



Compact Operating Instructions



MOVIAxis[®] Multi-Axis Servo Inverter





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1 General Information

1.1 *Scope of this documentation*

This documentation comprises the general safety notes and a selected information regarding the MOVIAXIS® multi-axis servo inverter.

- Please note that this documentation does not replace the detailed operating instructions.
- Read the detailed operating instructions before you start working with MOVIAXIS®.
- Observe the information, instructions and notes in the detailed operating instructions. This is essential for fault-free operation of the unit and fulfillment of any rights to claim under guarantee.
- The enclosed CD or DVD contains PDF files of the additional operating instructions as well as further MOVIAXIS® documentation.
- All technical documentation from SEW-EURODRIVE is available for download in PDF on the SEW-EURODRIVE website: www.sew-eurodrive.com



1.2 Structure of the safety notes

The safety notes in these operating instructions are designed as follows:

Pictogram 	 SIGNAL WORD Type and source of danger. Possible consequence(s) if disregarded. • Measure(s) to prevent the danger.
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Pictogram	Signal word	Meaning	Consequences if disregarded
Example:  General danger  Specific danger, e.g. electric shock	 DANGER	Imminent danger	Severe or fatal injuries
	 WARNING	Possible dangerous situation	Severe or fatal injuries
	 CAUTION	Possible dangerous situation	Minor injuries
	NOTICE	Possible damage to property	Damage to the drive system or its environment
	INFORMATION	Useful information or tip. Simplifies the handling of the drive system.	



2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation or if you require further information, please contact SEW-EURODRIVE.

2.1 General notes

Never install damaged products or put them into operation. Submit a complaint to the shipping company immediately in the event of damage.

During operation, multi-axis servo inverters can have live, bare and movable or rotating parts as well as hot surfaces, depending on their enclosure.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

Refer to this documentation for more information.

2.2 Target group

Only qualified electricians are authorized to install, startup or service the units or correct unit faults (observing IEC 60364 or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 as well as national accident prevention guidelines).

Qualified personnel in the context of these basic safety notes are: All persons familiar with installation, assembly, startup and operation of the product who possess the necessary qualifications.

Any activities regarding transportation, storage, operation, and disposal must be carried out by persons who have been instructed appropriately.

2.3 Designated use

MOVIAXIS® MX multi-axis servo inverters are units for use in industrial and commercial systems to operate permanent-field synchronous AC motors and asynchronous AC motors with encoder feedback. These motors must be suitable for operation with servo inverters. Connect other loads to the units only after you have consulted the manufacturer.

MOVIAXIS® MX multi-axis servo inverters are intended for use in metal control cabinets. These metal control cabinets represent the necessary enclosure for the application as well as the grounding over a large area required for EMC purposes.

When installed in machines, startup of the multi-axis servo inverters (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in EC directive 2006/42/EC (Machine Directive). You must also observe EN 60204.



Startup (i.e. the start of designated use) is only permitted under observance of the EMC directive (2004/108/EC).

The multi-axis servo inverters meet the requirements stipulated in the low voltage guideline 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these multi-axis servo inverters.

You must observe the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

2.3.1 Safety functions

MOVIAXIS® multi-axis servo inverters may not take on safety functions without a higher-level safety system. Use higher-level safety systems to ensure protection of equipment and personnel.

For safety applications, refer to the information in the following publication:

- Functional Safety.

2.4 Transportation and storage

You must observe the notes on transportation, storage and proper handling. Observe the climatic conditions as stated in the chapter "General technical data".

2.5 Installation

The units must be installed and cooled according to the regulations and specifications in the corresponding documentation.

Protect multi-axis servo inverters from excessive strain. Ensure that components are not deformed and/or insulation spaces are maintained, particularly during transportation. Avoid contact with electronic components and contacts.

Multi-axis servo inverters contain components that can be damaged by electrostatic energy and could be destroyed in case of improper handling. Prevent mechanical damage or destruction of electric components. This may pose health risks under certain circumstances.

The following applications are prohibited unless the unit is explicitly designed for such use:

- Use in potentially explosive areas.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.



2.6 Electrical connection

Observe the applicable national accident prevention guidelines when working on live multi-axis servo inverters (for example, BGV A3).

Perform electrical installation according to the pertinent regulations, e.g. cable cross sections, fusing, protective conductor connection. For any additional information, refer to the applicable documentation.

You will find notes on EMC-compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, in the documentation of the multi-axis servo inverter. Always observe these notes even with multi-axis servo inverters bearing the CE marking. The manufacturer of the system or machine is responsible for maintaining the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force, e.g. EN 60204 or EN 61800-5-1.

Required preventive measure: Grounding the unit.

Cables may only be connected and switches may only be operated in a de-energized state.

2.7 Safe disconnection

The unit meets all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

2.8 Operation

Systems with integrated multi-axis servo inverters must be equipped with additional monitoring and protection devices, if necessary, according to the applicable safety guidelines, such as the law governing technical equipment, accident prevention regulations, etc. Changes to the drive inverter using the software are permitted.

Do not touch live components or power connections immediately after disconnecting the multi-axis servo inverters from the supply voltage because there may still be some charged capacitors. Note the respective labels on the multi-axis servo inverter.

Cables may only be connected and switches may only be operated in a de-energized state.

Keep all covers and doors closed during operation.

The unit may still be live and connected to the supply system, even if the operation LEDs and other display elements are no longer illuminated.

Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive re-starting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply system before correcting the error.



Two-row configuration of the axis system:

The two-row **MOVIAXIS®** axis system without protection caps at the insulators has the degree of protection IP00.

The axis system with two rows may only be operated with installed protection caps at the insulators.

2.9 Unit temperature

MOVIAXIS® multi-axis servo inverters are usually operated with braking resistors. The braking resistors can also be installed in the housing of the supply modules.

The braking resistors can reach a surface temperature in the range of 70 °C to 250 °C.

Never touch the housings of the MOVIAXIS® modules or the braking resistors during operation or in the cool down phase once the unit has been switched off.



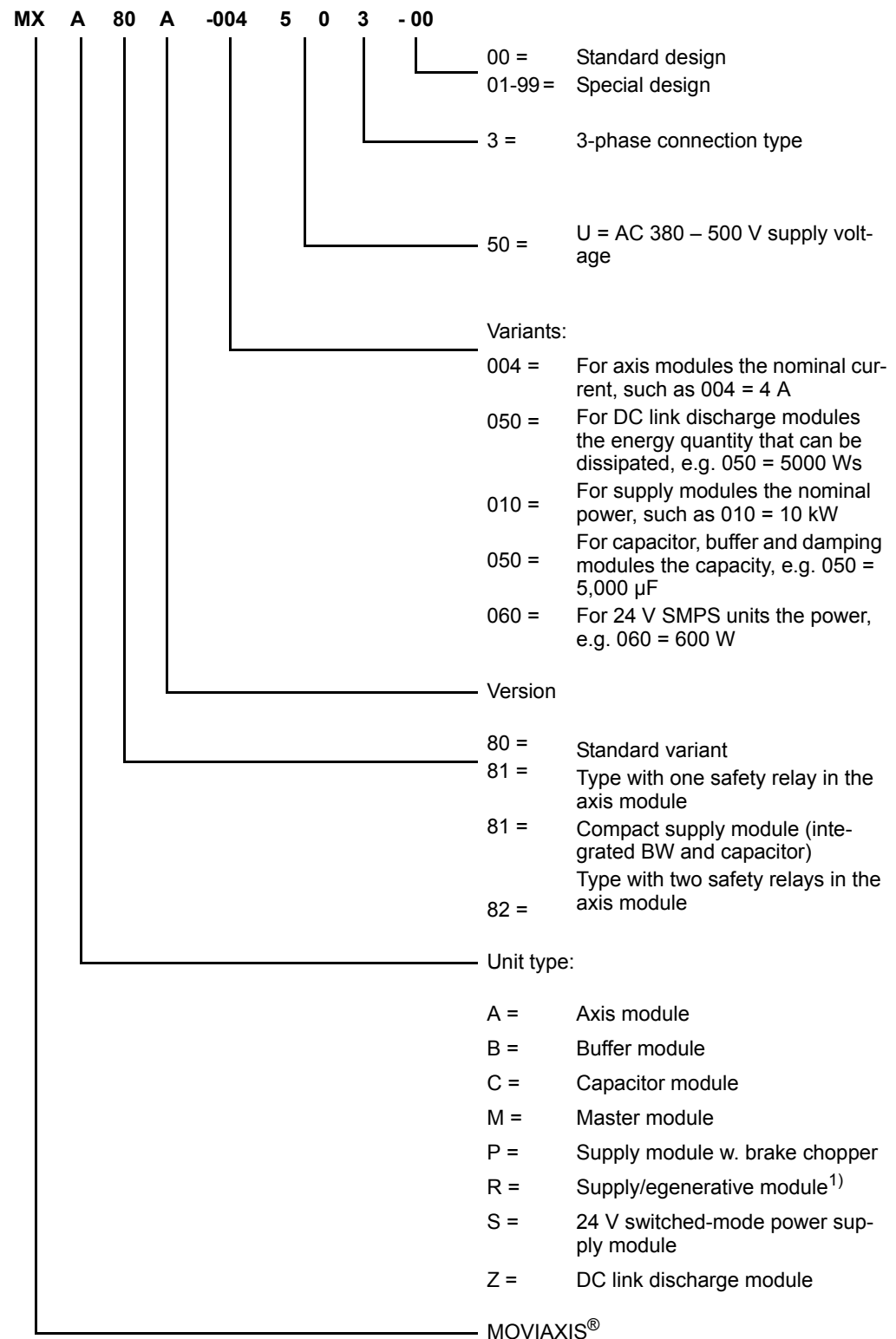
Type Designation

Type designation of MOVIAXIS® basic units

3 Type Designation

3.1 Type designation of MOVIAXIS® basic units

The following diagram shows the type designation:



1) For information on MXR, refer to the "Supply and Regenerative Module" manual



Unit designation for the axis module:

MXA80A-004-503-00 = Axis module with 4 A nominal current

Unit designation for the buffer module component

MXB80A-050-503-00 = Buffer module with a capacity of 5000 µF

Unit designation for the capacitor module component

MXC80A-050-503-00 = Capacitor module with a capacity of 5000 µF

Type designation for master module with fieldbus gateway component:

MXM80A-000-000-00/UFF41B = Master module with PROFIBUS/DeviceNet

MXM80A-000-000-00/UFR41B = Master module with EtherNet/IP / PROFINET Modbus/TCP

Type designation for master module with controller component:

MXM80A-000-000-00/DHF41B/
OMH41B = Master module with PROFIBUS/DeviceNet

MXM80A-000-000-00/DHR41B/
OMH41B = Master module with EtherNet/IP / PROFINET Modbus/TCP

Variants: T0 – T25

Unit designation for the supply module:

MXP81A-010-503-00 = 10 kW compact supply module with integrated C and BW

MXP80A-010-503-00 = 10 kW supply module

MXR80A-075-503-00¹⁾ = 50/75 kW supply and regenerative module

1) For detailed information on MXR, refer to the "Supply and Regenerative Module" manual"

Type designation for the 24 V switched-mode power supply module component

MXS80A-060-503-00 = 24 V switched-mode power supply module

Type designation for the DC link discharge module component:

MXZ80A-050-503-00 = DC link discharge module with an energy quantity of 5000 Ws that can be dissipated



4 Installation

4.1 Mechanical installation

- Check to make sure that the delivery is complete.

	CAUTION The mounting plate in the control cabinet must be conductive over a large area for the mounting surface of the inverter system (metallically pure, good conductivity). An EMC compliant installation of the MOVIAXIS® MX multi-axis servo drive can only be accomplished with a mounting plate that is conductive over a large area.
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- Mark the 4 bores for the retaining threads on the mounting platform (page) for each unit according to the table below. Make the bores with a tolerance according to ISO 2768-mK.
- The lateral distance between 2 axis systems must be at least 30 mm.
- Units within an axis system are mounted next to another without clearance.
- Cut the matching threads in the mounting platform and fasten the MOVIAXIS® MX multi-axis servo inverter with M6 screws. Screw head diameter 10 mm to 12 mm.

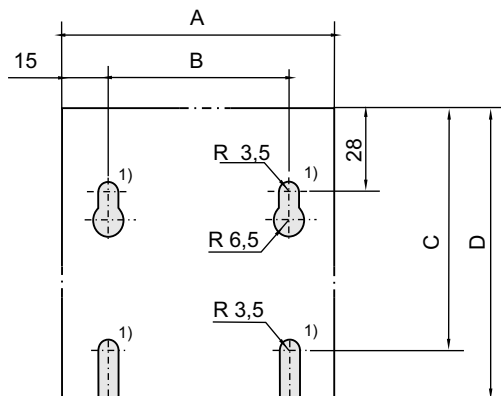
The following table shows the dimensions for the unit housings of the modules viewed from the back.

MOVIAXIS® MX	Rear view dimensions of MOVIAXIS® MX housing			
	A mm	B mm	C mm	D mm
Axis module size 1	60	30	353	362.5
Axis module size 2	90	60	353	362.5
Axis module size 3	90	60	453	462.5
Axis module size 4	120	90	453	462.5
Axis module size 5	150	120	453	462.5
Axis module size 6	210	180	453	462.5
Supply module size 1	90	60	353	362.5
MXP81 supply module	120	90	353	362.5
Supply module size 2	90	60	453	462.5
Supply module size 3	150	120	453	462.5
Supply and regenerative module ¹⁾	210	180	453	462.5
Master module	60	30	353	362.5
Capacitor module	150	120	453	462.5
Buffer module	150	120	453	462.5
24 V switched-mode power supply module	60	30	353	362.5
DC link discharge module	120	90	288	297.5

- 1) For detailed information on the MXR supply and regenerative module, refer to the "MXR Supply and Regenerative Module" manual



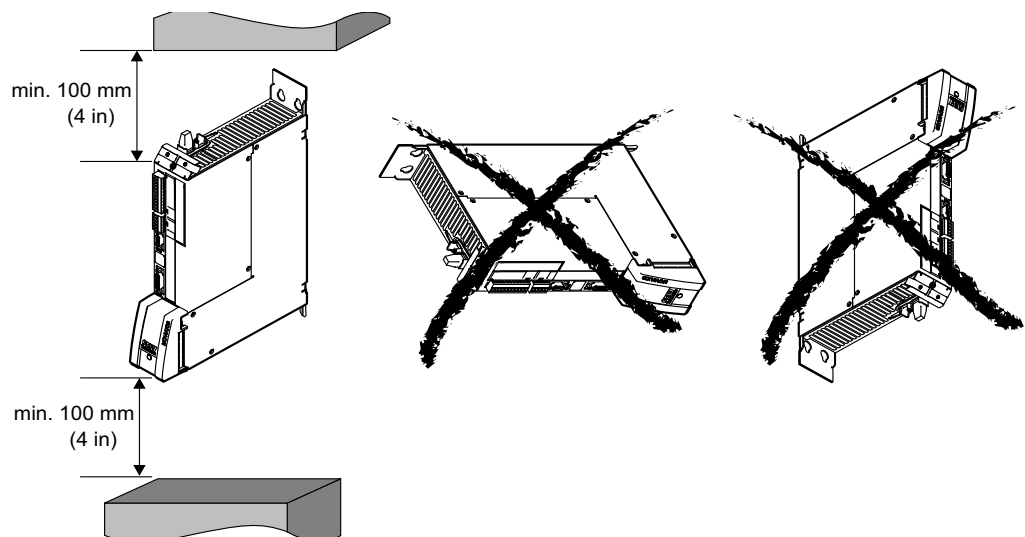
4.1.1 Housing rear view of MOVIAXIS® module



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4.1.2 Minimum clearance and mounting position

- Leave at least **100 mm (4 in)** clearance above and below the unit for optimum cooling. Make sure air circulation in the clearance is not impaired by cables or other installation equipment.
- **Ensure unobstructed cooling air supply and make sure that the units are not subjected to heated air from nearby components.**
- Units within an axis system must be lined up without space in between.
- Only install the units **vertically**. You must not install them horizontally, tilted or upside down.



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CAUTION

Special bending spaces are required according to EN 61800-5-1 for cables with a cross section of 10 mm² and larger. This means the clearance must be increased if required.



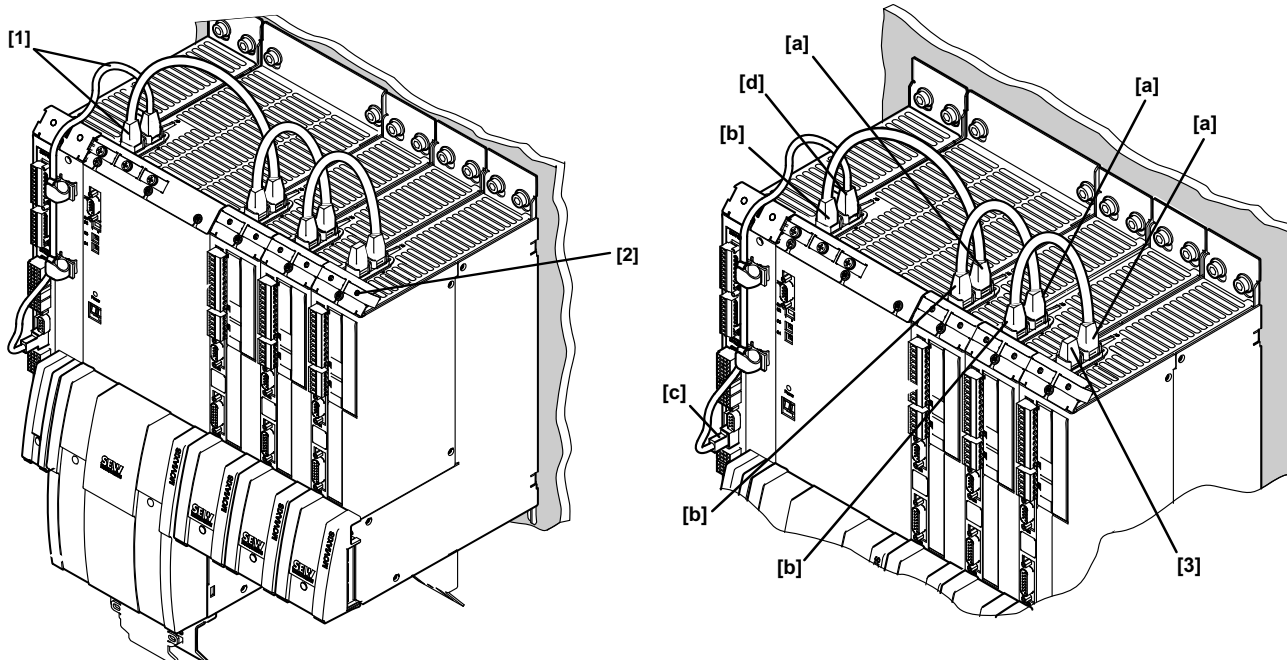
Installation

System bus cable for CAN-based system bus SBus with optional master

4.2 System bus cable for CAN-based system bus SBus with optional master module

The following describes how the system bus cables of the CAN system bus must be connected in the axis system.

- Insert the CAN system bus plugs **[1]** as described in the following (X9a, X9b):
 - The plugs on each end of the cable are color coded. Insert them in the following order: red (b) - green (a) - red (b) - green (a) - red (b)
 - red (b): Output (RJ45), X9b
 - green (a): Input (RJ45), X9a
 - black (c): MXM output (Weidmüller) (MOVI-PLC[®] *advanced*, UFX41 gateway)
 - black (d): MXP input (RJ45), X9a



INFORMATION



Important: Install a terminating resistor **[3]** in the last axis module of the axis system (included in the scope of delivery of the MXP and MXR supply modules).

4.2.1 Shield clamps

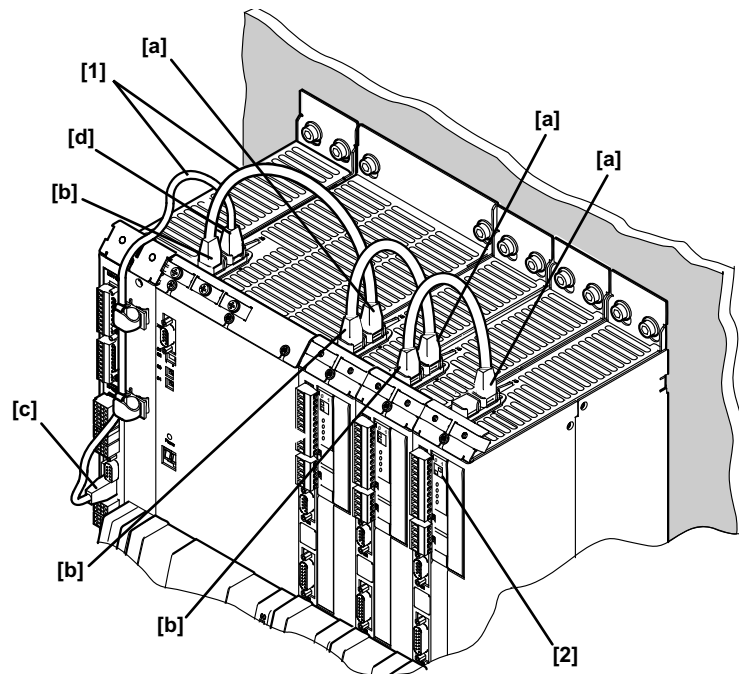
- Install the cables properly and screw on electronics shield clamps **[2]**.



4.3 System bus cable for EtherCAT®-compatible system bus SBus^{plus} with master module

The following describes how the system bus cables of the EtherCAT®-compatible system bus SBus^{plus} must be connected in the axis system.

- Insert the system bus plugs **[1]** as described in the following (X9a, X9b):
 - The RJ-45 plugs on each end of the cable are color coded. Insert them in the following order: red (b)- green (a) - red (b) - green (a) - red (b)
 - red (b): Output (RJ45), X9b
 - green (a): Input (RJ45), X9a
 - yellow (c): MXM output (RJ45) (MOVI-PLC® *advanced*, UFX41 gateway)
 - black (d): MXP input (RJ45), X9a



[1] System bus cable

[2] LAM switch

- Switch position 0: All axis modules except the last one
- Switch position 1: Last axis module in the system



INFORMATION

The DIP switch LAM **[2]** must be set to "1" at the last axis module in a system. At all other axis modules, it must be set to "0".



