1

Safe reference: Tolerance window (0x31B0:04 / P-0-3253.0.4 / P-0-2796) must not be "0"

004606D2

Safe reference: Tolerance window (0x31B0:04 / P-0-3253.0.4 / P-0-2796) greater than maximum value

00480001

The configured travel range cannot be displayed internally

Cause/Remedy 1: Cause: The parameterized maximum travel range is too large. Remedy: Parameterize a smaller value for the maximum travel range, if possible.

0048325B

Inverse of position factor for scaling adjustment outside the limits (min)

0048325C

Overflow when calculating the overflow threshold

00490000

Encoder evaluation: Invalid parameterization (EC/M5), execute command C8400

00490001

Non-verisimilar encoder resolution (0x3100:03 / P-0-3242.1.4, 0x3100:04 / P-0-3242.1.6, 0x3108:01 / P-0-3242.1.7)

0053008C

Impossible to switch from SCM to PM (C8200), because a critical SMO error is present

00530728

Limit value of position feedback value difference of channel 1 and channel 2 cannot be displayed

Cause/Remedy 1: Check parameterization; if necessary, adjust position scaling exponent.

00530729

Limit value of position feedback value difference of channel 1 and channel 2 cannot be displayed

Cause/Remedy 1: Check parameterization; if necessary, adjust position scaling exponent.

0053073D

With rotary ACUROlink encoders, the resolution has to be 2^n

0053073E

Linear ACUROlink encoders are not supported

00530D06

Failed to launch basic encoder evaluation, unknown detailed diagnostics

00530D07

Failed to stop basic encoder evaluation, unknown detailed diagnostics

00530D08

Faulty path

00530D0A

Encoder evaluation start: Encoder type = 0

00530D0B

Code word error implantation while enabling ENCB_MainC28

00530D0C

Code word error implantation while enabling ENCE_MainC28

00530D0D

Faulty path

00530D0E

Overflow/error when calculating the internal resolution

00530D0F

Linear ACUROlink encoders are not supported

00530D14

Encoder properties (0x3100:08 / P-0-3242.1.2) not defined

00530D18

Encoder evaluation start: Eval/Position State Unequal inactive

00530D19

Encoder evaluation start: faulty path

00530D2B

Encoder evaluation start: Timeout (sync problems)

00530D2D

Failed to launch ENCE encoder evaluation, unknown detailed diagnostics

00530D2E

Failed to stop ENCE encoder evaluation, unknown detailed diagnostics

00530D2F

Faulty path

00530D30

Encoder evaluation: Resolution (digital) is zero (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00530D31

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00530D32

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00530D33

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00530D90

Position scaling unit is not allowed (0x3022:01 / P-0-3222.0.1)

00530D92

Combination of position scaling and velocity scaling not allowed (0x3022:01 / P-0-3222.0.1)

00530D93

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00530D95

Combination of position scaling and velocity scaling not allowed (0x3022:01 / P-0-3222.0.1)

00530D96

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00530D97

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00530D98

Error in calculating an internal factor

00530F1E

Safe local inputs: Configuration not allowed

Cause/Remedy 1: Correct setting of bits 0-2 in 0x305C:01 / P-0-3322.0.2 / P-0-3840

00530F27

Safe local inputs not allowed

Cause/Remedy 1: Hardware has no safe local inputs

00533201

Configuration discovery: faulty path

00533202

Invalid scaling type (0x3022:01 / P-0-3222.0.1, bit 0-2) or encoder type (0x3100:08 / P-0-3242.1.2, bit 0)

00533203

Configuration discovery: faulty path

00533204

Invalid scaling type (0x3022:01 / P-0-3222.0.1, bit 0-2) or encoder type (0x3100:08 / P-0-3242.x.2, bit 0)

00533205

Position factor calculation: faulty path

00533206

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3 and 0x3100:03 / P-0-3242.1.4) cannot be displayed

00533207

Position factor calculation: Denominator = 0

00533208

Position factor calculation: faulty path

00533209

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

0053320A

Position factor calculation: Denominator = 0

0053320B

Position factor calculation: faulty path

0053320C

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

0053320D

Position factor calculation: Denominator = 0

0053320E

Position factor calculation: faulty path

0053320F

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

00533210

Position factor calculation: Denominator = 0

00533211

Position factor calculation: faulty path

00533212

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

00533213

Position factor calculation: Denominator = 0

00533214

Overflow calculation: faulty path

00533215

Overflow value cannot be represented in 32 bits

00533216

Overflow calculation: Denominator = 0

00533217

Overflow calculation: XShift factor > 31 | < 0

00533218

Overflow calculation: faulty path

00533219

Overflow value cannot be represented in 32 bits

0053321A

Overflow calculation: Denominator = 0

0053321B

Overflow calculation: XShift factor > 31 | < 0

0053321C

Overflow calculation: faulty path

0053321D

Overflow value cannot be represented in 32 bits

0053321E

Overflow calculation: Denominator = 0

0053321F

Overflow calculation: XShift factor > 31 | < 0

00533220

Overflow calculation: faulty path

00533221

Overflow value cannot be represented in 32 bits

00533222

Overflow calculation: Denominator = 0

00533223

Overflow calculation: XShift factor > 31 | < 0

00533224

Overflow calculation: faulty path

00533225

Overflow value cannot be represented in 32 bits

00533226

Overflow calculation: Denominator = 0

00533227

Overflow calculation: XShift factor > 31 | < 0

00533228

Limit value calculation: faulty path

00533229

Limit value calculation: Multiplication overflow (OV)

0053322A

Limit value calculation: Multiplication overflow (OV)

0053322B

Limit value calculation: Numerator > 64 bits

0053322C

Limit value calculation: (denominator * limit) > numerator

0053322D

Limit value calculation: Numerator > 64 bits

0053322E

Limit value calculation: faulty path

0053322F

Limit value calculation: Multiplication overflow (OV)

00533230

Limit value calculation: Multiplication overflow (OV)

00533231

Limit value calculation: Numerator > 64 bits

00533232

Limit value calculation: (denominator * limit) > numerator

00533233

Limit value calculation: Numerator > 64 bits

00533234

Limit value calculation: faulty path

00533235

Limit value calculation: Multiplication overflow (OV)

00533236

Limit value calculation: Multiplication overflow (OV)

00533237

Limit value calculation: Numerator > 64 bits

00533238

Limit value calculation: (denominator * limit) > numerator

00533239

Limit value calculation: Numerator > 64 bits

0053323A

Limit value calculation: faulty path

0053323B

Limit value calculation: Multiplication overflow (OV)

0053323C

Limit value calculation: Multiplication overflow (OV)

0053323D

Limit value calculation: Numerator > 64 bits

0053323E

Limit value calculation: (denominator * limit) > numerator

0053323F

Limit value calculation: Numerator > 64 bits

00533240

Limit value calculation: faulty path

00533241

Limit value calculation: Multiplication overflow (OV)

00533242

Limit value calculation: Multiplication overflow (OV)

00533243

Limit value calculation: Numerator > 64 bits

00533244

Limit value calculation: (denominator * limit) > numerator

00533245

Limit value calculation: Position scaling unit != m / inch

00533246

Limit value calculation: Numerator > 64 bits

00533255

Position factor calculation, rotary (denominator = 0)

00533256

Position factor calculation, rotary (denominator = 0)

00533257

Position factor calculation, linear (denominator = 0)

00533258

Position factor calculation, linear (denominator = 0)

00533259

Error: overflow modulo value in internal format

0053325A

Error: Inverse of position factor for scaling adjustment outside the limits (max)

005333C1

Incorrect configuration: 0x3151:02 / P-0-3312.0.2 illegal or encoder not configured

005333C2

P-0-3312.0.2 must not be equal to “0” with configured AKS

Cause/Remedy 1: Remedy: P-0-3312.0.2 must be set to a value not equal to “0” that works for both the motor and inverter Too low a cut-off threshold for an AKS can lead to thermal overloading of inverter components or the motor winding.

00533581

Error calculating the positional adjustment factor (0x3108:01 / P-0-3242.1.7 is “0”)

00533582

Error calculating the positional adjustment factor (0x3108:01 / P-0-3242.1.7 is “0”)

00533583

Error calculating the positional adjustment factor (0x3100:05 / P-0-3242.1.3 and 0x3100:06 / P-0-3242.1.5 are “0”)

00533584

Position factor calculation: faulty path

00533585

Error: No valid encoder class (no analog, combo or digital encoder)

00533586

Encoder position overflow threshold > 2^62

00533587

Unable to display the internal position range (modulo value = 0)

00533588

Unable to display the internal position range (modulo value > 2^62)

00533589

Traversing range (0x3020:06 / P-0-3221.0.7, 0x3020:05 / P-0-3221.0.6) greater than maximum

0053358A

There was an error calculating the internal traversing range

0053358B

Configured SMO: scaling exponent for translational location data (P-0-3222.x.2) is not supported

0053358C

There was an error calculating the internal traversing range

0053358D

Configured 0x3022:02 / P-0-3222.0.2 is not supported

0053358E

Internal error: no valid data access

0053358F

Internal error: no valid data access

00533590

Undocumented calculation error (internal position range)

00533591

Error: Unable to display the internal position range (modulo value > 2^62)

00533592

Error: Unable to display the internal position range (modulo value fraction)

00533593

Error: Unable to display the internal position range (modulo value fraction)

00533594

Non-verisimilar ENCB overflow threshold

00533595

Non-verisimilar encoder position overflow threshold

00533596

Overflow threshold for encoder position less than encoder resolution

00533597

Overflow threshold for encoder position does not match encoder resolution

00533598

Physical encoder resolution too large (0x3100:04 / P-0-3242.1.6)

00533599

Error: Position scaling unit != m / inch

0053359A

Error: Position scaling unit != m / inch

0053359B

Calculation of internal traversing range: faulty path

0053359C

Calculation of internal traversing range: faulty path

0053359D

Calculation of internal traversing range: faulty path

0053359E

Non-verisimilar encoder resolution (0x3100:03 / P-0-3242.1.4, 0x3100:04 / P-0-3242.1.6, 0x3108:01 / P-0-3242.1.7)

0053359F

Non-verisimilar encoder resolution (0x3100:05 / P-0-3242.1.3, 0x3100:06 / P-0-3242.1.5, 0x3108:01 / P-0-3242.1.7)

005335A0

Unsupported encoder type

005335A1

Non-verisimilar encoder resolution (0x3100:05 / P-0-3242.1.3, 0x3100:06 / P-0-3242.1.5, 0x3108:01 / P-0-3242.1.7)

005335A2

Invalid path: Encoder class

005335A3

Position resolution is invalid (0x3108:01 / P-0-3242.1.7 == 0)

005335B0

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 4-7

005335B1

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 0-3

005335B2

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 16 and 19

005335B3

Overflow while calculating safe position resolution (0x3108:01 / P-0-3242.1.7)

005335B4

Division by zero while calculating safe position overflow threshold (0x3108:02 / P-0-3242.1.8)

005335B5

Invalid path: Encoder class

00533605

Unauthorized error reaction 0x3153:01 / P-0-3311.0.1, bit 0

00533618

The time set in 0x3153:02 / P-0-3311.0.2 should be at least 10 ms longer than the time set in 0x2870:02 / P-0-0119.0.1 / P-0-2413

00536020

Encoder evaluation start: Timeout (sync problems WaitForStart IEP)

00536021

Encoder evaluation start: Faulty path (IEP)

00536022

Encoder evaluation start: Inadmissible state (“Eval” state or “Position” state not equal to inactive IEP)

00536026

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bit 24

00536028

Unauthorized error reaction 0x3151:01 / P-0-3312.0.1, bit 0

0054008C

Impossible to switch from SCM to PM (C8200), because a critical SMO error is present

00540728

Limit value of position feedback value difference of channel 1 and channel 2 cannot be displayed

Cause/Remedy 1: Check parameterization; if necessary, adjust position scaling exponent.

00540729

Limit value of position feedback value difference of channel 1 and channel 2 cannot be displayed

Cause/Remedy 1: Check parameterization; if necessary, adjust position scaling exponent.

0054073D

With rotary ACUROlink encoders, the resolution has to be 2^n

0054073E

Linear ACUROlink encoders are not supported

00540D06

Failed to launch basic encoder evaluation, unknown detailed diagnostics

00540D07

Failed to stop basic encoder evaluation, unknown detailed diagnostics

00540D08

Faulty path

00540D0A

Encoder evaluation start: Encoder type = 0

00540D0B

Code word error implantation while enabling ENCB_MainC28

00540D0C

Code word error implantation while enabling ENCE_MainC28

00540D0D

Faulty path

00540D0E

Overflow/error when calculating the internal resolution

00540D0F

Linear ACUROlink encoders are not supported

00540D14

Encoder properties (0x3100:08 / P-0-3242.1.2) not defined

00540D18

Encoder evaluation start: Eval/Position State Unequal inactive

00540D19

Encoder evaluation start: faulty path

00540D2B

Encoder evaluation start: Timeout (sync problems)

00540D2D

Failed to launch ENCE encoder evaluation, unknown detailed diagnostics

00540D2E

Failed to stop ENCE encoder evaluation, unknown detailed diagnostics

00540D2F

Faulty path

00540D30

Encoder evaluation: Resolution (digital) is zero (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00540D31

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00540D32

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00540D33

Encoder evaluation: Resolution (digital) does not equal 2^n (0x3100:03 / P-0-3242.1.4 and 0x3100:04 / P-0-3242.1.6)

00540D90

Position scaling unit is not allowed (0x3022:01 / P-0-3222.0.1)

00540D92

Combination of position scaling and velocity scaling not allowed (0x3022:01 / P-0-3222.0.1)

00540D93

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00540D95

Combination of position scaling and velocity scaling not allowed (0x3022:01 / P-0-3222.0.1)

00540D96

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00540D97

Velocity scaling unit is not allowed (0x3024:01 / P-0-3223.0.1)

00540D98

Error in calculating an internal factor

00540F1E

Safe local inputs: Configuration not allowed

Cause/Remedy 1: Correct setting of bits 0-2 in 0x305C:01 / P-0-3322.0.2 / P-0-3840

00540F27

Safe local inputs not allowed

Cause/Remedy 1: Hardware has no safe local inputs

00543201

Configuration discovery: faulty path

00543202

Invalid scaling type (0x3022:01 / P-0-3222.0.1, bit 0-2) or encoder type (0x3100:08 / P-0-3242.1.2, bit 0)

00543203

Configuration discovery: faulty path

00543204

Invalid scaling type (0x3022:01 / P-0-3222.0.1, bit 0-2) or encoder type (0x3100:08 / P-0-3242.x.2, bit 0)

00543205

Position factor calculation: faulty path

00543206

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3 and 0x3100:03 / P-0-3242.1.4) cannot be displayed

00543207

Position factor calculation: Denominator = 0

00543208

Position factor calculation: faulty path

00543209

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

0054320A

Position factor calculation: Denominator = 0

0054320B

Position factor calculation: faulty path

0054320C

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

0054320D

Position factor calculation: Denominator = 0

0054320E

Position factor calculation: faulty path

0054320F

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

00543210

Position factor calculation: Denominator = 0

00543211

Position factor calculation: faulty path

00543212

Position factor calculation: selected resolution (0x3100:05 / P-0-3242.1.3, 0x3100:03 / P-0-3242.1.4) cannot be displayed

00543213

Position factor calculation: Denominator = 0

00543214

Overflow calculation: faulty path

00543215

Overflow value cannot be represented in 32 bits

00543216

Overflow calculation: Denominator = 0

00543217

Overflow calculation: XShift factor > 31 | < 0

00543218

Overflow calculation: faulty path

00543219

Overflow value cannot be represented in 32 bits

0054321A

Overflow calculation: Denominator = 0

0054321B

Overflow calculation: XShift factor > 31 | < 0

0054321C

Overflow calculation: faulty path

0054321D

Overflow value cannot be represented in 32 bits

0054321E

Overflow calculation: Denominator = 0

0054321F

Overflow calculation: XShift factor > 31 | < 0

00543220

Overflow calculation: faulty path

00543221

Overflow value cannot be represented in 32 bits

00543222

Overflow calculation: Denominator = 0

00543223

Overflow calculation: XShift factor > 31 | < 0

00543224

Overflow calculation: faulty path

00543225

Overflow value cannot be represented in 32 bits

00543226

Overflow calculation: Denominator = 0

00543227

Overflow calculation: XShift factor > 31 | < 0

00543228

Limit value calculation: faulty path

00543229

Limit value calculation: Multiplication overflow (OV)

0054322A

Limit value calculation: Multiplication overflow (OV)

0054322B

Limit value calculation: Numerator > 64 bits

0054322C

Limit value calculation: (denominator * limit) > numerator

0054322D

Limit value calculation: Numerator > 64 bits

0054322E

Limit value calculation: faulty path

0054322F

Limit value calculation: Multiplication overflow (OV)

00543230

Limit value calculation: Multiplication overflow (OV)

00543231

Limit value calculation: Numerator > 64 bits

00543232

Limit value calculation: (denominator * limit) > numerator

00543233

Limit value calculation: Numerator > 64 bits

00543234

Limit value calculation: faulty path

00543235

Limit value calculation: Multiplication overflow (OV)

00543236

Limit value calculation: Multiplication overflow (OV)

00543237

Limit value calculation: Numerator > 64 bits

00543238

Limit value calculation: (denominator * limit) > numerator

00543239

Limit value calculation: Numerator > 64 bits

0054323A

Limit value calculation: faulty path

0054323B

Limit value calculation: Multiplication overflow (OV)

0054323C

Limit value calculation: Multiplication overflow (OV)

0054323D

Limit value calculation: Numerator > 64 bits

0054323E

Limit value calculation: (denominator * limit) > numerator

0054323F

Limit value calculation: Numerator > 64 bits

00543240

Limit value calculation: faulty path

00543241

Limit value calculation: Multiplication overflow (OV)

00543242

Limit value calculation: Multiplication overflow (OV)

00543243

Limit value calculation: Numerator > 64 bits

00543244

Limit value calculation: (denominator * limit) > numerator

00543245

Limit value calculation: Position scaling unit != m / inch

00543246

Limit value calculation: Numerator > 64 bits

00543255

Position factor calculation, rotary (denominator = 0)

00543256

Position factor calculation, rotary (denominator = 0)

00543257

Position factor calculation, linear (denominator = 0)

00543258

Position factor calculation, linear (denominator = 0)

00543259

Error: overflow modulo value in internal format

0054325A

Error: Inverse of position factor for scaling adjustment outside the limits (max)

005433C1

Incorrect configuration: 0x3151:02 / P-0-3312.0.2 illegal or encoder not configured

005433C2

P-0-3312.0.2 must not be equal to “0” with configured AKS

Cause/Remedy 1: Remedy: P-0-3312.0.2 must be set to a value not equal to “0” that works for both the motor and inverter Too low a cut-off threshold for an AKS can lead to thermal overloading of inverter components or the motor winding.

00543581

Error calculating the positional adjustment factor (0x3108:01 / P-0-3242.1.7 is “0”)

00543582

Error calculating the positional adjustment factor (0x3108:01 / P-0-3242.1.7 is “0”)

00543583

Error calculating the positional adjustment factor (0x3100:05 / P-0-3242.1.3 and 0x3100:06 / P-0-3242.1.5 are “0”)

00543584

Position factor calculation: faulty path

00543585

Error: No valid encoder class (no analog, combo or digital encoder)

00543586

Encoder position overflow threshold > 2^62

00543587

Unable to display the internal position range (modulo value = 0)

00543588

Unable to display the internal position range (modulo value > 2^62)

00543589

Traversing range (0x3020:06 / P-0-3221.0.7, 0x3020:05 / P-0-3221.0.6) greater than maximum

0054358A

There was an error calculating the internal traversing range

0054358B

Configured SMO: scaling exponent for translational location data (P-0-3222.x.2) is not supported

0054358C

There was an error calculating the internal traversing range

0054358D

Configured 0x3022:02 / P-0-3222.0.2 is not supported

0054358E

Internal error: no valid data access

0054358F

Internal error: no valid data access

00543590

Undocumented calculation error (internal position range)

00543591

Error: Unable to display the internal position range (modulo value > 2^62)

00543592

Error: Unable to display the internal position range (modulo value fraction)

00543593

Error: Unable to display the internal position range (modulo value fraction)

00543594

Non-verisimilar ENCB overflow threshold

00543595

Non-verisimilar encoder position overflow threshold

00543596

Overflow threshold for encoder position less than encoder resolution

00543597

Overflow threshold for encoder position does not match encoder resolution

00543598

Physical encoder resolution too large (0x3100:04 / P-0-3242.1.6)

00543599

Error: Position scaling unit != m / inch

0054359A

Error: Position scaling unit != m / inch

0054359B

Calculation of internal traversing range: faulty path

0054359C

Calculation of internal traversing range: faulty path

0054359D

Calculation of internal traversing range: faulty path

0054359E

Non-verisimilar encoder resolution (0x3100:03 / P-0-3242.1.4, 0x3100:04 / P-0-3242.1.6, 0x3108:01 / P-0-3242.1.7)

0054359F

Non-verisimilar encoder resolution (0x3100:05 / P-0-3242.1.3, 0x3100:06 / P-0-3242.1.5, 0x3108:01 / P-0-3242.1.7)

005435A0

Unsupported encoder type

005435A1

Non-verisimilar encoder resolution (0x3100:05 / P-0-3242.1.3, 0x3100:06 / P-0-3242.1.5, 0x3108:01 / P-0-3242.1.7)

005435A2

Invalid path: Encoder class

005435A3

Position resolution is invalid (0x3108:01 / P-0-3242.1.7 == 0)

005435B0

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 4-7

005435B1

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 0-3

005435B2

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bits 16 and 19

005435B3

Overflow while calculating safe position resolution (0x3108:01 / P-0-3242.1.7)

005435B4

Division by zero while calculating safe position overflow threshold (0x3108:02 / P-0-3242.1.8)

005435B5

Invalid path: Encoder class

00543605

Unauthorized error reaction 0x3153:01 / P-0-3311.0.1, bit 0

00543618

The time set in 0x3153:02 / P-0-3311.0.2 should be at least 10 ms longer than the time set in 0x2870:02 / P-0-0119.0.1 / P-0-2413

00546020

Encoder evaluation start: Timeout (sync problems WaitForStart IEP)

00546021

Encoder evaluation start: Faulty path (IEP)

00546022

Encoder evaluation start: Inadmissible state (“Eval” state or “Position” state not equal to inactive IEP)

00546026

Unauthorized error reaction 0x315E:01 / P-0-3263.0.1, bit 24

00546028

Unauthorized error reaction 0x3151:01 / P-0-3312.0.1, bit 0

C8221 SMO: Disable Parking axis, command 1 cannot be executed

An error occurred during the execution of the internal command for disabling the "Safe parking axis" state.

Cause	Remedy

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from exiting the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1700.

▼ Attributes

Short diagnostics no. (20 bits):	C8221
Long diagnostics no. (32 bits):	060C8221
Related Sercos IDN:	P-0-3231.0.14

Detailed diagnostics

00400014

Safe parking axis is not supported for this option

00400016

Command cannot be started

Cause/Remedy 1: A command is already active, and this command must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel Restart the device. If error persists, please contact customer support.

C8231 SMO: Disable Parking axis, command 2 cannot be executed

During the execution of the command for disabling the "Safe parking axis" state (C1700), the integrated safety technology carries out checks. An error occurred in the process. For advanced diagnostics, proceed as described:

1. Switch to the configuration mode (CM).
2. Restart the command C1700.
3. Try switching to the parameterization mode (PM); more error details will be generated during the command execution.
4. Remove the error causes with the aid of the error details.

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from disabling the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1700.

▼ Attributes

Short diagnostics no. (20 bits):	C8231
Long diagnostics no. (32 bits):	060C8231
Related Sercos IDN:	P-0-3231.0.12

Detailed diagnostics

0040000E

Safe parking axis is not supported for this option

00400015

Command cannot be started

Cause/Remedy 1: A command is already active, and this command must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel Restart the device. If error persists, please contact customer support.

C8301 SMO: Incorrect parameter image

When the command "SMO parameterization: C8300 Command Activate parameter image" (0x3012:02 / P-0-3231.0.3 / P-0-2467) is executed, a check is run to find out whether the axis identifier saved on the panel ["SMO identification: Active axis identifier" (0x3014:01 / P-0-3235.0.1 / P-0-2533)] complies with the axis identifier contained in the image ["SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534)]. If this is not the case, the command is not executed and terminated with this error message.

Cause	Remedy
Command C8300 was started without previously loading a parameter image	Before the command C8300 is executed, a parameter image has to be loaded by loading a parameter set
The image loaded is incompatible or defective	Load a valid parameter set

▼ Attributes

Short diagnostics no. (20 bits):	C8301
Long diagnostics no. (32 bits):	060C8301
Related Sercos IDN:	P-0-3231.0.3

C8302 SMO: Impossible to apply parameter image at this time

An error occurred during the execution of the command "SMO parameterization: C8300 Command Activate parameter image" (0x3012:02 / P-0-3231.0.3 / P-0-2467).

Cause	Remedy

Cause	Remedy
Safety technology is active. Drive is not in configuration mode (CM)	▪ Switch drive controller to the configuration mode (execute C0200) - or - Deactivate SafeMotion ▪ Restart C8300

▼ Attributes

Short diagnostics no. (20 bits):	C8302
Long diagnostics no. (32 bits):	060C8302
Related Sercos IDN:	P-0-3231.0.3

Detailed diagnostics

005334CA

Error while deactivating safety technology

005434CA

Error while deactivating safety technology

C8401 SMO: Impossible to apply encoder type

An error occurred during the execution of the command "SMO encoder config.: C8400 Command apply encoder config." (0x3100:01 / P-0-3254 / --).

Cause	Remedy
It is not possible to apply the encoder type; encoder type set in standard firmware is not allowed as a safety technology encoder ["SMO encoder config.: Phys. encoder type" (0x3100:09 / P-0-3242.1.1 / --)]	Check encoder configuration, if necessary replace encoder or motor

▼ Attributes

Short diagnostics no. (20 bits):	C8401
Long diagnostics no. (32 bits):	000C8401

C8402 SMO: Impossible to apply encoder configuration

An error occurred during the execution of the command "SMO encoder config.: C8400 Command apply encoder config." (0x3100:01 / P-0-3254 / --).

Cause	Remedy

Cause	Remedy
Acceptance of encoder configuration is not possible in this operating status; safety technology parameters are write-protected.	1. Start command C8100 to activate the configuration mode. 2. Set SMO password. 3. Restart command C8400 to apply encoder configuration.

▼ Attributes

Short diagnostics no. (20 bits):	C8402
Long diagnostics no. (32 bits):	000C8402

C8403 SMO: Parameter for applying encoder configuration invalid

An error occurred during the execution of the command "SMO encoder config.: C8400 Command apply encoder config." (0x3100:01 / P-0-3254 / --).

Cause	Remedy
At least one parameter of encoder configuration in standard firmware is invalid.	Check encoder parameters of standard firmware for validity and, if necessary, rewrite them.

▼ Attributes

Short diagnostics no. (20 bits):	C8403
Long diagnostics no. (32 bits):	000C8403

Detailed diagnostics

0044210C

Parameter is invalid (ONBOARD: 0x2418:01 / S-0-0602.10.1 / S-0-2550, OPT_2: 0x241A:01/ S-0-0602.2.1 / S-0-2500, OPT_3: 0x241C:01/ S-0-0602.3.1 / S-0-2525)

Cause/Remedy 1: Check parameter

0044210D

Parameter 0x3100:09 / P-0-3242.1.1 could not be written

Cause/Remedy 1: Check parameter

0044210E

Parameter is invalid (ONBOARD: 0x2418:15 / S-0-0602.10.21 / S-0-2570, OPT_2: 0x241C:15 / S-0-0602.3.21 / S-0-2545, OPT_3: 0x241C:15 / S-0-0602.3.21 / S-0-2545)

Cause/Remedy 1: Check parameter

0044210F

Parameter 0x3100:05 / P-0-3242.1.3 could not be written

Cause/Remedy 1: Check parameter

00442110

Parameter 0x3100:06 / P-0-3242.1.5 could not be written

Cause/Remedy 1: Check parameter

00442111

Parameter is invalid (ONBOARD: 0x2418:16 / S-0-0602.10.22 / S-0-2571, OPT_2: 0x241A:16 / S-0-0602.2.22 / S-0-2521, OPT_3: 0x241C:16 / S-0-0602.3.22 / S-0-2546)

Cause/Remedy 1: Check parameter

00442112

Parameter 0x3100:03 / P-0-3242.1.4 could not be written

Cause/Remedy 1: Check parameter

00442113

Parameter 0x3100:04 / P-0-3242.1.6 could not be written

Cause/Remedy 1: Check parameter

00442114

Parameter is invalid (ONBOARD: 0x2410:15 / S-0-0601.10.21 / S-0-2470, OPT_2: 0x2412:15/ S-0-0601.2.21 / S-0-2420, OPT_3: 0x2414:15 / S-0-0601.3.21 / S-0-2445)

Cause/Remedy 1: Check parameter

00442115

Parameter 0x3108:01 / P-0-3242.1.7 could not be written

Cause/Remedy 1: Check parameter

00442116

Parameter is invalid (ONBOARD: 0x2410:16 / S-0-0601.10.22 / S-0-2471, OPT_2: 0x2412:16 / S-0-0601.2.22 / S-0-2421, OPT_3: 0x2414:16 / S-0-0601.3.22 / S-0-2446)

Cause/Remedy 1: Check parameter

00442117

Parameter 0x3108:02 / P-0-3242.1.8 could not be written

Cause/Remedy 1: Check parameter

00442118

Parameter S-0-0602.x.140 is invalid

Cause/Remedy 1: Check parameter

00442119

Parameter 0x3108:03 / P-0-3242.1.10 could not be written

Cause/Remedy 1: Check parameter

0044211A

One of the following parameters is invalid: 0x2900:02 / S-0-0077, 0x24A2:01 / S-0-0277 or ONBOARD: 0x2418:02 / S-0-0602.10.2 / S-0-2551, OPT_2: 0x241A:02 / S-0-0602.2.2 / S-0-2501, OPT_3: 0x241C:02 / S-0-0602.3.2 / S-0-2526

Cause/Remedy 1: Check parameter

0044211B

Parameter 0x3100:08 / P-0-3242.1.2 could not be written

Cause/Remedy 1: Check parameter

0044211C

No encoder configured in parameter 0x3100:02 / P-0-3254.0.1 / P-0-3600

Cause/Remedy 1: Configure encoder in parameters

00500204

Impossible to write "SMO axis mechanics: Polarity" (0x3020:01 / P-0-3221.0.1)

C8501 SMO: Impossible to apply axis identification

An error occurred during the execution of the command "SMO identification: C8500 Command Apply data" (0x3014:03 / P-0-3235.0.3 / P-0-2535).

Cause	Remedy
The proposed axis identifier ["SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534)] cannot be applied since "SMO identification: Control word" (0x3014:04 / P-0-3235.0.4 / P-0-2536) has been incorrectly configured	Check "SMO identification: Control word" (0x3014:04 / P-0-3235.0.4 / P-0-2536) and set it correctly
"SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534) cannot be applied since it has not been verified	Verify "SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534)

Cause	Remedy
The proposed axis identifier ["SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534)] cannot be applied since the active axis identifier ["SMO identification: Active axis identifier" (0x3014:01 / P-0-3235.0.1 / P-0-2533)] no longer has the default value	Execute command C0720 to load the SafeMotion default values
"SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534) cannot be applied since the identifier does not have enough characters	Check "SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534) and assign an allowed string
"SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534) cannot be applied since the identifier has too many characters	
The proposed axis identifier ["SMO identification: Proposed axis identifier" (0x3014:02 / P-0-3235.0.2 / P-0-2534)] cannot be applied since the identifier has the same string as "SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468)	

▼ Attributes

Short diagnostics no. (20 bits):	C8501
Long diagnostics no. (32 bits):	060C8501
Related Sercos IDN:	P-0-3235.0.3

Detailed diagnostics

00530200

P-0-3235.0.4 incorrectly parameterized

00530201

Axle identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) not verified

Cause/Remedy 1: Only verified proposed axis identifiers are applied.

00530202

0x3014:01 / P-0-3235.0.1 / P-0-2533 not equal to default value

Cause/Remedy 1: The command C8500 can only be executed if 0x3014:01 / P-0-3235.0.1 / P-0-2533 is equal to its default value.

00530203

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) too long

Cause/Remedy 1: Only axis identifiers with a maximum of 44 characters are applied.

00530204

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) too short

Cause/Remedy 1: Only axis identifiers with a minimum of three characters are applied.

00530205

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) same as SMO password (0x3018:02 / P-0-3230.0.1 / P-0-2468)

0053020F

“Inherit identification data” command exited with unknown error

Cause/Remedy 1: Command C8500 terminated with an unknown error (firmware issue)

00540200

P-0-3235.0.4 incorrectly parameterized

00540201

Axle identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) not verified

Cause/Remedy 1: Only verified proposed axis identifiers are applied.

00540202

0x3014:01 / P-0-3235.0.1 / P-0-2533 not equal to default value

Cause/Remedy 1: The command C8500 can only be executed if 0x3014:01 / P-0-3235.0.1 / P-0-2533 is equal to its default value.

00540203

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) too long

Cause/Remedy 1: Only axis identifiers with a maximum of 44 characters are applied.

00540204

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) too short

Cause/Remedy 1: Only axis identifiers with a minimum of three characters are applied.

00540205

Axis identifier (0x3014:02 / P-0-3235.0.2 / P-0-2534) same as SMO password (0x3018:02 / P-0-3230.0.1 / P-0-2468)

0054020F

“Inherit identification data” command exited with unknown error

Cause/Remedy 1: Command C8500 terminated with an unknown error (firmware issue)

C8601 SMO: Encoder evaluation is inactive

An error occurred during the execution of the command "SMO axis validation: C8600 Command Measure pos. difference" (0x302E:01 / P-0-3210 / --).

Cause	Remedy
The encoder evaluation is inactive	1a) Activate encoder evaluation - or - 1b) Switch axis to parameterization mode or operating mode 2) Restart command C8600 and then stop it to measure position difference.

▼ Attributes

Short diagnostics no. (20 bits):	C8601
Long diagnostics no. (32 bits):	060C8601
Related Sercos IDN:	P-0-3210

Detailed diagnostics

00480101

Command cannot be executed because axis is in CM configuration mode

00480102

Command cannot be executed because “Safe parking axis” is active

00480103

Command cannot be executed because no encoder is configured

C8704 SMO: Incorrect change of system state

An error occurred during the execution of the command for switching the SafeMotion State Machine from the operating mode to the parameterization mode (C8700).

The cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C8704
Long diagnostics no. (32 bits):	060C8704
Related Sercos IDN:	P-0-3231.0.5

C8731 SMO: Parking axis, command 3 cannot be executed

An error occurred during the execution of the internal command for activating the "Safe parking axis" state.

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from being switched to the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1600.

▼ Attributes

Short diagnostics no. (20 bits):	C8731
Long diagnostics no. (32 bits):	060C8731
Related Sercos IDN:	P-0-3231.0.9

Detailed diagnostics

00400005

Timeout during synchronization with another channel

Cause/Remedy 1: Inspect and process diagnostics for the other channel

Cause/Remedy 2: Restart the device. If error persists, please contact customer support.

00400007

Command cannot be started

Cause/Remedy 1: A command is already active, and this command must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel Restart the device. If error persists, please contact customer support.

0040000F

Safe parking axis is not supported for this option

C8813 SMO: Incorrect parameterization

When executing the command C8800 (initiated by C0200) for switching from the parameterization mode to the operating mode of SafeMotion, an error was detected when checking the safety technology parameters.

Cause	Remedy
Parameters not verified	Verify parameters (see tip)
No axis identifier assigned	Assign axis identifier
Parameters outside of allowed value range	▪ Check and correct value ▪ Verify parameters (see tip)

In ctrlX DRIVE Engineering, a list of the non-verified parameters (P-0-3233) can be called:
"Project Explorer" → SMO branch context menu → „*Non-verified parameters*”.

▼ Attributes

Short diagnostics no. (20 bits):	C8813
Long diagnostics no. (32 bits):	060C8813
Related Sercos IDN:	P-0-3231.0.6

C8814 SMO: Incorrect configuration

When executing the command C8800 (initiated by C0200) for switching from the parameterization mode to the operating mode of SafeMotion, an error was detected in the configuration of SafeMotion.

An incorrect configuration might have caused the error to be triggered, see description in detailed diagnostics. To find out, please call the “Error/diagnostic memory” dialog in ctrlX DRIVE Engineering as follows:

- In the function tree select the drive for which an error has been diagnosed.
- Open the context menu of the axis: „*Diagnostics ➔ Error/diagnostic memory*”.
  ⇒ The “Error/diagnostic memory” dialog is opened.
- Filter for "detailed diagnostics".

Cause	Remedy
Scaling: The **data reference** for position, velocity and acceleration data is not equally parameterized	Make sure that the **data reference** is the same ■ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --) ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)
The **scaling type** for velocity and acceleration data is not equally parameterized	Make sure that the **scaling type** is the same ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)
The **scaling unit** for position, velocity and acceleration data is not equally parameterized (mixed inch/metric)	Make sure that the **scaling unit** is the same ■ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --) ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --)

Cause	Remedy
Scaling: The selection "Data reference at the motor shaft" - with load encoder – is not allowed	Select an allowed data reference
Scaling: The rotation position resolution is not correct	The rotation position resolution has to be entered as the value 360 × 10^{Exp} (Exp="0..7")
Signal control of outputs: The source IDN is not allowed - or - The source bit is not allowed	Check the "discrete outputs": Use ident number from "SMO signal control, discrete outputs: Possible source IDNs" (0x305A:03 / P-0-3335.0.3 / --) or Use bit from "SMO signal control, discrete outputs: Possible source bits" (0x305A:04 / P-0-3335.0.4 / --)
	Check the signal sources for the "safety bus status word": Use ident number from "SMO safety bus, signal control: Possible source IDNs" (0x3054:03 / P-0-3336.0.3 / P-0-2521) or Use bit from "SMO safety bus, signal control: Possible source bits" (0x3054:04 / P-0-3336.0.4 / P-0-2522)
IO mapper inputs: The maximum possible number of instances of an IO mapper block type has been exceeded	One connection type is used too often. Check the I/O mapper block types and their individually possible maximum number of instances: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: A target signal (target IDN / target bit) is used multiple times	Make sure a target IDN / a target bit is only used once. **Target IDNs:** ■ "SMO IO mapper 1: IDN target" (0x3030:04 / P-0-3330.0.4 / --) ■ "SMO IO mapper 2: IDN target" (0x3031:04 / P-0-3330.1.4 / --) ■ ... ■ "SMO IO mapper 16: IDN target" (0x303F:04 / P-0-3330.15.4 / --) **Target bits:** ■ "SMO IO mapper 1: Bit target" (0x3030:05 / P-0-3330.0.5 / --) ■ "SMO IO mapper 2: Bit target" (0x3031:05 / P-0-3330.1.5 / --) ■ ... ■ "SMO IO mapper 16: Bit target" (0x303F:05 / P-0-3330.15.5 / --)

Cause	Remedy
IO mapper inputs: The **target IDN** is not allowed	Check the I/O mapper block types and their individually possible target IDNs: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: The **target bits** are not allowed	Check the I/O mapper block types and their individually possible target bits: ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: Input signals not in order	I/O mapper block "Binary-to-bit decoder": Check the list of source IDNs for gaps: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)
IO mapper inputs: Only safety bus allowed	"Binary-to-bit decoder": Check the source IDN for "SMO safety bus function: Control word" (0x3052:02 / P-0-3340 / --): ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)

Cause	Remedy
IO mapper inputs: The IO mapper block type is not allowed	Check the IO mapper block types. Only values from "0" to "7" are allowed. ■ "SMO IO mapper 1: Type" (0x3030:01 / P-0-3330.0.1 / --) ■ "SMO IO mapper 2: Type" (0x3031:01 / P-0-3330.1.1 / --) ■ ... ■ "SMO IO mapper 16: Type" (0x303F:01 / P-0-3330.15.1 / --)
IO mapper inputs: The source IDN is not allowed	Use an IDN from the list of possible source IDNs: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)
IO mapper inputs: The list of source IDNs is incomplete	Make sure that the required inputs of the IO mapper block type have been entered: ■ "SMO IO mapper 1: IDN source" (0x3030:02 / P-0-3330.0.2 / --) ■ "SMO IO mapper 2: IDN source" (0x3031:02 / P-0-3330.1.2 / --) ■ ... ■ "SMO IO mapper 16: IDN source" (0x303F:02 / P-0-3330.15.2 / --)

Also see I/O mapper block types

▼ Attributes

Short diagnostics no. (20 bits):	C8814
Long diagnostics no. (32 bits):	060C8814
Related Sercos IDN:	P-0-3231.0.6

Detailed diagnostics

000406F8

Scaling type invalid or not supported by the SLE/SLP/SMP safety functions

0004073A

SLE, SLP: Invalid scaling of decimal place setting -> overflow in normalization factor calculation

00040743

SCA: Invalid configuration of direction-dependent cam evaluation (allowed settings: 0, 1, 2, 3)

00040744

In the SCA version "multiple cams", only the cams 1 to 8 can be parameterized

00040745

SCA: Cam range (for cam 1 e.g. 0x31B4:04 / P-0-3271.0.1) + switching hysteresis (0x3156:03/ P-0-3270.0.3) outside of modulo value (0x3020:05 / P-0-3221.0.6) or travel range (0x3020:06 / P-0-3221.0.7)

00040746

Safety functions SCA configured without "Safe homing procedure" configuration (0x31B0:01 / P-0-3253.0.1 / P-0-2793, bit 0)

00040747

SCA: Invalid scaling of decimal place setting in 0x3022:02 / P-0-3222.0.2 -> overflow in normalization factor calculation

0004075C

The cam ranges overlap in the SCA version "single cams"

0004075D

In the SCA version "single cams", the "inverted cam status (switch-off threshold < switch-on threshold)" is not allowed

00040777

SCA: Cam range too small with "positive/negative direction evaluation" configuration [<= 3 * switching hysteresis (0x3156:03/ P-0-3270.0.3)]

00040778

SCA: Cam range too small with "evaluation of both directions" configuration [<= 2 * switching hysteresis (0x3156:03/ P-0-3270.0.3)]

00190200

STRQ: Safety function STRQ not supported for these option types

Cause/Remedy 1: Safety function STRQ not supported for these option types

0019020E

STRQ: APSS internal error. Unexpected pointer to null while initializing measurement of electrical current

Cause/Remedy 1: Please contact customer service.

0019020F

STRQ: APSS measurement of electrical current was not initialized

Cause/Remedy 1: Please contact customer support

00190216

Value of electromotoric constant EMC (P-0-4015.0. 0 and P-0-3247.0.9) too high. Selected value leads to integer value range violation.

Cause/Remedy 1: Check P-0-4015.0. 0 and P-0-3247.0.9.

00190217

STRQ: EVAL torque map initialization error

Cause/Remedy 1: Check motor parameters set for Safe Torque function. Note: Safe Torque must be used only with eLION motors

00190221

STRQ: Number of encoder increments per rotation must be > 0

Cause/Remedy 1: Check encoder parameterization

00190223

STRQ: Encoder pole pair count does not match motor pole pair count

Cause/Remedy 1: Check encoder configuration against motor pole pair count in 0x315D:08 / P-0-3247.0.19

00190224

STRQ: Field-oriented motor control is not selected

Cause/Remedy 1: For using Safe Torque, "Current control with motor encoder" (field-oriented control) must be selected in 0x210C:01 / P-0-0045 and 0x315D:07 / P-0-3247.0.18. This is done by setting bits 14 and 15 to 00 in both parameters

00190225

STRQ: Encoder resolution does not match and is outside the value range

Cause/Remedy 1: Check encoder configuration

00190226

STRQ: Encoder type is not supported

Cause/Remedy 1: Safe Torque function can only be used with encoder of type "resolver". Check encoder configuration

00190228

STRQ: Safe Torque can only be used with rotary encoders

Cause/Remedy 1: Use and configure a rotatory encoder

0019022A

STRQ: Encoder pole pairs do not match encoder analog resolution

Cause/Remedy 1: Check encoder configuration

0019022B

STRQ: The torque free threshold does not match the maximum torque

Cause/Remedy 1: Threshold for torque free detection (0x315B:07 / P-0-3247.0.2) must not be more than 10% of max. torque (0x315D:04 / P-0-3247.0.12).

0019022C

STRQ: SafeTorque function could not be initialized. Probably wrong hardware

Cause/Remedy 1: Disable Safe Torque function or use eLION product

0019022D

STRQ: Motor construction type (0x2010:01 / P-0-4014 -> 0x315D:0D / P-0-3247.0.27) not supported by STQ.

Cause/Remedy 1: Set motor type to rotary synchronous motor with reluctance torque (0x2010:01 / P-0-4014)

0019022E

STRQ: parameters for SEO telegram arrival time monitors outside allowed range

Cause/Remedy 1: Check 0x315B:13 / P-0-3247.0.28 and 0x315B:14 / P-0-3247.0.29

0019022F

STRQ: Configured commutation offset is significantly smaller than mechanically adjusted value

Cause/Remedy 1: Measurement of commutation offset may have failed. Rerun measurement and transfer result to SMO (0x315D:09 / P-0-3247.0.5)

0019025A

STRQ: Eval error occurred in the context of the EEPROM operations

001F06ED

SLE in normal operation (0x3159:01 / P-0-3277.0.1 / P-0-2464, bit 2="1") and global SLE (0x3156:01 / P-0-3270.0.1; bit 2="1") were configured at the same time

001F06EE

SLP/SLE safety function configuration with F7 error reaction "torque disable" in 0x315E:01 / P-0-3263.0.1 is not allowed

001F06F9

End position limit value, positive (0x3150:01 / P-0-3270.0.4) greater than end position limit value, negative (0x3150:02 / P-0-3270.0.5)

001F06FA

End position limit value, negative (0x3150:02 / P-0-3270.0.5) outside modulo range (P-0-3221.0.6)

001F06FB

End position limit value, positive (0x3150:01 / P-0-3270.0.4) outside modulo range (P-0-3221.0.6)

001F06FC

Position limit value, positive (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --) greater than position limit value, negative (P3290.x.5)

001F06FD

Position limit value, negative (0x3180:02...0x318F:02 / P-0-3290.1.5...P-0-3290.16.5 / --) outside modulo range (P-0-3221.0.6)

001F06FE

Position limit value, positive (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --) outside modulo range (P-0-3221.0.6)

001F06FF

SLP/SLE safety function configuration with SMD-E-r_TimeTrend in 0x315E:01 / P-0-3263.0.1 is not allowed

005333B8

Hardware does not support phase current measurements

005333B9

Hardware does not support DC bus voltage measurement

005333C0

Measurement of DC bus voltage could not be initialized on SMO

005433B8

Hardware does not support phase current measurements

005433B9

Hardware does not support DC bus voltage measurement

005433C0

Measurement of DC bus voltage could not be initialized on SMO

00620002

The safe calibration parameters could not be validated: Invalid state

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00620003

The safe calibration values could not be applied

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620004

The safe calibration values are invalid: Validation result unspecified

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00620005

The safe calibration values are invalid: Validation result unspecified

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00620006

The safe calibration values are invalid: Validation result unspecified

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00620020

The safe calibration UID required for validating the safe calibration parameters could not be read from the nonvolatile memory

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620021

The read safe calibration UID is invalid: CRC error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620022

The read safe calibration UID is invalid: Error in “Version”

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620023

The nominal values of the safe calibration are invalid: CRC error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620024

The nominal values of the safe calibration are invalid: Incorrect calibration UID

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620025

The nominal values of the safe calibration are invalid: EIDN error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620026

The safe calibration values are invalid: CRC error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620027

The safe calibration values are invalid: incorrect calibration UID

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620028

The safe calibration values are invalid: EIDN error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620029

The safe calibration values are invalid: “Uncalibrated” error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

0062002A

The safe calibration values are invalid: “Uncalibrated” error

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

0062002B

The safe calibration values are invalid: case not covered

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

0062002C

The safe calibration values are invalid: empty elements

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

00620030

The safe calibration values are invalid: case not covered

Cause/Remedy 1: The device must undergo the safe calibration process if safety functions with safe measurement are selected.

0062003B

SMO: A set of manual calibration values is active but cannot be applied

Cause/Remedy 1: Remove the manual calibration values to return to a safe state.

C8816 SMO: Switching not allowed

Cause	Remedy
When executing the command C8800 (initiated by C0200) for switching from the parameterization mode to the operating mode of SafeMotion, an internal system error has occurred.	Please contact the service department

▼ Attributes

Short diagnostics no. (20 bits):	C8816
Long diagnostics no. (32 bits):	060C8816
Related Sercos IDN:	P-0-3231.0.6

C8831 SMO: Disable Parking axis, command 3 cannot be executed

During the execution of the command for disabling the "Safe parking axis" state (C1700), the integrated safety technology carries out checks. An error occurred in the process. For advanced diagnostics, proceed as described:

1. Switch to the configuration mode (CM).
2. Restart the command C1700.
3. Try switching to the operating mode (OM); more error details will be generated during the command execution.
4. Remove the error causes with the aid of the error details.

Cause	Remedy

Cause	Remedy
Other diagnostics specific to safety technology occurred. They prevent the axis from disabling the "Safe parking axis" state.	Have a look at the diagnostic trace to find out which diagnostics specific to safety technology were signaled last. Remove the causes of the diagnostics specific to safety technology that were signaled, and then restart the command C1700.

▼ Attributes

Short diagnostics no. (20 bits):	C8831
Long diagnostics no. (32 bits):	060C8831
Related Sercos IDN:	P-0-3231.0.10

Detailed diagnostics

0040000A

Command cannot be started

Cause/Remedy 1: A command is already active. It must be stopped first.

Cause/Remedy 2: Error during synchronization with another channel. Restart the device. If error persists, please contact customer support.

00400010

Safe parking axis is not supported for this option

C8901 SMO: Parameters cannot be applied

The command C8900 "SMO communication: Command apply configuration" (0x30B0:01 / P-0-3373.0.1 / --) was aborted with an error.

An error occurred during copying of the communication configuration parameters.

For the specific cause and remedy please see the respective detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C8901
Long diagnostics no. (32 bits):	0C0C8901

Detailed diagnostics

001A0001

Error while transferring functional parameter to safety control. Possible causes: Write protection, parameter length is zero, or source parameter is longer than space in destination parameter.

Cause/Remedy 1: Unlock SMO. If this does not help, contact manufacturer.

001A0005

Array parameter to be copied is longer than available buffer.

Cause/Remedy 1: The copy buffer must be enlarged in the software source code.

C8902 SMO: Communication configuration cannot be applied

The command C8900 "SMO communication: Command apply configuration" (0x30B0:01 / P-0-3373.0.1 / --) was aborted with an error.

At least one precondition to apply the communication configuration is not fulfilled.

For the specific cause and remedy please see the respective detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C8902
Long diagnostics no. (32 bits):	0C0C8902

Detailed diagnostics

001A0002

Command failed. Can only be executed in CM mode.

Cause/Remedy 1: Change to configuration mode and rerun command.

001A0003

Transfer of parameters to SMO failed. SMO is disabled.

Cause/Remedy 1: Enable SMO.

001A0004

Transfer of parameters to SMO failed. No SMO present.

Cause/Remedy 1: Command can be used only if SMO is present in drive.

C9701 Command execution failed

The command C9700 ["Servicing function: C9700 Command" (0x2B0C:01 / P-0-1560.0.1 / P-0-3610)] could not be started, since the command input is incorrect.



Executing servicing functions is only allowed for instructed customers!

Cause	Remedy
Faulty "Servicing function: C9700 Command input" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611)	Check and correct "Servicing function: C9700 Command input" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611)

▼ Attributes

Short diagnostics no. (20 bits):	C9701
Long diagnostics no. (32 bits):	000C9701

Detailed diagnostics

00640097

Incorrect command input

Cause/Remedy 1: Check command input in 0x2B0C:02 / P-0-1560.0.2 / P-0-3611 and use supported function number

C9705 Disabling ctrlX SENSE battery monitoring failed

An error occurred during the execution of the command C9700 ["Servicing function: C9700 Command" (0x2B0C:01 / P-0-1560.0.1 / P-0-3610)] [command input "Disabling ctrlX SENSE battery monitoring"].



Executing servicing functions is only allowed for instructed customers!



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

Cause	Remedy
An error occurred in the disabling of ctrlX SENSE battery monitoring	1. Execute the command C9700 (0x2B0C:01 / P-0-1560.0.1 / P-0-3610) with the command input "**Enabling** ctrlX SENSE battery monitoring" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611). 2. Execute the command C9700 (0x2B0C:01 / P-0-1560.0.1 / P-0-3610) with the command input "**Disabling** ctrlX SENSE battery monitoring" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611). If the error occurs repeatedly, please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C9705
Long diagnostics no. (32 bits):	000C9705

C9706 Enabling ctrlX SENSE battery monitoring failed

An error occurred during the execution of the command C9700 ["Servicing function: C9700 Command" (0x2B0C:01 / P-0-1560.0.1 / P-0-3610)] [command input "Enabling ctrlX SENSE battery monitoring"].



Executing servicing functions is only allowed for instructed customers!



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

Cause	Remedy
An error occurred in the enabling of ctrlX SENSE battery monitoring	1. Execute the command C9700 (0x2B0C:01 / P-0-1560.0.1 / P-0-3610) with the command input "**Disabling** ctrlX SENSE battery monitoring" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611). 2. Execute the command C9700 (0x2B0C:01 / P-0-1560.0.1 / P-0-3610) with the command input "**Enabling** ctrlX SENSE battery monitoring" (0x2B0C:02 / P-0-1560.0.2 / P-0-3611). If the error occurs repeatedly, please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	C9706
Long diagnostics no. (32 bits):	000C9706

C9707 ctrlX SENSE FW update acknowledge failed

An error occurred during the execution of the command C9700 ["Servicing function: C9700 Command" (0x2B0C:01 / P-0-1560.0.1 / P-0-3610)] [command input "Confirm ctrlX SENSE firmware update"].



Executing servicing functions is only allowed for instructed customers!



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	C9707
Long diagnostics no. (32 bits):	000C9707

F2007 Switching to forbidden Operation Mode

The error was generated because, via the control word for J1939 [UDS-DID: 0x400 (Sercos: P-0-1930)], an Operation Mode had been selected that is not supported or not allowed in the current state.

Cause	Remedy
An attempt was made to switch to an Operation Mode that is not supported	In control word for J1939 [UDS-DID: 0x400 (Sercos: P-0-1930)], select an Operation Mode that is supported
An attempt was made to switch to an Operation Mode that is not allowed in the current state	In control word for J1939 [UDS-DID: 0x400 (Sercos: P-0-1930)], select an Operation Mode that is allowed in the current state

▼ Attributes

Short diagnostics no. (20 bits):	F2007

Long diagnostics no. (32 bits):	000F2007
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	27B2

F2008 RL The motor type has changed

In the initialization phase (after the drive has been switched on), the controller checks whether the connected motor type complies with the parameterization made in "Motor identification: Type" (0x2AD2:01 / S-0-0141 / --). If this is not the case, the error F2008 is generated and the controller prompts the user to load the motor-specific control loop parameter values from the encoder memory of the motor.



The display of the control panels shows “RL”.

Cause	Remedy
Motor was replaced by a different motor type. **- or -** The value in "Motor identification: Type" (0x2AD2:01 / S-0-0141 / --) of parameter file loaded to drive controller differs from the connected motor type. **- or -** Drive controller was switched on for first time. Motor type stored in "Motor identification: Type" (0x2AD2:01 / S-0-0141 / --) differs from connected motor type.	Clear the error with C0500 **- or -** Press the *[Esc]* key on the control panel of controller **Note:** After the error has been cleared, command for loading the default values is automatically executed ["Application data default: C07_x Procedure command" (0x2B62:01 / S-0-0262 / --)], unless this was deactivated in "Axis configuration: Word" (0x2200:01 / P-0-0556 / --). **Attention:** Executing the command causes the previous control loop settings to be overwritten with the default control loop settings from the encoder memory!

▼ Attributes

Short diagnostics no. (20 bits):	F2008
Long diagnostics no. (32 bits):	000F2008
CiA error code:	FF12

F2010 Error when initializing I/O module

An error occurred during the first initialization of the device (initialization of digital inputs/outputs).

Cause	Remedy

Cause	Remedy
Conflict with last stored parameters of digital inputs/outputs	Check following parameter contents and correct them, if necessary: ■ "Digital inputs: Assignment list" (0x2A20:02 / P-0-0300 / --) ■ "Digital inputs: Bit numbers" (0x2A20:03 / P-0-0301 / --) ■ "Digital outputs: Assignment list" (0x2A22:02 / P-0-0310 / --) ■ "Digital outputs: Bit numbers" (0x2A22:03 / P-0-0311 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F2010
Long diagnostics no. (32 bits):	000F2010
CiA error code:	F084

Detailed diagnostics

006C0010
Error on initializing the DA assembly

F2018 Device overtemperature shutdown

The heat sink temperature of the device is monitored by a temperature sensor and a temperature model. When the heat sink temperature has reached the maximum value, the device is switched off in order to protect it against destruction.

Before the error F2018 is triggered, a device overtemperature prewarning (E2050) is output for 30 seconds.

Cause	Remedy
Overtemperature (heat sink) due to overload of device	Switch off drive and let it cool down. Check mechanics and drive sizing (on average, machining power may not exceed continuous power of drive) **For liquid-cooled devices:** Check sizing of cooling system (see documentation with material no. R911309636)
Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 °C	Reduce ambient temperature, e.g. by cooling the control cabinet
Heat sink of device is dirty	Clean heat sink
Convection is prevented by other components or mounting position in control cabinet	Mount device vertically and provide sufficient space for ventilating heat sink

Cause	Remedy
Device-internal fan failed	If fan fails, replace device or power section
Air conditioning of control cabinet failed	Check air conditioning of control cabinet
Incorrect control cabinet sizing with regard to heat dissipation	Check control cabinet sizing

Additional possible causes for liquid-cooled devices

Cause	Remedy
No cooling system connected	Connect cooling system
Error in cooling system, e.g. coolant pump defective or filter clogged up; thus, flow rate too low/coolant inlet temperature too high	Check cooling system and remove error

▼ Attributes

Short diagnostics no. (20 bits):	F2018
Long diagnostics no. (32 bits):	C00F2018
CiA error code:	4284
J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	27E8

F2019 Motor overtemperature shutdown

The motor temperature measured by the temperature sensor has reached the limit value for the motor shutdown temperature (S-0-0204).

The drive is immediately decelerated according to the selected error reaction ["Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --)], and the drive is switched off.

Cause	Remedy
Motor shutdown temperature incorrectly parameterized	Check and correct parameterization of "Motor temperature monitoring: Shutdown threshold" (0x2022:02 / S-0-0204 / --) using the motor or temperature sensor data sheet **Note:** For Bosch Rexroth motors with encoder memory, "Motor temperature monitoring: Shutdown threshold" (0x2022:02 / S-0-0204 / --), among other things, has been set to a fixed value and cannot (or not directly) be changed. [For some motor types, the firmware reduces the shutdown temperature below the value of "Motor temperature monitoring: Shutdown threshold" (0x2022:02 / S-0-0204 / --) to protect the rotor.]

Cause	Remedy
Motor is overloaded. Effective torque demanded from motor has been above allowed continuous torque for a too long time	Check sizing of motor. In the case of installations that have been operated for a long time, check whether drive conditions have changed (with regard to dirt accumulation, friction, moved masses etc.)
Line interruption, ground fault or short circuit in line for motor temperature monitoring	Check line for motor temperature monitoring for line interruption, ground fault or short circuit
Instability in speed control loop	Check parameterization of speed control loop

Additional possible causes for liquid-cooled devices

Cause	Remedy
No cooling system connected	Connect cooling system
Error in cooling system, e.g. coolant pump defective or filter clogged up; thus, flow rate too low/coolant inlet temperature too high	Check cooling system and remove error

See also Motor temperature monitoring

▼ Attributes

Short diagnostics no. (20 bits):	F2019
Long diagnostics no. (32 bits):	C00F2019
CiA error code:	4383
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	2363

F2021 Motor temperature monitor defective

As soon as the drive is in the operating mode, the function of the temperature sensor used for motor temperature monitoring is cyclically monitored by the drive.

The drive reacts with the error reaction that has been set or it refuses drive enable. Bit 2 is set in "Class 1 diagnostics: Value" (0x2B87:01 / S-0-0011 / --).

Temperature sensor type (see P-0-0512)	Cause	Remedy

Temperature sensor type (see P-0-0512)	Cause	Remedy
NTC (e.g., K227)	If F2021 is generated 30 seconds after the warning E2021 [motor temperature measured by the temperature sensor is smaller than "Motor temperature monitoring: Lower limit" (0x2022:07 / P-0-0505 / --) Interruption in line for motor temperature monitoring	Check motor connection and cable for interruption
PTC sensor with switching performance (e.g., SNM-xxx.DK, bimetal)	If F2021 is generated 30 seconds after the warning E2021 [motor temperature measured by the temperature sensor is smaller than "Motor temperature monitoring: Lower limit" (0x2022:07 / P-0-0505 / --) Short circuit in line for motor temperature monitoring	Check motor connection and cable for short circuit
Sensors that can be evaluated in analog form (e.g., KTY84 or PT1000)	The measured value is below -50° C or above 240° C; the sensor is detected to be defective	Use replacement temperature sensor (if available) or replace motor
NTC (e.g., K227)	Motor temperature stays below allowed ambient temperature range	Comply with minimum allowed ambient temperature (see documentation of respective motor series)
-	Drive controller defective	Replace drive controller or power section

See also Motor temperature monitoring

▼ Attributes

Short diagnostics no. (20 bits):	F2021
Long diagnostics no. (32 bits):	000F2021
CiA error code:	718B
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	2363

F2022 Device temperature monitor defective

The function of the temperature sensor, that is the basis of device temperature monitoring, is cyclically monitored.

If a temperature less than or equal to -40 °C has been measured for a defined time (e.g., 30 seconds), a defect is supposed to be present and the error F2022 is output.

Cause	Remedy
Sensor in drive controller is defective	Replace drive controller or power section

▼ Attributes

Short diagnostics no. (20 bits):	F2022
Long diagnostics no. (32 bits):	000F2022
CiA error code:	718D
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	27E8

F2023 Device temperature model error

The device temperature is calculated using a device temperature model that takes the temperature sensor data and the current operating conditions into account.

Cause	Remedy
An internal error occurred during initialization or in the cyclic calculation of the device temperature model	Carry out an update of the drive firmware. If the error persists: Replace the drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F2023
Long diagnostics no. (32 bits):	000F2023
J1939: "Failure Mode Identifier":	11
J1939: "Suspect Parameter Number":	27E8

F2025 Drive not ready for control

When drive enable is set, the drive must be ready; i.e. it has to signal the drive status "Ab" [bit 15="1" and bit 14="0" is the setting required in "Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --)].

However, if the drive only signals "bb" (ready for operation), the drive generates this error message.

Cause	Remedy
Drive enable (AF) had been set before power supply was switched on **- or -** Drive enable (AF) was set although drive is still in parameterization mode	Check logic for activating drive in connected control unit
Safety function "Safe Torque Off" (STO) is active	First deselect safety function before drive enable is set
Drive is in "Parking axis" state	Disable the "Parking axis" state by executing "Parking axis: C1700 Disable procedure command" (0x2380:02 / S-0-0139.0.150 / P-0-1742). Only then can drive enable be set.

Cause	Remedy
E-Stop function is active as warning E4034	First deselect E-Stop before drive enable is set
The command "Device reboot: C6400 Command" (0x2BD0:01 / S-0-1350 / --) was started on one axis of the device	If restart is not carried out, terminate the command C6400 on all axes

▼ Attributes

Short diagnostics no. (20 bits):	F2025
Long diagnostics no. (32 bits):	C00F2025
CiA error code:	FF14
J1939: "Failure Mode Identifier":	4
J1939: "Suspect Parameter Number":	27B2

F2026 Undervoltage in power section

The level of the DC bus voltage is monitored by the drive controller. In "DC bus supply: Configuration" (0x2606:01 / P-0-0118 / --), "Error" has been set with regard to the reaction to undervoltage.

With axis inverter: The readiness for power output of the DC bus is not displayed anymore ["DC bus supply: Control word" (0x2606:02 / S-0-0240 / --, bit 0 changes from "1" to "0") or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].

With converter/mains connection: The mains connection in the converter is faulty which causes the power supply to be switched off. Thereby, the readiness for power output of the DC bus is not ensured anymore or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].

Cause	Remedy
Power is switched off without deactivating the drive via drive enable (AF) beforehand	Check logic for activating drive in connected control unit
Failure in power supply or overload of power supply	Check the power supply
Mains failure	Check the cause of the mains failure, reconnect the mains voltage
Temporary power supply overload	Reduce machining cycle of the machine

▼ Attributes

Short diagnostics no. (20 bits):	F2026
Long diagnostics no. (32 bits):	C00F2026
CiA error code:	3222
J1939: "Failure Mode Identifier":	1

J1939: "Suspect Parameter Number":	238D

F2028 Excessive deviation

If the position control loop is closed, the drive monitors whether or not it can follow the preset position command value. For this purpose, a model position feedback value is calculated in the drive and compared to the actual position feedback value. If the difference between the calculated and actual position feedback value exceeds the value parameterized in "Position controller, monitor: Following error window" (0x6065:00 / S-0-0159 / --), the drive apparently cannot follow the preset command value and the error F2028 is generated.



The monitoring function as to whether or not the drive can follow the preset position command value is switched off by parameterizing "Position controller, monitor: Following error window" (0x6065:00 / S-0-0159 / --) with "0”.



The maximum deviation between the calculated and the real actual position value can be read in "Position controller, monitor: Max. model deviation" (0x220B:02 / P-0-0098 / --).

Cause	Remedy
Parameterized monitoring window is too small	Check and, if necessary, correct "Position controller, monitor: Following error window" (0x6065:00 / S-0-0159 / --)
Command acceleration too high due to incorrect command value input by control unit	Reduce acceleration input of control unit (see control unit manual)
Parameterized bipolar torque/force limit value too small	Check "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) and set it to maximum value allowed for the application
Axis is blocked or sluggish	Check mechanics and remove sluggishness
Faulty or non-optimized control loop parameters	Check control loop setting, e.g.: ■ "Position controller: Proportional gain" (0x220A:01 / S-0-0104 / --) ■ "Velocity controller: Proportional gain" (0x2220:01 / S-0-0100 / --) ■ "Axis configuration: Word" (0x2200:01 / P-0-0556 / --)
Drive acceleration capacity was exceeded	Check drive sizing

▼ Attributes

Short diagnostics no. (20 bits):	F2028
Long diagnostics no. (32 bits):	C00F2028
CiA error code:	8582

F2032 Validation error during commutation fine adjustment

When a synchronous motor with incremental measuring system is homed, the value of "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --) is converted to the reference point reference and compared to

"Commutation offset: Value" (0x218A:01 / P-0-0508 / --). This comparison revealed that the deviation had been too big, and the drive was decelerated.



If the deviation is too big, the operational safety of the motor is no longer ensured since the motor might have a "runaway effect".

Cause	Remedy
Initial commissioning was not carried out or carried out incompletely	Carry out initial commissioning
Motor encoder was replaced	Carry out initial commissioning
Motor connections (U, V, W) were interchanged	Check and, if necessary, correct motor connection
The value of "Commutation offset: Value" (0x218A:01 / P-0-0508 / --) and/or the value for the commutation offset stored in the encoder data memory were manipulated	Check value saved in "Commutation offset: Value" (0x218A:01 / P-0-0508 / --); if necessary, carry out initial commissioning again

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2032
Long diagnostics no. (32 bits):	000F2032
CiA error code:	7192

F2036 Excessive position feedback difference

The drive controller is in cyclic operation and both encoders have been homed. The error F2036 was generated because the value between actual position value 1 and actual position value 2 ["Position difference monitor enc.1 - enc.2: Current value" (0x24C4:01 / P-0-0391 / --)] had been greater than the monitoring window for encoder 2 ["Position difference monitor enc.1 - enc.2: Window" (0x24C4:02 / S-0-0391 / --)].

The drive carries out the parameterized error reaction ["Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --)], and the reference bits of both encoders are cleared ["Homing status: Feedback value status" (0x2508:01 / S-0-0403 / --)].



The monitoring function is inactive if "Position difference monitor enc.1 - enc.2: Window" (0x24C4:02 / S-0-0391 / --) has been parameterized with "0".



If the measuring wheel mode has been activated, "Position difference monitor enc.1 - enc.2: Window" (0x24C4:02 / S-0-0391 / --) is not active. In this case, the monitoring function uses "Encoder slip monitor: Window" (0x24CA:03 / P-0-0244 / --).

Cause	Remedy

Cause	Remedy
Encoder 2 incorrectly parameterized	Check "Encoder function and properties ENC_2: Value" (0x24A0:01 / S-0-0115 / --) and resolution for encoder 2: ■ "Phys. encoder configuration ONBOARD: Resolution (analog)" (0x2418:15 / S-0-0602.10.21 / S-0-2570) or "Phys. encoder configuration ONBOARD: Resolution (digital)" (0x2418:16 / S-0-0602.10.22 / S-0-2571) ■ "Phys. encoder configuration OPT_2: Resolution (analog)" (0x241A:15 / S-0-0602.2.21 / S-0-2520) or "Phys. encoder configuration OPT_2: Resolution (digital) (0x241A:16 / S-0-0602.2.22 / S-0-2521) ■ "Phys. encoder configuration OPT_3: Resolution (analog)" (0x241C:15 / S-0-0602.3.21 / S-0-2545) or "Phys. encoder configuration OPT_3: Resolution (digital)" (0x241C:16 / S-0-0602.3.22 / S-0-2546)
Mechanics between motor shaft and encoder 2 incorrectly parameterized	Check "Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --), "Gear ratio: Driving shaft revolutions" (0x6091:02 / S-0-0122 / --) and "Feed constant: Value" (0x2390:01 / S-0-0123 / --)
Mechanics between motor shaft and encoder 2 is not rigid (e.g., gear backlash, slip) and selected monitoring window is too small	Increase "Position difference monitor enc.1 - enc.2: Window" (0x24C4:02 / S-0-0391 / --), switch it off in the case of gear with slip
Maximum allowed slip exceeded in active measuring wheel mode	Check or switch off "Encoder slip monitor: Window" (0x24CA:03 / P-0-0244 / --)
Encoder cable defective	Replace encoder cable
Maximum input frequency of encoder interface exceeded	Reduce velocity
Encoder 2 not mounted to driven axis	Deactivate "Position difference monitor enc.1 - enc.2: Window" (0x24C4:02 / S-0-0391 / --) (="0")

Incorrect encoder gearbox settings	Check relevant encoder parameters and correct them, if necessary:
	■ Gearbox 1 (encoder 1):
	  ■ motor side: "Gearbox encoder ENC_1: Revolutions, mechanical side" (0x24A8:01 / P-0-0121 / --)
	  ■ encoder side: "Gearbox encoder ENC_1: Revolutions, encoder side" (0x24A8:02 / P-0-0122 / --)
	■ Gearbox 2 (encoder 2):
	  ■ load side: "Gearbox encoder ENC_2: Revolutions, mechanical side" (0x24AA:01 / P-0-0124 / --)
	  ■ encoder side: "Gearbox encoder ENC_2: Revolutions, encoder side" (0x24AA:02 / P-0-0125 / --)
	■ "Gear ratio: Motor shaft revolutions" (0x6091:01 / S-0-0121 / --), "Gear ratio: Driving shaft revolutions" (0x6091:02 / S-0-0122 / --)

Incorrect position data reference of an absolute encoder	Execute command "Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)

See also Position control with cyclic command value input

▼ Attributes

Short diagnostics no. (20 bits):	F2036
Long diagnostics no. (32 bits):	C00F2036
CiA error code:	8583

F2042 Encoder 2: Encoder signals incorrect

Analog / combined encoders: The signals of the measuring system are monitored on hardware and software level with regard to their amplitudes and signal shapes. If a signal (e.g., sin or cos) leaves the allowed range or if the signals are disturbed in such a way that a position error occurs, this error is generated.

Digital encoders: In the case of digital measuring systems, the received encoder protocol is monitored according to the manufacturer's encoder specification:

- Encoder error messages are cyclically evaluated
- Telegram CRC checksums are monitored according to specification
- Telegram failures are detected

The error can be cleared in CM (configuration mode) or upon successful reinitialization.

Since the position is no longer generated correctly when this error is detected, the encoder has to be reinitialized.

When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.
On the software level, the signals of a resolver are monitored for their levels.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Replace measuring system
Hardware defect on control section of drive controller	Replace control section or entire drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F2042

Long diagnostics no. (32 bits):	C00F2042
CiA error code:	7388

F2043 Measuring encoder: Encoder signals incorrect

Analog / combined encoders: The signals of the measuring system are monitored on hardware and software level with regard to their amplitudes and signal shapes. If a signal (e.g., sin or cos) leaves the allowed range or if the signals are disturbed in such a way that a position error occurs, this error is generated.

Digital encoders: In the case of digital measuring systems, the received encoder protocol is monitored according to the manufacturer's encoder specification:

- Encoder error messages are cyclically evaluated
- Telegram CRC checksums are monitored according to specification
- Telegram failures are detected

Since the position of the measuring system is no longer generated correctly when this error is detected, the encoder has to be reinitialized.
The error can be cleared in CM (configuration mode) or upon successful reinitialization.

When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.
On the software level, the signals of a resolver are monitored for their levels.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller

Only Rexroth service engineers or especially trained users are allowed to replace the control section. The replacement of the entire drive controller is described in the Project Planning Manual for the power section.

▼ Attributes

Short diagnostics no. (20 bits):	F2043
Long diagnostics no. (32 bits):	000F2043
CiA error code:	738D

F2047 Low encoder battery voltage encoder 2

For encoders with a battery, the absolute position information is maintained, even when the drive controller has been switched off. This is ensured by an encoder cable-integrated battery that buffers the encoder data in case voltage is switched off.



The battery was designed for a service life of 10 years in its installed state for a machine running in three-shift operation.

The battery voltage is measured cyclically during operation. If the value falls below the allowed battery voltage, the warning E2047 is output.



CAUTION!

Error caused by battery undervoltage when controlling motors and moving parts!

If the battery is not replaced before the 24V control voltage is switched off, the drive controller signals "F2047 Low battery voltage" after restart and during phase switching to "OM" or "P4". This deletes the reference of the drive controller to the mechanics.
Replace battery immediately!

Cause	Remedy
Battery voltage has fallen below allowed value	**CAUTION:** To avoid loss of reference, the battery has to be replaced before the 24V control voltage is switched off. 1. If the drive has been locked by a customer password, unlock drive by entering the customer password. 2. Clear error. 3. Replace battery immediately.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2047
Long diagnostics no. (32 bits):	000F2047

F2050 Overflow of target position preset memory

For drive-controlled positioning, a new positioning command value x(k+1) can be preset while the drive moves to the target position of the last positioning command value x(k). The new positioning command value is saved in an input buffer (target position preset memory) and is only deleted after having been applied.

Cause	Remedy
An attempt was made to preset a new positioning command value x(k+2) while the drive had moved to the target position of the positioning command value x(k)	Check command value input in control unit and make sure that a new positioning command value x(k+2) is only preset if positioning command value x(k+1) had been applied and drive moves to the corresponding target position

Cause	Remedy
Incorect command value acceptance [toggling of "Drive-controlled positioning: Control word" (0x2844:02 / S-0-0346 / --, bit 0)] in control unit causes preset positioning command value to be applied multiple times	Check control program and only toggle "Drive-controlled positioning: Control word" (0x2844:02 / S-0-0346 / --, bit 0) once for each new positioning command value, since each bit change results in applying the current positioning command value
Incorrect positioning mode was set in "Drive-controlled positioning: Control word" (0x2844:02 / S-0-0346 / --) for "moving to target position"	In "Drive-controlled positioning: Control word" (0x2844:02 / S-0-0346 / --), set positioning mode "immediately move to new target" for "moving to target position"

See also Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	F2050
Long diagnostics no. (32 bits):	000F2050
CiA error code:	8681

F2051 No sequential block in target position preset memory

In the positioning block mode "sequential block without intermediate stop", the drive monitors whether or not a new positioning block is available in the target position preset memory when the target position is reached.

Cause	Remedy
When target position of a sequential block is reached, no new positioning block is available in target position preset memory	Preset sequential block in time (before target position is reached)
Positioning block mode by mistake set to "sequential block without intermediate stop"	Check positioning block mode and, if necessary, switch off sequential block processing ["Drive-controlled positioning: Control word" (0x2844:02 / S-0-0346 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	F2051
Long diagnostics no. (32 bits):	000F2051
CiA error code:	8683

F2053 Incr. encoder emulator: Pulse frequency too high

In the drive, the number of the increments or lines output within the velocity controller cycle (125 µs) is monitored to make sure that the maximum allowed frequency of the incremental encoder signals of 4 MHz (maximum value at 1-fold oversampling) is not exceeded. Otherwise, a position offset would occur due to "lost increments".



The maximum allowed frequency of the incremental encoder signals also has to be taken into account for the sizing of the subsequent evaluation electronics in the control.

Cause	Remedy
The resolution of the emulated encoder set in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) is too high for the present travel velocity	Reduce the number of increments of the incremental encoder emulator in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) – or – Reduce travel velocity

▼ Attributes

Short diagnostics no. (20 bits):	F2053
Long diagnostics no. (32 bits):	000F2053
CiA error code:	7393

F2054 Encoder emulator: Hardware error



The cause of the error can be also read via the detailed diagnostics.

Cause	Remedy
During the operating mode (OM), an error was signaled via a bit in the status word of the encoder emulation hardware	Temporarily switch axis to PM to reset the encoder emulation hardware If occurring repeatedly: Replace encoder emulation hardware
During the operating mode (OM), a faulty CRC was detected in the communication between drive and encoder emulation hardware	

▼ Attributes

Short diagnostics no. (20 bits):	F2054
Long diagnostics no. (32 bits):	000F2054
CiA error code:	7396

Detailed diagnostics

005100A0

Incremental encoder emulation: Missing firmware access to data register between two sync pulses

005100A1

Incremental encoder emulation: Double firmware access to data register between two sync pulses

005100A2

Incremental encoder emulation: Position error of zero pulse (outside of Q0 or not at the beginning of Q0)

005100A3

Incremental encoder emulation: Directional error of zero pulse (distance to zero pulse inverted to new increments)

005100A4

Absolute encoder emulation: Missing firmware access to data register between two sync pulses

005100A5

Absolute encoder emulation: Double firmware access to data register between two sync pulses

005100A6

Encoder emulation: Error message in hardware status word

005100A7

Encoder emulation: Incorrect checksum in communication with emulator hardware

F2056 Overload at I/O module

Overload occurred in the case of one of the following actuations:

In the case of "high" actuation of one or more digital outputs on the optional module "DA" [no "high" signal (+24 V_{DC}) is output].

- or -

In the case of actuation of one or more analog inputs on the optional module "DA" in current mode.

The error can only be cleared when the cause of the error has been removed.

Cause	Remedy
Overloaded output or overloaded outputs	Reduce load on output or outputs
Short-circuited output or short-circuited outputs	Remedy short circuit(s)
Input(s) overloaded	Reduce the load of the input(s)
Wiring error	Correct wiring
Hardware defective	Replace hardware

▼ Attributes

Short diagnostics no. (20 bits):	F2056

Long diagnostics no. (32 bits):	000F2056

Detailed diagnostics

006C0004

Digital output overload

006C0005

Analog current input overload

006C0007

Error at one or more flex I/O input(s) of the eLION-AD option

F2057 Target position out of travel range

In operation modes with internal position command value generation a check is run, before a movement is carried out, to find out whether the preset target position is within the allowed travel range of the drive.

If position limit value monitoring has been activated and the target position is outside of the allowed travel range, a warning bit is set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --). Additionally, the message "Positioning status: Target position outside of travel range" (0x2848:06 / S-0-0323 / --) is set.
The positioning procedure is **not** started.

The reaction to a travel range error may be set in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --).

Cause	Remedy
Position limit values incorrectly parameterized	Check parameterization of position limit values and adjust it according to desired travel range. **Sercos/SoE:** "Travel range limitation: Limit value, positive" (S-0-0049 / --) has to be greater than "Travel range limitation: Limit value, negative" (S-0-0050). **CoE:** "Travel range limitation: Min position limit (0x607D:01)" has to be greater than "Travel range limitation: Max position limit" (0x607D:02).
Position limit value monitoring has been activated although it is not required	Deactivate position limit value monitoring if it is not required (e.g., in modulo mode): **Sercos/SoE:** "Axis polarity: Position" (0x290A:01 / S-0-0055 / --) **CoE:** Set one of the two values to "0": "Travel range limitation: Min position limit (0x607D:01)" or "Travel range limitation: Max position limit" (0x607D:02)

Cause	Remedy
In the case of relative interpolation, travel distance value was set too high, or multiple travel distances that are added cause "Positioning profile: Effective target position" (0x2840:04 / S-0-0430 / --) to be outside of the position limits	Check "Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --) and adjust it in control program, if necessary
In the case of absolute interpolation, preset target position is incorrect	Check preset target position ["Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --) for "drive-internal interpolation" or "Drive-controlled positioning: Command value" (0x2844:01 / S-0-0282 / --) "drive-controlled positioning")] and, if necessary, adjust it in control program [only enter "Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --) within the position limit values minus "Position status: Position window" (0x6067:00 / S-0-0057 / --); i.e. the target position has to be further away from the position limit values than "Position status: Position window"].
In "positioning block mode", one or more target positions have been incorrectly parameterized or incorrect positioning block is selected	Check "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) and "Positioning block mode: Selection" (0x284E:07 / P-0-4026 / --). In addition, check block selection via respective master communication (e.g., field bus or digital I/Os)

See also Travel range limit switches

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2057
Long diagnostics no. (32 bits):	C00F2057
CiA error code:	8685

F2067 Synchronization to master communication incorrect

Drive control is synchronized to the bus interface (Sercos, EtherCAT,...) via a phase control loop (**P**hase **L**ocked **L**oop - PLL). The proper function of synchronization is monitored by monitoring the respective control deviation of the PLL for an allowed threshold. If it is exceeded, this error message is generated.

Cause	Remedy
Interference injections due to faulty connection of master communication result in synchronization problems	Check and, if necessary, correct connection of master communication (incl. shield connection)
Synchronization clock of master fluctuates very much due to software or hardware error in master (e.g., jittering of MST in the case of Sercos)	Check communication master and ensure a stable, constant synchronization clock

Cause	Remedy
Master communication hardware (e.g., optional Sercos module) of drive controller defective	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F2067
Long diagnostics no. (32 bits):	000F2067
CiA error code:	F094

F2068 Brake error

The control of the self-applying brake is monitored. There is an error in the control.

Cause	Remedy
Supply voltage for brake has not been correctly connected or is outside of tolerance (24 V +/-5 %)	Check supply voltage
A wire break has occurred in brake control	Check brake control for wire break **Note:** If the activation of brake control causes problems with wire break monitoring, wire break monitoring can be deactivated [see "Brake control: Configuration" (0x2032:01 / P-0-0525 / --)].
Motor cable has been incompletely connected	▪ Check motor cable ▪ Check whether motor cable shield has been connected over a large surface at the controller
Brake is defective	Replace motor
Drive controller is defective	Replace drive controller

See brake

▼ Attributes

Short diagnostics no. (20 bits):	F2068
Long diagnostics no. (32 bits):	000F2068
CiA error code:	7183

Detailed diagnostics

00410002
Overcurrent in brake control

Cause/Remedy 1: Cause: Control of the motor holding brake has detected an overcurrent. Remedy: Check motor cable with brake control.

Cause/Remedy 2: Cause: The brake current is too high. Remedy: Use a brake with a lower current.

00410003

Wire break in brake control

Cause/Remedy 1: Cause: Control of the motor holding brake has detected a wire break. Remedy: Check motor cable with brake control.

Cause/Remedy 2: Cause: The brake current is too low. Remedy: Use a brake with a higher current.

00410004

Hardware or firmware error in brake control

00410005

Short circuit of brake supply voltage

Cause/Remedy 1: Cause: Control of the motor holding brake has detected a short circuit of the supply voltage. Remedy: Check motor cable with brake control.

F2074 Actual pos. value 1 outside absolute encoder window

When switching off a drive with an encoder 1 that can be evaluated in absolute form, the current actual position is stored in the drive. When switching the drive back on, the current position is compared to the position stored when the drive was switched off the last time. If the deviation is greater than the value of "Absolute encoder monitoring ENC_1: Window" (0x24B8:01 / P-0-0095 / --), the error message F2074 is generated.



The monitoring function can be switched off by P-0-0095="0".

Cause	Remedy
While switched off, axis was moved by more than distance entered in "Absolute encoder monitoring ENC_1: Window" (0x24B8:01 / P-0-0095 / --)	Make sure displayed position is correct in relation to machine zero point. Then clear error and, if necessary, reestablish position data reference
Value entered in "Absolute encoder monitoring ENC_1: Window" (0x24B8:01 / P-0-0095 / --) is too low for existing encoder resolution so that encoder jitter will already cause monitoring function to be triggered	Check parameterization of "Absolute encoder monitoring ENC_1: Window" (0x24B8:01 / P-0-0095 / --) and increase monitoring window
Amplifier replaced without parameter update	Clear error and establish position data reference
Encoder 1 defective	Replace motor or motor encoder

WARNING!

Risk of accident caused by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the motor and send it to the manufacturer's service department for inspection.

▼ Attributes

Short diagnostics no. (20 bits):	F2074
Long diagnostics no. (32 bits):	000F2074
CiA error code:	7398

Detailed diagnostics

0044010F
Encoder 1: Position offset (0x24C0:01 / S-0-0051) greater than monitoring window (0x24B8:01 / P-0-0095)

F2075 Actual pos. value 2 outside absolute encoder window

When switching off a drive with an encoder 2 that can be evaluated in absolute form, the current actual position is stored in the drive. When switching the drive back on, the current position is compared to the position stored when the drive was switched off the last time. If the deviation is greater than the value of "Absolute encoder monitoring ENC_2: Window" (0x24BA:01 / P-0-0096 / --), the error message F2075 is generated.

The monitoring function can be switched off by P-0-0095="0".

Cause	Remedy
While switched off, axis was moved by more than distance entered in "Absolute encoder monitoring ENC_2: Window" (0x24BA:01 / P-0-0096 / --)	Make sure displayed position is correct in relation to machine zero point. Then clear error and, if necessary, reestablish position data reference
Value entered in "Absolute encoder monitoring ENC_2: Window" (0x24BA:01 / P-0-0096 / --) is too low for existing encoder resolution so that encoder jitter will already cause monitoring function to be triggered	Check parameterization of "Absolute encoder monitoring ENC_2: Window" (0x24BA:01 / P-0-0096 / --) and increase monitoring window
Amplifier replaced without parameter update	Clear error and establish position data reference
Encoder 2 defective	Replace motor or motor encoder

WARNING!

