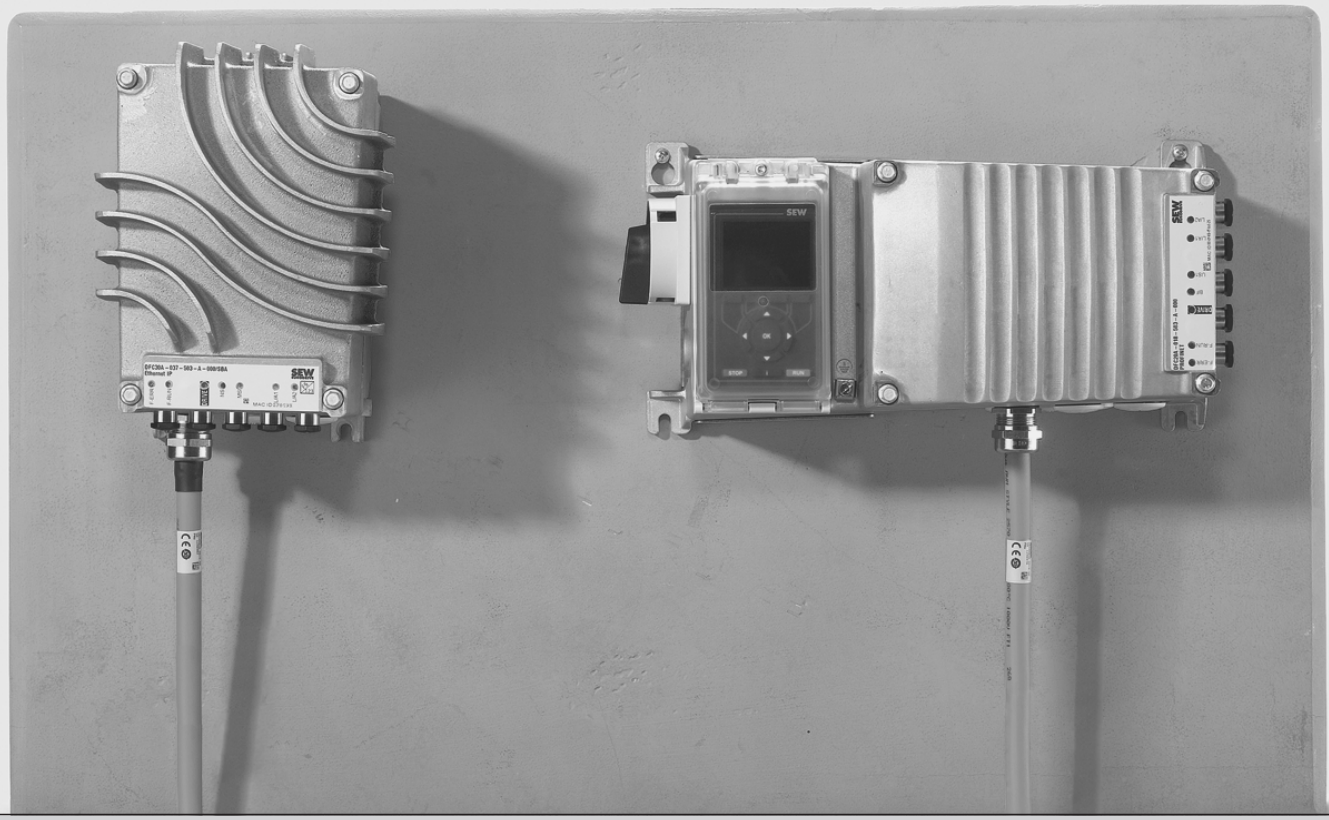
SEW EURODRIVE

Operating Instructions



Decentralized Inverter

MOVIMOT® flexible

MMF..-C/DAC (AS-Interface)

Edition 07/2021

26863707/EN

Table of contents

1 General information 6
1.1 About this documentation 6
1.2 Other applicable documentation 6
1.3 Structure of the safety notes 6
1.4 Decimal separator in numerical values 8
1.5 Rights to claim under limited warranty 8
1.6 Product names and trademarks 8
1.7 Copyright notice 8

2 Safety notes for MOVIMOT® flexible 9
2.1 Preliminary information 9
2.2 Duties of the user 9
2.3 Target group 10
2.4 Network security and access protection 10
2.5 Designated use 11
2.6 Functional safety technology 11
2.7 Transportation 12
2.8 Installation/assembly 12
2.9 Protective separation 13
2.10 Electrical installation 13
2.11 Startup/operation 14

3 Device structure 15
3.1 MOVIMOT® flexible 15
3.2 Cable entry position 18
3.3 Nameplate position 20
3.4 Example nameplate and type designation 21
3.5 Example of the optional nameplate "Plug connector positions" 24
3.6 Electronics 27
3.7 Example nameplate and type designation of the electronics 32
3.8 Example nameplate and type designation of the connection unit 35

4 Mechanical installation 37
4.1 Installation notes 37
4.2 Required tools and resources 38
4.3 Tolerances for torque ratings 38
4.4 Installation requirements 38
4.5 Installing the device 39
4.6 Mounting the device 45
4.7 Mounting the device with mounting panel M01 48
4.8 Mounting the device with mounting panel M31 50
4.9 Tightening torques 51

5 Electrical installation 56
5.1 Installation planning taking EMC aspects into account 56
5.2 Equipotential bonding at the connection box 60
5.3 Installation instructions 60

26863707/EN – 07/2021

5.4 Installation topology (example: standard installation) ... 71
5.5 Terminal assignment ... 72
5.6 Connection diagram MOVIMOT® flexible MMF../DAC.. ... 76
5.7 Cable routing and cable shielding ... 77
5.8 EMC cable glands ... 85
5.9 Bulk cables ... 86
5.10 Plug connectors ... 91
5.11 Assignment of optional plug connectors ... 111
5.12 Plug connector assignment at the electronics cover ... 154
5.13 PC connection ... 155

6 Startup ... 165
6.1 Startup notes ... 165
6.2 Startup requirements ... 168
6.3 Parameterization mode ... 169
6.4 Control elements ... 170
6.5 DIP switch ... 175
6.6 Detailed motor selection table for startup via DIP switch S3 ... 183
6.7 Startup procedure ... 202
6.8 Startup with the CBG21A keypad ... 205
6.9 Startup with the CBG11A keypad ... 207
6.10 Process data configuration ... 209
6.11 Disabling DynaStop® for startup purposes ... 213
6.12 Configuring the drive behavior at standstill (FCB02, FCB13, FCB14) ... 215

7 Operation ... 216
7.1 Switch disconnector ... 216
7.2 Load disconnector /R01 at the inverter output of MMF3../DAC ... 217
7.3 Manual mode with MOVISUITE® ... 218
7.4 Drive unit behavior in case of a voltage failure ... 220
7.5 DynaStop® ... 221
7.6 Function "Releasing the brake / deactivating DynaStop® with FCB01" ... 222
7.7 DynaStop® in conjunction with STO ... 224
7.8 Mechanical brake in connection with STO ... 229

8 Service ... 230
8.1 Evaluating fault messages ... 230
8.2 Switch-off responses ... 231
8.3 Fault messages with parameterizable response ... 231
8.4 Switch-off responses ... 233
8.5 Resetting fault messages ... 235
8.6 Description of status and operating displays ... 235
8.7 Fault/error table ... 240
8.8 Device replacement ... 304
8.9 SEW-EURODRIVE Service ... 308
8.10 Shutdown ... 308
8.11 Storage ... 308
8.12 Extended storage ... 309

26863707/EN – 07/2021

8.13 Waste disposal ... 311

9 Inspection and maintenance ... 312
9.1 Determining the operating hours ... 312
9.2 Inspection and maintenance intervals ... 313
9.3 Inspection and maintenance work ... 314

10 Project planning ... 323
10.1 Preliminary information ... 323
10.2 SEW-Workbench ... 323
10.3 Schematic workflow for project planning ... 324
10.4 Drive selection ... 325
10.5 Recommendations for motor and inverter selection ... 325
10.6 Motor/inverter assignments ... 330
10.7 Thermal motor protection without temperature sensor ... 362
10.8 Selecting an inverter ... 364
10.9 Selecting the braking resistor ... 367

11 Technical data and dimension sheets ... 373
11.1 Markings ... 373
11.2 General information ... 374
11.3 Technical data ... 375
11.4 Brake control ... 388
11.5 Braking resistors ... 389
11.6 Mounting kit for braking resistor BW...-.../..C ... 402
11.7 Line choke ... 406
11.8 Screw fittings ... 408
11.9 Connection cables ... 410
11.10 Mounting positions ... 412
11.11 Device dimension drawings ... 413
11.12 Dimension drawings of plug connectors in the electronics cover ... 419
11.13 Dimension drawings of plug connectors in the connection box ... 421
11.14 Dimension drawing of M01 mounting panel ... 427
11.15 Dimension drawing of M31 mounting panel ... 429

12 Functional safety ... 432
12.1 General information ... 432
12.2 Integrated Safety Technology ... 433
12.3 Safety conditions ... 438
12.4 Connections variants ... 443
12.5 Safety characteristics ... 458

13 Address list ... 459

Index ... 470

26863707/EN – 07/2021

1 General information

1.1 About this documentation

The documentation at hand is the original.

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their operation as well as persons who work on the product independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or if you require further information, contact SEW-EURODRIVE.

1.2 Other applicable documentation

Observe the corresponding documentation for all additional components.

1.3 Structure of the safety notes

1.3.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER**	Imminent hazard	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 product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.3.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:

SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

26863707/EN – 07/2021

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage
	Warning of hot surfaces
	Warning of risk of crushing
	Warning about suspended load
	Warning of automatic restart

1.3.3 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

⚠ **SIGNAL WORD!** Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

26863707/EN – 07/2021

1.4 Decimal separator in numerical values

In this document, a period is used to indicate the decimal separator.

Example: 30.5 kg

1.5 Rights to claim under limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.6 Product names and trademarks

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.7 Copyright notice

© 2021 SEW-EURODRIVE. All rights reserved. Unauthorized reproduction, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

26863707/EN – 07/2021

2 Safety notes for MOVIMOT® flexible

2.1 Preliminary information

The following general safety notes serve the purpose of preventing injury to persons and damage to property. They primarily apply to the use of products described in this documentation. If you use additional components, also observe the relevant warning and safety notes.

2.2 Duties of the user

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following may be carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

- National and regional safety and accident prevention regulations
- Warning and safety signs on the product
- All other relevant project planning documents, installation and startup instructions, and wiring diagrams
- Do not assemble, install or operate damaged products
- All system-specific specifications and conditions

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

26863707/EN – 07/2021

2.3 Target group

Specialist for mechanical work

Any mechanical work may be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product who possess the following qualifications:

- Qualifications in the field of mechanics in accordance with the national regulations
- Familiarity with this documentation

Specialist for electrotechnical work

Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications:

- Qualifications in the field of electrical engineering in accordance with the national regulations
- Familiarity with this documentation

Additional qualifications

In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation.

The persons must have the express authorization of the company to operate, program, parameterize, label, and ground devices, systems, and circuits in accordance with the standards of safety technology.

Instructed persons

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the training is to give persons the ability to perform the required tasks and work steps in a safe and correct manner.

2.4 Network security and access protection

A bus system makes it possible to adapt electronic drive technology components to the particulars of the machinery within wide limits. There is a risk that a change of parameters that cannot be detected externally may result in unexpected but not uncontrolled system behavior and may have a negative impact on operational safety, system availability, or data security.

Ensure that unauthorized access is prevented, especially with respect to Ethernet-based networked systems and engineering interfaces.

Use IT-specific safety standards to increase access protection to the ports. For a port overview, refer to the respective technical data of the device in use.

26863707/EN – 07/2021

2.5 Designated use

The product is intended for installation in electrical plants or machines.

In case of installation in electrical systems or machines, startup of the product is prohibited until it is determined that the machine meets the requirements stipulated in the local laws and directives. For Europe, Machinery Directive 2006/42/EC as well as the EMC Directive 2014/30/EU apply. Observe EN 60204-1 (Safety of machinery - electrical equipment of machines). The product meets the requirements stipulated in the Low Voltage Directive 2014/35/EU.

The standards given in the declaration of conformity apply to the product.

Technical data and information on the connection conditions are provided on the nameplate and in chapter "Technical data" in the documentation. Always comply with the data and conditions.

Unintended or improper use of the product may result in severe injury to persons and damage to property.

Do not use the product as a climbing aid.

2.5.1 Restrictions under the European WEEE Directive 2012/19/EU

You may use options and accessories from SEW-EURODRIVE exclusively in connection with products from SEW-EURODRIVE.

2.5.2 Hoist applications

To avoid danger of fatal injury by falling hoists, observe the following points when using the product in lifting applications:

- The product is not designed for use as a safety device in lifting applications.
- Use additional monitoring systems or mechanical protection devices.

2.6 Functional safety technology

The product must not perform any safety functions without a higher-level safety system unless explicitly allowed by the documentation.

26863707/EN – 07/2021

2.7 Transportation

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product is damaged, it must not be assembled, installed or started up.

Observe the following notes when transporting the device:

- Ensure that the product is not subject to mechanical impact.
- Before transportation, cover the connections with the supplied protection caps.
- Only place the product on the cooling fins or on the side without connectors during transportation.

If necessary, use suitable, sufficiently dimensioned handling equipment.

Observe the information on climatic conditions in chapter Technical data of the documentation.

2.8 Installation/assembly

Ensure that the product is installed and cooled in accordance with the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that no components are deformed or no insulation spaces are modified, particularly during transportation. Electrical components must not be mechanically damaged or destroyed.

Observe the notes in chapter Mechanical installation in the documentation.

2.8.1 Restrictions of use

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

- Use in potentially explosive atmospheres
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1
- Use at an elevation of more than 3800 m above sea level

The product can be used at altitudes above 1000 m above sea level up to 3800 m above sea level under the following conditions:

- The reduction of the nominal output current and/or the line voltage is considered according to the data in chapter Technical data in the documentation.
- Above 2000 m above sea level, the air and creeping distances are only sufficient for overvoltage class II according to EN 60664. At altitudes above 2000 m above sea level, limiting measures must be taken which reduce the line side overvoltage from category III to category II for the entire system.
- If a protective electrical separation (in accordance with EN 61800-5-1 and EN 60204-1) is required, then implement this outside the product at altitudes of more than 2000 m above sea level.

26863707/EN – 07/2021

2.9 Protective separation

The product meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. The connected signal circuits must meet requirements according to SELV (**S**afety **E**xtra **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

2.10 Electrical installation

Ensure that all of the required covers are correctly attached after carrying out the electrical installation.

Make sure that preventive measures and protection devices comply with the applicable regulations (e.g. EN 60204-1 or EN 61800-5-1).

2.10.1 Stationary application

Necessary preventive measure for the product:

Type of energy transfer	Preventive measure
Direct power supply	• Ground connection

2.10.2 Regenerative operation

The drive is operated as a generator due to the kinetic energy of the system/machine. Before opening the connection box, secure the output shaft against rotation.

26863707/EN – 07/2021

2.11 Startup/operation

Observe the safety notes in chapters Startup and Operation in this documentation.

Make sure the connection boxes are closed and screwed before connecting the supply voltage.

Depending on the degree of protection, products may have live, uninsulated, and sometimes moving or rotating parts as well as hot surfaces during operation.

When the device is switched on, dangerous voltages are present at all power connections as well as at any connected cables and terminals. This also applies even when the product is inhibited and the motor is at standstill.

Do not separate the connection to the product during operation. This may result in dangerous electric arcs damaging the product.

If you disconnect the product from the voltage supply, do not touch any live components or power connections because capacitors might still be charged. Observe the following minimum switch-off time:

5 minutes.

Observe the corresponding information signs on the product.

The fact that the operation LED and other display elements are no longer illuminated does not indicate that the product has been disconnected from the supply system and no longer carries any voltage.

Mechanical blocking or internal protective functions of the product can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, first disconnect the product from the supply system and then start troubleshooting.

Risk of burns: The surface temperature of the product can exceed 60 °C during operation. Do not touch the product during operation. Let the product cool down before touching it.

2.11.1 Switch disconnector

The switch disconnector only disconnects the device from the supply system. The terminals of the device are still connected to the line voltage after the switch disconnector is activated.

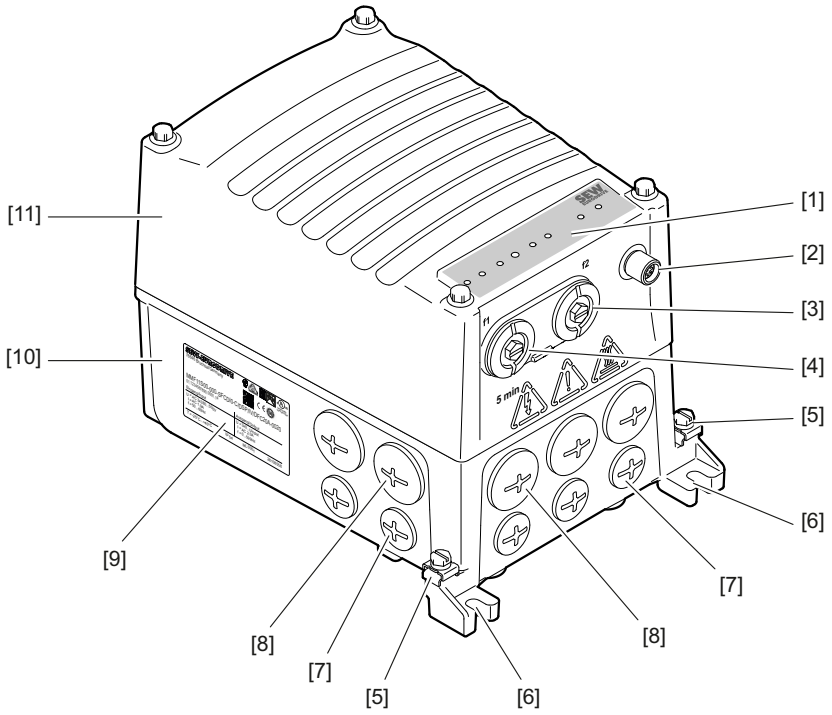
26863707/EN – 07/2021

3 Device structure

3.1 MOVIMOT® flexible

3.1.1 MOVIMOT® flexible MMF1.

MOVIMOT® flexible MMF1. is a decentralized frequency inverter that serves to control drive units. It comprises of 2 core components, the electronics cover and the universal connection box (see the following figure).



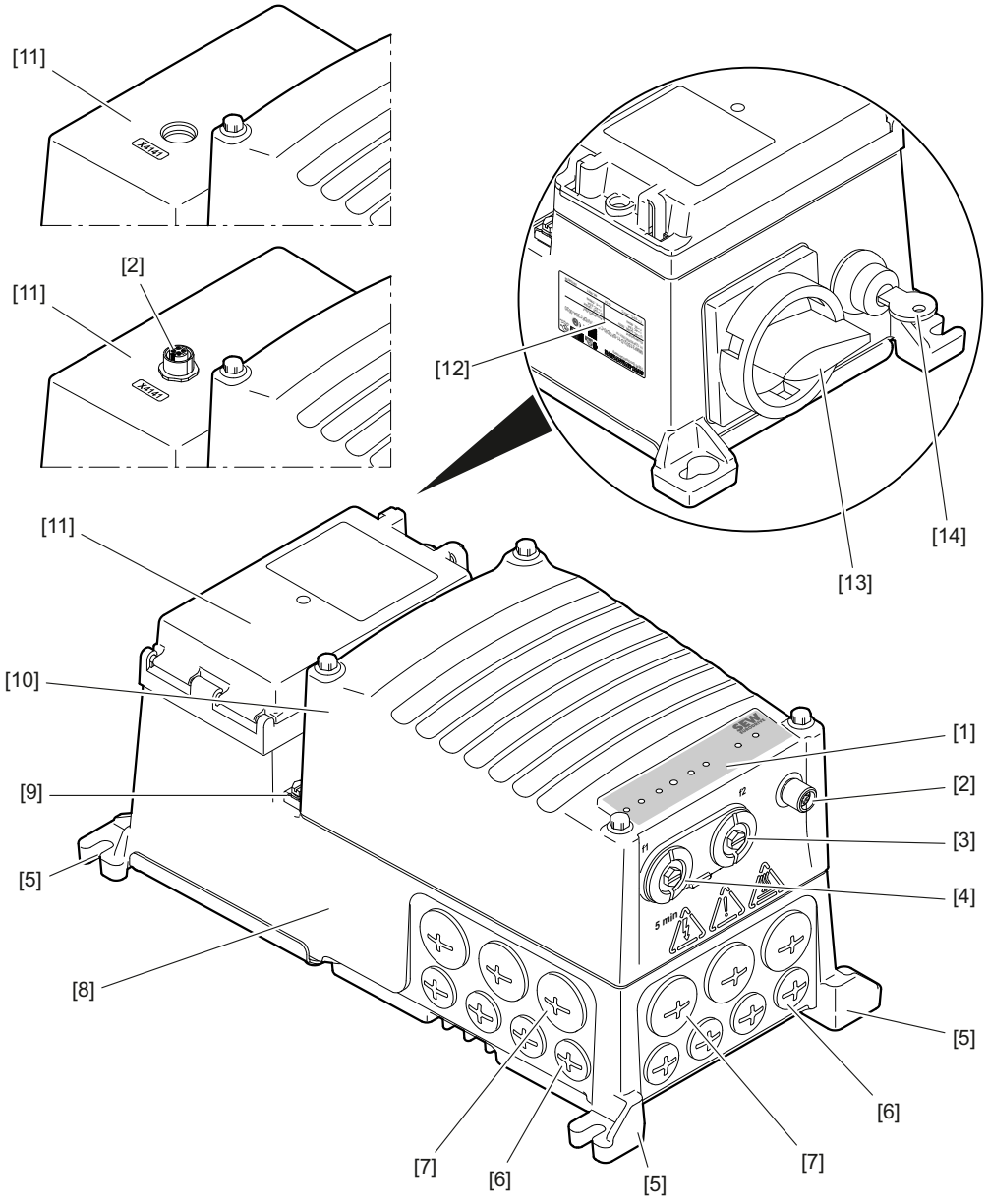
9007228572490507

[1] LED displays
[2] Plug connector
[3] Potentiometer f2 (underneath the screw plug)
[4] Potentiometer f1 (underneath the screw plug)
[5] Screws for PE connection
[6] Mounting lug
[7] Cable glands M16
[8] Cable glands M25
[9] Nameplate
[10] Connection box
[11] Decentralized inverter (referred to as electronics cover in the following)

26863707/EN – 07/2021

3.1.2 MOVIMOT® flexible MMF31

MOVIMOT® flexible MMF3. is a decentralized frequency inverter that serves to control drive units. It comprises of 4 core components, the electronics cover, connection box, front module, and maintenance switch (see the following figure).



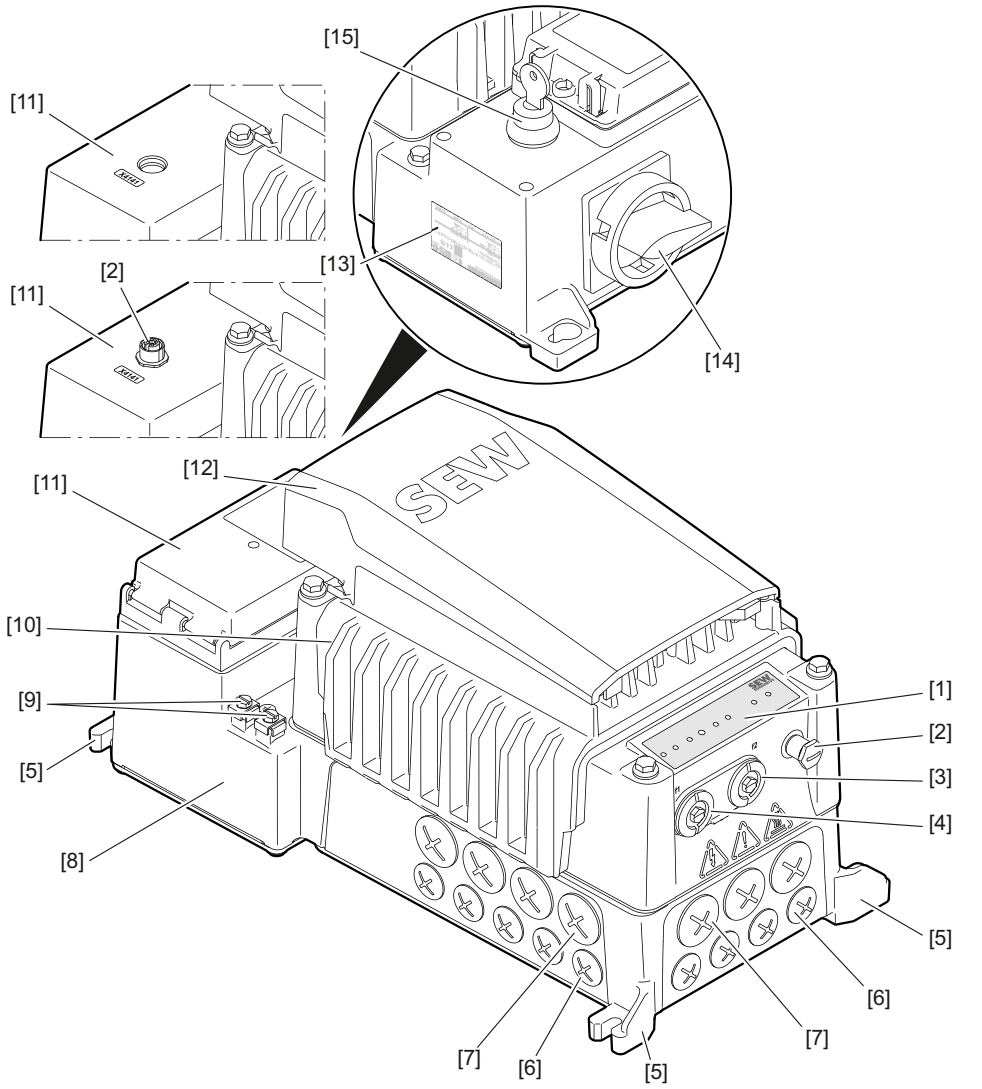
9007228572499339

[1] LED displays
[2] Plug connector
[3] Potentiometer f2 (underneath the screw plug)
[4] Potentiometer f1 (underneath the screw plug)
[5] Mounting lug
[6] Cable glands M16
[7] Cable glands M25
[8] Connection box
[9] Screws for PE connection
[10] Decentralized inverter (referred to as electronics cover in the following)
[11] Front module in the protective housing (e.g. CBG.. keypad)
[12] Nameplate
[13] Switch disconnector
[14] Key switch (optional)

26863707/EN – 07/2021

3.1.3 MOVIMOT® flexible MMF32

MOVIMOT® flexible MMF3. is a decentralized frequency inverter that serves to control drive units. It comprises of 4 core components, the electronics cover, connection box, front module, and maintenance switch (see the following figure).



34266069771

[1] LED displays
[2] Plug connector
[3] Potentiometer f2 (underneath the screw plug)
[4] Potentiometer f1 (underneath the screw plug)
[5] Mounting lug
[6] Cable glands M16
[7] Cable glands M25
[8] Connection box
[9] Screws for PE connection
[10] Decentralized inverter (referred to as electronics cover in the following)
[11] Front module in the protective housing (e.g. CBG.. keypad)
[12] Fan
[13] Nameplate
[14] Switch disconnector
[15] Key switch (optional)

26863707/EN – 07/2021

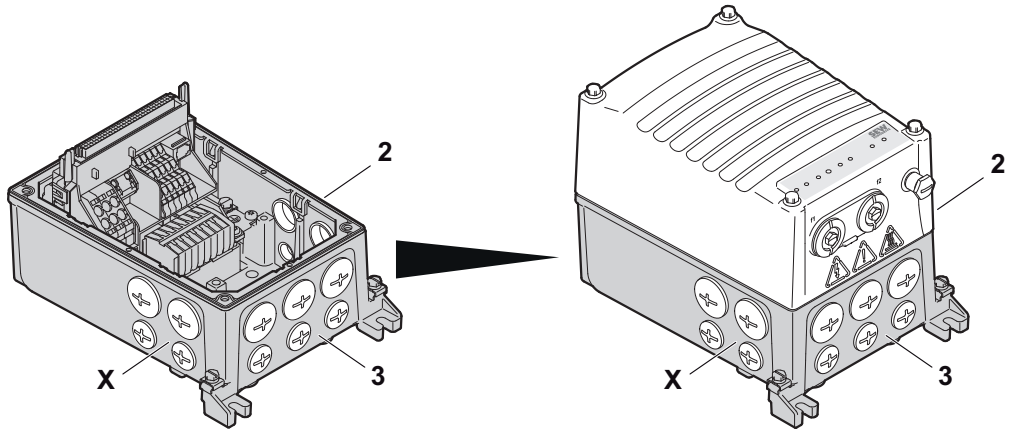
3.2 Cable entry position

3.2.1 Design MMF1.

The following cables entries are possible for the device:

- Position X + 2 + 3
  - X: 2 × M25 × 1.5 + 2 × M16 × 1.5
  - 2: 2 × M25 × 1.5 + 2 × M16 × 1.5
  - 3: 3 × M25 × 1.5 + 3 × M16 × 1.5

The following figure shows the possible cable entries:



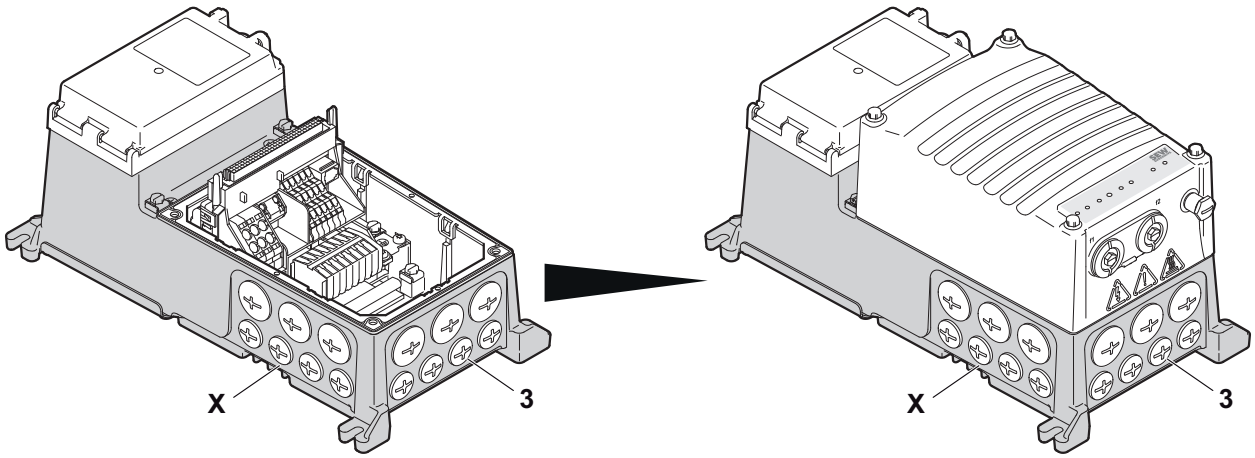
29317789707

3.2.2 MMF31 design

The following cables entries are possible for the device:

- Position X + 3
  - X: 3 × M25 × 1.5 + 4 × M16 × 1.5
  - 3: 3 × M25 × 1.5 + 4 × M16 × 1.5

The following figure shows the possible cable entries:



29317793547

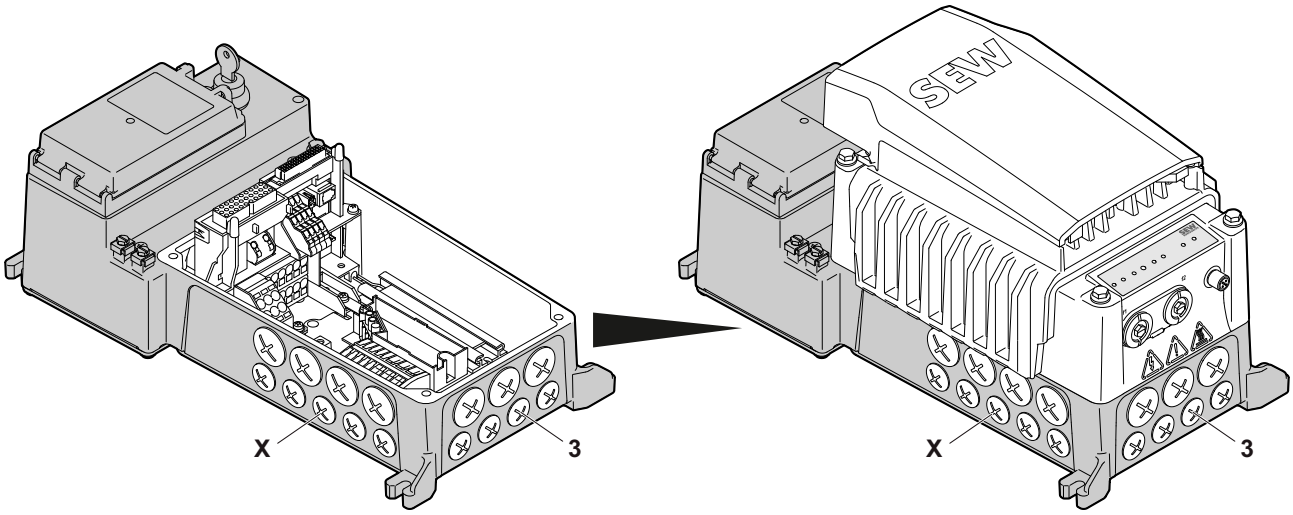
26863707/EN – 07/2021

3.2.3 MMF32 design

The following cables entries are possible for the device:

- Position X + 3
  - X: 4 × M25 × 1.5 + 5 × M16 × 1.5
  - 3: 3 × M25 × 1.5 + 4 × M16 × 1.5

The following figure shows the possible cable entries:



34352318219

26863707/EN – 07/2021

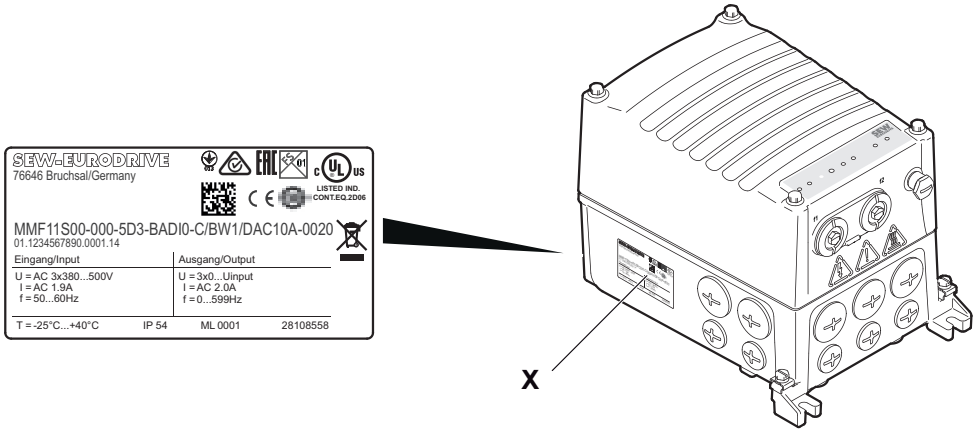
3.3 Nameplate position

3.3.1 Design MMF1.

The following nameplate positions are possible for the device:

- Nameplate of the complete device: Position X
- Optional nameplate: Position 2

The following figure shows examples of the nameplate position:



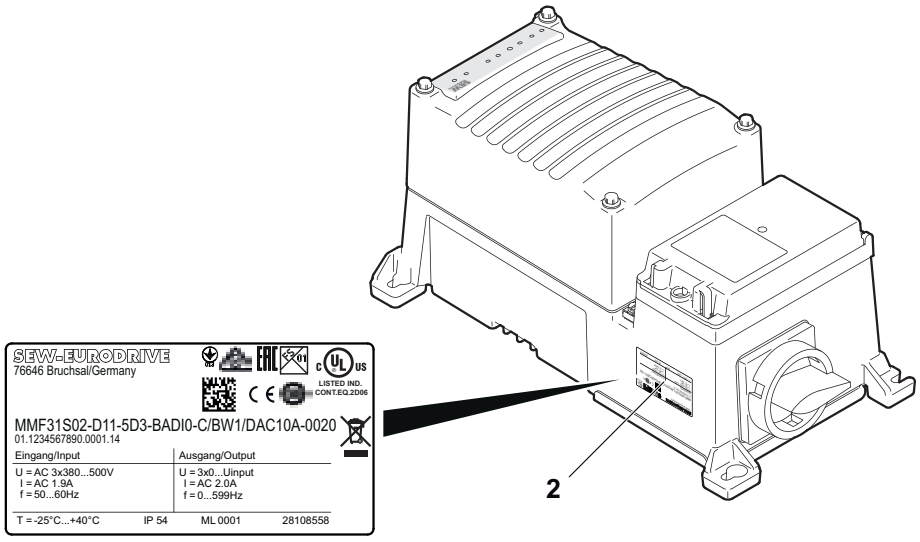
29318056715

3.3.2 Design MMF3.

The following nameplate positions are possible for the device:

- Nameplate of the complete device: Position 2 (left)
- Optional nameplate: Position 2 (right)

The following figure shows examples of the nameplate position:



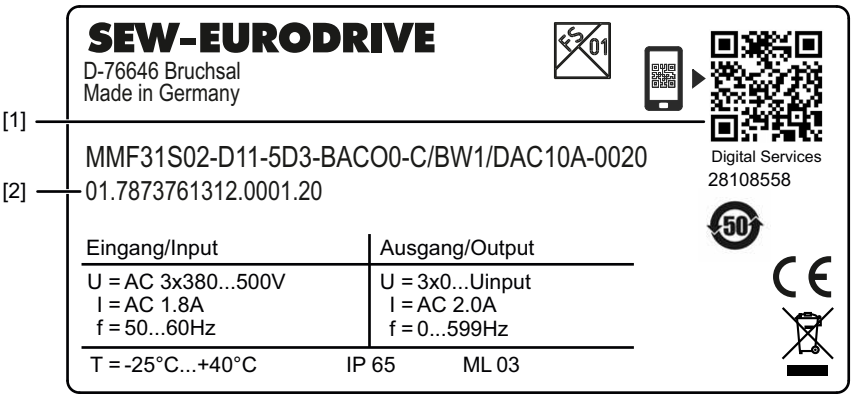
29318084875

26863707/EN – 07/2021

3.4 Example nameplate and type designation

3.4.1 Nameplate

The following figure gives an example of a nameplate of the device. For the structure of the type designation, refer to chapter "Type designation".



9007228572594827

[1] Product label with QR code. The QR code can be scanned. You will be redirected to the digital services of SEW-EURODRIVE. There, you have access to product-specific data, documents and further services.

[2] Unique serial number

FS logo description

The FS logo on the nameplate is based on the combination of safety-related components that is installed.

The following FS logo variants are possible:

Device with STO connection via terminals or plug connectors.

26863707/EN – 07/2021

3.4.2 Type designation

The following table shows an example of the type designation of MOVIMOT® flexible:

MMF	**Product family** MMF = MOVIMOT® flexible
3	**Variant** 1 = Device variant 1 3 = Device variant 3
1	**Flange dimensions for the sizes of electronics covers** 1 = Suitable for electronics cover size 1 with or without cooling fins 2 = Suitable for electronics cover size 2 with or without fan
S0	**Mechanics design** S0 = Housing with metric threads for cable entry
2	**Front module** 0 = Closed 1 = Engineering interface M12[1)] 2 = Protective housing for CBG.. keypad[1)] 3 = Protective housing for CBG.. local keypad and key switch[1)]
–	
D11	**Maintenance switch** 000 = Without switching element D11 = Load disconnector with feedback contact[1)] M11 = Load disconnector with feedback contact and line protection[1)] R01 = Load disconnector at the inverter output with contact signal for output stage inhibit[1)]
–	
5	**Connection voltage** 5 = AC 500 V
D	**Power section variant EMC** D = EMC filter with limit value category C3 (EN 61800-3)
3	**Connection type** 3 = 3-phase
–	
BA	**Connection unit** BA = Connection unit binary or AS-Interface
CO	**Digital interface (MOVILINK® DDI)** DI = Integrated MOVILINK® DDI slave (for motors without digital interface) CO = MOVILINK® DDI interface via coaxial cable (for motors with digital interface)
0	**Board design** 0 = Standard connection board
–	

26863707/EN – 07/2021

C	**Version** C = Generation C
/	
BW1	**Options** DSP = electrodynamic retarding function DynaStop®[2)] BES = Control module BES brake rectifier 24 V[2)] IV = Plug connector (M25, M16) PE = Pressure compensation fitting for electronics BW1 = Integrated BW1 braking resistor BW2 = Integrated BW2 braking resistor M31 = Mounting panel M31 for MMF31 design[3)] EBW = External BW100-005 braking resistor[4)]
/	
DAC10A	**Electronics cover design** DAC10A = **D**irect **A**S-Interface **C**ommunication – AS-Interface (communication via M12)
–	
0020	**Nominal output current of the electronics cover** 0020 = 2.0 A 0025 = 2.5 A 0032 = 3.2 A 0040 = 4.0 A 0055 = 5.5 A 0070 = 7.0 A 0095 = 9.5 A 0125 = 12.5 A 0160 = 16.0 A

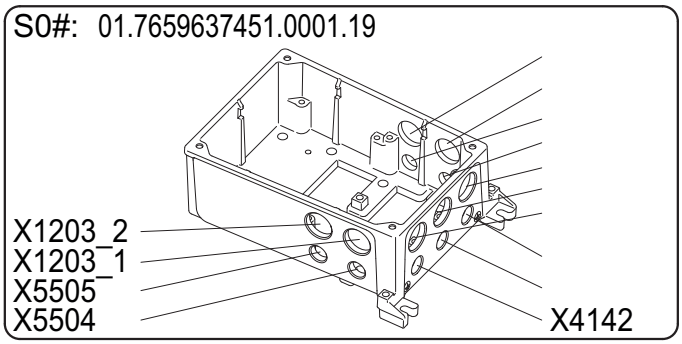
1) Only available in combination with MOVIMOT® flexible MMF3.
2) These options cannot be combined.
3) Option /M31 is installed at the factory.
4) Option /EBW is only available in combination with option /M31. Option /EBW is installed and connected at the factory.

26863707/EN – 07/2021

3.5 Example of the optional nameplate "Plug connector positions"

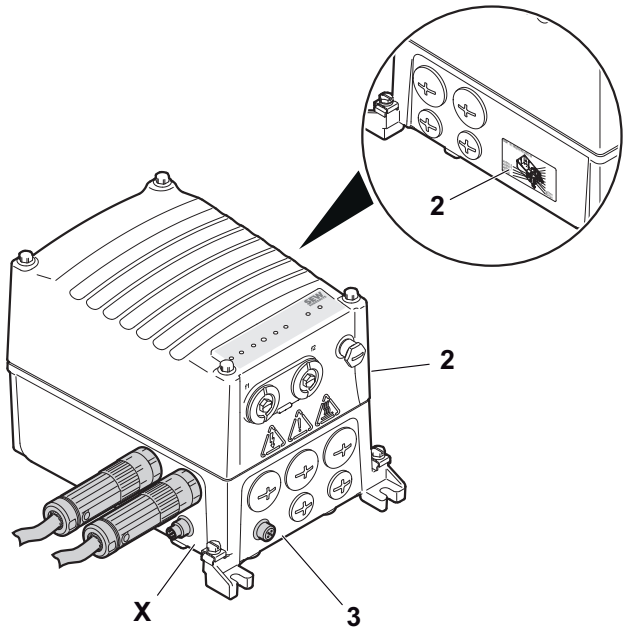
3.5.1 Design MMF1.

The following figure shows an example of the optional nameplate "Plug connector positions":



27021623667009547

The nameplate shows the designations and positions of the plug connectors at the connection box. This nameplate can be installed in position 2.

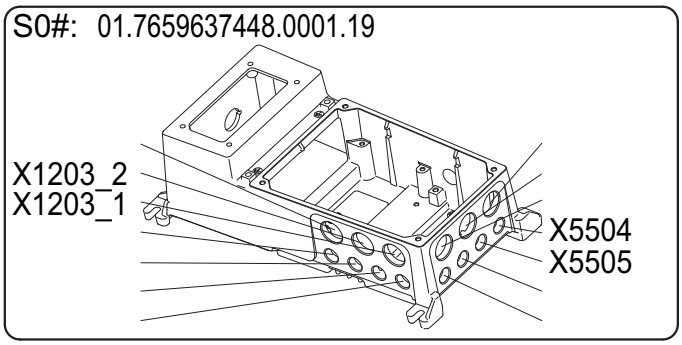


29320599051

26863707/EN – 07/2021

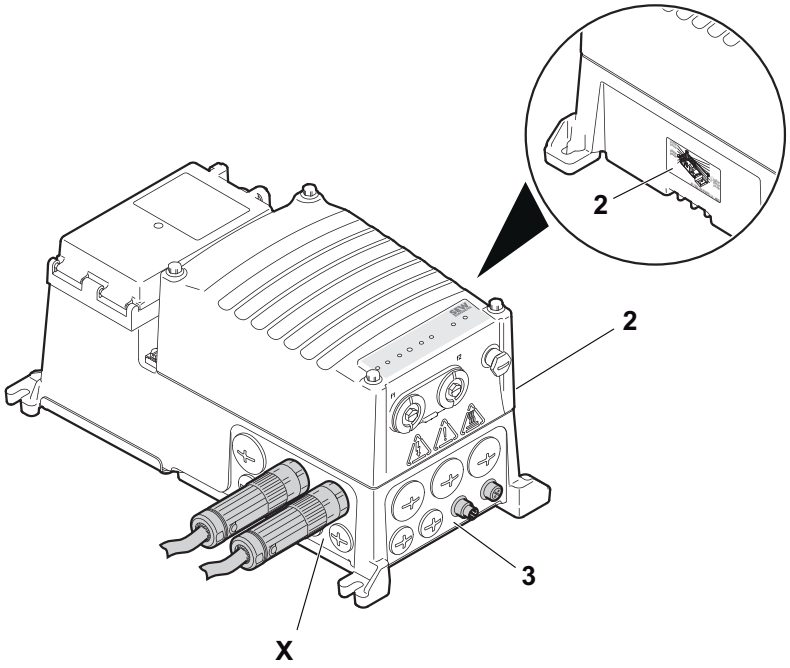
3.5.2 MMF31 design

The following figure shows an example of the optional nameplate "Plug connector positions":



30580203403

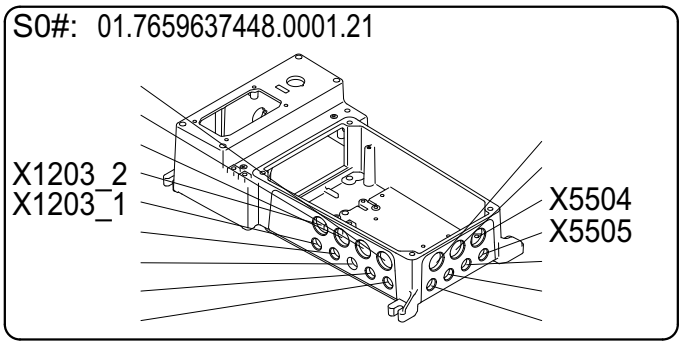
The nameplate shows the designations and positions of the plug connectors at the connection box. This nameplate can be installed in position 2.



29321051275

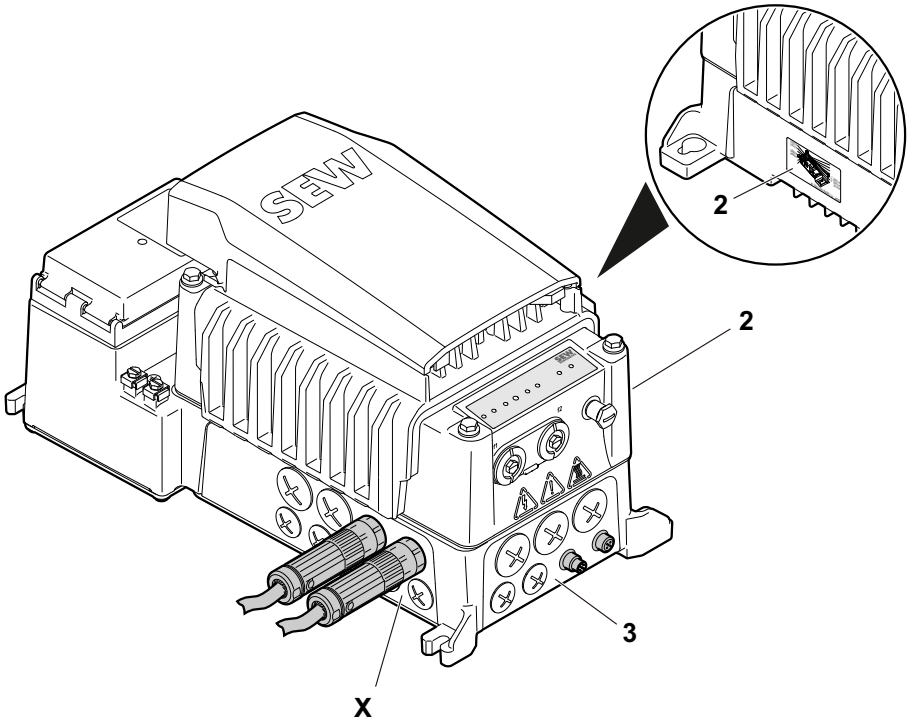
3.5.3 MMF32 design

The following figure shows an example of the optional nameplate "Plug connector positions":



34346821003

The nameplate shows the designations and positions of the plug connectors at the connection box. This nameplate can be installed in position 2.



34237180683

26863707/EN – 07/2021

3.6 Electronics

3.6.1 Overview of electronics cover

Devices with the following electronics covers are available depending on the nominal output current:

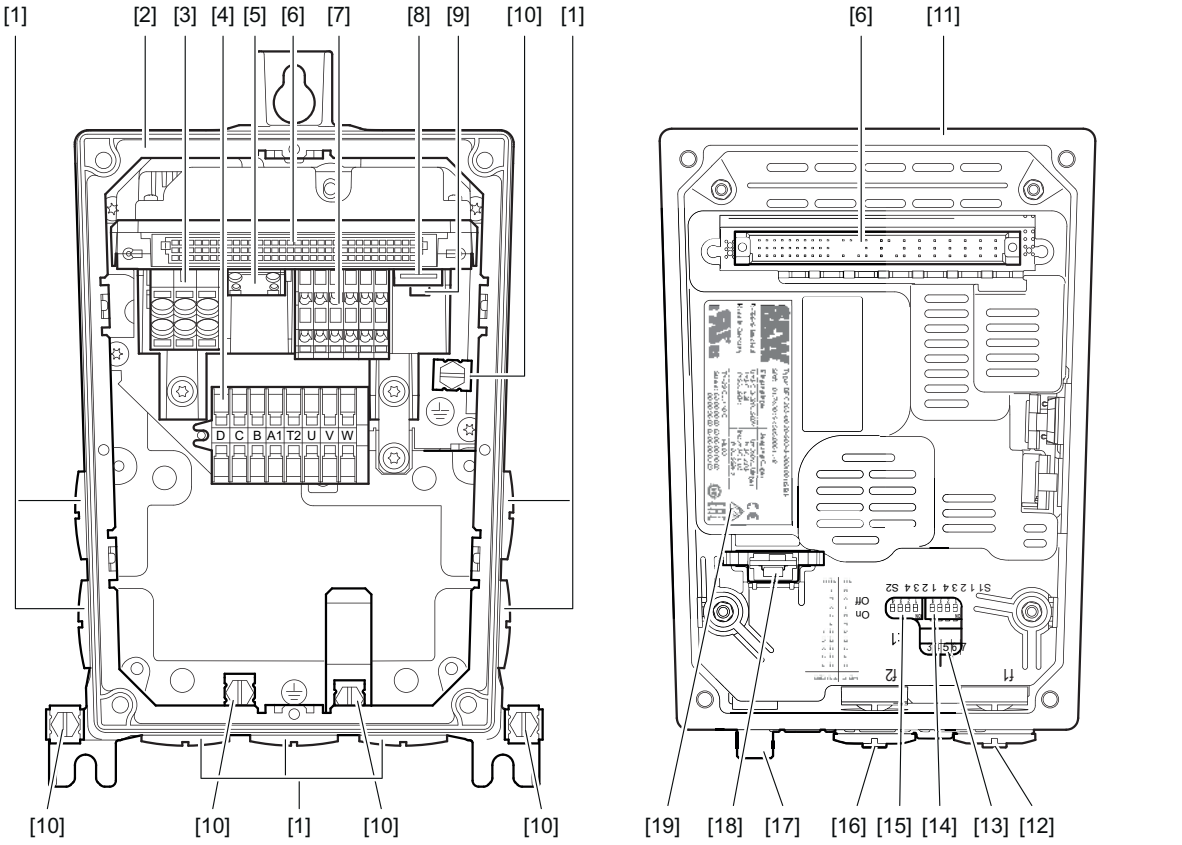
Electronics cover			
Nominal output current	**Type designation**	**Size**	**Image**
2.0 A	DAC...-0020..	Size 1 without cooling fins	
2.5 A	DAC...-0025..		
3.2 A	DAC...-0032..		
4.0 A	DAC...-0040..	Size 1 with cooling fins	
5.5 A	DAC...-0055..		
7.0 A	DAC...-0070..	Size 2 without fan	
9.5 A	DAC...-0095..		
12.5 A	DAC...-0125..	Size 2 with fan	
16.0 A	DAC...-0160..		

26863707/EN – 07/2021

3.6.2 Connection box and electronics cover (internal)

Design MMF1.

The following figure shows the connection box and the bottom side of the electronics cover:



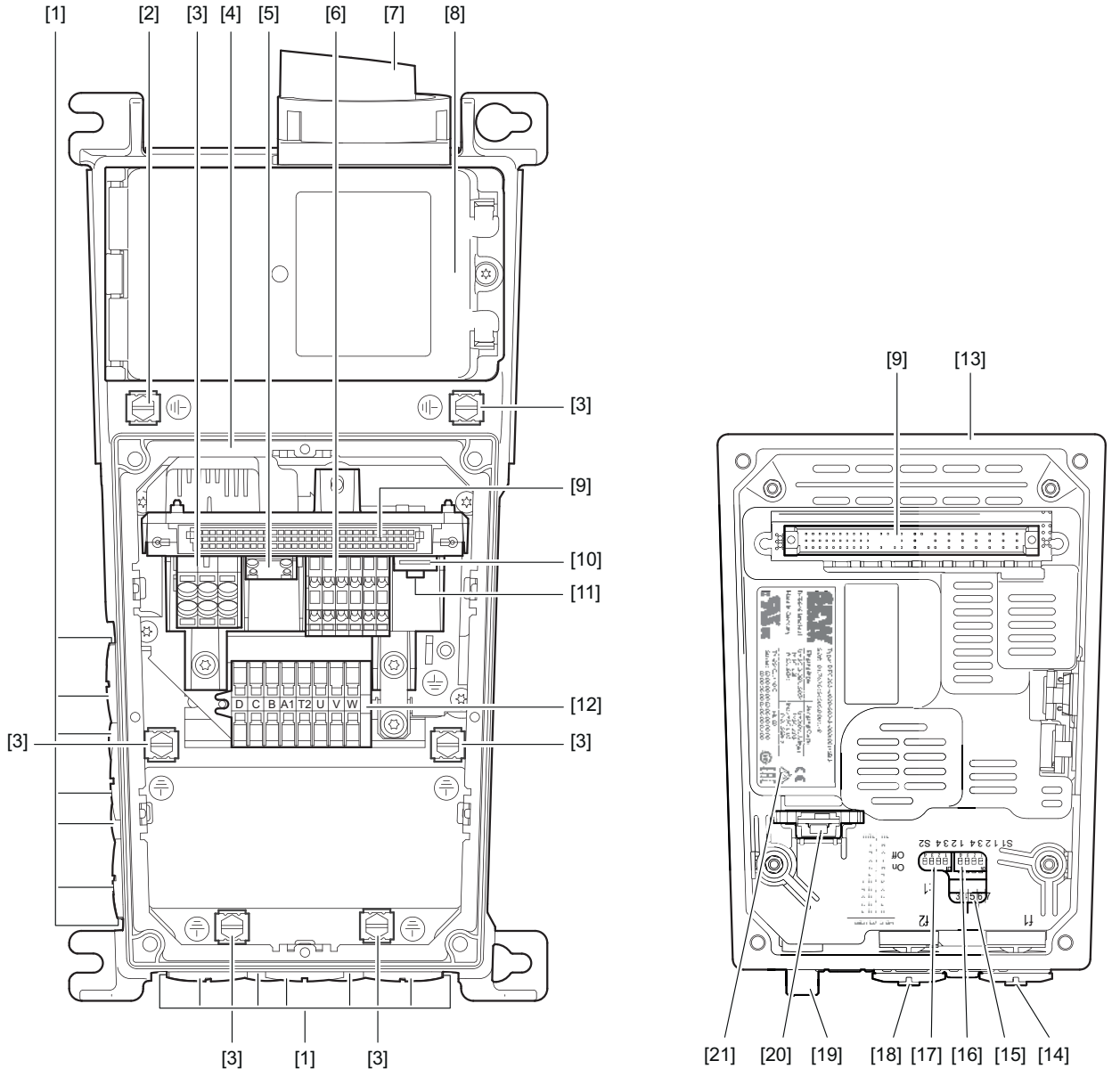
29487275019

[1] Cable glands
[2] Connection box
[3] Connection line L1, L2, L3
[4] Connection for motor, brake and temperature sensor
[5] Braking resistor connection
[6] Plug connector connection unit for electronics cover
[7] Electronics terminal strip
[8] Engineering interface
[9] MOVILINK® DDI connection
[10] Screws for PE connection
[11] Electronics cover
[12] Potentiometer f1 (underneath the screw plug)
[13] Potentiometer t1
[14] DIP switches S1/1 – S1/4
[15] DIP switches S2/1 – S2/4
[16] Potentiometer f2 (underneath the screw plug)
[17] Plug connector
[18] Replaceable memory module
[19] Electronics cover nameplate

26863707/EN – 07/2021

MMF31 design

The following figure shows the connection box and the bottom side of the electronics cover:

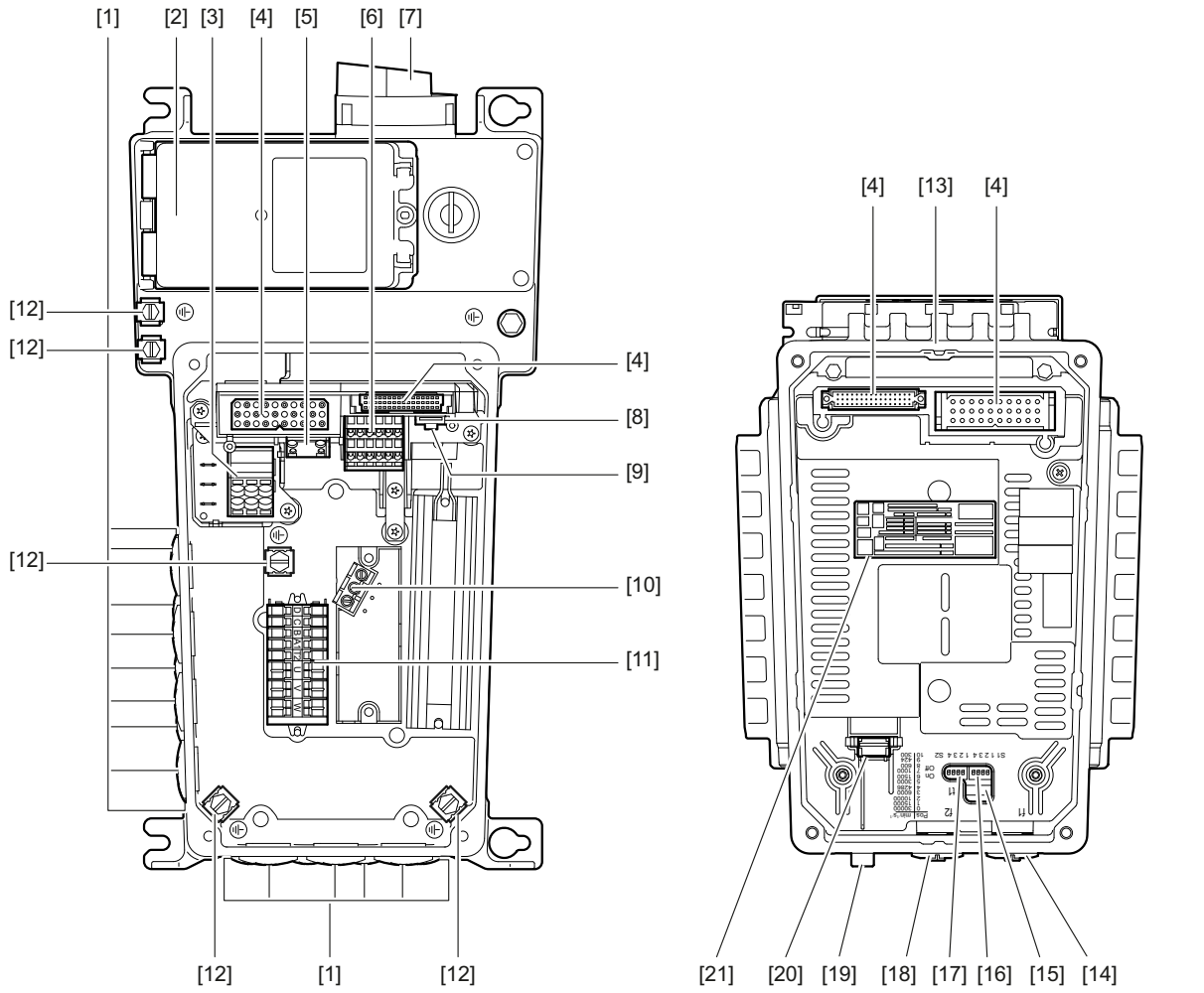


29487277963

[1] Cable glands
[2] Screws for PE connection
[3] Connection line L1, L2, L3
[4] Connection box
[5] Braking resistor connection
[6] Electronics terminal strip
[7] Maintenance switch
[8] Front module
[9] Plug connector connection unit for electronics cover
[10] Engineering interface
[11] MOVILINK® DDI connection
[12] Motor and brake connection
[13] Electronics cover
[14] Potentiometer f1 (underneath the screw plug)
[15] Potentiometer t1
[16] DIP switches S1/1 – S1/4
[17] DIP switches S2/1 – S2/4
[18] Potentiometer f2 (underneath the screw plug)
[19] Plug connector
[20] Replaceable memory module
[21] Electronics cover nameplate

MMF32 design

The following figure shows the connection box and the bottom side of the electronics cover:



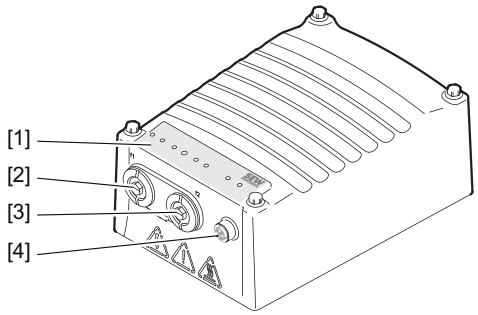
34323112971

[1] Cable glands
[2] Front module
[3] Connection line L1, L2, L3
[4] Plug connector connection unit for electronics cover
[5] Braking resistor connection
[6] Electronics terminal strip
[7] Maintenance switch
[8] Engineering interface
[9] MOVILINK® DDI connection
[10] Internal terminals
[11] Motor and brake connection
[12] Screws for PE connection
[13] Electronics cover
[14] Potentiometer f1 (underneath the screw plug)
[15] Potentiometer t1
[16] DIP switches S1/1 to S1/4
[17] DIP switches S2/1 to S2/4
[18] Potentiometer f2 (underneath the screw plug)
[19] Plug connector
[20] Replaceable memory module
[21] Electronics cover nameplate

26863707/EN – 07/2021

3.6.3 Electronics cover (outer) size 1

The following figure gives an example of electronics cover designs:

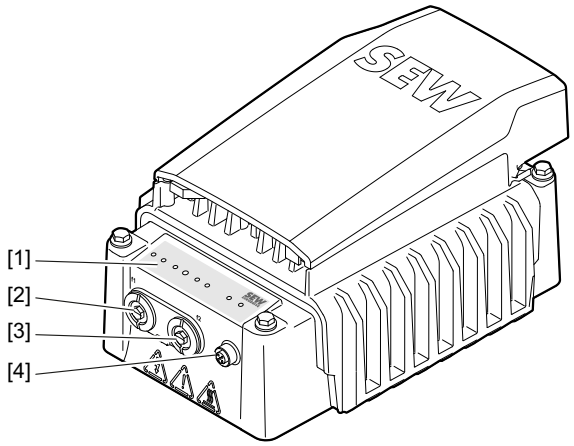


29317784459

[1] LED displays
[2] Potentiometer f1 (underneath the screw plug)
[3] Potentiometer f2 (underneath the screw plug)
[4] Plug connector

3.6.4 Electronics cover (outer) size 2 with fan

The following figure gives an example of electronics cover designs:



34237122187

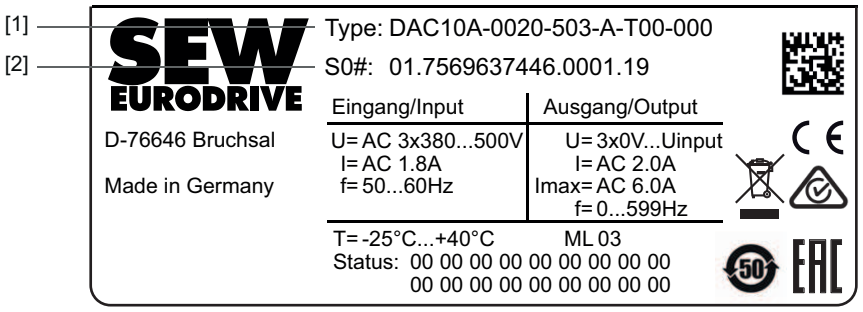
[1] LED displays
[2] Potentiometer f1 (underneath the screw plug)
[3] Potentiometer f2 (underneath the screw plug)
[4] Plug connector

26863707/EN – 07/2021

3.7 Example nameplate and type designation of the electronics

3.7.1 Inner nameplate of DAC.. electronics cover

The following figure gives an example of a nameplate of the electronics cover. For the structure of the type designation, refer to chapter "Type designation of the electronics cover".

