BECKHOFF New Automation Technology

Manual | EN

MS1132-2001-2349

Power infeed, red main switch, replaceable fuses, 400/480 V AC/32 A, 24 V DC/18 A power supply

2025-07-10 | Version: 0.2

Table of contents

1 Foreword

1.1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
The documentation and the following notes and explanations must be complied with when installing and commissioning the components.
The trained specialists must always use the current valid documentation.

The trained specialists must ensure that the application and use of the products described is in line with all safety requirements, including all relevant laws, regulations, guidelines, and standards.

Disclaimer

The documentation has been compiled with care. The products described are, however, constantly under development.
We reserve the right to revise and change the documentation at any time and without notice.
Claims to modify products that have already been supplied may not be made on the basis of the data, diagrams, and descriptions in this documentation.

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1.2 For your safety

Safety regulations

Read the following explanations for your safety.
Always observe and follow product-specific safety instructions, which you may find at the appropriate places in this document.

Exclusion of liability

All the components are supplied in particular hardware and software configurations which are appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation, and drive technology who are familiar with the applicable national standards.

Signal words

The signal words used in the documentation are classified below. In order to prevent injury and damage to persons and property, read and follow the safety and warning notices.

Personal injury warnings

⚠ DANGER
Hazard with high risk of death or serious injury.

⚠ WARNING
Hazard with medium risk of death or serious injury.

⚠ CAUTION
There is a low-risk hazard that could result in medium or minor injury.

Warning of damage to property or environment

NOTICE
The environment, equipment, or data may be damaged.

Information on handling the product

This information includes, for example:
recommendations for action, assistance or further information on the product.

1.3 Intended use

The MS1132-2001-2349 is designed to feed an external supply voltage into the MX-System. It may only be operated if it is mounted on a baseplate in accordance with the mounting instructions in this manual and the terminal box is closed.

With the exception of the terminal box, the housing must not be opened by the user. There are no user-serviceable parts inside the housing. The housing screws on the bottom of the module may only be loosened by Beckhoff Service.

Intended use of an MX-System

Application in machines and systems in industrial environments and exclusively inside buildings.

The electrical wiring must be permanent wiring.

Improper use

Improper use is not permitted and will result in the exclusion of liability on the part of Beckhoff Automation GmbH & Co.

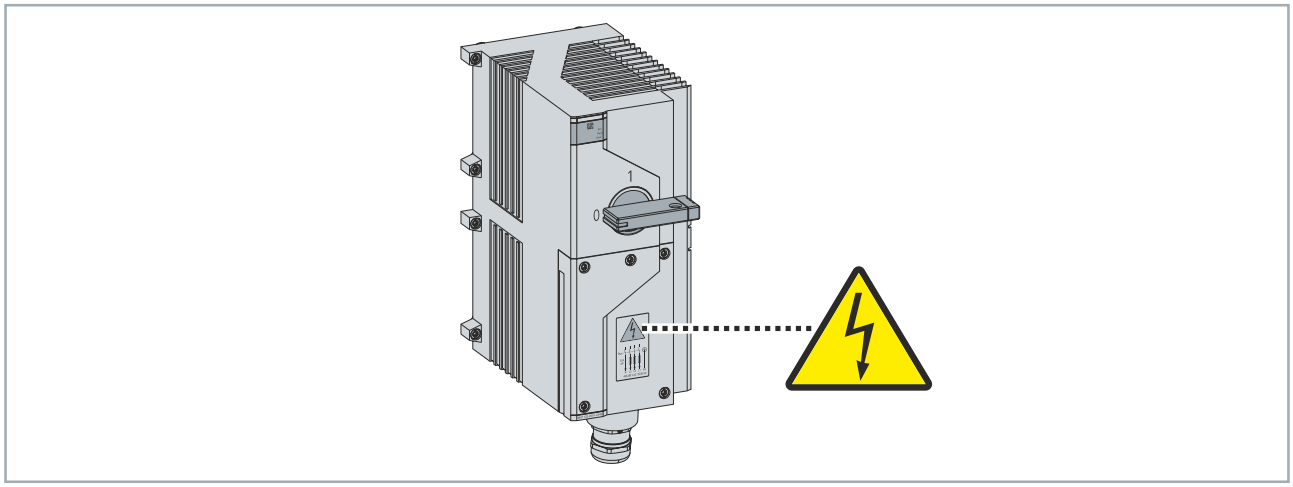
1.4 Safety instructions

This module works with a life-threatening voltage. Work on the module may only be carried out in a de-energized state.

Work on the terminal box may only be carried out by specialists who are qualified for electrical work with life-threatening voltages in accordance with the legal requirements of the respective country.

1.5 Safety sign

You will find safety signs on Beckhoff products and packaging. These attached, printed, or laser-engraved safety signs may vary depending on the product. They serve to protect people and to prevent damage to the products. Safety signs must not be removed and must be legible to the user.



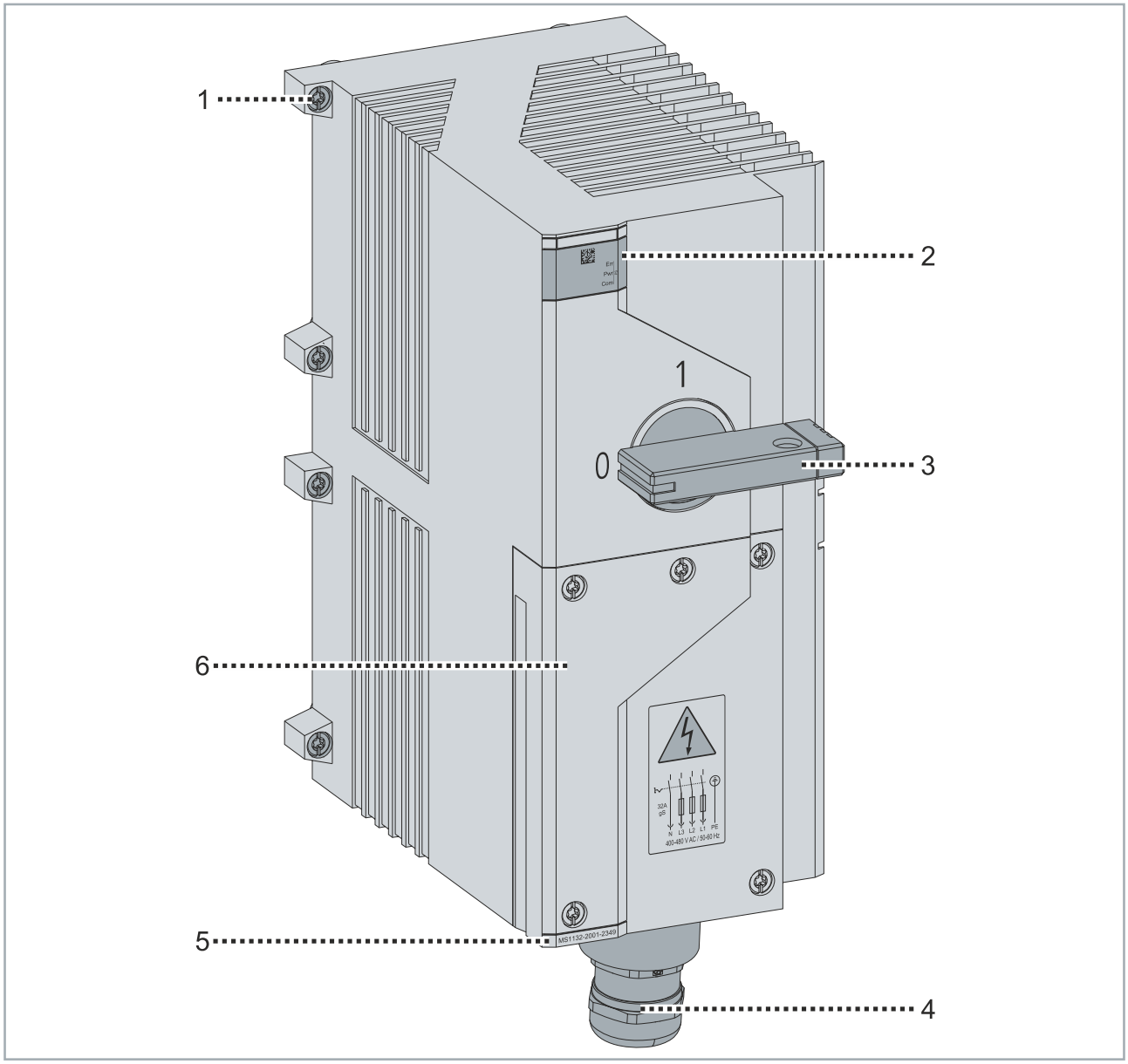
Warning: High voltage!

Risk of electric shock when terminal box is open.

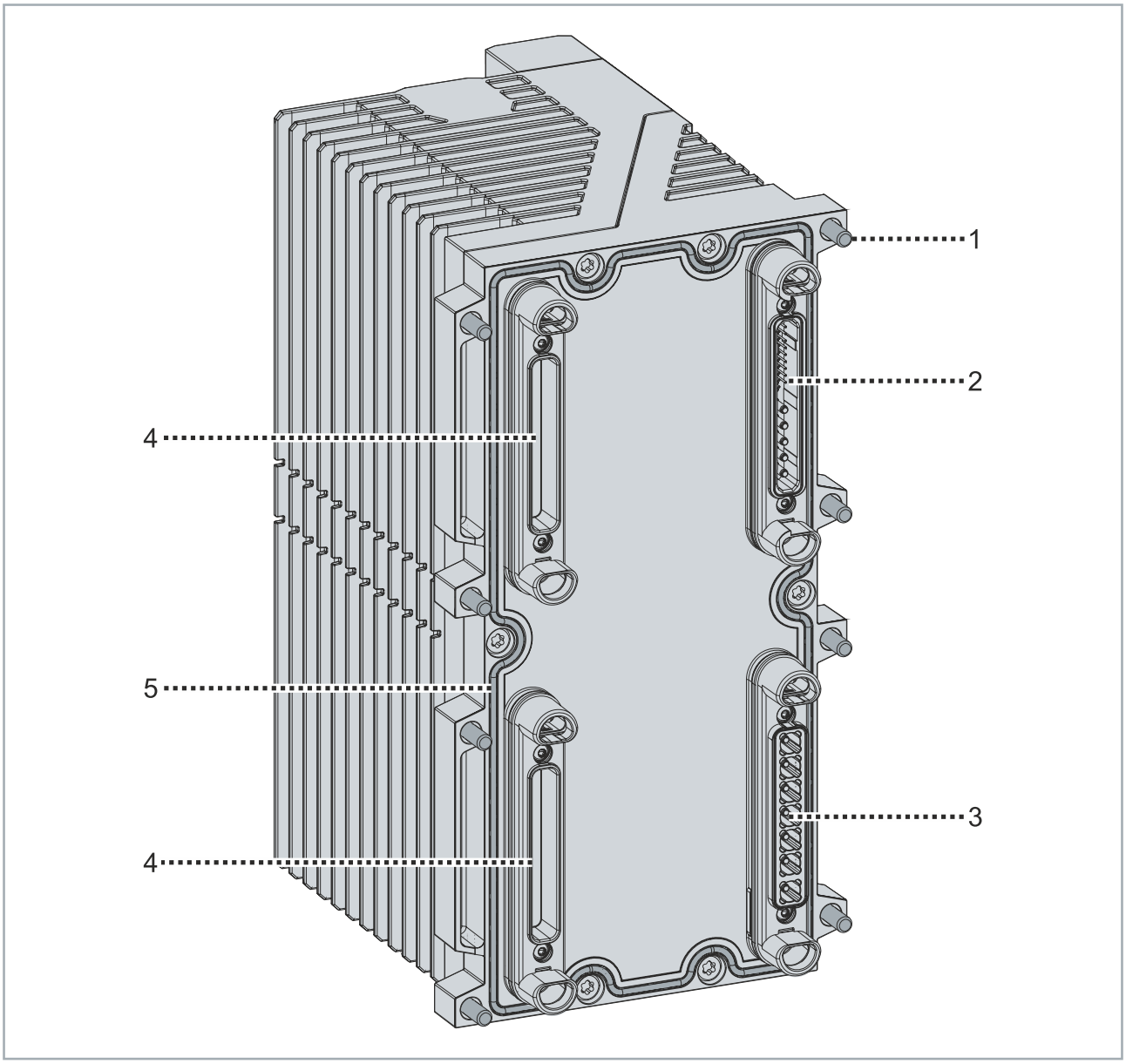
2 Product overview

The MS1132-2001-2349 module is a 3-phase power infeed module with fuses on the input side and a red main switch for up to 32 A.

A PELV power supply unit with an output current of 18 A DC is integrated to supply the 24 V DC control voltage.



Position	Name
1	Fastening screw, captive, 4 x
2	Status display
3	Main switch
4	Power infeed
5	Module name
6	Terminal box



Position	Name
1	Fastening screw, captive, 8 x
2	Data connector
3	Power connector
4	Connector
5	Seal

2.1 Product functions

2.1.1 Main switch

The main switch is red on a yellow background. This coloring makes it an emergency stop switch in accordance with EN 60204-1.

The main switch can be locked with a padlock when in the off state (position "0"). See chapter Secure the main switch to prevent accidental activation [▶ 32].

The main switch is designed in such a way that it prevents the terminal box from being opened in the switched-on state (position "1"). The terminal box can therefore only be opened when the module is switched off.

2.1.2 Electrical fuses

The module has a fuse for each phase at the power input. The fuses can be replaced by the user. See chapter Replacing the fuses [▶ 33].