Risk of accident caused by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the motor and send it to the manufacturer's service department for inspection.

▼ Attributes

Short diagnostics no. (20 bits):	F2075
Long diagnostics no. (32 bits):	000F2075
CiA error code:	7399

Detailed diagnostics

00440090
Position offset (0x24C2:01 / S-0-0053) greater than monitoring window (0x24BA:01 / P-0-0096)

F2076 Act. pos. value measuring enc. outside abs. encoder window

When switching off a drive with a measuring encoder that can be evaluated in absolute form, the current actual position is stored in the drive. When switching the drive on again, the current position is compared to the position stored when the drive was switched off the last time. If the deviation is greater than the value in "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --), the error message F2076 is generated.



The monitoring function can be switched off by "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --)="0".

Cause	Remedy
While switched off, axis was moved by more than distance entered in "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --)	Make sure displayed position is correct in relation to machine zero point. Then clear error and, if necessary, reestablish position data reference
The value entered in "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --) is too low for existing encoder resolution so that normal encoder jitter already causes monitoring function to be triggered.	Check parameterization of "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --) and increase monitoring window
Encoder defective or encoder replacement	Replace encoder, clear error and establish position data reference
Amplifier replaced without parameter update	Clear error and establish position data reference

Cause	Remedy
The parameter "Measuring encoder function: Actual position value offset" (0x24CE:06 / P-0-0087 / --) is directly used in the generation of parameter "Encoder actual values MEAS: Position" (0x24C3:01 / P-0-0052 / --). During the deactivation/switch-off of the measuring encoder evaluation and the reinitialization of the position, the value of "Measuring encoder function: Actual position value offset" (0x24CE:06 / P-0-0087 / --) was changed. The change in "Measuring encoder function: Actual position value offset" (0x24CE:06 / P-0-0087 / --) is interpreted as a distance in the deactivated state. The total distance detected thereby is greater than the value in "Absolute encoder monitoring MEAS: Window" (0x24BB:01 / P-0-0097 / --).	Clear error and establish position data reference. Do not change "Measuring encoder function: Actual position value offset" (0x24CE:06 / P-0-0087 / --) between switch-off and reinitialization of the position.

WARNING!

Risk of accident caused by unintended axis motion!

⇒ Check position data reference. The encoder is defective if the position data reference is incorrect! Replace the encoder and send it to the manufacturer's service department for inspection.

▼ Attributes

Short diagnostics no. (20 bits):	F2076
Long diagnostics no. (32 bits):	000F2076
CiA error code:	739A

Detailed diagnostics

0044220E
Position offset (0x24C3:01 / P-0-0052) greater than monitoring window (0x24BB:01 / P-0-0097)

F2077 Current measurement trim wrong

The current measurement in the drive controller is trimmed in operation. The adjustment values of current measurement have exceeded the allowed tolerance.

Cause	Remedy
Defective hardware of control section or power section	Replace defective part or entire drive controller

See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F2077

Long diagnostics no. (32 bits):	000F2077
CiA error code:	7280
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	239B

Detailed diagnostics

0042030D

Phase U zero adjust invalid

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

0042030E

Phase V zero adjust invalid

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

0042030F

Phase W zero adjust invalid

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

F2080 Low battery voltage, encoder at XG20

For encoders with a battery, the absolute position information is maintained, even when the drive controller has been switched off. This is ensured by an encoder cable-integrated battery that buffers the encoder data in case voltage is switched off.



The battery was designed for a service life of 10 years in its installed state for a machine running in three-shift operation.



CAUTION!
Error caused by battery undervoltage when controlling motors and moving parts!
The reference of the drive controller to the mechanics was deleted (see F2174/F2175).
Replace battery immediately!

Cause	Remedy
Battery voltage **of the encoder connected to interface XG20** has fallen below allowed value	1. If the drive controller has been locked by a customer password, unlock drive by entering the customer password. 2. Clear error. 3. Replace battery. 4. Switch off drive and then switch it back on or go to the "parking axis" state. 5. Reestablish reference of the drive controller to the mechanics (see F2174/F2175).

▼ Attributes

Short diagnostics no. (20 bits):	F2080
Long diagnostics no. (32 bits):	000F2080

F2081 Low battery voltage, encoder at XG21

For encoders with a battery, the absolute position information is maintained, even when the drive controller has been switched off. This is ensured by an encoder cable-integrated battery that buffers the encoder data in case voltage is switched off.



The battery was designed for a service life of 10 years in its installed state for a machine running in three-shift operation.



CAUTION!
Error caused by battery undervoltage when controlling motors and moving parts!
The reference of the drive controller to the mechanics was deleted (see F2174/F2175).
Replace battery immediately!

Cause	Remedy
Battery voltage **of the encoder connected to interface XG21** has fallen below allowed value	1. If the drive controller has been locked by a customer password, unlock drive by entering the customer password. 2. Clear error. 3. Replace battery. 4. Switch off drive and then switch it back on or go to the "parking axis" state. 5. Reestablish reference of the drive controller to the mechanics (see F2174/F2175).

▼ Attributes

Short diagnostics no. (20 bits):	F2081
Long diagnostics no. (32 bits):	000F2081

F2082 Low battery voltage, encoder at XG22

For encoders with a battery, the absolute position information is maintained, even when the drive controller has been switched off. This is ensured by an encoder cable-integrated battery that buffers the encoder data in case voltage is switched off.



The battery was designed for a service life of 10 years in its installed state for a machine running in three-shift operation.



CAUTION!
Error caused by battery undervoltage when controlling motors and moving parts!
The reference of the drive controller to the mechanics was deleted (see F2174/F2175).
Replace battery immediately!

Cause	Remedy

Cause	Remedy
Battery voltage **of the encoder connected to interface XG22** has fallen below allowed value	1. If the drive controller has been locked by a customer password, unlock drive by entering the customer password. 2. Clear error. 3. Replace battery. 4. Switch off drive and then switch it back on or go to the "parking axis" state. 5. Reestablish reference of the drive controller to the mechanics (see F2174/F2175).

▼ Attributes

Short diagnostics no. (20 bits):	F2082
Long diagnostics no. (32 bits):	000F2082

F2088 24 V error at I/O module

The external 24V supply of the I/O module (optional module "DA" or eLION AD option) failed or has not been connected.

Monitoring of the external 24V supply of the I/O module can be activated/deactivated ["Analog input function: Control word adjustment" (0x2A30:01 / P-0-2901.0.1 / P-0-1791, bit 12)].

Cause	Remedy
The external 24V supply failed	Check the 24V power supply unit
The external 24V supply has not been connected	Check wiring

▼ Attributes

Short diagnostics no. (20 bits):	F2088
Long diagnostics no. (32 bits):	000F2088

Detailed diagnostics

006C0008
DA option: 24 V error

F2099 F2 test error, axis reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for errors of category F20xx.

Cause	Remedy

Cause	Remedy
Bit 0 in "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) was set	▪ Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) ▪ Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F2099
Long diagnostics no. (32 bits):	000F2099
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF2

F2100 Incorrect access to command value memory

An error occurred when the command value memory (flash/internal memory) of the control section had been accessed.

The error is signaled if one or multiple application parameters, process parameters or device parameters could not be loaded after switching on. Either because the parameter data in the command value memory are invalid or because it was not possible to write the parameter data to the parameter.

Furthermore, the error is signaled if during operation one or multiple application parameters or device parameters could not be saved in the command value memory after a value change. Either because the command value memory is defective or it had been impossible to access the parameter data.

The faulty parameters are marked as being invalid and entered in "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 --).

Cause	Remedy
After a firmware update, the parameter data saved in the command value memory are no longer compatible with the parameter definition.	▪ Open "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 --). ▪ Check values of invalid parameters and set them to valid. ▪ Update parameter data in command value memory using the command "Application data: C2200 Backup procedure command" (0x2B60:08 / S-0-0264 / --). ▪ Switch device off and back on.
Error occurs sporadically. If possible, replace hardware to exclude hardware defect.	▪ Open "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 --). ▪ Check values of invalid parameters and set them to valid. ▪ Update parameter data in command value memory using the command "Application data: C2200 Backup procedure command" (0x2B60:08 / S-0-0264 / --). ▪ Switch device off and back on. If error occurs repeatedly, please contact our service department. For this purpose, please note down the content of "IDN list generic: Invalid data" (0x2B64:06 / S-0-0423 --) and forward it to the service department, or make a parameter backup of device and forward it to the service department.

Cause	Remedy
Error occurs permantently. Hardware in control section defective.	Control section or entire device has to be replaced.



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F2100
Long diagnostics no. (32 bits):	000F2100
CiA error code:	6380
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	21AD

Detailed diagnostics

006E0D02

Retain memory deleting error (process parameters)

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D05

Parameter write error while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: Unable to copy parameter values from flash to RAM. Remedy: If the error persists after a firmware update, check all saved parameters (see P-0-0195).

006E0D06

Parameter type error while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: The data type of the parameter value in flash does not match the type of the parameter in RAM. Remedy: If the error persists after a firmware update, check all saved parameters (see P-0-0195).

006E0D0B

Storage time too short while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: The available saving time when switching off has reached a critical value. Remedy: The parameter values are current and valid. However, to keep the availability high, the device should be replaced.

006E0D81

System resources runtime error

Cause/Remedy 1: Cause: Operating system error. Unable to save parameters. Remedy: Switch the device off and on again.

006E0D85

Stored parameter data error

Cause/Remedy 1: Cause: The data type of the parameter value in flash does not match the type of the parameter in RAM. Remedy: If the error persists after a firmware update, first check the parameter in question, and if necessary replace the device.

006E0D87

Parameter flash read error

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D88

Parameter flash write error

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D89

Parameter flash checksum error

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D8B

Error in initial parameter loading. At least one parameter is invalid

Cause/Remedy 1: Cause: Error when loading the parameter values from flash. Data type or data length in the RAM do not match. Remedy: If the error persists after a firmware update, first check the parameter in question, and if necessary replace the device.

006E0D8C

Parameter ID missing in flash

Cause/Remedy 1: Cause: The parameter value in flash is not valid (corrupt). Remedy: If the error persists after a firmware update, first check the saved parameter, and if necessary replace the device.

006E0D8E

There were pending parameter read/write requests when switching off

Cause/Remedy 1: Cause: One or more asynchronous storage jobs were not carried out before the device was switched off. Remedy: If you cannot determine which parameters were affected, you should check all parameters to be saved.

F2104 Commutation offset invalid

The value for the commutation offset stored in the motor encoder memory was detected to be invalid.

It is not allowed to operate the motor without a valid commutation offset!

Cause	Remedy
Commutation offset has not yet been determined	For absolute encoders: Execute command "Ident. commutation offset: C1200 Command identification" (0x218C:01 / P-0-0524 / --) **NOTE:** The command cannot be executed for Bosch Rexroth housing motors with an encoder mounted at the factory
Malfunction when reading commutation offset from encoder memory	Repeat procedure: Switch phases at device or switch device off and back on so that offset is read from encoder memory again. If error occurs again, check shielding and encoder lines; if necessary, contact our service department.
Defective encoder memory or encoder electronics	Clear error. Replace encoder or replace motor in the case of Bosch Rexroth housing motors with an encoder mounted at the factory. If necessary, determine commutation offset again.
Function was deactivated for digital Hall sensors	Activate function

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F2104
Long diagnostics no. (32 bits):	000F2104
CiA error code:	7193

Detailed diagnostics

00420490

The commutation offset (0x218A:01 / P-0-0508) could not be saved

Cause/Remedy 1: Internal Firmware Error

00420491

The commutation offset could not be saved in the encoder memory

Cause/Remedy 1: Error in encoder communication -> check connection to encoder

F2107 Incorrect commutation angle

Following the initialization of the relative measuring system (PM→OM transition, e.g. by switching the axis to ready for operation), "Commutation offset: Coarse value" (0x218A:03 / P-0-0509 / --) becomes active as commutation angle

for linear Rexroth motors. However, the motor is only operational if the axis slide was in a defined initial position!

The defined initial position of the axis slide is signaled to the controller via an axis limit switch being activated. The switch signal has to be assigned to the corresponding bit of "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --), and the switching state must have been configured.



F2107 is only signaled when "AF" is set. The error can only be reset in the parameterization mode (PM).

Cause	Remedy
During PM→OM transition, axis slide is not in defined initial position required for the motor function	▪ Switch axis to PM. ▪ Clear error. ▪ Bring axis slide to defined initial position to activate the axis limit switch. [The switching state is displayed in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --).] ▪ Switch axis to OM.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F2107
Long diagnostics no. (32 bits):	000F2107

F2110 Internal access to forbidden memory range

This diagnostic message is only generated for untested firmware!

A monitoring function checks whether the second processor of the communication interface accesses the external RAM which is forbidden. This increases the runtime in the cyclic interrupts.

Cause	Remedy
Second processor of the communication interface accesses the external RAM	The cause can be analyzed via the patch symbols :ExtRamAccessSource and :ExtRamAccessTarget with the "COM" option. With the two symbols, the source and the target of the access are displayed as addresses. The cause can be identified via the *.map file belonging to the COM firmware. The cause must be removed immediately.

▼ Attributes

Short diagnostics no. (20 bits):	F2110
Long diagnostics no. (32 bits):	020F2110
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

F2131 Incorrect switching state of probe 1 input signal

An incorrect switching state was detected during the monitoring of the probe 1 input.



The switch-on level monitoring for probe 1 is configured via "Touch probe function, extended: Control word" (0x2965:01 / P-0-0226 / --).

Cause	Remedy
The configuration in "Touch probe control: Control word" (0x2960:01 / S-0-0169 / --) specifies that a **positive edge** at the input of probe 1 triggers the recording of a measured value. When probe enable was activated, **"1"** had already been applied at the input of probe 1 ["Touch probe input 1: Switching state" (0x2966:01 / S-0-0401 / --)].	▪ 1. Remove probe enable ▪ 2. Clear error ▪ 3. Apply low level at input of probe1 ▪ 4. Set probe enable again
The configuration in "Touch probe control: Control word" (0x2960:01 / S-0-0169 / --) specifies that a **negative edge** at the input of probe 1 triggers the recording of a measured value. When probe enable was activated, **"0"** had already been applied at the input of probe 1 ["Touch probe input 1: Switching state" (0x2966:01 / S-0-0401 / --)].	▪ 1. Remove probe enable ▪ 2. Clear error ▪ 3. Apply high level at input of probe1 ▪ 4. Set probe enable again - or - Remove wire break

See also Probe function

▼ Attributes

Short diagnostics no. (20 bits):	F2131
Long diagnostics no. (32 bits):	000F2131
CiA error code:	73A0

F2174 Loss of encoder 1 reference

With absolute encoder evaluation, the validity of the initialized absolute position is checked during position initialization. If the controller detects that the position data reference of the encoder can no longer be established due to changes in the mechanics parameters or replacement of the encoder or device, "Homing status: Feedback value status" (0x2508:01 / S-0-0403 / --) goes to "relative" and the error F2174 is generated.

Cause	Remedy
Switched on without reference (at initial commissioning or caused, e.g., by changes to parameters that characterize the mechanical system or affect position evaluation)	Clear error and establish position data reference again

Cause	Remedy
Loss of reference after switching off and back on [24 V switching elements operated with DC (such as relays or power contactors) are used without active suppressor circuit of the operating coil]	Ensure that a correctly connected suppressor circuit of the operating coil is used at 24 V switching elements operated with DC
Switched on without reference (after motor or encoder was replaced)	Clear error and establish position data reference
Change in mechanics parameters (gearbox, feed constant,...)	Clear error and establish position data reference
Amplifier replaced without parameter update	Clear error and establish position data reference
Switched on without reference after device has been replaced with loaded, axis-specific parameter values [according to "Application data: IDN list" (0x2B60:03 / S-0-0192 / --)]	Clear error and establish position data reference - or - Clear error, then load parameter values of "Process data, retain: IDN list of retain data" (0x2B6E:01 / P-0-0195 / --), if it had been possible to save them directly before the device was replaced. Check correctness of reestablished position data reference
In the case of encoders with buffer battery: F2080/F2081/F2082 (low battery voltage) was entered besides F2174 in "Diagnostic trace: Main diagnostics" (0x2B84:0A / S-0-1303.0.10 / S-0-1405). Encoder memory is not supplied with power because battery power is no longer sufficient or there is cable break in supply line.	Reestablish power supply of encoder memory. Replace battery (see F2080/F2081/F2082) or remove cable break.
Defective encoder	Replace motor or encoder, clear error and establish position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2174
Long diagnostics no. (32 bits):	C00F2174
CiA error code:	7383

Detailed diagnostics

0044002E

Basic encoder evaluation (ENCB) could not initialize the encoder position (ENC_1: see 0x2484:01 / S-0-0610.1.1 / S-0-2700; ENC_2: see 0x2486:01 / S-0-0610.2.1 / S-0-2725)

00440035

Encoder 1: F2174 due to invalid 0x24B4:03 / P-0-0177.0.1 / P-0-3819

0044003A

Encoder[x]: Loss of reference due to change of scaling type for position data (0x2900:01 / S-0-0076)

0044003B

Encoder[x]: Loss of reference due to change in travel range (modulo format: 0x2488:01 / S-0-0103, absolute format: 0x2488:02 / S-0-0278)

0044003C

Encoder[x]: Loss of reference due to change in position adjustment factor (gearbox/scaling/encoder resolution)

0044003D

Encoder[x]: Loss of reference due to change in travel range in encoder format.

0044003E

Loss of reference due to change in encoder type (ENC_1: 0x24A2:01 / S-0-0277, ENC_2: 0x24A0:01 / S-0-0115) or change in rotational direction (ENC_1: 0x24A2:01 / S-0-0277, ENC_2: 0x24A0:01 / S-0-0115, 0x290A:01 / S-0-0055)

00440046

Encoder 1: F2174 due to plausibility error 0x24B4:02 / P-0-0177 (actual length > maximum length)

00440047

Loss of reference due to change in rotat. direct. of encoder (ONBOARD: 0x2410:01 / S-0-0601.10.1 or 0x2418:02 / S-0-0602.10.2, OPT_2: 0x2412:01 / S-0-0601.2.1 or 0x241A:02 / S-0-0602.2.2, OPT_3: 0x2414:01 / S-0-0601.3.1 or 0x241C:02 / S-0-0602.3.2)

00440048

Encoder[x]: Loss of reference due to class 2 encoder error

00440107

No valid absolute encoder offset (ENC_1: 0x24B4:01 / S-0-0613.1.156 / P-0-3888, ENC_2: 0x24B6:01 / S-0-0613.2.156 / P-0-3890) determined from OEM memory (absolute initialization)

00440108

Encoder 1: 0x24B4:03 / P-0-0177.0.1 / P-0-3819 not valid (absolute PosInit with offset)

00440109

Absolute encoder offset (ENC_1: 0x24B4:01 / S-0-0613.1.156 / P-0-3888, ENC_2: 0x24B6:01 / S-0-0613.2.156 / P-0-3890) in OEM memory

not valid (mod initialization)

0044010A

Encoder 1: 0x24B4:03 / P-0-0177.0.1 / P-0-3819 not valid (modulo PosInit with offset)

0044010B

Encoder 1: 0x24B4:02 / P-0-0177 not valid (PosInit with retain data)

0044010C

Loss of reference due to encoder replacement [inconsistent serial number (ENC_1: 0x24B4:04 / S-0-0611.1.136 / P-0-3884, ENC_2: 0x24B6:04 / S-0-0611.2.136 / P-0-3886)]

0044010D

Loss of reference due to invalid absolute encoder offset in OEM memory (ENC_1: 0x24B4:01 / S-0-0613.1.156 / P-0-3888, ENC_2: 0x24B6:01 / S-0-0613.2.156 / P-0-3890)

0044010E

Encoder[x]: Loss of reference due to missing reference status in the retain data

00440111

Encoder 1: Loss of reference due to invalid retain data (0x24B4:02 / P-0-0177)

0044011B

Encoder[x]: Reference loss due to changed encoder type (lin./rot.) or changed move polarity (ENC_1: 0x2490:01 / S-0-0611.1.1 / S-0-2800, ENC_2: 0x2492:01 / S-0-0611.2.1 / S-0-2825)

0044011C

Encoder[x]: Reference loss due to changed resolution format (ENC_1: 0x2490:01 / S-0-0611.1.1 / S-0-2800, ENC_2: 0x2492:01 / S-0-0611.2.1 / S-0-2825)

F2175 Loss of encoder 2 reference

With absolute encoder evaluation, the validity of the initialized absolute position is checked during position initialization. If the controller detects that the position data reference of the encoder can no longer be established due to changes in the mechanics parameters or replacement of the encoder or device, "Homing status: Feedback value status" (0x2508:01 / S-0-0403 / --) goes to "relative" and the error F2175 is generated.

Cause	Remedy

Cause	Remedy
Switched on without reference (at initial commissioning or caused, e.g., by changes to parameters that characterize the mechanical system or affect position evaluation)	Clear error and establish position data reference again
Loss of reference after switching off and back on [24 V switching elements operated with DC (such as relays or power contactors) are used without active suppressor circuit of the operating coil]	Ensure that a correctly connected suppressor circuit of the operating coil is used at 24 V switching elements operated with DC
Switched on without reference (after encoder was replaced)	Clear error and establish position data reference
Change in mechanics parameters (gearbox, feed constant,...)	Clear error and establish position data reference
Amplifier replaced without parameter update	Clear error and establish position data reference
Switched on without reference after device has been replaced with loaded, axis-specific parameter values [according to "Application data: IDN list" (0x2B60:03 / S-0-0192 / --)]	Clear error and establish position data reference - or - Clear error, then load parameter values of "Process data, retain: IDN list of retain data" (0x2B6E:01 / P-0-0195 / --), if it had been possible to save them directly before the device was replaced. Check correctness of reestablished position data reference
In the case of encoders with buffer battery: F2080/F2081/F2082 (low battery voltage) was entered besides F2175 in "Diagnostic trace: Main diagnostics" (0x2B84:0A / S-0-1303.0.10 / S-0-1405). Encoder memory is not supplied with power because battery power is no longer sufficient or there is cable break in supply line.	Reestablish power supply of encoder memory. Replace battery (see F2080/F2081/F2082) or remove cable break.
Defective encoder	Replace encoder, clear error and establish position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2175
Long diagnostics no. (32 bits):	C00F2175
CiA error code:	7385

Detailed diagnostics

00440091

F2175 due to invalid 0x24B6:03 / P-0-0178.0.1 / P-0-3919

00440092

F2175 due to plausibility error 0x24B6:02 / P-0-0178 (actual length > maximum length)

00440093

0x24B6:03 / P-0-0178.0.1 / P-0-3919 not valid (absolute PosInit with offset)

00440094

0x24B6:03 / P-0-0178.0.1 / P-0-3919 not valid (modulo PosInit with offset)

00440095

0x24B6:02 / P-0-0178 not valid (PosInit with retain data)

00440096

Reference loss due to invalid retain data (0x24B6:02 / P-0-0178)

F2176 Loss of measuring encoder reference

With absolute encoder evaluation, the validity of the initialized absolute position is checked during position initialization. If the controller detects that the position data reference of the encoder can no longer be established due to changes in the mechanics parameters or replacement of the encoder or device, the controller generates the error F2176.

Cause	Remedy
Switched on without reference (during initial commissioning or caused, e.g., by changes to parameters that characterize the mechanical system or affect position evaluation)	Clear error and establish position data reference
Switched on without reference (after measuring encoder was replaced)	Clear error and establish position data reference
Controller replaced without parameter update	Clear error and establish position data reference
Defective encoder	Replace measuring encoder, clear error and establish position data reference

▼ Attributes

Short diagnostics no. (20 bits):	F2176
Long diagnostics no. (32 bits):	000F2176
CiA error code:	7389

Detailed diagnostics

004421FC

Absolute encoder offset (0x24B7:01 / S-0-0613.3.156) in OEM encoder memory is invalid

004421FD

0x24B7:03 / P-0-0179.0.1 not valid (modulo PosInit with offset)

004421FE

0x24B7:02 / P-0-0179 not valid (PosInit with retain data)

00442203

F2176 due to validation error 0x24B7:02 / P-0-0179 (current length > maximum length)

00442204

F2176 due to encoder replacement [inconsistent serial number (0x24B7:04 / S-0-0611.3.136)]

00442205

F2176 due to encoder replacement [inconsistent serial number (0x24B7:04 / S-0-0611.3.136)]

00442206

F2176 due to encoder replacement [inconsistent serial number (0x24B7:04 / S-0-0611.3.136)]

00442207

F2176 due to invalid absolute encoder offset in encoder OEM memory (0x24B7:01 / S-0-0613.3.156)

00442209

Basic encoder evaluation (ENCB) could not initialize the encoder position (0x2487:01 / S-0-0610.3.1)

0044220A

F2176 due to invalid retain data (0x24B7:02 / P-0-0179)

0044220B

Loss of reference due to change in travel range

0044220C

Loss of reference due to change in direction of motion (0x24A3:01 / P-0-0328)

0044220D

Loss of reference due to change in encoder type (lin./rot.) or change in motion polarity (0x2493:01 / S-0-0611.3.1)

0044220F

Loss of reference due to invalid 0x24B7:03 / P-0-0179.0.1

00442224

Measuring encoder: Position resolution has changed (0x24CE:4 / P-0-0084)

00442225

Measuring encoder: Scaling has changed (0x24CE:1 / P-0-0330)

F2177 Encoder 1 modulo limitation error

With modulo scaling activated, the drive limits its actual position values to "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --); otherwise, to "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --). Since these values possibly cannot be exactly represented in the internal format, the systematic errors are corrected in the drive in the case of position overflow. If the drive falls behind with the correction, the error F2177 is generated.

Cause	Remedy
Modulo value and/or maximum travel range incorrectly parameterized and not adjusted to the application	Check and, if necessary, correct "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --) and "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --)
Drive was moved so fast that correction dose not work correctly	Reduce drive velocity in the case of position overflow

▼ Attributes

Short diagnostics no. (20 bits):	F2177
Long diagnostics no. (32 bits):	000F2177
CiA error code:	738E

Detailed diagnostics

0044000E

Encoder[x]: Modulo correction overflow encoder format (velocity too high)

F2178 Encoder 2 modulo limitation error

With modulo scaling activated, the drive limits its actual position values to "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --); otherwise, to "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --). Since these values possibly cannot be exactly represented in the internal format, the systematic errors are corrected in the drive in the case of position overflow. If the drive falls behind with the correction, the error F2178 is generated.

Cause	Remedy
Modulo value and/or maximum travel range incorrectly parameterized and not adjusted to the application	Check and, if necessary, correct "Maximum travel range: Modulo format" (0x2488:01 / S-0-0103 / --) and "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --)
Drive was moved so fast that correction dose not work correctly	Reduce drive velocity in the case of position overflow

▼ Attributes

Short diagnostics no. (20 bits):	F2178
Long diagnostics no. (32 bits):	000F2178
CiA error code:	7391

F2179 Modulo limitation error of measuring encoder

Depending on the scaling, the drive limits the measuring encoder position feedback values to the position range determined by "Measuring encoder function: Travel range" (0x24CE:05 / P-0-0765 / --) and "Measuring encoder function: Position resolution" (0x24CE:04 / P-0-0084 / --) or to the defined modulo value of 360,0000 degrees. See also "Measuring encoder function: Control word" (0x24CE:01 / P-0-0330 / --), bit 2. Since these values possibly cannot be exactly represented, errors are corrected in the drive.

Cause	Remedy
Encoder speed was so high that correction does not work correctly	Reduce encoder speed

▼ Attributes

Short diagnostics no. (20 bits):	F2179
Long diagnostics no. (32 bits):	000F2179
CiA error code:	7394

F2190 Incorrect Ethernet configuration

During the initialization of the device, the parameterization for the Ethernet communication is checked. An error was detected during this check.

Cause	Remedy

Cause	Remedy
Unallowed configuration of parameters for Ethernet communication (TCP/IP): IP address and gateway address are not in the same IP network **- or -** IP address and gateway address are identical	Set parameters for Ethernet communication (TCP/IP) to valid values: ■ "IP target setting FIELD: IP address" (0x2C21:04 / S-0-1020 / --) ■ "IP target setting FIELD: Subnet mask" (0x2C21:05 / S-0-1021 / --) ■ "IP target setting FIELD: Gateway address" (0x2C21:06 / S-0-1022 / --)
Automatic setting of the IP address is impossible: Setting of network mask does not comply with a class C network **- or -** "MCI identification: Drive address" (0x2C02:01 / S-0-1040 / --) is not in the allowed range from 1 to 254	Set IP address manually **- or -** Set network mask to a class C network and use "MCI identification: Drive address" (0x2C02:01 / S-0-1040 / --) in the range from 1 to 254

▼ Attributes

Short diagnostics no. (20 bits):	F2190
Long diagnostics no. (32 bits):	000F2190
CiA error code:	7582

F2211 Non-fatal PLC error no. 1

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2211
Long diagnostics no. (32 bits):	0A0F2211
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF21

F2212 Non-fatal PLC error no. 2

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2212
Long diagnostics no. (32 bits):	0A0F2212
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF22

F2213 Non-fatal PLC error no. 3

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2213
Long diagnostics no. (32 bits):	0A0F2213
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF23

F2214 Non-fatal PLC error no. 4

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2214
Long diagnostics no. (32 bits):	0A0F2214
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF24

F2215 Non-fatal PLC error no. 5

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2215
Long diagnostics no. (32 bits):	0A0F2215
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF25

F2216 Non-fatal PLC error no. 6

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the

description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2216
Long diagnostics no. (32 bits):	0A0F2216
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF26

F2217 Non-fatal PLC error no. 7

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2217
Long diagnostics no. (32 bits):	0A0F2217
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF27

F2218 Non-fatal PLC error no. 8

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function "ctrlX DRIVE Technology Function") allows non-fatal errors to be generated from within the PLC program.

Non-fatal errors are errors which still allow carrying out a freely definable, variable error reaction (0x2872:01 / P-0-0117 / --, 0x2870:01 / P-0-0119 / --).

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F2218
Long diagnostics no. (32 bits):	0A0F2218
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF28

F2270 Analog input, wire break

The drive provides the function of monitoring the input value of the analog inputs for wire break. The message to be output can be configured as a warning or as an error in the control word for the respective analog input.

Conditions causing this error to be triggered:

- The configuration in the respective control word for the analog input is such that an error is generated when the input value falls below the input value at the analog input and
- wire break monitoring was activated and
- the current/voltage value at the selected analog input is smaller than the threshold value.

	Control word	Wire break monitoring
Analog input 1	0x2A31:02 / P-0-2900.0.1 / P-0-1783	0x2A31:09 / P-0-2900.0.10 / P-0-3480
Analog input 2	0x2A32:02 / P-0-2900.1.1 / P-0-3481	0x2A32:09 / P-0-2900.1.10 / P-0-3487
Analog input 3	0x2A33:02 / P-0-2900.2.1 / P-0-3482	0x2A33:09 / P-0-2900.2.10 / P-0-3494
Analog input 4	0x2A34:02 / P-0-2900.3.1 / P-0-3483	0x2A34:09 / P-0-2900.3.10 / P-0-3501

The error stays present as long as the conditions are met.



The value range of the voltage source or current source connected to the analog input should be limited to the allowed value range of the analog input.

Cause	Remedy
Cable break was detected at one of the analog inputs (the input value is below the threshold value for wire break monitoring)	Check the wiring of the analog input; if applicable, reestablish contact to the voltage source **- or -** Check threshold value for wire break monitoring
The wiring of at least one of the analog inputs is wrong or defective	Check the wiring of the analog input

▼ Attributes

Short diagnostics no. (20 bits):	F2270
Long diagnostics no. (32 bits):	000F2270

CiA error code:	F095

Detailed diagnostics

006C0000

Analog input 1, wire break

006C0001

DA option: analog input 1, wire break

006C0002

DA option: analog input 2, wire break

006C0003

DA option: analog input 3, wire break

F2802 Error in mains synchronization

Synchronization to the mains voltage is not possible.

Cause	Remedy
At least one phase is missing	Check mains circuit breakers and replace them, if necessary
Mains voltage is too low	Measure mains voltage and compare it to allowed value range
Mains frequency is outside of specified range	Measure mains frequency and compare it to allowed value range

▼ Attributes

Short diagnostics no. (20 bits):	F2802
Long diagnostics no. (32 bits):	070F2802
CiA error code:	F096

F2803 Black start impossible

A voltage has been applied in the island grid. Thus, a black start is not possible.

Cause	Remedy

Cause	Remedy
One or multiple voltage sources, that provide an island grid, are available in the island grid	Deactivate the existing voltage sources and run up again in black start - or - Change parameterization and have supply unit synchronize to an existing island grid. For this purpose, set the selected operation mode to "island grid mode, closed-loop controlled" in the corresponding operation mode parameter. Operation mode parameters: ■ "Power supply operation modes: Primary operation mode" (0x2604:02 / S-0-1709.0.1 / S-0-2046) ■ "Power supply operation modes: Secondary operation mode 1" (0x2604:03 / S-0-1709.0.2 / S-0-2047) ■ "Power supply operation modes: Secondary operation mode 2" (0x2604:04 / S-0-1709.0.3 / S-0-2048) ■ "Power supply operation modes: Secondary operation mode 3" (0x2604:05 / S-0-1709.0.4 / S-0-2049) ■ "Power supply operation modes: List" (0x2604:01 / S-0-1705.0.1 / S-0-2024)
There is residual voltage in the island grid	Have residual voltage decay or actively reduce it

▼ Attributes

Short diagnostics no. (20 bits):	F2803
Long diagnostics no. (32 bits):	070F2803

F2804 Error, power section heat sink fan

The fan for the heat sink of the controller signals an error.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective controller	Replace controller

▼ Attributes

Short diagnostics no. (20 bits):	F2804
Long diagnostics no. (32 bits):	070F2804
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

F2805 Error, power section capacitors fan

The fan for the capacitors of the drive controller power section/of the supply unit signals an error.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective drive controller power section / supply unit	Drive controller: Replace drive controller or power section Supply unit: Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2805
Long diagnostics no. (32 bits):	000F2805
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

F2806 Error, braking resistor fan

The device fan of the drive controller/supply unit braking resistor signals an error.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective drive controller power section / supply unit	Drive controller: Replace drive controller or power section Supply unit: Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2806
Long diagnostics no. (32 bits):	070F2806

F2807 Switching to non-initialized power supply operation mode

When switching the active operation mode, the drive was switched to a non-initialized operation mode.

For the operation modes that can be selected, please see descriptions of the operation mode parameters:

- "Power supply operation modes: Primary operation mode" (0x2604:02 / S-0-1709.0.1 / S-0-2046)
- "Power supply operation modes: Secondary operation mode 1" (0x2604:03 / S-0-1709.0.2 / S-0-2047)
- "Power supply operation modes: Secondary operation mode 2" (0x2604:04 / S-0-1709.0.3 / S-0-2048)
- "Power supply operation modes: Secondary operation mode 3" (0x2604:05 / S-0-1709.0.4 / S-0-2049)
- "Power supply operation modes: List" (0x2604:01 / S-0-1705.0.1 / S-0-2024)

Cause	Remedy
A non-initialized operation mode was selected. The operation mode entered in the operation mode parameter is not supported by the supply unit.	Input an operation mode supported by the supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2807
Long diagnostics no. (32 bits):	070F2807
J1939: "Failure Mode Identifier":	4
J1939: "Suspect Parameter Number":	239D

F2808 Error in fan monitoring

An internal error has occurred during the monitoring of the device fans.

Cause	Remedy
Device error	Replace the device or contact the service department (it might be possible to fix the error by a device update of the FWL files)
Device-internal components incorrectly configured	

▼ Attributes

Short diagnostics no. (20 bits):	F2808
Long diagnostics no. (32 bits):	070F2808

F2809 Error, mains connection fan

The fan for the mains connection module signals an error.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective mains connection module	Replace mains connection module

▼ Attributes

Short diagnostics no. (20 bits):	F2809
Long diagnostics no. (32 bits):	070F2809

F2811 Mains connection overtemperature

The mains supply temperature measured by the temperature sensor is higher than the switch-off threshold specified for the device.

Cause	Remedy

Cause	Remedy
Temperature monitoring line interrupted or short-circuited	Check mains connection to supply unit. Check temperature sensor connection line for mains connection and corresponding terminals with regard to interruption and short circuit.
Supply unit is overloaded	▪ Reduce load. To prevent the supply unit from being switched off, this can also be done temporarily by the control unit. ▪ Check sizing of the installation. ▪ In the case of installations that have been operated for a long time, check whether drive conditions have changed (with regard to dirt accumulation, friction, moved masses etc.). ▪ If an external cooling system is available: Check sizing of cooling system.
Fan has failed - or - Defective coolant pump - or - Cooling circuit not connected	Check cooling system
Cooling system dirty	Clean heat sink. In the case of water cooling: Check flow and clean pipes, if necessary.
Ambient temperature too high	Check whether or not ambient temperature exceeds temperature allowed according to Project Planning Manual. Check control cabinet cooling system. An air conditioning unit is possibly required.
Bad transmission in cooling system	Check device mounting on external cooling system. Retighten mounting screws. If necessary, use heat transfer compound in accordance with mounting instructions. Ensure plane connection.
Heat transmission by convection or heat conduction by neighboring devices or parts	Check inward flow of cooling air. Increase distance between the devices. Thermally insulate heat sources on the external cooling system.
Missing or bad convection	Ensure free inward flow of cooling air
Incorrect control cabinet sizing with regard to heat dissipation	Check control cabinet sizing
Device-internal cooling has failed	Replace mains connection
Defective supply unit	Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2811
Long diagnostics no. (32 bits):	070F2811

Detailed diagnostics

00450319

Mains AC overcurrent error, DC bus capacitor overload

Cause/Remedy 1: Cause: The DC bus capacitor is overloaded due to an excessive mains current. Remedy: Relieve load on device

F2812 Mains frequency outside of the extended monitoring window

The error message F2812 is generated if advanced mains monitoring has been activated ["Grid monitoring: Configuration word" (0x2646:01 / S-0-1712.0.150 / P-0-1779, bit 0="1") and the mains frequency exceeded the threshold value parameterized in "Grid monitoring: Frequency increase f> threshold value" (0x2646:05 / S-0-1712.0.165 / P-0-2225).

Cause	Remedy
Mains frequency above the parameterized maximum value	Check mains connection

▼ Attributes

Short diagnostics no. (20 bits):	F2812
Long diagnostics no. (32 bits):	070F2812

F2814 Mains voltage outside of the extended monitoring window

For more than 2 seconds, the mains voltage in operation has fallen below the minimum value specified for the device. For a device of the "XVR" type, this is 220 V minus 10% phase-to-phase mains voltage.

Cause	Remedy
Mains connection voltage is too low	Check the mains voltage
Mains voltage dip due to high load by supply unit	Use "non-rigid" mains or mains connection transformer

▼ Attributes

Short diagnostics no. (20 bits):	F2814
Long diagnostics no. (32 bits):	070F2814
CiA error code:	3185

F2815 Overvoltage in mains

Cause	Remedy
Mains voltage peak value has exceeded allowed maximum value	Check mains voltage. Use a matching transformer where necessary

▼ Attributes

Short diagnostics no. (20 bits):	F2815
Long diagnostics no. (32 bits):	070F2815
CiA error code:	3181

F2816 Softstart fault power supply unit

During the soft start procedure (charging the DC bus capacitor), the curve of the DC bus voltage is monitored. Significant deviations point to a defect in the power section and are diagnosed with the error F2816.

Cause	Remedy
Short circuit in the DC bus	Check DC bus wiring for short circuit
Load on the DC bus	Check DC bus wiring. If there is a faulty connection of an external braking resistor, correct the connection
Insulation error in the DC bus	Check DC bus wiring. If wiring is ok, there may be an insulation error within the device or other devices connected to the DC bus. To identify the defective device, gradually remove connected devices from drive system (remove wiring)
Final value of DC bus voltage is not reached within a maximum time	Check whether there is a defect at load connected externally to DC bus
Inadmissible voltage fluctuations in power grid. Mains voltage dropped inadmissibly during soft start procedure	Check mains voltage
Device is defective	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F2816
Long diagnostics no. (32 bits):	070F2816
CiA error code:	5182

Detailed diagnostics

00450402

Mains connection: Charging error

00450403

DC bus voltage was not reached

F2818 Phase failure

A single-phase mains failure, which lasted longer than the tolerated phase failure time, was detected.

Cause	Remedy
Mains circuit breaker defective	Replace mains circuit breaker
Incorrect wiring	Check and correct wiring

▼ Attributes

Short diagnostics no. (20 bits):	F2818
Long diagnostics no. (32 bits):	070F2818
CiA error code:	3182

F2819 Mains failure

In operation, two mains phase voltages (rms values) have dropped below a threshold value for 2 seconds.

Cause	Remedy
Mains failure (permanent or temporary)	Search and remove cause of mains failure
Mains circuit breakers defective	Replace mains circuit breakers

▼ Attributes

Short diagnostics no. (20 bits):	F2819
Long diagnostics no. (32 bits):	070F2819
CiA error code:	3186

F2820 Braking resistor overload

If the DC bus voltage exceeds "Brake resistor: Switching threshold, effective value" (0x2624:01 / P-0-0833 / --) as a result of regenerative operation of the drive, the braking resistor is switched on to limit the DC bus voltage.

The load of the braking resistor has increased to 110 %. Power was switched off to avoid braking resistor overload.



The load of the braking resistor is displayed in "Brake resistor thermal model: Current load" (0x2622:01 / P-0-0844 / --).

Cause	Remedy
Deceleration of connected drives is too high	Reduce deceleration of connected drives
Energy absorption capacity of braking resistor is exhausted	Switch off power supply with a delay in the case of "drive OFF" or "E-STOP" (for regenerative supply units), or reduce velocity
Regenerated energy in machining cycle is too high	Increase cycle time or reduce maximum velocity
Continuous regenerative power and/or rotary drive energy is too high	Reduce maximum velocity or check sizing of braking resistor and, if necessary, increase sizing

▼ Attributes

Short diagnostics no. (20 bits):	F2820
Long diagnostics no. (32 bits):	070F2820

CiA error code:	5480

F2821 Error in control of braking resistor

Devices of XCS type

An error has occurred in the control of the **external** braking resistor.

Cause	Remedy
Control of braking resistor has detected inadmissibly high current	Check braking resistor for correct resistance value. If necessary, use braking resistor with higher resistance value
Control of braking resistor has detected that current is too low	Check and, if necessary, correct inputs for external braking resistor

▼ Attributes

Short diagnostics no. (20 bits):	F2821
Long diagnostics no. (32 bits):	070F2821
CiA error code:	5482

F2822 Device temperature monitor defective

The temperature of the supply unit heat sink is monitored using a temperature sensor.

Cause	Remedy
Defective temperature sensor or conductor break of sensor in supply unit	Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2822
Long diagnostics no. (32 bits):	070F2822

F2823 Device temperature model error

In addition to thermal monitoring by temperature sensors, the thermal conditions in the supply unit are monitored using a thermal model.

Cause	Remedy
The model parameters have been incorrectly configured or do not match this supply unit	Defective device, the correct model parameters have to be loaded. Please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F2823
Long diagnostics no. (32 bits):	070F2823

Detailed diagnostics

00420901

Thermal overload error

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

00420907

Temperature model of active output stage could not be initialized

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

00420908

Error in fan control

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

00420909

PWM frequency out of range

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

0042090A

Thermal model does not return any values

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

0042090B

Thermal model has no input data

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

0042090C

Parameters for thermal model could not be loaded

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

0042090D

The set PWM frequency is not available in the model parameters

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

0042090E

The thermal model cannot be initialized

Cause/Remedy 1: Inconsistent or missing data for thermal model of output stage

F2825 HV discharge timeout

This error occurs if HV discharge is active, but the DC bus voltage has not fallen below 60 V within 5 seconds.



In the HV discharge status word (P–0–0221.0.3), bit 5 is set if this error occurs.

Cause	Remedy
There is a connection between source and DC bus	Disconnect connection between source and DC bus (battery connection or supply) to successfully carry out HV discharge
Electrical components of discharge circuit, such as IGBT, were damaged by overheating	MX PPS card, that contains the active discharge circuit, has to be replaced

▼ Attributes

Short diagnostics no. (20 bits):	F2825
Long diagnostics no. (32 bits):	000F2825
CiA error code:	5485
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	2393

F2826 Undervoltage in DC bus

The DC bus voltage level is monitored by the supply unit and by the supply section in the converter.

Converter and supply unit XVE

With the converter/supply unit XVE, the DC bus voltage has fallen below 75% of the mains peak value during operation.

Supply unit XVR

In the case of the supply unit XVR, the peak value of the mains voltage is generated by Park's transformation (d/q transformation) of the mains phase voltages (vector length in alpha/beta system). This mains voltage is PT1 filtered with a time constant of 20 ms.

The monitoring for undervoltage in the DC bus contains two components:

- The monitoring threshold (86% of the filtered mains voltage) is compared to the current measured value of the DC bus voltage.
- Or the DC bus voltage falls below the filtered peak value of the mains voltage, and the current command value corresponds to the feeding current limit value (device overload).

The readiness for power output of the DC bus is not ensured anymore. The reaction of the devices to the undervoltage error depends on the configuration of power off on error ["DC bus supply: Configuration" (0x2606:01 / P-0-0118 / --)].

Cause	Remedy
Failure in power supply or overload of power supply	Check the power supply
Mains failure	Check the cause of the mains failure, reconnect the mains voltage
Temporary power supply overload	Reduce machining cycle of the machine
Supply unit XVR in island grid mode: The peak value of the mains voltage command value is too high for the current DC bus voltage	Increase "Voltage controller: Command value" (0x2676:01 / S-0-1716.0.160 / P-0-3829) or reduce "Characteristic curves: U-Q curve, U0" (0x267A:03 / S-0-1716.0.172 / P-0-1631)

▼ Attributes

Short diagnostics no. (20 bits):	F2826
Long diagnostics no. (32 bits):	070F2826

Detailed diagnostics

00450002

DC bus lower than the device threshold

Cause/Remedy 1: Cause: The DC bus voltage is less than 75% of the mains peak value (passive supply unit) or less than 86% of the mains peak value (active supply unit).

00450003

DC bus voltage is less than the mains peak value

Cause/Remedy 1: Cause: XVR: DC bus voltage is less than the mains peak value and the maximum permissible rectifier current is exceeded. The supply unit is overloaded. Remedy: Relieve load on supply unit.

00450004

DC bus voltage < command value

Cause/Remedy 1: Cause: With DC-DC actuators and in island grid mode, the DC bus voltage must always be higher than the command value.

F2827 Excessive oscillation in DC bus

Excessive voltage oscillation occurred in the DC bus for several minutes.

The monitoring function is used to protect the motor-side power output stage against overheating.

Cause	Remedy
One mains phase has failed	Check mains connection. Check allowed power consumption for single-phase operation

Cause	Remedy
Drive oscillates. Oscillation might possibly not be mechanically visible, therefore check command torque	Check command torque of drive to know whether it corresponds to expected load cycle. Check settings of velocity control loop and position control loop.
Allowed power is exceeded on mains side	Check consumed power of controller or drive system. If necessary, use additional DC bus capacitors, mains choke or DC bus choke
Drive loads DC bus impulsively	Check application

▼ Attributes

Short diagnostics no. (20 bits):	F2827
Long diagnostics no. (32 bits):	070F2827

F2834 Contactor control error

It was impossible to connect the mains contactor or the mains contactor dropped out during operation. (The mains contactor is in the mains connection module.)

Cause	Remedy
Mains contactor sticks	Replace mains contactor or mains connection module
Dirty auxiliary contacts of mains contactor	

▼ Attributes

Short diagnostics no. (20 bits):	F2834
Long diagnostics no. (32 bits):	070F2834
CiA error code:	5188

Detailed diagnostics

00450324

Feedback mains contactor is not open

Cause/Remedy 1: Cause: Feedback contacts of the mains contactor are not correctly wired or the mains contactor is stuck. Remedy: Check feedback contacts or replace mains contactor.

Cause/Remedy 2: Feedback contacts of the mains contactor are not configured on the IOs

Cause/Remedy 3: Contacts of the mains contactor are stuck

00450325

Feedback mains contactor is not closed

Cause/Remedy 1: Cause: Feedback contacts of the mains contactor are not correctly wired or the mains contactor control is not working. Remedy: Check feedback contacts, replace control or mains contactor.

Cause/Remedy 2: Feedback contacts of the mains contactor are not configured on the IOs

Cause/Remedy 3: Contacts of the mains contactor are stuck

F2860 Overcurrent in mains-side power section

The current in the mains-side power section has exceeded the maximum allowed value. The power supply was switched off.

Cause	Remedy
Mains choke incorrectly connected	Check connection of mains choke
Mains choke missing or incorrectly sized	Check mains choke
Mains filter missing or incorrectly sized	Check mains filter
Connected capacitance in DC bus too high	Reduce capacitance according to Project Planning Manual; check possibility of group supply
Device defective	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F2860
Long diagnostics no. (32 bits):	070F2860
CiA error code:	2181

Detailed diagnostics

00420801

Overcurrent in phase L1

00420802

Overcurrent in phase L2

00420804

Overcurrent in phase L3

F2877 Current measurement trim wrong

The current measurement in the supply unit is trimmed with the mains switched off. The trim values are checked for compliance with the allowed tolerance. If the values are higher, the error message F2877 is generated.

Cause	Remedy
Defective supply unit	Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F2877
Long diagnostics no. (32 bits):	070F2877

F2898 F2 test error, axis and supply unit reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for supply errors and axis errors of category F28xx.



When the error occurs, the best possible deceleration of the axis is carried out and the power supply is switched off.

Cause	Remedy
Bit 8 and bit 1 were set in "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	▪ Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) ▪ Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F2898
Long diagnostics no. (32 bits):	000F2898
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF2

F2899 F2 test error, supply unit reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for supply errors of category F28xx.

When the error occurs, the power supply is switched off.



The reaction of the supply unit can be set via "Power supply control: Power off delay" (0x2600:03 / S-0-1720.0.3 / S-0-2059).

Cause	Remedy
The value "0x100" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	▪ Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) ▪ Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F2899
Long diagnostics no. (32 bits):	000F2899
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF2

F2901 Communication error: Check connection or network config.

An error occurred in the client/server communication.

Cause	Remedy
Invalid network settings	If required, check and modify the network settings of the device. **Valid network settings** ▪ IP address: 192.168.222.0 to 192.168.222.199 ▪ Subnet mask: 255.255.255.0 ▪ Gateway address: 0.0.0.0
Electric connection between panel and device defective	Check the electric connection between panel and device. If required, replace the panel or the device.
All axes were found but it is not possible to establish a connection one or several servers	Check the network settings of the server to which a connection is to be established to
Manually restart the device after a successful firmware download	Please wait until booting of the device has been completed. Subsequently, delete the error

▼ Attributes

Short diagnostics no. (20 bits):	F2901
Long diagnostics no. (32 bits):	000F2901

F2902 File system corrupt: Contact the service team

A corrupt file system was detected by the panel. Files cannot be accessed or cannot be used anymore. Panel function requiring access to the file system do not work correctly.

Cause	Remedy
Error during initialization of the external data carrier	Disconnect the panel from the device and connect it to the device. Formatting and initialization of the memory is automatically triggered after switch on. If the problem persists, please contact our service department.
Error during reading a file	
Error during writing to a file	

▼ Attributes

Short diagnostics no. (20 bits):	F2902

Long diagnostics no. (32 bits):	000F2902

F2903 Panel base parameters invalid: Contact the service team

The panel is equipped with a set of basic parameters that are written once per production line. In case of invalid basic parameters, this error is reported in the panel.

Cause	Remedy
Basic parameters of the panel not updated or corrupt	Please contact the service department
Invalid panel MAC ID	

▼ Attributes

Short diagnostics no. (20 bits):	F2903
Long diagnostics no. (32 bits):	000F2903

F3010 SMO: IO mapper inputs error

If in the "I/O mapper inputs", the function block type 6: "Safe AND with protection against restart" is used, the inputs Start and Reset are monitored for compliance with "SMO IO mapper inputs: Minimum pulse duration" (0x3050:01 / P-0-3332.0.1 / P-0-2527).

Cause	Remedy
Pulse duration of the Start input falls below the time parameterized in "SMO IO mapper inputs: Minimum pulse duration" (0x3050:01 / P-0-3332.0.1 / P-0-2527)	Check the pulse duration of the "Start" input or the value of "SMO IO mapper inputs: Minimum pulse duration" (0x3050:01 / P-0-3332.0.1 / P-0-2527)
Pulse duration of the Reset input falls below the time parameterized in "SMO IO mapper inputs: Minimum pulse duration" (0x3050:01 / P-0-3332.0.1 / P-0-2527)	Check the pulse duration of the "Reset" input or the value of "SMO IO mapper inputs: Minimum pulse duration" (0x3050:01 / P-0-3332.0.1 / P-0-2527)

▼ Attributes

Short diagnostics no. (20 bits):	F3010
Long diagnostics no. (32 bits):	060F3010
CiA error code:	F0A6
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

00530096
Signal control inputs: Pulse duration less than the minimum

00530097

Signal control inputs: Maximum pulse duration exceeded.

0053349F

Signal control inputs: Pulse duration less than the minimum

005334A0

Signal control inputs: Maximum pulse duration exceeded.

00540096

Signal control inputs: Pulse duration less than the minimum

00540097

Signal control inputs: Maximum pulse duration exceeded.

0054349F

Signal control inputs: Pulse duration less than the minimum

005434A0

Signal control inputs: Maximum pulse duration exceeded.

F3011 Incorrect supply voltage

Cause	Remedy
An error was detected in the power supply of the integrated safety technology.	Check the power supply of the control device. The detailed diagnostics shows whether overvoltage or undervoltage has occurred. If the voltage is back in the valid operating range, the error can be cleared.

▼ Attributes

Short diagnostics no. (20 bits):	F3011
Long diagnostics no. (32 bits):	060F3011
J1939: "Failure Mode Identifier":	2

J1939: "Suspect Parameter Number":	5561

Detailed diagnostics

00533250

Overvoltage in 24 V supply voltage

00533251

Undervoltage in 24 V supply voltage

00543250

Overvoltage in 24 V supply voltage

00543251

Undervoltage in 24 V supply voltage

F3100 F3 test error during machine acceptance test

The error was generated within the scope of the machine acceptance test ("error reaction" testing point) to check the reaction of the drive when an F3 error occurs [see "SMO axis validation support: Error reaction" (0x302C:01 / P-0-3211 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	F3100
Long diagnostics no. (32 bits):	060F3100
CiA error code:	F0A7
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF3

Detailed diagnostics

00530054

F3 test error during machine acceptance test

0053349A

F3 test error during machine acceptance test

00540054
F3 test error during machine acceptance test

0054349A
F3 test error during machine acceptance test

F3101 Axis validation missing

The continuous operation of SafeMotion in the operating mode (OM) is only possible for a maximum of 15 minutes if the validation status is missing [see "SMO axis validation: Status" (0x302E:03 / P-0-3210.0.2 / P-0-2543)]. Thereafter, the drive is switched off automatically with this error message. If the error is cleared, the axis can be operated for another 15 minutes.

Cause	Remedy
With non-validated axis configuration, the axis was operated for 15 minutes in the operating mode (OM).	Carry out the validation of the axis configuration

▼ Attributes

Short diagnostics no. (20 bits):	F3101
Long diagnostics no. (32 bits):	060F3101
CiA error code:	F0A8

Detailed diagnostics

00530074
Axis validation missing

00540074
Axis validation missing

F3112 Safe reference missing

This error is generated as a reaction to Safe reference missing, depending on the selected/active special mode and the configured safety function.

Cause	Remedy

Cause	Remedy
The axis has been in the following state for at least 15 minutes: ■ "Safe homing procedure" has been activated (0x31B0:01 / P-0-3253.0.1 / P-0-2793) ■ The axis is in the operating mode "SMO application" (0x3082:04 / P-0-3231 / --) ■ "Safe reference" is missing (0x310E:01 / P-0-3256 / --)	Establish "Safe reference" **Note: After a risk assessment**, the parameterization can be such that the warning E3112 is signaled instead of the error F3112 (0x31B0:01 / P-0-3253.0.1 / P-0-2793).



The error can be cleared even if its cause has not yet been removed; the time monitoring is restarted by clearing the error.

▼ Attributes

Short diagnostics no. (20 bits):	F3112
Long diagnostics no. (32 bits):	060F3112
CiA error code:	F0A9

Detailed diagnostics

000406E7

Safety function SLP active, without Safe reference

000406E8

Safety function SMP active, without Safe reference

000406E9

Safety function SLE active in special mode "Safe motion", without Safe reference

004606EA

In the configuration "Safe homing procedure active" (bit 0="1" in 0x31B0:01 / P-0-3253.0.1 / P-0-2793), the drive has been without "Safe reference" for more than 15 min.

F3115 Brake check time interval exceeded

If "time interval of holding brake check" was activated in "Brake control: Configuration" (0x2032:01 / P-0-0525 / --), the drive monitors the time that has passed since the last holding brake check.

The time interval specified in P-0-0550, within which the brake test has to be carried out again, was exceeded.

Error reaction

The drive reacts with the error reaction that has been set. The status of holding brake check is set to "0" in "Brake control: Status word" (0x2032:02 / P-0-0539 / --).

Cause	Remedy
Drive had been put into operation and drive enable was set; after 15 minutes, drive generates error F3115	Brake test has to be carried out within 15 minutes after drive had been put into operation and drive enable was set [C2100 (P-0-0541)]
Time set in the time interval brake test (P-0-0550) has elapsed since last brake test	Clear error; drive is operational again. Brake test has to be carried out within 15 minutes (with drive enable) [C2100 (P-0-0541)]

See brake

▼ Attributes

Short diagnostics no. (20 bits):	F3115
Long diagnostics no. (32 bits):	000F3115
CiA error code:	F0AA

F3119 Error in initialization of P-0-3212

Cause	Remedy
Faulty read access to memory. It was impossible to initialize "SMO service: Code words for tests" (0x3002:02 / P-0-3212 / --) with its data backup.	Clear error and reconfigure "SMO service: Code words for tests" (0x3002:02 / P-0-3212 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F3119
Long diagnostics no. (32 bits):	060F3119
CiA error code:	F0AB

Detailed diagnostics

0053013D

Faulty reading of the code words from the EEProm for initializing the 0x3002:02 / P-0-3212

00533489

DBUG: Timeout while synchronising parameters

0053348A

DBUG: Timeout while synchronising parameters

0053348B

DBUG: Timeout while synchronising parameters

0054013D

Faulty reading of the code words from the EEProm for initializing the 0x3002:02 / P-0-3212

00543489

DBUG: Timeout while synchronising parameters

0054348A

DBUG: Timeout while synchronising parameters

0054348B

DBUG: Timeout while synchronising parameters

F3132 SDL validation error

Invalid states between the control of the safety door and the feedback signal of the safety door were detected.

In the case of error, the axis at which the safety door was configured, locks normal operation for all involved axes (see 0x3062:01 / P-0-3268 / --, bit 5) of the local safety zone in order to keep the involved axes in the safe state or to transfer them to the safe state by deselecting normal operation.

In the case of error, the safety status of the zone/axis signals "zone not safe" (see 0x3062:01 / P-0-3268 / --, bit 4 or 0x3062:03 / P-0-3268.0.3 / --, bit 1).



The cause for triggering the error and the remedy can also be found in the detailed diagnostics.



In the case of a validation error in normal operation or special mode, the error F3132 is directly triggered.
In the case of a validation error after a switching action for unlocking/locking the safety door, the error F3132 is only triggered after the time "SMO local zone: Tolerance time for SDL" (0x3062:04 / P-0-3268.0.4 / --) has elapsed.



To clear the error F3132 without any problem, the safety door should be locked before the "Clear error" command is executed.

Cause	Remedy

Cause	Remedy
Feedback signal or control of safety door have not been configured correctly	▪ Check configuration of IO mapper block "SDL with door request" in the "IO mapper inputs" ▪ Check configuration of control of safety door in "signal control of outputs" (take push-pull mode of safe output 3 into account)
Wiring error, interruption, short circuit or feedback hardware of safety door defective	Check wiring, mechanics and state of safety door
The safety door is unlocked/locked too slowly.	Ensure that the safety door is unlocked/locked within the tolerance time after the safety door has been controlled. The tolerance time between the control of the safety door and the state change of the feedback signal can be parameterized via "SMO local zone: Tolerance time for SDL" (0x3062:04 / P-0-3268.0.4 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F3132
Long diagnostics no. (32 bits):	060F3132
CiA error code:	F0AD

Detailed diagnostics

001C004A

Feedback signal reports unlocked safety door in normal operation

Cause/Remedy 1: Check configuration of SDL IO mapper block in "IO mapper inputs"

Cause/Remedy 2: Check wiring and state of safety door

001C004B

Feedback signal reports unlocked safety door without the corresponding control signal

Cause/Remedy 1: Check configuration of SDL IO mapper block in "IO mapper inputs"

Cause/Remedy 2: Check wiring and state of safety door

001C004C

Impossible to unlock safety door within the tolerance time

Cause/Remedy 1: Check configuration of SDL IO mapper block in "IO mapper inputs"

Cause/Remedy 2: Check wiring and state of safety door

001C004D

Feedback signal reports locked safety door without the corresponding control signal

Cause/Remedy 1: Check configuration of SDL IO mapper block in "IO mapper inputs"

Cause/Remedy 2: Check wiring and state of safety door

001C004E

Impossible to lock safety door within the tolerance time

Cause/Remedy 1: Check configuration of SDL IO mapper block in "IO mapper inputs"

Cause/Remedy 2: Check wiring and state of safety door

F3134 Dynamization time interval incorrect

The selection signals of channel 1 and 2 of safety technology are dynamized by short pulses (selection signal goes to "0") to detect errors in the selection and in the safety-relevant circuits.

The diagnostic unit of safety technology monitors that each channel is dynamized at least once per hour. The safety technology tolerates the failure of the dynamization pulse on one channel, if the 8 successive dynamization pulses occur within the monitoring limit.

When the diagnostic unit detects an error, the error F3134 is generated and the parameterized error reaction is carried out. In addition, a safety technology error reaction takes place after 30 minutes which switches off the output stage via two channels.

In the case of a short circuit or "stuck at high" of the selection channels, there is a maximum delay of 2 hours until a functional error reaction is initiated, or 2.5 hours until the safety technology error reaction is initiated.

Cause	Remedy
Error in wiring: ▪ loose connections ▪ incorrect wiring of inputs and outputs ▪ short circuit between both selection channels ▪ short circuit between one or both selection channels with 24 V	Check wiring of selection and remove error
Hardware defective	Replace drive controller



The error can be cleared by a selection and deselection combination. The cause should be fixed first.

▼ Attributes

Short diagnostics no. (20 bits):	F3134
Long diagnostics no. (32 bits):	000F3134
CiA error code:	F0AE

F3140 SVM: Error in DC bus voltage monitoring

An inconsistency was detected during DC link voltage measurement or evaluation. Reliable monitoring of the DC link voltage is no longer possible.

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3140
Long diagnostics no. (32 bits):	060F3140
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	238D

Detailed diagnostics

00153321

SMO: SVM error on initialization of DC measurement

Cause/Remedy 1: Restart the device. If error persists, please contact customer support.

00153322

SMO: SVM - unsupported option

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153323

SMO: SVM - unknown option

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153324

SMO: SVM - unknown case in DC evaluation link

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153325

SMO: SVM - DC measurement inconsistency after 2ooX cycles

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153326

SMO: SVM - DC voltage in transition area for too long

Cause/Remedy 1: Check the DC bus with regard to charging and discharging times. The transition area must be passed through quicker than the set value.

00153327

SMO: SVM - uncovered evaluation result

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153328

SMO: SVM - incorrect value

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00153329

SMO: SVM - not initialized

Cause/Remedy 1: Internal error

0015332B

SMO: SVM - voltage conversion overflow

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

F3141 Operating status selection validation error

Cause	Remedy
Selection of a motion mode ("SMM 1" to "SMM 16") in special mode "Safe motion" is not unequivocal; either there is no SMM signal active or multiple SMM signals are active [see "SMO state machine: Control word, safety" (0x3082:01 / P-0-3261 / --)]	A motion mode can be selected using safety bus communication or safe inputs; check the selection. If necessary, correct the maximum allowable time during which either no SMM signals or multiple SMM signals can be active during selection of motion modes ["SMO state machine prof. 1: Max. tol. time for dif. selection" (0x3084:05 / P-0-3280.0.5 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	F3141
Long diagnostics no. (32 bits):	060F3141
CiA error code:	F0AF

Detailed diagnostics

0053000A

No unequivocal SMM selection (no SMM signal or multiple SMM signals active in 0x3082:01 / P-0-3261).

0053000B

Non-configured special mode “Safe motion” selected.

00536029

Active safe AKS when selecting normal operation

0054000A
No unequivocal SMM selection (no SMM signal or multiple SMM signals active in 0x3082:01 / P-0-3261).

0054000B
Non-configured special mode “Safe motion” selected.

00546029
Active safe AKS when selecting normal operation

F3142 Activation time of enabling control exceeded

The parameterized maximum time for the activation of the enabling control has been exceeded.

Error reaction

The drive is decelerated according to "SMO error reaction: Configuration stopping process" (0x315E:01 / P-0-3263.0.1 / --). The drive automatically switches to "Safe stop 1" and the output stage is switched off via two channels.

Cause	Remedy
Enabling control was activated too long	Remove enabling signal before parameterized time is over; parameterizable activation times of enabling control: ■ "SMO special mode 1: Max. activation time enabling control" (0x3140:02 / P-0-3290.1.6 / --) ■ "SMO special mode 2: Max. activation time enabling control" (0x3141:02 / P-0-3290.2.6 / --) ■ ... ■ "SMO special mode 16: Max. activation time enabling control" (0x314F:02 / P-0-3290.16.6 / --)
Parameterization of maximum activation time of enabling control does not make sense	Check parameterization and change it, if necessary: ■ "SMO special mode 1: Max. activation time enabling control" (0x3140:02 / P-0-3290.1.6 / --) ■ "SMO special mode 2: Max. activation time enabling control" (0x3141:02 / P-0-3290.2.6 / --) ■ ... ■ "SMO special mode 16: Max. activation time enabling control" (0x314F:02 / P-0-3290.16.6 / --)
Enabling control is defective or incorrectly wired	Check and, if necessary, replace/correct enabling control and wiring

After having removed the cause, start the command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error and then set drive enable again.

▼ Attributes

Short diagnostics no. (20 bits):	F3142
Long diagnostics no. (32 bits):	060F3142
CiA error code:	F0B0

Detailed diagnostics

0053000C

Enabling control is activated longer than the parameterized maximum time (SMM1: 0x3140:02 / P-0-3290.1.6, SMM2: 0x3141:02 / P-0-3290.2.6, SMM3: 0x3142:02 / P-0-3290.3.6,...)

00533490

Enabling control is activated longer than parameterized maximum time (SMO special mode 1: 0x3140:02 / P-0-3290.1.6, SMO special mode 2: 0x3141:02 / P-0-3290.2.6,...)

0054000C

Enabling control is activated longer than the parameterized maximum time (SMM1: 0x3140:02 / P-0-3290.1.6, SMM2: 0x3141:02 / P-0-3290.2.6, SMM3: 0x3142:02 / P-0-3290.3.6,...)

00543490

Enabling control is activated longer than parameterized maximum time (SMO special mode 1: 0x3140:02 / P-0-3290.1.6, SMO special mode 2: 0x3141:02 / P-0-3290.2.6,...)

F3144 AKS validation during drive-controlled transition to SM1

The drive-controlled transition to the safety technology operating state "special mode 1" (SM1) with motor phase short circuit is implemented by an "AKS" of the functional part of the firmware.

During the transition to SM1 by the safety function "Safe stop 1" (SS1), the correct selection or actuation of the motor phase short circuit is checked.



During an "AKS" of the functional part of the firmware, a PWM signal with a duty factor of 100% is applied in the lower half bridge, and a PWM signal with a duty factor of 0% is applied in the upper half bridge to short-circuit the motor phases. The PWM signal of both half bridges is evaluated by SMO during the transition process.

Cause	Remedy
During the drive-controlled transition, the selection or actuation of the motor phase short circuit is not correct.	If error occurs repeatedly, replace drive controller.



The cause for triggering the error can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3144
Long diagnostics no. (32 bits):	060F3144

Detailed diagnostics

005335B6

PWM control does not match the AKS status

Cause/Remedy 1: Cause: The PWM control of the lower or upper half-bridge deviated from the command value during the transition to special mode. Remedy: If error occurs repeatedly, replace drive controller.

005335B7

AKS not active during transition to SM1

Cause/Remedy 1: Cause: The selection of a motor phase short circuit by the functional part was not permanently active during the transition to special mode. Remedy: If error occurs repeatedly, replace drive controller.

005435B6

PWM control does not match the AKS status

Cause/Remedy 1: Cause: The PWM control of the lower or upper half-bridge deviated from the command value during the transition to special mode. Remedy: If error occurs repeatedly, replace drive controller.

005435B7

AKS not active during transition to SM1

Cause/Remedy 1: Cause: The selection of a motor phase short circuit by the functional part was not permanently active during the transition to special mode. Remedy: If error occurs repeatedly, replace drive controller.

F3165 Faulty SMO reference signal

The SMO reference signal is statically evaluated (0x31B0:01 / P-0-3253.0.1 / P-0-2793) and the Safe reference has been established (0x310E:01 / P-0-3256 / --).

Although the axis is outside of the SMO reference position*, the SMO reference signal (0x31B0:02 / P-0-3253 / --) shows high level. The Safe reference is cleared because the SMO reference signal is no longer unequivocal.

SMO reference position

- CoE: 0x31B0:03 ± 0x31B0:04
- Sercos: P-0-3253.0.3 ± P-0-3253.0.4
- SoE: P-0-2795 ± P-0-2796

Cause	Remedy
The selected "SMO safe homing: Tolerance window" (0x31B0:04 / P-0-3253.0.4 / P-0-2796) is too small	Remove cause and execute command C4000
SMO home switch / reference cam was shifted	

Cause	Remedy
"Stuck at High" of SMO reference signal (0x31B0:02 / P-0-3253 / --)	
"Sporadic" high level (disturbances) of SMO reference signal (0x31B0:02 / P-0-3253 / --)	

▼ Attributes

Short diagnostics no. (20 bits):	F3165
Long diagnostics no. (32 bits):	060F3165

Detailed diagnostics

004606C8
Signal outside of reference position (+/- tolerance) detected

F3166 Reference position check failed

The SMO reference signal was not detected within the defined position range during the time interval in which the Safe reference would have had to be cyclically checked.

Cause	Remedy
During the time interval in which the Safe reference would have had to be cyclically checked (0x31B0:09 / P-0-3253.0.7 / P-0-2248), the SMO reference signal (0x31B0:02 / P-0-3253 / --) was not detected within the SMO reference position*. **SMO reference position** ■ CoE: 0x31B0:03 ± 0x31B0:04 ■ Sercos: P-0-3253.0.3 ± P-0-3253.0.4 ■ SoE: P-0-2795 ± P-0-2796	Repeat command C4000 to set the status of the SMO encoder position feedback value to "safely homed" again (0x310E:01 / P-0-3256 / --). Make sure that the drive is moved over the SMO reference position at a velocity < "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) for subsequent reference position checks.

Use "SMO safe homing: Configuration" (0x31B0:01 / P-0-3253.0.1 / P-0-2793) to configure whether or not the "Safe reference" is cyclically checked.

▼ Attributes

Short diagnostics no. (20 bits):	F3166
Long diagnostics no. (32 bits):	060F3166

Detailed diagnostics

0046071B
SMO reference signal (0x31B0:02 / P-0-3253) not detected within 0x31B0:09 / P-0-3253.0.7 / P-0-2248

0053071B

SMO reference signal (0x31B0:02 / P-0-3253) not detected within 0x31B0:09 / P-0-3253.0.7 / P-0-2248

0054071B

SMO reference signal (0x31B0:02 / P-0-3253) not detected within 0x31B0:09 / P-0-3253.0.7 / P-0-2248

F3167 Encoder evaluation warning

Cause	Remedy
The standard encoder evaluation signals a warning in the "SMO application" system state (0x3082:04 / P-0-3231 / --). The warning points to a problem that might potentially cause the Safe reference to get lost on the SMO side. The status of the SMO encoder position feedback value is set to "relative" (0x310E:01 / P-0-3256 / --).	▪ Using the diagnostic trace, analyze whether or not a warning of the standard encoder evaluation had occurred before the error F3167 occurred. ▪ Eliminate the cause of the warning using the description of the diagnostic message. ▪ Execute the command C4000 again to set the status of the safe reference of the SMO encoder to "safely homed" again (0x310E:01 / P-0-3256 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F3167
Long diagnostics no. (32 bits):	060F3167

Detailed diagnostics

0053071D

Default encoder evaluation reports warning E2074/E2077

0054071D

Default encoder evaluation reports warning E2074/E2077

F3360 SMO: Error in control of safe local outputs

With configured safe outputs (and the outputs actuated with 24 V), the safety technology cyclically monitors whether they can be switched off to 0 V. In addition, the voltage level that is output is monitored both in the case of actuation with 0 V and with 24 V. An error was detected by one of these monitoring functions.

Cause	Remedy

Cause	Remedy
State of output does not comply with actuation	Check the wiring for short circuit against V_{CC} or GND. If error occurs repeatedly, replace drive controller.
Incorrect dynamization of the output	If error occurs repeatedly, replace drive controller.

See also detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3360
Long diagnostics no. (32 bits):	060F3360
CiA error code:	F0B6
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7F3FB

Detailed diagnostics

001D0015

LIO_: Dynamization error, digital output 1

001D0016

LIO_: Dynamization error, digital output 2

001D0017

LIO_: Dynamization error, digital output 3

001D0018

LIO_: Level failure, digital output 1

001D0019

LIO_: Level failure, digital output 2

001D001A

LIO_: Level failure, digital output 3

00530470

LIO_: Digital output level inconsistent

Cause/Remedy 1: The level of the digital output does not match the command value

00533445

LIO_: Dynamization error, digital output

Cause/Remedy 1: Check the cabling of the digital outputs

Cause/Remedy 2: Digital output hardware defect

00540470

LIO_: Digital output level inconsistent

Cause/Remedy 1: The level of the digital output does not match the command value

00543445

LIO_: Dynamization error, digital output

Cause/Remedy 1: Check the cabling of the digital outputs

Cause/Remedy 2: Digital output hardware defect

F3363 SMO: Error in control of safe local inputs

With configured safe inputs, the safety technology cyclically monitors their actuation. An error was diagnosed in the process.

Cause	Remedy
Only in the case of dual-channel selection ["SMO local IOs: Input signals configuration" (0x305C:01 / P-0-3322.0.2 / P-0-3840, bit 2="0")] Inputs are not consistent	▪ Check actuation for consistency. A tolerance time of inconsistent inputs of a maximum of 1 second is tolerated. ▪ Check the wiring. If error occurs repeatedly, replace drive controller.

See also detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3363
Long diagnostics no. (32 bits):	060F3363
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

001D0010

LIO_: Digital inputs: The two channels of dig. input 1 are not equal

001D0011

LIO_: Digital inputs: The two channels of dig. input 2 are not equal

001D0012

LIO_: Digital inputs: The two channels of dig. input 3 are not equal

001D0013

LIO_: Digital inputs: The two channels of dig. input 4 are not equal

001D0014

LIO_: Digital inputs: The two channels of dig. input 5 are not equal

00530775

LIO_: Digital inputs: The two channels of dig. input 1 are not equal

Cause/Remedy 1: Input 1 is not consistent on both channels

00530776

LIO_: Digital inputs: The two channels of dig. input 2 are not equal

Cause/Remedy 1: Input 2 is not consistent on both channels

00540775

LIO_: Digital inputs: The two channels of dig. input 1 are not equal

Cause/Remedy 1: Input 1 is not consistent on both channels

00540776

LIO_: Digital inputs: The two channels of dig. input 2 are not equal

Cause/Remedy 1: Input 2 is not consistent on both channels

F3364 SMO: Local inputs system error

With configured safe inputs, the safety technology cyclically monitors their actuation. An error was diagnosed in the process.

Cause	Remedy

Cause	Remedy
A hardware error was detected when the local inputs had been monitored.	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F3364
Long diagnostics no. (32 bits):	060F3364
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

00533466

LIO_: Error detected during dynamization test on digital input

Cause/Remedy 1: Check cabling of digital input

Cause/Remedy 2: Hardware defective

00533488

LIO_: The levels read at the digital input are not consistent

Cause/Remedy 1: The levels read at the digital input are not consistent

00543466

LIO_: Error detected during dynamization test on digital input

Cause/Remedy 1: Check cabling of digital input

Cause/Remedy 2: Hardware defective

00543488

LIO_: The levels read at the digital input are not consistent

Cause/Remedy 1: The levels read at the digital input are not consistent

F3365 SMO: Local inputs overvoltage error

Cause	Remedy
An input voltage > 36 V has been applied at a local input	Make sure that the voltage applied at the local input is < 36 V

▼ Attributes

Short diagnostics no. (20 bits):	F3365
Long diagnostics no. (32 bits):	060F3365
J1939: "Failure Mode Identifier":	3
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

00533468

LIO_: Overvoltage at digital input

00543468

LIO_: Overvoltage at digital input

F3366 SMO: Local inputs system error after overvoltage

Cause	Remedy
After an overvoltage > 36 V the inputs were switched off. In this state, a level other than 0 V is still detected; a hardware error has occurred	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F3366
Long diagnostics no. (32 bits):	060F3366
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

00533465

LIO_: Hardware error at digital input after detected overvoltage

Cause/Remedy 1: Eliminate cause of overvoltage at the digital input

Cause/Remedy 2: Digital input hardware defect

00543465

LIO_: Hardware error at digital input after detected overvoltage

Cause/Remedy 1: Eliminate cause of overvoltage at the digital input

Cause/Remedy 2: Digital input hardware defect

F3367 SMO: Error in control of SAFETYlink inputs

When the safe local input signals of SAFETYlink communication had been checked, different states between the signals of input 1 and input 2 of the respective input pair were detected with active dual-channel evaluation. The affected input pair can be recognized by the detailed diagnostics (input pair 1...8).

Cause	Remedy
Cable break, contact error or incorrect wiring of the inputs at the SAFETYlink master	Check wiring of the inputs at the SAFETYlink master
The delay in control of the inputs at the SAFETYlink master is greater than 1 second **NOTE:** The tolerated discrepancy time for different states between the signals of input 1 and input 2 of the corresponding input pair is 1 second and cannot be modified.	Check control of the inputs at the SAFETYlink master
SAFETYlink master incorrectly configured	Check configuration of SAFETYlink master
Incorrect or unintended configuration of dual-channel evaluation of the safe input signals of SAFETYlink communication	Check configuration of dual-channel evaluation (P–0–3320.0.2)

▼ Attributes

Short diagnostics no. (20 bits):	F3367
Long diagnostics no. (32 bits):	060F3367
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7F3F9

Detailed diagnostics

0017003C

SafetyLink: Discrepancy error at input channel pair 1

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

0017003D

SafetyLink: Discrepancy error at input channel pair 2

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

0017003E

SafetyLink: Discrepancy error at input channel pair 3

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

0017003F

SafetyLink: Discrepancy error at input channel pair 4

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

00170040

SafetyLink: Discrepancy error at input channel pair 5

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

00170041

SafetyLink: Discrepancy error at input channel pair 6

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

00170042

SafetyLink: Discrepancy error at input channel pair 7

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

00170043

SafetyLink: Discrepancy error at input channel pair 8

Cause/Remedy 1: Cable break, contact error, faulty wiring => check wiring

Cause/Remedy 2: The delay in control of the inputs is greater than 1 second => check control

F3370 SMO: B sample error

An error has occurred in the use of B sample functionalities.

For further information, see the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3370
Long diagnostics no. (32 bits):	060F3370

Detailed diagnostics

00020014

SMO: Error with the permanent storing of the activation keys

00020015

SMO: Error in the CRC of the activation keys

00020016

SMO: Error when reading the activation keys

00020017

SMO: Error when registering the firmware cross comparison

00020018

SMO: Error when cross-comparing the firmware

00020019

SMO: Error when reading the activation keys

F3460 PROFIsafe error

An invalid value was detected when the PROFIsafe data (F-parameters or useful data) had been checked.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3460
Long diagnostics no. (32 bits):	000F3460

Detailed diagnostics

005306AC

PROFIsafe: Error during cross comparison of useful data (F-output)

005306AD

PROFIsafe: F-destination address mismatch

005306B5

PROFIsafe: Error when checking the data length

00530737

PROFIsafe: iParCRC in the F-parameters does not match

005406AC

PROFIsafe: Error during cross comparison of useful data (F-output)

005406B5

PROFIsafe: Error when checking the data length

F3461 PROFIsafe connection error

A PROFIsafe connection error has occurred.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3461
Long diagnostics no. (32 bits):	000F3461

Detailed diagnostics

005306AD

PROFIsafe: F-destination address mismatch

005306AF

PROFIsafe: Watchdog time "0" or inadmissible

005306B0

PROFIsafe: Required SIL level is not supported

005306B1

PROFIsafe: Invalid version of F-parameters

005306B3

PROFIsafe: Inconsistent F-parameters

005406AD

PROFIsafe: F-destination address mismatch

005406AF

PROFIsafe: Watchdog time "0" or inadmissible

005406B0

PROFIsafe: Required SIL level is not supported

005406B1

PROFIsafe: Invalid version of F-parameters

005406B3

PROFIsafe: Inconsistent F-parameters

F3462 PROFIsafe: F-destination address mismatch

When the PROFIsafe connection had been established, an F-destination address mismatch was detected, i.e. cyclic PROFIsafe communication is not possible.

Cause	Remedy
"SMO PROFIsafe: F-destination address" (0x30BA:02 / P-0-3360.0.1 / --) does not match the F-parameters received by the F-Host (safety control).	Correctly configure "SMO PROFIsafe: F-destination address" (0x30BA:02 / P-0-3360.0.1 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F3462
Long diagnostics no. (32 bits):	000F3462

Detailed diagnostics

005306AD

PROFIsafe: F-destination address mismatch

005406AD

PROFIsafe: F-destination address mismatch

F3463 PROFIsafe: F-source address mismatch or not valid

When the PROFIsafe connection had been established, an F-source address mismatch was detected, i.e. cyclic PROFIsafe communication is not possible.

Cause	Remedy
"SMO PROFIsafe: F-source address" (0x30BA:05 / P-0-3360.0.7 / --) does not match the F-parameters received by the F-Host (safety control).	Correctly configure "SMO PROFIsafe: F-source address" (0x30BA:05 / P-0-3360.0.7 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F3463
Long diagnostics no. (32 bits):	000F3463

Detailed diagnostics

005306AE

PROFIsafe: F-source address not valid

005306B7

PROFIsafe: F-source address does not match

005406AE

PROFIsafe: F-source address not valid

005406B7

PROFIsafe: F-source address does not match

F3464 PROFIsafe: F-parameter block inconsistent (CRC1 error)

When the PROFIsafe connection had been established, the checksum of the F-parameter block (CRC1) was detected to be wrong, i.e. cyclic PROFIsafe communication is not possible.

Cause	Remedy
The checksum (CRC1) of "SMO PROFIsafe: F-parameters" (0x30BA:08 / P-0-3362 / --) is wrong	Check the configuration of the F-parameters in the F-Host (safety control) and analyze possible errors in the communication path or in the transmission

▼ Attributes

Short diagnostics no. (20 bits):	F3464
Long diagnostics no. (32 bits):	000F3464

Detailed diagnostics

005306B2

PROFIsafe: Faulty CRC of F-parameters

005406B2

PROFIsafe: Faulty CRC of F-parameters

F3465 PROFIsafe: iParameters inconsistent (iParCRC error)

When the PROFIsafe connection had been established, an F_iPar_CRC mismatch was detected, i.e. cyclic PROFIsafe communication is not possible.

Cause	Remedy
The "PROFIsafe iParCRC" of SMO (the first four bytes of S–0–1800.0.15) does not match the F-parameters received by the F-Host (safety control).	Configure the "PROFIsafe F_iPar_CRC" correctly in the F-Host (safety control).

▼ Attributes

Short diagnostics no. (20 bits):	F3465
Long diagnostics no. (32 bits):	000F3465

Detailed diagnostics

00530737

PROFIsafe: iParCRC in the F-parameters does not match

005336B0

PROFIsafe: iParCRC in the F-parameters is “0” (“FSCP test mode”)

00540737

PROFIsafe: iParCRC in the F-parameters does not match

005436B0

PROFIsafe: iParCRC in the F-parameters is “0” (“FSCP test mode”)

F3466 PROFIsafe: Transmission data inconsistent (CRC2 error)

Inconsistent data were detected in the cyclic PROFIsafe communication (CRC2 error). The useful data were set to FailSafe values.

Cause	Remedy
Inconsistent data were detected in the cyclic PROFIsafe telegram (CRC2 error).	Analyze effects and disturbances on the communication path.

▼ Attributes

Short diagnostics no. (20 bits):	F3466
Long diagnostics no. (32 bits):	000F3466

F3467 PROFIsafe: Transmission timeout (watchdog elapsed)

A transmission timeout (watchdog timeout) was detected in the cyclic PROFIsafe communication. The useful data were set to FailSafe values.

Cause	Remedy
A transmission timeout (watchdog timeout) was detected in the cyclic PROFIsafe communication.	Set the watchdog time (F_WD_Time) to a higher value in the F-Host (safety control). Analyze effects and disturbances on the communication path.