4.4 Electrical installation

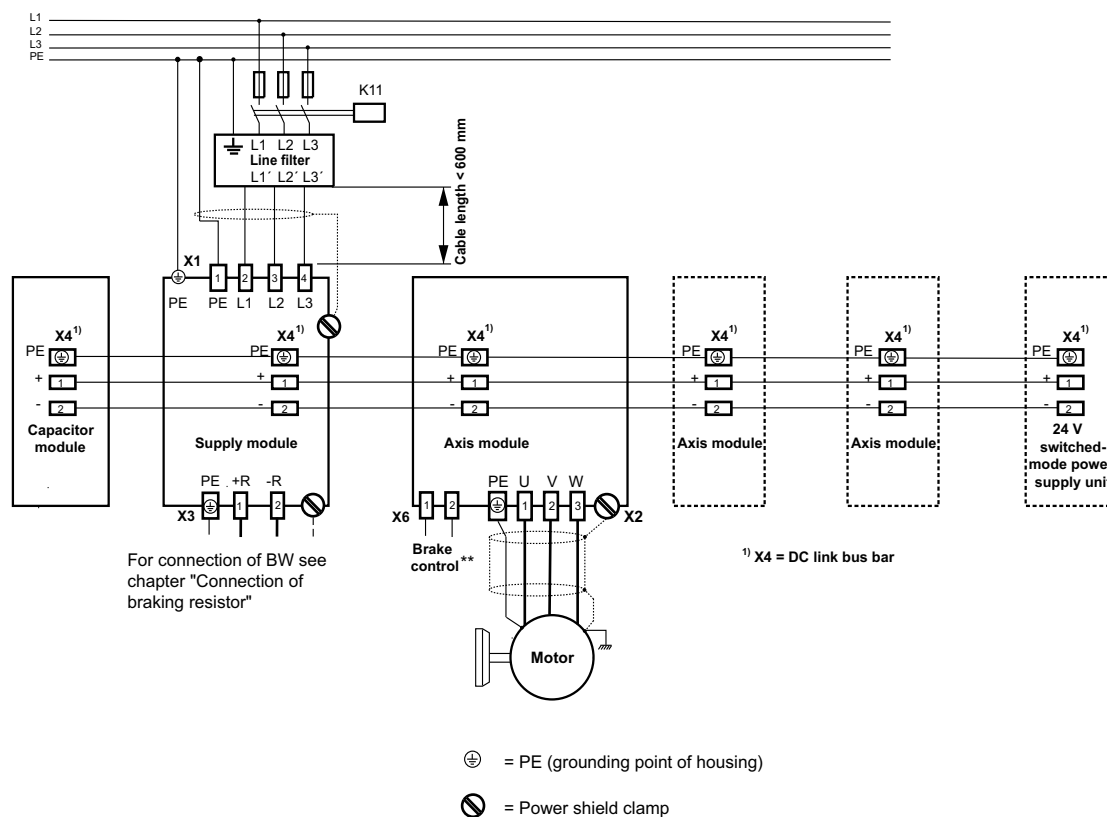
4.4.1 Connecting the units

- Connect the supply terminals of all units in the MOVIAXIS® MX axis system according to the respective wiring diagrams in chapter "Wiring diagrams" (page).
- Check to see that the assignment of multi-axis servo drive and motor is correct according to project planning specification.
- Check to see that all grounding cables have been connected.
- Take suitable measures to prevent the motor starting up inadvertently, for example by removing the electronics terminal block X10 on the axis module. Integrate additional safety features for certain applications to prevent possible injuries and damages to machines.
- Only use closed cable lugs for connection to the screw bolt in order to prevent litz strands from escaping.

4.5 Wiring diagrams

4.5.1 Connection of supply module, axis module, and capacitor or buffer module

Wiring of power terminals MXP80.. Size 1 and 2

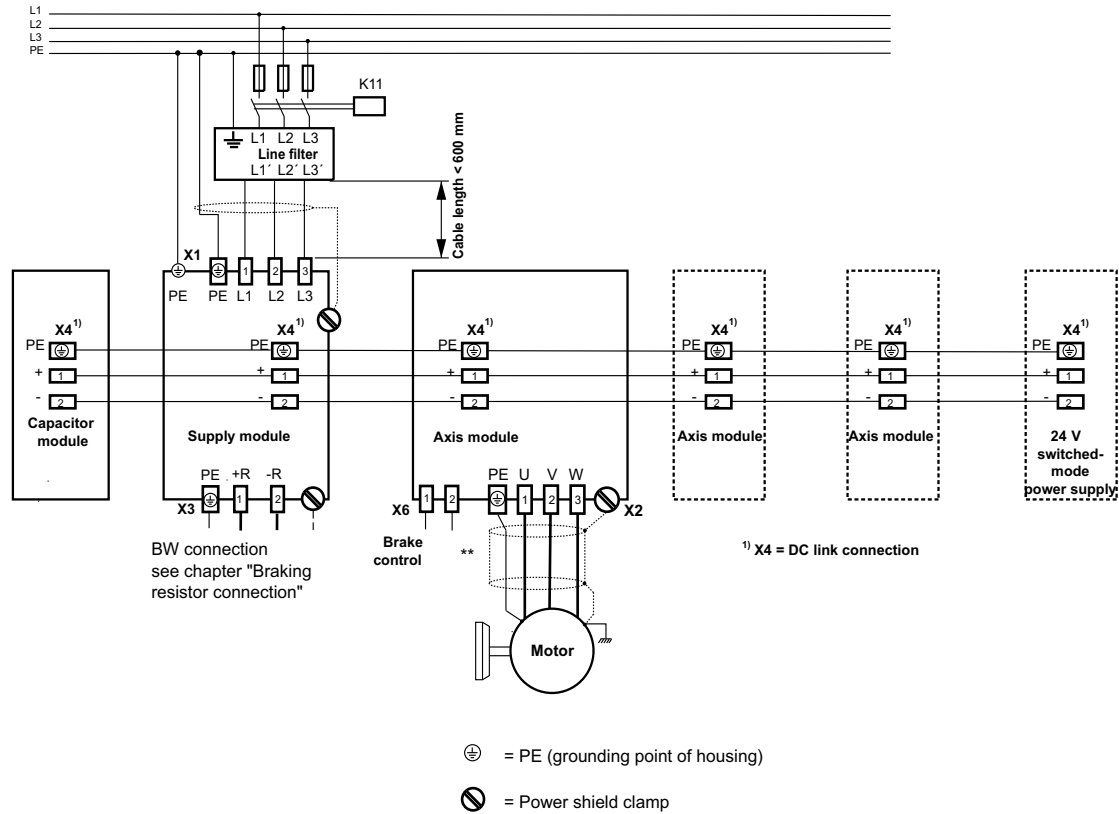


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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



Wiring of power terminals MXP80.. Size 3

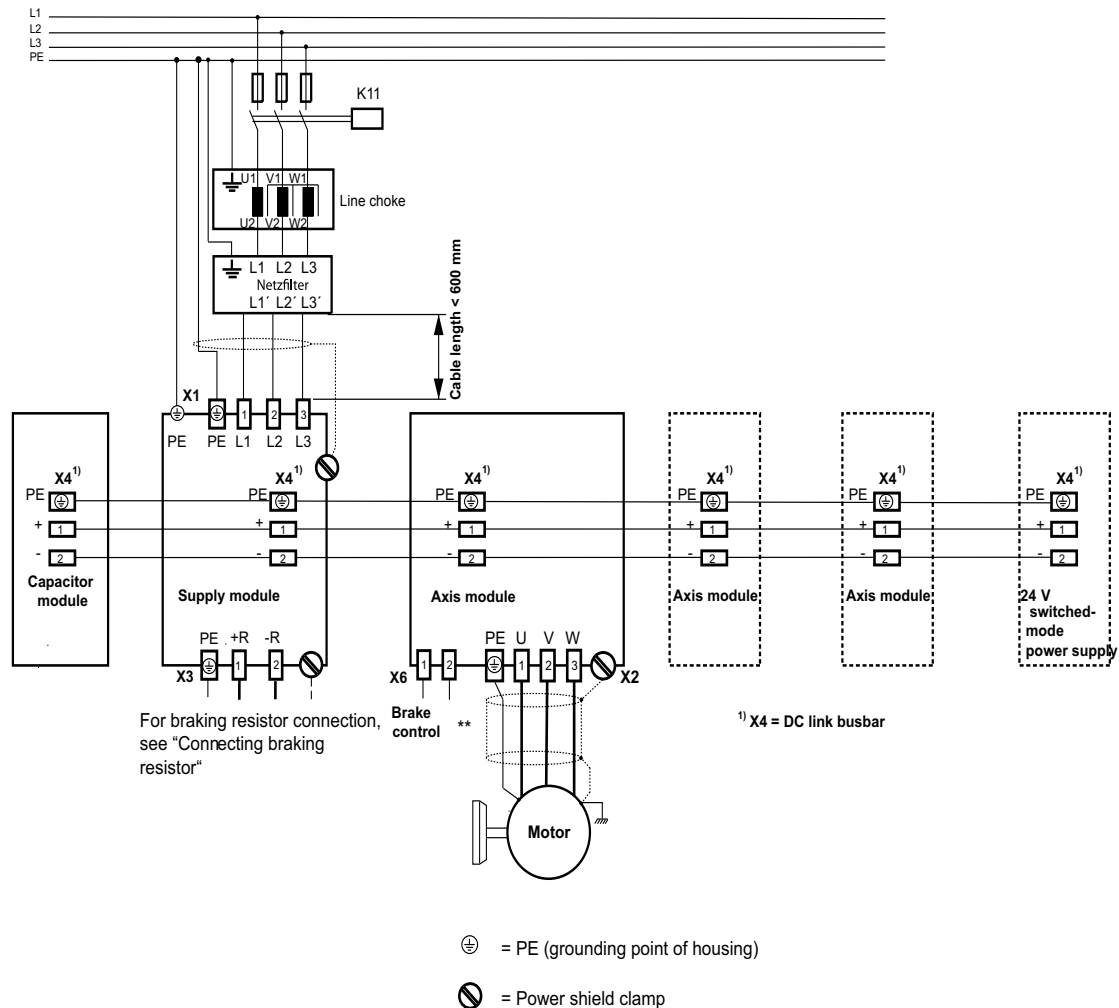


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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



Wiring of power terminals MXP80.. BG3 for example with line filter and line choke

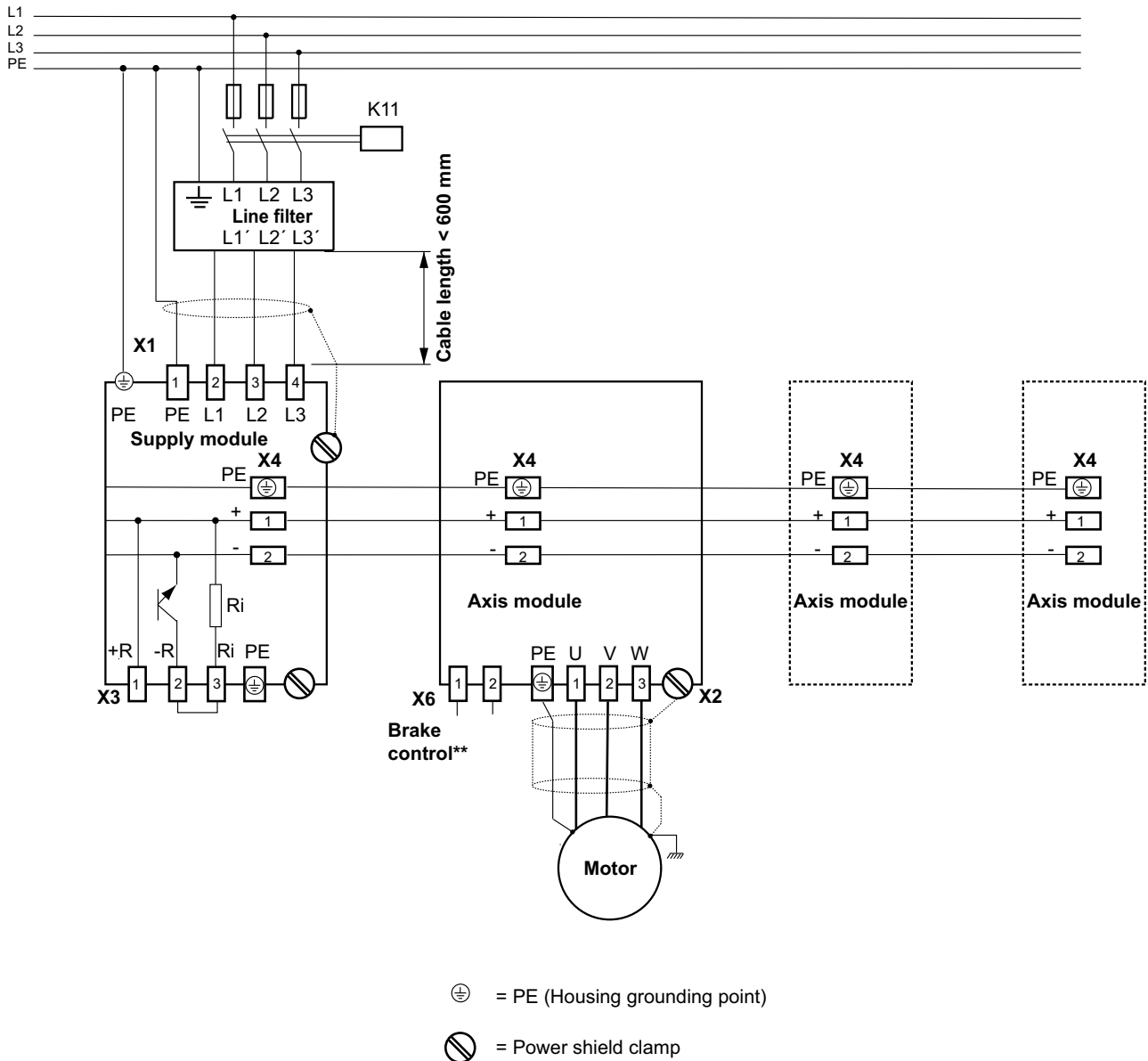


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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



Wiring the MXP81... power connections with integrated braking resistor

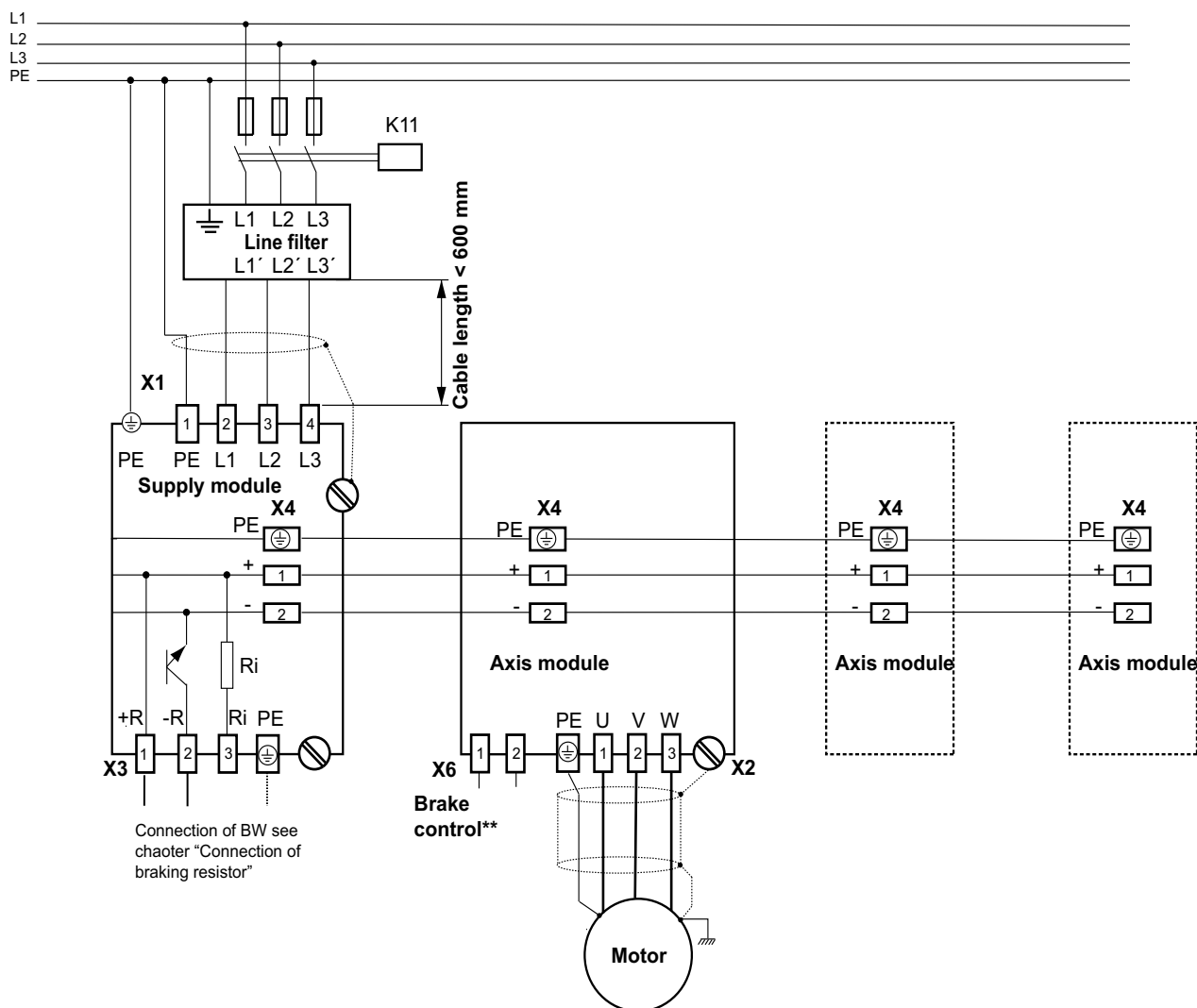


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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



Wiring the MXP81... power connections with external braking resistor



⊕ = PE (Housing grounding point)

⊗ = Power shield clamp

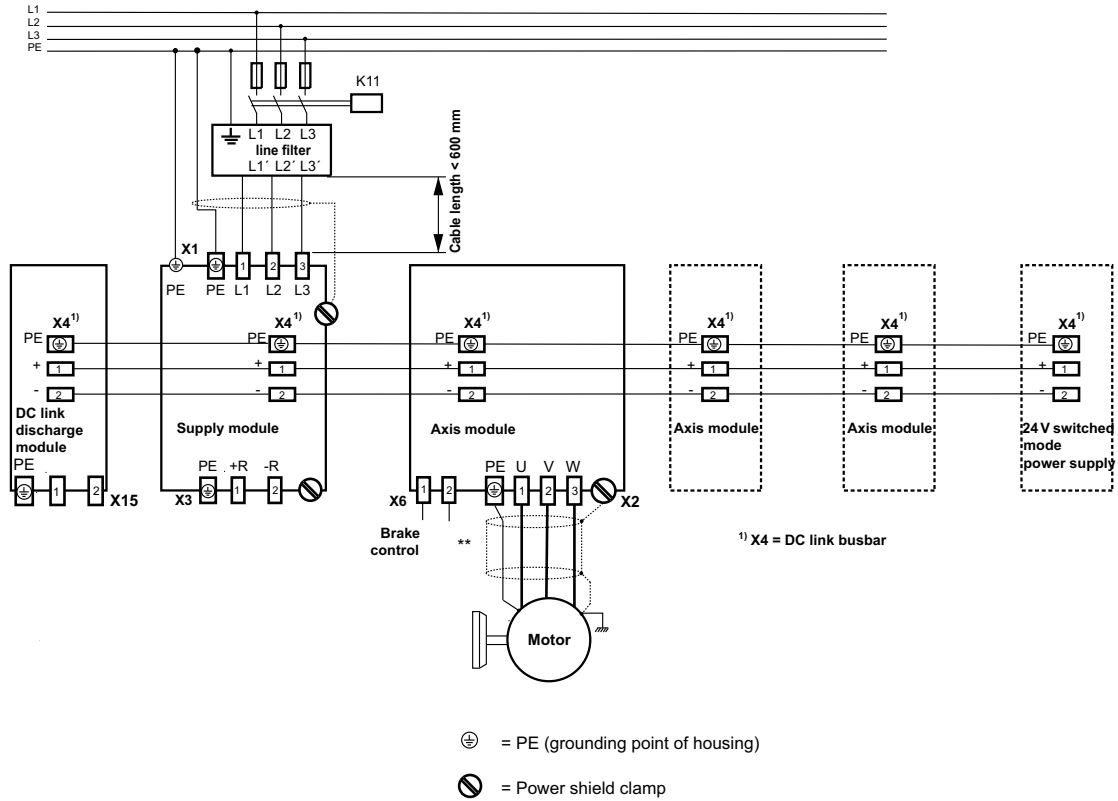
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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



4.5.2 Connecting supply module, axis modules and DC link discharge module

Wiring of power
terminals

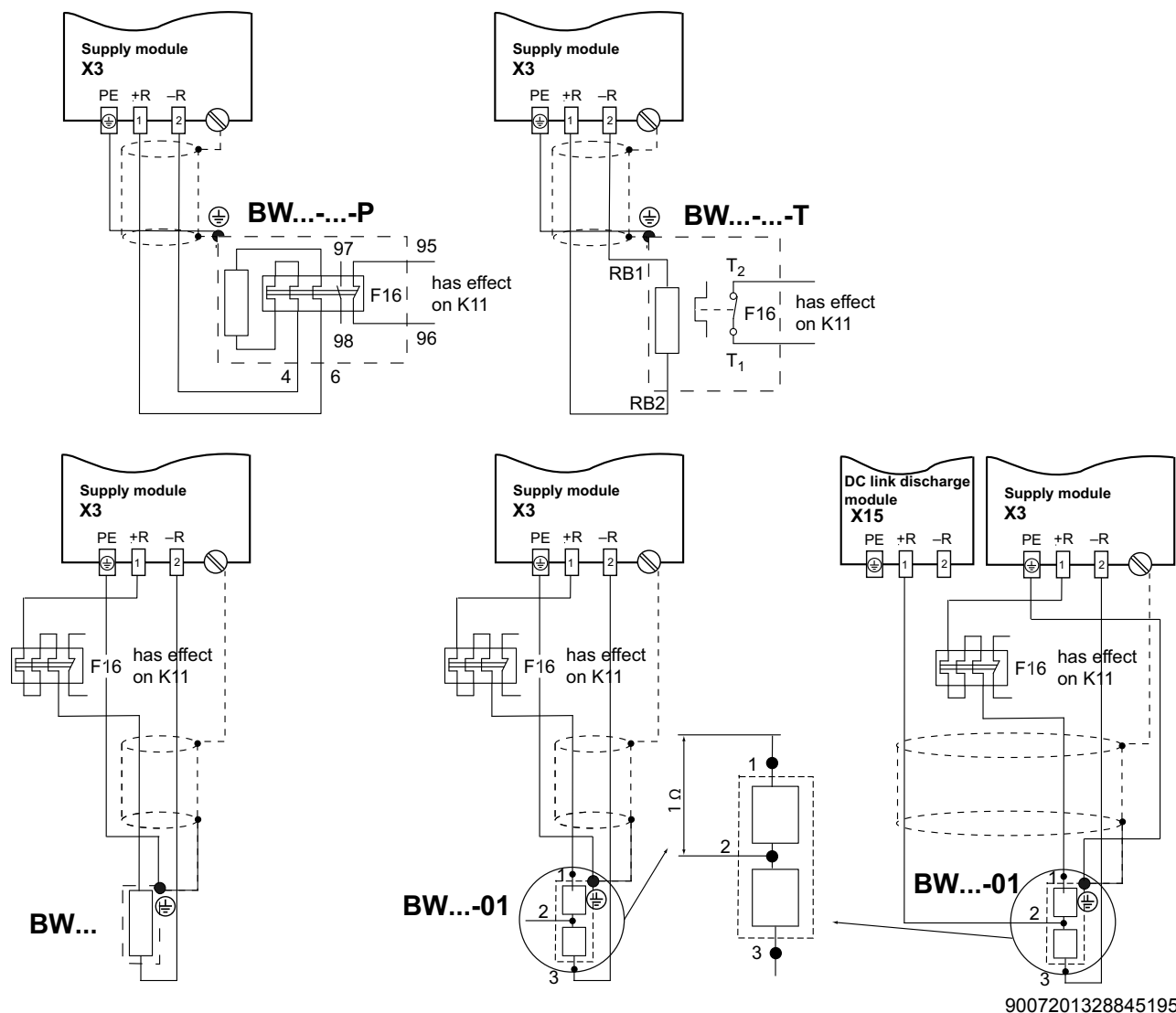


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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.



