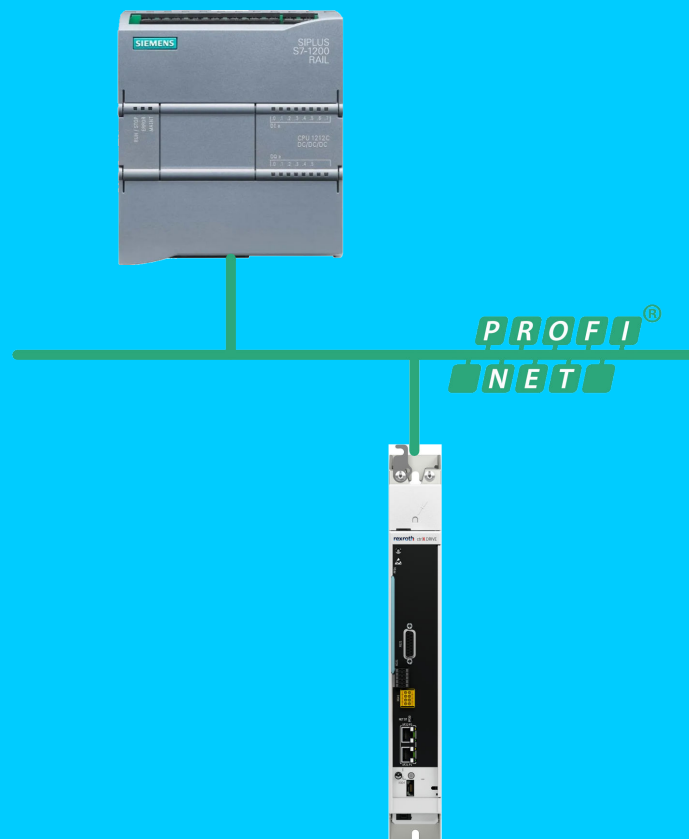


ctrlX DRIVE Siemens PROFINET

Drive-Controlled Positioning with Function Block



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DOK-XDRV**-TIA*_PN_DCP-RE01-EN-P

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1 Trademark information



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3 About this documentation

This documentation describes the PLC function block FB_TIA_PN_DCP_cXD.

The function block FB_TIA_PN_DCP_cXD enables the use of the positioning functions of ctrlX DRIVE drive controllers via PROFINET communication with Siemens TIA PLC CPUs.

Furthermore, this documentation describes the required settings in ctrlX DRIVE, the Siemens control and in the TIA Portal to be able to use the FB_TIA_PN_DCP_cXD function block.

Editions of this documentation

Edition	Release date	Comment
01	2023-12-06	First edition



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.

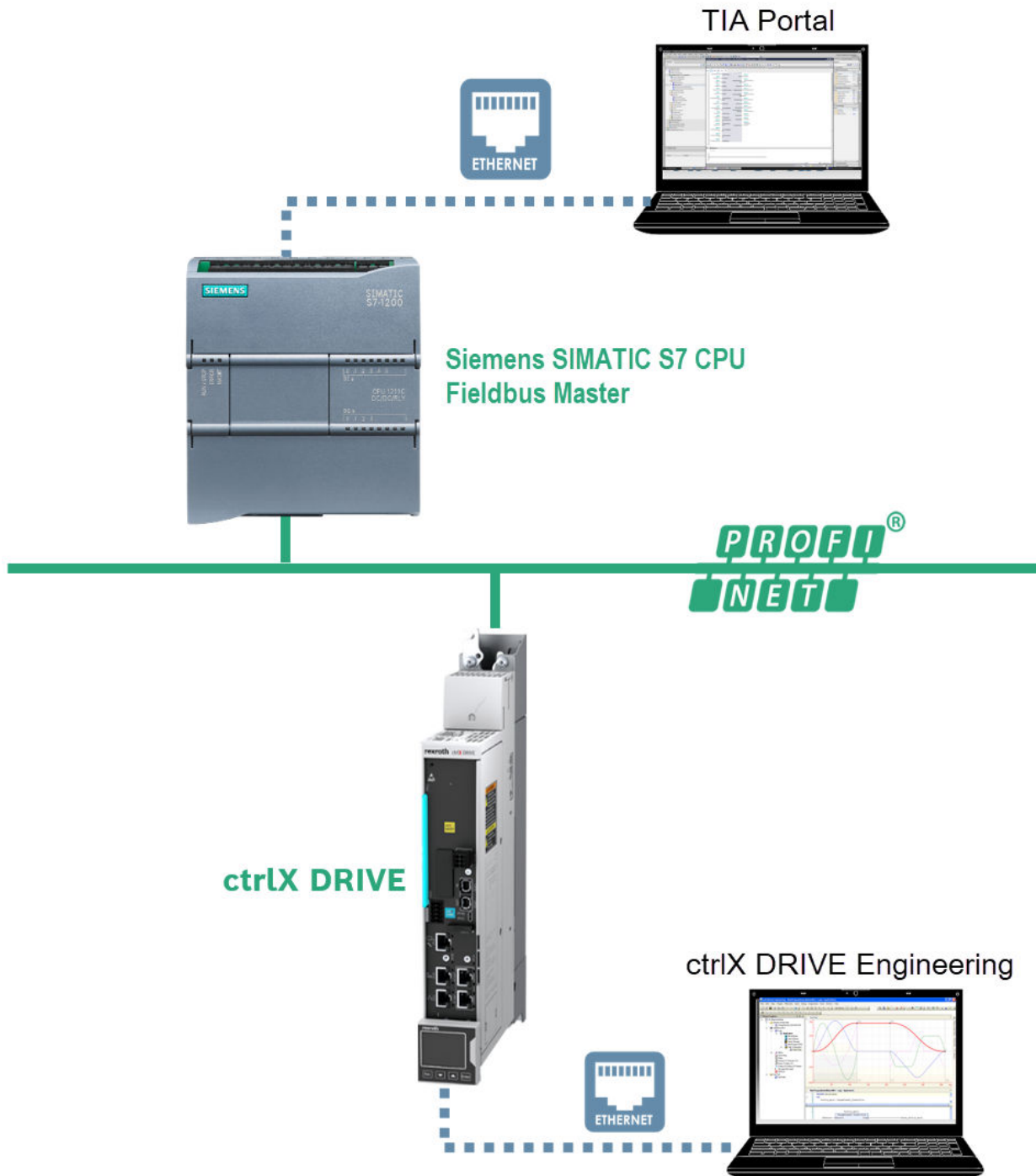
4 Configuration

4.1 Overview

The following chapters describe the required settings in ctrlX DRIVE, the Siemens control and in the TIA Portal to use the PLC function block

The figure shows a ctrlX DRIVE drive controller as PROFINET IO device with a Siemens control as PROFINET IO controller.

The initial configuration of ctrlX DRIVE is carried out with ctrlX DRIVE Engineering. The access to parameters and the operation of ctrlX DRIVE is carried out via the Siemens control and with the help of the PLC with the TIA Portal software.



4.2 Configuration – ctrlX DRIVE Engineering

The following paragraphs describe the required configuration of ctrlX DRIVE by means of ctrlX DRIVE Engineering.