▼ Attributes

Short diagnostics no. (20 bits):	F3467
Long diagnostics no. (32 bits):	000F3467

F3470 Safe CAN communication: General error

An internal error or a general configuration error of the safe CAN communication (J1939-76) has been diagnosed.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3470
Long diagnostics no. (32 bits):	000F3470
J1939: "Failure Mode Identifier":	10
J1939: "Suspect Parameter Number":	26F

Detailed diagnostics

0053340C

J1939-76: Internal cross check error

0053340D

J1939-76: Internal configuration error

00533410

J1939-76: Producer error, null pointer exception error

00533411

J1939-76: Consumer error, null pointer exception error

00533412

J1939-76: Producer error, connection not configured

00533413

J1939-76: Consumer error, connection not configured

0054340C

J1939-76: Internal cross check error

0054340D

J1939-76: Internal configuration error

00543410

J1939-76: Producer error, null pointer exception error

00543411

J1939-76: Consumer error, null pointer exception error

00543412

J1939-76: Producer error, connection not configured

00543413

J1939-76: Consumer error, connection not configured

F3471 Safe CAN communication: Error connection #1

An error concerning connection #1 of the safe CAN communication (J1939-76) has been diagnosed.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3471
Long diagnostics no. (32 bits):	000F3471
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	26F

Detailed diagnostics

0053340F

J1939-76: Invalid control command bits (reserved 0b10)

00533420

J1939-76 error: invalid number of connections

00533421

J1939-76 error: Priority of the SHM is not correct

00533422

J1939-76 error: Data size exceeds maximum of 8 bytes

00533423

J1939-76 error: Source address does not match SDG configuration

00533424

J1939-76 error: destination address does not match SDG configuration

00533425

J1939-76 error: Internal IDs and CAN IDs are inconsistent

00533426

J1939-76 error: Invalid PG number of the SHM or SDM

00533427

J1939-76 error: Transmission time is smaller than the minimum value

00533428

J1939-76 error: Configured maximum SCT exceeds the limit

00533429

J1939-76 error: Configured maximum SRVT exceeds the limit

00533430

J1939-76 error: SDM was not received

00533431

J1939-76 error: SHM was not received

00533432

J1939-76 error: authentication error

00533433

J1939-76 error: Seq. number violation: unintended repetition

00533434

J1939-76 error: Seq. number violation, incorrect sequence

00533435

J1939-76 error: Seq. number violation, packet loss

00533436

J1939-76 error: SCT timing violation

00533437

J1939-76 error: SRVT timing violation

00533438

J1939-76 error: Invalid CRC (data integrity error)

0054340F

J1939-76: Invalid control command bits (reserved 0b10)

00543420

J1939-76 error: invalid number of connections

00543421

J1939-76 error: Priority of the SHM is not correct

00543422

J1939-76 error: Data size exceeds maximum of 8 bytes

00543423

J1939-76 error: Source address does not match SDG configuration

00543424

J1939-76 error: destination address does not match SDG configuration

00543425

J1939-76 error: Internal IDs and CAN IDs are inconsistent

00543426

J1939-76 error: Invalid PG number of the SHM or SDM

00543427

J1939-76 error: Transmission time is smaller than the minimum value

00543428

J1939-76 error: Configured maximum SCT exceeds the limit

00543429

J1939-76 error: Configured maximum SRVT exceeds the limit

00543430

J1939-76 error: SDM was not received

00543431

J1939-76 error: SHM was not received

00543432

J1939-76 error: authentication error

00543433

J1939-76 error: Seq. number violation: unintended repetition

00543434

J1939-76 error: Seq. number violation, incorrect sequence

00543435

J1939-76 error: Seq. number violation, packet loss

00543436

J1939-76 error: SCT timing violation

00543437

J1939-76 error: SRVT timing violation

00543438

J1939-76 error: Invalid CRC (data integrity error)

F3472 Safe CAN communication: Error connection #2

An error concerning connection #2 of the safe CAN communication (J1939-76) has been diagnosed.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F3472
Long diagnostics no. (32 bits):	000F3472
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	26F

F4001 Bus synchronization failure

"Subdevice STM: Master communication configuration" (0x2BD2:01 / P-0-4088 / --) was parameterized so that an error is to be the reaction to the failure of cyclic communication.

Bus-specific status	Sercos: phase-3 and phase-4
Generic communication status	Operational (Safe-Operational)
Findings	Application-synchronously operated buses require regular subsequent synchronisation for error-free operation. This can be done by transmitting a synchronization telegram (as with Sercos) or by synchronizing the clock (as with EtherCAT). The slave detected that this did not happen within the required space of time. **The system was automatically switched to Pre-Operational.**
Cause	▪ Disturbance on the bus ▪ Incorrect return to Pre-Operational ▪ Synchronization master faulty or not available ▪ Control section defective
Remedy	**The problem can only be solved by the master or configurator.** For some buses, the monitoring window in the slave can be increased.
Master communication(s)	All application-synchronous buses

▼ Attributes

Short diagnostics no. (20 bits):	F4001
Long diagnostics no. (32 bits):	C30F4001
CiA error code:	8282

F4002 Failure of a consumer connection

Bus-specific status	Sercos: phase-4
Generic communication status	Operational
Findings	The communication supports bus-specific monitoring mechanisms for consumer connections (with process data, cyclic command values), such as: ▪ A connection has to be transmitted or updated in a configured space of time. ▪ A connection has to be transmitted in a configured space of time with a defined property (counter, toggle bit, etc.). ▪ A connection has to be transmitted in a configured point in time with a defined property (counter, toggle bit, etc.). The device had detected that the configured monitoring criterion was violated for at least one consumer connection. **There was no automatic return to Pre-Operational.**
Cause	▪ There is disturbance on the bus. ▪ The producer of the connection has an error and does not transmit anymore. ▪ The producer does not transmit in the configured pattern (e.g., due to overload). ▪ The timing settings are faulty. ▪ The number of successive failures of a connection has exceeded the parameterized limit value. ▪ The settings of the “distributed clocks” or of the synchronization are incorrect.
Remedy	▪ Check bus line and connector ▪ Check settings in master ▪ Sercos: Change line topology to ring topology ▪ Sercos: Increase value in "MCI connection [x]: Allowed data losses" (S-0-1050.x.11)
Master communication(s)	All

▼ Attributes

Short diagnostics no. (20 bits):	F4002
Long diagnostics no. (32 bits):	C30F4002
CiA error code:	8250
J1939: "Failure Mode Identifier":	9
J1939: "Suspect Parameter Number":	26F

F4003 Invalid communication phase shutdown

Bus-specific status	All
Generic communication status	All
Findings	Invalid communication phase was set by Sercos master module (phase >4). **Automatic return to Pre-Operational.**
Cause	Error in Sercos master module of the control
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4003
Long diagnostics no. (32 bits):	C30F4003
CiA error code:	8181

F4004 Error during phase progression

Bus-specific status	All
Generic communication status	All
Findings	The specified order had not been complied with during phase progression. **Automatic return to Pre-Operational.**
Cause	Error in Sercos master module of the control
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4004
Long diagnostics no. (32 bits):	C30F4004
CiA error code:	8183

F4005 Error during phase regression

Bus-specific status	All
Generic communication status	All

Findings	When the device had been switched back from a communication phase, it was not switched to communication phase 0. **Automatic return to Pre-Operational.**
Cause	Error in Sercos master module of the control
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4005
Long diagnostics no. (32 bits):	C30F4005
CiA error code:	8185

F4006 Phase switching without ready signal

Bus-specific status	All
Generic communication status	All
Findings	An attempt was made from the Sercos master to carry out phase switching without waiting for the drive’s ready signal. **Automatic return to Pre-Operational.**
Cause	Error in Sercos master module of the control
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4006
Long diagnostics no. (32 bits):	030F4006
CiA error code:	8187

F4009 Bus failure

The cyclic communication via the master communication interface failed after the master communication interface had been initialized and commissioned.



DANGER!

Dangerous movements! Danger to life, risk of injury, serious injury or property damage due to automatic restart after a bus failure!

In the case of bus failure, an error reaction is to be carried out in the control, too, to prevent automatic restart after the bus has been restored. This means that in the case of bus failure, the bits "Drive Halt", "Drive enable" and "Drive ON" should be reset in the control.

▼ EtherCAT

Bus-specific status	Operational
Generic communication status	Operational
Findings	The EtherCAT process data watchdog triggered in the Operational phase or when the system had been switched to Operational. **The system was automatically switched to Operational.**
Cause	▪ Failure of cyclic data during operation ▪ PLC in EtherCAT master was stopped ▪ Ethernet connection interrupted in Operational phase
Remedy	▪ Check PLC status ▪ Check Ethernet cable/connector
Master communication(s)	EtherCAT

▼ PROFIBUS

The master has to address the slave within the monitoring time.

Cause	Remedy
Master does not exchange any cyclic output data	Check state of master
The bus connection has been interrupted	Check cable and interface
EMC problems in the transmission path	Check shielding and routing
Defective bus terminator	Check whether bus terminating resistors have been installed at the remotest bus nodes. Bus terminating resistors are not allowed to be installed at any of the other nodes

▼ PROFINET

The consumer (drive) monitors the reception of the cyclic data from the provider (control unit) with a monitoring interval.

Cause	Remedy

Cause	Remedy
Master does not exchange any cyclic output data	Check state of master
Ethernet connection interrupted	Check Ethernet cable and, if applicable, switch
EMC problems in the transmission path	Check shielding and routing
Network load too high	Switch off unnecessary Ethernet communication; if required, establish separate network for PROFINET

▼ Sercos

Cause	Remedy
Communication phase 0 was set, although drive enable had been set	First remove drive enable and then set communication phase 0

▼ Attributes

Short diagnostics no. (20 bits):	F4009
Long diagnostics no. (32 bits):	000F4009
CiA error code:	8189
J1939: "Failure Mode Identifier":	19
J1939: "Suspect Parameter Number":	26F

F4017 Incorrect sequence during phase switching

Bus-specific status	All
Generic communication status	All
Findings	An attempt was made from the Sercos master to carry out phase switching with a sequence that the drive detected as incorrect. **Automatic return to Pre-Operational**
Cause	▪ A timeout during phase switching occurred in the drive (individual switching periods took too long). ▪ The master has changed the phase without prior notice (new phase in MST without CPS bit set). ▪ The drive was switched on while Sercos had already been in a higher phase.
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4017
Long diagnostics no. (32 bits):	C30F4017
CiA error code:	818C

F4019 Incorrect sequence upon phase start

Bus-specific status	All
Generic communication status	All
Findings	An attempt was made from the Sercos master to carry out a phase switch with a sequence that the slave detected as incorrect. **Automatic return to Pre-Operational.**
Cause	After a phase switch the bus master does not start with the announced phase
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4019
Long diagnostics no. (32 bits):	C30F4019

F4020 Communication bus cable break

Bus-specific status	All
Generic communication status	All
Findings	The Sercos topology was changed from "Loop-back with Forward" (LF) to "NRT-Modus". **Automatic return to Pre-Operational**
Cause	Cable break has occurred (defective cable)
Remedy	Replace cable and restart phase progression by master
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	F4020
Long diagnostics no. (32 bits):	C30F4020

CiA error code:	818E

F4034 Emergency-Stop activated

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

The monitoring function for the E-Stop input has to be activated and parameterized via "E-Stop function: Configuration" (0x2806:01 / P-0-0008 / --).
The axis is decelerated as parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --).
The error can only be cleared, when the selection of E-Stop is removed or the evaluation of E-Stop was switched off.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clear error (reset key or error clearing command). Afterwards switch power back on and clarify what caused E-Stop to trigger
Digital inputs and outputs on control section incorrectly parameterized	Check configuration of digital inputs/outputs on control section and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See E-Stop function

See also Digital inputs/outputs

See Best possible deceleration

▼ Attributes

Short diagnostics no. (20 bits):	F4034
Long diagnostics no. (32 bits):	000F4034
CiA error code:	F09A
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF4

F4036 Disturbed internal communication with communication module

Multiple telegram failures between communication module and the control section.

Cause	Remedy
Faulty internal cyclic data channel	The error can be cleared if the failure has not occurred anymore. If the error occurs more often, the device has to be replaced.
Faulty internal cyclic process data channel	The error can be cleared in the “PreOP2” (CP2) state of communication. If the error occurs more often, the device has to be replaced.

▼ Attributes

Short diagnostics no. (20 bits):	F4036
Long diagnostics no. (32 bits):	000F4036
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	24DC

Detailed diagnostics

007B0156
Communication interrupt failed on COM port

F4037 Excessive position command difference

When the drive is running in the operation mode "position control with cyclic command value input", the preset position command values are monitored ["Cyclic position control: Command value" (0x2820:01 / S-0-0047 / --)]. If the position difference between two successive position command values is greater than the effective velocity limit value, position command value monitoring is activated and the error F4037 is generated.



The excessive position command value is stored in "Position command value monitor: Excessive value" (0x2824:01 / P-0-0010 / --).
The last valid position command value is stored in "Position command value monitor: Last valid value" (0x2824:02 / P-0-0011 / --).

Cause	Remedy
Incorrect command value input by the control	Contact the control unit manufacturer or programmer

Cause	Remedy
Parameterized velocity limit value is too low	Check and, if necessary, correct velocity limit values: ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)
A firmware not requiring an export license is used; position command values corresponding to an inverter output frequency ≥ 600 Hz were preset	Check and, if necessary, correct position command values
Limit values of motor were exceeded ■ "Motor basic data: Max. motor speed" (0x6080:00 / S-0-0113 / --) ■ "Axis mechanical data: Velocity limit, bipolar" (0x2204:03 / P-0-0113 / --)	
Drive does not yet follow the external command value input ["Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --, bit 3="0")	Only enable change in command value if bit 3 of "Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --) is "1"

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	F4037
Long diagnostics no. (32 bits):	000F4037

F4039 Communication return with enable signal set

Cause	Remedy
Sercos: The communication master set communication phase 0, although drive enable had been set	First remove drive enable and then set communication phase 0
Ethercat: The communication master left the "Operational" state although drive enable had been set	First remove drive enable before leaving "Operational"

▼ Attributes

Short diagnostics no. (20 bits):	F4039

Long diagnostics no. (32 bits):	000F4039
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	19C5

F4040 DRIVElink: Consumer connection failure

In the Consumer connection of ctrlX DRIVElink, the configured monitoring criterion was detected to have been violated.

Cause	Remedy
There is disturbance on the bus of ctrlX DRIVElink	Check bus line and connector
The Producer of the connection has an error and does not transmit anymore – or – The Producer does not transmit in the configured pattern (e.g., due to overload)	Check Producer
The timing settings of Producer and Consumer do not match	Check timing settings
The number of successive failures of a connection has exceeded the parameterized limit value	Increase value in "DRIVElink connection 2: Allowed connection failures" (0x2DA4:08 / P-0-1857 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F4040
Long diagnostics no. (32 bits):	000F4040
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

F4041 DRIVElink: Communication failure

The ctrlX DRIVElink communication was detected to have failed; the return to "Pre-Operational" was not correct.

Cause	Remedy
There is disturbance on the bus of ctrlX DRIVElink	Check bus line and connector
ctrlX DRIVElink node was switched off	Check the ctrlX DRIVElink nodes

▼ Attributes

Short diagnostics no. (20 bits):	F4041
Long diagnostics no. (32 bits):	000F4041

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00770003

In at least one DRIVElink slave, the firmware is not up-to-date

Cause/Remedy 1: At least one DRIVElink slave does not support all functionalities of the DRIVElink master. Firmware in slave may not be older than the one of the master.

F4072 EtherCAT: EoE Invalid Mac Address

A problem occurred while the "Ethernet over EtherCAT (EoE)" telegrams had been processed.

Cause	Remedy
The MAC address assigned by the master is invalid	In the EtherCAT ensure that the MAC address is not 00-00-00-00-00-00 or that the "MultiCast Flag" is set in the MAC address

▼ Attributes

Short diagnostics no. (20 bits):	F4072
Long diagnostics no. (32 bits):	000F4072
J1939: "Failure Mode Identifier":	9
J1939: "Suspect Parameter Number":	26F

F4090 EtherCAT: Invalid mailbox configuration

Error in the configuration of Syncmanager 0 / Syncmanager 1 in the EtherCAT slave controller.

Bus-specific status	EtherCAT: Pre-Operational, Safe-Operational and Operational
Generic communication status	Pre-Operational, Safe-Operational and Operational
Findings	The configuration of Syncmanager 0 or Syncmanager 1 is invalid. **The system was automatically switched to Init or switching to Pre-Operational was refused.**
Cause	▪ Start address of Syncmanager 0 / Syncmanager 1 is wrong ▪ Length of Syncmanager 0 / Syncmanager 1 is wrong ▪ Syncmanager 0 / Syncmanager 1 are inactive ▪ Wrong device description (ESI) in the EtherCAT master

Remedy	**The problem can only be solved by the master.** Correct the Syncmanager 0 or Syncmanager 1 configuration in the EtherCAT master.
Master communication(s)	EtherCAT

▼ Attributes

Short diagnostics no. (20 bits):	F4090
Long diagnostics no. (32 bits):	030F4090

F4091 EtherCAT: Invalid output configuration

The Syncmanager 2 in the EtherCAT slave controller was deactivated.

Bus-specific status	EtherCAT: Safe-Operational and Operational
Generic communication status	Safe-Operational and Operational
Findings	Syncmanager 2 was deactivated **The system was automatically switched to Pre-Operational.**
Cause	▪ Start address of Syncmanager 2 is wrong ▪ Length of Syncmanager 2 is wrong ▪ Syncmanager 2 was deactivated
Remedy	**The problem can only be solved by the master.** Correct the Syncmanager 2 configuration in the EtherCAT master.
Master communication(s)	EtherCAT

▼ Attributes

Short diagnostics no. (20 bits):	F4091
Long diagnostics no. (32 bits):	030F4091

F4092 EtherCAT: Invalid input configuration

The Syncmanager 3 in the EtherCAT slave controller was deactivated.

Bus-specific status	EtherCAT: Safe-Operational and Operational
Generic communication status	Safe-Operational and Operational
Findings	Syncmanager 3 was deactivated **The system was automatically switched to Pre-Operational.**
Cause	▪ Start address of Syncmanager 3 is wrong ▪ Length of Syncmanager 3 is wrong ▪ Syncmanager 3 was deactivated

Remedy	**The problem can only be solved by the master.** Correct the Syncmanager 3 configuration in the EtherCAT master.
Master communication(s)	EtherCAT

▼ Attributes

Short diagnostics no. (20 bits):	F4092
Long diagnostics no. (32 bits):	030F4092

F4093 EtherCAT: Invalid watchdog configuration

Bus-specific status	Safe-Operational and Operational
Generic communication status	Safe-Operational and Operational
Findings	The configuration of the EtherCAT process data watchdog in the EtherCAT slave controller is invalid. **The system was automatically switched to Pre-Operational.**
Cause	The master deactivates the EtherCAT process data watchdog during operation.
Remedy	**The problem can only be solved by the master or configurator.**
Master communication(s)	EtherCAT

▼ Attributes

Short diagnostics no. (20 bits):	F4093
Long diagnostics no. (32 bits):	030F4093

F4099 F4 test error; axis and supply unit reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for communication errors of category F4xxx.



The reaction of the supply unit can be set via "Power supply control: Power off delay" (0x2600:03 / S-0-1720.0.3 / S-0-2059).

Cause	Remedy
The value "0x210" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F4099
Long diagnostics no. (32 bits):	000F4099
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF4

F4200 VPI: Consumer connection failure

In the Consumer connection via VPI (virtual peripherals interface), the configured monitoring criterion was detected to have been violated.

Cause	Remedy
The Producer of the connection has an error and does not transmit anymore – or – The Producer does not transmit in the configured pattern (e.g., due to overload)	Check Producer
The timing settings of Producer and Consumer do not match	Check timing settings

▼ Attributes

Short diagnostics no. (20 bits):	F4200
Long diagnostics no. (32 bits):	000F4200
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

F6001 Non-fatal system error

A non-fatal system error has occurred. The drive is decelerated using the configured F6 error reaction.

Cause	Remedy
The diagnostic system has detected an undefined diagnostic message	Save all of the parameters. Then please contact our service department, and make parameter backup available to the service team

▼ Attributes

Short diagnostics no. (20 bits):	F6001
Long diagnostics no. (32 bits):	000F6001

Detailed diagnostics

0044011D
Encoder[x]: Unsupported encoder evaluation

0044011E
Encoder[x]: Unsupported basic encoder evaluation

00661000
Incorrect operating mode diagnostics

F6007 Switching to non-initialized operation mode

When switching the active operation mode, the drive was switched to a non-initialized operation mode.

For the operation modes that can be selected, please see descriptions of the operation mode parameters:

- "Axis operation modes: Primary operation mode (0x2800:01 / S-0-0032 / --)
- "Axis operation modes: Secondary operation mode 1" (0x2800:02 / S-0-0033 / --)
- "Axis operation modes: Secondary operation mode 2" (0x2800:03 / S-0-0034 / --)
- "Axis operation modes: Secondary operation mode 3" (0x2800:04 / S-0-0035 / --)
- "Axis operation modes: Secondary operation mode 4" (0x2800:05 / S-0-0284 / --)
- "Axis operation modes: Secondary operation mode 5" (0x2800:06 / S-0-0285 / --)
- "Axis operation modes: Secondary operation mode 6" (0x2800:07 / S-0-0286 / --)
- "Axis operation modes: Secondary operation mode 7" (0x2800:08 / S-0-0287 / --)

Cause	Remedy
An operation mode that had not been initialized was selected via the drive control word [e.g., "Axis operation modes: Primary operation mode (0x2800:01 / S-0-0032 / --)="0"].	Enter desired operation mode in operation mode parameter selected via drive control word

See Operating mode selection

▼ Attributes

Short diagnostics no. (20 bits):	F6007
Long diagnostics no. (32 bits):	000F6007
CiA error code:	F098

F6010 PLC runtime error

ctrlX DRIVE PLC triggers error F6010 in the case of internal errors, configuration errors, runtime errors or task watchdogs.

The cause of the error can be narrowed down via the detailed diagnostics. A more detailed diagnostics of the cause of the error is displayed in "PLC diagnostics: Error message" (0x3406:01 / P-0-1365 / --).

Runtime errors are division by 0, illegal array addressing, invalid pointer access, calling mathematical functions with invalid arguments, etc. These errors can be directly assigned to a code position or program line in the corresponding PLC function block.

When connecting the programming system ctrlX PLC Engineering, the incorrect code position/program line is highlighted in yellow in the case of error, if the error F6010 was generated by a runtime error.
If ctrlX PLC Engineering is not available on site, the error can be reproduced on a different device with a parameter backup ["Replay Exception" function [see also "PLC diagnostics: Internal exception data" (0x3406:03 / P-0-1362 / --) and "PLC function: Control word" (0x3400:01 / P-0-1350 / --, bit 8)]. Thus, the position causing the error can be shown on a different device with ctrlX PLC Engineering.

Error reaction

The PLC is not started or all tasks are stopped. The drive is also set to standstill with velocity command value zero switching. I.e., the error reaction cannot parameterized by the user.

The error can only be cleared when it is no longer present.

The following is required, depending on the error type:

- a PLC reset
- in the case of configuration errors: program correction
- in the case of internal errors: drive restart

Bug fixing

The following cases have to be distinguished for troubleshooting:

- In a **freely programmed application**, the PLC program or the ctrlX DRIVE PLC configuration or the task configuration have to be changed with the programming system to fix the error.
  Depending on the cause of the error, the following actions can be seen in the detailed diagnostics:
  - In the case of runtime errors and task watchdogs: Remove the incorrect programming
  - In the case of configuration errors: Correct the configuration
  - In the case of internal errors: With the error present, make a parameter backup of all parameters and contact the service team
- For a **technology function** provided by Bosch Rexroth, please refer to the instruction for debugging of the relevant documentation.

▼ Attributes

Short diagnostics no. (20 bits):	F6010
Long diagnostics no. (32 bits):	0A0F6010
CiA error code:	F099
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	FC9

Detailed diagnostics

00260001

Internal task create error

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260002

Internal task list create error

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260003

Internal semaphore create error

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260004

Internal function package error

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260005

Internal error during system start

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260006

Internal error during system start file system

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260007

Invalid pointer access in PLC project - see P-0-1365 for details

Cause/Remedy 1: Cause: Pointer access to unauthorized address in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

00260008

Invalid pointer access (alignment) in PLC project - see P-0-1365 for details

Cause/Remedy 1: Cause: Pointer access to unauthorized address in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

00260009

Watchdog of IEC task expired - see P-0-1365 for details

Cause/Remedy 1: Cause: Watchdog of a task in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

0026000A

Array bound or range violation - see P-0-1365 for details

Cause/Remedy 1: Cause: Impermissible value of array index or variable in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

0026000B

Integer division by 0 - see P-0-1365 for details

Cause/Remedy 1: Cause: Integer division by 0 in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

0026000C

REAL/LREAL division by 0 - see P-0-1365 for details

Cause/Remedy 1: Cause: REAL/LREAL division by 0 in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

0026000D

FPU error in REAL/LREAL function - see P-0-1365 for details

Cause/Remedy 1: Cause: FPU error in REAL/LREAL operation in technology function. Remedy: PLC reset. Rectify error in technology function or contact service.

0026000E

Unknown error occurred - see P-0-1365 for details

Cause/Remedy 1: Cause: Unknown error occurred. Remedy: PLC reset. Contact the service team.

0026000F

Error in PLC project - see P-0-1365 for details

Cause/Remedy 1: Cause: Error in PLC project. Remedy: See P-0-1365 for details. Rectify error in project.

00260010

PLC retain data invalid (P-0-1359) - see P-0-1365 for details

Cause/Remedy 1: Cause: PLC retain data invalid (P-0-1359) Loading of boot project was denied. Remedy: If applicable, rectify error (exception) in technology function or contact service.

00260011

Internal error in task system 1

Cause/Remedy 1: Cause: Internal error no. 1 in task system. Remedy: Reboot required. Contact the service team.

00260012

Internal error in task system 2

Cause/Remedy 1: Cause: Internal error no. 2 in task system. Remedy: Reboot required. Contact the service team.

00260013

Internal error - no free memory

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260014

Internal event create error

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260015

Internal error when releasing data memory

Cause/Remedy 1: Cause: Internal error. Remedy: Reboot required. Contact the service team.

00260016

Watchdog in PositionLoop event

Cause/Remedy 1: Cause: Watchdog in PositionLoop event Remedy: PLC reset. Rectify error in technology function or contact service.

00260017

Call of impermissible POU in PositionLoop event

Cause/Remedy 1: Cause: Call of an impermissible POU in PositionLoop event. Remedy: PLC reset. Remove impermissible POU call in PositionLoop event in technology function.

00260018

Instance data of a direct variable has been overwritten

Cause/Remedy 1: Cause: Instance data of a direct variable has been overwritten. Maybe by copying a complete direct variable instance. Remedy: Change code accordingly.

F6028 Position limit value exceeded (overflow)

The drive provides a function for monitoring an allowed travel range using software limit switches that can be parameterized.



Travel range monitoring has to be activated and parameterized using the position limit values ["Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --), "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)]. Besides, the polarities of the specified position data may be inverted using "Axis polarity: Position" (0x290A:01 / S-0-0055 / --).
If the error occurs, the axis is decelerated with the reaction parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 4...7).
In "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --), parameterize how the drive reacts when the travel range is exceeded (fatal warning or error).

Cause	Remedy

Cause	Remedy
A command value was specified for the drive that results in an axis position outside of positive or negative travel range/position limit value	▪ Clear error and switch on power ▪ Set drive enable ▪ Specify a command value that leads back to the allowed travel range Contact the machine manufacturer to clarify cause of faulty command value
Positive or negative travel range/position limit value incorrectly parameterized	Check and, if necessary, correct parameterization of "Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --) and "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)
If position limit values are at the end of the possible travel range [+/- "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --)], it is no longer possible to clearly detect the exceeded travel range via the actual position values. Therefore, overflow monitoring is carried out that generates the error	Increase "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --) - or - reduce position limit values so that defined deceleration is still possible within the defined travel range.

Additionally, the travel range may be limited by "Position status: Position window" (0x6067:00 / S-0-0057 / --).

See also Position limit values

▼ Attributes

Short diagnostics no. (20 bits):	F6028
Long diagnostics no. (32 bits):	000F6028
CiA error code:	8081

F6029 Positive position limit exceeded

The drive provides a function for monitoring an allowed travel range using software limit switches that can be parameterized.

Travel range monitoring has to be activated and parameterized using the position limit values ["Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --), "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)]. Besides, the polarities of the specified position data may be inverted using "Axis polarity: Position" (0x290A:01 / S-0-0055 / --).
If the error occurs, the axis is decelerated with the reaction parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 4...7).
In "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --), parameterize how the drive reacts when the travel range is exceeded (fatal warning or error).

Cause	Remedy

Cause	Remedy
A command value was specified for the drive that results in an axis position outside of the positive travel range/position limit value	▪ Clear error and switch on power ▪ Set drive enable ▪ Specify a command value that leads back to the allowed travel range Contact the machine manufacturer to clarify cause of faulty command value
Positive travel range/position limit value incorrectly parameterized	Check and, if necessary, correct parameterization of "Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --)



Additionally, the travel range may be limited by "Position status: Position window" (0x6067:00 / S-0-0057 / --).

See also Position limit values

▼ Attributes

Short diagnostics no. (20 bits):	F6029
Long diagnostics no. (32 bits):	C00F6029
CiA error code:	8082

F6030 Negative position limit exceeded

The drive provides a function for monitoring an allowed travel range using software limit switches that can be parameterized.



Travel range monitoring has to be activated and parameterized using the position limit values ["Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --), "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)]. Besides, the polarities of the specified position data may be inverted using "Axis polarity: Position" (0x290A:01 / S-0-0055 / --).
If the error occurs, the axis is decelerated with the reaction parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 4...7).
In "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --), parameterize how the drive reacts when the travel range is exceeded (fatal warning or error).

Cause	Remedy
A command value was specified for the drive that results in an axis position outside of the negative travel range/position limit value	▪ Clear error and switch on power ▪ Set drive enable ▪ Specify a command value that leads back to the allowed travel range Contact the machine manufacturer to clarify cause of faulty command value
Negative travel range/position limit value incorrectly parameterized	Check and, if necessary, correct parameterization "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)

Additionally, the travel range may be limited by "Position status: Position window" (0x6067:00 / S-0-0057 / --).

See also Position limit values

▼ Attributes

Short diagnostics no. (20 bits):	F6030
Long diagnostics no. (32 bits):	C00F6030
CiA error code:	8083

F6034 Emergency-Stop activated

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch).

The monitoring function for the E-Stop input has to be activated and parameterized via "E-Stop function: Configuration" (0x2806:01 / P-0-0008 / --).
The error can only be cleared, when the selection of E-Stop is removed or the evaluation of E-Stop was switched off.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clarify cause of triggering
Digital inputs and outputs on control section incorrectly parameterized	Check configuration of digital inputs/outputs and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See E-Stop function

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	F6034
Long diagnostics no. (32 bits):	C00F6034
CiA error code:	F09B
J1939: "Failure Mode Identifier":	14

J1939: "Suspect Parameter Number":	7FFF6

F6042 Both travel range limit switches activated

The compliance with the allowed travel range of linear axes is monitored on the hardware side via two travel range limit switches. If the travel range limit switches have been correctly mounted, **one** of the two travel range limit switches is activated in case the travel range is exceeded.

The error F6042 is generated if the following conditions have been fulfilled:

- The controller detects that both travel range limit switches have been simultaneously activated and
- Exceeding the travel range is handled as an error [setting in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

Cause	Remedy
Due to incorrect mounting, axis simultaneously activates both travel range limit switches	Mount travel range limit switches in such a way that they are activated shortly before axis end position is reached. Make sure the braking distance is sufficient.
Travel range limit switches were incorrectly connected	Connect travel range limit switches correctly; check whether switching logic parameterized in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --) is complied with
Switching logic of travel range limit switches does not match the implemented wiring	Check switching logic of travel range limit switches regarding the implemented wiring; adjust it in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --) if necessary

See also Travel range limit switches

▼ Attributes

Short diagnostics no. (20 bits):	F6042
Long diagnostics no. (32 bits):	C00F6042
CiA error code:	8085

F6043 Positive travel range limit switch activated

The drive provides a function for monitoring travel range limit switches (external hardware limit switches).



The monitoring function for the travel range limit switches may be activated and parameterized via "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --).
If the error occurs, the axis is decelerated with the reaction parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 4...7).

Cause	Remedy

Cause	Remedy
The travel range limit switch mounted in the positive direction (see Project Planning Manual of motor) was activated because the axis is outside of the travel range defined by the travel range limit switches	▪ Clear error and switch on power ▪ Set drive enable ▪ Specify a command value that leads back to the allowed travel range
Digital inputs and outputs on control section incorrectly parameterized	Check and, if necessary, correct configuration of digital inputs/outputs
Travel range limit switch or cable is defective or wired incorrectly	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Travel range limit switches

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	F6043
Long diagnostics no. (32 bits):	C00F6043
CiA error code:	8086

F6044 Negative travel range limit switch activated

The drive provides a function for monitoring travel range limit switches (external hardware limit switches).



The monitoring function for the travel range limit switches may be activated and parameterized via "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --).
If the error occurs, the axis is decelerated with the reaction parameterized in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 4...7).

Cause	Remedy
The travel range limit switch mounted in the negative direction (see Project Planning Manual of motor) was activated because the axis is outside of the travel range defined by the travel range limit switches	▪ Clear error and switch on power ▪ Set drive enable ▪ Specify a command value that leads back to the allowed travel range

Cause	Remedy
Digital inputs and outputs on control section incorrectly parameterized	Check and, if necessary, correct configuration of digital inputs/outputs
Travel range limit switch or cable is defective or wired incorrectly	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Travel range limit switches

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	F6044
Long diagnostics no. (32 bits):	C00F6044
CiA error code:	8087

F6057 Synchronization not possible

With the acceleration set in "Position control synchronization: Acceleration (0x2830:03 / P-0-0142 / --)", the current actual velocity of the axis and the current external command value input, synchronization is not possible.

Possible causes (the exact cause for triggering the error and the remedy can be found in the detailed diagnostics):

- Value parameterized in "Position control synchronization: Acceleration" (0x2830:03 / P-0-0142 / --) is "0" or very small
- Actual velocity of axis too high
- Position difference of successive external position command values too big
- Incorrect command value input by the external control

▼ Attributes

Short diagnostics no. (20 bits):	F6057
Long diagnostics no. (32 bits):	000F6057

Detailed diagnostics

00520206

Synchronization not possible with absolute position scaling

Cause/Remedy 1: Cause: The distance calculated for synchronization exceeds the limit value allowed for absolute position scaling.

Cause/Remedy 2: Remedy: Check and, if necessary, increase acceleration in 0x2830:03 / P-0-0142.

Cause/Remedy 3: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 4: Remedy: Reduce actual velocity of axis when synchronization starts.

00520207

Synchronization not possible with modulo scaling

Cause/Remedy 1: Cause: The distance calculated for synchronization exceeds the limit value allowed for modulo scaling.

Cause/Remedy 2: Remedy: Check and, if necessary, increase acceleration in 0x2830:03 / P-0-0142.

Cause/Remedy 3: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 4: Remedy: Reduce actual velocity of axis when synchronization starts.

00520208

Unexpected internal overflow

Cause/Remedy 1: Cause: At the start of synchronization, an unexpected internal overflow occurred

Cause/Remedy 2: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 3: Remedy: Please contact our service department.

00520209

Unexpected internal overflow

Cause/Remedy 1: Cause: At the start of synchronization, an unexpected internal overflow occurred.

Cause/Remedy 2: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 3: Remedy: Please contact our service department.

00520210

Unexpected internal overflow

Cause/Remedy 1: Cause: At the start of synchronization, an unexpected internal overflow occurred.

Cause/Remedy 2: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 3: Remedy: Please contact our service department.

00520211

Unexpected internal overflow

Cause/Remedy 1: Cause: At the start of synchronization, an unexpected internal overflow occurred.

Cause/Remedy 2: Remedy: Check command value input of external control in 0x2820:04 / P-0-0047 when synchronization starts, and, if necessary, reduce position difference of the successive external position command values (command velocity of axis).

Cause/Remedy 3: Remedy: Please contact our service department.

00520212

Unexpected internal overflow

Cause/Remedy 1: Internal error: No remedy possible. Please send a detailed error description to customer service.

00520213

Acceleration that has been set is "0"

Cause/Remedy 1: Cause: The acceleration set in 0x2830:03 / P-0-0142 for the synchronization motion is "0".

Cause/Remedy 2: Remedy: Set the correct acceleration for the synchronization motion in 0x2830:03 / P-0-0142.

F6058 Internal overflow by positioning input

The error was generated because a problem had occurred in the generation of the position command value profile.

Possible causes (the exact cause for triggering the error and the remedy can be found in the detailed diagnostics):

- Overflow in braking distance calculation when positioning with modulo scaling
- Validation error when positioning with modulo scaling

▼ Attributes

Short diagnostics no. (20 bits):	F6058
Long diagnostics no. (32 bits):	000F6058
CiA error code:	8686

Detailed diagnostics

00520219

Overflow in braking distance calculation when positioning with modulo scaling

Cause/Remedy 1: Cause: A numerical overflow occurred when the braking distance had been calculated.

Cause/Remedy 2: Remedy: Check deceleration that was set. The setting is made depending on the operation mode, e.g. in 0x2840:03 / S-0-0359 (drive-controlled positioning or drive-internal interpolation) or in 0x6084 (CiA402 Profile Position Mode).

Cause/Remedy 3: Remedy: Check velocity. The decisive factor is the velocity at which the new positioning is processed. This is, for example, the positioning velocity of the active operation mode.

Cause/Remedy 4: Remedy: If the deceleration is not specifically preset, check acceleration that has been set. This is, for example, 0x2808:02 / S-0-0372 for the "Position spindle" command.

Cause/Remedy 5: Remedy: Check position scaling settings.

0052021A

Validation error when positioning with modulo scaling

Cause/Remedy 1: Cause: An implausible result occurred in the processing of positioning.

Cause/Remedy 2: Remedy: Check the command value input.

Cause/Remedy 3: Remedy: Please contact our service department.

0052021B

Validation error when positioning with modulo scaling

Cause/Remedy 1: Cause: An implausible result occurred in the processing of positioning.

Cause/Remedy 2: Remedy: Check the command value input.

Cause/Remedy 3: Remedy: Please contact our service department.

0052021C

Validation error with absolute positioning

Cause/Remedy 1: Cause: An internal error occurred in the course of positioning.

Cause/Remedy 2: Remedy: Check the command value input.

Cause/Remedy 3: Remedy: Please contact our service department.

0052021D

Validation error with relative positioning

Cause/Remedy 1: Cause: An internal error occurred in the course of positioning.

Cause/Remedy 2: Remedy: Check the command value input.

Cause/Remedy 3: Remedy: Please contact our service department.

0052021E

Internal overflow in the case of sequential block without stop

Cause/Remedy 1: Cause: Internal position overflow while positioning with sequential block without stop had been active.

Cause/Remedy 2: Remedy: Check the command value input.

Cause/Remedy 3: Remedy: If this error occurs as an error resulting from F2051 with NC reaction set, the axis has to be brought to standstill earlier by the NC.

Cause/Remedy 4: Remedy: Please contact our service department.

0052021F

Internal overflow in the case of sequential block without stop in positioning block mode

Cause/Remedy 1: Cause: Internal position overflow while positioning with sequential block without stop had been active in the positioning block mode.

Cause/Remedy 2: Remedy: Check the involved positioning blocks.

Cause/Remedy 3: Remedy: Please contact our service department.

00520220

Internal overflow in position processing

Cause/Remedy 1: Cause: The processing of positioning caused an internal position overflow.

Cause/Remedy 2: Cause: In the case of a modulo axis, multiple positioning procedures in the same direction were preset.

Cause/Remedy 3: Remedy: Check the input of the positioning command values

Cause/Remedy 4: Remedy: For a modulo axis, check the positioning mode that has been set in S-0-0393 bit 1/0 and correct it, if necessary.

Cause/Remedy 5: Remedy: For a modulo axis and active drive profile CiA402, check the positioning mode that has been set in 0x60F2 bit 7/6 and correct it, if necessary.

00520221

Internal overflow when reinitializing the generator function

Cause/Remedy 1: Cause: An internal position overflow occurred in position command value processing.

Cause/Remedy 2: Cause: In the case of a modulo axis, multiple positioning procedures in the same direction were preset before.

Cause/Remedy 3: Remedy: Check the input of the positioning command values.

Cause/Remedy 4: Remedy: For a modulo axis, check the positioning mode that has been set in S-0-0393 (bit 1/0) and correct it, if necessary.

Cause/Remedy 5: Remedy: For a modulo axis and active drive profile CiA402, check the positioning mode that has been set in 0x60F2 bit 7/6 and correct it, if necessary.

00520222

Internal procedure error after shutdown

Cause/Remedy 1: Internal error: No remedy possible. Please send a detailed error description to customer service.

00520223

Internal procedure error after immediate shutdown

Cause/Remedy 1: Internal error: No remedy possible. Please send a detailed error description to customer service.

00520224

Validation error after target position has been reached

Cause/Remedy 1: Internal error: No remedy possible. Please send a detailed error description to customer service.

00520225

Validation error when processing the positive positioning velocity

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520226

Validation error when processing the negative positioning velocity

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520227

Validation error when processing the acceleration and deceleration

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520228

Validation error when processing the acceleration

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520229

Validation error when processing the deceleration

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022A

Validation error when decelerating to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022B

Validation error when starting deceleration to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022C

Validation error when starting deceleration to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022D

Validation error when starting deceleration to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022E

Validation error when starting deceleration to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

0052022F

Position overflow when decelerating

Cause/Remedy 1: Cause: The current braking distance causes position overflow during positioning

Cause/Remedy 2: Remedy: Check deceleration and/or acceleration

Cause/Remedy 3: Remedy: Check velocity

00520230

Position overflow when decelerating

Cause/Remedy 1: Cause: The current braking distance causes position overflow during positioning

Cause/Remedy 2: Remedy: Check deceleration and/or acceleration

Cause/Remedy 3: Remedy: Check velocity

00520231

Position overflow when decelerating

Cause/Remedy 1: Cause: The current braking distance causes position overflow during positioning

Cause/Remedy 2: Remedy: Check deceleration and/or acceleration

Cause/Remedy 3: Remedy: Check velocity

00520232

Position overflow when decelerating

Cause/Remedy 1: Cause: The current braking distance causes position overflow during positioning

Cause/Remedy 2: Remedy: Check deceleration and/or acceleration

Cause/Remedy 3: Remedy: Check velocity

00520233

Validation error when decelerating to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520234

Validation error when decelerating to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520235

Validation error when decelerating to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520236

Validation error when decelerating to target position

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

00520237

Internal procedure error in generation of diagnostics

Cause/Remedy 1: Internal error: Please send a detailed error description to customer service.

F6059 Incorrect direction when jogging

If the configuration specifies that the position data of the axis are to be processed in the modulo format, and positive or negative direction of rotation has been set as the mode for modulo positioning, jogging in the opposite direction causes the error F6059 to be generated.

Application profile "CiA 402":
The modulo format can be activated via "Position range limit: Max position range limit" (0x607B:02 / P-0-1901.0.47 / --). The mode for modulo positioning can be set in "Positioning option code" (0x60F2:00 / P-0-1901.0.60 / --).
Other application profiles:
The modulo format can be configured in "Position data scaling: Type" (0x2900:01 / S-0-0076 / --). If modulo format has been activated, the mode for modulo positioning can be set in "Positioning profile: Command value mode" (0x2840:01 / S-0-0393 / --).

The cause for triggering the error (motion in positive or negative direction not possible) and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F6059
Long diagnostics no. (32 bits):	000F6059
CiA error code:	8688

Detailed diagnostics

00520204

Impossible to move in positive direction

Cause/Remedy 1: Cause: With positioning mode "negative direction" set, motion in positive direction was specified.

Cause/Remedy 2: Remedy: Do not jog in positive direction.

Cause/Remedy 3: Remedy: In positioning block mode, do not use positioning block with "traveling in positive direction" mode.

Cause/Remedy 4: Remedy: In the case of modulo scaling, check and, if necessary, correct positioning mode in "Positioning profile: Command value mode" (0x2840:01 / S-0-0393) bit 1/0.

Cause/Remedy 5: Remedy: With drive profile CiA402 and in the case of modulo scaling, check and, if necessary, correct positioning mode in "Positioning option code" (0x60F2:00 / P-0-1901.0.60) bit 7/6.

00520205

Impossible to move in negative direction

Cause/Remedy 1: Cause: With positioning mode "positive direction" set, motion in negative direction was specified.

Cause/Remedy 2: Remedy: Do not jog in negative direction.

Cause/Remedy 3: Remedy: In positioning block mode, do not use positioning block with "traveling in negative direction" mode.

Cause/Remedy 4: Remedy: In the case of modulo scaling, check and, if necessary, correct positioning mode in "Positioning profile: Command value mode" (0x2840:01 / S-0-0393) bit 1/0.

Cause/Remedy 5: Remedy: With drive profile CiA402 and in the case of modulo scaling, check and, if necessary, correct positioning mode in "Positioning option code" (0x60F2:00 / P-0-1901.0.60) bit 7/6.

F6099 F6 test error, axis reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for an axis error with emergency stop (error of category F6xxx).

Cause	Remedy

Cause	Remedy
The value "0x002" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F6099
Long diagnostics no. (32 bits):	000F6099
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF6

F6200 Velocity command value > standstill window in SOS

The safety function "Safe operating stop (SOS)" is active.

The drive monitors to ensure that no velocity command values are specified such that the standstill window is exited.

Cause	Remedy
Incorrect velocity command values are preset by drive or external control unit	Check "Velocity controller: Command value" (0x2220:09 / P-0-0048 / --) and adjust it according to parameterization of "SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F6200
Long diagnostics no. (32 bits):	000F6200
CiA error code:	8088

F6644 Device-internal communication to I/O module disturbed

Multiple telegram failures to the I/O module (optional module "DA" or eLION AD option).

Cause	Remedy
Disturbed communication to the I/O module	Switch off the device and then switch it back on
Faulty communication to the I/O module	– Firmware update of I/O module might be required – Have defective optional module replaced – Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F6644
Long diagnostics no. (32 bits):	000F6644
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

007B0076
Error reading input data of the eLION-AD option

007B0077
Error when writing the output data of the eLION-AD option

F6801 Non-fatal system error

A non-fatal system error occurred. The supply unit is decelerated using the configured F6 error reaction.

Cause	Remedy
The diagnostic system has detected an undefined diagnostic message	Save all of the parameters. Then please contact our service department, and make parameter backup available to the service team

▼ Attributes

Short diagnostics no. (20 bits):	F6801
Long diagnostics no. (32 bits):	000F6801

F6899 F6 test error, axis and supply unit reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for an emergency stop of the axis or a supply unit error.



The reaction of the supply unit can be set via "Power supply control: Power off delay" (0x2600:03 / S-0-1720.0.3 / S-0-2059).

Cause	Remedy
The value "0x102" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F6899
Long diagnostics no. (32 bits):	000F6899
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF6

F7009 Homing velocity exceeded

The velocity feedback value has exceeded the maximum homing velocity. The maximum homing velocity is monitored, because "Safe homing procedure" was activated, but the "Safe reference" is missing.

Cause	Remedy
Safe homing procedure is active (0x31B0:01 / P-0-3253.0.1 / P-0-2793) and the status of the SMO encoder position feedback value is "relative" (0x310E:01 / P-0-3256 / --). In this state, the velocity feedback value (0x310E:03 / P-0-3258 / --) has exceeded "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797).	Make sure the velocity feedback value (0x310E:03 / P-0-3258 / --) is smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) until the status for the "Safe reference" (0x310E:01 / P-0-3256 / --) has been set. - or - Check whether "Safe homing procedure" is actually required. This is the case if, e.g., safety functions of the safe absolute positions are used (SLP, SLE, SMP). If "Safe homing procedure" is not required, change the parameterization of "SMO safe homing: Configuration" (0x31B0:01 / P-0-3253.0.1 / P-0-2793).

▼ Attributes

Short diagnostics no. (20 bits):	F7009
Long diagnostics no. (32 bits):	060F7009

Detailed diagnostics

004606C9
Safe reference missing and 0x310E:02 / P-0-3257 >= 0x31B0:05 / P-0-3253.0.5 / P-0-2797

F7010 Safely-limited increment exceeded

In the special mode "Safe motion" with configured safety function "Safely-limited increment", the monitoring function makes sure that the values do not leave the parameterized position window (increment).

The bipolar position window is activated with the start of the special mode. For the duration of the special mode, the drive can freely move within the limits of the position window.

Cause	Remedy

Cause	Remedy
At least one of the position windows relevant for special mode "Safe motion" has been incorrectly parameterized	Check parameterization of position windows and adjust it to desired travel targets. Position window: ■ "SMO safely-limited increment 1: Increment" (0x3170:01 / P-0-3290.1.3 / --) or ■ "SMO safely-limited increment 2: Increment" (0x3171:01 / P-0-3290.2.3 / --) or ■ ... ■ "SMO safely-limited increment 16: Increment" (0x317F:01 / P-0-3290.16.3 / --) After troubleshooting, start command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error an then set drive enable again
Command value input is incorrect; i.e. drive moves to invalid target positions	Check command value input in control unit and adjust target positions according to travel range or required target positions. After troubleshooting, start command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error an then set drive enable again

▼ Attributes

Short diagnostics no. (20 bits):	F7010
Long diagnostics no. (32 bits):	060F7010
CiA error code:	F0BB

Detailed diagnostics

0053000D

Position window (safely limited step size 1: 0x3170:01 / P-0-3290.1.3, safely limited step size 2: 0x3171:01 / P-0-3290.2.3, safely limited step size 3: 0x3172:01 / P-0-3290.3.3,...) exceeded

0054000D

Position window (safely limited step size 1: 0x3170:01 / P-0-3290.1.3, safely limited step size 2: 0x3171:01 / P-0-3290.2.3, safely limited step size 3: 0x3172:01 / P-0-3290.3.3,...) exceeded

F7011 SMP, SLP: Safe position limit value, positive exceeded

Cause	Remedy
With active safety function "Safely-monitored position (SMP)" or "Safely-limited position (SLP)"	

Cause	Remedy
The allowed positive absolute position limit was exceeded.	Check command value input and adjust it in accordance with the respective parameterized value: ▪ SMO safe position 1: Positive limit value (0x3180:01 / P-0-3290.1.4 / --) ▪ SMO safe position 2: Positive limit value (0x3181:01 / P-0-3290.2.4 / --) ▪ ... ▪ SMO safe position 16: Positive limit value (0x318F:01 / P-0-3290.16.4 / --) - or - Check whether the "SMO safe position x: Positive limit value" have been parameterized correctly.
The actual position of the drive is outside of the allowed positive absolute position limit, and the drive moved at a velocity greater than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797). - or - The actual position of the drive is outside of the allowed positive absolute position limit. When moving back to the allowed position range, the drive kept moving in the positive direction by a distance greater than parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).	▪ Start "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error. ▪ Set drive enable again. ▪ When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).
Only with active safety function "Safely-limited position (SLP)"	
The drive was moved in the direction of the positive position limit with a velocity at which the deceleration capacity no longer suffices for the drive to come to standstill within the positive position limit.	In the case of movements in the direction of the positive position limit, reduce the drive velocity so that the deceleration capacity suffices for the drive to come to standstill within the positive position limit. - or - Check whether the "SMO safe position x: Positive limit value" have been parameterized correctly.

▼ Attributes

Short diagnostics no. (20 bits):	F7011
Long diagnostics no. (32 bits):	060F7011
CiA error code:	F0BC

Detailed diagnostics

000406CE

SLP: Velocity towards positive position limit value too high (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --)

000406D0

SLP/SMP: Positive position limit value exceeded (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --)

000406D2

SLP/SMP return motion check: Positive position limit value exceeded (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --)

000406D4

SLP/SMP: Return velocity to allowed position range (0x3180:01...0x318F:01 / P-0-3290.1.4...P-0-3290.16.4 / --) greater than 0x31B0:05 / P-0-3253.0.5

F7012 SMP, SLP: Safe position limit value, negative exceeded

Cause	Remedy
With active safety function "Safely-monitored position (SMP)" or "Safely-limited position (SLP)"	
The allowed negative absolute position limit was exceeded.	Check command value input and adjust it in accordance with the respective parameterized value: ■ SMO safe position 1: Negative limit value (0x3180:02 / P-0-3290.1.5 / --) ■ SMO safe position 2: Negative limit value (0x3181:02 / P-0-3290.2.5 / --) ■ ... ■ SMO safe position 16: Negative limit value (0x318F:02 / P-0-3290.16.5 / --) - or - Check whether the "SMO safe position x: Negative limit value" have been parameterized correctly.
The actual position of the drive is outside of the allowed negative absolute position limit, and the drive moved at a velocity greater than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797). - or - The actual position of the drive is outside of the allowed negative absolute position limit. When moving back to the allowed position range, the drive kept moving in the negative direction by a distance greater than parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).	■ Start "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error. ■ Set drive enable again. ■ When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).
Only with active safety function "Safely-limited position (SLP)"	
The drive was moved in the direction of the negative position limit with a velocity at which the deceleration capacity no longer suffices for the drive to come to standstill within the negative position limit.	In the case of movements in the direction of the negative position limit, reduce the drive velocity so that the deceleration capacity suffices for the drive to come to standstill within the negative position limit. - or - Check whether the "SMO safe position x: Negative limit value" have been parameterized correctly.

▼ Attributes

Short diagnostics no. (20 bits):	F7012
Long diagnostics no. (32 bits):	060F7012
CiA error code:	F0BD

Detailed diagnostics

000406CF

SLP: Velocity towards negative position limit value too high (0x3180:02...0x318F:02 / P-0-3290.1.5...P-0-3290.16.5 / --)

000406D1

SLP/SMP: Negative position limit value below minimum (0x3180:02...0x318F:02 / P-0-3290.1.5...P-0-3290.16.5 / --)

000406D3

SLP/SMP return motion check: Negative position limit value below minimum (0x3180:02...0x318F:02 / P-0-3290.1.5...P-0-3290.16.5 / --)

000406D5

SLP/SMP return motion check: Negative position limit value below minimum (0x3180:02...0x318F:02 / P-0-3290.1.5...P-0-3290.16.5 / --)

F7013 Velocity threshold exceeded

In the special mode "Safe motion", a parameterized velocity threshold was exceeded.

Cause	Remedy
In the special mode "Safe motion", one of the following velocity thresholds was exceeded ■ "SMO safely-limited speed 1: Velocity" (0x3160:01 / P-0-3290.1.2 / --) or ■ "SMO safely-limited speed 2: Velocity" (0x3161:01 / P-0-3290.2.2 / --) or ■ ... ■ "SMO safely-limited speed 16: Velocity" (0x316F:01 / P-0-3290.16.2 / --)	Check command value input and adjust it according to parameter setting **- or -** Check parameterization and change it, if necessary. After troubleshooting, start command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error an then set drive enable again

▼ Attributes

Short diagnostics no. (20 bits):	F7013
Long diagnostics no. (32 bits):	060F7013
CiA error code:	F0BE
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	7F3A0

Detailed diagnostics

0053000E

Velocity threshold (safely limited velocity 1: 0x3160:01 / P-0-3290.1.2, safely limited velocity 2: 0x3161:01 / P-0-3290.2.2, safely limited velocity 3: 0x3162:01 / P-0-3290.3.2,...) exceeded

0054000E

Velocity threshold (safely limited velocity 1: 0x3160:01 / P-0-3290.1.2, safely limited velocity 2: 0x3161:01 / P-0-3290.2.2, safely limited velocity 3: 0x3162:01 / P-0-3290.3.2,...) exceeded

F7014 Timeout in safely-monitored transient oscillation

In the special mode "Safe motion" with configured safety function "Safely-monitored transient oscillation" monitoring takes place so that the parameterized velocity limit is not exceeded for a longer period than the parameterized time period.

Cause	Remedy
In special mode "Safe motion" (with active safety function "Safely-monitored transient oscillation") the "Safely-reduced speed" was exceeded for a longer period than the tolerated time period	Check command value input and adjust it according to parameter setting **- or -** Check parameter setting and change it, if necessary. **Tip:** For "Safely-reduced speed" and tolerated time period for the respective special mode "Safe motion", please see the table below. After troubleshooting, start command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error an then set drive enable again

Special mode "Safe motion"	"Safely-reduced speed"	Tolerated time period
1	"SMO safely-limited speed 1: Reduced velocity" (0x3160:02 / P-0-3290.1.8 / --)	"SMO safely-limited speed 1: Tolerance time for overshooting" (0x3160:03 / P-0-3290.1.7 / --)
2	"SMO safely-limited speed 2: Reduced velocity" (0x3161:02 / P-0-3290.2.8 / --)	"SMO safely-limited speed 2: Tolerance time for overshooting" (0x3161:03 / P-0-3290.2.7 / --)

Special mode "Safe motion"	"Safely-reduced speed"	Tolerated time period
3	"SMO safely-limited speed 3: Reduced velocity" (0x3162:02 / P-0-3290.3.8 / --)	"SMO safely-limited speed 3: Tolerance time for overshooting" (0x3162:03 / P-0-3290.3.7 / --)
4	"SMO safely-limited speed 4: Reduced velocity" (0x3163:02 / P-0-3290.4.8 / --)	"SMO safely-limited speed 4: Tolerance time for overshooting" (0x3163:03 / P-0-3290.4.7 / --)
5	"SMO safely-limited speed 5: Reduced velocity" (0x3164:02 / P-0-3290.5.8 / --)	"SMO safely-limited speed 5: Tolerance time for overshooting" (0x3164:03 / P-0-3290.5.7 / --)
6	"SMO safely-limited speed 6: Reduced velocity" (0x3165:02 / P-0-3290.6.8 / --)	"SMO safely-limited speed 6: Tolerance time for overshooting" (0x3165:03 / P-0-3290.6.7 / --)
7	"SMO safely-limited speed 7: Reduced velocity" (0x3166:02 / P-0-3290.7.8 / --)	"SMO safely-limited speed 7: Tolerance time for overshooting" (0x3166:03 / P-0-3290.7.7 / --)
8	"SMO safely-limited speed 8: Reduced velocity" (0x3167:02 / P-0-3290.8.8 / --)	"SMO safely-limited speed 8: Tolerance time for overshooting" (0x3167:03 / P-0-3290.8.7 / --)
9	"SMO safely-limited speed 9: Reduced velocity" (0x3168:02 / P-0-3290.9.8 / --)	"SMO safely-limited speed 9: Tolerance time for overshooting" (0x3168:03 / P-0-3290.9.7 / --)
10	"SMO safely-limited speed 10: Reduced velocity" (0x3169:02 / P-0-3290.10.8 --)	"SMO safely-limited speed 10: Tolerance time for overshooting" (0x3169:03 / P-0-3290.10.7 / --)
11	"SMO safely-limited speed 11: Reduced velocity" (0x316A:02 / P-0-3290.11.8 / --)	"SMO safely-limited speed 11: Tolerance time for overshooting" (0x316A:03 / P-0-3290.11.7 / --)
12	"SMO safely-limited speed 12: Reduced velocity" (0x316B:02 / P-0-3290.12.8 / --)	"SMO safely-limited speed 12: Tolerance time for overshooting" (0x316B:03 / P-0-3290.12.7 / --)
13	"SMO safely-limited speed 13: Reduced velocity" (0x316C:02 / P-0-3290.13.8 / --)	"SMO safely-limited speed 13: Tolerance time for overshooting" (0x316C:03 / P-0-3290.13.7 / --)
14	"SMO safely-limited speed 14: Reduced velocity" (0x316D:02 / P-0-3290.14.8 / --)	"SMO safely-limited speed 14: Tolerance time for overshooting" (0x316D:03 / P-0-3290.14.7 / --)
15	"SMO safely-limited speed 15: Reduced velocity" (0x316E:02 / P-0-3290.15.8 / --)	"SMO safely-limited speed 15: Tolerance time for overshooting" (0x316E:03 / P-0-3290.15.7 / --)
16	"SMO safely-limited speed 16: Reduced velocity" (0x316F:02 / P-0-3290.16.8 / --)	"SMO safely-limited speed 16: Tolerance time for overshooting" (0x316F:03 / P-0-3290.16.7 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F7014

Long diagnostics no. (32 bits):	060F7014
CiA error code:	F0BF

Detailed diagnostics

0053000F

“Reduced velocity” velocity threshold (safely limited speed 1: 0x3160:02 / P-0-3290.1.8,...) exceeded for longer than maximum allowed time window (safely limited speed 1: 0x3160:03 / P-0-3290.x.7,...)

0054000F

“Reduced velocity” velocity threshold (safely limited speed 1: 0x3160:02 / P-0-3290.1.8,...) exceeded for longer than maximum allowed time window (safely limited speed 1: 0x3160:03 / P-0-3290.x.7,...)

F7020 Safe maximum speed exceeded

When monitoring of the Safe maximum speed has been configured [see "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --)], the drive in normal operation and in special mode monitors the current actual velocity.

When the velocity threshold parameterized in P-0-3270.0.2 is exceeded, the error F7020 is generated.

Cause	Remedy
Velocity threshold was incorrectly parameterized	Check and, if necessary, increase parameterization of "SMO global functions: Safe max. speed" (0x3156:02 / P-0-3270.0.2 / --)
Incorrect command value input; i.e. velocity command value too high	Check command value input in the control or, for drive-internal interpolation, check parameterized positioning data [cf. "Positioning profile: Profile velocity" (0x6081:00 / S-0-0259 / --) or "Positioning block mode: Velocity" (0x284E:02 / P-0-4007 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	F7020
Long diagnostics no. (32 bits):	060F7020
CiA error code:	F0C0
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	7F3A0

Detailed diagnostics

00530010

Velocity threshold (0x3156:02 / P-0-3270.0.2) exceeded

00533491

Velocity threshold (0x3156:02 / P-0-3270.0.2) exceeded

00540010

Velocity threshold (0x3156:02 / P-0-3270.0.2) exceeded

00543491

Velocity threshold (0x3156:02 / P-0-3270.0.2) exceeded

F7023 SLE: Safe position limit value, positive exceeded

In normal operation or in normal operation and special mode [depending on the setting in "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --) or "SMO normal operation: Configuration" (0x3159:01 / P-0-3277.0.1 / P-0-2464)] with configured safety function "Safely-limited end position (SLE)", the parameterized position limit value had already been exceeded in positive direction, or the axis was on the point of exceeding the position limit value.

Cause	Remedy
The drive was moved in the direction of the positive position limit with a velocity at which the deceleration capacity no longer suffices for the drive to come to standstill within the positive position limit.	Check whether the value in "SMO safe end position: Positive limit value" (0x3150:01 / P-0-3270.0.4 / --) has been parameterized correctly. **ATTENTION: If the value is increased, make sure this does not cause damage to machines or personal injury!** - or - In the case of movements in the direction of the positive position limit, reduce the drive velocity so that the deceleration capacity suffices for the drive to come to standstill within the positive position limit.
The allowed positive absolute position limit was exceeded	Check command value input and adjust it in accordance with the value parameterized in "SMO safe end position: Positive limit value" (0x3150:01 / P-0-3270.0.4 / --). - or - Check whether the value in "SMO safe end position: Positive limit value" (0x3150:01 / P-0-3270.0.4 / --) has been parameterized correctly.
The actual position of the drive is outside of the allowed positive absolute position limit, and the drive moved at a velocity greater than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797).	When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave the standstill window parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).

Cause	Remedy
The actual position of the drive is outside of the allowed positive absolute position limit. When moving back to the allowed position range, the drive kept moving in the positive direction by a distance greater than parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).	Check whether the value in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --) has been parameterized correctly. **ATTENTION: If the value is increased, make sure this does not cause damage to machines or personal injury!** - or - When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave the standstill window parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F7023
Long diagnostics no. (32 bits):	060F7023

Detailed diagnostics

000406DA

SLE: Velocity towards positive position limit value too high (0x3150:01 / P-0-3270.0.4)

000406DC

SLE: Positive position limit value exceeded (0x3150:01 / P-0-3270.0.4)

000406DE

SLE return motion check: Positive position limit value exceeded

000406E0

SLE: Return velocity to allowed position range (0x3150:01 / P-0-3270.0.4) greater than 0x31B0:05 / P-0-3253.0.5 / P-0-2797

F7024 SLE: Safe position limit value, negative exceeded

In normal operation or in normal operation and special mode [depending on the setting in "SMO global functions: Configuration" (0x3156:01 / P-0-3270.0.1 / --) or "SMO normal operation: Configuration" (0x3159:01 / P-0-3277.0.1 / P-0-2464)] with configured safety function "Safely-limited end position (SLE)", the parameterized position limit value had already been exceeded in negative direction, or the axis was on the point of exceeding the position limit value.

Cause	Remedy

Cause	Remedy
The drive was moved in the direction of the negative position limit with a velocity at which the deceleration capacity no longer suffices for the drive to come to standstill within the negative position limit.	Check whether the value in "SMO safe end position: Negative limit value" (0x3150:02 / P-0-3270.0.5 / --) has been parameterized correctly. **ATTENTION: If the value is increased, make sure this does not cause damage to machines or personal injury!** - or - In the case of movements in the direction of the negative position limit, reduce the drive velocity so that the deceleration capacity suffices for the drive to come to standstill within the negative position limit.
The allowed negative absolute position limit was exceeded	Check command value input and adjust it in accordance with the value parameterized in "SMO safe end position: Negative limit value" (0x3150:02 / P-0-3270.0.5 / --). - or - Check whether the value in "SMO safe end position: Negative limit value" (0x3150:02 / P-0-3270.0.5 / --) has been parameterized correctly.
The actual position of the drive is outside of the allowed negative absolute position limit, and the drive moved at a velocity greater than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797).	When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave the standstill window parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).
The actual position of the drive is outside of the allowed negative absolute position limit. When moving back to the allowed position range, the drive kept moving in the negative direction by a distance greater than parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).	Check whether the value in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --) has been parameterized correctly. **ATTENTION: If the value is increased, make sure this does not cause damage to machines or personal injury!** - or - When moving back to the allowed position range, make sure the drive moves at a velocity smaller than "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797) and does not leave the standstill window parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).

▼ Attributes

Short diagnostics no. (20 bits):	F7024
Long diagnostics no. (32 bits):	060F7024

Detailed diagnostics

000406DB

SLE: Velocity towards negative position limit value too high (0x3150:02 / P-0-3270.0.5)

000406DD

SLE: Negative position limit value below minimum (0x3150:02 / P-0-3270.0.5)

000406DF

SLE return motion check: Negative position limit value below minimum

000406E1

SLE: Return velocity to allowed position range (0x3150:02 / P-0-3270.0.5) greater than 0x31B0:05 / P-0-3253.0.5 / P-0-2797

F7030 Position window for safe operating stop exceeded

In the safety function "Safe operating stop" the axis is monitored for standstill. The bipolar position window used for this purpose is activated at the start of the Safe operating stop.

Cause	Remedy
"SMO safe standstill: Monitoring window safe operational stop" (0x3155:02 / P-0-3285.0.2 / --) has been incorrectly parameterized	Change parameterization of "SMO safe standstill: Monitoring window safe operational stop" (0x3155:02 / P-0-3285.0.2 / --) to a valid value
Incorrect command values are preset by drive or external control	Check command value input and adjust it according to parameterization

▼ Attributes

Short diagnostics no. (20 bits):	F7030
Long diagnostics no. (32 bits):	060F7030
CiA error code:	F0C1

Detailed diagnostics

00530011

Position window (0x3155:02 / P-0-3285.0.2) exceeded

00540011

Position window (0x3155:02 / P-0-3285.0.2) exceeded

F7031 Incorrect direction of motion

During the execution of the safety function "Safe direction", the drive is monitored with regard to whether it inadmissibly moves against the parameterized direction of motion by more than the distance parameterized in "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).

Cause	Remedy
Incorrect command value input	Adjust command value input according to parameterized direction of motion and "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --). **Tip:** For parameterization of direction of motion, please see table below.
Incorrect parameterization of direction of motion	Check parameterization of direction of motion and change it, if necessary. **Tip:** For parameterization of direction of motion, please see table below.
Incorrect parameterization of "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --)	Check and, if necessary, change parameterization of "SMO global functions: Standstill window for safe direction" (0x3156:03 / P-0-3270.0.3 / --).

Parameterization of direction of motion

Parameter name	Parameter numbers
SMO global functions: Configuration	0x3156:01 / P-0-3270.0.1 / --
SMO special mode 1: Configuration	0x3140:01 / P-0-3290.1.1 / --
SMO special mode 2: Configuration	0x3141:01 / P-0-3290.2.1 / --
SMO special mode 3: Configuration	0x3142:01 / P-0-3290.3.1 / --
SMO special mode 4: Configuration	0x3143:01 / P-0-3290.4.1 / --
SMO special mode 5: Configuration	0x3144:01 / P-0-3290.5.1 / --
SMO special mode 6: Configuration	0x3145:01 / P-0-3290.6.1 / --
SMO special mode 7: Configuration	0x3146:01 / P-0-3290.7.1 / --
SMO special mode 8: Configuration	0x3147:01 / P-0-3290.8.1 / --
SMO special mode 9: Configuration	0x3148:01 / P-0-3290.9.1 / --
SMO special mode 10: Configuration	0x3149:01 / P-0-3290.10.1 / --
SMO special mode 11: Configuration	0x314A:01 / P-0-3290.11.1 / --
SMO special mode 12: Configuration	0x314B:01 / P-0-3290.12.1 / --
SMO special mode 13: Configuration	0x314C:01 / P-0-3290.13.1 / --
SMO special mode 14: Configuration	0x314D:01 / P-0-3290.14.1 / --
SMO special mode 15: Configuration	0x314E:01 / P-0-3290.15.1 / --
SMO special mode 16: Configuration	0x314F:01 / P-0-3290.16.1 / --

▼ Attributes

Short diagnostics no. (20 bits):	F7031
Long diagnostics no. (32 bits):	060F7031
CiA error code:	F0C2

Detailed diagnostics

00530012

Position limit value (0x3156:03 / P-0-3270.0.3) exceeded in negative direction

00530013

Position limit value (0x3156:03 / P-0-3270.0.3) exceeded in positive direction

00540012

Position limit value (0x3156:03 / P-0-3270.0.3) exceeded in negative direction

00540013

Position limit value (0x3156:03 / P-0-3270.0.3) exceeded in positive direction

F7032 Forced zone safety

An error was detected in the safety zone.

If the zone master signals this error, then it locks normal operation via the zone bus; i. e. all zone nodes are kept in a safe state or are transitioned into a safe state by the drive reaction to error F7032.

Cause	Remedy
Zone node in normal operation receives the signal "Normal operation locked" via the zone bus [see "SMO SAFETYlink: Control word" (0x3060:02 / P-0-3266.0.1 / P-0-2546)]	Put zone master to error-free state

▼ Attributes

Short diagnostics no. (20 bits):	F7032
Long diagnostics no. (32 bits):	060F7032
CiA error code:	F0C3

Detailed diagnostics

0053008F

Normal operation (NO) is active, although zone master has NO disabled (0x3060:02 / P-0-3266.0.1 / P-0-2546, bit 2)

0054008F

Normal operation (NO) is active, although zone master has NO disabled (0x3060:02 / P-0-3266.0.1 / P-0-2546, bit 2)

F7035 SAFETYlink error

In connection with the telegrams and signals of the safety control, errors were detected.

Subsequently, the input signals as well as the signals for " zone errors", "zone acknowledgment" and "safe door locking" are internally set to fail-safe values.



The cause of the error can be read via the detailed diagnostics.

Cause	Remedy
In the wiring of ctrlX SAFETYlink, none or more than one safety control has been connected	Make sure that exactly one safety control (= zone master) is available in the ctrlX SAFETYlink ring
Connection between safety control and zone node or between zone nodes is missing	Correct wiring of ctrlX SAFETYlink
The inputs/outputs of ctrlX SAFETYlink (XG42/XG43) were directly connected	
Safety control or zone node[1)] has no control voltage	Switch on control voltage at the respective device[1)]
A zone node[1)] is in configuration mode (CM)	Switch zone node to PM or OM
An axis[1)] is independent regarding safety (not a zone node), but connected to a safety zone	Remove the axis from the safety zone (pull the connectors at XG42 and XG43)
The safety technology is not active at a zone node[1)]	Carry out initial commissioning
Sporadic errors in the cyclic communication of ctrlX SAFETYlink	Check impact of EMC and shielding
No cyclic ctrlX SAFETYlink communication, but there is bus activity	Remove possible ctrlX SAFETYlink ring break at a following zone node
No cyclic ctrlX SAFETYlink communication and no bus activity	Remove possible ctrlX SAFETYlink ring break at this or previous zone node

Legend:
1): *Several axes/zone nodes may be concerned*

▼ Attributes

Short diagnostics no. (20 bits):	F7035
Long diagnostics no. (32 bits):	060F7035
CiA error code:	F0C6

Detailed diagnostics

00530480

Safety zone telegrams detected at X42, although SafeMotion is inactive

005304B2

No SAFETYlink communication but security zone control word is not NULL

00530526

Invalid status signal "Error of safety zone": Check configuration and zone bus connections

00530527

Invalid signal “Zone status ‘safety’”: Check configuration and zone bus connections

00530528

Invalid signal "Enabling of normal operation": Check configuration and zone bus connections

00530FF1

SafetyLink: Cross check error of the zone bus outputs

Cause/Remedy 1: Exception HAL__SIZB: initialization error

00530FF2

Safety zone telegrams detected at X42, although safety zone is inactive

Cause/Remedy 1: Exception HAL__SIZB: initialization error

0053312D

SafetyLink: internal error (ASZB_ERROR_CROSSCOM)

0053312E

SafetyLink: Rx telegram error (ASZB_ERROR_RX_ZBCOM_TOPO)

0053312F

SafetyLink: Rx telegram loss (ASZB_ERROR_RX_ZBCOM_SLAVE)

00533130

SafetyLink: Rx telegram CRC error (ASCB_ERROR_RX_EVALUATION_CRC_TOPO)

00533131

SafetyLink: Rx telegram wrong address (ASCB_ERROR_RX_EVALUATION_ADDR_TOPO)

00533132

SafetyLink: Rx telegram error (ASZB_ERROR_RX_EVALUATION_TELREC)

00533133

SafetyLink: Rx telegram wrong address (ASCB_ERROR_RX_EVALUATION_ADDR)

00533134

SafetyLink: Rx telegram CRC error (ASZB_ERROR_RX_EVALUATION_CRC)

00533135

SafetyLink: Rx telegram inconsistent counters (ASCB_ERROR_RX_EVALUATION_TELCOUNT)

00533136

SafetyLink: Rx telegram inconsistent data (ASCB_ERROR_RX_EVALUATION_DATA)

00533137

SafetyLink: Rx telegram inconsistent state (ASCB_ERROR_RX_EVALUATION_CMD)

00533138

SafetyLink: Rx telegram sequence error (ASZB_ERROR_RX_EVALUATION_MCOUNT)

00533139

SafetyLink: Rx telegram timeout (ASZB_ERROR_RX_EVALUATION_TIMEOUT)

0053313A

SafetyLink: Rx telegram invalid cycle time (ASCB_ERROR_RX_EVALUATION_CYCTIME)

0053313B

SafetyLink: Error in the other channel (ASZB_ERROR_SAFETY_CHANNEL)

0053313C

SafetyLink: internal error (ASZB_ERROR_UNVALID_STATE_INI)

0053313D

SafetyLink: internal error (ASZB_ERROR_STATE_CHECK_TOPOLOGY)

0053313E

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_WCYC)

0053313F

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_PCYC)

00533140

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_SCYC)

00533141

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_CYC)

00533142

SafetyLink: Error in topology discovery (ASZB_ERROR_TOPO_COUNTER)

00533143

SafetyLink: Rx timeout (ASCB_ERROR_RX_CYCLIC_TIMEOUT)

00533144

SafetyLink: internal error (ASZB_ERROR_CCOM_RX_TEL)

00533145

SafetyLink: invalid master cycle time (ASZB_ERROR_MASTER_CYC_TIME)

00533146

SafetyLink: no cyclic communication, but there is bus activity

Cause/Remedy 1: Possible SafetyLink ring interruption on a subsequent drive on the SafetyLink.

00533147

SafetyLink: unknown error (ASZB_ERROR_CODE_E)

00533148

SafetyLink: no cyclic communication and no bus activity

Cause/Remedy 1: Possible SafetyLink ring interruption on this or a previous drive on the SafetyLink.

00533149

SafetyLink: invalid telegram counter sequence (ASZB_ERROR_RX_EVAL_MCOUNT_TOPO)

0053314A

SafetyLink: invalid topology address / more than 32 slaves connected (ASZB_ERROR_TOPO_ADDRESS)

0053314B

SafetyLink: CRC error in the other safety channel (ASZB_ERROR_CRC_SAFETY_CHANNEL)

00540480

Safety zone telegrams detected at X42, although SafeMotion is inactive

005404B2

No SAFETYlink communication but security zone control word is not NULL

00540526

Invalid status signal "Error of safety zone": Check configuration and zone bus connections

00540527

Invalid signal “Zone status ‘safety’”: Check configuration and zone bus connections

00540528

Invalid signal "Enabling of normal operation": Check configuration and zone bus connections

00540FF1

SafetyLink: Cross check error of the zone bus outputs

Cause/Remedy 1: Exception HAL__SIZB: initialization error

00540FF2

Safety zone telegrams detected at X42, although safety zone is inactive

Cause/Remedy 1: Exception HAL__SIZB: initialization error

0054312D

SafetyLink: internal error (ASZB_ERROR_CROSSCOM)

0054312E

SafetyLink: Rx telegram error (ASZB_ERROR_RX_ZBCOM_TOPO)

0054312F

SafetyLink: Rx telegram loss (ASZB_ERROR_RX_ZBCOM_SLAVE)

00543130

SafetyLink: Rx telegram CRC error (ASCB_ERROR_RX_EVALUATION_CRC_TOPO)

00543131

SafetyLink: Rx telegram wrong address (ASCB_ERROR_RX_EVALUATION_ADDR_TOPO)

00543132

SafetyLink: Rx telegram error (ASZB_ERROR_RX_EVALUATION_TELREC)

00543133

SafetyLink: Rx telegram wrong address (ASCB_ERROR_RX_EVALUATION_ADDR)

00543134

SafetyLink: Rx telegram CRC error (ASZB_ERROR_RX_EVALUATION_CRC)

00543135

SafetyLink: Rx telegram inconsistent counters (ASCB_ERROR_RX_EVALUATION_TELCOUNT)

00543136

SafetyLink: Rx telegram inconsistent data (ASCB_ERROR_RX_EVALUATION_DATA)

00543137

SafetyLink: Rx telegram inconsistent state (ASCB_ERROR_RX_EVALUATION_CMD)

00543138

SafetyLink: Rx telegram sequence error (ASZB_ERROR_RX_EVALUATION_MCOUNT)

00543139

SafetyLink: Rx telegram timeout (ASZB_ERROR_RX_EVALUATION_TIMEOUT)

0054313A

SafetyLink: Rx telegram invalid cycle time (ASCB_ERROR_RX_EVALUATION_CYCTIME)

0054313B

SafetyLink: Error in the other channel (ASZB_ERROR_SAFETY_CHANNEL)

0054313C

SafetyLink: internal error (ASZB_ERROR_UNVALID_STATE_INI)

0054313D

SafetyLink: internal error (ASZB_ERROR_STATE_CHECK_TOPOLOGY)

0054313E

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_WCYC)

0054313F

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_PCYC)

00543140

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_SCYC)

00543141

SafetyLink: internal error (ASCB_ERROR_UNVALID_STATE_CYC)

00543142

SafetyLink: Error in topology discovery (ASZB_ERROR_TOPO_COUNTER)

00543143

SafetyLink: Rx timeout (ASCB_ERROR_RX_CYCLIC_TIMEOUT)

00543144

SafetyLink: internal error (ASZB_ERROR_CCOM_RX_TEL)

00543145

SafetyLink: invalid master cycle time (ASZB_ERROR_MASTER_CYC_TIME)

00543146

SafetyLink: no cyclic communication, but there is bus activity

Cause/Remedy 1: Possible SafetyLink ring interruption on a subsequent drive on the SafetyLink.

00543147

SafetyLink: unknown error (ASZB_ERROR_CODE_E)

00543148

SafetyLink: no cyclic communication and no bus activity

Cause/Remedy 1: Possible SafetyLink ring interruption on this or a previous drive on the SafetyLink.

00543149

SafetyLink: invalid telegram counter sequence (ASZB_ERROR_RX_EVAL_MCOUNT_TOPO)

0054314A

SafetyLink: invalid topology address / more than 32 slaves connected (ASZB_ERROR_TOPO_ADDRESS)

0054314B

SafetyLink: CRC error in the other safety channel (ASZB_ERROR_CRC_SAFETY_CHANNEL)

F7050 Maximum transition time exceeded

In the transition to a safe state the drive is not able to reach the new target velocity/standstill within the parameterized maximum transition time.



The drive can also be shut down in an NC-controlled way [cf. "SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --)].

Safety technology, change in operating state

After respective transition time has expired, depending on the selected safety technology operating state, the following checks are made:

Active operating state	Selected operating state	Relevant parameters	Actual velocity below the parameterized threshold?	Drive enable removed?
NO	EMERGENCY STOP/SMST1	0x3084:02 / P-0-3280.0.2 / --'3)	0x310E:04 / P-0-3255 / --'2)	√
	SMST2	0x3084:02 / P-0-3280.0.2 / --'3)	0x310E:04 / P-0-3255 / --'2)	-
	SMMx*1)	0x3084:04 / P-0-3280.0.4 / --*5)	0x3160:01..0x316F:01 / P-0-3290.1.2..P-0-3290.16.2 / --*6)	-
SMMx*1)	SMMx*1)	0x3084:03 / P-0-3280.0.3 / --*4)	0x3160:01..0x316F:01 / P-0-3290.1.2..P-0-3290.16.2 / --*6)	-
	EMERGENCY STOP/SMST1	0x3084:03 / P-0-3280.0.3 / --*4)	0x310E:04 / P-0-3255 / --'2)	√
	SMST2	0x3084:03 / P-0-3280.0.3 / --*4)	0x310E:04 / P-0-3255 / --'2)	-
SMST2	EMERGENCY STOP/SMST1	0x3084:03 / P-0-3280.0.3 / --*4)	0x310E:04 / P-0-3255 / --'2)	√

Legend:
***1):** *x=1...16*
***2):** *"SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --)*
***3):** *"SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --)*
***4):** *"SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --)*
***5):** *"SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --)*
***6):** *"SMO safely-limited speed x: Velocity" (0x3160:01..0x316F:01 / P-0-3290.1.2..P-0-3290.16.2 / --)*

Cause	Remedy
Parameterization of the maximum transition time **from normal operation to special mode "Safe standstill"** is too low	Check parameterizations of "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --) and correct them accordingly
Parameterization of the maximum transition time **from special mode to another special mode** is too low	Check parameterizations of "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --) and correct them accordingly
Parameterization of the maximum transition time **from normal operation to special mode "Safe motion**" is too low	Check parameterizations of "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --) and correct them accordingly
Parameterization of the velocity threshold for safe standstill is too low	Check parameterizations of "SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --) and correct them accordingly

Cause	Remedy
Parameterization of Safely-limited speed is too low	Check parameterizations of "SMO safely-limited speed x: Velocity" (0x3160:01..0x316F:01 / P-0-3290.1.2..P-0-3290.16.2 / --) and correct them accordingly
Drive enable is still set	Make sure that drive enable is removed
"NC-controlled stopping process" was activated by mistake	Check "SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --) and correct it accordingly; i. e. activate "drive-controlled stopping process"
Parameterized deceleration is too low or not adjusted to parameterized tolerance time	▪ With **drive-controlled** transition, deceleration takes place via "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --); the error reaction parameterized in drive has to be checked ▪ With **NC-controlled** transition, check deceleration parameterized in the control

F3 error reaction

After the tolerance time for the F3 error reaction has expired, the following checks are made:

Active operating state	Selected operating state	Relevant parameters	Actual velocity below the parameterized threshold?	Drive enable removed?
NO, SMST2, SMMx*1)	Error state	0x315E:02 / P-0-3263.0.6 / --'3)	0x310E:04 / P-0-3255 / --'2)	√

Legend:
***1):** *x=1...16*
***2):** *"SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --)*
***3):** *"SMO error reaction: F3 tolerance time" (0x315E:02 / P-0-3263.0.6 / --)*

Cause	Remedy
Parameterization of tolerance time for F3 error reaction is too low	Check parameterizations of "SMO error reaction: F3 tolerance time" (0x315E:02 / P-0-3263.0.6 / --) and correct them accordingly
Parameterization of the velocity threshold for safe standstill is too low	Check parameterizations of "SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --) and correct them accordingly
Drive enable is still set	Make sure that drive enable is removed
Parameterized deceleration is too low or not adjusted to parameterized tolerance time	With **drive-controlled** transition, deceleration takes place via "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --); the error reaction parameterized in drive has to be checked

▼ Attributes

Short diagnostics no. (20 bits):	F7050
Long diagnostics no. (32 bits):	060F7050
CiA error code:	F0C7

J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	27B2

Detailed diagnostics

00530014

Selected SMO operating status not reached within the maximum transition time

00533492

Selected SMO operating status not reached within the maximum transition time

00533493

Selected SMO operating status not reached within the maximum transition time

005335AB

STO function was not activated within the maximum error reaction time

00533624

SS2-t: Standstill not reached within the maximum transition time

00540014

Selected SMO operating status not reached within the maximum transition time

00543492

Selected SMO operating status not reached within the maximum transition time

00543493

Selected SMO operating status not reached within the maximum transition time

005435AB

STO function was not activated within the maximum error reaction time

00543624

SS2-t: Standstill not reached within the maximum transition time

F7051 Safely-monitored deceleration exceeded

In the transition to a safe state the drive is not able to reach the selected special mode with the parameterized deceleration.

The error is generated by the safety function "Safely-monitored deceleration" (SMD) during **a change in safety technology operating state** or **monitoring of the F3 error reaction** if the current actual velocity of the drive is not within the parameterized velocity envelope curve.