The fuses respond more slowly than the fuses in modules that are supplied from the power fed in, e.g. servo drive modules. This ensures that in the event of an overload at the output of such a module, only the respective output is shutdown. The fuses of the power infeed do not yet trigger and the MX-System continues to function.

2.1.3 Power supply 24 V DC

The power supply generates a regulated output voltage of 24 V_{DC} and makes it available on the baseplate as the supply voltage U_B for other MX-System modules.

The power supply is protected against overload. An automatic overvoltage shutdown switches off the power supply if the output voltage becomes too high due to an internal error.

You can operate several power supplies in parallel to increase the output current.

2.2 Delivery state

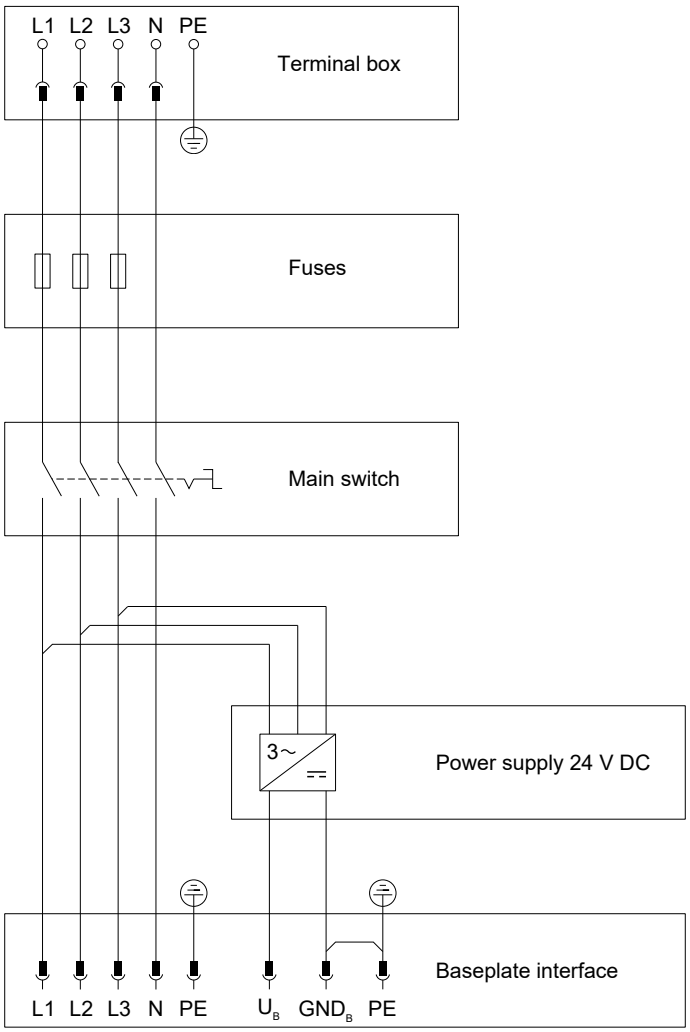
This chapter describes the default settings for basic product functions on delivery.

2.2.1 Power supply

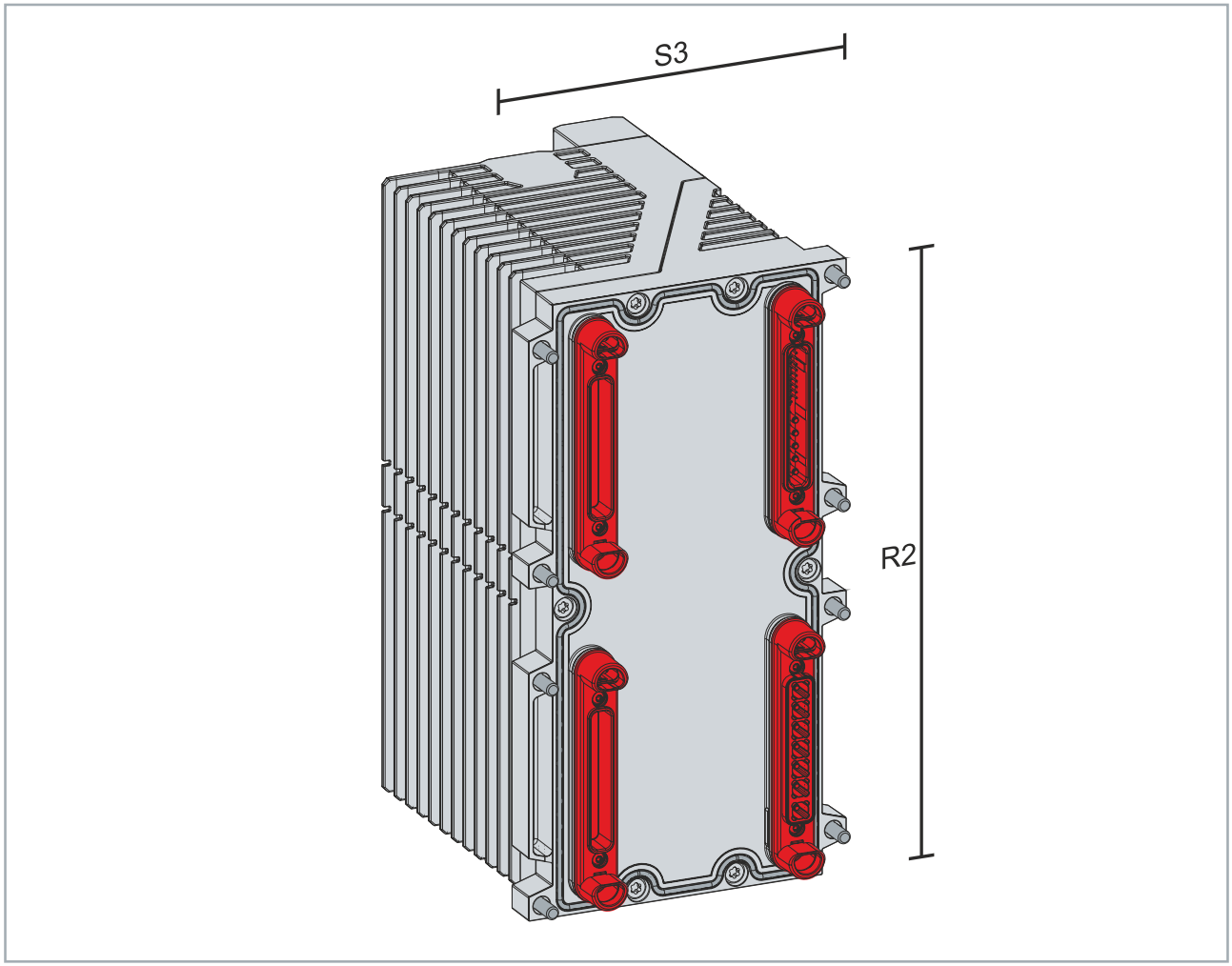
When delivered, the power supply is switched on automatically when the input voltage is applied and the main switch is switched on. This behavior is independent of whether EtherCAT communication is present or not.

You can configure the automatic switch-on of the power supply, see chapter Power supply [▶ 19].

2.3 Block diagram



2.4 Baseplate interface

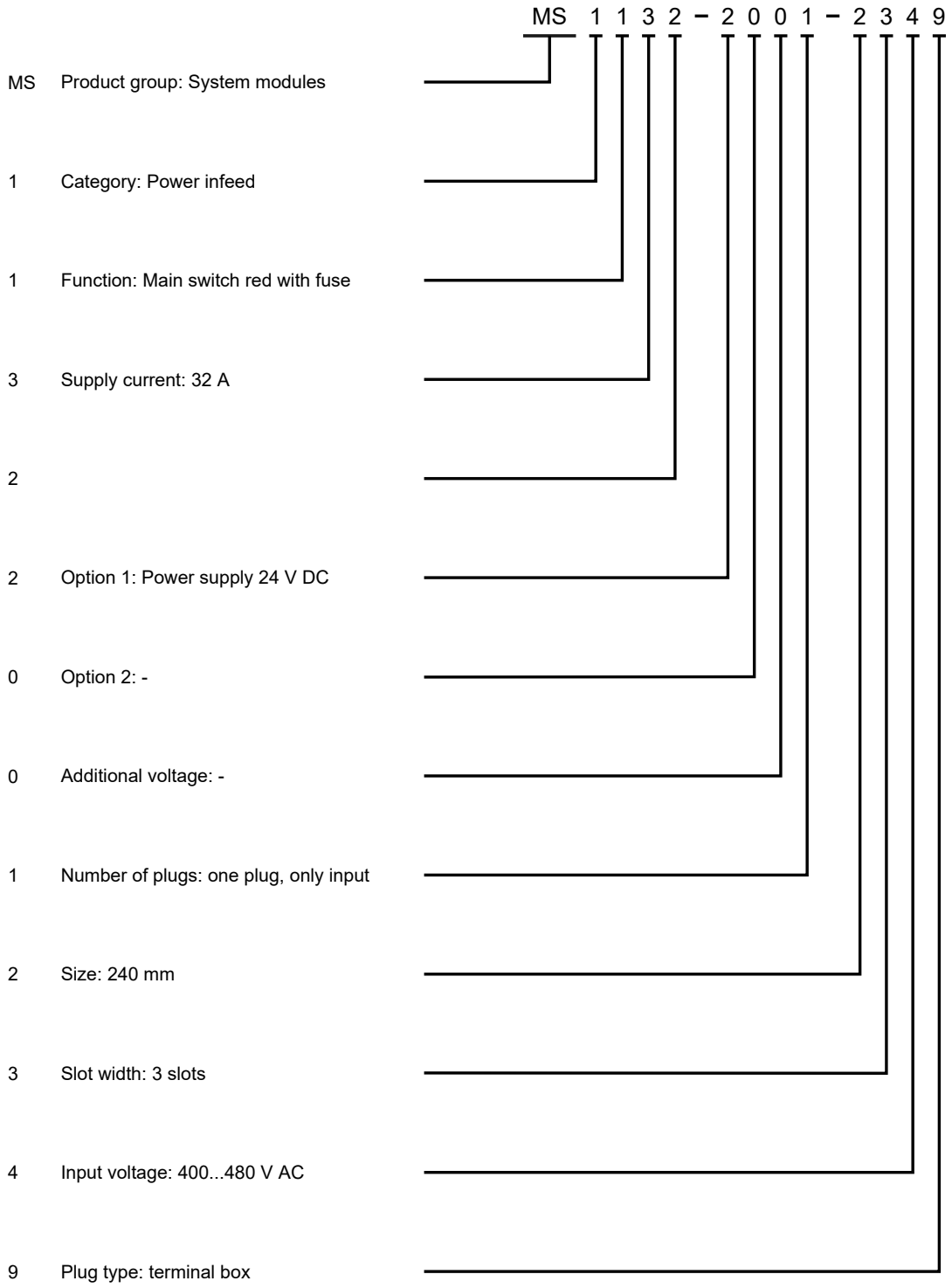


The module requires one data slot and one power slot in two rows **R2**. Due to the design, three data slots **S3** and three power slots **S3** of a baseplate are required next to each other:

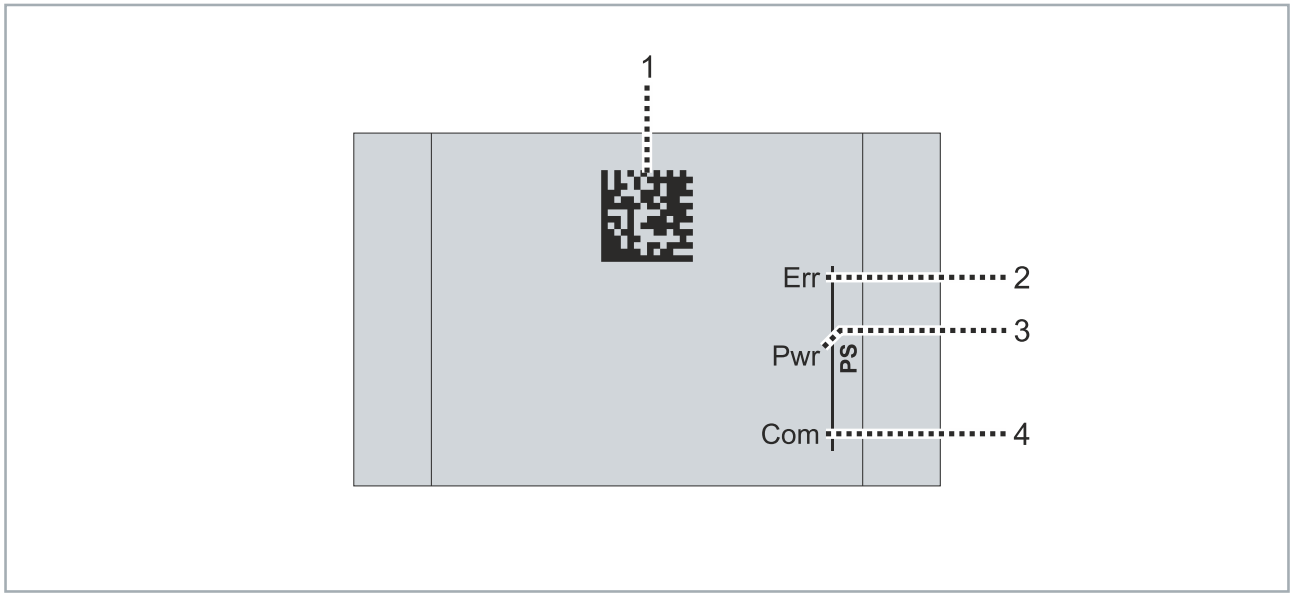
Slots required in	1-row baseplates	2-row baseplates	3-row baseplates
Row 1	—	3	—
Row 2	—	3*	3
Row 3	—	—	3

* The 2-row baseplates *MB21xx-0000-4000*, *MB21xx-0000-6000* and *MB21xx-0000-8000* have data slots and power slots in row 2. The module must be mounted in a power slot.