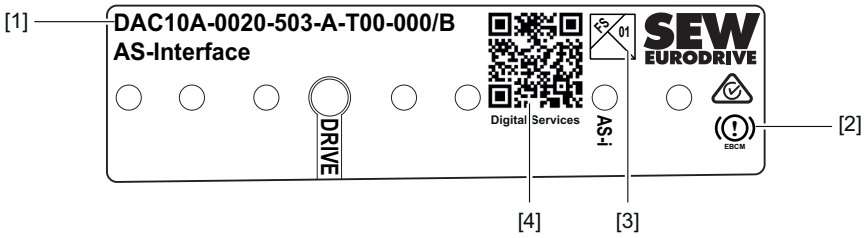


9007229749770379

[1] Type designation of the electronics cover
[2] Unique serial number of the electronics cover
DataMatrix code with the unique serial number of the electronics cover

3.7.2 Outer nameplate of DAC.. electronics cover

The following figure gives an example of a nameplate of the electronics cover. For the structure of the type designation, refer to chapter "Type designation of the electronics cover".



9007232239958539

[1] Type designation of the electronics cover
[2] Identification of the optional HV brake control /B
[3] FS logo
[4] Product label with QR code. The QR code can be scanned. You will be redirected to the digital services of SEW-EURODRIVE. There, you have access to product-specific data, documents and further services.

Digital Services

FS logo description

The FS logo on the nameplate is based on the combination of safety-related components that is installed.

The following FS logo variants are possible:

FS 01 — Device with STO connection via terminals or plug connectors.

26863707/EN – 07/2021

3.7.3 Type designation of DAC.. electronics cover

The following table shows the type designation of the electronics cover:

DAC	**Product family** DAC = Electronics cover **D**irect **A**S-Interface **C**ommunication
1	**Communication type** 1 = AS-Interface
0	**Connection configuration** 0 = M12 plug connector on electronics cover (standard)
A	**Communication version**
–	
0020	**Nominal output current of the electronics cover** 0020 = 2.0 A 0025 = 2.5 A 0032 = 3.2 A 0040 = 4.0 A 0055 = 5.5 A 0070 = 7.0 A 0095 = 9.5 A 0125 = 12.5 A 0160 = 16.0 A
–	
5	**Connection voltage** 5 = AC 500 V
0	**Power section variant EMC** 0 = Basic interference suppression 1 = IT system design
3	**Connection type** 3 = 3-phase
–	
A	**Version**
–	
K	**Device variant** T = Technology profile (fieldbus connection)
0	**Technology level** 0 = Technology level 0 (standard)
0	**Application level** 0 = Application level 0 (standard)
–	

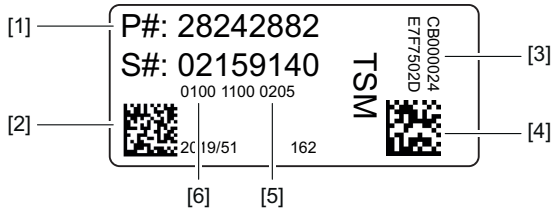
26863707/EN – 07/2021

000	**MOVIKIT® version** 000 = No MOVIKIT® module loaded at factory settings

/	
B	**Operating mode options** B = Brake control

3.7.4 Example: Nameplate of a replaceable memory module

The following figure shows an example of the nameplate for the replaceable memory module:



32992442763

[1] Part number of the replaceable memory module
[2] DataMatrix code with the unique serial number of the electronics cover
[3] Unique safety key ID for designs with optional safety card CSB51A
[4] DataMatrix code with the unique safety key ID for designs with optional safety card CSB51A
[5] Status of the safety key ID
[6] Status of the data required for starting up the DIP switches (S3) (Available for MOVIMOT® flexible only)

Available variants:

Part number	Description
28242882	Standard memory module (housing color: Black) with startup data[1)] for the following motor types[2)]: • DR2S. • DRN.. (DRN71MS4 – DRN100M4 with electronics cover of size 1) • MOVIGEAR® classic Additionally applicable for status 0400 and higher: • DRN.. (DRN100M4 – DRN132M4 with electronics cover of size 2) • CMP.. • CM3C..

26863707/EN – 07/2021

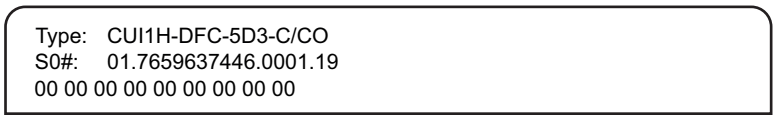
Part number	Description
In preparation	Retrofit memory module[1] (Housing color: Red) with startup data for the following motor types[3] • DT/DV.. • DY.. • DZ.. • DRS.. • DRE.. • DRP.. • eDRE.. • DRE.J.. • DRU.J..

1) For MOVIMOT® flexible only
2) Status 0100 and higher
3) For further details refer to the operating instructions MOVIMOT® flexible, chapter "Startup" > "DIP switch" > "Overview" > "DIP switch S3".

3.8 Example nameplate and type designation of the connection unit

3.8.1 Nameplate

The following figure gives an example of a nameplate of the connection unit. For the structure of the type designation, refer to chapter "Type designation of the connection unit".



29703388939

26863707/EN – 07/2021

3.8.2 Type designation of connection unit

The following table shows the type designation of the connection unit:

CU	**Product family** CU = Connection unit
I	**Hardware design** I = for MOVIMOT® flexible MMF1. C = for MOVIMOT® flexible MMF3.
1	**Flange dimensions for the sizes of electronics covers** 1 = Suitable for electronics cover size 1 with or without cooling fins 2 = Suitable for electronics cover size 2 with or without fan
H	**Fieldbus connection configuration** S = Standard H = Hybrid
–	
DFC	**Communication variant** DBC = **D**irect **B**inary **C**ommunication DAC = **D**irect **A**S-Interface **C**ommunication DFC = **D**irect **F**ieldbus **C**ommunication DSI = **D**irect **S**ystem bus **I**nstallation
–	
5	**Connection voltage** 5 = AC 500 V
D	**EMC variant** D = EMC filter with limit value category C3 (EN 61800-3)
3	**Connection type** 3 = 3-phase
–	
C	**Version**
/	
CO	**Option** DI = Digital interface (MOVILINK® DDI) CO = Digital interface (MOVILINK® DDI) via coaxial element DSP = DynaStop® electrodynamic deceleration option

26863707/EN – 07/2021

4 Mechanical installation

4.1 Installation notes

INFORMATION

Adhere to the safety notes during installation.

⚠ WARNING

Improper installation/disassembly of the device and mount-on components.

Serious injuries.

- Adhere to the notes about installation and disassembly.

⚠ WARNING

Risk of injury if the device starts up unintentionally, and danger of electrical voltage.

Dangerous voltages may still be present for up to 5 minutes after disconnection from the line voltage.

- Disconnect the device from the power supply with suitable external measures before you start working on the device and secure it against unintentional reconnection to the voltage supply.
- Secure the output shaft against rotation.
- Before removing the electronics cover, wait for at least the following time: **5 minutes.**

26863707/EN – 07/2021

4.2 Required tools and resources

- Set of wrenches, set of screwdrivers, set of socket wrenches
- Torque wrench
- Mounting device
- Compensation elements (washers and spacing rings), if necessary
- Fasteners for output elements
- Standard parts are not included in the delivery

4.3 Tolerances for torque ratings

The specified torques must be adhered to with a tolerance of +/- 10%.

4.4 Installation requirements

Check that the following conditions have been met:

- The information on the nameplate of the device corresponds to the line voltage.
- The device is undamaged (no damage caused by transport or storage).
- The ambient temperature corresponds to the operating instructions and nameplate.
- The device must not be installed in the following ambient conditions:
  - Potentially explosive atmosphere
  - Oils
  - Acids
  - Gases
  - Vapors
  - Radiation
- For special designs: The device is designed in accordance with the actual ambient conditions.

26863707/EN – 07/2021

4.5 Installing the device

4.5.1 Notes

- Only install the device on a level, low-vibration, and torsionally rigid support structure.
- Check the validity of the degree of protection using the information in the operating instructions and the data on the nameplate.
- Ensure that cooling air supply is unobstructed and that air discharged by other units does not influence cooling.
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Seal the cable entries properly.
- Clean the sealing surfaces of the cover before reinstalling it.
- Observe the information of Directive VDI 2230-1 on determining the tightening torques for mounting the drive unit to the application.

4.5.2 Electronics cover

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

- Let the devices cool down before touching them.

NOTICE

Loss of the guaranteed degree of protection.

Possible damage to property.

- When the cover is removed from the connection box, you have to protect the cover and the wiring space from humidity, dust or foreign particles.
- Make sure that the cover is mounted properly.

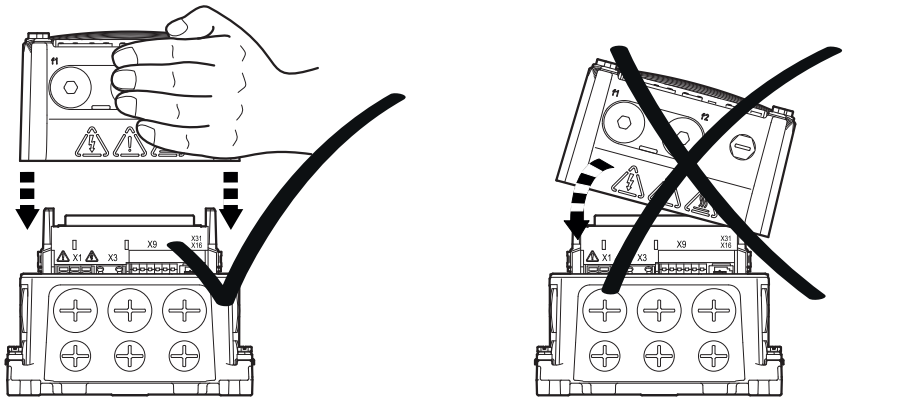
26863707/EN – 07/2021

Installing the electronics cover

- Use only electronics covers that match the size.
- Be careful not to tilt the electronics cover when placing it on the connection box.

Design MMF1.

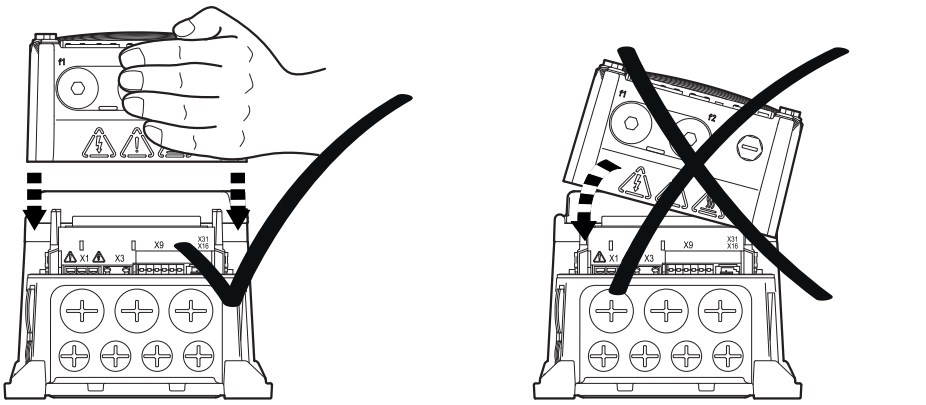
The following figure shows how to correctly place the electronics cover onto the connection box:



30566967563

MMF31 design

The following figure shows how to correctly place the electronics cover onto the connection box:

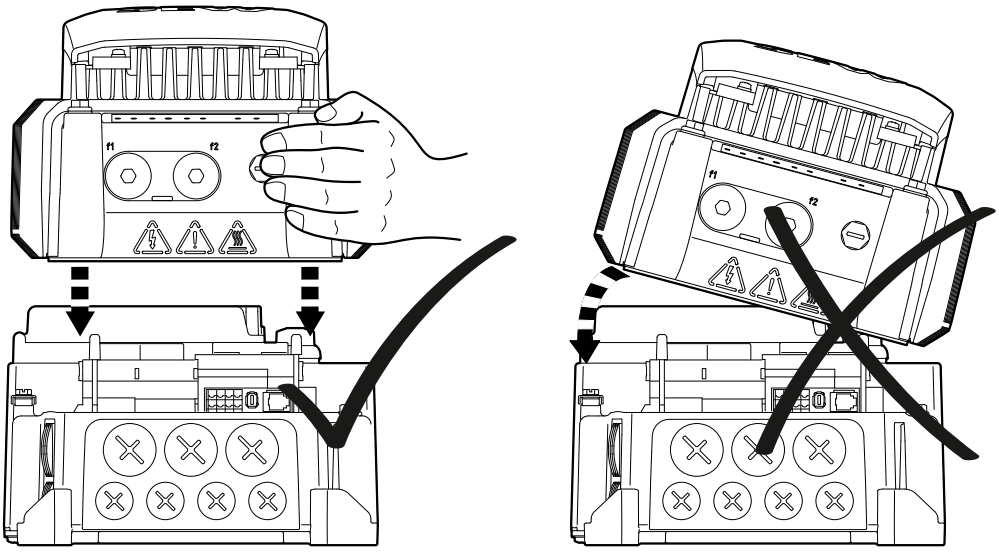


30566976139

26863707/EN – 07/2021

MMF32 design

The following figure shows how to correctly place the electronics cover onto the connection box:



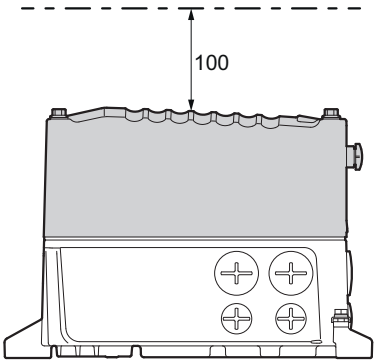
34346818571

Minimum installation clearance

Note the minimum installation clearance required to remove the electronics cover. For detailed dimension drawings, see chapter "Technical data and dimension sheets".

Design MMF1.

The following figure shows the minimum clearance when installing the electronics cover:

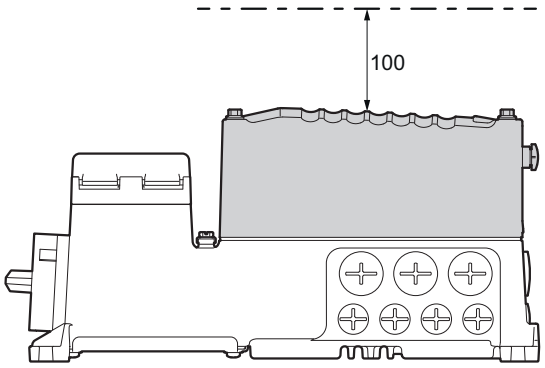


25847860491

26863707/EN – 07/2021

MMF31 design

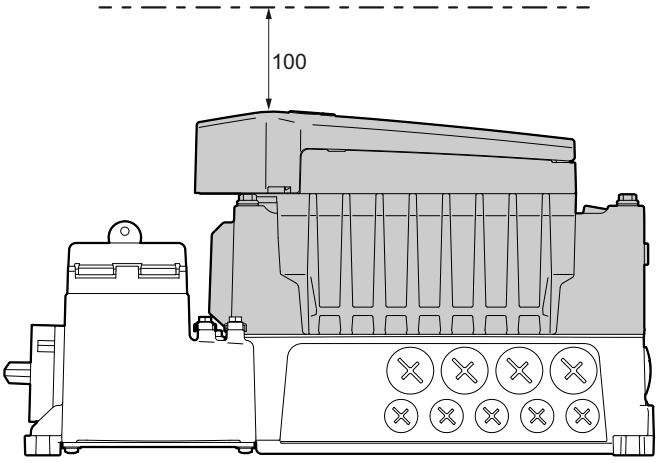
The following figure shows the minimum clearance when installing the electronics cover:



25847856907

MMF32 design

The following figure shows the minimum clearance when installing the electronics cover:



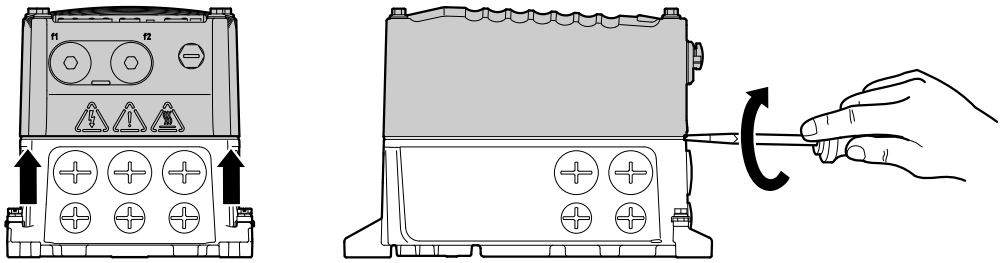
34237217163

26863707/EN – 07/2021

Removing the electronics cover

Design MMF1.

The following figure shows how you can loosen the electronics cover from the connection box in the intended places:

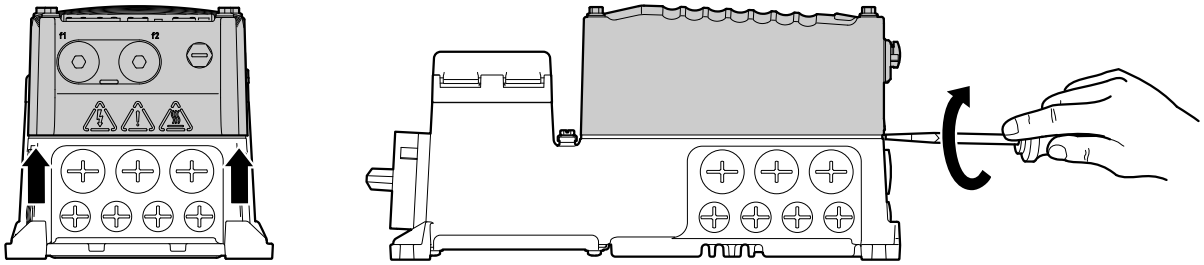


9007229821943819

Check the gasket. Replace damaged gaskets, see chapter "Inspection and maintenance work" > "Replacing the gasket...".

MMF31 design

The following figure shows how you can loosen the electronics cover from the connection box in the intended places:

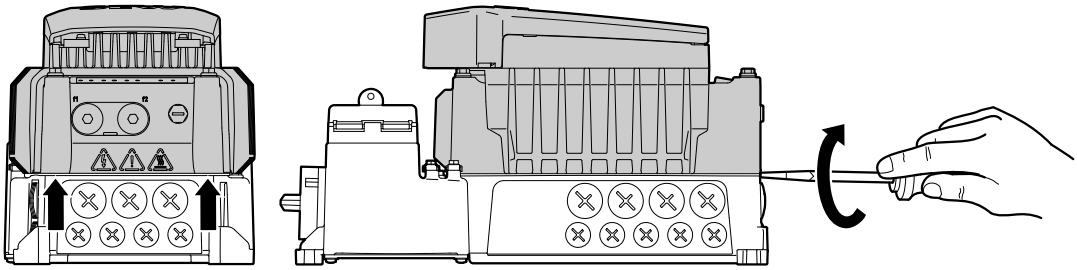


9007229821952395

Check the gasket. Replace damaged gaskets, see chapter "Inspection and maintenance work" > "Replacing the gasket...".

MMF32 design

The following figure shows how you can loosen the electronics cover from the connection box in the intended places:

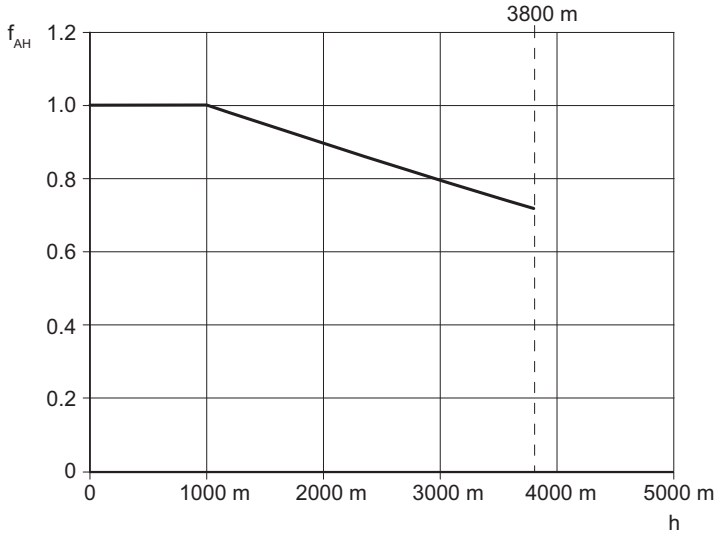


34237119755

Check the gasket. Replace damaged gaskets, see chapter "Inspection and maintenance work" > "Replacing the gasket...".

4.5.3 Derating depending on the installation altitude

The following diagram shows the factor f_{AH} (according to IEC 60034-1:2017, Table 12) by which the thermal motor torque has to be reduced depending on the installation altitude H. Observe the additional chapter "Technical data and dimension drawings" > "Derating depending on the ambient temperature".



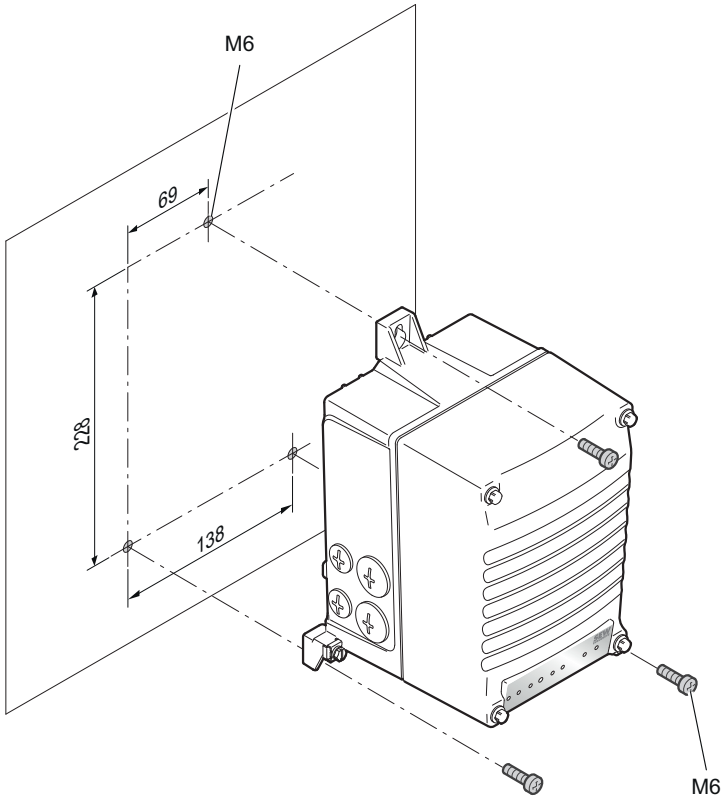
25852074635

26863707/EN – 07/2021

4.6 Mounting the device

4.6.1 Design MMF1.

The following figure shows the mounting dimensions for the device:

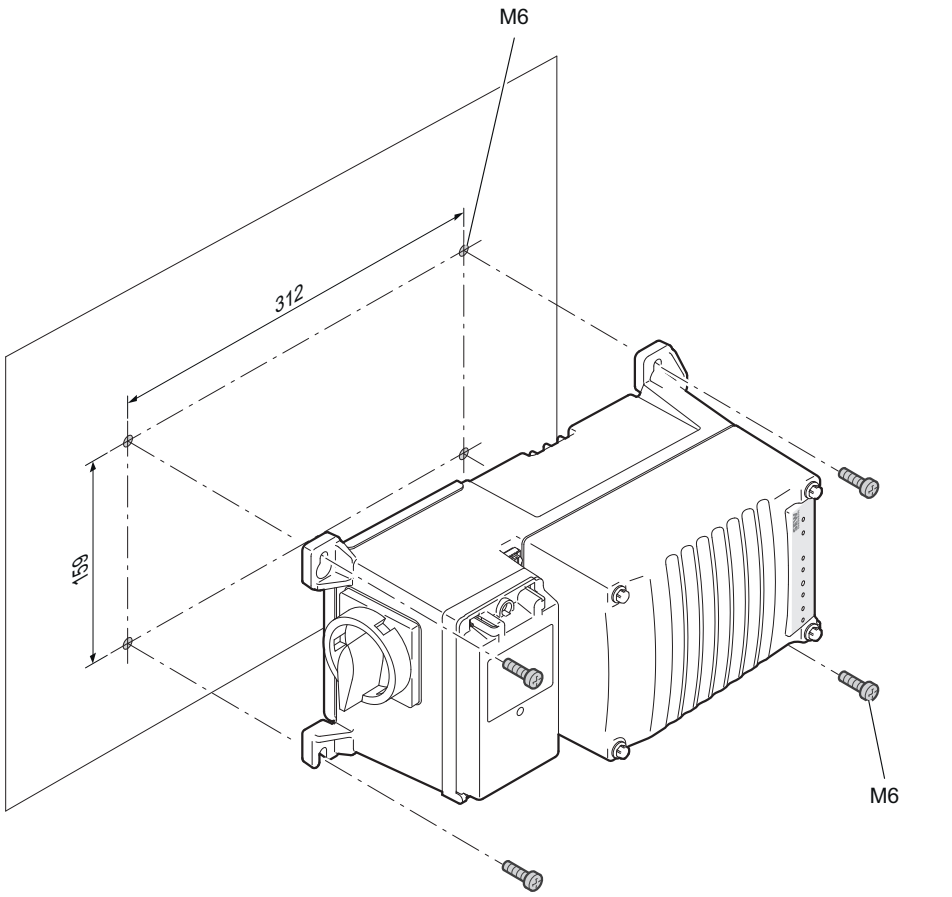


25829928715

26863707/EN – 07/2021

4.6.2 MMF31 design

The following figure shows the mounting dimensions for the device:

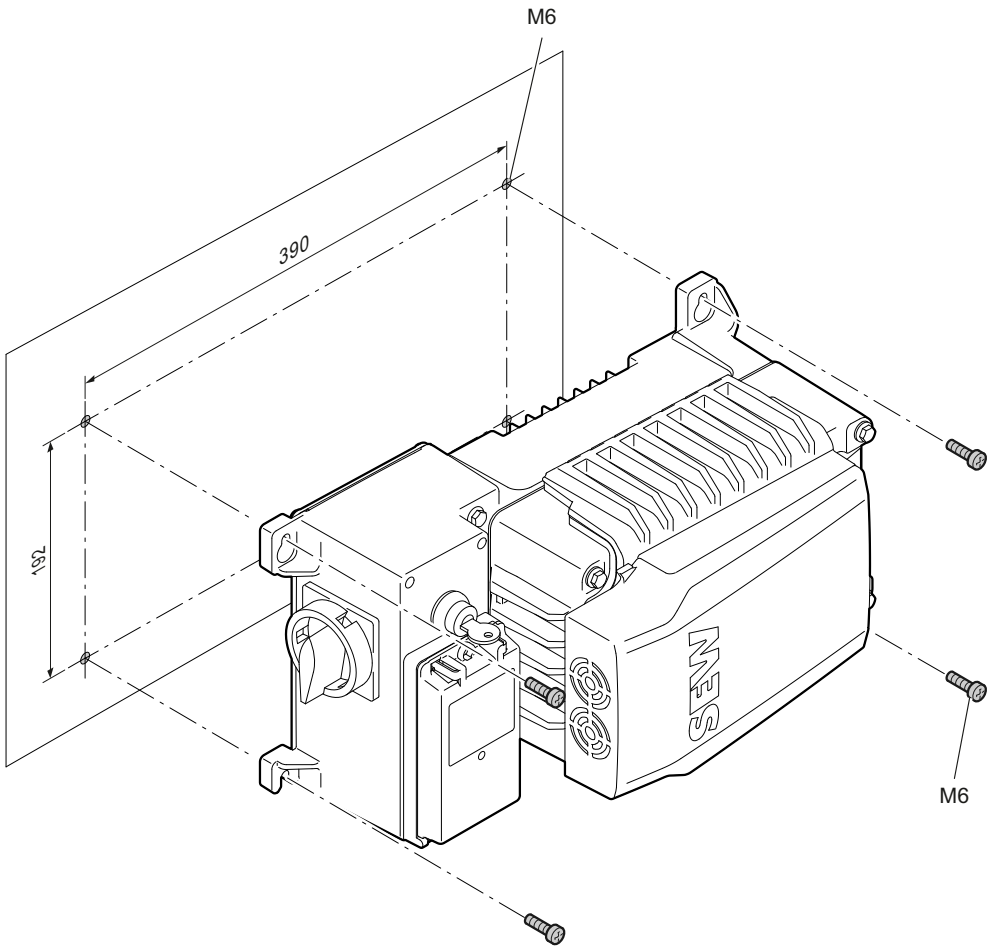


25829932299

26863707/EN – 07/2021

4.6.3 MMF32 design

The following figure shows the mounting dimensions for the device:



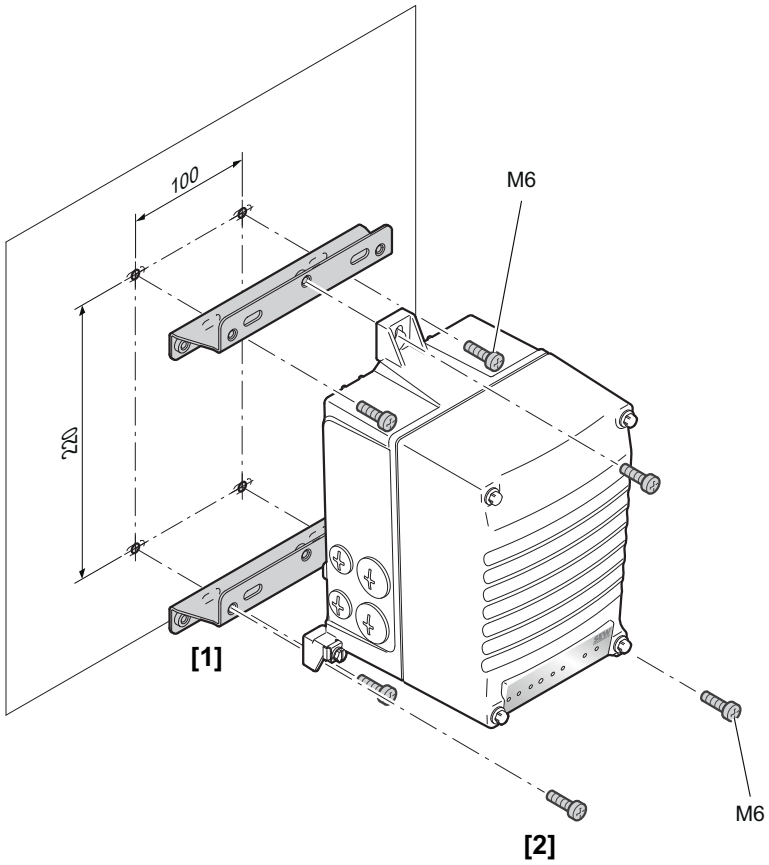
34237219595

26863707/EN – 07/2021

4.7 Mounting the device with mounting panel M01

4.7.1 Design MMF1.

The following figure shows the mounting dimensions for the device with mounting panel M01:



31263212171

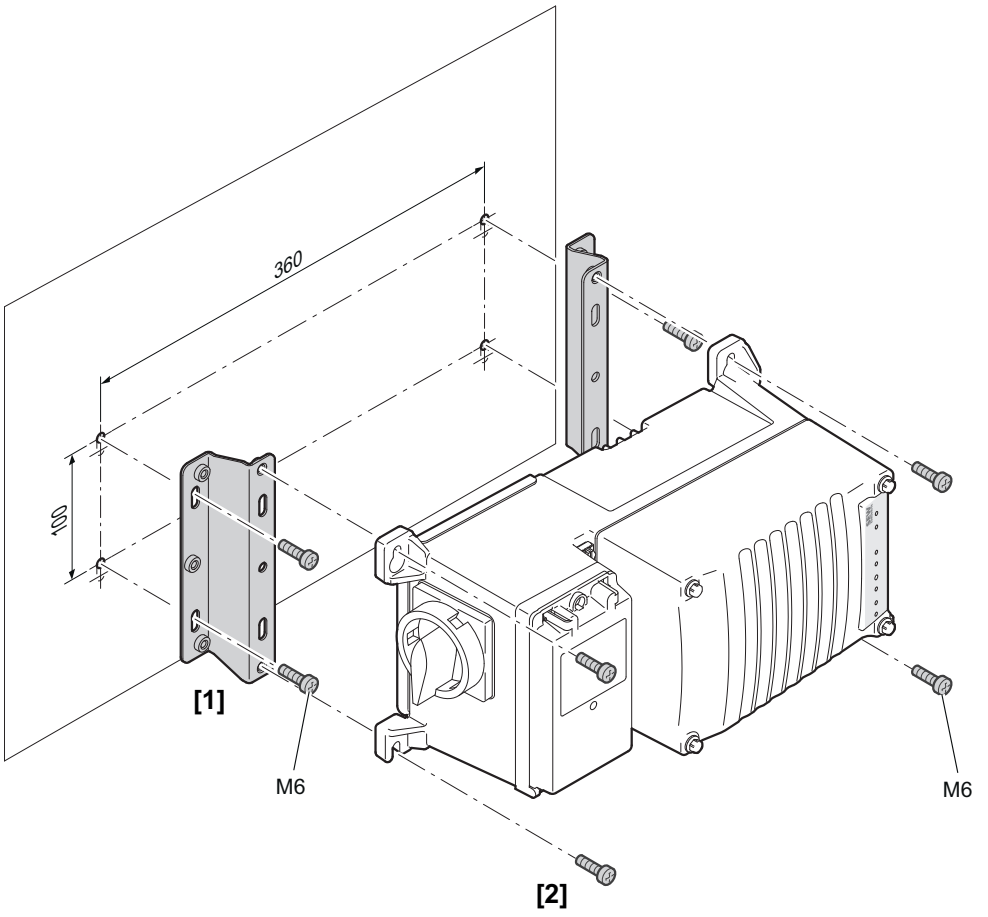
[1] Mounting panel M01 (stainless steel)
(available for delivery from SEW-EURODRIVE, part number: 28266129,
scope of delivery: 2 spacers, 4 hex head screws M6 × 20,
stainless steel, torque: 3.3 Nm)

[2] Hex head screw 4 × M6

26863707/EN – 07/2021

4.7.2 Design MMF3.

The following figure shows the mounting dimensions for the device with mounting panel M01:



31263214603

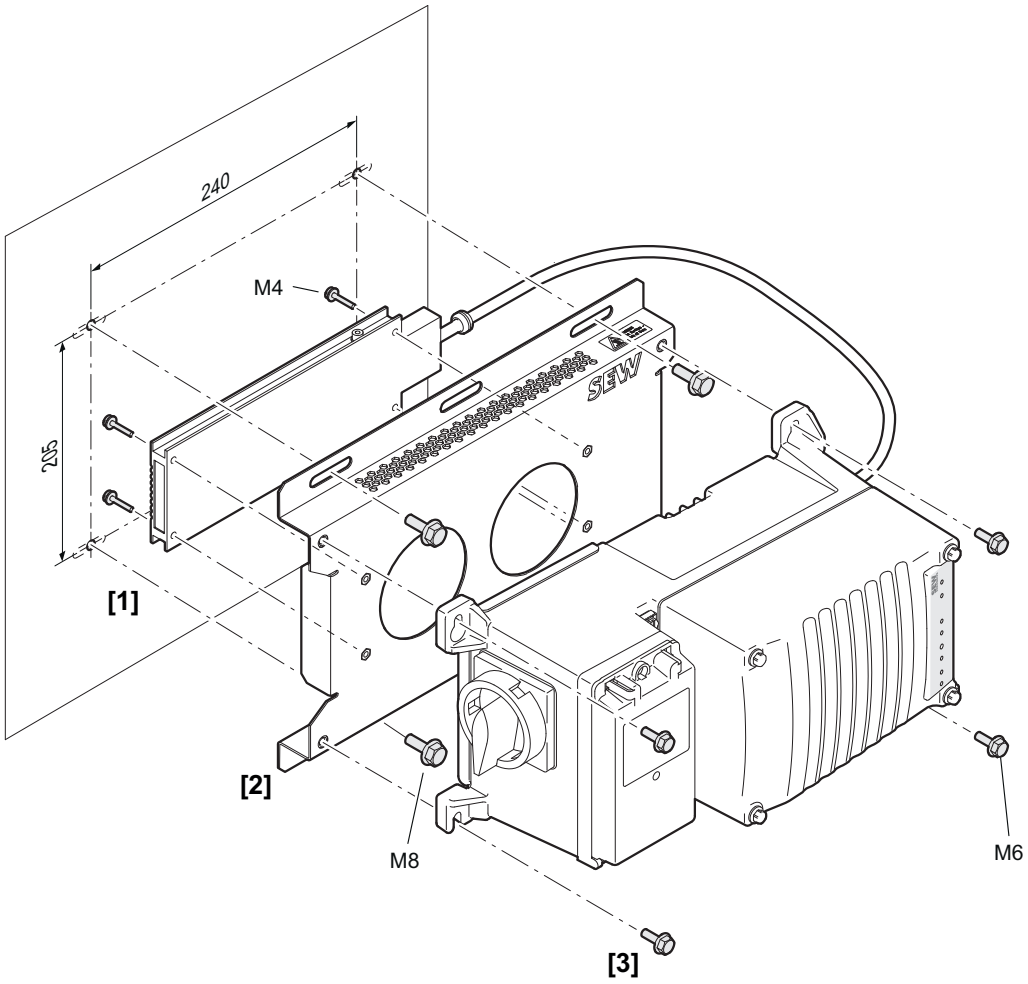
[1] Mounting panel M01 (stainless steel)
(available for delivery from SEW-EURODRIVE, part number: 28266129,
scope of delivery: 2 spacers, 4 hex head screws M6 × 20,
stainless steel, torque: 3.3 Nm)

[2] Hex head screw 4 × M6

4.8 Mounting the device with mounting panel M31

4.8.1 Design MMF31../M31/EBW

The following figure shows the mounting dimensions for the device with mounting panel M31 and the braking resistor BW100-005:



34764001419

[1] Breaking resistor BW100-005 (option /EBW)
[2] Mounting panel M31 (galvanized steel)
[3] Hex head screw 4 × M6

When design **MMF31../M31** is ordered, MOVIMOT® flexible MMF31 is mounted to the M31 mounting panel at the factory.

When design **MMF../M31/EBW** is ordered, MOVIMOT® flexible MMF31 and the BW100-005 braking resistor are mounted to the M31 mounting panel at the factory. The BW100-005 braking resistor is wired to the connection box at the factory.

The following retrofit accessories sets are in preparation:

- Accessories set with M31 mounting panel
- Accessories set with BW100-005 braking resistor

26863707/EN – 07/2021

4.9 Tightening torques

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

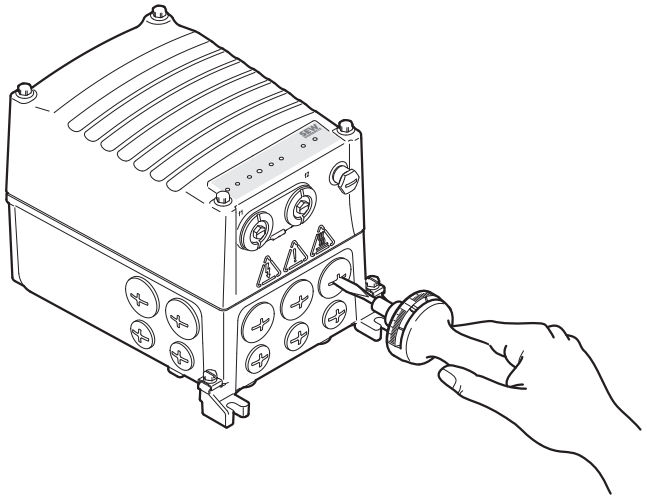
- Let the devices cool down before touching them.

4.9.1 Blanking plugs

Tighten the plastic blanking plugs **included in the delivery** by SEW-EURODRIVE with 2.5 Nm:

Design MMF1.

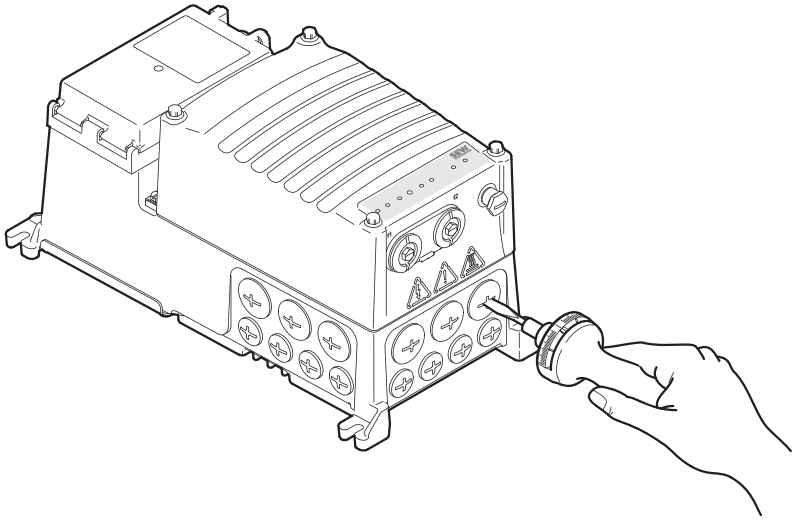
The following figure shows an example of the blanking plugs for the device:



29490169355

Design MMF3.

The following figure shows an example of the blanking plugs for the device:



29490172939

26863707/EN – 07/2021

4.9.2 Cable glands

Tightening torques

Tighten the EMC cable glands **optionally** supplied by SEW-EURODRIVE to the following torques:

Screw fitting	Part number	Content	Size	Outer cable diameter	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18204805	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm
EMC cable glands (stainless steel)	18216366	10 pieces	M16 × 1.5	5 to 9 mm	4.0 Nm
	18216382	10 pieces	M25 × 1.5	11 to 16 mm	7.0 Nm
Cable gland for externally routed Ethernet cable with mini IO plug connector (brass, nickel-plated)	25676040	10 pieces	M25 × 1.5	1 x 6.5 mm	7.0 Nm
	25676032	10 pieces	M25 × 1.5	2 x 6.5 mm	7.0 Nm

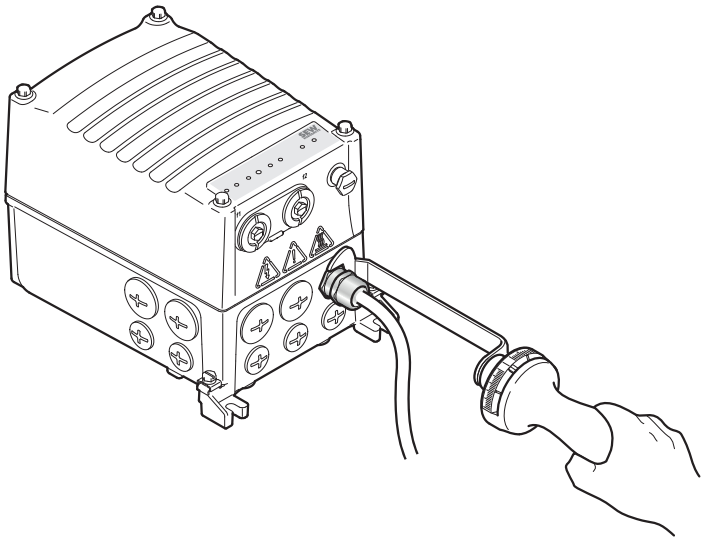
The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm: ≥ 160 N
- Cable with outer diameter < 10 mm: = 100 N

26863707/EN – 07/2021

Design MMF1.

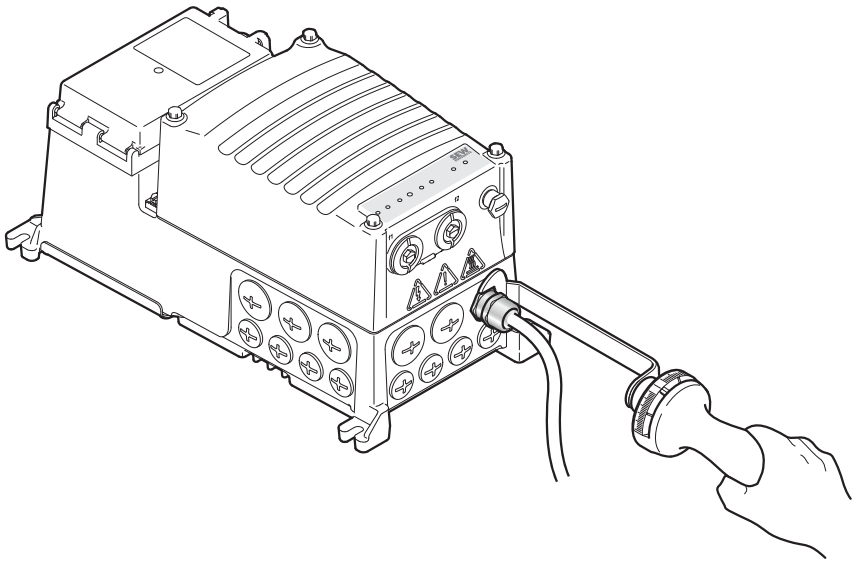
The following figure shows an example of the cable glands for the device:



29490218763

Design MMF3.

The following figure shows an example of the cable glands for the device:



29490222347

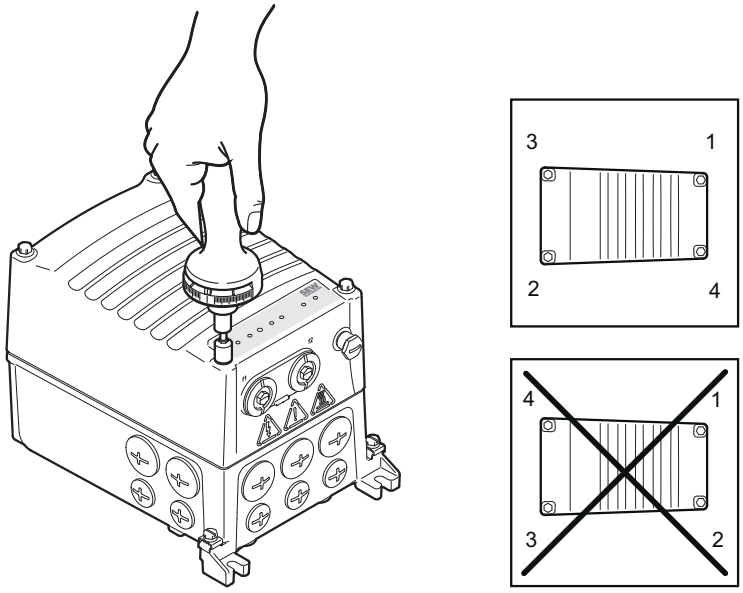
26863707/EN – 07/2021

4.9.3 Electronics cover

Proceed as follows when installing the electronics cover: Insert the screws and tighten them **step by step** in diametrically opposite sequence.

Design MMF1.

The following figure shows how to screw on the electronics cover:

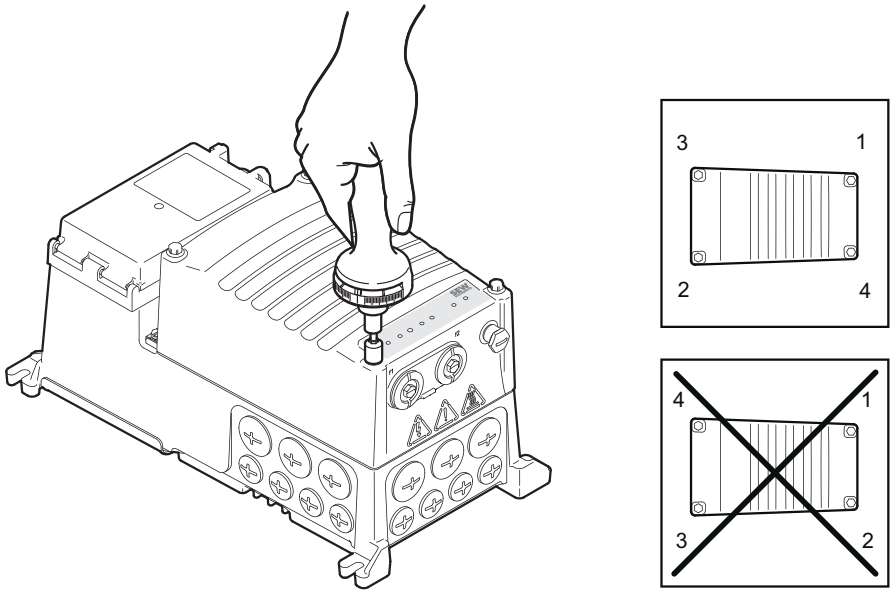


29490225931

Tighten the screws with a tightening torque of 6.0 Nm.

MMF31 design

The following figure shows how to screw on the electronics cover:



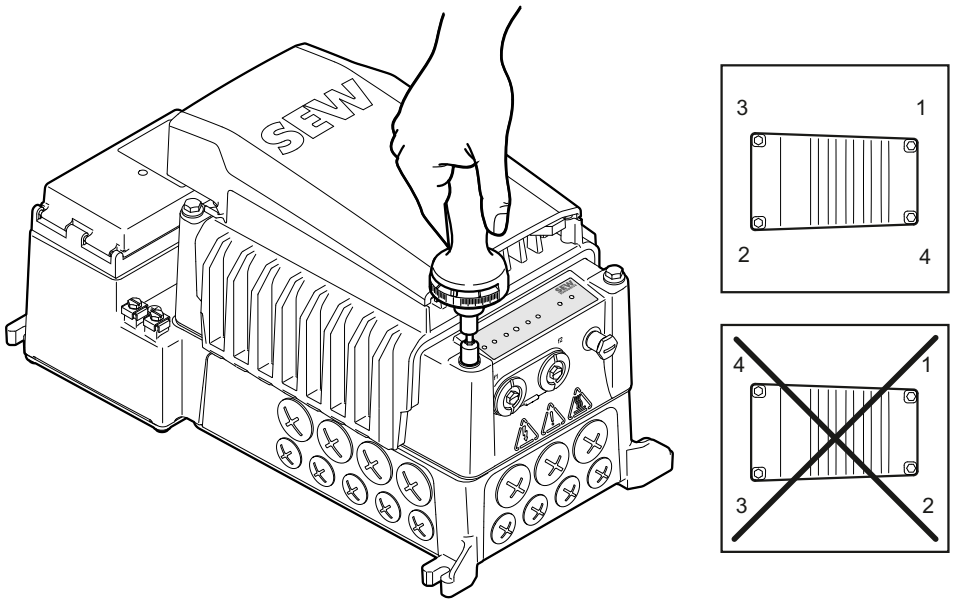
29490229515

Tighten the screws with a tightening torque of 6.0 Nm.

26863707/EN – 07/2021

MMF32 design

The following figure shows how to screw on the electronics cover:



34237117323

Tighten the screws with a tightening torque of 9.5 Nm.

5 Electrical installation

5.1 Installation planning taking EMC aspects into account

5.1.1 Notes on arranging and routing installation components

The correct operation of decentralized inverters depends on selecting the correct cables, providing correct grounding, and on a properly functioning equipotential bonding.

Always adhere to the **relevant standards**.

Note the following information.

5.1.2 EMC-compliant installation

INFORMATION

This drive system is not designed for operation on a public low voltage supply system that supplies residential areas.

This is a product with restricted availability in accordance with IEC 61800-3. This product may cause EMC interference. In this case, it is recommended for the user to take suitable measures.

With respect to the EMC regulation, frequency inverters and compact drives cannot be seen as stand-alone units. They can only be evaluated in terms of EMC when they are integrated in a drive system. Conformity is declared for a described, CE-typical drive system. These operating instructions contain further information.

5.1.3 Cable selection, routing and shielding

⚠ WARNING

Electric shock caused by faulty installation.

Severe or fatal injuries.

- Take the utmost care when installing the units.
- Observe the connection examples.

For more information on cable selection, routing and shielding, refer to chapter "Cable routing and shielding".

26863707/EN – 07/2021

5.1.4 Equipotential bonding

Regardless of the PE connection, it is essential that **low-impedance, HF-capable equipotential bonding** is provided (see also EN 60204-1 or DIN VDE 0100-540):

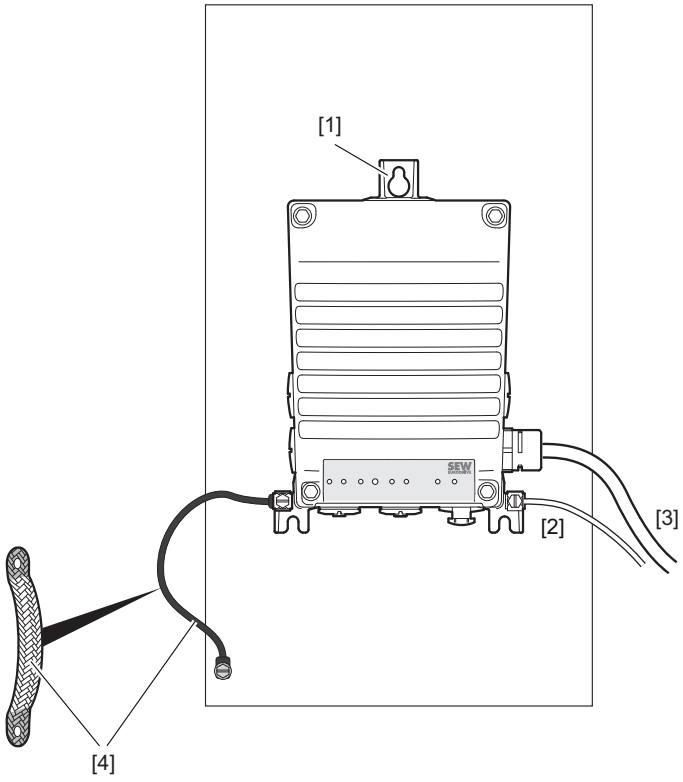
- Provide for a connection over a wide area between the device and the mounting plate.
- To do so, use a ground strap (HF litz wire), for example, to connect the device and the grounding point of the system.
- Do not use the cable shields of data lines for equipotential bonding.