4.5.3 Connecting braking resistors



BW...-P

When the signal contact F16 trips, K11 must open. When F16 (trip contact at overload relay or temperature switch) triggers, K11 must open and "Output stage enable" must receive a "0" signal. F16 is a signal contact, which means the resistor circuit must not be interrupted.

BW...-T

When the internal temperature switch trips, K11 must open. When F16 (trip contact at overload relay or temperature switch) triggers, K11 must open and "Output stage enable" must receive a "0" signal. F16 is a signal contact, which means the resistor circuit must not be interrupted.

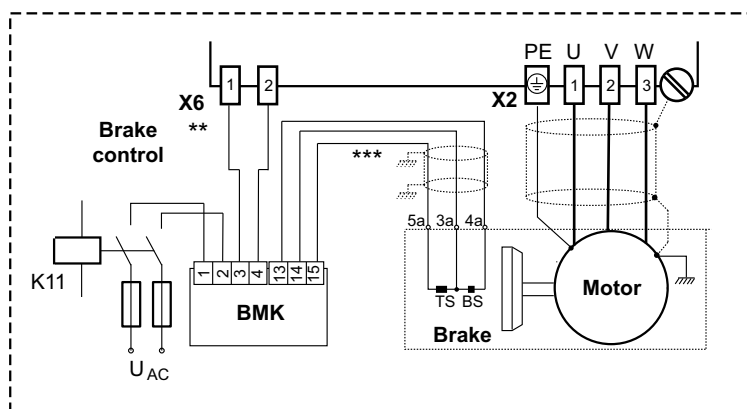
BW... , BW...-01

When the external bimetallic relay (F16) trips, K11 must open. When F16 (trip contact at overload relay or temperature switch) triggers, K11 must open and "Output stage enable" must receive a "0" signal. F16 is a signal contact, which means the resistor circuit must not be interrupted.

Braking resistor type	Overload protection
BW..	External bimetallic relay F16
BW...-01	External bimetallic relay F16
BW...-T	- Internal temperature switch or - External bimetallic relay F16
BW...-P	Internal bimetallic relay F16

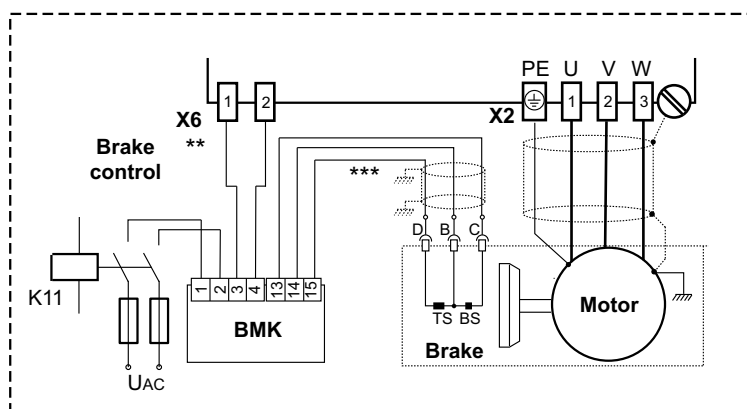
4.5.4 Brake control

BMK brake control with terminal box



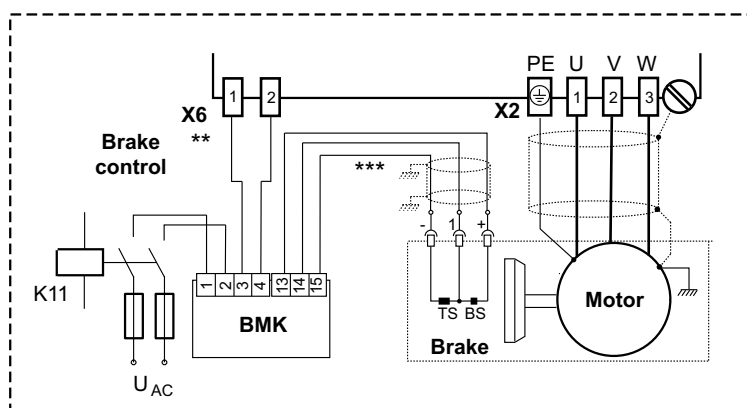
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BMK brake control with SB1 plug connector



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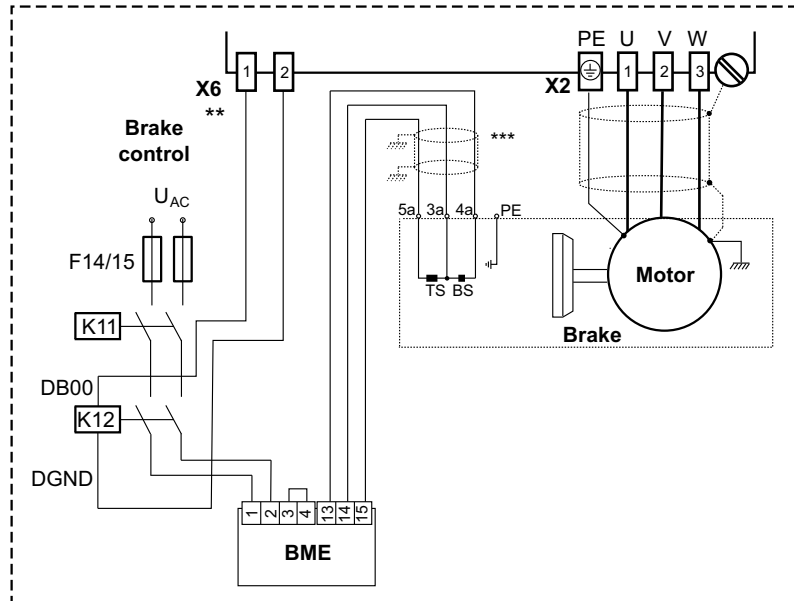
BMK brake control with SBB plug connector



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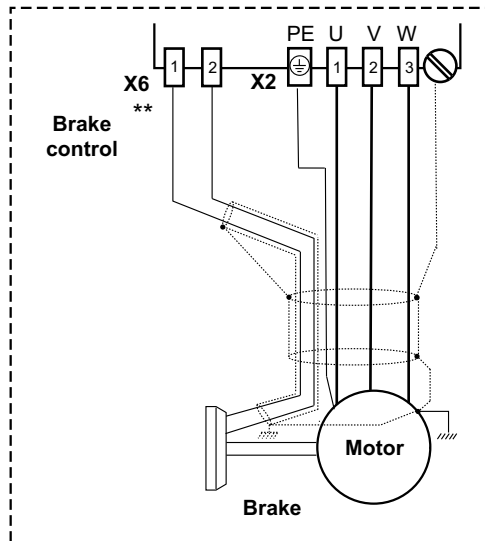
- ** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.
- *** Install the connection cables between the brake rectifier and the brake separately from other power cables when installing the brake rectifier in the control cabinet. Joint installation is only permitted with shielded power cables.

BME brake control with terminal box



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Directly controlled motor brake

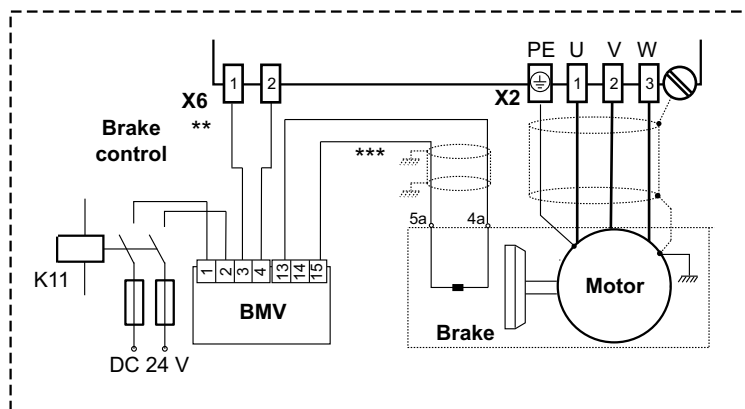


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- **** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.
- ***** Install the connection cables between the brake rectifier and the brake separately from other power cables when installing the brake rectifier in the control cabinet. Joint installation is only permitted with shielded power cables.

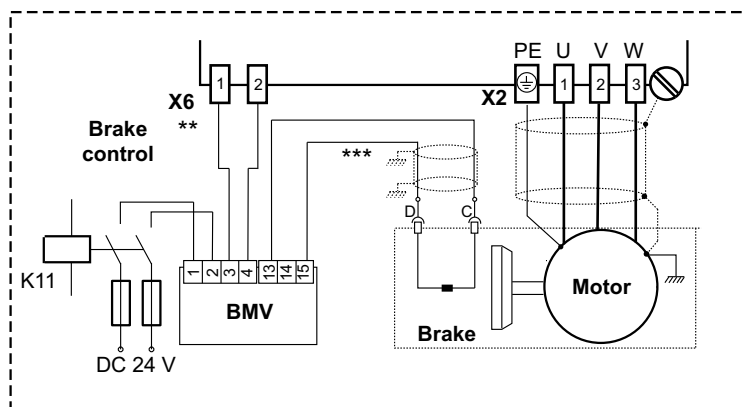


BP brake control BMV with terminal box



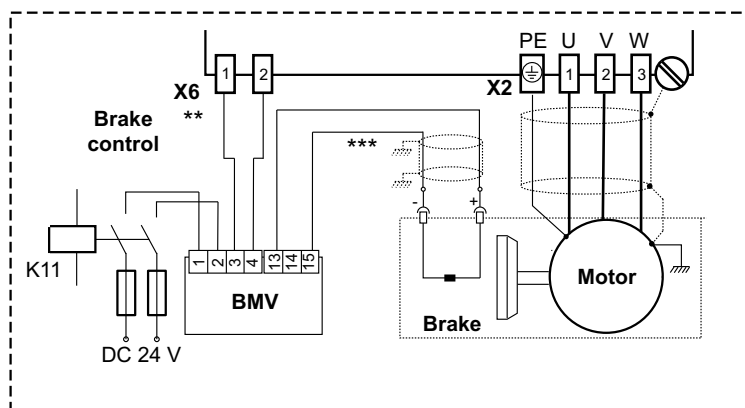
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BP brake control BMV with SB1 plug connector



2788942859

BP brake control BMV with SBB plug connector



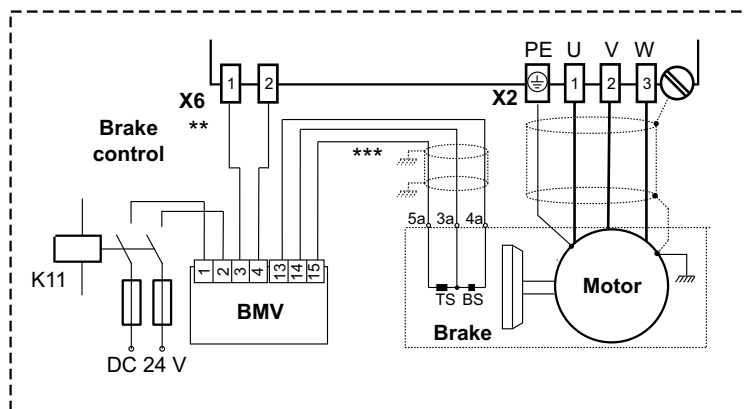
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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.

*** Install the connection cables between the brake rectifier and the brake separately from other power cables when installing the brake rectifier in the control cabinet. Joint installation is only permitted with shielded power cables.

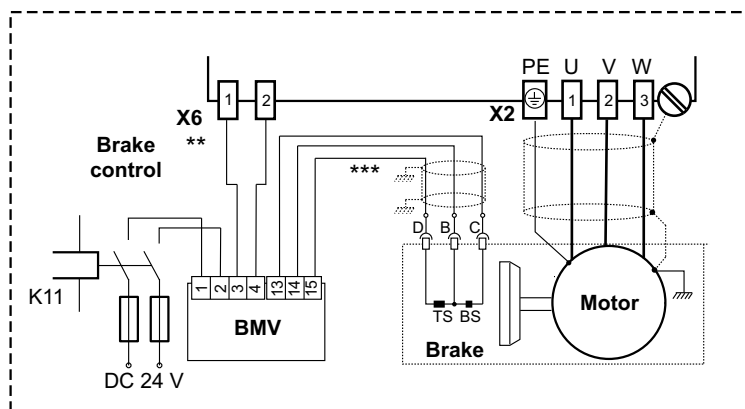


BY brake control BMV with terminal box



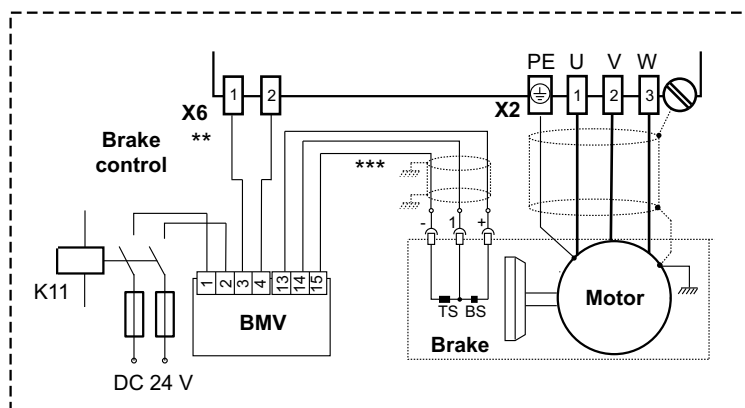
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BY brake control BMV with SB1 plug connector



2788966539

BY brake control BMV with SBB plug connector



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** Make sure to provide separate isolation for the brake lines when controlling the brakes with 24 V. We recommend using SEW hybrid cables that offer complete shielding with shielding supports as well as separate shielding for the brake line.

*** Install the connection cables between the brake rectifier and the brake separately from other power cables when installing the brake rectifier in the control cabinet. Joint installation is only permitted with shielded power cables.

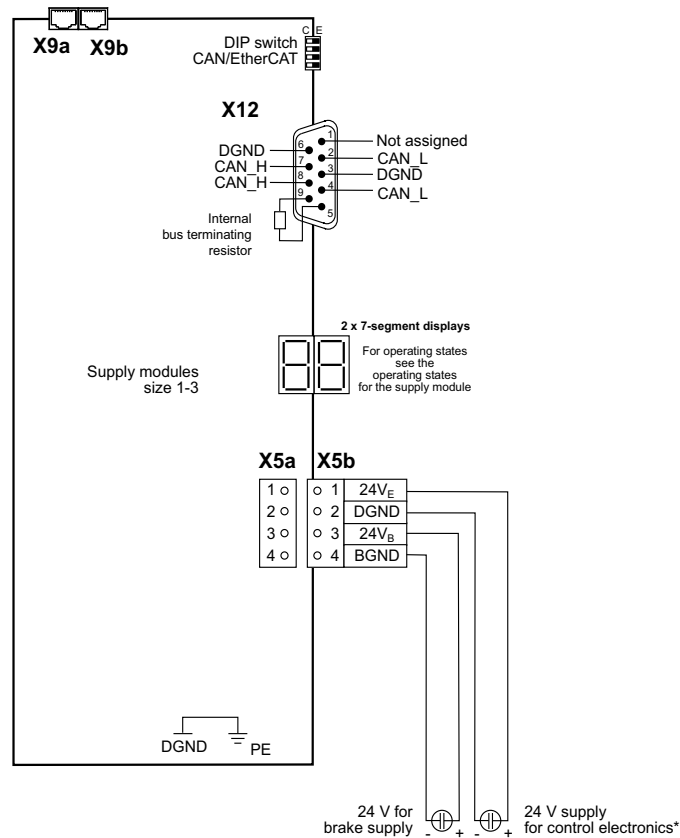


BST brake control

For information about BST brake control, refer to the "BST Safety-Related Brake Module" operating instructions.

4.5.5 Connection of supply module and supply and regenerative module

Wiring the control electronics



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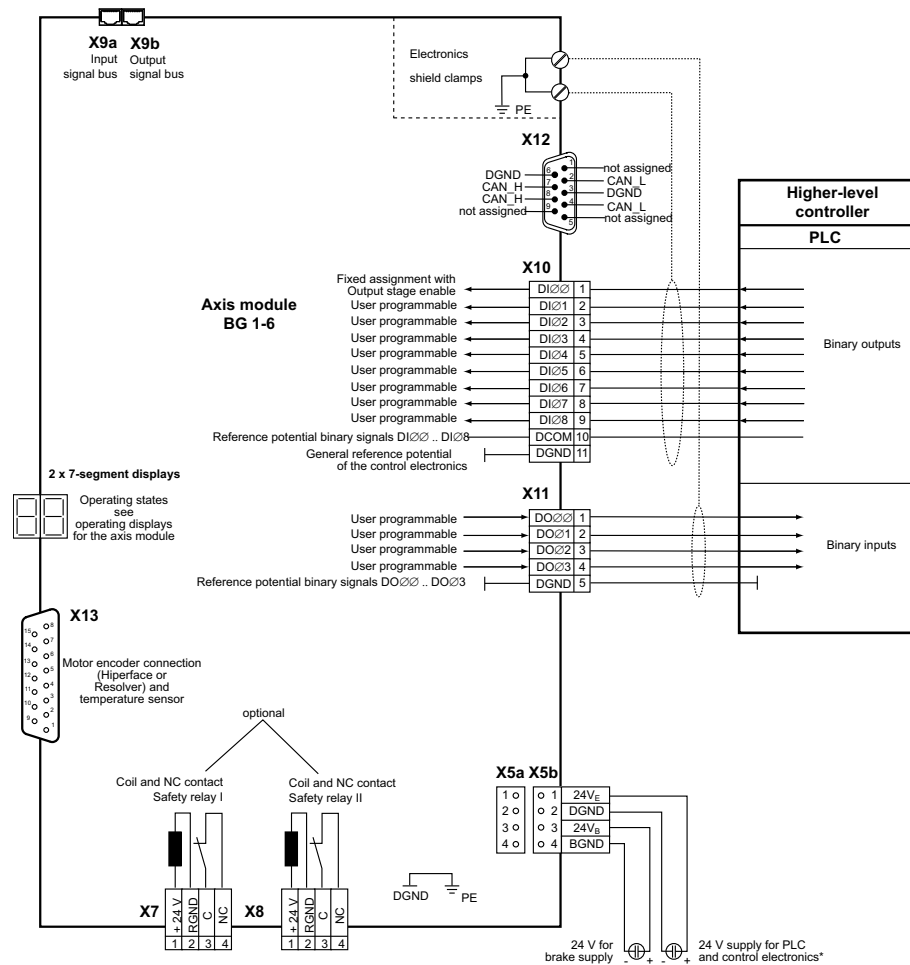
* Connection via supplied prefabricated cables.

X9a System bus input
X9b System bus output



4.5.6 Connection of axis modules

Wiring the control electronics



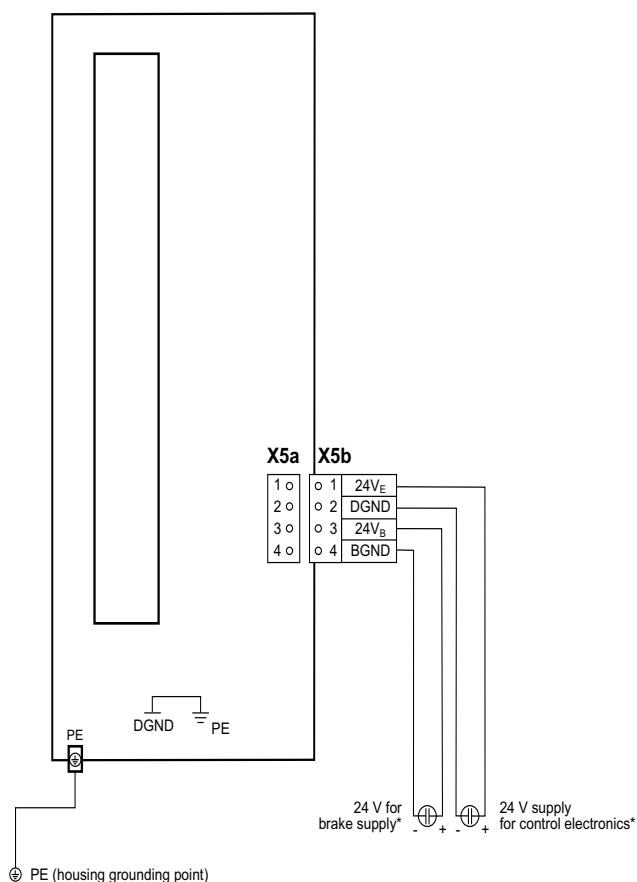
1406125963

* Connection via supplied prefabricated cables.



4.5.7 Connection of master module component

Wiring the control
electronics



1406133259

* Connection via supplied prefabricated cables.



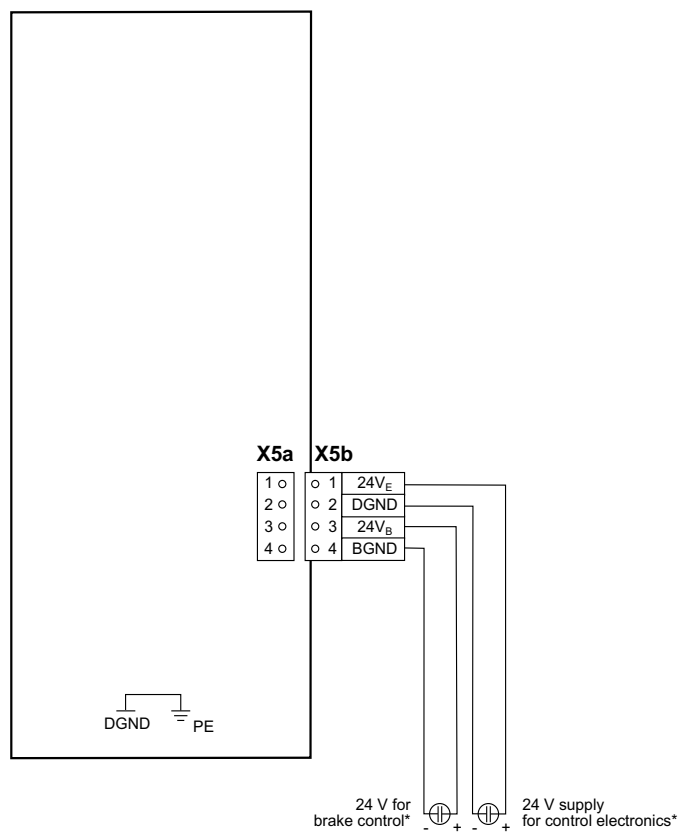
CAUTION

The housing grounding point of the master module must be connected to PE, e.g. at the control cabinet.