2.5 Type key


MS 1 1 3 2 – 2 0 0 1 – 2 3 4 9
MS Product group: System modules
1 Category: Power infeed
1 Function: Main switch red with fuse
3 Supply current: 32 A
2
2 Option 1: Power supply 24 V DC
0 Option 2: -
0 Additional voltage: -
1 Number of plugs: one plug, only input
2 Size: 240 mm
3 Slot width: 3 slots
4 Input voltage: 400...480 V AC
9 Plug type: terminal box

2.6 Status display

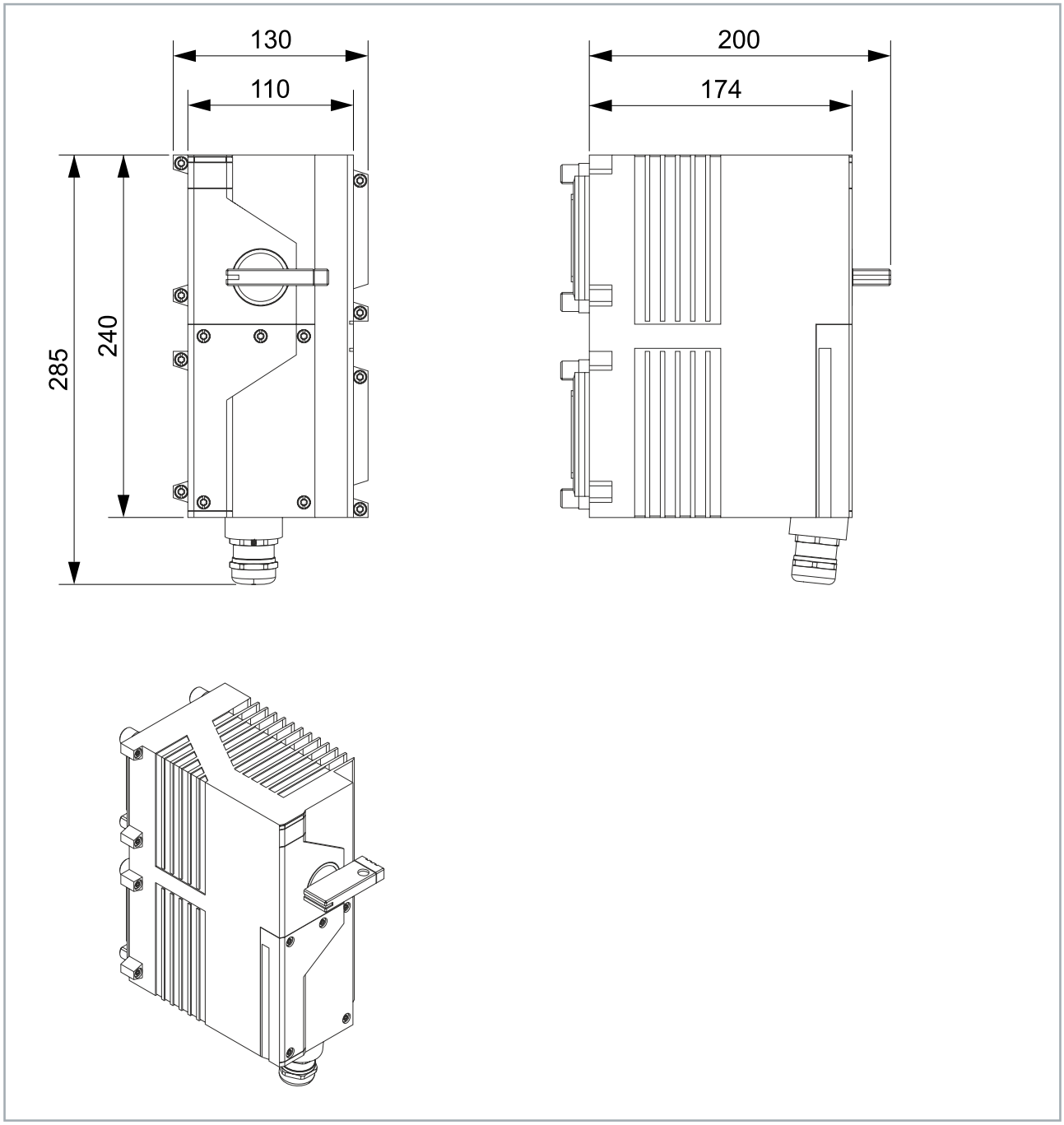


PS - Status display for the power supply

Position	Status display	Status	Explanation
1	-	-	Beckhoff Identification Code as DataMatrix code
2	Err	off	no error exists
		red illuminated	Power supply switched off due to an error
3	Pwr	off	no 24 V DC output voltage available
		green illuminated	24 V DC output voltage switched on
4	Com	off	Initialization state
		flashing green	is in *Pre-Operational* state
		single flash green	is in *Safe-Operational* state
		green illuminated	is in *Operational* state
		flickers green	Firmware is being loaded

2.7 Dimensions

All dimensions in mm



3 Technical data

All values are typical values over the entire temperature range, unless stated otherwise.

Baseplate interface	
Connector	2 data connectors 2 power connectors
Hot Swap	No

EtherCAT	
Distributed Clocks	no

Voltage input	
Connection	Screw terminals in the terminal box
Input voltage range V_{in}	3~ 400 … 480 V AC (-15 % / +10 %)
Permissible input current	max. 32 A AC Derating: 1%/K above 40 °C ambient temperature
Frequency of the input voltage	50 … 60 Hz (± 10 %)
Inrush current	< 3 A AC

Power supply	
Input voltage V_{In}	3~ 400-500 V AC (-15 % … +10 %)
Input frequency f_{In}	50-60 Hz (±10 %)
Current consumption I_{In}	0.8 A per phase at V_{In} = 400 V AC: 0.7 A per phase at V_{In} = 480 V AC
Power factor λ	0.94
Switch-on energy	1 mC at V_{In} = 400 V AC: 1.2 mC at V_{In} = 480 V AC
Output voltage V_{OUT}	24 V DC in the factory setting adjustable up to 28 V DC
Overvoltage limitation	33 V DC Max. 36 V DC
Output current I_{OUT}	20 A at V_{Out} = 24 V DC 7.14 A at V_{Out} = 28 V DC
Short-circuit current	27 A
Output capacitance	5100 µF
Output type	PELV
Parallel use	permissible, max. 2 modules
Output decoupling for redundancy	no
Feeding back into the output	permissible
Efficiency	95.1 % at V_{In} = 400 V AC 94.8 % at V_{In} = 480 V AC
Power loss	23.3 W at V_{In} = 400 V AC, V_{Out} = 24 V DC, I_{OUT} = 20 A 24.3 W at V_{In} = 480 V AC, V_{Out} = 24 V DC, I_{OUT} = 20 A

Housing data	
Width (slots)	3
Height (rows)	2
Dimensions W × H × D	130 mm × 285 mm × 200 mm 130 mm × 240 mm × 174 mm (housing only)
Material	Zinc die-cast
Cooling	Convection
Weight	5.6 kg
Installation position	Vertical. See system manual, chapter "Installation conditions".

Environmental conditions	
Operating temperature	0 … 50 °C
Storage temperature	-25 … +60 °C
Air humidity	95%, no condensation
Protection rating	IP20 as a separate module
	IP65 / IP67 as part of a fully and correctly assembled MX-System
Pollution degree	2
Overvoltage category	III 300 V
Maximum installation altitude	2000 m

Device safety	
Separation between input and output	Double or reinforced electrical isolation
Protection class	I

Standards, approvals	
Device safety	conforms to EN 61010-2-201
EMC immunity/emission	conforms to EN IEC 61000-6-2 / EN IEC 61000-6-4
Vibration/shock resistance	conforms to EN 60068-2-6 / EN 60068-2-27
Approvals	CE, UL in preparation

4 Software functions

Software functions are the functions of a module's firmware that a controller can access via EtherCAT.

Functionality

The following descriptions document the full range of software functions at the time of publication of this manual. The range of functions that can actually be used depends on the firmware version of a module.

4.1 Power supply

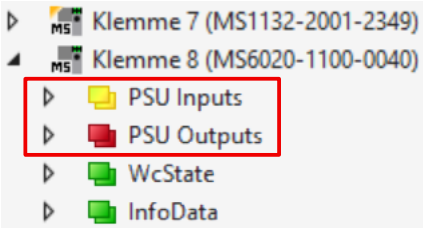
This software function enables configuration, control and diagnosis of the power supply integrated in the module.
It is implemented by the EtherCAT profile 5001.00911 "Power Supply", or "PSU" for short.

► Full description of this software function in the Beckhoff Information System: Link

4.1.1 Process Data Objects (PDO)

The process data objects are disabled on delivery. You can enable them via the Predefined PDO Assignments.

If the process data objects are enabled, you will find them under the subordinate device "MS6020-1100-0040"



PSU Inputs

Variable	Data type	Description
Warning	BOOL	Warning message
Error	BOOL	Error message. The output voltage has been switched off.
I2T Warning	BOOL	The I²T warning threshold (0x8000:11) was exceeded.
DC OK	BOOL	The output voltage is within the permissible range.
Overrange	BOOL	One of the measured values is outside the measurable range.
Input Cycle Counter	BIT2	A 2-bit counter that is incremented each time the input data in the process image is updated.
Output Voltage	REAL32	The present output voltage in V.
Output Current	REAL32	The present output current in A.
I2T Utilization	UINT8	The current I²T utilization.
Info Data 1	UINT16	Additional information. The content of these variables can be selected in parameter 8001:19.
Info Data 2	UINT16	Additional information. The content of these variables can be selected in parameter 8001:21.

PSU Outputs

Variable	Data type	Description
Disable Output	BOOL	Disables the output.
Reset	BOOL	Resets an error message and switches the output voltage back on.

5 Mechanical installation

Required tools

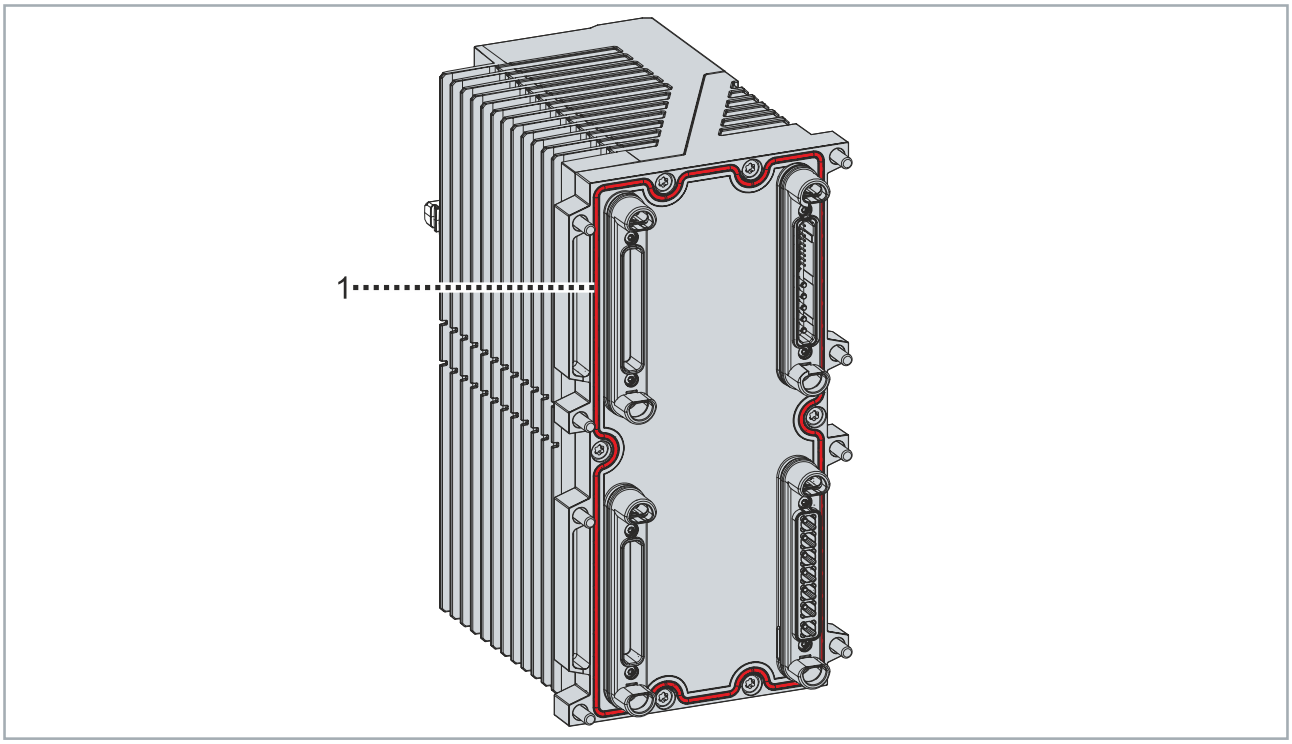
- Torx T25 screwdriver
- Torque wrench 5 Nm

5.1 Preparation

NOTICE

Check the module for damage

If the seal is worn or damaged, liquids and dirt can penetrate and damage the MX-System. The IP67 protection rating is not met if the seals are worn or damaged.