INFORMATION

For detailed information on equipotential bonding for decentralized inverters and drive units, refer to the publication "Equipotential Bonding of Decentralized Inverters" by SEW-EURODRIVE.

Design MMF1.

The following figure shows a connection over a wide surface area between the mounting plate and the device:



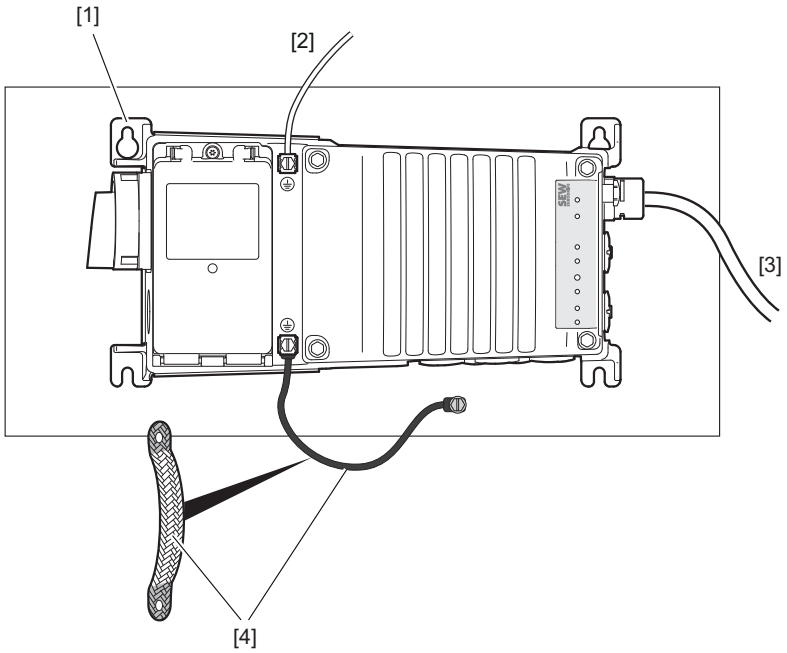
30583362571

[1] Conductive connection over a wide surface between the decentralized frequency inverter and the mounting plate, in case the entire contact surface is electrically conductive (e.g. unpainted).
[2] Second PE conductor via separate terminals
[3] PE conductor in the supply system cable
[4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire). The contact surfaces must be electrically conductive (e.g. unpainted).

26863707/EN – 07/2021

MMF31 design

The following figure shows a connection over a wide surface area between the mounting plate and the device:



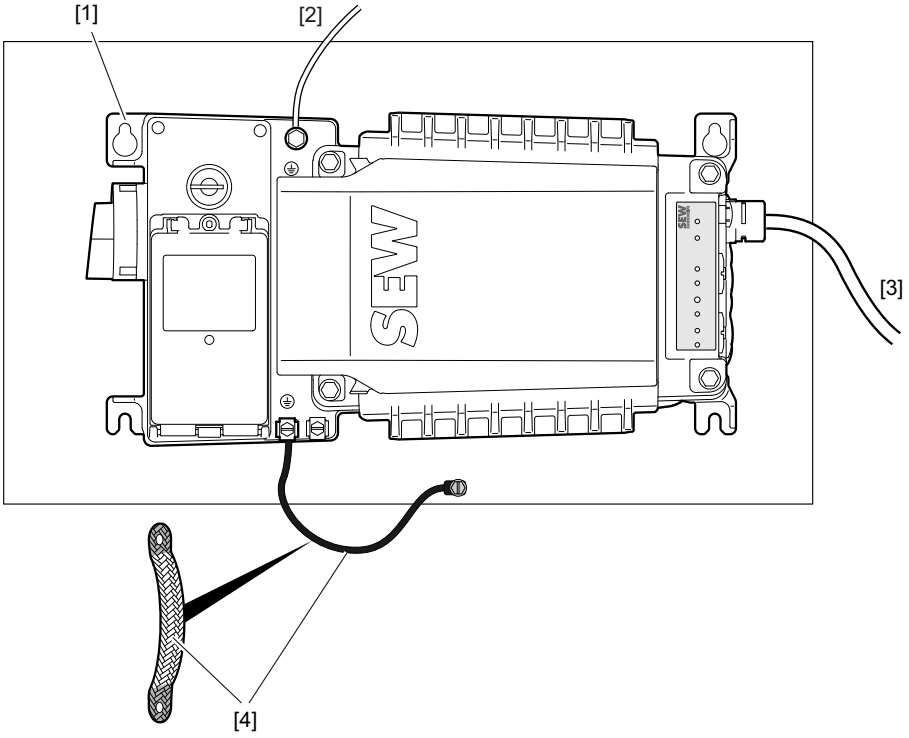
30583397003

[1] Conductive connection over a wide surface between the decentralized frequency inverter and the mounting plate, in case the entire contact surface is electrically conductive (e.g. unpainted).
[2] Second PE conductor via separate terminals
[3] PE conductor in the supply system cable
[4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire). The contact surfaces must be electrically conductive (e.g. unpainted).

26863707/EN – 07/2021

MMF32 design

The following figure shows a connection over a wide surface area between the mounting plate and the device:



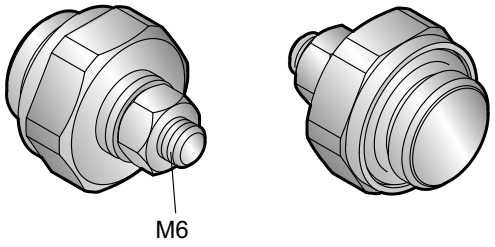
34237127051

[1] Conductive connection over a wide surface between the decentralized frequency inverter and the mounting plate, in case the entire contact surface is electrically conductive (e.g. unpainted).
[2] Second PE conductor via separate terminals
[3] PE conductor in the supply system cable
[4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire). The contact surfaces must be electrically conductive (e.g. unpainted).

26863707/EN – 07/2021

5.2 Equipotential bonding at the connection box

Another option for HF-capable equipotential bonding at a connection box is the following cable gland with M6 stud bolt:



3884960907

	Tightening torque of the cable gland	Tightening torque of the M6 nut for stud bolt	Part number
M16 cable gland with M6 stud bolt	4.0 Nm	3.0 Nm	08189234
M25 cable gland with M6 stud bolt	7.0 Nm	3.0 Nm	08192685

You can install this cable gland at a connection box that still has a free cable entry of size M16 or M25.

Screw the cable gland into the free cable entry and install the grounding cable (with ring cable lug) or the HF litz wire at the M6 stud bolt.

5.3 Installation instructions

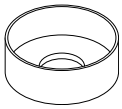
5.3.1 Permitted voltage systems

Information on voltage systems	Information on permissibility
TN and TT systems – voltage systems with directly grounded star point	Use is possible without restrictions.
IT systems – voltage systems with non-grounded star point	Use is permitted only with electronics cover in IT system design (...-513-....). • For use in IT systems, SEW-EURODRIVE recommends using insulation monitors with pulse-code measurement. Using such devices prevents false tripping of the insulation monitor due to the earth capacitance of the inverter. • No EMC limits are specified for interference emission in IT systems. The EMC limits for interference emission specified in chapter "Technical data" do not apply to IT system designs.
Voltage systems with grounded outer conductor	Not permitted.

26863707/EN – 07/2021

Mounting of insulating bushing (only with electronics cover size 2)

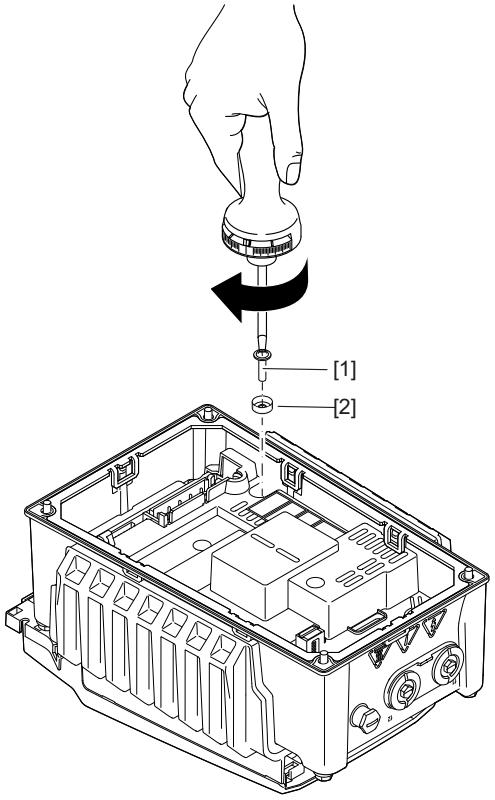
The electronics covers of size 2 are compatible with IT systems only if you mount an insulating bushing. When ordering the electronics cover, SEW-EURODRIVE supplies the insulating bushing as a single item in an accessory bag, provided it has been selected separately. The insulating bushing is not included in the delivery as standard. Alternatively, you can order the insulating bushing separately as an accessory (1, 5 or 10 pieces) later:

Figure of insulating bushing	Content	Part number
	1 pieces	28284437
	5 pieces	28284445
	10 pieces	28284453

Mounting

When electrically installing a device with an electronics cover of size 2 in IT systems, mount the insulating bushing in the electronics cover as follows:

1. Observe the notes in chapter "Preliminary work regarding inspection and maintenance".
2. Loosen the 4 screws of the electronics cover and remove it.
3. Loosen the screw [1] of the electronics cover.
4. Screw the screw [1] with the insulating bushing [2] into the electronics cover. Tighten the screw with a tightening torque of 1.4 to 1.6 Nm.



34566638859

5. Place the electronics cover onto the connection box and fasten the electronics cover.
   ⇨ Insert the screws and tighten them in diametrically opposite sequence step by step with a tightening torque of 9.5 Nm.

5.3.2 Connecting supply system cables

- The nominal voltage and frequency of the device must correspond with the data of the supply system.
- Dimension the cable cross section according to the input current I_{line} for nominal power (see chapter "Technical data and dimension sheets").
- Install safety equipment F11/F12/F13 for line fuses at the beginning of the power supply cable behind the supply bus junction, see chapter "Connection diagram".

  Dimension the safety features according to the cable cross section.
- Use only copper conductors with a minimum temperature range of 90 °C as connection cable.

5.3.3 Permitted cable cross section of terminals

Line terminals X1

Observe the permitted cable cross sections for installation:

Line terminals X1	Without conductor end sleeve	With conductor end sleeve (with or without plastic collar)
Connection cross section (mm^2)	0.5 mm^2 – 6 mm^2	0.5 mm^2 – 6 mm^2
Stripping length	13 mm – 15 mm	

Terminals X2_A for motor, brake and temperature sensor

Observe the permitted cable cross sections for installation:

Terminals X2_A for motor, brake and temperature sensor	Without conductor end sleeve	With conductor end sleeve (without plastic collar)	With conductor end sleeves (with plastic collar)
Connection cross section	0.08 mm^2 – 2.5 mm^2	0.08 mm^2 – 1.5 mm^2	0.08 mm^2 – 1.5 mm^2
Stripping length	8 mm – 9 mm		

Terminals X3 for braking resistor

Observe the permitted cable cross sections for installation:

Terminals X3 for braking resistor	Without conductor end sleeve	With conductor end sleeve (with or without plastic collar)
Connection cross section	0.08 mm^2 – 4.0 mm^2	0.25 mm^2 – 2.5 mm^2
Stripping length	8 mm – 9 mm	

26863707/EN – 07/2021

Control terminals X9

Observe the permitted cable cross sections for installation:

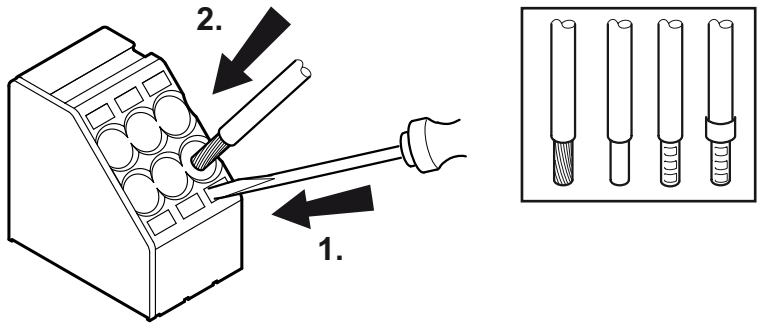
Control terminals X9	Without conductor end sleeve	With conductor end sleeve (without plastic collar)	With conductor end sleeve (with plastic collar)
Connection cross section	0.08 mm² – 2.5 mm²	0.25 mm² – 2.5 mm² [1)]	0.25 mm² – 1.5 mm²
Stripping length	5 mm – 6 mm		

[1)] 2.5 mm² only in combination with quadratically crimping (e.g. with WAGO® Vario-crimp crimping tool)

5.3.4 Activating line terminals X1

Adhere to the following sequence when you activate the line terminals X1:

Line terminals X1 (the following figure shows a schematic illustration)



25649924107

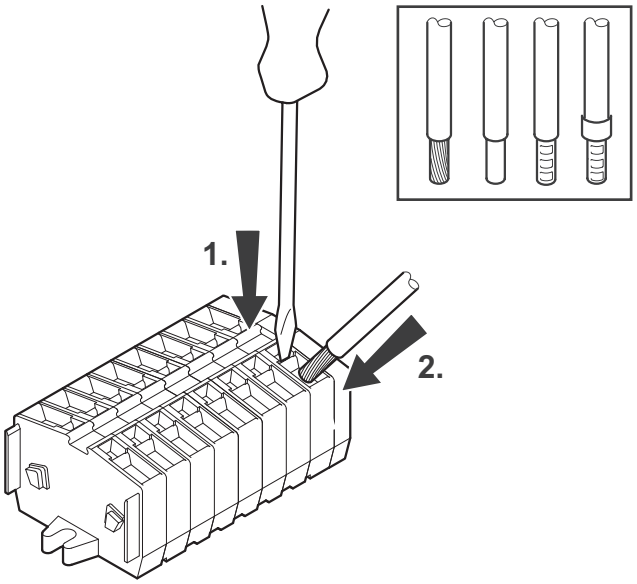
26863707/EN – 07/2021

5.3.5 Activating terminals X2_A for motor, brake and temperature sensor

Adhere to the following sequence when you activate the terminals X2_A for motor, brake and temperature sensor:

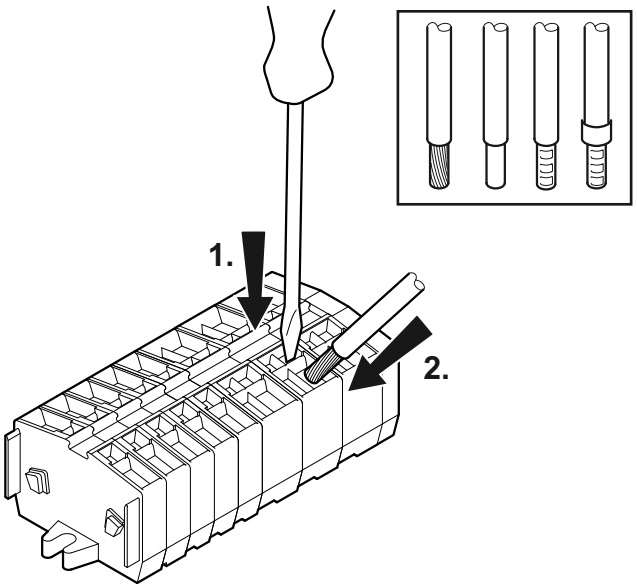
Terminals X2_A for motor, brake and temperature sensor (the following figure shows a schematic illustration)

Terminals X2_A in designs MMF1. and MMF31



9007225066726923

Terminals X2_A in design MMF32



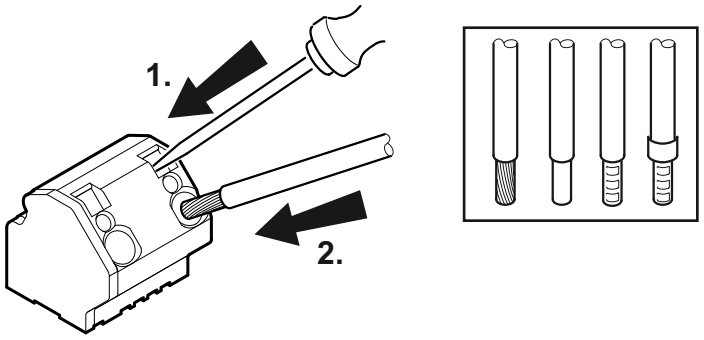
34316713355

26863707/EN – 07/2021

5.3.6 Activating terminals X3 for the braking resistor

Adhere to the following sequence when you activate the terminals X3 for the braking resistor:

Terminals X3 for the braking resistor (the following figure shows a schematic illustration)

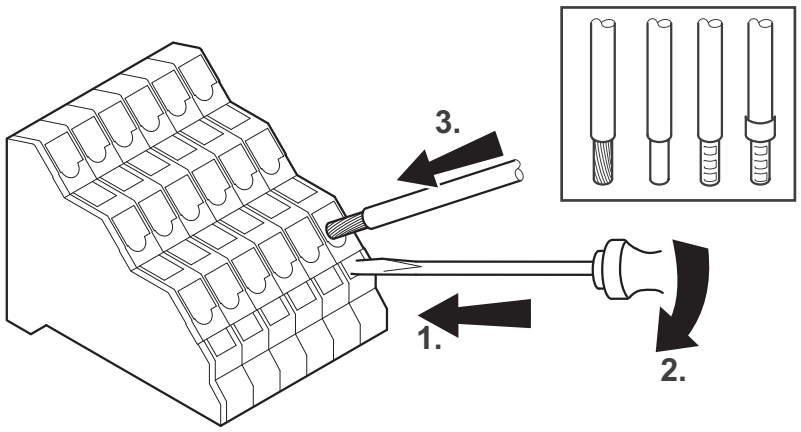


25650172171

5.3.7 Activating control terminals X9

Adhere to the following sequence when actuating the X9 control terminals:

X9 control terminals (the following figure shows a schematic illustration)



30508870539

5.3.8 Residual current device

⚠ WARNING

No protection against electric shock if an incorrect type of residual current device is used.

Severe or fatal injuries.

- The product can cause direct current in the PE conductor. If a residual current device (RCD) or a residual current monitoring device (RCM) is used for protection in the event of a direct or indirect contact, only a type B RCD or RCM is permitted on the supply end of the product.

- If the use of a residual current device is not mandatory according to the standards, SEW-EURODRIVE recommends not to use a residual current device.

26863707/EN – 07/2021

5.3.9 Line contactor

NOTICE

Non-compliance with the minimum switch-on/switch-off times.

Damage to the device.

- Keep the supply system switched off for 10 s before switching the power back on.
- Do not switch the supply system off and on more than once per minute.

- Use only a contactor of utilization category AC-3 (EN 60947-4-1) as a line contactor.

26863707/EN – 07/2021

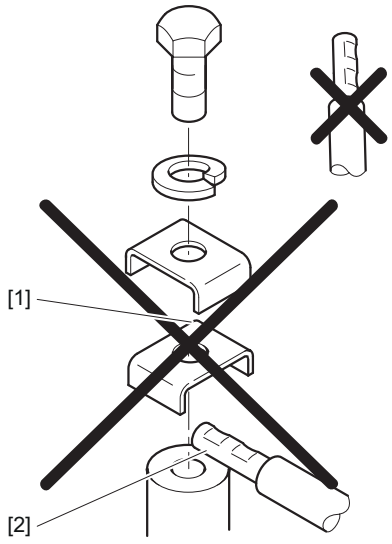
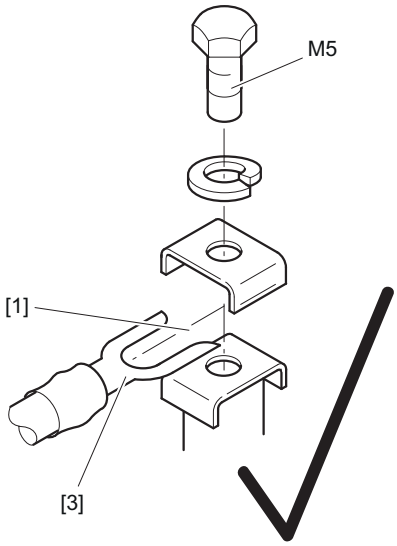
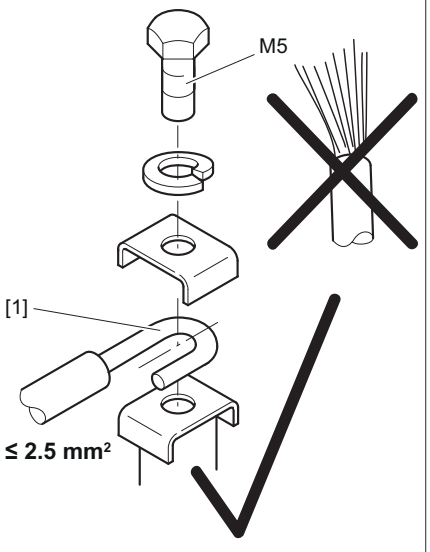
5.3.10 Notes on PE connection

⚠ WARNING

Electric shock due to incorrect connection of PE.

Severe or fatal injuries.

- The permitted tightening torque for the screw is 2.0 to 2.4 Nm.
- Observe the following notes regarding PE connection.

Impermissible assembly **Using a conductor end sleeve or using a straight, rigid core is not permitted.**	**Recommendation:** **Assembly with cable lug**[1)] **Permitted for all cross sections**	**Assembly with solid connecting wire**[1)] **Permitted for cross sections up to max. 2.5 mm²**
 *9007222159731851*	 *9007222159700491*	 *9007222159689227*

1) Use the specified material for the assembly that is included in the accessory bag.

[1] Install the PE connection cable between both U-shaped mounting panels.

[2] Incorrect installation sequence.

[3] Forked cable lug suitable for M5 PE screws.

26863707/EN – 07/2021

Leakage currents

Earth-leakage currents ≥ 3.5 mA can occur during normal operation. In order to fulfill EN 61800-5-1, observe the following notes:

- The protective earth (PE) connection must meet the requirements for systems with high earth-leakage currents.
- This usually means
  - installing a PE connection cable with a minimum cross section of 10 mm^2 (copper conductor)
  - or installing a second PE connection cable in parallel with the original PE connection.

    The second PE connection is not required according to DIN EN 61800-5-1, if the line connection is equipped with a plug connector for industrial applications (according to IEC 60309) and if the supply system cable has a diameter of ≥ 2.5 mm^2.

INFORMATION

The round M23 plug connectors of the 723 series by TE Connectivity - Intercontec products meet the requirements according to IEC 60309 "Plug connectors for industrial applications".

5.3.11 Installation with protective separation

The electronics cover meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. The connected signal circuits and the DC 24 V voltage supply must meet the requirements according to SELV (**S**afety **E**xtra **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

5.3.12 Protection devices

- The units come equipped with integrated protection devices against overload.
- Cable protection for the power cable must be implemented using external overload devices.
- Observe the relevant standards concerning the cable cross section, voltage drop and installation type.

26863707/EN – 07/2021

5.3.13 Installation above 1000 m asl

You can install the drive units at altitudes from 1000 m to a maximum of 3800 m above sea level provided that the following conditions are met.[1)] machinery.

- The nominal motor current I_N is reduced due to the reduced cooling above 1000 m (see the chapter "Technical data and dimension sheets").
- Above 2000 m above sea level, the air and creeping distances are only sufficient for overvoltage category II. If the installation requires overvoltage category III, you will have to install additional external overvoltage protection to limit overvoltage peaks to 1.5 kV phase-to-phase and 2.5 kV phase-to-ground.
- If safe electrical disconnection is required, it must be implemented outside the unit for altitudes of 2000 m above sea level and higher (safe electrical disconnection in accordance with EN 61800-5-1).
- At installation altitudes between 2000 and 3800 m above sea level measures must be taken, which reduce the line side overvoltage from category III to category II for the entire system.

1) The maximum altitude is limited by the reduced dielectric strength due to the lower air density.

5.3.14 UL-compliant installation

INFORMATION

Due to UL requirements, the following chapters are always printed in English independent of the language of the publication:

Observe the following notes for UL-compliant installation:

The devices are for use only in industrial machinery NFPA 79 applications.

Field Wiring Power Terminals

- Use 75 °C copper wire only.
- Tighten terminals to 17.7 – 21.24 in-lbs (screw connect terminals only).

Short Circuit Current Rating

Suitable for use on a circuit capable of delivering not more than 65,000 rms symmetrical amperes (models with maintenance switch not more than 5,000 rms) when protected by when protected by 600 V maximum non-semiconductor fuses (Class CA, CB, CD, CF, G, J, K-1, K-5, RK1, RK5, T) or when protected by 500 V maximum inverse time circuit breakers having an interrupting rating not less than 65 kA rms symmetrical amperes..

Suitable for motor group installation on a circuit capable of delivering not more than 65,000 rms symmetrical amperes (models with maintenance switch not more than 5,000 rms) when protected by 600 V maximum non-semiconductor fuses (Class CA, CB, CD, CF, G, J, K-1 , K-5, RK1, RK5, T) or when protected by 500 V maximum inverse time circuit breakers having an interrupting rating not less than 65 kA rms symmetrical amperes.

The max. voltage is limited to 500 V.

26863707/EN – 07/2021

Branch Circuit Protection

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.

For maximum branch circuit protection see table below.

SCCR: 65 kA/500 V 5 kA/500V (devices with maintenance switch) when protected by	
Non-semiconductor fuses (currents are maximum values)	Inverse time circuit breakers (currents are maximum values)
40 A max./600 V	40 A max./500 V min.

Motor Overload Protection

The devices are provided with load and speed-sensitive overload protection and thermal memory retention upon shutdown or power loss.

The trip current is adjusted to 150% of the rated motor current.

Surrounding Air Temperature Rating

The devices are suitable for an ambient temperature of 40 °C, max. 60 °C with de-rated output current. To determine the output current rating at temperatures above 40 °C, the output current should be de-rated by 3 % per K between 40 °C and 60 °C.

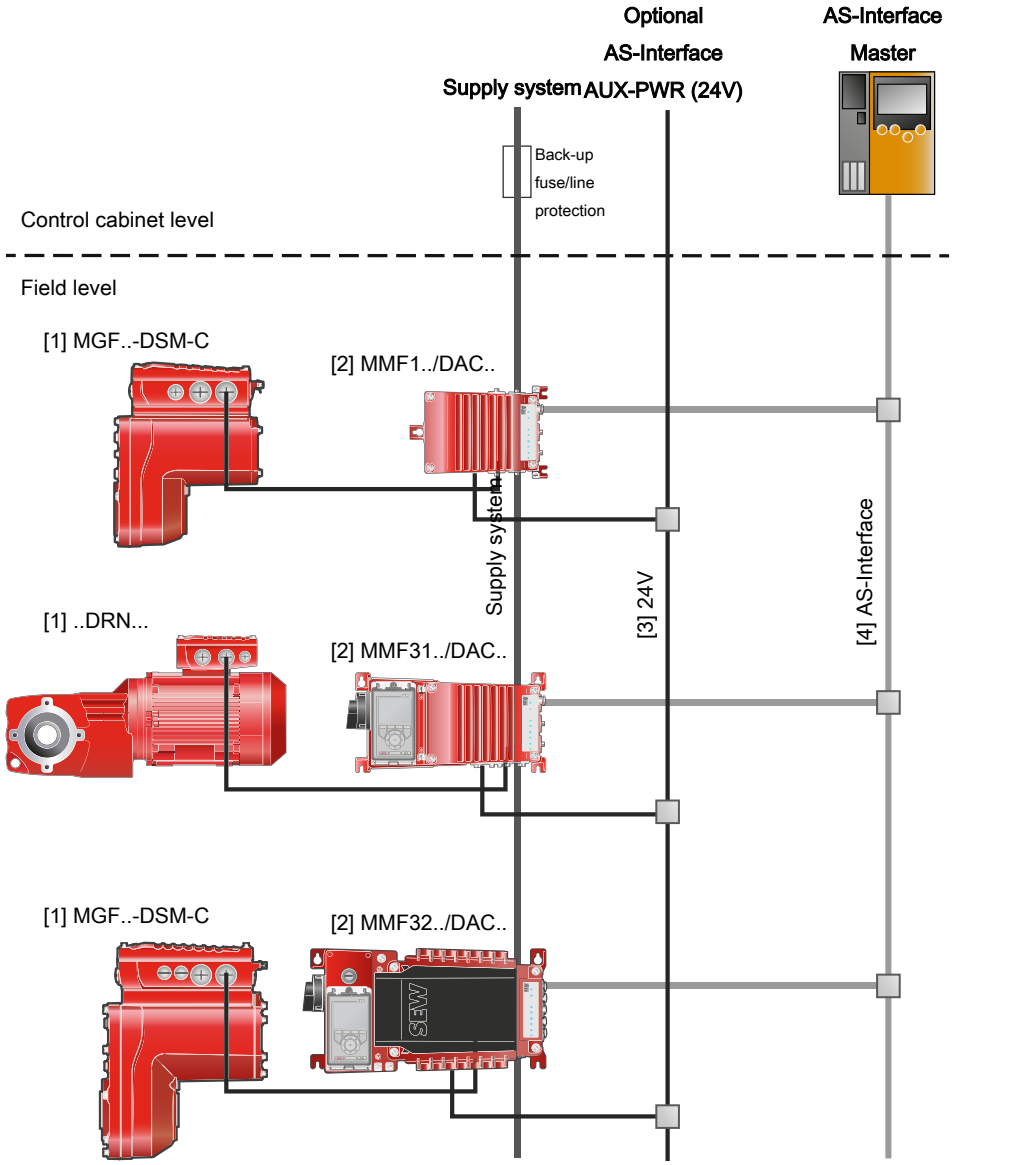
Wiring Diagrams

For wiring diagrams, refer to chapter "Electrical Installation".

26863707/EN – 07/2021

5.4 Installation topology (example: standard installation)

The following figure shows a basic installation topology with the device:



[1] Connected drive units with/without digital interface
[2] MOVIMOT® flexible with DAC.. electronics cover
[3] Optional 24 V backup voltage via the AS-Interface (AUX-PWR)
[4] AS-Interface communication cable

5.5 Terminal assignment

INFORMATION

The terminals X3 for connecting the braking resistor can be connected to an optional, internal braking resistor. As an alternative, you an connect an external braking resistor if the power rating of this braking resistor is not sufficient.

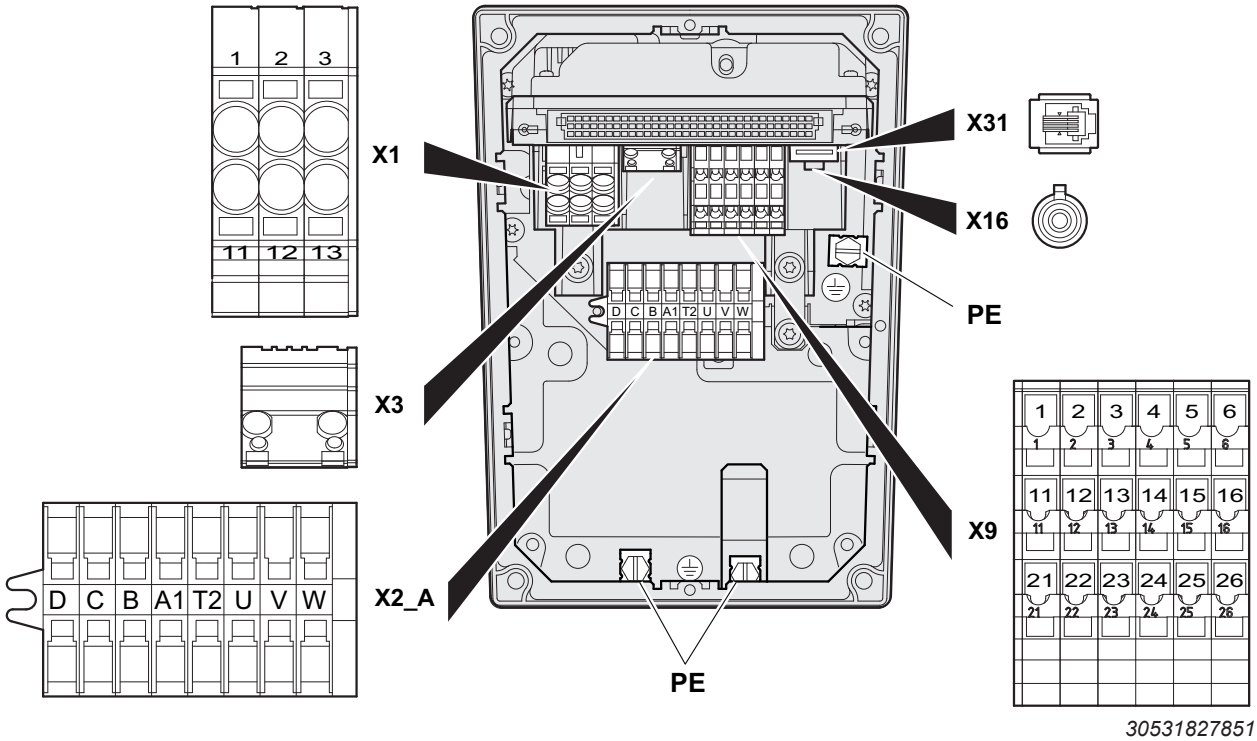
Proceed as follows to do so:

- Loosen the connections of the internal braking resistor.
- Insulate and fasten the connections of the internal braking resistor. Make sure all connections leading to other components are electrically insulated.
- Connect the external braking resistor again. Observe the installation instructions of the device and of the external braking resistor.

Connect the device according to the following terminal assignment.

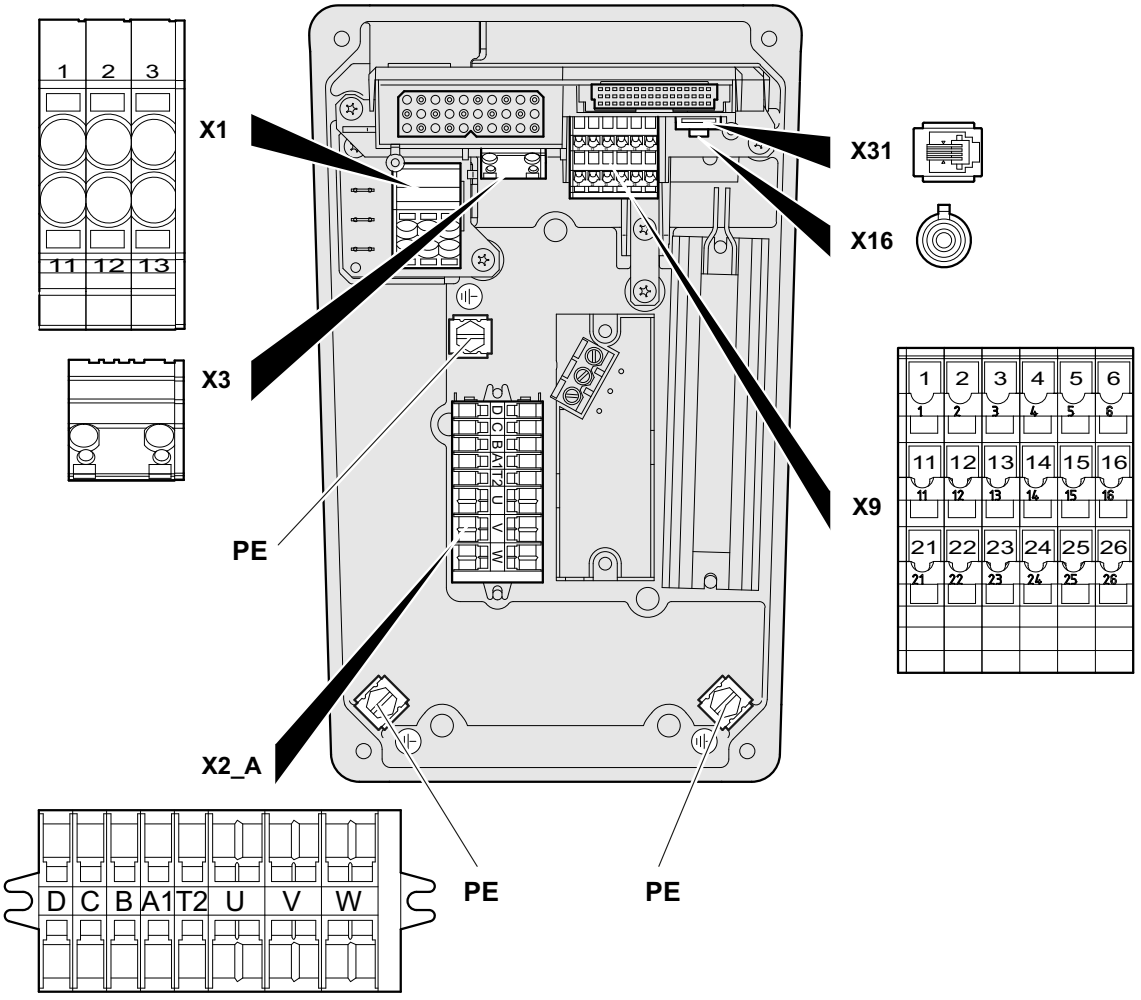
The following figure shows the terminal assignment in the connection box of the device:

5.5.1 Design MMF1., MMF31



30531827851

5.5.2 MMF32 design



34321589771

5.5.3 Assignment

Assignment				
Terminal	**No.**	**Name**	**Marking**	**Function**
X1 **line terminals**	1	L1	Brown	Line connection, phase L1 – IN
	2	L2	Black	Line connection, phase L2 – IN
	3	L3	Gray	Line connection, phase L3 – IN
	11	L1	Brown	Line connection, phase L1 – OUT
	12	L2	Black	Line connection, phase L2 – OUT
	13	L3	Gray	Line connection, phase L3 – OUT
⏚	–	PE	–	PE connection
X3 **braking resistor terminals**	1	BW	–	Braking resistor connection
	2	BW	–	Braking resistor connection

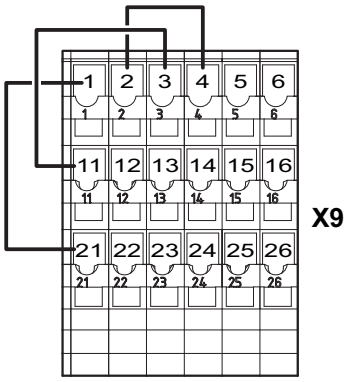
Assignment				
Terminal	**No.**	**Name**	**Marking**	**Function**
X9 control terminals	1	F_STO_P1	Yellow	Input STO+
	2	F_STO_P1	Yellow	Input STO+ (to loop through)
	3	0V24_OUT	–	0V24 reference potential for DC 24 V output
	4	24V_OUT	–	DC 24 V output
	5	DI01	–	Digital input DI01
	6	DI02	–	Digital input DI02
	11	F_STO_M	Yellow	Input STO_ground
	12	F_STO_M	Yellow	Input STO_ground (to loop through)
	13	24V_IN	–	DC 24 V supply
	14	DOR-C	–	Relay output DO R, common contact
	15	DI03		Digital input DI03
	16	DI04		Digital input DI04
	21	F_STO_P2	Yellow	Input STO+
	22	F_STO_P2	Yellow	Input STO+ (to loop through)
	23	0V24_IN	–	0V24 reference potential for DC 24 V supply
	24	DOR-NO	–	Relay output DO R, NO contact
	25	0V24_OUT		0V24 reference potential for output
	26	24V_OUT		DC 24 V output
X31 engineering interface	1	0V24_OUT	–	0V24 reference potential for DC 24 V auxiliary output
	2	CAN_L	–	CAN Low connection
	3	CAN_H	–	CAN High connection
	4	24V_OUT	–	DC 24 V auxiliary output
X16 MOVILINK® DDI interface	1	DDI	–	MOVILINK® DDI supply/communication
	2	DDI_GND	–	MOVILINK® DDI reference potential

26863707/EN – 07/2021

Assignment					
Terminal	**No.**	**Name**	**Marking**	**Function**	
				Connection depending on the connection unit[1)]	
				Option /CO[2)]	**Option /DI**
X2_A Terminals for motor, brake and temperature sensor	D	Brake D	White	Connection Brake D	Connection Brake 14
	C	Brake C	White	Connection Brake C	Connection Brake 13
	B	Brake B	White	Connection Brake B	Connection Brake 15
	A1	Brake A	White	Connection Brake A	Connection Temperature sensor (Temp+)
	T2	–	White	Reserved	Connection Temperature sensor (Temp-)
	U	U	Gray	Motor connection, phase U	
	V	V	Gray	Motor connection, phase V	
	W	W	Gray	Motor connection, phase W	

1) See chapter "Type designation of the connection unit".
2) For more information refer to chapter "Bulk cables" > "Brakemotor cables for motors with digital interface (MOVILINK® DDI)" > "Connecting the bulk cables".

The following figure shows the factory-installed jumpers at the X9 terminals:



29006177419

These jumpers are not present in the following designs:

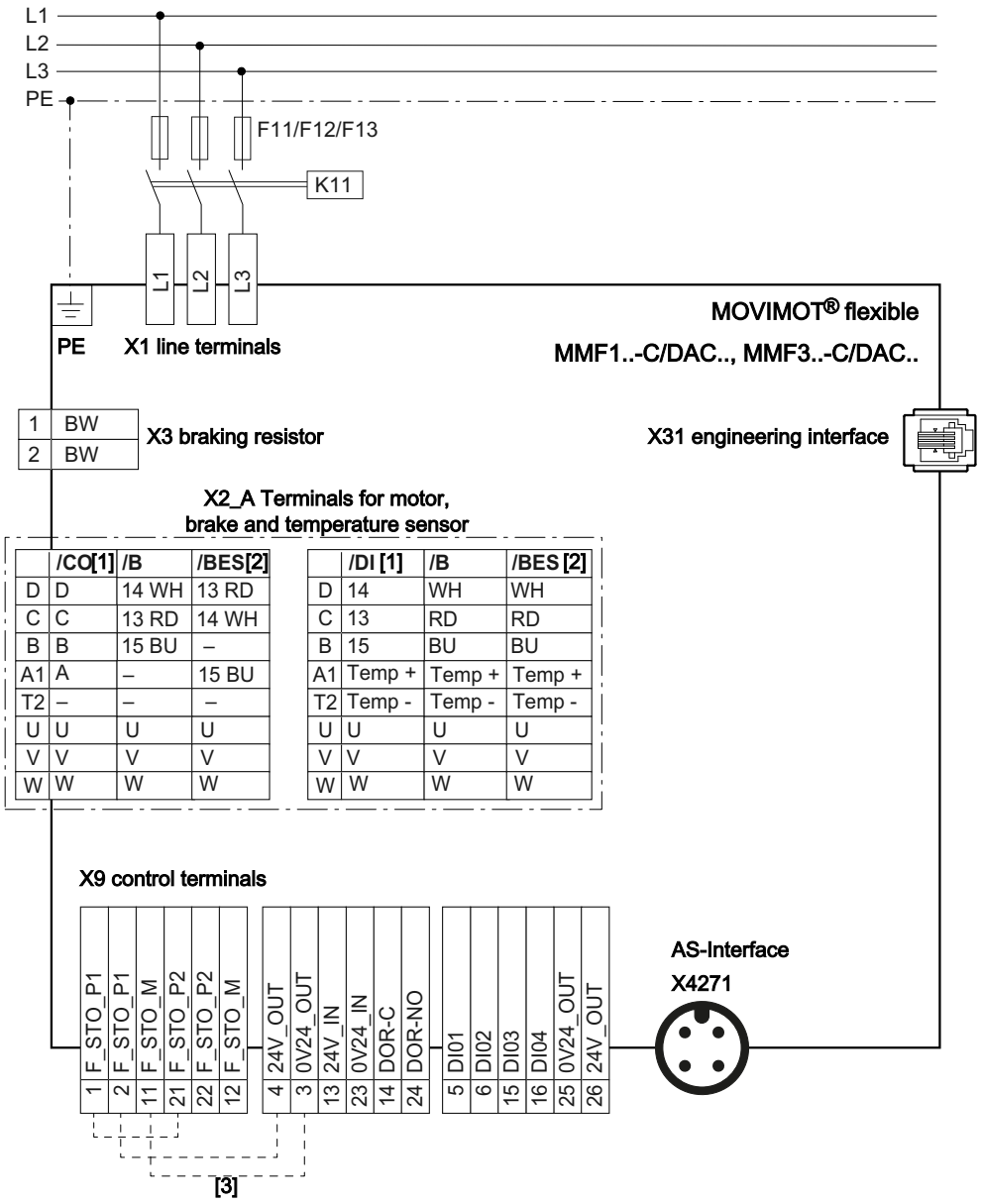
- Designs with plug connectors with STO function.

For additional information, refer to chapter "Functional safety".

26863707/EN – 07/2021

5.6 Connection diagram MOVIMOT® flexible MMF../DAC..

The following figure shows the connections of the device:



[1] Connection unit option, see chapter "Type designation connection unit"
[2] Devices with option /BES include additionally integrated auxiliary terminals. These auxiliary terminals are intended for connecting the BES brake rectifier only. Do not change the installation of this auxiliary terminal.
[3] Jumpers installed at the factory for designs without plug connectors with STO function. For additional information, refer to chapter "Functional safety".

For terminal assignment, refer to chapter "Terminal assignment".

For plug connector assignment, refer to chapter "Plug connectors".

For further information regarding the brake control, refer to chapter "Technical data and dimension sheets" > "Brake control".

26863707/EN – 07/2021

5.7 Cable routing and cable shielding

5.7.1 Installation with separately routed Ethernet cable

Notes on cable routing and shielding – Recommended cable routing

Note the following when routing and shielding the cables:

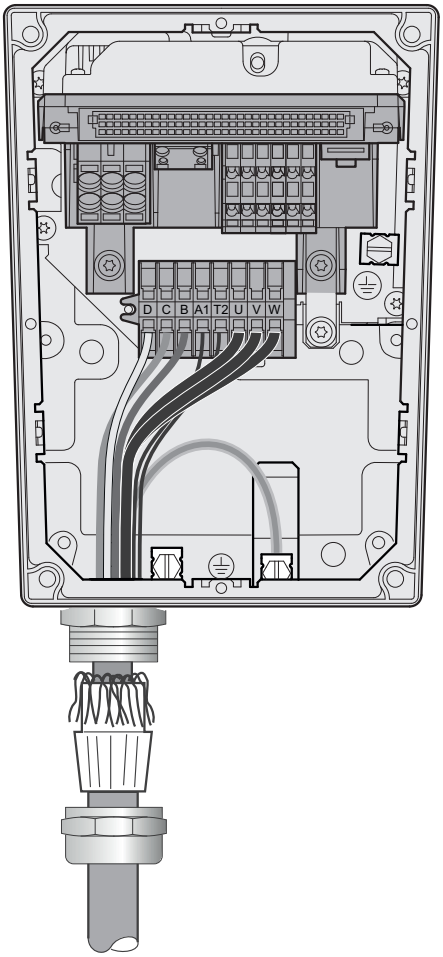
- Cable selection
  - For cable selection, note chapter "Technical data and dimension sheets / connection cables" in the operating instructions.
  - You can use unshielded connection cables for the supply system connection.
- Cable shielding
  - Connect the cable shields to the optionally available EMC cable glands, see chapter "EMC cable glands".
- External braking resistor
  - Also observe the notes in chapter "Terminal assignment".
- Observe the permitted bending radii of the installed cables for cable routing.

26863707/EN – 07/2021

Motor connection for motors without digital interface, design MMF1., MMF31

(Connection unit with /DI option)

The following figure shows the motor connection with hybrid cable for motors without digital interface:



[1]

30566940171

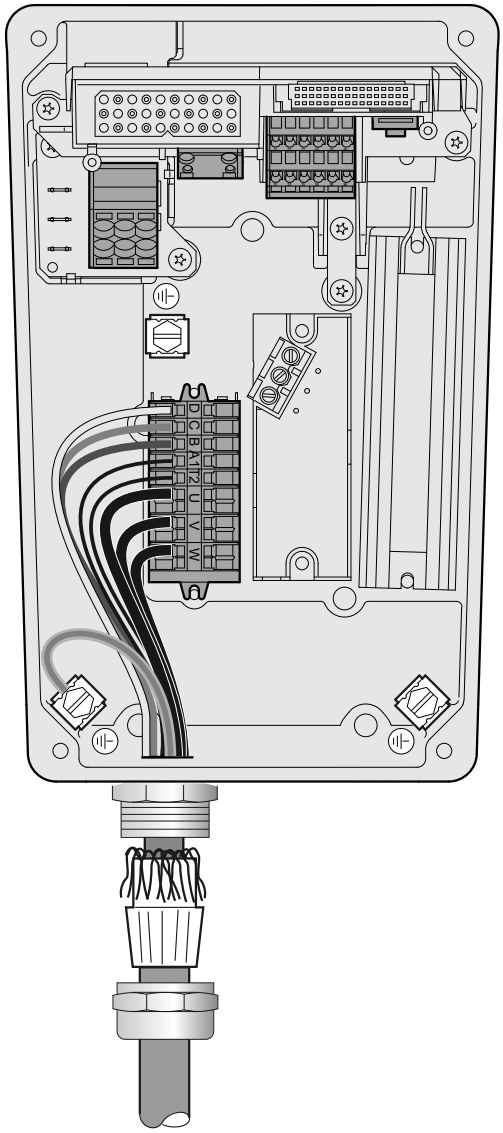
[1] Motor connection for motors without digital interface

26863707/EN – 07/2021

Motor connection for motors without digital interface, design MMF32

(Connection unit with /DI option)

The following figure shows the motor connection with hybrid cable for motors without digital interface:



[1]

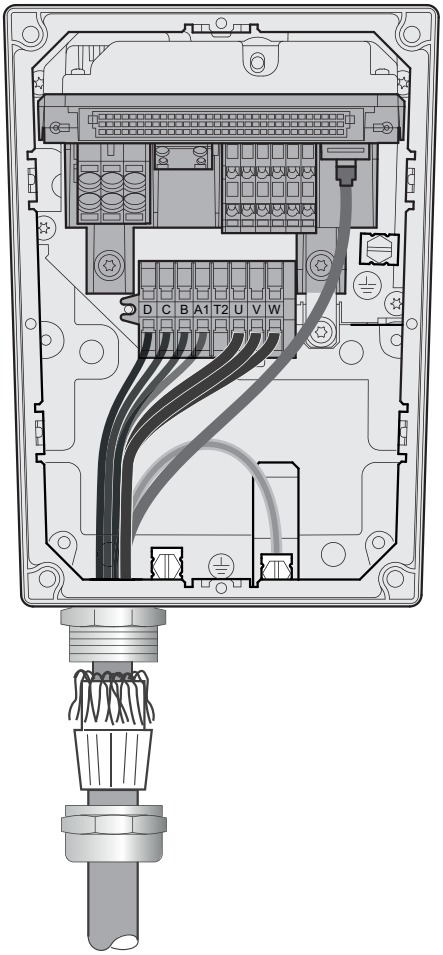
34323842571

[1] Motor connection for motors without digital interface

Motor connection for motors with digital interface (MOVILINK® DDI), design MMF1., MMF31

(Connection unit with /CO option)

The following figure shows the motor connection with hybrid cable for motors with digital interface:



[1]

30566960139

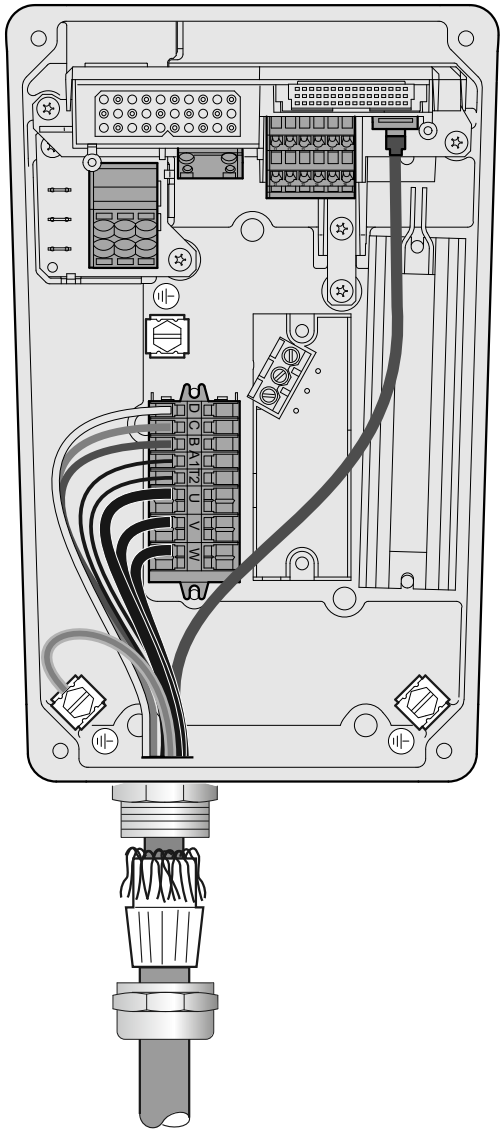
[1] Motor connection for motors with digital interface (MOVILINK® DDI)

26863707/EN – 07/2021

Motor connection for motors with digital interface (MOVILINK® DDI), design MMF32

(Connection unit with /CO option)

The following figure shows the motor connection with hybrid cable for motors with digital interface:



[1]

34329564171

[1] Motor connection for motors with digital interface (MOVILINK® DDI)

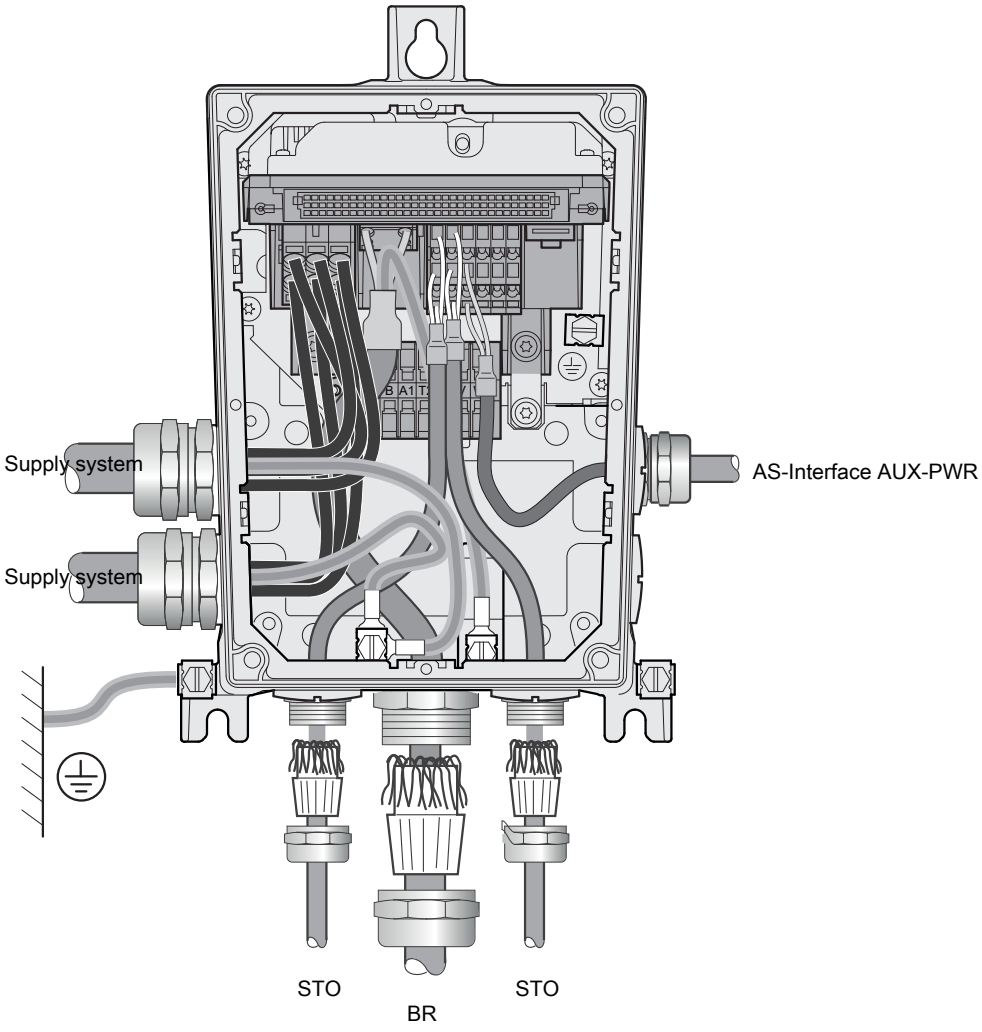
Other connections

Design MMF1.

The following figure shows the connections of the device without motor connection:

INFORMATION

Motor connection is shown in another figure, see chapter "Cable routing and cable shielding" > "Installation with separately routed Ethernet cable" > "Motor connection...".



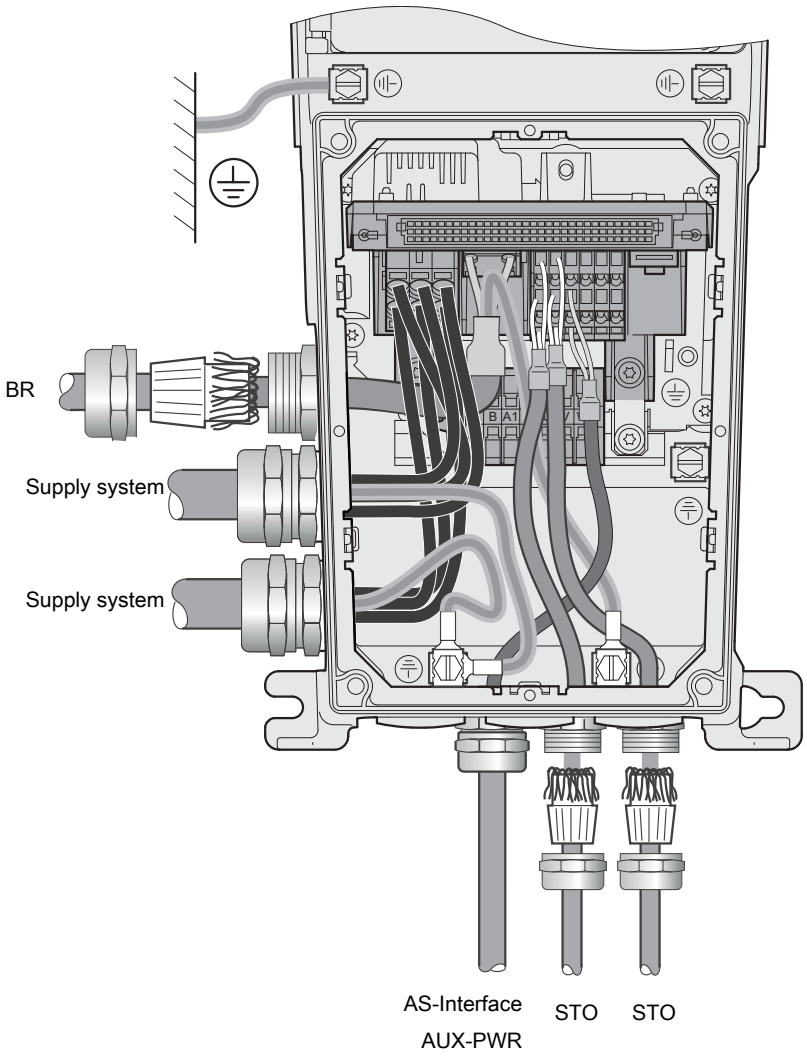
30722356235

MMF31 design

The following figure shows the connections of the device without motor connection:

INFORMATION

Motor connection is shown in another figure, see chapter "Cable routing and cable shielding" > "Installation with separately routed Ethernet cable" > "Motor connection...".