See also Application Manual of firmware "Establishing a connection to the drive"

Prerequisites

- ctrlX DRIVE Engineering has been installed
- ctrlX DRIVE uses at least firmware AXS-V-0308 or newer

Configuring the master communication of ctrlX DRIVE

1. The master communication of ctrlX DRIVE has to be set to “PROFINET”.
Selecting the application profile:
 - AXS-V-0402 and below: “Sercos profile” has to be selected as application profile.
 - AXS-V-0404 and above: “FSP Drive profile” has to be selected as application profile.
 To change the master communication, restart ctrlX DRIVE.
 - ➔ Master communication and application profile have been configured.

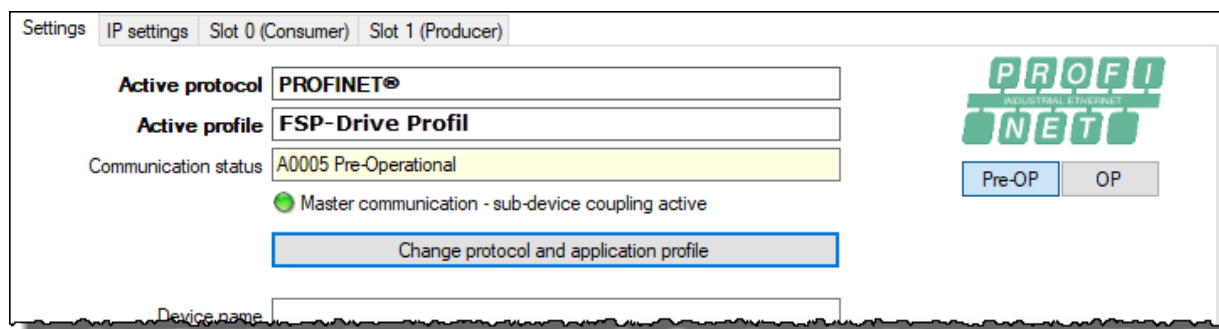


Fig. 1: Configuring the master communication

Configuring process data in AT and MDT

2. Configuring the parameters required for the [Example program](#) in the process data.
 - ➔ Process data to be configured in the AT:
 - S-0-0135, Servodrive profile: Status word
 - S-0-0144, Signal status word: Value
 - S-0-0386, Position controller: Position actual value
 - S-0-0535, Velocity controller: Velocity actual value
 - S-0-0390, Diagnostic message: Manufacturer status register

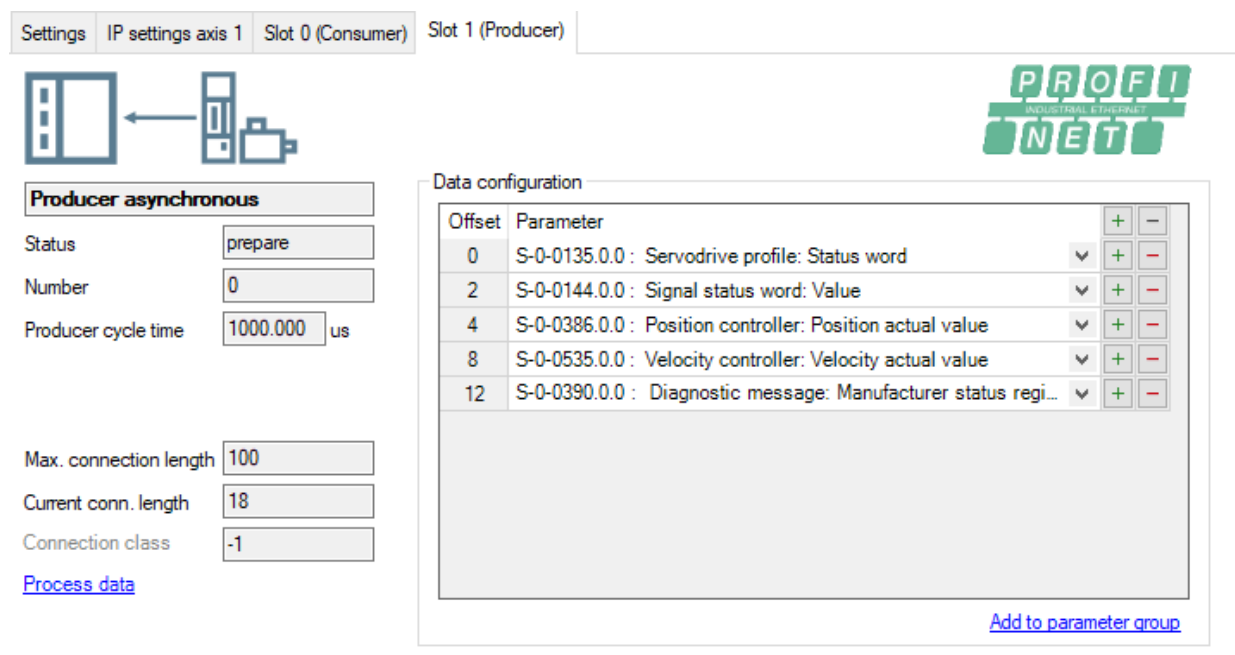


Fig. 2: Configuring process data in AT

Process data to be configured in the MDT:

- S-0-0134, Servodrive profile: Control word
- S-0-0145, Signal control word: Value
- S-0-0282, Drive-controlled positioning: Command value
- S-0-0259, Positioning profile: Profile velocity
- S-0-0260, Positioning profile: Acceleration
- S-0-0359, Positioning profile: Deceleration

Settings
IP settings axis 1
Slot 0 (Consumer)
Slot 1 (Producer)

Consumer asynch. (no watchdog)

Status: prepare
Number: 0
Producer cycle time: 1000.000 us
Allowed data losses: 2
Error counter: 0
Max. connection length: 100
Current conn. length: 22
Connection class: -1

[Process data](#)

Data configuration

Offset	Parameter		+	-
0	S-0-0134.0.0 : Servodrive profile: Control word	▼	+	-
2	S-0-0145.0.0 : Signal control word: Value	▼	+	-
4	S-0-0282.0.0 : Drive-controlled positioning: Command value	▼	+	-
8	S-0-0259.0.0 : Positioning profile: Profile velocity	▼	+	-
12	S-0-0260.0.0 : Positioning profile: Acceleration	▼	+	-
16	S-0-0359.0.0 : Positioning profile: Deceleration	▼	+	-

[Add to parameter group](#)

Fig. 3: Configuring process data in MDT

Configuring the signal control word

3. ➤ Configuring the target parameters and bit numbers in "S-0-0145, Signal control word: Value".