4.5.8 Connection of capacitor module/buffer module component

Wiring the control electronics



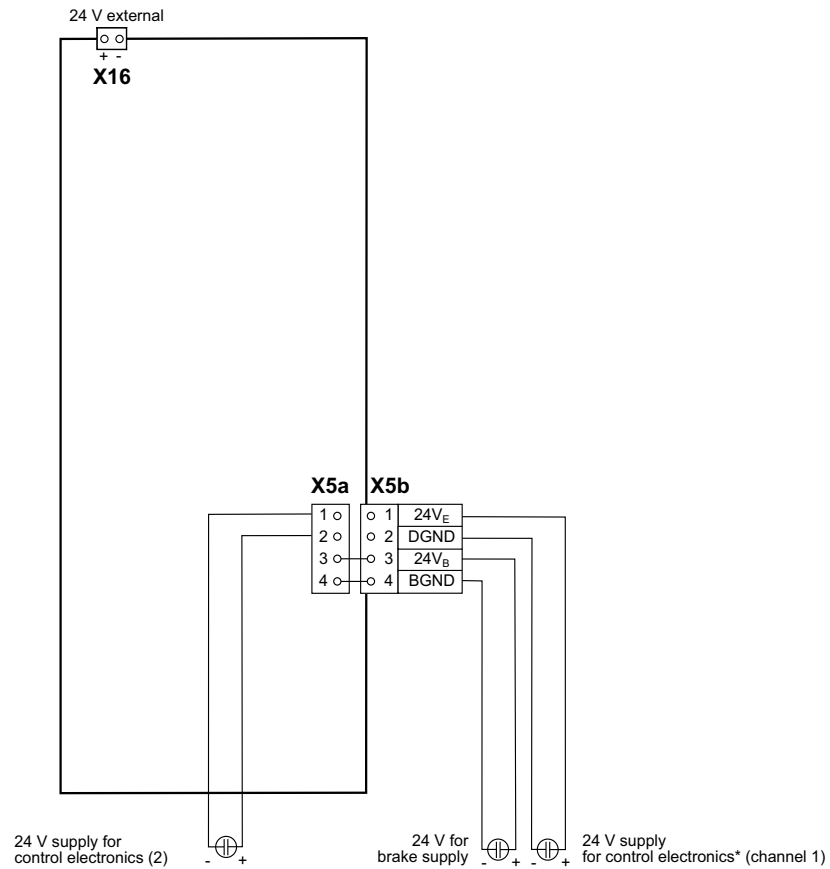
1406212491

* Connection via supplied prefabricated cables.



4.5.9 Connection of 24 V switched-mode power supply module component

Wiring the control electronics



9007200660955915

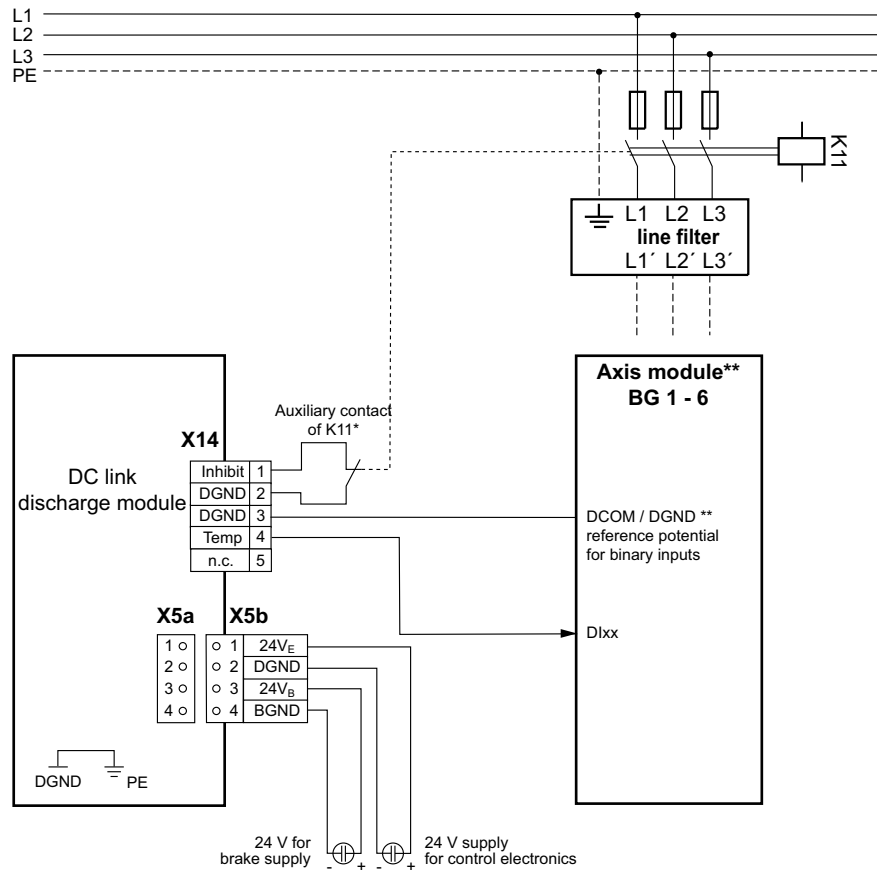
* Connection via supplied prefabricated cables.

You find more information on 24 V supply and control electronics in the "MOVIAXIS® Multi-Axis Servo Inverter" system manual.



4.5.10 Connecting additional component DC link discharge module

Wiring the control electronics



4046960011

* Contact must be suitable for switching very small currents (≤ 50 mA).

** See chapter "Connecting axis modules" (page)



NOTICE

Possible damage of the supply module and braking resistor.

When operating the DC link discharge module, make sure to activate discharge of the DC link only if the following requirements are met:

- The main contacts of the K11 relay are open
- Output stage enable of all axis modules is withdrawn



INFORMATION

Use a contactor with lagging auxiliary contact to prevent that supply module and braking resistor are damaged.



4.6 Terminal assignment

4.6.1 Terminal assignment of MXP80.. supply modules

	terminal	Assignment	Brief description
	X1:1	PE	Power supply connection (BG1 / 10 kW))
	X1:2	L1	
	X1:3	L2	
	X1:4	L3	
	X3:1	+R	Braking resistor connection (BG1 / 10 kW))
	X3:2	-R	
	X3:3	n.c.	
	X3:4	PE	
	X1:1	PE	Supply system connection (size 2 / 25 kW)
	X1:2	L1	
	X1:3	L2	
	X1:4	L3	
	X3:1	+R	Braking resistor connection (size 2 / 25 kW)
	X3:2	-R	
	X3:3	PE	
	X1:PE	PE	Supply system connection (size 3 / 50, 75 kW)
	X1:1	L1	
	X1:2	L2	
	X1:3	L3	
	X3:PE	PE	Braking resistor connection (size 3 / 50, 75 kW)
	X3:1	+R	
	X3:2	-R	
	X4:PE	PE	DC link bus connection
	X4:1	+U _Z	
	X4:2	- U _Z	
	X5a:1	+24 V _E	Voltage supply for electronics
	X5a:2	DGND	
	X5a:3	+24 V _B	Voltage supply for brake supply
	X5a:4	BGND	
	X5b:1	+24 V _E	Voltage supply for electronics
	X5b:2	DGND	
	X5b:3	+24 V _B	Voltage supply for brake supply
	X5b:4	BGND	
	X9a		a = Input: System bus, with green plug b = Output: System bus, with red plug
	X9b		
	X12:1	n.c.	CAN bus low Reference potential CAN bus CAN bus low Unit internal SBus terminating resistor Reference potential CAN bus CAN bus high CAN bus high Unit internal SBus terminating resistor
	X12:2	CAN_L	
	X12:3	DGND	
	X12:4	CAN_L	
	X12:5	R _{termination}	
	X12:6	DGND	
	X12:7	CAN_H	
	X12:8	CAN_H	
	X12:9	R _{termination}	

1) Only for CAN-based system bus. No function for EtherCAT®-compatible system bus.



4.6.2 Terminal assignment of MXP81.. supply modules

	terminal	Assignment	Brief description
	X1:1	PE	Power supply connection (BG1 / 10 kW))
	X1:2	L1	
	X1:3	L2	
	X1:4	L3	
	X3:1	+R	Braking resistor connection (BG1 / 10 kW))
	X3:2	-R	
	X3:3	Ri	
	X3:4	PE	
	X4:PE	PE	DC link bus connection
	X4:1	+U _Z	
	X4:2	- U _Z	
	X5a:1	+24 V _E	Voltage supply for electronics
	X5a:2	DGND	
	X5a:3	+24 V _B	Voltage supply for brake supply
	X5a:4	BGND	
	X5b:1	+24 V _E	Voltage supply for electronics
	X5b:2	DGND	
	X5b:3	+24 V _B	Voltage supply for brake supply
	X5b:4	BGND	
	X9a X9b		a = Input: System bus, with green plug b = Output: System bus, with red plug
	X12:1	n.c.	CAN bus low Reference potential CAN bus CAN bus low Unit internal SBus terminating resistor Reference potential CAN bus CAN bus high CAN bus high Unit internal SBus terminating resistor
	X12:2	CAN_L	
	X12:3	DGND	
	X12:4	CAN_L	
	X12:5	R _{termination}	
	X12:6	DGND	
	X12:7	CAN_H	
	X12:8	CAN_H	
	X12:9	R _{termination}	

1) Only for CAN-based system bus. No function for EtherCAT®-based system bus.



4.6.3 Terminal assignment of the MXA axis modules

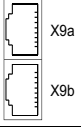
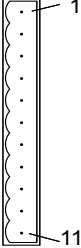
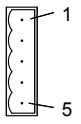
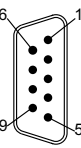
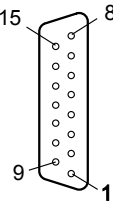
	terminal	Assignment	Brief description
	X2:PE X2:1 X2:2 X2:3	PE U V W	Motor connection sizes 1, 2
	X2:PE X2:1 X2:2 X2:3	PE U V W	Motor connection size 3
	X2:PE X2:1 X2:2 X2:3	PE U V W	Motor connection sizes 4, 5, 6
	X4:PE X4:1 X4:2	PE +U _Z - U _Z	DC link bus connection
	X5a:1 X5a:2	+24 V _E DGND	Voltage supply for electronics
	X5a:3 X5a:4	+24 V _B BGND	Voltage supply for brake supply
	X5b:1 X5b:2	+24 V _E DGND	Voltage supply for electronics
	X5b:3 X5b:4	+24 V _B BGND	Voltage supply for brake supply
	X6:1 X6:2	DBØØ BGND	Brake connection (switched)
	X7:1 X7:2 X7:3 X7:4	+24 V RGND C NC	Unit design with one safety relay, optional Safety relay I (sizes 1 – 6) Safety relay I (sizes 1 – 6), common contact Safety relay I (sizes 1 – 6), NC contact The connector comes equipped with a coding nose.
	X8:1 X8:2 X8:3 X8:4	+24 V RGND C NC	Design with two safety relays, optional Safety relay II (sizes 2 – 6) Safety relay II (sizes 2 – 6), common contact Safety relay II (sizes 2 – 6), NC contact The connector comes equipped with a coding nose.

Table continued on next page. Footnotes at the end of the table.



Installation

Terminal assignment

	terminal	Assignment	Brief description
	X9a X9b		a = Input: System bus, with green plug b = Output: System bus, with red plug
	X10:1 X10:2 X10:3 X10:4 X10:5 X10:6 X10:7 X10:8 X10:9 X10:10 X10:11	DIØØ DIØ1 DIØ2 DIØ3 DIØ4 DIØ5 DIØ6 DIØ7 DIØ8 DCOM DGND	Binary input 1, with fixed assignment "Controller enable" Binary input 2, freely programmable Binary input 3, freely programmable Binary input 4, freely programmable Binary input 5, freely programmable Binary input 6, freely programmable Binary input 7, freely programmable Binary input 8, freely programmable Binary input 9, freely programmable Reference potential for the binary inputs DIØØ – DIØ8 General reference potential of control electronics Electrically isolated via optocoupler with reference to DCOM (X10:10).
	X11:1 X11:2 X11:3 X11:4 X11:5	DOØØ DOØ1 DOØ2 DOØ3 DGND	Binary output 1, freely programmable Binary output 2, freely programmable Binary output 3, freely programmable Binary output 4, freely programmable Reference potential for the binary outputs DOØØ – DOØ3
	X12:1 X12:2 X12:3 X12:4 X12:5 X12:6 X12:7 X12:8 X12:9	n.c. CAN_L DGND CAN_L R_{termination} DGND CAN_H CAN_H R_{termination}	CAN2 Bus Low Reference potential CAN bus CAN2 Bus Low Unit internal SBus terminating resistor Reference potential CAN bus CAN2 Bus High CAN2 Bus High Unit internal SBus terminating resistor
	X13:1 X13:2 X13:3 X13:4 X13:5 X13:6 X13:7 X13:8 X13:9 X13:10 X13:11 X13:12 X13:13 X13:14 X13:15	S2 (SIN +) S1 (COS +) n.c.²⁾ n.c. R1 (REF +) TF/TH/KTY- n.c. n.c. S4 (SIN -) S3 (COS -) n.c. n.c. R2 (REF -) TF/TH/KTY+ n.c.	Motor resolver connection
Table continued on next page. Footnotes at the end of the table.			



	terminal	Assignment	Brief description
	X13:1	Signal track A (cos +)	Connection of motor encoders: sin/cos encoder, TTL encoder
	X13:2	Signal track B (sin +)	
	X13:3	Signal track C	
	X13:4	n.c.	
	X13:5	n.c.	
	X13:6	TF/TH/KTY-	
	X13:7	n.c.	
	X13:8	DGND	
	X13:9	Signal track A_N (cos -)	
	X13:10	Signal track B_N (sin -)	
	X13:11	Signal track C_N	
	X13:12	n.c.	
	X13:13	n.c.	
	X13:14	TF/TH/KTY+	
	X13:15	U _S ³⁾	
	X13:1	Signal track A (cos +)	Connection of Hiperface [®] motor encoder
	X13:2	Signal track B (sin +)	
	X13:3	n.c.	
	X13:4	DATA+	
	X13:5	n.c.	
	X13:6	TF/TH/KTY-	
	X13:7	n.c.	
	X13:8	DGND	
	X13:9	Signal track A_N (cos -)	
	X13:10	Signal track B_N (sin -)	
	X13:11	n.c.	
	X13:12	DATA-	
	X13:13	n.c.	
	X13:14	TF/TH/KTY+	
	X13:15	U _S ³⁾	

1) The pin assignment is identical for both connectors (X7 and X8) and they are interchangeable. Coding prevents an incorrect connection.

2) Do not connect any cable.

3) 12 V, max. 500 mA

4.6.4 Terminal assignment of the MXM master module

	terminal	Assignment	Brief description
	X5a:1	+24 V _E	Voltage supply for electronics ¹⁾
	X5a:2	DGND	
	X5a:3	+24 V _B	Voltage supply for brake supply
	X5a:4	BGND	
	X5b:1	+24 V _E	Voltage supply for electronics
	X5b:2	DGND	
	X5b:3	+24 V _B	Voltage supply for brake supply
	X5b:4	BGND	

1) Only for looping through



4.6.5 Terminal assignment of the MXC capacitor module

	terminal	Assignment	Brief description
	X4:PE X4:1 X4:2	PE +U _Z - U _Z	DC link bus connection
	X5a:1 X5a:2	+24 V _E DGND	Voltage supply for electronics
	X5a:3 X5a:4	+24 V _B BGND	Voltage supply for brake supply
	X5b:1 X5b:2	+24 V _E DGND	Voltage supply for electronics
	X5b:3 X5b:4	+24 V _B BGND	Voltage supply for brake supply

4.6.6 Terminal assignment of the MXB buffer module

	terminal	Assignment	Brief description
	X4:PE X4:1 X4:2	PE +U _Z - U _Z	DC link bus connection
	X5a:1 X5a:2	+24 V _E DGND	Voltage supply for electronics
	X5a:3 X5a:4	+24 V _B BGND	Voltage supply for brake supply ¹⁾
	X5b:1 X5b:2	+24 V _E DGND	Voltage supply for electronics
	X5b:3 X5b:4	+24 V _B BGND	Voltage supply for brake supply

1) Only for looping through



4.6.7 Terminal assignment of the MXS 24 V switched-mode power supply module

	terminal	Assignment	Brief description
	X4:PE X4:1 X4:2	PE n.c. - U _Z	DC link bus connection
	X5a:1 X5a:2	+24 V _E DGND	Voltage supply for electronics (channel 1)
	X5a:3 X5a:4	+24 V _B BGND	Voltage supply for brake (channel 3)
	X5b:1 X5b:2	+24 V _E DGND	Voltage supply for electronics (channel 2)
	X5b:3 X5b:4	+24 V _B BGND	Voltage supply for brake (channel 3)
	X16:1 X16:2	+24 V DGND	External 24 V voltage supply (input) Is intended to supply the backup voltage to ensure that the control voltage is maintained when switching off the power supply.

4.6.8 Terminal assignment of the DC link discharge module MXZ

	terminal	Assignment	Brief description
	X4:PE X4:1 X4:2	PE n.c. - U _Z	DC link bus connection
	X5a:1 X5a:2	+24 V _E DGND	Voltage supply for electronics
	X5a:3 X5a:4	+24 V _B BGND	Voltage supply for brake supply
	X5b:1 X5b:2	+24 V _E DGND	Voltage supply for electronics
	X5b:3 X5b:4	+24 V _B BGND	Voltage supply for brake supply
	X14:1	Inhibit	Control signal for discharge process → discharge process is started once the connection "Inhibit" with GND has been established. Connect the Inhibit input in a non-separable manner (fixed installation) with the break contact of the mains contactor. Reference potential for the TEMP binary output Binary output (= High, 24 V) when the temperature of the MXZ.. power switch is in the permitted range.
	X14:2	DGND	
	X14:3	DGND	
	X14:4	TEMP	
	X14:5	n.c.	
	X15:PE X15:1 X15:2	PE Discharge n.c.	Connection braking resistor for discharge

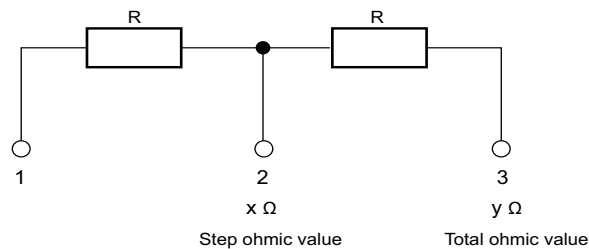


Installation

Permitted tightening torques at the terminals

4.6.9 Terminal assignment of the braking resistors

The following figure shows a braking resistor with central tap.



4.7 Permitted tightening torques at the terminals

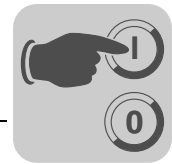
Supply module	Tightening torque	
	Line connection X1	Braking resistor terminals
Size 1	0.5 – 0.6 Nm	0.5 – 0.6 Nm
MXP81	0.5 – 0.6 Nm	0.5 – 0.6 Nm
Size 2	3.0 – 4.0 Nm	3.0 – 4.0 Nm
Size 3	6.0 – 10.0 Nm	3.0 – 4.0 Nm
Supply and regenerative module		
MXR ¹⁾	6.0 – 10.0 Nm	3.0 – 4.0 Nm
Axis module	Motor connection X2	---
Size 1	0.5 – 0.6 Nm	---
Size 2	1.2 – 1.5 Nm	---
Size 3	1.5 – 1.7 Nm	---
Size 4	3.0 – 4.0 Nm	---
Size 5	3.0 – 4.0 Nm	---
Size 6	6.0 – 10.0 Nm	---
DC link discharge module	Braking resistor connection X15	---
All sizes	3.0 – 4.0 Nm	---

1) For detailed information about MXR, refer to the "Supply and Regenerative Module" manual"

Tightening torque	
of the signal terminals X10, X11	0.5 – 0.6 Nm
of the DC link bus connection X4	3.0 – 4.0 Nm
of the safety relay terminals X7, X8	0.22 – 0.25 Nm
of the brake connection terminals X6 of the axis modules	0.5 – 0.6 Nm
of the 24 V voltage supply terminals	0.5 – 0.6 Nm
of the terminals X61 for multi-encoder cards XGH, XGS	0.22 – 0.25 Nm
of terminals X21, X22, X25, X26 of the input/output cards XIO, XIA	0.5 – 0.6 Nm

4.8 Permitted line fuses

MXP supply module	10 kW	25 kW	50 kW	75 kW
Input fuse	20 A	40 A	80 A	125 A

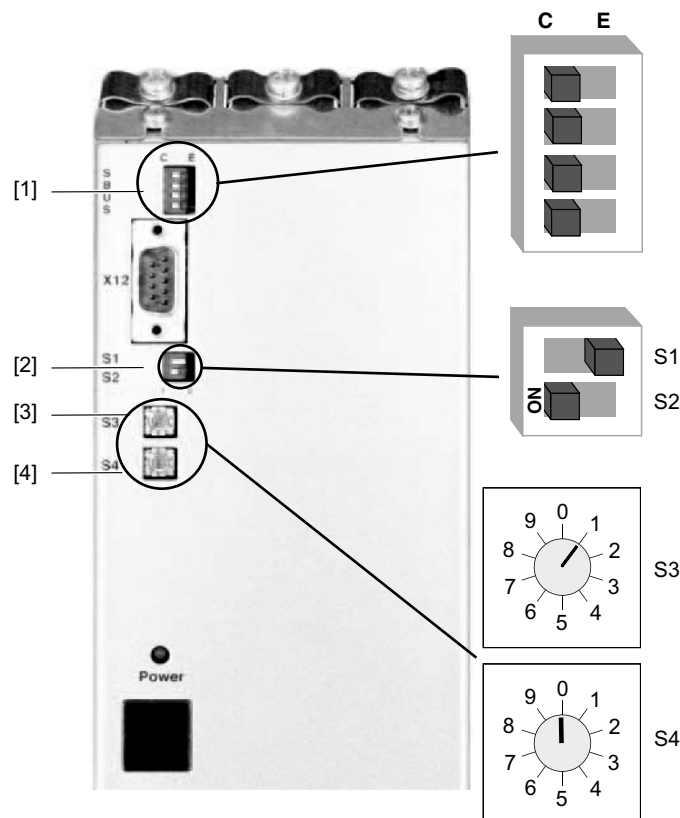


5 Startup

5.1 Supply module settings for CAN-based system bus SBus

The following settings are necessary:

- The CAN baud rate is set using the two address switches S1 and S2 on the supply module, see section "Setting the CAN baud rate" (page 42).
- The 4 DIP switches for setting the system bus are set to "C".
- The axis address is set using the two address switches S3 and S4 on the supply module, see section "Setting the CAN axis address". The next axis address will be set automatically based on the first address.



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- [1] DIP switches system bus
[2] S1, S2: DIP switches for CAN baud rate

- [3] S3: Axis address switch 10^0
[4] S4: Axis address switch 10^1

For detailed information about assigning an address to a supply and regenerative module, refer to the "MXR Supply and Regenerative Module" manual.