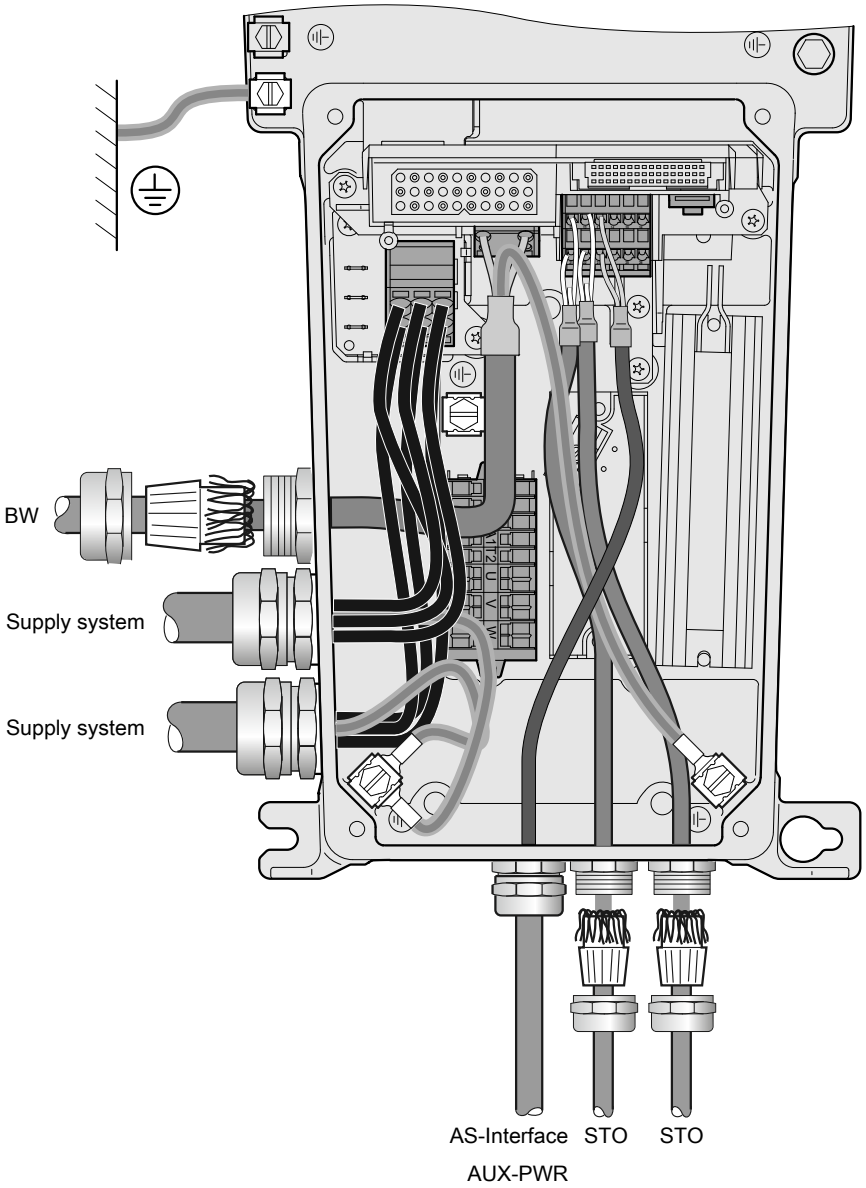
30726880779

MMF32 design

The following figure shows the connections of the device without motor connection:

INFORMATION

Motor connection is shown in another figure, see chapter "Cable routing and cable shielding" > "Installation with separately routed Ethernet cable" > "Motor connection...".



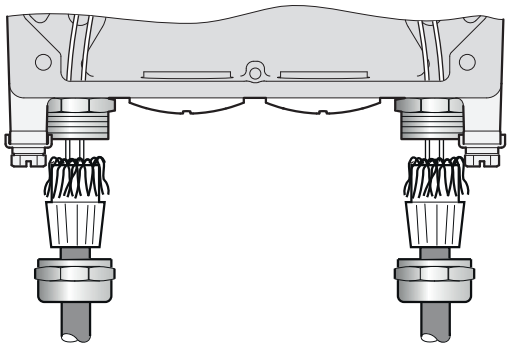
34335046667

26863707/EN – 07/2021

5.8 EMC cable glands

5.8.1 Cable shielding

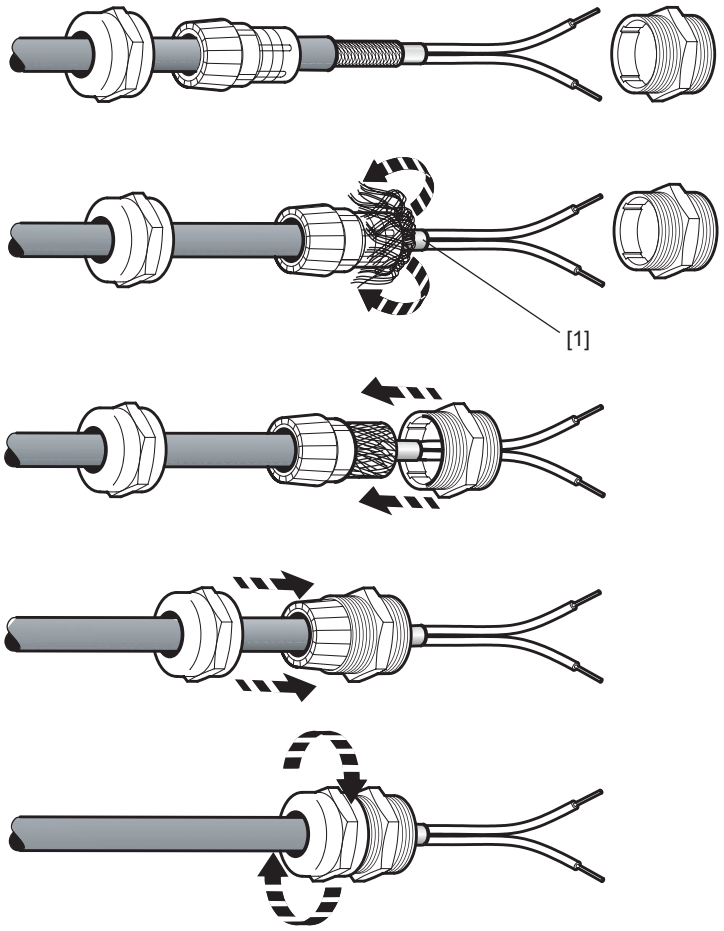
For shielded cables, it is best to use EMC cable glands to connect the shield. EMC cable glands are available as option.



25216680843

5.8.2 Assembly of EMC cable glands

Assemble the EMC cable glands supplied by SEW-EURODRIVE according to the following figure:



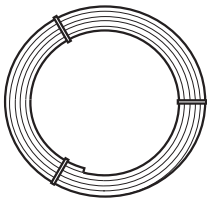
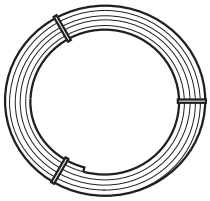
18014401170670731

[1] Cut off insulation foil and fold it back.

5.9 Bulk cables

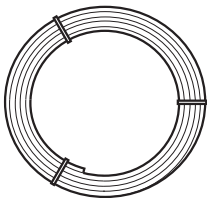
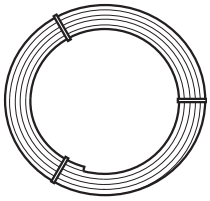
5.9.1 Brake motor cables for motors with digital interface (MOVILINK® DDI)

Connection cable 1.5 mm²

Connection cable	Conformity/ Operating voltage	Cable reel/in-stallation type	Cable type/ properties	Cable cross section/ Part number
Motor connection with MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	50 m 200 m 	LEONI LEHC® 005796 Halogen-free	1.5 mm² 28123336
Motor connection with MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	50 m 200 m 	LEONI LEHC® 005775	1.5 mm² 28123395

26863707/EN – 07/2021

Connection cable 2.5 mm²

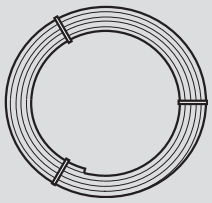
Connection cable	Conformity/ Operating voltage	Cable reel/in-stallation type	Cable type/ properties	Cable cross section/ Part number
Motor connection with MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	50 m 200 m 	LEONI LEHC® 005770 Halogen-free	2.5 mm² 28123344
Motor connection with MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	50 m 200 m 	LEONI LEHC® 005776	2.5 mm² 28123409

26863707/EN – 07/2021

Connection of bulk cables

The following table shows the core assignment of cables with the following part numbers:

Part numbers	
Installation method of cable	**Part numbers**
	28123395, 28123409
	28123336, 28123344

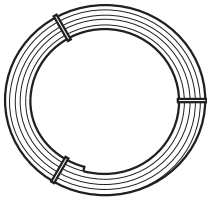
Connection description					
Bulk cable			**Motor connection depending on brake control**		
			**Without brake**	**3-wire brake AC 110-500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**
Core color/ core cross section	**Identification**	**Signal**	**Description**		
Black 1.5 mm² 2.5 mm²	U/L1	U	Motor connection, phase U		
Black 1.5 mm² 2.5 mm²	V/L2	V	Motor connection, phase V		
Black 1.5 mm² 2.5 mm²	W/L3	W	Motor connection, phase W		
Green/yellow 1.5 mm² 2.5 mm²	-	PE	PE connection		
Purple coaxial cable	-	DDI	MOVILINK® DDI connection		
Yellow 1.0 mm²	A	Brake A	Reserved[1)]	Reserved[1)]	Brake-
Orange 1.0 mm²	B	Brake B	Reserved[1)]	Brake 15 (blue)	Reserved[1)]
Pink 1.0 mm²	C	Brake C	Reserved[1)]	Brake 13 (red)	Reserved[1)]
Purple 1.0 mm²	D	Brake D	Reserved[1)]	Brake 14 (white)	Brake+

1) Reserved wires must be isolated and fixed in the connection box.

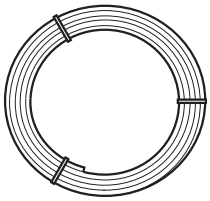
26863707/EN – 07/2021

5.9.2 Brake motor cables for motors without digital interface

Connection cable 1.5 mm²

Connection cables	Conformity/ Operating voltage	Cable reel/in-stallation type	Cable type/ properties	Cable cross section/ Part number
Motor connection without MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	100 m 200 m 	LEONI LEHC® 005272 Halogen-free	1.5 mm² 19150067

Connection cable 2.5 mm²

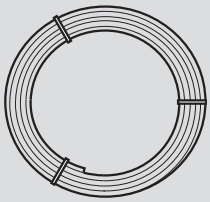
Connection cables	Conformity/ Operating voltage	Cable reel/in-stallation type	Cable type/ properties	Cable cross section/ Part number
Motor connection without MOVILINK® DDI  **Open cable end (not prefabricated)**	CE/UL: AC 500 V	100 m 200 m 	LEONI LEHC® 005275 Halogen-free	2.5 mm² 19150075

26863707/EN – 07/2021

Connection of bulk cables

The following table shows the core assignment of cables with the following part numbers:

Part numbers	
Installation method of cable	**Part numbers**
	19150067, 19150075

Connection description					
Bulk cable			**Motor connection depending on brake control**		
			**Without brake**	**3-wire brake AC 110 - 500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**
Core color/ core cross section	**Identification**	**Signal**	**Description**		
Black 1.5 mm² 2.5 mm²	U/L1	U	Motor connection, phase U		
Black 1.5 mm² 2.5 mm²	V/L2	V	Motor connection, phase V		
Black 1.5 mm² 2.5 mm²	W/L3	W	Motor connection, phase W		
Green/yellow 1.5 mm² 2.5 mm²	-	PE	PE connection		
Black 1.0 mm²	1	Brake 13	Reserved[1)]	Brake 13 (red)	Brake+
Black 1.0 mm²	2	Brake 14	Reserved[1)]	Brake 14 (white)	Reserved[1)]
Black 1.0 mm²	3	Brake 15	Reserved[1)]	Brake 15 (blue)	Brake–
Black 0.75 mm²	4	Temp+	Temperature sensor+ connection		
Black 0.75 mm²	5	Temp–	Temperature sensor connection–		

1) Reserved wires must be isolated and fixed in the wiring space.

26863707/EN – 07/2021

5.10 Plug connectors

5.10.1 Representation of connections

The wiring diagrams of the plug connectors depict the contact end of the connections.

5.10.2 Designation key

The designation of plug connectors is specified according to the following key:

X	Terminal
2	**Group** 1 = Power input 2 = Power output 3 = Encoder 4 = Bus 5 = Inputs and outputs
01	**Function** Function of the plug connector within a group
2	**Type** Wiring diagram of the plug connector within a function
–	
	Group number (optional) For several plug connectors with the same function
	Sequence number (optional) In case of several plug connectors in one group

26863707/EN – 07/2021

5.10.3 Connection cables

INFORMATION

For more information about cable types, see chapter "Technical data".

Connection cables are not included in the scope of delivery.

Prefabricated cables for connecting SEW-EURODRIVE components can be ordered. For each connection, the available prefabricated cables are listed. Specify the part number and length of the required cable in your order.

The number and design of the required connection cables depend on the type of the device and the components to be connected. This is why you do not need all listed cables.

Cable types

The table below shows the depiction and what they mean:

Representation	Meaning
	Fixed length
	Variable length
	Suitable for cable carriers
	Not suitable for cable carriers

Cable routing

Observe the permitted bending radii of the installed cables for cable routing. For detailed information, refer to chapter "Technical data" > "Dimension sheets" > "Plug connectors including mating connectors".

26863707/EN – 07/2021

Using prefabricated cables with plug connectors

SEW-EURODRIVE uses prefabricated cables for certifications, type tests and approval of the units. The cables available from SEW-EURODRIVE meet all the requirements necessary for the functions of the unit and the connected components. The devices under consideration are always the basic devices including all connected components and corresponding connection cables.

This is why SEW-EURODRIVE recommends to use only the prefabricated cables specified in the documentation.

When using units with integrated safety functions according to EN ISO 13849, you also have to adhere to all the conditions and requirements for the installation and routing of cables described in the documentation for the units concerning functional safety.

Using third-party cables with or without plug connectors

If third-party cables are used – even if these cables are technically adequate – SEW-EURODRIVE does not accept any liability and cannot guarantee unit properties or functions.

If you use third-party cables for connecting the device and connected components, ensure their compliance with applicable national regulations. Note that the technical features of the device or unit network might be affected inadvertently when using third-party cables. This concerns in particular the following properties:

- Mechanical properties (e.g. IP degree of protection, cable carrier suitability)
- Chemical properties (e.g. silicone and halogen free, resistance to substances)
- Thermal properties (e.g. thermal stability, increase in device temperature, flammability class)
- EMC behavior (such as interference emission limit values, compliance with interference immunity values stipulated in standards)
- Functional safety (approvals according to EN ISO 13849-1)

Third-party cables not explicitly recommended by SEW-EURODRIVE must meet at least the requirements of the following standards and have been permitted according to these plug connector standards:

- IEC 60309
- IEC 61984

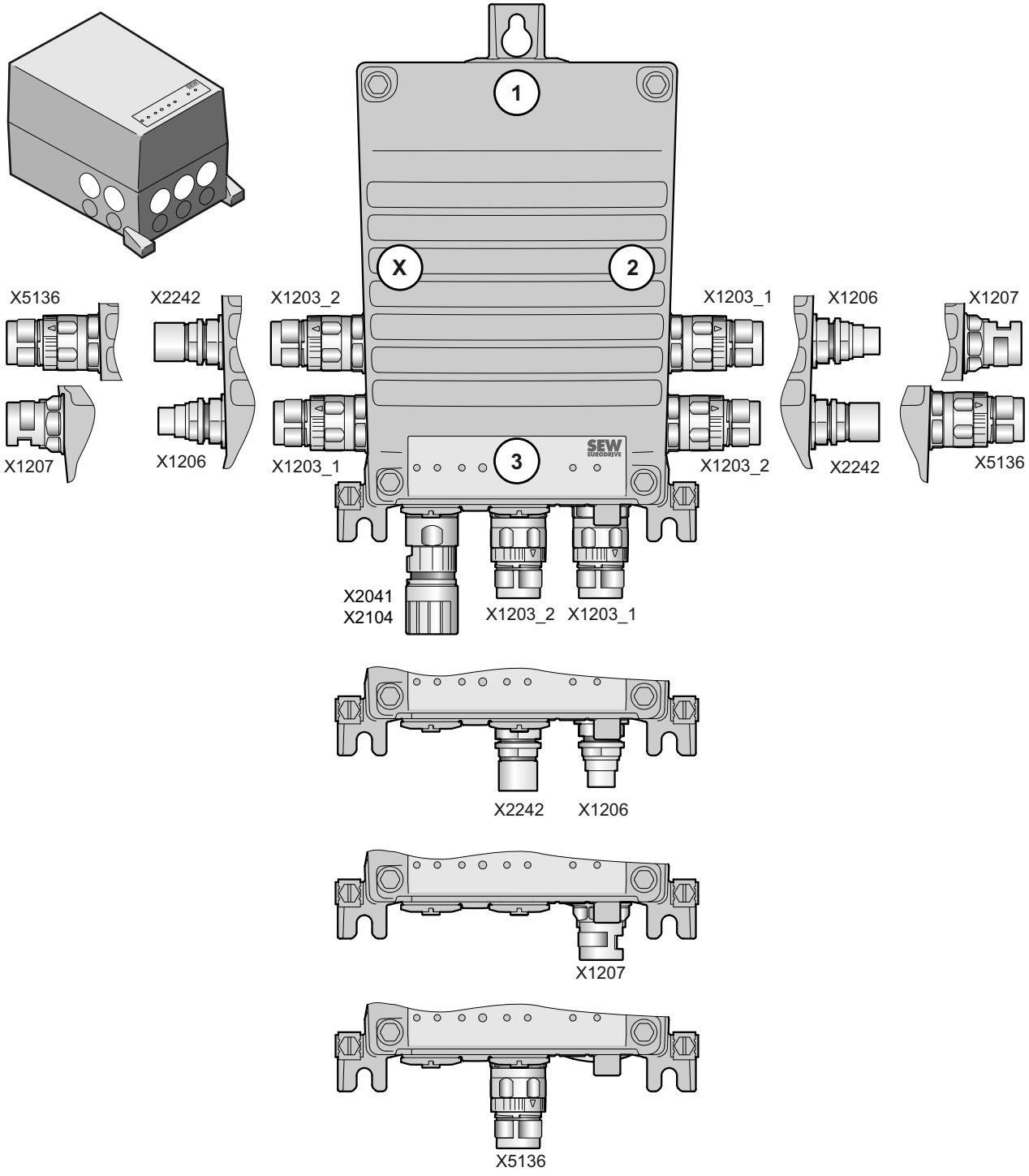
26863707/EN – 07/2021

5.10.4 Plug connector positions, connection box

Design MMF1../DAC..

Cable entries M25

The following figure depicts the possible plug connector positions for the M25 cable entries:



33423954059

Plug connectors				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X1203_1	Black	AC 400 V connection[1)]	X, 2 or 3	• X1206 • X1207
X1203_2	Black	AC 400 V connection	X, 2 or 3	• X2242 • X5136
X1206	–	AC 400 V connection (IN)[2)]	X, 2 or 3	• X1203_1 • X1207
X2242	–	AC 400 V connection (OUT)	X, 2 or 3	• X1203_2 • X5136
X1207	Black	AC 400 V connection	X, 2 or 3	• X1203_1 • X1206
X5136	–	Digital inputs/outputs	X, 2 or 3	• X1203_2 • X2242
X2041	Brown	Connection for motors without digital interface	3	• X2104
X2104	None	Connection for motors with digital interface (MOVILINK® DDI)	3	• X2041

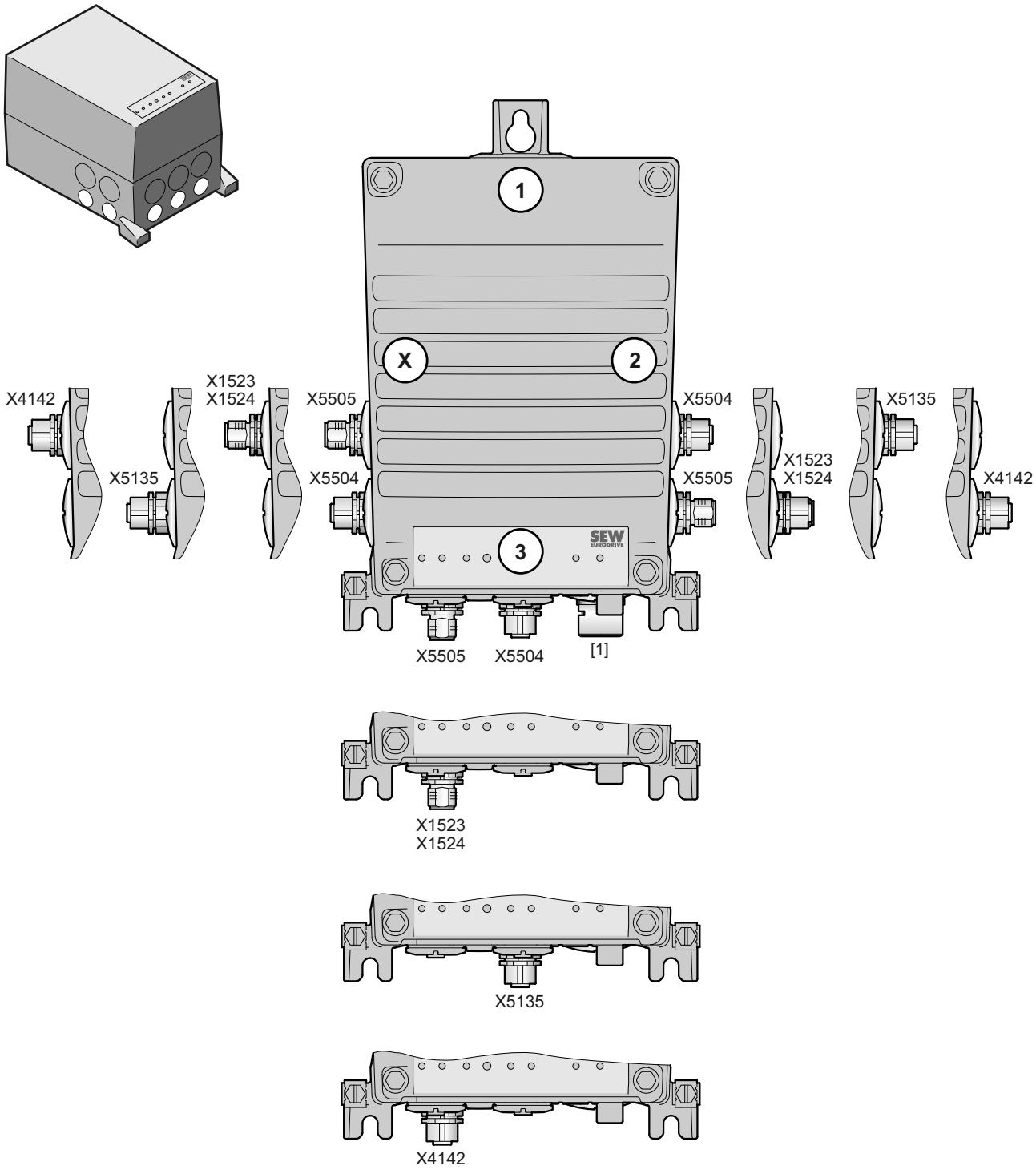
1) Plug connector X1203_1 can also be ordered separately (i.e. without plug connector X1203_2).

2) Plug connector X1206 can also be ordered separately (i.e. without plug connector X2242).

26863707/EN – 07/2021

Cable entries M16

The following figure depicts the possible plug connector positions for the M16 cable entries:



9007229821345675

Plug connectors				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X5135	Black	Digital inputs	X, 2 or 3	• X5504
X5504	Yellow	STO (3-core connection)[1)]	X, 2 or 3	• X5135
X5505	Yellow	STO (3-core connection)[1)]	X, 2 or 3	• X4142 • X1523 • X1524
X1523	Light gray	DC 24 V backup voltage – input	X, 2 or 3	• X5505 • X4142 • X1524
X1524	Black	DC 24 V backup voltage (AUX-PWR)	X, 2 or 3	• X5505 • X4142 • X1523
X4142	Red	Engineering interface	X, 2 or 3	• X5505 • X1523 • X1524
–	–	[1] Optional pressure compensation	3	–

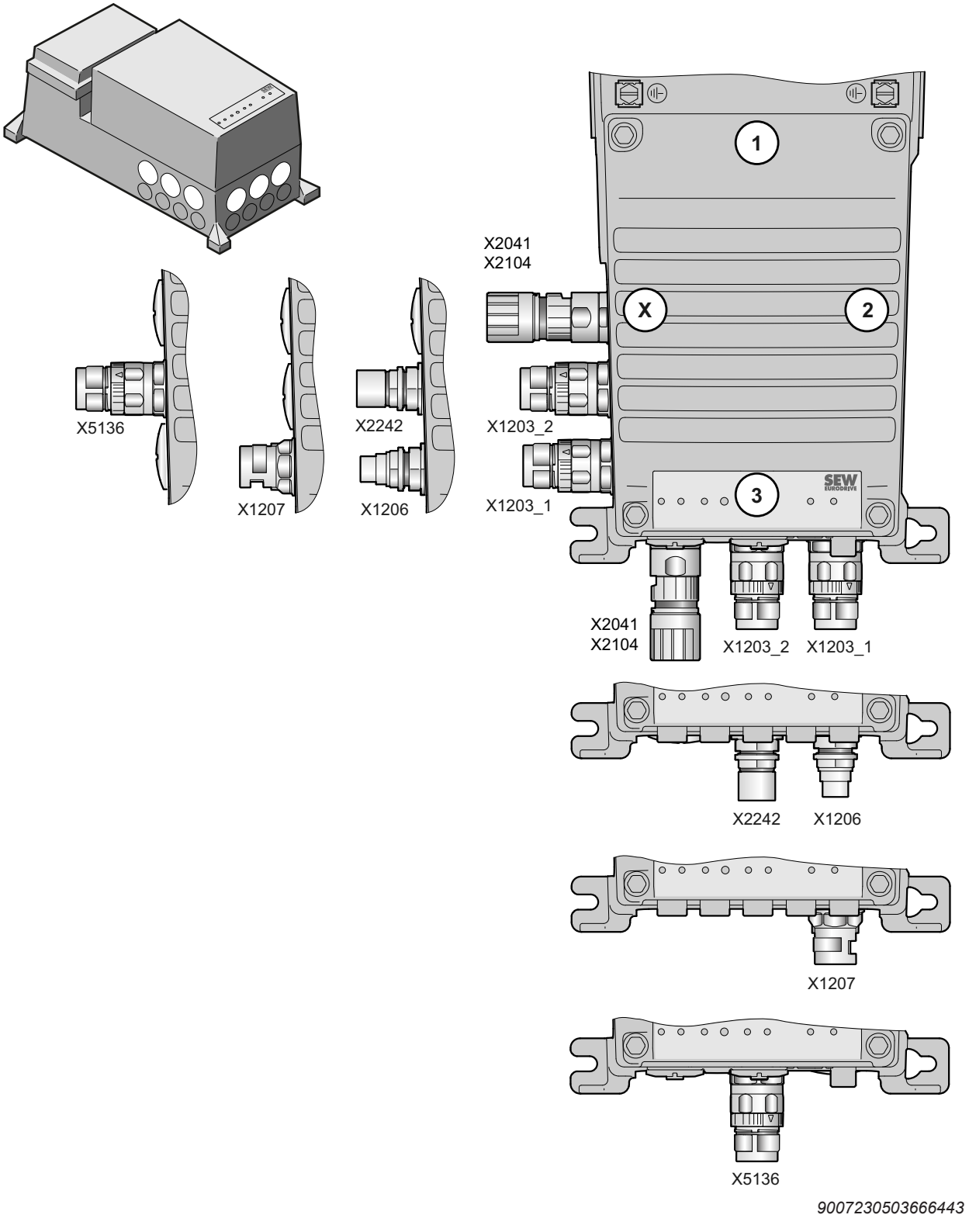
1) Plug connectors X5504 and X5505 can only be ordered together.

26863707/EN – 07/2021

Design MMF31../DAC..

Cable entries M25

The following figure depicts the possible plug connector positions for the M25 cable entries:



9007230503666443

26863707/EN – 07/2021

Plug connectors				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X1203_1	Black	AC 400 V connection[1)]	X or 3	• X1206 • X1207
X1203_2	Black	AC 400 V connection	X or 3	• X2242 • X5136
X1206	–	AC 400 V connection (IN)[2)]	X or 3	• X1203_1 • X1207
X2242	–	AC 400 V connection (OUT)	X or 3	• X1203_2 • X5136
X1207	Black	AC 400 V connection	X or 3	• X1203_1 • X1206
X5136	–	Digital inputs/outputs	X or 3	• X1203_2 • X2242
X2041	Brown	Connection for motors without digital interface	X or 3	• X2104
X2104	None	Connection for motors with digital interface (MOVILINK® DDI)	X or 3	• X2041

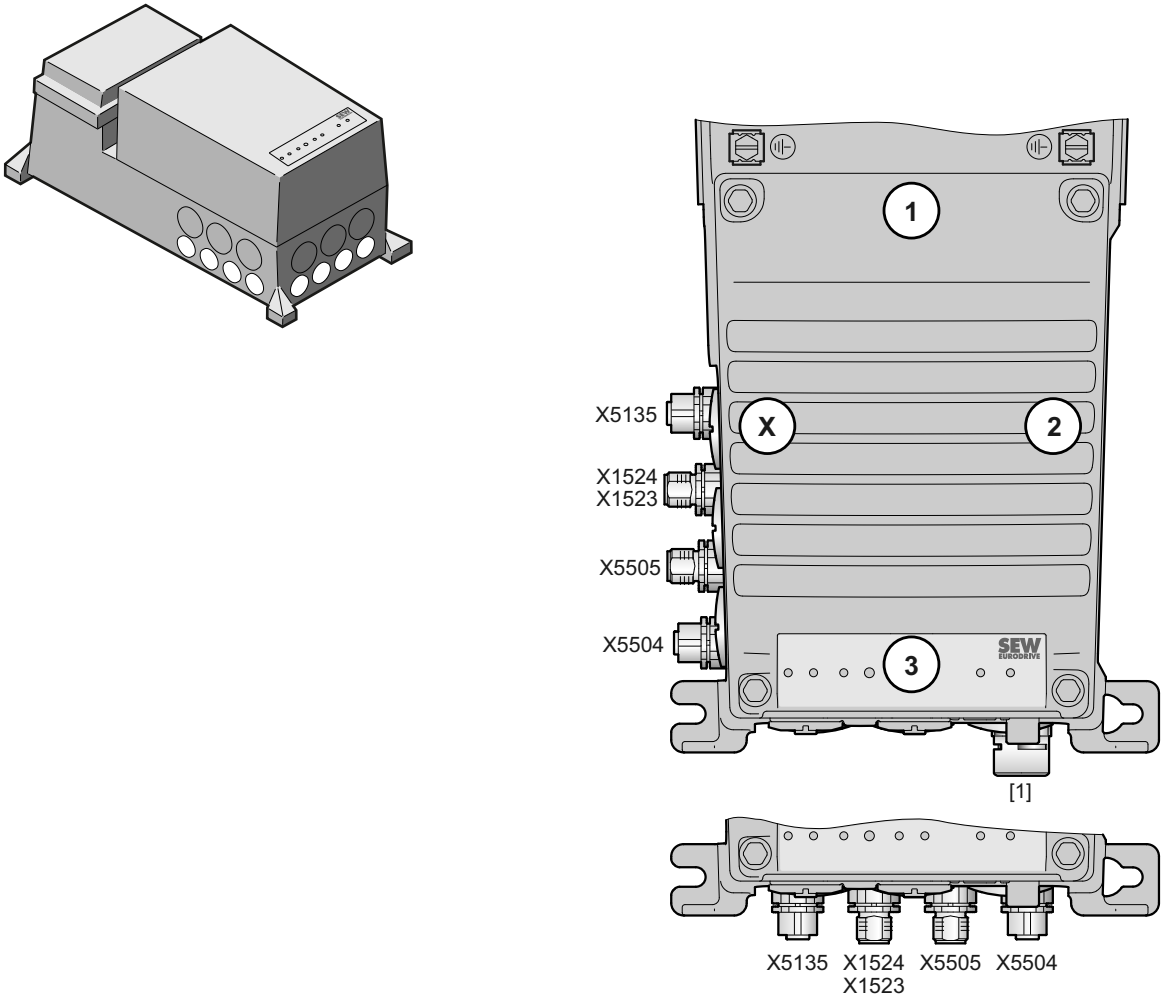
1) Plug connector X1203_1 can also be ordered separately (i.e. without plug connector X1203_2).

2) Plug connector X1206 can also be ordered separately (i.e. without plug connector X2242).

26863707/EN – 07/2021

Cable entries M16

The following figure depicts the possible plug connector positions for the M16 cable entries:



9007229821403147

Plug connectors				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X5135	Black	Digital inputs	X or 3	–
X5504	Yellow	STO (3-core connection)[1)]	X or 3	• Optional pressure compensation
X5505	Yellow	STO (3-core connection)[1)]	X or 3	–
X1523	Light gray	DC 24 V backup voltage	X or 3	• X1524
X1524	Black	DC 24 V backup voltage (AUX-PWR)	X or 3	• X1523
–	–	[1] Optional pressure compensation	3	• X5504

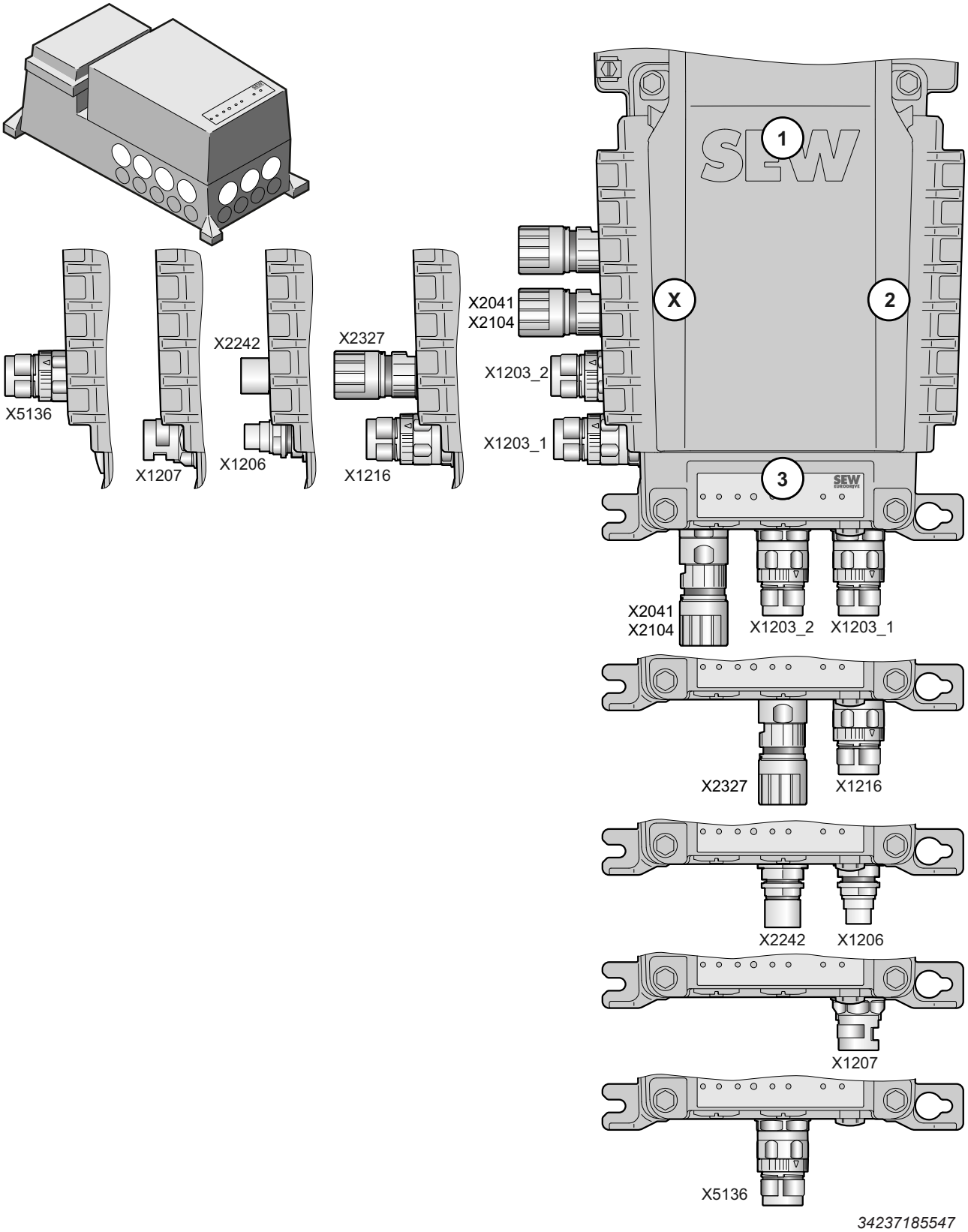
1) Plug connectors X5504 and X5505 can only be ordered together.

26863707/EN – 07/2021

Design MMF32../DAC..

Cable entries M25

The following figure depicts the possible plug connector positions for the M25 cable entries:



34237185547

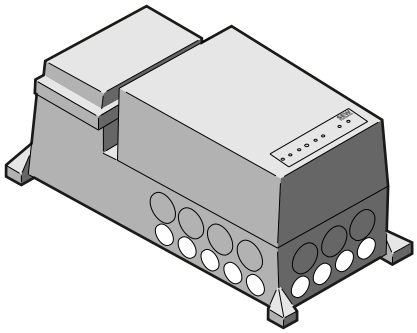
Plug connector				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X1203_1	Black	AC 400 V connection[1)]	X or 3	• X1206 • X1207 • X1216
X1203_2	Black	AC 400 V connection	X or 3	• X2242 • X5136 • X2327
X1206	–	AC 400 V connection (IN)[2)]	X or 3	• X1203_1 • X1207 • X1216
X2242	–	AC 400 V connection (OUT)	X or 3	• X1203_2 • X5136 • X2327
X1207	Black	AC 400 V connection	X or 3	• X1203_1 • X1206 • X1216
X5136	–	Digital inputs/outputs	X or 3	• X1203_2 • X2242 • X2327
X2041	Brown	Connection for motors without digital interface	X or 3	• X2104
X2104	None	Connection for motors with digital interface (MOVILINK® DDI)	X or 3	• X2041

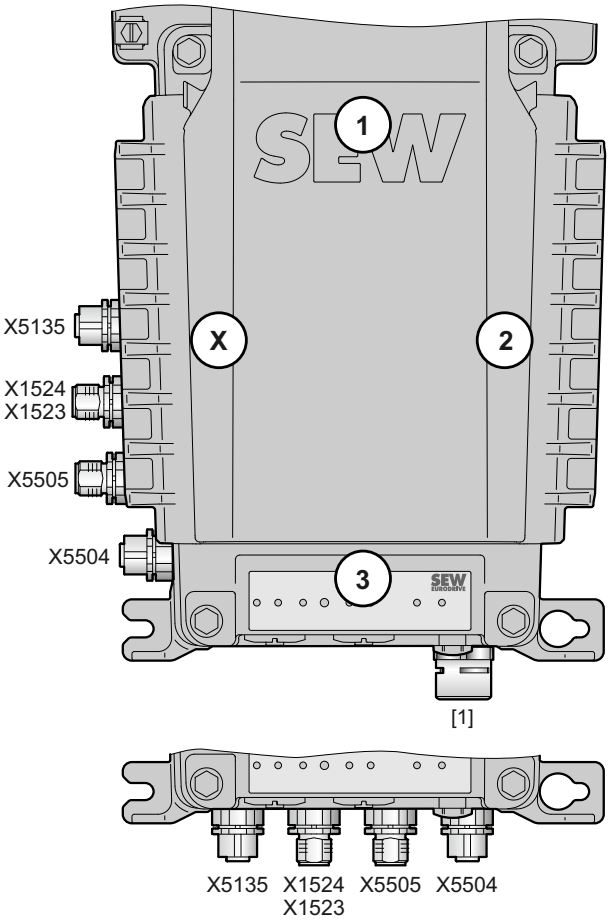
1) Plug connector X1203_1 can also be ordered separately (i.e. without plug connector X1203_2).
2) Plug connector X1206 can also be ordered separately (i.e. without plug connector X2242).

26863707/EN – 07/2021

Cable entries M16

The following figure depicts the possible plug connector positions for the M16 cable entries:





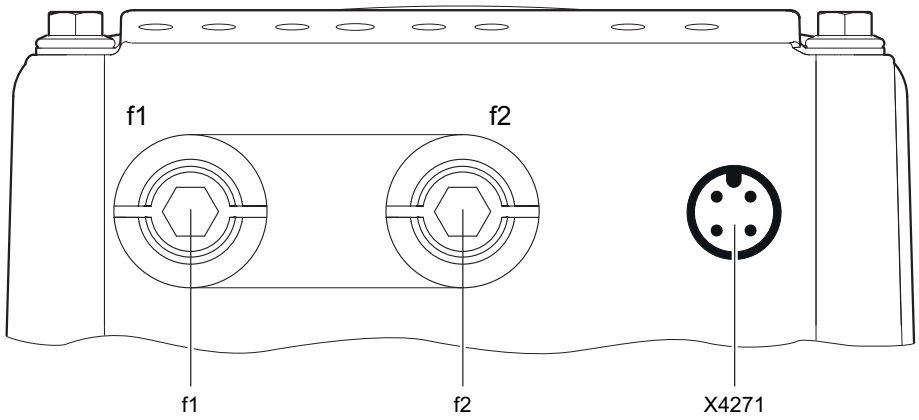
34237183115

Plug connector				Not together at a position with the plug connector:
Designation	**Coding ring/ color**	**Function**	**Position**	
X5135	Black	Digital inputs	X or 3	–
X5504	Yellow	STO (3-core connection)[1)]	X or 3	• Optional pressure compensation
X5505	Yellow	STO (3-core connection)[1)]	X or 3	–
X1523	Light gray	DC 24 V backup voltage	X or 3	• X1524
X1524	Black	DC 24 V backup voltage (AUX-PWR)	X or 3	• X1523
–	–	[1] Optional pressure compensation	3	• X5504

1) Plug connectors X5504 and X5505 can only be ordered together.

5.10.5 Plug connector positions at the DAC.. electronics cover

The following figure shows an example the positions of the potentiometers and plug connectors:



9007228262118411

Designation	Function
f1	Potentiometer f1 (underneath the screw plug)
f2	Potentiometer f2 (underneath the screw plug)
X4271	AS-Interface

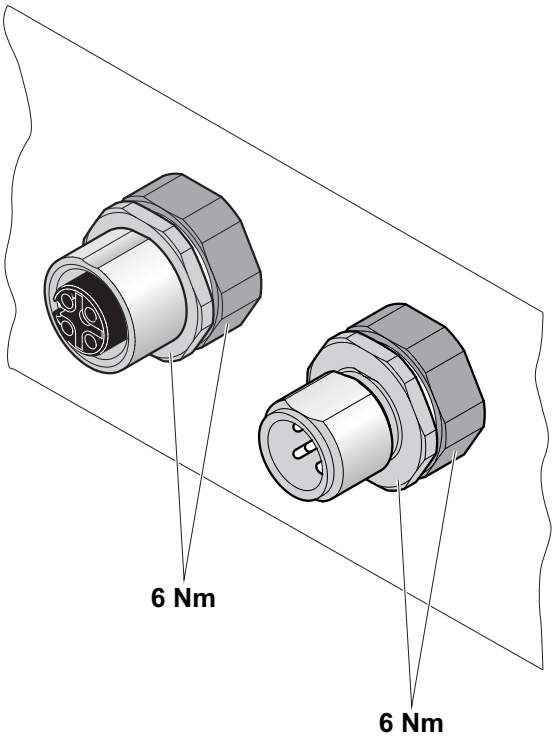
26863707/EN – 07/2021

5.10.6 Plug connector variants

M12 plug connector at the connection box

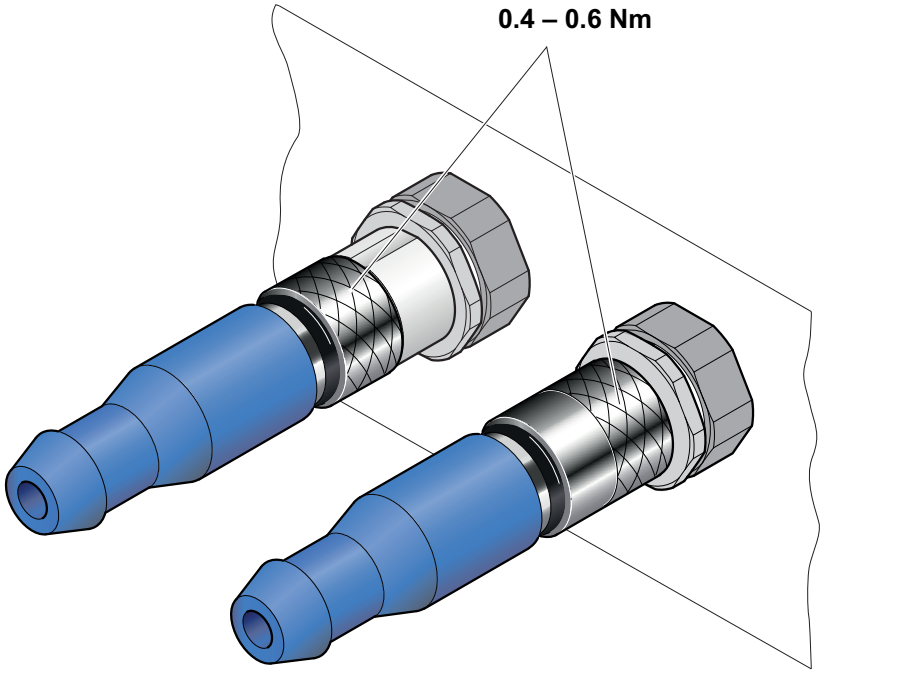
M12 plug connectors at the connection box are pre-installed so they match the connection cables provided by SEW-EURODRIVE. Customers can adjust the orientation of plug connectors if required.

The following figure shows a schematic illustration with the permitted tightening torques:



19443420299

M12 plug connector with mating connector



32845364363

INFORMATION

The M12 plug connectors are usually tightened with a torque of 0.4 – 0.6 Nm. Observe the data sheet of the used prefabricated cables.

26863707/EN – 07/2021

M23 plug connector

⚠ CAUTION

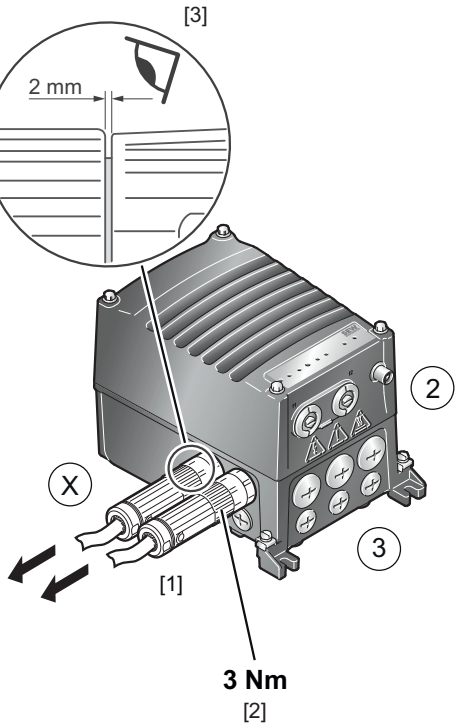
Loss of the guaranteed degree of protection.

Potential damage to property.

- Remove the union nut from the M23 plug connector using 3 Nm.
- Between plug connector and bushing is a gap of 2 mm.

M23 plug connectors are available in the plug connector design "Straight".

Design MMF1.



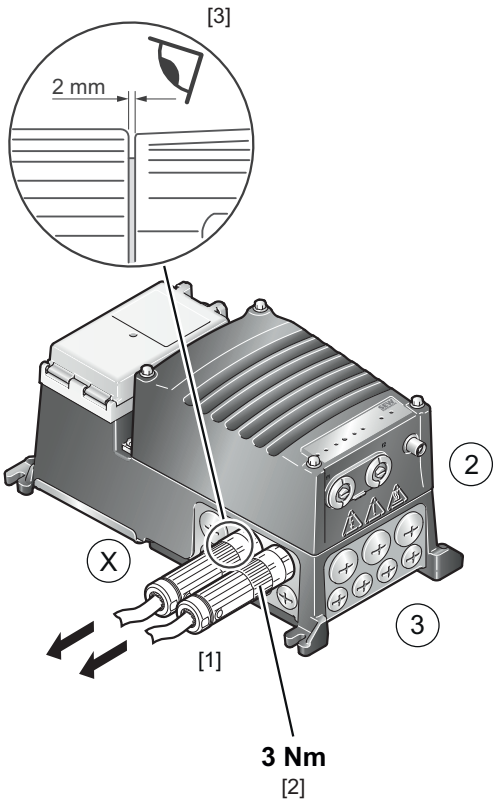
30568710027

[1] "Straight" design

[2] The tightening torque for the union nut is 3 Nm.
You can order suitable tools from TE Connectivity - Intercontec products using the following purchase order number:
- Torque wrench 3 Nm, 1/4" external square driver: C1.020.00
- Spanner wrench 1/4" square socket, suitable to the 923/723 series with SpeedTec equipment: C6.216.00

[3] There is a gap of 2 mm between plug connector and socket

MMF31 design



30568715531

[1] "Straight" design
[2] The tightening torque for the union nut is 3 Nm
You can order suitable tools from TE Connectivity - Intercontec products using the following purchase order number:
- Torque wrench 3 Nm, 1/4" external square driver: C1.020.00
- Spanner wrench 1/4" square socket, suitable to the 923/723 series with SpeedTec equipment: C6.216.00

[3] There is a gap of 2 mm between plug connector and socket

26863707/EN – 07/2021

5.10.7 Using plug connectors assembled by yourself

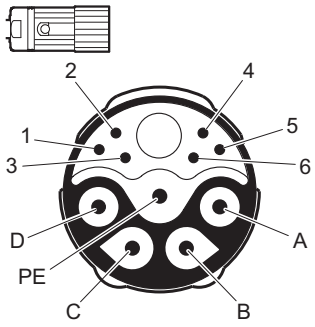
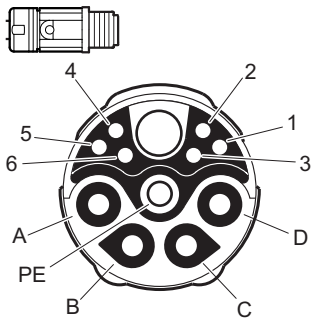
M23 plug connector by TE connectivity – Intercontec Products

The power plug connectors for assembling connection cables yourself, and the corresponding assembly tool set is available for order from TE Connectivity - Intercontec products.

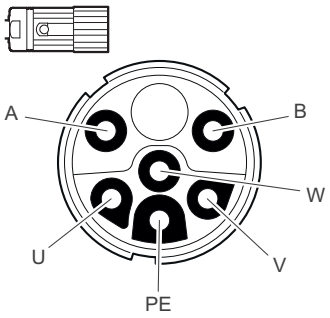
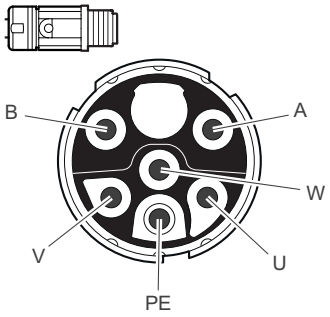
Contact TE Connectivity - Intercontec products if the order designation is not available in the online order system of Intercontec.

Order information

The table below shows the order designations for connectors by TE Connectivity - Intercontec products with the matching coding for assembly by the customer:

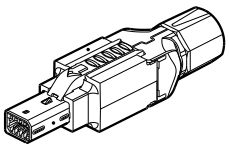
Plug connector type		Outer cable diameter / core cross section of crimp contacts	Designation for order from the supplier TE Connectivity - Intercontec products
Plug connector AC 400 V Coding ring: Black	Cable plug (male, union nut) 	14 mm – 17 mm / 2.5 mm² – 4.0 mm²	H 51 A 019 MR 02 59 0102 000
		9.5 mm – 14.5 mm / 2.5 mm² – 4.0 mm²	H 51 A 019 MR 02 42 0102 000
		9.5 mm – 14.5 mm / 0.35 mm² – 2.5 mm²	H 51 A 019 MR 12 42 0102 000
	Cable socket (female/male thread) 	14 mm – 17 mm / 2.5 mm² – 4.0 mm²	H 52 A 013 FR 02 59 0102 000
		9.5 mm –14.5 mm / 2.5 mm² – 4.0 mm²	H 52 A 013 FR 02 42 0102 000
		9.5 mm – 14.5 mm / 0.35 mm² – 2.5 mm²	H 52 A 013 FR 17 42 0102 000
PAC hybrid plug connector Coding ring: Gray/ green		–	Not approved for assembly by customer

26863707/EN – 07/2021

Plug connector type		Outer cable diameter / core cross section of crimp contacts	Designation for order from the supplier TE Connectivity - Intercontec products
PA hybrid plug connector Coding ring: Black/ green	Cable socket (female/ union nut) 	14 mm – 17 mm / 2.5 mm² – 4.0 mm² 0.35 mm² – 2.5 mm²	H 51 A 655 FR 20 92 0113 000
		14 mm – 17 mm / 0.35 mm² – 2.5 mm²	H 51 A 655 FR 23 59 0113 000
	Cable plug (male/male thread) 	14 mm – 17 mm / 2.5 mm² – 4.0 mm² 0.35 mm² – 2.5 mm²	H 52 A 656 MR 24 92 0113 000
		14 mm – 17 mm / 0.35 mm² – 2.5 mm²	H 52 A 656 MR 23 59 0113 000

Mini-I/O plug connector

The following tables contains the part numbers and purchase order numbers of the mini-I/O plug connectors for customer assembly of mini I/O connection cables.

Plug connector	Cable Outer diameter Core cross section	Cable Category	Purchase order number TE Connectivity Intercontec products (quantity)	Part number SEW-EURODRIVE (quantity)
Industrial mini I/O plug connector (male) Type 1 for field installation 	4.7 –– 5.7 mm[1)] 4 × AWG22	CAT5e	1-2350278-1 (60 pieces)	25697064[1)] (1 piece)
	5.8 –– 8.2 mm 4 × AWG22	CAT5e	1-2350323-1 (60 pieces)	25708775 (1 piece)
	4.7 –– 5.7 mm 4 × AWG26 – AWG24	CAT5e	1-2350304-1 (60 pieces)	Not available
	5.7 –– 8.2 mm 8 × AWG26 – AWG24	CAT6A	1-2350310-1 (60 pieces)	Not available

1) Suitable for use with PAC/PSC hybrid cables (cable type: HELUKABEL Li9Y11-HF, HELUKABEL Li9YYö)

26863707/EN – 07/2021

5.11 Assignment of optional plug connectors

⚠ WARNING

Electric shock when disconnecting or connecting voltage-carrying plug connectors.

Severe or fatal injuries

- Switch off the line voltage.
- Never plug or unplug plug connectors while they are energized.