Status	Target parameter	Bit number
Bit 0: <input type="radio"/>	S-0-0346.0.0: Drive-controlled positioning: Control word	0
Bit 1: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 2: <input type="radio"/>	S-0-0148.0.0: Homing control: C0600 Command drive-controlled procedure	0
Bit 3: <input type="radio"/>	S-0-0346.0.0: Drive-controlled positioning: Control word	3
Bit 4: <input type="radio"/>	S-0-0346.0.0: Drive-controlled positioning: Control word	5
Bit 5: <input type="radio"/>	S-0-0099.0.0: Class 1 diagnostics: C0500 Reset command	0
Bit 6: <input type="radio"/>	S-0-0346.0.0: Drive-controlled positioning: Control word	1
Bit 7: <input type="radio"/>	S-0-0346.0.0: Drive-controlled positioning: Control word	2
Bit 8: <input type="radio"/>	S-0-0420.0.0: Subdevice STM: C0400 Activate configuration mode	0
Bit 9: <input type="radio"/>	S-0-0422.0.0: Subdevice STM: C0200 Activate operation mode	0
Bit 10: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 11: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 12: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 13: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 14: <input type="radio"/>	S-0-0000.0.0: <empty>	0
Bit 15: <input type="radio"/>	S-0-0447.0.0: Set absolute position function: C0300 Command procedure	0

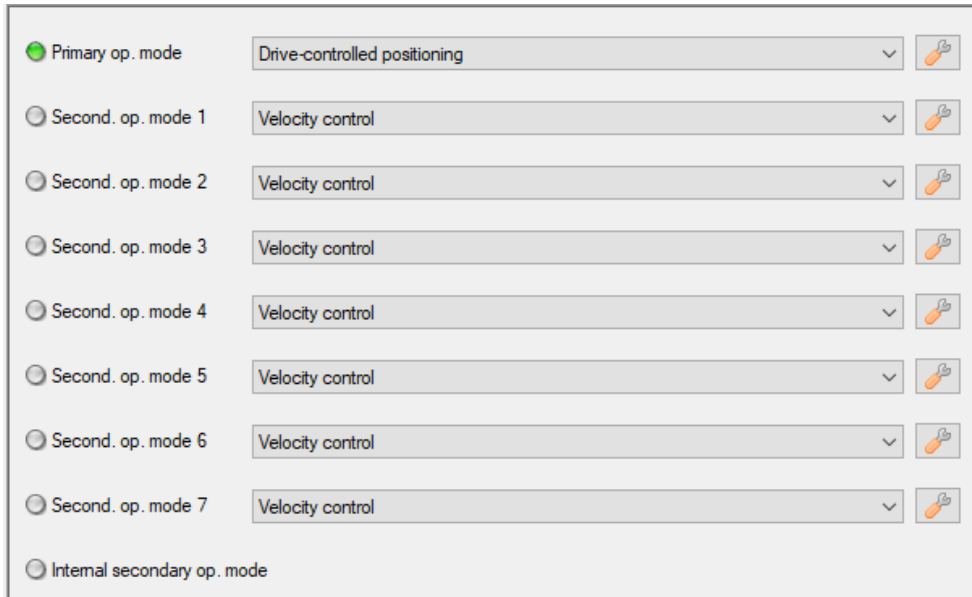
Configuring the signal status word









4. ➤ Configuring the source parameters and bit numbers in "S-0-0144, Signal status word: Value".

Status	Source parameter	Bit number
Bit 0: <input type="radio"/>	S-0-0424.0.0: Subdevice STM: Status, parameterization mode	0
Bit 1: <input checked="" type="radio"/>	S-0-0424.0.0: Subdevice STM: Status, parameterization mode	1
Bit 2: <input type="radio"/>	S-0-0437.0.0: Positioning status: Word	2
Bit 3: <input type="radio"/>	S-0-0419.0.0: Drive-controlled positioning: Command acknowledgment	0
Bit 4: <input type="radio"/>	S-0-0331.0.0: Velocity status: Actual value = 0	0
Bit 5: <input type="radio"/>	P-0-0115.0.0: Axis state machine: Status word, axis	5
Bit 6: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 7: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 8: <input type="radio"/>	P-0-0110.0.0: Axis state machine: Status word 2, axis	7
Bit 9: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 10: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 11: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 12: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 13: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 14: <input type="radio"/>	S-0-0000.0.0: <no signal>	0
Bit 15: <input type="radio"/>	S-0-0000.0.0: <no signal>	0

Setting the operation mode

5. Setting the operation mode (P-0-0115)



<input checked="" type="radio"/> Primary op. mode	Drive-controlled positioning	
<input type="radio"/> Second. op. mode 1	Velocity control	
<input type="radio"/> Second. op. mode 2	Velocity control	
<input type="radio"/> Second. op. mode 3	Velocity control	
<input type="radio"/> Second. op. mode 4	Velocity control	
<input type="radio"/> Second. op. mode 5	Velocity control	
<input type="radio"/> Second. op. mode 6	Velocity control	
<input type="radio"/> Second. op. mode 7	Velocity control	
<input type="radio"/> Internal secondary op. mode		

4.3 Configuration - Siemens TIA Portal

The following paragraphs describe the required configuration of ctrlX DRIVE in the Siemens TIA Portal.



For questions about the TIA Portal, please refer to the TIA Portal help.

Prerequisites

- TIA Portal has been installed
- Siemens control SIMATIC S7-1200 or SIMATIC S7-1500 is available

1. Start TIA Portal.


Make sure that ctrlX DRIVE is available in the hardware catalog of the TIA Portal

2. ctrlX DRIVE has to be included in the hardware catalog of the TIA Portal.

If ctrlX DRIVE is not available in the hardware catalog of the TIA Portal, the GSDML file of ctrlX DRIVE has to be installed. Alternatively, the provided example program can be opened. ctrlX DRIVE then is automatically available in the hardware catalog of the TIA Portal.

To manually install the GSDML file of ctrlX DRIVE, proceed as follows:

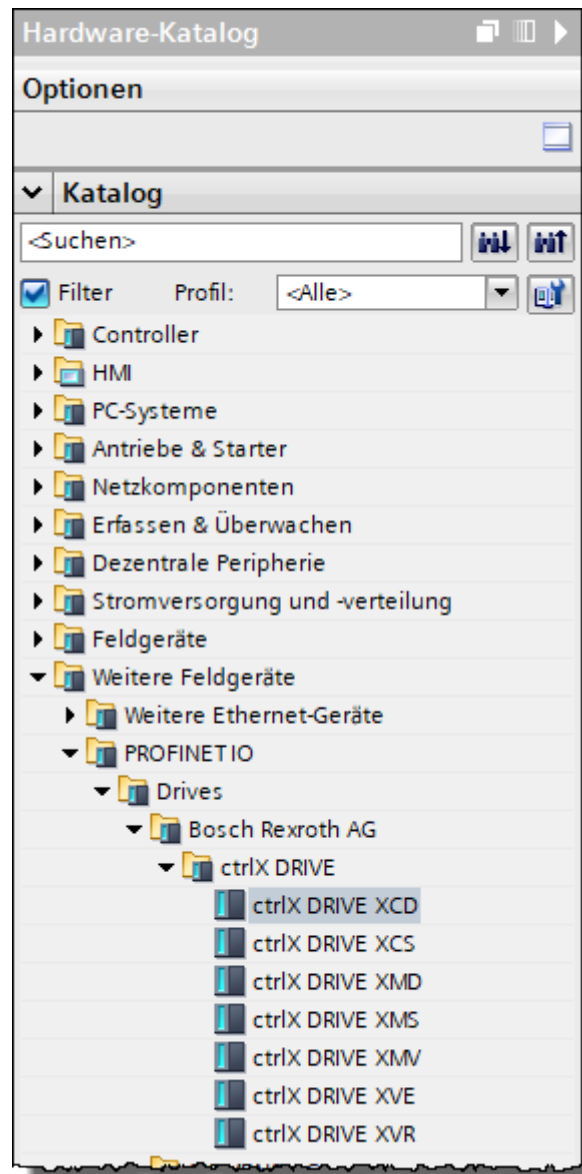
1. The GSDML file of ctrlX DRIVE is included in the ZIP archive. Unpack the ZIP archive.