Startup

Supply module settings for CAN-based system bus SBus

5.1.1 Setting the CAN baud rate

The two DIP switches S1 and S2 have been installed in the supply module for setting the CAN baud rate, see illustration in section "Supply module settings for CAN-based system bus" (page 41).

	125 kbit/s	250 kbit/s	500 kbit/s	1 Mbit/s
S1				
S2				



INFORMATION

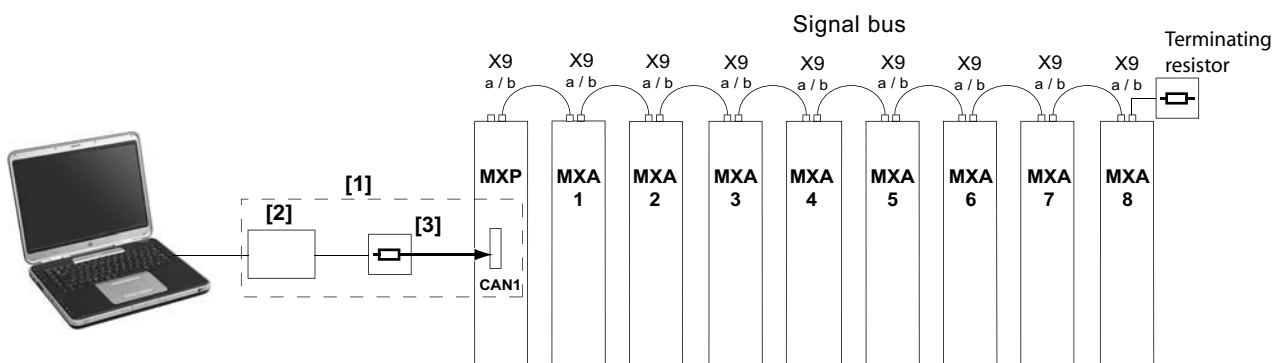
The default setting upon delivery is 500 kbit/s.

5.1.2 Bus terminating resistors for CAN-based system bus SBus

The CAN-based system bus connects the supply module with the axis module. This CAN bus requires a terminating resistor.

The following figure shows a schematic representation of the CAN communication and the respective position of the terminating resistor.

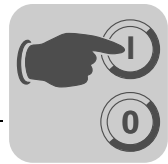
The terminating resistor is a standard accessory of the supply module .



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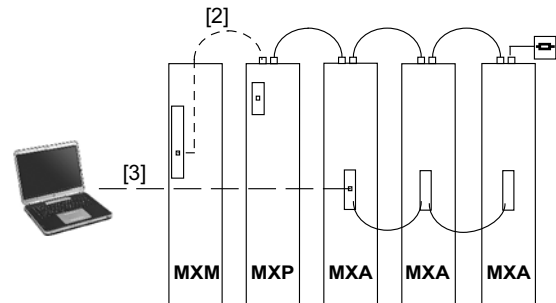
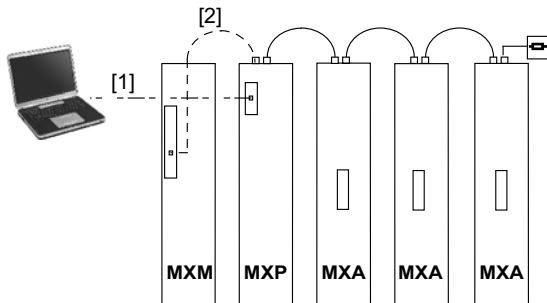
- [1] Connection cable between PC and CAN interface on the supply module. The connection cable consists of the USB-CAN interface [2] and the cable with integrated terminating resistor [3].
- [2] USB-CAN interface
- [3] Cable with integrated terminating resistor (120 Ω between CAN_H and CAN_L)

For more information on communication between the PC and the MOVIAXIS® system, refer to section "Communication via CAN adapter" in the detailed operating instructions.



5.2 Communication selection

The following figures show the possible access types for the system buses of the unit system.



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- [1] PC-CAN to CAN-based system bus SBus
- [2] Master module with CAN-based system bus SBus/EtherCAT®-compatible system bus SBus^{plus}
- [3] PC-CAN to CAN-based application bus CAN2

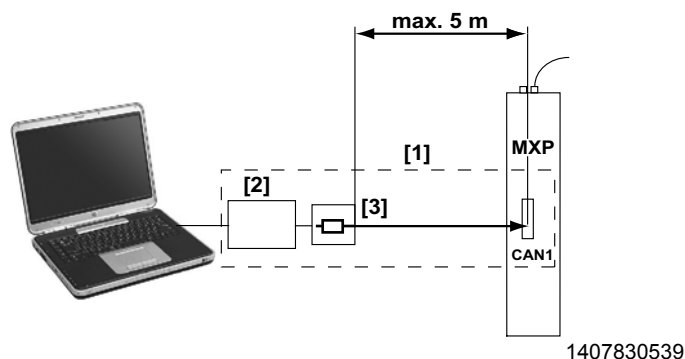
SEW-EURODRIVE recommends the following communication paths:

- Unit system without master module: CAN
- Unit system with master module and DHE/DHF/DHR/UFx: TCP/IP or USB

5.3 CAN-based application bus CAN2 – information and settings

5.3.1 Connections and PC diagnostics at the supply module

	INFORMATION CAN connections shall only be implemented in the control cabinet to avoid potential shifts.
--	--



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- [1] Connection cable between PC and CAN interface on the supply module. The connection cable consists of the USB-CAN interface [2] and the cable with integrated terminating resistor [3].
- [2] USB-CAN interface
- [3] Cable with integrated terminating resistor (120 Ω between CAN_H and CAN_L)

The maximum permitted cable length between terminating resistor and supply module is 5 m.



Startup

CAN-based application bus CAN2 – information and settings



INFORMATION

Observe the notes of the cable manufacturer on CAN suitability when selecting the cable.

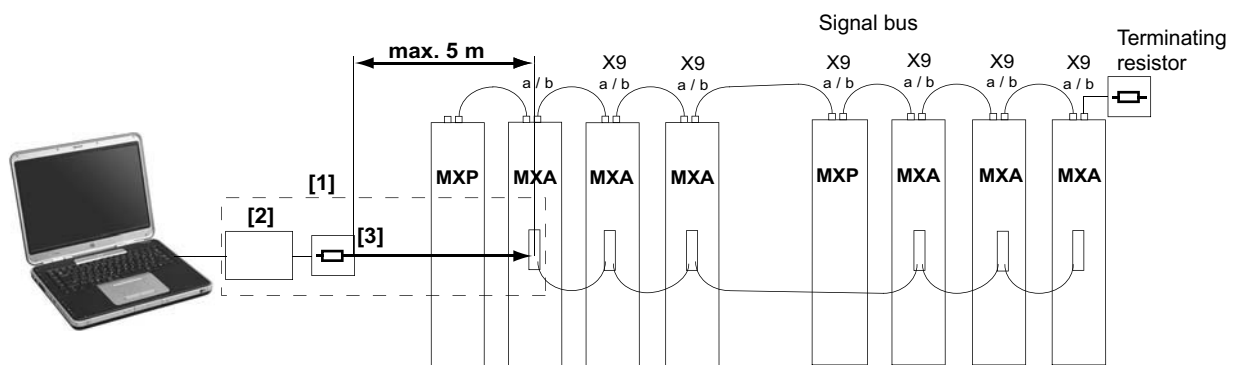
For more information on communication between the PC and the MOVIAXIS® system, refer to section "Communication via CAN adapter" in the detailed operating instructions.

5.3.2 Connections and PC diagnostics at the axis module



INFORMATION

CAN connections shall only be implemented in the control cabinet to avoid potential shifts.



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[1] Connection cable between PC and CAN interface on the axis module. The connection cable consists of the USB-CAN interface [2] and the cable with integrated terminating resistor [3].

[2] USB-CAN interface [3] Cable with integrated terminating resistor (120 Ω between CAN_H and CAN_L)

The maximum permitted cable length between terminating resistor and the first axis module is 5 m.



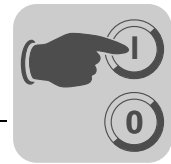
INFORMATION

For the connection between the axis systems, please use prefabricated cables from SEW-EURODRIVE.

For more information on communication between the PC and the MOVIAXIS® system, refer to section "Communication via CAN adapter" in the detailed operating instructions.

5.3.3 Setting the CAN2 axis address

All axis modules are set to address "0" at the factory. Each axis module must be given a CAN2 axis address by means of parameter setting.

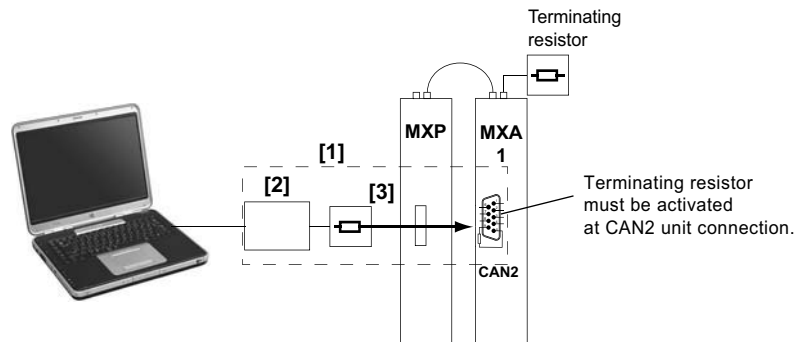


5.3.4 Bus terminating resistor for CAN2 bus connection

The CAN-based application bus CAN2 connects the supply module with the axis module. The CAN2 bus requires a terminating resistor.

The following figure shows the diagram of possible combinations for CAN communication and the respective position of the terminating resistor.

The terminating resistor is a standard accessory of the supply module .



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- [1] Connection cable between PC and CAN interface on the axis module. The connection cable consists of the USB-CAN interface [2] and the cable with integrated terminating resistor [3].
- [2] USB-CAN interface
- [3] Cable with integrated terminating resistor (120 Ω between CAN_H and CAN_L)

	INFORMATION
	Install terminating resistor. The terminating resistor in the last axis module of the axis system must be activated, see chapter "Connecting CAN2 cables to the axis modules" in the detailed operating instructions.

For more information on communication between the PC and the MOVIAXIS® system, refer to section "Communication via CAN adapter" in the detailed operating instructions.

5.4 Communication via CAN adapter

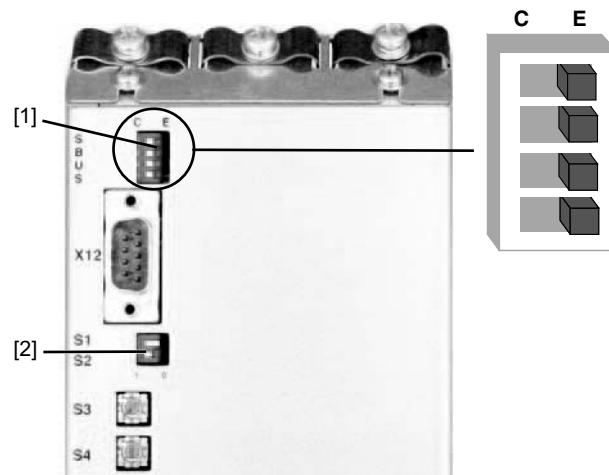
For communication between a PC and a MOVIAXIS® system, we recommend using the CAN adapter from SEW-EURODRIVE, which is supplied with a prefabricated cable and a terminating resistor. The part no of the CAN adapter is 18210597.



5.5 Settings for EtherCAT®-compatible system bus SBus^{plus}

Please note the following when using an EtherCAT®-compatible system bus:

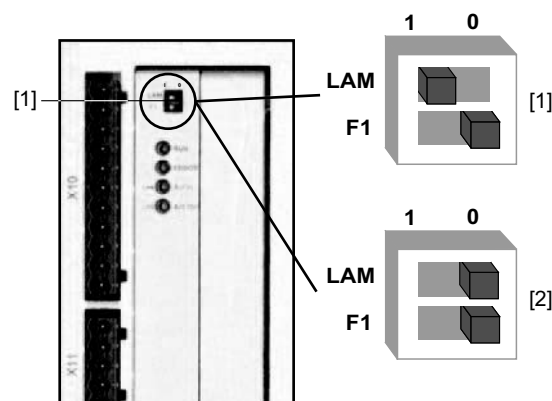
- Set the 4 DIP switches on the supply module to position "E".



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- [1] Settings for EtherCAT® operation: All 4 switches set to "E"
 [2] DIP switches S1, S2, S3 and S4 and X12 have no functions

- In this variant, switches S1, S2, S3 and S4 as well as terminal X12 on the supply module do not have any function.
- Set the DIP switch LAM to **setting "1"** at the **last** axis module in the system. At all other axis modules, the LAM DIP switch must be set to "0".



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- [1] Setting the LAM DIP switch on the **last** axis module of a system
 [2] Setting the LAM DIP switch of all axis modules of a system except for the last axis module

- In this version, X9b does not require a terminating resistor.



6 Operation

6.1 General information

	! DANGER Dangerous voltages at cables and motor terminals Severe or fatal injuries from electric shock. • When the unit switch is in the ON position, dangerous voltages are present at the output terminals as well as any connected cables and motor terminals. This also applies even when the unit is inhibited and the motor is at standstill. • The fact that the operation LED is no longer illuminated does not indicate that the MOVIAXIS® multi-axis servo drive is no longer connected to the mains and is de-energized. • Before you touch the power terminals, check to see that the MOVIAXIS® multi-axis servo drive has been disconnected from the mains. • Observe the general safety notes in section 2 and the notes in section "Electrical Installation" in the detailed operating instructions.
	! DANGER Risk of crushing if the motor starts up unintentionally. Severe or fatal injuries. Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Removing the cause of the problem or performing a reset can result in the drive re-starting on its own. • Ensure that the motor cannot start inadvertently, for example, by removing the electronics terminal block X10. • Additional safety precautions must be taken depending on the application to avoid injury to people and damage to machinery.
	CAUTION The motor output of the multi-axis servo inverter may only be switched or disconnected when the output stage is inhibited.



6.2 Operating displays and errors of the MXP supply module

6.2.1 Table of displays

	Description	Status	Comment / action	Display on axis module
Displays during standard operation				
	Ready for operation (ready)	No error/warning. $V_Z = > 100 \text{ V}$	Status display only.	-
Displays of different unit states				
	DC link voltage missing or less than 100 V.	No error/warning. $V_Z = > 100 \text{ V}$	Check supply system.	X
Displays in case of warnings				
	I^2_{xt} prewarning.	Utilization of the supply module has reached the prewarning level.	Check application regarding utilization.	P
	Temperature prewarning.	The temperature of the supply module is approaching the cut-off threshold.	Check application regarding utilization, check ambient temperature.	P
	Prewarning: Utilization of internal braking resistor $\geq 80\%$	Unit is ready for operation	Check unit utilization / project planning. Affects only MXP81.	-

6.2.2 Table of errors

	Description	Status	Comment / action	Display on axis module
Displays in case of an error				
	Error brake chopper.	Brake chopper is not ready for operation.	See error list of axis modules.	X
	Error excessive ZK voltage U_Z .	Error message by SM via signaling bus when DC link voltage is too high.	Check application design and braking resistor.	X
	Error excessive ZK current.	The DC link current in the supply module has exceeded the maximum limit of $250\% I_{\text{nominal}}$.	Check application regarding utilization.	X
	Error I^2_{xt} monitoring.	Utilization of the supply module has reached the limit value.	Check application regarding utilization.	X
	Error temperature monitoring.	Temperature of the supply module has reached the switch-off threshold.	Check application regarding utilization, check ambient temperature.	X
	Switch-off due to internal braking resistor overload	The unit is not ready for operation any longer	Check unit utilization / project planning. Affects only MXP81.	x
	Error voltage supply (switched-mode power supply module inside unit).	A supply voltage inside the unit is defective.	Check connected loads for overcurrent or unit for defects.	-
	Thermal overload of the additional capacity	Additional capacity at full capacity. Error response only depending on the settings made for the axis modules.	Braking resistor converts regenerative energy into heat. Check unit utilization / project planning. Affects only MXP81.	x
	Error voltage supply (switched-mode power supply module inside unit).	A supply voltage inside the unit is defective.	Check connected loads for overcurrent or unit for defects.	-



6.3 Operating displays and errors of MXA axis module

6.3.1 Table of displays

	Description	Status	Comment / action
Displays during boot process			
b0	Unit passes through several states when loading the firm-ware (boot) to get ready for operation.	- Status: not ready. - Output stage is inhibited. - No communication possible.	- Waiting for boot process to finish. - Unit stays in this condition: Unit defective.
b1			
b2			
b3			
br			
Displays of different unit states			
00	DC link voltage missing	- Status: not ready. - Output stage is inhibited. - Communication is possible.	Check supply system.
01	Supply module not ready for operation.		Check supply module.
02	Axis module 24 V or internal switched-mode power supply module of axis not ready for operation.		24 V check or unit defective.
02 flashing	Axis module in safe stop.		Safety function activated.
03	Incorrect synchronization with bus. Process data processing not available.		- Check bus connection. - Check synchronization setting at unit and controller. - Check process data settings at unit and controller. - Check for missing PDO.
04 flashing	The encoder evaluation is not ready.		- Encoders are initialized. - Unit stays in this condition: - No encoder selected. "Source of actual speed" parameter shows an encoder that does not exist.
Displays during initialization processes (parameters will be reset to default values)			
d0	Basic initialization.	- Status: not ready. - Output stage is inhibited. - Communication is possible.	Waiting for initialization to finish.
d1	Initialization of delivery state.		
d2	Initialization of factory setting.		
d3	Initialization of customer-specific set 1.		
d4	Initialization of customer-specific set 2.		



Operation

Operating displays and errors of MXA axis module

	Description	Status	Comment / action
Displays during standard operation			
01	Output stage inhibit	• Output stage is inhibited.	The drive is not actuated by the output stage. The brake is applied; without brake the motor coasts to a halt. This FCB is permanently selected with terminal DI00. But it can be additionally selected by other sources.
02	Unassigned	For further information refer to the MOVIAXIS® parameter description	
03	Unassigned		
04	Unassigned		
05	n-control (speed control)		Speed control with internal ramp generator.
06	Interpolated n-control		Speed control with setpoints cyclically via bus. The ramp generator is located externally, e.g. in the higher-level controller.
07	M-control (torque control)		Torque control
08	Interpolated M-control		Torque control with setpoints cyclically via bus.
09	Position control		Positioning mode with internal ramp generator.
10	Interpolated position control		Positioning mode with setpoints cyclically via bus. The ramp generator is located externally, e.g. in the higher-level controller.
12	Reference travel		The drive performs reference travel.
13	Stop		Deceleration at application limit. This FCB also becomes active if no other FCB is selected as default FCB.
14	Emergency stop		Deceleration at emergency stop limit.
15	Stop at system limit		Deceleration at system limit.
16	Electronic cam		Electronic cam active.
17	Synchronous operation		Synchronous operation active.
18	Calibrate incremental encoder		Encoder commutation for synchronous motors.
19	Hold control		Position control at current position.
20	Jog mode		Jog mode active.
21	Brake test		Brake is tested by applying torque while brake is closed.
22	Multi-drive		Is used to operate 2, 3 or 4 motors in interpolated speed control mode.
25	Rotor position identification		Is used for communication detection of synchronous motors.
26	Stop at user limits		Is used for stopping at user limits.



6.3.2 Table of errors

	INFORMATION
	Errors or sub-error codes, which are not included in the following list, can be displayed within the framework of displayed errors. In this case, contact SEW-EURODRIVE.

A "P" in the column "Error response" indicates that the response is programmable. The factory set error response is listed in the "Error response" column.

The following abbreviations are used for the module designations:

- "AM" for axis module
- "SM" for supply module

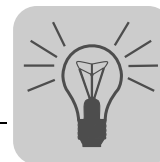
Code	Error	Sub-error Code	Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause			
00	No fault (this display is actually an operating display, see operating displays)	---	---	---	---	Ready = 1 (depending on system state) Malfunction = 1
01	"Overcurrent" error		• Short-circuit output • Motor too large • Defective output stage	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
02	"UCE monitoring" fault		The fault is an additional kind of overcurrent, measured at the collector-emitter voltage of the output stage. The possible reason behind this fault is identical to fault 01. The distinction is important for internal purposes only.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
03	"Ground fault"		Ground fault • in the motor lead • in the inverter • in the motor	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
04	"Brake chopper" fault		Error message by supply module via signal bus. • Too much regenerative power • Braking resistor circuit interrupted • Short circuit in the braking resistor circuit • Brake resistance too high • Brake chopper defective	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
05	"Timeout HW info system" fault		The connection between supply module and axis module via signaling bus has been interrupted	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Connection to signaling bus interrupted			
		02	Timeout flag signaling bus cannot be reset			
06	"Line phase failure" error		Error message by supply module via signal bus. It was detected that a line phase is missing.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
07	"DC link" error		Error message by SM via signaling bus when DC link voltage is too high	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0



Operation

Operating displays and errors of MXA axis module

Code	Error		Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause			
08	Error "Speed monitoring"		Active speed monitoring has detected an unacceptable deviation between setpoint and actual speed	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Motor speed monitoring			
		02	Regenerative speed monitoring			
		03	System limit actual speed exceeded			
11	"AM overtemperature" error		Temperature of the AM has reached or exceeded the cut-off threshold. Possible reasons: - Ambient temperature too high - Unfavorable air convection - Defective fan - Medium utilization too high	Display only	-----	Ready = 0 Malfunction = 0
		01	Limit heat sink temperature exceeded.			
		02	Second temperature sensor of the electronics signals overtemperature.			
		12	Second temperature sensor of the electronics signals overtemperature prewarning.			
12	"Brake output" error		- No brake connected - Brake line separated in "on" status - Overload through overcurrent > 2A (F13 has priority) - Overload due to excessive connection (approx. > 0,5 Hz) Monitoring is only active with parameter settings "Brake installed" and "Brake applied".	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Brake output			
13	"Brake supply" error		Brake supply voltage not within permitted range of +10% / - 0%. Monitoring only possible with parameter settings "Brake installed" and "Brake applied" as well as with CMP and DS motors.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Brake supply voltage			
14	"Resolver" error		Error with resolver or resolver evaluation.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Wire breakage detection of resolver			
		02	Emulation error resolver (excessive speed)			
		03	Invalid period of the synchronization signal			
		04	Synchronization signal failure			
		05	Incorrect parameter setting of DSP			
		06	Saturation at AD converter input			
		07	Unable to initialize PLL			
		08	CRC error via data flash (X-Flash)			
		09	CRC error via program flash (P-Flash)			
		10	CRC error via program flash (P-Flash)			
		11	Watchdog of DSP has triggered			
		12	Invalid instruction in DSP			
		13	Unexpected interrupt in DSP			
		14	Software interrupt in DSP			
		15	Hardware stack overflow in DSP			