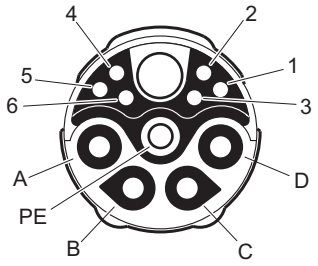
5.11.1 X1203_1 and X1203_2: AC 400 V connection

The following table shows information about this connection:

Function
AC 400 V connection for supplying the device/for looping through

Connection type
M23, SEW insert, 723 series, SpeedTec-capable, company: TE/Intercontec, female, coding ring: black, protected against contact

Connection diagram



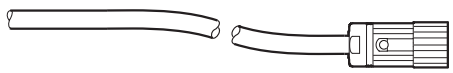
Assignment		
Contact	**Signal**	**Description**
A	L1	Line connection, phase L1
B	L2	Line connection, phase L2
C	L3	Line connection, phase L3
D	Res.	Reserved
PE	PE	PE connection
1	Res.	Reserved
2	Res.	Reserved
3	Res.	Reserved
4	Res.	Reserved
5	Res.	Reserved
6	Res.	Reserved

26863707/EN – 07/2021

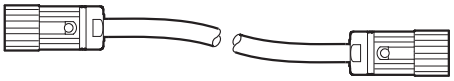
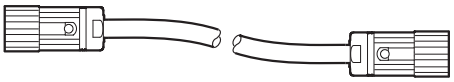
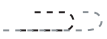
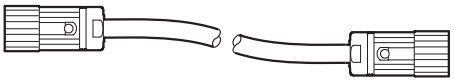
Connection cables

The following tables list the cables available for this connection:

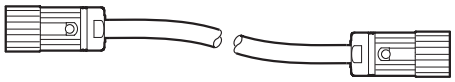
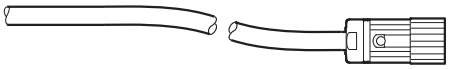
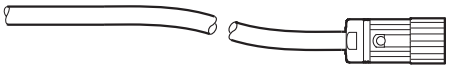
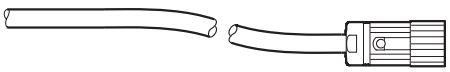
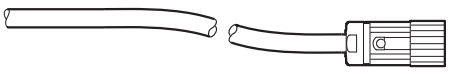
Cable cross section 1.5 mm²

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 Open — M23, coding ring: black, male	CE: 18180094	HELUKABEL® JZ-600	Variable 	1.5 mm² / AC 500 V

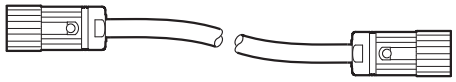
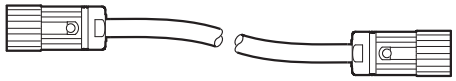
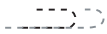
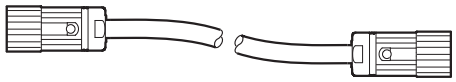
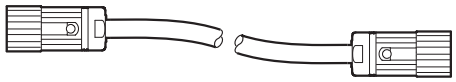
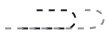
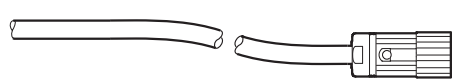
Cable cross section 2.5 mm²

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, coding ring: black, male — M23, coding ring: black, male	CE: 18127460	HELUKABEL® TOPFLEX® – 600-PVC	Variable 	2.5 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, male	CE: 18133959	HELUKABEL® TOPFLEX® – 611-PUR (halogen-free)	Variable 	2.5 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, male	UL: 18153267	HELUKABEL® – JZ-602	Variable 	2.5 mm² / AC 500 V

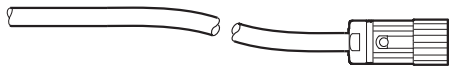
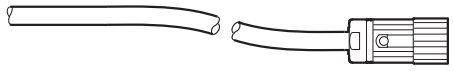
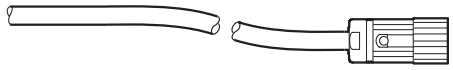
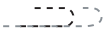
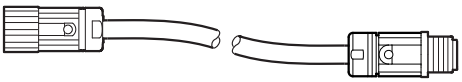
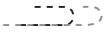
26863707/EN – 07/2021

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, coding ring: black, male — M23, coding ring: black, male	UL: 18153275	HELUKABEL® MULTIFLEX® – 512	Variable	2.5 mm² / AC 500 V
 Open — M23, coding ring: black, male	CE: 18127479	HELUKABEL® TOPFLEX® – 600-PVC	Variable	2.5 mm² / AC 500 V
 Open — M23, coding ring: black, male	CE: 18133967	HELUKABEL® TOPFLEX® – 611-PUR (halogen-free)	Variable	2.5 mm² / AC 500 V
 Open — M23, coding ring: black, male	UL: 18153283	HELUKABEL® – JZ-602	Variable	2.5 mm² / AC 500 V
 Open — M23, coding ring: black, male	UL: 18153291	HELUKABEL® MULTIFLEX® – 512	Variable	2.5 mm² / AC 500 V

Cable cross section 4.0 mm²

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross-section/operating voltage
 M23, coding ring: black, male — M23, coding ring: black, male	CE: 18127487 CE: 18133975	HELUKABEL® TOPFLEX® – 600-PVC	Variable	4 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, male	CE: 18133975	HELUKABEL® TOPFLEX® – 611-PUR (Halogen-free)	Variable 	4 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, male	UL: 18153305	HELUKABEL® – JZ-602	Variable	4 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, male	UL: 18153313	HELUKABEL® MULTIFLEX® – 512	Variable 	4 mm² / AC 500 V
 Open — M23, coding ring: black, male	CE: 18127495	HELUKABEL® TOPFLEX® – 600-PVC	Variable	4 mm² / AC 500 V

26863707/EN – 07/2021

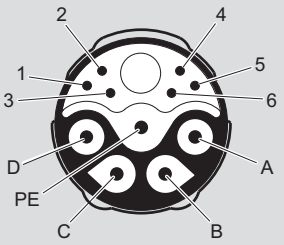
Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross-section/operating voltage
 Open — M23, coding ring: black, male	CE: 18133983	HELUKABEL® TOPFLEX® – 611-PUR (Halogen-free)	Variable 	4 mm² / AC 500 V
 Open — M23, coding ring: black, male	UL: 18153321	HELUKABEL® – JZ-602	Variable 	4 mm² / AC 500 V
 Open — M23, coding ring: black, male	UL: 18153348	HELUKABEL® MULTIFLEX® – 512	Variable 	4 mm² / AC 500 V
 M23, coding ring: black, male — M23, coding ring: black, female	UL: 18166318	HELUKABEL® MULTIFLEX® – 512	Variable 	4 mm² / AC 500 V

26863707/EN – 07/2021

Connection of cables with open end

The following table shows the core assignment of cables with the following part numbers:

Part numbers
18180094, 18127479, 18133967, 18153283, 18153291, 18127495, 18133983, 18153321, 18153348

Assembly					
Open cable end			Description	Prefabricated plug connectors	
					
Core color/ core cross section	Identification	Assembly		Signal	Contact
Black 1.5 mm² 2.5 mm²	1	Not prefabricated	Line connection, phase L1	L1	A
Black 1.5 mm² 2.5 mm²	2	Not prefabricated	Line connection, phase L2	L2	B
Black 1.5 mm² 2.5 mm²	3	Not prefabricated	Line connection, phase L3	L3	C
Green/yellow 1.5 mm² 2.5 mm²	–	Not prefabricated	PE connection	PE	PE

26863707/EN – 07/2021

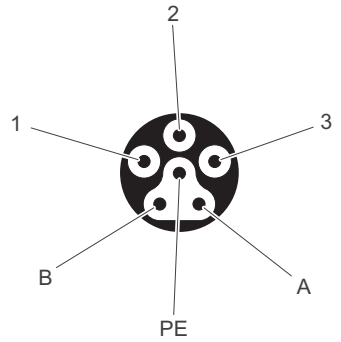
5.11.2 X1206: AC 400 V connection, input

The following table shows information about this connection:

Function
AC 400 V connection (IN)

Connection type
MQ15-X-Power, male, plug connector without union nut, MURR Elektronik, (current load max. 16 A)

Connection diagram



Assignment		
Contact	**Signal**	**Description**
1	L1	Line connection, phase L1 (IN)
2	L2	Line connection, phase L2 (IN)
3	L3	Line connection, phase L3 (IN)
PE	PE	PE connection
A	Res.	Reserved
B	Res.	Reserved

26863707/EN – 07/2021

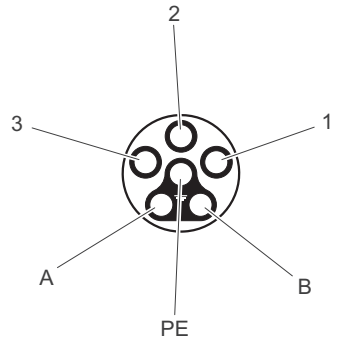
5.11.3 X2242: AC 400 V connection, output

The following table shows information about this connection:

Function
AC 400 V connection (OUT)

Connection type
MQ15-X-Power, female, plug connector with union nut, MURR Elektronik, (current load max. 16 A)

Connection diagram



Assignment

Contact	Signal	Description
1	L1	Line connection, phase L1 (OUT)
2	L2	Line connection, phase L2 (OUT)
3	L3	Line connection, phase L3 (OUT)
PE	PE	PE connection
A	Res.	Reserved
B	Res.	Reserved

26863707/EN – 07/2021

5.11.4 X1207: AC 400 V connection (IN)

INFORMATION

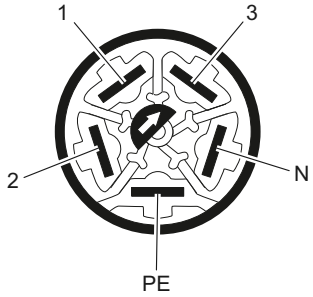
The number of permitted plug-in cycles for this connector is 10 times.

The following table shows information about this connection:

Function
AC 400 V connection (IN)

Connection type
QPD W 4PE2,5, QUICKON connector, coding 3, male, PhoenixContact

Connection diagram



Assignment		
Contact	**Signal**	**Description**
1	L1	Line connection, phase L1 (IN)
2	L2	Line connection, phase L2 (IN)
3	L3	Line connection, phase L3 (IN)
PE	PE	PE connection
N	Res.	Reserved

INFORMATION

SEW-EURODRIVE does not offer prefabricated cables for this type of plug connector.

26863707/EN – 07/2021

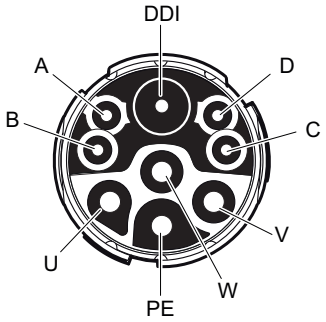
5.11.5 X2104: Inverter output for connecting motors with digital interface (MOVILINK® DDI)

The following table shows information about this connection:

Function
Inverter output for connecting motors with digital interface (MOVILINK® DDI)

Connection type
M23, female, union nut with female thread, TE Connectivity - Intercontec Products, series 723, SEW insert, SpeedTec equipment, coding ring: without, protected against contact

Connection diagram



Assignment

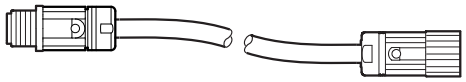
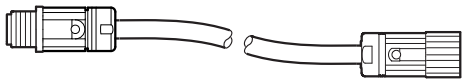
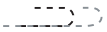
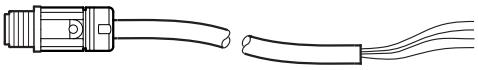
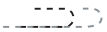
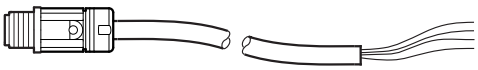
Contact	Signal	Description	
		Connection depending on brake control	
		Standard design for 2-wire and 3-wire brakes AC 110 – 500 V	Design with brake rectifier 24 V (/BES) for 2-wire brakes
U	U	Motor connection, phase U	
V	V	Motor connection, phase V	
W	W	Motor connection, phase W	
PE	PE	PE connection	
1	DDI	MOVILINK® DDI	
A	Brake A	Reserved	Brake connection-
B	Brake B	Brake 15 connection (blue)	Reserved
C	Brake C	Brake 13 connection (red)	Reserved
D	Brake D	Brake 14 connection (white)	Brake connection+

26863707/EN – 07/2021

Connection cables

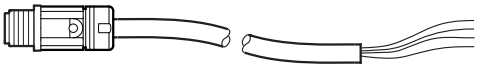
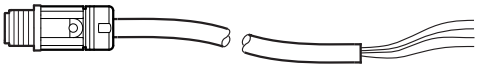
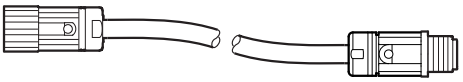
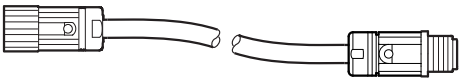
The following tables list the cables available for this connection:

Cable cross section 1.5 mm²

Connection cables	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, without encoding ring, male — M23, without encoding ring, female	CE/UL: 28123905	LEONI LEHC® 005775	Variable	4 × 1.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, male — M23, without encoding ring, female	CE/UL: 28123859	LEONI LEHC® 005769	Variable 	4 × 1.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, male — Open	CE/UL: 28124332	LEONI LEHC® 005769	Variable 	4 × 1.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, male — Open	CE/UL: 28124367	LEONI LEHC® 005775	Variable	4 × 1.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V

26863707/EN – 07/2021

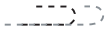
Cable cross section 2.5 mm²

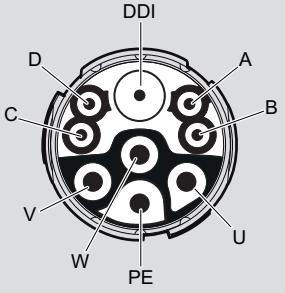
Connection cables	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, without encoding ring, male — Open	CE/UL: 28124340	LEONI LEHC® 005770	Variable 	4 × 2.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, male — Open	CE/UL: 28124375	LEONI LEHC® 005776	Variable 	4 × 2.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, female — M23, without encoding ring, male	CE/UL: 28123867	LEONI LEHC® 005244	Variable 	4 × 2.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V
 M23, without encoding ring, female — M23, without encoding ring, male	CE/UL: 28123913	LEONI LEHC® 005244	Variable 	4 × 2.5 mm² + 4 × 1.0 mm² + RG58 / AC 500 V

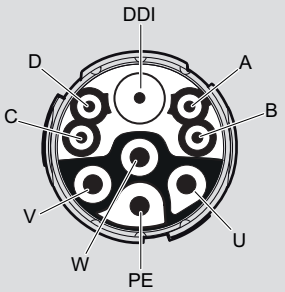
26863707/EN – 07/2021

Connection of cables with open end

The following table shows the core assignment of cables with the following part numbers:

Part numbers	
Installation method of cable	**Part numbers**
	28124367, 28124375
	28124332, 28124340

Assembly							
Open cable end at the motor			**Motor connection depending on brake control**			**Prefabricated plug connector**	
			Without brake	**3-wire brake AC 110 – 500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**		
Core color/ core cross section	**Identification**	**Assembly**	**Description**			**Signal**	**Contact**
Black 1.5 mm² 2.5 mm²	U/L1	Not prefabricated	Motor connection, phase U			U	U
Black 1.5 mm² 2.5 mm²	V/L2	Not prefabricated	Motor connection, phase V			V	V
Black 1.5 mm² 2.5 mm²	W/L3	Not prefabricated	Motor connection, phase W			W	W
Green/yellow 1.5 mm² 2.5 mm²	-	Not prefabricated	PE connection			PE	PE
Purple coaxial cable	-	Coaxial connectors	MOVILINK® DDI connection			DDI	1
Yellow 1.0 mm²	A	Not prefabricated	Reserved[1)]	Reserved[1)]	Brake-	Brake A	A
Orange 1.0 mm²	B	Not prefabricated	Reserved[1)]	Brake 15 (blue)	Reserved[1)]	Brake B	B
Pink 1.0 mm²	C	Not prefabricated	Reserved[1)]	Brake 13 (red)	Reserved[1)]	Brake C	C

Assembly							
Open cable end at the motor			Motor connection depending on brake control			Prefabricated plug connector	
			Without brake	3-wire brake AC 110 – 500 V (BE/BZ brake)	2-wire brake DC 24 V (BK/BP brake)		
Core color/ core cross section	**Identi-fication**	**Assembly**	**Description**			**Signal**	**Contact**
Purple 1.0 mm²	D	Not pre-fabricated	Reserved[1)]	Brake 14 (white)	Brake+	Brake D	D

1) Reserved wires must be isolated and fixed in the connection box.

26863707/EN – 07/2021

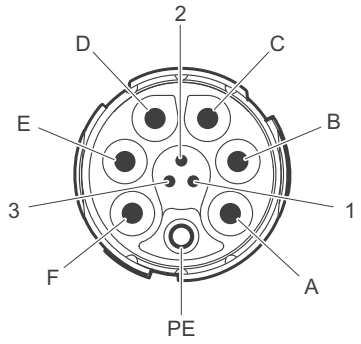
5.11.6 X2041: Inverter output for connecting motors without digital interface

The following table shows information about this connection:

Function
Inverter output for connecting motors without digital interface

Connection type
M23, female, union nut with female thread, TE Connectivity - Intercontec Products, series 723, SEW insert, SpeedTec equipment, coding ring: brown, protected against contact

Connection diagram



Assignment

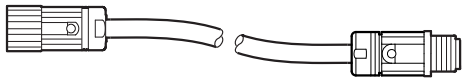
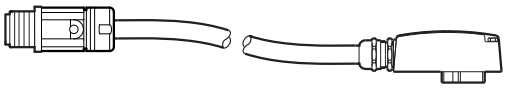
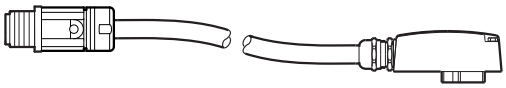
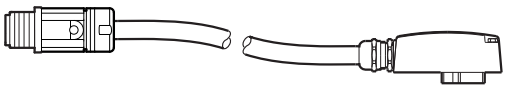
Contact	Signal	Description
A	U	Motor connection, phase U
B	V	Motor connection, phase V
C	W	Motor connection, phase W
D	13	Brake connection 13
E	14	Brake connection 14
F	15	Brake connection 15
PE	PE	PE connection
1	Temp+	Connection temperature sensor+
2	Res.	Reserved
3	Temp−	Connection temperature sensor −

26863707/EN – 07/2021

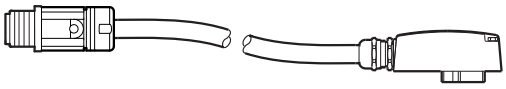
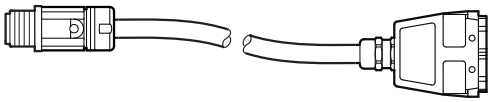
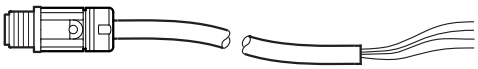
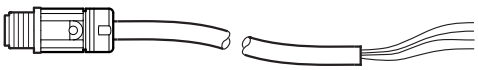
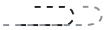
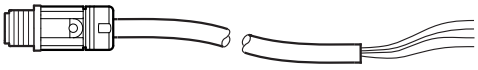
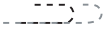
Connection cables

The following tables list the cables available for this connection:

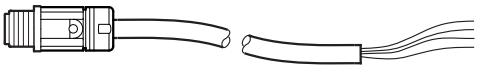
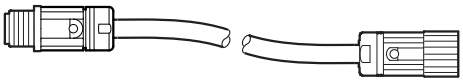
Cable cross section 1.5 mm²

Connection cables	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, coding ring: brown, female — M23, coding ring: brown, male	CE/UL: 28128710	LEONI LEHC® 000749	Variable ---	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — IS2, female, △	CE/UL: 28125932	LEONI LEHC® 000749	Variable ---	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — IS2, female, ⅄	CE/UL: 28125940	LEONI LEHC® 000749	Variable ---	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — IS1, female, △	CE/UL: 28125959	LEONI LEHC® 000749	Variable ---	1.5 mm² / AC 500 V

26863707/EN – 07/2021

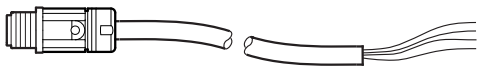
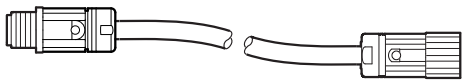
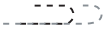
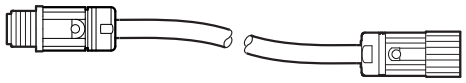
Connection cables	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M23, coding ring: brown, male — IS1, female, ⅄	CE/UL: 28125967	LEONI LEHC® 000749	Variable 	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — HAN® 10E, female, ASB4	CE/UL: 28125975	LEONI LEHC® 000749	Variable 	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — Open, M5 ring cable lug, conductor end sleeves	CE/UL: 28125983	LEONI LEHC® 000749	Variable 	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — Open, M4 ring cable lug, conductor end sleeves	CE/UL: 28125991	LEONI LEHC® 000749	Variable 	1.5 mm² / AC 500 V
 M23, coding ring: brown, male — Open	CE/UL: 28128435	LEONI LEHC® 000749	Variable 	1.5 mm² / AC 500 V

26863707/EN – 07/2021

Connection cables		Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
		CE/UL: 28126009	LEONI LEHC® 000749	Variable	1.5 mm² / AC 500 V
M23, coding ring: brown, male	Open, conductor end sleeves				
		CE/UL: 28128451	LEONI LEHC® 000749	Variable	1.5 mm² / AC 500 V
M23, coding ring: brown, male	M23, without encoding ring, female (SH1/ KH1)				

26863707/EN – 07/2021

Cable cross section 2.5 mm²

Connection cables		Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
		CE/UL: 28135369	LEONI LEHC® 005275	Variable	2.5 mm² / AC 500 V
M23, coding ring: brown, male	Open				
		CE/UL: 28128443	LEONI LEHC® 005275	Variable 	2.5 mm² / AC 500 V
M23, coding ring: brown, male	M23, without encoding ring (SH1/KH1) female				
		CE/UL: 28128478	LEONI LEHC® 005275	Variable	2.5 mm² / AC 500 V
M23, coding ring: brown, male	M23, coding ring: brown, female				

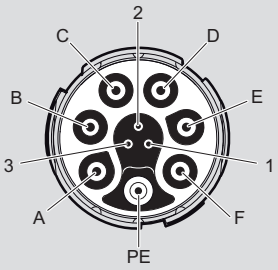
26863707/EN – 07/2021

Connection of cables with open end

28128435, 28135369

The following table shows the core assignment of cables with the following part number:

Part numbers
28128435, 28135369

Assembly							
Open cable end, not prefabricated			**Motor connection depending on brake control**			**Prefabricated plug connector**	
			Without brake	**3-wire brake AC 110 – 500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**		
Core color/ core cross section	**Identification**	**Assembly**	**Description**			**Signal**	**Contact**
Black 2.5 mm²	U1	Not prefabricated	Motor connection, phase U			U	A
Black 2.5 mm²	V2	Not prefabricated	Motor connection, phase V			V	B
Black 2.5 mm²	W3	Not prefabricated	Motor connection, phase W			W	C
Black 1.0 mm²	1	Not prefabricated	Reserved[1)]	Brake 13 (blue)	Brake+	Brake 13	D
Black 1.0 mm²	2	Not prefabricated	Reserved[1)]	Brake 14 (white)	Reserved[1)]	Brake 14	E
Black 1.0 mm²	3	Not prefabricated	Reserved[1)]	Brake 15 (blue)	Brake–	Brake 15	F
Green/yellow 2.5 mm²	–	Not prefabricated	PE connection			PE	PE
Black 0.75 mm²	4	Not prefabricated	Temperature sensor+ connection			Temp+	1
–	–	–	–			Res.	2
Black 0.75 mm²	5	Not prefabricated	Temperature sensor- connection			Temp–	3

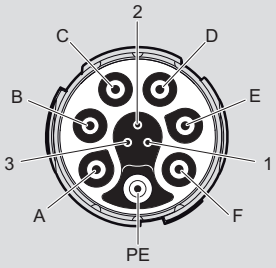
1) Reserved wires must be isolated and fixed in the connection box.

26863707/EN – 07/2021

28125991, 28125983

The following table shows the core assignment of cables with the following part numbers:

Part numbers
28125991, 28125983

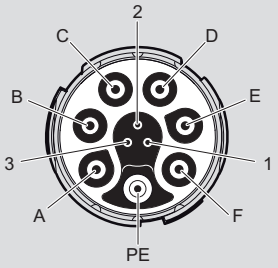
Assembly							
Open cable end, conductor end sleeves, ring cable lugs			**Motor connection depending on brake control**			**Prefabricated plug connector**	
			Without brake	**3-wire brake AC 110 – 500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**		
Core color/ core cross section	**Identification**	**Assembly**	**Description**			**Signal**	**Contact**
Black 1.5 mm² 2.5 mm²	U1	Ring cable lug M4, M5	Motor connection, phase U			U	A
Black 1.5 mm² 2.5 mm²	V2	Ring cable lug M4, M5	Motor connection, phase V			V	B
Black 1.5 mm² 2.5 mm²	W3	Ring cable lug M4, M5	Motor connection, phase W			W	C
Black 1.0 mm²	1	Conductor end sleeve	Reserved[1)]	Brake 13 (blue)	Brake+	Brake 13	D
Black 1.0 mm²	2	Conductor end sleeve	Reserved[1)]	Brake 14 (red)	Reserved[1)]	Brake 14	E
Black 1.0 mm²	3	Conductor end sleeve	Reserved[1)]	Brake 15 (white)	Brake–	Brake 15	F
Green/yellow 1.5 mm² 2.5 mm²	–	Conductor end sleeve	PE connection			PE	PE
Black 0.75 mm²	4	Conductor end sleeve	Temperature sensor+ connection			Temp+	1
–	–	–	–			Res.	2
Black 0.75 mm²	5	Conductor end sleeve	Temperature sensor- connection			Temp–	3

1) Reserved wires must be isolated and fixed in the connection box.

28126009

The following table shows the core assignment of cables with the following part number:

Part number
281286009

Assembly								
Open cable end, conductor end sleeves			**Motor connection depending on brake control**			**Prefabricated plug connector**		
			Without brake	**3-wire brake AC 110 – 500 V (BE/BZ brake)**	**2-wire brake DC 24 V (BK/BP brake)**			
Core color/ core cross section	**Identification**	**Assembly**	**Description**				**Signal**	**Contact**
Black 1.5 mm²	U1	Conductor end sleeve	Motor connection, phase U				U	A
Black 1.5 mm²	V2	Conductor end sleeve	Motor connection, phase V				V	B
Black 1.5 mm²	W3	Conductor end sleeve	Motor connection, phase W				W	C
Black 1.0 mm²	1	Conductor end sleeve	Reserved[1)]	Brake 13 (red)	Brake+		Brake 13	D
Black 1.0 mm²	2	Conductor end sleeve	Reserved[1)]	Brake 14 (white)	Reserved[1)]		Brake 14	E
Black 1.0 mm²	3	Conductor end sleeve	Reserved[1)]	Brake 15 (blue)	Brake–		Brake 15	F
Green/yellow 1.5 mm²	–	Conductor end sleeve	PE connection				PE	PE
Black 0.75 mm²	4	Conductor end sleeve	Temperature sensor+ connection				Temp+	1
–	–	–	–				Res.	2
Black 0.75 mm²	5	Conductor end sleeve	Temperature sensor- connection				Temp–	3

1) Reserved wires must be isolated and fixed in the connection box.

26863707/EN – 07/2021

5.11.7 X5504: STO (3 cores)

⚠ WARNING

No safe disconnection of the device.

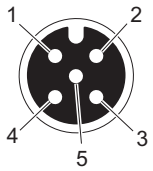
Severe or fatal injuries.

- Do not use the 24 V output (pins 1 and 3) for safety-related applications.
- Only jumper the STO connection with 24 V if the device does not have to fulfill any safety function.

The following table shows information about this connection:

Function
Connection for safe torque off (STO, 3 cores)

Connection type
M12, 5-pin, female, A-coded, color: yellow

Connection diagram


Assignment		
Contact	**Signal**	**Description**
1	24V_OUT	DC 24 V auxiliary output (permitted only for operation with STO jumper plug)
2	F_STO_P2	F_STO_P2 connection
3	0V24_OUT	0V24 reference potential for DC 24 V auxiliary output (permitted only for operation with STO jumper plug)
4	F_STO_P1	F_STO_P1 connection
5	F_STO_M	F_STO_M connection

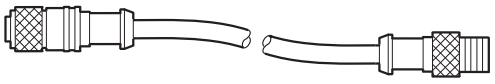
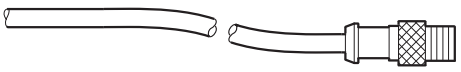
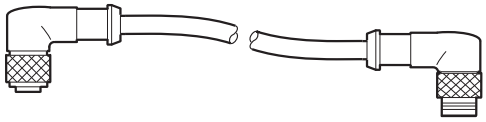
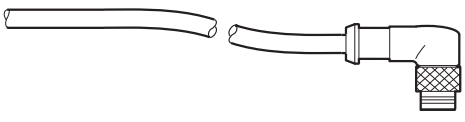
26863707/EN – 07/2021

Connection cables

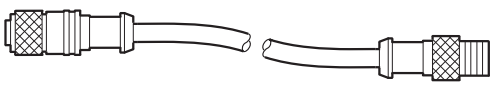
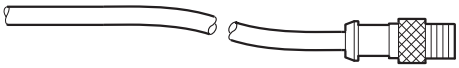
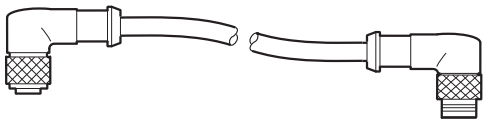
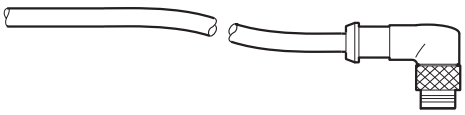
INFORMATION

Use only shielded cables for this connection and only suitable plug connectors that connect the shield with the device in an HF-capable manner.

The following table provides an overview of the cables available for this connection:

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110935	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 Open — M12, 5-pin, A-coded, male	CE/UL: 28110943	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110951	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 Open — M12, 5-pin, A-coded, male	CE/UL: 28110978	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V

26863707/EN – 07/2021

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110994	igus chainflex CF78.UL	Variable ---)	4 × 0.5 mm² / DC 60 V
 Open — M12, 5-pin, A-coded, male	CE/UL: 28111001	igus chainflex CF78.UL	Variable ---)	4 × 0.5 mm² / DC 60 V
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28111028	igus chainflex CF78.UL	Variable ---)	4 × 0.5 mm² / DC 60 V
 Open — M12, 5-pin, A-coded, male	CE/UL: 28111036	igus chainflex CF78.UL	Variable ---)	4 × 0.5 mm² / DC 60 V

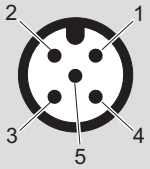
26863707/EN – 07/2021

Connection of cables with open end

HELUKABEL®

The following table shows the core assignment of cables with the following part numbers:

Part numbers
28110978, 28110943

Assembly					
Open cable end			Description	Prefabricated plug connectors	
					
Core color/ core cross section	Identi-fication	Assembly		Signal	Contact
[1]	–	Not pre-fabricated	DC 24 V auxiliary output	24V_OUT	1
White 0.75 mm²	–	Not pre-fabricated	F_STO_P2 connection	F_STO_P2	2
[1]	–	Not pre-fabricated	0V24 reference potential for DC 24 V auxiliary output	0V24_OUT	3
Brown 0.75 mm²	–	Not pre-fabricated	F_STO_P1 connection	F_STO_P1	4
Green 0.75 mm²	–	Not pre-fabricated	F_STO_M connection	F_STO_M	5

1) Do not connect these cores in the plug connector.

26863707/EN – 07/2021

igus chainflex

The following table shows the core assignment of cables with the following part numbers:

Part numbers
28111001, 28111036

Assembly					
Open cable end			Description	Prefabricated plug connectors	
Core color/ core cross section	Identification	Assembly		Signal	Contact
[1]	–	Not prefabricated	DC 24 V auxiliary output	24V_OUT	1
Black 0.75 mm²	1	Not prefabricated	F_STO_P2 connection	F_STO_P2	2
[1]	–	Not prefabricated	0V24 reference potential for DC 24 V auxiliary output	0V24_OUT	3
Black 0.75 mm²	2	Not prefabricated	F_STO_P1 connection	F_STO_P1	4
Black 0.75 mm²	3	Not prefabricated	F_STO_M connection	F_STO_M	5

1) Do not connect these cores in the plug connector.

26863707/EN – 07/2021

5.11.8 X5505: STO (3 cores)

⚠ WARNING

Disabling of the safety-related disconnection of further devices due to parasitic voltages when using an STO jumper plug.

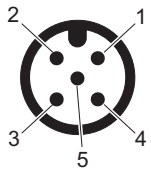
Severe or fatal injuries.

- Only use the STO jumper plug when all incoming and outgoing STO connections have been removed from the device.

The following table shows information about this connection:

Function
Connection for safe torque off (STO, 3 cores)

Connection type
M12, 5-pin, male, A-coded, color: yellow

Connection diagram


Assignment		
Contact	**Signal**	**Description**
1	Res.	Reserved
2	F_STO_P2	F_STO_P2 connection
3	Res.	Reserved
4	F_STO_P1	F_STO_P1 connection
5	F_STO_M	F_STO_M connection

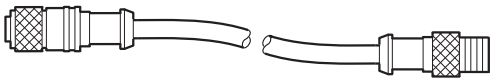
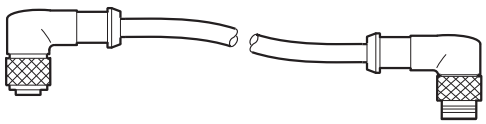
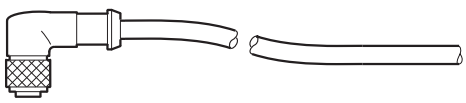
26863707/EN – 07/2021

Connection cables

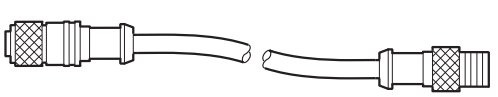
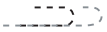
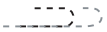
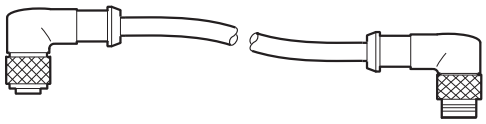
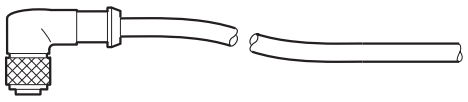
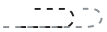
INFORMATION

Use only shielded cables for this connection and only suitable plug connectors that connect the shield with the device in an HF-capable manner.

The following table provides an overview of the cables available for this connection:

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110935	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 M12, 5-pin, A-coded, female — Open	CE/UL: 28117808	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110951	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V
 M12, 5-pin, A-coded, female — Open	CE/UL: 28110986	HELUKABEL® LiYCY	Variable 	3 × 0.75 mm² / DC 60 V

26863707/EN – 07/2021

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28110994	igus chainflex CF78.UL	Variable 	4 × 0.5 mm² / DC 60 V
 M12, 5-pin, A-coded, female — Open	CE/UL: 28117816	igus chainflex CF78.UL	Variable 	4 × 0.5 mm² / DC 60 V
 M12, 5-pin, A-coded, female — M12, 5-pin, A-coded, male	CE/UL: 28111028	igus chainflex CF78.UL	Variable 	4 × 0.5 mm² / DC 60 V
 M12, 5-pin, A-coded, female — Open	CE/UL: 28111044	igus chainflex CF78.UL	Variable 	4 × 0.5 mm² / DC 60 V

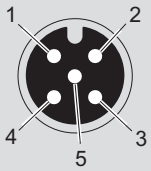
26863707/EN – 07/2021

Connection of cables with open end

HELUKABEL®

The following table shows the core assignment of cables with the following part numbers:

Part numbers
28117808, 28110986

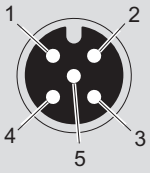
Assembly					
Open cable end			Description	Prefabricated plug connectors	
					
Core color/ core cross section	Identi-fication	Assembly		Signal	Contact
[1]	–	Not pre-fabricated	DC 24 V auxiliary output	24V_OUT	1
White 0.75 mm²	–	Not pre-fabricated	F_STO_P2 connection	F_STO_P2	2
[1]	–	Not pre-fabricated	0V24 reference potential for DC 24 V auxiliary output	0V24_OUT	3
Brown 0.75 mm²	–	Not pre-fabricated	F_STO_P1 connection	F_STO_P1	4
Black 0.75 mm²	–	Not pre-fabricated	F_STO_M connection	F_STO_M	5

1) Do not connect these cores in the plug connector.

igus chainflex

The following table shows the core assignment of cables with the following part numbers:

Part numbers
28117816, 28111044

Assembly					
Open cable end			Description	Prefabricated plug connectors	
					
Core color/ core cross section	Identi-fication	Assembly		Signal	Contact
1)	–	Not pre-fabricated	DC 24 V auxiliary output	24V_OUT	1
Black 0.75 mm²	1	Not pre-fabricated	F_STO_P2 connection	F_STO_P2	2
1)	–	Not pre-fabricated	0V24 reference potential for DC 24 V auxiliary output	0V24_OUT	3
Black 0.75 mm²	2	Not pre-fabricated	F_STO_P1 connection	F_STO_P1	4
Black 0.75 mm²	3	Not pre-fabricated	F_STO_M connection	F_STO_M	5

1) Do not connect these cores in the plug connector.

26863707/EN – 07/2021

5.11.9 STO jumper plug (3-core)

⚠ WARNING

Safe disconnection of the device is not possible when the jumper plug is used.

Severe or fatal injuries can occur.

- Only use the jumper plug if the device is not used to fulfill any safety function.

⚠ WARNING

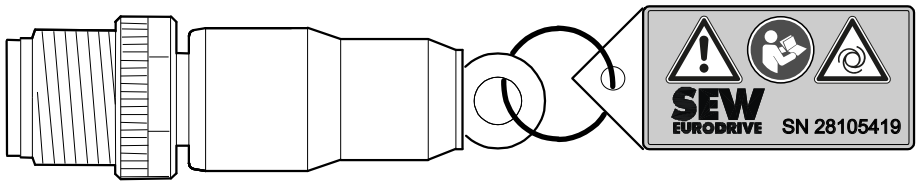
Disabling of the safety-related disconnection of further devices due to parasitic voltages when using an STO jumper plug.

Severe or fatal injuries.

- Only use the STO jumper plug when all incoming and outgoing STO connections have been removed from the device.

The STO jumper plug can be connected to the STO plug connector X5504 of the device. The STO jumper plug deactivates the safety functions of the device.

The following figure shows the STO jumper plug with the printed **red** tag, part number 28105419:



25247142411

26863707/EN – 07/2021

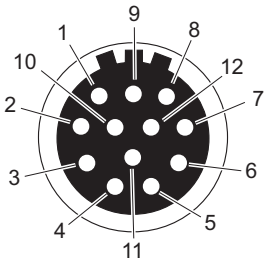
5.11.10 X5136: Digital inputs, relay output

The following table shows information about this connection:

Function
Digital inputs, relay output

Connection type
M23, female, male thread, TE Connectivity - Intercontec products, P insert, SpeedTec equipment, 12-pin, 0°-coded, coding ring: without, protected against contact

Connection diagram



Assignment

Contact	Signal	Description
1	DI01	Digital input DI01
2	DI02	Digital input DI02
3	DI03	Digital input DI03
4	DI04	Digital input DI04
5	Res.	Reserved
6	DOR-C	Relay output DO R, common contact
7	DOR-NO	Relay output DO R, NO contact
8	+24V_O	DC 24 V output
9	0V24_O	0 V 24 reference potential
10	Res.	Reserved
11	+24V_O	DC 24 V output
12	FE	Functional earth

26863707/EN – 07/2021

Connection cables

INFORMATION

Use only shielded cables for this connection and only suitable plug connectors that connect the shield with the device in an HF-capable manner.

The following table provides an overview of the cables available for this connection:

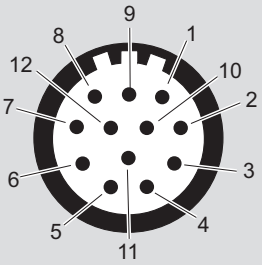
Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 Open — M23, 12-pin, 0°-coded	CE/UL: 11741457	HELUKABEL Li9Y91YC11Y -HF	Variable 	6 × 2 × 0.25 mm² / DC 60 V

26863707/EN – 07/2021

Connection of cables with open end

The following table shows the core assignment of cables with the following part number:

Part numbers
11741457

Assembly					
Open cable end			Description	Prefabricated plug connectors	
					
Core color/ core cross section	Identification	Assembly		Signal	Contact
Pink 0.25 mm²	–	Not prefabricated	Digital input DI01	DI01	1
Gray 0.25 mm²	–	Not prefabricated	Digital input DI02	DI02	2
Red 0.25 mm²	–	Not prefabricated	Digital input DI03	DI03	3
Blue 0.25 mm²	–	Not prefabricated	Digital input DI04	DI04	4
Yellow 0.25 mm²	–	Not prefabricated	Reserved	Res.	5
Green 0.25 mm²	–	Not prefabricated	Relay output DO R, common contact	DOR-C	6
Purple 0.25 mm²	–	Not prefabricated	Relay output DO R, NO contact	DOR-NO	7
Black 0.25 mm²	–	Not prefabricated	DC 24 V output	+24V_O	8
Brown 0.25 mm²	–	Not prefabricated	0 V 24 reference potential	0V24_O	9
White 0.25 mm²	–	Not prefabricated	Reserved	Res.	10
Gray/pink 0.25 mm²	–	Not prefabricated	DC 24 V output	+24V_O	11
Green/yellow 0.25 mm²	–	Not prefabricated	Functional earth	FE	12

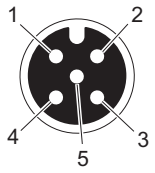
26863707/EN – 07/2021

5.11.11 X5135: Digital inputs

The following table shows information about this connection:

Function
Digital inputs

Connection type
M12, 5-pin, female, A-coded, color: black

Connection diagram


Assignment		
Contact	**Signal**	**Description**
1	+24V	DC 24 V sensor supply
2	DI02	Digital input DI02
3	0V24	0V24 reference potential for sensors
4	DI01	Digital input DI01
5	FE	Functional earth

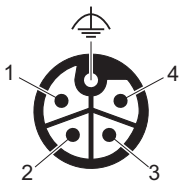
26863707/EN – 07/2021

5.11.12 X1523: DC 24 V backup voltage, input

The following table shows information about this connection:

Function
DC 24 V backup voltage input

Connection type
M12, 5-pin, male, L-coded, color: light gray

Connection diagram


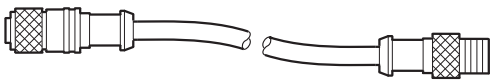
Assignment		
Contact	**Signal**	**Description**
1	+24V/L1	DC 24 V input/L1 (for backup mode)
2	0V24/N2	0V24 reference potential/N2 (for DC 24 V /BES brake rectifier)
3	0V24/N1	0V24 reference potential/N1 (for backup mode)
4	+24V/L2	DC 24 V connection/L2 (for DC 24 V /BES brake rectifier)
⏚	FE	Functional earth

Devices with plug connectors X1523 and X2313 include additionally integrated auxiliary terminals. These auxiliary terminals are intended for connecting the second voltage level (contacts 2 and 3) only. Do not change the installation of this auxiliary terminal.

26863707/EN – 07/2021

Connection cables

The following table provides an overview of the cables available for this connection:

Connection cable	Conformity/ part number	Cable type	Length/installation type	Cable cross section/operating voltage
 M12, 5-pin, L-coded, female — M12, 5-pin, L-coded, male	CE/UL: 28114345	HELUKABEL® JZ-500	Variable 	5 × 2.5 mm² / DC 60 V
 M12, 5-pin, L-coded, female — Open	CE/UL: 28117786	HELUKABEL® JZ-500	Variable 	5 × 2.5 mm² / DC 60 V

26863707/EN – 07/2021

Connection of cables with open end

The following table shows the core assignment of cables with the following part number:

Part numbers
28117786

Assembly					
Open cable end			Description	Prefabricated plug connectors	
Core color/ core cross section	Identification	Assembly		Signal	Contact
Black 2.5 mm²	1	Not prefabricated	DC 24 V output/L1 (for backup voltage/supply)	+24V/L1	1
Black 2.5 mm²	2	Not prefabricated	0V24 reference potential/N2 (for DC 24 V /BES brake rectifier)	0V24/N2	2
Black 2.5 mm²	3	Not prefabricated	0V24 reference potential/N1 (for backup voltage/supply)	0V24/N1	3
Black 2.5 mm²	4	Not prefabricated	DC 24 V output/L2 (for DC 24 V /BES brake rectifier)	+24V/L2	4
Black 2.5 mm²	5	Not prefabricated	Functional earth	FE	⏚

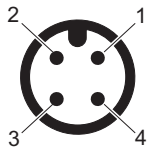
26863707/EN – 07/2021

5.11.13 X1524: DC 24 V backup voltage, input (AUX-PWR)

The following table shows information about this connection:

Function
Input of DC 24 V backup voltage / DC 24 V supply (AUX-PWR)

Connection type
M12, 4-pin, male, A-coded, color: black

Connection diagram


Assignment		
No.	**Name**	**Function**
1	+24V	DC 24 V input (AUX-PWR)
2	Res.	Reserved
3	0V24	0V24 Reference potential (AUX-PWR)
4	Res.	Reserved

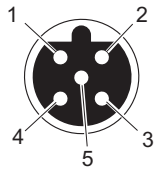
26863707/EN – 07/2021

5.11.14 X4142: Engineering interface

The following table shows information about this connection:

Function
Engineering interface (CAN)

Connection type
M12-SPEEDCON, 5-pin, female, B-coded, color: red

Connection diagram


Assignment		
Contact	**Signal**	**Description**
1	Res.	Reserved
2	24V_OUT	DC 24 V auxiliary output[1)]
3	0V24_OUT	0V24 reference potential[1)]
4	CAN_H	CAN High connection
5	CAN_L	CAN Low connection

1) Only use this output to supply components by SEW-EURODRIVE.

26863707/EN – 07/2021

Connection cables

The following table provides an overview of the cables available for this connection:

Connection cables	Conformity/ part number	Length/installation type	Operating voltage
Connection to interface adapter USM21A: USK15A M12-SPEED-CON, 5-pin, B-coded, male — RJ10	CE: 28139038	3.0 m 	DC 60 V
Connection to CBG.. keypad : USK25A M12-SPEED-CON, 5-pin, B-coded, male — D-sub, 9-pin, male, angled	CE: 28139046	3.0 m 	DC 60 V

26863707/EN – 07/2021

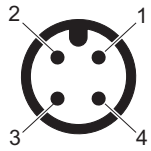
5.12 Plug connector assignment at the electronics cover

5.12.1 X4271: AS-Interface

The following table shows information about this connection:

Function
AS-Interface

Connection type
M12, 4-pin, male, A-coded, color: black

Connection diagram


Assignment		
Contact	**Signal**	**Description**
1	ASI+	AS-Interface data cable +
2	Res.	Reserved
3	ASI-	AS-Interface data cable -
4	Res.	Reserved

26863707/EN – 07/2021

5.13 PC connection

Connect the PC to the drive unit before you start the engineering software MOVISUITE®.

You have several options to connect a PC to the device.

5.13.1 Connection via interface adapter USM21A

The USM21A interface adapter is used to connect the PC and the engineering interface of the device.

The data is transferred according to the USB 2.0 standard. It is also possible to work with a USB 3.0 interface.

You need the following components for the connection:

Component	Part number
USM21A interface adapter The following connection cables are included in the delivery: • USB 2.0 connection cable – USB type A/USB type B, – Length: 1.5 m • RJ10/RJ10 connection cable For connection to the engineering interface X31 – With 2 RJ10 plug connectors – Length: 3 m	28231449
Connection cable RJ10/M12 (USK15A) For connection to the X4141 engineering interface or to the M12 optional engineering interface at the front module of MMF3...: • With RJ10 plug connector • With M12 SPEEDCON plug connector, 5-pin, male, B-coded • Length: 3 m	28139038
RJ10/SUB-D9 connection cable For connection to the SUB-D9 optional engineering interface at the front module of MOVIMOT® flexible MMF3...2.. or MMF3...3..: • With RJ10 plug connector • With Sub-D9 plug connector, female • Length: 1.5 m	18123864
Retrofit set M12 engineering interface X4142 M12 SPEEDCON, 5-pin, B-coded, female	28273273

26863707/EN – 07/2021

Connection to X4142 (M12 at the connection box)

The engineering interface X31 in the connection box is assigned to the internal wiring of plug connector X4142.

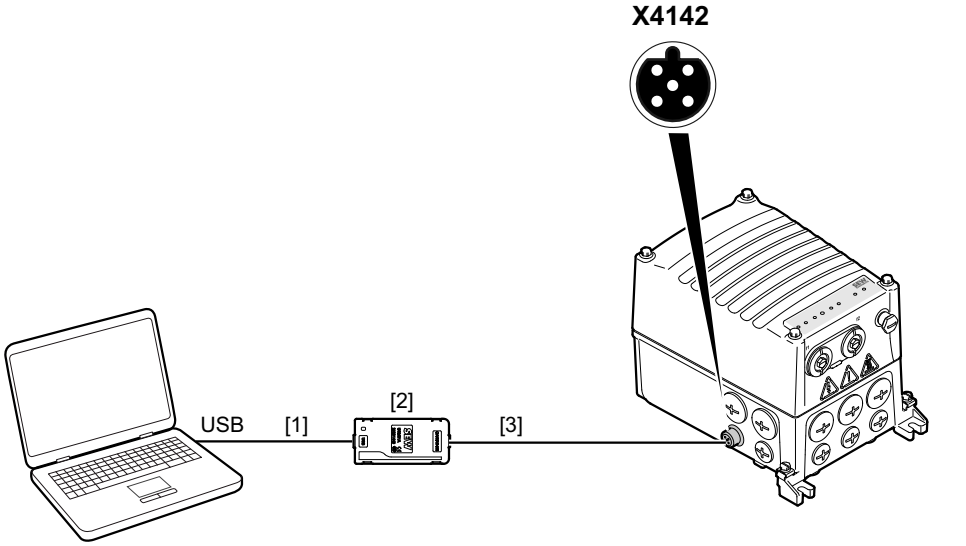
NOTICE

Unauthorized insertion of the STO jumper plug into the engineering interface.

Damage to the device.

- **Never** insert the STO jumper plug into the engineering interface.

The following illustration shows how to connect the PC to the device:



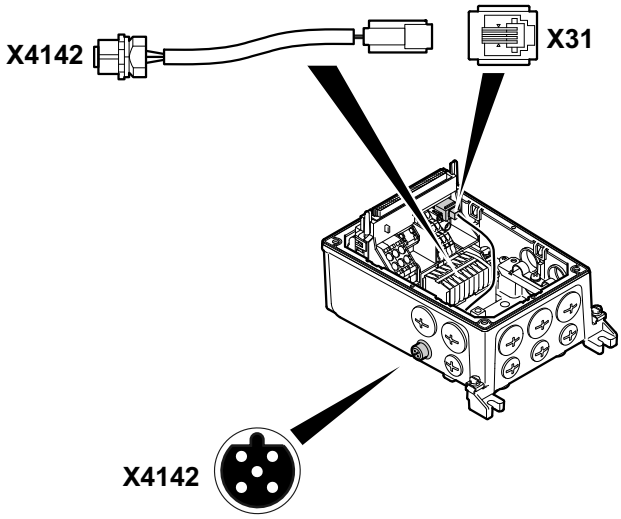
9007229806018187

[1] USB 2.0 connection cable
(commercially available, included in the USM21A delivery)
[2] USM21A interface adapter
[3] Connection cable RJ10/M12 (USK15A)
(available for delivery from SEW-EURODRIVE, part number: 28139038)

Installing the included engineering plug connector X4142

SEW-EURODRIVE supplies the engineering plug connector X4142 in some cases in an accessory bag (part number: 28273273) with the decentralized inverter. In this case, install the engineering plug connector X4142 to the connection box of the decentralized frequency inverter as follows:

1. It is essential that you observe the startup instructions.
2. Switch off the voltage supply and wait for at least 5 minutes.
3. Loosen the screws and remove the electronics cover from the connection box.
4. Plug in the plug connector RJ10 from outside through one of the permitted cable entry bores (for the permitted positions, see chapter "Plug connector positions"). Push the cable completely into the connection box.
5. Screw plug connector M12 into the cable entry bore. Fasten the nut of the M12 plug connector (tightening torque: 6 Nm).
6. Insert the RJ10 plug connector into plug connector X31 in the connection box. The following figure shows an example of the cable routing:



9007225086897291

7. Plug the electronics cover onto the connection box. Screw on the electronics cover with 4 screws (tightening torque: 6 Nm).

Connection to X31 (RJ10 in the connection box)

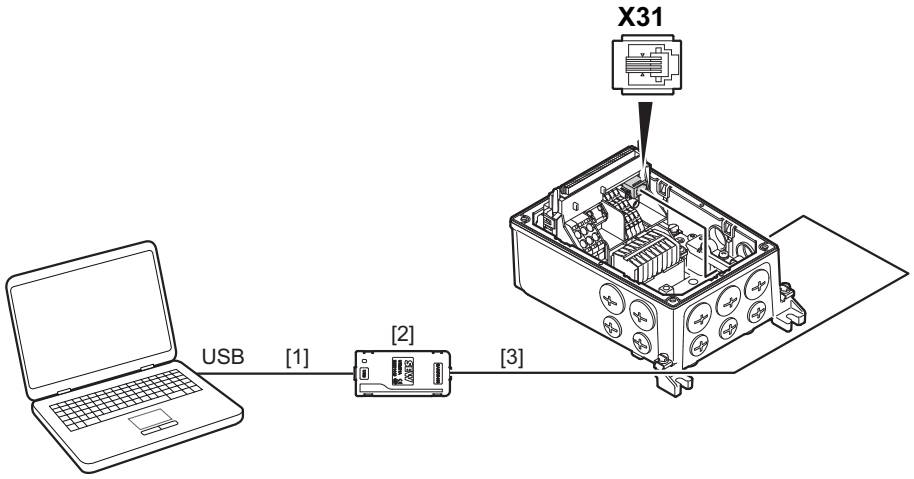
NOTICE

Connector X31 provides a 24 V supply voltage for operating the connected options.

Damage to connected options with low nominal voltage.

- Only connect options with a nominal voltage of 24 V to connector X31, such as:
  - Interface adapter USM21A,
  - CBG.. keypad
- Do **not** connect the following options with 5 V nominal voltage to the X31 connector:
  - Interface adapters USB11A, UWS11A, UWS21A
  - Keypads DBG.., GBG21A.

The following illustration shows how to connect the PC to the device:



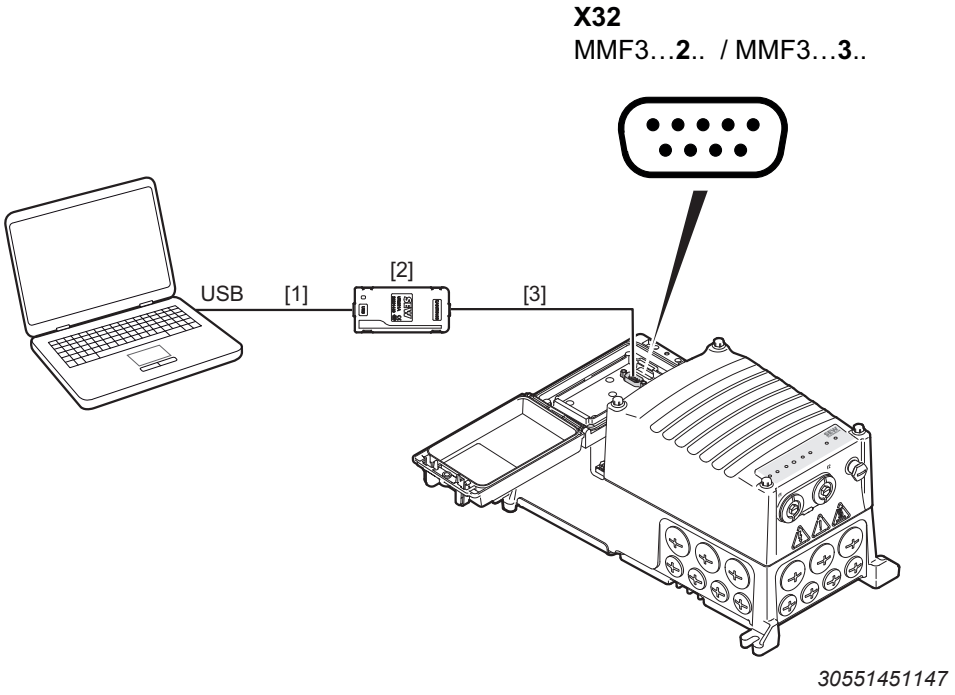
25824402315

[1] USB 2.0 connection cable
(commercial, included in the USM21A interface adapter delivery)
[2] USM21A interface adapter
[3] RJ10/RJ10 connection cable (included in the USM21A interface adapter delivery)

26863707/EN – 07/2021

Connection to X32 at the front module of MMF3.

The following figure shows how to connect the PC to the X32 optional engineering interface at the front module of MOVIMOT® flexible MMF3...2.. or MMF3...3..:



[1] USB 2.0 connection cable
(commercial, included in the USM21A interface adapter delivery)
[2] USM21A interface adapter
[3] RJ10/Sub-D9 connection cable
(available for delivery from SEW-EURODRIVE, part number: 18123864)

26863707/EN – 07/2021

Connection to X4142 at the front module of MMF3.

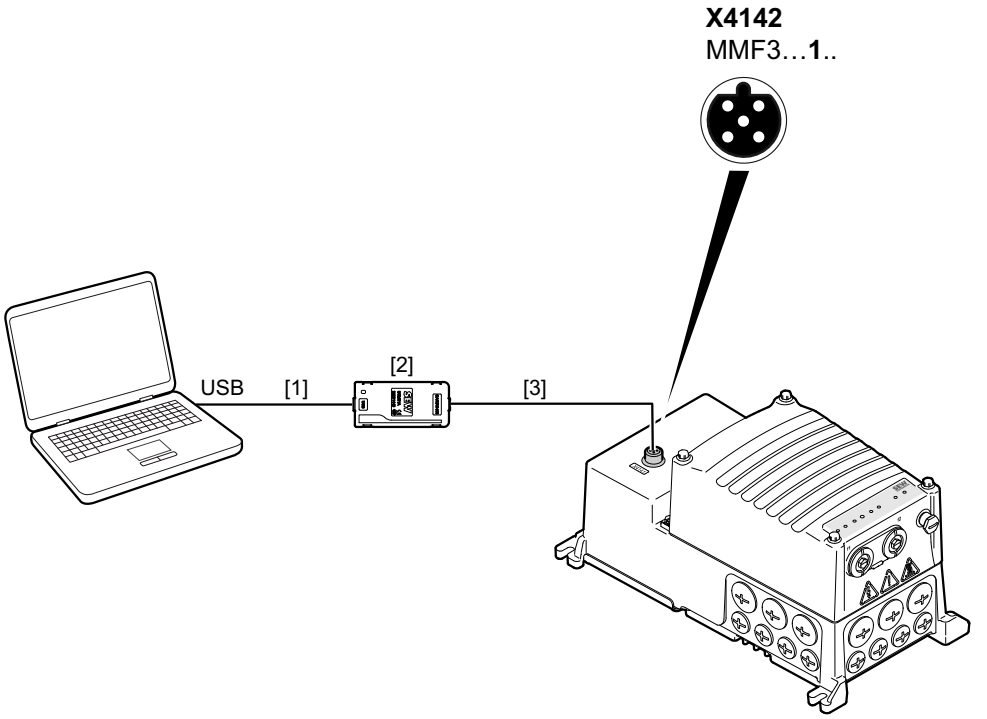
NOTICE

Unauthorized insertion of the STO jumper plug into the engineering interface.

Damage to the device.

- **Never** insert the STO jumper plug into the engineering interface.

The following figure shows how to connect the PC to the X4142 optional engineering interface at the front module of MOVIMOT® flexible MMF3...1..:



9007229806274955

[1] USB 2.0 connection cable
(commercially available, included in the delivery of the USM21A interface)
[2] USM21A interface adapter
[3] Connection cable RJ10/M12 (USK15A)
(available for delivery from SEW-EURODRIVE, part number: 28139038)

26863707/EN – 07/2021

5.13.2 Connection via CBG21A or CBG11A keypad

Use the CBG21A or CBG11A keypad to connect the PC and the engineering interface of the device.

The data is transferred according to the USB 2.0 standard. It is also possible to work with a USB 3.0 interface.

You need the following components for the connection:

Component	Part number
CBG21A keypad	28238133
CBG11A keypad	28233646
CBG.. connection cable D-sub/RJ10 (USK21A) For connecting the X31 engineering interface to the 24 V supply voltage • With D-sub plug connector 9-pin, male • With RJ10 plug connector • Length: 3 m	28117832
USB connection cable USB A/USB 2.0 Mini B For connecting the CBG.. keypad to the USB interface of the PC • With USB A plug connector • With USB 2.0 Mini B plug connector • Length: 3 m	25643517
CBG.. connection cable D-sub/M12, B-coded (USK25A) For connecting the X4142 engineering interface to the 24 V supply voltage • With D-sub plug connector 9-pin, male • With M12 SPEEDCON plug connector, 5-pin, male, B-coded • Length: 3 m	28139046

26863707/EN – 07/2021

Connection to X4142 (M12 at the connection box)

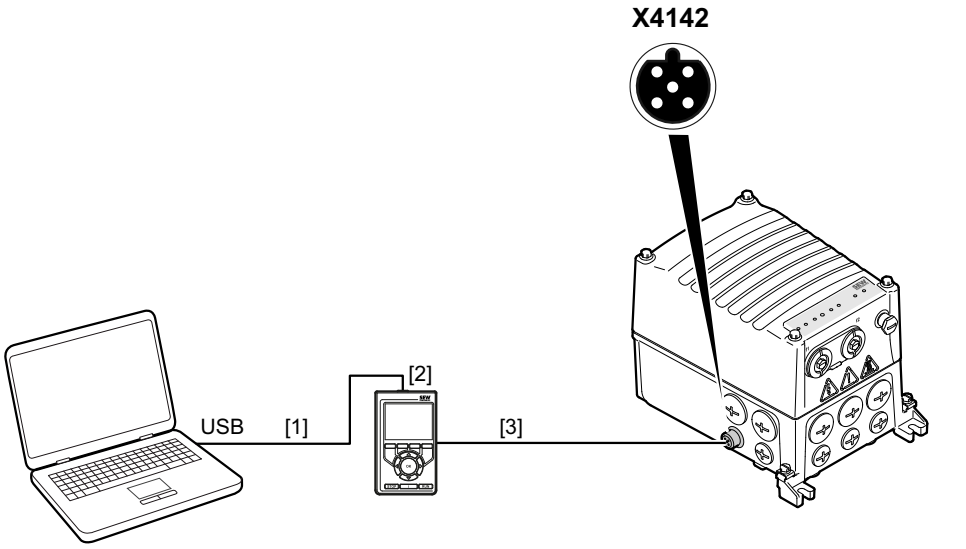
NOTICE

Unauthorized insertion of the STO jumper plug into the engineering interface.

Damage to the device.

- **Never** insert the STO jumper plug into the engineering interface.

The following illustration shows how to connect the PC to the device:



9007229806361867

[1] Connection cable USB A/USB 2.0 Mini B
(available for delivery from SEW-EURODRIVE, part number: 25643517)
[2] CBG21A or CBG11A keypad
[3] Connection cable D-Sub/M12 (USK25A)
(available for delivery from SEW-EURODRIVE, part number: 28139046)

26863707/EN – 07/2021

Connection to X31 (RJ10 in the connection box)

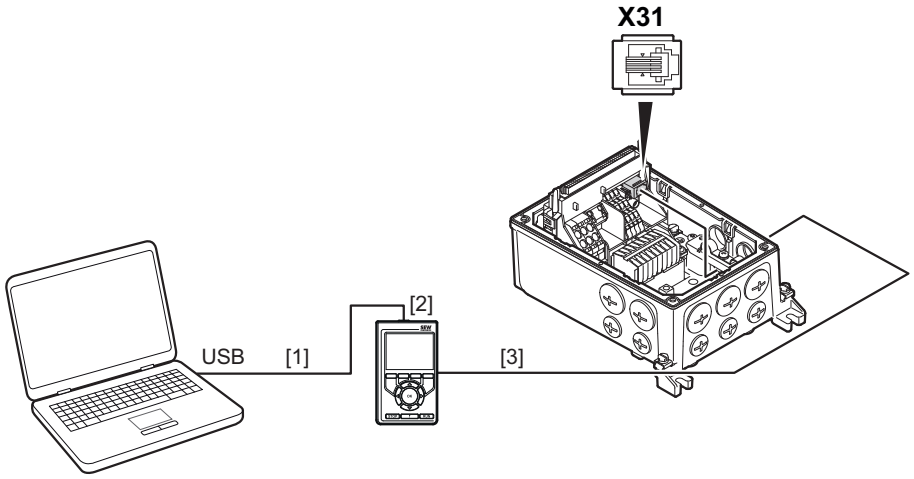
NOTICE

Connector X31 provides a 24 V supply voltage for operating the connected options.