Safety technology, change in operating state

Cause	Remedy
If transitions between safety technology operating states are NC-controlled ["SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --, bit 0="0")], deceleration caused by NC is insufficient	Adjust command value input (deceleration caused by NC) to the values parameterized in the following parameters: ■ "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --) ■ "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --) ■ "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --)
If transitions between safety technology operating states are drive-controlled ["SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --, bit 0="1")], deceleration caused by drive is insufficient	■ Check parameterization of "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) ■ Check "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --)
Overshooting the actual velocity when selecting safety technology operating states during acceleration procedures	■ Check control settings and adjust them, if necessary ■ Check parameterizations: ■ "SMO safely-monitored decel.: Oscillation velocity window" (0x315A:01 / P-0-3280.0.6 / --) ■ "SMO safely-monitored decel.: Reaction time" (0x315A:02 / P-0-3280.0.7 / --) ■ "SMO safely-monitored decel.: Trans. time, NO to standstill" (0x315A:06 / P-0-3280.0.11 / --) ■ "SMO safely-monitored decel.: Trans. time, SMD between SMx" (0x315A:07 / P-0-3280.0.12 / --) ■ "SMO safely-monitored decel.: Trans. time, NO to SMM" (0x315A:08 / P-0-3280.0.13 / --)

Cause	Remedy
Overshooting the actual velocity when reaching "Velocity window of SMD"	▪ Check control settings and adjust them, if necessary ▪ Check parameterization of "SMO safely-monitored decel.: Velocity window" (0x315A:03 / P-0-3280.0.8 / --)
Incorrect parameterization	▪ "SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --) ▪ "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --) ▪ "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --) ▪ "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --) ▪ "SMO safely-monitored decel.: Oscillation velocity window" (0x315A:01 / P-0-3280.0.6 / --) ▪ "SMO safely-monitored decel.: Reaction time" (0x315A:02 / P-0-3280.0.7 / --) ▪ "SMO safely-monitored decel.: Velocity window" (0x315A:03 / P-0-3280.0.8 / --) ▪ "SMO safely-monitored decel.: Deceleration" (0x315A:05 / P-0-3280.0.9 / --)

Monitoring the F3 error reaction

Cause	Remedy
With "drive reaction to errors of category F3", the deceleration by the drive is insufficient	▪ Check parameterization of "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) ▪ Check "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --)

Overshooting the actual velocity upon an F3 error during acceleration procedures	▪ Check control settings and adjust them, if necessary
	▪ Check parameterization:
	  ▪ "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --)
	  ▪ "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --)

Cause	Remedy
Overshooting the actual velocity when reaching "Velocity window SMD-E"	▪ Check control settings and adjust them, if necessary ▪ Check parameterization of "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --)
Incorrect parameterization	Check parameterizations and change them, if necessary: ▪ "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --) ▪ "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --) ▪ "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --) ▪ "SMO state machine prof. 1: Max. tol. time for dif. selection" (0x3084:05 / P-0-3280.0.5 / --) ▪ "SMO safely-monitored decel.: Oscillation velocity window" (0x315A:01 / P-0-3280.0.6 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F7051
Long diagnostics no. (32 bits):	060F7051
CiA error code:	F0C8

Detailed diagnostics

00530015

Velocity limit exceeded during transition to the selected SMO operating status

00533494

Velocity limit exceeded during transition to the selected SMO operating status

00540015

Velocity limit exceeded during transition to the selected SMO operating status

00543494

Velocity limit exceeded during transition to the selected SMO operating status

F7052 Selected target velocity exceeded

Cause	Remedy

Cause	Remedy
In an NC-controlled safety technology operation mode transition, the control prematurely terminated the transition to the selected operating state ["SMO state machine: Control word, functional" (0x3082:02 / P-0-3261.0.1 / P-0-2463)]. The target velocity of the selected operating state was not yet reached.	**Safety technology operation mode transitions to the special mode "Safe standstill" or "EMERGENCY STOP"** The transition is only permitted to be terminated prematurely if the actual velocity is within "SMO global functions: Velocity threshold" (0x3156:04 / P-0-3238 / --)
	Safety technology operation mode transitions to the special mode "Safe motion" The transition is only permitted to be terminated prematurely if the actual velocity is within the parameterized velocity window of the selected motion mode: ■ "SMO safely-limited speed 1: Velocity" (0x3160:01 / P-0-3290.1.2 / --) ■ "SMO safely-limited speed 2: Velocity" (0x3161:01 / P-0-3290.2.2 / --) ■ ... ■ "SMO safely-limited speed 16: Velocity" (0x316F:01 / P-0-3290.16.2 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F7052
Long diagnostics no. (32 bits):	060F7052
CiA error code:	F0C9

Detailed diagnostics

00530016

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00533495

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00533496

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00533497

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00533498

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00533622

SS2-t: Early operating state change by NC-Ready bit even though standstill has not yet been reached

00540016

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00543495

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00543496

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00543497

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00543498

Premature change in operating status due to NC-Ready bit even though target velocity has not yet been reached

00543622

SS2-t: Early operating state change by NC-Ready bit even though standstill has not yet been reached

F7059 Scaling-dependent maximum velocity exceeded

In normal operation and special mode, the current actual velocity is monitored for compliance with the maximum velocity calculated in scaling-dependent form.

The actual velocity has exceeded this maximum velocity.

Cause	Remedy

Cause	Remedy
Modulo format ["SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --, bit 7="1")] has been selected as the position data processing format	Check/adjust the following parameterizations: ▪ Value at which the position data overflow ["SMO axis mechanics: Modulo value" (0x3020:05 / P-0-3221.0.6 / --)] ▪ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ▪ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --)
Absolute format ["SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --, bit 7="0")] has been selected as the processing format.	Adjust "SMO axis mechanics: Max. travel range" (0x3020:06 / P-0-3221.0.7 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F7059
Long diagnostics no. (32 bits):	060F7059

Detailed diagnostics

00530F37

Scaling-dependent maximum velocity exceeded (threshold depending on 0x3020:05 / P-0-3221.0.6 and 0x3020:06 / P-0-3221.0.7)

0053354B

Scaling-dependent maximum velocity exceeded (threshold depending on 0x3020:05 / P-0-3221.0.6, 0x3020:06 / P-0-3221.0.7)

00540F37

Scaling-dependent maximum velocity exceeded (threshold depending on 0x3020:05 / P-0-3221.0.6 and 0x3020:06 / P-0-3221.0.7)

0054354B

Scaling-dependent maximum velocity exceeded (threshold depending on 0x3020:05 / P-0-3221.0.6, 0x3020:06 / P-0-3221.0.7)

F7100 F7 test error during machine acceptance test

The error was generated within the scope of the machine acceptance test ("error reaction" testing point) to check the reaction of the drive when an F7 error occurs [see "SMO axis validation support: Error reaction" (0x302C:01 / P-0-3211 / --)].

▼ Attributes

Short diagnostics no. (20 bits):	F7100

Long diagnostics no. (32 bits):	060F7100
CiA error code:	F0CA
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF7

Detailed diagnostics

0053005A

F7 test error during machine acceptance test

0054005A

F7 test error during machine acceptance test

F8008 Autom. commutation: Axis blocked

For synchronous motors with incremental motor encoder, the commutation offset is determined when drive enable is switched on. An error occurred in the process.

Due to the method that has been set for determining the commutation offset ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --)], it is required that the motor can move. If this is not the case, this error is output and the offset determination is canceled.

Cause	Remedy
Axis blocked	Remove blocking
Brake applied	Check brake control
Axis is in contact with a limit stop	Make sure that axis is not switched off at the limit stop. Move away the axis from limit stop before setting drive enable

▼ Attributes

Short diagnostics no. (20 bits):	F8008
Long diagnostics no. (32 bits):	000F8008

F8009 Autom. commutation timeout: Axis in motion

During the execution of the automatic commutation setting, the axis has to be at standstill and/or the axis has to come to standstill after a motion that was triggered by the execution of the command. If this is not possible, this error is output and the commutation offset determination is canceled.

The automatic commutation setting is always carried out when for synchronous motors with an incremental encoder drive enable is switched on and the drive has previously been in the parameterization mode.

Cause	Remedy

Cause	Remedy
Motor coasts to stop	Wait for the motor to coast to stop - or - Decelerate motor mechanically - or - Induce short-circuit braking - or - Before phase switching and/or switching off the control voltage, decelerate motor in a controlled way
Axis oscillates for a long time	Dampen the axis; if required, generate a low additional friction at the axis

▼ Attributes

Short diagnostics no. (20 bits):	F8009
Long diagnostics no. (32 bits):	000F8009

F8010 Autom. commutation: Max. motion range when moving back

During commutation setting, the axis left the allowed actual position value range while there had been an attempt to move the motor back to the position at which the motor had been before the start of the commutation setting.



- The "return to start position" function supports the detection of a commutation offset that was not correctly determined and also the detection of an axis that does not work correctly.
- With the **sine-wave method**, the motion range is also monitored while the offset is determined. If necessary, the error message F8012 is output.

Cause	Remedy
Positive feedback of motor The commutation offset determination has generated an incorrect value for "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --)	Check motor encoder signals. For this purpose, move motor knowing the manufacturer-side settings of rotational direction and/or velocity/polarity, and check position feedback values with regard to polarity and validation. If necessary, reverse polarity of motor encoder or exchange two motor phases. Repeat commutation setting. With **sine-wave method**, determine new start values for "Ident. commutation offset sine-wave method: Amplitude" (0x2184:01 / P-0-0514 / --) and "Ident. commutation offset sine-wave method: Frequency" (0x2184:02 / P-0-0520 / --). For this purpose, set 0x2184:01 / P-0-0514="0" and start command C1200. If necessary, manually adjust values in 0x2184:01 / P-0-0514 and 0x2184:02 / P-0-0520. With **saturation method**, determine new start values for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) and "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --). For this purpose, set 0x2182:01 / P-0-0506="0" and start command C1200. If necessary, manually adjust values in 0x2182:01 / P-0-0506 and 0x2182:02 / P-0-0507.
Positive feedback of motor after motor replacement (servicing) due to connection error	Check whether rotational direction of motor complies with rotational direction of motor encoder. If not, reverse rotational direction of motor (exchange phases) or reverse rotational direction of motor encoder

Cause	Remedy
Due to low friction of mechanics, axis moved away from its initial position at start of commutation offset setting	With saturation method, switch off "Return to start position" ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --, bit 5="0")], if possible on axis side!

▼ Attributes

Short diagnostics no. (20 bits):	F8010
Long diagnostics no. (32 bits):	000F8010
CiA error code:	7185

F8011 Commutation offset could not be determined

The method for commutation setting could not determine any value for the commutation offset.

Cause	Remedy
Axis could not carry out required motion	Check axis for stiffness or blocking; if necessary, reduce friction (lubrication, guide rail of flexible cable track) or remove blocking **- or -** In "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --), set "Increase of amplitude with priority" under "Search direction for sine-wave method" **- or -** Increase value of "Ident. commutation offset sine-wave method: Amplitude" (0x2184:01 / P-0-0514 / --) to modify excitation amplitude for sine-wave method opposite to friction force of axis
Axis has developed resonance during determination of commutation offset	In "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --), set "Increase of frequency with priority" under "Search direction for sine-wave method" **- or -** Reduce value "Ident. commutation offset sine-wave method: Frequency" (0x2184:02 / P-0-0520 / --) to modify excitation frequency for sine-wave method opposite to resonance frequency of axis
Motor is not supplied with current	Check motor connection
Sine-wave method is without success, although axis possesses required mobility and does not show any resonance phenomena	If automatic search for motor-specific values of "Ident. commutation offset sine-wave method: Amplitude" (0x2184:01 / P-0-0514 / --) and "Ident. commutation offset sine-wave method: Frequency" (0x2184:02 / P-0-0520 / --) for angle acquisition shows no result in spite of multiple repetition, then try with manually input values

Cause	Remedy
Signals of motor encoder do not reflect movement of axis, encoder cables of 2 drives possibly interchanged **- or -** Incorrect polarity of encoder signals	Check motor encoder signals. For this purpose, move motor knowing the manufacturer-side settings of rotational direction and/or velocity/polarity, and check position feedback values with regard to polarity and validation
During the execution of command for setting the commutation offset, power supply was switched off or there was undervoltage	Make sure that device has been switched on and mains voltage in operation does not fall below minimum value specified for the device, and again execute command for setting the commutation offset

▼ Attributes

Short diagnostics no. (20 bits):	F8011
Long diagnostics no. (32 bits):	000F8011
CiA error code:	7188
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	E4

F8012 Autom. commutation: Max. motion range

The axis left the allowed actual position value range while commutation settings (sine-wave method) had been made.

Cause	Remedy
Strong axis motion due to too high drive torque or force generation during commutation setting	Reduce value of "Ident. commutation offset sine-wave method: Amplitude" (0x2184:01 / P-0-0514 / --) **- and/or -** Increase value of "Ident. commutation offset sine-wave method: Frequency" (0x2184:02 / P-0-0520 / --)
External forces or torques move axis out of the allowed actual position value range	Check axis mechanics for whether external forces occur, e.g. due to flexible cable track, hanging load, etc.
Cogging force or cogging torque moves axis out of the allowed actual position value range	Make sure that cogging forces of motor do not cause position limits to be exceeded during commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F8012
Long diagnostics no. (32 bits):	000F8012

CiA error code:	718A

F8013 Automatic commutation: Current too low

The amplitude of the actual current value, that results from commutation setting using the saturation method, is monitored. When the commutation offset had been determined, the amplitude of the actual current value did not reach the minimum threshold.

Cause	Remedy
Amplitude of actual current value does not suffice for safely determining the commutation offset	Increase "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or reduce "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) **- or -** Enter value "0" for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting **- or -** If the commutation setting is repeated multiple times at different motor positions (drive remains in "Ab") and approx. 30 similar values are determined for "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --): **Iteratively** reduce "Ident. commutation offset saturation method: Harmonics rate" (0x2182:03 / P-0-0517 / --) until the error F8018 no longer occurs. Finally, check the function multiple times!



If the error occurs repeatedly, please contact our service department.

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F8013
Long diagnostics no. (32 bits):	000F8013
CiA error code:	718C
J1939: "Failure Mode Identifier":	5
J1939: "Suspect Parameter Number":	E4

F8014 Automatic commutation: Overcurrent

The amplitude of the actual current value, that results from automatically determining the commutation offset, is monitored. The error F8014 is generated if a maximum value is exceeded.

Cause	Remedy

Cause	Remedy
Amplitude of actual current value is higher than allowed maximum current	Reduce "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or increase "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) **- or -** Enter value "0" for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting



If the error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F8014
Long diagnostics no. (32 bits):	000F8014
CiA error code:	718E
J1939: "Failure Mode Identifier":	6
J1939: "Suspect Parameter Number":	E4

F8015 Automatic commutation: Timeout

Saturation method

An error was detected during the execution of the automatic commutation offset determination (after drive enable).

Cause	Remedy
Due to the commutation setting routine, the axis may slightly move away from its initial position. With the "return" function [can be activated in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --)], the axis again moves to the position it had before the start of commutation setting. An error occurred in the process. Possible causes may be that the axis is blocked, the load is too big or that there are very high cogging torques.	To locate the source of the error, the return function may be switched off. It might be possible to entirely do without the return function. **However, this is not recommended for the sine-wave method!** In the control then track the position during commutation setting, or apply the position at the end. Remove cause, if possible. Increase torque limitation, if necessary.
An error occurred in the signal generator	Switch drive off and then back on. If the error continues to be signaled, contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	F8015
Long diagnostics no. (32 bits):	000F8015

CiA error code:	718F
J1939: "Failure Mode Identifier":	7
J1939: "Suspect Parameter Number":	E4

F8016 Automatic commutation: Iteration without result

The determination of the commutation offset ["Ident. commutation offset: C1200 Command identification" (0x218C:01 / P-0-0524 / --)] failed. It had been impossible to find appropriate values for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) and "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) or "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --) used to achieve sufficient magnetic saturation effects in the motor. Therefore, it had been impossible to determine a suitable value for the commutation offset.

Cause	Remedy
Test current generated in the motor is too low	*Only if bit 2-0="010" has been set in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --):* Maybe a higher current is required at the current motor position for determining the commutation. Repeat initial commissioning of the method. Try different positions with command C1200. Increase value of "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --) or reduce value of "Ident. commutation offset saturation method: Frequency" (0x2182:02 / P-0-0507 / --) so that a higher test current is achieved. Enter value "0" for "Ident. commutation offset saturation method: Amplitude" (0x2182:01 / P-0-0506 / --). Hereby, the appropriate value for signal voltage is automatically determined during commutation setting **Iteratively** reduce "Ident. commutation offset saturation method: Harmonics rate" (0x2182:03 / P-0-0517 / --). **Note:** Afterwards, check at multiple different motor positions that the commutation offset is determined correctly! If changing the values was unsuccessful, check whether it is possible to use a different method for setting the commutation offset.
The current level for determining the commutation offset does not match	*Only if bit 2-0="101" has been set in "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --):* The current level is specified via "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --). The appropriate current level could not be determined correctly. Proceed as described: 1. Manually specify a value in "Ident. commutation offset saturation method: Factor current" (0x2182:04 / P-0-0518 / --). If 0x2182:04 / P-0-0518="0" has been specified or if the initial commissioning mode has been selected, enter half the value displayed in 0x2182:04 / P-0-0518 in 0x2182:04 / P-0-0518. 2. Restart C1200.
Type current of controller is too low for using saturation method to set the commutation offset	Check whether it is possible to use a different method for setting the commutation offset - or - Use a controller that is able to supply the motor with sufficiently high current (for Bosch Rexroth kit motors, the required minimum current for magnetic saturation effects is approx. the 2.0...2.5-fold continuous current at standstill)

Cause	Remedy
Motor has no or only very low saturation effects ("ironless motor")	Check whether it is possible to use a different method for setting the commutation offset
Motor not correctly connected	Check connections of motor phases to controller. Check all motor phases from controller to motor for interruptions

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F8016
Long diagnostics no. (32 bits):	000F8016
CiA error code:	7190
J1939: "Failure Mode Identifier":	8
J1939: "Suspect Parameter Number":	E4

F8018 Device overtemperature shutdown

The heat sink temperature of the device is monitored by a temperature sensor and a temperature model. If the heat sink temperature exceeds the maximum value set for the device and when the load determined by the temperature model has reached the absolute limit value set for the device, the device goes torque-free to protect it against destruction.



The error can only be cleared when the device has cooled down.

Cause	Remedy
Overtemperature (heat sink) due to overload of device	Switch off drive and let it cool down. Check mechanics and drive sizing (on average, machining power may not exceed continuous power of drive) For liquid-cooled devices: Check sizing of cooling system (see documentation with material no. R911309636)
Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 °C	Reduce ambient temperature, e.g. by cooling the control cabinet
Heat sink of device is dirty	Clean heat sink
Convection is prevented by other components or mounting position in control cabinet	Mount device vertically and provide sufficient space for ventilating heat sink
Device-internal fan failed	If fan fails, replace device or power section
Air conditioning of control cabinet failed	Check air conditioning of control cabinet

Cause	Remedy
Incorrect control cabinet sizing with regard to heat dissipation	Check control cabinet sizing
For liquid-cooled devices: No cooling system connected	Connect cooling system
For liquid-cooled devices: Error in cooling system, e.g. coolant pump defective or filter clogged up; thus, flow rate too low/coolant inlet temperature too high	Check cooling system and remove error

▼ Attributes

Short diagnostics no. (20 bits):	F8018
Long diagnostics no. (32 bits):	000F8018
CiA error code:	4282
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	27E8

F8019 Impossible to determine commutation offset

It is not possible to determine the commutation offset.

Cause	Remedy
With the selected settings for the control loop performance, the selected commutation offset determination procedure cannot be executed	Select other method for determining the commutation offset ["Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --, bit 0–2)] – or – change performance setting ["Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --); or maybe "Axis configuration: Word" (0x2200:01 / P-0-0556 / --)]

▼ Attributes

Short diagnostics no. (20 bits):	F8019
Long diagnostics no. (32 bits):	000F8019
J1939: "Failure Mode Identifier":	7
J1939: "Suspect Parameter Number":	236B

F8022 Encoder 1: Encoder signals incorrect

Analog / combined encoders: The signals of the measuring system are monitored on hardware and software level with regard to their amplitudes and signal shapes. If a signal (e.g., sin or cos) leaves the allowed range or if the

signals are disturbed in such a way that a position error occurs, this error is generated.

Digital encoders: In the case of digital measuring systems, the received encoder protocol is monitored according to the manufacturer's encoder specification:

- Encoder error messages are cyclically evaluated
- Telegram CRC checksums are monitored according to specification
- Telegram failures are detected

The error can be cleared in CM (configuration mode) or upon successful reinitialization.

Since the position is no longer generated correctly when this error is detected, the encoder has to be reinitialized.

When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.
On the software level, the signals of a resolver are monitored for their levels.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
During motor operation with the measuring system ACURO®link: A fault was detected in the transmission telegram of the encoder; telegram failed twice	Faults such as an electrostatic discharge to the shaft of the motor may lead to failure of the encoder sending telegram. Make sure that faults do not occur
Measuring system dirty	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller
Only for ACUROlink encoder of the 1st generation (0x2AE2:08 / S-0-1300.20.8 / S-0-3536≠"Cxx"), connected using a hybrid cable REH0804 ("single cable solution") to one of the following ctrlX DRIVE device types: XMS*-W0006...0036; XMD*-W2323; XCD*-2323 Encoder signal interferences occur in the previously mentioned constellation.	Mount a ferrite sleeve (snap-on ferrite) to the encoder cable of the hybrid cable: ferrite sleeve "manufacturer parts number 74272733" of Adolf Würth GmbH & Co. KG (can also be ordered with Bosch Rexroth using the material number R913082363). Please note that only a hybrid cable length of ≤10 meters is permitted for an interference suppression using so-called ferrite sleeves.

Cause	Remedy
Only for ACUROlink encoder of the 2nd generation (0x2AE2:08 / S-0-1300.20.8 / S-0-3536="Cxx"), connected using a hybrid cable REH0804 ("single cable solution") to one of the following ctrlX DRIVE device types: XMS*-W0006...0036; XMD*-W2323; XCD*-2323 Encoder signal interferences occur in the previously mentioned constellation as the hybrid cable length exceeds 25 meters.	Ensure that the hybrid cable length does not exceed 25 meters.

▼ Attributes

Short diagnostics no. (20 bits):	F8022
Long diagnostics no. (32 bits):	C00F8022
CiA error code:	7386
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	2361

Detailed diagnostics

004421F0
Encoder status incorrect (byte 18)

F8024 Maximum braking time exceeded

The drive checks automatically whether, in the case of closed-loop-controlled best possible deceleration, it is decelerated within the parameterized "Axis shutdown: Maximum drive off delay time" (0x2870:05 / S-0-0273 / --).

The maximum delay time for "Drive Off" was exceeded.

Cause	Remedy
"Axis shutdown: Maximum drive off delay time" (0x2870:05 / S-0-0273 / --) incorrectly parameterized	Increase "Axis shutdown: Maximum drive off delay time" (0x2870:05 / S-0-0273 / --)
Deceleration ramp for best possible deceleration incorrectly parameterized	Depending on the parameterized "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), correct the parameterization of the deceleration ramp for best possible deceleration: "Jerk limitation: Value" (0x284A:01 / S-0-0349 / --), "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --), "Axis shutdown: Emergency stop deceleration" (0x2870:06 / S-0-0429 / --) or "Drive Halt: Quick stop deceleration signed" (0x2808:02 / S-0-0372 / --)

Cause	Remedy
Insufficient torque/force, possibly due to thermal overload	Check "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --) and "Torque/force limitation: Effective peak value" (0x230C:06 / P-0-0444 / --)
Hardware defect in the device	Replace entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See Best possible deceleration

▼ Attributes

Short diagnostics no. (20 bits):	F8024
Long diagnostics no. (32 bits):	000F8024
J1939: "Failure Mode Identifier":	7
J1939: "Suspect Parameter Number":	26F

F8025 Overvoltage in power section

The DC voltage reached an impermissibly high value.



When the error is triggered, the motor immediately goes torque-free or is decelerated via short-circuit braking.

Cause	Remedy
The power supply of the drive controller cannot consume the regenerative motor power	Reduce motor power
The power feedback unit of the power supply cannot consume the motor power	Check power feedback unit
The braking resistor cannot consume the motor power.	Check braking resistor, the resistance value might be too high
The power supply provides a DC voltage that is too high	Check mains connection voltage
The device is defective (error in the DC bus voltage measurement)	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F8025
Long diagnostics no. (32 bits):	000F8025

CiA error code:	3286
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	238D

F8026 HV discharge while drive enabled

The function "Discharge DC bus (HV discharge)" is only available for drive controllers for mobile machines (EDS).

Discharging the DC bus (HV discharge) was activated with drive enable having been set. The discharging resistor for DC bus discharge is activated once selected.

If the EMF of the motor was greater than 50 V at the time of selection, the motor phase short circuit is activated by the error entry [irrespective of the configuration in "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --)]. If the EMF of the motor was smaller than 50 V, drive enable is deactivated.

Cause	Remedy
HV discharge was selected with active control	Remove drive enable before selecting HV discharge - or - Check actuation / wiring

▼ Attributes

Short diagnostics no. (20 bits):	F8026
Long diagnostics no. (32 bits):	000F8026
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	27B2

F8027 STO while drive enabled

When this error occurs, the drive immediately goes torque-free!

Cause	Remedy
Drive enable was set in special mode "Safe standstill"	First go from special mode "Safe standstill" to normal operation and then set drive enable - or - Check actuaction / wiring

▼ Attributes

Short diagnostics no. (20 bits):	F8027

Long diagnostics no. (32 bits):	000F8027
CiA error code:	F0CC
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	27B2

F8035 Communication error, encoder interface modules

A multiple telegram failure to the encoder interface has been reported.

1. Switch off the drive and then switch it back on (restart).
2. Analyze the entries in the diagnostic memory and proceed depending on the error history after a drive restart (see the following table).

Cause	Remedy
If error F8131 occurred after a drive restart: During the execution of the safety technology, monitoring determined a severe exception that prevents further operation.	Save **all parameters**. Contact our service department to have the parameter file analyzed.
If the error occurs sporadically (without previous error F8131): The internal communication to the encoder interface is disrupted.	Remove external disturbances which can be caused by insufficient or defective shielding.
If the error occurs permanently (without previous error F8131): The encoder interface is defective.	Please contact our service department to replace the hardware.

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	F8035
Long diagnostics no. (32 bits):	000F8035
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	2361

Detailed diagnostics

0044C80E

Assemblies encoder interface could not be determined

007D0012

Communication fault, encoder option module 2

007D0013

Communication fault, encoder option module 2

Cause/Remedy 1: Unknown error, please contact customer support

F8036 Communication error, onboard encoder modules

A multiple telegram failure to the encoder interface has been reported.

Cause	Remedy
If the error occurs sporadically: The internal communication to the encoder interface is disrupted.	Remove external disturbances which can be caused by insufficient or defective shielding.
If the error occurs permanently: The encoder interface is defective.	Please contact our service department to replace the hardware.

▼ Attributes

Short diagnostics no. (20 bits):	F8036
Long diagnostics no. (32 bits):	000F8036

Detailed diagnostics

007D0014

Communication fault, onboard encoder

007D0015

Communication fault, onboard encoder

007D0018

Internal error in ICEN

F8042 Encoder 2: Encoder signals incorrect

Faulty encoder signals were detected for encoder 1, the warning E8022 was generated and the motor and axis control were switched to the signals of encoder 2 in the function as "redundant motor encoder". The error F8042 was generated, because faulty encoder signals were also detected at encoder 2.

The signals of analog measuring systems (encoder 2) are monitored on the hardware and software levels with regard to their amplitudes and signal shapes. If a signal (sin or cos) leaves the allowed range or if the signals are disturbed in such a way that a position error occurs, this error is generated.

For digital measuring systems (encoder 2), the transmission of the position is monitored using a checksum (CRC). If a checksum error is detected, this error is generated.

The error can be cleared in CM (configuration mode) or upon successful reinitialization.

Since the position is no longer generated correctly when this error is detected, the encoder has to be reinitialized.

When using an incremental encoder with square-wave signals, monitoring is carried out with regard to an inadmissible edge.
On the software level, the signals of a resolver are monitored for their levels.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
During motor operation with the measuring system ACURO®link: A fault was detected in the transmission telegram of the encoder; telegram failed twice	Faults such as an electrostatic discharge to the shaft of the motor may lead to failure of the encoder transmission telegram. Make sure that faults do not occur
Measuring system dirty	Clean or replace measuring system
Hardware defect on control section of drive	Replace control section or entire drive controller
Only for ACUROlink encoder of the 1st generation (0x2AE2:08 / S-0-1300.20.8 / S-0-3536≠"Cxx"), connected using a hybrid cable REH0804 ("single cable solution") to one of the following ctrlX DRIVE device types: XMS*-W0006...0036; XMD*-W2323; XCD*-2323 Encoder signal interferences occur in the previously mentioned constellation.	Mount a ferrite sleeve (snap-on ferrite) to the encoder cable of the hybrid cable: ferrite sleeve "manufacturer parts number 74272733" of Adolf Würth GmbH & Co. KG (can also be ordered with Bosch Rexroth using the material number R913082363). Please note that only a hybrid cable length of ≤10 meters is permitted for an interference suppression using so-called ferrite sleeves.
Only for ACUROlink encoder of the 2nd generation (0x2AE2:08 / S-0-1300.20.8 / S-0-3536="Cxx"), connected using a hybrid cable REH0804 ("single cable solution") to one of the following ctrlX DRIVE device types: XMS*-W0006...0036; XMD*-W2323; XCD*-2323 Encoder signal interferences occur in the previously mentioned constellation as the hybrid cable length exceeds 25 meters.	Ensure that the hybrid cable length does not exceed 25 meters.

▼ Attributes

Short diagnostics no. (20 bits):	F8042
Long diagnostics no. (32 bits):	C00F8042
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	2361

F8055 Incorrect processing of diagnostic message

Cause	Remedy
A problem occurred in the processing of the diagnostic messages of the drive. Too many diagnostic messages had been signaled in too short a time; the diagnostic system was unable to process the diagnostic messages.	▪ Carry out a parameter backup of all parameters. ▪ Have a look at the diagnostic trace to find out which diagnostic messages were signaled last. A warning or an error is likely to have been cyclically signaled. This diagnostic message usually appears repeatedly in the diagnostic trace. ▪ Switch the drive off and back on. ▪ Put drive into operation again and prevent the corresponding diagnostic message from being cyclically generated. Please contact our service department to forward the parameter backup to the service team.

▼ Attributes

Short diagnostics no. (20 bits):	F8055
Long diagnostics no. (32 bits):	000F8055
J1939: "Failure Mode Identifier":	11
J1939: "Suspect Parameter Number":	26F

Detailed diagnostics

00660032

Too many diagnostic messages in too short a time! See Diagnostic Trace

00661032

Too many diagnostic messages in too short a time! See Diagnostic Trace

F8060 Overcurrent in power section

The current in the power transistor bridge has exceeded the maximum allowed device peak current (cf. "Inverter type data: Peak current" (0x2314:02 / S-0-0110 / --)].

Cause	Remedy
Short circuit in motor or motor cable	Check motor cable and motor for short circuit
Power section of drive controller defective	Replace drive controller
Current controller parameterized incorrectly	Check current controller parameterization (cf. motor data sheet) and correct it, if necessary, after consulting our service department
Voltage fluctuations in DC bus too high because system impedance too big	Reduce system impedance, e.g. increase supply line cross sections

▼ Attributes

Short diagnostics no. (20 bits):	F8060
Long diagnostics no. (32 bits):	C00F8060
CiA error code:	5483
J1939: "Failure Mode Identifier":	6
J1939: "Suspect Parameter Number":	27BF

Detailed diagnostics

00420401

Overcurrent in phase U

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00420402

Overcurrent in phase V

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00420404

Overcurrent in phase W

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

F8064 Interruption of motor phase

In individual motor phases or in the entire motor, the current is "0" or current specified by the current command value is by far not attained in individual phases.



DANGER!

Lethal injury caused by coasting axis (torque disable)!

⇒ Additional measures might be necessary to stop the axis.

The phase current is monitored both in V/Hz (U/f) operation and in closed-loop operation in SVC and FOC. Phase current monitoring is also active during the execution of travel commands. Particularly the command "C37 Command Check direction of motion" can be used to verify the electric continuity of the individual motor phases.

Restrictions of the correct monitoring function

- Safe monitoring of individual motor phases is only possible with a speed command value of >10 rpm.
- If the required current is very small in closed-loop operation with low motor load, phase failure is not detected. This is especially the case in no-load operation.
  With strongly fluctuating currents, phase failure might not be detected in closed-loop operation if the currents cyclically go down to "0" or cyclically change rapidly between positive and negative values.



DANGER!

Lethal electric shock from live parts with more than 50 V!

⇒ Comply with the safety regulations when working/conducting checks at the drive controller/motor.



CAUTION!

Property damage with phase current monitoring switched off

Phase current monitoring can be switched off in "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --, bit 4).
If phase current monitoring has been switched off, the system can no longer monitor the correct function of the motor connection. Property damage may occur because the motor does not work.

Cause	Remedy
At least one motor phase has not been connected to drive controller or line break has occurred	▪ Check motor cable connection (check assignment motor connection↔axis). ▪ Check individual motor phases from connection at drive controller for line break and high ohmic resistance. ▪ Check motor line for loose contact. ▪ Check terminal connecting points of motor line for tight fit. ▪ Check for squeezed insulation.
Motor power connections of a multi-axis device were interchanged	Check whether assignment of motor connections is correct for the axes
Incorrect axis assignment between motor and drive controller	Check whether assignment of motor connections is correct for the axes
In V/Hz (U/f) operation: User-defined V/Hz (U/f) characteristic has been selected ["Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --, bit 11/10)] and parameterized voltage at frequency="0" is too low. - or - No value specified for frequency="0" in "V/Hz (U/f) control: User-defined characteristics, freq." (0x2100:0A / P-0-0614 / --) and "V/Hz (U/f) control: User-defined characteristics, voltages" (0x2100:0B / P-0-0615 / --). - or - V/Hz (U/f) characteristic has been incorrectly parameterized.	Check/correct parameterization of V/Hz (U/f) characteristic. - or - Switch off phase current monitoring ["Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --, bit 4)]. **CAUTION:** With phase current monitoring switched off, the system can no longer monitor the correct function of the motor connection. Property damage may occur because the motor does not work.

Cause	Remedy
In V/Hz (U/f) operation: Voltage boost too low in V/Hz (U/f) operation.	Adjust "V/Hz (U/f) control: Voltage boost" (0x2100:0C / P-0-0568 / --) until magnetizing current flows in standstill ["Motor current control: Absolute output current value" (0x2102:0D / P-0-0440 / --) corresponds to "Induction motor data: Magnetizing current" (0x2006:06 / P-0-4004 / --)]
In V/Hz (U/f) operation: The motor is accelerated very slowly out of the standstill range (< 1 Hz/s^2) In V/Hz (U/f) operation, asymmetrical currents may occur in case very small phase voltages are output, so that no current flow is detected in individual phases.	Accelerate the motor faster. If necessary, increase speed ramps, e.g. "V/Hz (U/f) control: Stator frequency slope, maximum value" (0x2100:09 / P-0-0569 / --). - or - Increase "V/Hz (U/f) control: Voltage boost" (0x2100:0C / P-0-0568 / --), if necessary until a higher current than "Induction motor data: Magnetizing current" (0x2006:06 / P-0-4004 / --) flows in standstill. - or - Switch off phase current monitoring ["Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --, bit 4)]. **CAUTION:** With phase current monitoring switched off, the system can no longer monitor the correct function of the motor connection. Property damage may occur because the motor does not work.
In FOC or SVC operation: Motor is operated at the voltage limit (motor voltage » DC bus voltage / 1.415) or motor is operated above the nominal speed with incorrect voltage control.	Activate field weakening ["Motor control function: Configuration 2" (0x210C:02 / P-0-3945 / --, bit 0="1") Check parameterization of field weakening and voltage control: ■ "Motor voltage control: Proportional gain" (0x211C:01 / P-0-0533 / --) ■ "Motor voltage control: Integral action time" (0x211C:02 / P-0-0534 / --) ■ "Motor voltage control: Voltage command value 2" (0x211C:03 / P-0-0535 / --) ■ "Motor voltage control: Voltage command value 1" (0x211C:04 / P-0-0536 / --)
Motor or control incorrectly parameterized, particularly in V/Hz (U/f) operation the magnetizing current is too high by at least the factor 2, or in closed-loop operation in SVC or FOC the current controller P-gain or the integral action time is wrong by at least the factor 2.	Compare motor data in drive to actual motor data. Check parameterization of current control: "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) "Motor current control: Integral action time 1" (0x2102:06 / S-0-0107 / --) Check parameterization of voltage control: ■ "Motor voltage control: Proportional gain" (0x211C:01 / P-0-0533 / --) ■ "Motor voltage control: Integral action time" (0x211C:02 / P-0-0534 / --) ■ "Motor voltage control: Voltage command value 2" (0x211C:03 / P-0-0535 / --) ■ "Motor voltage control: Voltage command value 1" (0x211C:04 / P-0-0536 / --)

Cause	Remedy
DC bus voltage="0" or too low	Check "Inverter DC bus: Voltage, actual value" (0x2648:01 / S-0-0380 / --) for correct value. Check DC bus voltage for voltage dips. Switch on power.
Motor winding (U, V, W) has burned out	Check motor winding using an ohmmeter and replace motor, if necessary
Power section defective	Replace drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Rexroth motors

▼ Attributes

Short diagnostics no. (20 bits):	F8064
Long diagnostics no. (32 bits):	000F8064
CiA error code:	3130
J1939: "Failure Mode Identifier":	5
J1939: "Suspect Parameter Number":	239B

F8072 Device carrier internal voltage error

An internal error of the board mains voltage (device carrier) has been detected. The supply of peripheral devices connected to the device may be affected.

Cause	Remedy
Device defective	Please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	F8072
Long diagnostics no. (32 bits):	000F8072
J1939: "Failure Mode Identifier":	4
J1939: "Suspect Parameter Number":	24BA

F8077 Velocity controller overload

The monitoring for velocity controller overload triggers if the following conditions occur simultaneously:

- The effective torque/force command value (0x6074:00 / P-0-0049 / --) is at the torque/force limit for longer than

the duration of "Velocity controller, monitor: Tolerance time overload" (0x2221:01 / P-0-0474 / --).
- The absolute value of the actual velocity is smaller than "Velocity controller, monitor: Act. velocity window overload" (0x2221:02 / P-0-0474.0.1 / P-0-1538).



If "Velocity controller, monitor: Act. velocity window overload" (0x2221:02 / P-0-0474.0.1 / P-0-1538) is parameterized with "0", the error message is suppressed.

Cause	Remedy
Load at axis mechanics too high	Check whether axis mechanics is blocked
Drive acceleration capacity was exceeded too long	Reduce preset maximum acceleration value to enable the drive to follow the position or velocity command value characteristic. – OR – Increase value of "Velocity controller, monitor: Tolerance time overload" (0x2221:01 / P-0-0474 / --) in accordance with desired command value characteristic.
Incorrectly parameterized torque/force limit values	See documentation of E8260

See also Control loop monitoring

▼ Attributes

Short diagnostics no. (20 bits):	F8077
Long diagnostics no. (32 bits):	000F8077
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	27B3

F8078 Speed loop error

The velocity control loop monitoring triggers if the following conditions occur **simultaneously**:

- "Torque/Force: Torque demand" (0x6074:00 / P-0-0049 / --) is at the torque/force limit.
- "Torque/Force: Torque demand" (0x6074:00 / P-0-0049 / --) and the actual velocity have different signs.
- The actual velocity at the **motor shaft** is greater than 20 rpm (or 20 mm/min for linear motors).
- Actual acceleration and control deviation have different signs.

Cause	Remedy
Motor phases (U, V, W) interchanged so that commutation of motor is incorrect	Check motor cable connection and correct phase assignment, if necessary. **Note:** The wired rotating field direction (U > V > W) can be checked using the direction of motion check when executing the command C3700.

Cause	Remedy
Incorrect encoder arrangement	Correct the encoder equipment (inverting rotational direction of encoder might resolve the problem) **Note:** With the help of the encoder validation check during the execution of the command C3700, the rotational direction of the encoder can be checked.
Incorrect velocity controller setting	Check velocity controller setting according to Functional Description/Application Manual
Incorrect commutation offset	Make commutation settings, if possible - or - Replace motor
Motor encoder defective	Replace motor encoder (or motor)
For voltage-controlled motor operation: Motor is operated in a voltage-controlled way (without encoder; V/Hz (U/f) control); with this type of motor control, velocity control loop monitoring does not make sense	Deactivate velocity control loop monitoring in "Axis configuration: Word" (0x2200:01 / P-0-0556 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F8078
Long diagnostics no. (32 bits):	000F8078
CiA error code:	7481
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	27B3

F8079 Velocity limit value exceeded

The velocity feedback value reached an impermissibly high value.

Cause	Remedy
"Velocity controller: Velocity actual value" (0x606C:00 / S-0-0535 / --) has exceeded the 1.125-fold value of the velocity limit value	Check and, if necessary, correct "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --). [Within the "Velocity status: Standstill window" (0x2212:01 / S-0-0124 / --) the actual velocity is not monitored.]
Velocity control loop unstable or too heavily oscillating due to incorrect parameterization	Check and, if necessary, correct parameterization of velocity controller

Cause	Remedy
A firmware not requiring an export license is used; velocity command values corresponding to an inverter output frequency ≥ 600 Hz were preset	▪ Check operability: Does the drive follow a preset velocity command value? If necessary, ensure operability by repeating commissioning. ▪ Sensorless motor operation: Check slip compensation. In the case of over-compensation, velocity feedback value can be higher than velocity command value. If necessary, reduce velocity command value or "Induction motor data: Rated slip frequency" (0x2006:03 / P-0-0600 / --). ▪ Check whether another connected motor "tows" the motor to a higher velocity.
Torque input without sufficient counter-torque	Check axis mechanics – OR – Reduce torque input
Incorrect commutation offset	Re-determine commutation offset

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	F8079
Long diagnostics no. (32 bits):	C00F8079
CiA error code:	8089
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	2361

F8080 Frequency > 599Hz

The output frequency of the drive controller is higher than 599 Hz.

Firmware for drive controllers requires an export license according to applicable export regulations if it enables an output frequency exceeding 599 Hz. For this reason, the maximum output frequency of the drive controller is monitored with regard to 599 Hz.

Cause	Remedy
The preset velocity command value requires an output frequency > 599 Hz	The motor speed cannot be reached. Check the command value input
The preset velocity command value requires an output frequency "near" 599 Hz	▪ Check operability: Does the drive follow a preset velocity command value? If necessary, ensure operability by repeating commissioning. ▪ Asynchronous motors: Check slip compensation. With asynchronous motors, the output frequency is increased by the slip frequency as compared to the velocity command value. Reduce velocity command value.

Cause	Remedy
Velocity control loop unstable or too heavily oscillating due to incorrect parameterization	Check and, if necessary, correct parameterization of velocity controller

▼ Attributes

Short diagnostics no. (20 bits):	F8080
Long diagnostics no. (32 bits):	000F8080
J1939: "Failure Mode Identifier":	8
J1939: "Suspect Parameter Number":	2361

F8081 Speed at drive shaft too low

The speed at the drive shaft has fallen below the fixed value depending on the direction of rotation of 100 rpm or –100 rpm.

Cause	Remedy
The measured speed signal has fallen below the value depending on the direction of rotation of 100 rpm or –100 rpm with active DC bus voltage control.	▪ Input a higher speed ▪ Before reducing the speed below 100 rpm or –100 rpm, leave the "DC bus voltage control" mode

▼ Attributes

Short diagnostics no. (20 bits):	F8081
Long diagnostics no. (32 bits):	000F8081
J1939: "Failure Mode Identifier":	1
J1939: "Suspect Parameter Number":	2361

F8091 Power section defective

Cause	Remedy
During the initialization of the power section, invalid power parameters, invalid safety calibration values or a non-adjusted device were detected.	Restart the device. If the error persists, please contact our service department.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F8091
Long diagnostics no. (32 bits):	000F8091
CiA error code:	5081
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	2395

Detailed diagnostics

00450312

Mains connection: Parameter initialization error

00450313

Mains connection: Device not calibrated

00620050

The power stage was not safely calibrated. No safe calibration values were transferred from the power stage to SMO

Cause/Remedy 1: Restart device. If the error persists, the device must undergo the secure calibration process. Please contact our service department.

00620051

The power stage was not safely calibrated. No safe calibration values were transferred from the power stage to SMO

Cause/Remedy 1: Restart device. If the error persists, the device must undergo the secure calibration process. Please contact our service department.

00620052

The power stage was not safely calibrated. No safe calibration values were transferred from the power stage to SMO

Cause/Remedy 1: Restart device. If the error persists, the device must undergo the secure calibration process. Please contact our service department.

F8098 F8 test error, F8022 error reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the controlled deceleration of an axis.

Cause	Remedy
The value "0x0008" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F8098
Long diagnostics no. (32 bits):	000F8098
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF8

F8099 F8 test error, axis reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the fatal error reaction of an axis.



Depending on how the best possible deceleration (0x2870:01 / P-0-0119 / --) has been configured, short-circuit braking is triggered or drive enable is immediately switched off.

Cause	Remedy
The value "0x004" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F8099
Long diagnostics no. (32 bits):	000F8099
CiA error code:	5082
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF8

F8100 Error when initializing the parameter handling

During the initialization of the drive controller, the control section is checked for correct function. An error was detected during this check.

Cause	Remedy
After the device had been switched on it was impossible to load the saved application parameters, process parameters or device parameters from the command value memory (flash/internal memory) of the control section. Either because the command value memory is defective or the data on the command value memory are invalid.	Switch drive off and back on. If error still occurs, contact our service department and, if necessary, replace control section or entire drive controller

Cause	Remedy
Control section configuration is invalid	Switch drive off and back on. If error occurs again, replace control section by different control section with appropriate configuration. If necessary, contact our service department
Firmware used is not suitable, i.e. hardware and firmware do not match	Select suitable firmware using the Application Manual, index entry "Supported control sections"
Hardware defect on control section (e.g., F8844)	Switch drive off and back on. If error still occurs, please contact our service department and, if necessary, replace control section or entire drive controller.
Before the last switch-off, a processor crash/exception occurred during operation	

See also Firmware replacement



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F8100
Long diagnostics no. (32 bits):	000F8100
CiA error code:	6381
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	21AD

Detailed diagnostics

006E0D00

Retain memory access error (process parameters)

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D01

Retain memory reading error (process parameters)

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D03

Storage time always too short on retain memory (process parameters)

Cause/Remedy 1: Cause: When switching off, the time available for saving is too short (capacitors). Remedy: Replace device.

006E0D07

Missing image while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: No current data found in flash when switching on the device. Old data loaded. Remedy: If you have ruled out an error, replace the device. Parameters from P-0-0195 should be checked.

006E0D08

Incomplete image while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: A parameter to be saved is not present in flash. Remedy: If the problem persists after a firmware update, replace the device. Parameters from P-0-0195 should be checked.

006E0D09

Saving error detected while loading from retain memory (process parameters)

Cause/Remedy 1: Cause: A parameter failed to save when the device was switched off. Remedy: Check all saved parameters (see P-0-0195). If the error persists, the device has to be replaced.

006E0D0A

Error while loading parameters from retain memory (process parameter)

Cause/Remedy 1: Cause: An incorrectly saved parameter was found in the flash memory. Remedy: Replace device.

006E0D80

System resources init error

Cause/Remedy 1: Cause: Operating system error. Unable to save parameters. Remedy: Switch the device off and on again.

F8101 Error during parameter set switching

An error occurred within the scope of the command for parameter set switching [C4100 (0x2B6A:01 / S-0-0216 / --)].

Cause	Remedy
Impossible to reset the selected parameter set to the previously active parameter set. The parameters configured in "Parameter set switching: Configuration list" (0x2B6A:04 / S-0-0219 / --) are mutually inconsistent and therefore do not correspond to the configured parameter set data.	1. Check the configuration list of the parameters selected for parameter set switching (0x2B6A:04 / S-0-0219 / --), including the respective parameter set data of the selected parameter set (0x2B6A:02 / S-0-0217 / --). 2. Restart the command for parameter set switching [C4100 (0x2B6A:01 / S-0-0216 / --)]. 3. If the cause of the error was removed, the error can afterwards be cleared by the command C0500.

▼ Attributes

Short diagnostics no. (20 bits):	F8101
Long diagnostics no. (32 bits):	000F8101

F8102 Error when initializing power section

During the initialization of the drive controller, the power section is checked for correct function. An error was detected during this check.

Cause	Remedy
Hardware and firmware do not match	Check Firmware Release Notes or Firmware Version Notes and, if necessary, use latest firmware release
Axis type-specific physical type data of power output stage ["Output stage data, axis: Type-specific" (0x2A94:01 / P-0-1519.0.1 / --) saved on the power section are invalid or were incorrectly written	Switch drive off and back on. If error occurs again, check content of "Output stage data, axis: Type-specific" (0x2A94:01 / P-0-1519.0.1 / --) and please contact our service department It might be necessary to replace power section or entire drive controller
Hardware defect on power section	Replace power section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F8102
Long diagnostics no. (32 bits):	000F8102
CiA error code:	6089
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	2395

F8105 Firmware runtime error

A serious runtime error occurred.

The cause of the error can be read via the detailed diagnostics.

Cause	Remedy
A serious runtime error in the firmware was detected.	Check Firmware Release Notes and, if necessary, use latest firmware release

▼ Attributes

Short diagnostics no. (20 bits):	F8105

Long diagnostics no. (32 bits):	020F8105
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	FC9

Detailed diagnostics

007B0003

Watchdog of current controller interrupt

007B0155

Communication interrupt failed on COM port

007B0157

Service interrupt failed on COM port

007D0016

Internal error in SENS

007D0017

Internal error in SENS

007D0019

Internal error in ICEN

007D001A

Internal communication error

007D001B

Internal communication error

007D001C

Internal error in ICEN

007D001D

Internal error in ICEN

F8106 SMO: Internal communication error

An internal communication error to safety technology (SMO) was detected.

1. Switch off the drive and then switch it back on (restart).
2. Analyze the entries in the diagnostic trace and proceed depending on the error history after drive restart (see table below).

Cause	Remedy
If error F8131 occurred after drive restart: During the execution of a safety function, a monitoring function detected a severe exception that prevents further operation.	Save **all parameters**. Contact our service department to have the parameter file analyzed.
If the error occurs sporadically (without previous error F8131): The internal communication to safety technology (SMO) is disrupted.	Remove external disturbances which can be caused, for example, by insufficient or defective shielding.
If the error occurs permanently (without previous error F8131): The optional safety technology card (SMO) is defective.	Please contact our service department to have the hardware replaced.

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	F8106
Long diagnostics no. (32 bits):	020F8106
J1939: "Failure Mode Identifier":	9
J1939: "Suspect Parameter Number":	24C9

Detailed diagnostics

007D1001

Internal initialization error (ICSM)

007D1002

Internal initialization error (ICSM)

007D1003

Internal initialization error (ICSM)

007D1004

Internal initialization error (ICSM)

007D1005

Internal initialization error (ICSM)

007D1006

Internal initialization error (ICSM)

007D1007

Internal initialization error (ICSM)

007D1008

Internal initialization error (ICSM)

007D1009

Internal initialization error (ICSM)

007D100A

Internal initialization error (ICSM)

007D100B

Internal initialization error (ICSM)

007D100C

Internal initialization error (ICSM)

007D100D

Internal initialization error (ICSM)

007D100E

Internal initialization error (ICSM)

007D100F

Internal error in data exchange between ACX and SMO channel 1 (ICSM)

007D1010

Internal error in data exchange between ACX and SMO channel 1 (ICSM)

007D1011

Internal error in data exchange between ACX and SMO channel 2 (ICSM)

007D1012

Internal error in data exchange between ACX and SMO channel 2 (ICSM)

F8110 Firmware update incompatible

After the firmware update, a check is run to find out whether all subsystems, that are to be updated by the firmware file loaded, were actuallly updated. If this is not the case, the update is incomplete and the error F8110 is displayed.

Cause	Remedy
The firmware file is not compatible with the hardware. **TIP:** The Firmware Release Notes contain information on the incompatibility of firmware files with certain hardware versions.	Load a compatible firmware file to the device.
The firmware file is outdated. The hardware at hand is more recent than the loaded firmware and not fully supported.	Load a current firmware file to the device.
The firmware file is defective.	Please contact our service department to get a faultless firmware file.

▼ Attributes

Short diagnostics no. (20 bits):	F8110
Long diagnostics no. (32 bits):	020F8110
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

F8115 Firmware inconsistent

During the initialization of the device, a check is run to find out whether the firmware of all components and optional modules is compatible. If this is not the case, the error F8115 is displayed.

The error F8115 can be expected after a firmware download, or after an optional module or component has been replaced. The error cannot be cleared. The error has to be removed to operate the device.

Cause	Remedy
A previous firmware download was not completed. ▪ The download was interrupted by communication breakdown or voltage failure. ▪ The download was carried out from the loader and the loader could not be updated.	Repeat the firmware download in order to complete it.
In the case of ctrlX DRIVEplus with communication: X3 The firmware of ctrlX CORE and ctrlX DRIVE was updated. One or more of the required apps have not been installed or have been installed in the wrong version	Make sure that all required apps have been installed in the target version
The firmware file is outdated. Optional modules or components not supported by the firmware file were installed in the device.	Use a current firmware file.
An optional module or component was replaced.	Carry out the firmware download completely to update the firmware.
The firmware file is defective.	Please contact our service department to get a faultless firmware file.

See also Firmware replacement

▼ Attributes

Short diagnostics no. (20 bits):	F8115
Long diagnostics no. (32 bits):	020F8115
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

Detailed diagnostics

007B0048

Inconsistent FWB firmware package detected

Cause/Remedy 1: Perform firmware update (repeat canceled or incomplete update, if applicable)

007C0009

Version of interface to COM.2 not compatible

Cause/Remedy 1: Remedy: Load suitable firmware for COM.2

007C000A

Version of interface to COM.2 not readable

Cause/Remedy 1: Load suitable firmware for COM.2

F8118 Invalid power section/firmware combination

The power section is incompatible with the firmware used.

Cause	Remedy
Firmware does not support the available power section type	Replace firmware. Use a firmware version or a firmware release that supports the power section type. - or - Replace power section. Use a power section type that is supported by the firmware version and release used.

▼ Attributes

Short diagnostics no. (20 bits):	F8118
Long diagnostics no. (32 bits):	000F8118
CiA error code:	6080
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

Detailed diagnostics

0045050A

Power section is not a power unit

Cause/Remedy 1: Cause: The supply unit firmware was loaded onto a unit that is not a supply unit. Remedy: Use the correct device.

0045050B

Power section is not a drive controller

Cause/Remedy 1: Cause: The drive controller firmware has been loaded onto a unit that is not a drive controller. Remedy: Use the correct device.

0045050C

DC/DC actuator capability not available with this power section

Cause/Remedy 1: Cause: The DC/DC actuator function is configured with an XVR device. Remedy: Use an XMV device

F8122 Control section defective

An error occurred during the initialization of the control section.

Cause	Remedy
In the case of ctrlX DRIVEplus with communication: X3 The firmware updates of ctrlX CORE and ctrlX DRIVE were installed in the wrong order.	1. Downgrade the firmware of ctrlX CORE to the original version. 2. Update the firmware of ctrlX DRIVE. 3. Update the firmware of ctrlX CORE.
In the case of ctrlX DRIVEplus with communication: X3 The firmware of ctrlX CORE and ctrlX DRIVE was updated. The firmware version of ctrlX CORE is not compatible with the firmware version of ctrlX DRIVE	Make sure that the firmware version of ctrlX CORE is compatible with the firmware version of ctrlX DRIVE. **Tip:** The compatibility of the firmware versions is documented in the Release Notes of ctrlX CORE Runtime
The hardware of the control section is defective	Replace drive controller; use hardware configuration of the same type



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	F8122
Long diagnostics no. (32 bits):	020F8122
CiA error code:	5083
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	24DC

Detailed diagnostics

007C0200

Plausibility error selecting SMO function packages for ctrlX DRIVE

Cause/Remedy 1: Check your license and selected function packages for the SMO

007C0201

Plausibility error selecting SMO function packages for eLION

Cause/Remedy 1: Check your license and selected function packages for the SMO

007C0202

Plausibility error due to selection of invalid SMO function packages

Cause/Remedy 1: Check your license and selected function packages for the SMO

007D000D

Internal error, encoder option module 2: Unable to establish communication

007D000E

Internal error, encoder option module 2: Unable to establish communication

007D000F

Internal error, encoder option module 2: Unable to establish communication

007D0010

Internal error, encoder option module 2: Unable to establish communication

007D0011

Internal error, encoder option module 2: Unable to establish communication

F8130 Mains connection module (XLI) not ready for operation

The communication with the external mains connection module (XLI) could not be established or is faulty.

Cause	Remedy
Faulty connection between supply module and mains connection module	Check correct wiring between supply module and mains connection module
Faulty power supply of mains connection module	Supply the supply module and mains connection module from the same voltage source (24 V)
Defective mains connection module	Replace mains connection module

▼ Attributes

Short diagnostics no. (20 bits):	F8130
Long diagnostics no. (32 bits):	020F8130

Detailed diagnostics

007B0080

XLI 24 V error

F8131 Exception on optional module

A serious runtime error occurred.

Cause	Remedy
A serious runtime error was detected.	Switch device off and on again. If the error occurs repeatedly, please save **all parameter values**, **with the error present**, by means of ctrlX DRIVE Engineering (context menu of the device: „*{Device}* ➔ *Parameters* ➔ *Save...*“). To evaluate the parameter file, please contact our service department; the hardware might be defective.

▼ Attributes

Short diagnostics no. (20 bits):	F8131
Long diagnostics no. (32 bits):	000F8131
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	FC9

Detailed diagnostics

0004075E

Inadmissible SCA version configuration

00050002

Inconsistent configuration of S-AKS functionality

Cause/Remedy 1: Internal error: No remedy possible. Please send a detailed error description to customer service.

00400006

Parking axis: invalid transition value (test)

0040001B

Parking axis, timeout when switching

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0040001C

Parking axis, unknown program step

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0040001D

INIT, NULL pointer to bool variable, whether semaphore could be assigned

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400021

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400022

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400023

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400024

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400025

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400026

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400027

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400028

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400029

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400030

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400031

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400032

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

00400033

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact the service department.

00400034

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact the service department.

00400040

Null pointer detected

Cause/Remedy 1: Internal error: No remedy is possible. Please contact the service department.

00400419

Parking axis, command sequence monitor: undefined state

0040041A

Parking axis, command sequence monitor: Command executed multiple times

0040041B

Parking axis, command sequence monitor: wrong command direction

0040041C

Parking axis, command sequence monitor: PaOffOn from OM is faulty

0040041D

Parking axis, command sequence monitor: PaOffOn from PM is faulty

0040041E

Parking axis, command sequence monitor: PaOffOn from CM is faulty

0040041F

Parking axis, command sequence monitor: PaOnOff to OM is faulty

00400420

Parking axis, command sequence monitor: PaOnOff to PM is faulty

00400421

Parking axis, command sequence monitor: PaOnOff to CM is faulty

00400422

Parking axis, command sequence monitor: PaOnOff to OM is faulty

00400423

Parking axis, command sequence monitor: PaOnOff to PM is faulty

00400424

Parking axis, command sequence monitor: PaOnOff to CM is faulty

00400425

Parking axis, command sequence monitor: undefined state

00400426

Parking axis, command sequence monitor: Command executed multiple times

00400427

Parking axis, command sequence monitor: wrong command direction

00410009

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000A

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000B

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000C

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000D

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000E

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

0041000F

Invalid program path

Cause/Remedy 1: Internal error: No remedy is possible. Please contact customer support.

004606CA

Safe reference: Undefined status variable

004606CB

Safe reference: Undefined status variable

004606CC

Safe reference: Undefined status variable

004606CD

Safe reference: Value of variable outside of allowed range

004606CE

Safe reference: Illegal pointer

004606F0

Safe reference: Undefined sequence variable

004606F7

Safe reference: Overflow or underflow in subtraction

Cause/Remedy 1: Contact our service department.

00480121

ENCE: Incorrect shift value

00480122

ENCE: Incorrect shift counter

00530460

Safe bus, consumer life counter failed

00530FF5

ESM: Null pointer exception

Cause/Remedy 1: Hardware defective

0053349B

Exception error while reading the manufacturer version (0x3000:01 / P-0-3200 / P-0-2554)

0053349C

Safety function “SLS”: Plausibility check error: select/deselect status with active/inactive status

0053349D

Safety function “SMD-Trend”: Plausibility check error: select/deselect status with active/inactive status

0053349E

Safety function “SMD-Trend”: Plausibility check error: select/deselect status with active/inactive status

005334A1

Safety function “SMD-ActVel”: Plausibility check error: select/deselect status with active/inactive status

005334A2

Safety function “SMD-ActVel”: Plausibility check error: select/deselect status with active/inactive status

005334A3

Drive-controlled error reaction “SMD-E”: Plausibility check error: select/deselect status with active/inactive status

005334A4

Drive-controlled error reaction “SMD-E”: Plausibility check error: select/deselect status with active/inactive status

005334A6

Value out of bounds

005334A7

Safety function “SLI”: Plausibility check error: select/deselect status with active/inactive status

005334A8

Safety function “SLS-LT”: Plausibility check error: select/deselect status with active/inactive status

005334A9

Safe transfer of “Trend”: incorrect starting state

005334AA

Safe transfer of “ActVel”: Incorrect starting state

005334AB

Safe transfer: Braking time calculation overflow

005334AC

Safe position, relative: Position difference overflow

005334AD

Safe position, relative: Position difference overflow

005334AE

Safe position, relative: Position difference overflow

005334B4

Acknowledgment of the internal status of an SMD transfer: Invalid SMD function

005334B8

PARS_App: Error writing DSTORE_IDENTCRC

005334B9

PARS_App: Error writing DSTORE_IDENTCRC

005334BA

PARS_App: Error writing DSTORE_IDENTCRC

005334BB

PARS_App: Error writing DSTORE_IDENTCRC

005334BC

PARS_App: Error writing DSTORE_IDENTCRC

005334BD

PARS_App: Error writing DSTORE_IDENTCRC

005334BE

PARS_App: Error writing DSTORE_IDENTCRC

005334BF

PARS_App: Unable to read from DStore

005334C0

PARS_App: Unable to read from DStore

005334C1

PARS_App: Unable to read from DStore

005334CB

Error writing to EEPROM

005334CC

Cannot synchronize between channels

005334D2

Parameter images different

005334D3

PARS_Image_eOReadParamImage_0x3012:01 / P-0-3232 NULL pointer exception

005334D4

PARS_Image_eOReadParamImage_0x3012:01 / P-0-3232 NULL pointer exception

005334D5

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005334D6

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005334D7

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005334D8

RTOS error while sending buffer job

005334D9

RTOS error while sending buffer job

005334DA

RTOS error while sending buffer job

005334DB

RTOS error when releasing a semaphore

005334DC

RTOS error when releasing a semaphore

005334DD

RTOS error when releasing a semaphore

005334DE

RTOS error when releasing a semaphore

005334DF

RTOS error when releasing a semaphore

005334E0

RTOS error when releasing a semaphore

005334E1

RTOS error when releasing a semaphore

005334E2

RTOS error when releasing a semaphore

005334E3

RTOS error when releasing a semaphore

005334E4

Invalid pointer PARS_Archiv

005334E5

Invalid pointer PARS_Archiv

005334E6

DStore busy

005334E7

Unable to access Ident semaphore on Read

005334F6

No valid safety technology operating status selected

005334F7

No valid safety technology operating status selected

005334F8

System STM: Error during return value switching

005334F9

System STM: Error during return value switching

005334FA

System STM: Error during return value switching

005334FB

System STM: Error during return value switching

005334FC

System STM: Error during return value switching

005334FD

System STM: Error during return value switching

005334FE

System STM: Error during return value switching

005334FF

System STM: Error during return value switching

00533500

System STM: Error during return value switching

00533501

System STM: faulty transition value (SetFp)

00533502

System STM: faulty transition value (SetFp)

00533503

System STM: faulty transition value (SetFp)

00533504

System STM: faulty transition value (SetFp)

00533505

System STM: faulty transition value (SetFp)

00533506

System STM: faulty transition value (SetFp)

00533507

System STM: faulty transition value (SetFp)

00533508

System STM: faulty transition value (SetFp)

00533509

System STM: faulty transition value (SetFp)

0053350A

System STM: faulty transition value (SetFp)

0053350B

Wrong return value

0053350C

Invalid program path

0053350D

Invalid status word

0053350E

Undefined state

0053350F

Undefined state

00533510

Wrong return value

00533511

Wrong return value

00533512

Illegal pointer in ADC_Result_STE

00533513

Undefined safety technology operating state

00533514

Undefined safety technology operating state

00533515

Undefined safety technology operating state

00533516

Undefined safety technology operating state

00533517

Undefined safety technology operating state

00533518

Undefined safety technology operating state

00533519

Undefined state

0053351A

SMO initialization error: Password processing

0053351B

SS1 transfer time monitor: Error in plausibility check of monitoring selection

0053351C

SS1 transfer time monitor: Error in plausibility check of monitoring selection

0053351D

Plausibility check of active movement mode: SMM number out of valid range

0053351E

Plausibility check of active movement mode: SMM number out of valid range

0053351F

Plausibility check of active movement mode: SMM number out of valid range

00533520

CSS_CONF_Invalid_Transition_Parameters

00533521

CSS_CONF_Invalid_Transition_Parameters

00533522

CSS_CONF_Invalid_Transition_Parameters

00533523

CSS_CONF_Invalid_Transition_Parameters

00533524

CSS_CONF_Invalid_Transition_Parameters

00533525

CSS_CONF_Invalid_Transition_Parameters

00533526

CSS_CONF_Invalid_Transition_Parameters

00533527

CSS_CONF_Invalid_Transition_Parameters

00533528

System STM: undefined system state

00533529

System STM: undefined system state

0053352A

System STM: undefined system state

0053352B

System STM: undefined system state

00533540

Invalid program path

00533541

Invalid parameter pointer

00533542

Severe exception error FRAM 2323

00533543

Invalid program path

00533544

Severe exception error FRAM 2333

00533549

Severe exception error ENCE 3609

0053354A

Local I/Os: State machine state not allowed

0053354C

Safety function “SMD-r_TimeTrend”: Plausibility check error: select/deselect status with active/inactive status

0053354D

Safety function “SMD-r_TimeTrend”: Plausibility check error: select/deselect status with active/inactive status

0053354E

Safe transfer of TimeTrend: incorrect starting state

0053354F

Safe transfer of TimeTrend: Error number SMM

00533550

Safe transfer of TimeTrend: Error number SMM

00533551

LIO_: Invalid channel ID reported by SBX

00533552

LIO_: Invalid channel ID reported by SBX

00533553

LGVT: NULL pointer exception

00533554

LGVT: NULL pointer exception

00533555

NULL pointer exception

00533556

NULL pointer exception

0053355A

Channel number is invalid

0053355B

Channel number is invalid

0053355C

Channel number is invalid

00533609

Could not allocate memory

0053360A

Could not allocate memory

0053360B

Could not initialize command handler

0053360C

Null pointer exception

00533619

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0053361A

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0053361B

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0053361C

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0053361D

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0053361E

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0053361F

Safety function SMD-E_Basic: Incorrect state

00533620

Initialization of ramp monitoring SMD-E_Basic: Incorrect state

00533621

Initialization of ramp monitoring SMD-E_Basic: Incorrect SMM number

0053602A

FRAM: Error when releasing a semaphore

00540460

Safe bus, consumer life counter failed

00540FF5

ESM: Null pointer exception

Cause/Remedy 1: Hardware defective

0054349B

Exception error while reading the manufacturer version (0x3000:01 / P-0-3200 / P-0-2554)

0054349C

Safety function “SLS”: Plausibility check error: select/deselect status with active/inactive status

0054349D

Safety function “SMD-Trend”: Plausibility check error: select/deselect status with active/inactive status

0054349E

Safety function “SMD-Trend”: Plausibility check error: select/deselect status with active/inactive status

005434A1

Safety function “SMD-ActVel”: Plausibility check error: select/deselect status with active/inactive status

005434A2

Safety function “SMD-ActVel”: Plausibility check error: select/deselect status with active/inactive status

005434A3

Drive-controlled error reaction “SMD-E”: Plausibility check error: select/deselect status with active/inactive status

005434A4

Drive-controlled error reaction “SMD-E”: Plausibility check error: select/deselect status with active/inactive status

005434A6

Value out of bounds

005434A7

Safety function “SLI”: Plausibility check error: select/deselect status with active/inactive status

005434A8

Safety function “SLS-LT”: Plausibility check error: select/deselect status with active/inactive status

005434A9

Safe transfer of “Trend”: incorrect starting state

005434AA

Safe transfer of “ActVel”: Incorrect starting state

005434AB

Safe transfer: Braking time calculation overflow

005434AC

Safe position, relative: Position difference overflow

005434AD

Safe position, relative: Position difference overflow

005434AE

Safe position, relative: Position difference overflow

005434B4

Acknowledgment of the internal status of an SMD transfer: Invalid SMD function

005434B8

PARS_App: Error writing DSTORE_IDENTCRC

005434B9

PARS_App: Error writing DSTORE_IDENTCRC

005434BA

PARS_App: Error writing DSTORE_IDENTCRC

005434BB

PARS_App: Error writing DSTORE_IDENTCRC

005434BC

PARS_App: Error writing DSTORE_IDENTCRC

005434BD

PARS_App: Error writing DSTORE_IDENTCRC

005434BE

PARS_App: Error writing DSTORE_IDENTCRC

005434BF

PARS_App: Unable to read from DStore

005434C0

PARS_App: Unable to read from DStore

005434C1

PARS_App: Unable to read from DStore

005434CB

Error writing to EEPROM

005434CC

Cannot synchronize between channels

005434D2

Parameter images different

005434D3

PARS_Image_eOReadParamImage_0x3012:01 / P-0-3232 NULL pointer exception

005434D4

PARS_Image_eOReadParamImage_0x3012:01 / P-0-3232 NULL pointer exception

005434D5

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005434D6

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005434D7

PARS_VerifyeOReadNotVeriPara NULL pointer exception

005434D8

RTOS error while sending buffer job

005434D9

RTOS error while sending buffer job

005434DA

RTOS error while sending buffer job

005434DB

RTOS error when releasing a semaphore

005434DC

RTOS error when releasing a semaphore

005434DD

RTOS error when releasing a semaphore

005434DE

RTOS error when releasing a semaphore

005434DF

RTOS error when releasing a semaphore

005434E0

RTOS error when releasing a semaphore

005434E1

RTOS error when releasing a semaphore

005434E2

RTOS error when releasing a semaphore

005434E3

RTOS error when releasing a semaphore

005434E4

Invalid pointer PARS_Archiv

005434E5

Invalid pointer PARS_Archiv

005434E6

DStore busy

005434E7

Unable to access Ident semaphore on Read

005434F6

No valid safety technology operating status selected

005434F7

No valid safety technology operating status selected

005434F8

System STM: Error during return value switching

005434F9

System STM: Error during return value switching

005434FA

System STM: Error during return value switching

005434FB

System STM: Error during return value switching

005434FC

System STM: Error during return value switching

005434FD

System STM: Error during return value switching

005434FE

System STM: Error during return value switching

005434FF

System STM: Error during return value switching

00543500

System STM: Error during return value switching

00543501

System STM: faulty transition value (SetFp)

00543502

System STM: faulty transition value (SetFp)

00543503

System STM: faulty transition value (SetFp)

00543504

System STM: faulty transition value (SetFp)

00543505

System STM: faulty transition value (SetFp)

00543506

System STM: faulty transition value (SetFp)

00543507

System STM: faulty transition value (SetFp)

00543508

System STM: faulty transition value (SetFp)

00543509

System STM: faulty transition value (SetFp)

0054350A

System STM: faulty transition value (SetFp)

0054350B

Wrong return value

0054350C

Invalid program path

0054350D

Invalid status word

0054350E

Undefined state

0054350F

Undefined state

00543510

Wrong return value

00543511

Wrong return value

00543512

Illegal pointer in ADC_Result_STE

00543513

Undefined safety technology operating state

00543514

Undefined safety technology operating state

00543515

Undefined safety technology operating state

00543516

Undefined safety technology operating state

00543517

Undefined safety technology operating state

00543518

Undefined safety technology operating state

00543519

Undefined state

0054351A

SMO initialization error: Password processing

0054351B

SS1 transfer time monitor: Error in plausibility check of monitoring selection

0054351C

SS1 transfer time monitor: Error in plausibility check of monitoring selection

0054351D

Plausibility check of active movement mode: SMM number out of valid range

0054351E

Plausibility check of active movement mode: SMM number out of valid range

0054351F

Plausibility check of active movement mode: SMM number out of valid range

00543520

CSS_CONF_Invalid_Transition_Parameters

00543521

CSS_CONF_Invalid_Transition_Parameters

00543522

CSS_CONF_Invalid_Transition_Parameters

00543523

CSS_CONF_Invalid_Transition_Parameters

00543524

CSS_CONF_Invalid_Transition_Parameters

00543525

CSS_CONF_Invalid_Transition_Parameters

00543526

CSS_CONF_Invalid_Transition_Parameters

00543527

CSS_CONF_Invalid_Transition_Parameters

00543528

System STM: undefined system state

00543529

System STM: undefined system state

0054352A

System STM: undefined system state

0054352B

System STM: undefined system state

00543540

Invalid program path

00543541

Invalid parameter pointer

00543542

Severe exception error FRAM 2323

00543543

Invalid program path

00543544

Severe exception error FRAM 2333

00543549

Severe exception error ENCE 3609

0054354A

Local I/Os: State machine state not allowed

0054354C

Safety function “SMD-r_TimeTrend”: Plausibility check error: select/deselect status with active/inactive status

0054354D

Safety function “SMD-r_TimeTrend”: Plausibility check error: select/deselect status with active/inactive status

0054354E

Safe transfer of TimeTrend: incorrect starting state

0054354F

Safe transfer of TimeTrend: Error number SMM

00543550

Safe transfer of TimeTrend: Error number SMM

00543551

LIO_: Invalid channel ID reported by SBX

00543552

LIO_: Invalid channel ID reported by SBX

00543553

LGVT: NULL pointer exception

00543554

LGVT: NULL pointer exception

00543555

NULL pointer exception

00543556

NULL pointer exception

0054355A

Channel number is invalid

0054355B

Channel number is invalid

0054355C

Channel number is invalid

00543609

Could not allocate memory

0054360A

Could not allocate memory

0054360B

Could not initialize command handler

0054360C

Null pointer exception

00543619

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0054361A

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0054361B

SS2 transfer time monitor: Error in plausibility check of monitoring selection

0054361C

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0054361D

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0054361E

“SMD-E_Basic” drive-controlled error reaction: Plausibility check error: select/deselect status with active/inactive status

0054361F

Safety function SMD-E_Basic: Incorrect state

00543620

Initialization of ramp monitoring SMD-E_Basic: Incorrect state

00543621

Initialization of ramp monitoring SMD-E_Basic: Incorrect SMM number

0054602A

FRAM: Error when releasing a semaphore

00620035

Abortion of the safe calibration process because the trim values from S-CALISET could not be applied

Cause/Remedy 1: Please contact our service department.

006E0002

Value out of bounds

Cause/Remedy 1: Contact our service department.

006E0003

Null pointer exception

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

006E0004

Value out of bounds

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

006E0005

Null pointer exception

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

006E0006

Null pointer exception

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

006E0007

Null pointer exception

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

006E0008

Value out of bounds

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

F8132 Subsystem of encoder not ready for operation

An error occurred during the initialization of the encoder (subsystem).

Cause	Remedy
Encoder hardware incorrectly configured.	Please contact our service department to have the hardware replaced.

▼ Attributes

Short diagnostics no. (20 bits):	F8132
Long diagnostics no. (32 bits):	020F8132
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	2361

F8211 Fatal PLC error no. 1

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8211
Long diagnostics no. (32 bits):	0A0F8211
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF81

F8212 Fatal PLC error no. 2

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8212
Long diagnostics no. (32 bits):	0A0F8212
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF82

F8213 Fatal PLC error no. 3

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message

is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8213
Long diagnostics no. (32 bits):	0A0F8213
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF83

F8214 Fatal PLC error no. 4

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8214
Long diagnostics no. (32 bits):	0A0F8214
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF84

F8215 Fatal PLC error no. 5

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8215
Long diagnostics no. (32 bits):	0A0F8215
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF85

F8216 Fatal PLC error no. 6

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8216
Long diagnostics no. (32 bits):	0A0F8216
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF86

F8217 Fatal PLC error no. 7

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8217
Long diagnostics no. (32 bits):	0A0F8217

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF87

F8218 Fatal PLC error no. 8

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal errors to be generated from within the PLC program.

Fatal errors are errors which do not allow carrying out a freely definable error reaction.

Occurrence of this error depends on the particular PLC project (or the active Technology App). If the error message is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	F8218
Long diagnostics no. (32 bits):	0A0F8218
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FF88

F8300 Dynamization pulse width incorrect

The dynamization pulses of the selection signals should not fall below a minimum sampling ratio of t_{PH} / t_P=90%, i.e. the values cannot fall below the relation between the duration of the HIGH time (t_{PH}) and the periodic time of the test pulse (t_P), because this can affect the availability of the axis.

This error does not affect the safety technology!

This error is detected by the diagnostic unit of the safety technology. In case an error is detected, an immediate error reaction is initiated (safe and functional output stage switch-off).

Cause	Remedy
Sampling ratio of dynamization pulses too low on one or on both selection channels	Check wiring of inputs and outputs and remove error
In the case of selection by active safety unit: Test pulse generation is not suitable or faulty	Replace drive controller



The error can be cleared by a selection and deselection combination. The cause should be fixed first.

▼ Attributes

Short diagnostics no. (20 bits):	F8300

Long diagnostics no. (32 bits):	000F8300
CiA error code:	F0CD

F8301 Error when checking selection signals

The check during the selection/deselection of the safety functions showed that the selection signals of channel 1 and channel 2 differed for more than 1 second.

In case a selection reaction error is detected, an immediate error reaction is initiated (safe and functional output stage switch-off) after the error occurred once.

Cause	Remedy
Error in wiring: ▪ loose connections or wire break ▪ incorrect wiring of inputs and outputs ▪ short circuit between one or both selection channels and 24 V or 0 V	Check wiring of selection and remove error. Then switch power supply off and back on.
Delay between selection channels exceeded during a selection or deselection	Correct selection timing and then clear error by selecting and deselecting the safety functions. Then acknowledge error message.
With active safety unit: Incorrect selection (selection not suitable or faulty)	Replace drive controller
Hardware defective	Replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F8301
Long diagnostics no. (32 bits):	000F8301
CiA error code:	F0CE

F8303 STO system error

The diagnostic unit of the safety technology monitors its function. In case an error is detected, an immediate error reaction (safe and functional output stage switch-off) is initiated.

Cause	Remedy
Firmware update was carried out after drive controller had been in "AF"	Switch power supply off and back on. Then repeat firmware update
System error within diagnostic unit of safety technology (e.g., watchdog)	Switch power supply off and back on. If error occurs repeatedly, replace drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F8303
Long diagnostics no. (32 bits):	000F8303

CiA error code:	F0D0
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	7F3F0

F8312 SMO: Invalid scaling setting

Cause	Remedy
Invalid setting in the SMO scaling parameters	Check parameterization and change it, if necessary **SMO axis mechanics** ■ "SMO axis mechanics: Polarity" (0x3020:01 / P-0-3221.0.1 / --) ■ "SMO axis mechanics: Input revolutions of load gearbox" (0x3020:02 / P-0-3221.0.2 / --) ■ "SMO axis mechanics: Output revolutions of load gearbox" (0x3020:03 / P-0-3221.0.3 / --) ■ "SMO axis mechanics: Feed constant" (0x3020:04 / P-0-3221.0.4 / --) ■ "SMO axis mechanics: Modulo value" (0x3020:05 / P-0-3221.0.6 / --) ■ "SMO axis mechanics: Max. travel range" (0x3020:06 / P-0-3221.0.7 / --) ■ "SMO axis mechanics: Type of motor construction" (0x3020:07 / P-0-3221.0.8 / --) **SMO position scaling** ■ "SMO position scaling: Type" (0x3022:01 / P-0-3222.0.1 / --) ■ "SMO position scaling: Exponent" (0x3022:02 / P-0-3222.0.2 / --) ■ "SMO position scaling: Resolution" (0x3022:03 / P-0-3222.0.3 / --) **SMO velocity scaling** ■ "SMO velocity scaling: Type" (0x3024:01 / P-0-3223.0.1 / --) ■ "SMO velocity scaling: Exponent" (0x3024:02 / P-0-3223.0.2 / --) **SMO acceleration scaling** ■ "SMO acceleration scaling: Type" (0x3026:01 / P-0-3224.0.1 / --) ■ "SMO acceleration scaling: Exponent" (0x3026:02 / P-0-3224.0.2 / --) ■ "SMO acceleration scaling: Ramp reference velocity" (0x3026:03 / P-0-3224.0.3 / --) - or - Start the command C0720 to load the SMO default values

▼ Attributes

Short diagnostics no. (20 bits):	F8312
Long diagnostics no. (32 bits):	060F8312
J1939: "Failure Mode Identifier":	31

J1939: "Suspect Parameter Number":	7FFFF

F8316 SMO: Incorrect change of system state

An error was detected with regard to an inactive SMO during the state change between the "condition as supplied" and "functional commissioning".

The state change can take place with the following actions:

- With "SMO configuration: Functional commissioning" (0x3010:04 / P-0-3201 / --)
- After switching on the control voltage during the first run-up
- When activating the SMO
- With "SMO parameterization: C8300 Command Activate parameter image" (0x3012:02 / P-0-3231.0.3 / P-0-2467)

The cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F8316
Long diagnostics no. (32 bits):	060F8316
CiA error code:	F0D5

Detailed diagnostics

005300F6

An error was detected during verification of the identification data image (0x3014:05 / P-0-3235.0.5 / P-0-2553) (magic number invalid)

0053066D

An error (version not valid) was detected while checking 0x3014:05 / P-0-3235.0.5 / P-0-2553 (identification data image)

0053066E

An error (axis number not valid) was detected while checking 0x3014:05 / P-0-3235.0.5 / P-0-2553 (identification data image)

005400F6

An error was detected during verification of the identification data image (0x3014:05 / P-0-3235.0.5 / P-0-2553) (magic number invalid)

0054066D

An error (version not valid) was detected while checking 0x3014:05 / P-0-3235.0.5 / P-0-2553 (identification data image)

0054066E

An error (axis number not valid) was detected while checking 0x3014:05 / P-0-3235.0.5 / P-0-2553 (identification data image)

F8318 SMO: Different states of state machines

Cause	Remedy
Different states of SMO state machine and subdevice state machine were detected, this is not allowed.	Switch off the device and then switch it back on to acknowledge the error. If the error occurs again, please contact our service department.

The state SMO had been in when the error was triggered is described in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F8318
Long diagnostics no. (32 bits):	060F8318
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	7F3F3

Detailed diagnostics

00400035

SMO state machine is in CM, "parking axis" not active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from CM, "parking axis" not active. Please contact the service department.

00400036

SMO state machine is in PM, "parking axis" not active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from PM, "parking axis" not active. Please contact the service department.

00400037

SMO state machine is in OM, "parking axis" not active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from OM, "parking axis" not active. Please contact the service department.

00400038

SMO state machine is in NA_SD (SMO not active, "Safety Default"), "parking axis" not active

Cause/Remedy 1: Internal error: State machine on AXS signals differing state, "parking axis" not active. Please contact the service department.

00400039

SMO state machine is in NA_FC (SMO not active, functional commissioning), "parking axis" not active

Cause/Remedy 1: Internal error: State machine on AXS signals differing state, "parking axis" not active. Please contact the service

department.

0040003A

SMO state machine is in CM, "parking axis" active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from CM, "parking axis" active. Please contact the service department.

0040003B

SMO state machine is in PM, "parking axis" active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from PM, "parking axis" active. Please contact the service department.

0040003C

SMO state machine is in OM, parking axis active

Cause/Remedy 1: Internal error: State machine on AXS signals state differing from OM, "parking axis" active. Please contact the service department.

0040003D

SMO state machine is in NA_SD (SMO not active, "Safety Default"), "parking axis" active

Cause/Remedy 1: Internal error: State machine on AXS signals differing state, "parking axis" active. Please contact the service department.

0040003E

SMO state machine is in NA_FC (SMO not active, functional commissioning), "parking axis" active

Cause/Remedy 1: Internal error: State machine on AXS signals differing state, "parking axis" active. Please contact the service department.

F8319 SMO: INIT system error

When the safety technology was started, an error was detected that prevents further operation.

1. Switch off the drive and then switch it back on.
2. If the error continues to be reported, backup **all parameters**.
3. Contact our service department.

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	F8319
Long diagnostics no. (32 bits):	060F8319
CiA error code:	F0D6

Detailed diagnostics

005334CE

Illegal pointer on axis identifier

005434CE

Illegal pointer on axis identifier

F8320 SMO: Invalid module/firmware combination

An invalid module/firmware combination is used, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F8320
Long diagnostics no. (32 bits):	060F8320
CiA error code:	F0D7
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

Detailed diagnostics

00533469

FRAM: Error when registering cross comparison firmware

0053346A

FRAM: Error when cross-comparing the firmware

0053346B

FRAM: Error when registering cross comparison firmware

0053346C

FRAM: Error when cross-comparing the firmware

00533545

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00533546

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00533547

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00533548

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00533611

Non-certified firmware not allowed on certified hardware

00543469

FRAM: Error when registering cross comparison firmware

0054346A

FRAM: Error when cross-comparing the firmware

0054346B

FRAM: Error when registering cross comparison firmware

0054346C

FRAM: Error when cross-comparing the firmware

00543545

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00543546

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00543547

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00543548

Cross check in ICSM_Icom_vPerformXCheckSystemInfo

00543611

Non-certified firmware not allowed on certified hardware

F8321 SMO: Invalid circuit board/firmware combination

An invalid circuit board/firmware combination is used, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F8321
Long diagnostics no. (32 bits):	060F8321
CiA error code:	F0D8
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

F8322 SMO: Invalid combination HW/FW properties

During the initialization phase, the safety technology checks the requirements on the hardware stored in the firmware against the hardware properties. A mismatch was detected during this check.

The error cannot be cleared.

Cause	Remedy
Hardware properties expected or requested by firmware are missing	Please contact our service department

▼ Attributes

Short diagnostics no. (20 bits):	F8322
Long diagnostics no. (32 bits):	060F8322
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	EA

F8323 SMO: Error in deactivation

An error occurred while deactivating the SMO.

The state "SMO_not_active" was not reached. The "SMO password: Level" (0x3018:01 / P-0-3230 / --) is maintained.

The cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F8323
Long diagnostics no. (32 bits):	060F8323
CiA error code:	F0D9

F8324 SMO: Error in activation

"SafeMotion" could not be activated.

Activating "SafeMotion" can be triggered by different actions.



If this error occurs, the detailed diagnostics usually provide information on the error cause.

Cause	Remedy
The control voltage was switched on. Although a **valid** safety technology password had been detected, the parameterization mode could not be activated.	Check "SMO password: Level" (0x3018:01 / P-0-3230 / --). ▪ If 0x3018:01 / P-0-3230="0", switch off the control voltage and then switch it back on. If the error occurs repeatedly, please contact our service department. ▪ If 0x3018:01 / P-0-3230="2", analyze the entries in the diagnostic memory and debug the errors that occurred when executing the command C8200.
The safety technology password was assigned for the first time. Although the password had been valid, the safety technology could not be activated. (The safety technology password entered originally was discarded.)	▪ Switch off the control voltage and then switch it back on. ▪ Assign a new valid safety technology password.
An attempt was made to load a parameter image and an error occurred in the process.	▪ Analyze the entries in the diagnostic memory. ▪ If the diagnostic memory contains errors that occurred in the execution of the command C8300, remove these errors. ▪ In addition, make sure that the parameter image originates from a pattern axis that was completely commissioned and validated. ▪ Load the parameter image again.
The control voltage had been switched on and **no valid** safety technology password was detected.	Assign new password following the requirements for the safety technology password ["SMO password: Entry" (0x3018:02 / P-0-3230.0.1 / P-0-2468)]
If the auxiliary function "Safe homing procedure" is used: "SMO Safe homing procedure: Tolerance window" (0x31B0:04/ P-0-3253.0.4 / P-0-2796) has been parameterized with "0"	Assign a value unequal zero to "SMO Safe homing procedure: Tolerance window" (0x31B0:04/ P-0-3253.0.4 / P-0-2796)

If the error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F8324
Long diagnostics no. (32 bits):	060F8324
CiA error code:	F0DA

Detailed diagnostics

00400008

Timeout during synchronization with another channel

Cause/Remedy 1: Inspect and process diagnostics for the other channel.

00400009

Timeout during synchronization with another channel

Cause/Remedy 1: Inspect and process diagnostics for the other channel.

0040000B

Timeout during synchronization with another channel

Cause/Remedy 1: Inspect and process diagnostics for the other channel.