Error		Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
Code	Signal		Cause	Response ²⁾		
		16	ONCE trap in DSP			
		17	Interrupt A in DSP			
		18	Interrupt B in DSP			
		19	Non-permissible angle during calibration			
		20	Error deleting flash during calibration			
		21	Error programming flash during calibration			
		22	Error verifying flash during calibration			
		23	Resolver evaluation not calibrated			
		24	PLL has locked during operation			
		256	Init phase of DSP not finished within permitted time period			
		267	Ready signal of DSP not within permitted time period			
		512	Protection against division overflow by limiting the actual speed		Set the correct system numerator/denominator values.	
15	"Absolute encoder" error		An error has occurred in the checksum of the Hiperface [®] signals.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
	Encoder input of basic unit	01	Comparison of the absolute encoder position (via Hiperface [®] parameter channel) with the incremental position of the axis every second.		• Check track signal wiring. • Check interference sources • Replace encoder • Replace card	
		02	Unknown encoder type		Clarify whether this encoder can be used	
		03	Corrupt encoder nameplate data Incorrect block checksum of the data field range of the encoder manufacturer.		Replace encoder	
		32 – 67	Hiperface [®] encoder signals internal error. The error code is displayed as follows: [Displayed value] -32. You can inquire about this error code at the encoder manufacturer.		• Check wiring and interference sources • If the problem persists, replace the encoder	



Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
	Encoder input of basic unit	256	- SSI encoder: Voltage range of the voltage supply (12 V) - SSI encoder signals an error by a set error bit in the SSI protocol		Check voltage supply to SSI encoder	
					- Check settings on SSI encoder (error bit) - Check wiring - Check interference sources - Replace encoder	
		257	SSI encoder: Interrupted clock or data line		- Check wiring - Check interference sources, also supply voltage - Check startup parameters - Replace encoder	
		258	SSI encoder: Position outside tolerance range		- Check interference sources (interrupted beam, reflector, data lines, etc.) - Check startup parameters	
		259	SSI encoder: SSI clock sequence does not match speed sampling interval		- Increase SSI clock rate - Check startup parameters	
		260	SSI encoder: User defined fault via fault mask		- SSI encoder signals error, see data sheet of encoder - Check startup parameters	
		261	SSI encoder: No high level present		- Check wiring - Replace encoder	
		513	Faulty comparison of EnDat encoder between raw position and track counter		- Check track signal wiring. - Check interference sources - Replace encoder - Replace card	
		514	Invalid EnDat parameter measuring steps		- Perhaps no EnDat encoder can be used! - Replace encoder	
		515	Invalid EnDat parameter resolution		- Perhaps no EnDat encoder can be used! - Replace encoder	
		516	Invalid EnDat parameter multi-turn		- Perhaps no EnDat encoder can be used! - Replace encoder	
		544 – 575	EnDat encoder signals error statue. Error codes are listed in the EnDat protocol description. EnDat error code = subcode - 544 or subcode - 4640 or subcode - 8736		Replace encoder	



Code	Error		Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal			Cause	Response ²⁾		
	Encoder option 1		4097	Comparison of the absolute encoder position (via Hiperface [®] parameter channel) with the incremental position of the axis every second.		- Check track signal wiring. - Check interference sources - Replace encoder - Replace card	
			4098	Unknown encoder type			
			4099	Corrupt encoder nameplate data Incorrect block checksum of the data field range of the encoder manufacturer.		Replace encoder	
			4128 – 4163	Hiperface [®] encoder signals internal error. The error code is displayed as follows: [Displayed value] -4128. You can inquire about this error code at the encoder manufacturer.		- Check wiring and interference sources - If the problem persists, replace the encoder	
			4352	SSI encoder option 1: Voltage range of the voltage supply (12 V)		Check voltage supply to SSI encoder	
			4353	SSI encoder option 1: Interrupted clock or data line		Check connection to SSI encoder	
			4354	SSI encoder option 1: Position outside tolerance range		Minimize interference	
			4355	SSI encoder option 1: SSI clock sequence does not match speed sampling interval		Set a higher cycle frequency	
			4356	SSI encoder option 1: User defined fault via fault mask			
			4357	SSI encoder option 1: No high level present		Replace option card or encoder	
	Encoder option 1		4609	Incorrect comparison between raw position and check counter with EnDat encoder			
			4610	Incorrect EEPROM values in encoder			
			4611	Incorrect EEPROM values in encoder			
			4612	Incorrect EEPROM values in encoder			
			4640 – 4671	EnDat encoder signals error status. The error code is displayed as follows: [displayed value] - 5640. Error codes are listed in the EnDat protocol description.			
			4672	EnDat encoder signals internal warning			



Operation

Operating displays and errors of MXA axis module

Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
	Encoder option 2	8193	Comparison of the absolute encoder position (via Hiperface [®] parameter channel) with the incremental position of the axis every second.		- Check track signal wiring. - Check interference sources - Replace encoder - Replace card	
		8194	Unknown encoder type			
		8195	Corrupt encoder nameplate data Incorrect block checksum of the data field range of the encoder manufacturer.		Replace encoder	
		8224 – 8259	Hiperface [®] encoder signals internal error. The error code is displayed as follows: [Displayed value] -8224. You can inquire about this error code at the encoder manufacturer.		- Check wiring and interference sources - If the problem persists, replace the encoder	
		8448	SSI encoder signal voltage drop			
		8449	SSI encoder wire breakage detected			
		8450	SSI encoder position not within tolerance			
		8451	SSI encoder SSI clock sequence does not match speed sampling interval		Increase clock frequency	
		8452	SSI encoder user-defined error via fault mask			
		8453	SSI encoder No high level present		Replace option card or encoder	
		8705	Incorrect comparison between raw position and check counter with EnDat encoder			
		8706	Incorrect EEPROM values in encoder			
		8707	Incorrect EEPROM values in encoder			
		8708	Incorrect EEPROM values in encoder			
		8736 – 8767	EnDat encoder signals error status. The error code is displayed as follows: [displayed value] - 8736. Error codes are listed in the EnDat protocol description.			
		8768	EnDat encoder signals internal warning			



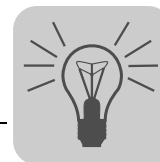
Code	Error	Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause	Response ²⁾		
16	"Startup" error		Error during startup	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Denominator of pole pair number of resolver not equal to 1			
		02	Numerator of pole pair number of resolver too great			
		03	Numerator of pole pair number of resolver too small, that means zero			
		04	Denominator of emulation PPR count for resolver not equal to 1			
		05	Numerator of emulation PPR count for resolver too small			
		06	Numerator of emulation PPR count for resolver too great			
		07	Numerator of emulation PPR count for resolver is not a power of two			
		08	Denominator of emulation PPR count for sine encoder not equal to 1			
		09	Numerator of emulation PPR count for sine encoder too small			
		10	Numerator of emulation PPR count for sine encoder too great			
		11	Numerator of emulation PPR count for sine encoder is not a power of two			
		100	The motor-inverter combination cannot reach the required test torque with the present limit values		Check limit values, adjust test torque	
		512	Startup for invalid motor type			
		513	Set current limit exceeds maximum current of axis			
		514	Set current limit is less than nominal magnetizing current of the motor			
		515	CFC: Factor for calculation of q-current cannot be displayed			
		516	Non-permitted PWM frequency configured			
		517	Parameter "Final speed flux table" not within permitted range			
		518	Parameter "Final flux ID table" not within permitted range			
		519	Output stage enable requested without valid motor startup			
		520	Motor startup not possible with enabled output stage			
		521	Factor for torque limit cannot be displayed (A)			
		522	Factor for torque limit cannot be displayed (B)			
		525	Factors for current setpoint filter cannot be displayed			
		526	Factors for current increase limit cannot be displayed			
		527	Position FIR filter cannot show the encoder delay			
		528	Speed FIR filter cannot show the encoder delay			
		529	Thermal motor monitoring I2t: Two points with identical speed in the torque-speed characteristics		Increase distance between curve points	



Operation

Operating displays and errors of MXA axis module

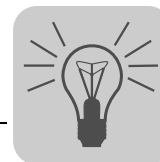
Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
		530	Max. motor current configured incorrectly			
		531	Rotor position identification: Forward correction table does not increase in strict monotonous manner			
		532	Rotor position identification: CMMin too small		Nominal axis current too high compared to motor	
		533	Rotor position identification not permitted for started-up motor			
		534	PWM frequency for FCB 25 must be 8 kHz		Set PWM frequency to 8 kHz	
		535	Index TMU-Init not set		Set TMU-Init index	
		1024	NV memory parameter of nominal unit current is greater than NV memory parameter of current measuring range			
		1025	NV memory parameter of current measuring range is zero			
		1026	NV memory parameter of current measuring range is zero			
		1027	NV memory parameter of current measuring range is too large			
		1028	System limits for speed are greater than max. possible speed			
		1029	Application limits for speed are greater than max. possible speed			
		1030	Invalid sensor type set for output stage temperature			
		1031	CFC: No absolute encoder used as motor encoder in synchronous motors			
		1032	CFC: No absolute encoder used as motor encoder in synchronous motors			
		1033	Position range in position detection mode "without overflow counter" exceeded		Check project planning of travel distance	
		1034	FCB dual drive: Lag error window may not be smaller than "standard" lag error window			
		1035	FCB dual drive: Lag error window may not be smaller than adjustment threshold			
		1036	Modulo reference offset is not within Modulo limit		Perform error-free startup	
		1037	Position values of software limit switch reversed, positive < negative			
		1038	Encoder system: Denominator factor (system unit) larger than or equal to numerator factor (system unit)		- Perform startup - Increase numerator factor (system unit)	
		1039	Encoder option 1 unable to evaluate set encoder type		Encoder must be operated on XGS11A	
		1040	Encoder option 2 unable to evaluate set encoder type		Use corresponding option card or connect the required encoder to the proper hardware	
		1041	The device of option is unable to evaluate the set encoder type		Use corresponding option card or connect the required encoder to the proper hardware	
		1042	No commutation present		Set commutation with FCB25	



Code	Error		Error Cause	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code				
		1043	Standstill current not permitted for synchronous motor		Disable standstill current function	
17	Internal computer error (traps)		CPU has detected an internal error	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
18	Internal software error		The software has detected a non-permissible state.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
19	Process data error		Invalid process data	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Process data: Negative maximum torque indicated			
		02	Process data: Positive minimum torque indicated			
		03	Process data: Negative motor torque limit indicated			
		04	Process data: Negative regenerative torque limit indicated			
		05	Process data: Torque limit for quadrant 1 is negative			
		06	Process data: Torque limit for quadrant 2 is negative			
		07	Process data: Torque limit for quadrant 3 is negative			
		08	Process data: Torque limit for quadrant 4 is negative			
		09	Torque control: Maximum speed < minimum speed			
		10	Position control: Maximum speed value < 0			
		11	Position control: Maximum speed < 0			
		12	Position control: Minimum speed > 0			
		13	Process data: Enter negative acceleration			
		14	Process data: Enter negative deceleration			
		15	Process data: Enter negative jerk			
		16	Combination of FCB number and FCB instance does not exist			
		17	Target position not within limit switch range			
		18	Test torque during brake test exceeds system limit		Set test torque smaller than system limit	
		19	Process data: Negative velocity limit		Specify positive velocity limit	
		20	Parameter set changeover requested with active output stage.		First inhibit the output stage (select FCB01 or enable = 0) before changing to another data set via process data	
		21	Selection for target or source not within permitted range		Selections for target and source must be valid table indices	
		30	FCB 09: Target in user-defined unit not within set modulo range		Adjust modulo underflow and modulo overflow to the travel range used / select target values in such a way that they are within the active modulo range.	



Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
		31	FCB 09: Target specified in user-defined unit results in target overflow in system units		Increase resolution of user-specified unit for position	
		32	FCB 09: Modulo underflow >= Modulo overflow		Swap values of modulo underflow and modulo overflow	
		33	FCB 09: Absolute target position requested but not referenced.		Perform reference travel for position encoder	
		34	FCB 09: Acceleration or deceleration limit = 0 transferred		Check local setpoint, application limits, system limits, transferred process data	
20	Electronic cam lag error		The preset lag error limit in electronic cam mode was exceeded	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	CAM: Electronic cam lag error			
21	Lag error dual drive		The preset lag error limit in dual drive mode "Engel" was exceeded	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	FCB dual drive: Lag error in adjustment phase			
		02	FCB dual drive: Lag error in standard operation			
25	"Non-volatile parameter memory" error		An error was detected during access to non-volatile parameter memory.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	NV memory address access			
		02	NV memory runtime error (MemoryDevice)			
		03	Error reading data from non-volatile memory. Data cannot be used due to faulty identification or checksum.			
		04	Initialization error of memory system.			
		05	The read-only memory contains invalid data.			
		06	The read-only memory contains incompatible data of another device (in case of exchangeable data memories)			
		07	NV memory initialization error			
		08	NV memory internal error			
		09	NV memory JFLASH error			
		10	NV memory FLASH module error			
26	"External terminal" error		A binary input terminal has signaled an error.	Stop with emergency stop delay (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	External terminal error			
27	"Limit switch" error		One or both limit switches cannot be detected at the programmed input terminals or in the control word.	Shutdown with emergency stop delay	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Both limit switches missing or wire breakage			
		02	Limit switch reversed			
28	"Fieldbus timeout" error		Process data communication is interrupted.	Stop with emergency stop delay (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Error Fieldbus timeout			



Code	Error	Sub-error Code	Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause			
29	"Hardware limit switch reached" error		Hardware limit switch reached during positioning	Stop with emergency stop delay (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Right limit switch approached			
		02	Left limit switch approached			
30	"Deceleration time-out" error		The drive did not come to a standstill within the preset delay time.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Stop ramp time violation			
		02	Time violation stop at application limit			
		03	Time violation stop at system limit			
		04	Emergency stop ramp time exceeded			
31	"TF/TH Temperature protection motor" fault		Overtemperature sensor (KTY/TF/TH) of the drive has triggered for motor protection	"No response" (D), (P)	No response	Ready = 1 Malfunction = 1
		01	Wire breakage of motor temperature sensor detected			
		02	Short circuit of motor temperature sensor detected			
		03	Motor overtemperature KTY			
		04	Motor overtemperature (synchronous motor model)			
		05	Motor overtemperature (TF/TH)			
		06	Motor overtemperature I2t model			
33	"SM Boot Timeout" error		The supply module is not or no longer ready for operation.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Boot synchronization with supply module error			
36	"Lag distance synchronous operation" error		A preset, maximum permitted lag distance was exceeded during synchronous operation	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	FCB synchronous operation: Lag error			
37	Error "System watchdog"		Internal watchdog timer setting has been exceeded	Output stage inhibit	System blocked / CPU reset	Ready = 0 Malfunction = 0
38	"Technology functions" error		Error in a technology function	Stopping with application limits, program-mable	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Cam function: Trip point with negative edge < positive edge has been entered			
		02	Cam function: Command overflow trip-point processing			
		03	Cam: Incorrect flow control block type			
		04	Cam: Incorrect flow table block type			
		05	Cam: Incorrect ProfGen block type			
		06	Cam: Incorrect derivate gen. block type			
		07	Cam: Incorrect motor mgmt. block type			
		08	Cam: Flow control block version is newer than that of the firmware			
		09	Cam: Flow table block version is newer than that of the firmware			



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Operating displays and errors of MXA axis module

Code	Error		Error	Response 2)	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause			
		10	Cam: ProfGen block version is newer than that of the firmware			
		11	Cam: Derivate gen. block version is newer than that of the firmware			
		12	Cam: Motor mgmt. version is newer than that of the firmware			
		13	Cam: Start address of cam flow table block not within DDB			
		14	Cam: The denominator of a mathematical curve must not be zero			
		15	Cam: Invalid start curve type			
		16	Cam: This curve type is not permitted			
		17	Cam: The length of the mathematical curve must be greater than or equal to 2			
		18	Cam: The master cycle of a curve defined by control points must be greater than zero			
		19	Cam: A sequence of transfer functions is not permitted			
		20	Cam: The sequence of transfer functions to SpeedControl is not permitted			
		21	Cam: The sequence of SpeedControl to math. curve is not permitted			
		22	Cam: The sequence of SpeedControl to abs. position control is not permitted			
		23	Cam: The sequence of SpeedControl to rel. position control is not permitted			
		24	Cam: Start curve number is negative (not initialized)			
		35	Cam: A negative curve number is not permitted (not initialized)			
		26	Cam: A negative start address of a math. curve is not permitted (not initialized)			
		28	Cam: Invalid initialization mode			
		29	Cam: Invalid remaining distance correction mode			
		30	Cam: Start address of Cam_ProfGen block not within DDB			
		31	Cam: Start address of Cam1 block not within DDB			
		32	Cam: Address of Cam1 master source not within DDB			
		33	Cam: Start address of Cam2 block not within DDB			
		34	Cam: Address of Cam2 master source not within DDB			
		35	Cam: Start address of Cam3 block not within DDB			
		36	Cam: Address of Cam3 master source not within DDB			
		37	Cam: Start address of Cam_DerivateGen block not within DDB			
		38	Cam: Address of derivate generator source not within DDB			
		39	Cam: Start address of motor management block not within DDB			



Code	Error	Sub-error Code	Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause			
		40	Cam: Address of motor management Y source not within DDB			
		41	Cam: Address of motor management V source not within DDB			
		42	Cam: Address of motor management A source not within DDB			
		43	Cam: Address of motor management MPrectrl source not within DDB			
		44	Cam: Address of motor management JRel source not within DDB			
		45	Cam: Address of motor management JRelToPhi source not within DDB			
		46	Cam: The length of the mathematical curve must be greater than or equal to 3			
		47	Cam: Illegal motor management mode			
		48	Cam: Illegal initialization mode of the CAM-Prof-Gen			
		50	PositionSetpointGen: Setpoint calculation is disabled			
		51	PositionSetpointGen: Data structure exceeds DDB limit			
		52	PositionSetpointGen: Incorrect type			
		53	PositionSetpointGen: Version in DDB higher than firmware version			
		54	EGear: Master cycle in position dependent synchronization must not be zero			
		55	EGear: Slave cycle in position dependent synchronization must not be zero			
		56	EGear: The parameters for time-dependent synchronization are invalid			
		57	PositionSetpointGen: Filter time not within limits			
		58	PositionSetpointGen: Slave factor is zero			
		59	EGear: Parameter not activated			
		60	EGear: Incorrect type			
		61	EGear: Version in DDB higher than firmware version			
		62	PositionSetpointGen: ModuloMin >= ModuloMax or a parameter not within limits			
		63	PositionSetpointGen: Position source not within DDB			
		80	Position source not within DDB			
		100	VEncoder: Data structure exceeds DDB limit			
		101	VEncoder: Incorrect type			
		102	VEncoder: Version in DDB higher than firmware version			
		103	VEncoder: Invalid ramp parameters			
		104	VEncoder: Divisor is zero			
		105	VEncoder: ModuloMin >= ModuloMax			
		106	VEncoder: Specified target not within permitted range			



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Operating displays and errors of MXA axis module

Code	Error		Error	Response 2)	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause			
		107	VEncoder: PositionIni not within permitted range			
		108	VEncoder: Invalid operating mode			
		109	VEncoder: Speed is so high that ModuloValue is exceeded in 500µs			
		110	VEncoder: Parameter max. velocity, max. jerk not within permitted range			
		120	DataRecord: Data structure exceeds DDB limit			
		121	DataRecord: Incorrect type			
		122	DataRecord: Version in DDB higher than firmware version			
		123	DataRecord: Interpolation time not within limits			
		124	DataRecord: ModuloMin >= ModuloMax or a parameter not within limits			
		125	DataRecord: Position source not within DDB			
		126	DataRecord: The interrupt source has changed in "Wait for interrupt" condition			
		127	DataRecord: The interrupt level has changed in "Wait for interrupt" condition			
		128	DataRecord: PositionExternSource not within DDB or illegal index			
		140	DataBuffer: Data structure exceeds DDB limit			
		141	DataBuffer: Incorrect type			
		142	DataBuffer: Version in DDB higher than firmware version			
		160	SystemData: Data structure exceeds DDB limit			
		161	SystemData: Incorrect type			
		162	SystemData: Version in DDB higher than firmware version			
		180	EventControl: Incorrect type			
		181	EventControl: Version in DDB higher than firmware version			
		182	EventControl: ModuloMin >= ModuloMax or a parameter not within limits			
		183	EventControl: Source not within DDB			
		184	CAM controller: Invalid DDB structure length			
		185	CAM controller: Invalid DDB structure type			
		186	CAM controller: Invalid DDB structure version			
		187	CAM controller: Invalid data source			
		188	CAM controller: Invalid cam reference			
		189	CAM controller: Invalid cam data			
		190	CAM controller: Track error			
39	"Reference travel" error		An error has occurred during reference travel	Output stage inhibit (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	FCB reference travel: Timeout error during search for zero pulse			
		02	FCB reference travel: Hardware limit switch before reference cam			



Code	Error Signal	Sub- error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
			Cause	Response 2)		
		03	FCB reference travel: Hardware limit switch and reference cam not flush			
		04	FCB reference travel: Referencing for type 0 must be set to TP			
		06	Fixed stop before limit switch/reference cam		Shift or activate limit switch/reference cam	
		07	Limit switch/reference cam not flush/overlapping with fixed stop		Set limit switch/reference cam flush/overlapping with fixed stop.	
		08	Reference offset in "Single-turn absolute position" must be smaller than 1 encoder revolution		Set reference offset smaller than 1 encoder revolution	
		99	FCB reference travel: Reference type was changed during travel			
40	"Boot synchronization" error		Synchronization with an option card could not be executed appropriately	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Option bus not ready or option card faulty			
		02	Timeout at boot synchronization with option or option card faulty			
		03	New boot synchronization required for NG-DPRAM option			
		04	Timeout at boot synchronization with option or option card fault		Check connection to option bus	
41	Error "Watchdog timer for option"		Connection between main computer and option card computer no longer exists	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Burst on option bus aborted by single access			
		02	Too many options in total or too many options of one kind			
		03	Resource management subsystem option error			
		04	Error in an option driver			
		05	Invalid burst length			
		06	Option found with address selection switch set to 0.		Set address selection switch so it matches the option card slot	
		07	Two options with the same address selection switch detected		Set address selection switch so it matches the option card slot	
		08	CRC error XIA11A		Replace XIA11A option	
		09	Watchdog triggered at XIA11A		Replace XIA11A option	
		10	Alleged XIA11A system tick cycle violation		Report to developer	
		11	SERR on option bus		Replace option	
		12	5-volt reset on XFP11A option			
		13	Watchdog error at CP923X		Replace option or firmware of option	
		14	Timeout during option bus access		Replace option	
		15	Error interrupt for which no cause could be determined			
		18	Error on option bus		Check option card (might be defective)	
		19	Error message from option bus connection		Report firmware error	
		21	No sync signal within a certain wait time			



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Operating displays and errors of MXA axis module