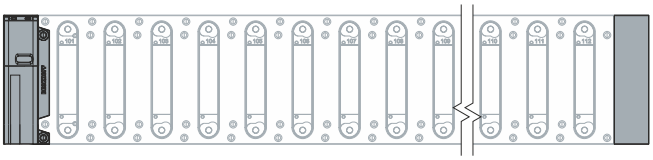


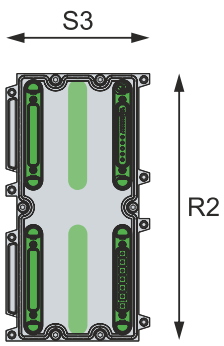
1. Check the seal [1] of the module for wear and damage
2. Replace worn and damaged seals

5.2 Placement of the module on the baseplate

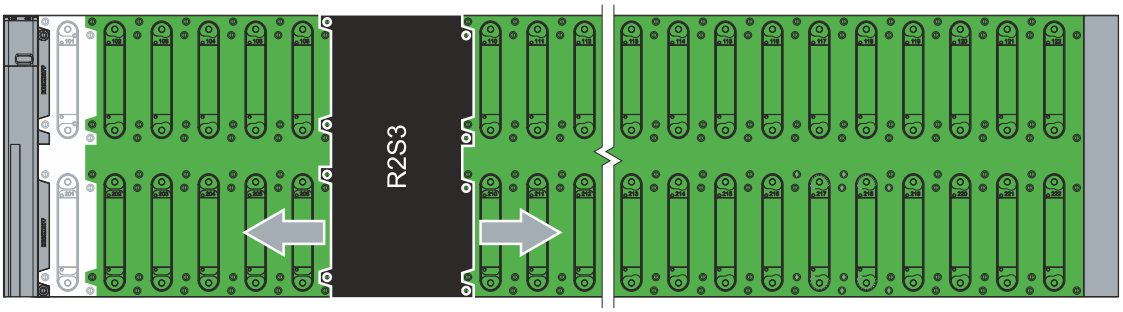
The module can be plugged into the following areas marked in green:

MB11xx-0000-0000

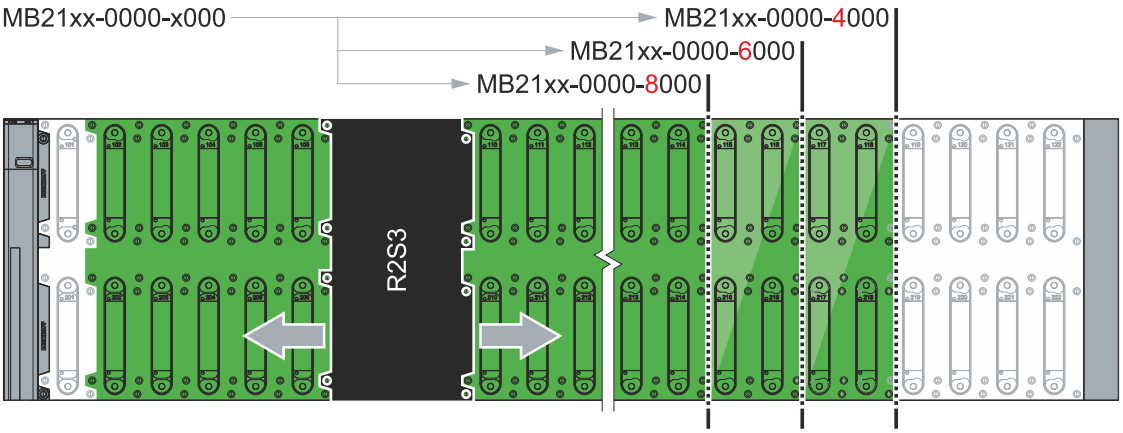




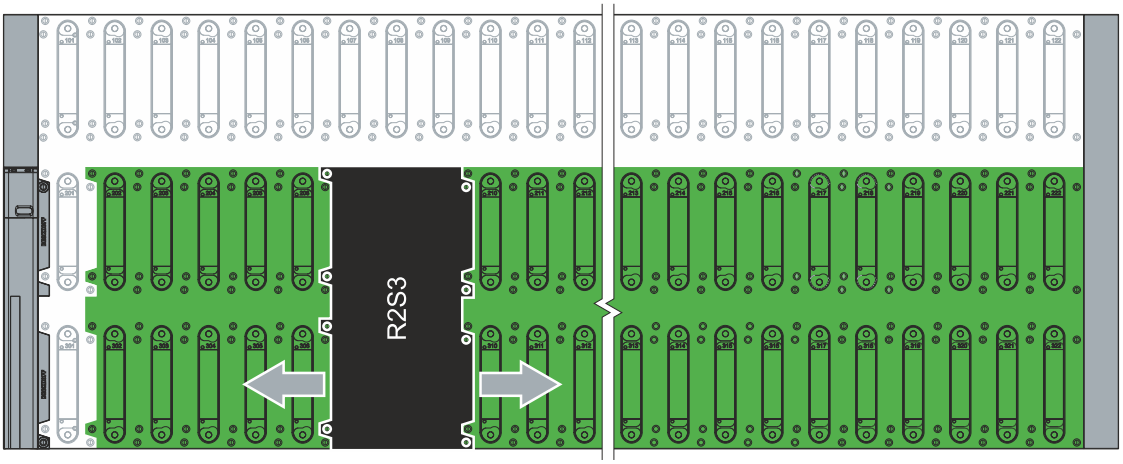
MB21xx-0000-0000



MB21xx-0000-x000



MB31xx-0000-0000



5.3 Mounting the module

⚠ CAUTION

Danger due to the high weight of an equipped baseplate

First mount the baseplate and then the modules to the baseplate. If you mount the modules on the baseplate first, the total weight of the MX-System will increase. Another person is required to transport and assemble an equipped baseplate.

- Wear personal protective equipment.
- The equipped baseplate must be transported and mounted by two people.

NOTICE

Ensure correct installation

If the module is not installed correctly, liquids and dirt may enter and damage the MX-System. The IP67 protection rating is not met if the installation is incorrect.

NOTICE

Limited number of mating cycles

The module may be plugged in a maximum of 25 times to attach it to the baseplate. If the module is plugged into the baseplate more than 25 times, a secure connection between the module and the baseplate cannot be guaranteed.

- Observe the permissible number of mating cycles.
- Replace the module if the number of mating cycles is exceeded.
- Replace the baseplate if the number of mating cycles is exceeded.

The module must be plugged into data slot *101* and the power slot *201* below it on a baseplate. The data slots *102* and *103* as well as the power slots *202* and *203* are also required for design reasons.

1. Plug the module on the baseplate
2. Tighten all screws
3. Observe tightening torques:

Components	Tightening torque [Nm]
Screws	5

Further information on installation can be found in the system manual in the "Mounting" chapter.

6 Connection

NOTICE

Defect caused by hot plug

If cables are connected or disconnected during operation, damage to property is possible.

- Only connect or disconnect cables when all supply voltages have been shutdown.

6.1 Operator measures

Use an appropriately dimensioned line protection to protect the supply line.

If you use a residual current device, use a type that is all-current sensitive.

CE-compliant: external protection

Use mains fuses of operating class “gG” in accordance with IEC 60269.

Power infeed	Max. fuse protection	Max. SCCR
MS1132-2001-2349 MS1132-2201-2349	40 A	5 kA

6.2 Required accessories

You will need the following accessories for the electrical connection:

Installation material required

- 1 x sheathed cable 5 x 4 mm²
  - Outer diameter 11…16 mm
  - Ambient temperature range 105 °C or higher
- 5 x cable lug:
  - Tubular cable lug OR ring cable lug, for example according to DIN 46237

If you are using tubular cable lugs and UL508A compliance is required:

- 5 x heat-shrink tubing
  - UL-compliant
  - Dielectric strength ≥ 6 kV
  - with inner diameter > 8.5 mm
  - 30 mm length

Required tools

- Torx T25 screwdriver
- Torque wrench 3 Nm to 5 Nm
- Stripping tool, cable knife OR cable stripper
- Tool for stripping the wires, for example, wire strippers
- Wrench with 29 mm width across flats
- Socket wrench with 8 mm width across flats
- Crimp tool for the cable lugs

6.3 Connecting the power cable

⚠ WARNING

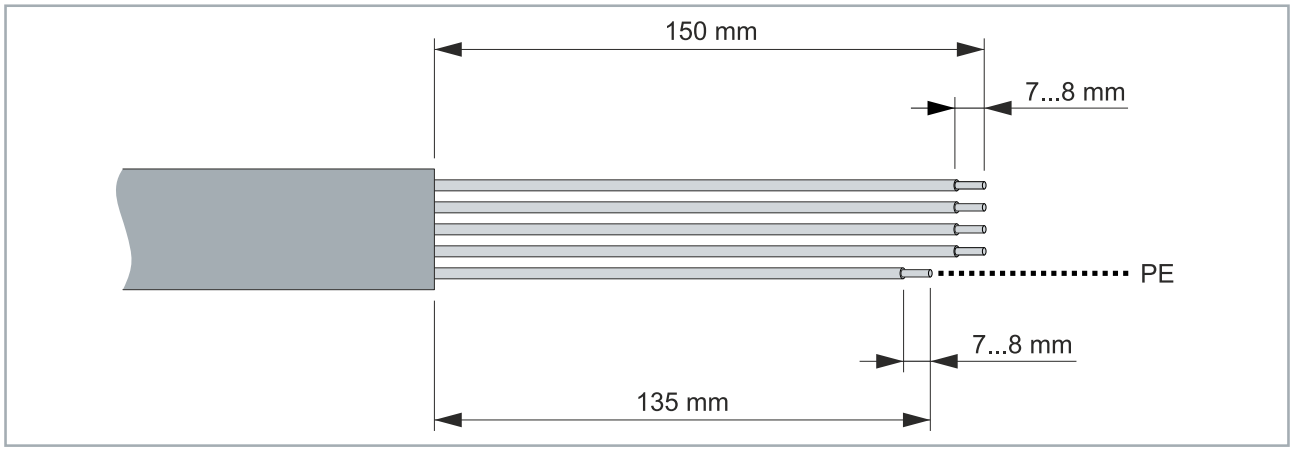
Danger to life due to electric shock

Errors in electrical connection can lead to death, personal injury, or property damage.

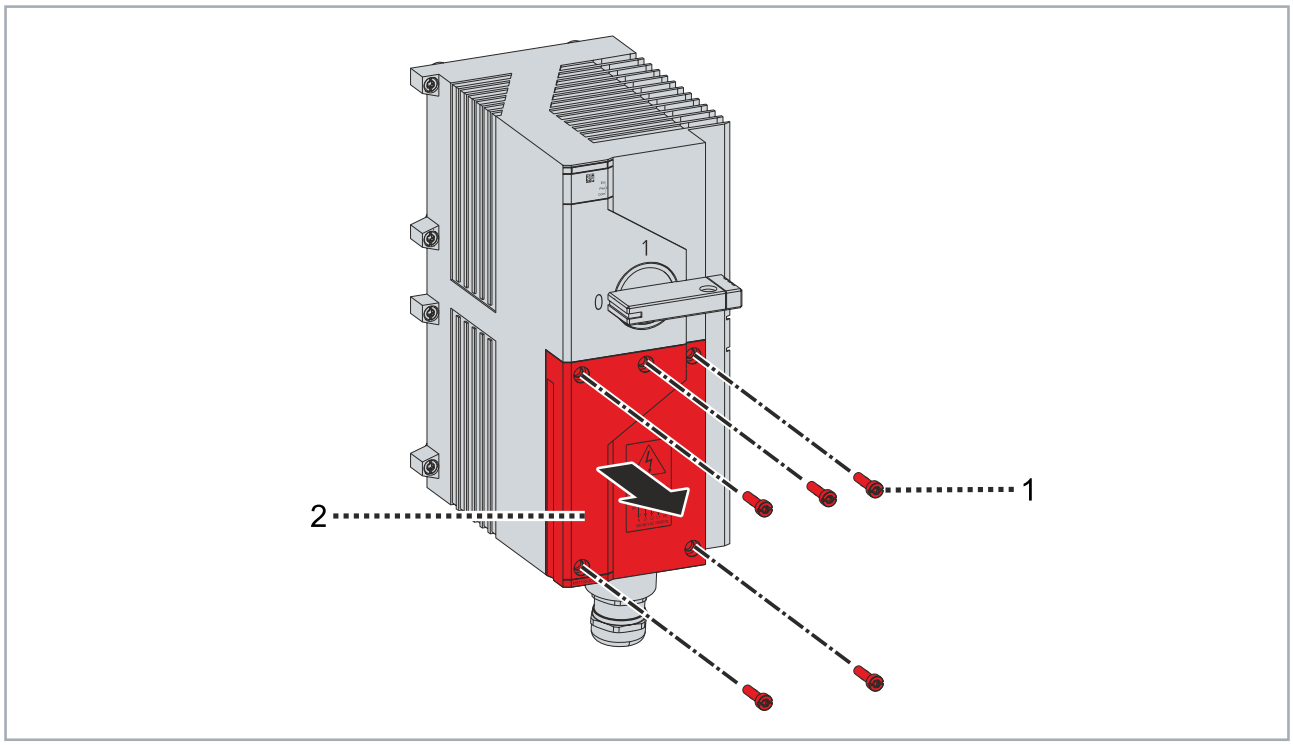
- Observe personnel qualifications. Work on the terminal box may only be carried out by qualified personnel for electrical work.
- Follow the instructions below exactly.