0040000C

Timeout during synchronization with another channel

Cause/Remedy 1: Inspect and process diagnostics for the other channel.

F8325 SMO: Error output 3

An error occurred at the local output 3 in "push-pull mode". All outputs were switched off.

The error cannot be cleared.



"Output 3" ("high-side output" or "push-pull mode") is configured via "SMO local IOs: Output signals configuration" (0x305C:06 / P-0-3323.0.1 / --).

Cause	Remedy
State of output does not comply with actuation	Check the wiring for short circuit against V_{CC} or GND. If error occurs repeatedly, replace drive controller.
Incorrect dynamization of the output	If error occurs repeatedly, replace drive controller.

▼ Attributes

Short diagnostics no. (20 bits):	F8325

Long diagnostics no. (32 bits):	060F8325

Detailed diagnostics

00120024

Error detected at output 3 in pull-push mode

0012002A

Level error detected at output 3 in push-pull mode

F8326 SMO: Error during booting process

When safe outputs have been configured, the safety technology monitors during the booting process whether the voltage at the output is within the specification for "Low".

Cause	Remedy
During the booting process, a wiring error (short circuit against 24 V) was detected at a local output	Remove wiring error at the local output

▼ Attributes

Short diagnostics no. (20 bits):	F8326
Long diagnostics no. (32 bits):	060F8326

Detailed diagnostics

00120025

External voltage detected at output 1

00120026

External voltage detected at output 2

00120027

External voltage detected at output 3

00120029

Hardware error or not supported by driver

F8330 SMO: Configuration data record has not been activated

When initializing the drive-integrated safety technology, the saved SafeMotion parameter image was detected to have been modified.

Cause	Remedy
A new parameter set with modified SafeMotion parameter image was loaded	To continue operating the safety technology, activate the modified parameter image by executing the command C8300

▼ Attributes

Short diagnostics no. (20 bits):	F8330
Long diagnostics no. (32 bits):	060F8330
CiA error code:	F0DB

Detailed diagnostics

005334D1

Parameter images of channel 1 and channel 2 differ

005434D1

Parameter images of channel 1 and channel 2 differ

F8350 Maximum transition time exceeded

Safety technology, change in operating state

During the transition to the safety technology operating state "EMERGENCY STOP" or the special mode "Safe standstill" via the safety function "Safe stop 1" (SS1) in the "time-prioritized" characteristic ["SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --, bit 1="0")], the drive is unable to reach standstill within the parameterized maximum transition time.

Cause	Remedy
The parameterized transition time for the NC-controlled transition **from normal operation to special mode "Safe standstill"** is too short	Check parameterization of "SMO state machine prof. 1: Max. trans. time, NO to SMST/SMES" (0x3084:02 / P-0-3280.0.2 / --) and correct it accordingly
The parameterized transition time for the NC-controlled transition **from one special mode to another special mode** is too short	Check parameterization of "SMO state machine prof. 1: Max. trans. time, between SMxx" (0x3084:03 / P-0-3280.0.3 / --) and correct it accordingly

Cause	Remedy
Drive enable is still set **Note:** Monitoring of drive enable in SafeMotion always refers to the internal drive enable ["Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --, bit 15/14)] and not to drive enable of the control ["Axis state machine: Control word, axis" (0x2802:03 / P-0-0116 / --)]. When drive enable is switched off, the internal drive enable is always extended by the parameterized delay after drive enable was reset ["Axis delay time: Off" (0x2804:02 / S-0-0207 / --)]. This has to be taken into account when parameterizing transition times or error reaction times.	Make sure that drive enable is removed
In the configuration "SS1 time-prioritized" with deceleration monitoring ["SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --, bit 1="0" and bit 2="1")], the parameterized deceleration is too low or has not been adjusted to the parameterized tolerance time	▪ With **drive-controlled** transition, deceleration takes place via "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --); the error reaction parameterized in drive has to be checked ▪ With **NC-controlled** transition, check deceleration parameterized in the control
"NC-controlled stopping process" was activated by mistake	Check "SMO state machine prof. 1: Config operation mode transitions" (0x3084:01 / P-0-3280.0.1 / --) and correct it accordingly; i. e. activate "drive-controlled stopping process"

F7 error reaction

During the transition to the "Safe standstill error", the drive is not able to reach standstill within the parameterized maximum transition time. F8350 is an error resulting from the error F7050.

Cause	Remedy
The tolerance time parameterized for the reaction to F7 errors is too short	Check "SMO error reaction: F7 tolerance time" (0x315E:03 / P-0-3263.0.7 / --) and correct it accordingly

Cause	Remedy
Drive enable is still set **Note:** Monitoring of drive enable in SafeMotion always refers to the internal drive enable ["Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --, bit 15/14)] and not to drive enable of the control ["Axis state machine: Control word, axis" (0x2802:03 / P-0-0116 / --)]. When drive enable is switched off, the internal drive enable is always extended by the parameterized delay after drive enable was reset ["Axis delay time: Off" (0x2804:02 / S-0-0207 / --)]. This has to be taken into account when parameterizing transition times or error reaction times.	Make sure that drive enable is removed
Parameterized deceleration is too short or not adjusted to parameterized tolerance time	With **drive-controlled** transition, deceleration takes place via "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --); the error reaction parameterized in drive has to be checked

See also SafeMotion documentation

▼ Attributes

Short diagnostics no. (20 bits):	F8350
Long diagnostics no. (32 bits):	060F8350
CiA error code:	F0DC
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	27B2

Detailed diagnostics

00530017

STO function was not enabled within the maximum fault response time

00533499

STO function was not activated within the maximum error reaction time

005335AB

STO function was not activated within the maximum error reaction time

00533608

Selected SMO operating status not reached within the maximum transition time.

00533623

SS2-t: Standstill not reached within the maximum transition time

00540017

STO function was not enabled within the maximum fault response time

00543499

STO function was not activated within the maximum error reaction time

005435AB

STO function was not activated within the maximum error reaction time

00543608

Selected SMO operating status not reached within the maximum transition time.

00543623

SS2-t: Standstill not reached within the maximum transition time

F8351 Safely-monitored deceleration exceeded

In the transition to the "Safe standstill error" (SMD-E), the drive is not able to reach standstill with the parameterized deceleration.

The error is generated by the safety function "Safely-monitored deceleration" (SMD) with **monitoring of the F7 error reaction** if the actual velocity of the drive is not within the parameterized velocity envelope curve.

Cause	Remedy
With "drive reaction to errors of category F7", the deceleration by the drive is insufficient	▪ Check parameterization of "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --) ▪ Check torque limit (P-0-0109)
Overshooting of actual velocity upon an F7 error during acceleration procedures	▪ Check control settings and adjust them, if necessary ▪ Check parameterization of "SMO safely-monitored decel. error: Oscillation vel. window" (0x315F:01 / P-0-3263.0.2 / --) and "SMO safely-monitored decel. error: Reaction time" (0x315F:02 / P-0-3263.0.3 / --)
Overshooting of actual velocity when reaching the velocity window SMD-E	▪ Check control settings and adjust them, if necessary ▪ Check parameterization of "SMO state machine prof. 1: Max. trans. time, NO to SMM" (0x3084:04 / P-0-3280.0.4 / --)

Cause	Remedy
Incorrect parameterization	Check parameterizations and change them, if necessary: ■ "SMO safely-monitored decel. error: Oscillation vel. window" (0x315F:01 / P-0-3263.0.2 / --) ■ "SMO safely-monitored decel. error: Reaction time" (0x315F:02 / P-0-3263.0.3 / --) ■ "SMO safely-monitored decel. error: Velocity window" (0x315F:03 / P-0-3263.0.4 / --) ■ "SMO safely-monitored decel. error: Deceleration" (0x315F:04 / P-0-3263.0.5 / --) ■ "SMO error reaction: F7 tolerance time" (0x315E:03 / P-0-3263.0.7 / --) ■ "SMO safely-monitored decel. error: Jerk" (0x315F:05 / P-0-3263.0.8 / --)

▼ Attributes

Short diagnostics no. (20 bits):	F8351
Long diagnostics no. (32 bits):	060F8351
CiA error code:	F0DD

Detailed diagnostics

00530018

Velocity limit exceeded during transition to standstill.

00540018

Velocity limit exceeded during transition to standstill.

F8352 Drive enable set in STO

Cause	Remedy
Drive enable was set while the safety function “Safe torque off (STO)“ had been active	Go to normal operation before setting drive enable **- or -** Check control / wiring
Special mode “Safe standstill” was selected with active control.	Remove drive enable before selection **- or -** Check control / wiring

▼ Attributes

Short diagnostics no. (20 bits):	F8352
Long diagnostics no. (32 bits):	060F8352

CiA error code:	F0DE
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	27B2

Detailed diagnostics

00050001
In STO selection, drive enable was set (host)

F8353 SBC system error

The correct functioning of the interrupting circuit is cyclically checked to lock the brake in a safe way when the safety technology has detected an error. This is done on the one hand during the actions "release brake" / "lock brake", on the other hand statically while the brake drivers are being enabled or locked. The corresponding hardware implementation ensures that this is possible without impacting the brake state.

An error was detected when the brake had been locked or when the brake drivers of the safety function "Safe brake control (SBC)" had been cyclically checked.

Cause	Remedy
An error was detected during check of interrupting circuit	Make sure that brake current is at least 0.1 A. With values smaller than 0.1 A, it is not possible to monitor the switch-off capability
	Check brake wiring for short circuit or wire break
	If brake wiring is error-free: Start command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --) to clear the error an then set drive enable again. If error occurs repeatedly, replace drive controller.
Safety function "Safe Brake Control (SBC)" was configured although no brake has been connected	Deselect "Safe brake control (SBC)" configuration in "SMO safe braking and holding function: Configuration" (0x315C:02 / P-0-3265.0.1 / P-0-2544)

▼ Attributes

Short diagnostics no. (20 bits):	F8353
Long diagnostics no. (32 bits):	060F8353
CiA error code:	F0DF

Detailed diagnostics

0053043B
Test pulse faulty Cause/Remedy 1: There was a faulty pulse during the dynamic test

0053355D

Dynamic test, cross-circuit detected

0054043B

Test pulse faulty

Cause/Remedy 1: There was a faulty pulse during the dynamic test

0054355D

Dynamic test, cross-circuit detected

F8354 Error when checking interrupting circuits

To be able to safely lock the output stage in case of an error detected by the safety technology, the correct functioning of the interrupting circuit is checked cyclically. This is done on the one hand during the actions "enable output stage" and "lock output stage", on the other hand statically while the output stage is enabled or locked. The corresponding hardware implementation ensures that this is possible without impacting the PWM control pulses.

An error was detected when the output stage had been locked or when the locking of the output stage of the safety function "Safe torque off (STO)" had been cyclically checked.



Safety is not acknowledged; i.e. bit 0="0" in "SMO state machine: Status word" (0x3082:05 / P-0-3237 / --).

Cause	Remedy
An error was detected during check of interrupting circuit	Switch the control voltage off and back on to restart the device. If error occurs repeatedly, replace drive controller.

▼ Attributes

Short diagnostics no. (20 bits):	F8354
Long diagnostics no. (32 bits):	060F8354
CiA error code:	F0E0
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	2395

Detailed diagnostics

00530438

Test if deselection faulty, cross circuit detected

Cause/Remedy 1: The selection signal does not match the feedback signal, indication of cross circuit

00530439

Test pulse error detected

Cause/Remedy 1: There was a faulty pulse during the dynamic test

00530467

Dynamization error, cross-circuit detected

Cause/Remedy 1: During the dynamization, a cross-circuit between the control paths was detected

005304A4

Plausibility error during static test

Cause/Remedy 1: The static test had a plausibility error

00540438

Test if deselection faulty, cross circuit detected

Cause/Remedy 1: The selection signal does not match the feedback signal, indication of cross circuit

00540439

Test pulse error detected

Cause/Remedy 1: There was a faulty pulse during the dynamic test

00540467

Dynamization error, cross-circuit detected

Cause/Remedy 1: During the dynamization, a cross-circuit between the control paths was detected

005404A4

Plausibility error during static test

Cause/Remedy 1: The static test had a plausibility error

F8356 SMO: Incorrect parameter processing

An undefined state occurred in the processing of the safety technology parameters.

1. Save **all parameters**.
2. Contact our service department.
3. Remove the causes of the errors additionally signaled.
4. Switch the drive to the configuration mode (C8100) and then execute the command "Class 1 diagnostics: C0500 Reset command" (0x2B87:02 / S-0-0099 / --).

See also Loading, storing and saving parameters

▼ Attributes

Short diagnostics no. (20 bits):	F8356
Long diagnostics no. (32 bits):	060F8356
CiA error code:	F0E2

Detailed diagnostics

00530250

CRC checksums differ between channel 1 and channel 2 configuration parameters

00530251

Timeout of CRC checksum comparison between channel 1 and channel 2 configuration parameters

00530252

CRC checksums differ between channel 1 and channel 2 parameterization parameters

00530253

Timeout of CRC checksum comparison between channel 1 and channel 2 parameterization parameters

00530266

Cyclic channel for comparing axis identifiers is busy

Cause/Remedy 1: Cyclic channel for comparing axis identifiers is busy

00530267

Timeout of cyclic channel for comparing axis identifiers

Cause/Remedy 1: Timeout of cyclic channel for comparing axis identifiers.

0053348C

Timeout while creating the CRC checksum for the configuration parameters of channel 1 and channel 2

0053348D

Timeout while creating the CRC checksum for the configuration parameters of channel 1 and channel 2

005334C3

CRC checksums differ between channel 1 and channel 2 configuration parameters

005334C4

CRC checksums differ between channel 1 and channel 2 parameterization parameters

00540250

CRC checksums differ between channel 1 and channel 2 configuration parameters

00540251

Timeout of CRC checksum comparison between channel 1 and channel 2 configuration parameters

00540252

CRC checksums differ between channel 1 and channel 2 parameterization parameters

00540253

Timeout of CRC checksum comparison between channel 1 and channel 2 parameterization parameters

00540266

Cyclic channel for comparing axis identifiers is busy

Cause/Remedy 1: Cyclic channel for comparing axis identifiers is busy

00540267

Timeout of cyclic channel for comparing axis identifiers

Cause/Remedy 1: Timeout of cyclic channel for comparing axis identifiers.

0054348C

Timeout while creating the CRC checksum for the configuration parameters of channel 1 and channel 2

0054348D

Timeout while creating the CRC checksum for the configuration parameters of channel 1 and channel 2

005434C3

CRC checksums differ between channel 1 and channel 2 configuration parameters

005434C4

CRC checksums differ between channel 1 and channel 2 parameterization parameters

F8359 SMO: Encoder evaluation error

The signals of the measuring system are monitored on the hardware and software levels. If a monitoring functions is triggered, the error F8359 is generated.

In addition, the actual position values calculated by the encoder evaluation and the generated status are monitored. If the difference of the actual position values generated by channel 1 and channel 2 exceed the monitored threshold or if the generated actual velocity value cannot be displayed or if channel 1 and channel 2 report different status information, error F8359 is generated.

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective measuring system	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Clean or replace measuring system
Channel 1 and channel 2 provide different data	Restart drive
Hardware defect on control section of drive	Replace control section or entire drive controller

▼ Attributes

Short diagnostics no. (20 bits):	F8359
Long diagnostics no. (32 bits):	060F8359
CiA error code:	F0E4
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	2361

F8360 Torque reset timeout

During the transition to the "special mode 1" and/or "Safe error state", the drive is not able to reach the target torque "0" within the parameterized maximum transition time.

Cause	Remedy

Cause	Remedy
After the maximum allowed time after the start of the safety function "Safely-monitored torque reduction (SMTR)" had been over (transition time), drive enable was not yet removed	Make sure that drive enable was removed before "SMO safely-monitored torque reduction: Max. transition time" (0x3153:02 / P-0-3311.0.2 / --) is over - or - Correct "SMO safely-monitored torque reduction: Max. transition time" (0x3153:02 / P-0-3311.0.2 / --) until which drive enable must have been removed. The selected maximum transition time has to be greater than the duration of "Axis shutdown: Ramp, torque/force reset" (0x2870:02 / P-0-0119.0.1 / P-0-2413) to "0".

▼ Attributes

Short diagnostics no. (20 bits):	F8360
Long diagnostics no. (32 bits):	060F8360
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	27B3

Detailed diagnostics

00190100
SMTR: Maximum transition time exceeded

F8361 Validation error, current measurement

The validity of the measured values of phase current measurement is validated on the basis of different criteria in SMO. If this validation fails, this diagnostic message is generated.

Cause	Remedy
An error occurred during validation of measured phase current values by SMO.	If error occurs repeatedly, replace drive controller.

▼ Attributes

Short diagnostics no. (20 bits):	F8361
Long diagnostics no. (32 bits):	060F8361
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00536024

Plausibility error, current measurement

00536025

Plausibility error, current measurement

Cause/Remedy 1: Cause: An error occurred during validation of measured phase current values by SMO. Remedy: If error occurs repeatedly, replace drive controller.

00546024

Plausibility error, current measurement

00546025

Plausibility error, current measurement

Cause/Remedy 1: Cause: An error occurred during validation of measured phase current values by SMO. Remedy: If error occurs repeatedly, replace drive controller.

F8362 AKS validation by SMTR

During a motor phase short circuit (AKS) of the functional part of the firmware, the "Safely-monitored torque reduction" (SMTR) additionally monitors whether the PWM pattern evaluated in SMO matches the "Motor phase short circuit active" state.

During an "AKS" of the functional part of the firmware, a PWM signal with a duty factor of 100% is applied in the lower half bridge, and a PWM signal with a duty factor of 0% is applied in the upper half bridge to short-circuit the motor phases. The PWM signal of both half bridges is evaluated by SMO during the transition process.

Cause	Remedy
The PWM pattern evaluated in SMO does not match the "Motor phase short circuit active" state.	If error occurs repeatedly, replace drive controller.

The cause for triggering the error can be found in the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	F8362
Long diagnostics no. (32 bits):	060F8362
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	27B3

Detailed diagnostics

00190101

PWM control does not match the AKS status

Cause/Remedy 1: Cause: The PWM control of the lower or upper half-bridge deviated from the command value during the transition to special mode. Remedy: If error occurs repeatedly, replace drive controller.

F8399 SMO: Test error for enabling test

The error is generated for tests (“error reaction” testing point) to check the reaction of the drive when an F83 error occurs.

▼ Attributes

Short diagnostics no. (20 bits):	F8399
Long diagnostics no. (32 bits):	060F8399
CiA error code:	F0E6

F8811 Device overtemperature shutdown

The heat sink temperature of the device is monitored by a temperature sensor and a temperature model. When the heat sink temperature has reached the maximum value, the device is switched off in order to protect it against destruction.

Before the error F8818 was triggered, the error message F2811 had been output. After F2811 had been output, the device load was not reduced within 30 seconds; thus the error F8818 was triggered. The supply unit reacted by immediately switching off the power supply.

Cause	Remedy
Overtemperature (heat sink) due to overload of device	Switch off supply unit and let it cool down. Check mechanics and drive sizing (on average, machining power may not exceed continuous power of drive) For liquid-cooled devices: Check sizing of cooling system (see documentation with material no. R911309636)
Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 °C	Reduce ambient temperature, e.g. by cooling the control cabinet
Heat sink of device is dirty	Clean heat sink
Convection is prevented by other components or mounting position in control cabinet	Mount device vertically and provide sufficient space for ventilating heat sink
Air conditioning of control cabinet failed	Check air conditioning of control cabinet
Incorrect control cabinet sizing with regard to heat dissipation	Check control cabinet sizing
For liquid-cooled devices: No cooling system connected	Connect cooling system

Cause	Remedy
For liquid-cooled devices: Error in cooling system, e.g. coolant pump defective or filter clogged up; thus, flow rate too low/coolant inlet temperature too high	Check cooling system and remove error

▼ Attributes

Short diagnostics no. (20 bits):	F8811
Long diagnostics no. (32 bits):	070F8811

Detailed diagnostics

0045030C

Mains connection: Overtemperature of rectifier (average power exceeds continuous power) or overtemperature of choke

Cause/Remedy 1: The temperature sensor of the thyristor rectifier has detected an impermissibly high temperature. The device is overloaded.

Cause/Remedy 2: The temperature sensor at the choke has detected an impermissibly high temperature. The choke is overloaded.

0045030E

Mains connection rectifier, temperature model: Chip temperature above error threshold

Cause/Remedy 1: The thermal model of the thyristor rectifier has exceeded the maximum chip temperature. The device is overloaded.

00450314

Mains connection: The thermal model of mains-side rectifier signals an overload error because temperature difference is too high

F8812 Mains frequency outside of the monitoring window

The mains frequency is monitored to protect the device; for this purpose, limit values have been stored in the device (38 to 67 Hz).



When advanced mains monitoring has been activated in the island grid mode ["Grid monitoring: Configuration word" (0x2646:01 / S-0-1712.0.150 / P-0-1779, bit 0="1")], the parameterized monitoring limits ["Grid monitoring: Frequency reduction f< threshold value" (0x2646:04 / S-0-1712.0.164 / P-0-2224) and "Grid monitoring: Frequency increase f> threshold value" (0x2646:05 / S-0-1712.0.165 / P-0-2225)] apply **additionally**.

Cause	Remedy
Mains frequency below the mains frequency allowed for the device (approx. 38 Hz)	Check mains connection
Mains frequency above the mains frequency allowed for the device (approx. 67 Hz)	

Cause	Remedy
Switch-off order of XVR not complied with	If the mains is disconnected by an upstream main contactor while XVR is in operation, the mains filters may start oscillating. ÞFirst switch off the supply unit, and then disconnect the upstream main contactor.
When advanced mains monitoring has been activated in the island grid mode "Grid monitoring: Configuration word" (0x2646:01 / S-0-1712.0.150 / P-0-1779, bit 0="1"), this applies additionally: Mains frequency outside of parameterized monitoring limits ["Grid monitoring: Frequency reduction f< threshold value" (0x2646:04 / S-0-1712.0.164 / P-0-2224) and "Grid monitoring: Frequency increase f> threshold value" (0x2646:05 / S-0-1712.0.165 / P-0-2225)]	Check island grid

▼ Attributes

Short diagnostics no. (20 bits):	F8812
Long diagnostics no. (32 bits):	070F8812

Detailed diagnostics

00450005

Frequency reduction protection f< [Hz] threshold value not met

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected a drop in the mains frequency below the value of parameter 0x2646:04 / S-0-1712.0.164 / P-0-2224.

00450006

Frequency increase protection f> [Hz] threshold value exceeded

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected that the mains frequency has exceeded the value of parameter 0x2646:05 / S-0-1712.0.165 / P-0-2225.

0045000B

Device protection: Minimum mains frequency not reached

Cause/Remedy 1: Cause/Remedy: Network monitoring for device protection has detected a drop in the mains frequency below the value of the basic device parameter P-0-2666.0.187 [0].

0045000C

Device protection: Maximum mains frequency exceeded

Cause/Remedy 1: Cause/Remedy: Network monitoring for device protection has detected an increase in the mains frequency above the value of the basic device parameter P-0-2666.0.187 [1].

F8813 Connection error mains choke

After power supply has been switched on for the first time, after the control voltage was switched on, the connection of the commutation choke is checked with regard to the following aspects:

- the phase sequence of power connections has to be the same as the phase sequence of synchronization inputs
- the inductance of the commutation choke has to match the supply unit

The check detected an error; the corresponding detailed diagnostics provides information on the exact cause of the error.

▼ Attributes

Short diagnostics no. (20 bits):	F8813
Long diagnostics no. (32 bits):	070F8813
CiA error code:	5085

Detailed diagnostics

0045040C

Incorrect commutation choke phase angle

Cause/Remedy 1: Cause: The phase angle is incorrect on the mains voltage synchronization connectors and the power connectors. Remedy: Check connection between XVR controller and mains connection module.

0045040D

Incorrect commutation choke inductance

Cause/Remedy 1: Cause: The inductance of the mains choke is outside of the specified values.

Cause/Remedy 2: The inductance of the mains choke is more than twice as high as specified

00450416

Mains current does not build up

Cause/Remedy 1: Cause: A minimum current must flow during the throttle check but this does not build up. Remedy: Check wiring between mains connection module and XVR supply unit.

00450417

Mains current does not decay

Cause/Remedy 1: Cause: The current must decay again between the individual measuring pulses of the throttle check, but this is not the case. Remedy: There may be an offset in the current measurement. -> Replace XVR device

F8814 Mains voltage outside of the extended monitoring window

For more than 2 seconds, the mains voltage in operation has fallen below the minimum value specified for the device. For a device of the "XVR" type, this is 220 V minus 10% phase-to-phase mains voltage.

Cause	Remedy

Cause	Remedy
Mains connection voltage is too low	Check the mains voltage
Mains voltage dip due to high load by supply unit	Use "non-rigid" mains or mains connection transformer

▼ Attributes

Short diagnostics no. (20 bits):	F8814
Long diagnostics no. (32 bits):	070F8814

Detailed diagnostics

00450007

Voltage reduction protection U< [V] threshold value not met

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected a drop in the mains voltage below the value of parameter 0x2646:06 / S-0-1712.0.160 / P-0-2220.

00450008

Voltage reduction protection U<< [V] threshold value not met

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected a drop in the mains voltage below the value of parameter 0x2646:07 / S-0-1712.0.161 / P-0-2221.

00450009

Voltage increase protection U> [V] threshold value exceeded

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected that the mains voltage has exceeded the value of parameter 0x2646:02 / S-0-1712.0.162 / P-0-2222.

0045000A

Voltage increase protection U>> [V] threshold value exceeded

Cause/Remedy 1: Cause/Remedy: Extended network monitoring has detected that the mains voltage has exceeded the value of parameter 0x2646:03 / S-0-1712.0.163 / P-0-2223.

F8815 Overvoltage in mains

To monitor the mains voltage, the mains voltage peak value is generated and filtered over multiple mains periods. This error is generated if the filtered measured value is 10 % above the mains connection voltage specified for the device. This error is also generated if the unfiltered measured value is 15 % above the mains connection voltage specified for the device.

Cause	Remedy
Mains voltage peak value has exceeded allowed maximum value	Check whether the mains voltage range has been complied with (see “Technical data”, “Mains voltag”e for the device used) Use a matching transformer where necessary

▼ Attributes

Short diagnostics no. (20 bits):	F8815
Long diagnostics no. (32 bits):	070F8815
CiA error code:	3183

Detailed diagnostics

0045030A
Mains connection: Overvoltage in mains

F8816 Overvoltage in power section, mains

The supply unit detected a DC bus voltage far above the allowed value. The power supply was switched off.

Cause	Remedy
Energy regenerated to the DC bus by machine mechanics during braking process was so high that it could not be dissipated by supply unit within the regeneration time. This caused the DC bus voltage to rise to an inadmissible value	Reduce regenerative power by lower acceleration values **– or –** Activate power limitation ["Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) / "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --)] **– or –** Correct the drive sizing **– or –** Ensure that supply unit is adequately sized with regard to braking energy requirements
Mains supply voltage (alternating input voltage) too high	Check mains supply voltage (alternating voltage/3-phase)
F8xxx error at high speed (field weakening range) of a synchronous motor	Check whether braking resistance value in DC bus exceeds maximum value allowed for motor; reduce braking resistance value to or below the allowed value if necessary

Supply unit in island grid mode / XMV in DC/DC mode

If a supply unit is operated in island grid mode or a device of the XMV type in DC/DC mode, the device has to be supplied externally with an appropriate DC bus voltage. If the applied DC bus voltage is above the maximum allowed value for the DC bus voltage, this error is output.



CAUTION!
This error message prevents operation of the device, but **the device is not protected from destruction**, since the device cannot switch off the externally applied DC bus voltage.

Cause	Remedy
Externally applied DC bus voltage is higher than value allowed for the device	Bring applied DC bus voltage to allowed range

Cause	Remedy
On the DC output voltage, more energy is fed in than the supply unit of the primary DC bus can dissipate.	Reduce energy supply **– or –** Increase regenerative capacity of supply unit

▼ Attributes

Short diagnostics no. (20 bits):	F8816
Long diagnostics no. (32 bits):	070F8816

F8817 Overvoltage in power section

The DC bus voltage is monitored. The error is triggered when the maximum value is exceeded.

Cause	Remedy
Energy regenerated to the DC bus by machine mechanics during braking process was so high that it could not be dissipated by supply unit within the regeneration time. This caused DC bus voltage to rise to an inadmissible value.	Reduce regenerative power through lower acceleration values – or – Correct the drive sizing – or – Activate power limitation ["Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --)] – or – Ensure that supply unit is adequately sized with regard to braking energy requirements; if sizing of available braking resistor is not adequate, use additional braking resistor where necessary
Mains supply voltage (alternating input voltage) is too high.	Check mains supply voltage (alternating voltage/3-phase)
No braking resistor (HLR) / braking unit (HLT) connected, or connection or cable defective	Connect braking resistor (HLR) / braking unit (HLT) or check connection
F8xxx error at high speed (field weakening range) of a synchronous motor	Check whether braking resistance value in DC bus exceeds maximum value allowed for motor; reduce braking resistance value to or below the allowed value if necessary
The parameterization of the supply unit is incorrect, e.g. ■ Regeneration deactivated ■ Current limit value too low ■ ...	Check parameterization

▼ Attributes

Short diagnostics no. (20 bits):	F8817
Long diagnostics no. (32 bits):	000F8817

CiA error code:	3282
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	238D

F8820 Braking resistor overload

If the DC bus voltage exceeds the current switch-on threshold of the braking resistor (P-0-0833), as a result of regenerative operation of the drive, the braking resistor is switched on to limit the DC bus voltage.

The load of the braking resistor has by far exceeded the load limit. Power was switched off to avoid braking resistor overload.



The load of the braking resistor is displayed in "Brake resistor thermal model: Current load" (0x2622:01 / P-0-0844 / --).



The error can only be cleared when its cause has been removed.
Once the cause of the error has been removed, the braking resistor has to be checked for operability!

Cause	Remedy
Mains contactor was opened so that regenerated energy of the supplied axes had to be absorbed by braking resistor. Energy absorption capacity of braking resistor is exhausted.	Only switch off the mains contactor if the supplied axes are not in operation.
Enable signal of supply unit was switched off, even though the supplied axes were still active, so that regenerated energy of the supplied axes had to be absorbed by braking resistor. Energy absorption capacity of braking resistor is exhausted.	Only switch off supply unit when axes were decelerated.
Allowed deceleration of connected drives is too high.	Reduce deceleration of connected drives. Connect additional capacitances in the DC bus to enable the regenerated energy to be stored.
Rotary drive energy is too high.	Reduce maximum speed or check sizing of supply module, and increase sizing of supply module if necessary.

▼ Attributes

Short diagnostics no. (20 bits):	F8820
Long diagnostics no. (32 bits):	070F8820
CiA error code:	5481

Detailed diagnostics

00450307

Mains connection: Critical braking resistor or braking transistor overload

F8821 Transistor short circuit of braking resistor control

The current is monitored by controlling the braking resistor. This error is output if the current is significantly higher than the specified minimum resistance would expect.

Cause	Remedy
Terminal connectors for external braking resistor have been short-circuited	Check connection of braking resistor
Faulty braking transistor ⇒ device defective	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F8821
Long diagnostics no. (32 bits):	070F8821
CiA error code:	5484

Detailed diagnostics

00450305

Mains connection: Error in control of braking resistor

00450306

Mains connection: Overcurrent in braking resistor control

F8822 Error in control of braking resistor

The current is monitored by controlling the braking resistor. This error is output if the current is significantly lower than the specified maximum resistance would expect.

Cause	Remedy
No braking resistor has been connected	Connect a braking resistor - or - Configure operation without braking resistor ["Power supply, device: Configuration word" (0x2628:01 / P-0-0860 / --)], if the braking resistor is not required
Maximum resistance value was clearly exceeded	Connect specified braking resistors only

Cause	Remedy
Braking resistance value has been incorrectly parameterized or is outside of the allowed tolerance	Measure braking resistance value and compare it to resistance value displayed in ctrlX DRIVE Engineering (see “Braking resistor” dialog). **Internal braking resistor:** If resistance value clearly deviates, please contact our service department. **External braking resistor:** If resistance value clearly deviates, please check parameterized resistance value and, if necessary, correct it according to the data sheet.
Braking resistor is defective	Check braking resistor
There is an internal device defect (current in braking transistor is detected although braking resistor has not been controlled)	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F8822
Long diagnostics no. (32 bits):	070F8822

F8830 12V/24V voltage not available. Motor operation prohibited

The error was generated because the control voltage supply is overloaded.

The control voltage supply is overloaded in the following cases with drive enable activated:

- Low voltage supply below 9 V
- Low voltage supply <6 V and high voltage <200 V

Drive enable is deactivated by this error.



The cause for triggering the error and the remedy can be found in the detailed diagnostics.

Cause	Remedy
Low voltage supply below 9V	Check low voltage supply
Low voltage supply <6 V and high voltage <200 V	Check high voltage

▼ Attributes

Short diagnostics no. (20 bits):	F8830
Long diagnostics no. (32 bits):	000F8830
CiA error code:	5086
J1939: "Failure Mode Identifier":	18
J1939: "Suspect Parameter Number":	239D

Detailed diagnostics

007B0086
Low voltage supply below 9 V

007B0087
Low voltage <6 V and high voltage <200 V

F8833 Ground fault current mains supply

The total current of the three mains phases is not equal to “0”. A ground fault in the supply unit or in the supplied devices was thereby detected by the supply unit. To isolate the ground fault, the monitoring function switches off the main contactor.

Cause	Remedy
Ground fault in supply unit	Check the insulation of the DC bus line with a measuring device. If the DC bus cabling is not faulty, there is a device error or a connection error
Ground fault in the supplied devices	Carry out insulation test for all devices
Ground fault in the motor supply or in the motor of a supplied motor controller	Pay attention to ground fault message of axis controllers. Carry out insulation test for motors and controllers

▼ Attributes

Short diagnostics no. (20 bits):	F8833
Long diagnostics no. (32 bits):	070F8833
CiA error code:	2120

Detailed diagnostics

00450404
Ground fault detected during DC bus charging Cause/Remedy 1: Cause: Current flowing between one or multiple phases and ground potential. Remedy: Identify and replace component responsible for the impermissible current flow.

F8834 Ground fault inverter

The total current of the three motor phases is not equal to “0”. This implies a ground fault in the motor phases. The power supply was switched off.

Cause	Remedy
Ground fault in one or multiple motor lines	Check insulation of motor cable with a measuring device and remove ground fault

Cause	Remedy
Ground fault in motor winding	Check insulation of motor with a measuring device and remove ground fault, replace motor if necessary
Ground fault by wrong wiring	Check and correct wiring
Ground fault in a drive controller of the drive system	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	F8834
Long diagnostics no. (32 bits):	000F8834
J1939: "Failure Mode Identifier":	1
J1939: "Suspect Parameter Number":	24BA

F8836 DC bus balancing monitor

An unbalance of the internal DC bus capacitances was detected.

Cause	Remedy
There is an unbalance of the internal DC bus capacitances.	Switch device off/on. If the error still occurs, replace the device

▼ Attributes

Short diagnostics no. (20 bits):	F8836
Long diagnostics no. (32 bits):	070F8836
CiA error code:	5184

Detailed diagnostics

00450303
Mains connection: DC bus balancing monitor

F8844 Device-internal module communication disturbed

Multiple telegram failures to the internal optional module / to external optional cards.

Cause	Remedy
Faulty communication with one of the optional cards	Replace defective optional card

Cause	Remedy
Faulty communication with subsystems	Firmware update of subsystems might be required - or - Replace device
Internal optional module defective	Replace device
Only for the device combination XVR supply unit with XLI mains connection module: Communication error due to drop of 24V DC power supply or current limitation	Check and, if necessary, replace 24V DC power supply **Note:** Check and, if necessary, replace fusing elements

▼ Attributes

Short diagnostics no. (20 bits):	F8844
Long diagnostics no. (32 bits):	000F8844
J1939: "Failure Mode Identifier":	19
J1939: "Suspect Parameter Number":	24DC

Detailed diagnostics

006C000A

Error when reading the flex I/O input data of eLION-AD option

006C000B

Error when writing the output data of the eLION-AD option

Cause/Remedy 1: Cause: Fatal error when writing the data of the flex I/Os. Remedy: Contact our service department.

006C000C

Error when setting the individual flex I/O pin configurations of the eLION-AD option

007B004C

COM.x communication to host not compatible

F8855 Incorrect processing of diagnostic message

Cause	Remedy

Cause	Remedy
A problem occurred in the processing of the diagnostic messages. Too many diagnostic messages had been signaled in too short a time; the diagnostic system was unable to process the diagnostic messages.	▪ Carry out a parameter backup of all parameters. ▪ Have a look at the diagnostic trace to find out which diagnostic messages were signaled last. A warning or an error is likely to have been cyclically signaled. This diagnostic message usually appears repeatedly in the diagnostic trace. ▪ Switch device off and back on. ▪ Put device into operation again and prevent the corresponding diagnostic message from being cyclically generated. Please contact our service department to forward the parameter backup to the service team.

▼ Attributes

Short diagnostics no. (20 bits):	F8855
Long diagnostics no. (32 bits):	000F8855
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	26F

F8860 Overcurrent in power section (does not decay)

The motor current and the DC bus current are monitored by the power section. If the DC bus current rises to a multiple of the device peak current, the power transistors are switched off.

Cause	Remedy
Short-circuit between the motor phases	Check the impedance between the motor phases Check cables and connections for short circuits
Short circuit in the DC bus	Check for short circuit between L+ and L- and remove it if possible, or replace damaged component if necessary

If the error occurs repeatedly, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	F8860
Long diagnostics no. (32 bits):	000F8860
CiA error code:	2310
J1939: "Failure Mode Identifier":	0
J1939: "Suspect Parameter Number":	27BF

Detailed diagnostics

00420408

5- to 10-fold overcurrent detected by desaturation monitoring

00420410

5- to 10-fold overcurrent detected by desaturation monitoring from LN on the DC bus current measurement

00450300

Mains connection: Overcurrent in DC bus of inverter

F8861 Overcurrent in power section (does not decay, mains)

The supply unit monitors the mains current. If the current rises above the 1.3-fold to 1.5-fold device peak current, the power transistors are switched off. After the output stage was switched off, the overcurrent does not decay or only decays slowly.

Cause	Remedy
Mains current controller incorrectly parameterized	Check parameterization of mains current controller ["Mains current controller: Proportional gain" (0x2658:11 / S-0-1708.0.11 / S-0-2038) and "Mains current controller: Integral time" (0x2658:12 / S-0-1708.0.12 / S-0-2039)] and, if necessary, correct it after consulting our service department.
Short circuit in the DC bus	Check for short circuit between L+ and L- and remove it if possible, or replace damaged component if necessary
Device defective	Replace device

See also Mains current control

▼ Attributes

Short diagnostics no. (20 bits):	F8861
Long diagnostics no. (32 bits):	070F8861

Detailed diagnostics

00420808

5- to 10-fold overcurrent detected by desaturation monitoring

00420810

Overcurrent at local axis

0045030D

Mains connection: Overcurrent in rectifier module

F8891 Power section defective

During the initialization of the power section, invalid power parameters or a non-adjusted device were detected.

Cause	Remedy
One of the parameters of the power section is invalid (e.g., checksum error) or contains an inadmissible value.	Replace device
Defective control section and/or power section of drive controller / defective supply unit	

▼ Attributes

Short diagnostics no. (20 bits):	F8891
Long diagnostics no. (32 bits):	070F8891
J1939: "Failure Mode Identifier":	11
J1939: "Suspect Parameter Number":	2395

F8892 Defective power section device carrier

An error occurred on the carrier board of the power section.

Cause	Remedy
Internal program flow control has detected an error (watchdog)	Switch off the device and then switch it back on. If error occurs again, the device has to be replaced.
An error occurred when the parameters saved had been read	

▼ Attributes

Short diagnostics no. (20 bits):	F8892
Long diagnostics no. (32 bits):	000F8892
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	2395

Detailed diagnostics

007B0070

24 V wiring error

F8893 I/O module defective

An error occurred on the I/O module (optional module "DA" or eLION AD option).

Cause	Remedy
Internal program flow control has detected an error (watchdog)	Switch off the device and then switch it back on. If error occurs again, the device has to be replaced.
An error occurred when the parameters saved had been read	
The synchronization of the analog channels is incorrect	

▼ Attributes

Short diagnostics no. (20 bits):	F8893
Long diagnostics no. (32 bits):	000F8893

Detailed diagnostics

007B0153
eLION-AD option: Parameterization error

007B0154
eLION-AD option: Calibration error

F8899 F8 test error, axis and supply unit reaction

Using "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --), this error was triggered for test purposes to check the error reaction that has been set for fatal axis and supply unit errors (category F88xx).



If errors of this category occur, the power supply is switched off immediately.

Cause	Remedy
The value "0x404" was written to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --)	1. Write the value "0" to "Axis shutdown: Activation of test errors" (0x2870:04 / P-0-0257 / --) 2. Reset error

See also Error reaction

▼ Attributes

Short diagnostics no. (20 bits):	F8899
Long diagnostics no. (32 bits):	000F8899
CiA error code:	5088

J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFF8

F8901 Panel fatal error: Contact the service team

A critical error occurred in the panel.

Cause	Remedy
Error in hardware initialization of the panel	Disconnect the panel from the device and connect it to the device. If the error persists, please contact our service department.
Memory error	
Error during RTOS initialization	

▼ Attributes

Short diagnostics no. (20 bits):	F8901
Long diagnostics no. (32 bits):	000F8901

E2001 Diagnostic trace S-0-1303.0.10 overflow warning

Cause	Remedy
A problem occurred in the processing of the diagnostic messages of the drive. Too many diagnostic messages are/were signaled in too short a time so that the diagnostic trace became inconsistent. The warning does not have any direct influence on the drive function.	▪ Carry out a parameter backup of all parameters. ▪ Have a look at "Diagnostic trace: Main diagnostics" (0x2B84:0A / S-0-1303.0.10 / S-0-1405) to find out which diagnostic messages were signaled last. A warning or an error is likely to have been cyclically signaled. This diagnostic message usually appears repeatedly in the diagnostic trace. ▪ Switch the drive off and back on. ▪ Put drive into operation again and prevent the corresponding diagnostic message from being cyclically generated. Please contact our service department to forward the parameter backup to the service team.

▼ Attributes

Short diagnostics no. (20 bits):	E2001
Long diagnostics no. (32 bits):	000E2001

Detailed diagnostics

00660034
Unable to store all pieces of diagnostic information in the diagnostic memory 0x2B84:0A / S-0-1303.0.10 / S-0-1405

E2002 Parameters outside of valid value range

The warning was generated because a value within a forbidden value range had been specified via a J1939 command value or J1939 limit value parameter.

- Allowed range: "Valid signal" or "Not available or not requested"
- Forbidden range: "Parameter specific indicator", "Reserved range for future indicator bits" or "Error indicator"

Cause	Remedy
A value within a forbidden value range was specified via a J1939 command value or J1939 limit value parameter	Specify a value within the allowed value range for the respective parameter(s). The detailed diagnostics number for E2002 gives information about which parameter value is within a forbidden value range.

▼ Attributes

Short diagnostics no. (20 bits):	E2002
Long diagnostics no. (32 bits):	000E2002
J1939: "Failure Mode Identifier":	17
J1939: "Suspect Parameter Number":	27B3

Detailed diagnostics

00580007

J1939: Command value (0x28A0:02 / P-0-1930.0.1) out of bounds

00580008

J1939: Parameter 0x28B0:01 / P-0-1931.0.1 out of bounds

00580009

J1939: Parameter 0x28B0:02 / P-0-1931.0.2 out of bounds

0058000A

J1939: Parameter 0x28B0:03 / P-0-1931.0.3 out of bounds

0058000B

J1939: Parameter 0x28B8:01 / P-0-1931.0.4 out of bounds

0058000C

J1939: Parameter 0x28B8:02 / P-0-1931.0.5 out of bounds

0058000D

J1939: Parameter 0x28BA:01 / P-0-1931.0.6 out of bounds

0058000E

J1939: Parameter 0x28BA:02 / P-0-1931.0.7 out of bounds

0058000F

J1939: Parameter 0x28B2:09 / P-0-1931.0.10 out of bounds

00580010

J1939: Parameter P-0-1931.0.11 out of bounds

00580011

J1939: Parameter 0x28B2:0A / P-0-1931.0.12 out of bounds

00580012

J1939: Parameter 0x28B2:06 / P-0-1931.0.13 out of bounds

00580013

J1939: Parameter 0x28B2:01 / P-0-1931.0.14 out of bounds

00580014

J1939: Parameter 0x28B2:02 / P-0-1931.0.15 out of bounds

00580015

J1939: Parameter 0x28BC:01 / P-0-1933 out of bounds

00580016

J1939: Parameter 0x28BC:02 / P-0-1933.0.1 out of bounds

00580017

J1939: Parameter 0x28BC:04 / P-0-1933.0.3 out of bounds

00580018

J1939: Parameter 0x28BC:05 / P-0-1933.0.4 out of bounds

0058001A

J1939: Parameter 0x28BC:07 / P-0-1933.0.6 outside of allowed range

E2004 Performance load prewarning threshold exceeded

The prewarning threshold for the performance load was exceeded.



This warning may be cleared by switching to the parameterization mode or by changing "Performance load AXC: Prewarning threshold" (0x2BA0:03 / P-0-0322.0.2 / P-0-2790) or "Performance load COM: Prewarning threshold" (0x2BA1:03 / P-0-0322.20.2 / --).

Cause	Remedy
Prewarning threshold for performance load of CPU at control section set in "Performance load AXC: Prewarning threshold" (0x2BA0:03 / P-0-0322.0.2 / P-0-2790) was exceeded	Increase value of "Performance load AXC: Prewarning threshold" (0x2BA0:03 / P-0-0322.0.2 / P-0-2790). Please note that with loads > 90% the reactions to the following actions may be slowed down: ▪ acyclic communication requests ▪ reduced computing time for "Technology Function" ▪ increased processing times for commands With loads > 95%, failure-free operation is no longer ensured, CPU watchdogs (F9003) may occur. **Tip:** The averaged performance load is displayed in "Performance load AXC: Value" (0x2BA0:01 / P-0-0322 / --)
	Increase the master communication cycle time
	Reduce the cyclically configured process data
	Deactivate optional firmware functions if they are not required
Prewarning threshold for performance load of communication interface set in "Performance load COM: Prewarning threshold" (0x2BA1:03 / P-0-0322.20.2 / --) was exceeded	**Tip:** The averaged performance load is displayed in "Performance load COM: Value" (0x2BA1:01 / P-0-0322.20.0 / P-0-3921). Increase the master communication cycle time Reduce the cyclically configured process data

▼ Attributes

Short diagnostics no. (20 bits):	E2004
Long diagnostics no. (32 bits):	000E2004

E2010 Position control with encoder 2 not possible

For operation modes using "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the control encoder can be switched during operation.

If no second encoder has been defined as a control encoder, this warning is generated when there is an attempt to switch to encoder 2.

▼ Attributes

Short diagnostics no. (20 bits):	E2010
Long diagnostics no. (32 bits):	000E2010
CiA error code:	8580

E2012 Position control with encoder 1 not possible

For operation modes using "Axis control: Control word control loop" (0x2202:01 / S-0-0520 / --), the control encoder can be switched during operation.

If the operational encoder 1 is not available, this warning is generated when switching the control encoder to encoder 1 is attempted.

▼ Attributes

Short diagnostics no. (20 bits):	E2012
Long diagnostics no. (32 bits):	000E2012
CiA error code:	F086

E2021 Motor temperature outside of measuring range

The lower limit of the allowed ambient temperature range of Bosch Rexroth motors is 0° C. If temperatures are very low (below -20 °C) there is an imminent risk of motor encoder failure, as well as damage to shaft bearings and housings.

Cause	Remedy
The motor temperature measured by the temperature sensor is smaller than "Motor temperature monitoring: Lower limit" (0x2022:07 / P-0-0505 / --)	Warning disappears automatically when motor exceeds "Motor temperature monitoring: Lower limit" (0x2022:07 / P-0-0505 / --) due to load or higher ambient temperature.

See also Motor temperature monitoring

▼ Attributes

Short diagnostics no. (20 bits):	E2021
Long diagnostics no. (32 bits):	000E2021
CiA error code:	4381
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	2363

E2025 Device carrier undervoltage

An undervoltage of the board mains voltage (device carrier) has been detected. To prevent a failure of the device, the device carrier is supplied with voltage in a kind of "emergency operation".

NOTICE!

Emergency operation is not designed to supply the equipment carrier with voltage permanently, damage to the drive electronics (DC/DC converter) may occur!

Remove the cause of the undervoltage as soon as possible.

Cause	Remedy
24 V supply failure	Restore supply with 24 V
Connection of the 24 V supply interrupted e.g. cable break at the 24 V connector plug	Reconnect the 24 V supply

▼ Attributes

Short diagnostics no. (20 bits):	E2025
Long diagnostics no. (32 bits):	000E2025
J1939: "Failure Mode Identifier":	17
J1939: "Suspect Parameter Number":	239D

E2026 Undervoltage in power section

The level of the DC bus voltage is monitored by the drive controller. In "DC bus supply: Configuration" (0x2606:01 / P-0-0118 / --), "Warning" has been set with regard to the reaction to undervoltage.

With axis inverter: The readiness for power output of the DC bus is not displayed anymore ["DC bus supply: Control word" (0x2606:02 / S-0-0240 / --, bit 0 changes from "1" to "0")] or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].

With converter/mains connection: The mains connection in the converter is faulty which causes the power supply to be switched off. Thereby, the readiness for power output of the DC bus is not ensured anymore or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].

Cause	Remedy
Power is switched off without deactivating the drive via drive enable (AF) beforehand	Check logic for activating drive in connected control unit
Undervoltage threshold not configured in accordance with the connected mains voltage	Check connected mains voltage and/or "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --) in accordance with the connected mains voltage ["DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --) should be approx. 75% of mains peak value]
Fault or overload of power supply	Check the power supply
Mains failure	Check the cause of the mains failure, reconnect the mains voltage
Temporary power supply overload	Reduce machining cycle of the machine

▼ Attributes

Short diagnostics no. (20 bits):	E2026
Long diagnostics no. (32 bits):	C00E2026
CiA error code:	3221
J1939: "Failure Mode Identifier":	18
J1939: "Suspect Parameter Number":	238D

E2032 Impossible to switch off

An error occurred during the execution of the command for switching off the eLION inverter ["J1939 application: C6900 Switch-off request" (0x28AE:01 / P-0-1934.0.10 / --)].

The conditions required to execute the command for switching off the eLION inverter were not fulfilled or the eLION inverter was not switched off successfully.

Cause	Remedy
"Encoder actual values ENC_1: Velocity sensor actual value" (0x6069:00 / S-0-0040 / --) is greater than 0 rpm [threshold value for detecting motor or axis standstill: "Velocity status: Standstill window" (0x2212:01 / S-0-0124 / --)]	Switch off axis and wait until axis is in standstill
eLION inverter is not in "bb"	Bring eLION inverter to "bb"
It had been impossible to switch off the device, because CAN telegrams were still received	Terminate CAN communication before timeout ("J1939 protocol: CAN timeout" (0x2CE0:08 / P-0-4089.0.200 / --)

Cause	Remedy
The DC bus voltage U_{DC} has increased to a value ≥60 V	Discharge DC bus and make sure that the DC bus voltage is smaller than 60 V. [The currently measured DC bus voltage is displayed in "Inverter DC bus: Voltage, actual value" (0x2648:01 / S-0-0380 / --).]

▼ Attributes

Short diagnostics no. (20 bits):	E2032
Long diagnostics no. (32 bits):	000E2032
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	27B2

E2033 Error in power supply from high voltage source

The warning was generated because the DC/DC converter does not behave as expected.

Cause	Remedy
Faulty behavior of DC/DC converter	Check DC/DC converter

▼ Attributes

Short diagnostics no. (20 bits):	E2033
Long diagnostics no. (32 bits):	000E2033
J1939: "Failure Mode Identifier":	12
J1939: "Suspect Parameter Number":	24BB

E2035 Incr. encoder emulator: Pulse frequency too high

In the drive, the number of the increments or lines output within the velocity controller cycle (125 µs) is monitored to make sure that the maximum allowed frequency of the incremental encoder signals of 4 MHz (maximum value at 1-fold oversampling) is not exceeded. Otherwise, a position offset would occur due to "lost increments".



The maximum allowed frequency of the incremental encoder signals also has to be taken into account for the sizing of the subsequent evaluation electronics in the control.

Cause	Remedy

Cause	Remedy
The resolution of the emulated encoder set in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) is too high for the present travel velocity	Reduce the number of increments of the incremental encoder emulator in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) – or – Reduce travel velocity

▼ Attributes

Short diagnostics no. (20 bits):	E2035
Long diagnostics no. (32 bits):	000E2035

E2036 Incremental enc. emulator resol. cannot be displayed

The warning is output because the resolution of the emulated encoder (0x29E1:03 / P-0-0901.3.3 / P-0-2359) was reparameterized during the operating mode (OM). In the case of incremental encoder emulation, inadmissible overflow can occur for increment output. To avoid this overflow, "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359) has to be parameterized accordingly.

In the case of modulo processing, the overflow occurs at the modulo value entered in Maximum travel range: Modulo format (0x2488:01 / S-0-0103 / --):

CoE:
0x29E1:03 = 0x2900:04 / 0x2488:01 ´ 2^{29}
Sercos:
P-0-0901.3.3 = S-0-0079 / S-0-0103 ´ 2^{29}
SoE:
P-0-2359 = S-0-0079 / S-0-0103 ´ 2^{29}

Position data scaling: Rotational resolution (0x2900:04 / S-0-0079 / --)
Maximum travel range: Modulo format (0x2488:01 / S-0-0103 / --)
Encoder emulation configuration OPT_3: Resolution (0x29E1:03 / P-0-0901.3.3 / P-0-2359)

Otherwise, the overflow occurs at the value entered in "Maximum travel range: Absolute format" (0x2488:02 / S-0-0278 / --):

CoE:
0x29E1:03 = 0x2900:04 / 0x2488:02 ´ 2^{29}
Sercos:
P-0-0901.3.3 = S-0-0079 / S-0-0278 ´ 2^{29}
SoE:
P-0-2359 = S-0-0079 / S-0-0278 ´ 2^{29}

Position data scaling: Rotational resolution (0x2900:04 / S-0-0079 / --)
Maximum travel range: Absolute format (0x2488:02 / S-0-0278 / --)
Encoder emulation configuration OPT_3: Resolution (0x29E1:03 / P-0-0901.3.3 / P-0-2359)

Cause	Remedy

Cause	Remedy
The resolution of the emulated signal entered during the operating mode (OM) does not match the modulo range / travel range	Reduce resolution entered in "Encoder emulation configuration OPT_3: Resolution" (0x29E1:03 / P-0-0901.3.3 / P-0-2359)

▼ Attributes

Short diagnostics no. (20 bits):	E2036
Long diagnostics no. (32 bits):	000E2036

E2045 Encoder emulator: Hardware warning



The cause of the warning can be also read via the detailed diagnostics.

Cause	Remedy
During the operating mode (OM), an error was signaled via a bit in the status word of the encoder emulation hardware	Temporarily switch axis to PM to reset the encoder emulation hardware If occurring repeatedly: Replace encoder emulation hardware
During the operating mode (OM), a faulty CRC was detected in the communication between drive and encoder emulation hardware	

▼ Attributes

Short diagnostics no. (20 bits):	E2045
Long diagnostics no. (32 bits):	000E2045

Detailed diagnostics

005100A0

Incremental encoder emulation: Missing firmware access to data register between two sync pulses

005100A1

Incremental encoder emulation: Double firmware access to data register between two sync pulses

005100A2

Incremental encoder emulation: Position error of zero pulse (outside of Q0 or not at the beginning of Q0)

005100A3

Incremental encoder emulation: Directional error of zero pulse (distance to zero pulse inverted to new increments)

005100A4

Absolute encoder emulation: Missing firmware access to data register between two sync pulses

005100A5

Absolute encoder emulation: Double firmware access to data register between two sync pulses

005100A6

Encoder emulation: Error message in hardware status word

005100A7

Encoder emulation: Incorrect checksum in communication with emulator hardware

E2047 Low battery voltage (encoder 2)

For encoders with a battery, the absolute position information is maintained, even when the drive controller has been switched off. This is ensured by an encoder cable-integrated battery that buffers the encoder data in case voltage is switched off.

The battery was designed for a service life of 10 years in its installed state for a machine running in three-shift operation.

CAUTION!

Error caused by battery undervoltage when controlling motors and moving parts!

If the battery is not replaced before the 24V control voltage is switched off, the drive signals battery undervoltage, after restart and during phase switching to "OM" or "P4", with F2047. This deletes the reference of the drive controller to the mechanics.
Replace battery immediately!

Cause	Remedy
Battery voltage has fallen below allowed value (The battery voltage is measured cyclically during operation.)	To avoid loss of reference, the battery has to be replaced before the 24V control voltage is switched off

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	E2047

Long diagnostics no. (32 bits):	000E2047

E2049 Positioning velocity >= limit value

In the operation modes in which the drive-internal position command value interpolator is active, the velocity command value (positioning velocity) effective in the drive is limited to the smallest parameterized velocity limit value.

This means that monitoring is active in the following operation modes or operating states:

Operation modes

- Drive-internal interpolation
- Drive-controlled positioning
- Positioning block mode

Commands

- Drive-controlled homing procedure
- Automatic control loop setting
- Spindle positioning
- ...

Cause	Remedy
Preset velocity is incorrect. Parameterized and/or cyclically input value is too high	Check the following parameterizations and/or cyclic command values of control unit and set a smaller value for the preset velocity used than for the velocity limit value ["Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --), "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --), "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)]: ■ "Positioning profile: Profile velocity" (0x6081:00 / S-0-0259 / --) ■ "Homing speeds: Speed during search for switch" (0x6099:01 / S-0-0041 / --) ■ "Spindle positioning: Speed" (0x29A0:05 / S-0-0222 / --) ■ "Positioning block mode: Velocity" (0x284E:02/ P-0-4007 / --) **Note:** The preset velocity is also influenced by "Feedrate override: Value" (0x282E:01 / S-0-0108 / --).
A velocity limit value has been incorrectly parameterized	Check velocity limit values: ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --) Check whether parameter is contained in the cyclic data. For devices with analog inputs: Check whether parameter possibly has been assigned to an analog input.

Cause	Remedy
For devices with analog inputs: Analog input to which velocity limit value* was assigned is defective or not connected. *Velocity limit values* ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)	Check wiring and function of analog input; if necessary, replace cable or control section, or the entire drive controller (observe the note!)



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Velocity Limitation

▼ Attributes

Short diagnostics no. (20 bits):	E2049
Long diagnostics no. (32 bits):	C00E2049
CiA error code:	8680

E2050 Device overtemp. prewarning

The temperature of the device is monitored by temperature sensors and a temperature model. The diagnostic message E2050 warns about overheating of the device.



If the warning E2050 is generated, it is possible for a device-specific period (e.g., 30 seconds) to decelerate the axis via the control in accordance with the process (e.g., finishing machining, leaving the collision area, etc.) or to reduce the load of the drive controller.
If the temperature of the device remains high, the error F2018 is generated. The device is switched off to protect it against destruction.

Cause	Remedy
Amplifier overtemperature (heat sink) due to drive overload (overcurrent)	Switch off drive and let it cool down. Check mechanics and drive sizing (on average, machining power may not exceed continuous power of drive)
Ambient temperature too high. Specified performance data are valid up to an ambient temperature of 40 °C (without derating)	Reduce ambient temperature, e.g. by cooling the control cabinet (observe derating of device where applicable)
Convection is prevented by other components or mounting position in control cabinet	Mount device vertically and provide sufficient space for ventilating heat sink
Device-internal fan failed	Replace device-internal fans. If a fan fails, **all** fans of the device have to be replaced
Air conditioning of control cabinet or ventilation failed	Check air conditioning of control cabinet or ventilation
Control cabinet does not have adequate heat dissipation	Check control cabinet with regard to heat dissipation (see Project Planning Manual, index entry “Project planning of cooling system”).
Heat sink of device is dirty	Clean heat sink, replace fan if necessary

Additional possible causes for liquid-cooled devices

Cause	Remedy
Coolant too hot or flow rate too low	Check pump and cooler; check sizing of liquid heat sink
Bad thermal transition between liquid heat sink and device	Check device mounting; check sizing of liquid heat sink
Bad thermal transition between liquid heat sink and cooling medium	Check liquid heat sink and cooling medium for accumulated dirt

See also Current and torque/force limitation, power limitation

▼ Attributes

Short diagnostics no. (20 bits):	E2050
Long diagnostics no. (32 bits):	C00E2050
CiA error code:	4285
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	27E8

Detailed diagnostics

00450301

Mains connection: Overtemperature inverter circuit board

E2051 Motor overtemp. prewarning

The motor temperature measured by the temperature sensor approaches the limit value and has reached "Motor temperature monitoring: Warning threshold" (0x2022:01 / S-0-0201 / --), or the thermal model of the motor has exceeded the load prewarning threshold. The causes have to be distinguished by evaluating the detailed diagnostics.



When the motor temperature has reached "Motor temperature monitoring: Shutdown threshold" (0x2022:02 / S-0-0204 / --), the drive is switched off (F2019).

Cause	Remedy
Incorrect parameterization of motor warning temperature	Check and correct parameterization of "Motor temperature monitoring: Warning threshold" (0x2022:01 / S-0-0201 / --) using the motor or temperature sensor data sheet. Check "Motor temperature sensor: Actual value" (0x2024:04 / S-0-0383 / --)
Incorrect parameterization of prewarning threshold of thermal motor load	Check parameterization of temperature model: ▪ "Motor thermal model 1 config.: Time const., motor winding" (0x202A:02 / P-0-4034 / --) ▪ "Motor thermal model 1 config.: Time const., motor housing" (0x202A:03 / P-0-4035 / --) ▪ "Motor thermal model 1 config.: Intermittent overload factor" (0x202A:04 / P-0-4037 / --) Check motor load and prewarning threshold: ▪ "Motor thermal model: Actual load" (0x2026:01 / P-0-0446 / --) ▪ "Motor thermal model: Prewarning threshold" (0x2026:03 / P-0-0468 / --)
Motor is overloaded. Effective torque demanded from motor has been above allowed continuous torque for a too long time	Check sizing of motor and reduce motor load, e.g. by reducing feedrate in cutting operation. Or, in case of installations that have been operated for a long time, check whether drive conditions have changed (with regard to dirt accumulation, friction, moved masses, etc.)
Line interruption, ground fault or short circuit in line for motor temperature monitoring	Check line for motor temperature monitoring for line interruption, ground fault or short circuit
Temperature sensor incorrectly configured	Check and, if necessary, correct temperature sensor configuration: ▪ "Motor temperature sensor: Type" (0x2024:01 / P-0-0512 / --) – or – ▪ "Motor temperature sensor: Charact. values" (0x2024:02 / P-0-0513 / --)
Instability in speed control loop	Check parameterization of speed control loop
Fan / cooling system defective	Check fan / cooling system

See also Motor temperature monitoring

▼ Attributes

Short diagnostics no. (20 bits):	E2051
Long diagnostics no. (32 bits):	C00E2051
CiA error code:	4382
J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	2363

Detailed diagnostics

00430001
Motor load warning threshold reached (thermal model)

00430003
Motor measurement warning threshold reached (sensor)

E2052 Coolant temperature outside of range

For devices that have a second input for temperature measurement, this input may be configured to measure the coolant temperature ["Motor temperature sensor 2: Actual value" (0x2025:01 / P-0-0597 / --)]. The sensor connected to this input is monitored for whether "Motor temperature monitoring: Minimum coolant temperature" (0x2022:03 / P-0-0595 / --) has fallen below the minimum value or whether "Motor temperature monitoring: Maximum coolant temperature" (0x2022:04 / P-0-0596 / --) has been exceeded.

The corresponding detailed diagnostics shows whether the coolant temperature is too high or too low; check the motor cooling, the coolant sensor and/or the parameterization.

▼ Attributes

Short diagnostics no. (20 bits):	E2052
Long diagnostics no. (32 bits):	000E2052
J1939: "Failure Mode Identifier":	2
J1939: "Suspect Parameter Number":	27EC

E2053 Target position out of travel range

In operation modes with internal position command value generation a check is run, before a movement is carried out, to find out whether the preset target position is within the allowed travel range of the drive.

If position limit value monitoring has been activated and the target position is outside of the allowed travel range, a warning bit is set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --). Additionally, the message "Positioning status: Target position outside of travel range" (0x2848:06 / S-0-0323 / --) is set.
The positioning procedure is **not** started.

Cause	Remedy
Position limit values incorrectly parameterized	Check parameterization of position limit values and adjust it according to desired travel range. **Sercos/SoE:** "Travel range limitation: Limit value, positive" (S-0-0049 / --) has to be greater than "Travel range limitation: Limit value, negative" (S-0-0050). **CoE:** "Travel range limitation: Min position limit (0x607D:01)" has to be greater than "Travel range limitation: Max position limit" (0x607D:02).
Position limit value monitoring has been activated although it is not required	Deactivate position limit value monitoring if it is not required (e.g., in modulo mode): **Sercos/SoE:** "Axis polarity: Position" (0x290A:01 / S-0-0055 / --) **CoE:** Set one of the two values to "0": "Travel range limitation: Min position limit (0x607D:01)" or "Travel range limitation: Max position limit" (0x607D:02)
In the case of relative interpolation, travel distance value was set too high, or multiple travel distances that are added cause "Positioning profile: Effective target position" (0x2840:04 / S-0-0430 / --) to be outside of the position limits	Check preset travel distance ["Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --)] and adjust it in control program, if necessary
In the case of absolute interpolation, preset target position is incorrect	Check preset target position ["Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --) for "drive-internal interpolation" or "Drive-controlled positioning: Command value" (0x2844:01 / S-0-0282 / --) "drive-controlled positioning")] and, if necessary, adjust it in control program [only enter "Drive-internal interpolation: Target position" (0x2842:01 / S-0-0258 / --) within the position limit values minus "Position status: Position window" (0x6067:00 / S-0-0057 / --); i.e. the target position has to be further away from the position limit values than "Position status: Position window"].
In "positioning block mode", one or more target positions have been incorrectly parameterized or incorrect positioning block is selected	Check "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) and "Positioning block mode: Selection" (0x284E:07 / P-0-4026 / --). Furthermore, check block selection via respective master communication (e.g., field bus or digital I/Os)

See also Travel range limit switches

For “relative interpolation”, see Drive-controlled positioning

▼ Attributes

Short diagnostics no. (20 bits):	E2053
Long diagnostics no. (32 bits):	C00E2053
CiA error code:	8682

E2054 Not homed

Before a motion is carried out, a check is run in the case of operation modes with drive-internal position command

value generation to find out whether, with absolute target position preset, the measuring system used for positioning has been homed.



When the warning E2054 appears, the drive stops or does not accept the target position or the positioning block. A warning bit is set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).

Cause	Remedy
Absolute positioning was started although position data reference of drive had not yet been established [drive has not been homed, cf. position feedback value status in "Homing status: Feedback value status" (0x2508:01 / S-0-0403 / --)]	Establish absolute position data reference by executing the command "Homing control: C0600 Command drive-controlled procedure" (0x2501:01 / S-0-0148 / --) or "Set absolute position function: C0300 Command procedure" (0x2510:01 / S-0-0447 / --)

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	E2054
Long diagnostics no. (32 bits):	C00E2054
CiA error code:	8684

E2055 Feedrate override S-0-0108 = 0

Using "Feedrate override: Value" (0x282E:01 / S-0-0108 / --) it is possible to set the proportional (0...100 %) scaling for the travel velocity of drive-controlled travel commands.

A feedrate override of 0 % also causes the effective travel velocity to be "0". Although the velocity command value [e.g., "Positioning profile: Profile velocity" (0x6081:00 / S-0-0259 / --)] is present, the axis stops at the current position or the drive decelerates to standstill.

The function of the feedrate override can be switched off by setting 0x282E:01 / S-0-0108 / -- = 100 %. The axis then moves at full target velocity.

Cause	Remedy
"Feedrate override: Value" (0x282E:01 / S-0-0108 / --) is "0"	Set "Feedrate override: Value" (0x282E:01 / S-0-0108 / --) to a value greater than "0" so that the axis moves. If "Feedrate override: Value" (0x282E:01 / S-0-0108 / --) has been cyclically configured, the configuration has to be changed.
For devices with analog inputs	
Feedrate override via analog input has been activated and voltage at analog input is "0"	Apply a voltage greater than "0" proportional to the desired velocity (+10 V corresponds to 100 % of velocity) Alternative: Deactivate feedrate override
Feedrate potentiometer of connected control is at "0" or is incorrectly evaluated	**WARNING! Dangerous movements! Danger to life, risk of injury, serious injury or property damage! Activating the feedrate potentiometer changes the travel velocity of the axis.** Activate the feedrate potentiometer in small steps and check the analog signal and evaluation.

Cause	Remedy
Analog input used for feedrate override or connecting cable is defective	Check and, if necessary, replace cable and control section (observe the note!)



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

▼ Attributes

Short diagnostics no. (20 bits):	E2055
Long diagnostics no. (32 bits):	C00E2055
CiA error code:	8687

E2056 Torque limit = 0

To protect the drive and the connected mechanics from mechanical overload, the maximum torque or the maximum force can be limited to allowed values.



With the firmware AXS-V-0316 and above, this warning can be suppressed via "Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 19="1") in the case of error.

Cause	Remedy
One of the torque/force-limiting parameters has the value "0"	Check torque/force limit values and enter "correct" limit values (unequal "0"): ■ "Torque/force limitation: Limit value, positive" (0x230C:04 / S-0-0082 / --) ■ "Torque/force limitation: Limit value, negative" (0x230C:05 / S-0-0083 / --) ■ "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) ■ "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --) ■ "Fixed stop: Torque/force limit value" (0x220C:02 / S-0-0530 / --)

Cause	Remedy
A motor without encoder memory is used where the motor data have not yet been set and thus the maximum allowed currents ["Motor basic data: Peak current" (0x2010:08 / S-0-0109 / --), "Motor basic data: Motor rated current" (0x6075:00 / S-0-0111 / --),...] are still "0"	Load the motor parameters via the motor database stored in the commissioning software
For devices with analog inputs	
One of the torque/force-limiting parameters has been assigned to an analog input and the voltage at the analog input is "0"	Apply a voltage greater than "0" proportional to the desired torque/force limit value **Note:** The scaling of the analog input defines the scaling of the analog input voltage
The potentiometer of the connected control is "0" or is evaluated incorrectly	Actuate the potentiometer carefully, check analog signal and evaluation
Cable connected to analog input for torque/force limitation is defective	Check cable and replace it, if necessary
Analog input used for torque/force limitation is defective	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See Analog Inputs

See also Torque/force control

▼ Attributes

Short diagnostics no. (20 bits):	E2056
Long diagnostics no. (32 bits):	C00E2056
CiA error code:	8380
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	27CE

E2058 Selected positioning block has not been programmed

In the "positioning block mode", the selected positioning block is checked so that only complete positioning blocks can be started.

When the warning E2058 is displayed, the drive stops or does not accept the selected positioning block. A warning bit is set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).

Cause	Remedy
The positioning block data of the currently selected block are not available	Check the positioning block data and correct the corresponding parameters ■ "Positioning block mode: Target position" (0x284E:01 / P-0-4006 / --) ■ "Positioning block mode: Velocity" (0x284E:02 / P-0-4007 / --) ■ "Positioning block mode: Acceleration" (0x284E:03 / P-0-4008 / --) ■ "Positioning block mode: Jerk" (0x284E:04 / P-0-4009 / --) ■ "Positioning block mode: Mode" (0x284E:06 / P-0-4019 / --)
Incorrect positioning block selection via field bus or digital inputs	Check "Positioning block mode: Selection" (0x284E:07 / P-0-4026 / --) and actuation. If required, check the wiring and the connection of the digital I/Os
Incorrect configuration of digital inputs results in undesired positioning block selection	Check configuration of the digital inputs and correct it accordingly

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	E2058
Long diagnostics no. (32 bits):	000E2058
CiA error code:	8689

E2059 Velocity command value limit active

The drive permanently monitors the effective velocity command value (sum of velocity command values at controller input) and limits it.

With the firmware AXS-V-0316 and above, this warning can be suppressed via "Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 17="1") in the case of error.

Cause	Remedy
Cyclic command value preset by control unit is incorrect or too high	Check cyclic command value and, if necessary, adjust control program

Cause	Remedy
Parameterized velocity limit value is too low	Check velocity limit values: ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)
A firmware not requiring an export license is used; velocity command values corresponding to an inverter output frequency ≥ 600 Hz were preset	Reduce velocity command value to allowed value
Limit values of motor were exceeded	Reduce velocity command value taking the motor limit values into account: ■ "Motor basic data: Max. motor speed" (0x6080:00 / S-0-0113 / --) ■ "Axis mechanical data: Velocity limit, bipolar" (0x2204:03 / P-0-0113 / --)

See also Velocity control

▼ Attributes

Short diagnostics no. (20 bits):	E2059
Long diagnostics no. (32 bits):	000E2059
CiA error code:	8480
J1939: "Failure Mode Identifier":	20
J1939: "Suspect Parameter Number":	27B3

E2061 Device overload prewarning

The load of the device has exceeded a threshold value. A warning is generated, alerting the user to reduce the load in order to avoid an overload.

Devices with digital control are monitored by a continuously running temperature model. If the thermal load approaches 100%, the continuous current limitation function is activated (E8057).

Current limitation is accompanied by a reduction in torque/force, which is unwanted for machines and installations and may lead to problems. For this reason, a warning is output before such a situation may occur.

The warning binarily is also displayed in bit 1 of "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).

Setting the threshold value

The threshold value for the overload prewarning can be set in "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --). If the thermal load exceeds this value, warning E2061 is output. Useful values for "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --) are at 80% to 90% to ensure a buffer before the actual thermal load (100%) is reached.

The warning is deactivated if "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --) is parameterized with "0%".
If a value greater than 100% is parameterized in "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --) and the device load exceeded a threshold value, the fatal warning E8057 is generated and the output current is limited by the controller.

If the "load-dependent PWM frequency switching" function has been selected in "Motor control function: Configuration 1" (0x210C:01 / P-0-0045 / --), the device is switched to the lower switching frequency in case the prewarning threshold is exceeded.
The device is switched to the higher switching frequency when "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --) falls below an internally calculated threshold. The value of this threshold is lower than the value for "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --).
As long as the controller is operated with the lower switching frequency, the overload warning (E2061) is displayed.

Cause	Remedy
Illogical threshold value for "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --)	Increase threshold value "Inverter thermal model: Load warning threshold" (0x21A4:02 / P-0-0441 / --), if necessary
Overload of drive (e.g., due to excessive infeed during machining or high acceleration to high speed)	Switch off drive and let it cool down. Check drive sizing and command value profile
Changes in mechanical system with regard to friction and moved masses	In the case of installations that have been operated for a long time, check drive conditions for changes in mechanics

See also Current and torque/force limitation, power limitation

▼ Attributes

Short diagnostics no. (20 bits):	E2061
Long diagnostics no. (32 bits):	C00E2061
CiA error code:	4286
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	27E8

E2063 Velocity command value > limit value

The drive permanently monitors the velocity command value ["Target velocity" (0x60FF:00 / S-0-0036 / --) or any other parameterized velocity command value input].

With the firmware AXS-V-0316 and above, this warning can be suppressed via "Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 20="1") in the case of error.

Cause	Remedy
Cyclic velocity command value preset by control unit is incorrect or too high	Check cyclic velocity command value and, if necessary, adjust control program
Parameterized velocity limit value is too low	Check and, if necessary, correct velocity limit values: ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)
A firmware not requiring an export license is used; velocity command values corresponding to an inverter output frequency ≥ 600 Hz were preset	Reduce velocity command value to allowed value.
Limit values of motor were exceeded	Reduce velocity command value taking the motor limit values into account: ■ "Motor basic data: Max. motor speed" (0x6080:00 / S-0-0113 / --) ■ "Axis mechanical data: Velocity limit, bipolar" (0x2204:03 / P-0-0113 / --)

See also Velocity control

▼ Attributes

Short diagnostics no. (20 bits):	E2063
Long diagnostics no. (32 bits):	C00E2063
CiA error code:	8481
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	27B3

E2070 Acceleration limit active

The velocity command value is limited by "Acceleration limitation: Motor limit value" (0x2302:02 / P-0-0564 / --). For this purpose, the current velocity command value is compared to the value of the previous controller cycle, and the change is limited.

Inputting "0" in "Acceleration limitation: Motor limit value" (0x2302:02 / P-0-0564 / --) switches off the acceleration limitation.

With the firmware AXS-V-0316 and above, this warning can be suppressed via "Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 18="1") in the case of error.

Cause	Remedy
Acceleration limitation too low	Check and, if necessary, correct parameterization of "Acceleration limitation: Motor limit value" (0x2302:02 / P-0-0564 / --)
Incorrect command value input by the control	Contact control manufacturer or programmer
Acceleration input was greater than or equal to acceleration limitation	Reduce the acceleration input used ■ "Homing acceleration" (0x609A:00 / S-0-0042 / --) ■ "Positioning profile: Acceleration" (0x2840:02 / S-0-0260 / --) ■ "Positioning profile: Deceleration" (0x2840:03 / S-0-0359 / --) ■ "Drive Halt: Quick stop deceleration signed" (0x2808:02 / S-0-0372 / --) ■ "Axis shutdown: Emergency stop deceleration" (0x2870:06 / S-0-0429 / --) ■ "Error reaction, return motion: Acceleration" (0x2874:03 / P-0-0057 / --) ■ "Position control synchronization: Acceleration" (0x2830:03 / P-0-0142 / --) ■ "Axis control optimization: Acceleration "(0x2206:0A / P-0-0170 / --) ■ "Velocity profile: Acceleration 1" (0x2836:01 / P-0-1201 / --) ■ "Velocity profile: Acceleration 2" (0x2836:02 / P-0-1203 / --) ■ "Velocity profile: Deceleration 1" (0x2836:04 / P-0-1211 /) ■ "Positioning block mode: Acceleration" (0x284E:03 / P-0-4008 / --)
Parameterization of higher-level control loop (position control) too "aggressive"	Reduce controller gains in higher-level control loop

▼ Attributes

Short diagnostics no. (20 bits):	E2070
Long diagnostics no. (32 bits):	000E2070
CiA error code:	8482
J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	2A30

E2074 Encoder 1: Encoder signals disturbed

The correct function of the encoders is monitored during operation. If an encoder-related warning stored in the encoder is detected by the connected drive controller, the warning E2074 is output. Depending on the encoder class, there are different causes.

Cause	Remedy

Cause	Remedy
Digital encoder The encoder protocol contains a warning, e.g. buffer battery worn, temperature exceeded, etc.	Check encoder. The warning E2074 is cleared as soon as the encoder no longer signals the warning that caused E2074 to be triggered. **Note:** If E2080, E2081 or E2082 is additionally signaled, the voltage of the buffer battery of the connected encoder comes close to the wear limit. E2074 is only cleared when the following things were done: ▪ The buffer battery was replaced (observe descriptions of E2080 / E2081 / E2082), the cause of E2080 / E2081 / E2082 was removed. ▪ The configuration mode (CM) was activated ▪ The encoder position was successfully reinitialized
Analog encoder / combined encoder In the case of encoders with square-wave signals (TTL), the reference mark monitoring has triggered a warning. In special cases, reference mark monitoring may be deactivated for the respective encoder interface: ▪ "Phys. encoder configuration ONBOARD: Configuration" (0x2418:88 / S-0-0602.10.136 / P-0-3880) ▪ "Phys. encoder configuration OPT_2: Configuration" (0x241A:88 / S-0-0602.2.136 / P-0-3872) ▪ "Phys. encoder configuration OPT_3: Configuration" (0x241C:88 / S-0-0602.3.136 / P-0-3876)	
Virtual encoder In the cyclic status of the producer there is a warning bit that has been set. The detailed cause of the warning is not available in the consumer. In the case of the virtual encoder, the encoder position is generated by the producer (control master) and transmitted to the consumer (drive controller) via the master communication or ctrlX DRIVElink.	

▼ Attributes

Short diagnostics no. (20 bits):	E2074
Long diagnostics no. (32 bits):	000E2074
CiA error code:	738B
J1939: "Failure Mode Identifier":	10
J1939: "Suspect Parameter Number":	2361

E2075 Encoder 2: Encoder signals disturbed

The correct function of the encoders is monitored during operation. If an encoder-related warning stored in the encoder is detected by the connected drive controller, the warning E2075 is output. Depending on the encoder class, there are different causes.

Cause	Remedy
Digital encoder The encoder protocol contains a warning, e.g. buffer battery worn, temperature exceeded, etc.	Check encoder. The warning E2075 is cleared as soon as the encoder no longer signals the warning that caused E2075 to be triggered. **Note:** If E2080, E2081 or E2082 is additionally signaled, the voltage of the buffer battery of the connected

Cause	Remedy
Analog encoder / combined encoder In the case of encoders with square-wave signals (TTL), the reference mark monitoring has triggered a warning. In special cases, reference mark monitoring may be deactivated for the respective encoder interface: ■ "Phys. encoder configuration ONBOARD: Configuration" (0x2418:88 / S-0-0602.10.136 / P-0-3880) ■ "Phys. encoder configuration OPT_2: Configuration" (0x241A:88 / S-0-0602.2.136 / P-0-3872) ■ "Phys. encoder configuration OPT_3: Configuration" (0x241C:88 / S-0-0602.3.136 / P-0-3876)	encoder comes close to the wear limit. E2075 is only cleared when the following things were done: ■ The buffer battery was replaced (observe descriptions of E2080 / E2081 / E2082), the cause of E2080 / E2081 / E2082 was removed. ■ The configuration mode (CM) was activated ■ The encoder position was successfully reinitialized
Virtual encoder In the cyclic status of the producer there is a warning bit that has been set. The detailed cause of the warning is not available in the consumer. In the case of the virtual encoder, the encoder position is generated by the producer (control master) and transmitted to the consumer (drive controller) via the master communication or ctrlX DRIVElink.	

▼ Attributes

Short diagnostics no. (20 bits):	E2075
Long diagnostics no. (32 bits):	000E2075
CiA error code:	738C

E2076 Measuring encoder: Encoder signals warning

The correct function of the encoders is monitored during operation. If an encoder-related warning stored in the encoder is detected by the connected drive controller, the warning E2076 is output. Depending on the encoder class, there are different causes.

Cause	Remedy
Digital encoder The encoder protocol contains a warning, e.g. buffer battery worn, temperature exceeded, etc.	Check encoder. The warning E2076 is cleared as soon as the encoder no longer signals the warning that caused E2076 to be triggered. **Note:** If E2080, E2081 or E2082 is additionally signaled, the voltage of the buffer battery of the connected encoder comes close to the wear limit. E2076 is only cleared when the following things were done: ■ The buffer battery was replaced (observe descriptions of E2080 / E2081 / E2082), the cause of E2080 / E2081 / E2082 was removed. ■ The configuration mode (CM) was activated ■ The encoder position was successfully reinitialized

Cause	Remedy
Analog encoder / combined encoder In the case of encoders with square-wave signals (TTL), the reference mark monitoring has triggered a warning. In special cases, reference mark monitoring may be deactivated for the respective encoder interface: ■ "Phys. encoder configuration ONBOARD: Configuration" (0x2418:88 / S-0-0602.10.136 / P-0-3880) ■ "Phys. encoder configuration OPT_2: Configuration" (0x241A:88 / S-0-0602.2.136 / P-0-3872) ■ "Phys. encoder configuration OPT_3: Configuration" (0x241C:88 / S-0-0602.3.136 / P-0-3876)	
Virtual encoder In the cyclic status of the producer there is a warning bit that has been set. The detailed cause of the warning is not available in the consumer. In the case of the virtual encoder, the encoder position is generated by the producer (control master) and transmitted to the consumer (drive controller) via the master communication or ctrlX DRIVElink.	

▼ Attributes

Short diagnostics no. (20 bits):	E2076
Long diagnostics no. (32 bits):	000E2076
CiA error code:	738F

E2080 Low battery voltage, encoder at XG20

For some multi-turn rotary encoders, maintaining the absolute position information (position data reference) is only possible with permanent power supply. To avoid losing the position data reference of drive controllers by switching off the encoder supply voltage, permanent power supply has to be ensured. A permanently connected battery, the so-called "buffer battery", can ensure the permanent power supply of the encoder.

Depending on the encoder type, the buffer battery is monitored for wear:

1. The buffer battery is only monitored for wear when the encoder is activated by switching on the connected drive controller or when the axis is activated after the "Parking axis" state.

2. In addition to the above-mentioned aspects (1), the buffer battery is permanently monitored for wear during the operation of the axis.

Cause of warning and required action

The voltage of the buffer battery of the encoder connected to XG20 comes close to the wear limit. The buffer battery has to be replaced immediately. Regarding how to maintain the absolute position information, observe the following aspects:

1. Provide the specific buffer battery for the encoder. Check battery voltage.

2. Make sure the encoder remains supplied with power by the connected drive controller:
   - The drive must not be "CM".
   - The drive must not be in the "Parking axis" state.
   - Readiness for power output of the axis should not be present.
3. Remove buffer battery.
4. Insert new buffer battery.

   If 10 seconds later "E2080" is still displayed, the message can be cleared by restarting the encoder supply voltage:

   - Switch off/on the drive controller
     – or –
   - Activate/deactivate the "Parking axis" state

   Notice for Panasonic encoders (MSM and MS2M motor encoders): If E2080 is still displayed after the buffer battery was replaced, the encoder supply voltage has to be restarted twice to clear the message.



CAUTION!
After a restart with a **worn** battery, the drive controller signals low battery voltage "F2080". Thereby, the position data reference of the actual position values (reference) to the axis mechanics is cleared.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	E2080
Long diagnostics no. (32 bits):	000E2080

E2081 Low battery voltage, encoder at XG21

For some multi-turn rotary encoders, maintaining the absolute position information (position data reference) is only possible with permanent power supply. To avoid losing the position data reference of drive controllers by switching off the encoder supply voltage, permanent power supply has to be ensured. A permanently connected battery, the so-called "buffer battery", can ensure the permanent power supply of the encoder.

Depending on the encoder type, the buffer battery is monitored for wear:

1. The buffer battery is only monitored for wear when the encoder is activated by switching on the connected drive controller or when the axis is activated after the "Parking axis" state.

2. In addition to the above-mentioned aspects (1), the buffer battery is permanently monitored for wear during the operation of the axis.

Cause of warning and required action

The voltage of the buffer battery of the encoder connected to XG21 comes close to the wear limit. The buffer battery has to be replaced immediately. Regarding how to maintain the absolute position information, observe the following aspects:

1. Provide the specific buffer battery for the encoder. Check battery voltage.
2. Make sure the encoder remains supplied with power by the connected drive controller:
   - The drive must not be "CM".
   - The drive must not be in the "Parking axis" state.
   - Readiness for power output of the axis should not be present.
3. Remove buffer battery.