 The GSDML files are also included in the installation directory of ctrlX DRIVE Engineering or ctrlX WORKS. To go directly to the installation directory of ctrlX DRIVE Engineering, call the “Help → Device data sheets” menu in ctrlX DRIVE Engineering.

If the TIA software is changed, this also has to be adjusted:

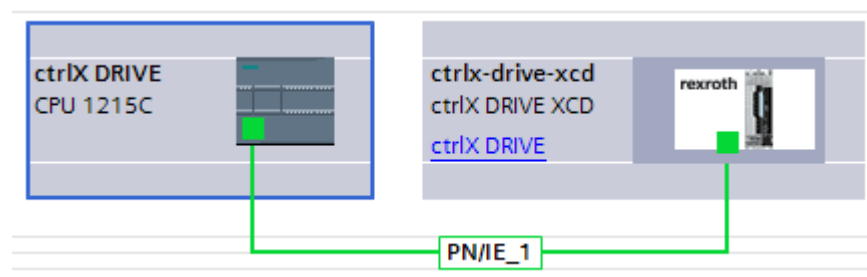
2. Install the GSDML in the TIA Portal (for the required steps, please see the Help of the TIA Portal).

➔ ctrlX DRIVE is available in the hardware catalog of the TIA Portal.



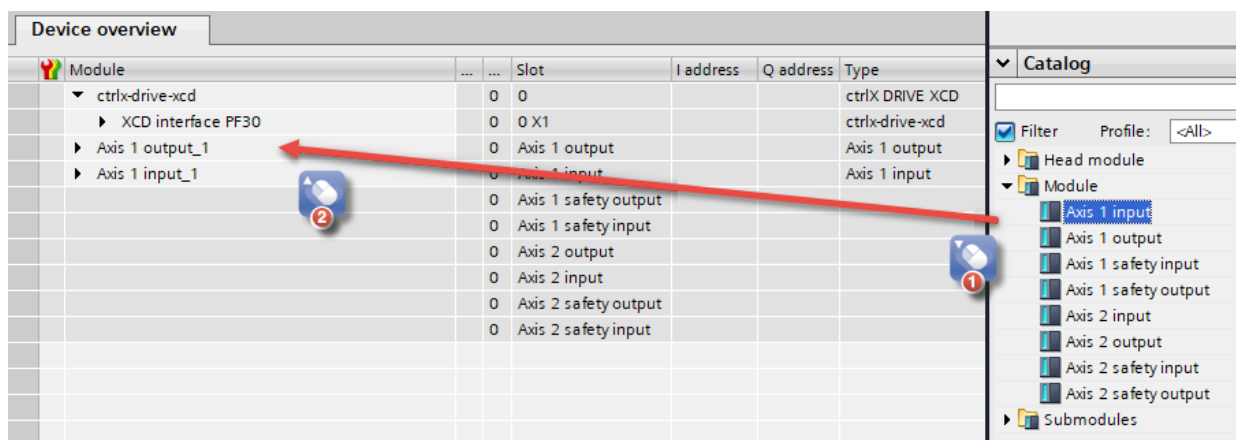
Network configuration

3. ➤ ctrlX DRIVE is configured as PROFINET IO device in the PROFINET network. The parameters in the cyclic data channel (AT and MDT) are predefined as input and output modules in the hardware catalog.
 - ➔ The network connection is as shown in the exemplary figure.



ctrlX DRIVE configuration – Adding input and output modules

4. The input and output modules in the hardware catalog are to be added to ctrlX DRIVE.
 - ➔ The input and output modules are mapped.



ctrlX DRIVE configuration – Address assignment

5. To be able to access the input and output modules with the help of the function block and to exchange data, it is necessary to assign the addresses to the structures of the input and output modules.

- ➔ The following figure shows the use of the "I_address" and "Q_address" values as they are configured in ctrlX DRIVE.

Important: For "I_address" and "Q_address", the address numbers have to have the order shown.

- Control word (Axis 1 output_1): S-0-0134 and S-0-0145
- Status word (Axis 1 input_1): S-0-0135 and S-0-0144
- Command values: S-0-0282, S-0-0259, S-0-0260 and S-0-0359
- Actual values: S-0-0386 and S-0-0535
- Diagnostics: S-0-0390

ⓘ "Axis 1 output_1" and "Axis 1 input_1" are slots at the Siemens TIA PLC CPU.

The I- and Q-addresses have to be linked to the function block by means of variables:

- Variable In_InADDR WORD %68.0 → FB.stInputDrive
- Variable In_OutADDR WORD %68.0 → FB.stOutputDrive

To correctly declare the variables, please observe ➔ [Table 1 Interface variables of the FB_TIA_PN_DCP_cXD function block on page 20.](#)

TIA PN_DCP_cXD_V17 > CPU1500 [CPU 1515-2 PN] > PLC tags > Default tag table [105]

Tags User constants System constants

Device overview

Module

Module	Slot	I address	Q address	Type
ctrlx-drive-xcd	0	0		ctrlx DRIVE XCD
XCD interface PF30	0	0 X1		ctrlx-drive-xcd
Axis 1 output_1	0	Axis 1 output 1	20..21	Axis 1 output
S-0-0134.0.0: Master control word	0	Axis 1 output 1	20..21	S-0-0134.0.0: Master control word
S-0-0145.0.0: Signal control word	0	Axis 1 output 2	22..23	S-0-0145.0.0: Signal control word
S-0-0282.0.0: Positioning command value	0	Axis 1 output 3	24..27	S-0-0282.0.0: Positioning command value
S-0-0259.0.0: Positioning velocity	0	Axis 1 output 4	28..31	S-0-0259.0.0: Positioning velocity
S-0-0260.0.0: Positioning acceleration	0	Axis 1 output 5	32..35	S-0-0260.0.0: Positioning acceleration
S-0-0359.0.0: Positioning deceleration	0	Axis 1 output 6	36..39	S-0-0359.0.0: Positioning deceleration
Axis 1 input_1	0	Axis 1 input 1	16..17	Axis 1 input
S-0-0135.0.0: Drive status word	0	Axis 1 input 1	16..17	S-0-0135.0.0: Drive status word
S-0-0144.0.0: Signal status word	0	Axis 1 input 2	18..19	S-0-0144.0.0: Signal status word
S-0-0386.0.0: Active position feedback value	0	Axis 1 input 3	20..23	S-0-0386.0.0: Active position feedback value
S-0-0535.0.0: Active velocity feedback value	0	Axis 1 input 4	24..27	S-0-0535.0.0: Active velocity feedback value
S-0-0390.0.0: Diagnostic message number	0	Axis 1 input 5	28..31	S-0-0390.0.0: Diagnostic message number