1. Set the main switch to position "0"
2. Apply the five safety rules of electrical engineering to create a safe working environment
3. Ensure that the module is correctly mounted on a baseplate

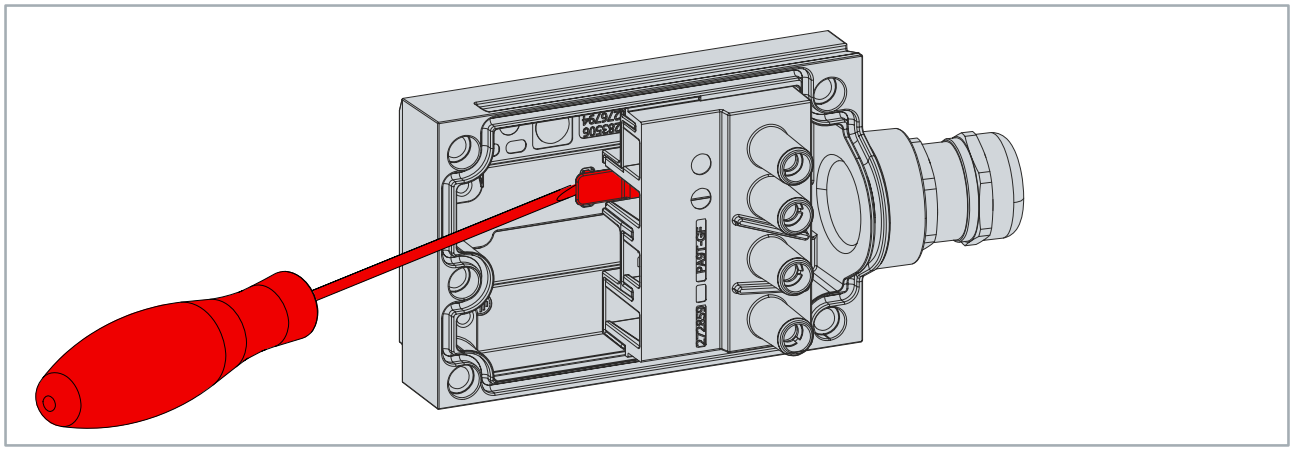
For more information, refer to the system manual in the chapter “Installation”.



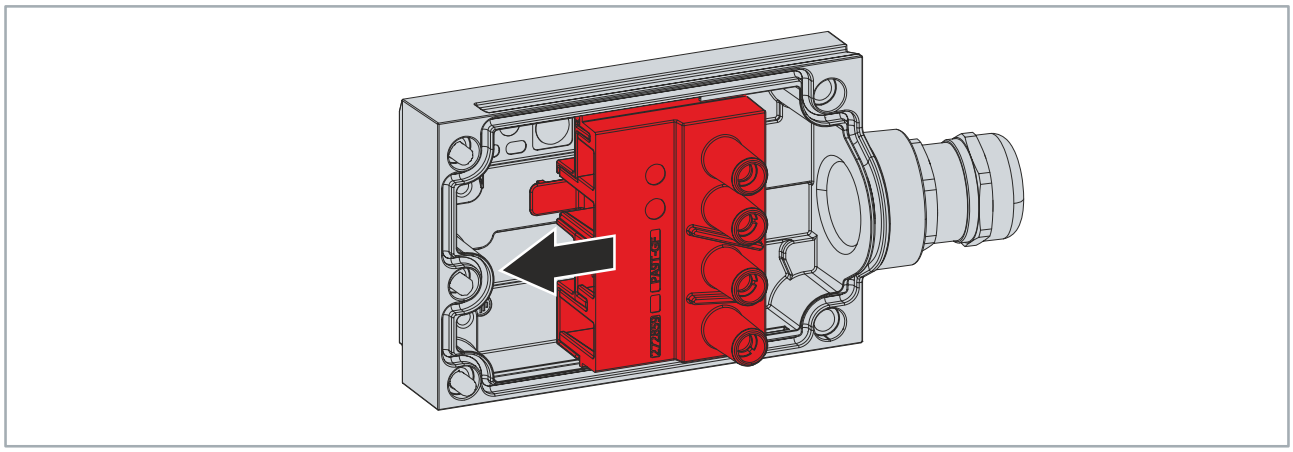
4. Strip 150 mm of sheathed cable
5. Shorten PE wire [PE] to 135 mm
6. Strip 7 mm to 8 mm of insulation from all wires



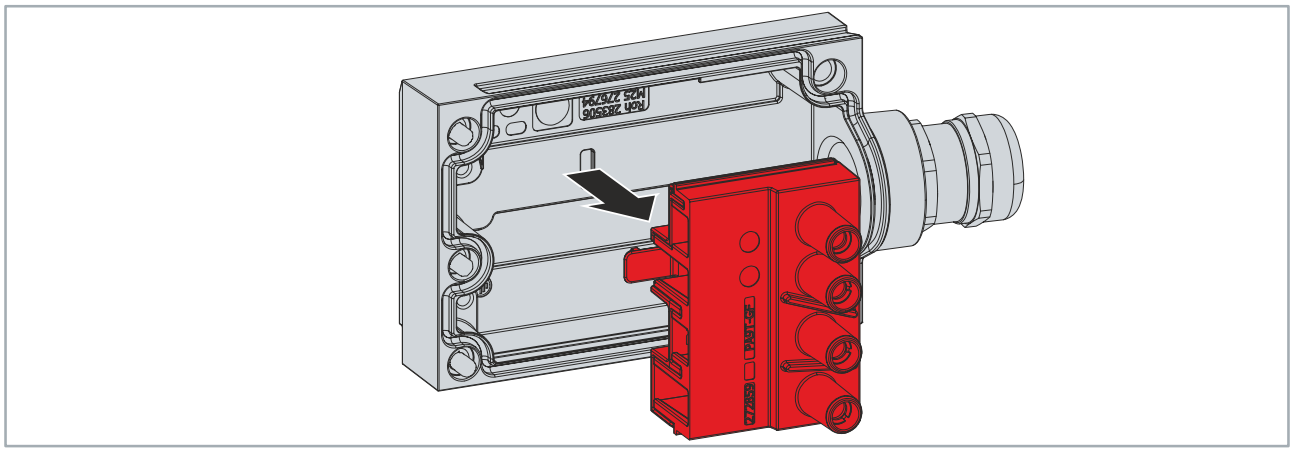
7. Remove the screws [1] of the terminal box and remove the terminal box [2]



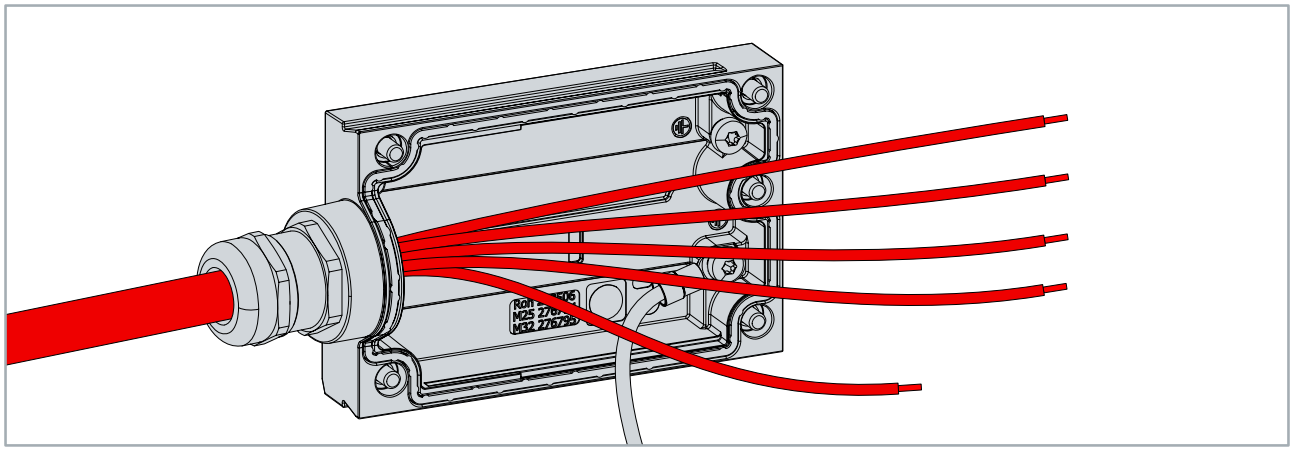
8. Release the supply plug from the terminal box



9. Push the supply plug in the terminal box to the side

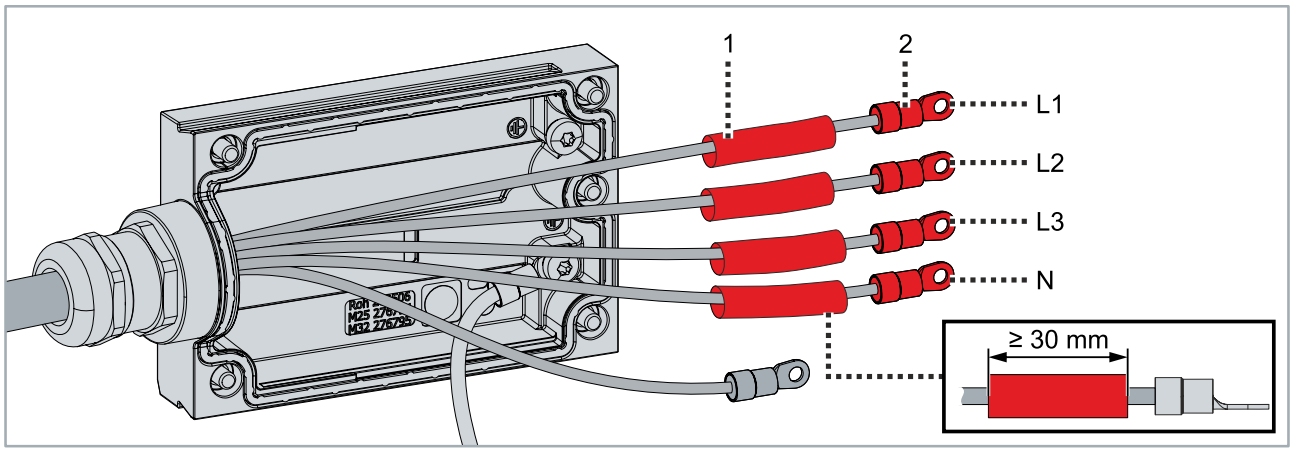


10. Remove the supply plug



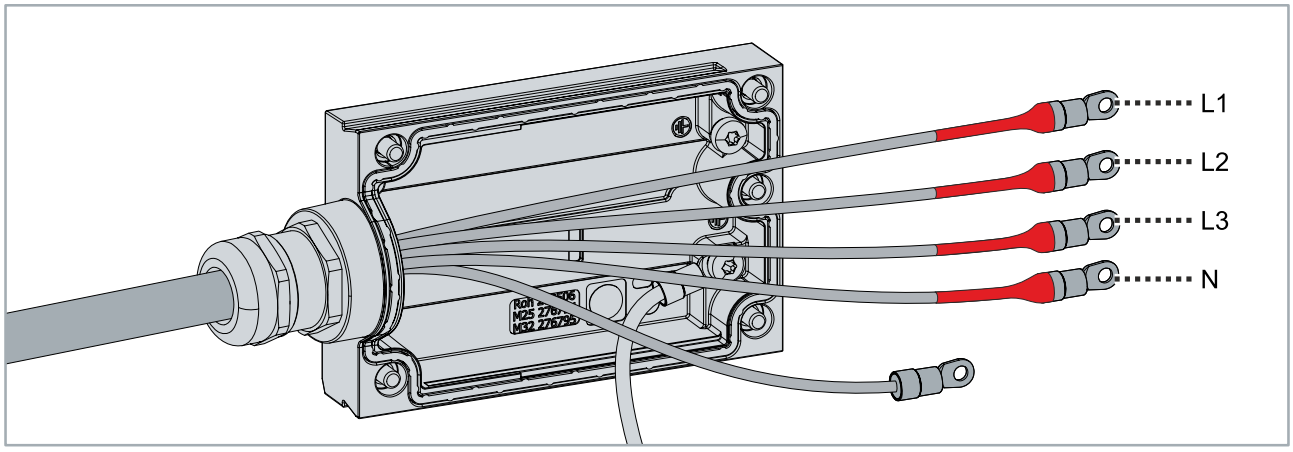
11. Feed the cable through the cable gland
12. Ensure that the end of the sheath is just completely inside the cable gland
13. Tighten the cable gland with the wrench
14. Observe tightening torques:

Component	Tightening torque [Nm]
Cable gland	12



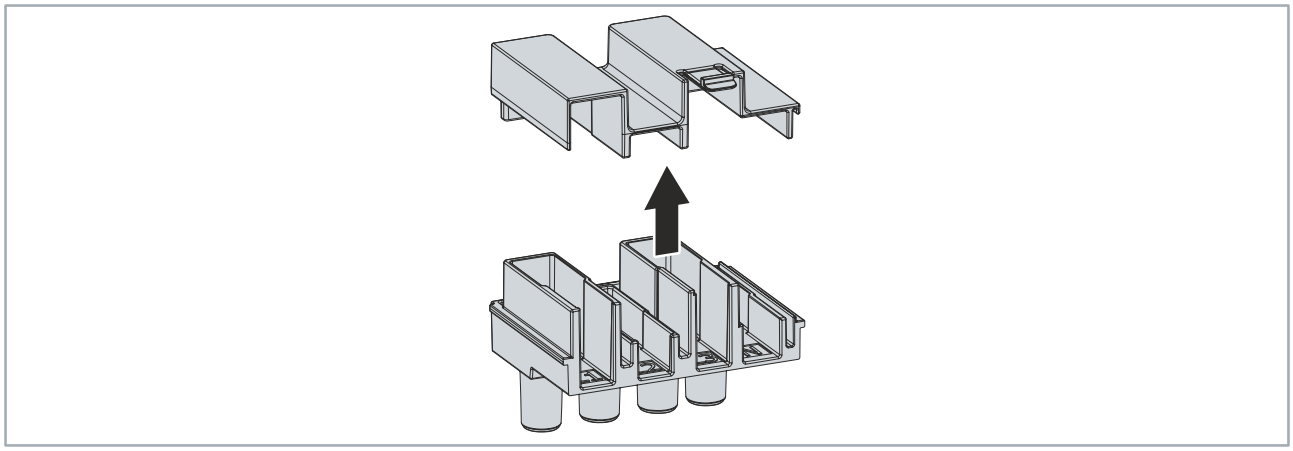
If you are using tubular cable lugs and UL508A compliance is required:

15. Slide at least 30 mm long heat-shrink tubing [1] over the wire ends of L1, L2, L3 and N
16. Use the crimp tool to professionally attach cable lugs [2] to all wire ends
17. Ensure that no wire ends are sticking out



If you are using tubular cable lugs and UL508A compliance is required:

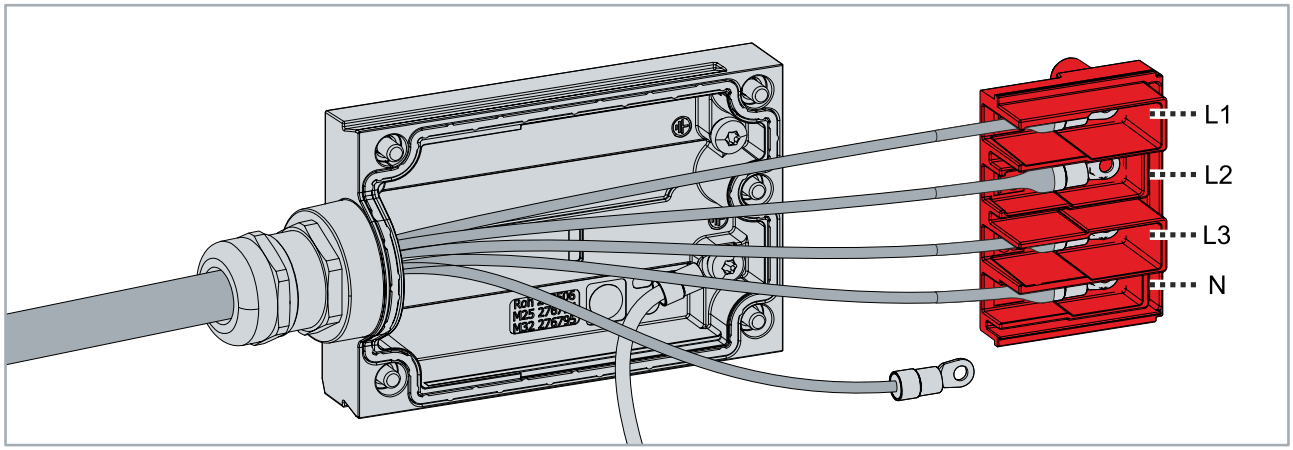
18. Shrink heat-shrink tubing over cables and cable lugs



19. Open the supply plug

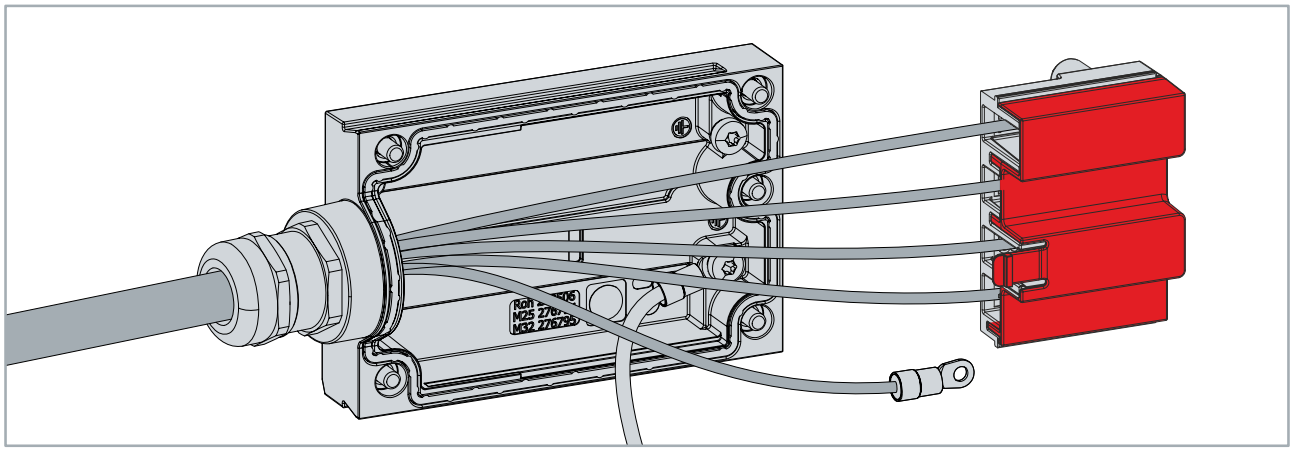
NOTICE

Be sure to connect all three phases

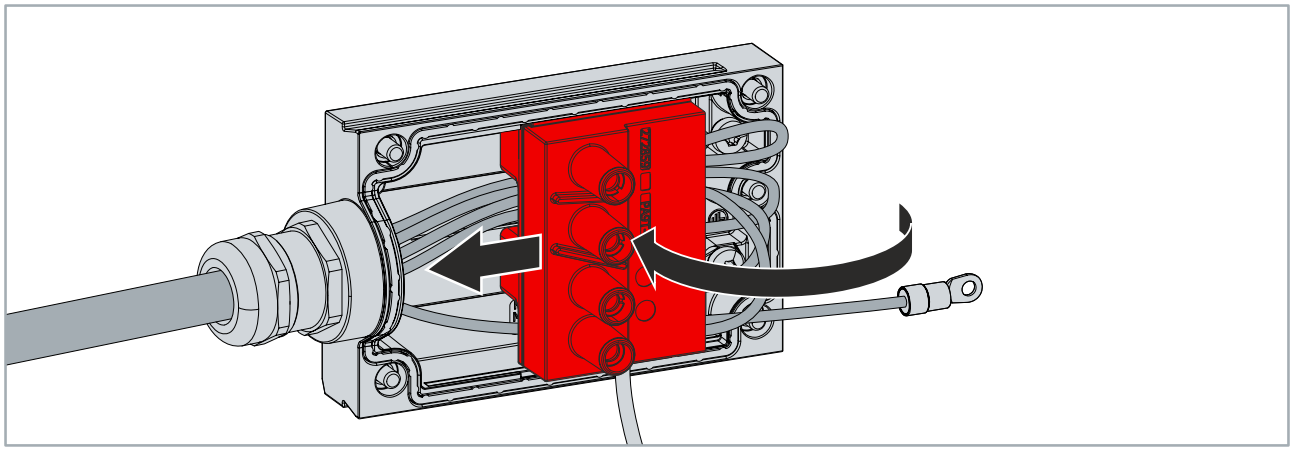


20. Screw on L1, L2, L3 and N with the socket wrench in the supply plug
21. Observe tightening torques:

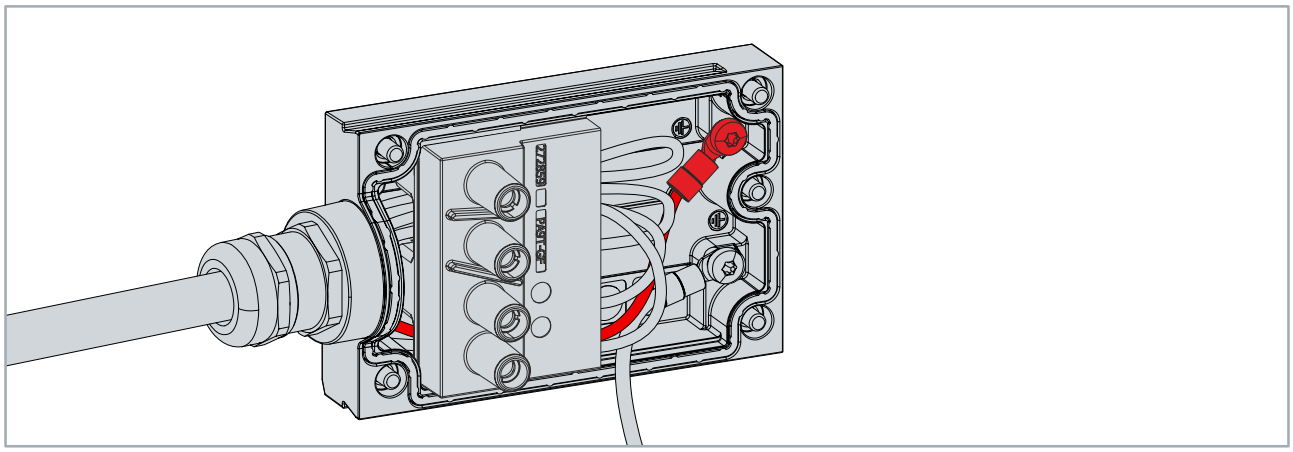
Component	Tightening torque [Nm]
Screws	5



22. Close the supply plug

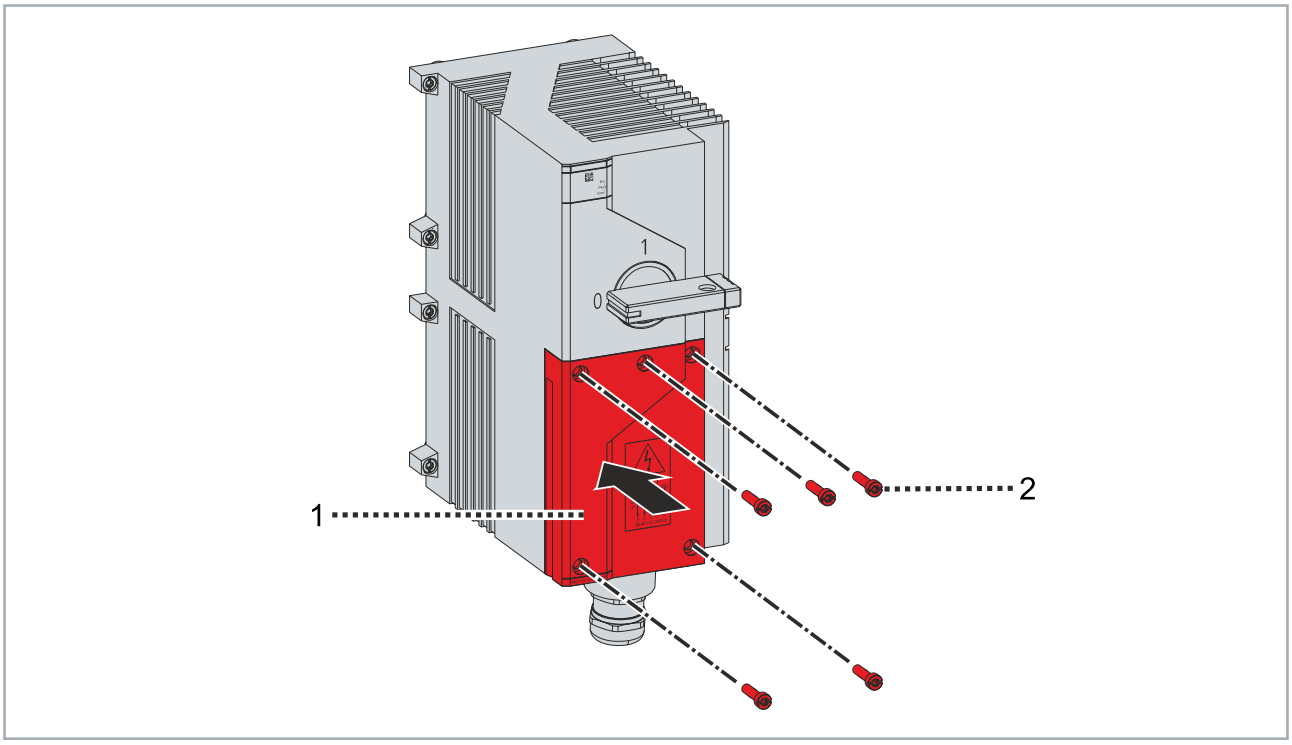


23. Insert the supply plug into the terminal box and push it to the left until the supply plug engages



24. Secure the PE wire in the terminal box
25. Observe tightening torques:

Component	Tightening torque [Nm]
Screws	5



26. Place terminal box [1] on the module
27. Tighten screws [2]

7 Commissioning and operation

NOTICE

Danger if operated in an unsuitable environment

Material damage is possible.

- Before commissioning, ensure that the environmental conditions at the place of commissioning and operation are complied with at all times. Further information can be found in chapter Technical data [▶ 17].

⚠ WARNING

Danger to life due to electric shock

After switching on, a life-threatening voltage may be present at open connectors on the system.

- Before switching on, ensure that all components to which the power voltage is distributed are correctly and completely installed and wired.
- Before switching on, ensure that unused connectors and other connections are covered with the sealing caps, dummy caps or protective caps provided for this purpose.