4. Insert new buffer battery.

   If 10 seconds later "E2081" is still displayed, the message can be cleared by restarting the encoder supply voltage:

   - Switch off/on the drive controller
     – or –
   - Activate/deactivate the "Parking axis" state

   Notice for Panasonic encoders (MSM and MS2M motor encoders): If E2081 is still displayed after the buffer battery was replaced, the encoder supply voltage has to be restarted twice to clear the message.



CAUTION!
After a restart with a **worn** battery, the drive controller signals low battery voltage "F2081". Thereby, the position data reference of the actual position values (reference) to the axis mechanics is cleared.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	E2081
Long diagnostics no. (32 bits):	000E2081

E2082 Low battery voltage, encoder at XG22

For some multi-turn rotary encoders, maintaining the absolute position information (position data reference) is only possible with permanent power supply. To avoid losing the position data reference of drive controllers by switching off the encoder supply voltage, permanent power supply has to be ensured. A permanently connected battery, the so-called "buffer battery", can ensure the permanent power supply of the encoder.

Depending on the encoder type, the buffer battery is monitored for wear:

1. The buffer battery is only monitored for wear when the encoder is activated by switching on the connected drive controller or when the axis is activated after the "Parking axis" state.

2. In addition to the above-mentioned aspects (1), the buffer battery is permanently monitored for wear during the operation of the axis.

Cause of warning and required action

The voltage of the buffer battery of the encoder connected to XG22 comes close to the wear limit. The buffer battery has to be replaced immediately. Regarding how to maintain the absolute position information, observe the following aspects:

1. Provide the specific buffer battery for the encoder. Check battery voltage.
2. Make sure the encoder remains supplied with power by the connected drive controller:
   - The drive must not be "CM".
   - The drive must not be in the "Parking axis" state.
   - Readiness for power output of the axis should not be present.
3. Remove buffer battery.

4. Insert new buffer battery.

   If 10 seconds later "E2082" is still displayed, the message can be cleared by restarting the encoder supply voltage:

   - Switch off/on the drive controller
     – or –
   - Activate/deactivate the "Parking axis" state

   Notice for Panasonic encoders (MSM and MS2M motor encoders): If E2082 is still displayed after the buffer battery was replaced, the encoder supply voltage has to be restarted twice to clear the message.



CAUTION!
After a restart with a **worn** battery, the drive controller signals low battery voltage "F2082". Thereby, the position data reference of the actual position values (reference) to the axis mechanics is cleared.

See also Establishing the position data reference

▼ Attributes

Short diagnostics no. (20 bits):	E2082
Long diagnostics no. (32 bits):	000E2082

E2084 Reference mark not detected (cogging reference)

During the search for the reference mark, an error was signaled in the encoder status; the search was aborted. The cogging reference could not be determined.

Cause	Remedy
The encoder detected an error in the search for the reference mark.	▪ Switch from PM to OM to clear the warning. ▪ If the warning occurs again, the motor encoder has to be checked and replaced, if necessary. How to avoid the problem: Disable the cogging torque/force compensation function

▼ Attributes

Short diagnostics no. (20 bits):	E2084
Long diagnostics no. (32 bits):	000E2084

E2092 Incorrect internal synchronization

The drive is told by the NC cycle time in which intervals new cyclic command values have to be received and have been processed. The warning E2092 is generated, if the parameterized processing clock ["Application synchronization: NC cycle time" (0x2BE0:01) **with EtherCAT**, producer cycle time of main consumer connection (S-0-1050.x.10) **with Sercos**)] differs from the effective processing clock of the cyclic command values.

Cause	Remedy

Cause	Remedy
Master communication with synchronization ability (EtherCAT) If "Application synchronization: NC cycle time" (0x2BE0:01) is greater than Sercos cycle time, master communication master has to toggle the "IPOSYNC" bit of master control word. If this does not happen or is done incorrectly, warning E2092 is generated	Master communication master has to toggle "IPOSYNC" bit correctly (see description of master communication)
Master communication with synchronization ability (Sercos) With synchronous consumer connection, producer has to transmit new data to consumer at a defined point of time (S-0-1050.x.10). Producer signals this to consumer by toggling the "new data" bit (S-0-1050.x.8, bit 1). Producer did not toggle the "new data" bit at point of time T_{Pcyc} (producer cycle time).	Producer of synchronous consumer connection has to toggle "new data" bit at point of time T_{Pcyc} (producer cycle time)

▼ Attributes

Short diagnostics no. (20 bits):	E2092
Long diagnostics no. (32 bits):	000E2092
CiA error code:	FF01

Detailed diagnostics

007B001D
MDT data were not transmitted or not transmitted in time

E2110 DC bus voltage command value has exceeded limit value

The DC bus voltage command value has exceeded the limit value.

Cause	Remedy
DC bus voltage command value written or preset via the master communication is too high	Make sure that DC bus voltage command value ["Vdc control via axis: Command value" (0x2240:01 / P-0-0716.0.1 / --)] written or preset via the master communication does not exceed the limit value
The drooping method of DC bus voltage control has been activated ["Vdc control via axis: Configuration Word UDC-Control Axis" (0x2240:11 / P-0-0718.0.3 / --) and the parameters "Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) and "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --) have not been parameterized correctly	Make sure the parameters "Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) and "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --) have been parameterized with an appropriate value unequal 0 W

▼ Attributes

Short diagnostics no. (20 bits):	E2110
Long diagnostics no. (32 bits):	000E2110

J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	27B3

E2111 DC bus voltage command value has fallen below limit value

The DC bus voltage command value has fallen below the limit value.

Cause	Remedy
DC bus voltage command value written or preset via the master communication is too low	Make sure that DC bus voltage command value ["Vdc control via axis: Command value" (0x2240:01 / P-0-0716.0.1 / --)] written or preset via the master communication does not fall below the limit value
The drooping method of DC bus voltage control has been activated ["Vdc control via axis: Configuration Word UDC-Control Axis" (0x2240:11 / P-0-0718.0.3 / --) and the parameters "Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) and "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --) have not been parameterized correctly	Make sure the parameters "Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) and "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --) have been parameterized with an appropriate value unequal 0 W

▼ Attributes

Short diagnostics no. (20 bits):	E2111
Long diagnostics no. (32 bits):	000E2111
J1939: "Failure Mode Identifier":	17
J1939: "Suspect Parameter Number":	27B3

E2132 Touch probe input I_1: Bouncing detected

The signal at probe input I_1 bounces, i.e. the evaluation function has detected more than one edge.

Cause	Remedy
The signal at probe input I_1 bounces, the evaluation function has detected multiple edges. This results in the following behavior: ■ Only the last detected edge is evaluated. ■ The edge counters may register more edges than occurred probe events.	Use a bounce-free probe

▼ Attributes

Short diagnostics no. (20 bits):	E2132
Long diagnostics no. (32 bits):	000E2132

E2133 Touch probe input I_2: Bouncing detected

The signal at probe input I_2 bounces, i.e. the evaluation function has detected more than one edge.

Cause	Remedy
The signal at probe input I_2 bounces, the evaluation function has detected multiple edges. This results in the following behavior: ▪ Only the last detected edge is evaluated. ▪ The edge counters may register more edges than occurred probe events.	Use a bounce-free probe

▼ Attributes

Short diagnostics no. (20 bits):	E2133
Long diagnostics no. (32 bits):	000E2133

E2160 Max. number of activatable firmware functions exceeded

The parameterization mode had been activated ["Subdevice STM: C1100 Activate parameterization mode" (0x2BD2:04 / P-0-0504 / --)] and a check showed that more firmware functions are active than available by the scope of functions to be activated.

E2160 is displayed for a maximum of 60 seconds; operation is possible. E2160 is repeatedly displayed every hour for a maximum of 60 seconds.

Enabling firmware functions which exceed the originally ordered scope of functions to be activated requires additional licensing that is not free of charge. If you use firmware functions exceeding the scope of functions to be activated, any guarantee on the part of Bosch Rexroth will expire!
The following data are saved in "Optional firmware functions: Operating hours at change" (0x2A00:06 / P-0-2003.0.6 / P-0-1719):

- List element 1: Count of operating hours counter at change of scope of functions to be activated
- List element 2: Change in activated firmware functions

Cause	Remedy
More firmware functions have been activated than available by the activatable scope of functions	Reduce the number of activated firmware functions ["Optional firmware functions: Selection" (0x2A00:01 / P-0-2003.0.1 / P-0-1714)] - or - Increase the number of activatable firmware functions by additional licensing **TIP:** The activated firmware functions are contained in "Optional firmware functions: Active" (0x2A00:02 / P-0-2003.0.2 / P-0-1715) and may be read at runtime.

For enabling firmware functions see also Productivity package

▼ Attributes

Short diagnostics no. (20 bits):	E2160
Long diagnostics no. (32 bits):	020E2160

J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	EA

E2161 Increased scope of functions to be activated -> restart requ

Cause	Remedy
The scope of functions to be activated was increased ("Optional firmware functions: Licensed range of functions" (0x2A00:04 / P-0-2003.0.4 / P-0-1717)]; switching to PM is prevented by C1199 **NOTE:** The scope of functions to be activated is part of the originally ordered scope of functions and normally is programmed by the production department. The warning E2161 is generated to show that increasing the scope of functions to be activated is **not free of charge**.	Restart the device to apply the value changed in "Optional firmware functions: Licensed range of functions" (0x2A00:04 / P-0-2003.0.4 / P-0-1717) - or - Enter the original value in "Optional firmware functions: Licensed range of functions" (0x2A00:04 / P-0-2003.0.4 / P-0-1717)

For enabling firmware functions see also Productivity package

▼ Attributes

Short diagnostics no. (20 bits):	E2161
Long diagnostics no. (32 bits):	020E2161
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	102

E2165 B sample function activated

This warning is displayed cyclically to draw attention to the fact that a non-certified B-sample function is enabled in the device.

WARNING!
The use of a non-certified B-sample function is at your own risk! B-sample functions are not released for use in series machines!

For enabling firmware functions see also Productivity package

▼ Attributes

Short diagnostics no. (20 bits):	E2165
Long diagnostics no. (32 bits):	020E2165
J1939: "Failure Mode Identifier":	31

J1939: "Suspect Parameter Number":	7FFFF

E2184 Reference mark not detected (commutation)

During the search for the reference mark, an error was signaled in the encoder status; the search was aborted. The commutation offset could not be determined.

Cause	Remedy
The encoder detected an error in the search for the reference mark.	▪ Switch from PM to OM to clear the warning. ▪ If the warning occurs again, the motor encoder has to be checked and replaced, if necessary. How to avoid the problem: Deactivate the optimization of the commutation offset "Ident. commutation offset: Control word" (0x218C:02 / P-0-0522 / --, bit 10)

See also Commutation setting

▼ Attributes

Short diagnostics no. (20 bits):	E2184
Long diagnostics no. (32 bits):	000E2184

E2211 PLC warning no. 1 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2211
Long diagnostics no. (32 bits):	0A0E2211
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE21

E2212 PLC warning no. 2 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE

Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2212
Long diagnostics no. (32 bits):	0A0E2212
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE22

E2213 PLC warning no. 3 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2213
Long diagnostics no. (32 bits):	0A0E2213
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE23

E2214 PLC warning no. 4 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2214
Long diagnostics no. (32 bits):	0A0E2214
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE24

E2215 PLC warning no. 5 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2215
Long diagnostics no. (32 bits):	0A0E2215
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE25

E2216 PLC warning no. 6 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2216
Long diagnostics no. (32 bits):	0A0E2216
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE26

E2217 PLC warning no. 7 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2217
Long diagnostics no. (32 bits):	0A0E2217
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE27

E2218 PLC warning no. 8 without drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows non-fatal warnings to be generated from within the PLC program.

In the case of non-fatal warnings, the drive does not carry out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E2218
Long diagnostics no. (32 bits):	0A0E2218
J1939: "Failure Mode Identifier":	31

J1939: "Suspect Parameter Number":	7FE28

E2270 Analog input, wire break

The drive provides the function of monitoring the input value of the analog inputs for wire break. The message to be output can be configured as a warning or as an error in the control word for the respective analog input.

Conditions causing this warning to be triggered:

- The configuration in the control word for the analog input is such that a warning is generated when the input value falls below the input value at the analog input and
- wire break monitoring was activated (threshold value>"0") and
- the current/voltage value at the selected analog input is smaller than the threshold value.

For the control word and the associated threshold value of wire break monitoring for the respective analog input, please refer to " ⇘ Table 10: “Control word for the analog input and associated threshold value of wire break monitoring”".

The warning stays present as long as the conditions are met.

The value range of the voltage source or current source connected to the analog input should be limited to the allowed value range of the analog input.

Cause	Remedy
Cable break was detected at one of the analog inputs (the input value is below the threshold value)	Check the wiring of the analog input; if applicable, reestablish contact to the voltage source **- or -** Check threshold value
The wiring of at least one of the analog inputs is wrong or defective	Check the wiring of the analog input

Control word for the analog input and associated threshold value of wire break monitoring

Analog input	Control word for the analog input	Wire break monitoring for the analog input (threshold value)
1	"Analog input 1: Control word" (0x2A31:02 / P-0-2900.0.1 / P-0-1783)	"Analog input 1: Wire break threshold" (0x2A31:09 / P-0-2900.0.10 / P-0-3480)
2	"Analog input 2: Control word" (0x2A32:02 / P-0-2900.1.1 / P-0-3481)	"Analog input 2: Wire break threshold" (0x2A32:09 / P-0-2900.1.10 / P-0-3487)
3	"Analog input 3: Control word" (0x2A33:02 / P-0-2900.2.1 / P-0-3482)	"Analog input 3: Wire break threshold" (0x2A33:09 / P-0-2900.2.10 / P-0-3494)
4	"Analog input 4: Control word" (0x2A34:02 / P-0-2900.3.1 / P-0-3483)	"Analog input 4: Wire break threshold" (0x2A34:09 / P-0-2900.3.10 / P-0-3501)

▼ Attributes

Short diagnostics no. (20 bits):	E2270
Long diagnostics no. (32 bits):	000E2270

E2284 Reference mark not detected (encoder emulation)

During the search for the reference mark, an error was signaled in the encoder status; the search was aborted.

Cause	Remedy
The encoder detected an error in the search for the reference mark	Switch from "OM" to "PM" to clear the warning. If the warning occurs again, the motor encoder has to be checked and replaced, if necessary.

▼ Attributes

Short diagnostics no. (20 bits):	E2284
Long diagnostics no. (32 bits):	000E2284

E2665 ABG filter 2: Bypass function active

The ABG filter is active (in "Mode 1"). Due to inappropriate/incorrect parameterization, the ABG filter 2 has come to a critical range.

The output data of the ABG filter 2 are limited for the duration of the warning.
The status of the ABG filter 2 is displayed in "ABG filter 2: Status" (0x24D1:07 / P-0-0666.1.7 / P-0-3157).

Cause	Remedy
Due to inappropriate/incorrect parameterization, the ABG filter 2 has come to a critical range	▪ Optimize parameters of ABG filter 2 ▪ Adjust limitation parameters

▼ Attributes

Short diagnostics no. (20 bits):	E2665
Long diagnostics no. (32 bits):	000E2665
J1939: "Failure Mode Identifier":	20
J1939: "Suspect Parameter Number":	2367

E2666 ABG filter 1: Bypass function active

Up to and including the firmware AXS-V-0602, the name of this diagnostic message is "ABG filter: Bypass function active".
With the firmware AXS-V-0604 and above, there is a second ABG filter.

The ABG filter 1 is active (in "Mode 1"). Due to inappropriate/incorrect parameterization, the ABG filter 1 has come to a critical range.

The output data of the ABG filter 1 are limited for the duration of the warning.
The status of the AGB filter 1 is displayed in "ABG filter: Status" (0x24D0:07 / P-0-0666.0.7 / P-0-2257).

Cause	Remedy
Due to inappropriate/incorrect parameterization, the ABG filter 1 has come to a critical range	▪ Optimize parameters of ABG filter 1 ▪ Adjust limitation parameters

▼ Attributes

Short diagnostics no. (20 bits):	E2666
Long diagnostics no. (32 bits):	000E2666
J1939: "Failure Mode Identifier":	20
J1939: "Suspect Parameter Number":	2368

E2804 Warning, power section heat sink fan

The fan for the heat sink of the device signals a warning.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Device defective	Replace device

▼ Attributes

Short diagnostics no. (20 bits):	E2804
Long diagnostics no. (32 bits):	070E2804

E2805 Warning, power section capacitors fan

The fan for the capacitors of the drive controller power section / of the supply unit signals a warning.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective drive controller power section / supply unit	Drive controller: Replace drive controller or power section Supply unit: Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	E2805
Long diagnostics no. (32 bits):	070E2805

E2806 Warning, braking resistor fan

The device fan of the drive controller/supply unit braking resistor signals a warning.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective drive controller power section / supply unit	Drive controller: Replace drive controller or power section Supply unit: Replace supply unit

▼ Attributes

Short diagnostics no. (20 bits):	E2806
Long diagnostics no. (32 bits):	070E2806

E2809 Warning, mains connection fan

The fan for the mains connection module signals a warning.

Cause	Remedy
Clogged fan	Remove clogging / clean fan
Defective fan	Replace fan
Defective mains connection module	Replace mains connection module

▼ Attributes

Short diagnostics no. (20 bits):	E2809
Long diagnostics no. (32 bits):	070E2809

E2811 Overload in mains connection module/soft start module

The power dissipation of the components in the mains connection has reached the load limit.



The power dissipation of the components in the mains connection may be reduced by connecting a mains choke in the incoming circuit.

Cause	Remedy
Peak power supplied by the mains is too high in the machine cycle	Adjust load cycles of the axes so that not all axes supplied via the DC bus simultaneously draw energy from the mains
Average feed-in power is too high	Reduce load

▼ Attributes

Short diagnostics no. (20 bits):	E2811
Long diagnostics no. (32 bits):	070E2811
CiA error code:	4483

Detailed diagnostics

00450301

Mains connection: Overtemperature inverter circuit board

0045030F

Mains connection rectifier, temperature model: Chip temperature above warning threshold (average power exceeds continuous power)

00450310

Mains connection rectifier, temperature model: Heat sink temperature above warning threshold (average power exceeds continuous power)

00450311

Mains connection, electrolytic capacitor temperature model: Continuous power exceeded during operation without mains choke

00450315

Mains connection: The thermal model of mains-side rectifier signals an overload warning because temperature difference is too high

00450316

Mains connection: Overtemperature inverter circuit board

00450504

Thermal overload of the IGBT jumper, current limitation is active

Cause/Remedy 1: Cause: Thermal overload of the active power supply connection of the rectifier/regeneration supply unit. The load model has responded. The available output current is limited. Remedy: The load must be removed from the device without delay

00450505

Thermal overload of IGBT jumper, sensor pre-warning temperature reached

Cause/Remedy 1: Cause: Due to the thermal overload of the active power supply connection of the rectifier/regeneration supply unit, the temperature sensor has reached the prewarning temperature. Remedy: The load must be removed from the device without delay

E2815 Overvoltage in mains

The mains voltage in operation is 10 % above the maximum supply voltage. For a device of the "XVR" type, this is 500 V plus 10%.

Cause	Remedy
Mains connection voltage is too high.	Check sizing of mains connection; if necessary, increase supply line cross section or use a matching transformer.
Mains filters for suppressing mains pollution form an oscillating system. The mains voltage oscillates.	Check mains filter. Is the mains filter used the one specified for the size of the supply unit? Has the mains filter been connected in accordance with the Project Planning Manual? **NOTE:** If the supply unit has a master switch in the incoming circuit, **first switch off the enable signal of the supply unit** and then switch off the master switch!

▼ Attributes

Short diagnostics no. (20 bits):	E2815
Long diagnostics no. (32 bits):	070E2815

Detailed diagnostics

00450318
Mains connection: Overvoltage in the mains 10% above max. connection voltage

E2818 Phase failure

The failure of a mains phase was detected that lasted longer than the tolerated phase failure time.

In the case of phase failure, the device keeps working for two seconds with reduced feed-in power (approx. 60%).
If the phase failure lasts longer than 2 seconds, the error F2818 is generated.

Cause	Remedy
Mains circuit breaker defective	Replace mains circuit breaker
Incorrect wiring	Check and correct wiring

▼ Attributes

Short diagnostics no. (20 bits):	E2818
Long diagnostics no. (32 bits):	070E2818
CiA error code:	3187

Detailed diagnostics

00450308

Mains connection: Phase failure warning

E2819 Mains failure

A two-phase or three-phase mains failure was detected.

If the DC bus voltage decreases below the monitoring threshold, "Undervoltage in DC bus" is reported.

Cause	Remedy
Mains voltage not available	Check mains voltage and mains connection
Mains circuit breaker defective	Replace mains circuit breaker
Incorrect wiring	Check and correct wiring

▼ Attributes

Short diagnostics no. (20 bits):	E2819
Long diagnostics no. (32 bits):	070E2819
CiA error code:	3188

Detailed diagnostics

00450309

Mains connection: Mains failure warning

E2820 Braking resistor overload prewarning

A temperature model, taking the continuous power and the maximum energy absorption of the braking resistor into account, is calculated for the thermal load of the braking resistor. When the thermal load reaches the warning threshold, this warning is output and bit 1 is set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).



The prewarning threshold for the thermal load of the braking resistor may be set in "Brake resistor thermal model: Prewarning threshold" (0x2622:03 / P-0-0469 / --).

Cause	Remedy
Allowed deceleration of connected drives is too high	Reduce deceleration of connected drives
Energy absorption capacity of braking resistor is almost exhausted	Switch power off with a delay in the case of OFF or E-STOP (for regenerative supply units)
Regenerated energy in machining cycle is too high	Increase cycle time or reduce maximum drive speed of application
Continuous regenerative power and/or rotary drive energy is too high	Check sizing of braking resistor; increase sizing if necessary

Cause	Remedy
Incorrectly parameterized prewarning threshold for thermal load of braking resistor	Correctly parameterize the prewarning threshold for thermal load of braking resistor (P-0-0469)

▼ Attributes

Short diagnostics no. (20 bits):	E2820
Long diagnostics no. (32 bits):	070E2820
CiA error code:	5487

E2823 Unbalanced phase current

The connections of the DC/DC converter device are not equally loaded.

Cause	Remedy
Output chokes not correctly connected	Check connections of the output chokes
Output chokes have different inductances	Check inductances of the output chokes

▼ Attributes

Short diagnostics no. (20 bits):	E2823
Long diagnostics no. (32 bits):	070E2823

Detailed diagnostics

00450501

Phase U output voltage different

Cause/Remedy 1: Cause: For XMV, each phase should carry approx. 1/3 of the total current. The current in phase U is too small or too large. Remedy: Check the phase U connection

00450502

Phase V output voltage different

Cause/Remedy 1: Cause: For XMV, each phase should carry approx. 1/3 of the total current. The current in phase V is too small or too large. Remedy: Check the phase V connection

00450503

Phase W output voltage different

Cause/Remedy 1: Cause: For XMV, each phase should carry approx. 1/3 of the total current. The current in phase W is too small or too large. Remedy: Check the phase W connection

E2825 Braking resistor switch-on voltage > configured value

Cause	Remedy
The switch-on threshold of the braking resistor can be configured ["Brake resistor: Switching threshold, command value" (0x2624:02 / P-0-0834 / --)]. The warning is displayed because "Brake resistor: Switching threshold, effective value" (0x2624:01 / P-0-0833 / --) exceeds the value that has been set by more than approx. 35 V.	The switch-on voltage of the braking resistor always has to be higher than the mains voltage peak value. Therefore, the switch-on voltage is increased as the mains voltage rises. ■ Supply the device with a lower mains connection voltage - or - 1. Make sure that the connected motor has been designed for the DC bus voltage. 2. Increase the switch-on threshold of the braking resistor. **CAUTION:** Damage to the motor if the switch-on threshold of the braking resistor was increased and the connected motor has not been designed for the DC bus voltage!

▼ Attributes

Short diagnostics no. (20 bits):	E2825
Long diagnostics no. (32 bits):	070E2825

Detailed diagnostics

00450317
Mains connection: Due to increased mains voltage, the bleeder switch-on voltage had to be increased in comparison to the configured value (0x2624:02 / P-0-0834)

E2826 Command current limitation active

In the "DC current control" mode the preset command current, or in the "DC voltage control" mode the controller output of the DC voltage controller (current command value), is actively limited. The current limits are defined by the DC current limit values or by the power limit values.

Notes:

- The warning can only occur with the DC/DC converter.
- "DC/DC converter: Configuration" (0x26A0:01 / S-0-1741.0.150 / P-0-1647) shows whether the positive limit value (bit 16) or the negative limit value (bit 17) was reached.
- "DC/DC converter: Configuration" (0x26A0:01 / S-0-1741.0.150 / P-0-1647) shows which limit value parameters act on the limit value (bits 8 to 12).

Cause	Remedy

Cause	Remedy
One of the preset limit values was reached. Power and DC current limit values can be preset via the following parameters: ■ "DC current limitation: Limit value, bipolar" (0x26A3:01 / S-0-1741.0.180 / P-0-1660) ■ "DC current limitation: Limit value, positive" (0x26A3:02 / S-0-1741.0.181 / P-0-1670) ■ "DC current limitation: Limit value, negative" (0x26A3:03 / S-0-1741.0.182 / P-0-1671) ■ "DC output power limitation: Limit value, positive" (0x26A5:01 / S-0-1741.0.187 / P-0-1794) ■ "DC output power limitation: Limit value, negative" (0x26A5:02 / S-0-1741.0.188 / P-0-1795)	■ Check whether power and DC current limit values have been set correctly; if necessary, adjust limit values ■ *In "DC current control" mode:* Adjust DC command value if limit values are not to be reached. ■ *In "DC voltage control" mode:* Modify DC voltage command value less dynamically compared to actual DC voltage value, e.g. by smoothing via "DC voltage controller: Command value filter, time constant" (0x26A1:04 / S-0-1741.0.170 / P-0-1648) – OR – ■ Deactivate the warning if command values and limit values are explicitly desired and warning is unwanted ["DC/DC converter: Configuration" (0x26A0:01 / S-0-1741.0.150 / P-0-1647, bit 1="1")].

See also Controlling the DC grid

▼ Attributes

Short diagnostics no. (20 bits):	E2826
Long diagnostics no. (32 bits):	070E2826

E2827 Current controller output limitation active

In the "DC current control" mode or in the "DC voltage control" mode, the controller output of the DC current controller is actively limited. The value from "DC voltage limitation: Limit value" (0x26A4:01 / S-0-1741.0.186 / P-0-1675) has a limiting effect.

Notes:

- The warning can only occur with the DC/DC converter.
- The active limitation of the DC current controller’s controller output is additionally displayed by S–0–1742.0.151, bit 3="1".
- The warning E2827 can be deactivated via "DC/DC converter: Configuration" (0x26A0:01 / S-0-1741.0.150 / P-0-1647, bit 2="1"). However, it is not recommended to deactivate the warning, since the warning protects devices against overvoltage that are connected to the DC/DC converter. With the correct sizing of the system, the warning should only occur in critical cases of operation.

Cause	Remedy

Cause	Remedy
The limit value for the controller output of the DC current controller was reached. The limit value can be preset via "DC voltage limitation: Limit value" (0x26A4:01 / S-0-1741.0.186 / P-0-1675).	▪ Check the limit value in "DC voltage limitation: Limit value" (0x26A4:01 / S-0-1741.0.186 / P-0-1675) taking into account the information in its parameter description and, if necessary, adjust the limit value. – OR – ▪ Adjust the command value input with active DC voltage control to prevent the limit value from being exceeded.

See also Controlling the DC grid

▼ Attributes

Short diagnostics no. (20 bits):	E2827
Long diagnostics no. (32 bits):	070E2827

E2834 Switching off via OFF input

The converters and power supply devices are controlled via the master communication. This means that the mains contactor is switched on/off and the enable signal is set via "Power supply control: Control word" (0x2600:01 / S-0-1720.0.1 / S-0-2057).

In spite of active master communication and mains connection control via the control word of the supply units, the power supply can be switched off via a digital input (assigning a digital input to S-0-1720.0.150), or switching on can be prevented.

Cause	Remedy
OFF contact opens while supply unit switched on	Remove the supply unit enable signal ["Power supply control: ON/OFF" (0x2600:04 / S-0-1720.0.150 / P-0-1781)]. OFF signal wiring possibly has to be modified. Change or delete assignment of digital input, if necessary.
OFF contact has been opened and enable signal of supply unit is set via the master communication	

▼ Attributes

Short diagnostics no. (20 bits):	E2834
Long diagnostics no. (32 bits):	070E2834

E2861 Device overload prewarning

The load of the device exceeds "Power supply thermal model: Warning threshold" (0x21A6:02 / S-0-1710.0.4 / S-0-2053), the output current is not yet reduced.

Cause	Remedy

Cause	Remedy
"Power supply thermal model: Actual load value" (0x21A6:01 / S-0-1710.0.2 / S-0-2051) has exceeded "Power supply thermal model: Warning threshold" (0x21A6:02 / S-0-1710.0.4 / S-0-2053)	Check the warning threshold; it might be possible to set the warning threshold to a higher value. Reduce load of the device. It might be possible to do this by optimizing the machining cycles with regard to energy efficiency.

▼ Attributes

Short diagnostics no. (20 bits):	E2861
Long diagnostics no. (32 bits):	070E2861

E2890 Unknown power section diagnostics

The power section installed in the device generates a diagnostic message unknown to the firmware version used.

Cause	Remedy
New monitoring functions were implemented in the power section	Update the application firmware

▼ Attributes

Short diagnostics no. (20 bits):	E2890
Long diagnostics no. (32 bits):	070E2890

E2901 Flash memory full: Clear memory with Win PC

The panel has a flash memory of 128 MB. The memory usage of 128 MB is reached.

Cause	Remedy
The available memory is less than 1 KB	1. Connect the panel to the PC 2. Save all files 3. Delete files which are not required anymore from the memory
The number of files in the “Device/Backup” folder in the memory exceeds the limit of 10 files	1. Connect the panel to the PC 2. Save all files 3. Delete all files which are not required from the “Device/Backup” folder to comply with the limit of 10 files
The number of files in the “Device/Diagnostics” folder in the memory exceeds the limit of 60 files	1. Connect the panel to the PC 2. Save all files 3. Delete all files which are not required from the “Device/Diagnostics” folder to comply with the limit of 60 files

▼ Attributes

Short diagnostics no. (20 bits):	E2901
Long diagnostics no. (32 bits):	000E2901

E2902 File system error: Restart panel

The warning was generated if a file system operation failed.

Cause	Remedy
Flash memory not formatted	Disconnect the panel from the device and connect it to the device. If the problem persists, please contact our service department.
Invalid directory access	
Accessing invalid file names	
“Open file” failed	
“Close file” failed	

▼ Attributes

Short diagnostics no. (20 bits):	E2902
Long diagnostics no. (32 bits):	000E2902

E2903 Panel communication interrupted

The panel contains a client-server communication with the device. The communication between panel and device was deactivated.

Cause	Remedy
Safety settings are activated in the device, restricting the communication with the panel	Use ctrlX DRIVE Engineering to deactivate the ctrlX CORE safety settings: 1. Start ctrlX DRIVE Engineering. 2. Open „*Tools ➔ Connection ➔ Select connection...*” 3. Open the “Control” tab and select the type “Rexroth ctrlX CORE”. 4. Once the connection has been established, open the “IP settings” tab in the overview and click on the link “Engineering deactivated via panel” in ctrlX CORE.

▼ Attributes

Short diagnostics no. (20 bits):	E2903
Long diagnostics no. (32 bits):	000E2903

E2904 Incompatible language version: Language files update

Cause	Remedy

Cause	Remedy
The current firmware version of the panel (FWA file) is not compatible with the active language version of the panel (FWS file).	Copy the compatible FWS and/or FWA file to the mass storage of the panel and carry out an update of the language. If the warning persists, please contact our service department.

▼ Attributes

Short diagnostics no. (20 bits):	E2904
Long diagnostics no. (32 bits):	000E2904
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

E3112 Safe reference missing

This warning is generated as a reaction to Safe reference missing, depending on the selected/active special mode and the configured safety function.

Cause	Remedy
The axis has been in the following state for at least 15 minutes: ■ "Safe homing procedure" has been activated (0x31B0:01 / P-0-3253.0.1 / P-0-2793) ■ The axis is in the operating mode "SMO application" (0x3082:04 / P-0-3231 / --) ■ "Safe reference" is missing (0x310E:01 / P-0-3256 / --)	Establish "Safe reference"



If the drive is in "special mode Safe motion" and one of the safety functions "Safely-limited end position (SLE)", "Safely-limited position (SLP)" or "Safely-monitored position (SMP)" is active, the error **F3112** is generated [regardless of "SMO safe homing: Configuration" (0x31B0:01 / P-0-3253.0.1 / P-0-2793), bit 4].

▼ Attributes

Short diagnostics no. (20 bits):	E3112
Long diagnostics no. (32 bits):	060E3112
CiA error code:	F0E7

E3113 Prewarning: End of reference position check time interval

The time interval, in which the Safe reference is to be cyclically checked, ends in less than 15 minutes. The SMO reference signal has not been detected within the defined position range since the interval began.

Cause	Remedy

Cause	Remedy
Since the beginning of the time interval in which the Safe reference is to be cyclically checked (0x31B0:09 / P-0-3253.0.7 / P-0-2248), the SMO reference signal ["SMO safe homing: Control word" (0x31B0:02 / P-0-3253 / --)] was not detected within the SMO reference position. **SMO reference position** ▪ CoE: 0x31B0:03 ± 0x31B0:04 ▪ Sercos: P-0-3253.0.3 ± P-0-3253.0.4 ▪ SoE: P-0-2795 ± P-0-2796 Deprecated: P-0-3253.0.6 Replaced by: P-0-3253.0.7	Move drive over the SMO reference position at a velocity < "SMO safe homing: Maximum velocity" (0x31B0:05 / P-0-3253.0.5 / P-0-2797).

- At the end of the time interval, this warning is replaced by the error message F3166 and the "Safe reference of the SMO encoder" status is set to "relative" (0x310E:01 / P-0-3256 / --).
- Use "SMO safe homing: Configuration" (0x31B0:01 / P-0-3253.0.1 / P-0-2793) to configure whether or not the "Safe reference" is cyclically checked.
- The time interval is restarted after the check was carried out successfully or after the command C4000 was executed successfully.

▼ Attributes

Short diagnostics no. (20 bits):	E3113
Long diagnostics no. (32 bits):	060E3113

Detailed diagnostics

0053071C
Time interval ending (<15 min.), SMO reference signal not yet detected

0054071C
Time interval ending (<15 min.), SMO reference signal not yet detected

E3115 Prewarning: End of brake check time interval

The parameterization of the brake control word was such that the brake is to be monitored in a specified time interval ["Brake control: Configuration" (0x2032:01 / P-0-0525 / --, bit 6="1")]; the drive monitors the time elapsed since the last monitoring.

The time interval for the brake test ends.

Cause	Remedy
Drive had been put into operation and drive enable was set; after 5 minutes, drive generates warning E3115	"Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --) has to be carried out within 15 minutes after drive had been put into operation and drive enable was set

Cause	Remedy
Time interval since the last brake check has approached the time interval parameterized in "Brake check interval: Time interval" (0x2036:02 / P-0-0550 / --) by 15 minutes or less	Start "Brake check: C2100 Check command" (0x2034:01 / P-0-0541 / --) within 15 minutes after E3115 has occurred

See brake

▼ Attributes

Short diagnostics no. (20 bits):	E3115
Long diagnostics no. (32 bits):	000E3115
CiA error code:	F0E8

E3130 SMO: Warning safe torque/force evaluation

An error occurred during the safe determination of the currently applied torque.

A more precise cause of the error can be read via the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	E3130
Long diagnostics no. (32 bits):	060E3130
J1939: "Failure Mode Identifier":	11
J1939: "Suspect Parameter Number":	27CE

Detailed diagnostics

00190232

Phase current measurement is not supported by hardware

Cause/Remedy 1: Deactivate all functions that require current measurement by SMO

00190240

Safe torque - actual value: Frequent measurement errors. Overall result set to invalid

Cause/Remedy 1: Check 0x315B:0E / P-0-3247.0.6. Check other hardware diagnoses for identification of root cause.

00190242

Safe Torque - actual value: First cycles have not passed, no average torque available

Cause/Remedy 1: Wait for the time set in 0x315B:0C / P-0-3247.0.3

00190248

Safe Torque - actual value: Error in torque value calculation. I_d or I_q may be out of allowed range

Cause/Remedy 1: Check magnitude and noise of phase currents. Verify that configured parameters of function "Safe Torque actual value" are appropriate

00190249

Safe torque - actual value: Error while monitoring sum of phase currents

Cause/Remedy 1: Check parameters 0x315B:05 / P-0-3247.0.16 and 0x315B:09 / P-0-3247.0.21. If they are correct, a current sensor might be defective.

0019024A

Safe Torque - actual value: Error in the current range check on phase U

Cause/Remedy 1: Current set in 0x315B:06 / P-0-3247.0.17 exceeded. Correct parameter or replace defective device

0019024B

Safe Torque - actual value: Error in the current range check on phase V

Cause/Remedy 1: Current set in 0x315B:06 / P-0-3247.0.17 exceeded. Correct parameter or replace defective device

0019024C

Safe Torque - actual value: Error in the current range check on phase W

Cause/Remedy 1: Current set in 0x315B:06 / P-0-3247.0.17 exceeded. Correct parameter or replace defective device

0019024D

Safe Torque - actual value: Error when comparing the torque calculated by the two safety controllers

Cause/Remedy 1: Check parameter 0x315B:04 / P-0-3247.0.15. If deviation between measurement results persists, a hardware defect may be present.

0019024F

Safe Torque - actual value: Motor performance map automatically adjusted. This is not an error

Cause/Remedy 1: No remedy needed

00190256

Safe Torque - actual value: Encoder telegram received outside expected time span.

Cause/Remedy 1: Internal error: No remedy is possible. Please send a detailed error description to customer support.

00190270

Safe Torque - actual value: Difference between encoder position too large.

Cause/Remedy 1: Check parameter P-0-3247.0.24 for allowed difference. Contact customer support, if needed.

00190271

Safe Torque - actual value: Encoder position is invalid

Cause/Remedy 1: Check encoder status. Contact customer support, if needed.

00190272

Safe Torque - actual value: Low signal quality of encoder position

Cause/Remedy 1: Check encoder connection. Contact customer support, if needed.

00190273

Safe Torque - actual value: Encoder error

Cause/Remedy 1: Check encoder settings.

E3133 SMO: Safe calibration indadmissible

An inadmissible "Safe calibration" has been activated. Operation is only allowed for development purposes.

▼ Attributes

Short diagnostics no. (20 bits):	E3133
Long diagnostics no. (32 bits):	060E3133
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

Detailed diagnostics

00620033

A set of safe calibration values is present that is only intended for development purposes

Cause/Remedy 1: Internal error: No remedy is possible. Please contact our service department.

0062003A

SMO: A set of manual calibration values is active. This state is unsafe and is intended for development purposes only

Cause/Remedy 1: Remove the manual calibration values to return to a safe state.

0062003B

SMO: A set of manual calibration values is active but cannot be applied

Cause/Remedy 1: Remove the manual calibration values to return to a safe state.

E3134 SMO: Using non-licensed safety functions

Cause	Remedy
A safety function was configured that is not contained in the SafeMotion functional package. **Note:** In the "OM" state of the SafeMotion state machine, the warning E3134 is output hourly for 60 seconds.	License the SafeMotion functional package for the configured or parameterized safety function to be allowed to use the safety function. **CAUTION!** Enabling functions which exceed the licensed scope of functions of the original order requires additional licensing that is not free of charge! If you use functions exceeding the licensed scope of functions, any guarantee on the part of Bosch Rexroth will expire.

▼ Attributes

Short diagnostics no. (20 bits):	E3134
Long diagnostics no. (32 bits):	060E3134
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7F3F3

Detailed diagnostics

006E0010

SMO: Configured/parameterized functions do not match the active scope of functions

Cause/Remedy 1: Configure or parameterize your displayed function packages in 0x3004:02 / P-0-3203.0.1 to match the allowed function packages in 0x3004:03 / P-0-3203.0.2

Cause/Remedy 2: Check the settings of the function package activation with ctrlX DRIVE Engineering

Cause/Remedy 3: Please contact the service department and purchase the corresponding license for your activated functions.

E3151 Safely-monitored deceleration exceeded

During the safety function "Safely-monitored deceleration (SMD) based on actual velocity", the actual velocity exceeds the velocity envelope curve in parameter "SMO global functions: Velocity threshold" (0x3156:04 / P-0-3238 / --).



Monitoring of incorrect distance only becomes active if the velocity envelope curve has fallen below the velocity window 2 × "SMO encoder function: Velocity threshold" (0x310E:04 / P-0-3255 / --).

For the time during which the threshold is exceeded, the incorrect distance is determined (by integration of the actual velocity values).

The warning E3151 is generated as long as an incorrect distance is detected which is smaller than the value in "SMO safe standstill: Monitoring window safe operational stop" (0x3155:02 / P-0-3285.0.2 / --). If the incorrect distance exceeds "SMO safe standstill: Monitoring window safe operational stop" (0x3155:02 / P-0-3285.0.2 / --), the error F7051 or F8135 is generated in accordance with the parameterization of the operation mode transition.

▼ Attributes

Short diagnostics no. (20 bits):	E3151
Long diagnostics no. (32 bits):	060E3151

E4001 Bus synchronization failure

"Subdevice STM: Master communication configuration" (0x2BD2:01 / P-0-4088 / --) was parameterized so that a warning is to be the reaction to the failure of cyclic communication.

Bus-specific status	Sercos: phase-3 and phase-4
Generic communication status	Operational (Safe-Operational)
Findings	Application-synchronously operated buses require regular subsequent synchronisation for error-free operation. This can be done by transmitting a synchronization telegram (as with Sercos) or by synchronizing the clock (as with EtherCAT). The slave detected that this did not happen within the required space of time. **The system was automatically switched to Pre-Operational.**
Cause	▪ Disturbance on the bus ▪ Incorrect return to Pre-Operational ▪ Synchronization master faulty or not available ▪ Control section defective
Remedy	**The problem can only be solved by the master or configurator.** For some buses, the monitoring window in the slave can be increased.
Master communication(s)	All application-synchronous buses

▼ Attributes

Short diagnostics no. (20 bits):	E4001
Long diagnostics no. (32 bits):	C30E4001
CiA error code:	8180

E4002 Failure of a consumer connection

Bus-specific status	Sercos: phase-4
Generic communication status	Operational

Findings	The communication supports bus-specific monitoring mechanisms for consumer connections (with process data, cyclic command values), such as: ▪ A connection has to be transmitted or updated in a configured space of time. ▪ A connection has to be transmitted in a configured space of time with a defined property (counter, toggle bit, etc.). ▪ A connection has to be transmitted in a configured point in time with a defined property (counter, toggle bit, etc.). The device had detected that the configured monitoring criterion was violated for at least one consumer connection. **There was no automatic return to Pre-Operational.**
Cause	▪ There is disturbance on the bus. ▪ The producer of the connection has an error and does not transmit anymore. ▪ The producer does not transmit in the configured pattern (e.g., due to overload). ▪ The timing settings are faulty. ▪ The number of successive failures of a connection has exceeded the parameterized limit value. ▪ The settings of the “distributed clocks” or of the synchronization are incorrect.
Remedy	▪ Check bus line and connector ▪ Check settings in master ▪ Sercos: Change line topology to ring topology ▪ Sercos: Increase value in "MCI connection [x]: Allowed data losses" (S-0-1050.x.11)
Master communication(s)	All

▼ Attributes

Short diagnostics no. (20 bits):	E4002
Long diagnostics no. (32 bits):	C30E4002
CiA error code:	8182
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	26F

E4007 Communication bus cable break

Bus-specific status	All
Generic communication status	All
Findings	The Sercos topology was changed from "Loop-back with Forward" (LF) to "NRT-Modus". **Automatic return to Pre-Operational**
Cause	Cable break has occurred (defective cable)

Remedy	Replace cable and restart phase progression by master
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4007
Long diagnostics no. (32 bits):	C30E4007
CiA error code:	8188

E4008 Invalid addressing command value data container A

There is an error in the index check in the multiplex channel. During cyclic data exchange, the index for accessing the configuration lists for the command values is monitored to show whether it points to a non-initialized point in the list.

Cause	Remedy
Via "MUX control: Addressing" (0x2C9C:01 / S-0-0368 / --), an index (layer) was selected for accessing the configuration lists for the command values in which no parameter has been entered	Via the low byte of "MUX control: Addressing" (0x2C9C:01 / S-0-0368 / --), only select indices (layers) in which parameters have been entered
	"Fill" configuration lists for the command values with parameters ■ "MUX command 1: Configuration list" (0x2C90:02 / S-0-0370 / --) ■ "MUX command 2: Configuration list" (0x2C91:02 / S-0-0490 / --) ■ "MUX command 3: Configuration list" (0x2C92:02 / S-0-0491 / --) ■ ... ■ "MUX command 8: Configuration list" (0x2C97:02 / S-0-0496 / --)

See Multiplex channel

▼ Attributes

Short diagnostics no. (20 bits):	E4008
Long diagnostics no. (32 bits):	000E4008
CiA error code:	8280

E4009 Invalid addressing actual value data container A

There is an error in the index check in the multiplex channel. During cyclic data exchange, the index for accessing the configuration lists for the actual values is monitored to show whether it points to a non-initialized point in the list.

Cause	Remedy
Via "MUX control: Addressing" (0x2C9C:01 / S-0-0368 / --), an index (layer) was selected for accessing the configuration lists for the actual values in which no parameter has been entered	Via the high byte of "MUX control: Addressing" (0x2C9C:01 / S-0-0368 / --), only select indices (layers) in which parameters have been entered
	"Fill" configuration lists for the actual values with parameters: ■ "MUX feedback 1: Configuration list" (0x2CA0:02 / S-0-0371 / --) ■ "MUX feedback 2: Configuration list" (0x2CA1:02 / S-0-0500 / --) ■ "MUX feedback 3: Configuration list" (0x2CA2:02 / S-0-0501 / --) ■ ... ■ "MUX feedback 8: Configuration list" (0x2CA7:02 / S-0-0506 / --)

See Multiplex channel

▼ Attributes

Short diagnostics no. (20 bits):	E4009
Long diagnostics no. (32 bits):	000E4009
CiA error code:	8281

E4010 Slave not scanned

During the initialization of the Sercos ring, the slave was not addressed by the Sercos master in communication phase 1.

Bus-specific status	phase-2
Generic communication status	Pre-Operational
Cause	Save was not scanned in phase 1
Remedy	**The problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4010
Long diagnostics no. (32 bits):	C30E4010
CiA error code:	818A

E4013 DRIVElink: Incorrect addressing

Cause	Remedy
During the check of the slave addresses by the ctrlX DRIVElink master [during the transition to PreOp (CP2)] the slave addresses were not detected in the order as they are entered in "DRIVElink function: Expected slaves" (0x2DA0:06 / P-0-1869 / --). Switching the ctrlX DRIVElink communication to OP (CP4) was prevented.	Make sure that the ctrlX DRIVElink slaves, in the correct order and with the correct addresses as entered in "DRIVElink function: Expected slaves" (0x2DA0:06 / P-0-1869 / --), are connected to each other via ctrlX DRIVElink – OR – Delete all list elements in "DRIVElink function: Expected slaves" (0x2DA0:06 / P-0-1869 / --) to avoid checking the slave addresses at the master

▼ Attributes

Short diagnostics no. (20 bits):	E4013
Long diagnostics no. (32 bits):	000E4013
CiA error code:	FF0A

E4020 Communication bus ring break

The Sercos ring was interrupted. The Sercos topology was changed from " Fast Forward“ (FF) to “Loop-back with Forward“ (LF).

The drive does not leave the current status.

Cause	Remedy
Master has changed topology via Device Control (C-Dev) (S-0-1044)	
A neighboring slave has changed its topology	
One of the two Sercos cables was removed	Plug in removed cable again. After the cause was removed, carry out ring recovery by master
Cable break has occurred (defective cable)	Replace cable. After the cause was removed, carry out ring recovery by master

Bus-specific status	All
Generic communication status	All
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4020
Long diagnostics no. (32 bits):	C30E4020

CiA error code:	818D

E4037 Excessive position command difference

When the drive is running in the operation mode "position control with cyclic command value input", the preset position command values ["Cyclic position control: Command value" (0x2820:01 / S-0-0047 / --)] are monitored. If the position difference between two successive position command values is greater than the effective velocity limit value, position command value monitoring is activated and the warning E4037 is generated if this has been configured ["Cyclic position control: Mode" (0x2820:03 / P-0-0187 / --, bit 15="1")]. The controller does not carry out any other error reaction; the control has to ensure that correct command values are used. As an alternative, the error F4037 can be configured for this error case ["Cyclic position control: Mode" (0x2820:03 / P-0-0187 / --, bit 15="0")].



CAUTION!

When the error case has been configured as a warning, the triggering of the monitoring function no longer causes the drive-side error reaction. In case there is no reaction by the higher-level control, the system/machine can be damaged or destroyed!

The higher-level control has to react system-specifically to the triggering of the monitoring function (error case).



The excessive position command value is stored in "Position command value monitor: Excessive value" (0x2824:01 / P-0-0010 / --).
The last valid position command value is stored in "Position command value monitor: Last valid value" (0x2824:02 / P-0-0011 / --).



The warning is cleared when exiting the operating mode "position control with cyclic command value input" or at the earliest 2 seconds after the error condition has stopped to exist.

Cause	Remedy
Incorrect command value input by the control	Contact the control unit manufacturer or programmer
Parameterized velocity limit value is too low	Check and, if necessary, correct velocity limit values: ■ "Velocity limitation: Max profile velocity" (0x607F:00 / S-0-0091 / --) ■ "Velocity limitation: Limit value, positive" (0x2304:02 / S-0-0038 / --) ■ "Velocity limitation: Limit value, negative" (0x2304:03 / S-0-0039 / --)
A firmware not requiring an export license is used; position command values corresponding to an inverter output frequency ≥ 600 Hz were preset	Check and, if necessary, correct position command values

Cause	Remedy
Limit values of motor were exceeded ■ "Motor basic data: Max. motor speed" (0x6080:00 / S-0-0113 / --) ■ "Axis mechanical data: Velocity limit, bipolar" (0x2204:03 / P-0-0113 / --)	
Drive does not yet follow the external command value input ["Axis state machine: Status word, axis" (0x2802:02 / P-0-0115 / --, bit 3="0")]	Only enable change in command value if bit 3 of 0x2802:02 / P-0-0115 / -- is "1"

See also "Position control" (Sercos) or "Cyclic sync position mode" (CoE)

See also "Position mode drive-controlled" (Sercos) or "Cyclic sync position mode drive controlled" (CoE)

▼ Attributes

Short diagnostics no. (20 bits):	E4037
Long diagnostics no. (32 bits):	000E4037
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

E4040 Sercos: Hot plug error

Bus-specific status	HP0, HP1, HP2
Generic communication status	Pre-Operational, Safe-Operational
Findings	During the hot-plug phase progression, an error has occurred that cannot be assigned to any specific hot-plug diagnostics
Cause	The master does not follow the sequence of the hot-plug phase progression described in the Sercos specification
Remedy	**Problem can only be solved by the master**
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4040
Long diagnostics no. (32 bits):	C30E4040
CiA error code:	818F

E4041 Sercos: HP0 Cycle Time invalid

Bus-specific status	HP0
Generic communication status	Pre-Operational
Findings	An error was detected during the ckeck of the transmitted communication parameters. **Switching to HP1 is not possible.**
Cause	The slave does not support the Sercos cycle time (S-0-1002, MCI timing: Cycle time (tScyc)) parameterized in the bus master
Remedy	**Problem can only be solved by the master.** In the bus master, parameterize a Sercos cycle time (S-0-1002, MCI timing: Cycle time (tScyc)) that is supported by the slave.
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4041
Long diagnostics no. (32 bits):	C30E4041
CiA error code:	8190

E4042 Sercos: HP0 MDT length invalid

Bus-specific status	HP0
Generic communication status	Pre-Operational
Findings	An error was detected during the ckeck of the transmitted communication parameters. **Switching to HP1 is not possible.**
Cause	The MDT length parameterized in the bus master (S-0-1010, Sercos protocol: Lengths of MDTs) is not supported by the slave
Remedy	**Problem can only be solved by the master.** Parameterize MDT lengths conforming to standard in the bus master (see description of "S-0-1010, Sercos protocol: Lengths of MDTs").
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4042
Long diagnostics no. (32 bits):	C30E4042

CiA error code:	8191

E4043 Sercos: HP0 AT length invalid

Bus-specific status	HP0
Generic communication status	Pre-Operational
Findings	An error was detected during the ckeck of the transmitted communication parameters. **Switching to HP1 is not possible.**
Cause	The AT length parameterized in the bus master (S-0-1012, Sercos protocol: Lengths of ATs) is not supported by the slave
Remedy	**Problem can only be solved by the master.** Parameterize AT lengths conforming to standard in the bus master (see description of "S-0-1012, Sercos protocol: Lengths of ATs").
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4043
Long diagnostics no. (32 bits):	C30E4043
CiA error code:	8192

E4044 Sercos: HP0 MTU size invalid

Bus-specific status	HP0
Generic communication status	Pre-Operational
Findings	An error was detected during the ckeck of the transmitted communication parameters. **Switching to HP1 is not possible.**
Cause	The MTU (Maximum Transmission Unit) parameterized in the bus master (S-0-1027.0.1, MTU configuration FIELD: Requested value) is not supported by the slave
Remedy	**Problem can only be solved by the master.** In the bus master, parameterize an MTU (S-0-1027.0.1, MTU configuration FIELD: Requested value) that is supported by the slave.
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4044
Long diagnostics no. (32 bits):	C30E4044
CiA error code:	8193

E4045 Sercos: HP0 UC window invalid

Bus-specific status	HP0
Generic communication status	Pre-Operational
Findings	An error was detected during the ckeck of the transmitted communication parameters. **Switching to HP1 is not possible.**
Cause	The UC transmission time parameterized in the bus master (S-0-1017, Sercos protocol: UC transmission time) is not supported by the slave
Remedy	**Problem can only be solved by the master.** In the bus master, parameterize a UC transmission time (S-0-1017, Sercos protocol: UC transmission time) that is supported by the slave.
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4045
Long diagnostics no. (32 bits):	C30E4045
CiA error code:	8194

E4046 Sercos: HP supported removed

Bus-specific status	HP0, HP1, HP2
Generic communication status	Pre-Operational, Safe-Operational
Findings	The bus master aborted “hot plug“ during the hot-plug phase progression. **The drive controller automatically went back to the NRT mode.**
Cause	▪ Bus interruption ▪ Bus master wants to abort hot-plug phase progression and possibly restart it
Remedy	**Problem can only be solved by the master.** Remedy can only come from the bus master, e.g. by restarting the hot-plug phase progression.
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4046
Long diagnostics no. (32 bits):	C30E4046
CiA error code:	8195

E4047 Sercos: HP enabled removed

Bus-specific status	HP1, HP2
Generic communication status	Pre-Operational, Safe-Operational
Findings	During the hot-plug phase HP1 or HP2, the bus master requested the hot-plug slave to return to hot-plug phase 0 (HP0)
Cause	Bus master wants to abort hot-plug phase progression and possibly restart it
Remedy	**Problem can only be solved by the master.** Remedy can only come from the bus master, e.g. by restarting from hot-plug phase 0.
Master communication(s)	Sercos

▼ Attributes

Short diagnostics no. (20 bits):	E4047
Long diagnostics no. (32 bits):	C30E4047
CiA error code:	8196

E4070 EtherCAT mailbox error

While acyclic data had been processed, one of the following problems occurred:

- Master transmits non-supported mailbox protocol
  ⇒ Check configuration on master side
- Invalid mailbox counter from master
- Timeout while transmitting mailbox data
- Error in internal buffer handling



The corresponding detailed diagnostics might provide information on the cause/remedy.

▼ Attributes

Short diagnostics no. (20 bits):	E4070
Long diagnostics no. (32 bits):	000E4070

E4071 EtherCAT SoE mailbox error

A problem occurred while the acyclic parameter channel had been processed (SoE).



The corresponding detailed diagnostics might provide information on the cause/remedy.

Cause	Remedy
Invalid “Cmd type” in the SoE header	Invalid telegram from master; no remedy in the drive
Invalid actual length in mailbox header	Invalid telegram from master; no remedy in the drive
Invalid “Drive No” in the SoE header	Check configuration in EtherCAT master
Invalid mailbox counter (from master)	The corresponding detailed diagnostics might provide information on the cause/remedy

▼ Attributes

Short diagnostics no. (20 bits):	E4071
Long diagnostics no. (32 bits):	000E4071

E4072 EtherCAT EoE mailbox error

EtherCAT

A problem occurred while the "Ethernet over EtherCAT (EoE)" telegrams had been processed.



The corresponding detailed diagnostics might provide information on the cause/remedy.

Cause	Remedy
Error while applying the IP settings	Check whether IP address, network mask and gateway address are verisimilar
Master transmits telegram with incorrect MAC address	Check configuration in EtherCAT master
“MAC filter settings request” received from master	Drive does not support “MAC filter settings”; check configuration in EtherCAT master
Timeout while processing EoE data	The corresponding detailed diagnostics might provide information on the cause/remedy
Invalid frame/fragment number	
Error in internal buffer handling	

▼ Attributes

Short diagnostics no. (20 bits):	E4072

Long diagnostics no. (32 bits):	000E4072

Detailed diagnostics

00720033

EtherCAT: Send Mbx NOT free

00720034

EtherCAT: Mailbox queue receive error

00720035

EtherCAT: Mailbox queue create error

E4073 EtherCAT CoE mailbox error

A problem occurred while the acyclic parameter channel had been processed (CoE):

Invalid mailbox counter from master

The corresponding detailed diagnostics might provide information on the cause/remedy.

▼ Attributes

Short diagnostics no. (20 bits):	E4073
Long diagnostics no. (32 bits):	000E4073

E4074 EtherCAT: FoE mailbox error

An error occurred in the EtherCAT slave during the EtherCAT FoE communication.

The detailed diagnostics provided information about cause and remedy. The diagnostics contains the FoE error code and a description.

▼ Attributes

Short diagnostics no. (20 bits):	E4074
Long diagnostics no. (32 bits):	030E4074

E4280 PROFINET: Reset to Factory

The PROFINET service "Reset to Factory" was triggered via the PROFINET network to reset the PROFINET settings on the PROFINET Device to the condition as supplied. Device name, IP configuration and, where applicable, other PROFINET-specific values were deleted.

The active connection to the PROFINET Controller no longer exists.

▼ Attributes

Short diagnostics no. (20 bits):	E4280
Long diagnostics no. (32 bits):	0C0E4280
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

E4281 PROFINET: Configuration error at slot / subslot

When a PROFINET connection had been established, a difference was detected between the existing configuration of the I/O data on the PROFINET Device and the I/O data required by the PROFINET Controller.

No valid I/O data are received via PROFINET.

The I/O configurations between the PROFINET Device and the PROFINET Controller have to be adjusted.

For more detailed information on the affected slot / subslot, please see the detailed diagnostics.

▼ Attributes

Short diagnostics no. (20 bits):	E4281
Long diagnostics no. (32 bits):	0C0E4281
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FFFF

E8022 Encoder 1: Encoder signals incorrect

The encoder signals of encoder 1 are incorrect. Since encoder 2 has been configured as a redundant motor control encoder, no error but this warning is generated in the case of incorrect encoder signals of encoder 1. It is possible to continue operation with encoder 2.



Velocity control and the operation modes using encoder 1 as control encoder are automatically switched to encoder 2.
The warning is cleared by switching to "CM".

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Replace measuring system

Cause	Remedy
Hardware defect on control section of drive controller	Replace drive controller



Since the position is no longer generated correctly, encoder 1 has to be re-initialized after elimination of the error.

▼ Attributes

Short diagnostics no. (20 bits):	E8022
Long diagnostics no. (32 bits):	000E8022
J1939: "Failure Mode Identifier":	19
J1939: "Suspect Parameter Number":	2361

E8023 Encoder 2: Encoder signals incorrect

The encoder signals of encoder 2 are incorrect. Since encoder 2 has been configured as a redundant motor control encoder, no error but this warning is generated in the case of incorrect encoder signals of encoder 2. It is possible to continue operation with encoder 1.



Velocity control and the operation modes using encoder 2 as control encoder are automatically switched to encoder 1.
The warning is cleared by switching to "PM".

Cause	Remedy
Defective encoder cable or cable shielding	Check cable to measuring system and replace it, if necessary
Electromagnetic noise caused by power cable	Check and, if necessary, correct shielding of power cable
Defective encoder	Check measuring system and replace it, if necessary
Faulty mounting of measuring head in the case of linear measuring systems	Check mounting of measuring head and correct it, if necessary
Measuring system dirty	Replace measuring system
Hardware defect on control section of drive controller	Replace drive controller



Since the position is no longer generated correctly, encoder 2 has to be re-initialized after elimination of the error.

▼ Attributes

Short diagnostics no. (20 bits):	E8023

Long diagnostics no. (32 bits):	000E8023

E8025 Overvoltage in power section

The DC bus voltage is monitored. When the allowed maximum DC bus voltage is exceeded, the fatal warning E8025 is generated.

The controller disables the motor torque in the case of overvoltage. When the DC bus voltage falls below the allowed maximum value again, the motor is switched back on.



With the firmware AXS-V-0316 and above, this warning can be suppressed via "Inverter power section: Configuration" (0x2120:01 / P-0-0016 / --, bit 15="1") in the case of error.

Cause	Remedy
Energy regenerated to the DC bus by machine mechanics during braking process was so high that it could not be dissipated by supply unit within the regeneration time. This caused the DC bus voltage to rise to an inadmissible value	Reduce regenerative power by lower acceleration values **– or –** Activate power limitation ["Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) / "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --)] **– or –** Correct the drive sizing **– or –** Ensure that supply unit is adequately sized with regard to braking energy requirements; if sizing of available braking resistor is not adequate, use additional braking resistor where necessary
Mains supply voltage (alternating input voltage) too high	Check mains supply voltage (alternating voltage/3-phase) **– or –** Check "Motor basic data: Max. DC bus voltage" (0x2010:09 / P-0-0853 / --)
No braking resistor connected or connection or cable defective	Connect braking resistor or check connection
F8xxx error at high speed (field weakening range) of a synchronous motor	Check whether braking resistance value in DC bus exceeds maximum value allowed for motor; reduce braking resistance value to or below the allowed value if necessary

▼ Attributes

Short diagnostics no. (20 bits):	E8025
Long diagnostics no. (32 bits):	C00E8025
CiA error code:	3284
J1939: "Failure Mode Identifier":	16

J1939: "Suspect Parameter Number":	238D

E8026 Undervoltage in power section

The level of the DC bus voltage is monitored by the drive controller. In "DC bus supply: Configuration" (0x2606:01 / P-0-0118 / --), "fatal warning" has been set with regard to the reaction to undervoltage.

With axis inverter: The readiness for power output of the DC bus is not displayed anymore ["DC bus supply: Control word" (0x2606:02 / S-0-0240 / --, bit 0 changes from "1" to "0")] or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].

With converter/mains connection: The mains connection in the converter is faulty which causes the power supply to be switched off. Thereby, the readiness for power output of the DC bus is not ensured anymore or the DC bus voltage has fallen below the specified minimum value [see value of "DC bus supply: Undervoltage threshold" (0x2606:03 / P-0-0114 / --)].



If this fatal warning occurs, the motive torque is locked. The control unit still can actively decelerate the drive, but no longer accelerate it.

Cause	Remedy
Power is switched off without deactivating the drive via drive enable (AF) beforehand	Check logic for activating drive in connected control unit
Fault or overload of power supply	Check the power supply
Mains failure	Check the cause of the mains failure, reconnect the mains voltage

▼ Attributes

Short diagnostics no. (20 bits):	E8026
Long diagnostics no. (32 bits):	000E8026
CiA error code:	3285
J1939: "Failure Mode Identifier":	17
J1939: "Suspect Parameter Number":	238D

E8027 STO while drive enabled



If this warning occurs, the drive controller immediately goes torque-free!

Cause	Remedy
Special mode “Safe standstill” was selected with active control.	Remove drive enable before selection **- or -** Check control / wiring

Cause	Remedy
Drive enable was set in special mode “Safe standstill”	Go to normal operation before setting drive enable **- or -** Check control / wiring

▼ Attributes

Short diagnostics no. (20 bits):	E8027
Long diagnostics no. (32 bits):	000E8027
CiA error code:	F0EB

E8028 Overcurrent in power section

The controller monitors the motor current supplied by the power section (=controller output current).

If the controller output current is greater than the 1.2-fold of "Inverter type data: Peak current" (0x2314:02 / S-0-0110 / --) **or** if the controller output current is greater than the current limit value [product of "Synchron. motor data: Current limit of demagnetization" (0x2008:01 / P-0-4013 / --) and "Motor basic data: Peak current" (0x2010:08 / S-0-0109 / --)], the output stage of the power section is locked until the controller output current has dropped to allowed values again. The warning E8028 is output during this process.

Cause	Remedy
Current controller incorrectly parameterized	The current controller is a typical PI controller with "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) and "Motor current control: Integral action time 1" (0x2102:06 / S-0-0107 / --). Þ Check parameterization of current controller and, if necessary, correct it after consulting our service department
For **motors by Bosch Rexroth with encoder data memory** (e.g., motors of MHD, MKD, MKE types), values for current controller parameterization do not correspond to values in encoder data memory	Check whether values in "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) and "Motor current control: Integral action time 1" (0x2102:06 / S-0-0107 / --) correspond to values in encoder data memory **Note:** The calculation of "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) depends on "Inverter power section: Switching frequency" (0x2120:03 / P-0-0001 / --) and "Axis configuration: Word" (0x2200:01 / P-0-0556 / --)!
For **motors by Bosch Rexroth without encoder data memory** or **third-party motors**, parameterized values for current controller parameterization do not correspond to those of the motor	Check whether values in "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) and "Motor current control: Integral action time 1" (0x2102:06 / S-0-0107 / --) correspond to those of the motor

▼ Attributes

Short diagnostics no. (20 bits):	E8028
Long diagnostics no. (32 bits):	000E8028

CiA error code:	2380
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	27BF

E8029 Positive position limit exceeded

The drive provides a function for monitoring an allowed travel range using software limit switches that can be parameterized.

Travel range monitoring has to be activated and parameterized using the position limit values ["Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --), "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)]. Besides, the polarities of the specified position data may be inverted using "Axis polarity: Position" (0x290A:01 / S-0-0055 / --).
In "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --), parameterize how the drive reacts when the travel range is exceeded (fatal warning or error).

Drive reaction

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ="4"$_{hex}$ has been parameterized, the drive is decelerated with the ramp parameterized in "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --) when this warning occurs.

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ≠"4"$_{hex}$ has been parameterized, the drive reacts to this warning with velocity command value reset without taking an acceleration limitation into consideration. The available torque/force is determined by "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --).

Cause	Remedy
A command value was specified for the drive that results in an axis position outside of the positive travel range/position limit value	Specify a command value that leads back to the allowed travel range. Contact the machine manufacturer to clarify cause of faulty command value
Positive travel range/position limit value incorrectly parameterized	Check and, if necessary, correct parameterization of "Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --)

Additionally, the travel range may be limited by "Position status: Position window" (0x6067:00 / S-0-0057 / --).

See also Position limit values

▼ Attributes

Short diagnostics no. (20 bits):	E8029
Long diagnostics no. (32 bits):	C00E8029
CiA error code:	868A

E8030 Negative position limit exceeded

The drive provides a function for monitoring an allowed travel range using software limit switches that can be parameterized.

Travel range monitoring has to be activated and parameterized using the position limit values ["Travel range limitation: Limit value, positive" (0x2308:04 / S-0-0049 / --), "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)]. Besides, the polarities of the specified position data may be inverted using "Axis polarity: Position" (0x290A:01 / S-0-0055 / --).
In "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --), parameterize how the drive reacts when the travel range is exceeded (fatal warning or error).

Drive reaction

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ="4"$_{hex}$ has been parameterized, the drive is decelerated with the ramp parameterized in "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --) when this warning occurs.

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ≠"4"$_{hex}$ has been parameterized, the drive reacts to this warning with velocity command value reset without taking an acceleration limitation into consideration. The available torque/force is determined by "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --).

Cause	Remedy
A command value was specified for the drive that results in an axis position outside of the negative travel range/position limit value	Specify a command value that leads back to the allowed travel range. Contact the machine manufacturer to clarify cause of faulty command value
Negative travel range/position limit value incorrectly parameterized	Check and, if necessary, correct parameterization of "Travel range limitation: Limit value, negative" (0x2308:05 / S-0-0050 / --)

Additionally, the travel range may be limited by "Position status: Position window" (0x6067:00 / S-0-0057 / --).

See also Position limit values

▼ Attributes

Short diagnostics no. (20 bits):	E8030
Long diagnostics no. (32 bits):	C00E8030
CiA error code:	868B

E8034 Emergency-Stop activated

The drive provides a function for monitoring an E-Stop input (connection of an external hardware switch). This monitoring function has to be activated and parameterized via P-0-0008.

If the warning E8034 occurs, the axis is decelerated in accordance with "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --, bit 0 to 3) for switching off drive enable.

Cause	Remedy
E-Stop input was controlled (0 V at digital input)	Remove failure that caused E-Stop to be triggered and clarify cause of triggering
Digital inputs and outputs on control section incorrectly parameterized	Check configuration of digital inputs/outputs on control section and correct it, if necessary
E-Stop switch or cable connection defective or incorrectly wired	Check function and wiring of E-Stop switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See E-Stop function

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	E8034
Long diagnostics no. (32 bits):	000E8034
CiA error code:	FF0F
J1939: "Failure Mode Identifier":	14
J1939: "Suspect Parameter Number":	7FFE8

E8040 Torque/force actual value limit active

The torque/force actual value limitation is active. This means that the "stall protection controller" has modified the working point of the machine to prevent overload.

Cause	Remedy
Load torque is too high	Reduce load torque

Cause	Remedy
Torque/force limit values have been parameterized incorrectly	Check torque/force limit values and, if necessary, increase the limits: ■ "Torque/force limitation: Limit value, positive" (0x230C:04 / S-0-0082 / -- ■ "Torque/force limitation: Limit value, negative" (0x230C:05 / S-0-0083 / --) ■ "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) ■ "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --)

▼ Attributes

Short diagnostics no. (20 bits):	E8040
Long diagnostics no. (32 bits):	000E8040
CiA error code:	8381

E8041 Current limitation active

The warning E8041 was generated because the current limitation controller had been activated. The output voltage was reduced due to overcurrent.

Cause	Remedy
Too much load on the island grid	Reduce load of the island grid
Short circuit at output of power output stage (e.g., in the load)	Check load and mains for short circuit
Defective power output stage in dirive controller	Replace drive controller

See also Island grid mode

▼ Attributes

Short diagnostics no. (20 bits):	E8041
Long diagnostics no. (32 bits):	070E8041

E8042 Both travel range limit switches activated

The compliance with the allowed travel range of linear axes is monitored on the hardware side via two travel range limit switches. If the travel range limit switches have been correctly mounted, **one** of the two travel range limit switches is activated in case the travel range is exceeded.

The warning E8042 is generated if the following conditions have been fulfilled:

- The controller detects that both travel range limit switches have been simultaneously activated and
- exceeding the travel range is handled as a fatal warning [setting in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

As long as the cause for E8042 is not eliminated, the controller does not accept any command values!

Drive reaction

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ="4"$_{hex}$ has been parameterized, the drive is decelerated with the ramp parameterized in "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --) when this warning occurs.

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ≠"4"$_{hex}$ has been parameterized, the drive reacts to this warning with velocity command value reset without taking an acceleration limitation into consideration. The available torque/force is determined by "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --).

Cause	Remedy
Due to incorrect mounting, axis simultaneously activates both travel range limit switches	Mount travel range limit switches in such a way that they are activated shortly before axis end position is reached. Make sure the braking distance is sufficient.
Travel range limit switches were incorrectly connected	Connect travel range limit switches correctly; check whether switching logic parameterized in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --) is complied with
Switching logic of travel range limit switches does not match the implemented wiring	Check switching logic of travel range limit switches regarding the implemented wiring; adjust it in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --) if necessary

See also Travel range limit switches

▼ Attributes

Short diagnostics no. (20 bits):	E8042
Long diagnostics no. (32 bits):	C00E8042
CiA error code:	8090

E8043 Positive travel range limit switch activated

The drive provides a function for monitoring travel range limit switches (external hardware limit switches). This monitoring function has to be activated and parameterized ["Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

The warning E8043 is generated if the following conditions have been fulfilled:

- The controller detects that the positive travel range limit switch has been activated and
- exceeding the travel range is handled as a fatal warning [setting in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

Drive reaction

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ="4"$_{hex}$ has been parameterized, the drive is decelerated with the ramp parameterized in "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --) when this warning occurs.

WARNING!

Dangerous movements! Danger to life, risk of injury, serious injury or property damage!

If the travel range limit switch connections were interchanged or the polarity of the direction of axis motion is wrong, the axis does not stop, because the actual position value characteristic is interpreted as leading back to the allowed position range!
Check the correct connections of the travel range limit switches in positive and negative direction and the correct polarity of the direction of motion.

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ≠"4"$_{hex}$ has been parameterized, the drive reacts to this warning with velocity command value reset without taking an acceleration limitation into consideration. The available torque/force is determined by "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --).

Cause	Remedy
The travel range limit switch mounted in the positive direction (see Project Planning Manual of motor) was activated because the axis is outside of the travel range defined by the travel range limit switches	Set drive enable and specify a command value that leads back to the allowed travel range
Digital inputs and outputs on control section incorrectly parameterized	Check parameterization of digital inputs/outputs on control section and correct it, if necessary
Travel range limit switch or cable is defective or wired incorrectly	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller

See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Travel range limit switches

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	E8043
Long diagnostics no. (32 bits):	C00E8043
CiA error code:	8091

E8044 Negative travel range limit switch activated

The drive provides a function for monitoring travel range limit switches (external hardware limit switches). This monitoring function has to be activated and parameterized ["Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

The warning E8043 is generated if the following conditions have been fulfilled:

- The controller detects that the negative travel range limit switch has been activated and

- exceeding the travel range is handled as a fatal warning [setting in "Travel range limitation: Configuration" (0x2308:01 / S-0-0532 / --)].

Drive reaction

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ="4"$_{hex}$ has been parameterized, the drive is decelerated with the ramp parameterized in "Acceleration limitation: Bipolar profile limit value" (0x2302:01 / S-0-0138 / --) when this warning occurs.



WARNING!

Dangerous movements! Danger to life, risk of injury, serious injury or property damage!

If the travel range limit switch connections were interchanged or the polarity of the direction of axis motion is wrong, the axis does not stop, because the actual position value characteristic is interpreted as leading back to the allowed position range!
Check the correct connections of the travel range limit switches in positive and negative direction and the correct polarity of the direction of motion.

If "Axis shutdown: Best possible shutdown" (0x2870:01 / P-0-0119 / --), bit 7...4 ≠"4"$_{hex}$ has been parameterized, the drive reacts to this warning with velocity command value reset without taking an acceleration limitation into consideration. The available torque/force is determined by "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --).

Cause	Remedy
The travel range limit switch mounted in the negative direction (see Project Planning Manual of motor) was activated because the axis is outside of the travel range defined by the travel range limit switches	Set drive enable and specify a command value that leads back to the allowed travel range
Digital inputs and outputs on control section incorrectly parameterized	Check parameterization of digital inputs/outputs on control section and correct it, if necessary
Travel range limit switch or cable is defective or wired incorrectly	Check function and wiring of travel range limit switch
Control section or digital inputs on control section defective	Replace control section or entire drive controller



See Controller replacement
(Only Rexroth service engineers are allowed to replace the control section.)

See also Travel range limit switches

See also Digital inputs/outputs

▼ Attributes

Short diagnostics no. (20 bits):	E8044
Long diagnostics no. (32 bits):	C00E8044
CiA error code:	8092

E8055 Motor overload, current limit active

To protect the motors against thermal destruction in the case of temporarily occurring peak loads, the thermal load of the motor is constantly calculated in the controller using a motor temperature model.

The drive possibly can no longer follow the command values preset by a control unit.

If the warning E8055 is active, the bit 0 (overload warning) is additionally set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).

With the firmware AXS-V-0316 and above, this warning can be suppressed via "Motor thermal model: Configuration" (0x2026:04 / P-0-0537 / --, bit 0="1") in the case of error.

Cause	Remedy
Too high acceleration torque/too high acceleration force is demanded	Reduce acceleration by adjusting the command value profile
Drive overload by too high continuous load	Reduce overload in long machining phases
Too high process force or machining force (e.g., infeed)	Reduce process force or machining force
Mechanical changes in the axis (e.g., friction, load conditions,...)	Check mechanical system and, if necessary, optimize load conditions and/or friction conditions

See also Current and torque/force limitation, power limitation

▼ Attributes

Short diagnostics no. (20 bits):	E8055
Long diagnostics no. (32 bits):	C00E8055
CiA error code:	7182
J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	2363

E8057 Device overload, current limit active

To protect the devices against thermal destruction, the thermal load of the output stage in devices with digital current control is constantly calculated by a temperature model, depending on the measured current.

If the thermal load exceeds 100 % [displayed in "Inverter thermal model: Actual load value" (0x21A4:01 / P-0-0141 / --)], the continuous current limitation is activated and the warning E8057 is generated. As a result, the drive can no longer follow the command values preset by a control unit.

If the warning E8057 is active, the bit 0 (overload warning) is additionally set in "Class 2 diagnostics: Value" (0x2B88:01 / S-0-0012 / --).

With the firmware AXS-V-0316 and above, this warning can be suppressed via "Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 21="1") in the case of error.

With XVR

When the thermal load has reached 100 %, the continuous current limitation is activated and the warning E8057 is generated. As a result, the available DC bus power is reduced and notably drives with a high power requirement can no longer follow the command value input.

Cause	Remedy
Device has not been adjusted to the requirements of the application or the motor	Check drive sizing and, if necessary, use a more powerful device
Too high acceleration torque / too high acceleration force is demanded	Reduce acceleration by adjusting the command value profile
Drive overload by too high continuous load	Reduce overload in long machining phases
Too high process force or machining force (e.g., infeed)	Reduce process force or machining force
Mechanical changes in the axis (e.g., friction, load conditions,...)	Check mechanical system and, if necessary, optimize load conditions and/or friction conditions
Encoder error (e.g., cable/wire break)	Check encoder, check wiring

See also Current and torque/force limitation, power limitation

▼ Attributes

Short diagnostics no. (20 bits):	E8057
Long diagnostics no. (32 bits):	C00E8057
CiA error code:	2381
J1939: "Failure Mode Identifier":	15
J1939: "Suspect Parameter Number":	27E8

E8211 PLC warning no. 1 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8211
Long diagnostics no. (32 bits):	0A0E8211
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE81

E8212 PLC warning no. 2 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8212
Long diagnostics no. (32 bits):	0A0E8212
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE82

E8213 PLC warning no. 3 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8213
Long diagnostics no. (32 bits):	0A0E8213
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE83

E8214 PLC warning no. 4 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8214
Long diagnostics no. (32 bits):	0A0E8214
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE84

E8215 PLC warning no. 5 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8215
Long diagnostics no. (32 bits):	0A0E8215

J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE85

E8216 PLC warning no. 6 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8216
Long diagnostics no. (32 bits):	0A0E8216
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE86

E8217 PLC warning no. 7 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8217
Long diagnostics no. (32 bits):	0A0E8217
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE87

E8218 PLC warning no. 8 with drive reaction

In conjunction with Technology Apps, the PLC integrated in the drive (optional firmware function “ctrlX DRIVE Technology Function”) allows fatal warnings to be generated from within the PLC program.

In the case of fatal warnings, the drive carries out a drive reaction.

Occurrence of this warning depends on the particular PLC project (or the active Technology App). If the warning is generated by a Technology App provided by Bosch Rexroth, the causes and remedies can be found in the description of the Technology App.

Note: The English diagnostic text is stored as the **default text** in all language versions.

The diagnostic text can be edited via the integrated PLC. This allows meaningful and language-dependent diagnostic messages to be assigned.

▼ Attributes

Short diagnostics no. (20 bits):	E8218
Long diagnostics no. (32 bits):	0A0E8218
J1939: "Failure Mode Identifier":	31
J1939: "Suspect Parameter Number":	7FE88

E8260 Torque/force command value limit active

Besides the dynamic actual torque/force value limitation by the motor or amplifier temperature model, there are voltage-dependent (velocity-dependent), as well as parameterizable limitations of the torque/force command value. At least one of these limitations was reached.



The cause of the limitation is displayed in "Torque/force limitation: Status word" (0x230C:01 / P-0-0445 / --).
If no limitation is displayed, "Motor basic data: Peak current" (0x2010:08 / S-0-0109 / --) or "Inverter type data: Peak current" (0x2314:02 / S-0-0110 / --) takes effect as the limit value.



If required, the warning E8260 can be deactivated ["Axis configuration: Word" (0x2200:01 / P-0-0556 / --, bit 4="1").

Cause	Remedy
"Controlled motor operation" / " closed-loop operation" The drive acceleration capacity has been exceeded. In the "position control" and "velocity control" modes, this causes a position deviation (lag error) to build up between command value and actual value	Reduce preset maximum acceleration value to enable the drive to follow the position or velocity command value characteristic

Cause	Remedy
"Controlled motor operation" / "closed-loop operation" Velocity command value is higher than maximum velocity of drive. The drive limits the output value of the velocity controller (torque command value) so that output voltage of the controller, depending on the load, does not exceed the value of "Motor voltage control: Voltage command value 2" (0x211C:03 / P-0-0535 / --) or of "Motor voltage control: Voltage command value 1" (0x211C:04 / P-0-0536 / --)	Reduce maximum velocity command value so that values of "Motor voltage control: Voltage command value 2" (0x211C:03 / P-0-0535 / --) or "Motor voltage control: Voltage command value 1" (0x211C:04 / P-0-0536 / --) are not reached when accelerating or at maximum velocity. If possible, use controlled supply (XVR); with uncontrolled supply, increase supply voltage if necessary
"Controlled motor operation" / "closed-loop operation" Incorrectly parameterized torque/force limit values	Increase torque/force limit values, if required: ■ "Torque/force limitation: Limit value, positive" (0x230C:04 / S-0-0082 / --) ■ "Torque/force limitation: Limit value, negative" (0x230C:05 / S-0-0083 / --) ■ "Torque/force limitation: Limit value, bipolar" (0x230C:03 / S-0-0092 / --) ■ "Torque/force limitation: Peak limit value" (0x230C:02 / P-0-0109 / --)
"Controlled motor operation" / "closed-loop operation" Incorrectly parameterized current controller in the case of motors without encoder data memory (e.g., kit motors or third-party motors)	The current controller is a typical PI controller with "Motor current control: Proportional gain 1" (0x2102:05 / S-0-0106 / --) and "Motor current control: Integral action time 1" (0x2102:06 / S-0-0107 / --). Þ Check parameterization of current controller and, if necessary, correct it after consulting our service department
"Model-based current control without motor encoder (SVC)" Controller cannot permanently supply the required standstill current of asynchronous motor	Reduce standstill current ["Induction motor control: Premagnetization factor" (0x2118:02 / P-0-0532 / --) × "Induction motor data: Magnetizing current" (0x2006:06 / P-0-4004 / --) by a lower value of "Induction motor control: Premagnetization factor" (0x2118:02 / P-0-0532 / --) **- or -** Use a controller with a higher continuous current (type current)
"Open-loop operation" / "V/Hz (U/f)-controlled motor operation" The acceleration capacity of the open-loop-controlled drive has been exceeded (velocity command value ramp too steep)	The maximum change in velocity with which the drive can follow the command values is determined by the motor. Therefore, "V/Hz (U/f) control: Stator frequency slope, maximum value" (0x2100:09 / P-0-0569 / --) has to be adjusted, if necessary

Cause	Remedy
"Controlled motor operation" / "closed-loop operation" The drive hardly accelerates, accelerates not at all or accelerates in the wrong direction, which is why the higher-level control loop increases the command value up to the command value limit.	▪ Check whether one or more motor phases are not connected or are connected with insufficient contact and make contact if necessary. ▪ Check whether two motor phases are connected incorrectly and correct the connection if necessary. ▪ Check whether an incorrect rotational direction of the encoder is active and correct rotational direction of encoder if necessary. ▪ Check whether a "Commutation offset: Effective value" (0x218A:05 / P-0-0521 / --) is active and correct the commutation angle offset if necessary. **Note:** With the help of the direction of motion and encoder validation check during the execution of the command C3700, both the wired rotary field direction (U > V > W) and the rotational direction of the encoder can be checked.

See also Automatic setting of motor control

▼ Attributes

Short diagnostics no. (20 bits):	E8260
Long diagnostics no. (32 bits):	000E8260
CiA error code:	8382
J1939: "Failure Mode Identifier":	16
J1939: "Suspect Parameter Number":	27B3

Detailed diagnostics

00420A01

Torque/force command value is limited in controlled operation

Cause/Remedy 1: See main diagnostics

00420A02

Maximum change in velocity exceeded in controlled operation

Cause/Remedy 1: See main diagnostics

E8300 SMO: Error within the safety zone

The axis has been configured such that it reacts to zone errors with this fatal warning ["SMO SAFETYlink: Configuration" (0x3060:01 / P-0-3266.0.2 / P-0-2547)]. The reaction occurs according to "SMO error reaction: Configuration stopping process" (0x315E:01 / P-0-3263.0.1 / --, bit 0-3).

Cause	Remedy
A zone node signaled an error via the zone bus [see "SMO SAFETYlink: Control word" (0x3060:02 / P-0-3266.0.1 / P-0-2546, bit for error status of safety zone)].	Put axis of zone that signaled the error to error-free state

▼ Attributes

Short diagnostics no. (20 bits):	E8300
Long diagnostics no. (32 bits):	060E8300
CiA error code:	F083

E8825 Overvoltage in power section

The DC bus voltage is monitored. The maximum allowed DC bus voltage had been exceeded, the fatal warning E8825 was generated.

The device switches off mains current control; therefore, power regeneration to the mains does not occur anymore.

When the DC bus voltage falls below the allowed maximum value again, the regeneration to the mains is switched back on.

Cause	Remedy
Energy regenerated to the DC bus by machine mechanics during braking process was so high that it could not be dissipated by supply unit within the regeneration time. This caused the DC bus voltage to rise to an inadmissible value	Reduce regenerative power by lower acceleration values **– or –** Activate power limitation ["Power limitation: Withdrawal from DC bus" (0x230A:04 / S-0-0561 / --) / "Power limitation: Supply to DC bus" (0x230A:03 / S-0-0562 / --)] **– or –** Correct the drive sizing **– or –** Ensure that supply unit is adequately sized with regard to braking energy requirements; if sizing of available braking resistor is not adequate, use additional braking resistor where necessary

Supply unit in island grid mode / XMV in DC/DC mode

If a supply unit is operated in island grid mode or a device of the XMV type in DC/DC mode, the device has to be supplied externally with an appropriate DC bus voltage. If the applied DC bus voltage is above the maximum allowed value for the DC bus voltage, this warning is output.