Default tag table

Name	Data type	Address	Retain	Access	Write	Visible	Supervisory
sPosCmd	Real	%MD2					
sVelCmd	Real	%MD6					
sAccCmd	Real	%MD10					
sDecCmd	Real	%MD14					
srPosScalingFactor	Real	%MD18					
srVelScalingFactor	Real	%MD22					
oDriveOperatingMode	Bool	%MD27.0					
oDriveEnabled	Bool	%MD7.1					
oMainMode	Bool	%MD7.2					
oHomingAck	Bool	%MD7.3					
oInPos	Bool	%MD7.4					
oNewValuePossible	Bool	%MD7.5					
oSetPosAck	Bool	%MD7.6					
oHardwareLock	Bool	%MD7.7					
oCommandChanged	Bool	%MD8.0					
oDriveWarning	Bool	%MD8.1					
oDriveError	Bool	%MD8.2					
oInStandstill	Bool	%MD8.3					
oDriveDiagnosis	Dint	%MD29					
oPosAct	Real	%MD34					
oVelAct	Real	%MD38					
DriveData_Output	*stControlWord_DCP_cXD*	%Q20.0					
Tag_01	Bool	%M45.0					
DriveData_Input	*stStatusWord_DCP_cXD*	%I16.0					
srAccDecScalingFactor	Real	%MD49					

5 Description of the FB_TIA_PN_DCP_cXD function block

Brief description

The function block FB_TIA_PN_DCP_cXD facilitates the use of the positioning functions of ctrlX DRIVE drive controllers via PROFINET communication with Siemens TIA PLC CPUs.

The drive controller only executes the position control when the "MainMode" is active.

The parameters required by the function block are exchanged as cyclic data (AT and MDT), via the "stStatusWord_cXD" and "stControlWord_cXD" structures.

The command values and actual values are scaled with the help of the "PosScalingFactor", "AccDecScalingFactor" and "VelScalingFactor" factors.

The function block can be used from firmware version AXS-V-0308 with ctrlX DRIVE.



Interface description

Function blocks programmed in the programming languages SCL (Structured Control Language) or GRAPH cannot be switched.

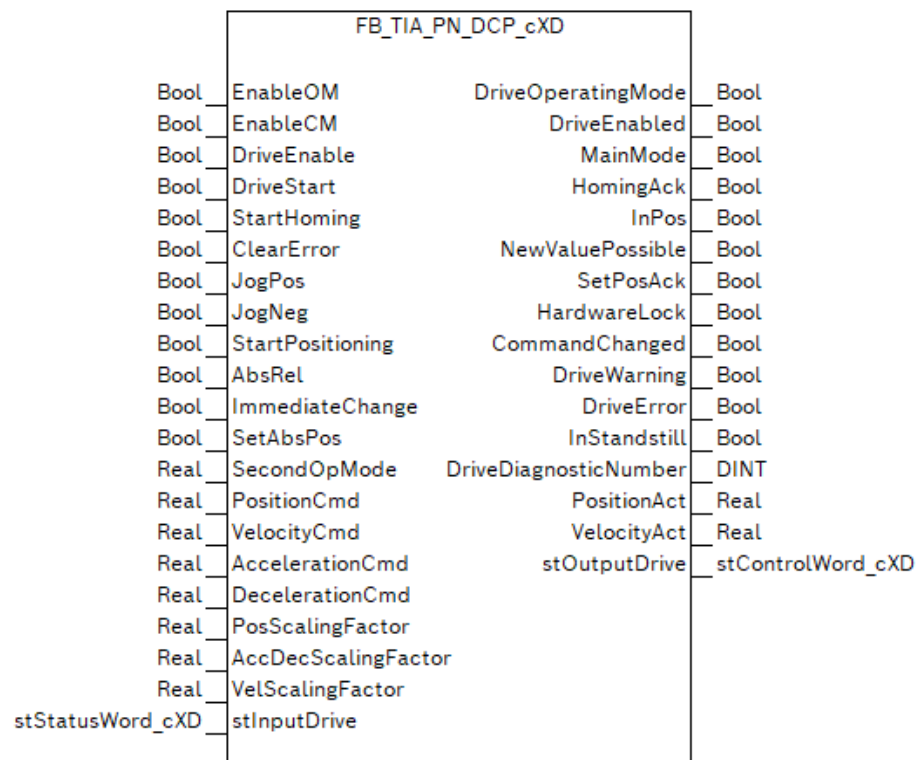


Fig. 4: FB_TIA_PN_DCP_cXD function block

Table 1: Interface variables of the FB_TIA_PN_DCP_cxD function block

I/O type	Name	Data type	Description
VAR_INPUT	EnableOM	BOOL	Switch ctrlX DRIVE to operating mode (PM→OM)
	EnableCM	BOOL	Switch ctrlX DRIVE to configuration mode (OM→CM)
	DriveEnable	BOOL	Enabling ctrlX DRIVE (→) S-0-0134, bit 14 Command "Power On", which switches to "AH"
	DriveStart	BOOL	Command "Operating mode", ctrlX DRIVE switches to "AF"
	StartHoming	BOOL	With rising edge, homing of ctrlX DRIVE is started
	ClearError	BOOL	With rising edge, the command "Clear error" is executed in ctrlX DRIVE
	JogPos	BOOL	Positioning mode "Infinite travel" (jog mode) in positive direction
	JogNeg	BOOL	Positioning mode "Infinite travel" (jog mode) in negative direction
	StartPositioning	BOOL	New commanded values are applied with rising edge
	AbsRel	BOOL	Switching between "Absolute commanding" and "Relative commanding" <ul style="list-style-type: none"> ● FALSE: "Absolute commanding" ● TRUE: "Relative commanding"
	ImmediateChange	BOOL	New commanded values become valid immediately if "TRUE"
	SetAbsPos	BOOL	Setting the absolute value
	SecondOpMode	BOOL	Switching to the second operation mode
	PositionCmd	Real	Positioning command value (S-0-0282)
	VelocityCmd	Real	Positioning velocity (S-0-0259)
	AccelerationCmd	Real	Positioning acceleration (S-0-0260)
	DecelerationCmd	Real	Positioning deceleration (S-0-0359)
	PosScalingFactor	Real	Scaling for the position value (S-0-0078) (default value: 100)
	AccDecScalingFactor	Real	Scaling for acceleration and deceleration value (S-0-0162) (default value: 100)
	VelScalingFactor	Real	Scaling for the velocity value (S-0-0046) (default value: 100)
	stInputDrive	stStatusWord_cxD	Input structure for the current values of ctrlX DRIVE
VAR_OUTPUT	DriveOperatingMode	BOOL	ctrlX DRIVE is in operating mode (OM) <ul style="list-style-type: none"> ● FALSE: PM ● TRUE: OM
	DriveEnabled	BOOL	ctrlX DRIVE with power on, with torque
	MainMode	BOOL	Primary operation mode active and ctrlX DRIVE follows the commanded value
	HomingAck	BOOL	ctrlX DRIVE has been homed
	InPos	BOOL	ctrlX DRIVE in position, last commanded value reached
	NewValuePossible	BOOL	ctrlX DRIVE is ready for new commanded values, this can be realized with a rising edge at the "StartPositioning" input
	SetPosAck	BOOL	Position command value reached

