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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

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
<i>In V/Hz (U/f) operation:</i> 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
<i>In V/Hz (U/f) operation:</i> 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 / --)]
<i>In V/Hz (U/f) operation:</i> The motor is accelerated very slowly out of the standstill range ($< 1 \text{ Hz/s}^2$) 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.

Cause	Remedy
<i>In FOC or SVC operation:</i> 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 / --)
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.

Cause	Remedy
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](#)