Code	Error		Error Cause	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code				
		22	Sync period not divisible as whole number by basic period			
		23	Invalid sync/basic period ratio			
		24	Sync period interval not within permitted range			
		25	Timer overflow in the area of writing the timer register			
		26	Reference lost between EncEmu and count timer			
		27	Speed too high (max. counts exceeded)			
		28	Illegal parameter (emu. source, emu. hysteresis, emu. resolution)			
		29	Phase controller in setpoint limitation			
		30	No capture occurred			
		31	Encoder option 1 or 2: CRC error in internal flash of XC161		Replace XGH/XGS	
		32	Maximum angle difference exceeded			
		33	XGS/XGH option 1: Position mode is not supported		Firmware update of the option	
		34	XGS/XGH option 2: Position mode is not supported		Firmware update of the option	
42	"Lag distance positioning" error		A preset, maximum permitted following error was exceeded during positioning - Encoder connected incorrectly - Acceleration ramps too short - P component of positioning controller too small - Incorrect speed controller parameters - Value of lag error tolerance too small	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	FCB Positioning lag error			
		02	FCB Jog lag error			
		03	FCB Standard lag error			
43	"Remote timeout" error		An interruption has occurred during control via a serial interface	Stop with application limits	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	FCB Jog mode: Communication timeout at direction control			
		02	The watchdog for secure parameter communication has been activated, but was not re-triggered in time. (No connection to the device or connection too slow)		1. Check connection to device 2. Extend timeout interval of watchdog (max. 500 ms) 3. Decrease utilization of computer to be controlled, close additional programs, such as unnecessary MotionStudio plug-ins	
44	"Ixt utilization" error		Overload in inverter	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Ixt current limit less than required torque current			
		02	Chip temperature rise limit exceeded			
		03	Chip temperature limit exceeded			
		04	Limit electromechanical utilization exceeded			
		05	Short circuit of sensor detected			
		06	Motor current limit exceeded			



Code	Error	Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause	Response ²⁾		
45	"System initialization" error		Error initializing the system	Output stage inhibit	System blocked / CPU reset	Ready = 0 Malfunction = 0
		01	The measured current offsets are outside the permitted limit values			
		02	An error occurred during CRC generation for the firmware			
		03	Data bus error during RAM test			
		04	Address bus error during RAM test			
		05	Memory cell error during RAM test			
		20	Incorrect FPGA version for current firmware		Reload BSP or firmware	
46	"Timeout SBUS #2" error		Communication via SBUS#2 is interrupted	Shutdown with emergency stop delay [P]	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Timeout CANopen CAN2: Control failure, cable breakage			
50	24 V supply voltage error		Error in 24 V supply voltage	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	24 V signals incorrect or switched-mode power supply defective		Check 24 V supply	
		04	Internal AD converter: No conversion carried out			
51	"Software limit switch" error		A software limit switch was approached during positioning	Shutdown with emergency stop delay (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	The right software limit switch was approached			
		02	The left software limit switch was approached			
53	"CRC flash" error		A CRC error occurred while checking the program code by Flash in Code RAM or Resolver DSP.	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	CRC32 error in Flash EEPROM section "Initial Boot Loader"			
		02	CRC23 error in Flash EEPROM section "Boot Loader"			
		03	CRC32 error in Flash EEPROM section "DSP firmware"			
		04	CRC32 error in code RAM (firmware) after copying from Flash EEPROM			
		05	CRC32 error in code RAM (firmware) with ongoing control during operation			
		06	CRC32 error in code RAM (firmware) following a software or Watchdog reset (CPU error triggered by code inconsistency)			
		07	CRC32 error in code RAM (firmware): Repeated reading of same memory cell yielded different result			
		09	Correctable bit error detected in Boot Loader Package			
		10	Correctable bit error detected in Board Support Package			
		11	Correctable bit error detected in firmware			



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Operating displays and errors of MXA axis module

Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response ²⁾		
55	"FPGA configuration" error		Internal error in logic component block (FPGA)	Output stage inhibit	System blocked / CPU reset	Ready = 0 Malfunction = 0
56	"External RAM" error		Internal error in external RAM block	Output stage inhibit	System blocked / CPU reset	Ready = 0 Malfunction = 0
		01	Asynchronous DRAM read&write check error			
		02	Asynchronous burst-RAM read & write check error			
		03	Synchronous burst-RAM read check error (burst mode failure)			
		04	FRAM error			
		05	FRAM consistency management error detected			
57	"TTL encoder" error		Error in TTL encoder	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	TTL encoder: Broken wire			
		02	TTL encoder: Emulation error (excessive speed)			
		03	TTL encoder: Invalid period of the synchronization signal			
		04	TTL encoder: Synchronization signal failure			
		05	TTL encoder: Incorrect parameter setting of DSP			
		06	TTL encoder: Saturation at AD converter input			
		07	TTL encoder: Unable to initialize PLL			
		08	TTL encoder: CRC error via data flash (X-Flash)			
		09	TTL encoder: CRC error via boot flash (B-Flash)			
		10	TTL encoder: CRC error via program flash (P-Flash)			
		11	TTL encoder: Watchdog of DSP has triggered			
		12	TTL encoder: Invalid instruction in DSP			
		13	TTL encoder: Unexpected interrupt in DSP			
		14	TTL encoder: Software interrupt in DSP			
		15	TTL encoder: Hardware stack overflow in DSP			
		16	TTL encoder: ONCE trap in DSP			
		17	TTL encoder: Interrupt A in DSP			
		18	TTL encoder: Interrupt B in DSP			
		19	TTL encoder: Non-permissible angle during calibration			
		20	TTL encoder: Error deleting flash during calibration			
		21	TTL encoder: Error programming flash during calibration			
		22	TTL encoder: Error verifying flash during calibration			
		23	TTL encoder: Resolver evaluation not calibrated			



Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
		24	TTL encoder: PLL has locked during operation			
		256	TTL encoder: Init phase of DSP not finished within permitted time period			
		257	TTL encoder: Ready signal of DSP not within permitted time period			
		512	Encoder of basic unit: TTL encoder: Amplitude control has failed		- Check wiring if the fault occurs immediately - Check disturbance source if the fault occurs sporadically - Replace encoder - Replace card	
		513	Encoder of basic unit: TTL encoder: EPLD reports error		Please contact SEW-EURODRIVE.	
		514	Encoder of basic unit: TTL encoder: Protection against division overflow by limiting the actual speed		Set the correct system numerator/denominator values.	
		4608	TTL encoder option 1: Error in amplitude control			
		4609	TTL encoder option 1: EPLD error message			
		4610	TTL encoder option 1: Protection against division overflow by limiting the actual speed			
		8704	TTL encoder option 2: Error in amplitude control			
		8705	TTL encoder option 2: EPLD error message			
		8706	TTL encoder option 2: Protection against division overflow by limiting the actual speed			
58	"Sine/cosine encoder" error		Error in sine/cosine encoder evaluation	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Sin/cos encoder: Wire breakage detection			
		02	Sin/cos encoder: Emulation error (excessive speed)			
		03	Sin/cos encoder: Invalid period of the synchronization signal			
		04	Sin/cos encoder: Synchronization signal failure			
		05	Sin/cos encoder: Incorrect parameter setting of DSP			
		06	Sin/cos encoder: Saturation at AD converter input			
		07	Sin/cos encoder: Unable to initialize PLL			
		08	Sin/cos encoder: CRC error via data flash (X-Flash)			
		09	Sin/cos encoder: CRC error via boot flash (B-Flash)			
		10	Sin/cos encoder: CRC error via program flash (P-Flash)			
		11	Sin/cos encoder: Watchdog of DSP has triggered			
		12	Sin/cos encoder: Invalid instruction in DSP			
		13	Sin/cos encoder: Unexpected interrupt in DSP			



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Operating displays and errors of MXA axis module

Code	Error		Error	Response 2)	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub- error Code	Cause			
		14	Sin/cos encoder: Software interrupt in DSP			
		15	Sin/cos encoder: Hardware stack overflow in DSP			
		16	Sin/cos encoder: ONCE trap in DSP			
		17	Sin/cos encoder: Interrupt A in DSP			
		18	Sin/cos encoder: Interrupt B in DSP			
		19	Sin/cos encoder: Non-permissible angle during calibration			
		20	Sin/cos encoder: Error deleting flash during calibration			
		21	Sin/cos encoder: Error programming flash during calibration			
		22	Sin/cos encoder: Error verifying flash during calibration			
		23	Sin/cos encoder: Resolver evaluation not calibrated			
		24	Sin/cos encoder: PLL has locked during operation			
		256	Sin/cos encoder: Init phase of DSP not finished within permitted time period			
		257	Sin/cos encoder: Ready signal of DSP not within permitted time period			
		512	Encoder of basic unit: Sin/cos encoder: Amplitude control has failed		• Check wiring if the fault occurs immediately • Check disturbance source if the fault occurs sporadically • Replace encoder • Replace card	
		513	Encoder of basic unit: Sin/cos encoder: Initialization of track counter not possible		Please contact SEW-EURODRIVE.	
		514	Encoder of basic unit: Sin/cos encoder: Quadrant control has failed		Set the correct system numerator/denominator values.	
		515	Encoder of basic unit: Sin/cos encoder: Protection against division overflow by limiting the actual speed		Set the correct system numerator/denominator values.	
		4608	Sin/cos encoder encoder option 1: Error in amplitude control			
		4609	Sin/cos encoder encoder option 1: Initialization of track counter not possible			
		4610	Sin/cos encoder encoder option 1: Error in quadrant control			
		4611	Sin/cos encoder encoder option 1: Protection against division overflow by limiting the actual speed			
		8704	Sin/cos encoder encoder option 2: Error in amplitude control			
		8705	Sin/cos encoder encoder option 2: Initialization of track counter not possible			
		8706	Sin/cos encoder encoder option 2: Error in quadrant control			
		8707	Sin/cos encoder encoder option 2: Protection against division overflow by limiting the actual speed			



Code	Error		Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal			Cause	Response ²⁾		
59	"Encoder communication" error			Error of Hiperface [®] encoder or in Hiperface [®] evaluation	Shutdown with emergency stop delay	System is waiting Warm start	Ready = 1 Malfunction = 0
	Encoder of basic unit	01		Hiperface [®] encoder: Quadrant control has failed		- Delete the serial number when the encoder is disconnected (index 9807, 1/2/3 on standard input, index 9808, 1/2/3 on option 1 and index 9809, 1/2/3 on option 2) - Then connect the encoder again - Restart MOVIAxis[®]	
		02		Hiperface [®] encoder: Incorrect track angle offset. Can happen when the brake is replaced (motor is sent in for brake replacement, encoder is re-calibrated and commutated there)			
		16		Hiperface [®] encoder: Encoder does not respond during communication			
		64		Hiperface [®] encoder: Communication error when reading type			
		128		Hiperface [®] encoder: Communication error when reading status		Eliminate disturbance sources	
		192		Hiperface [®] encoder: Communication error when reading serial number			
		256		Hiperface [®] encoder: Communication error while initializing absolute position			
		320		Hiperface [®] encoder: Communication error while re-initializing absolute position			
		384		Hiperface [®] encoder: Communication error while checking absolute position			
		448		Hiperface [®] encoder: Communication error while writing position			
		512		Hiperface [®] encoder: No response while reading analog values			
		576		Hiperface [®] encoder: No response to encoder nameplate request			
		1024		EnDat encoder: Communication error during reset command			
		1088		EnDat encoder: Communication error during position initialization			
		1152		EnDat encoder: Communication error during position validation			
		1216		EnDat encoder: Communication error during memory range select			
		1280		EnDat encoder: Communication error while reading a parameter			
		1388		EnDat encoder: Communication error while writing a parameter			



Code	Error		Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause	Response 2)		
	Option 1	4097	Hiperface [®] encoder option 1: Error in quadrant control			
		4098	Hiperface [®] encoder option 1: Incorrect track angle offset			
		4112	Hiperface [®] encoder option 1: No response to communication request			
		4160	Hiperface [®] encoder option 1: No response to type request			
		4224	Hiperface [®] encoder option 1: No response to status request			
		4288	Hiperface [®] encoder option 1: No response to serial number request			
		4352	Hiperface [®] encoder option 1: No response to initialization position request			
	Option 1	4416	Hiperface [®] encoder option 1: No response to position re-initialization			
		4480	Hiperface [®] encoder option 1: No response to position plausibility check			
		4544	Hiperface [®] encoder option 1: No response to writing of position			
		4608	Hiperface [®] encoder option 1: No response while reading analog values		Check communication	
		4672	Hiperface [®] encoder option 1: No response to encoder nameplate request		Check communication	
		5120	EnDat encoder option 1: Communication error during reset command			
		5184	EnDat encoder option 1: Communication error during position initialization			
		5248	EnDat encoder option 1: Communication error during position validation			
		5312	EnDat encoder option 1: Communication error during memory range select			
		5376	EnDat encoder option 1: Communication error while reading a parameter			
		5440	EnDat encoder option 1: Communication error while writing a parameter			



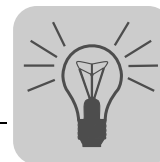
Code	Error		Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
	Signal			Cause	Response ²⁾		
	Option 2		8193	Hiperface [®] encoder option 2: Error in quadrant control			
			8194	Hiperface [®] encoder option 2: Incorrect track angle offset			
			8208	Hiperface [®] encoder option 2: No response to communication request			
			8256	Hiperface [®] encoder option 2: No response to type request			
			8320	Hiperface [®] encoder option 2: No response to status request			
			8384	Hiperface [®] encoder option 2: No response to serial number request			
			8448	Hiperface [®] encoder option 2: No response to initialization position request			
			8512	Hiperface [®] encoder option 2: No response to position re-initialization			
			8576	Hiperface [®] encoder option 2: No response to position plausibility check			
			8640	Hiperface [®] encoder option 2: No response to writing of position			
			8704	Hiperface [®] encoder option 2: No response while reading analog values		Check communication	
			8768	Hiperface [®] encoder option 2: No response to encoder nameplate request		Check communication	
			9216	EnDat encoder option 2: Communication error during reset command			
			9280	EnDat encoder option 2: Communication error during position initialization			
			9344	EnDat encoder option 2: Communication error during position validation			
			9408	EnDat encoder option 2: Communication error during memory range select			
	Option 2		9472	EnDat encoder option 2: Communication error while reading a parameter			
			9536	EnDat encoder option 2: Communication error while writing a parameter			
60	"DSP Communication" error			Error during flash of the DSP	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
			01	DSP JTAG Comm error: No JTAG connection			
			02	DSP Once-Comm error: Unable to enter debug state			
			03	DSP Once-Comm error: DSP_CPU not in debug mode before executing a DSP_Code			
			04	DSP Once-Comm error: DSP-PLL not locked, or no external cycle present			
			05	"DSP flash information FW" error Unknown ID code			
			06	"DSP flash information FW" error CRC error while checking one of the three flash areas			
			07	"DSP flash information FW" error Unknown Flash info version in DSP firmware in Tri-Core-Flash			
			08	"DSP flash information DSP" error: Unknown Flash info version in DSP firmware in DSP-Flash			



Operation

Operating displays and errors of MXA axis module

Code	Error		Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause			
		09	"DSP flash information DSP" error: DSP code routine for calculation of three CRCs not executed completely			
		10	"DSP flash programming" error: Error deleting the B-flash			
		11	"DSP flash programming" error: Error deleting the P-flash			
		12	"DSP flash programming" error: Error deleting the X-flash			
		13	"DSP flash programming" error: Access to flash register while BUSY bit is set			
		14	"DSP flash programming" error: Access to FIU_CNTL register while BUSY bit is set			
		15	"DSP flash programming" error: Write access to flash while deleting			
		16	"DSP flash programming" error: Write/read access to flash while programming			
		17	"DSP flash programming" error: Flash access not within permitted range			
		18	"DSP flash programming" error: Error verifying B-flash			
		19	"DSP flash programming" error: Error verifying P-flash			
		20	"DSP flash programming" error: Error verifying X-flash			
		21	"DSP flash programming" error: Access to flash register while BUSY flag is set			
		22	"DSP flash programming" error: Access to FIU_CNTL register while BUSY bit is set			
		23	"DSP flash programming" error: Write access to flash while deleting			
		24	"DSP flash programming" error: Write/read access to flash while programming			
		25	"DSP flash programming" error: Flash access not within permitted range			
		26	"DSP flash programming" error: No longer used.			
		27	"DSP flash programming" error: No valid programming mode			
		28	"DSP flash programming" error: Length of page and row not defined			
		29	"DSP calibration" error: X-flash CRC error			
		30	"DSP calibration" error: Wire breakage detection of resolver			
		31	"DSP calibration" error: Emulation error resolver (excessive speed)			
		32	"DSP calibration" error: Invalid period of the synchronization signal			
		33	"DSP calibration" error: Synchronization signal failure			
		34	"DSP calibration" error: Incorrect parameter setting			
		35	"DSP calibration" error: Saturation at AD converter input			



Code	Error		Error	Response 2)	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub- error Code	Cause			
		36	"DSP calibration" error: Unable to initialize PLL			
		37	"DSP calibration" error: CRC error via X-Flash			
		38	"DSP calibration" error: B-flash CRC error			
		39	"DSP calibration" error: CRC error via P-Flash			
		40	"DSP calibration" error: Watchdog of DSP has triggered			
		41	"DSP calibration" error: Invalid instruction in DSP			
		42	"DSP calibration" error: Unexpected interrupt in DSP			
		43	"DSP calibration" error: Software interrupt in DSP			
		44	"DSP calibration" error: Hardware stack overflow in DSP			
		45	"DSP calibration" error: ONCE trap in DSP			
		46	"DSP calibration" error: Interrupt A in DSP			
		47	"DSP calibration" error: Interrupt B in DSP			
		48	"DSP calibration" error: Non-permissible angle during calibration			
		49	"DSP calibration" error: Error deleting flash during calibration			
		50	"DSP calibration" error: Error programming flash during calibration			
		51	"DSP calibration" error: Error verifying flash during calibration			
		52	"DSP calibration" error: Resolver evaluation not calibrated			
		53	"DSP calibration" error: PLL has locked during operation			
		54	"DSP calibration" error: Unknown DSP error			
66	"Process data configuration" error		Process data configuration error	Shutdown with emergency stop delay	System is blocked System restart	Ready = 0 Malfunction = 0
		01	The process data configuration has been changed. The entire process data subsystem has to be restarted by means of an inverter reset.			
		102	Process data configuration error: Incorrect input process data length of communication option			
		201	Process data configuration error: 2 I/O PDOs connected to one option		I/O PDOs must be connected with different options	
		301	Two PDO Mapper channels linking to the same target		Eliminate conflict of PDO mapper channels.	
		1001	Software error in process data subsystem: Process data buffer stack overflow			
		1002	Software error in process data subsystem: Process data buffer stack underflow			



Operation

Operating displays and errors of MXA axis module

Code	Error		Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code	Cause			
		1003	Software error in process data sub-system: Too many users for process data buffer stack			
		1004	Software error in process data sub-system: 1004			
		1005	Software error in process data sub-system: 1005			
		1006	Software error in process data sub-system: 1006			
		1007	Software error in process data sub-system: Too many PDO users			
		1008	Software error in process data sub-system: Too many PDO user nodes			
		1009	Software error in process data sub-system: 1009			
		1010	"Firmware" error: Permitted number of PDO Mapper channels exceeded			
		2000	Software		Restore factory settings	
		2001	Address is 0 or greater than 127		Address 1 to 127 assigned	
		2002	Invalid PDO mapping			
		10001	A PDO configured to CAN has an ID located in the area (0x200-0x3ff and 0x600-0x7ff) used for parameter setting by the SBus.			
		10002	A PDO configured to CAN has an ID located in the area (0x580-0x67f) used for parameter setting by CANopen.			
		10003	A PDO configured to CAN is to transmit more than 4 PD. Only 0 – 4 PD are possible for CAN.			
		10004	Two or more PDOs configured to the same CAN bus use the same ID.			
		10005	Two PDOs configured to the same CAN bus use the same ID.			
		10006	Process data configuration error: Too many PDOs set to CAN (missing mem.)			
		10007	Process data configuration error: Too many PDOs set to CAN (missing can res.)			
		10008	An invalid transmission mode was entered for a PDO configured to CAN.			
		10009	Process data configuration error: Can-ID has already been used by Scope on the same CAN			
		10010	Process data configuration error: Can-ID has already been used by Sync on the same CAN			
		10011	Process data configuration error: Send problems on CAN (double send err.)			
		10012	Process data configuration error: Send problems on system bus (double send err.)			
		10013	Process data configuration error: Send problems on application CAN (double send err.)			
		10014	The inhibit time is not a whole-numbered multiple of the current process data processing		Adjust inhibit time or change current process data processing	



Code	Error		Error	Response 2)	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub- error Code	Cause			
		10015	The event timer is not a whole-numbered multiple of the current process data processing		Adjust event timer or current process data processing	
		10016	The CAN setpoint cycle is not a whole-numbered multiple of the current process data processing		Adjust CAN setpoint cycle or current process data processing	
		10017	The CAN sync period is not a whole-numbered multiple of the current process data processing		Adjust CAN sync period or current process data processing	
		10018	The CAN sync offset is not a whole-numbered multiple of the current process data processing		Adjust CAN sync offset or current process data processing	
		10019	Data acceptance time of synchronous out PDOs greater than or equal to CAN setpoint processing cycle. This means out-PDOs are no longer sent.		Set the time of data acceptance of synchronous out PDOs to a smaller value than the CAN setpoint processing cycle.	
		20001	Configuration conflict with the master			
		20002	Process data configuration error: Bus master has deactivated OUT PDO or specified invalid offset			
		20003	Process data configuration error: Bus master has deactivated IN PDO or specified invalid offset			
		20004	Process data configuration error: More input PDO on K-Net than permitted			
		20005	Process data configuration error: More output PDO on K-Net than permitted			
		20006	Process data configuration error: More PDO words on K-Net than permitted			
67	"PDO timeout" error		An input PDO whose timeout interval is not 0, that has not been set to "Offline" and that has already been received once has exceeded its timeout interval.	Shutdown with application delay (D), (P)	System is waiting Warm start	Ready = 1 Malfunction = 0
		0	PDO 0			
		1	PDO 1			
		2	PDO 2			
		3	PDO 3			
		4	PDO 4			
		5	PDO 5			
		6	PDO 6			
		7	PDO 7			
		8	PDO 8			
		9	PDO 9			
		10	PDO 10			
		11	PDO 11			
		12	PDO 12			
		13	PDO 13			
		14	PDO 14			
		15	PDO 15			
68	"External synchronization" error			Shutdown with emergency stop delay	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Time limit for expected synchronization signal has been exceeded			



Code	Error		Error Cause	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal	Sub-error Code				
		02	Synchronization lost, synchronization period outside tolerance range			
		03	Synchronization to synchronization signal not possible			
		04	Cycle duration of sync. signal is not a integer multiple of the PDO system duration			
		05	Time limit for synchronization signal exceeded			
		06	Synchronization lost, period of synchronization signal invalid			
		07	No synchronization of the synchronization signal possible			
		08	Duration of system interval too short			
		09	Duration of system interval too long			
		10	Duration of system interval is not a multiple of the base interval			
69	"Prewarning motor overtemperature" error		Motor temperature has exceeded the adjustable prewarning threshold	No response, display only	-----	Ready = 1 Malfunction = 1
		01	Thermal motor protection: Prewarning triggered by KTY temperature			
		02	Thermal motor protection: Prewarning triggered by synchronous motor model temperature			
		03	Thermal motor protection: Warning threshold I2t model exceeded			
70	"Error message word 0" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 0			
71	"Error message word 1" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 1			
72	"Error message word 2" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 2			
73	"Error message word 3" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 3			
74	"Error message word 4" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 4			
75	"Error message word 5" error		The error message of an unknown device was detected in the error message word	No response, display only	-----	
		01	Message error control word 5			
76	Error: "Intelligent option"		MOVI-PLC® error	No response, display only	-----	