Recommendation: sequential commissioning

For distributed systems, it is recommended that the individual system components are commissioned or connected one after the other. This procedure facilitates troubleshooting if, for example, there is a short circuit in a part of the system due to a wiring error.

Proceed as follows to put the module into operation.

1. Mount the module on a baseplate.

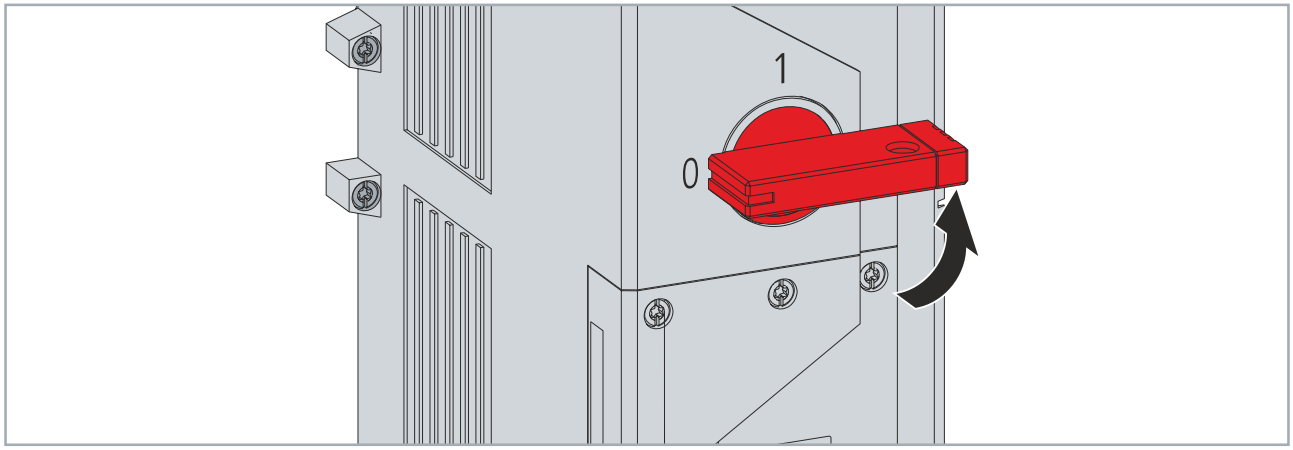
For more information, refer to the system manual in the chapter “Installation”.

2. Connect the supply line to the power input. See chapter Connection [▶ 24].
3. Switch on the main switch.
4. Parameterize the functions of the module if required. See chapter Software functions [▶ 19].

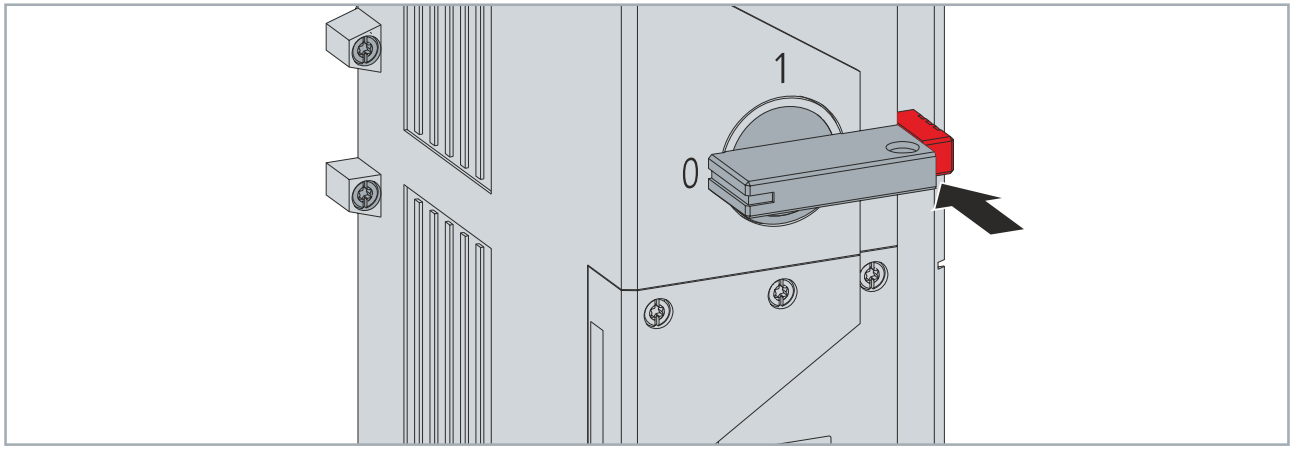
7.1 During operation

7.1.1 Secure the main switch to prevent accidental activation

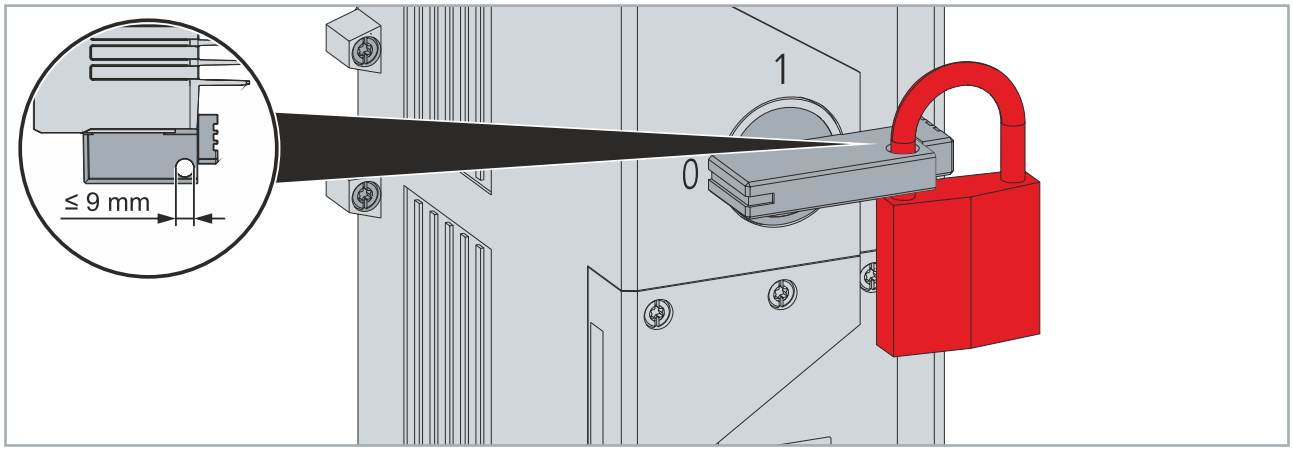
You can secure the main switch with a padlock to prevent it from being switched on. The diameter of the shackle must be smaller than 9 mm.



1. Set the main switch to position "0"



2. Press down the cap at the end of the main switch
   - ⇨ The main switch can no longer be moved.
   - ⇨ The hole in the main switch is open.



3. Guide the padlock shackle through the hole in the main switch
4. Close the padlock

7.2 Replacing the fuses

⚠ WARNING

Danger to life due to electric shock

Errors in electrical connection can lead to death, personal injury, or property damage.

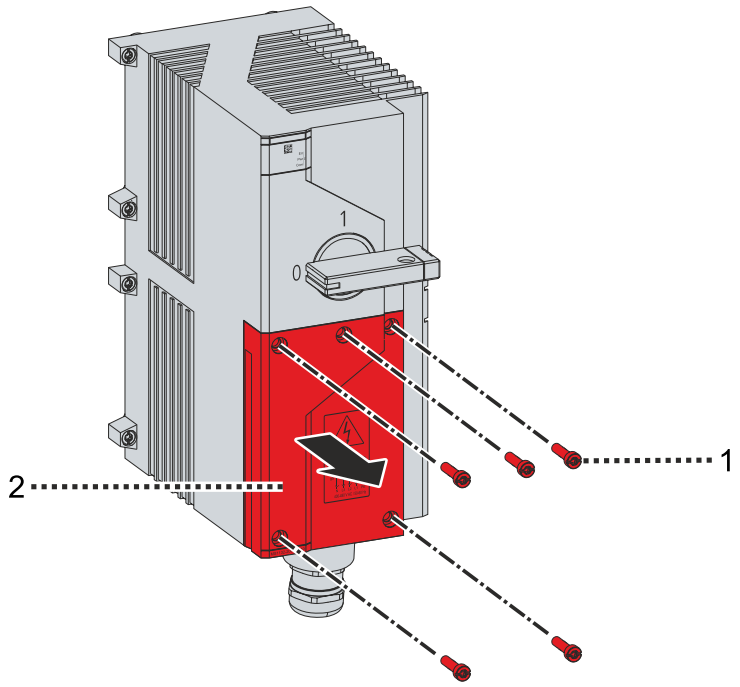
- Observe personnel qualifications. Work on the terminal box may only be carried out by qualified personnel for electrical work.
- Follow the instructions below exactly.

If a fuse has triggered, you must replace it immediately.

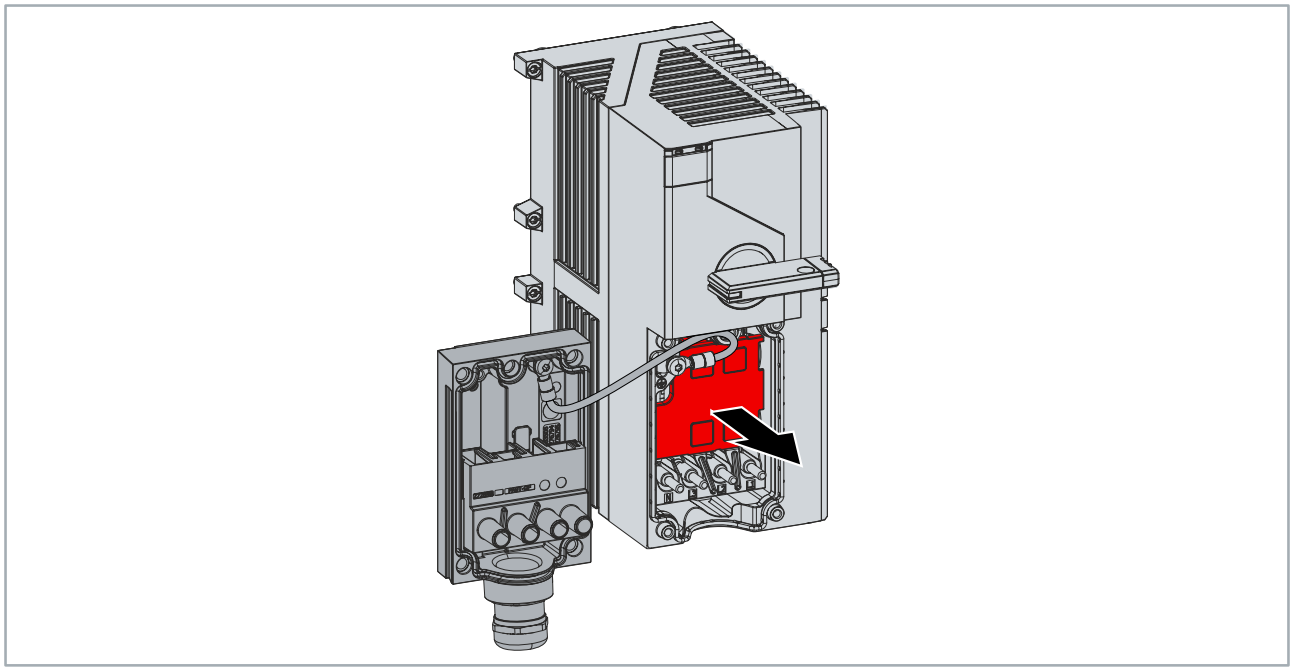
You may need to replace other fuses in the MX-System. The short circuit that triggered the fuse may have damaged other fuses.

Type of fuses: SIBA 50 058 08.40.