Damage to connected options with low nominal voltage.

- Only connect options with a nominal voltage of 24 V to connector X31, such as:
  - Interface adapter USM21A,
  - CBG.. keypad
- Do **not** connect the following options with 5 V nominal voltage to the X31 connector:
  - Interface adapters USB11A, UWS11A, UWS21A
  - Keypads DBG.., GBG21A.

The following illustration shows how to connect the PC to the device:

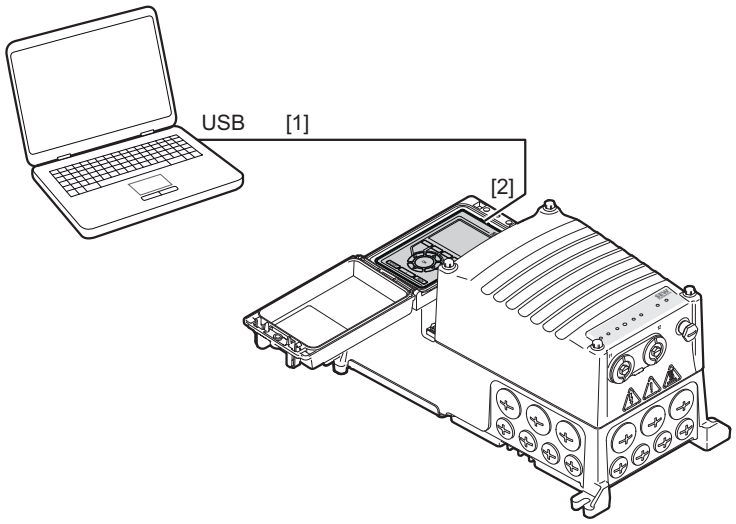


25824398731

[1] Connection cable USB A/USB 2.0 Mini B
(available for delivery from SEW-EURODRIVE, part number: 25643517)
[2] CBG21A or CBG11A keypad
[3] Sub-D9/RJ10 connection cable
(available for delivery from SEW-EURODRIVE, part number: 28117832)

Connection to the front module of MMF3.

The following illustration shows how to connect the PC to the front module of MOVIMOT® flexible MMF3.:



30551665419

[1] Connection cable USB A/USB 2.0 Mini B
(available for delivery from SEW-EURODRIVE, part number: 25643517)

[2] CBG21A or CBG11A keypad

26863707/EN – 07/2021

6 Startup

6.1 Startup notes

INFORMATION

It is essential to comply with the safety notes during startup.

⚠ WARNING

Risk of injury due to missing or defective protective covers.

Severe or fatal injuries.

- Install the protective covers of the system according to the instructions.
- Never start the device if the protection covers are not installed.

⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages can still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, de-energize the device via a suitable external disconnection device.
- Secure the device against unintended re-connection of the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least the following time before removing the electronics cover: **5 minutes**

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

- Let the devices cool down before touching them.

⚠ WARNING

Device malfunction due to incorrect device setting.

Severe or fatal injuries.

- Observe the startup instructions.
- Always have the installation carried out by trained specialists.
- Only use settings that are correct for the function.

26863707/EN – 07/2021

NOTICE

Undercutting the minimum switch-off time of the line contactor.

Irreparable damage to the inverter or unforeseen malfunctions.

- You must observe a minimum switch-off time of 10 s after switching off the voltage supply.
- Do not switch the voltage supply on or off **more often than once per minute**.

INFORMATION

- Before startup, remove the paint protection cap from the LED displays.
- Before startup, remove the paint protection film from the nameplates.

INFORMATION

- To ensure fault-free operation, do not disconnect or connect signal cables during operation.

6.1.1 Lifting applications

⚠ WARNING

Danger of fatal injury if the hoist falls.

Severe or fatal injuries.

- In case of products used in lifting applications, additional monitoring systems or mechanical protection devices must be used.

NOTICE

Application in ELSM® control mode

When the inverter is operated in ELSM® control mode, using it in lifting applications is not permitted. In this control mode only applications of horizontal materials handling are permitted.

Startup notes for lifting applications

⚠ WARNING

The DynaStop® electrodynamic retarding function does not allow for a definite stop at a position.

This can result in severe or fatal injuries.

- DynaStop® must not be used for hoists.
- When DynaStop® is used on inclining/downward slopes or for vertical conveyors without free hanging loads, adhere to the basic safety and health requirements (e.g. the EG Machinery Directive 2006/42/EG).
- The behavior of the DynaStop® function must be taken into account for the risk assessment of the application, that determines the required safety measures.

26863707/EN – 07/2021

⚠ WARNING

Risk from falling loads.

This can result in severe or fatal injuries.

- Do **not** use the function "Releasing the brake / deactivating DynaStop® with FCB 01" for hoist applications and applications with potentially falling loads.
- Inhibit the function via the following steps:
  - Deactivate the function of the DIP switch S1/2 using the parameter *Deactivation* = **"1"** (path: *Functions* > *Inputs/outputs* > *Basic device* > *DIP switch functions* > *Releasing the brake / deactivating DynaStop® with FCB 01 – enable*)
  - Inhibit the functions using the parameter *Releasing the brake / deactivating DynaStop® with FCB 01 – enable* = **"0"** (path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit*).

INFORMATION

The recommended settings and procedures must be matched to the requirements of the application and its safety assessment, and adjusted accordingly.

SEW-EURODRIVE recommends the following settings and procedures for lifting applications:

- Set parameter *Apply brake/activate DynaStop® in STO state (8501.3)* **= "1"** (Yes), see chapter "DynaStop® in conjunction with STO".
- Set parameter *Integrator mode (8404.9)* = **"0"** (hold).

  Path: *Optimization DT1* > *Set controller dynamics* > *Advanced settings*.

26863707/EN – 07/2021

6.2 Startup requirements

Startup is only required when you need to change the factory set parameterization.

In this case, the following conditions apply to startup:

- You have installed the device correctly both mechanically and electrically.
- You have performed a correct project planning for the device.
- Safety measures prevent accidental startup of devices.
- Safety measures prevent danger to persons or machines.

Required hardware components:

- PC or laptop as specified in chapter "PC connection".
- Interface cable and, if necessary, interface adapter according to chapter "PC connection".

Required software:

- Engineering software MOVISUITE® standard by SEW-EURODRIVE.

26863707/EN – 07/2021

6.3 Parameterization mode

The following parameterization modes are available to perform the device startup.

Easy mode

Easy startup with predefined control interface.

- Setting parameters, setpoints, and additional functions can only be set using the mechanical setting elements (potentiometer and DIP switch) at the device.
- Startup does not require any software or keypads.
- All parameters are reset to delivery state when the device is switched to Easy mode.
- All device parameters are write-protected.

Exceptions:

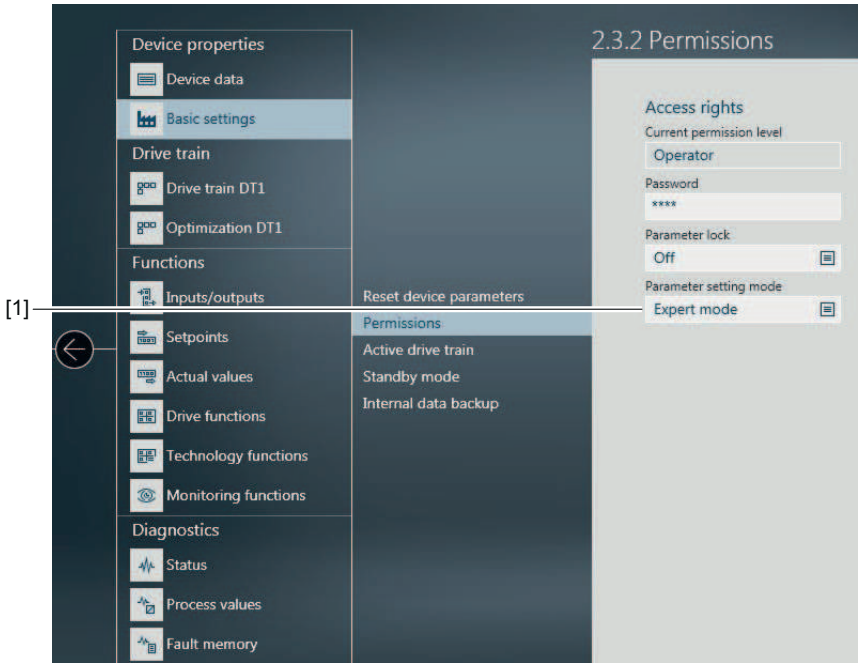
- When you switch to Easy mode, the addressing parameters are not reset to the delivery state.
- You can also change the parameters for device address configuration and the parameterization mode when the device is set to Easy mode.

Expert mode

Expert mode is a parameterization mode that allows full access to all device functions via the MOVISUITE® engineering software or the CBG.. keypad.

- The predefined connection interfaces of the device can be adjusted to the requirements of the application.
- You can deactivate the mechanical setting elements. Doing so, you will activate the (parameterizable) replacement values of the mechanical setting elements.
- You can set the device parameters.

The parameterization mode can be set via the MOVISUITE® engineering software or the CBG.. keypad.



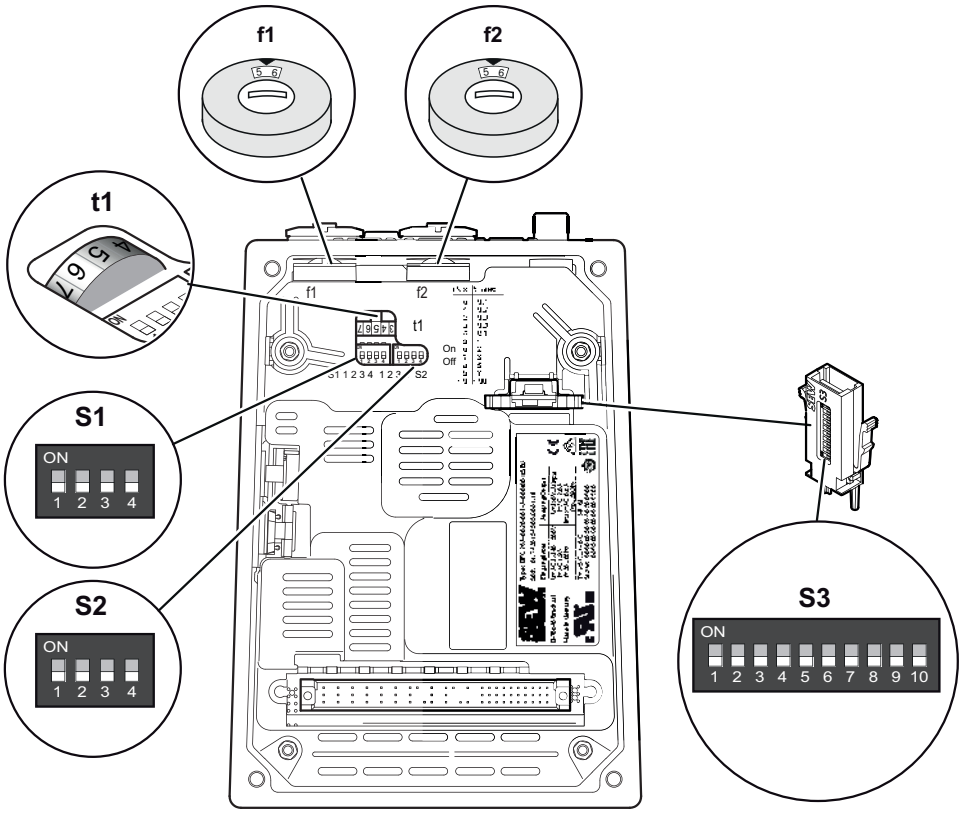
9007228573934347

[1] Basic settings > authorizations > parameterization mode > Expert mode

6.4 Control elements

6.4.1 Overview of design MMF1., MMF31

The following figure gives an overview of the control elements at the electronics cover:



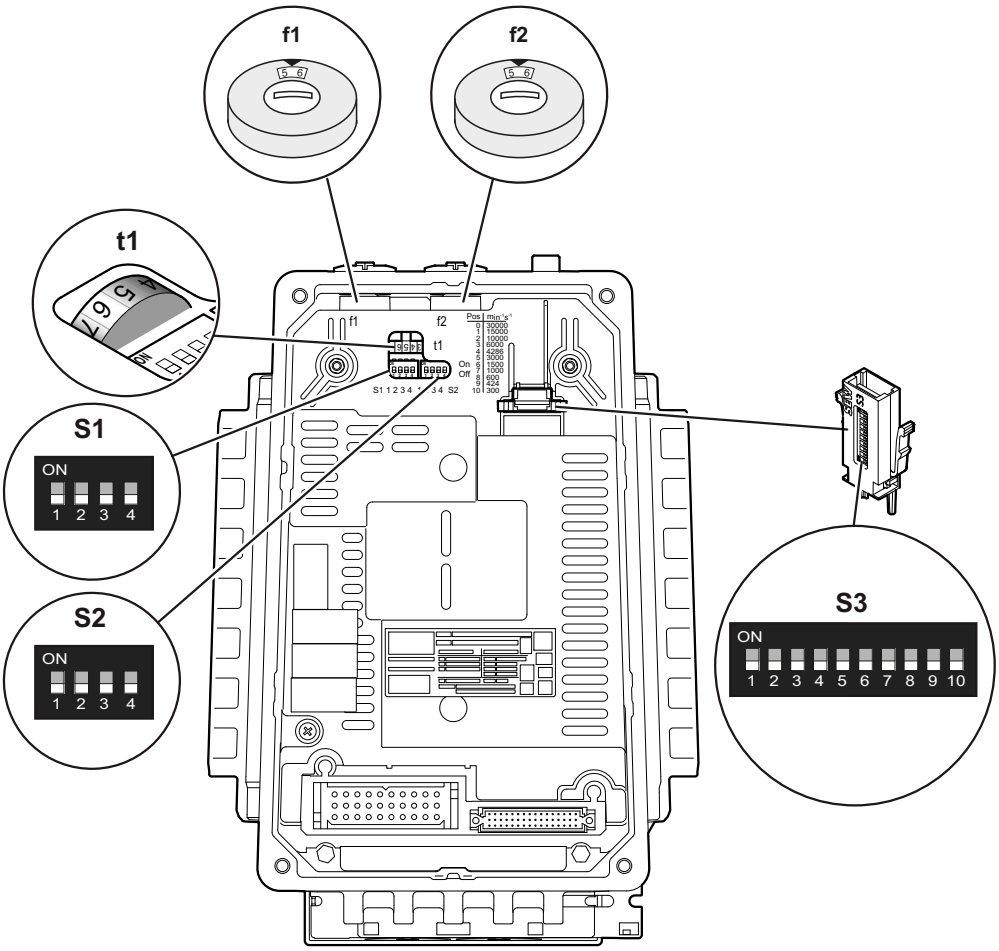
9007228265084555

f1 Potentiometer f1 (underneath the screw plug)
f2 Potentiometer f2 (underneath the screw plug)
t1 Potentiometer t1
S1 DIP switch S1
S2 DIP switch S2
S3 DIP switch S3

26863707/EN – 07/2021

6.4.2 Overview of design MMF32

The following figure gives an overview of the control elements at the electronics cover:



34336548747

f1 Potentiometer f1 (underneath the screw plug)
f2 Potentiometer f2 (underneath the screw plug)
t1 Potentiometer t1
S1 DIP switch S1
S2 DIP switch S2
S3 DIP switch S3

6.4.3 Potentiometer f1

NOTICE

Loss of the ensured degree of protection if the screw plug of the potentiometer is not installed or not installed correctly.

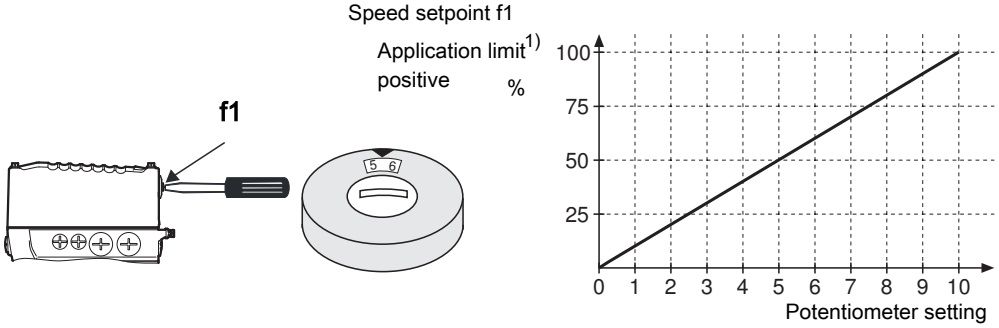
Damage to the device.

- After setting the setpoint, make sure the screw plug of the potentiometer has a seal and screw it in.

Use the f1 potentiometer to adjust speed setpoint f1.

- When the device is set to Easy mode, the predefined setpoint is always active at the potentiometer f1.
- The potentiometer f1 can be deactivated in Expert mode. In this case, the parameterizable replacement value is activated as speed setpoint f1.

The following figure shows how to scale the speed setpoint f1 using potentiometer f1:



9007228266718731

1) Depending on the selected direction of rotation, the parameter *Application limit – positive speed* or the parameter *Application limit – negative speed* are used to scale the speed setpoint f1.
For the application limit, refer to the MOVISUITE® parameter tree in the following menu: *Functions* > *Monitoring functions* > *Limit values* > *Application limit*.

26863707/EN – 07/2021

6.4.4 Potentiometer f2

NOTICE

Loss of the ensured degree of protection if the screw plug of the potentiometer is not installed or not installed correctly.

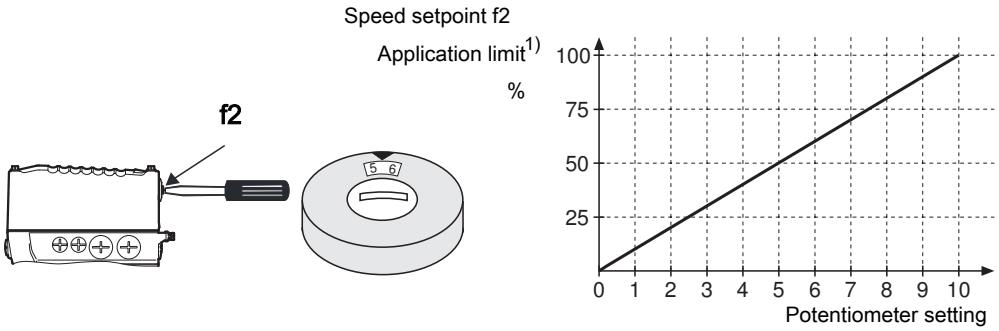
Damage to the device.

- After setting the setpoint, make sure the screw plug of the potentiometer has a seal and screw it in.

Use the potentiometer f2 to adjust speed setpoint f2.

- When the device is set to Easy mode, the predefined setpoint is always active at the potentiometer f2.
- The potentiometer f2 can be deactivated in Expert mode. In this case, the parameterizable replacement value is activated as speed setpoint f2.

The following figure shows how to scale the speed setpoint f2 using potentiometer f2:



9007228536783243

1) Depending on the selected direction of rotation, the parameter *Application limit positive* or the parameter *Application limit negative* are used to scale the speed setpoint f2.
For the application limit, refer to the MOVISUITE® parameter tree in the following menu: *Functions* > *Monitoring functions* > *Limit values* > *Application limit*.

6.4.5 Potentiometer t1

Use the potentiometer t1 to set the acceleration/deceleration setpoint t1.

- When the device is set to Easy mode, the predefined setpoint is always active at the potentiometer t1.
- The potentiometer t1 can be deactivated in Expert mode.

  In this case, the parameters *Acceleration 1* and *Deceleration 1* of the fixed setpoint processing are activated.

The following table lists the scaling of acceleration/deceleration setpoint t1 depending on the setting of potentiometer t1:

Potentiometer t1											
Detent setting	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Acceleration/deceleration $min^{-1}s^{-1}$	30000	15000	10000	6000	4286	**3000**	1500	1000	600	429	300
Ramp time[1)] s	0.1	0.2	0.3	0.5	0.7	**1**	2	3	5	7	10

1) Alternative information on the equivalent ramp times for acceleration/deceleration based on a speed change of 3000 min-1.

26863707/EN – 07/2021

6.5 DIP switch

6.5.1 Overview

NOTICE

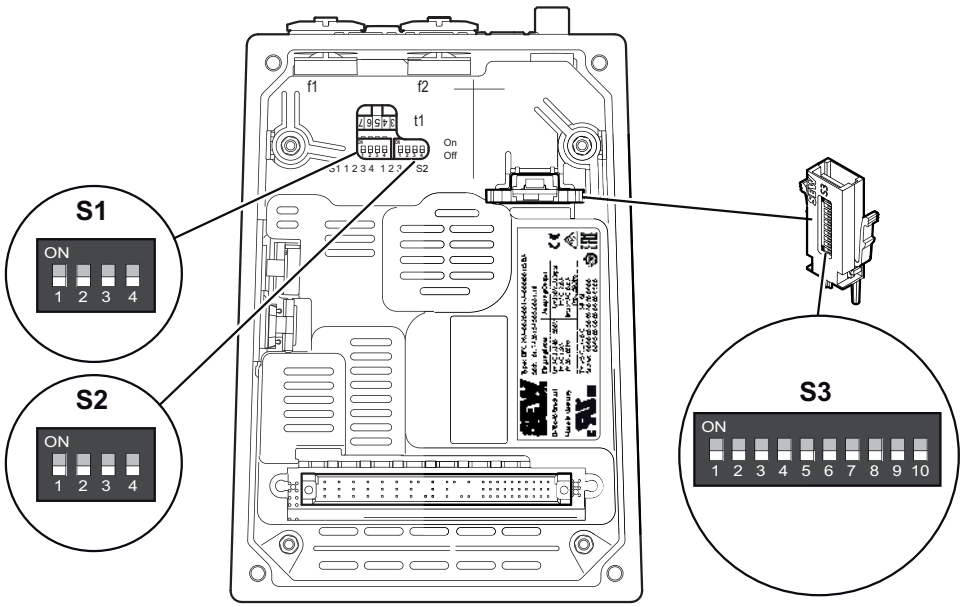
Damage to the DIP switches caused by unsuitable tools.

Possible damage to property.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
- The force used for setting the DIP switches must not exceed 5 N.

Overview of design MMF1., MMF31

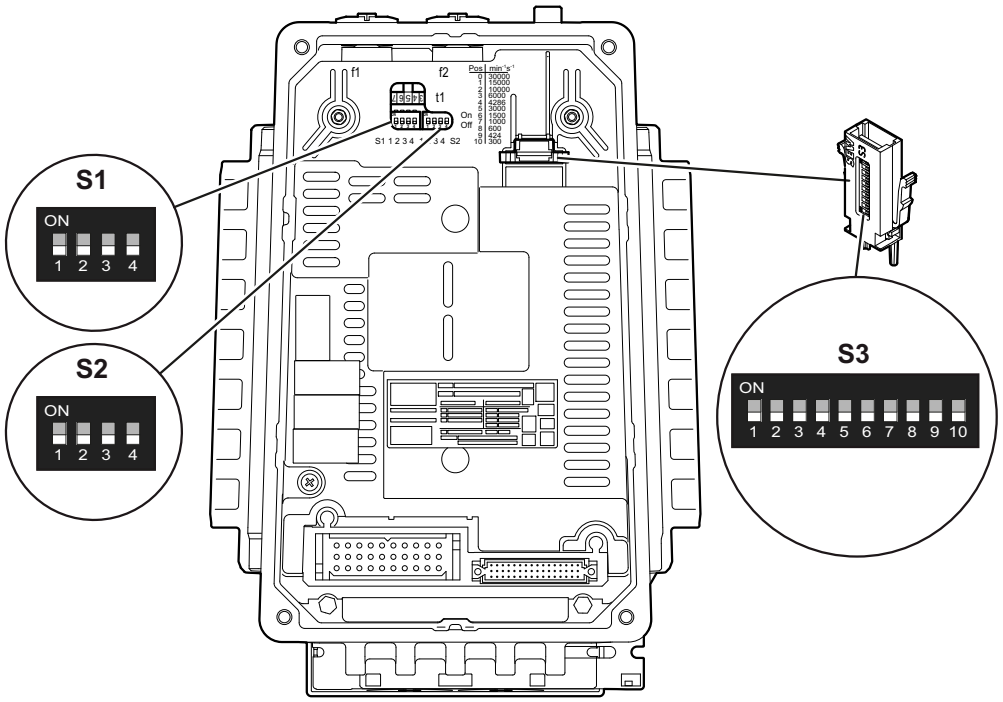
The following figure shows the DIP switches of the device:



9007228267677579

Overview of design MMF32

The following figure shows the DIP switches of the device:



34336552587

DIP switch S1

The following table shows the functions of DIP switch S1:

DIP switch	S1			
	1	2	3	4
Meaning	**Direction of rotation reversal**	**Releasing the brake /deactivating DynaStop® with FCB 01 – enable**	**Speed monitoring deactivation**	**Reserved**
ON	On	On	Speed monitoring Off	On
OFF	**Off**[1)]	**Off**[1)]	**Speed monitoring On**[1)]	**Off**[1)]

1) The factory settings are shown in boldface.

You must not alter the factory setting of the S1/4 DIP switch = OFF.

26863707/EN – 07/2021

DIP switch S2

The following table shows the functions of DIP switch S2:

DIP switch	S2			
	1	2	3	4
	Reserved	Selected AS-Interface slave type/profile		
		Bit 2^0	Bit 2^1	Bit 2^2
ON	–	1	1	1
OFF	–	**0**	**0**	**0**

You must not alter the factory setting of the S2/1 DIP switch = OFF.

DIP switch S3

Use the DIP switch S3 to perform startup of the drive train for motors without digital interface. Motor assignment depends on the nominal output current of the electronics cover via the DIP switches S3/3 and S3/4.

Startup via DIP switch S3 is only effective if the following requirements are met when using the memory module:

- The drive train has not been started up using MOVISUITE® or CBG...
- The drive train has not been started up via digital interface (DDI).
- The connected motor is not quipped with a digital interface (DDI).

The following table shows the functions of DIP switch S3:

DIP switch	S3									
	1	2	3	4	5	6	7	8	9	10
Meaning	**Brake type**	**Motor connection type**[1]	**Binary coding**							
			Motor assignment		**Motor protection**		**Motor series**			
			2^0	2^1	2^0	2^1	2^0	2^1	2^2	2^3
ON	Optional brake	△	1	1	1	1	1	1	1	1
OFF	**Standard brake**	⅄	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

1) If the motor connection type is changed via DIP switch S3/2, the motor connection type via DIP switch D3/3 and S3/4 must be checked and adapted if necessary.

6.5.2 Description of the DIP switches

DIP switch S1/1: Direction of rotation reversal

INFORMATION

The direction of rotation is reversed depending on the setting of the DIP switch and of the parameter drive train 1 > Controller > *Direction of rotation reversal*. If both settings are active, the speed setpoint is not inverted (logical XOR).

You can reverse the direction of rotation of the drive using this DIP switch.

- OFF (S1/1 = OFF): The drive turns clockwise for a positive setpoint and counterclockwise for a negative setpoint.
- ON (S1/1 = ON): The drive turns counterclockwise for a positive setpoint and clockwise for a negative setpoint.

DIP switch S1/2: Releasing the brake / deactivating DynaStop® with FCB01 – enable

⚠ WARNING

Risk from falling loads.

This can result in severe or fatal injuries.

- Do not enable the function "Releasing the brake / deactivating DynaStop®" for hoist applications and applications with potentially falling loads.

INFORMATION

If the function of this DIP switch is deactivated via parameter access, the last active setting of the relevant parameter is maintained.

Use this DIP switch to enable the function "Releasing the brake / deactivating DynaStop® with FCB 01" even when the drive is disabled.

- OFF (S1/2 = OFF): The function "Releasing the brake / deactivating DynaStop® with FCB 01" is inhibited.
- ON (S1/2 = ON): The function "Releasing the brake / deactivating DynaStop® with FCB 01" is enabled.

  When the function block FCB 01 is active, you can release the brake or deactivate DynaStop® using a digital input or an actuated process data bit.

INFORMATION

For more information about disabling DynaStop® without drive enable, refer to chapter "Operation".

26863707/EN – 07/2021

DIP switch S1/3: Deactivating the speed monitoring

INFORMATION

If the function of this DIP switch is deactivated via parameter access, the last active setting of the relevant parameter is maintained.

This DIP switch is used to disable speed monitoring.

- Speed monitoring OFF (S1/3 = ON): Speed monitoring is not active.
- Speed monitoring ON (S1/3 = OFF): Speed monitoring is active.

  Speed monitoring is used to protect the drive in case of blockage.

  When speed monitoring is active and the drive operates at the current limit for longer than 1 second (factory settings), the drive unit triggers the fault "Speed monitoring". The drive unit signals the fault, for example via the "DRIVE" status LED. The current limit must be reached permanently for the duration of the delay time before the monitoring function trips.

DIP switches S2/2 – S2/4: Selecting the AS-Interface slave type/profile

Use this DIP switch to select the slave type and the profile for the AS-Interface communication.

DIP switch			AS-Interface slave type/profile
S2/2	S2/3	S2/4	
OFF	OFF	OFF	Binary slave 4DI/4DO, profile: S-7.F
ON	OFF	OFF	Double slave 4DI/4DO The drive is A- and B-slave • A-slave -> CTT3, profile: S-7.A.7 • B-slave -> CTT2 (SMART parameter access), profile: S-7.A.5
OFF	**ON**	OFF	A/B-Slave 4DI/4DO, profile: S-7.A.7 The drive is A- or B-slave (each CTT3)
ON	**ON**	OFF	Double slave 8DI/8DO The drive is A- and B-slave • A-slave -> CTT3, profile: S-7.A.A • B-slave -> CTT2 (SMART parameter access), profile: S-7.A.5
OFF	OFF	**ON**	A/B-slave 8DI/8DO, profile: S-7.A.A The drive is A- or B-slave (each CTT3)
ON	OFF	**ON**	Reserved
OFF	**ON**	**ON**	Reserved
ON	**ON**	**ON**	Reserved

26863707/EN – 07/2021

DIP switch S3/1: Brake type

Use this DIP switch to select the brake type of the motor.

- **OFF (S3/1 = OFF): Use this setting to select the standard brake.**

  This setting corresponds to the brake type that is automatically assigned to the motor type.[1)]

- ON (S3/1 = ON): Use this setting to select the optional brake.

  This setting corresponds to the brake type that is optionally assigned to the motor type.[1)]

If no brake listed in the motor selection tables[1)] matches the brake in the motor, perform startup of the drive train via MOVISUITE®. Startup via DIP switch S3 is not possible.

1) See chapter "Detailed motor selection table for startup via DIP switch S3".

DIP switch S3/2: Motor connection type

You can select the connection type of asynchronous motors at this DIP switch. When selecting synchronous motors, the switch does not have any function.

- **OFF (S3/2 = OFF): Use this setting to select the connection type of asynchronous motors** ⅄.
- ON (S3/2 = ON): Use this setting to select the connection type of asynchronous motors △.

If the motor connection type is changed via DIP switch S3/2, the motor connection type via DIP switch D3/3 and S3/4 must be checked and adapted if necessary, see chapter "Detailed motor selection table for startup via DIP switch S3".

26863707/EN – 07/2021

DIP switch S3/3 – S3/4: Motor assignment

Use these DIP switches to select the relative motor power in relation to inverter power. The selection depends on the selected motor series, motor connection type, and the nominal output current of the electronics cover.

S3/3	S3/4	Motor assignment
0	**0**	**Adjusted**
1	0	1 stage smaller
0	1	2 stages smaller
1	1	3 stages smaller

DIP switch S3/5 – S3/6: Motor protection

Use these DIP switches to select the temperature sensor type for thermal protection of the motor.

S3/5	S3/6	Motor protection
		Type of temperature sensor[1]
0	**0**	**No temperature sensor**[2]
1	0	PK (PT1000)
0	1	TF
1	1	TH

1) Temperature sensors of type KTY cannot be selected via the DIP switch settings. If necessary, select the KTY temperature sensor in the MOVISUITE® engineering software.

2) If no temperature sensor is selected, basic temperature protection of the motor is realized via the firmware function of the inverter.

26863707/EN – 07/2021

DIP switch S3/7 – S3/10: Motor series

Use these DIP switches to select the motor series (motor type).

Motor series	S3/7	S3/8	S3/9	S3/10	Motor series	
					Motor type	Nominal voltage Nominal frequency
0	**0**	**0**	**0**	**0**	**DRN.. 4-pole**	**230 V/400 V 50 Hz**
1	1	0	0	0	DRN.. 4-pole	266 V/460 V 60 Hz
2	0	1	0	0	DRN.. 4-pole	Wide-range voltage 50/60 Hz
3	1	1	0	0	DR2S.. 4-pole	230 V/400 V 50 Hz
4	0	0	1	0	DR2S.. 4-pole	266 V/460 V 60 Hz
5	1	0	1	0	DR2S.. 4-pole	Wide-range voltage 50/60 Hz
6	0	1	1	0	MOVIGEAR® classic	400 V 133 Hz
7	1	1	1	0	CM3C 2000 min^{-1}	400 V 133 Hz
8	0	0	0	1	CM3C 3000 min^{-1}	400 V 200 Hz
9	1	0	0	1	CM3C 4500 min^{-1} (in preparation)	400 V 300 Hz
10	0	1	0	1	CMP 2000 min^{-1}	400 V 167 Hz
11	1	1	0	1	CMP 3000 min^{-1}	400 V 150/250 Hz
12	0	0	1	1	CMP 4500 min^{-1} (in preparation)	400 V 225/375 Hz
13	1	0	1	1	Reserved	–
14	0	1	1	1	Reserved	–
15	1	1	1	1	Reserved	–

Nominal voltage range for wide-range voltage motors			
50 Hz		60 Hz	
△	⅄	△	⅄
220 – 240 V	380 – 420 V	254 – 277 V	440 – 480 V

26863707/EN – 07/2021

6.6 Detailed motor selection table for startup via DIP switch S3

The following detailed motor selection tables show how to perform startup via DIP switch S3 on the **standard memory module** (part no. 28242882).

6.6.1 DRN.. motor series, 4-pole

DRN.. motor series, 4-pole											
230/400 V, 50 Hz				266/460 V, 60 Hz				Wide-range voltage, 50/60 Hz			
DIP switch S3				DIP switch S3				DIP switch S3			
S3/7	S3/8	S3/9	S3/10	S3/7	S3/8	S3/9	S3/10	S3/7	S3/8	S3/9	S3/10
0	0	0	0	1	0	0	0	0	1	0	0

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF	0	1
TH	1	1

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
DRN71MS4	BE03/230 V	0	0020	2.0 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE05A/230 V		0025	2.5 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
			0032	3.2 A	⅄	0			
					△	1	1	1	3 stages smaller
DRN71M4	BE05A/230 V	0	0020	2.0 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**Adjusted**
			0025	2.5 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
			0032	3.2 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
	BE1A/230 V	1	0040	4.0 A	⅄	0			
					△	1	1	1	3 stages smaller
			0055	5.5 A	⅄	0			
					△	1			
DRN80MK4	BE1B/230 V	0	0020	2.0 A	⅄	**1**	**0**	**0**	**adjusted**
					△	1			
			0025	2.5 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
			0032	3.2 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE05B/230 V	1	0040	4.0 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
			0055	5.5 A	⅄	0			
					△	1	1	1	3 stages smaller

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
DRN80M4	BE1B/230 V	0	0025	2.5 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0032	3.2 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
			0040	4.0 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE05B/230 V	1	0055	5.5 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
			0070	7.0 A	⅄	0			
					△	1	1	1	3 stages smaller
DRN90S4	BE2B/230 V	0	0032	3.2 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0040	4.0 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
			0055	5.5 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE1C/230 V	1	0070	7.0 A	⅄	1	1	1	3 stages smaller
					△	0	0	1	2 stages smaller
			0095	9.5 A	⅄	1			
					△	0	1	1	3 stages smaller
DRN90L4	BE2B/230 V	0	0040	4.0 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
			0070	7.0 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE1C/230 V	1	0095	9.5 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
			0125	12.5 A	⅄	0			
					△	1	1	1	3 stages smaller
DRN100LS4 (50 Hz) DRN100LM4 (60 Hz and 50/60 Hz)	BE5A/230 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
	BE2B/230 V	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
			0160	16.0 A	⅄	0			
					△	1	1	1	3 stages smaller
DRN100L4[1)]	BE5A/230 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
	BE2B/230 V	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller

26863707/EN – 07/2021

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
DRN112M4[1)]	BE5B/230 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
	BE11A/230 V	1			△	**1**	**0**	**0**	**adjusted**
			0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
DRN132S4[1)]	BE11A/230 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	**0**	**0**	**0**	**adjusted**
	BE5B/230 V	1			△	1			
			0160	16.0 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**adjusted**
DRN132M4[1)]	BE11B/230 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0			
	BE20A/230 V	1			△	1			
			0160	16.0 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.2 DR2S.. motor series, 4-pole

DR2S.. motor series, 4-pole											
230/400 V, 50 Hz				266/460 V, 60 Hz				Wide-range voltage, 50/60 Hz			
DIP switch S3				DIP switch S3				DIP switch S3			
S3/7	S3/8	S3/9	S3/10	S3/7	S3/8	S3/9	S3/10	S3/7	S3/8	S3/9	S3/10
1	1	0	0	0	0	1	0	1	0	1	0

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF	0	1
TH	1	1

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
DR2S63M4	BE03/230 V	0	0020	2.0 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
			0025	2.5 A	⅄	0	1	1	3 stages smaller
	BE03/230 V	1			△	1	0	1	2 stages smaller
			0032	3.2 A	⅄	0			
					△	1	1	1	3 stages smaller
DR2S71MS4	BE05A/230 V	0	0020	2.0 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**Adjusted**
			0025	2.5 A	⅄	0	0	1	2 stages smaller
	BE1A/230 V	1			△	1	1	0	1 stage smaller
			0032	3.2 A	⅄	0	1	1	3 stages smaller
					△	1	0	1	2 stages smaller
DR2S71M4	BE1A/230 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0025	2.5 A	⅄	0	1	0	1 stage smaller
	BE05A/230 V	1			△	**1**	**0**	**0**	**Adjusted**
			0032	3.2 A	⅄	0	0	1	2 stages smaller
					△	1	1	0	1 stage smaller
DR2S80MK4	BE1B/230 V	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted**
	BE05B/230 V	1			△	1			
			0032	3.2 A	⅄	0	1	0	1 stage smaller
					△	**1**	**0**	**0**	**Adjusted**
DR2S80M4	BE1B/230 V	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	0			
	BE05B/230 V	1			△	1			
			0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.3 MOVIGEAR® classic motor series

Motor series			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
0	1	1	0

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF[1)]	0	1
TH[1)]	1	1

1) MOVIGEAR® classic is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1[1)]			S3/2[2)]		S3/3	S3/4	Motor power
MGF..-1-..C	–	0	0020	2.0 A	⅄	0	0	0	Adjusted
					△	1			
			0025	2.5 A	⅄	0	1	0	1 stage smaller
					△	1			
			0032	3.2 A	⅄	0	0	1	2 stages smaller
					△	1			
			0040	4.0 A	⅄	0	1	1	3 stages smaller
					△	1			
			0055	5.5 A	⅄	0			
					△	1			
MGF..-2-..C	–	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	0	0	0	Adjusted
					△	1			
			0032	3.2 A	⅄	0	0	0	Adjusted
					△	1			
			0040	4.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0055	5.5 A	⅄	0	0	1	2 stages smaller
					△	1			
MGF..-4-..C	–	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	0			
					△	1			
			0032	3.2 A	⅄	0			
					△	1			
			0040	4.0 A	⅄	0	0	0	Adjusted
					△	1			
			0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	1			

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1[1]			S3/2[2]		S3/3	S3/4	Motor power
MGF..-4-..C/XT	–	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	0			
					△	1			
			0032	3.2 A	⅄	0			
					△	1			
			0040	4.0 A	⅄	0			
					△	1			
			0055	5.5 A	⅄	0	0	0	Adjusted
					△	1			

1) MOVIGEAR® classic is not available with brake. DIP switch S3/1 is ignored.

2) MOVIGEAR® classic is available only with star connection. DIP switch S3/2 must be set to 0 = STAR.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.4 Motor series CM3C, 2000 min^{-1}

Motor series CM3C, n_N = 2000 min^{-1} 400 V, 133 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
1	1	1	0

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF[1)]	0	1
TH[1)]	1	1

1) CM3C.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C71S[1)]	BZ1/230 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0040	4.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
	BZ1/400 V	1	0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	1			
			0070	7.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0095	9.5 A	⅄	0	1	1	3 stages smaller
					△	1			
CM3C71M[1)]	BZ1/230 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1			
	BZ1/400 V	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	⅄	0			
					△	1			
CM3C80S[1)]	BZ3/230 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	BZ3/400 V	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1			

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C80M[1]	BZ3/230 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	BZ3/400 V	1	0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1			
CM3C100M[1]	BZ5/230 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	**0**	**0**	**0**	**Adjusted**[2]
					△	1			
	BZ5/400 V	1	0160	16.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.5 Motor series CM3C, 3000 min^{-1}

Motor series CM3C, n_N = 3000 min^{-1} 400 V, 200 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
0	0	0	1

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF[1)]	0	1
TH[1)]	1	1

1) CM3C.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C63S[1)]	BZ05/230 V	0	0020	2.0 A	人	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0025	2.5 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
			0032	3.2 A	人	0	1	0	1 stage smaller
					△	1			
	BZ05/400 V	1	0040	4.0 A	人	0	0	1	2 stages smaller
					△	1			
			0055	5.5 A	人	0	1	1	3 stages smaller
					△	1			
CM3C63M[1)]	BZ05/230 V	0	0032	3.2 A	人	0	0	0	**Adjusted[2)]**
					△	1			
			0040	4.0 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
			0055	5.5 A	人	0	1	0	1 stage smaller
					△	1			
	BZ05/400 V	1	0070	7.0 A	人	0	0	1	2 stages smaller
					△	1			
			0095	9.5 A	人	0	1	1	3 stages smaller
					△	1			
CM3C71S[1)]	BZ1/230 V	0	0055	5.5 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	人	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	人	0	0	1	2 stages smaller
					△	1			
	BZ1/400 V	1	0125	12.5 A	人	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	人	0			
					△	1			

26863707/EN – 07/2021

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C71M[1)]	BZ1/230 V	0	0055	5.5 A	人	0			
					△	1			
			0070	7.0 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
			0095	9.5 A	人	0	1	0	1 stage smaller
					△	1			
	BZ1/400 V	1	0125	12.5 A	人	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	人	0	1	1	3 stages smaller
					△	1			
CM3C71L[1)]	BZ1/230 V	0	0095	9.5 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
			0125	12.5 A	人	0	1	0	1 stage smaller
					△	1			
	BZ1/400 V	1	0160	16.0 A	人	0	0	1	2 stages smaller
					△	1			
CM3C80M[1)]	BZ3/230 V	0	0095	9.5 A	人	0			
					△	1			
			0125	12.5 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			
	BZ3/400 V	1	0160	16.0 A	人	0	1	0	1 stage smaller
					△	1			
CM3C80L[1)]	BZ3/230 V	0	0095	9.5 A	人	0			
					△	1			
			0125	12.5 A	人	0			
					△	1			
	BZ3/400 V	1	0160	16.0 A	人	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.6 Motor series CM3C, 4500 min^{-1} (in preparation)

Motor series CM3C, n_N = 4500 min^{-1} 400 V, 300 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
1	0	0	1

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF[1)]	0	1
TH[1)]	1	1

1) CM3C.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C63S[1)]	BZ05/230 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0040	4.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
	BZ05/400 V	1	0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	1			
			0070	7.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0095	9.5 A	⅄	0	1	1	3 stages smaller
					△	1			
CM3C63M[1)]	BZ05/230 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1			
	BZ05/400 V	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	⅄	0			
					△	1			
CM3C63L[1)]	BZ05/230 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	BZ05/400 V	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1			

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CM3C71S[1)]	BZ1/230 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
	BZ1/400 V	1			△	1			
			0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1			
CM3C71M[1)]	BZ1/230 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	**0**	**0**	**0**	**Adjusted**
	BZ1/400 V	1			△	1			
			0160	16.0 A	⅄	0	1	0	1 stage smaller
					△	1			
CM3C71L[1)]	BZ1/230 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0			
	BZ1/400 V	1			△	1			
			0160	16.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.7 Motor series CMP, 2000 min^{-1}

Motor series CMP., n_N = 2000 min^{-1} 400 V, 167 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
0	1	0	1

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF	0	1
TF[1)]	1	1

1) CMP.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP71S[1)]	BP1/24 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted**[2)]
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted**[2)]
					△	1			
			0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0040	4.0 A	⅄	**0**	1	0	1 stage smaller
					△	1			
	no brake	1	0055	5.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0070	7.0 A	⅄	0	1	1	3 stages smaller
					△	1			
			0095	9.5 A	⅄	0			
					△	1			
CMP71M[1)]	BP1/24 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	⅄	0			
					△	1			
CMP71L[1)]	BP1/24 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1			

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP80M[1]	BP3/24 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1			
CMP80L[1]	BP3/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
	no brake	1	0160	16.0 A	⅄	0	1	0	1 stage smaller
					△	1			
CMP100M[1]	BP5/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0			
					△	1			
	no brake	1	0160	16.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.8 Motor series CMP, 3000 min^{-1}

Motor series CMP, n_N = 3000 min^{-1} 400 V, 150/250 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
1	1	0	1

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF	0	1
TF[1)]	1	1

1) CMP.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP40S[1)]	BK01/24 V	0	0020	2.0 A	⅄	0	1	1	3 stages smaller
					△	1			
			0025	2.5 A	⅄	0			
	no brake	1			△	1			
			0032	3.2 A	⅄	0			
					△	1			
CMP40M[1)]	BK01/24 V	0	0020	2.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0025	2.5 A	⅄	0	1	1	3 stages smaller
	no brake	1			△	1			
			0032	3.2 A	⅄	0			
					△	1			
CMP50S[1)]	BK02/24 V	0	0020	2.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0025	2.5 A	⅄	0	0	1	2 stages smaller
	no brake	1			△	1			
			0032	3.2 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP50M[1)]	BK02/24 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0025	2.5 A	⅄	0	1	0	1 stage smaller
					△	1			
			0032	3.2 A	⅄	0	0	1	2 stages smaller
	no brake	1			△	1			
			0040	4.0 A	⅄	0	1	1	3 stages smaller
					△	1			
			0055	5.5 A	⅄	0			
					△	1			

26863707/EN – 07/2021

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP50L[1)]	BK04/24 V	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0032	3.2 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0040	4.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0055	5.5 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP63M[1)]	BK07/24 V	0	0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0040	4.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0070	7.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0095	9.5 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP63L[1)]	BK07/24 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	⅄	0			
					△	1			
CMP71M[1)]	BP1/24 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP71L[1)]	BP1/24 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1			

26863707/EN – 07/2021

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP80S[1)]	BP3/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	**0**	**0**	**0**	**Adjusted**
	no brake	1			△	1			
			0160	16.0 A	⅄	0	1	0	1 stage smaller
					△	1			
CMP80M[1)]	BP3/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0			
	no brake	1			△	1			
			0160	16.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.6.9 Motor series CMP, 4500 min^{-1} (in preparation)

Motor series CMP, n_N = 4500 min^{-1} 400 V, 225/375 Hz			
DIP switch S3			
S3/7	S3/8	S3/9	S3/10
0	0	1	1

Motor protection		
Temperature sensor type	DIP switch S3	
	S3/5	S3/6
No temperature sensor	0	0
PK (PT1000)	1	0
TF	0	1
TF[1)]	1	1

1) CMP.. is available only with PK temperature sensor (PT1000).

The following table shows the settings of the DIP switch S3 depending on the motor and the nominal output current of the inverter.

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP50S[1)]	BK02/24 V	0	0020	2.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0025	2.5 A	⅄	0	1	0	1 stage smaller
					△	1			
			0032	3.2 A	⅄	0	0	1	2 stages smaller
					△	1			
	no brake	1	0040	4.0 A	⅄	0	1	1	3 stages smaller
					△	1			
			0055	5.5 A	⅄	0			
					△	1			
CMP50M[1)]	BK02/24 V	0	0020	2.0 A	⅄	0			
					△	1			
			0025	2.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0032	3.2 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0040	4.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0055	5.5 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP50L[1)]	BK04/24 V	0	0032	3.2 A	⅄	**0**	**0**	**0**	**Adjusted[2)]**
					△	1			
			0040	4.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0055	5.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0070	7.0 A	⅄	0	0	1	2 stages smaller
					△	1			
			0095	9.5 A	⅄	0	1	1	3 stages smaller
					△	1			

26863707/EN – 07/2021

Motor			Electronics cover		DIP switch S3				
Motor type	Brake		Type designation	Nominal output current	Connection type		Motor assignment in relation to the inverter power		
	Type/nominal voltage	S3/1			S3/2		S3/3	S3/4	Motor power
CMP63M[1]	BK07/24 V	0	0055	5.5 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			
			0070	7.0 A	⅄	0	1	0	1 stage smaller
					△	1			
			0095	9.5 A	⅄	0	0	1	2 stages smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	1	1	3 stages smaller
					△	1			
			0160	16.0 A	⅄	0			
					△	1			
CMP63L[1]	BK07/24 V	0	0055	5.5 A	⅄	0			
					△	1			
			0070	7.0 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0095	9.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0125	12.5 A	⅄	0	0	1	2 stages smaller
					△	1			
			0160	16.0 A	⅄	0	1	1	3 stages smaller
					△	1			
CMP71S[1]	BP1/24 V	0	0095	9.5 A	⅄	**0**	**0**	**0**	**adjusted**
					△	1			
			0125	12.5 A	⅄	0	1	0	1 stage smaller
					△	1			
	no brake	1	0160	16.0 A	⅄	0	0	1	2 stages smaller
					△	1			
CMP71M[1]	BP1/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0	**0**	**0**	**Adjusted**
					△	1			
	no brake	1	0160	16.0 A	⅄	0	1	0	1 stage smaller
					△	1			
CMP71L[1]	BP1/24 V	0	0095	9.5 A	⅄	0			
					△	1			
			0125	12.5 A	⅄	0			
					△	1			
	no brake	1	0160	16.0 A	⅄	**0**	**0**	**0**	**Adjusted**
					△	1			

1) The motor parameters are included in the standard memory module of status 0400 or higher.
2) The inverter output voltage is lower than the nominal motor current. Check the capacity utilization of the motor/frequency inverter combination.

Motor startup via DIP switch S3 is not possible. Start up the motor using the MOVISUITE® software or the CBG.. keypad.

26863707/EN – 07/2021

6.7 Startup procedure

6.7.1 Startup in Easy mode

In Easy mode (delivery state), startup is performed without a PC or keypad.

The device functions are predefined in Easy mode.

The setpoint is only set using mechanical setting elements (potentiometer, DIP switch).

The electronics cover controls the drive unit using the drive function FCB 05 Speed control.

6.7.2 Startup in Easy mode

In expert mode, perform startup of the devices using the MOVISUITE® engineering software or the CBG21A keypad from SEW-EURODRIVE.

25882306443

The startup procedure is divided into segments. The following steps illustrate the start-up procedure for a device by way of an example.

Drive train segment

Drive train		Configuring drive trains.

Interfaces segment

Standard interfaces		Basic settings of the standard interfaces • Standard I/O • Encoder 1

Functions segment

I/O configuration		• Standard I/O • I/O card DI/DO

26863707/EN – 07/2021

MOVIKIT® configuration (optional)		• Basic settings • Monitoring functions • Drive functions • Inputs/outputs • Process data interface
PO configuration		• Advanced PO configuration
PI configuration		• Advanced PE configuration
Drive functions		• FCB 05 Speed control
Advanced drive functions		• FCB 01 Output stage inhibit • FCB 02 Stop default • FCB 26 Stop at user limit
Monitoring functions		• Limit values 1 • Control functions 1 • Energy-saving function

Information on the drive unit

Device data is available via the project node.

Device data		• Device identification • Main component • Subcomponent • Production label
Fault responses Overview		• Axis module • Power supply monitoring • Functions
Setup		• Access rights • Resetting device parameters.

26863707/EN – 07/2021

Checklist for startup

The following checklist lists the necessary steps for complete startup.

Step	Startup step	Finished
1	Install the drive unit.	
2	Install the MOVI-C® component.	
3	Start MOVISUITE®.	
4	Start up the drive train.	
5	Parameterize the setpoints.	
6	Parameterize the function blocks (FCBs).	
7	Configure digital inputs and outputs.	
8	Configure the process data (PD).[1)]	
9	Configure the software modules (MOVIKIT®).	
10	Test the drive unit/application.	

1) Not available with DBC designs.

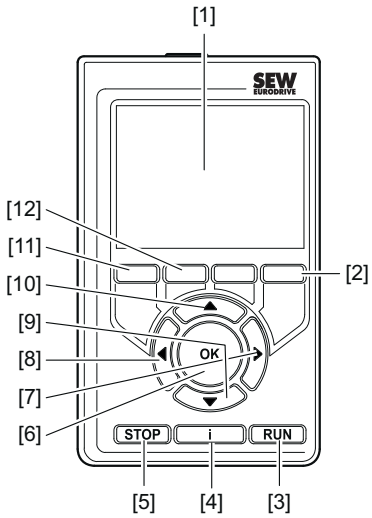
26863707/EN – 07/2021

6.8 Startup with the CBG21A keypad

Using the CBG21A keypad, startup can be performed intuitively guided by the symbols and functions of the color display.

6.8.1 CBG21A keypad

The following figure shows the CBG21A keypad:



[1]	Color display	
[2]	Function keys (Function according to bottom line on color display)	
[3]	<RUN> key	(Start)
[4]	<I> key	(Information)
[5]	<STOP> key	(Stop)
[6]	<OK> key	(Acknowledgment)
[7]	<►> key	(Left)
[8]	<◄> key	(Right)
[9]	<▼> key	(Down)
[10]	<▲> key	(Up)
[11]	Function key <⇦>	(Back)
[12]	Function key <⇨>	(Next)

Operation

Activating a field	Select a field using the arrow keys <◄>/<►>/<▲>/<▼>. Use the <OK> key to activate the field.
Entering numbers	Use the arrow keys <◄>/<►> to change the digit within the number. The editable digit is highlighted. Change the value of the number using the arrow keys <▲>/<▼>. Confirm the number with the <OK> key.

26863707/EN – 07/2021

Symbols used

The available functions are shown with pictograms in the keypad display.

Manual mode

Optimization of the control mode

Application

Diagnostics

Parameters

Data management

Settings

Back

Next

Startup

26863707/EN – 07/2021

6.9 Startup with the CBG11A keypad

Using the CBG11A keypad, startup can be performed intuitively guided by the symbols and functions of the color display.

INFORMATION

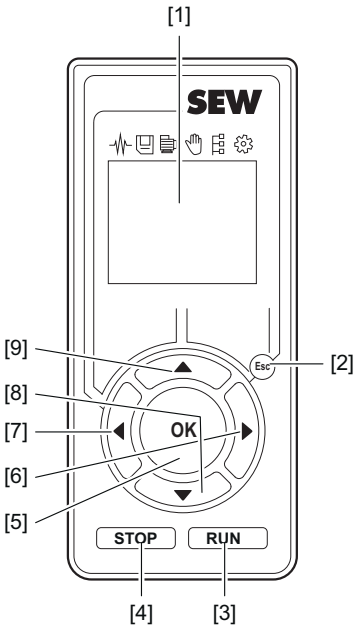
You cannot start up a motor with encoder using the keypad.

You can carry out this particular startup with the MOVISUITE® engineering software.

6.9.1 CBG11A keypad

The following figure shows the CBG11A keypad:

[1]	Color display	
[2]	<Esc> key	
[3]	<RUN> key	(Start)
[4]	<STOP> key	(Stop)
[5]	<OK> key	(Acknowledgment)
[6]	<►> key	(Left)
[7]	<◄> key	(Right)
[8]	<▼> key	(Down)
[9]	<▲> key	(Up)



All text on the color display is only available in English.

Operation

Select functions	Use the <Esc> key to return to the main menu. Select a function using the arrow keys <◄>/<►>/<▲>/<▼>. Confirm your selection with the <OK> key.
Entering numbers	Use the arrow keys <◄>/<►> to change the digit within the number. The editable digit is underlined. Change the value of the number using the arrow keys <▲>/<▼>. Confirm the number with the <OK> key.

26863707/EN – 07/2021

Symbols used

The available functions are shown with pictograms in the keypad display.

Diagnostics

Data management

Startup

Manual mode

Parameter tree

Keypad settings

A firmware update of the drive unit is not possible with the CBG11A keypad.

26863707/EN – 07/2021

6.10 Process data configuration

In Easy mode, the following process data configuration is active.

In Expert mode, you can assign different functions to the individual data bits.

6.10.1 Control word 1

Control word 1 – Cyclic data bits of the AS-Interface				
DO (AS-Interface)	**PO1 (Device)**	**Function**	**Usable data width of the AS-Interface slave profile**	
DO0	0	Positive direction of rotation	4 bits	8 bits
DO1	1	Negative direction of rotation		
DO2	2	Potentiometer f2		
DO3	3	Output stage enable/fault reset		
DO4	4	Fixed speed setpoint bit 0		
DO5	5	Fixed speed setpoint bit 1		
DO6	6	FCB 13 Stop at application limit		
DO7	7	Releasing the brake / deactivating DynaStop® with FCB 01		
–	8	No function		
–	9	No function		
–	10	No function		
–	11	No function		
–	12	No function		
–	13	No function		
–	14	No function		
–	15	No function		

26863707/EN – 07/2021

6.10.2 Status word 1

Status word 1 – Cyclic data bits of the AS-Interface				
DI (AS-Interface)	**PI1 (Device)**	**Function**	**Usable data width of the AS-Interface slave profile**	
DI0	0	Ready for operation	4 bits	8 bits
DI1	1	Local mode/manual mode active		
DI2	2	DI01		
DI3	3	DI02		
DI4	4	Motor standstill – filtered		
DI5	5	STO active		
DI6	6	Electromechanical utilization prewarning		
DI7	7	Fault		
–	8	No function		
–	9	No function		
–	10	No function		
–	11	No function		
–	12	No function		
–	13	No function		
–	14	No function		
–	15	No function		

26863707/EN – 07/2021

6.10.3 Control word 2

Control word 2 – Acyclic parameter bits of the AS-Interface				
PO (AS-Interface)	**PO2 (Device)**	**Function**		**Usable data width of the AS-Interface slave profile**
PO0	0	No function		4 bits
PO1	1	No function		
PO2	2	No function		
PO3	3	Bits reserved for AS-Interface -> Bit permanently set to "0"	**A/B-slave,** **Double slave**	
		No function	**Binary slave**	
–	4	No function		
–	5	No function		
–	6	No function		
–	7	No function		
–	8	No function		
–	9	No function		
–	10	No function		
–	11	No function		
–	12	No function		
–	13	No function		
–	14	No function		
–	15	No function		

26863707/EN – 07/2021

6.10.4 Status word 2

Status word 2 – Acyclic parameter bits of the AS-Interface			
PI (AS-Interface)	**PI2 (Device)**	**Function**	**Usable data width of the AS-Interface slave profile**
PI0	0	No function	4 bits
PI1	1	No function	
PI2	2	No function	
PI3	3	No function	
–	4	No function	
–	5	No function	
–	6	No function	
–	7	No function	
–	8	No function	
–	9	No function	
–	10	No function	
–	11	No function	
–	12	No function	
–	13	No function	
–	14	No function	
–	15	No function	

26863707/EN – 07/2021

6.11 Disabling DynaStop® for startup purposes

6.11.1 Important notes on disabling DynaStop® (/DSP option)

⚠ WARNING

Removing the electronics cover will disable DynaStop®.