I/O type	Name	Data type	Description
	HardwareLock	BOOL	Locked by hardware (P-0-0110, bit 7) <ul style="list-style-type: none"> FALSE: The axis is not locked by hardware inputs or safety inputs. TRUE: The axis is locked due to a hardware input.
	CommandChanged	BOOL	Command change bit (P-0-0115, bit 5) <ul style="list-style-type: none"> FALSE: No change in command state TRUE: Command state has changed
	DriveWarning	BOOL	Class 2 diagnostics, warning S-0-0012
	DriveError	BOOL	Class 1 diagnostics, error S-0-0011
	InStandstill	BOOL	ctrlX DRIVE has been stopped (current velocity < velocity window)
	DriveDiagnostic-Number	DINT	ctrlX DRIVE diagnostic number from S-0-0390
	PositionAct	REAL	Active actual position value (S-0-0386)
	VelocityAct	REAL	Actual velocity value (S-0-0040)
	stOutputDrive	stControlWord_cxD	Output structure for the current values of ctrlX DRIVE

Minimum, maximum and default values

The values of the function block inputs are applied continuously.

The default value for inputs with the data type "BOOL" is "FALSE"; for inputs with the data type "REAL" it is "0".

Functional description

The function block FB_TIA_PN_DCP_cxD facilitates the use of the positioning functions of ctrlX DRIVE drive controllers via PROFINET communication with Siemens TIA PLC CPUs.

Various values can be commanded at the function block inputs and can be specified in the control word.

The actual values and the status word of ctrlX DRIVE are evaluated and displayed at the function block outputs.

Supported functions

- Drive-controlled positioning** (the main function of the function block)

Before drive-controlled positioning is started with a rising edge at the "StartPositioning" input, the values for position "PositionCmd", velocity "VelocityCmd", acceleration "AccelerationCmd" and deceleration "DecelerationCmd" have to be checked.

The resolution of the position value "PosScalingFactor", the acceleration and deceleration value "AccDecScalingFactor" and the velocity value "VelScalingFactor" are used within the function block to scale the position, the acceleration/deceleration and the velocity.

The motion control of ctrlX DRIVE to the specified position at "PositionCmd" only starts if the two inputs "JogPos" and "JogNeg" have been set to "FALSE".
- Position-controlled jog mode**

With the function block inputs "JogPos" and "JogNeg", ctrlX DRIVE can be continuously moved in positive or negative direction.

At the "VelocityCmd" input, the velocity has to be specified.

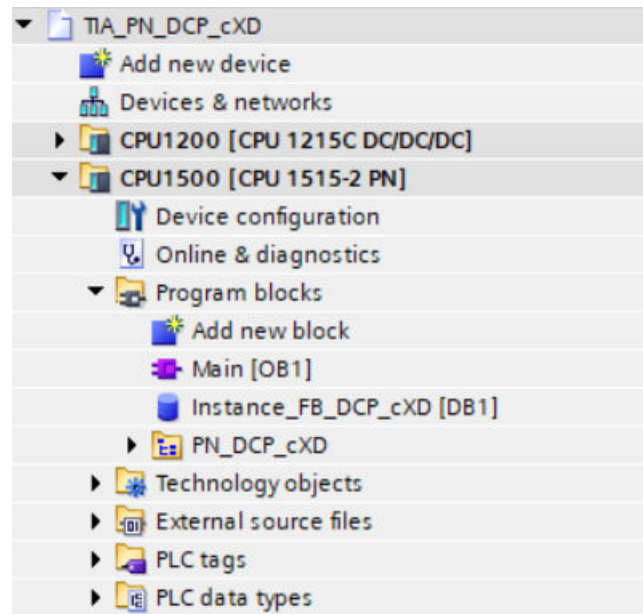
Non-functional criteria: The parameters (limit values) and the cyclic data (AT and MDT) have been configured and parameterized in ctrlX DRIVE.











































6 Example program

Description

The example shows the use of the FB_TIA_PN_DCP_cXD function block at the SIMATIC S7-1200 and SIMATIC S7-1500 controls in the different operation modes.

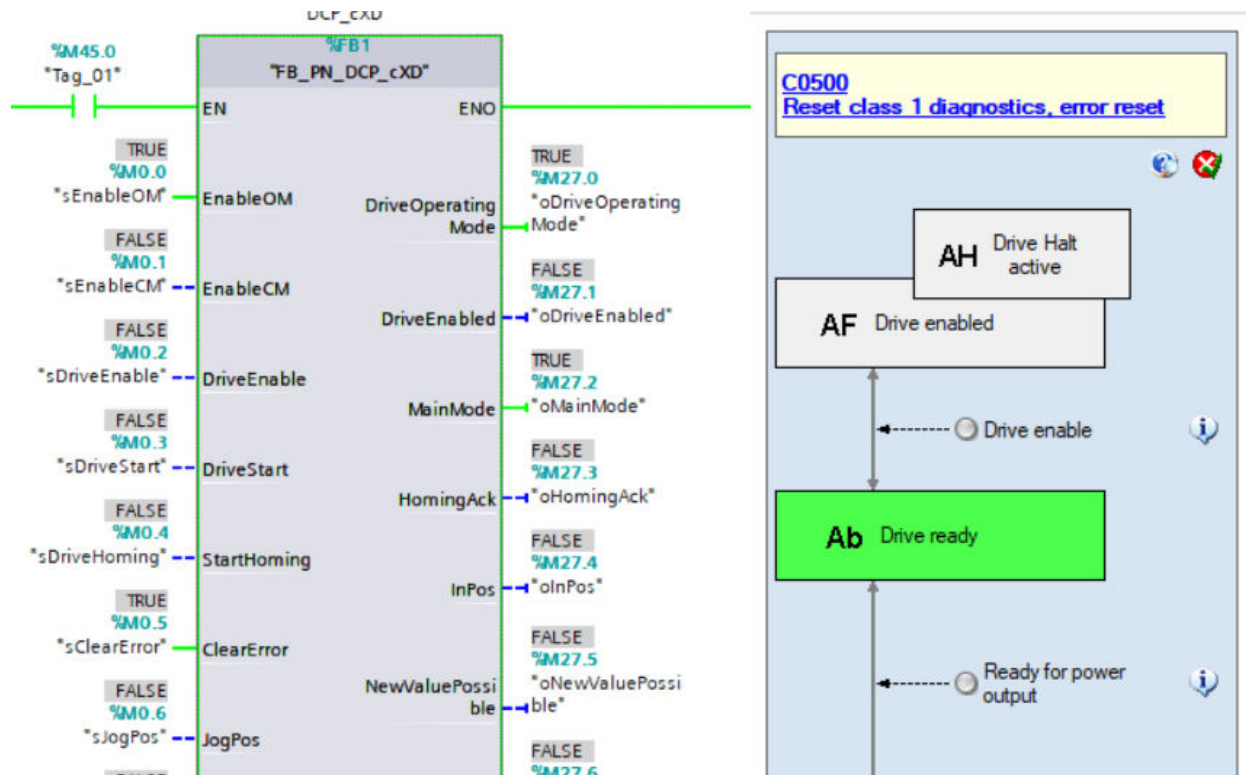
The main program "OB1" contains an instance "DB1" of the FB_TIA_PN_DCP_cXD function block with the I/O image link to ctrlX DRIVE.