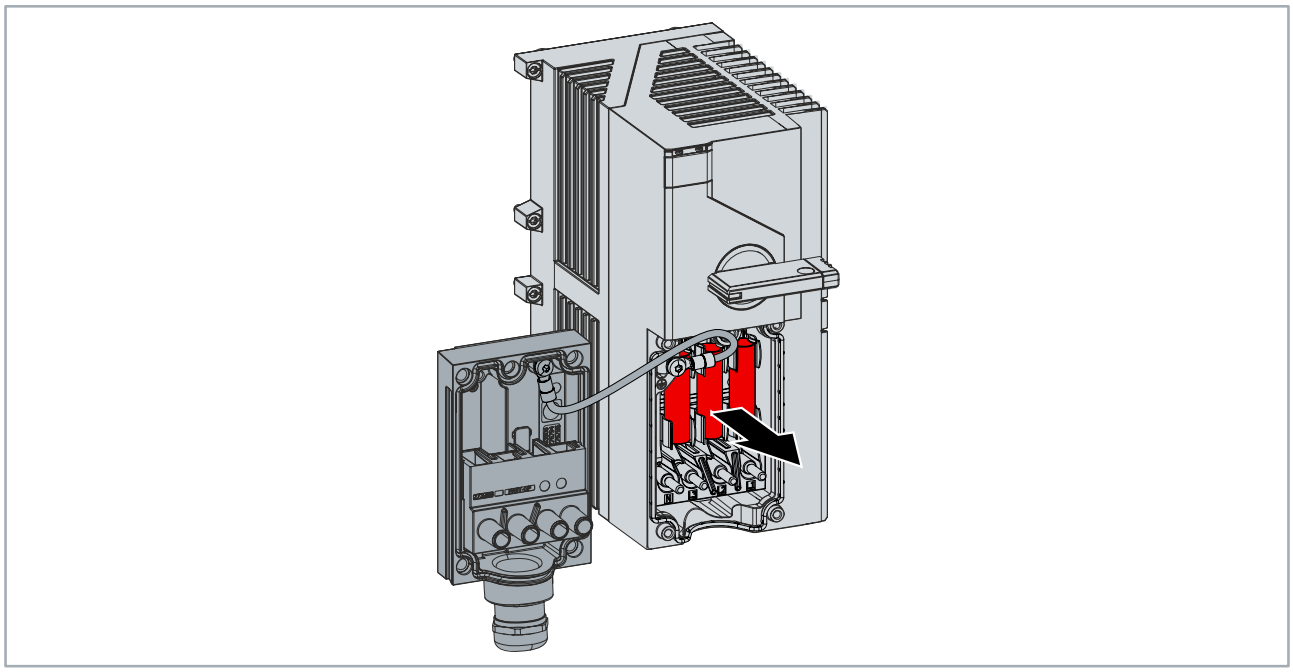
1. Switch off the external supply voltage
2. Apply the five safety rules of electrical engineering to create a safe working environment
3. Set the main switch to position "0"



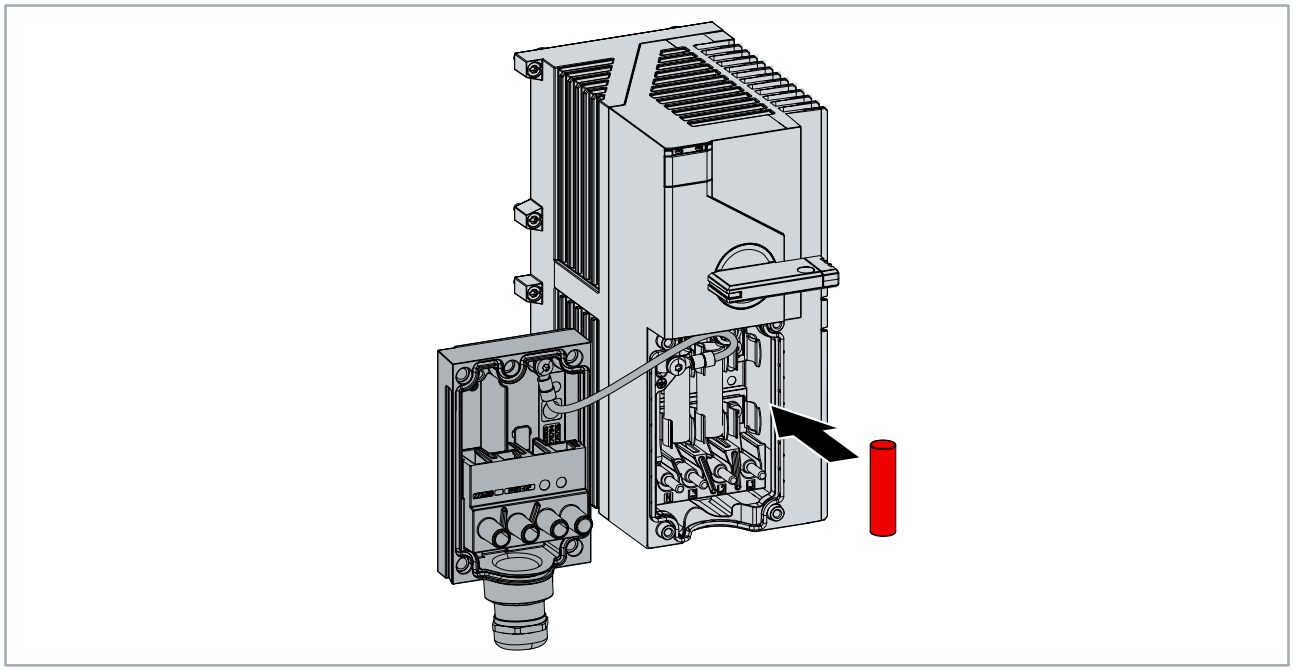
4. Loosen the screws [1] of the terminal box and remove the terminal box [2]



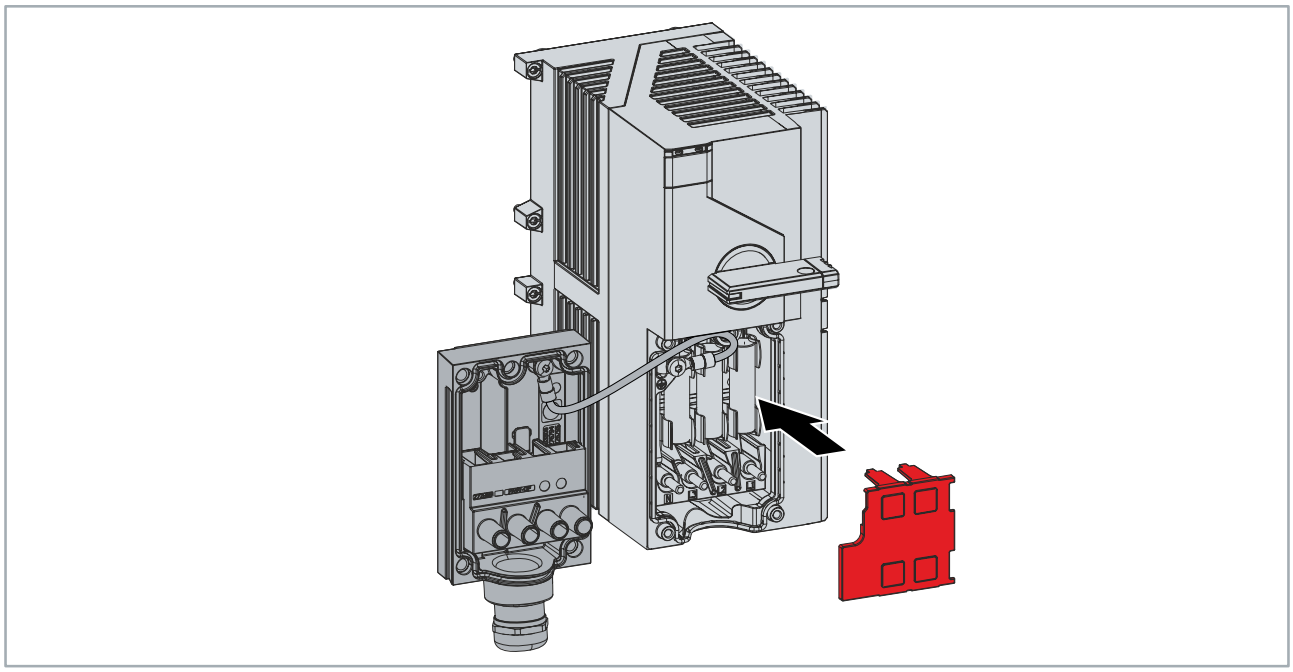
5. Remove the fuse cover



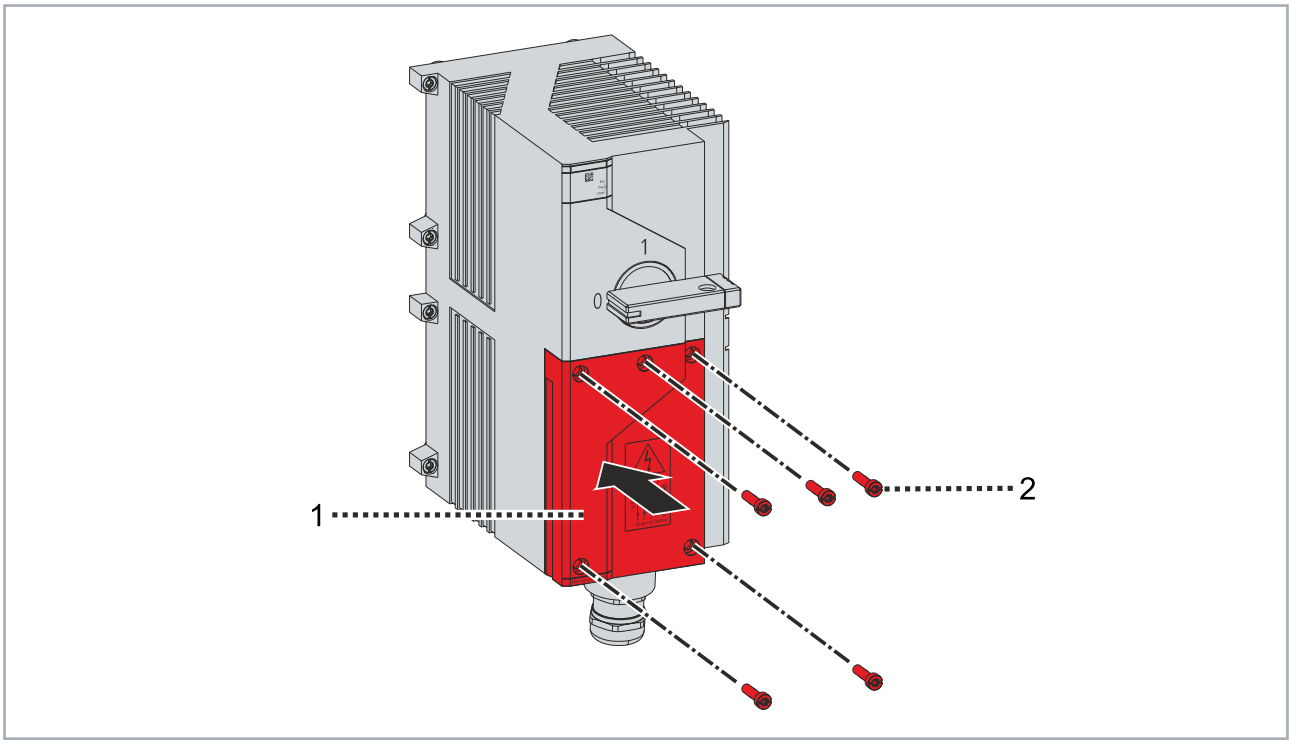
6. Remove old fuse with pliers



7. Insert new fuse by hand



8. Insert the fuse cover



9. Place the terminal box [1] on the module
10. Tighten screws [2]
11. Observe tightening torques:

Component	Tightening torque [Nm]
Screws, M5 x 12	5

8 Decommissioning

8.1 Disassembly

⚠ CAUTION

Danger to life due to exposed contacts with dangerous voltages

After disassembling the module, the contacts of the power connectors in the baseplate are exposed. Touching the contacts can lead to death or injury from electric shock.

- Shutdown the input voltage before disassembly.

NOTICE

This device is not hot-swappable

Disassembling this device under voltage can lead to material damage.

- Switch off the supply voltage before disassembling.

1. Loosen all mounting screws of the module
2. Take the module off the baseplate

For more information, refer to the system manual in the chapter “Disassembly”.

3. If the module is mounted again, follow the chapter Mechanical installation [▶ 21]

8.2 Disposal

Products marked with a crossed-out wheeled bin shall not be discarded with the normal waste stream. The device is considered as waste electrical and electronic equipment. The national regulations for the disposal of waste electrical and electronic equipment must be observed.

9 Appendix

9.1 Manual version history

The following table shows the version history of this manual.

Version	Comment
0.3	• Optimizations
0.2	• Optimizations
0.1	• First preliminary version

9.2 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

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e-mail:	info@beckhoff.com
web:	www.beckhoff.com

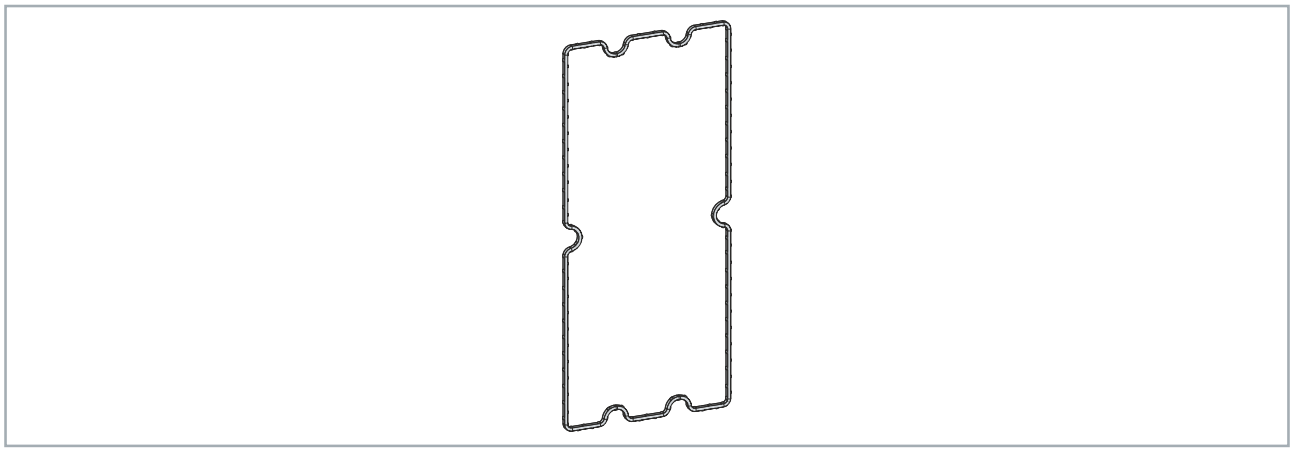
9.3 Accessories

Suitable accessories can be found on the product website:

https://www.beckhoff.com/ms1132-2001-2349

The following items are also available for replacing worn parts:

MX seal S3R2



The S3R2 seal is available to replace worn and damaged seals on a 2-row MX module with three slots.

Trademark statements

More Information:
www.beckhoff.com/ms1132-2001-2349

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