The device switches off mains current control. Therefore, energy is no longer supplied to the DC bus for devices of the XMV type in DC/DC mode. In the case of a supply unit in island grid mode, the generation of the island grid is interrupted.

When the DC bus voltage falls below the allowed maximum value again, closed-loop DC/DC control or the generation

of the island grid is continued.

Cause	Remedy
Externally applied DC bus voltage is higher than value allowed for the device	Bring applied DC bus voltage to allowed range
On the DC output voltage, more energy is fed in than the supply unit of the primary DC bus can dissipate.	Reduce energy supply **– or –** Increase regenerative capacity of supply unit

▼ Attributes

Short diagnostics no. (20 bits):	E8825
Long diagnostics no. (32 bits):	070E8825

E8826 HV discharge pin priority

HV discharge can be requested using various options:

- Via a digital input
- Via a Technology Function
- Via the CAN bus mode Discharge (20)

The request via the digital input or a Technology Function has higher priority than the passive/active control modes.

This warning was activated because one of the following cases had occurred:

- The converter had been in the active mode and HV discharge was requested via the digital input or a Technology Function
  Þ The converter activates HV discharge and triggers this warning.
- The converter carried out HV discharge (source of request: digital input or a Technology Function), but requests the active mode via CAN.
  Þ The converter remains in HV discharge and triggers this warning.
- The converter is still in the recovery phase [i.e. the time after the last HV discharge is shorter than the recovery time of HV discharge (30 seconds)] and the converter had already been put in an active mode via CAN, and HV discharge is again requested via a digital input or a Technology Function
  – OR –
  The converter is still in the recovery phase and the HV discharge request via a digital input or a Technology Function is already in the waiting loop, but the converter has requested the active mode via CAN.

▼ Attributes

Short diagnostics no. (20 bits):	E8826
Long diagnostics no. (32 bits):	000E8826
J1939: "Failure Mode Identifier":	13
J1939: "Suspect Parameter Number":	27B2

E8828 Overcurrent in power section

The controller monitors the mains current (=controller output current).

If the controller output current is greater than the 1.2-fold "Power supply type data: Peak current" (0x260A:02 / S-0-1701.0.2 / S-0-2003), the output stage of the power section is locked until the controller output current has dropped to allowed values again. The warning E8828 is output during this process.

Cause	Remedy
Current controller incorrectly parameterized	Check current controller setting ["Mains current controller: Proportional gain" (0x2658:11 / S-0-1708.0.11 / S-0-2038) and "Mains current controller: Integral time" (0x2658:12 / S-0-1708.0.12 / S-0-2039)]
Defective mains choke or mains choke inductance too low	Check mains choke and wiring. Have mains filter and mains choke been wired in accordance with the Project Planning Manual?
Current controller incorrectly parameterized	Execute command for loading the controller default values - or - Execute command for loading the factory default values. When the DC bus is subsequently charged, the choke is checked and the current controller settings are recalculated

▼ Attributes

Short diagnostics no. (20 bits):	E8828
Long diagnostics no. (32 bits):	070E8828

F0105 Error in library CXAD_DriveParameter

An error occurred in a function block of the PLC library CXAD_DriveParameter. Additional information see detailed diagnostics in the ErrorIdent.Additional2 output of the function block generating the error.

▼ Attributes

Short diagnostics no. (20 bits):	F0105
Long diagnostics no. (32 bits):	0A0F0105

Detailed diagnostics

00230001

Several tasks use the same instance of a function block

Cause/Remedy 1: Cause: The same instance of a function block is used in several tasks. Remedy: Use different instances of the function block in different tasks.

00230002

Value of "Element" input outside the permissible range

Cause/Remedy 1: Cause: The value of the "Element" input is beyond the permitted range. Remedy: Only values from 1 to 7 are permitted for the value of the "Element" input.

00230003

Value of "ValueAdr" input invalid

Cause/Remedy 1: Cause: The value of the input "ValueAdr" is invalid. The pointer address is either 0 (zero pointer) or not in the IEC memory range. Remedy: A valid pointer address has to be used at the "ValueAdr" input.

00230004

Value of "SizeOfValue" input too small

Cause/Remedy 1: Cause: The value of the "SizeOfValue" input is too small. The received data does not match the memory provided. Remedy: Increase the size of the memory.

00230005

Value of "SizeofValue" input incorrect

Cause/Remedy 1: Cause: The value of the "SizeOfValue" input does not correspond to the data length of the parameter addressed at the "Idn" input. Remedy: Set the value of the "SizeOfValue" input to match the data length of the addressed parameter.

00230006

Value of "SizeOfValue" input too large

Cause/Remedy 1: Cause: The value of input "SizeOfValue" is greater than 16#FFFF. Only list parameters with a maximum length of 64 kByte are supported. Remedy: Reduce the list length at the "SizeOfValue" input.

00230007

List length to be written and value of "SizeOfValue" input do not match

Cause/Remedy 1: Cause: The list length to be written (in the first 2 bytes starting at address "ValueAdr") and the value of "SizeOfValue" input are inconsistent. Remedy: Set the list length to be written to the same value as the value of the "SizeOfValue" input.

00230020

"ValueOut" input invalid (pointer address or size)

Cause/Remedy 1: Cause: The "ValueOut" input is invalid. Invalid pointer address (zero) or invalid size (<= 0). It is possible that no variable is transferred at "ValueOut" input. Remedy: Transfer the variable at the "ValueOut" value.

00230021

Reading error: Parameter type not supported

Cause/Remedy 1: Cause/Remedy: The operating data of the parameter cannot be read. Only individual parameters with a data length of 2, 4 or 8 bytes and text lists are supported.

00230022

Reading error: Data length of float parameter not supported

Cause/Remedy 1: Cause/Remedy: Error when reading the operating data of a parameter of the data type "Float". Only "Float" parameters with a fixed data length of 4 or 8 bytes are supported (no list parameters).

00230023

Reading error: Data length of parameter of type TIME not supported

Cause/Remedy 1: Cause/Remedy: Error when reading the operating data of a parameter of data type "TIME". Only "TIME" parameters with a fixed data length of 8 bytes are supported (no list parameters).

00230024

Internal error: Parameter has an unknown data type

Cause/Remedy 1: Internal error: The parameter has an unknown data type. The data type is not in the IL_DRIVE_DATA_TYPE enumeration and thus not supported.

00230025

Incorrect data type at "ValueOut" input

Cause/Remedy 1: Cause: The data type to read the parameter date at the “ValueOut” input is unsuitable. Remedy: Determine the data type of the parameter using the attribute and create a suitable data type at the "ValueOut” input.

00230026

Internal error: Size of "ValueOut" input not suitable (data type DEC)

Cause/Remedy 1: Internal error: The size of the variable applied to the "ValueOut" input is not suitable to read the operating data of the parameter with the data type DEC.

00230027

Internal error: Size of "ValueOut" input not suitable (data type FLOAT)

Cause/Remedy 1: Internal error: The size of the variable applied to the "ValueOut" input is not suitable to read the operating data of the parameter with the data type FLOAT.

00230028

String length too small

Cause/Remedy 1: Cause: The read string (parameter data) is longer than the string length of the variables created at the "ValueOut" input. Remedy: Increase the string length at the "ValueOut" input.

00230029

Internal error: Error in the state machine

Cause/Remedy 1: Internal error: The function block is in an invalid state due to an error in the internal state machine.

0023002A

"Value" input invalid (pointer address or size)

Cause/Remedy 1: Cause: The "Value" input is invalid. Invalid pointer address (zero) or invalid size (<= 0). It is possible that no variable is transferred at the "Value” input. Remedy: Transfer the variable at the "Value” value.

0023002B

Incorrect data type at "Value" input

Cause/Remedy 1: Cause: The data type to write the parameter date to the “Value” input is unsuitable. Remedy: Determine the data type of the parameter using the attribute and create a suitable data type at the "Value” input.

0023002C

Writing error: Parameter type not supported

Cause/Remedy 1: Cause: The operating date of the parameter cannot be written. Remedy: Only individual parameters with a data length of 2, 4 or 8 bytes and text lists are supported.

0023002D

Value to be written too large

Cause/Remedy 1: Cause: The value to be written at the "Value” input is greater than the maximum value of the parameter (beyond the data type value range). Remedy: Correct the value at the "Value” input.

0023002E

Value to be written too small

Cause/Remedy 1: Cause: The value to be written at input "Value" is smaller than the minimum value of the parameter (beyond the data type value range). Remedy: Correct the value at the "Value” input.

0023002F

Internal error: Invalid data type for a 2-byte integer parameter

Cause/Remedy 1: Internal error: Invalid data type (float, text or unknown data type) for an integer parameter with a data length of 2 bytes.

00230030

Internal error: Invalid data type for a 4-byte integer parameter

Cause/Remedy 1: Internal error: Invalid data type (float, text or unknown data type) for an integer parameter with a data length of 4 bytes.

00230031

Internal error: Invalid data type for a 8-byte integer parameter

Cause/Remedy 1: Internal error: Invalid data type (float, text or unknown data type) for an integer parameter with a data length of 8 bytes.

00230032

Internal error: Unsupported data length for integer variable

Cause/Remedy 1: Internal error: Unsupported data length. Individual parameters with data lengths of 2, 4 or 8 bytes can only be written, if a variable with integer data type (BOOL, LINT, WORD, ...) is created at the "Value" input.

00230033

Internal error: Unsupported data length for real variable

Cause/Remedy 1: Internal error: Unsupported data length. Only single parameters with data lengths of 2, 4 or 8 bytes are supported, if an

integer parameter is to be written with a real variable (REAL/LREAL) at the "Value" input.

00230034

Unsupported data type

Cause/Remedy 1: Cause: The data type used at "Value" input is not supported (e.g. structure, array, etc.). Remedy: Use the supported data type at the "Value" input.

00230035

Writing error: Data length of float parameter not supported

Cause/Remedy 1: Cause/Remedy: Error when writing the operating date of a parameter of the data type "Float". Only "Float" parameters with a fixed data length of 4 or 8 bytes are supported (no list parameters).

00230036

Data type REAL or LREAL at "Value" input not possible for parameter type

Cause/Remedy 1: Cause: The data type REAL or LREAL is used at the "Value" input. However, the parameter to be written is neither a FLOAT data type nor an integer data type with decimal places. Remedy: Correct the data type of the variable at the "Value" input.

00230037

Data type STRING at "Value" input for parameter type not possible

Cause/Remedy 1: Cause: The data type STRING is used at the "Value" input. The parameter to be written is not of the data type STRING (data type "text" and a variable length of 1 byte). Remedy: Correct the data type of the variable at the "Value" input.

00230038

Negative value not possible

Cause/Remedy 1: Cause: The data type of the parameter to be written is unsigned. The value at the "Value" input is negative. Remedy: Correct the value at the “Value” input.

00230039

Parameter is not a command

Cause/Remedy 1: Cause: The parameter addressed at the "Idn" input is not a command. Remedy: Only commands are supported.

0023003A

Timeout error

Cause/Remedy 1: Cause: The function block was terminated due to the timeout. Remedy: Increase value at "Timeout" input if necessary.

0023003B

Error when checking the parameter operating data

Cause/Remedy 1: Cause: Command cannot be started, since operating data of command parameter ("Idn" input) is already 3. Remedy: Set operating data to value 0 before command is started with "IL_DriveCommand".

0023003C

Command is not ready for execution

Cause/Remedy 1: Cause: The command is not ready for execution. Possibly, the command was already started. Remedy: Before executing the command, make sure the command state is either "0" or "1".

0023003D

Unexpected command status

Cause/Remedy 1: Internal error: After a command error, the command was stopped. When reading the command status, an unexpected status (IL_DRIVE_DATA_SETTING, IL_DRIVE_DATA_END_OK or IL_DRIVE_DATA_IN_PROCESS) was read.

0023003E

No list parameter

Cause/Remedy 1: The parameter applied at the "Idn" input is not a list parameter. Only list parameters are supported.

0023003F

Buffer too small

Cause/Remedy 1: Cause: Buffer at "BufferOut" input too small. Size of elements to be read (ReadElements) is greater than the buffer (BufferOut). Remedy: Either increase buffer size (BufferOut) or reduce number of elements to be read (ReadElements).

00230040

"StartElement" greater than current number of elements

Cause/Remedy 1: Cause: The start element number ("StartElement" input) is higher than the number of the last element in the list parameter. Remedy: Reduce start element number (StartElement input). The "ActElements" output displays the current number of elements.

00230041

Buffer ("BufferOut" input) is too small to read all elements

Cause/Remedy 1: Cause: The buffer is not big enough ("BufferOut" input) to hold all elements from the start element. Remedy: Increase buffer size ("BufferOut" input). The "ActElements" output displays the current number of elements.

00230042

The data to be written exceed the maximum list length

Cause/Remedy 1: Cause: Impossible to write data since the sum of "StartElement" and "WriteElements" exceeds the list length of the parameter. Remedy: Reduce data to be written (WriteElements) or make start element (StartElement) smaller.

00230043

Data to be written ("WriteElements" input) are greater than the size of the source buffer ("Buffer" input)

Cause/Remedy 1: Cause: Data to be written ("WriteElements" input) are greater than the source buffer size ("Buffer" input). Remedy: Reduce data to be written ("WriteElements" input) or increase size of source buffer ("Buffer" input).

00230044

The sum of the "StartElement" and "WriteElements" inputs is greater than the "ListElements" input

Cause/Remedy 1: Cause: The sum of the "StartElement" and "WriteElements" inputs is greater than the "ListElements" input. Remedy: Either reduce the "StartElement" or "WriteElements" input or increase the "ListElements" input.

00230045

The "ListElements" input is greater than the maximum number of elements

Cause/Remedy 1: Cause: The "ListElements" input is greater than the maximum number of list elements. Remedy: Reduce the "ListElements" input to a value smaller than or equal to the maximum number of list elements for this parameter.

00230046

The "BufferOut" input is invalid (pointer address or size)

Cause/Remedy 1: Cause: The "BufferOut" input is invalid. Invalid pointer address ("0") or invalid size (<= "0"). Possibly, no variable is transmitted at the "BufferOut" input. Remedy: Transmit a variable at the "BufferOut" input.

00230047

The "Buffer" input is invalid (pointer address or size)

Cause/Remedy 1: Cause: The "Buffer" input is invalid. Invalid pointer address ("0") or invalid size (<= "0"). Possibly, no variable is transmitted at the "Buffer" input. Remedy: Transmit a variable at the "Buffer" input.

F010C Error in library CXAD_Base

An error occurred in a function block of the PLC library CXAD_Base. Additional information see detailed diagnostics in the ErrorIdent.Additional2 output of the function block generating the error.

▼ Attributes

Short diagnostics no. (20 bits):	F010C
Long diagnostics no. (32 bits):	0A0F010C

Detailed diagnostics

00230401

Invalid main diagnostic number at MainDiagNo input

Cause/Remedy 1: Cause: Invalid main diagnostic number at the MainDiagNo input. Remedy: Use valid main diagnostic numbers.

00230402

Invalid detailed diagnostic number at DetailDiagNo input

Cause/Remedy 1: Cause: Invalid detailed diagnostic number at the DetailDiagNo: 0 input. Remedy: Use the detailed diagnostic numbers 16#0001 to 16#FFFF.

00230403

Up to eight simulaneous user errors allowed

Cause/Remedy 1: Cause: Up to eight errors can be sent simultaneously whose diagnostic reason is still pending (cannot be cleared). Remedy: Revise the PLC program. Send only up to eight non clearable errors simultaneously.

00230404

Up to eight simultaneous warnings allowed

Cause/Remedy 1: Cause: Up to eight warnings can be sent simultaneously. Remedy: Revise the PLC program. Send only up to eight warnings simultaneously.

00230405

Diagnostics not started with SET_DIAG_START

Cause/Remedy 1: Cause: Diagnotics should be terminated with SET_DIAG_END, but it was not started with SET_DIAG_START. Remedy: Always start the diagnostics with SET_DIAG_START, end with SET_DIAG_END. Special case SET_DIAG_START_END: Error cause is no longer present.

00230406

Warning / message cannot be issued with SET_DIAG_START_EN

Cause/Remedy 1: Cause: A warning / message is to be issued with SET_DIAG_START_END. This is not allowed. Remedy: Correct the "SetDiagState" input. Always start a warning / message with SET_DIAG_START and end it with SET_DIAG_END.

00230407

Value of "Ident" input is beyond the permitted parameters

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in the ctrlX PLC Engineering.

00230408

Value of "Format" input is beyond the permitted values

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in the ctrlX PLC Engineering.

00230409

Value of "Decimals" input is beyond the permitted values

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in the ctrlX PLC Engineering.

0023040A

An internal error occured

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in the ctrlX PLC Engineering.

0023040B

The drive is not in CM

Cause/Remedy 1: Cause: Drive is not in CM. Remedy: Set drive to CM.

0023040C

The "Name" input or the "Unit" input does not meet the specifications

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in the ctrlX PLC Engineering.

0023040D

Invalid data length of parameter for Format IDN

Cause/Remedy 1: Cause: Invalid data length of the register parameter for Format IDN. Remedy: Use a register parameter with a data length of 4 bytes (single or list parameter).

0023040E

Setting limit values is not supported for register parameters with IDN format

Cause/Remedy 1: Cause/Remedy: Setting limit values is not supported for register parameters with IDN format

0023040F

The "Writability" input does not meet the specifications

Cause/Remedy 1: Cause: Invalid input. Remedy: Refer to the POU documentation in ctrlX PLC Engineering.

00230410

The device has no axis

Cause/Remedy 1: Cause: The device has no axis. Remedy: Do not use this function block on this device.

00230411

Function not possible because Easy Startup is active.

Cause/Remedy 1: Cause: Function not possible because Easy Startup is active. Remedy: Stop Easy Startup mode.

00230412

Function not possible because the PLC has no temporary control

Cause/Remedy 1: Cause: Function not possible because the PLC has no temporary control. Remedy: Enable temporary control with "MX_SetControl".

00230413

The selected operation mode with input "NewOpMode" is not allowed

Cause/Remedy 1: Cause: The selected operation mode with input "NewOpMode" is not allowed. Remedy: Use one of the allowed operation modes.

00230414

Timeout when switching operation mode

Cause/Remedy 1: Cause: Timeout when switching operation mode. Remedy: Reset the PLC. Contact the service team.

00230415

Axis is not in status OM

Cause/Remedy 1: Cause: Axis is not in status OM. Remedy: Set axis in OM.

F0114 Error in CXAD_AxisControl library

An error occurred in a function block of the PLC library CXAD_AxisControl. Additional information see detailed diagnostics in the ErrorIdent.Additional2 output of the function block generating the error.

▼ Attributes

Short diagnostics no. (20 bits):	F0114
Long diagnostics no. (32 bits):	0A0F0114

Detailed diagnostics

00230001

Several tasks use the same instance of a function block

Cause/Remedy 1: Cause: The same instance of a function block is used in several tasks. Remedy: Use different instances of the function block in different tasks.

00230410

The device has no axis

Cause/Remedy 1: Cause: The device has no axis. Remedy: Do not use this function block on this device.

00230412

Function not possible because the PLC has no temporary control

Cause/Remedy 1: Cause: Function not possible because the PLC has no temporary control. Remedy: Enable temporary control with "MX_SetControl".

00230415

Axis is not in status OM

Cause/Remedy 1: Cause: Axis is not in status OM. Remedy: Set axis in OM.

00230480

Axis has no reference

Cause/Remedy 1: Cause: Axis has no reference. Remedy: Axis must be referenced or needs absolute position.

00230481

Axis is not in "Drive with torque" state

Cause/Remedy 1: Cause: Axis is not in "Drive with torque" state (P-0-0115, Bit 14/15). Remedy: Switch on axis with "MX_Power".

00230482

Operation mode could not be initialized

Cause/Remedy 1: Cause: Operation mode could not be initialized due to "Drive halt" or drive command. Remedy: "Drive halt" or drive command must be stopped.

00230483

No velocity command value acknowledgment

Cause/Remedy 1: Cause: The velocity command value (P-0-1460) was not acknowledged in P-0-1460.0.1 within timeout monitoring. Remedy: Increase time for timeout monitoring in method mInOp.

00230484

No torque/force command value acknowledgment

Cause/Remedy 1: Cause: Torque/force command value (P-0-1465) was not acknowledged in P-0-1465.0.1 within timeout monitoring. Remedy: Increase time for timeout monitoring in method mInOp.

00230485

No positioning command value acknowledgment

Cause/Remedy 1: Cause: Positioning command value acknowledge (P-0-1455) was not set within timeout monitoring. Remedy: Increase time for timeout monitoring in method mInOp.

Other detailed diagnostics

This section contains all detailed diagnostics that have **no relation to a main diagnostics** or that have a **relation to multiple main diagnostics**.

Detailed diagnostics

0012001D

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

001400F6

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current

firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

0014010A

Overvoltage at the 12.5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014010B

Power sag at the 12.5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014010E

Overvoltage at the 3.3 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014010F

Power sag at the 3.3 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140117

Overvoltage at the 12.5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140118

Power sag at the 12.5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014011A

Overvoltage at the 3.3 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014011B

Power sag at the 3.3 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014011E

Overvoltage at the 3.3 V CH

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014011F

Power sag at the 3.3 V CH

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140121

Overvoltage at the bandgap voltage

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140122

Power sag at the bandgap voltage

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140129

Overvoltage at the reference voltage

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

0014012A

Power sag at the reference voltage

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140134

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00140135

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00140141

Overvoltage at the 5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140142

Power sag at the 5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140144

Overvoltage at the 5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140145

Power sag at the 5 V

Cause/Remedy 1: Cause: The error was probably caused by an unstable supply voltage. Remedy: Please check the supply voltage.

00140192

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00140208

Unknown encoder type

Cause/Remedy 1: Cause: The encoder is unknown in the firmware being used. Remedy: Check whether the encoder can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

0014020D

State machine has an invalid value

0014020E

State machine has an invalid value

0014020F

Invalid channel

00140210

Internal error: Self test of ECC module has caused an error. Please contact the service department.

00150764

Parameter not plausible (S-0-0121 to P-0-3221.0.2)

00150765

Parameter not plausible (S-0-0122 to P-0-3221.0.3)

00150766

Parameter not plausible (S-0-0123 to P-0-3221.0.4)

00150767

Parameter not plausible (S-0-0103 to P-0-3221.0.6)

00150768

Parameter not plausible (S-0-0278 to P-0-3221.0.7)

00150769

Parameter not plausible (bit 0: S-0-0055 to P-0-3221.0.1 (bit 0))

0015076A

Parameter not plausible (S-0-0076 to P-0-3222.0.1)

0015076B

Parameter not plausible (S-0-0078 to P-0-3222.0.2)

0015076C

Parameter not plausible (S-0-0079 to P-0-3222.0.3)

0015076D

Parameter not plausible (S-0-0043, Bit 0 to P-0-3221.0.1, Bit 0)

0015076E

Parameter not plausible (S-0-0044 to P-0-3223.0.1)

0015076F

Parameter not plausible (S-0-0046 to P-0-3223.0.2)

00150770

Parameter not plausible (S-0-0160 to P-0-3224.0.1)

00150771

Parameter not plausible (S-0-0162 to P-0-3224.0.2)

00150772

Parameter not plausible (S-0-0446 to P-0-3224.0.3)

00150773

Error when reading an SMO parameter (see S-0-0423)

00150775

On config. bit 0 = 1 in P-0-3219, the velocity weighting of SafeMotion and standard firmware is not equal.

00160014

Unknown encoder type

Cause/Remedy 1: Cause: The encoder is unknown in the firmware being used. Remedy: Check whether the encoder can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160040

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160041

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160043

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160047

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160052

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160055

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160057

Unknown encoder type

Cause/Remedy 1: Cause: The encoder is unknown in the firmware being used. Remedy: Check whether the encoder can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00160088

DMA Overflow

00160089

Value should not be negative

001A0010

FSoE: Mismatch of safe communication profile in SMO and EtherCAT master (length mismatch).

0030007F

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

00400400

The selected operation mode is not supported.

Cause/Remedy 1: Cause/Remedy: Unknown operation modes are configured in the operation mode parameters (S-0-0032 and following).

00400402

Error when generating the "SysEvent" event group

00400403

Error when receiving events in the system control

00400405

Error when transmitting events from "SYST_DriveStatusHandler()"

00400407

Error when transmitting events from "SYST_HandleEStop()"

0040040A

Ring buffer overflow of events from interrupts

0040040D

The selected operation mode is not supported.

Cause/Remedy 1: Cause/Remedy: Unknown operation modes are configured in the operation mode parameters (S-0-0032 and following).

00400415

Configured operation mode is not allowed

Cause/Remedy 1: Cause/Remedy: Unknown operation modes are configured in the operation mode parameters (S-0-0032 and following).

00400416

Reaction to fatal warning

Cause/Remedy 1: Cause: Logbook entry, a fatal entry resulted in deceleration.

00410006

Subsystem of brake control not ready

00410007

Subsystem parameter of brake control "Eco Mode" not available

00410008

Brake control "Eco Mode" not activated

Cause/Remedy 1: Cause: The "Eco Mode" function package is not available. Remedy: Activate the corresponding function code in the enabled function package or deactivate the brake control "Eco Mode" function

00420204

Error reading device maximum current values

Cause/Remedy 1: Cause: Current limit values could be read from the basic device parameters. Remedy: Replace device.

00420314

SVC control: standstill current 0x2108:0E / P-0-0592.0.54 too low

Cause/Remedy 1: Remedy: Parameterize 0x2108:0E / P-0-0592.0.54 correctly

00420315

SVC control: Field weakening not active (0x210C:02 / P-0-3945)

Cause/Remedy 1: Cause/Remedy: Field weakening is deactivated in parameter 0x210C:02 / P-0-3945, bit 0. Activate field weakening. Check parameterization of field weakening.

00420316

Prediction not configurable (0x210C:02 / P-0-3945, bit 1/2)

Cause/Remedy 1: Cause/Remedy: Function is not available. Check parameterization.

00420421

Power section parameters for overvoltage protection are not plausible

Cause/Remedy 1: Cause/Remedy: The parameters 0x2A94:AD / P-0-2630.0.18 or P-0-2630.0.22 must be smaller than the switch-off threshold (P-0-2630.0.1).

00420480

Error during axis motion for "orientation" commutation adjustment

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00420981

Error during initialization of control mode

00430002

Table of resistance values for temperature not strictly monotonic

Cause/Remedy 1: The characteristic curve of the temperature sensor in the motor must be strictly monotonic.

00430004

Coolant temperature upper limit exceeded

Cause/Remedy 1: Sensor 2 is configured as a coolant temperature sensor. The measured value is greater than the upper limit

00430006

Coolant temperature lower limit not reached

Cause/Remedy 1: Sensor 2 is configured as a coolant temperature sensor. The measured value is smaller than the lower limit

00430007

Measured value of sensor 1 invalid

Cause/Remedy 1: Error in motor temperature measurement 1

00430008

Measured value of sensor 2 invalid

Cause/Remedy 1: Error in motor temperature measurement 2

00430009

Sensor 2 not available

Cause/Remedy 1: The present device hardware does not support a second motor temperature sensor. Deactivate the configuration in 0x2022:03 / P-0-0595 with the value "0".

0043000A

Motor temperature of subsystem not available

Cause/Remedy 1: The motor temperature measurement cannot be transferred.

0043000B

"Sensor 2" motor temperature of subsystem not available

Cause/Remedy 1: The motor temperature measurement 2 cannot be transferred.

0043000C

Encoder temperature not available

Cause/Remedy 1: The encoder temperature cannot be transferred.

0043000D

Motor temperature not available from encoder

Cause/Remedy 1: The motor temperature cannot be transferred from the encoder

00440011

Error during activation of ENCB reference mark evaluation

00440012

Encoder[x]: Error --> reference mark already detected at reference mark start

00440014

Encoder[x]: Info: Unable to find serial number of encoder for saving

0044002F

Encoder 1: Error in parameter handling Status of 0x24B4:02 / P-0-0177 could not be set to invalid

00440030

Encoder 1: Error in parameter handling Status of 0x24B4:03 / P-0-0177.0.1 / P-0-3819 could not be set to invalid

00440031

Encoder 1: Error when saving 0x24B4:03 / P-0-0177.0.1 / P-0-3819

00440032

Encoder 1: Error when reading the absolute encoder offset (0x24B4:01 / S-0-0613.1.156) from the OEM memory

00440033

Encoder 1: Absolute encoder offset in OEM memory could not be set to invalid

00440034

Encoder 1: Error in parameter handling Status of 0x24B4:01 / S-0-0613.1.156 could not be set to invalid

00440037

Encoder 1: Error when calculating the comparative checksum (reading the absolute encoder offset)

00440038

Encoder 1: Absolute encoder offset in OEM memory is invalid (reading the absolute encoder offset)

00440043

Encoder[x]: Impossible to identify the encoder interface for reference mark evaluation.

00440045

Encoder 1: Absolute encoder offset in OEM memory could not be set to invalid as OEM memory is read-only

00440063

Timeout when reading the encoder option reference mark

00440064

Invalid internal state "reading the encoder option reference mark"

00440065

Timeout when reading the encoder option detailed diagnostics

00440066

Invalid internal state "reading the encoder option detailed diagnostics"

00440067

Invalid distance coding of reference marks

00440068

Internal error when reading the encoder option reference mark

00440069

Internal error when reading the encoder option reference mark

0044006A

Internal error when reading the encoder option detailed diagnostics

0044006B

Second reference mark determined identical to first reference mark

0044007C

Parameter channel for option 2 could not be reserved

0044007D

Parameter channel for option 3 could not be reserved

0044007E

Slot number not supported

0044007F

Slot number not supported

00440080

Encoder 2: Error in parameter handling Status of 0x24B6:02 / P-0-0178 could not be set to invalid

00440081

Encoder 2: Error in parameter handling Status 0x24B6:03 / P-0-0178.0.1 / P-0-3919 could not be set to invalid

00440082

Encoder 2: Error when saving 0x24B6:03 / P-0-0178.0.1 / P-0-3919

00440083

Encoder 2: Error when reading the absolute encoder offset (0x24B6:01 / S-0-0613.2.156 / P-0-3890) from the OEM memory

00440084

Encoder 2: Absolute encoder offset in OEM memory could not be set to invalid

00440085

Encoder 2: Error in parameter handling Status of 0x24B6:01 / S-0-0613.2.156 / P-0-3890 could not be set to invalid

00440086

Encoder 2: Error when calculating the comparative checksum (reading the absolute encoder offset)

00440087

Encoder 2: Absolute encoder offset in OEM memory is invalid (reading the absolute encoder offset)

00440088

Encoder 2: Absolute encoder offset in OEM memory could not be set to invalid as OEM memory is read-only

00440089

Encoder 2: Error when reading the absolute encoder offset from the OEM memory

Cause/Remedy 1: Encoder 2: Error when reading the absolute encoder offset from the OEM memory

0044008A

Encoder 2: Impossible to identify the encoder interface for reading the absolute encoder offset

Cause/Remedy 1: Encoder 2: Impossible to identify the encoder interface for reading the absolute encoder offset.

0044008B

Encoder 2: No readable OEM memory identified

Cause/Remedy 1: Encoder 2: No readable OEM memory identified!

00440101

Encoder 1: Error when reading the absolute encoder offset from the OEM memory

00440102

Encoder 1: Impossible to identify the encoder interface for reading the absolute encoder offset

0044011F

Encoder[x]: Unsupported encoder class (digital, combi, analog)

00440120

Phys. encoder evaluation configuration could not be saved

00440121

Properties of phys. encoder could not be saved: ONBOARD: 0x2418:02 / S-0-0602.10.2 / S-0-2551, OPT_2: 0x241A:02 / S-0-0602.2.2 / S-0-2501, OPT_3: 0x241C:02 / S-0-0602.3.2 / S-0-2526

00440122

Type of phys. encoder could not be saved: ONBOARD: 0x2418:01 / S-0-0602.10.1 / S-0-2550, OPT_2: 0x241A:01/ S-0-0602.2.1 / S-0-2500, OPT_3: 0x241C:01/ S-0-0602.3.1 / S-0-2525

00440123

Serial number of encoder could not be saved: ONBOARD: 0x2410:88 / S-0-0601.10.136 / P-0-3870, OPT_2: 0x2412:88 / S-0-0601.2.136 / P-0-3866, OPT_3: 0x2414:88 / S-0-0601.3.136 / P-0-3868

00440243

Encoder 1: No readable OEM memory identified

00440248

Encoder 1: Evaluation (ENCB/ENCE) not ready for operation --> 0x24B4:02 / P-0-0177 and 0x24B4:03 / P-0-0177.0.1 / P-0-3819 and OEM AbsEncOffset are set to invalid

00440249

Encoder 2: Evaluation (ENCB/ENCE) not ready for operation --> 0x24B6:02 / P-0-0178 and 0x24B6:03 / P-0-0178.0.1 / P-0-3919 and OEM AbsEncOffset are set to invalid

0044024A

Error: The position could not be calculated correctly

0044024B

Error: The position could not be calculated correctly

0044024C

Error: The position could not be calculated correctly

0044024D

Error: The position could not be calculated correctly

0044024E

Encoder 1 error: Internal error flag could not be deleted

Cause/Remedy 1: Unknown error, please contact customer support

0044024F

Encoder 2 error: Internal error flag could not be deleted

Cause/Remedy 1: Unknown error, please contact customer support

00440401

Fatal exception: Internal sequence control disrupted

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00440402

Fatal exception: Internal sequence control disrupted

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00440403

Internal error: Data address P-0-2690.0.1 could not be set

00440404

Internal error: Data address P-0-2690.0.2 could not be set

00440405

Internal error: Data address P-0-2690.0.3 could not be set

00440406

Internal error: Data address P-0-2690.0.4 could not be set

00440407

Internal error: Data address P-0-2690.0.5 could not be set

00440408

Internal error: Data address P-0-2690.0.6 could not be set

00440409

Internal error: Data address P-0-2690.0.7 could not be set

0044040A

Internal error: Data address P-0-2690.0.8 could not be set

0044040B

Internal error: Data address P-0-2690.0.9 could not be set

0044040C

Internal error: Data address P-0-2690.0.10 could not be set

0044040D

Internal error: Data address P-0-2690.0.11 could not be set

0044040E

Internal error: Data address P-0-2690.0.12 could not be set

0044040F

Internal error: Data address P-0-2690.0.13 could not be set

00440410

Internal error: Data address P-0-2690.0.14 could not be set

00440411

Internal error: Data address P-0-2690.0.17 could not be set

00440412

Internal error in i32LimitDiffValueUnipolar32(): i32LimitValue > 0

00440413

Internal error in i32LimitDiffValueBipolar32(): i32LimitValue > 0

00440414

Internal error in i32LimitDiffValueUnipolar64(): i32LimitValue > 0

00440415

Internal error in i32LimitDiffValueBipolar64(): i32LimitValue > 0

00440416

Internal error in i32LimitValueUnipolar32(): i32LimitValue > 0

00440417

Internal error in i32LimitValueBipolar32(): i32LimitValue > 0

00440418

Internal error in i32LimitValueUnipolar64(): i32LimitValue > 0

00440419

Internal error in i32LimitValueBipolar64(): i32LimitValue > 0

0044041A

Internal error in ui32AbsMath(): Value == INT16_MIN

0044041B

Internal error in ui16AbsMath(): Value == INT16_MIN

0044041C

Internal error in vStdBytecopy(): Destination range too small

0044041D

Internal error in vStdBytecopy(): Nullpointer access

0044041E

Internal error in vStdBytecopy(): Nullpointer access

0044041F

Internal error in main: STUS_STimer_sb8Init failed

00440420

Fatal exception: Internal sequence control disrupted

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00440421

Fatal exception: Error during event registration

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00440422

Fatal exception: Internal sequence control disrupted

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

00440423

Internal error in FRAM_Sync_vSync: STUS_STimer_eSync failed

00440424

Internal error in FramRtosInit_vStartRtos: AOS__Appl_StartTaskSystem failed

00440425

Internal error in FramRtosInit_vBasicInitalization: AOS__Appl_Init failed

00440426

Internal error in FramRtosInit_vBasicInitalization: AOS__Task_Setup failed

00440427

Internal error in FramRtosInit_vBasicInitalization: AOS__Semaphore_Setup failed

00440428

Internal error in FramRtosInit_vBasicInitalization: AOS__Event_Setup failed

00440429

Internal error in FramRtosInit_vBasicInitalization: AOS__Queue_Setup failed

0044042A

Internal error in fram_task_vHostCommunication: Logical program sequence control

0044042B

Internal error in Sin2cos2 at Init: freq limits exceed minimum

0044042C

Internal error in Sin2cos2 at Init: freq limits exceed maximum

0044042D

Error: S-0-0601.x.16*="0" (*only in firmware up to AXS-V-0202)

0044042E

Internal error in Sin2cos2 at Init: Limit value limits exceed maximum

0044042F

Error in cutoff frequency calculation: Division by 0

00440430

Internal error: Inconsistent data for sin2cos2 check limit values

00440431

Internal error: Cycle time not supported for sin2cos2 check limit values

00440432

Error: Signal magnitude (Sin2 + Cos2) is smaller than minimum limit value

Cause/Remedy 1: The levels of the 1Vss signals are outside of specification

Cause/Remedy 2: The encoder has no analog 1Vss signals

Cause/Remedy 3: The encoder is connected incorrectly

Cause/Remedy 4: The signal quality of the analog 1Vss signals is insufficient

00440433

Error: signal magnitude (Sin2 + Cos2) is bigger than maximum limit

Cause/Remedy 1: The levels of the 1Vss signals are outside of specification

Cause/Remedy 2: The encoder has no analog 1Vss signals

Cause/Remedy 3: The encoder is connected incorrectly

Cause/Remedy 4: The signal quality of the analog 1Vss signals is insufficient

00440434

Internal error in frequency at Init: Limit frequency is not a positive value

00440435

Internal error in frequency at Init: Cycle time is not a positive value

00440436

Internal error in frequency check: Maximum limit frequency exceeded

00440437

Internal error in position plausibility check: Phase error between counter and angle too great

00440438

Evaluation init: Error in the calculation of the position resolution (S-0-0602.x.13 > 65536)

00440439

Evaluation init: Error in the calculation of the position resolution (S-0-0602.x.13 = 0)

0044043A

Internal error: Undefined encoder type or inverted movement direction (S-0-0602.x.2)

0044043B

Internal error in evaluation: Undefined encoder type at BuildPosition

0044043C

Internal error: Comm Interface Reset Error

0044043D

Internal error: Busy Timeout Error

0044043E

Unexpected communication state

0044043F

Unknown communication state

00440440

Internal error: Command read status: PARITY Error

00440441

Internal error: Command read encoder status: Count Error

00440442

Internal error: Communication Test: Telegram error command read encoder status

00440443

Internal error: Communication Test: Telegram error command read encoder status (Byte 0)

00440444

Internal error: Communication Test: Telegram error command read encoder status (Byte 1)

00440445

Internal error: Communication Test: Telegram error command read encoder status, error bit is set

00440446

Internal error: Illegal command

0044044A

Internal error: Data address P-0-2690.0.32 could not be set

0044047C

Decoder: SSI telegram is too long

Cause/Remedy 1: Change parameterization

0044047D

Decoder: SSI telegram part is not supported

Cause/Remedy 1: Change parameterization

0044047E

Scheduler: SSI telegram is too short

Cause/Remedy 1: Change parameterization

0044047F

Scheduler: SSI telegram is too long

Cause/Remedy 1: Change parameterization

00440480

Scheduler: SSI Baud rate is not supported

Cause/Remedy 1: Change parameterization

00440481

Scheduler: SSI timing is not supported

Cause/Remedy 1: Change parameterization

00440482

SSI state machine: Internal procedure error at telegram type 1 Init

00440483

SSI state machine: SSI telegram type is not supported

Cause/Remedy 1: Change parameterization

00440484

SSI state machine: Timeout during switch-on

00440485

Scheduler: Error in measurement of SSI encoder monoflop time

00440486

Scheduler: Measured monoflop time of SSI encoder is too short

Cause/Remedy 1: No SSI encoder is connected

Cause/Remedy 2: The encoder is connected or wired incorrectly

Cause/Remedy 3: Transmission is disrupted

Cause/Remedy 4: The encoder is not supported

00440487

Scheduler: Measured monoflop time of SSI encoder is too long

00440488

Scheduler: Unexpected Baud rate value

00440489

Scheduler: Unexpected return value from SSI GetRxData

0044048A

Scheduler: Unexpected return value from SSI CheckTm

0044048B

Scheduler: Unexpected communication counter value

00440491

Unsupported encoder type

00440492

Unsupported encoder type

00440495

Error during position initialization: Analog signals outside the permissible limits

00440496

Timeout error: Position initialization (incremental position)

00440497

Internal error: Position initialization (incremental position)

004404A8

Error: Velocity > ONBOARD: 0x2418:08 / S-0-0602.10.8 / S-0-2557, OPT_2: 0x241A:08 / S-0-0602.2.8 / S-0-2507, OPT_3: 0x241C:08 / S-0-0602.3.8 / S-0-2532

004404A9

Error: Calculated S-0-0601.x.3 > 48 bit

004404AA

Error: Calculated S-0-0601.x.3 > 38 bit or "0"

004404AB

Error: Calculated S-0-0601.x.138 > 48 bit or "0"

004404AC

Error: Calculated S-0-0601.x.138 > 48 bit

004404AD

Error: There is no communication connection to the Hiperface encoder

004404AE

Error: Electrical data sheet (EDS) is not valid

004404B0

Timeout error: Position initialization could not be completed

004404B3

Error occurred while executing command "Read position"

004404B4

Communication interface not free for writing the command "Read position"

004404B5

Implausible status of the communication interface when executing the command "Read position"

004404B6

Error executing command "Read position" -> parity error detected

004404B7

Error executing command "Read position" -> count error detected

004404BA

Error executing command "Read position" -> parity error detected

004404BB

Error executing command "Read position" -> count error detected

004404BC

Error when executing the command "Read position": Error bit in telegram is set

004404BD

Wrong or faulty Hiperface telegram received (command "Read position")

004404BE

Faulty Hiperface telegram received (checksum) -> command "Read position"

004404C0

Hiperface encoder type ID not supported

00440540

Hiperface encoder OEM read - memory address overflow

00440541

Hiperface encoder OEM read - executed bytes not correct

00440542

Hiperface encoder OEM write - memory address overflow

00440543

Hiperface encoder OEM write - executed bytes not correct

00440544

Hiperface encoder OEM read/write - varied size of data fields not supported

00440545

Hiperface encoder OEM read/write - data field size is zero

00440546

Hiperface encoder OEM data field not enabled

00440547

Hiperface encoder OEM data field not writable

00440548

Hiperface encoder OEM area not fully formatted and has free memory

00440549

Hiperface encoder cmd 55 command number in return telegram incorrect

0044054A

Hiperface application Tx buffer overflow

0044054B

Hiperface application Rx buffer overflow

0044054C

Data length to be written causes array overflow in Hiperface application Cmd 4b

0044054D

Checksum error when reading encoder data field 0xFF (type plate)

00440562

Command [set position] is not supported by resolver encoder

00440563

Command [OEM read] is not supported by resolver encoder

00440564

Command [OEM write] is not supported by resolver encoder

00440565

Command [encoder scan] is not supported by resolver encoder

00440569

Error initializing the incremented position evaluation.

0044056A

Error initializing the Hiperface position evaluation

0044056B

Error initializing absolute position

0044056C

Error initializing absolute position

0044056D

Error initializing absolute position

0044056E

Error: Inverted movement direction configured (ONBOARD: 0x2418:02 / S-0-0602.10.2 / S-0-2551, OPT_2: 0x241A:02 / S-0-0602.2.2 / S-0-2501, OPT_3: 0x241C:02 / S-0-0602.3.2 / S-0-2526)

0044056F

Absolute position initialization error: Encoder does not respond to the command "Read position"

00440570

Absolute position initialization error: Encoder does not respond to the command "Read position"

00440574

SSI digital communication: Internal procedure error

00440575

SSI digital communication: Internal procedure error

00440576

SSI digital communication: Status bit active

00440577

SSI digital communication: No valid position formation in "pre operational" mode

00440578

SSI digital communication: No valid position formation in "wait for config" mode

00440579

SSI EDS: Internal procedure error (mechanical encoder type)

0044057A

SSI EDS: Internal procedure error in calculation of telegram length

0044057B

SSI: In the protocol configuration of the physical encoder (ONBOARD: 0x2418:07 / S-0-0602.10.7 / S-0-2556, OPT_2: 0x241A:07 / S-0-0602.2.7 / S-0-2506, OPT_3: 0x241C:07 / S-0-0602.3.7 / S-0-2531), more bits than allowed have been configured

Cause/Remedy 1: More position bits than allowed were configured.

Cause/Remedy 2: In the case of a linear measuring system, multi-turn bits were configured. They have to be set to "0".

0044057C

SSI EDS: Full protocol length too long

0044057D

SSI EDS: Resolution (digital)="0" (ONBOARD: 0x2418:16 / S-0-0602.10.22 / S-0-2571, OPT_2: 0x241A:16 / S-0-0602.2.22 / S-0-2521, OPT_3: 0x241C:16 / S-0-0602.3.22 / S-0-2546)

0044057E

SSI EDS: Internal procedure error in factor calculation

0044057F

Scheduler: Line level at SSI telegram start not valid

00440580

Scheduler: Line level after SSI telegram not valid (monoflop time)

00440581

Scheduler: No new SSI telegram in this cycle

00440582

SSI state machine: Internal procedure error at telegram type 2 Init

00440583

SSI command adapter: Command "Set position" not supported

00440584

SSI command adapter: Command "OEM read" not supported

00440585

SSI command adapter: Command "Write position" not supported

00440599

Timeout during synchronization of resolver excitation voltage

0044059B

Error during creation of resolver excitation voltage

0044059C

Error during creation of resolver excitation voltage

0044059D

Error during creation of resolver excitation voltage

0044059F

Error during synchronization of resolver excitation voltage

004405A0

Position initialization: Position difference between analog and digital position too large

004405A6

Error when calculating the internal maximum initialization speed

004405A8

SI EDS: Too many position bits in SSI protocol

004405AA

Resolver: Error when initializing the analog signals

004405AB

Initialization error: Position overflow threshold is not plausible

004405AF

Internal error in ssi::scheduler: SSI Telegram Timeout

004405B0

Internal error in ssi::scheduler: Telegram Check Timeout

004405B4

Error: Resolver encoder type is not supported (ONBOARD: 0x2418:01 / S-0-0602.10.1 / S-0-2550, OPT_2: 0x241A:01/ S-0-0602.2.1 / S-0-2500, OPT_3: 0x241C:01/ S-0-0602.3.1 / S-0-2525)

004405B8

Resolver initialization error (timeout)

004405D3

Error in the calculation of the position resolution (="0") (ONBOARD: 0x2418:15 / S-0-0602.10.21 / S-0-2570, OPT_2: 0x241C:15 / S-0-0602.3.21 / S-0-2545, OPT_3: 0x241C:15 / S-0-0602.3.21 / S-0-2545)

004405D4

Error: Calculated position resolution > 48 bit (ONBOARD: 0x2418:15 / S-0-0602.10.21 / S-0-2570, OPT_2: 0x241C:15 / S-0-0602.3.21 / S-0-2545, OPT_3: 0x241C:15 / S-0-0602.3.21 / S-0-2545)

004405D5

Error: Calculated position resolution > 38 bit (ONBOARD: 0x2418:15 / S-0-0602.10.21 / S-0-2570, OPT_2: 0x241C:15 / S-0-0602.3.21 / S-0-2545, OPT_3: 0x241C:15 / S-0-0602.3.21 / S-0-2545)

004405D6

Error: The absolute position is not plausible.

004405D7

Error: Position of the encoder is not plausible (command "Read Position")

004405DA

Error: Absolute position range > 48 bit

004405DC

Internal absolute position range is "0" (S-0-0601.0.158="0")

Cause/Remedy 1: Incremental encoders: Check and correct value (ONBOARD: 0x2418:15 / S-0-0602.10.21 / S-0-2570, OPT_2: 0x241C:15 / S-0-0602.3.21 / S-0-2545, OPT_3: 0x241C:15 / S-0-0602.3.21 / S-0-2545)

Cause/Remedy 2: Digital encoders: Check and correct value (ONBOARD: 0x2418:16 / S-0-0602.10.22 / S-0-2571, OPT_2: 0x241A:16 / S-0-0602.2.22 / S-0-2521, OPT_3: 0x241C:16 / S-0-0602.3.22 / S-0-2546)

004405DD

Internal absolute position range is too large (S-0-0601.0.158)

Cause/Remedy 1: Incremental encoders: Check and correct value of S-0-0602.x.21 ()

Cause/Remedy 2: Digital encoders: Check and correct value of S-0-0602.x.22

004405DE

Hiperface encoder status error bit persists despite encoder reset

004405DF

Resolver encoder: Overcurrent in excitation signal

004405E0

Resolver encoder (16 kHz): Error during vector length monitoring

004405E1

Resolver encoder (8 kHz): Error during vector length monitoring

004405E2

Resolver encoder: Error during frequency and phase check of excitation signal

004405E4

Resolver encoder: Error during synchronization of excitation signal

004405E5

Resolver encoder: Undefined state in the sequence control for adopting the position of channel 1 for channel 2

004405E6

Resolver encoder: Error in the calculation of the position resolution (S-0-0602.x.21="0")

004405E9

Pointer length outside safety-related valid range for uncorrected pointers

004405EA

Pointer ratio outside safety-related valid range

004405EB

Phase of excitation signal outside safety-related valid range

004405EC

Frequency of excitation signal outside safety-related valid range

004405ED

Initialization of the excitation monitoring failed

004405EE

Phase difference of both track signals outside safety-related valid range

004405EF

Output current of resolver excitation signal too high

004405F0

Pointer length outside functionally valid range for uncorrected pointers

004405F1

Velocity outside functional valid range

004405F2

Velocity outside safety-related valid range

004405F3

Pointer length outside safety-related valid range for corrected pointers

004405F4

Initialization of excitation PLL failed

004405F5

Initialization of excitation signal failed

004405F6

Timeout error during initialization of excitation signal for resolver

004405F7

Timeout error during position initialization for resolver

004405F8

Frequency configuration of resolver excitation signal faulty

004405F9

Frequency configuration of resolver excitation signal faulty

004405FA

Fatal exception: Default switch state activated

004405FB

Fatal exception: Default switch state activated

004405FC

Hardware initialization of resolver excitation monitoring failed

004405FD

S-0-0601.x.22 is not plausible

004405FE

Error with command "zero offset": Position resolution is "0"

00440602

Resolver: Timeout during initialization of functionally safe resolver evaluation

0044063F

Hiperface motor name plate checksum error

00440641

EnDat2.2: EEPROM access checksum error when receiving extra data

00440642

EnDat2.2: EEPROM access checksum error when receiving extra data

00440643

EnDat2.2: EEPROM read access checksum error when receiving extra data

00440644

EnDat2.2: EEPROM write access checksum error when receiving extra data

00440645

EnDat2.2: EEPROM read access checksum error when receiving extra data

00440646

EnDat2.2: EEPROM write access checksum error when receiving extra data

00440647

EnDat2.2: EEPROM access acknowledgement error in extra data I4 - I0

00440648

EnDat2.2: EEPROM access acknowledgement error in extra data MRS code

00440649

EnDat2.2: EEPROM access timeout when receiving extra data

0044064A

EnDat2.2: EEPROM access timeout when receiving extra data

0044064B

EnDat2.2: EEPROM read access acknowledgement error in extra data I4 - I0

0044064C

EnDat2.2: EEPOM read access acknowledgement error in extra data parameter address

0044064D

EnDat2.2: EEPROM read access timeout when receiving extra data

0044064E

EnDat2.2: EEPROM write access acknowledgement error in extra data I4 - I0

0044064F

EnDat2.2: EEPROM write access acknowledgement error in extra data parameter address

00440650

EnDat2.2: EEPROM write access acknowledgement error in extra data parameter LSB

00440651

EnDat2.2: EEPROM write access timeout when receiving extra data

00440652

EnDat2.2: EEPROM read access acknowledgement error in extra data I4 - I0

00440653

EnDat2.2: EEPOM read access acknowledgement error in extra data parameter address

00440654

EnDat2.2: EEPROM read access timeout when receiving extra data

00440655

EnDat2.2: EEPROM write access acknowledgement error in extra data I4 - I0

00440656

EnDat2.2: EEPROM write access acknowledgement error in extra data parameter address

00440657

EnDat2.2: EEPROM write access acknowledgement error in extra data parameter MSB

00440658

EnDat2.2: EEPROM write access timeout when receiving extra data

00440659

EnDat2.2: EEPROM read procedure timeout

0044065A

EnDat2.2: EEPROM write procedure timeout

0044065B

EnDat2.2: Tx error when sending extra info

0044065C

EnDat2.2: Tx error when sending extra info

0044065E

EnDat 2.2: Error starting acyclic encoder communication

0044065F

EnDat 2.2: Timeout in acyclic encoder communication

00440660

EnDat 2.2: CRC error in acyclic encoder communication

00440661

EnDat 2.2: Acknowledgment fault when selecting the storage area

00440662

EnDat 2.2: Error starting acyclic encoder communication

00440663

EnDat 2.2: Timeout in acyclic encoder communication

00440664

EnDat 2.2: CRC error in acyclic encoder communication

00440665

EnDat 2.2: Acknowledgment fault in acyclic encoder communication

00440666

EnDat 2.2: Error starting acyclic encoder communication

00440667

EnDat 2.2: Timeout in acyclic encoder communication

Cause/Remedy 1: No EnDat encoder is connected

Cause/Remedy 2: The encoder is connected or wired incorrectly

Cause/Remedy 3: Transmission is disrupted

00440668

EnDat 2.2: CRC error in acyclic encoder communication

00440669

EnDat 2.2: Error starting acyclic encoder communication

0044066A

EnDat 2.2: Timeout in acyclic encoder communication

0044066B

EnDat 2.2: CRC error in acyclic encoder communication

0044066F

EnDat 2.2: Hardware initialization error in acyclic encoder communication

00440672

Internal error: Data address P-0-2690.x.18 could not be set

00440673

Internal error: Data address P-0-2690.x.19 could not be set

00440674

Internal error: Data address P-0-2690.x.20 could not be set

00440675

SSI command adapter: Command not supported

00440676

SSI internal error: Overflow

00440677

SSI internal error: Overflow

00440678

SSI internal error: Overflow

00440679

SSI internal error: Overflow

0044067A

SSI internal error: Overflow

0044067C

Command "Set position" not supported

0044067D

The configured encoder type is not supported (see S-0-0602.x.1)

0044068D

Error while determining the absolute position range

004406B8

EnDat 2.2: Encoder error F1/F2 active

004406B9

EnDat 2.2: CRC error in encoder communication

004406BA

EnDat 2.2: Encoder communication timeout

004406BB

EnDat 2.2: Error in encoder communication

004406BC

EnDat 2.2: Cyclic position not initialized

004406BD

Severe exception error: Default switch state activated

004406BE

Illegal bit combination when evaluating EnDat 2.1 word 14

004406BF

NVM check failed when reading EnDat 2.1 word 13

004406C0

EnDat 2.2: Inverted measurement direction of encoder is not supported

004406C1

EnDat 2.2: Unexpected execution type of encoder

004406C2

EnDat 2.2: Too many cycles for the transfer of position 1

004406C3

Fatal exception: Default state activated

004406C4

Severe exception error: Default switch state activated

004406C5

EnDat 2.2: Internal overflow when calculating the internal absolute position range

004406C6

EnDat 2.2: Encoder parameters not plausible

004406C7

Fatal exception: Default switch state activated

004406C8

EnDat 2.2: Internal overflow when calculating the absolute position range

004406C9

Fatal exception: Default switch state activated

004406F4

EnDat 2.2: Command "Set position" not supported

004406F5

Fatal exception: Default switch state activated

004406F6

EnDat 2.2: Command "Switch off encoder supply voltage" not supported

004406F7

Fatal exception: Default switch state activated

004406F8

Fatal exception: Default switch state activated

004406F9

Fatal exception: Default switch state activated

004406FA

EnDat 2.2: Acknowledgment fault as error reaction type 2 in acyclic encoder communication

004406FB

EnDat 2.2: Undefined acknowledgment fault in acyclic encoder communication

004406FC

Fatal exception: Default switch state activated

004406FD

Fatal exception: Default switch state activated

004406FE

Fatal exception: Default switch state activated

004406FF

Fatal exception: Unexpected return when initializing hardware

00440700

Fatal exception: Internal process disrupted

00440701

Fatal exception: Default switch state activated

00440702

EnDat 2.2: Encoders with batteries are not supported.

00440703

EnDat 2.2: NVM check for EnDat 2.1 word 14 failed

00440704

Fatal exception: Default switch state activated

00440705

Fatal exception: Default switch state activated

00440706

Fatal exception: Default switch state activated

00440707

EnDat 2.2: Encoder error cannot be deleted

00440708

EnDat 2.2: Command type 2.2 is not supported

00440709

EnDat 2.2: Unknown scaling for Tcalc in EnDat 2.1 word 39

0044070A

EnDat 2.2: Encoder not supported as Tcalc too large

0044070B

EnDat 2.2: Error initializing encoder communication

0044070C

EnDat 2.2: Encoder does not support a Baud rate of min. 8 Mbaud/MHz

0044070D

Fatal exception: Internal process disrupted

0044070E

Fatal exception: Internal process disrupted

0044070F

Fatal exception: Internal process disrupted

00440710

EnDat 2.2: Reading encoder parameters in current state not possible

00440711

EnDat 2.2: Writing encoder parameters in current state not possible

00440712

Fatal exception: Internal process disrupted

00440713

Fatal exception: Internal process disrupted

00440714

Fatal exception: Default switch state activated

00440715

EnDat 2.2: Encoder not supported due to too many bits in response telegram for position 1

00440716

EnDat 2.2: Error in acyclic encoder communication

00440717

EnDat 2.2: Error in acyclic encoder communication

00440718

EnDat 2.2: Error in acyclic encoder communication

00440719

EnDat 2.2: Error in acyclic encoder communication

0044071A

EnDat 2.2: Error in acyclic encoder communication

0044071B

EnDat 2.2: Timeout in acyclic encoder communication

0044071C

EnDat 2.2: CRC error in acyclic encoder communication

0044071D

EnDat 2.2: Error starting acyclic encoder communication

0044071E

Fatal exception: Internal process disrupted

0044071F

Fatal exception: Internal overflow

00440720

Fatal exception: Value range violated

00440721

Fatal exception: Value range violated

00440722

Fatal exception: Internal overflow

00440723

Fatal exception: Value range violated

00440724

Fatal exception: Value range violated

00440725

Fatal exception: Internal overflow

00440726

Fatal exception: Value range violated

00440727

Fatal exception: Value range violated

00440728

Fatal exception: Value range violated

00440729

Fatal exception: Value range violated

0044072A

Fatal exception: Value range violated

0044072B

Fatal exception: Value range violated

0044072C

Fatal exception: Value range violated

0044072D

Fatal exception: Default switch state activated

0044072E

Fatal exception: Value range violated

0044072F

Fatal exception: Value range violated

00440730

EnDat 2.2: Timeout when starting cyclic safe encoder evaluation

00440789

EnDat 2.2: Error activating the appropriate recovery time of the encoder

0044078A

EnDat 2.2: Order designation of the encoder is not supported

0044078B

EnDat 2.2: Acknowledgment fault as error reaction type 2 in acyclic encoder communication

0044078C

Fatal exception: Internal process disrupted

0044078D

Fatal exception: Internal process disrupted

0044078E

EnDat 2.2: Error initializing encoder communication

0044078F

EnDat2.2: Tx error sending extra data

00440790

Fatal exception: Default case unexpected

00440791

Fatal exception: Default case unexpected

00440792

Fatal exception: Default state activated

004407A1

1Vpp encoder: Command is not supported

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

004407A2

Fatal exception: Value range violated

004407A3

EnDat 2.2: Error initializing encoder communication

004407A4

EnDat 2.2: Error initializing encoder communication

004407A5

EnDat 2.2: Hardware initialization error in acyclic encoder communication

004407A6

Fatal exception: Value range violated

004407A8

Inconsistent firmware on channel 1 and channel 2

Cause/Remedy 1: Download firmware again

004407A9

Fatal exception: Default switch state activated

004407AA

Fatal exception: Default switch state activated

004407AB

Fatal exception: Internal sequence control disrupted

004407AC

Fatal exception: Default switch state activated

004407B4

Error during position initialization

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

004407D3

Fatal exception: Internal process disrupted

004407D4

Fatal exception: Unexpected return value

004407D5

EnDat 2.2: Acknowledgment fault when requesting additional information

004407D6

Fatal exception: Unexpected return value

004407D7

Fatal exception: Unexpected return value

004407D8

EnDat 2.2: Acknowledgment fault when requesting additional information

004407D9

EnDat 2.2: Acknowledgment fault when selecting the storage area

004407DA

Fatal exception: Default switch state activated

004407DB

EnDat 2.2: Timeout in acyclic encoder communication

004407DC

EnDat 2.2: CRC error in acyclic encoder communication

004407DD

EnDat 2.2: Timeout in acyclic encoder communication

004407DE

EnDat 2.2: CRC error in acyclic encoder communication

004407DF

EnDat 2.2: Timeout in acyclic encoder communication

004407E0

EnDat 2.2: CRC error in acyclic encoder communication

004407E1

Fatal exception: Default switch state activated

004407E2

Fatal exception: Default switch state activated

004407E3

Fatal exception: Internal process disrupted

004407E4

Fatal exception: Internal process disrupted

004407E5

Fatal exception: Internal process disrupted

004407E6

Fatal exception: Internal process disrupted

004407E7

EnDat 2.2: NVM check for EnDat 2.1 word 13 failed

004407E8

EnDat 2.2: Value range exceeded during internal hardware initialization

004407E9

Fatal exception: Internal process disrupted

004407EA

Fatal exception: Internal process disrupted

004407EB

Fatal exception: Internal process disrupted

004407EC

Fatal exception: Internal process disrupted

004407ED

Read HIPERFACE encoder OEM: Address outside of memory

004407EE

Write HIPERFACE encoder OEM: Address outside of memory

004407EF

HIPERFACE encoder OEM data field configuration: Could not read Bosch Rexroth ID

004407F0

HIPERFACE encoder OEM data field configuration: Could not write Bosch Rexroth ID

004407F7

Internal error: Data address P-0-2690.0.21 could not be set

004407F8

Internal error: Data address P-0-2690.0.22 could not be set

004407F9

Absolute position initialization error: Timeout during the "Read position" command

004407FA

Absolute position initialization error: The encoder does not respond to the "Read position" command

00440819

Internal error: Data address P-0-2690.0.36 could not be set

0044081A

Fatal exception: Value range violated

0044081B

Fatal exception: Value range violated

0044081C

Internal error: Data address P-0-2690.0.21 could not be set

0044081D

Internal error: Data address P-0-2690.0.22 could not be set

0044081E

Internal error: Data address P-0-2690.0.23 could not be set

0044082D

Internal error: Parameter read function could not be set

0044082E

Internal error: Parameter read function could not be set

0044082F

Internal error: Function is not supported for this encoder type

00440830

Internal error: Function is not supported for this encoder type

00440831

Internal error: Function is not supported for this encoder type

00440832

Internal error: Error in program run

00440833

Internal error: Error in program run

00440834

No zero quadrant within the reference pulse

00440835

No zero quadrant within the reference pulse

00440836

The reference pulse is less than or equal to one quadrant

00440837

More than one zero quadrant is within the reference pulse

00440838

One of the edges of reference pulse is in the zero quadrant

00440839

Internal error in plausibility check: Phase error between counter and angle too great

0044083A

Internal error: Incorrect reference mark number requested

0044085D

HIPERFACE encoder cmd 55 error bit "return telegram" set

0044085E

Fatal exception: Internal process disrupted

0044085F

Fatal exception: Internal process disrupted

00440860

Fatal exception: Internal process disrupted

00440861

Fatal exception: Internal process disrupted

00440862

Fatal exception: Internal process disrupted

00440863

Fatal exception: Internal process disrupted

00440864

Fatal exception: Internal process disrupted

00440865

EnDat 2.2: Timeout when starting cyclic safe encoder evaluation

00440866

EnDat 2.2: Error in the sequence when starting safe encoder evaluation

00440867

EnDat 2.2: Cyclic safe position formation not initialized

00440868

EnDat 2.2: Cyclic "SOTest" of the sequential number of position 2 part 1 failed

00440869

EnDat 2.2: Cyclic "SOTest" of the sequential number of position 2 part 2 failed

0044086A

EnDat 2.2: Cyclic "SOTest" of the sequential number of position 2 part 3 failed

0044086B

EnDat 2.2: Cyclic "SOTest" position comparison of position 1 with position 2 failed

0044086C

Severe exception error: Default switch state activated

0044086D

EnDat 2.2: Determined cable delay too long for cyclic digital encoder communication

Cause/Remedy 1: Use a suitable encoder cable to reduce the cable delay

0044086E

EnDat 2.2: Cyclic "SOTest" forced dynamization failed

0044086F

EnDat 2.2: Cyclic "SOTest" tm measurement failed

00440870

EnDat 2.2: Cyclic "SOTest" forced dynamization not initialized

00440871

EnDat 2.2: Cyclic "SOTest" tm measurement not initialized

00440872

EnDat 2.2: CRC error in the cyclic "SOTest" of the sequential number of position 2 part 1

00440873

EnDat 2.2: CRC error in the cyclic "SOTest" of the sequential number of position 2 part 2

00440874

EnDat 2.2: CRC error in the cyclic "SOTest" of the sequential number of position 2 part 3

00440875

EnDat 2.2: Timeout in the cyclic "SOTest" of the sequential number of position 2 part 1

00440876

EnDat 2.2: Timeout in the cyclic "SOTest" of the sequential number of position 2 part 2

00440877

EnDat 2.2: Timeout in the cyclic "SOTest" of the sequential number of position 2 part 3

00440878

Fatal exception: Default switch state activated

00440879

Fatal exception: Default switch state activated

0044087A

Fatal exception: Default switch state activated

0044087C

Fatal exception: Default switch state activated

0044087D

Fatal exception: Default switch state activated

0044087E

Fatal exception: Default switch state activated

00440885

Fatal exception: Internal sequence control disrupted

00440886

Error during initialization of the position (take over position from channel 1)

00440897

Error when determining the absolute position range (EnDat 2.1 word 17 / EnDat 2.2 word 34)

00440898

Position resolution is not supported (pm cannot be displayed in nm)

004408B1

Internal error: Encoder supply voltage faulty

004408B2

Internal error: Temperature limit value not reached

004408B3

Internal error: Temperature limit value exceeded

004408B4

Internal error: No temperature sensor detected

004408B5

Internal error: Initialization of the temperature measurement failed

004408BA

Error: Non-certified firmware not permitted on certified hardware

004408C2

Diagnostics due to reached default branch

Cause/Remedy 1: Contact customer support.

004408C3

Diagnostics due to reached default branch

Cause/Remedy 1: Contact customer support.

004408C8

CSU cycle time greater than maximum allowed jitter

004408C9

Pointer length shorter than lower limit

Cause/Remedy 1: Position not valid

004408CA

Pointer length longer than upper limit

Cause/Remedy 1: Position not valid

004408CB

Frequency status check not positive

004408CC

Position status check not positive

004408CD

ZLU: When updating the limits, a frequency exceedance of 440 kHz was detected

004408CE

Fatal exception: Unknown encoder type in P-0-2690.0.9

004408CF

Fatal exception: Undefined or unpermitted state for position initialization

004408D0

Fatal exception: Undefined or unpermitted state for position initialization

004408D1

Fatal exception: Undefined or unpermitted state for position initialization

004408D2

Fatal exception: Undefined channel ID

004408D3

Fatal exception: Undefined state when reading the absolute position of the encoder

004408D4

Fatal exception: Unknown configuration P-0-2690.0.9

004408D5

The digital position read by the encoder exceeds the upper limit

004408D6

Fatal exception: Normalization factor less than 1 not possible

004408D7

Fatal exception: Invalid cycle time

004408D8

Fatal exception: Invalid cycle time

004408D9

Fatal exception: Invalid position resolution

004408DA

Fatal exception: Invalid cycle time

004408DB

Fatal exception: Invalid cycle time

004408DC

Fatal exception: Invalid position resolution

004408DD

Fatal exception: Invalid channel ID

004408DE

Fatal exception: Invalid channel ID

004408DF

Fatal exception: Invalid channel ID

004408E0

Fatal exception: Unknown encoder type in P-0-2690.0.9

004408E1

Fatal exception: Unsupported EnDat command in the firmware

004408E2

Fatal exception: Default case unexpected

004408E3

Fatal exception: Default case unexpected

004408E4

Fatal exception: Default case unexpected

004408E5

Fatal exception: Switch case unexpected

004408E6

Fatal exception: Switch case unexpected

004408E7

Fatal exception: Switch case unexpected

004408E8

Fatal exception: Switch case unexpected

004408E9

Fatal exception: Switch case unexpected

004408EA

Fatal exception: Undefined state of position evaluation

004408EB

Fatal exception: Undefined channel ID

004408EC

Fatal exception: Undefined state of position evaluation

004408ED

Undefined state of sequence control for cyclic encoder evaluation (init)

004408EE

Fatal exception: Default case unexpected

004408EF

Fatal exception: Address offset uneven

004408F0

Fatal exception: Number of bytes uneven

004408F1

Fatal exception: Address uneven

004408F2

Fatal exception: Number of bytes uneven

004408F3

Invalid value EnDat word 9 and 10

004408F4

Offset uneven

004408F5

Offset exceeds upper limit

004408F6

Fatal exception: Address exceeds 8-bit range

004408F7

Fatal exception: Default case unexpected

004408F8

Fatal exception: Switch case unexpected

004408F9

Fatal exception: Switch case unexpected

004408FA

Fatal exception: Switch case unexpected

004408FB

Fatal exception: Switch case unexpected

004408FC

Fatal exception: Switch case unexpected

004408FD

Fatal exception: Switch case unexpected

004408FE

Fatal exception: Switch case unexpected

004408FF

Fatal exception: Switch case unexpected

00440900

Fatal exception: Switch case unexpected

00440901

Fatal exception: Default switch case unexpected

00440902

Fatal exception: Switch case unexpected

00440903

Fatal exception: Default switch case unexpected

00440904

Fatal exception: Switch case unexpected

00440905

Fatal exception: Default switch case unexpected

00440906

Fatal exception: Switch case unexpected

00440907

Fatal exception: Unknown channel ID

00440908

Fatal exception: Default switch case unexpected

00440909

Fatal exception: Switch case unexpected

0044090A

Fatal exception: Default switch case unexpected

0044090B

Timeout of the state machine

0044090C

Error calculating the normalization factor

0044090D

Error: Position resolution equal to "0"

0044090E

Error calculating the normalization factor

0044090F

Error: Position resolution equal to "0"

00440910

Error calculating the maximum initialization speed

00440911

Error calculating the maximum initialization speed

00440912

Position not without errors when transferring from channel 1 to channel 2

00440913

Error during absolute position initialization

00440914

Digital encoder position with error

00440915

Read digital encoder position: Timeout

00440916

Difference between digital and analog position too great during position initialization

00440917

Error: negative value "absolutPositionOffset"

00440918

Error: Maximum initialization speed exceeded

00440919

Error: Negative absolute position value calculated

0044091A

Error: P-0-2690.0.4 Absolute position range equal to "0"

0044091B

Error: Calculated absolute position range equal to "0" or exceeds 48 bit

0044091C

Error: Calculation of the position overflow threshold

0044091D

Error: Calculated position range in increments exceeds 48 bits

0044091E

Position bit range exceeds internal position range

0044091F

Position bit length equals "0"

00440920

Error: Analog or digital position resolution equal to "0"

00440921

Error: EnDat telegram timeout

00440922

Error: EnDat telegram checksum

00440923

Error: EnDat telegram ACK bits

00440924

Error: EnDat telegram timeout

00440925

Error: EnDat telegram checksum

00440926

Error: EnDat telegram ACK bits error reaction type 2

00440927

Error: EnDat telegram ACK bits

00440928

Error: EnDat telegram timeout

00440929

Error: EnDat telegram checksum

0044092A

Error: EnDat telegram ACK bits error reaction type 2

0044092B

Error: EnDat telegram ACK bits

0044092C

Error: EnDat telegram timeout

0044092D

Error: EnDat telegram checksum

0044092E

Error in EnDat word 0

0044092F

Error: Encoder memory data NVM check

00440930

Error: Encoder memory EnDat2.1 word 20-21 equal to "0"

00440931

Error: Encoder memory EnDat2.1 word 17 equal to "0"

00440932

Error: Encoder memory data NVM check

00440933

Error: Encoder memory data NVM check

00440934

Error: Encoder memory data NVM check

00440935

Error: Encoder memory data NVM check

00440936

Error: Encoder memory EnDat2.1 word 30 unknown bits

00440937

Error: P-0-2690.0.9 unknown encoder type

00440938

Error: "positionRangef64" exceeds the upper limit

00440939

Error: Encoder memory EnDat2.1 word 38 unknown bits

0044093A

Error: Encoder memory EnDat2.2 word 34 unknown bits

0044093B

Error: P-0-2690.0.9 unknown encoder type

0044093C

Error: Encoder memory EnDat2.2 word 27 bit 0 not supported

0044093D

Error: Encoder memory EnDat2.2 word 27 bit 1 resolution "0" or too high

0044093E

Error: Encoder memory EnDat2.2 word 27 resolution not supported

0044093F

Error: Encoder memory EnDat2.2 word 27 resolution not supported

00440940

Error: Encoder memory EnDat2.2 word 27 unknown bits

00440941

Error: Encoder memory EnDat2.1 word 14 encoder type not supported

00440942

Error: Encoder memory EnDat2.1 word 14 encoder type not supported

00440943

Error: Encoder memory EnDat2.1 word 14 encoder type not supported

00440944

Error: Encoder memory EnDat2.1 word 14 encoder type not supported

00440945

Error: Encoder memory EnDat2.1 word 14 encoder type not supported

00440946

Error: Encoder memory EnDat2.1 word 14 encoder type unknown

00440947

Error: Encoder memory EnDat2.1 word 40 - order designation not supported

00440948

Error: Position initialization unsuccessful

00440949

Error: Unexpected state of the position initialization state machine

0044094A

Error: Position initialization timeout

0044094B

Error: Position initialization unsuccessful

0044094C

Fatal exception: OEM address offset limit value violated

0044094D

Error: "Waiting for valid safe status" timeout when activating monitoring

0044094E

Error: "Waiting for valid safe status" timeout when deactivating monitoring

0044094F

Error: Position initialization unsuccessful

00440950

Error: position resolution, analog (P-0-2690.0.6) value range violated

00440951

Error: position resolution, analog (P-0-2690.0.6) value range violated

00440952

Error: Encoder order designation not recognizable as EnDat01 or EnDat02

00440960

Initialization of excitation PLL failed

00440961

Initialization of excitation PLL failed

00440962

Timeout during initialization of the resolver excitation signal

00440963

Severe exception error: Default switch state activated

00440964

Fatal exception: Unexpected function call

00440965

Fatal exception: Unexpected function call

00440966

Fatal exception: Unexpected function call

00440967

Fatal exception: Unexpected "Mrs Code" in the transfer parameter

00440968

Receipt of "Addon Data" invalid

00440969

Error during receipt of "Addon Data Ack"

0044096A

Timeout during receipt of "Addon Data"

0044096B

Error during receipt of "Addon Data Checksum"

0044096C

Fatal exception: Unexpected function return value

0044096D

Severe exception error: Default switch state activated

0044096E

E22 word 1 bit 4 operating state error source not supported by encoder

0044096F

Operating state error source that not supported by the encoder is set; this is not possible

00440970

Severe exception error: Default switch state activated

00440971

E21 word 0 bits set that are not supported in word 35

00440972

E21 word 1 bits set that are not supported in word 36

00440973

Error: Encoder battery undervoltage

00440974

Warning: Battery level low (multiturn encoder)

00440975

Warning in the encoder cannot be deleted during initialization

00440976

Position error (multiturn encoder)

00440978

Zero offset command is not supported for EnDat combi encoder

00440979

Command cannot be executed for the encoder used

0044097A

Command cannot be executed for the encoder used

0044097B

Command cannot be executed for the encoder used

0044097C

Command cannot be executed for the encoder used

0044097D

Command cannot be executed for the encoder used

0044097E

Encoder type not defined

0044097F

Fatal exception: Default case unexpected

00440990

TTL encoder: Two zero quadrants within a marker signal

00440991

TTL encoder: Rising and falling edge of marker signal in the same quadrant

00440992

TTL encoder: No zero quadrant within the reference pulse

00440993

TTL encoder: No zero quadrant within the reference pulse

00440994

TTL encoder: More than one zero quadrant is within the reference pulse

00440995

TTL encoder: Incorrect reference mark number requested

004409BA

Internal error in validation check: Negative edge latched before positive edge (positive direction of motion)

004409BB

Internal error in validation check: Negative edge latched before positive edge (negative direction of motion)

004409BC

Internal error in validation check: No quadrant between the latched edges

004409BD

Internal error in validation check: More than eight quadrants between the latched edges

00440A00

Deactivation of encoder access via the scheduler failed

00440A01

Initialization of the "Telegram Schemes" failed

00440A02

Failed to delete encoder errors

00440A03

Failed to set encoder parameters

00440A04

Activation of encoder access via the scheduler failed

00440A05

Initialization of the encoder evaluation failed

00440A06

Configuration of the offset time before B-sample failed

00440A07

Part 1 of the cyclic encoder evaluation could not be activated

00440A08

Part 2 of the cyclic encoder evaluation could not be activated

00440A09

Activation of the evaluation function in the 64-ms task failed

00440A0A

Unable to read the encoder memory, as cyclic evaluation is active

00440A0B

Unable to check the interface index

00440A0C

Attempted access to an invalid area in the encoder memory

00440A0D

Switching of the "Telegram Scheme" to ready the EEPROMS failed

00440A0E

Failed to determine the send and receive buffers for reading the EEPROM

00440A0F

Timeout when reading the motor data memory

00440A10

Data transfer error when reading the motor data memory

00440A11

Failed to set class 2 error

00440A12

Failed to set telegram mode

00440A13

Failed to determine the send and receive buffers for sending a telegram

00440A14

Timeout when sending a telegram to the encoder

00440A15

Timeout when receiving data in cyclic encoder evaluation

00440A16

CRC error in cyclic encoder evaluation

00440A17

"Multiturn error" in cyclic encoder evaluation

00440A18

Maximum rotating speed of the motor exceeded

00440A19

Initialization speed of the motor too high (greater than 100 rpm)

00440A1A

"Singleturn error" in cyclic encoder evaluation

00440A1B

Battery voltage less than 3.1 V (+/- 0.1 V)

00440A1C

Communication error when initializing the encoder

00440A1D

The encoder type is not supported

00440A1E

Error setting the "Telegram Schemes no. 1"

00440A1F

Error setting the "Telegram Schemes no. 0"

00440A20

Error setting the "Telegram Schemes no. 2"

00440A21

Error reading the "Encoder ID", or encoder type not in the database

00440A22

Failed to read the serial number from EEPROM

00440A23

Failed to buffer the serial number in parameters

00440A24

"Encoder ID" could not be set

00440A25

Error during absolute position initialization: Incorrect checksum for position

00440A26

ctrlX SENSEmotor: Error when reading the extended error information

00440A27

ctrlX SENSEmotor: Error when reading the extended error information

00440A28

ctrlX SENSEmotor: Error when reading the extended warning information

00440A29

ctrlX SENSEmotor: Error when reading the extended warning information

00440A2A

0x2418:02 / S-0-0602.10.2 / S-0-2551: ctrlX SENSEmotor "standard" parameterized, but ctrlX SENSEmotor Basic encoder connected

00440A2B

0x2418:02 / S-0-0602.10.2 / S-0-2551: ctrlX SENSEmotor "basic" parameterized, but ctrlX SENSEmotor standard encoder connected

00440B00

The encoder command could not be started because a semaphore has been permanently assigned

Cause/Remedy 1: Please contact the service department

00440B01

The encoder command could not be started because a semaphore has been permanently assigned

Cause/Remedy 1: Please contact the service department

00440B02

The encoder command could not be started because a semaphore has been permanently assigned

Cause/Remedy 1: Please contact the service department

00440B03

Encoder command password could not be written

Cause/Remedy 1: Please contact the service department

00440B04

Encoder command password could not be written

Cause/Remedy 1: Please contact the service department

00440B05

Encoder command timeout

Cause/Remedy 1: Please contact the service department

00440B06

The encoder command could not be started because communication with the ctrlX SENSE encoder is not possible

Cause/Remedy 1: Remedy: Switch drive controller to PM or OM.

00440B07

The encoder command could not be started because communication with the ctrlX SENSE encoder is not possible

Cause/Remedy 1: Remedy: Switch drive controller to PM or OM.

00440B08

The encoder command could not be started because communication with the ctrlX SENSE encoder is not possible

Cause/Remedy 1: Remedy: Switch drive controller to PM or OM.

00440B09

The encoder command could not be started because "PA" (parking axis) is active

Cause/Remedy 1: Remedy: Exit "PA" and switch drive controller to PM or OM.

00440B0A

The encoder command could not be started because "PA" (parking axis) is active

Cause/Remedy 1: Remedy: Exit "PA" and switch drive controller to PM or OM.

00440B0B

The encoder command could not be started because "PA" (parking axis) is active

Cause/Remedy 1: Remedy: Exit "PA" and switch drive controller to PM or OM.