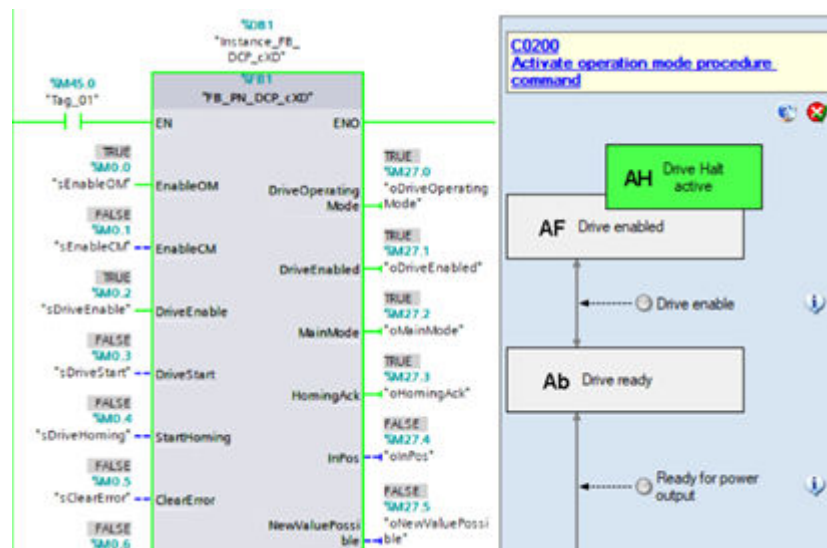
Default tag table								
	Name	Data type	Address	Retain	Acces...	Writa...	Visibl...	Supervision
1	 sEnableOM	Bool	%M0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2	 sEnableCM	Bool	%M0.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3	 sDriveEnable	Bool	%M0.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4	 sDriveStart	Bool	%M0.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5	 sDriveHoming	Bool	%M0.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
6	 sClearError	Bool	%M0.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
7	 sJogPos	Bool	%M0.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
8	 sJogNeg	Bool	%M0.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9	 sNewValue	Bool	%M1.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
10	 sAbs_Rel	Bool	%M1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
11	 sImmediateChange	Bool	%M1.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
12	 sSetAbsPos	Bool	%M1.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
13	 sSecondOperationMode	Bool	%M1.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
14	 sPosCmd	Real	%MD2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
15	 sVelCmd	Real	%MD6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
16	 sAccCmd	Real	%MD10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
17	 sDecCmd	Real	%MD14	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
18	 srPosScalingFactor	Real	%MD18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
19	 srVelScalingFactor	Real	%MD22	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
20	 srAccDecScalingFactor	Real	%MD49	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
21	 oDriveOperatingMode	Bool	%M27.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
22	 oDriveEnabled	Bool	%M27.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
23	 oMainMode	Bool	%M27.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
24	 oHomingAck	Bool	%M27.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
25	 oInPos	Bool	%M27.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
26	 oNewValuePossible	Bool	%M27.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
27	 oSetPosAck	Bool	%M27.6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
28	 oHardwareLock	Bool	%M27.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
29	 oCommandChanged	Bool	%M28.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
30	 oDriveWarning	Bool	%M28.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
31	 oDriveError	Bool	%M28.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
32	 oInStandstill	Bool	%M28.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
32	 oInStandstill	Bool	%M28.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
33	 oDriveDiagnosis	DInt	%MD29	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
34	 oPosAct	Real	%MD34	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
35	 oVelAct	Real	%MD38	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
36	  DriveData_Output	*stControlWord...	%Q0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
37	 Tag_01	Bool	%M45.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
38	  DriveData_Input	*stStatusWord_...	%I0.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
39	 <Add new>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Switching the drive to AF

A rising edge at input "ClearError" clears all current errors at ctrlX DRIVE. If the configuration is correct, ctrlX DRIVE now is in the "Ab" (Drive ready) state.

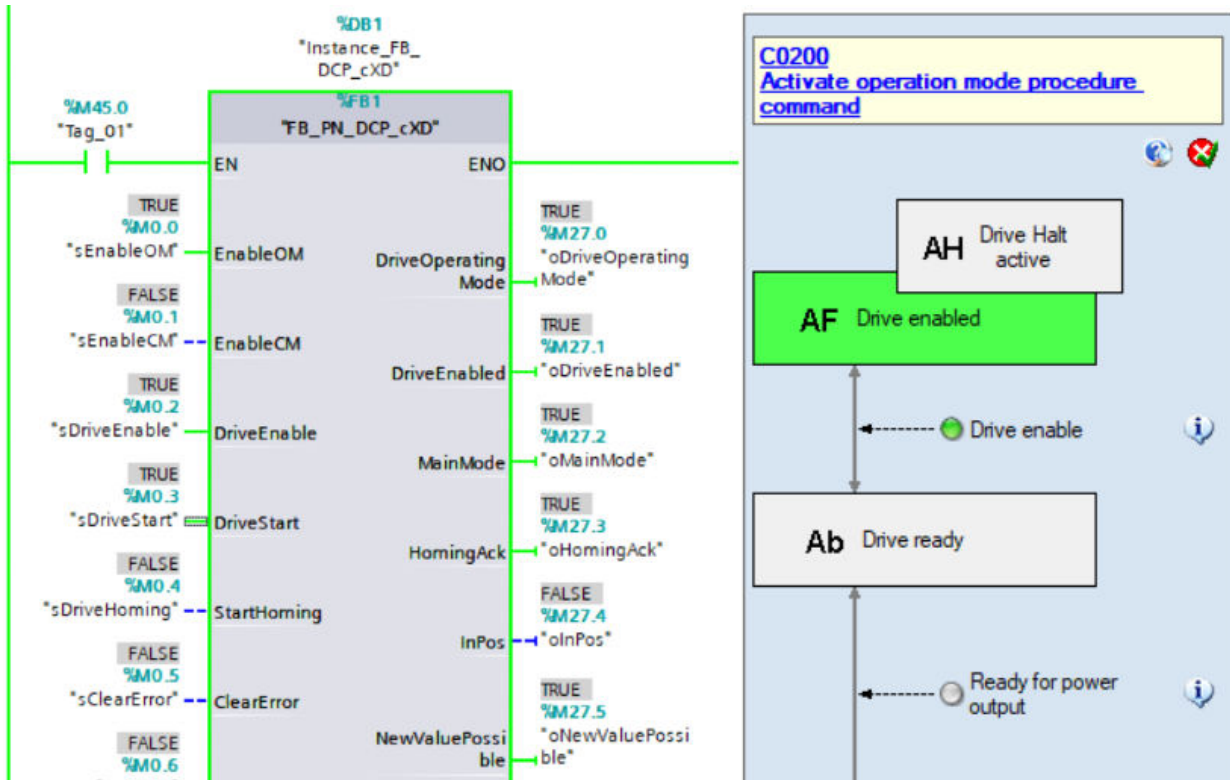


To switch to "AH" (Drive Halt), set the inputs "EnableOM"="TRUE", "DriveEnable"="TRUE" and "DriveStart"="FALSE".