Severe or fatal injuries.

- If it is not permitted to deactivate the system, additional measures are required (e.g. mechanical stake-out)

⚠ WARNING

Electric shock due to regenerative energy created by moving system or machine. The regenerative energy can cause dangerous voltages at the terminals or plug connectors, even when the supply voltage is disconnected.

Severe or fatal injuries.

- Never touch the wiring space with wiring board and plug connector.
- If you cannot rule out that the wiring space is touched, provide for suitable protection covers.

NOTICE

Damage to the connector plug between drive unit and electronics cover due to regenerative energy created by movement of the system or machine.

Potential damage to property.

- To disable DynaStop®, you have to remove the electronics cover completely to prevent damage to the plug connector (destroyed contacts).

26863707/EN – 07/2021

6.11.2 Steps for disabling DynaStop®

INFORMATION

For more information on the DynaStop® function, refer to chapters "Operation" and the documentation of the connected drive unit.

Disabling DynaStop® by removing the electronics cover

Disable the DynaStop® function as follows:

1. Observe chapter "Startup notes"
2. Observe chapter "Important notes on disabling DynaStop®".
3. Disconnect all components from the voltage supply and use an external disconnecting device to avoid an unintentional re-connection.
4. Completely remove the electronics cover.

The DynaStop® function is disabled. The system/machine can now be moved mechanically observing the notes in chapter "Important notes on disabling DynaStop®".

Disabling DynaStop® using the control signal

As an alternative, you can disable the DynaStop® function using a control signal (process data or digital input). Observe the instructions in chapter "Operation" > "Disabling DynaStop® without drive enable. (FCB 01)".

26863707/EN – 07/2021

6.12 Configuring the drive behavior at standstill (FCB02, FCB13, FCB14)

The parameter *Behavior at standstill* defines the drive behavior in case the drive enable is revoked and the motor is at standstill (path: *Functions* > *Drive functions* > *FCB 02 Stop default*). This parameter is effective when the function blocks FCB 02, FCB 13 and FCB 14 are active.

The following table lists the drive behavior after motor standstill:

Index	Parameters	Setting	Behavior at motor standstill		
			Brake/ DynaStop®	**Motoring position hold control**	**Effect on the the motor shaft**
8563.1	*Behavior at standstill* (Path: *Functions* > *Drive functions* > *FCB02 Stop default*)	Drive energized (brake released / DynaStop® deactivated)	Brake released	Position hold control active	The motor shaft is regulated to rotational speed = "0" by the motor.
			DynaStop® is deactivated		
		Drive not energized (brake applied / DynaStop® activated)	Brake applied	Motor de-energized	Motor shaft is held by brake.
			DynaStop® is activated		The motion of the motor shaft is retarded by DynaStop®.
		Drive not energized (without brake/ DynaStop®)	Brake released	Motor de-energized	The motor shaft can rotate freely.
			DynaStop® is deactivated		

26863707/EN – 07/2021

7 Operation

7.1 Switch disconnector

⚠ WARNING

Electric shock due to dangerous voltages at the line terminals.

The switch disconnector disconnects the electronics cover from the voltage supply. Voltage is still present at the terminals of the device.

- A correct installation includes that terminals of the device are protected against contact.
- Secure the device against unintended reconnection of the voltage supply.
- Wait for at least the following time before removing the electronics cover: **5 minutes**

NOTICE

Increased wear of the switch contacts.

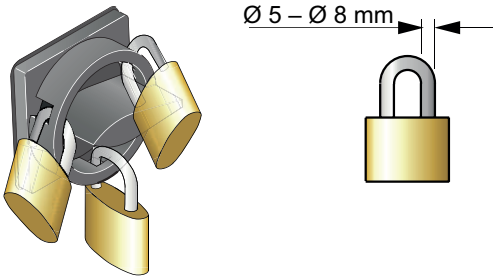
Destruction of the switch contacts.

- Do not operate the switch disconnector under load.

The switch disconnector of the device serves to interrupt the voltage supply of the electronics cover. The control unit of the decentralized inverter will remain supplied after the load disconnector is opened only if the optional, external DC 24 V backup voltage is connected.

- For devices with DAC electronics cover, the feedback contact (NC contact) of the load disconnector applies to the digital input DI04. You can query the load disconnector status at the digital input DI04 when the DC 24 V backup voltage is connected to the device.
- For devices with DFC or DSI electronics cover, the feedback contact (NC contact) of the load disconnector applies to the digital input DI08. You can query the load disconnector status at the digital input DI08 when the DC 24 V backup voltage is connected to the device.

The load disconnector can be secured with 3 locks.



26585544715

26863707/EN – 07/2021

7.2 Load disconnector /R01 at the inverter output of MMF3../DAC

⚠ WARNING

Electric shock due to mixing up the load disconnector and its function.

Severe or fatal injuries.

- Before opening the device, check the type designation on the nameplate to see which load disconnector is installed in the device.
  - The optional load disconnectors **/D11** and **/M11** disconnect the 400 V power supply between the power terminals X1 and the electronics cover.
  - The optional load disconnector **/R01** at the inverter output disconnects the connection between the inverter output of the electronics cover (power output stage) and the motor connection terminals X2_A (terminals U, V, W).
- Note that the terminals of the devices with load disconnector **/R01** at the inverter output are also energized when the load disconnector /R01 is switched off. Avoid contact with the terminals.

NOTICE

Unexpected drive functions by using the load disconnector /R01 at the inverter output.

Possible damage to property.

- Do not use the load disconnector /R01 at the inverter output with the following motors and options:
  - Brakemotors
  - Option /DSP (DynaStop®)
  - Option /BES (24 V brake control)

NOTICE

Damage to the power semiconductors or increased wear of the switching contacts.

Possible damage to property.

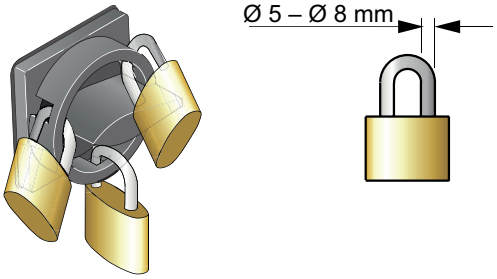
- Only operate the load disconnector /R01 at the inverter output when the output stage is disabled.
- Make sure that the leading feedback contact of the load disconnector /R01 at the inverter output acts on digital input DI04 with the output stage inhibit function (corresponds to delivery state).
- Do not use digital input DI04 for other signals.

The load disconnector /R01 at the inverter output of MOVIMOT® flexible MMF3... is used to interrupt the connection between the inverter output of the electronics cover (power output stage) and the motor connection terminals X2_A (terminals U, V, W). The leading feedback contact (normally closed contact) of the load disconnector /R01

26863707/EN – 07/2021

at the inverter output acts on digital input DI04 (output stage inhibit) of the unit. This means that the output stage is inhibited when the load disconnector is actuated. You can query the switching state of the load disconnector via the state of digital input DI04.

The load disconnector can be secured with 3 locks.



26585544715

7.3 Manual mode with MOVISUITE®

For manual operation of the device, you can use the manual mode function of the MOVISUITE® engineering software.

1. First connect the PC to the device, see chapter "PC connection".
2. Start the MOVISUITE® engineering software and add the device to MOVISUITE®.
3. Next, click the "Tools" [2] choice box. Select the "Manual mode" [1] menu item.

27021619746386699

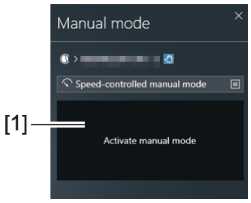
⇨ MOVITSUITE® opens the "Manual mode" window.

7.3.1 Activating/deactivating manual mode

Activation

Manual mode can only be activated when the device is inhibited.

To activate manual mode, click the [Activate manual mode] button [1].



27021619746390027

Manual mode remains active even after a fault reset.

Deactivation

⚠ WARNING

Risk of injury if the device starts up unintentionally.

Severe or fatal injuries.

- Before deactivating manual mode, take measures to prevent the device from starting up unintentionally.
- Take additional safety precautions depending on the application to avoid injury to people and damage to machinery.

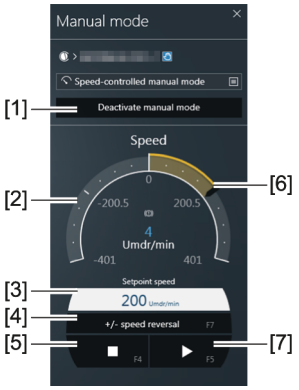
Manual mode is deactivated:

- When you click on the [Deactivate manual mode] button
- Or when you close the "Manual mode" window.

7.3.2 Control in manual mode

Manual operation window

Once manual mode has been successfully activated, you can control the device using the controls in the MOVISUITE® "Manual mode" window.



36028819001133963

Controller

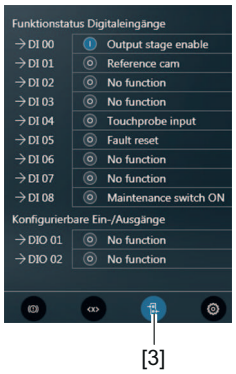
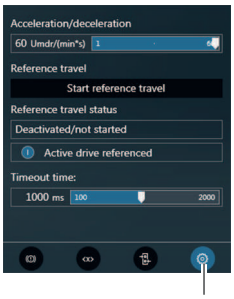
1. Set the setpoint speed using the edit box [3] or graphic input [6].

2. To specify the direction of rotation, click the button [4].
3. To enable the device, click the button [7].
4. To stop the device, click the button [5].

The "Speed" group [2] shows the actual speed of the device.

Advanced functions and displays of manual mode

The following functions are available in manual mode using MOVISUITE®:

Release brake Disable output stages	Actual values	Digital inputs and outputs	Acceleration Reference travel Timeout
			
Key [1]	Key [2]	Key [3]	Key [4]

7.4 Drive unit behavior in case of a voltage failure

The motor of the drive unit has the following function when the drive is in motion:

In case of a voltage failure, the drive unit uses the motion energy (energy recovery) to supply the electronics cover with voltage. The inverter in the electronics cover realizes a controlled motor deceleration.

If the regenerated energy is not sufficient, the inverter activates the holding function.

26863707/EN – 07/2021

7.5 DynaStop®

7.5.1 Functional description

⚠ WARNING

The DynaStop® electrodynamic retarding function does not allow for a definite stop at a position.

This can result in severe or fatal injuries.

- DynaStop® must not be used for hoists.
- When DynaStop® is used on inclining/downward slopes or for vertical conveyors without free hanging loads, adhere to the basic safety and health requirements (e.g. the EG Machinery Directive 2006/42/EG).
- The behavior of the DynaStop® function must be taken into account for the risk assessment of the application, that determines the required safety measures.

NOTICE

Setting the controller inhibit when the decentralized frequency inverter is running will activate DynaStop®. This can cause high torque loads, which may damage the inverter and the application.

Possible damage to property

- Activate the controller inhibit only when the speed is "0".

NOTICE

Impermissible use of DynaStop®.

Possible damage to property.

✓ Use DynaStop® with the following motor types **only**:

- CMP..
- CM3C..

The DynaStop® function allows for generating a speed-dependent torque that acts against the rotational movement.

Within the permitted operating range, this torque prevents an excessive acceleration of the motor shaft by an external force (e.g. lowering at inclining tracks).

7.5.2 DynaStop® torques

INFORMATION

Possible DynaStop® torques are specified in the documentation of the connected drive unit.

7.6 Function "Releasing the brake / deactivating DynaStop® with FCB01"

7.6.1 Information

INFORMATION

For information on how to disable the DynaStop® function for startup and assembly purposes, refer to chapter "Startup".

7.6.2 Activating the function

⚠ WARNING

Risk from falling loads.

This can result in severe or fatal injuries.

- Do **not** use the function "Releasing the brake / deactivating DynaStop® with FCB 01" for hoist applications and applications with potentially falling loads.
- Inhibit the function via the following steps:
  - Deactivate the function of the DIP switch S1/2 using the parameter *Deactivation* = **"1"** (path: *Functions* > *Inputs/outputs* > *Basic device* > *DIP switch functions* > *Releasing the brake / deactivating DynaStop® with FCB 01 – enable*)
  - Inhibit the functions using the parameter *Releasing the brake / deactivating DynaStop® with FCB 01 – enable* = **"0"** (path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit*).

In case the output stage is inhibited, you can deactivate the DynaStop® function/release the brake by a control signal (digital input or process data bit) using the function "Releasing the brake / deactivating DynaStop® with FCB01". For example, this allows to move loads freely using a horizontal conveyor.

Now make the following settings:

1. **Enabling the function**:
   - **Via DIP switch S1/2**

     Set the DIP switch S1/2 "Releasing the brake / deactivating DynaStop® with FCB 01 – enable" = ON.
   - **Via parameter settings**

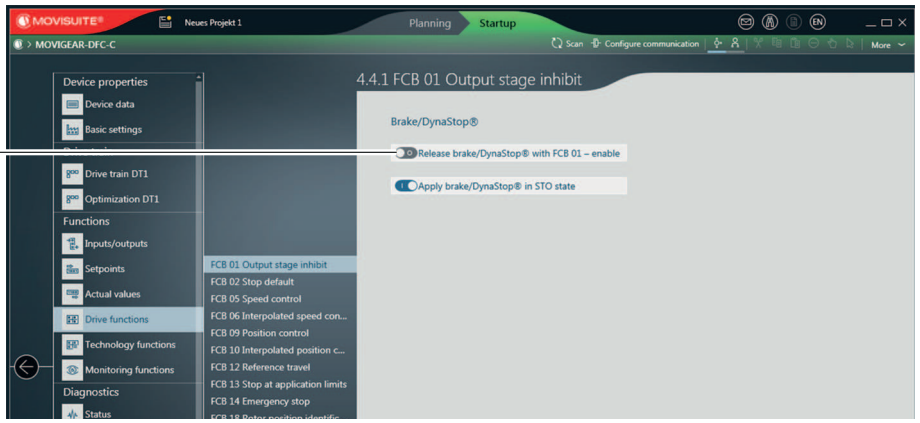
     Deactivate the DIP switch S1/2 by setting the parameter *Deactivation* = **"1"**.

     (Path: *Functions* > *Inputs/outputs* > *Basic device* > *DIP switch functions* > *Releasing the brake / deactivating DynaStop® with FCB 01 – enable)*

     Enable the function "Releasing the brake / deactivating DynaStop® with FCB 01 – enable" by setting the parameter *Releasing the brake / deactivating DynaStop® with FCB 01 – enable* to **"1"** [1].

     (Path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit*)

26863707/EN – 07/2021



18014420484359179

2. **Configuring the control signal**:

   - **Control via the digital input**

     Assign the function "Releasing the brake / deactivating DynaStop® with FCB 01" [2] to a digital input.

18014420484362123

   - **Control via process data bit** (not available with DBC designs)

     Assign the function "Releasing the brake / deactivating DynaStop® with FCB 01" [3] to a process output bit.

27021619739106059

The set control signal can be used to release the brake/deactivate DynaStop® when the function block FCB01 is active.

7.7 DynaStop® in conjunction with STO

⚠ WARNING

The DynaStop® electrodynamic retarding function does not allow for a definite stop at a position.

This can result in severe or fatal injuries.

- DynaStop® must not be used for hoists.
- When DynaStop® is used on inclining/downward slopes or for vertical conveyors without free hanging loads, adhere to the basic safety and health requirements (e.g. the EG Machinery Directive 2006/42/EG).
- The behavior of the DynaStop® function must be taken into account for the risk assessment of the application, that determines the required safety measures.

INFORMATION

Observe chapter "Functional safety" for using the STO function.

The optional DynaStop® function is not safety-related. It is not part of the safety functions described in chapter "Functional safety".

26863707/EN – 07/2021

7.7.1 Using the brake/DynaStop® in conjunction with STO

To use the DynaStop® function in conjunction with the STO function, SEW-EURODRIVE recommends control using the safety function SS1(c).

To do so, the parameter *Behavior at standstill* must be set to "Brake applied/drive not energized" (path: *Functions* > *Drive functions* > *FCB 02 Stop default*).

The following table shows the behavior of the DynaStop® function depending on the parameter setting:

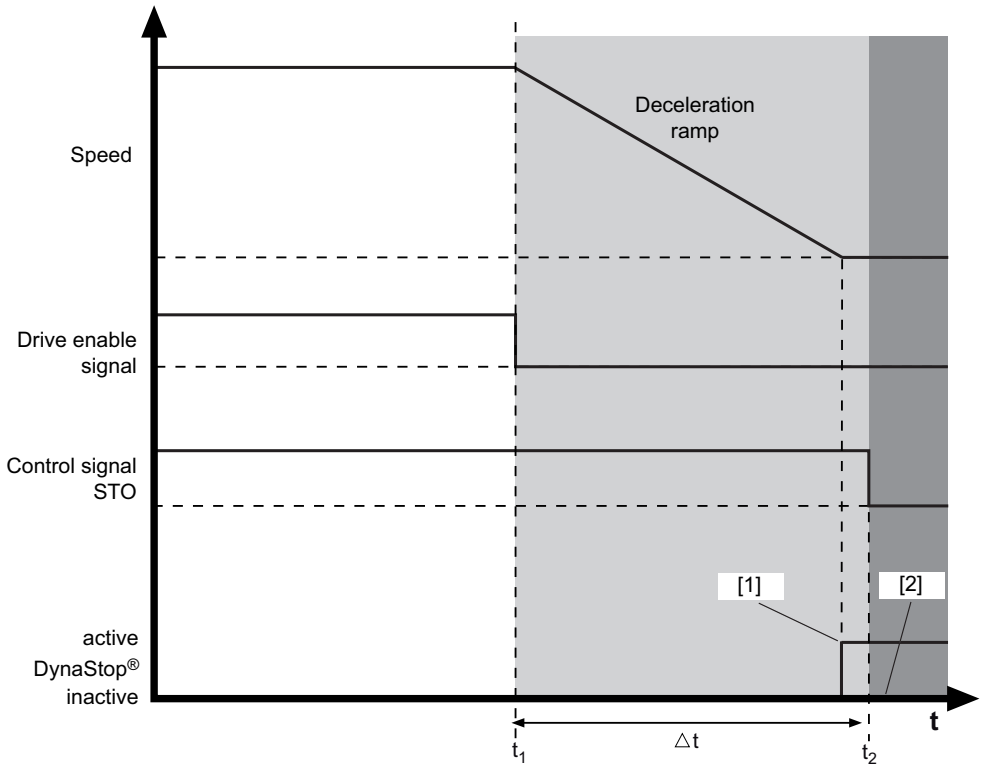
Index	Parameter	Setting	Meaning
8563.1	*Behavior at standstill* (Path: *Functions* > *Drive functions* > *FCB 02 Stop default)*	Drive energized (brake released / DynaStop® deactivated)	If the enable signals are revoked, the drive decelerates according to the active deceleration setpoint. When the drive reaches speed "0", DynaStop® is **not** activated. Motor position control is active.
		Drive not energized (brake applied / DynaStop® activated)	If the enable signals are revoked, the drive decelerates according to the active deceleration setpoint. When the speed reaches "0", DynaStop® is activated. The motor is de-energized.
8501.3	*Apply brake/activate DynaStop® in STO state* (Path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit* > *Brake/DynaStop®*)	**0 (no)**	The DynaStop® status remains unchanged when STO is activated.
		1 (yes)	DynaStop® is activated (not safety-related) when STO is enabled. **Note:** Observe the permitted operating range of the DynaStop® function.

Required settings

Recommended setting

26863707/EN – 07/2021

The following figure shows how to use the DynaStop® function in conjunction with the STO function and controller according to SS1(c):



[1] Parameter:
Behavior at standstill = **"Drive not energized (brake applied / DynaStop® activated)"**
(factory setting)

[2] Parameter:
Behavior at standstill = **"Drive energized (brake released / DynaStop® deactivated)"**
(Path: *Functions > Drive functions > FCB02 Stop default)*

t Time

t_1 Point of time when deceleration ramp is initiated

t_2 Point of time when STO is triggered

Δt Time span between initiating the deceleration ramp and STO

Safe time delay range

Range with active STO function

26863707/EN – 07/2021

7.7.2 Drive behavior when STO is activated before rotational speed "0" is reached

NOTICE

Danger due to incorrect parameter settings

If the parameter *Apply brake/activate DynaStop®in STO state* is set to **"1"**, (path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit* > *Brake/DynaStop®*), the DynaStop® function can be activated outside of the permitted operating range. This can cause high torque loads / high motor currents, which may damage the drive unit and the application.

Possible damage to property.

- Use the factory settings or recommended settings.

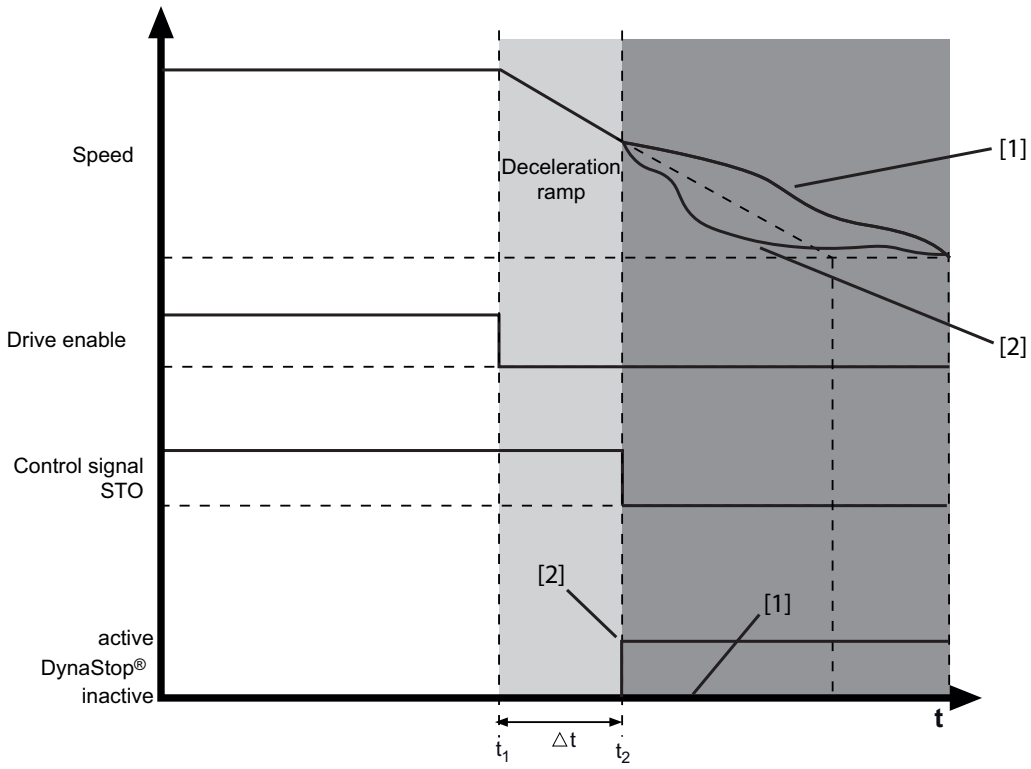
If STO is activated before the motor has come to standstill (rotational speed = 0), the DynaStop® function behaves as set in parameter *Apply brake/DynaStop® in STO state* (Path: *Functions* > *Drive functions* > FCB 01 *Output stage inhibit* > *Brake/DynaStop®*):

Index	Parameter	Setting	Meaning
8501.3	*Apply brake/activate DynaStop® in STO state* (Path: *Functions* > *Drive functions* > *FCB 01 Output stage inhibit* > *Brake/DynaStop®*)	**0 (no)**	The DynaStop® status remains unchanged when STO is activated. • Depending on the application, the motor coasts to a halt or even accelerates. • The stopping distance is not defined.
		1 (yes)	DynaStop® is activated (not safety-related) when STO is enabled. • In case DynaStop® is activated before the rotational speed has reached "0", high torques/motor currents can occur that may damage the drive and the application. • Evaluate the possible consequences. • The stopping distance is not defined.

Recommended setting/factory setting

26863707/EN – 07/2021

The following figure shows the behavior when STO is activated before rotational speed "0" is reached:



30807229195

[1] Parameter:
Apply brake/activate DynaStop® in STO state = **"0"** (no) factory settings

[2] Parameter:
Apply brake/activate DynaStop® in STO state = **"1"** (yes)
(Path: *Functions* > *Drive functions* > *FCB01 Output stage inhibit* > *Brake/ DynaStop®*)

t Time

t_1 Point of time when deceleration ramp is initiated

t_2 Point of time when STO is triggered

Δt Time span between initiating the deceleration ramp and STO

Safe time delay range

Range with active, safety-related STO function

Activating the STO function during the deceleration ramp aborts controlled deceleration:

Possible reasons for premature activation of STO:

- Deceleration time Δt too short
- Extension of the deceleration ramp when the current limit is reached, e.g. due to too high load

26863707/EN – 07/2021

7.8 Mechanical brake in connection with STO

7.8.1 Using the mechanical brake in connection with the STO function

The following table shows the behavior of the drive depending on the parameter settings:

Index	Parameter	Setting	Meaning
8563.1	*Behavior at standstill* (Path: *Functions* > *Drive functions* > *FCB02 Stop default*)	Drive energized (brake released / DynaStop® deactivated)	If the enable signals are revoked, the drive decelerates according to the active deceleration setpoint. When the speed is "0", the brake remains released. Motor position hold control is active.
		Drive not energized (brake applied / DynaStop® activated)	If the enable signals are revoked, the drive decelerates according to the active deceleration setpoint. When the speed is "0", the brake is applied. The motor is de-energized.
8501.3	*Apply brake/activate DynaStop® in STO state* (Path: *Functions* > *Drive functions* > *FCB01 Output stage inhibit* > *Brake/ DynaStop®*)	**0 (no)**	The brake state remains unchanged when STO is activated.
		1 (yes)	The brake is activated (not safety-related) when STO is activated.

Recommended setting

8 Service

8.1 Evaluating fault messages

8.1.1 MOVISUITE®

The following section shows a sample evaluation of a fault message in MOVISUITE®:

1. Open the parameter tree in MOVISUITE®.
2. In the parameter tree [6], select the "Status" node.
   - ⇨ The **current fault messages** can be found in the "Fault status" [5] group.
   - ⇨ **Additional information** on the causes for the "Not ready" status can be found in the "Device status" [4] group.
   - ⇨ Information on the **history of the fault messages** can be found in the "Fault memory" [7] node.

27021619739281291

[1] Fault status of the main component
[2] Fault status of the subcomponent
[3] Display of the status bits

26863707/EN – 07/2021

8.2 Switch-off responses

Fault response	Description
No response	The inverter ignores the event.
Warning with self-reset	The inverter sends a warning message with self-reset.
Warning	The inverter issues a warning message.
Application stop (with output stage inhibit)	The inverter stops with the deceleration set for the application limit. For n=0: Brake "applied" and output stage "off".
Application stop (with output stage inhibit) with self-reset	
Emergency stop (with output stage inhibit)	The inverter stops with the set emergency stop deceleration.
Emergency stop (with output stage inhibit) with self-reset	
Inhibit output stage with self-reset	The output stage is deactivated and the brake is applied.
Inhibit output stage	

Self-reset means: Eliminating the cause of the fault acknowledges the fault. The inverter automatically resumes the operation performed before the fault. The drive restarts automatically.

8.3 Fault messages with parameterizable response

Fault	Description	Index no.	Possible fault response
Heat sink overtemperature – prewarning	Here you can set the device response when the prewarning threshold for heat sink utilization is exceeded (index 8336.1).	8622.2	• No response • Warning
Positioning lag error	Here you can set the device response to a lag error (lag error window exceeded, index 8509.4).	8622.3	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage
Line phase failure	Here you can set the device response to a line phase failure (values below threshold defined by the user, index 8351.5).	8622.4	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage

26863707/EN – 07/2021

Fault	Description	Index no.	Possible fault response
External fault	Here you can set the device response to an external fault (e.g. triggered by terminal or control word).	8622.5	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage
Fieldbus – timeout	Here one can set how the device is to respond to a timeout on the EtherCAT®/SBus^{PLUS} (timeout period, Index 8455.3).	8622.6	• Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage • Warning with self-reset • Application stop (with output stage inhibit) with self-reset • Emergency stop (with output stage inhibit) with self-reset • Inhibit output stage with self reset
External synchronization	Here you can set the device response to loss of external synchronization.	8622.7	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage • Warning with self-reset • Application stop (with output stage inhibit) with self-reset • Emergency stop (with output stage inhibit) with self-reset • Inhibit output stage with self reset
Motor temperature prewarning – current parameter set	Motor temperature current parameter set – prewarning.	8442.5	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage

26863707/EN – 07/2021

Fault	Description	Index no.	Possible fault response
Electromechanical capacity utilization – prewarning	Here you can set the device response to an exceeded prewarning threshold for electromechanical capacity utilization (index 8336.2).	8622.10	• No response • Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage
HW limit switches – current parameter set		8572.1	• No response • Emergency stop (with output stage inhibit) • Emergency stop (with output stage inhibit) with self-reset
SW limit switches – current parameter set		8572.2	• No response • Emergency stop (with output stage inhibit) • Emergency stop (with output stage inhibit) with self-reset
Encoder – warning	Here you can set the device response to an encoder warning.	8622.13	• Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage
Encoder – fault	Here you can set the device response to an encoder fault.	8622.14	• Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage
Application heartbeat timeout (only with DSI designs)	Here you can set the device response to a timeout of the application heartbeat.	8622.21	• Warning • Application stop (with output stage inhibit) • Emergency stop (with output stage inhibit) • Inhibit output stage

8.4 Switch-off responses

Fault response	Description
No response	The inverter ignores the event.
Warning with self-reset	The inverter sends a warning message with self-reset.
Warning	The inverter issues a warning message.

26863707/EN – 07/2021

Fault response	Description
Application stop (with output stage inhibit)	The inverter stops with the deceleration set for the application limit. For n=0: Brake "applied" and output stage "off".
Application stop (with output stage inhibit) with self-reset	
Emergency stop (with output stage inhibit)	The inverter stops with the set emergency stop deceleration.
Emergency stop (with output stage inhibit) with self-reset	
Inhibit output stage with self-reset	The output stage is deactivated and the brake is applied.
Inhibit output stage	

Self-reset means: Eliminating the cause of the fault acknowledges the fault. The inverter automatically resumes the operation performed before the fault. The drive restarts automatically.

26863707/EN – 07/2021

8.5 Resetting fault messages

⚠ WARNING

Removing the source of the malfunction or performing a reset can result in an automatic restart of the connected drives.

Severe or fatal injuries.

- Prevent unintended startup.

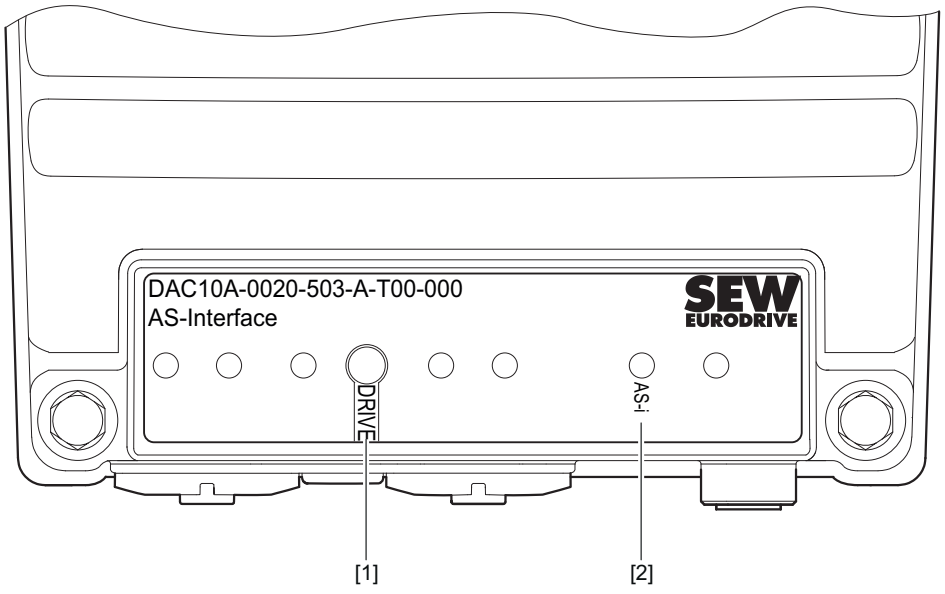
Acknowledge fault message by:

- Switch the supply system off and on again.
- Via the controller/PLC: Send "reset command".

8.6 Description of status and operating displays

8.6.1 LEDs of AS-Interface

The following figure shows an example of the LEDs of the AS-Interface design:



18014427523379339

[1] "DRIVE" status LED
[2] LED "AS-i"

26863707/EN – 07/2021

8.6.2 General LEDs

"DRIVE" status LED

LED	Operating status/ Fault code	Subfault code	Meaning	Measure
– **Off**	Not ready for operation		Line voltage absent.	Switch on the line voltage.
Yellow **Flashes very rapidly, 4 Hz**	Not ready for operation		Initialization phase	Wait for initialization to be completed.
Green/yellow **Flashes with changing colors, 0.5 Hz** **(1 x green, 1 x yellow)**	Ready but unit inhibited		The "STO" signal is active.	Deactivate the "STO" signal.
Yellow **Flashes slowly, 0.5 Hz**	Ready for operation, but manual mode/local mode, device inhibited		Line voltage is OK.	–
Yellow **Flashes rapidly, 2 Hz**	Ready		Deactivation of DynaStop® without drive enable is active.	–
Yellow **Steady light**	Ready but unit inhibited		Line voltage is OK. The output stage is inhibited.	–
Green **Flashes slowly, 0.5 Hz**	Unit enabled, but condition manual operation/local mode		The output stage is enabled. The motor is in operation.	–
Green **Flashes very rapidly, 4 Hz**	Unit enabled, but current limit active.		The drive is at the current limit.	Reduce the load.
Green **Steady light**	Unit enabled.		The output stage is enabled. The motor is in operation.	–
Yellow/red **Flashes with changing colors, 1 Hz** **(2 x yellow, 2 x red)**	Ready		A displaying fault is present. The output stage is inhibited.	Consult the “Fault table” chapter for possible measures to be taken.
Green/red **Flashes with changing colors, 1 Hz** **(2 × green, 2 × red)**	Ready		A displaying fault is present. The output stage is enabled. The motor is in operation.	Consult the “Fault table” chapter for possible measures to be taken.

26863707/EN – 07/2021

LED	Operating status/		Meaning	Measure
	Fault code	Subfault code		
Red **Flashes 1 Hz**	3	1	Ground fault	Consult the “Fault table” chapter for possible measures to be taken.
	4	1	Brake chopper fault	
	6	1	Line fault	
	7	1	DC link fault	
	8	1, 2, 3	Speed monitoring fault	
	9	1, 2, 5, 6, 9, 10	Control mode fault	
	10	1, 3 – 11	Data Flexibility fault	
	11	1 – 6	Temperature monitoring fault	
	12	1, 2	Brake fault	
	13	5, 24	Encoder 1 fault	
	16	5 – 8, 10, 20 – 27	Startup fault	
	19	1 – 9	Process data fault	
	20	2, 11	Device monitoring fault	
	23	4	Power section fault	
	25	2 – 7, 20, 21, 30, 31, 61, 70	Parameter memory monitoring	
	26	1, 3	External fault	
	28	1 – 12, 14	FCB drive function fault	
	29	1 – 4	Hardware limit switch fault	
	30	1 – 3	Software limit switch fault	
	31	1 – 4, 7, 9	Thermal motor protection fault	
	32	2 – 6, 12	Communication error	
	33	11, 12, 13	System initialization fault	
	34	1	Process data configuration fault	
	35	1 – 5	Function activation fault	
	42	1 – 3	Lag fault	
	44	2, 3, 4	Fault overcurrent phase U, V, W	
	46	2, 3, 50, 51, 52	Safety card fault	
	51	1	Analog processing fault	

26863707/EN – 07/2021

LED	Operating status/		Meaning	Measure
	Fault code	Subfault code		
Red **Steady light**	1	1, 2	Output stage monitoring fault	Contact SEW-EURODRIVE Service.
	4	2	Brake chopper fault	
	7	2	DC link fault	
	9	3, 4, 8	Control mode fault	
	10	2, 99	Data Flexibility fault	
	11	7, 8	Temperature monitoring fault	
	13	1, 3, 6, 7, 8, 9, 11, 13, 15, 22, 23	Encoder 1 fault	
	16	2, 11, 12. 30	Startup fault	
	17	7	Internal processor fault	
	18	1, 3,4, 7, 8, 9, 10, 12, 13	Software error	
	20	1, 7	Device monitoring fault	
	21	1	S-Drive 1 fault	
	23	5, 6, 7, 8	Power section fault	
	25	10, 12 – 19, 50, 51, 81	Parameter memory monitoring	
	28	13	FCB drive function fault	
	33	1, 2, 6, 7, 8, 10	System initialization fault	
	46	1	Safety card fault	

26863707/EN – 07/2021

8.6.3 Bus-specific LEDs for AS-Interface

LED "AS-i"

LED	Operating status/	Meaning	Measure
– **Off**	Not ready for operation	Line voltage absent.	Switch on the line voltage. Wait for initialization to be completed.
		The firmware of the subcomponent is not compatible to the used hardware.	Contact the SEW-EURODRIVE Service.
		The firmware of the subcomponent cannot be started.	Contact the SEW-EURODRIVE Service.
Green **Steady light**	Ready for operation	The device works in normal operation.	–
Yellow **Flashing**	Not ready for operation	A firmware update of the sub component is running.	Wait for the update to be completed.
Red **Flashing**	Not ready for operation	The communication to the AS-Interface master is interrupted.	Check the AS-Interface connection of the device. Check the configuration of the AS-Interface master. Check all connections of the AS-Interface installation.
1 × red, 1 × yellow **Flashing**	Not ready for operation	The slave address is set to 0.	Set a valid slave address.
2 × red, 2 × yellow **Flashing**	Not ready for operation	The AS-Interface master has detected an address conflict. The address is used by another slave.	Set an unused slave address.
Red **Steady light**	Not ready for operation	The AS-Interface communication is interrupted.	Check the AS-Interface connection of the device. Check all connections of the AS-Interface installation.

26863707/EN – 07/2021

8.7 Fault/error table

8.7.1 Fault 1 Output stage monitoring

Subfault: 1.1 **Description: Short circuit in motor output terminals**		
	Response: Output stage inhibit	
	Cause	Measure
	Overcurrent in output stage or faulty output stage control detected, and output stage inhibited by hardware.	Possible causes for overcurrent are short circuit at the output, excessive motor current, or a defective power output stage.

Subfault: 1.2 **Description: Overcurrent in output stage**	
Response: Output stage inhibit	
Cause	Measure
Motor current too high.	Connect a smaller motor.
Current supply	Check the current supply.
Current transformer	Check the current transformer.
Ramp limit deactivated and set ramp time too short.	Increase the ramp time.
Phase module defective.	Check the phase module.
DC 24 V supply voltage unstable.	Check the DC 24 V supply voltage.
Interruption or short circuit on signal lines of phase modules.	Check the signal lines.

8.7.2 Fault 3 Ground fault

Subfault: 3.1 **Description: Ground fault**	
Response: Output stage inhibit	
Cause	Measure
Ground fault in the motor lead.	Eliminate ground fault in motor lead.
Ground fault in the inverter.	Eliminate ground fault in inverter.
Ground fault in the motor.	Eliminate ground fault in motor.
Ground fault in line components.	Eliminate ground fault in line components.

26863707/EN – 07/2021

8.7.3 Fault 4 Brake chopper

Subfault: 4.1 Description: Brake chopper overcurrent		
	Response: Output stage inhibit	
	Cause	Measure
	Excessive regenerative power.	Extend the deceleration ramps.
	Short circuit detected in braking resistor circuit.	Check the supply cable to the braking resistor.
	Braking resistance too high.	Check the technical data of the braking resistor.

Subfault: 4.2 Description: Brake chopper defective		
	Response: Output stage inhibit	
	Cause	Measure
	Output stage of brake chopper defective.	Replace the defective brake chopper.

8.7.4 Fault 6 Line fault

Subfault: 6.1 Description: Line phase failure		
	Response: Line phase failure	
	Cause	Measure
	Missing line phase detected.	Check the supply system cable.
	DC link voltage periodically too low.	Check the configuration of the supply system.
	Inadequate line voltage quality.	Check supply (fuses, contactor).

8.7.5 Fault 7 DC link

Subfault: 7.1 Description: DC link overvoltage		
	Response: Output stage inhibit	
	Cause	Measure
	Maximum permitted DC link voltage limit exceeded and output stage inhibited by hardware.	– Extend the deceleration ramps. – Check the supply cable to the braking resistor. – Check the technical data of the braking resistor.

26863707/EN – 07/2021

8.7.6 Fault 8 Speed monitoring

Subfault: 8.1 Description: Speed monitoring – motor mode	
Response: Output stage inhibit	
Cause	Measure
Speed controller operates at setting limit (mechanical overload or phase failure in supply system or motor).	Increase the delay time set for speed monitoring, or reduce the load.
Encoder not connected correctly.	Check the encoder connection and direction of rotation. If necessary, increase the current limiting or reduce the acceleration values.
Encoder has incorrect direction of rotation.	– Check encoder connection and direction of rotation. If necessary, increase current limiting or reduce acceleration values. – Check motor lead and motor, check line phases.

Subfault: 8.2 Description: Speed monitoring – generator mode	
Response: Output stage inhibit	
Cause	Measure
Speed controller operates at setting limit (mechanical overload or phase failure in supply system or motor).	Increase the delay time set for speed monitoring, or reduce the regenerative load.
Encoder not connected correctly.	Check the encoder connection and direction of rotation. If necessary, increase the current limiting or reduce the deceleration values.
Encoder has incorrect direction of rotation.	– Check the encoder connection and direction of rotation. If necessary, increase the current limiting or reduce the deceleration values. – Check motor cable and motor. Check the line phases.

Subfault: 8.3 Description: Maximum speed at motor shaft	
Response: Output stage inhibit	
Cause	Measure
Actual speed exceeded "Maximum speed at motor shaft" limit value (index 8360.9 / 8361.9). This limit value is set at startup matching the motor and gear unit.	Reduce the maximum speed.

26863707/EN – 07/2021

8.7.7 Fault 9 Control mode

Subfault: 9.1 Description: Magnetization of motor not possible		
	Response: Output stage inhibit	
	Cause	Measure
	The user-defined current limit or output stage monitoring have reduced the possible maximum current to such a degree that the required magnetizing current cannot be set.	– Reduce the output stage utilization, e.g. by reducing the PWM frequency or reducing the load. – Increase the user-defined current limit.

Subfault: 9.2 Description: Requested operating mode not possible with active control mode		
	Response: Output stage inhibit	
	Cause	Measure
	The current FCB activated an operating mode. The active control mode does not support this operating mode, for example "position control" or "torque control" with U/f control mode.	– Use a control mode that supports the required operating mode. Connect an encoder if necessary. – Select an operating mode that is supported by the current control mode.

Subfault: 9.3 Description: Absolute rotor position not available		
	Response: Output stage inhibit	
	Cause	Measure
	The current control mode requires an absolute rotor position. The encoder selected for "Source of actual speed" does not provide an absolute rotor position.	Use an absolute encoder, or identify the rotor position using FCB 18.

Subfault: 9.4 Description: Correct current supply of motor not possible		
	Response: Output stage inhibit	
	Cause	Measure
	Failed to set required current during premagnetization.	Check the cabling, or disable the function "Current monitoring during premagnetization".

Subfault: 9.5 Description: Maximum output frequency exceeded		
	Response: Output stage inhibit	
	Cause	Measure
	Maximum output frequency exceeded.	Reduce the maximum speed.

26863707/EN – 07/2021

Subfault: 9.6 Description: Maximum model speed exceeded		
	Response: Output stage inhibit	
	Cause	Measure
	Speed of drive calculated in ELSM® control mode too high for motor control.	If possible, minimize the "Speed/position controller sampling cycle", or reduce the speed.

Subfault: 9.8 Description: Motor protection function – demagnetization	
Response: Output stage inhibit	
Cause	Measure
The fault can be caused as follows: – The motor is blocked. – The motor has already been operated at a speed below the transition speed for too long. – The motor has not been started up properly.	– Check the motor for blockage. – Check the drive selection. – Optimize the speed controller. – Perform motor startup again and run the drive function "FCB 25 Motor parameter measurement". – If the fault occurs repeatedly, contact SEW-EURODRIVE Service.

Subfault: 9.9 Description: Parameter measurement not possible with active motor type	
Response: Output stage inhibit	
Cause	Measure
Parameter measurement is possible only with "asynchronous" and "synchronous" motor types. No magnetic reluctance motors and LSPM motors.	Select the correct motor type.

Subfault: 9.10 Description: Rotor stall monitoring	
Response: Output stage inhibit	
Cause	Measure
The current control cannot hold the load torque. The deviation between stationary setpoint voltage and actual voltage is too large.	Reduce the load torque (hoist) in the controlled system.

Subfault: 9.11 Description: Standstill current function	
Response: Output stage inhibit	
Cause	Measure
With the ELSM method, the standstill current function is possible only in combination with rotor position measurement.	– Enable rotor position measurement. – Check motor data.

26863707/EN – 07/2021

8.7.8 Fault 10 Data Flexibility

Subfault: 10.1 Description: Initialization		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Init task error.	The init task has issued a return code ! = 0. Check the program.

Subfault: 10.2 Description: Illegal program command		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	The version of the MOVIKIT® software module in use is not compatible with the current firmware version of the device.	– Use the latest firmware version of the device. – Adjust the firmware version of the device according to the version overview in the installation notes. – Adjust the version of the MOVIKIT® software module according to the version overview in the installation notes. – In the context menu of the device, execute the "Adjust version and device" menu command.
	Unknown program command (illegal opcode) detected in Data Flexibility program.	Contact SEW-EURODRIVE Service.

Subfault: 10.3 Description: Memory access		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Memory area violated while accessing array.	For example, an array access results in writing beyond the permitted memory range. Check the program.

Subfault: 10.4 Description: Stack		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Overflow of Data Flexibility stack detected.	Check the program.

Subfault: 10.5 Description: Division by 0		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Division by 0.	Check the program.

26863707/EN – 07/2021

Subfault: 10.6 Description: Runtime		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Runtime error/watchdog	Check the program. The program execution time exceeds the permitted time.
	PDI or PDO tasks.	Check the program. The execution time of the PDI or PDO task exceeds the permitted time.

Subfault: 10.7 Description: Calculation result of multiplication/division command too large		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Calculation result of multiplication/division command exceeds 32 bits.	Check the program.
	Failed to write calculation result of multiplication/ division command into result variable.	Check the program.

Subfault: 10.8 Description: Illegal connection		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Index used in connect not allowed.	Check the program. The index used either does not exist or is not permitted for access via process data – see parameter list.

Subfault: 10.9 Description: CRC code		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Wrong CRC checksum of code.	Load the program again. The program memory is corrupt. Unauthorized write access to the program memory.

Subfault: 10.10 Description: Setpoint cycle time not supported		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Non-supported setpoint cycle time parameterized.	Set the setpoint cycle time to the default value 1 ms.

26863707/EN – 07/2021

Subfault: 10.11 Description: No application program loaded		
	Response: Output stage inhibit	
	Cause	Measure
	No Data Flexibility application program loaded.	Load the program or disable Data Flexibility.

Subfault: 10.12 Description: Runtime warning		
	Response: Warning	
	Cause	Measure
	The program requires more runtime than configured.	Check the program.

Subfault: 10.99 Description: Unknown fault		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Unknown Data Flexibility error.	Contact SEW-EURODRIVE Service.

8.7.9 Fault 11 Temperature monitoring

Subfault: 11.1 Description: Heat sink overtemperature		
	Response: Output stage inhibit	
	Cause	Measure
	Maximum permitted heat sink temperature exceeded. The capacity utilization is possibly too high.	– Reduce the load. – Reduce the rms value of the current. – Reduce the PWM frequency. – Ensure sufficient cooling. – Reduce the ambient temperature.

Subfault: 11.2 Description: Heat sink utilization – prewarning		
	Response: Heat sink utilization – prewarning	
	Cause	Measure
	High thermal load on heat sink of device, and prewarning threshold reached.	– Reduce the load. – Reduce the rms value of the output current. – Reduce the PWM frequency. – Ensure sufficient cooling. – Reduce the ambient temperature.

26863707/EN – 07/2021

Subfault: 11.3 Description: Device utilization		
	Response: Output stage inhibit	
	Cause	Measure
	The temperature has reached or exceeded the switch-off threshold. Possible causes: Mean output current too high.	Reduce the load.
	PWM frequency too high.	Reduce the PWM frequency.
	Ambient temperature too high.	Ensure sufficient cooling.
	Unfavorable air convection.	Check air convection.
	Fan defective.	Check the fan and replace if necessary.

Subfault: 11.5 Description: Electromechanical capacity utilization		
	Response: Output stage inhibit	
	Cause	Measure
	Electromechanical components of device overloaded by excessive continuous current.	Reduce the load. If necessary, reduce the rms value of the current.

Subfault: 11.6 Description: Electromechanical utilization – prewarning		
	Response: Electromechanical utilization – prewarning	
	Cause	Measure
	High load on electromechanical components of device due to high continuous current. Prewarning threshold reached.	– Reduce the load. – Reduce the PWM frequency. – Reduce the rms value of the current. – Reduce the ambient temperature.

Subfault: 11.7 Description: Wire break at temperature sensor of heat sink		
	Response: Output stage inhibit	
	Cause	Measure
	Wire break at temperature sensor of heat sink.	Contact SEW-EURODRIVE Service.

Subfault: 11.8 Description: Short circuit at temperature sensor of heat sink		
	Response: Output stage inhibit	
	Cause	Measure
	Short circuit at temperature sensor of heat sink.	Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 11.9 Description: Signal electronics overtemperature		
	Response: Output stage inhibit	
	Cause	Measure
	Maximum permitted signal electronics temperature exceeded.	– Reduce the load. – Reduce the ambient temperature.

Subfault: 11.10 Description: Wire break at temperature sensor of signal electronics		
	Response: Output stage inhibit	
	Cause	Measure
	Wire break at temperature sensor of signal electronics	Contact SEW-EURODRIVE Service.

Subfault: 11.11 Description: Short circuit at temperature sensor of signal electronics		
	Response: Output stage inhibit	
	Cause	Measure
	Short circuit at temperature sensor of signal electronics.	Contact SEW-EURODRIVE Service.

8.7.10 Fault 12 Brake

Subfault: 12.1 Description: Brake output fault		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	No brake connected.	Check the connection of the brake.
	Brake cable disconnected in switched-on state.	Check the connection of the brake.
	The brake was overloaded by an overcurrent > 2 A.	Check the sequential profile of brake control.
	The brake was overloaded by frequent connection (> 0.5 Hz).	Check the sequential profile of brake control.
	Monitoring works only with parameter setting "Brake installed" and "Brake applied".	Make sure that the connected brake is permitted.

26863707/EN – 07/2021

Subfault: 12.2 Description: DC 24 V brake voltage		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	DC 24 V supply voltage not within permitted tolerance of ± 10%.	Check the DC 24 V supply voltage.
	Monitoring is only active with parameter settings “Brake installed” and “Brake applied”.	Check the parameter setting.

Subfault: 12.3 Description: Temperature		
	Response: Output stage inhibit	
	Cause	Measure
	Brake temperature outside permitted range (too high or too low).	Check ambient conditions and the application.
	In the case of decentralized devices, the overvoltage of the DC link is dissipated via the brake. As a result, the temperature of the brake is too high.	Check the application for how often generator mode occurs.

Subfault: 12.4 Description: Brake control module missing		
	Response: Output stage inhibit	
	Cause	Measure
	Brake control activated although hardware does not have corresponding module.	Select another brake type or brake connection.

Subfault: 12.5 Description: Short circuit		
	Response: Output stage inhibit	
	Cause	Measure
	Short circuit detected on the brake.	Check the brake connection.

Subfault: 12.7 Description: Overcurrent		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	The brake requires more current than the electronics (inverter or BGI) can supply.	– Check the parameterization of the brake. – Use electronics of larger size. – Use a brake with a larger coil resistance.
	Brake coil defective.	Replace the brake.

26863707/EN – 07/2021

Subfault: 12.9 Description: Plausibility error		
	Response: Output stage inhibit	
	Cause	Measure
	No brake connected.	Connect brake.
	Brake connected incorrectly.	Check and correct the brake connection.
	Wrong brake taken into operation.	Check startup.

Subfault: 12.20 Description: Digital motor integration fault – critical	
Response: Output stage inhibit with self-reset	
Cause	Measure
The intelligent brake rectifier of digital motor integration has detected a critical component fault.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault detected by the subcomponent.

Subfault: 12.21 Description: Digital motor integration fault	
Response: Emergency stop + output stage inhibit with self-reset	
Cause	Measure
The intelligent brake rectifier of digital motor integration has detected a component fault.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault detected by the subcomponent.

Subfault: 12.22 Description: Digital motor integration warning	
Response: Warning with self-reset	
Cause	Measure
The intelligent brake rectifier of digital motor integration signaled a warning.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault signaled by the subcomponent.

Subfault: 12.23 Description: Digital motor integration timeout	
Response: Output stage inhibit	
Cause	Measure
Communication with intelligent brake rectifier disrupted.	Check the connection.

26863707/EN – 07/2021

8.7.11 Error 13 encoder 1 fault

Subfault: 13.1 Description: Position comparison check		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Fault detected when comparing raw position and track counter of absolute encoder.	– Check the track signal wiring. – Check interference sources (e.g. from the area of EMC). – Replace encoder. – Replace the encoder card. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.2 Description: Unknown encoder type		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Encoder type not known and not supported by device.	– Check the encoder type. – Contact SEW-EURODRIVE Service. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.3 Description: Invalid data		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Invalid encoder nameplate data (measuring steps/pulses per revolution/multi-turn).	– Check the startup parameters. – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.4 Description: Track measurement error		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Error during track measurement.	– Switch the device off and on again. – Check the wiring. – Check interference sources (e.g. from the area of EMC). – Check the encoder. Replace if necessary. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.5 Description: Internal warning		
	Response: Encoder – warning	
	Cause	Measure
	Encoder signaled warning.	– Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Clean the sensor.

Subfault: 13.6 Description: Signal level too low		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	The value established from the level of the two track signals A and B is below the permitted limit.	– Check the wiring. – Check interference sources (e.g. from the area of EMC). – Check the encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.7 Description: Signal level too high		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	The value established from the level of the two track signals A and B exceeds the permitted limit.	Check the gear ratio of the resolver in use. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.8 Description: Signal level monitoring		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	The value established from the level of the two track signals A and B exceeds the permitted limit.	Check the resolver mounting position. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.9 Description: Quadrant check		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Error checking quadrants (sine encoder).	– Switch the device off and on again. – Check the wiring. – Check interference sources (e.g. from the area of EMC). – Check the encoder. Replace if necessary. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.10 Description: Position tolerance range exceeded		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Position outside tolerance range.	– Check the startup parameters. – Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.11 Description: Encoder data timeout		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Encoder process data triggered timeout state.	– Check interference sources (e.g. from the area of EMC). – Check the startup parameters. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.12 Description: Emergency		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Encoder signaled emergency.	– Check interference sources (e.g. from the area of EMC). – Check the startup parameters. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.13 Description: Error during initialization		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Communication error during initialization.	With encoders from SEW-EURODRIVE: – Check the wiring. With encoders of other manufacturers: – Check the wiring. – Check the parameter setting in MOVISUITE®. – Compare the settings via DIP switches, display, USB interface, etc. on the encoder with the specifications in the operating manual of the inverter or option (e.g. baud rate, node ID). INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.14 Description: Communication error		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Faulty communication with encoder.	– Check the voltage supply. – Check interference sources (e.g. from the area of EMC). – Check the wiring. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.15 Description: System error		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	System error while evaluating encoder.	– Ensure that the multi-turn encoder is within the configured path range. – Check the limits. – Check for correct settings of encoder numerator/denominator factors. – Check interference sources (e.g. from the area of EMC). – Check the startup parameters. – Switch the device off and on again. – If the fault occurs repeatedly, contact SEW-EURODRIVE Service. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.16 Description: Permanent high level in data line – critical		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Permanent high level of data signal detected.	– Check the wiring. – Check the encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.17 Description: Permanent high level in data line		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Permanent high level of data signal detected.	– Check the wiring. – Check the encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.18 Description: Permanent low level in data line – critical		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Permanent low level of data signal detected.	– Check the wiring. – Check the encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.19 Description: Permanent low level in data line	
Response: Encoder 1 – latest fault	
Cause	Measure
Permanent low level of data signal detected.	– Check the wiring. – Check the encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.20 Description: SSI encoder – critical fault	
Response: Encoder 1 – latest critical fault	
Cause	Measure
SSI encoder signaled a critical fault.	– Check the startup parameters. – Check the settings at the SSI encoder. – Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive even with a fault in an external position encoder.

26863707/EN – 07/2021

Subfault: 13.21 Description: SSI encoder – fault		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	SSI encoder signaled a fault.	– Check the startup parameters. – Check the settings at the SSI encoder. – Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive even with a fault in an external position encoder.

Subfault: 13.22 Description: Internal fault – critical		
	Response: Encoder 1 – latest critical fault	
	Cause	Measure
	Encoder signaled internal fault.	– Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.23 Description: Internal fault		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Encoder signaled internal fault.	– Check the wiring. – Check interference sources (light beam interrupted, reflector, data cables, etc.). – Replace encoder. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

26863707/EN – 07/2021

Subfault: 13.24 Description: Travel range exceeded		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Current position mode does not allow for larger travel range.	Check the travel range. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.25 Description: Error during encoder startup	
Response: Output stage inhibit	
Cause	Measure
Fatal error during encoder startup.	Switch the device off and on again. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

Subfault: 13.26 Description: Digital motor integration fault – critical	
Response: Encoder 1 – latest critical fault	
Cause	Measure
Encoder of digital motor integration detected a component fault.	– Check interference sources. – Replace encoder.

Subfault: 13.27 Description: Digital motor integration fault	
Response: Encoder 1 – latest fault	
Cause	Measure
Encoder of digital motor integration detected a component fault.	– Check interference sources. – Replace encoder.

Subfault: 13.28 Description: Digital motor integration warning	
Response: Encoder – warning	
Cause	Measure
Encoder of digital motor integration signaled a warning.	Check interference sources.

26863707/EN – 07/2021

Subfault: 13.29 Description: Absolute position invalid		
	Response: Encoder 1 – latest fault	
	Cause	Measure
	Diagnostics error detected while evaluating absolute encoder position. Referencing is canceled.	– Reference the drive again. – If the fault occurs repeatedly, contact SEW-EURODRIVE Service. INFORMATION In "Emergency mode" manual mode, you can move the drive using the motor encoder even if the external position encoder is faulty.

8.7.12 Fault 16 Startup

Subfault: 16.1 Description: Motor not started up	
Response: Output stage inhibit	
Cause	Measure
Motor not started up or not started up completely.	Perform complete motor startup.

Subfault: 16.2 Description: Cannot calculate controller parameters	
Response: Output stage inhibit	
Cause	Measure
Delay of encoder in use too long to calculate required filter coefficients.	Use an encoder with a shorter delay, or contact SEW-EURODRIVE Service.

Subfault: 16.3 Description: Thermal motor model not possible	
Response: Output stage inhibit	
Cause	Measure
Invalid parameters for thermal motor model or for drive enable although starting up thermal model not yet completed.	Check the parameters of the thermal motor model, and perform startup.

Subfault: 16.5 Description: Current limit smaller than magnetizing current of the motor	
Response: Output stage inhibit	
Cause	Measure
Current limit smaller than magnetizing current of the motor calculated by active control mode.	Increase the current limit. Required magnetizing current: See diagnostics parameters of control mode.