Code	Error	Sub-error Code	Error	Response ²⁾	System state Measure Reset type	Binary output signal ¹⁾
	Signal		Cause			
81	"DC link overcurrent SM" error		The DC link current in the supply module has exceeded the maximum limit of 260% I_{nominal} .	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	SM: DC link current too high			
82	Prewarning "I _{ext} monitoring SM"		Utilization of the SM has reached the prewarning level	No response (D), (P)	-----	Ready = 1 Malfunction = 1
		01	SM: Pre-warning I _{ext} utilization			
83	"I _{ext} monitoring SM" error		Utilization of the SM has reached or exceeded the cut-off threshold	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	SM: I _{ext} utilization error			
84	"Brake chopper at AM" error		Error message through supply module via hardware information system. The brake chopper in the supply module is not ready for operation, triggered by BRC short-circuit monitoring or driver voltage monitoring.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	SM: Brake chopper error			
85	"SM temperature monitoring" prewarning		The temperature of the SM approaches the cut-off threshold	No response (D), (P)	-----	Ready = 1 Malfunction = 1
		01	SM: Temperature prewarning			
86	"SM overtemperature" error		Temperature of the SM has reached or exceeded the cut-off threshold.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	SM: Temperature error			
87	"Utilization braking resistor in SM" prewarning		The utilization of the braking resistor installed in the SM has reached the prewarning threshold (applies to 10 kW version only)	No response (D), (P)	-----	Ready = 1 Malfunction = 1
		01	SM: I _{ext} prewarning braking resistor			
88	"Utilization of braking resistor in SM" error		The utilization of the braking resistor installed in the SM has reached or exceeded the prewarning threshold (applies to 10kW version only)	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	I _{ext} utilization error braking resistor of the SM			
89	"Switched-mode power supply SM" error		Switched-mode power supply SM error	No response	-----	Ready = 1 Malfunction = 1
		01	At least one of the supply voltages in the SM is not present			
91	"SM 24 V voltage supply" warning displayed in supply module only		24 V electronics supply less than 17 V -> No error message for the axis !	No response	-----	Ready = 1 Malfunction = 1
		01	24 V electronics power supply too low			
94	"Device configuration data" error		An error has occurred in the unit configuration data block during testing in the reset phase	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Unit configuration data: Checksum error			
		02	Unit configuration data: Invalid version of the configuration data set			
		03	Unit configuration data: Unexpected rated unit voltage		Correct configuration or adjust firmware	
97	"Copy parameter set" error		Parameter set could not be copied correctly	Output stage inhibit	System is blocked System restart	Ready = 0 Malfunction = 0
		01	Download of parameter set to unit canceled		Repeat download or restore delivery condition	



Operation

Operating displays and errors of MXA axis module

Error		Sub-error Code	Error		System state Measure Reset type	Binary output signal ¹⁾
Code	Signal		Cause	Response ²⁾		
107	"Line components" error		The firmware has detected an error in one of the line components (choke, line filter, line contactor).	Display only	-----	
115	"Safety functions" error		Connections X7:1 (+24 V) / X7:2 (RGND) or X8:1 (+24 V) / X8:2 (RGND) are reversed. Check wiring.	Output stage inhibit	System is waiting Warm start	Ready = 1 Malfunction = 0
		01	Safety relays: Switching delay between shutdown channels 1 and 2 is too large		- One safety relay in the device: Check safety circuit board - Two safety relays in the device: Check control/ cabling of both relays. Permitted switching delay: 100 ms	
116	"Timeout MOVI-PLC" error		Communication timeout via DPRAM or SBus between MOVI-PLC® and unit	Emer-gency stop	System is waiting Check communication con- nection Warm start	Ready = 1 Malfunction = 0
197	"Power failure" error		The firmware has detected a power failure	Display only	-----	

1) valid for default response

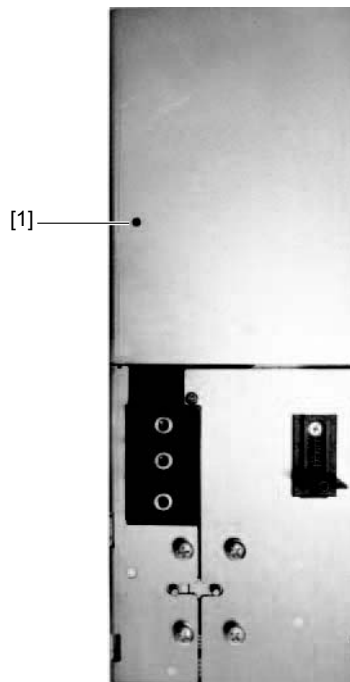
2) P = Programmable, D = Default response



6.4 MXC capacitor module operating displays

The operating states are indicated by a two-color LED at the front of the housing.

- LED lights up **green**:
 - Capacitor module is ready for operation.
- LED lights up **red**:
 - General error.
- LED **flashes red** (1 Hz):
 - Limit of capacitor module reached.
- LED does not light up:
 - No voltage is supplied to the capacitor module.



[1] LED

1778575499

6.5 MXB buffer module operating displays

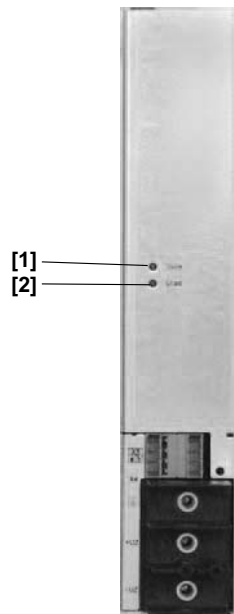
No messages are issued at the buffer module.



6.6 24 V SMPS module operating displays

The operating status, such as utilization and fault of the switched-mode power supply, is indicated by two LEDs on the front of the unit.

- LED State:
 - Normal operation **green**.
 - Fault **red**. A malfunction has occurred because of:
 - Overload,
 - Overvoltage,
 - Undervoltage.
- LED Load:
 - Normal operation **green**.
 - With ca. 80 % utilization per output (8A) **yellow**.



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[1] LED State

[2] LED Load



7 Service

7.1 General Information

No inspection or maintenance intervals required during active operation.

7.1.1 Repair service

Please contact **SEW-EURODRIVE electronics service if an error cannot be repaired** (→ "Customer and spare parts service").

When contacting the SEW electronics service, please always quote the production number and order number, so our service personnel can assist you more effectively. You find the production number on the nameplate.

Provide the following information when sending the unit in for repair:

- Production number (nameplate),
- Type designation
- Unit type
- Digits of the production number and order number
- Short application description (drive type, control)
- connected motor (motor type, motor voltage)
- Nature of the fault
- Accompanying circumstances
- Your own assumptions
- Unusual events preceding the problems.



8 Appendix

8.1 Declarations of conformity

EC Declaration of Conformity

SEW
EURODRIVE

900100010

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

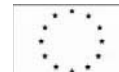
frequency inverters of the series **MOVIAXIS® 80A**

are in conformity with

Low Voltage Directive **2006/95/EC**

EMC Directive **2004/108/EC** **4)**

applied harmonized standards **EN 61800-5-1:2007**
EN 61800-3:2007



- 4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.

Bruchsal 11.12.09

Place Date **Johann Soder**
Managing Director Technology a) b)

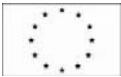
- a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents



EC Declaration of Conformity



SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the



frequency inverters of the series	MOVIAXIS® 81A	
are in conformity with		
Machinery Directive	2006/42/EC	1)
Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	4)
applied harmonized standards	EN 13849-1:2008 EN 60204-1:2007 EN 61800-5-1:2007 EN 61800-3:2007	5)

- 1) These products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.
- 4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.
- 5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal	11.12.09		
Place	Date	Johann Soder Managing Director Technology	a) b)

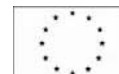
a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents



EC Declaration of Conformity

SEW
EURODRIVE

900120010



SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
 declares under sole responsibility that the

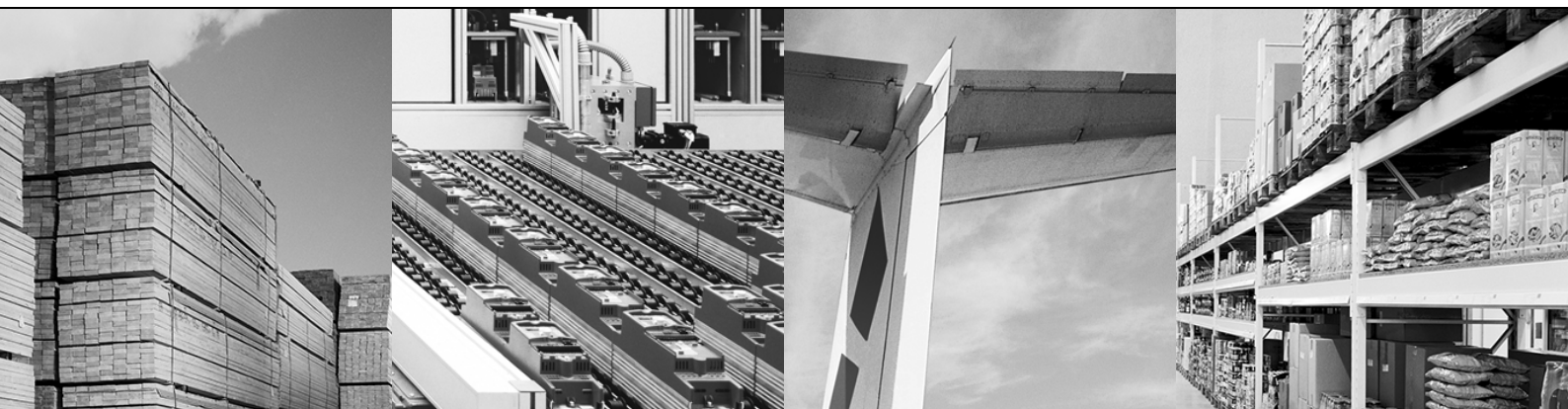
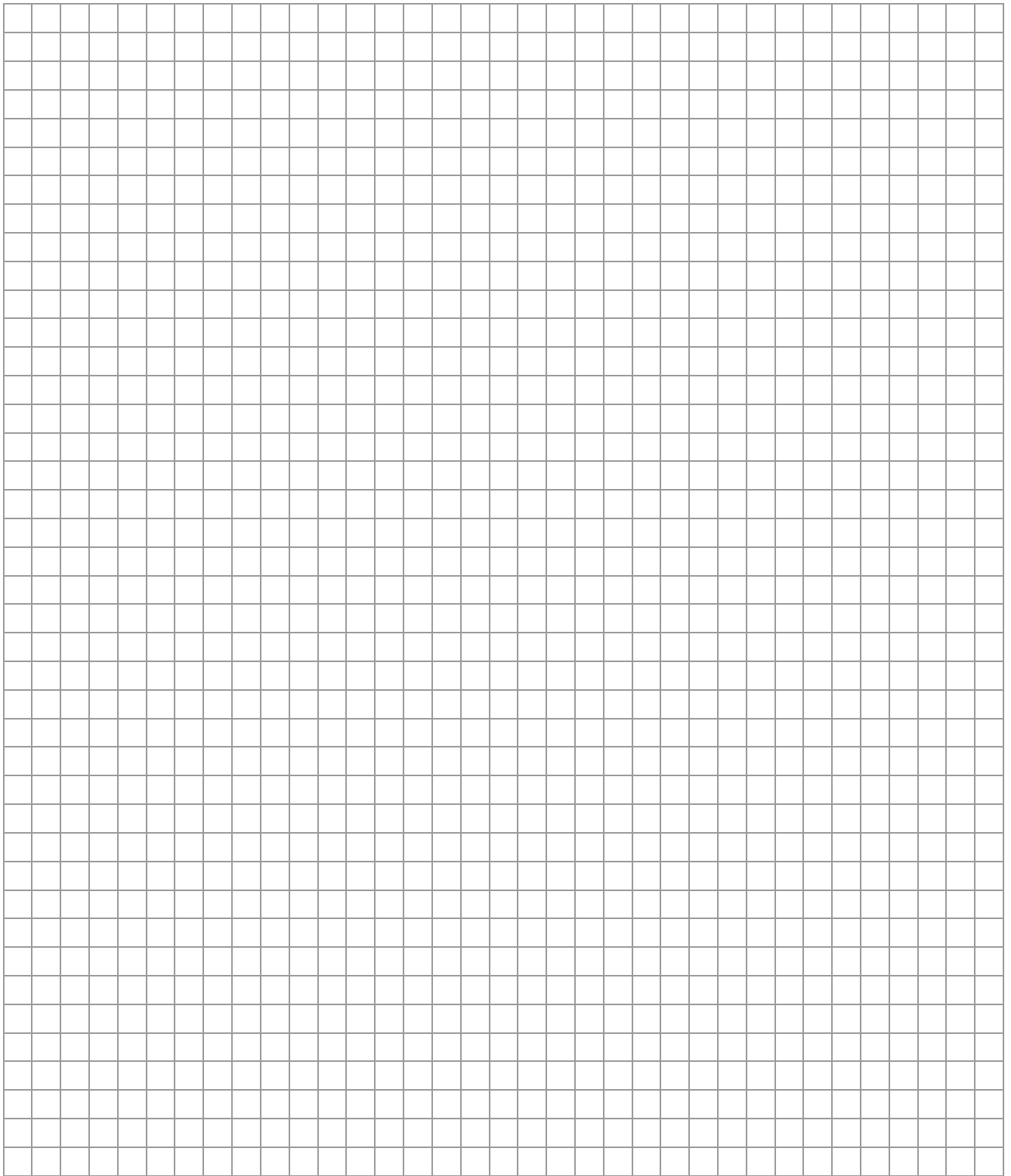
frequency inverters of the series	MOVIAXIS® 82A	
are in conformity with		
Machinery Directive	2006/42/EC	1)
Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	4)
applied harmonized standards	EN 13849-1:2008 EN 61800-5-2: 2007 EN 60204-1:2007 EN 61800-5-1:2007 EN 61800-3:2007 EN 201: 1996	5)

- 1) These products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.
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- 5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal 11.12.09

Place	Date	Johann Soder Managing Director Technology	a) b)
-------	------	--	-------

- a) Authorized representative for issuing this declaration on behalf of the manufacturer
 b) Authorized representative for compiling the technical documents





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Driving the world

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Revision



MOVIAXIS® Multi-Axis Servo Inverter
Changes to the wiring specification for DC 24 V



Revision for MOVIAXIS® MXM80A Master Module

Changes to the accessories package

1 Revision for MOVIAXIS® MXM80A Master Module



INFORMATION

This revision describes important changes to the wiring of the DC 24 V supply of the MOVIAXIS® MXM80A master module.

The revisions apply to the following publications:

- "MOVIAXIS® Multi-Axis Servo Inverter" operating instructions (part number 19305214, edition 08/2011)
- "MOVIAXIS® Multi-Axis Servo Inverter" system manual (part number 17093228, edition 05/2011)
- "MOVIAXIS® Multi-Axis Servo Inverter" compact operating instructions (part number 19308426, edition 08/2011)

This document does not replace the listed operating instructions or system manual or compact operating instructions.

1.1 Changes to the accessories package

In the accessories package (18210864) for MOVIAXIS® MXM80A, the connector part, "complete, DC 24 V (part number 18211755)" is replaced by the individual connector part "complete, 4-pole BK24V (part number 18202527)".



1.2 Changes to the DC 24 V wiring



STOP

The DC 24 V supply of the MOVIAxis® axis system via the MXM80A master module must be wired according to the new wiring method as of now.

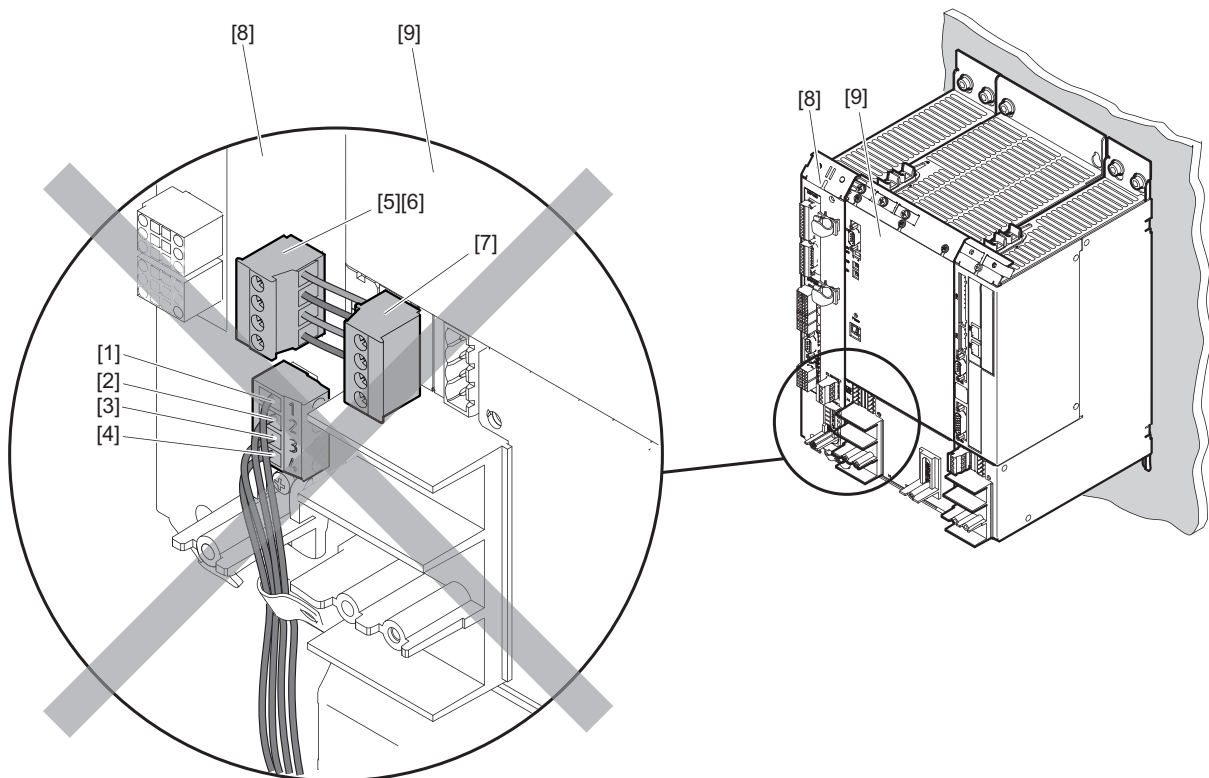
1.2.1 No longer valid: Previous wiring specifications

The customer had to make the following connections at the X5a port of the master module [8]:

- Terminals 1 [1] and 2 [2] for DC 24 V electronics supply
- Terminals 3 [3] and 4 [4] for DC 24 V brake supply

The DC 24 V supply for brake and electronics was then looped through from port X5b [6] of the master module [8] to the next module [9] using the connector part [5] of the accessories package (part number 18211755, system manual page 58).

A total of 4 wires had to be connected for the DC 24 V supply, see following figure.



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Revision for MOVIAXIS® MXM80A Master Module

Changes to the DC 24 V wiring

1.2.2 Valid as of now: New wiring specifications

The customer has to make the following connections at the X5a port of the master module [3]:

- Terminals 1 [1] and 2 [2] for DC 24 V electronics supply

The customer then has to make the following connections at the X5a port of the next module on the right from the master module:

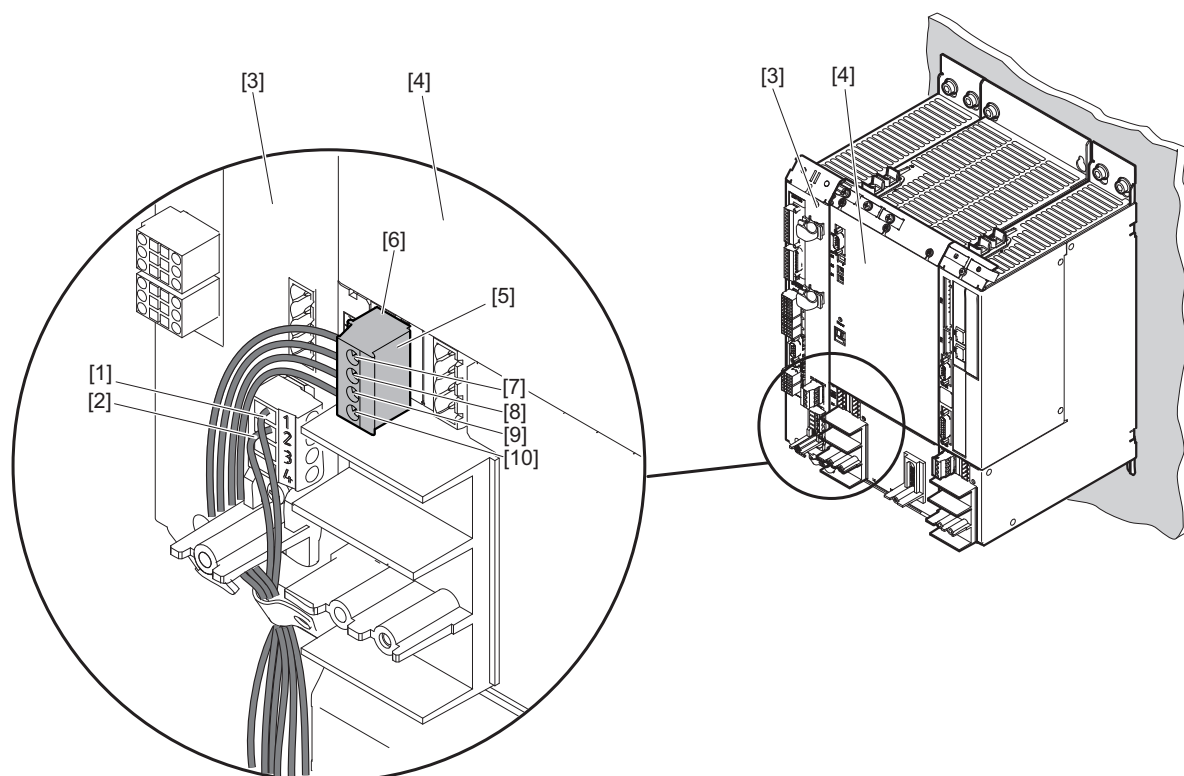
- Terminals 1 [7] and 2 [8] for DC 24 V electronics supply
- Terminals 3 [9] and 4 [10] for DC 24 V brake supply

The accessories package 18210864 of the MOVIAXIS® master module contains an additional connector [5] "complete, 4-pole BK24V (part number 18202527)" for this purpose. This connector is plugged into plug-in position X5A [6] of the next module [4].

→ In comparison with the previous wiring method, we now have a separate wiring of the master module with 2 wires in addition, and a connection of the downstream modules with 4 more wires. This means a total of 6 wires must be connected externally for the DC 24 V supply. It is not permitted to jumper the wires.

→ This modified installation procedure applies also to a dual-bus electronics and brake supply.

The following figure shows the new, correct wiring method:



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