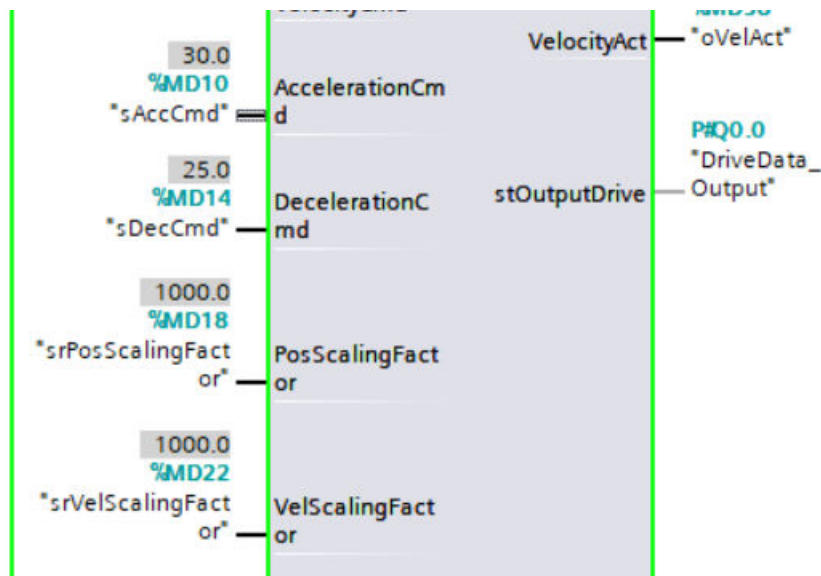
If ctrlX DRIVE is in "AH" (Drive Halt), use "DriveStart"="TRUE" to switch ctrlX DRIVE to "AF" (Drive enabled).

The "AF" state is the prerequisite to move the axis of ctrlX DRIVE in jog mode or by position specification.



ctrlX DRIVE "jogging"

Before the axis of ctrlX DRIVE can be moved in jog mode, the resolution for the position value, the velocity value, the positioning acceleration and the positioning deceleration has to be specified.



If the velocity is specified in "VelocityCmd=30", use "JogPos"="TRUE" to traverse in positive direction and use "JogNeg"="TRUE" to traverse in negative direction.

ctrlX DRIVE position-guided "jogging"

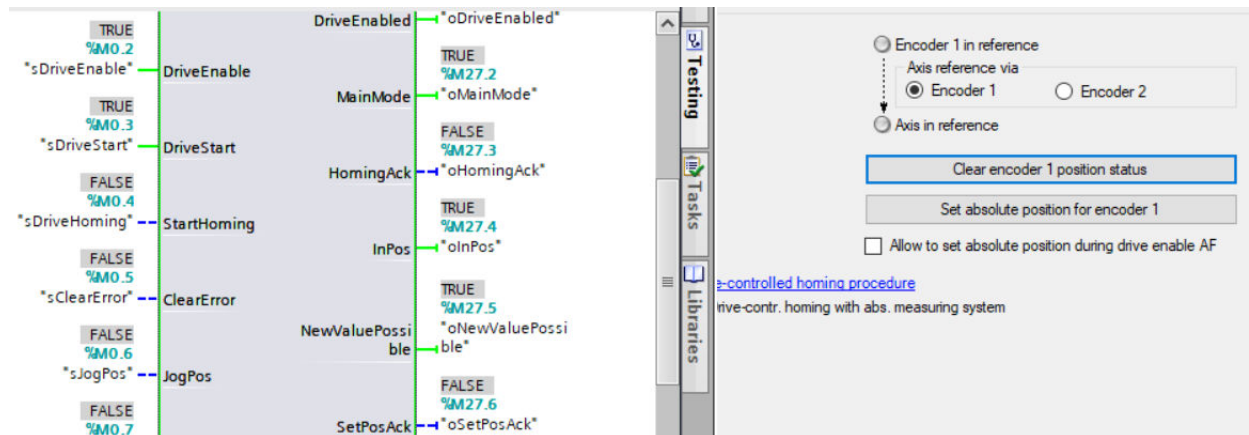
In contrast to "jogging", a position has to be specified for the position-guided "jogging" in "PositionCmd". With a rising edge at "StartPositioning"="TRUE", the axis of ctrlX DRIVE moves to the position.

Homing ctrlX DRIVE

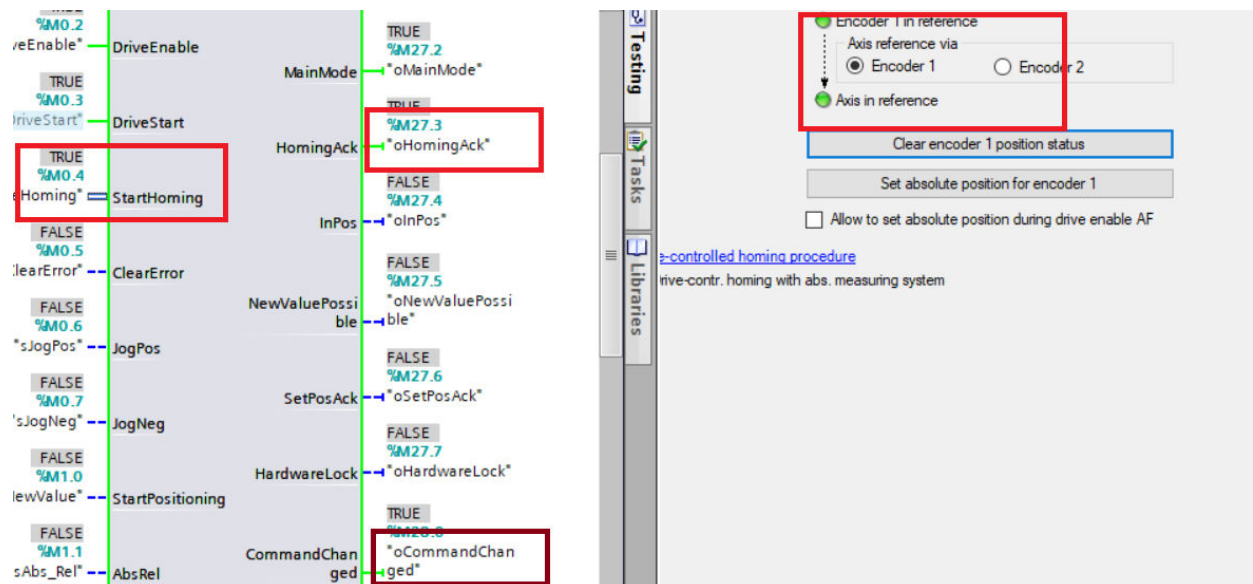


Before the function block can be used to start homing ctrlX DRIVE, cancel the reference point (command C1500) by means of ctrlX DRIVE Engineering.

See also Application Manual of firmware "Establishing the position data reference".



Homing can then be started with a rising edge at "StartHoming"="TRUE". Homing is acknowledged with "HominAck"="TRUE" and "CommandChanged"="TRUE".



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