00440B10

TTL encoder: Encoder resolution must not be "0"

00440B11

ctrlX SENSE: Temperature outside of allowed range

Cause/Remedy 1: Check encoder

00440B12

ctrlX SENSE: Battery voltage smaller than minimum value

Cause/Remedy 1: Check encoder

00440B13

ctrlX SENSE: Incorrect signals for position calculation

Cause/Remedy 1: Check encoder. Please contact the service department

00440B14

ctrlX SENSE: 2-fold telegram failure from host

Cause/Remedy 1: Check encoder. Please contact the service department

00440B15

ctrlX SENSE: External power supply outside of allowed range

Cause/Remedy 1: Check encoder

00440B16

ctrlX SENSE: Position read/write error from/to non-volatile memory

Cause/Remedy 1: Check encoder. Please contact the service department

00440B17

ctrlX SENSE: Invalid position calibration

Cause/Remedy 1: Check encoder

00440B18

ctrlX SENSE: System has rebooted independently (e.g., watchdog, hardfault)

Cause/Remedy 1: Check encoder. Please contact the service department

00440B19

ctrlX SENSE: Encoder velocity greater than maximum value

Cause/Remedy 1: Check encoder

00440B1A

ctrlX SENSE: Parameter read/write error from/to non-volatile memory

Cause/Remedy 1: Check encoder. Please contact the service department

00440B1B

ctrlX SENSE: Encoder hardware defective

Cause/Remedy 1: Check encoder

00440B1C

ctrlX SENSE: A firmware update was carried out

Cause/Remedy 1: Check encoder

00440B1D

ctrlX SENSE: Wrong or defective firmware

Cause/Remedy 1: Check encoder. Please contact the service department

00440B1E

ctrlX SENSE: Encoder damaged by overtemperature

Cause/Remedy 1: Check encoder. Please contact the service department

00440B1F

ctrlX SENSE: Encoder damaged by too high velocity

Cause/Remedy 1: Check encoder. Please contact the service department

00440B20

ctrlX SENSE: Firmware exception, firmware detected error and rebooted

Cause/Remedy 1: Check encoder. Please contact the service department

00440B21

ctrlX SENSE: Inadmissible system state 3

Cause/Remedy 1: Check encoder. Please contact the service department

00440B22

ctrlX SENSE: Data flash is not locked

Cause/Remedy 1: Check encoder. Please contact the service department

00440B23

ctrlX SENSE: Safe user parameter invalid

Cause/Remedy 1: Check encoder

00440B24

ctrlX SENSE: Encoder temperature greater than warning threshold

Cause/Remedy 1: Check encoder

00440B25

ctrlX SENSE: Battery voltage lower than 10%

Cause/Remedy 1: Check encoder

00440B26

ctrlX SENSE: Invalid host telegram received

Cause/Remedy 1: Check encoder. Please contact the service department

00440B27

ctrlX SENSE: Encoder battery is empty

Cause/Remedy 1: Check encoder

00440B28

ctrlX SENSE: "Encoder SiPosXX check state"

Cause/Remedy 1: Check encoder. Please contact the service department

00440B29

ctrlX SENSE: Temperature not in allowed range during calibration

Cause/Remedy 1: Check encoder

00440B30

HIPERFACE checksum error extended type label

00440B31

HIPERFACE checksum error extended type label

00440B32

ctrlX SENSEmotor: Error when establishing the communication [error 1]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B33

ctrlX SENSEmotor: Error when establishing the communication [fatal error]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B34

ctrlX SENSEmotor: Error when establishing the communication [CRC]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B35

ctrlX SENSEmotor: Error when establishing the communication [life counter]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B36

ctrlX SENSEmotor: Error when establishing the communication [busy]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B37

ctrlX SENSEmotor: Error when establishing the communication [pending]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B38

ctrlX SENSEmotor: Error when establishing the communication [error 2]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B39

ctrlX SENSEmotor: Error when establishing the communication [data error]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00440B3A

ctrlX SENSEmotor: Error when establishing the communication [error 3]

Cause/Remedy 1: Faulty communication to encoder, check wiring

00442000

The encoder could not be set to active

00442001

The encoder could not be set to active

00442002

The encoder could not be set to active

00442004

The encoder could not be set to preactive

00442005

The encoder could not be set to preactive

00442006

The encoder could not be set to preactive

00442007

Encoder type not defined

00442008

Encoder type not defined

00442009

Encoder type not defined

0044200A

Encoder cannot be switched to the operating mode

0044200B

Connection could not be established successfully

0044200C

Connection test: Encoder reset command not executed successfully

0044200D

Connection could not be established successfully

0044200E

The encoder could not be switched to the operational state

0044200F

Connection test: Could not establish a connection with the encoder

00442010

The ENCE "Interrupt Service Routine" could not be started

00442011

Connection could not be established successfully

00442012

Scheduler could not be stopped

00442013

Cyclic position evaluation could not be activated

00442014

Scheduler could not be stopped

00442015

Scheduler could not be activated

00442016

The scheduler reports errors in the configuration of the communication telegram

00442017

Position data registration reports errors

00442018

Scheduler could not be stopped

00442019

Semaphore could not be released

0044201A

Semaphore could not be released

0044201B

Semaphore could not be released

0044201C

Scheduler could not be stopped

0044201D

ACUROlink encoder scan: No encoder found

0044201E

Semaphore could not be released

0044201F

Telegram registration data could not be deleted

00442020

Telegram registration data could not be deleted

00442021

Connection could not be established successfully

00442022

Alarm bit was set: MRF command "Reset" reports error

00442023

Encoder reports "InitBusyErr"

00442024

The encoder could not be switched to the operational state

00442025

MFR command execution "InitBusy to InitReady" incorrect

00442026

MFR command execution "InitReady to PreOpWaitCfg" incorrect

00442027

MRF command execution "Set cycle time" incorrect

00442028

"Write baud rate" command: Baud rate CRC error

00442029

"Write baud rate" command: Baud rate confirmation incorrect

0044202A

"Write baud rate" command: Command confirmation incorrect

0044202B

MRF command execution "Set baud rate" incorrect

0044202C

MRF command execution "Set cycle time" incorrect

0044202D

MRF command execution "Check State PreOpReady" incorrect

0044202E

MRF command execution "PreOp to Op" incorrect

0044202F

Telegram scheme with 115.2 kB cannot be activated

00442030

MRF command execution "Reset" incorrect

00442031

Connection test in init state: MRF command "Reset" failed

00442032

Encoder reports "initbusy" error

Cause/Remedy 1: Turn the device off and on again

00442033

Connection test in init state failed: No connection

00442034

Telegram Scheme with 115.2 kB could not be activated

00442035

Connection test in operational state: Encoder does not report operational state

00442036

Telegram Scheme with 115.2 kB could not be activated

00442037

Telegram Scheme with 10 MB could not be activated in the operational state

00442038

Encoder does not respond with correct target state

00442039

Encoder state is invalid due to CRC error

0044203A

ACUROlink interface occupied (DTF): Encoder not responding to MRF command

0044203B

ACUROlink interface is active (MRF): ICOM not free for MRF command

0044203C

The position alarm bit could not be deleted

0044203D

The position registration function reports errors

0044203E

Scheduler could not be activated

0044203F

Scheduler could not be activated

00442040

Scheduler could not be synchronized

00442041

Scheduler could not be synchronized

00442042

Communication pointers could not be determined

00442043

Cyclic communication scheme could not be configured

00442044

Acyclic communication scheme could not be configured

00442045

No error

00442046

Internal system error

00442047

Unknown command

00442048

Invalid OEM address or data volume

00442049

Error writing or reading non-volatile OEM data

0044204A

Incorrect password

0044204B

Error writing position adjustment data to the non-volatile memory

0044204C

Error writing ADC adjustment data to the non-volatile memory

0044204D

"Delete error, category 2" not with singleturn encoders

0044204E

EDS could not be read within 5 s

0044204F

EDS checksum is incorrect

00442050

EDS could not be read

00442051

EDS checksum is incorrect

00442052

Not all EDS parameters could be updated

Cause/Remedy 1: See parameter S-0-0423

00442053

EDS attributes could not be written

00442054

Absolute encoder resolution could not be written

00442055

Encoder signal periods could not be written

00442056

Encoder type could not be written

00442057

Physical encoder protocol could not be written

00442058

Data exchange container could not be written

00442059

EDS data could not be read from the type plate

0044205A

Physical configuration of the EDS data could not be read from the type plate

0044205B

Position range could not be read

0044205C

Physical encoder protocol could not be read

0044205D

Type plate could not be written

0044205E

"Encoder evaluation, part 1" could not be started

0044205F

"Delete error 1" command could not be executed

00442060

"Delete error 2" command could not be executed

00442061

Absolute encoder range is outside the permitted value range

00442062

Encoder output data configuration could not be written

00442063

Absolute encoder rate could not be saved

00442064

Position range could not be written

00442065

Encoder initialization speed could not be written

00442066

Position range could not be written

00442067

Position overflow threshold is outside the permitted value range

00442068

Position overflow threshold could not be saved

00442069

Error reading firmware build date

0044206A

"Absolute encoder range, internal" could not be saved

0044206B

Resolution of position is outside the permitted value range

0044206C

Resolution of position is outside the permitted value range

0044206D

Resolution of position could not be saved

0044206E

Modulo range is outside the permitted value range

0044206F

Phys. encoder resolution (digital) could not be saved

00442070

Modulo value cannot not be read

00442071

Serial number of encoder could not be saved

00442072

Resolution of position is outside the permitted value range

00442073

Resolution of position is outside the permitted value range

00442074

Phys. encoder properties could not be saved

00442075

Position resolution could not be read

00442076

Position resolution could not be read

00442077

Phys. encoder description could not be saved

00442078

Encoder memory size could not be read

00442079

Encoder memory size could not be read

0044207A

Phys. max. initialization speed could not be saved

0044207B

Absolute encoder resolution is outside the permitted value range

0044207C

Encoder attribute could not be read

0044207D

Encoder cycle time could not be read

0044207E

Encoder initialization speed could not be read

0044207F

Absolute encoder resolution could not be read

00442080

Absolute encoder type could not be read

00442081

Encoder signal period is outside the permitted value range

00442082

Encoder signal period could not be read

00442083

PCB identification data (XML) could not be read

00442084

Encoder name could not be read

00442085

Encoder serial number could not be read

00442086

Data exchange container could not be read

00442087

Internal position range is outside the permitted value range

00442088

Internal position range could not be read

00442089

Internal position range could not be read

0044208A

Encoder name exceeds maximum length

0044208B

Serial number exceeds maximum length

0044208C

Encoder firmware version exceeds maximum length

0044208D

Encoder firmware version could not be read

0044208E

Encoder firmware build date could not be read

0044208F

Position range is outside the permitted value range

00442090

Position range is outside the permitted value range

00442091

"Absolute encoder range, internal" could not be saved

00442092

"Absolute encoder range, internal" could not be saved

00442093

Encoder output data configuration could not be saved

00442094

Phys. encoder properties could not be saved

00442095

Configuration of the phys. encoder evaluation could not be saved

00442096

Encoder output data cycle time could not be saved

00442097

Phys. max. initialization speed could not be saved

00442098

Phys. encoder resolution (digital) could not be saved

00442099

Phys. encoder type could not be saved

0044209A

Position overflow threshold could not be saved

0044209B

Resolution of position could not be saved

0044209C

Resolution of position could not be saved

0044209D

Serial number of encoder could not be saved

0044209E

Phys. encoder resolution (analog) could not be saved

0044209F

Extended position resolution (analog) could not be saved

004420A0

Resolution of position is invalid

004420A1

Position overflow threshold could not be saved

004420A2

The encoder scheduler semaphore request failed

004420A3

The encoder scheduler semaphore request failed

004420A4

The encoder scheduler semaphore request failed

004420A5

The encoder scheduler semaphore request failed

004420A6

The encoder scheduler semaphore request failed

004420A7

Task could not be suspended, queue is full

004420A8

Task could not be suspended, queue is full

004420A9

Task could not be suspended, queue is full

004420AA

Task could not be suspended, queue is full

004420AB

Task could not be suspended, queue is full

004420AC

The encoder scheduler semaphore release failed

004420AD

The encoder scheduler semaphore release failed

004420AE

The encoder scheduler semaphore release failed

004420AF

Queue response failed

004420B0

Queue response failed

004420B1

Queue response failed

004420B2

Binary semaphore creation failed

004420B3

Binary semaphore creation failed

004420B4

Binary semaphore creation failed

004420B5

Binary semaphore creation failed

004420B6

Binary semaphore creation failed

004420B7

Binary semaphore creation failed

004420B8

Creation of a new queue failed

004420B9

Creation of a new queue failed

004420BA

Creation of a new queue failed

004420BB

Creation of a new queue failed

004420BC

Creation of a new queue failed

004420BD

Creation of a new queue failed

004420BE

Encoder warnings could not be read

004420BF

Encoder errors could not be read

004420C0

Encoder buffer "Error class 2 (static)" could not be set

004420C1

Encoder buffer "Error class 2 (static)" could not be deleted

004420C2

Binary semaphore creation with timeout failed

004420C3

Encoder buffer "Error class 2 (static)" could not be saved

004420C4

Acyclic MRF data request with state error

004420C5

Acyclic MRF data request with timeout or procedure error

004420C6

Acyclic MRF data request with state error

004420C7

Acyclic MRF data request with timeout or procedure error

004420C8

Acyclic MRF data request with state error

004420C9

Acyclic MRF data request with timeout or procedure error

004420CA

Acyclic MRF data request with state error

004420CB

Acyclic MRF data request with timeout or procedure error

004420CC

Acyclic MRF data request with state error

004420CD

Acyclic MRF data request with timeout or procedure error

004420CE

Acyclic MRF data request with state error

004420CF

Acyclic MRF data request with timeout or procedure error

004420D0

Binary semaphore release failed

004420D1

Binary semaphore creation with timeout failed

004420D2

Encoder buffer "Error class 2 (static)" could not be saved

004420D3

Binary semaphore release failed

004420D4

Binary semaphore creation failed

004420D5

Binary semaphore creation failed

004420D6

Binary semaphore creation failed

004420D7

Binary semaphore creation with timeout failed

004420D8

Binary semaphore creation failed

004420D9

Undefined participant, encoder 1

004420DA

Deactivation of cyclic communication failed

004420DB

Deactivation of cyclic communication failed

004420DC

Deactivation of cyclic communication failed

004420DD

Undefined participant, encoder 2

004420DE

Failed to switch off encoder power supply for the internal interface

004420DF

Failed to switch off encoder power supply for the internal interface

004420E0

Failed to switch off encoder power supply for the internal interface

004420E1

Failed to switch off encoder power supply for the internal interface

004420E2

Failed to reconnect to the subsystem and restore SSCV2 connection

004420E3

Failed to reconnect to the subsystem and restore SSCV2 connection

004420E4

Failed to restart managed telegram parts

004420E5

Failed to restart managed telegram parts

004420E6

Activation of cyclic encoder communication failed

004420E7

Activation of cyclic encoder communication failed

004420E8

Activation of cyclic encoder communication failed

004420E9

"Encoder output data, cycle time" could not be saved

004420EA

Phys. max. initialization speed could not be saved

004420EB

Absolute position range could not be saved

004420EC

Configuration of cyclic encoder data failed

004420ED

Activation of cyclic encoder data failed

004420EE

Undefined board index

004420EF

Undefined board index

004420F0

"Encoder output data, cycle time" could not be saved

004420F1

Encoder reports errors (ALARM)

004420F2

Virtual encoder: Required parameters not cyclically configured

004420F3

Redundant motor encoder not enabled

004420F4

Measuring wheel is not enabled

004420F5

Encoder reports errors (ALARM)

004420F6

Encoder reports errors (ALARM)

004420F7

Encoder reports errors (ALARM)

004420F8

Encoder reports errors (ALARM)

004420F9

Encoder reports communication error (DTF)

004420FA

Encoder reports communication error (DTF)

004420FB

Encoder reports communication error (DTF)

004420FC

Encoder command selection could not be written

004420FD

Encoder command could not be written

004420FE

Encoder command could not be written

004420FF

Encoder command could not be written

00442100

Encoder command could not be written

00442101

Encoder command could not be written

00442102

Encoder command could not be written

00442103

The semaphore request failed

00442104

Adding a new item/message to the end of the queue failed

00442105

Encoder memory size was not available

00442106

"Encoder output data, cycle time" was not available

00442108

"Encoder evaluation, part 1" could not be activated

00442109

Phys. encoder zero offset could not be saved

0044210A

Safe zero point could not be read

0044210B

Overflow value cannot be displayed in 64 bit

0044211D

Failed to switch encoder to "Pre Active" (ACUROLink)

0044211E

Failed to switch encoder to "Pre Active" (ctrlX SENSE)

0044211F

Failed to reconnect to the subsystem and restore SSCV2 connection

00442120

Activation of cyclic encoder communication failed

00442121

Failed to switch off encoder power supply for the internal interface

00442122

Failed to reconnect to the subsystem and restore SSCV2 connection

00442123

Failed to restart managed telegram parts

00442124

Deactivation of cyclic communication failed

00442125

Activation of cyclic encoder communication failed

00442126

Communication with the encoder could not be established

00442127

Communication with the encoder could not be established

00442128

No encoder with valid ID was detected

00442129

No encoder with valid ID was detected

0044212A

Incorrect state in encoder state machine

0044212B

Parameter could not be read

0044212C

Parameter could not be read

0044212D

Incorrect parameter ID

00442130

Encoder scan active, see 0x2418:01 / S-0-0602.10.1 / S-0-2550

00442131

Encoder scan active, see 0x241A:01 / S-0-0602.2.1 / S-0-2500

00442132

Encoder scan active, see 0x241C:01 /S-0-0602.3.1 / S-0-2525

00442133

Resolver: Could not write correction factors CH1 (P-0-2690.x.84) (parameter handle error)

00442134

Resolver: Could not write correction factors CH1 (P-0-2690.x.84)

00442135

Resolver: Could not write correction factors CH2 (P-0-2690.x.85) (parameter handle error)

00442136

Resolver: Could not write correction factors CH2 (P-0-2690.x.85)

00442137

Resolver: Could not read correction factors CH1 (P-0-2690.x.84) (error during opening)

00442138

Resolver: Could not read correction factors CH1 (P-0-2690.x.84)

00442139

Resolver: Could not read correction factors CH2 (P-0-2690.x.85) (error during opening)

0044213A

Resolver: Could not read correction factors CH2 (P-0-2690.x.85)

0044213B

Resolver: Could not write correction factors CH1 (S-0-602.2.141)

0044213C

Resolver: Could not write correction factors CH2 (S-0-602.2.142)

0044213D

Error: No or no complete telegram (DTFs) received

00442140

Error when writing multi-turn data to the non-volatile memory

00442141

Flash locked, impossible to write data

00442142

Safe position calibration failed

00442149

Unknown diagnostic command message

004421F4

Measuring encoder: Internal error flag cannot be deleted

004421F8

Measuring encoder: ENCE evaluation not ready for operation -> "absolute encoder buffer" and "absolute encoder offset" are set to invalid.

004421F9

Measuring encoder: ENCE evaluation not ready for operation -> "absolute encoder buffer" and "absolute encoder offset" are set to invalid.

00442210

Measuring encoder: Error when reading the absolute encoder offset from the OEM memory

00442211

Measuring encoder: Error when reading the absolute encoder offset from the OEM memory

00442212

Measuring encoder: Error when calculating the comparative checksum (reading the absolute encoder offset)

00442213

Measuring encoder: Absolute encoder offset in OEM memory is invalid (reading the absolute encoder offset)

00442214

Measuring encoder: No readable OEM memory identified

00442215

Measuring encoder: Impossible to identify the encoder interface for reading the absolute encoder offset

00442217

Measuring encoder: Error in parameter handling: Unable to set status of 0x24B7:02 / P-0-0179 to invalid

00442218

Measuring encoder: Error in parameter handling: Unable to set status of 0x24B7:03 / P-0-0179.0.1 to invalid

00442219

Measuring encoder: Error when saving 0x24B7:03 / P-0-0179.0.1

0044221A

Measuring encoder: Error when reading the absolute encoder offset (0x24B7:01 / S-0-0613.3.156) from the OEM memory

0044221B

Measuring encoder: Error when reading the absolute encoder offset (0x24B7:01 / S-0-0613.3.156) from the OEM memory

0044221C

Measuring encoder: Error when calculating the comparative checksum (reading the absolute encoder offset)

0044221D

Measuring encoder: Impossible to set absolute encoder offset to invalid in OEM memory

0044221E

Measuring encoder: Impossible to set absolute encoder offset to invalid in OEM memory

0044221F

Measuring encoder: Error in parameter handling: Unable to set status of 0x24B7:01 / S-0-0613.3.156 to invalid

00442220

Measuring encoder: Undefined node

00442226

Virtual encoder: Encoder position via DRIVElink, master communication etc. not ready for operation

00442227

Virtual encoder: Encoder alarm received via DRIVElink, master communication, etc.

004487F4

Fatal exception: Default switch state activated

004487F5

Error during initialization of the resolver evaluation

0044C001

ctrlX SENSE encoder: Internal system error

0044C002

ctrlX SENSE encoder: Command started without active command

0044C003

ctrlX SENSE encoder: Unknown command or invalid input

0044C004

ctrlX SENSE encoder: Invalid OEM address or data volume

0044C005

ctrlX SENSE encoder: Timeout during command processing

0044C7F1

Encoder reports errors (ALARM)

0044C7F2

Communication error (DTF)

0044C7F5

Encoder reports errors (ALARM)

0044C7F6

Communication error (DTF)

0044C7F8

Virtual encoder: Communication error via DRIVElink, master communication etc.

0044C7F9

Resolution of position (OPT_2: S-0-0601.2.21 / 0x2412:15 / S-0-2420, OPT_3: S-0-0601.3.21 / 0x2414:15 / S-0-2445, ONBOARD: S-0-0601.10.21 / 0x2410:15 / S-0-2470) must not be "0"

0044C7FA

Calculated absolute position range exceeded (OPT_2: 0x2412:9E / S-0-0601.2.158 / P-0-3867, OPT_3: 0x2414:9E / S-0-0601.3.158 / P-0-3869, ONBOARD: 0x2410:9E / S-0-0601.10.158 / P-0-3871)

Cause/Remedy 1: Cause: Calculated absolute position range exceeded. Remedy: Check resolution of position (OPT_2: S-0-0601.2.21 / 0x2412:15 / S-0-2420, OPT_3: S-0-0601.3.21 / 0x2414:15 / S-0-2445, ONBOARD: S-0-0601.10.21 / 0x2410:15 / S-0-2470)

Cause/Remedy 2: Cause: Calculated absolute position range exceeded. Remedy: Check absolute position range (OPT_2: S-0-0601.2.23 / 0x2412:17 / S-0-2422, OPT_3: S-0-0601.3.23 / 0x2414:17 / S-0-2447, ONBOARD: S-0-0601.10.23 / 0x2410:17 / S-0-2472)

0044C7FD

Multiturn position error, encoder on XG20

0044C7FE

Multiturn position error, encoder on XG21

0044C7FF

Multiturn position error, encoder on XG22

0044DEAD

Encoder defective due to overload

Cause/Remedy 1: Contact our service department.

0044DEAE

Calculated absolute position range exceeded (OPT_2: 0x2412:9E / S-0-0601.2.158 / P-0-3867, OPT_3: 0x2414:9E / S-0-0601.3.158 / P-0-3869, ONBOARD: 0x2410:9E / S-0-0601.10.158 / P-0-3871)

Cause/Remedy 1: Cause: Calculated absolute position range exceeded. Remedy: Check resolution of position (OPT_2: S-0-0601.2.21 / 0x2412:15 / S-0-2420, OPT_3: S-0-0601.3.21 / 0x2414:15 / S-0-2445, ONBOARD: S-0-0601.10.21 / 0x2410:15 / S-0-2470)

Cause/Remedy 2: Cause: Calculated absolute position range exceeded. Remedy: Check absolute position range (OPT_2: S-0-0601.2.23 / 0x2412:17 / S-0-2422, OPT_3: S-0-0601.3.23 / 0x2414:17 / S-0-2447, ONBOARD: S-0-0601.10.23 / 0x2410:17 / S-0-2472)

0044DEAF

S-0601.x.24 resolution (analog) for analog encoder must not be "0"

0044DEB0

Calculated absolute position range exceeded (OPT_2: 0x2412:9E / S-0-0601.2.158 / P-0-3867, OPT_3: 0x2414:9E / S-0-0601.3.158 / P-0-3869, ONBOARD: 0x2410:9E / S-0-0601.10.158 / P-0-3871)

Cause/Remedy 1: Cause: Calculated absolute position range exceeded. Remedy: Check resolution of position (OPT_2: S-0-0601.2.21 / 0x2412:15 / S-0-2420, OPT_3: S-0-0601.3.21 / 0x2414:15 / S-0-2445, ONBOARD: S-0-0601.10.21 / 0x2410:15 / S-0-2470)

Cause/Remedy 2: Cause: Calculated absolute position range exceeded. Remedy: Check absolute position range (OPT_2: S-0-0601.2.23 / 0x2412:17 / S-0-2422, OPT_3: S-0-0601.3.23 / 0x2414:17 / S-0-2447, ONBOARD: S-0-0601.10.23 / 0x2410:17 / S-0-2472)

0044DEB1

Calculated absolute position range exceeded (OPT_2: 0x2412:9E / S-0-0601.2.158 / P-0-3867, OPT_3: 0x2414:9E / S-0-0601.3.158 / P-0-3869, ONBOARD: 0x2410:9E / S-0-0601.10.158 / P-0-3871)

Cause/Remedy 1: Cause: Calculated absolute position range exceeded. Remedy: Check resolution of position (OPT_2: S-0-0601.2.21 / 0x2412:15 / S-0-2420, OPT_3: S-0-0601.3.21 / 0x2414:15 / S-0-2445, ONBOARD: S-0-0601.10.21 / 0x2410:15 / S-0-2470)

Cause/Remedy 2: Cause: Calculated absolute position range exceeded. Remedy: Check absolute position range (OPT_2: S-0-0601.2.23 / 0x2412:17 / S-0-2422, OPT_3: S-0-0601.3.23 / 0x2414:17 / S-0-2447, ONBOARD: S-0-0601.10.23 / 0x2410:17 / S-0-2472)

00450001

"Smart Energy Mode" function package is not activated

Cause/Remedy 1: Cause: The "Smart Energy Mode" function (0x265A:01 / S-0-1709.0.152 / P-0-1607, bit 0) is only available with the function package. Remedy: Deactivate the function or enable the function.

0045030B

Mains connection: DC bus voltage smaller than 85% of mains voltage

00450316

Mains connection: Overtemperature inverter circuit board or choke

0045040B

Impossible to determine the DC bus capacitance

Cause/Remedy 1: When the DC bus is charged, the DC capacitance is determined. For this purpose, the DC bus voltage has to increase during the choke check. This might be impeded by an external load at the DC bus.

0045040E

Error reading P-0-2622.0.2

Cause/Remedy 1: The nominal DC bus capacity (basic device parameters) cannot be read

0045040F

Error reading P-0-2622.0.1

Cause/Remedy 1: The nominal mains choke values (basic device parameters) cannot be read

00450412

Control loop default values incorrectly calculated

00450413

Compared to initial measurement, DC bus capacitance was reduced by more than 30%

Cause/Remedy 1: Cause: The DC bus wiring was changed. One or more capacity modules have been removed. Remedy: Check the wiring, then set the capacitance value and the throttle value to "0". Reboot the supply unit.

Cause/Remedy 2: Cause: Due to aging of the DC bus electrolytic capacitors, the capacitance has reduced by more than 30% compared to the measured value during initial commissioning. Remedy: Replace device.

00450420

Error writing ZKS Powerfail configuration in LT

Cause/Remedy 1: Cause: "DC bus short circuit in the event of 24 V failure" is configured; the braking resistor is deactivated. Remedy: Configure the braking resistor or deactivate the function.

Cause/Remedy 2: Cause: "DC bus short circuit in the event of 24 V failure" is configured but there is no braking resistor. Remedy: Deactivate the function.

00450423

Error when reading the bleeder switch-on voltage

00450424

Error when reading the maximum feeding current

00450425

Error when reading the resistance value of the internal bleeder

00450426

Error when reading the error threshold of the bleeder

Cause/Remedy 1: Cause: The utilization limit for generating the bleeder overload cannot be read by the subsystem. Remedy: Perform a reboot; replace device if necessary.

00450427

Error when writing the external braking resistor data

Cause/Remedy 1: Cause: The external braking resistor data cannot be written to the subsystem; it does not match the permitted values. Remedy: Enter permitted values in 0x2620:01 / P-0-0858 (see project planning manual).

00450428

Error when reading “DC bus discharge finished threshold”

Cause/Remedy 1: Cause: The threshold below which the DC bus is considered discharged cannot be read by the subsystem. Remedy: Perform a reboot, replace the device if necessary

0045042B

Error when reading the minimum braking resistance

Cause/Remedy 1: Cause: The minimum resistance of the braking resistor cannot be read by the subsystem. Remedy: Perform a reboot, replace the device if necessary

0045042C

Error when reading braking resistor max. resistance value

Cause/Remedy 1: Cause: The maximum resistance of the braking resistor cannot be read by the subsystem. Remedy: Perform a reboot, replace the device if necessary

0045042D

Error when writing the selected braking resistor

Cause/Remedy 1: Cause: The device does not support the use of an external braking resistor. Remedy: Deselect the use of the external braking resistor in 0x2628:01 / P-0-0860.

0045042E

Error when configuring single-phase or 3-phase operation

Cause/Remedy 1: Cause: The device does not support single-phase or 3-phase operation. Remedy: Change the configuration in 0x2628:01 / P-0-0860.

0045042F

“DC bus short circuit when voltage fails” function not enabled

Cause/Remedy 1: Cause: The “DC bus short circuit when 24 V fails” function must first be enabled. Remedy: Enter the enable code or deselect the function in 0x2628:01 / P-0-0860.

00450430

“Braking resistor power control” function not enabled

Cause/Remedy 1: Cause: The “Braking resistor power control” function must first be enabled. Remedy: Enter the enable code or deselect the function in 0x2628:01 / P-0-0860.

Cause/Remedy 2: Cause: The “Braking resistor power control” function is not supported by XVR. Remedy: Deactivate function

00450431

Error when writing the power command value for the braking resistor

Cause/Remedy 1: Cause: The power command value cannot be written in the subsystem. Remedy: Perform a reboot, replace the device if necessary

00450433

The DC bus capacitance has dropped by more than 30%.

Cause/Remedy 1: The DC bus capacitance has dropped by more than 30% since initial commissioning. A subsequent optimization of the voltage regulation gain may be necessary.

00450434

Control loop default values incorrectly calculated

Cause/Remedy 1: The control loop parameters are calculated from the values for commutation choke and the DC bus capacitance when the DC bus is charged. The calculation was incorrect. Possible cause: Inductance or capacity is “0”.

00450435

Bleeder power control, maximum value for power command value not available

Cause/Remedy 1: Cause: System is not equipped for bleeder power control.

00450436

Continuous power of the external braking resistor is too high

Cause/Remedy 1: Cause/Remedy: The control circuit for the braking resistor can only provide a limited continuous power. The value in 0x2620:01 / P-0-0858 is too large. The maximum value must be taken from the project planning manual.

00450437

Parameterized maximum energy absorption of external braking resistor too high

Cause/Remedy 1: Cause/Remedy: The control circuit for the braking resistor can only absorb a limited continuous power. The value in 0x2620:01 / P-0-0858 is too large. The maximum value must be taken from the project planning manual.

00450438

Resistance value of external braking resistor incorrectly parameterized

Cause/Remedy 1: Cause/Remedy: The control circuit for the braking resistor can process only a small resistance range. The value in 0x2620:01 / P-0-0858 is too large or too small (for permitted value range, see project planning manual).

00450439

Maximum motor voltage and bleeder switch-on threshold not verisimilar

Cause/Remedy 1: Cause/Remedy: The parameterized switch-on threshold of the braking resistor (0x2624:02 / P-0-0834) must be at least 30 V less than the maximum voltage of the motor (0x2010:09 / P-0-0853)

0045043A

The currently measured intermediate circuit capacity is below the nominal value by more than 30%

Cause/Remedy 1: Cause/Remedy: The nominal intermediate circuit capacity installed in the device was undershot by 30%. This is a clear sign of device aging. The controller should be replaced soon.

0045043B

The switch-on threshold of the braking resistor cannot be defined

Cause/Remedy 1: Cause: The switch-on voltage threshold of the braking resistor cannot be written to the subsystem. Remedy: Perform a reboot, replace the device if necessary

0045043C

It is not possible to deactivate the load-dependent increase in the braking resistor threshold

Cause/Remedy 1: Cause: It is not possible to transfer the deactivation of the load-dependent increase in the braking resistor threshold to the subsystem. Remedy: Perform a reboot, replace the device if necessary

0045050D

With XMV, only the DC/DC actuator mode is possible

Cause/Remedy 1: Cause/Remedy: DC/DC actuator configuration is not enabled. With this controller, only the DC/DC actuator mode is possible.

0045050E

With XMV, the function package “DC/DC actuator” is required

Cause/Remedy 1: Cause/Remedy: Select the function package for the DC/DC actuator (0x08320001)

00450601

Unable to configure island grid mode in power module

Cause/Remedy 1: Cause: You are using an outdated power module that does not allow island grid operation. Remedy: Use up-to-date power module

00460001

Faulty reference mark

00460002

Maximum travel distance exceeded

00470001

Malfunction when reading commutation offset from encoder memory

Cause/Remedy 1: Cause: The commuation offset in the encoder memory is faulty. Remedy: Perform the commutation adjustment

Cause/Remedy 2: Cause: The encoder memory cannot be read. Remedy: Check the connection to the encoder.

00470002

Motor type plate generation: The motor encoder slot is not available

Cause/Remedy 1: Cause/Remedy: You selected a motor encoder slot that is not available for generating a motor type plate. Only “Onboard” or slot 2 is available.

00470003

Application data cannot be stored in the data area B

Cause/Remedy 1: Cause/Remedy: The application-specific data cannot be stored in the memory area B of the type plate. Memory is not available or is too small.

00470004

Unable to save application specific data in encoder

Cause/Remedy 1: Cause: An error occurred when trying to save the application-specific data in the encoder.

00470005

Insufficient encoder memory for the motor type plate

Cause/Remedy 1: Cause: The encoder’s memory is too small for a motor nameplate. At least 1400 bytes are required. The encoder is not capable of recording a type plate of this version.

00470006

Motor type plate version unknown

Cause/Remedy 1: Cause: An unknown memory version for the motor type plate was entered in 0x2052:01 / P-0-3100. Remedy: Before generating a type plate, 0x2052:01 / P-0-3100 must be written with a supported memory version.

00470007

Identification data cannot be stored in memory area A

Cause/Remedy 1: Cause: Memory area A (identification data) for the motor type plate is too small. Remedy: Shorten the identification data.

00470008

Static motor data cannot be stored in memory area A

Cause/Remedy 1: Cause: Memory area A for the motor type plate is too small. Remedy: Store less motor data.

00470009

Controller-specific motor data cannot be stored in memory area A

Cause/Remedy 1: Cause: Memory area A for the motor type plate is too small. Remedy: Store less motor control data.

0047000A

Unable to reset motor diagnostic data

Cause/Remedy 1: Cause: “Generate type plate” resets the motor diagnosis data, the storage in data area C was faulty

0047000B

Unable to save motor type plate to encoder

Cause/Remedy 1: Cause: An error occurred when trying to save the motor data in the encoder.

0047000C

Parameter format is unknown

Cause/Remedy 1: Cause: A parameter to be stored in the encoder memory has an unknown format

0047000D

Parameter is not part of the motor type plate

Cause/Remedy 1: Cause: The parameter cannot be used as a type plate parameter.

0047000E

Command only possible with master password

Cause/Remedy 1: Cause: The command requires the master password. Remedy: Enter the master password and restart the command.

0047000F

Compact parameter is not present

Cause/Remedy 1: Cause: The “Type plate, compact” parameter is not present (see 0x2B64:06 / S-0-0423)

00470010

Parameter is not present

Cause/Remedy 1: Cause: The parameter is not known in the firmware and therefore cannot be placed in the type plate (see 0x2B64:06 / S-0-0423).

00470011

Generating type plate application data is not authorized in End-User-Mode

Cause/Remedy 1: Cause: Application data cannot be generated in End-User-Mode. Remedy: Enter the OEM-Commissioning-Mode password.

00470012

Parameter is not writable in CM

Cause/Remedy 1: Cause: You can only store parameters that are writeable in CM at a minimum (see 0x2B64:06 / S-0-0423). Remedy: Remove this parameter from the data to be stored in the encoder memory.

00470013

Could not create compact parameter

Cause/Remedy 1: Cause: Could not generate the compact parameter for the type plate. There may be too many parameters assigned to the compact parameter. Remedy: Reduce the number of parameters.

00470014

Application-specific data invalid

Cause/Remedy 1: Cause: The application-specific data are missing or invalid.

00470015

Failed to save parameter

Cause/Remedy 1: Cause: When reading out the motor data from the encoder memory, the target parameter could not be saved (see 0x2B64:06 / S-0-0423).

00470016

Target parameter conversion error

Cause/Remedy 1: Cause: When reading out the motor data from the encoder memory, the target parameter returned a calculation error (see 0x2B64:06 / S-0-0423).

00470017

Application-specific data only possible with encoder memory version 7

Cause/Remedy 1: Cause: Application-specific data can only be created for motors with encoder memory version 7.

00470101

Unable to write diagnostic motor data to the encoder data memory

00470102

Unable to read operating hours of motor from the encoder

00470103

Unable to read thermal operating data of motor from the encoder memory

00470104

Unable to read mechanical operating data of motor from the encoder memory

00470105

Unable to read histogram data of motor from the encoder memory

00470106

Unable to read brake operating data from the encoder memory

00470107

Unable to save diagnostic data to area C

00470108

Unable to write memory dumb of the encoder to drive flash

00470109

Unable to write motor diagnostic data to drive flash

00490004

Parameter P-0-2690.0.29 (max. safe position difference) could not be written

00520202

Operating stop activated!

00520203

Operating stop deactivated!

00530033

Invalid password; initial password "INDRASAVE" was activated

0053004B

Signal control, outputs: Source IDN not allowed.

0053004C

IO mapper inputs: The maximum number of instances has been exceeded

0053004D

IO mapper inputs: A command signal is used more than once

0053004E

IO mapper inputs: Command IDN not allowed

0053004F

IO mapper inputs: Command bits not allowed

00530050

IO mapper inputs: Input signals in incorrect order

00530052

IO mapper inputs: List of source IDNs incomplete

00530055

Data reference of position, velocity and acceleration not the same

00530056

Scaling type of position, velocity and acceleration not the same

00530057

Scaling unit of position, velocity and acceleration not the same (inch and metric)

00530058

Data reference at the motor shaft not allowed with load encoder

00530059

Rotation position resolution not correct; only multiples of 360 degrees allowed

0053005F

System state change from SMO_AS to SMO_NA faulty

Cause/Remedy 1: During the start-up, the transition SMO_AS to SMO_NA was triggered. An error was detected in the process.

00530064

Normal operation active

00530065

Parking axis active

00530066

Parameterization mode active

00530067

Configuration mode active

00530068

SMO: other operating state

00530083

System STM is not in the SMO_NA_FC state (-> transition to SMO_NA_SD not allowed)

Cause/Remedy 1: The transition to “SMO inactive, factory state” is triggered, but the initial condition for this action (“SMO inactive, functional commissioning”) does not exist.

00530084

System STM is not in the SMO_NA_SD state (-> transition to SMO_NA_FC not allowed)

Cause/Remedy 1: The transition to “SMO inactive, functional commissioning” is triggered, but the initial condition for this action does not exist.

00530085

Faulty switching from OM to PM. Reboot drive

00530086

Only allowed in PM.

00530087

Only allowed in SCM.

00530088

System STM is not in the SMO_CM state (-> transition CM-PMP not allowed)

Cause/Remedy 1: The SMO_CM to SMO_PMP transition was triggered during start-up or C8300, but the system state machine was not in SMO_CM at this time.

00530089

Only allowed when “SafeMotion” is inactive

0053008A

Activation of “SafeMotion” not allowed in OM and PM. To activate “SafeMotion”, the drive must be in CM

0053008B

Deactivation of “SafeMotion” only possible in CM

00530095

Configuration error: Check configuration in 0x3060:01 / P-0-3266.0.2 / P-0-2547

00530098

IO mapper inputs: IO mapper block type not allowed

005300EB

Parameterization error for the SMO application

00530133

“Safe bus communication” parameter error

00530150

IO mapper inputs: Source IDN not allowed.

00530151

IO mapper inputs: Source bit not allowed.

00530152

Test detailed diagnostics 1

00530153

Test detailed diagnostics 2

00530154

Test detailed diagnostics 3

00530155

Test detailed diagnostics 4

00530156

Test detailed diagnostics 5

00530170

SMD ramp calculation overflow

Cause/Remedy 1: Control exponent V, A

00530210

Unable to switch, unknown error

00530211

Switch to SCM not possible because not all configuration parameters have been verified

00530212

Switch to SCM not possible because not all configuration parameters are within the allowed value range (see 0x3016:06 / P-0-3233)

00530213

Unable to switch, error while performing online write of configuration parameter

Cause/Remedy 1: Unable to switch to configuration mode because an error occurred while performing an online write of a configuration parameter.

00530217

Illegal state call PARS_AdminStmCmToReadyToPmp

00530218

Unable to switch, unknown error

00530219

Switch to OM not possible because not all parameters have been verified

0053021A

Switch to OM not possible because not all parameters are within the allowed value range

0053021B

Unable to switch, error while performing online write of a parameterization parameter

Cause/Remedy 1: Unable to switch to application mode because an error occurred while performing an online write of a parameterization parameter.

0053021C

Switch to OM not possible because no SMO axis identifier has been assigned yet

0053021D

Cannot switch because the axis validation (0x302E:03 / P-0-3210.0.2 / P-0-2543) is not verified

00530226

CRC calculation, illegal index on configuration parameters

00530227

CRC calculation, illegal index on parameterization parameters

00530255

CRC checksum PARS_Admin task endless loop has been exited

005302E3

Acceleration scaling -> Scaling type, unit not supported or not valid

005302E4

Velocity scaling -> Scaling type, unit not supported or not valid

005302E5

Position scaling -> Scaling type, unit not supported or not valid

005302E6

Encoder scaling -> Execution type not supported or invalid

005302E8

PARS_AccessGetIOParamPointer, faulty pointer on parameter tree

0053048A

System STM: Transition PmpToApp; timeout during sync. with other channel

0053048C

System STM: Transition AppToPmp; timeout during sync. with other channel

0053048E

System STM: Transition PmpToCm; timeout during sync. with other channel

0053048F

System STM: Transition CmToPmp; timeout during sync. with other channel

00530490

System STM: Transition StartUpOrC83CmToPmp; timeout during sync. with other channel

00530491

System STM: Transition NaToCm; timeout during sync. with other channel

00530493

System STM: Transition CmToNa; timeout during sync. with other channel

00530494

System STM: Transition NaSdToNaFc; timeout during sync. with other channel

00530495

System STM: Transition NaFcToNaSd; timeout during sync. with other channel

00530496

System STM: Transition StartToNa; timeout during sync. with other channel

0053049E

Configuration error: 0x3060:01 / P-0-3266.0.2 / P-0-2547, bit 0="1", although with the hardware used SafeMotion does not support zone setup via the safety zone module

0053049F

SBC not available

Cause/Remedy 1: Safety technology option module does not support SBC

005304A0

The build configuration of the firmware used is not allowed to be operated on this hardware.

005304A5

Impossible to switch from SCM to PM (C8200), because a critical SMO error is present

0053050F

Reset functional commissioning was called, but axis is not in SMO_NA

00530512

System state machine switching error TestCmp2, for NaToCm

00530513

System state machine switching error TestCmp2, for CmToPmp

00530514

System state machine switching error TestCmp2, for NaSdToNaFc

005305C0

Initial functional commissioning: system state not equal to SMO_NA

005306A0

Error switching from CM to PM because safe slave address not yet assigned

005306A1

When switching from CM to PM, it was detected that invalid assemblies were specified in the safe communication via CIP Safety or Fail Safe over Ethercat (0x3052:01 / P-0-3345="1" or "2")

Cause/Remedy 1: Cause: Invalid consuming (0x3056:02 / P-0-3342.0.1 / P-0-2549) or producing (0x3058:02 / P-0-3343.0.1 / P-0-2551) assemblies were selected. Remedy: Select valid assemblies

005306AB

The safe bus configuration (0x3052:01 / P-0-3345) requires a different master communication bus protocol (0x2C00:01 / P-0-4089.0.1 / P-0-2310)

005306F8

Scaling type invalid or not supported by the SLE/SLP/SMP safety functions

0053073B

Jerk scaling -> scaling type unit not supported or invalid

00530752

Signal control of outputs: Bit in source IDN not available

00530753

Signal control, outputs: Combination of source IDN and bit number not possible

00530784

Invalid parameters passed to PARS_AccessSetScalingTF()

00530785

Torque/force data scaling exponent (0x3028:02 / P-0-3225.0.2) outside of allowed range (0 to -10)

00530786

Percentage-based torque/force scaling setting is not supported in SMO

005307DE

Configuration error: Linear encoder (0x3100:09 / P-0-3242, bit 0=“1”) with rotational scaling (0x3028:01 / P-0-3225.0.1, bit 2-0=“2”)

005307DF

Configuration error: Rotary encoder (0x3100:09 / P-0-3242, bit 0="0") with linear scaling (0x3028:01 / P-0-3225.0.1, bit 2-0="1") and motor data reference (0x3028:01 / P-0-3225.0.1, bit 6="0")

00530F28

Configuration error: Rotary encoder (0x3100:08 / P-0-3242.1.2, bit 0=“0”) with translatory scaling (0x3028:01 / P-0-3225.0.1, bits 2-0=“1”)

00530F29

Configuration error: Linear motor type (0x3020:07 / P-0-3221.0.8=“1”) with rotary encoder (0x3100:08 / P-0-3242.1.2, bit 0=“0”)

00530F2A

Configuration error: Rotary motor type (0x3020:07 / P-0-3221.0.8=“0”), linear encoder (0x3100:08 / P-0-3242.1.2, bit 0=“1”), data reference on the motor (0x3028:01 / P-0-3225.0.1, bit 6=“0”)

00533252

FRAM: severe exception error

00533253

FRAM: severe exception error

00533254

FRAM: severe exception error

00533300

Invalid client ID

00533301

Error code outside of valid number range

00533302

Detailed diagnostics outside of valid number range

00533303

Illegal state

00533304

Illegal pointer

00533305

Invalid transition parameters

00533306

Error code outside of valid number range

00533307

Error code outside of valid number range

00533308

Error code outside of valid number range

00533309

Error code outside of valid number range

0053330A

Index out of valid range

0053330B

Error code outside of valid number range

0053330C

Error code outside of valid number range

0053330D

Error code outside of valid number range

00533311

Illegal pointer

00533474

DIAG: value out of bounds

00533475

DIAG: value out of bounds

00533476

DIAG: Invalid program path

00533477

DIAG: default branch called in switch statement

00533478

DIAG: default branch called in switch statement

00533479

DIAG: Invalid program path

0053347A

DIAG: value out of bounds

0053347B

DIAG: value out of bounds

0053347C

DIAG: value out of bounds

0053347D

DIAG: value out of bounds

0053347E

DIAG: value out of bounds

0053347F

DIAG: value out of bounds

00533480

DIAG: value out of bounds

00533481

DIAG: value out of bounds

00533482

DIAG: bool out of bounds

00533483

DIAG: value out of bounds

00533484

DIAG: value out of bounds

00533485

DIAG: value out of bounds

00533486

LGVT: NULL pointer exception

00533487

LGVT: Safe transfer: Division by 0 when calculating the braking time

0053348E

FRAM: severe exception error

0053348F

DIAG: default branch called in switch statement

005334B5

PARS_AppAxisIDAdoptID, illegal list length

005334B6

PARS_AppAxisIDIsDefVal, illegal list length

005334B7

PARS_AppAxisIDIsDefVal, illegal list length

005334C2

Illegal state PARS_AdminCrossCheck

005334C5

PARS_VerifyOReadData NULL pointer exception

005334C6

PARS_AppIdentImageUnpack pointer error

005334C7

PARS_AppIdentImageCreate pointer error

005334C8

PARS_VerifyOReadNotVeriPara faulty access to list data

005334C9

PARS_Image_eOReadParamImage_P3232 incorrect list context

005334CD

PARS_VerifyUpdateDataIntern: Illegal pointer on axis identifier

005334CF

PARS_VerifyCalculateAckChecksum: Illegal pointer on axis identifier

005334D0

PARS_VerifyCalculateAckChecksum: Illegal pointer on axis identifier

005334E8

Acceleration scaling -> Minimum/maximum value (calculated internally) not valid

005334E9

Acceleration scaling -> Exponent (0x3026:02 / P-0-3224.0.2) outside of valid value range

005334EA

Velocity scaling -> Minimum/maximum value (calculated internally) not valid

005334EB

Velocity scaling -> Exponent (0x3024:02 / P-0-3223.0.2) outside of valid value range

005334EC

Position scaling -> Minimum/Maximum value invalid (0x3020:06 / P-0-3221.0.7 must be greater than “0”)

005334ED

Position scaling -> Exponent (0x3022:02 / P-0-3222.0.2) outside of valid value range

005334EE

Encoder scaling -> Exponent (calculated internally) invalid

005334EF

Faulty pointer on parameter tree

005334F0

Faulty pointer on parameter tree

005334F2

Faulty pointer on parameter tree

005334F4

Faulty pointer on parameter tree

005334F5

Faulty pointer on parameter tree

0053353E

Jerk scaling -> Minimum/maximum value (calculated internally) not valid

0053353F

Jerk scaling -> Exponent outside of valid range

00533557

SMO: invalid parameterization

0053357A

LGVT: NULL pointer exception

0053357B

LGVT: NULL pointer exception

005335A4

DIAG: Value out of bounds

005335A5

DIAG: Value out of bounds

005335A6

DIAG: Value out of bounds

005335A7

DIAG: Value out of bounds

00536000

Invalid pointers

00540033

Invalid password; initial password "INDRASAVE" was activated

0054004B

Signal control, outputs: Source IDN not allowed.

0054004C

IO mapper inputs: The maximum number of instances has been exceeded

0054004D

IO mapper inputs: A command signal is used more than once

0054004E

IO mapper inputs: Command IDN not allowed

0054004F

IO mapper inputs: Command bits not allowed

00540050

IO mapper inputs: Input signals in incorrect order

00540052

IO mapper inputs: List of source IDNs incomplete

00540055

Data reference of position, velocity and acceleration not the same

00540056

Scaling type of position, velocity and acceleration not the same

00540057

Scaling unit of position, velocity and acceleration not the same (inch and metric)

00540058

Data reference at the motor shaft not allowed with load encoder

00540059

Rotation position resolution not correct; only multiples of 360 degrees allowed

0054005F

System state change from SMO_AS to SMO_NA faulty

Cause/Remedy 1: During the start-up, the transition SMO_AS to SMO_NA was triggered. An error was detected in the process.

00540064

Normal operation active

00540065

Parking axis active

00540066

Parameterization mode active

00540067

Configuration mode active

00540068

SMO: other operating state

00540083

System STM is not in the SMO_NA_FC state (-> transition to SMO_NA_SD not allowed)

Cause/Remedy 1: The transition to “SMO inactive, factory state” is triggered, but the initial condition for this action (“SMO inactive, functional commissioning”) does not exist.

00540084

System STM is not in the SMO_NA_SD state (-> transition to SMO_NA_FC not allowed)

Cause/Remedy 1: The transition to “SMO inactive, functional commissioning” is triggered, but the initial condition for this action does not exist.

00540085

Faulty switching from OM to PM. Reboot drive

00540086

Only allowed in PM.

00540087

Only allowed in SCM.

00540088

System STM is not in the SMO_CM state (-> transition CM-PMP not allowed)

Cause/Remedy 1: The SMO_CM to SMO_PMP transition was triggered during start-up or C8300, but the system state machine was not in SMO_CM at this time.

00540089

Only allowed when “SafeMotion” is inactive

0054008A

Activation of “SafeMotion” not allowed in OM and PM. To activate “SafeMotion”, the drive must be in CM

0054008B

Deactivation of “SafeMotion” only possible in CM

00540094

Configuration error: Safety zone and safe bus communication cannot be used at the same time.

00540095

Configuration error: Check configuration in 0x3060:01 / P-0-3266.0.2 / P-0-2547

00540098

IO mapper inputs: IO mapper block type not allowed

005400EB

Parameterization error for the SMO application

00540133

“Safe bus communication” parameter error

00540150

IO mapper inputs: Source IDN not allowed.

00540151

IO mapper inputs: Source bit not allowed.

00540152

Test detailed diagnostics 1

00540153

Test detailed diagnostics 2

00540154

Test detailed diagnostics 3

00540155

Test detailed diagnostics 4

00540156

Test detailed diagnostics 5

00540170

SMD ramp calculation overflow

Cause/Remedy 1: Control exponent V, A

00540210

Unable to switch, unknown error

00540211

Switch to SCM not possible because not all configuration parameters have been verified

00540212

Switch to SCM not possible because not all configuration parameters are within the allowed value range (see 0x3016:06 / P-0-3233)

00540213

Unable to switch, error while performing online write of configuration parameter

Cause/Remedy 1: Unable to switch to configuration mode because an error occurred while performing an online write of a configuration parameter.

00540217

Illegal state call PARS_AdminStmCmToReadyToPmp

00540218

Unable to switch, unknown error

00540219

Switch to OM not possible because not all parameters have been verified

0054021A

Switch to OM not possible because not all parameters are within the allowed value range

0054021B

Unable to switch, error while performing online write of a parameterization parameter

Cause/Remedy 1: Unable to switch to application mode because an error occurred while performing an online write of a parameterization parameter.

0054021C

Switch to OM not possible because no SMO axis identifier has been assigned yet

0054021D

Cannot switch because the axis validation (0x302E:03 / P-0-3210.0.2 / P-0-2543) is not verified

00540226

CRC calculation, illegal index on configuration parameters

00540227

CRC calculation, illegal index on parameterization parameters

00540255

CRC checksum PARS_Admin task endless loop has been exited

005402E3

Acceleration scaling -> Scaling type, unit not supported or not valid

005402E4

Velocity scaling -> Scaling type, unit not supported or not valid

005402E5

Position scaling -> Scaling type, unit not supported or not valid

005402E6

Encoder scaling -> Execution type not supported or invalid

005402E8

PARS_AccessGetIOParamPointer, faulty pointer on parameter tree

0054048A

System STM: Transition PmpToApp; timeout during sync. with other channel

0054048C

System STM: Transition AppToPmp; timeout during sync. with other channel

0054048E

System STM: Transition PmpToCm; timeout during sync. with other channel

0054048F

System STM: Transition CmToPmp; timeout during sync. with other channel

00540490

System STM: Transition StartUpOrC83CmToPmp; timeout during sync. with other channel

00540491

System STM: Transition NaToCm; timeout during sync. with other channel

00540493

System STM: Transition CmToNa; timeout during sync. with other channel

00540494

System STM: Transition NaSdToNaFc; timeout during sync. with other channel

00540495

System STM: Transition NaFcToNaSd; timeout during sync. with other channel

00540496

System STM: Transition StartToNa; timeout during sync. with other channel

0054049E

Configuration error: 0x3060:01 / P-0-3266.0.2 / P-0-2547, bit 0="1", although with the hardware used SafeMotion does not support zone setup via the safety zone module

0054049F

SBC not available

Cause/Remedy 1: Safety technology option module does not support SBC

005404A0

The build configuration of the firmware used is not allowed to be operated on this hardware.

005404A5

Impossible to switch from SCM to PM (C8200), because a critical SMO error is present

0054050F

Reset functional commissioning was called, but axis is not in SMO_NA

00540512

System state machine switching error TestCmp2, for NaToCm

00540513

System state machine switching error TestCmp2, for CmToPmp

00540514

System state machine switching error TestCmp2, for NaSdToNaFc

005405C0

Initial functional commissioning: system state not equal to SMO_NA

005406A0

Error switching from CM to PM because safe slave address not yet assigned

005406A1

When switching from CM to PM, it was detected that invalid assemblies were specified in the safe communication via CIP Safety or Fail Safe over Ethercat (0x3052:01 / P-0-3345="1" or "2")

Cause/Remedy 1: Cause: Invalid consuming (0x3056:02 / P-0-3342.0.1 / P-0-2549) or producing (0x3058:02 / P-0-3343.0.1 / P-0-2551) assemblies were selected. Remedy: Select valid assemblies

005406AB

The safe bus configuration (0x3052:01 / P-0-3345) requires a different master communication bus protocol (0x2C00:01 / P-0-4089.0.1 / P-0-2310)

005406F8

Scaling type invalid or not supported by the SLE/SLP/SMP safety functions

0054073B

Jerk scaling -> scaling type unit not supported or invalid

00540752

Signal control of outputs: Bit in source IDN not available

00540753

Signal control, outputs: Combination of source IDN and bit number not possible

00540784

Invalid parameters passed to PARS_AccessSetScalingTF()

00540785

Torque/force data scaling exponent (0x3028:02 / P-0-3225.0.2) outside of allowed range (0 to -10)

00540786

Percentage-based torque/force scaling setting is not supported in SMO

005407DE

Configuration error: Linear encoder (0x3100:09 / P-0-3242, bit 0=“1”) with rotational scaling (0x3028:01 / P-0-3225.0.1, bit 2-0=“2”)

005407DF

Configuration error: Rotary encoder (0x3100:09 / P-0-3242, bit 0="0") with linear scaling (0x3028:01 / P-0-3225.0.1, bit 2-0="1") and motor data reference (0x3028:01 / P-0-3225.0.1, bit 6="0")

00540F28

Configuration error: Rotary encoder (0x3100:08 / P-0-3242.1.2, bit 0=“0”) with translatory scaling (0x3028:01 / P-0-3225.0.1, bits 2-0=“1”)

00540F29

Configuration error: Linear motor type (0x3020:07 / P-0-3221.0.8=“1”) with rotary encoder (0x3100:08 / P-0-3242.1.2, bit 0=“0”)

00540F2A

Configuration error: Rotary motor type (0x3020:07 / P-0-3221.0.8=“0”), linear encoder (0x3100:08 / P-0-3242.1.2, bit 0=“1”), data reference on the motor (0x3028:01 / P-0-3225.0.1, bit 6=“0”)

00543252

FRAM: severe exception error

00543253

FRAM: severe exception error

00543254

FRAM: severe exception error

00543300

Invalid client ID

00543301

Error code outside of valid number range

00543302

Detailed diagnostics outside of valid number range

00543303

Illegal state

00543304

Illegal pointer

00543305

Invalid transition parameters

00543306

Error code outside of valid number range

00543307

Error code outside of valid number range

00543308

Error code outside of valid number range

00543309

Error code outside of valid number range

0054330A

Index out of valid range

0054330B

Error code outside of valid number range

0054330C

Error code outside of valid number range

0054330D

Error code outside of valid number range

00543311

Illegal pointer

00543474

DIAG: value out of bounds

00543475

DIAG: value out of bounds

00543476

DIAG: Invalid program path

00543477

DIAG: default branch called in switch statement

00543478

DIAG: default branch called in switch statement

00543479

DIAG: Invalid program path

0054347A

DIAG: value out of bounds

0054347B

DIAG: value out of bounds

0054347C

DIAG: value out of bounds

0054347D

DIAG: value out of bounds

0054347E

DIAG: value out of bounds

0054347F

DIAG: value out of bounds

00543480

DIAG: value out of bounds

00543481

DIAG: value out of bounds

00543482

DIAG: bool out of bounds

00543483

DIAG: value out of bounds

00543484

DIAG: value out of bounds

00543485

DIAG: value out of bounds

00543486

LGVT: NULL pointer exception

00543487

LGVT: Safe transfer: Division by 0 when calculating the braking time

0054348E

FRAM: severe exception error

0054348F

DIAG: default branch called in switch statement

005434B5

PARS_AppAxisIDAdoptID, illegal list length

005434B6

PARS_AppAxisIDIsDefVal, illegal list length

005434B7

PARS_AppAxisIDIsDefVal, illegal list length

005434C2

Illegal state PARS_AdminCrossCheck

005434C5

PARS_VerifyOReadData NULL pointer exception

005434C6

PARS_AppIdentImageUnpack pointer error

005434C7

PARS_AppIdentImageCreate pointer error

005434C8

PARS_VerifyOReadNotVeriPara faulty access to list data

005434C9

PARS_Image_eOReadParamImage_P3232 incorrect list context

005434CD

PARS_VerifyUpdateDataIntern: Illegal pointer on axis identifier

005434CF

PARS_VerifyCalculateAckChecksum: Illegal pointer on axis identifier

005434D0

PARS_VerifyCalculateAckChecksum: Illegal pointer on axis identifier

005434E8

Acceleration scaling -> Minimum/maximum value (calculated internally) not valid

005434E9

Acceleration scaling -> Exponent (0x3026:02 / P-0-3224.0.2) outside of valid value range

005434EA

Velocity scaling -> Minimum/maximum value (calculated internally) not valid

005434EB

Velocity scaling -> Exponent (0x3024:02 / P-0-3223.0.2) outside of valid value range

005434EC

Position scaling -> Minimum/Maximum value invalid (0x3020:06 / P-0-3221.0.7 must be greater than “0”)

005434ED

Position scaling -> Exponent (0x3022:02 / P-0-3222.0.2) outside of valid value range

005434EE

Encoder scaling -> Exponent (calculated internally) invalid

005434EF

Faulty pointer on parameter tree

005434F0

Faulty pointer on parameter tree

005434F2

Faulty pointer on parameter tree

005434F4

Faulty pointer on parameter tree

005434F5

Faulty pointer on parameter tree

0054353E

Jerk scaling -> Minimum/maximum value (calculated internally) not valid

0054353F

Jerk scaling -> Exponent outside of valid range

00543557

SMO: invalid parameterization

0054357A

LGVT: NULL pointer exception

0054357B

LGVT: NULL pointer exception

005435A4

DIAG: Value out of bounds

005435A5

DIAG: Value out of bounds

005435A6

DIAG: Value out of bounds

005435A7

DIAG: Value out of bounds

00546000

Invalid pointers

00630008

Error while reading from queue

00630009

Command not found

0063000A

No free “pre-run buffer” found

0063000B

Error when retrieving a semaphore

00650002

Watch point 0 triggered (0x2BA5:01 / P-0-0321.0.1)

00650003

Watch point 1 triggered (0x2BA6:01 / P-0-0321.1.1)

00650004

Watch point 2 triggered (0x2BA7:01 / P-0-0321.2.1)

00660001

Diagnostic chain overflow

00660020

Diagnostic trace: Internal buffer job returned error

00660047

Error when loading the subsystem diagnostic inventory

006611CF

Exception: Subdevice index out of bounds (DIAG)

006611D0

Exception due to invalid pointer to internal structure

006611D1

Exception due to invalid pointer to internal structure

006611D2

Exception due to invalid pointer to internal structure

00667FFF

System time was set

00670003

Transition not possible now

Cause/Remedy 1: Cause: Transition is not allowed because the current state does not match the state when transition was started. Remedy: Start a transition which is appropriate for the current state.

00670004

Timeout during transition

Cause/Remedy 1: Cause: Transition taking too long. Remedy: Check the diagnostic memory for errors and retry the transition.

00670013

Transition to SMO not possible at this time

Cause/Remedy 1: Cause: Transition is not allowed because the current state does not match the state when transition was started. Remedy: Start a transition which is appropriate for the current state.

00670014

Timeout in SMO during transition

Cause/Remedy 1: Cause: Transition taking too long. Remedy: Check the diagnostic memory for errors and retry the transition.

00670015

Error: Internal SMO transition command error

Cause/Remedy 1: Check diagnostic memory for other errors and restart transition command.

00670016

Error: encoder not ready for operation (ONBOARD: 0x2420:01 / S-0-0600.10.1 / S-0-2350, OPT_2: 0x2422:01 / S-0-0600.2.1 / S-0-2300, OPT_3: 0x2424:01 / S-0-0600.3.1 / S-0-2325), transition to SMO not possible

Cause/Remedy 1: Check encoder configuration and operation.

00670017

Error when reading an SMO parameter (see 0x2B64:06 / S-0-0423)

006A0008

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

006B0013

Unknown module code

Cause/Remedy 1: Cause: A module is unknown in the firmware used. Remedy: Check whether the module can be used with a current firmware release and, if necessary, carry out a firmware update. Please contact the service department, if necessary.

006D0001

Command not supported in offline simulation

Cause/Remedy 1: Remedy: Evaluate detailed diagnostics in the simulation

006D0003

Command not supported in offline simulation

Cause/Remedy 1: Remedy: Evaluate detailed diagnostics in the simulation

006E002C

ASOS resources init error

006E020C

Exception: Subdevice index out of bounds (PARS)

006E020D

Exception due to invalid pointer to internal structure

006E020E

Exception due to invalid pointer to internal structure

006E020F

Exception while determining the current list length

006E0B02

Invalid authorizations found in configuration of a password level (1-4) (1: 0x2B50:02 / P-0-4064.0.3 / P-0-3752, 2: 0x2B51:02 / P-0-4064.1.3 / P-0-3753, 3: 0x2B52:02 / P-0-4064.2.3 / P-0-3688, 4: 0x2B53:02 / P-0-4064.3.3 / P-0-3689)

006E0D02

Retain memory deleting error (process parameters)

Cause/Remedy 1: Cause: Error accessing the flash memory. Remedy: If you have ruled out other possible causes, replace the device.

006E0D83

Competing access to parameter flash from command and asynchronous storage

Cause/Remedy 1: An active command delayed the asynchronous storage of parameters in the flash, or a command could not access the parameter flash because asynchronous storage was active. Failed commands must be repeated.

006E0D84

Conflicting flash access prevents asynchronous saving of parameters

Cause/Remedy 1: Flash has been reserved by another function. The storage of parameters is thus delayed for a few seconds.

00720020

EtherCAT: EoE error, no telegram buffer

00720022

EtherCAT: EoE, incorrect frame / FragNo

00720023

EtherCAT: EoE drive does not support Mac filter

00720024

EtherCAT: EoE error

00720028

EtherCAT: Mailbox unsupported protocol

00720029

EtherCAT: Incorrect master mailbox counter

0072002A

EtherCAT: Mailbox invalid size

0072002B

EtherCAT: Timeout sending MbxIn

0072002C

EtherCAT: No Mbx repeat buffer

0072002D

EtherCAT: Mailbox invalid header

0072002E

EtherCAT: EoE drive does not support Mac filter

0072002F

EtherCAT: EoE, incorrect frame / FragNo

00720030

EtherCAT: EoE error, no telegram buffer

00720031

EtherCAT: EoE error

00720032

EtherCAT: Mailbox SoE invalid DriveNo

00720081

Error during initialization of Sercos master communication

00720082

Changed network settings for master communication

00720083

Changed network settings for panel

00720084

EtherCAT: Mailbox queue send error

00720085

EtherCAT: Mailbox send buffer handle error

00720086

EtherCAT: FoE (x8000) not defined

00720087

EtherCAT: FoE (x8002) read request NOT supported

00720088

EtherCAT: FoE (x8004) illegal OpCode

00720089

EtherCAT: FoE (x8005) PacketNo wrong

0072008A

EtherCAT: FoE (x8008) only in bootstrap

0072008B

EtherCAT: FoE (x800A) password error

0072008C

EtherCAT: FoE (x800B) program error

0072008D

EtherCAT: FoE (x800C) checksum wrong

0072008E

EtherCAT: FoE (x800D) firmware not fit hardware

0072008F

EtherCAT: FoE (x8010) File Hdr does not exist

00720101

Unable to generate SIP task

00720102

Unable to generate SIP event group

00720103

Unable to generate SIP semaphore

00720104

Error in connection referencing

00720105

Error in job referencing

00720106

Error in Connection Event Group

00720107

Error in Job Event Group

00720108

Error in Connection Send Routine

00720109

Error in Connection Receive Routine

0072010A

Error in Connection Request

0072010B

Error in request data

0072010C

Unable to generate SIP queue

0072010D

Error in Connection Queue

0072010E

Error in request function

0072010F

Error in request function referencing

00720110

Error in response data

00720111

Error because connection is closed

00720112

Iterative parameter access error

00720113

Error at a connection socket

00720114

Error at server socket

007B0003

Watchdog of current controller interrupt

007B0004

Watchdog of command value interrupt

007B0005

Watchdog of 8 ms task

007B0009

Watchdog of 2 ms task

007B000A

Monitoring of master communication PLL FRAM_SynchControl() has triggered

007B000D

Error from Nucleus operating system in the case of stack overflow

007B0013

Watchdog of 64 ms task

007B0015

Watchdog for writing current controller to FPGA

007B0017

Watchdog of service interrupt

007B0020

Performance load (0x2BA0:01 / P-0-0322) exceeds the warning threshold (0x2BA0:03 / P-0-0322.0.2 / P-0-2790)

007B0049

Check of FWB firmware package disabled

Cause/Remedy 1: Carry out firmware update

007B0078

Half value of PWM frequency (0x2120:03 / P-0-0001) smaller than allowed minimum PWM frequency

Cause/Remedy 1: In 0x2120:01 / P-0-0016, PWM frequency switching is activated. For automatic switching of PWM frequency, the value in 0x2120:03 / P-0-0001 must be at least twice as large as the minimum value of 0x2120:03 / P-0-0001.

007B0079

Setting not suitable for PWM frequency in 0x2120:03 / P-0-0001 and control loop performance in P-0-0556

Cause/Remedy 1: The PWM frequency set in P-0-0001 and the performance setting set in P-0-0556 cannot be operated together. Increase the PWM frequency or set a lower performance level.

007B007A

Unsupported PWM frequency setting in 0x2120:03 / P-0-0001

Cause/Remedy 1: Change setting in 0x2120:03 / P-0-0001.

007B007B

Unable to reconfigure parameterized control loop timing

Cause/Remedy 1: Incorrect operating phase of the cyclic bus communication for switching to the control loop performance set in 0x2200:01 / P-0-0556. Switch cyclic communication to CM.

007B007C

The control loop performance set in 0x2200:01 / P-0-0556 cannot be activated

Cause/Remedy 1: Change setting in 0x2200:01 / P-0-0556.

007B007D

The PWM frequency set in 0x2120:03 / P-0-0001 cannot be activated

Cause/Remedy 1: Change the value of the PWM frequency in 0x2120:03 / P-0-0001.

007D0001

Severe exception error: Default switch state activated

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0002

Severe exception error: Default switch state activated

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0003

Severe exception error: Default switch state activated

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0004

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0005

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0006

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0007

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0008

Severe exception error: Default switch state activated

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D0009

Severe exception error: Default switch state activated

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D000B

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

007D000C

Severe exception error: Possible memory overflow detected

Cause/Remedy 1: Internal error: For procedure, see error description in main diagnostics

008E0000

J1939 parameter group configuration

008F0000

Loss of J1939 parameter group number

00900000

Slot / subslot

00910000

Connection number

Sercos service channel error codes / error messages of serial communication

For some errors concerning serial communication, the error codes defined in the Sercos specification are used. These codes are also used in the case of incorrect access to control and system parameters.

Error code		Description
Hexadecimal	Decimal	
0x0000	0	No error in the service channel
0x0001	1	Service channel not open
0x0009	9	Invalid access to closing the service channel
0x1001	4097	No IDN
0x1009	4105	Invalid access to element 1
0x2001	8193	No name
0x2002	8194	Name transmission too short

Error code		Description
Hexadecimal	Decimal	
0x2003	8195	Name transmission too long
0x2004	8196	Name cannot be changed (read only)
0x2005	8197	Name is write-protected at this time
0x3002	12290	Attribute transmission too short
0x3003	12291	Attribute transmission too long
0x3004	12292	Attribute cannot be changed (read only)
0x3005	12293	Attribute is write-protected at this time
0x4001	16385	No units
0x4002	16386	Unit transmission too short
0x4003	16387	Unit transmission too long
0x4004	16388	Unit cannot be changed (read only)
0x4005	16389	Unit is write-protected at this time
0x5001	20481	No minimum input value
0x5002	20482	Minimum input value transmission too short
0x5003	20483	Minimum input value transmission too long
0x5004	20484	Minimum input value cannot be changed (read only)
0x5005	20485	Minimum input value is write-protected at this time
0x6001	24577	No maximum input value
0x6002	24578	Maximum input value transmission too short
0x6003	24579	Maximum input value transmission too long
0x6004	24580	Maximum input value cannot be changed (read only)
0x6005	24581	Maximum input value is write-protected at this time
0x7002	28674	Operation data transmission too short
0x7003	28675	Operation data transmission too long
0x7004	28676	Operation data cannot be changed (read only)
0x7005	28677	Operation data is write-protected at this time (e.g. Communication phase)
0x7006	28678	Operation data is smaller than the minimum input value
0x7007	28679	Operation data is greater than the maximum input value

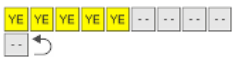
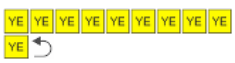
Error code		Description
Hexadecimal	Decimal	
0x7008	28680	Invalid operation data: Configured IDN will not be supported, invalid bit number or bit combination
0x7009	28681	Operation data write protected by a password
0x700A	28682	Operation data is write protected, it is configured cyclically. (IDN is configured in the MDT or AT. Therefore writing via the service channel is not allowed).
0x700B	28683	Invalid indirect addressing: (e.g., data container, list handling)
0x700C	28684	Operation data is write protected, due to other settings. (e.g., parameter, operation mode, drive enable, drive on etc.)
0x700D	28685	invalid floating point number
0x700E	28686	Operation data is write protected at parametrization level
0x700F	28687	Operation data is write protected at operating level
0x7010	28688	Procedure command already active
0x7011	28689	Procedure command not interruptible
0x7012	28690	Procedure command at this time not executable (e.g., in this phase the procedure command can not be activated)
0x7013	28691	Procedure command not executable (invalid or false parameters)
0x7014	28692	The received current length of list parameter does not match to expectation
0x7015	28693	Operation data is not yet created completely
0x7101	28929	IDN in S–0–0394 not valid
0x7102	28930	Empty list in S–0–0397 not allowed for write access
0x7103	28931	Maximum length of the list in S–0–0394 is exceeded by take-over of the list segment.
0x7104	28932	Read access only: The length of the list segment as of the list index exceeds the current length of the list in S–0–0394.
0x7105	28933	IDN in S–0–0394 is write protected
0x7106	28934	Operation data in list segment is smaller than the minimum value
0x7107	28935	Operation data in list segment is greater than the maximum value
0x7108	28936	Invalid list index in S–0–0395
0x7109	28937	Parameter in IDN S–0–0394 does not have variable length
0x710A	28938	IDN S–0–0397 not permitted as operation data in S–0–0394

Display at the device

For all devices of the ctrlX DRIVE product range, the states of the Subdevice State Machine and the Resource State

Machine are displayed at a diagnostic LED.

LED display of the aggregated device state

Device state		LED Color / flashing pattern [1]	Priority
ctrlX DRIVE	ctrlX CORE		
Fatal error (F9xxx) or exception (E0800)	System error (F8 or F9) Application is in the "SysError" state		High
Boot-up active	Boot-up or shutdown active		
Loader active	"ctrlX CORE Rescue System" active		
Identification	Identification		
Firmware update active	Service Mode active		
Firmware update error	App execution error		
Firmware update error-free	-		
Fatal error (F8xxx)	-		
Communication error (F4xxx)	-		
Non-fatal error (F2xxx or F3xxx) or travel range error (F6xxx or F7xxx)	User program runtime error (F0-F6)		
Warning (Exxxx)	Noncritical system error / warning		
Command or command error (Cxxxx)	-		
CM / PM / Axis parked / master communication not in "Operational"	System state "Service/Setup"		
"Safe torque off" (STO) or "EMERGENCY STOP" (SMES) or "Safe standstill" (SMST) or	-		
Safe motion (SMM)	-		
bb (drive ready for operation)	System state "Partial Operating"		
ZKS (DC bus short circuit)	-		
Ab (drive ready, power on) / Bb charg	-		Low
AH (Drive Halt)	-		
AF (drive in control) / Lb, LB and I LB	System state "Operating"		

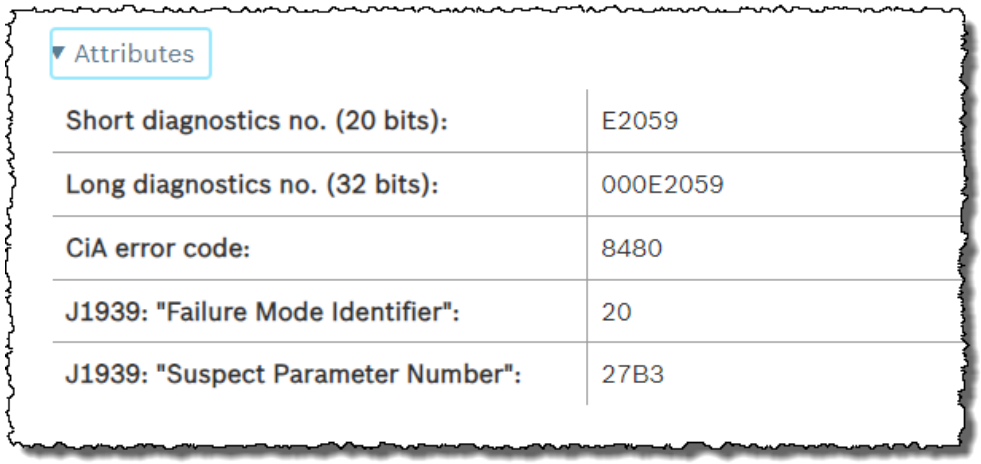
Device state		LED Color / flashing pattern	Priority
ctrlX DRIVE	ctrlX CORE		

Legend:
1): *Flashing pattern: One square corresponds to a duration of 250 ms; the arrow marks the end of a cycle; abbreviations on the squares: WH = LED permanently lit white, YE = LED permanently lit yellow, BU = LED permanently lit blue, GN = LED permanently lit green, RD = LED permanently lit red, -- = LED is off*

Explanation of the diagnostics attributes

Introduction

Each diagnostic message has properties that are listed under "Attributes". This is an example:



▼ Short diagnostics no. (20 bits)

The attribute "Short diagnostics no. (20 bits)" represents the value contained in the bits 0 to 19 of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) when the diagnostic message occurs.

The content of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) can be switched using "Diagnostic message: Configuration" (0x2B80:03 / P-0-0006 / --).

The hexadecimal value of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) consists of the following components:

Bit	Value	Description	Comment
20		Bit 20 shows the diagnostic message status.	
	0	Diagnostic message is "Fxxxx" (error) type: The error cannot be cleared, because its cause has not yet been removed Diagnostic message is "Cxxxx" (command) type: The command is in process	
	1	Diagnostic message is "Fxxxx" (error) type: The error can be cleared Diagnostic message is "Cxxxx" (command) type: The command was terminated with error or completed without error	For the classes "Warning" (E) or "Operating state" (A), this bit is used in logging only. For further information, see S-0-1303.0.10

Bit	Value	Description	Comment
19-16		Bits 19 to 16 indicate the diagnostic message class, and thus, its priority.	
	0x0-0x9	Reserved	
	0xA	Operating state	Priority 4 (lowest) Used to inform about messages related to the operating state or other types of information (e.g., Drive HALT).
	0xB	Reserved	
	0xC	Command / command error	Priority 3 Used to inform about diagnostics events occurring during the execution of a command.
	0xD	Reserved	
	0xE	Warning (C2D)	Priority 2
	0xF	Error (C1D)	Priority 1 (highest) Has to be confirmed with "S-0-0099, Reset Class 1 diagnostics".
15-0		Bits 15 to 0 indicate the status code of the diagnostic message.	

▼ Long diagnostics no. (32 bits)

The attribute "Long diagnostics no. (32 bits)" represents the value contained in the bits 0 to 31 of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) when the diagnostic message occurs.



The content of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) can be switched using "Diagnostic message: Configuration" (0x2B80:03 / P-0-0006 / --).

The hexadecimal value of "Diagnostic message: Manufacturer status register" (0x1002:00 / S-0-0390 / --) consists of the following components:

Bit	Value	Description	Comment
31-30		Interpretation of bits 29-0	Bits 31 and 30 indicate who is responsible for the specification of the diagnostic message.
	00	Manufacturer-specific status codes	Bits 29-16 (type and class) defined by Sercos Bits 15-0 status codes defined by the manufacturer Special case: When these bits (and all others) are zero, this means that no active diagnostics event is available.
	01	Completely manufacturer-specific	Bits 29-0 are defined by the manufacturer This bit combination is deprecated and should not be used for new implementations.

Bit	Value	Description	Comment
	10	Reserved	
	11	Standard	Bits 29-0 defined by Sercos
29-24		Bits 29 to 24 indicate the Sercos profile to which the diagnostic message belongs ("Source type")	
	0x00	FSP Drive	Other detailed drive-specific pieces of information see, for example, S-0-0011, S-0-0012
	0x01	FSP IO	Other detailed IO-specific pieces of information see, for example, under S-0-1500.x.32
	0x02	GDP	
	0x03	SCP	
	0x04	CSoS	
	0x05	FSP Encoder	For other detailed encoder-specific pieces of information, see, for example, under S-0-0600.x.1
	0x06	Safety Application	
	0x07	FSP Power Supply	
	0x08-0x20	Reserved	
	0x21	FSP IO sub-bus IO-Link	Other detailed IO-specific pieces of information see, for example, under S-0-1500.x.32
	0x22-0x2F	Reserved for other FSP IO sub-bus	
	0x30-0x3E	Reserved	
	0x3F	Unknown	
23-21		Reserved	
20		Bit 20 shows the diagnostic message status.	
	0	Diagnostic message is "Fxxxx" (error) type: The error cannot be cleared, because its cause has not yet been removed Diagnostic message is "Cxxxx" (command) type: The command is in process	
	1	Diagnostic message is "Fxxxx" (error) type: The error can be cleared Diagnostic message is "Cxxxx" (command) type: The command was terminated with error or completed without error	For the classes "Warning" (E) or "Operating state" (A), this bit is used in logging only. For further information, see S-0-1303.0.10

Bit	Value	Description	Comment
19-16		Bits 19 to 16 indicate the diagnostic message class, and thus, its priority.	
	0x0-0x9	Reserved	
	0xA	Operating state	Priority 4 (lowest) Used to inform about messages related to the operating state or other types of information (e.g., Drive HALT).
	0xB	Reserved	
	0xC	Command / command error	Priority 3 Used to inform about diagnostics events occurring during the execution of a command.
	0xD	Reserved	
	0xE	Warning (C2D)	Priority 2
	0xF	Error (C1D)	Priority 1 (highest) Has to be confirmed with "S-0-0099, Reset Class 1 diagnostics".
15-0		Bits 15 to 0 indicate the status code of the diagnostic message.	

▼ CiA error code

(Attribute is only listed if relevant to the diagnostic message)

A specific CANopen error code has been defined for each relevant diagnostic number of ctrlX DRIVE.

▼ J1939: "Failure Mode Identifier"

(Attribute is only listed if relevant to the diagnostic message)

The "Failure Mode Identifier" (FMI) shows the kind and type of error that occurred, e.g. exceeding or falling below value ranges, short circuits at the sensor, wrong update rate or calibration error.

▼ J1939: "Suspect Parameter Number"

(Attribute is only listed if relevant to the diagnostic message)

The "Suspect Parameter Number" (SPN) is a number defined in the SAE J1939 standard and contains a single parameter (e.g., motor speed) as a standardized signal. An SPN so to speak is a signal ID.

Documentations

Drive systems, system components

Documentations – Drive systems, System Components

Title	Type of documentation	Document type [1)]	Material number
ctrlX DRIVE Drive Systems	Project Planning Manual	DOK-XDRV**-X**********-PRxx-EN-P	R911386579

Title	Type of documentation	Document type	Material number
ctrlX DRIVE DC/DC Converter XMV	Application Manual	DOK-XDRV**-XMV********-APxx-EN-P	R911413650
Security Instructions Electric Drives and Controls	Project Planning Manual	DOK-IWORKS-SECURITY***-PRxx-EN-P	R911342562
Control Cabinet Air Conditioning, EMC, Design, IP Code, IndraDrive Electrics, Rexroth EFC/Fv, Sytronix	Project Planning Manual	DOK-DRIVE*-CABINET****-PRxx-EN-P	R911344988

1) In the document type codes, "xx" is a placeholder for the current edition of the documentation (e.g.: PR01 is the first edition of a Project Planning Manual)

Firmware/Runtime

Documentations – firmware

Title	Type of documentation	Document type [1)]	Material number
ctrlX DRIVE AXS-V-06 Functions	Application Manual	DOK-XDRV**-AXS-06VRS**-APxx-EN-P	R911425358
ctrlX DRIVE AXS-V-06 (CoE) Functions	Application Manual	DOK-XDRV**-AXS-06VRS*C-APxx-EN-P	R911425360
ctrlX DRIVE / eLION Diagnostic Messages of Runtime A*S-V-06RS	Reference Book	DOK-XDRV**-GEN6-DIAG**-RExx-EN-P	R911424817[2)]
ctrlX DRIVE / eLION Parameters/Objects of Runtime A*S-V-06RS	Reference Book	DOK-XDRV**-GEN6-PARA*C-RExx-EN-P	R911425449[2)]
ctrlX DRIVE AXS-V-05 Functions	Application Manual	DOK-XDRV**-AXS-05VRS**-APxx-EN-P	R911422255
ctrlX DRIVE AXS-V-05 (CoE) Functions	Application Manual	DOK-XDRV**-AXS-05VRS*C-APxx-EN-P	R911422257
ctrlX DRIVE Diagnostic Messages of Runtime AXS-V-05RS	Reference Book	DOK-XDRV**-GEN5-DIAG**-RExx-EN-P	R911422251[2)]
ctrlX DRIVE Parameters/Objects of Runtime AXS-V-05RS	Reference Book	DOK-XDRV**-GEN5-PARA*C-RExx-EN-P	R911422253[2)]
ctrlX DRIVE AXS-V-04 Functions	Application Manual	DOK-XDRV**-AXS-04VRS**-APxx-EN-P	R911421281
ctrlX DRIVE AXS-V-04 (CoE) Functions	Application Manual	DOK-XDRV**-AXS-04VRS*C-APxx-EN-P	R911421283
ctrlX DRIVE Diagnostic Messages of Runtime AXS-V-04RS	Reference Book	DOK-XDRV**-GEN4-DIAG**-RExx-EN-P	R911421277[2)]

Title	Type of documentation	Document type	Material number
ctrlX DRIVE Parameters/Objects of Runtime AXS-V-04RS	Reference Book	DOK-XDRV**-GEN4-PARA*C-RExx-EN-P	R911421279
ctrlX DRIVE AXS-V-03 Functions	Application Manual	DOK-XDRV**-AXS-03VRS**-APxx-EN-P	R911410073
ctrlX DRIVE AXS-V-03 (CoE) Functions	Application Manual	DOK-XDRV**-AXS-03VRS*C-APxx-EN-P	R911398021
ctrlX DRIVE Diagnostic Messages of Runtime AXS-V-03RS	Reference Book	DOK-XDRV**-GEN3-DIAG**-RExx-EN-P	R911409763 2)
ctrlX DRIVE Parameters of Runtime AXS-V-03RS	Reference Book	DOK-XDRV**-GEN3-PARA**-RExx-EN-P	R911409808 2)
ctrlX DRIVE Parameters/Objects of Runtime AXS-V-03RS	Reference Book	DOK-XDRV**-GEN3-PARA*C-RExx-EN-P	R911419643 2)
ctrlX DRIVE AXS-V-02 Functions	Application Manual	DOK-XDRV**-AXS-02VRS**-APxx-EN-P	R911398021
ctrlX DRIVE Diagnostic Messages of Runtime AXS-V-02RS	Reference Book	DOK-XDRV**-GEN2-DIAG**-RExx-EN-P	R911383776
ctrlX DRIVE Parameters of Runtime AXS-V-02RS	Reference Book	DOK-XDRV**-GEN2-PARA**-RExx-EN-P	R911383778

Legend:
1: *In the document typecodes, xx is a placeholder for the current edition of the documentation (e.g.: RE02 is the second edition of a Reference Book)*
2: *Link to the documentation on the "ctrlX AUTOMATION – Product Information" portal as an online help*

Functional safety

Documentations – functional safety

Title	Type of documentation	Document type 1)	Material number
ctrlX SAFETY "STO" (S-/P-Parameters) ctrlX DRIVE "2nd Generation"	Application Manual	DOK-XDRV**-SI-TX******-APxx-EN-P	R911383774
ctrlX SAFETY "STO" (CAN Parameters) ctrlX DRIVE "2nd Generation"	Application Manual	DOK-XDRV**-SI-TX***C**-APxx-EN-P	R911426739
ctrlX SAFETY "SafeMotion" (S-/P-Parameters) ctrlX DRIVEplus	Application Manual	DOK-XDRV**-SI-MX******-APxx-EN-P	R911404905
ctrlX SAFETY "SafeMotion" (CAN Parameters) ctrlX DRIVEplus	Application Manual	DOK-XDRV**-SI-MX***C**-APxx-EN-P	R911426737

1) In the document typecodes, xx is a placeholder for the current edition of the documentation (e.g.: AP02 is the second edition of an Application Manual)

Motors

Documentations – motors

Title	Type of documentation	Document typecode[1)]	Material number
MS2N Synchronous Servomotors	Project Planning Manual	DOK-MOTOR*-MS2N*******-PRxx-EN-P	R911347583
MS2S Synchronous Servomotors	Project Planning Manual	DOK-MOTOR*-MS2S*******-PRxx-EN-P	R911410075
MS2E Synchronous Servomotors acc. to ATEX Directive 2014/34/EU	Project Planning Manual	DOK-MOTOR*-MS2E*******-PRxx-EN-P	R911394140
MSK Synchronous Servomotors	Project Planning Manual	DOK-MOTOR*-MSK********-PRxx-EN-P	R911296289
MSK Synchronous Servomotors for Potentially Explosive Areas	Project Planning Manual	DOK-MOTOR*-MSK*EXGIIK3-PRxx-EN-P	R911312709
MKE Synchronous Motors Synchronous Servomotors acc. to ATEX Directive 2014/34/EU	Project Planning Manual	DOK-MOTOR*-MKE*GEN3***-PRxx-EN-P	R911411017
MAD / MAF Asynchronous Motors MAD / MAF	Project Planning Manual	DOK-MOTOR*-MAD/MAF****-PRxx-EN-P	R911295781
MLF Synchronous Linear Motors	Project Planning Manual	DOK-MOTOR*-MLF********-PRxx-EN-P	R911293635
ML3 Self-Cooled Linear Motors	Project Planning Manual	DOK-MOTOR*-ML3********-PRxx-EN-P	R911389760
MCL Ironless Linear Motors MCL	Project Planning Manual	DOK-MOTOR*-MCL********-PRxx-EN-P	R911330592

1) In the document type codes, "xx" is a placeholder for the current edition of the documentation (e.g.: PR01 is the first edition of a Project Planning Manual)

Cables

Documentations – Cables

Title	Type of documentation	Document type [1)]	Material number
ctrlX Motor Cables and Connectors	Reference Book	DOK-CONNEC-XDRV*******-RExx-EN-P	R911420100
Motor cables and connections with IndraDrive	Product information	DOK-CONNEC-MS2N*INDRV*-CAxx-EN-P	R911401938
Rexroth Connection Cables IndraDrive and IndraDyn	Selection Data	DOK-CONNEC-CABLE*INDRV-CAxx-EN-P	R911322949

1) In the document type codes, xx is a placeholder for the current edition of the documentation (e.g.: CA03 is the third edition of the Catalog documentation)

Service and support

Our worldwide service network provides an optimized and efficient support. Our experts provide you with advice and assistance. You can contact us **24/7 - including weekends and public holidays**.

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Tel:	**+49 9352 40 5060**
Fax:	**+49 9352 18 4941**
Email:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

Furthermore, please backup all parameters or generate a system report in ctrlX DRIVE Engineering (“Help”®“Generate system report”).

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