26863707/EN – 07/2021

Subfault: 16.6 Description: Control mode not possible		
	Response: Output stage inhibit	
	Cause	Measure
	Wrong control mode selected for the motor.	Choose a control mode that matches the selected motor.

Subfault: 16.7 Description: PWM frequency not possible		
	Response: Output stage inhibit	
	Cause	Measure
	The motor cannot be operated with the inverter. The motor requires a higher PWM frequency than the inverter can provide.	Use an inverter with a suitable PWM frequency range.
	Specified PWM frequency not allowed for this power output stage.	Choose another PWM frequency. The possible PWM frequencies can be found in the device configuration data.

Subfault: 16.8 Description: Temperature sensor motor 1		
	Response: Output stage inhibit	
	Cause	Measure
	Faulty startup of temperature sensor of motor 1.	Perform startup again.

Subfault: 16.9 Description: Temperature sensor motor 2		
	Response: Output stage inhibit	
	Cause	Measure
	Faulty startup of temperature sensor of motor 2.	Perform startup again.

Subfault: 16.10 Description: Actual position source not assigned		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Active control mode requires an encoder for position mode.	– Assign actual position source in encoder assignment of the active drive train (Index 8565.3 or 8566.3). – If no encoder is installed, activate the FCBs only using "torque control" or "speed control" operating mode.

26863707/EN – 07/2021

Subfault: 16.11 Description: Motor data calculation error		
	Response: Output stage inhibit	
	Cause	Measure
	Motor startup not possible because of inconsistent motor data or wrong device configuration data.	Check the motor data for plausibility, or contact SEW-EURODRIVE Service.

Subfault: 16.12 Description: Motor data write sequence		
	Response: Output stage inhibit	
	Cause	Measure
	Subindex 1 not written to zero before writing electrical startup parameters (index 8357, 8360, 8394, 8420 or 8358, 8361, 8395, 8421).	Reset the fault. Set parameters 8360/1 or 8361/1 to "0" before writing additional parameters.

Subfault: 16.13 Description: Several motor protection models are active		
	Response: Output stage inhibit	
	Cause	Measure
	More than one model active at the same time in thermal motor monitoring, e.g. for asynchronous motor and synchronous motor.	If the startup parameters were changed manually, switch off motor monitoring. In all other cases, contact SEW-EURODRIVE Service.

Subfault: 16.20 Description: Nominal speed too high or nominal frequency too low		
	Response: Output stage inhibit	
	Cause	Measure
	During startup using nameplate data: Nominal speed too high or nominal frequency too low. The resulting number of pole pairs is 0.	Enter plausible motor data (nominal speed and nominal frequency).

Subfault: 16.21 Description: Nominal slip negative		
	Response: Output stage inhibit	
	Cause	Measure
	During startup using nameplate data, the calculated nominal slip is negative: Nominal frequency too low, or nominal speed too high, or number of pole pairs too high.	Enter plausible motor data (nominal frequency, nominal speed, number of pole pairs).

26863707/EN – 07/2021

Subfault: 16.22 Description: Specify the number of pole pairs		
	Response: Output stage inhibit	
	Cause	Measure
	During startup using nameplate data: It is not possible to calculate the number of pole pairs accurately from nominal frequency and nominal speed.	Enter the number of pole pairs.

Subfault: 16.23 Description: Plausibility check failed		
	Response: Output stage inhibit	
	Cause	Measure
	During startup using nameplate data: The estimated nominal power does not match the entered nominal power.	Check entered nameplate data for plausibility.

Subfault: 16.24 Description: Speed controller sampling cycle not possible with current PWM frequency or current control mode		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	At a PWM frequency of "2.5 kHz", only the speed controller sampling cycle of 2 ms is permitted. For the ELSM® control mode, the only permitted speed controller sampling cycles are 1 ms and 2 ms.	Increase PWM frequency or increase sampling cycle of speed controller to 2 ms. Set the sampling cycle to 1 ms or 2 ms for ELSM® control mode.

Subfault: 16.25 Description: User-defined current limit too low for standstill current		
	Response: Output stage inhibit	
	Cause	Measure
	User-defined current limit value too small for minimum standstill current.	Increase the user-defined current limit, or disable the standstill current function.

Subfault: 16.26 Description: Nominal values incomplete or implausible		
	Response: Output stage inhibit	
	Cause	Measure
	During startup using nameplate data: Nominal voltage, nominal current, nominal speed or nominal torque are not entered or are not plausible.	Enter or check nominal voltage, nominal current, nominal speed, and nominal torque.

26863707/EN – 07/2021

Subfault: 16.27 Description: Maximum current or maximum torque not plausible	
Response: Output stage inhibit	
Cause	Measure
During startup using nameplate data: Maximum current or maximum torque not entered, or maximum current and maximum torque not plausible.	Check the maximum current and maximum torque.

Subfault: 16.30 Description: Faulty EtherCAT® EEPROM configuration state	
Response: Warning	
Cause	Measure
Faulty EtherCAT®/SBus^{PLUS} EEPROM configuration status. EEPROM not loaded; binary file not loaded.	Contact SEW-EURODRIVE Service.
Faulty EEPROM loading procedure.	Contact SEW-EURODRIVE Service.
Faulty EEPROM checksum.	Contact SEW-EURODRIVE Service.

Subfault: 16.40 Description: Data of selected motor not valid	
Response: Output stage inhibit	
Cause	Measure
Startup data set on replaceable memory module not valid for this motor.	Replace the memory module.

Subfault: 16.41 Description: Data of selected motor does not exist	
Response: Output stage inhibit	
Cause	Measure
No startup data set found on the replaceable memory module for the selected motor.	Check the selection and, if necessary, start up another motor or replace the memory module.

Subfault: 16.50 Description: Brake parameters not initialized	
Response: Output stage inhibit	
Cause	Measure
No brake data available.	Check startup.

Subfault: 16.60 Description: Parameter setting for 3-wire control not valid	
Response: Warning	
Cause	Measure
No 3-wire control stop terminal configured.	Set stop terminal parameters.

26863707/EN – 07/2021

8.7.13 Fault 17 Internal processor fault

Subfault: 17.7 Description: Exception error		
	Response: Output stage inhibit	
	Cause	Measure
	Exception trap in CPU.	Contact the SEW-EURODRIVE Service.

8.7.14 Fault 18 Software error

Subfault: 18.1 Description: Motor management		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Error detected at motor management interface.	– Switch the device off and on again. – Contact SEW-EURODRIVE Service if the fault persists.

Subfault: 18.3 Description: Task system warning		
	Response: Warning	
	Cause	Measure
	Error while processing internal task system. This may be a timeout for cyclical tasks, for example.	– Acknowledge the warning. – Contact SEW-EURODRIVE Service if the warning occurs regularly.

Subfault: 18.4 Description: Task system		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	A fault was detected during the processing of the internal task system. This may be a timeout for cyclical tasks, for example.	– Switch the device off and on again. – Contact SEW-EURODRIVE Service if the fault persists.

26863707/EN – 07/2021

Subfault: 18.7 Description: Fatal error		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Fatal software error.	– Switch the device off and on again. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 18.8 Description: Invalid fault code		
	Response: Output stage inhibit	
	Cause	Measure
	Invalid fault code requested.	– Switch the device off and on again. – Contact SEW-EURODRIVE Service if the fault persists.

Subfault: 18.9 Description: Internal software error		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	The software reports an unexpected event.	– Switch the device off and on again. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 18.10 Description: Watchdog		
	Response: Output stage inhibit	
	Cause	Measure
	Software no longer operates within intended cycle time.	– Switch the device off and on again. – Contact SEW-EURODRIVE Service if the fault persists.

26863707/EN – 07/2021

Subfault: 18.12 Description: Configuration data		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Configuration data not plausible or cannot be interpreted by active firmware version.	Update the firmware or load valid configuration data.

Subfault: 18.13 Description: Calibration data		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Calibration data not plausible.	Load valid calibration data.

8.7.15 Fault 19 Process data

Subfault: 19.1 Description: Torque profile value violation		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Implausible values specified as torque profile values.	Adjust the torque profile values.

Subfault: 19.2 Description: Position setpoint violation		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Position setpoint outside software limit switches.	Check position setpoint.
	Position setpoint outside modulo range.	Check position setpoint.
	Position in user unit generates number overflow in the system unit.	Check the position in user unit.

Subfault: 19.3 Description: Speed profile value violation		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Implausible values specified as speed profile values. Only a value range of >= 0 is permitted.	Adjust the speed profile values.

26863707/EN – 07/2021

Subfault: 19.4 Description: Acceleration profile value violation		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Implausible values specified as acceleration profile values. Only a value range of >= 0 is permitted.	Adjust the acceleration profile values.

Subfault: 19.5 Description: Drive function does not exist		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Non-existing drive function (FCB) selected via process data.	Specify an existing FCB number for FCB activation via process data.

Subfault: 19.6 Description: Mass moment of inertia setpoint violation		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Implausible values specified as mass moment of inertia setpoints. Only a value range of >= 0 is permitted.	Adjust the setpoints for the mass moment of inertia.

Subfault: 19.7 Description: Referencing missing		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Activated function permitted only with referenced encoder.	Reference the encoder first, then activate the function.

Subfault: 19.8 Description: Drive train changeover not allowed		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Drive train changeover requested while output stage is enabled.	Inhibit the output stage before changing to another drive train.

Subfault: 19.9 Description: Jerk setpoint violation		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Jerk values not plausible.	Adjust jerk setpoints.

26863707/EN – 07/2021

8.7.16 Fault 20 Device monitoring

Subfault: 20.1 **Description: Supply voltage fault**	
Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
Cause	Measure
Internal electronics supply voltage or externally connected DC 24 V standby supply voltage outside permitted voltage range.	Check the voltage level of the external DC 24 V standby supply voltage and check for correct connection. If required, correct. – Acknowledge the fault. – If the fault occurs repeatedly, replace the device. For further support, contact SEW-EURODRIVE Service.

Subfault: 20.2 **Description: Supply voltage overload**	
Response: Output stage inhibit	
Cause	Measure
For MOVIDRIVE® system, the current load of the current paths of the DC 24 V standby supply voltage inside the device is too high. The device signal output of the device was de-energized because of the fault message.	Identify the consumer that is overloading the internal supply voltage: 1st Remove all external consumers: – At the digital outputs of the basic device. – At options that may be present. – At all encoder connections. – At other consumers at the DC 24 V output voltage terminals. Second Acknowledge the fault. 3rd Reconnect the consumers with the device, one after the other, until the fault message appears once again. 4. To eliminate the fault, connect a consumer with a lower current consumption or eliminate the short circuit.

Subfault: 20.7 **Description: Internal hardware fault**	
Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
Cause	Measure
Fault in the device hardware.	– Acknowledge the fault. – If the fault occurs repeatedly, replace the device. For further support, contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 20.8 Description: Fan warning		
	Response: Warning with self-reset	
	Cause	Measure
	Fan function impaired.	Check the fan for proper functioning.

Subfault: 20.9 Description: Fan fault		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Fan defective.	Contact SEW-EURODRIVE Service.

Subfault: 20.10 Description: Fan supply voltage fault		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Supply voltage of fan missing.	Check the connection or establish a connection.

Subfault: 20.11 Description: STO – switching delay		
	Response: Output stage inhibit	
	Cause	Measure
	Switching delay between STO signals F-STO_P1 and F-STO_P2.	– Check the STO wiring. – Check the STO wiring before acknowledging the fault, and make sure that both STO signals are switched to low level.

Subfault: 20.23 Description: Power section temperature detection		
	Response: Output stage inhibit	
	Cause	Measure
	Fault in the device hardware. Power section does not provide temperature data.	– Acknowledge the fault. – If the fault occurs repeatedly, replace the device. For further support, contact SEW-EURODRIVE Service.

8.7.17 Fault 21 Digital motor integration 1

Subfault: 21.1 Description: Communication error		
	Response: Output stage inhibit	
	Cause	Measure
	Communication error detected on the interface of digital motor integration.	Check the cabling.

Subfault: 21.2 Description: Slave required		
	Response: Digital motor integration	
	Cause	Measure
	Device started up with a drive with digital motor integration but no drive with digital motor integration is connected.	Connect a drive with digital motor integration matching startup, or perform a new startup.

Subfault: 21.3 Description: Incompatible driving motor		
	Response: Output stage inhibit	
	Cause	Measure
	Connected drive not compatible with started-up drive.	Connect a drive that matches startup, or perform a new startup.

Subfault: 21.4 Description: Invalid label		
	Response: Output stage inhibit	
	Cause	Measure
	The connected drive contains invalid data.	Replace the drive.

Subfault: 21.5 Description: Incompatible slave		
	Response: Output stage inhibit	
	Cause	Measure
	The connected slave of digital motor integration cannot be used with this inverter firmware.	Update the inverter or the slave.

Subfault: 21.6 Description: Overload/short circuit on the interface		
	Response: Output stage inhibit	
	Cause	Measure
	Short circuit in the cabling of components of digital motor integration.	Check the cabling of the digital motor integration component.
	Voltage of digital motor integration component too low.	Check the voltage supply of the component.

Subfault: 21.7 Description: Continuous supply current of slave too high		
	Response: Output stage inhibit	
	Cause	Measure
	The continuous supply current of the slave is too large for operation on the device.	Use a slave with lower supply current.

26863707/EN – 07/2021

Subfault: 21.8 Description: Parameter error		
	Response: Output stage inhibit	
	Cause	Measure
	Error while processing data from digital motor integration slave.	Repeat the process in configuration state.
	The connected drive contains invalid data.	Replace the drive.

Subfault: 21.9 Description: Illegal hot plug		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	A slave of digital motor integration was connected while the drive was enabled.	Set the device to configuration state or switch it off. Connect the slave.
	A slave of digital motor integration was connected while the device was in standby mode without switching off the sensor supply.	Switch off encoder supply in standby mode. Connect the slave.

Subfault: 21.10 Description: Connection type configuration		
	Response: Output stage inhibit	
	Cause	Measure
	The connection type of the connected drive cannot be determined.	Set the connection type on the drive correctly.

Subfault: 21.11 Description: Illegal subcomponent		
	Response: Output stage inhibit	
	Cause	Measure
	The device cannot be operated with a subcomponent connected via digital motor integration.	Connect another subcomponent.

Subfault: 21.20 Description: Slave fault – critical		
	Response: Output stage inhibit	
	Cause	Measure
	A slave of digital motor integration detected a critical component fault.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault signaled by the subcomponent.

26863707/EN – 07/2021

Subfault: 21.21 Description: Slave fault		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	A slave of digital motor integration detected a component fault.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault signaled by the subcomponent.

Subfault: 21.22 Description: Slave warning		
	Response: Warning	
	Cause	Measure
	A slave of digital motor integration issued a warning.	For the exact cause of the fault and for information on how to correct the problem, refer to the fault signaled by the subcomponent.

8.7.18 Fault 23 Power section

Subfault: 23.1 Description: Warning		
	Response: Warning with self-reset	
	Cause	Measure
	Power section fault with fault response of the type "Warning".	See also "Power section subcomponent" fault status.

Subfault: 23.2 Description: Fault		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Power section fault with fault response of the type "Standard".	See also "Power section subcomponent" fault status.

Subfault: 23.3 Description: Critical fault		
	Response: Output stage inhibit	
	Cause	Measure
	Power section fault with fault response of the type "Critical fault".	See also "Power section subcomponent" fault status.

26863707/EN – 07/2021

Subfault: 23.4 Description: Hardware fault		
	Response: Output stage inhibit	
	Cause	Measure
	A fault occurred in a hardware component of the power section, e.g.: Overcurrent hardware comparator.	– Check the current supply. – Increase the ramp time. – Check for correct motor size (the motor current is too high). – Contact SEW-EURODRIVE Service.
	Switched-mode power supply fault, hardware fault.	– Check the current supply. – Check the DC 24 V supply voltage.
	Fault at the gate driver of an IGBT.	Defect in the power output stage. Contact the SEW-EURODRIVE Service.
	Invalid process data configuration. Status of control section and power section are not compatible.	Contact the SEW-EURODRIVE Service.

Subfault: 23.5 Description: Invalid process data configuration	
Response: Output stage inhibit	
Cause	Measure
Invalid process data configuration.	Contact the SEW-EURODRIVE Service.

Subfault: 23.6 Description: Process data timeout	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Power section communication interface detected process data timeout.	If the fault occurs repeatedly, contact SEW-EURODRIVE Service.

Subfault: 23.7 Description: Parameter communication timeout	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Power section communication interface detected timeout in parameter communication.	If the fault occurs repeatedly, contact SEW-EURODRIVE Service.

Subfault: 23.8 Description: Parameter communication error	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Power section communication interface detected error in parameter communication.	If the fault occurs repeatedly, contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 23.9 Description: Firmware of power section corrupt		
	Response: Output stage inhibit	
	Cause	Measure
	Failed to update firmware on power section.	Update the firmware again.

8.7.19 Fault 25 Parameter memory monitoring

Subfault: 25.1 Description: Timeout warning		
	Response: Warning with self-reset	
	Cause	Measure
	Access to memory (R/W) takes longer than expected.	The error will be reset automatically after completed memory access.

Subfault: 25.2 Description: NV memory – runtime error		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Runtime error of non-volatile memory system.	– Reset the device. – If this error occurs repeatedly, replace the device. Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 25.6 Description: Incompatible device configuration		
	Response: Output stage inhibit	
	Cause	Measure
	The data set in the device was copied from another device, which differs from the current device in the device family, power, or voltage.	– Check whether the configuration is correct and repeat the startup, if necessary. – Acknowledge the fault by manual reset with parameter set acceptance. Setting under [Diagnostics] > [Status] > [Fault status] parameter "Manual fault reset".
	Replaceable memory module used by another device. Power rating, device family, or voltage differs from the current device.	– Check whether the configuration is correct and repeat the startup, if necessary. – Acknowledge the fault by manual reset with parameter set acceptance. Setting under [Diagnostics] > [Status] > [Fault status] parameter "Manual fault reset".
	The power section was replaced and differs in its power rating or voltage from the original power section.	– Check whether the configuration is correct and repeat the startup, if necessary. – Acknowledge the fault by manual reset with parameter set acceptance. Setting under [Diagnostics] > [Status] > [Fault status] parameter "Manual fault reset".

Subfault: 25.7 Description: NV memory initialization – error	
Response: Output stage inhibit	
Cause	Measure
Error initializing non-volatile memory system.	– Reset the device. – If this error occurs repeatedly, replace the device. Contact SEW-EURODRIVE Service.

Subfault: 25.10 Description: Power section configuration data – version conflict	
Response: Output stage inhibit	
Cause	Measure
Wrong version of configuration data of power section.	Contact SEW-EURODRIVE Service.

Subfault: 25.12 Description: Power section configuration data – CRC error	
Response: Output stage inhibit	
Cause	Measure
Faulty configuration data of power section.	Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 25.13 Description: Control electronics configuration data – CRC error		
	Response: Output stage inhibit	
	Cause	Measure
	Faulty configuration data of control electronics.	Contact SEW-EURODRIVE Service.

Subfault: 25.14 Description: Calibration data of power section – version conflict		
	Response: Output stage inhibit	
	Cause	Measure
	Wrong version of calibration data of power section.	Contact SEW-EURODRIVE Service.

Subfault: 25.15 Description: Calibration data of control electronics – version conflict		
	Response: Output stage inhibit	
	Cause	Measure
	Wrong version of calibration data of control electronics.	Contact SEW-EURODRIVE Service.

Subfault: 25.16 Description: Power section calibration data – CRC error		
	Response: Output stage inhibit	
	Cause	Measure
	Faulty calibration data of power section.	Contact SEW-EURODRIVE Service.

Subfault: 25.17 Description: Control electronics calibration data – CRC error		
	Response: Output stage inhibit	
	Cause	Measure
	Faulty calibration data of control electronics.	Contact SEW-EURODRIVE Service.

Subfault: 25.18 Description: Power section QA data – CRC error		
	Response: Warning	
	Cause	Measure
	Faulty quality assurance data of power section.	Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 25.19 **Description: Control electronics QA data – CRC error**	
Response: Warning	
Cause	Measure
Faulty quality assurance data of control electronics.	Contact SEW-EURODRIVE Service.

Subfault: 25.20 **Description: Initialization error – basic device memory**	
Response: Output stage inhibit	
Cause	Measure
Initialization error of the basic device memory.	Contact SEW-EURODRIVE Service.

Subfault: 25.21 **Description: Runtime error – basic device memory**	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Runtime error in memory of basic device.	Contact SEW-EURODRIVE Service.

Subfault: 25.30 **Description: Initialization error – replaceable memory module**	
Response: Output stage inhibit	
Cause	Measure
The formatting of the replaceable memory module does not match.	Restore delivery state. NOTICE All the data on the replaceable memory module will be reset to default.
Initialization error of replaceable memory module after delivery state.	Contact SEW-EURODRIVE Service.

Subfault: 25.31 **Description: Runtime error – replaceable memory module**	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Runtime error of replaceable memory module.	Contact SEW-EURODRIVE Service.

Subfault: 25.32 **Description: Replaceable memory module not compatible**	
Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
Cause	Measure
The inserted replaceable memory module cannot be used.	Replace the memory module.

Subfault: 25.50 Description: Runtime error – replaceable safety memory module		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Runtime error of the replaceable safety memory module.	Contact SEW-EURODRIVE Service.

Subfault: 25.51 Description: Initialization error – replaceable safety memory module		
	Response: Warning	
	Cause	Measure
	Initialization error of the replaceable safety memory module.	Contact SEW-EURODRIVE Service.

Subfault: 25.61 Description: Failure – restore point		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Failed to create restore point.	Delete restore point.

Subfault: 25.70 Description: Incompatible card configuration		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The current configuration of the cards does not match the state of the stored startup. For example, a card was removed that was still present during startup.	– Restore the original configuration of the cards. – Acknowledge the fault by manual reset with parameter set acceptance. Setting under [Diagnostics] > [Status] > [Fault status] parameter "Manual fault reset".

8.7.20 Fault 26 External fault

Subfault: 26.1 Description: Terminal		
	Response: External fault	
	Cause	Measure
	Fault message about external fault source.	Programmable via 8622.5 (default: application stop (with output stage inhibit)).

26863707/EN – 07/2021

Subfault: 26.3 Description: Power section emergency shutdown		
	Response: Output stage inhibit	
	Cause	Measure
	Power section requested external emergency shutdown because it detected critical fault.	Contact SEW-EURODRIVE Service.

Subfault: 26.4 Description: External braking resistor fault		
	Response: Response to external braking resistor fault	
	Cause	Measure
	External braking resistor's temperature switch connected to terminal tripped.	– Check the resistor mounting position. – Clean the resistor. – Check the configuration of the resistor. – Install a larger resistor. – Check the trip switch settings. – Optimize the travel cycle so that less regenerative operation energy arises.

8.7.21 Fault 28 FCB drive functions

Subfault: 28.1 Description: FCB 11/12 – Timeout while searching zero pulse		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Failed to find zero pulse of encoder's C track within specified search time during reference travel.	Check the encoder wiring.

Subfault: 28.2 Description: FCB 11/12 – Hardware limit switch upstream of reference cam		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The hardware limit switch was reached during reference travel. The reference cam was not detected.	Make sure that the reference cam is not installed downstream of the hardware limit switch.

Subfault: 28.3 Description: FCB 11/12 – Hardware limit switch and reference cam not flush		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Hardware limit switch and reference cam not mounted flush.	Make sure that the reference cam and the hardware limit switch are mounted flush.

26863707/EN – 07/2021

Subfault: 28.4 Description: FCB 11/12 – Reference offset error		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Error when determining reference offset.	– Make sure that the reference offset is smaller than the "Modulo maximum" limit value. – When using a single-turn absolute encoder, make sure that the reference offset is larger than one encoder revolution.

Subfault: 28.5 Description: FCB 11/12 – Referencing not possible	
Response: Emergency stop + output stage inhibit	
Cause	Measure
In the active drive train, the "Actual position source" parameter is set to "No encoder".	Assign "Actual position source", or do not perform any referencing.

Subfault: 28.6 Description: FCB 11/12 – Limit switch/reference cam not flush/overlapping with fixed stop	
Response: Emergency stop + output stage inhibit	
Cause	Measure
Hardware limit switch or reference cam that has not been selected was approached during reference travel to fixed stop.	Check whether the parameters set for reference travel are correct.
During reference travel to fixed stop with selected hardware limit switch or reference cam, the fixed stop was reached without approaching the hardware limit switch or reference cam.	Check whether the parameters set for reference travel are correct.

Subfault: 28.7 Description: FCB 21 – Total torque greater than maximum torque at motor shaft	
Response: Output stage inhibit	
Cause	Measure
The required total torque from the torque input and load torque is greater than the permitted maximum torque at the motor shaft.	Reduce the torque input.

Subfault: 28.8 Description: FCB 21 – Total torque not reached	
Response: Output stage inhibit	
Cause	Measure
The required total torque from torque input and load torque is limited internally.	– Reduce the torque input. – Check limit values.

26863707/EN – 07/2021

Subfault: 28.9 Description: FCB 18 – Rotor position identification not possible	
Response: Output stage inhibit	
Cause	Measure
Rotor position identification started with incremental encoder but aborted prematurely.	– Restart the rotor position identification. – Check whether the encoder is connected correctly. – Check whether the encoder is defective.
Result of rotor position identification cannot be stored in encoder.	Select "Inverter" as storage location.
Combination of "Automatic" mode and "Encoder" storage location not permitted.	Set the operating mode to "Manual" or the storage location to "Inverter".

Subfault: 28.10 Description: FCB 25 – Unbalanced motor phases	
Response: Output stage inhibit	
Cause	Measure
Significantly different values determined in the three phases while measuring stator resistances.	– Check whether the motor is connected correctly. – Check all contact points on the motor and inverter. – Check the motor and motor cable for damage.

Subfault: 28.11 Description: FCB 25 – At least one phase with high resistance	
Response: Output stage inhibit	
Cause	Measure
At least one motor phase could not be measured during motor parameter measurement.	– Check whether the motor is connected correctly. – Check all contact points on the motor and inverter. – Check the motor and motor cable for damage.

Subfault: 28.12 Description: FCB 25 – Timeout during stator resistance measurement	
Response: Output stage inhibit	
Cause	Measure
Motor parameter measurement activated while motor is turning.	– Stop motor. – Start motor parameter measurement when the motor is at standstill.

26863707/EN – 07/2021

Subfault: 28.13 Description: FCB 25 – Characteristic curve identification not possible		
	Response: Output stage inhibit	
	Cause	Measure
	Motor parameter measurement does not allow for unique identification of the characteristic curve.	Contact SEW-EURODRIVE Service.

Subfault: 28.14 Description: Modulo min. and max. swapped		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	In the active data set, the value for "Modulo minimum" is greater than the value for "Modulo maximum"; see Monitoring functions\Limit values 1 or Monitoring functions\Limit values 2.	Swap the values for modulo minimum and modulo maximum.

Subfault: 28.15 Description: FCB 25 – Timeout		
	Response: Output stage inhibit	
	Cause	Measure
	Measuring rotor resistance, LSigma, or stator inductance not completed.	Contact SEW-EURODRIVE Service.

Subfault: 28.16 Description: FCB 04 – Local mode stopped by STO		
	Response: Output stage inhibit	
	Cause	Measure
	Drive stopped by activating STO in local mode.	Acknowledge the fault. Doing so prevents restart after revoking STO.

Subfault: 28.18 Description: FCB 21 – Brake missing		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	No brake is parameterized. Only brakes controlled by the inverter are tested during the brake test.	– Connect the brake to the inverter and parameterize it. – Start FCB 21 again.

26863707/EN – 07/2021

Subfault: 28.19 Description: FCB 21 – Motor encoder missing		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	No encoder is parameterized. An encoder is required for the brake test to detect the movement of the drive.	– Mount the encoder to the motor and parameterize it. – Start the FCB again.

8.7.22 Fault 29 HW limit switches

Subfault: 29.1 Description: Positive limit switch approached		
	Response: HW limit switch – current drive train	
	Cause	Measure
	Positive hardware limit switch approached.	– Check hardware limit switch wiring. – Check target position. – Move clear of the hardware limit switch at negative speed.

Subfault: 29.2 Description: Negative limit switch approached		
	Response: HW limit switch – current drive train	
	Cause	Measure
	Negative hardware limit switch approached.	– Check hardware limit switch wiring. – Check target position. – Move clear of the hardware limit switch at positive speed.

Subfault: 29.3 Description: Limit switch missing		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Both positive and negative hardware limit switches approached at the same time.	– Check hardware limit switch wiring. – Check the parameter setting of digital inputs. – Check the parameter setting of process output data.

26863707/EN – 07/2021

Subfault: 29.4 Description: Limit switches swapped		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Positive hardware limit switch approached at negative speed, or negative hardware limit switch approached at positive speed.	Check whether hardware limit switch connections are swapped.

8.7.23 Fault 30 Software limit switches

Subfault: 30.1 Description: Positive limit switch approached		
	Response: SW limit switches – current drive train	
	Cause	Measure
	Positive software limit switch approached.	– Check software limit switch position. – Check target position. – Move clear of software limit switch at negative speed.

Subfault: 30.2 Description: Negative limit switch approached		
	Response: SW limit switches – current drive train	
	Cause	Measure
	Negative software limit switch approached.	– Check software limit switch position. – Check target position. – Move clear of software limit switch at positive speed.

Subfault: 30.3 Description: Limit switches swapped		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Position value of negative software limit switch greater than position value of positive software limit switch.	Check software limit switch positions.

8.7.24 Fault 31 Thermal motor protection

Subfault: 31.1 Description: Temperature sensor wire break – motor 1		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Connection to temperature sensor of motor 1 interrupted.	Check the temperature sensor wiring.

26863707/EN – 07/2021

Subfault: 31.2 Description: Temperature sensor short circuit – motor 1		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Short circuit in connection with temperature sensor of motor 1.	Check the temperature sensor wiring.

Subfault: 31.3 Description: Temperature sensor overtemperature – motor 1		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature sensor of motor 1 signals overtemperature.	– Allow motor to cool down. – Check for motor overload. – Check whether the correct temperature sensor KY (KTY) was parameterized instead of PK (PT1000).

Subfault: 31.4 Description: Temperature model overtemperature – motor 1		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature model of motor 1 signals overtemperature.	– Allow motor to cool down. – Check for motor overload. – Check whether the correct temperature sensor KY (KTY) was parameterized instead of PK (PT1000).

Subfault: 31.5 Description: Temperature sensor prewarning – motor 1		
	Response: Thermal motor protection 1 – prewarning threshold	
	Cause	Measure
	Temperature signaled by temperature sensor of motor 1 exceeds prewarning threshold.	Check for motor overload.

Subfault: 31.6 Description: Temperature model prewarning – motor 1		
	Response: Thermal motor protection 1 – prewarning threshold	
	Cause	Measure
	Temperature signaled by temperature model of motor 1 exceeds prewarning threshold.	Check for motor overload.

26863707/EN – 07/2021

Subfault: 31.7 **Description: UL temperature monitoring**		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature model of active motor signals over-temperature.	Check for motor overload.

Subfault: 31.8 **Description: Communication timeout temperature sensor – motor 1**		
	Response: Output stage inhibit	
	Cause	Measure
	Communication with temperature sensor is disrupted, e.g. via MOVILINK® DDI.	Check the cabling.

Subfault: 31.9 **Description: Temperature too low – temperature sensor – motor 1**		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature signaled by temperature sensor of motor 1 below -50 °C.	– Check if a KTY temperature sensor is installed in the motor but the parameterization has been carried out for a PT1000 temperature sensor. – Heat the motor.

Subfault: 31.11 **Description: Temperature sensor wire break – motor 2**		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Connection to temperature sensor of motor 2 interrupted.	Check the temperature sensor wiring.

Subfault: 31.12 **Description: Temperature sensor short circuit – motor 2**		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Short circuit in connection with temperature sensor of motor 2.	Check the temperature sensor wiring.

26863707/EN – 07/2021

Subfault: 31.13 Description: Temperature sensor overtemperature – motor 2		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature sensor of motor 2 signals overtemperature.	– Allow motor to cool down. – Check for motor overload. – Check whether the correct temperature sensor KY (KTY) was parameterized instead of PK (PT1000).

Subfault: 31.14 Description: Temperature model overtemperature – motor 2		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature model of motor 2 signals overtemperature.	– Allow motor to cool down. – Check for motor overload. – Check whether the correct temperature sensor KY (KTY) was parameterized instead of PK (PT1000).

Subfault: 31.15 Description: Temperature sensor prewarning – motor 2		
	Response: No response	
	Cause	Measure
	Temperature signaled by temperature sensor of motor 2 exceeds prewarning threshold.	Check for motor overload.

Subfault: 31.16 Description: Temperature model prewarning – motor 2		
	Response: No response	
	Cause	Measure
	Temperature signaled by temperature model of motor 2 exceeds prewarning threshold.	Check for motor overload.

Subfault: 31.19 Description: Temperature too low – temperature sensor – motor 2		
	Response: Output stage inhibit	
	Cause	Measure
	Temperature signaled by temperature sensor of motor 2 below -50 °C.	– Check if a KTY temperature sensor is installed in the motor but the parameterization has been carried out for a PT1000 temperature sensor. – Heat the motor.

26863707/EN – 07/2021

Subfault: 31.50 Description: Fault at temperature sensor 1		
	Response: Output stage inhibit	
	Cause	Measure
	Fault detected at temperature sensor 1 of the motor.	Observe main fault code and take measures according to the main fault.

Subfault: 31.51 Description: Fault at temperature sensor 2		
	Response: Output stage inhibit	
	Cause	Measure
	Fault detected at temperature sensor 2 of the motor.	Observe main fault code and take measures according to the main fault.

Subfault: 31.52 Description: Fault at temperature sensor 3		
	Response: Output stage inhibit	
	Cause	Measure
	Fault detected at temperature sensor 3 of the motor.	Observe main fault code and take measures according to the main fault.

8.7.25 Fault 32 Communication

Subfault: 32.2 Description: EtherCAT®/SBusPLUS process data timeout		
	Response: Fieldbus – timeout response	
	Cause	Measure
	Timeout in process data transfer during EtherCAT®/SBusPLUS communication.	– Check the wiring of the system bus and module bus. – Check that the EtherCAT®/SBus^{PLUS} configuration is set correctly in the MOVI-C® CONTROLLER. – Check the EtherCAT®/SBus^{PLUS} timeout configuration in the device.

Subfault: 32.3 Description: Faulty synchronization signal		
	Response: External synchronization	
	Cause	Measure
	Faulty synchronization signal period.	Check for correct setting of the EtherCAT®/SBus^{PLUS} configuration in the MOVI-C® CONTROLLER.

26863707/EN – 07/2021

Subfault: 32.4 Description: No synchronization signal		
	Response: External synchronization	
	Cause	Measure
	No synchronization signal present.	Check for correct setting of the EtherCAT®/ SBus^{PLUS} configuration in the MOVI-C® CONTROLLER.

Subfault: 32.5 Description: Synchronization timeout		
	Response: External synchronization	
	Cause	Measure
	Timeout while synchronizing to synchronization signal.	Check for correct setting of the EtherCAT®/ SBus^{PLUS} configuration in the MOVI-C® CONTROLLER.

Subfault: 32.6 Description: Copy parameter set		
	Response: Output stage inhibit	
	Cause	Measure
	Error while downloading parameter set to device.	– Check the wiring of the system bus and module bus. – Restart download.

Subfault: 32.7 Description: Application heartbeat timeout		
	Response: Application heartbeat – timeout response	
	Cause	Measure
	Communication interrupted between IEC program in MOVI-C® CONTROLLER and device.	– Check the status of the IEC program. – Restart the IEC program.

Subfault: 32.8 Description: Timeout user timeout		
	Response: User timeout – timeout response	
	Cause	Measure
	The timeout time of the user timeout function elapsed	Write the parameter for triggering the user timeout function cyclically before the timeout time elapses.

26863707/EN – 07/2021

Subfault: 32.11 Description: Local mode timeout		
	Response: Local mode – timeout response	
	Cause	Measure
	Communication connection to device interrupted in local mode.	Increase the timeout setting in local mode.
	New Scope project created.	– Reset the fault. – Start local mode again.
	Scope measurement loaded from device.	– Reset the fault. – Start local mode again.

Subfault: 32.12 Description: Manual mode timeout		
	Response: Manual mode – timeout response	
	Cause	Measure
	Communication connection to device interrupted in manual mode.	– Check whether too many programs are open on the engineering PC. – Increase the timeout time in manual mode.
	New Scope project created.	– Reset the fault. – Restart manual mode.
	Scope measurement loaded from device.	– Reset the fault. – Restart manual mode.

8.7.26 Fault 33 System initialization

Subfault: 33.1 Description: Offset determination current measurement		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Error detected during current measurement.	Contact SEW-EURODRIVE Service.

Subfault: 33.2 Description: Firmware CRC check		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Error checking firmware.	Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 33.6 Description: FPGA configuration		
	Response: Output stage inhibit	
	Cause	Measure
	Error checking FPGA configuration.	Contact SEW-EURODRIVE Service.

Subfault: 33.7 Description: Function block compatibility error		
	Response: Output stage inhibit	
	Cause	Measure
	Error checking compatibility of function block.	Contact SEW-EURODRIVE Service.

Subfault: 33.8 Description: SW function block configuration		
	Response: Output stage inhibit	
	Cause	Measure
	Error detected while checking configuration of software function block.	Contact SEW-EURODRIVE Service.

Subfault: 33.9 Description: Power section hardware compatibility fault		
	Response: Output stage inhibit	
	Cause	Measure
	Firmware does not match hardware of power section.	Contact SEW-EURODRIVE Service.

Subfault: 33.10 Description: Run-up timeout		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	Timeout during system run-up.	Contact SEW-EURODRIVE Service.

Subfault: 33.11 Description: Hardware compatibility error		
	Response: Output stage inhibit	
	Cause	Measure
	Firmware does not match device.	Contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 33.12 Description: Memory module plugged in		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	A plugged-in memory module was detected during device start. The setting for the device parameter source is set to "Internal memory".	– Switch off the device. Remove the memory module and restart the device. – Change the parameter "Non-volatile memory source" to "Arbitrary" or "Replaceable memory module". Switch the device off and on again.

Subfault: 33.13 Description: Memory module removed		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	The device was started without a memory module. This device variant can be operated without memory module.	Switch off the device, insert the memory module, and switch on the device again.
	The device was started without a memory module. For the parameter "NV memory source", however, the setting "Replaceable memory module" was defined.	– Switch off the device, insert the memory module, and switch on the device again. – Change the setting of the "NV memory source" to "Internal memory". Switch the device off and on again.
	Replaceable memory module removed during ongoing operation.	– Switch off the device, insert the memory module, and switch on the device again. – Change the setting of the "NV memory source" to "Internal memory". Switch the device off and on again.

Subfault: 33.15 Description: Firmware configuration		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	The Device Update Manager detected a modified version of the application firmware.	Acknowledge the fault. Doing so will update the configuration data of the Device Update Manager.
	The error occurs repeatedly several times. The Device Update Manager is outdated and cannot save the configuration.	Update the Device Update Manager.

26863707/EN – 07/2021

Subfault: 33.18 Description: Fieldbus configuration		
	Response: Output stage inhibit System state: Fault acknowledgment with CPU reset	
	Cause	Measure
	The fieldbus variant is not compatible with the firmware variant of the main firmware: – With CiA402 firmware variants, only POWERLINK or EtherCAT® is possible. – With standard firmware variants, POWERLINK is not possible.	– Load appropriate variant of the main firmware. – Load appropriate variant of the fieldbus firmware. – For devices with pluggable fieldbus card, replace the card.

8.7.27 Fault 34 Process data configuration

Subfault: 34.1 Description: Changed process data configuration		
	Response: Application stop + output stage inhibit	
	Cause	Measure
	Process data configuration changed during active process data operation.	– Stop the process data and make your changes. Then start the process data again. – Perform a reset. Doing so will stop the process data, apply the changes, and restart the process data.

8.7.28 Fault 35 Function activation

Subfault: 35.1 Description: Activation level – invalid activation key		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The activation key was entered incorrectly.	Enter the activation key again.
	The activation key was not created for this device.	Check the activation key.
	When using a double axis, the activation key for the wrong instance was entered in the device.	Enter the activation key for the allocated instance.
	Activation key entered for technology level in parameter "Application level – activation key".	Enter the activation key in the correct parameter.

26863707/EN – 07/2021

Subfault: 35.2 Description: Application level too low		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The activated software module requires a higher application level.	Activation key was entered for required application level. You can read the required level from the parameter "Application level – Required level".

Subfault: 35.3 Description: Technology level too low		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	An activated technology function requires a higher technology level.	Enter an activation key for the required technology level. You can find the required level in the parameter 8438.13 "Technology level – Required level".

Subfault: 35.4 Description: Technology level – invalid activation key		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The activation key was entered incorrectly.	Enter the activation key again.
	The activation key was not created for this device.	Check the activation key.
	When using a double axis, the activation key for the wrong instance was entered in the device.	Enter the activation key for the allocated instance.
	Activation key entered for application level in parameter "Technology level – activation key".	Enter the activation key in the correct parameter.

26863707/EN – 07/2021

8.7.29 Fault 42 Lag error

Subfault: 42.1 Description: Positioning lag error	
Response: Positioning lag error	
Cause	Measure
A lag error occurred during positioning. Incorrect encoder connection.	Check the connection of the encoder.
Position encoder inverted or not installed correctly at the track.	Check the installation and connection of the position encoder.
Wiring faulty.	Check the wiring of encoder, motor, and line phases.
Acceleration ramps too short.	Extend the acceleration ramps.
P component of the position controller too small.	Set P component of the position controller to a larger value.
Speed controller parameters set incorrectly.	Check controller parameters.
Value of lag error tolerance too small.	Increase the lag error tolerance.
Mechanical components cannot move freely or are blocked.	Make sure mechanical parts can move freely, and check whether they are blocked.

Subfault: 42.2 Description: Jog mode lag error	
Response: Output stage inhibit	
Cause	Measure
A lag error occurred in jog mode (FCB 20). Incorrect encoder connection.	Check the connection of the encoder.
Position encoder inverted or not installed correctly at the track.	Check the installation and connection of the position encoder.
Wiring faulty.	Check the wiring of encoder, motor, and line phases.
Acceleration ramps too short.	Extend the acceleration ramps.
P component of the position controller too small.	Set P component of the position controller to a larger value.
Speed controller parameters set incorrectly.	Check controller parameters.
Value of lag error tolerance too small.	Increase the lag error tolerance.
Mechanical components cannot move freely or are blocked.	Make sure mechanical parts can move freely, and check whether they are blocked.

26863707/EN – 07/2021

Subfault: 42.3 Description: Standard lag error		
	Response: Output stage inhibit	
	Cause	Measure
	A lag error has occurred outside a positioning process. Incorrect encoder connection.	Check the connection of the encoder.
	Position encoder inverted or not installed correctly at the track.	Check the installation and connection of the position encoder.
	Wiring faulty.	Check the wiring of encoder, motor, and line phases.
	Acceleration ramps too short.	Extend the acceleration ramps.
	P component of the position controller too small.	Set P component of the position controller to a larger value.
	Speed controller parameters set incorrectly.	Check controller parameters.
	Value of lag error tolerance too small.	Increase the lag error tolerance.

8.7.30 Fault 44 Subcomponent power section

Subfault: 44.2 Description: Overcurrent phase U	
Response: Remote – critical fault	
Cause	Measure
Overcurrent phase U.	– Rectify the short circuit. – Connect a smaller motor. – Increase the ramp time. – In the event of a defective output stage, contact SEW-EURODRIVE Service.

Subfault: 44.3 Description: Overcurrent phase V	
Response: Remote – critical fault	
Cause	Measure
Overcurrent phase V.	– Rectify the short circuit. – Connect a smaller motor. – Increase the ramp time. – In the event of a defective output stage, contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

Subfault: 44.4 Description: Overcurrent phase W		
	Response: Remote – critical fault	
	Cause	Measure
	Overcurrent phase W.	– Rectify the short circuit. – Connect a smaller motor. – Increase the ramp time. – In the event of a defective output stage, contact SEW-EURODRIVE Service.

8.7.31 Fault 45 Fieldbus interface

Subfault: 45.1 Description: No response from fieldbus interface		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	The fieldbus interface does not start properly and is therefore not functional.	– Switch the power off and on again/perform a reset. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 45.2 Description: Fieldbus interface – fault		
	Response: Fieldbus – timeout response	
	Cause	Measure
	Device detected fault on device-internal connection to fieldbus interface.	– Switch the device off and on again. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 45.3 Description: Process output data timeout		
	Response: Fieldbus – timeout response	
	Cause	Measure
	Fieldbus interface detected timeout of process output data.	– Check the communication connection between the fieldbus master and the fieldbus interface for interruption. – Check the project planning of the fieldbus master. – Adjust the fieldbus timeout monitoring.

26863707/EN – 07/2021

Subfault: 45.5 Description: Engineering interface		
	Response: Warning	
	Cause	Measure
	Engineering via fieldbus interface no longer works, or only works to a limited extent.	– Switch the device off and on again. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 45.7 Description: Invalid process output data		
	Response: Fieldbus – timeout response	
	Cause	Measure
	– The fieldbus master sends invalid process output data. – The fieldbus interface has detected an internal fault in the exchange of process data exchange and marks the process output data as invalid.	– Check whether the PLC is in "Stop" state. – Restart the PLC. – Check the project planning of the fieldbus master. – In the event of an error in the internal exchange of process data, switch the device off and then on again.

Subfault: 45.9 Description: Fieldbus interface – warning		
	Response: Warning	
	Cause	Measure
	Device detected non-critical fault on device-internal connection to fieldbus interface.	– Switch the device off and on again. – If the fault occurs repeatedly, replace the device and send it together with the fault number to SEW-EURODRIVE. For further support, contact SEW-EURODRIVE Service.

Subfault: 45.50 Description: Fieldbus card – warning		
	Response: Warning with self-reset	
	Cause	Measure
	Fieldbus interface signals subcomponent fault of the type "warning".	Refer to the subcomponent fault of the fieldbus interface and take the measures required for eliminating the fault.

26863707/EN – 07/2021

Subfault: 45.51 Description: Fieldbus interface – fault		
	Response: Fieldbus – timeout response	
	Cause	Measure
	Fieldbus interface signals subcomponent fault of the type "standard".	Refer to the subcomponent fault of the fieldbus interface and take the measures required for eliminating the fault.

Subfault: 45.52 Description: Fieldbus interface – critical fault		
	Response: Fieldbus – timeout response	
	Cause	Measure
	Fieldbus interface signals subcomponent fault of the type "Critical fault".	Refer to the subcomponent fault of the fieldbus interface and perform the action required for eliminating the fault.

8.7.32 Fault 46 Safety card

Subfault: 46.1 Description: No response		
	Response: Output stage inhibit	
	Cause	Measure
	Failed to synchronize with subcomponent.	– Check device assignment of basic device and option. – Check card slot and installation and correct if necessary. – Restart the device. – Contact SEW-EURODRIVE Service.

Subfault: 46.2 Description: Invalid variant		
	Response: Output stage inhibit	
	Cause	Measure
	Plugged safety card design does not match inverter type.	– Remove the safety card. – Use the correct safety card design.
	For double axes, only designs without encoder interface can be used.	– Remove option. – Use the design without encoder interface.
	For double axes, no encoder option must be plugged in.	Remove the option.

26863707/EN – 07/2021

Subfault: 46.3 Description: Internal communication timeout		
	Response: Output stage inhibit	
	Cause	Measure
	Communication interrupted between inverter and safety card.	Check card slot and installation and correct if necessary. Contact SEW-EURODRIVE Service if the error is still present.
	Safety card signals subcomponent fault of the type "warning".	Check card slot and installation and correct if necessary. Contact SEW-EURODRIVE Service if the error is still present.

Subfault: 46.50 Description: Warning		
	Response: Warning with self-reset	
	Cause	Measure
	Safety card signals subcomponent fault of the type "warning".	Observe the subcomponent fault of the safety card and take measures according to the subcomponent fault.

Subfault: 46.51 Description: Fault		
	Response: Emergency stop + output stage inhibit with self-reset	
	Cause	Measure
	Safety card signals subcomponent fault of the type "standard fault".	Observe the subcomponent fault of the safety card and take measures according to the subcomponent fault.

Subfault: 46.52 Description: System error		
	Response: Output stage inhibit with self-reset	
	Cause	Measure
	Safety card signals subcomponent fault of the type "system fault" or "critical fault".	Observe the subcomponent fault of the safety card and take measures according to the subcomponent fault.

8.7.33 Fault 51 Analog processing

Subfault: 51.1 Description: Analog current input 4 mA limit		
	Response: Warning with self-reset	
	Cause	Measure
	Input current below 4 mA.	Check the input current.

26863707/EN – 07/2021

8.7.34 Fault 52 Explosion protection function category 2

Subfault: 52.1 **Description: Startup error**		
	Response: Output stage inhibit	
	Cause	Measure
	No valid startup available.	Perform startup.

Subfault: 52.2 **Description: Impermissible system function**		
	Response: Output stage inhibit	
	Cause	Measure
	Impermissible system function activated.	Disable impermissible functions when Ex protection function is active, such as "Activate standstill current" = "On" in the active control mode.

Subfault: 52.3 **Description: Inverter too large**		
	Response: Output stage inhibit	
	Cause	Measure
	Ratio of inverter current to nominal motor current too large.	Check the assignment of motor and inverter, and check the dimensioning of the system.

Subfault: 52.4 **Description: Parameterization of current limit characteristic**		
	Response: Output stage inhibit	
	Cause	Measure
	Error while setting parameters for current limit characteristic.	– Parameterize the current limit characteristic. – Perform startup again.

Subfault: 52.5 **Description: Time duration exceeded f < 5 Hz**		
	Response: Emergency stop + output stage inhibit	
	Cause	Measure
	Duration of 60 s for f < 5 Hz exceeded.	Check the dimensioning of the system: If speed control = FCB05, increase the speed. If speed = 0, inhibit output stage / with stop FCBs, activate the brake function if a brake is installed.

26863707/EN – 07/2021

8.8 Device replacement

8.8.1 Notes

⚠ WARNING

Removing the electronics cover will disable DynaStop®.

Severe or fatal injuries.

- If it is not permitted to deactivate the system, additional measures are required (e.g. mechanical stake-out)

⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages can still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, de-energize the device via a suitable external disconnection device.
- Secure the device against unintended re-connection of the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least the following time before removing the electronics cover: **5 minutes**

8.8.2 Replacing the electronics cover

1. Observe the safety notes.
2. Loosen the screws and take off the electronics cover from the connection box.
3. Compare the data on the nameplate of the previous electronics cover with the data on the nameplate of the new electronics cover.

INFORMATION

Always replace the electronics cover with an electronics cover with the same type designation.

But it is permitted to use an electronics cover with a nominal output current that is up to 3 times higher or lower than what the old electronics cover had.

- However, if you use an electronics cover with a higher nominal output current, the power at the output shaft will not be increased.
- When you use an electronics cover with a lower nominal output current than the old electronics cover, the power at the output shaft may no longer be high enough to meet the requirements.

INFORMATION

In safety-related applications, replace an electronics cover only with an electronics cover with the same FS logo.

26863707/EN – 07/2021

4. Set all the control elements (e.g. DIP switches, see "Startup" chapter) on the new electronics cover in the same way as the controls of the previous electronics cover.
5. Remove the replaceable memory module from the old electronics cover. Insert the replaceable memory module in the new electronics cover.

INFORMATION

If you perform startup of the electronics cover via DIP switch S3 and have changed the nominal output current of the electronics cover, adjust the motor assignment to the changed nominal output current of the electronics cover using DIP switches S3/3 and S3/4.

- **For devices up to firmware 7.0:**
  To prevent malfunction in case motor assignment via DIP switches S3/3 and S3/4 has not been adjusted, motor startup (motor assignment) remains active until the position of the DIP switches has been changed.
  For devices with firmware 8.0 or later:
  If you replace the previous electronics cover with an electronics cover of a different power class, you must set DIP switches S3/4 and S3/4 in the same way as the motor assignment, see chapter "Detailed motor selection tables for startup via DIP switch S3".
- **For devices up to firmware 7.0:**
  This might result in the position of the DIP switch S3 no longer corresponding to the saved motor assignment in connection with the nominal output current of the electronics cover. In this case, check motor startup via MOVISUITE® or CBG...
  For devices with firmware 8.0 or later:
  No further measures required.

6. Place the new electronics cover onto the connection box and screw it on.
7. Supply the device with voltage.
8. Check the new electronics cover for proper functioning.

26863707/EN – 07/2021

8.8.3 Replacing the memory module

1. Observe the safety notes.
2. Loosen the screws and take off the electronics cover from the connection box.
3. Remove the memory module from the old electronics cover.
4. Compare the part number of the memory module.

INFORMATION

The new memory module must have the same part number and the same (or a higher) status as the old memory module.

5. Set the DIP switches on the new memory module in the same way as the control elements of the previous memory module.
6. Insert the new memory module in the new electronics cover.
7. Place the electronics cover onto the connection box and screw it on.
8. Supply the device with voltage.
9. Check the startup of the device.
   - ⇨ If required, perform startup again or load the saved startup to the device.
   - ⇨ For devices with safety card, check the startup of the safety card. For more information, refer to the "MOVISAFE® CSB51A Safety Option" manual.
10. Check the new electronics cover for proper functioning.

26863707/EN – 07/2021

8.8.4 Device replacement

⚠ WARNING

Electric shock due to dangerous voltages at the line terminals.

The switch disconnector disconnects the electronics cover from the voltage supply. Voltage is still present at the terminals of the device.

- A correct installation includes that terminals of the device are protected against contact.
- Secure the device against unintended reconnection of the voltage supply.
- Wait for at least the following time before removing the electronics cover: **5 minutes**

1. Observe the safety notes.
2. When you replace the device including the electronics cover, you also have to carry out the steps described in chapter "Replacing the electronics cover".
3. Remove the defective device. Observe the notes in chapter "Mechanical installation".
4. Compare the data on the nameplate of the old device with the nameplate data of the new device.

INFORMATION

Always replace the decentralized frequency inverter with an inverter that has the same properties.

5. Install the device. Observe chapter "Mechanical installation".
6. Perform the installation according to chapter "Electrical installation".
7. Remove the memory module from the old electronics cover. Insert this memory module in the new electronics cover.
8. Place the electronics cover onto the connection box and screw it on.
9. Supply the device with voltage.
10. Check the new device for proper functioning.

26863707/EN – 07/2021

8.9 SEW-EURODRIVE Service

8.9.1 Sending in a device for repair

If a fault cannot be repaired, please contact SEW-EURODRIVE Service (see "Address list").

Please always specify the digits of the status label when you contact the SEW electronics service so our Service personnel can assist you more effectively.

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

- Serial number (see nameplate)
- Type designation
- Unit design
- Short description of the application (application, control type, etc.)
- Nature of the fault
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.

8.10 Shutdown

⚠ WARNING

Electric shock caused by dangerous voltages in the connection box. Dangerous voltages can still be present for up to 5 minutes after disconnection from the power supply system.

Severe or fatal injuries.

- Before removing the electronics cover, de-energize the device via a suitable external disconnection device.
- Secure the device against unintended re-connection of the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least the following time before removing the electronics cover: **5 minutes**

To shut down the unit, de-energize the unit using appropriate measures.

8.11 Storage

Observe the following instructions when shutting down or storing the device:

- If you shut down and store the device for a longer period, close open cable bushings and cover ports with protective caps.
- Make sure that the unit is not subject to mechanical impact during storage.

Observe the notes on storage temperature in chapter "Technical data".

26863707/EN – 07/2021

8.12 Extended storage

8.12.1 Storage conditions

Observe the storage conditions specified in the following table for extended storage:

Climate zone	Packaging[1)]	Storage location[2)]	Storage duration
Temperate (Europe, USA, Canada, China and Russia, excluding tropical zones)	Packed in containers, with desiccant and moisture indicator sealed in plastic wrap.	Under roof, protected against rain and snow, no shock loads.	Up to 3 years with regular checks of the packaging and moisture indicator (relative humidity < 50%).
	Open	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 50 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.
Tropical (Asia, Africa, Central and South America, Australia, New Zealand excluding temperate zones)	Packed in containers, with desiccant and moisture indicator sealed in plastic wrap. Protected against insect damage and mildew by chemical treatment.	Under roof, protected against rain and shocks.	Up to 3 years with regular checks of the packaging and moisture indicator (relative humidity < 50%).
	Open	Under roof and enclosed at constant temperature and atmospheric humidity (5 °C < ϑ < 50 °C, < 50% relative humidity). No sudden temperature fluctuations. Controlled ventilation with filter (free from dust and dirt). No aggressive vapors, no shocks. Protected against insect damage.	2 years or more with regular inspections. Check for cleanness and mechanical damage during the inspection. Check corrosion protection.

1) The packaging must be carried out by an experienced company using the packaging materials that have been explicitly specified for the particular application.

2) SEW-EURODRIVE recommends storing the drive according to the mounting position.

26863707/EN – 07/2021

8.12.2 Electronics

INFORMATION

For electronics components, adhere to the following notes in addition to the notes in chapters "Extended storage" > "Drive" and "Extended storage" > "Storage conditions".

If the device is in extended storage, connect it to the supply voltage for at least 5 minutes every 2 years. Otherwise, the device's service life may be reduced.

Procedure when maintenance has been neglected

Electrolytic capacitors are used in the inverters. They are subject to aging effects when de-energized. This effect can damage the capacitors if the device is connected directly to the nominal voltage after a longer period of storage. If you have not performed maintenance regularly, SEW-EURODRIVE recommends that you increase the line voltage slowly up to the maximum voltage. This can be done, for example, by using a variable transformer for which the output voltage has been set according to the following overview. After you have completed the regeneration process, the device can be used immediately or stored again for an extended period with maintenance.

The following graduations are recommended:

AC 400/500 V units:

- Stage 1: AC 0 V to AC 350 V within a few seconds
- Stage 2: AC 350 V for 15 minutes
- Stage 3: AC 420 V for 15 minutes
- Stage 4: AC 500 V for 1 hour

26863707/EN – 07/2021

8.13 Waste disposal

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately.

- Oil and grease

  Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.
- Screens
- Capacitors

Waste disposal according to WEEE Directive 2012/19/EU

This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.

26863707/EN – 07/2021

9 Inspection and maintenance

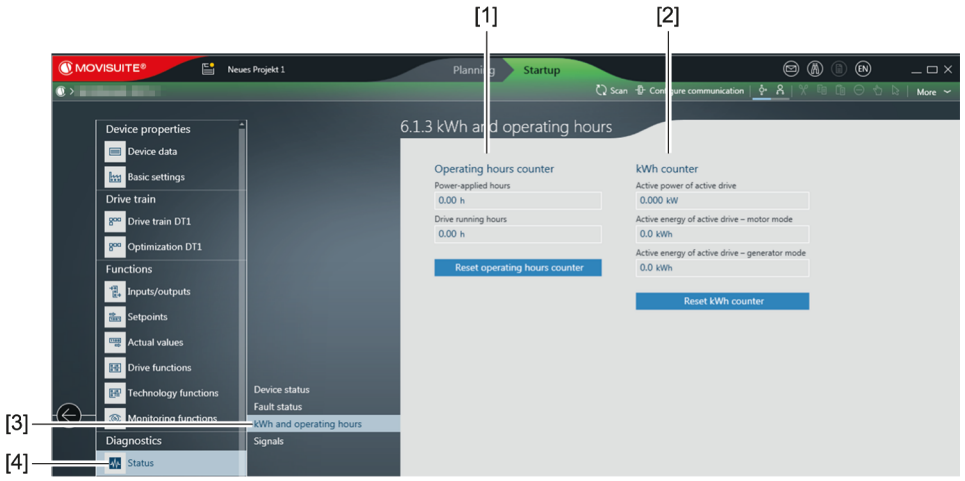
9.1 Determining the operating hours

9.1.1 About MOVISUITE®

The device allows for reading the operating hours performed in order to assist with inspection and maintenance work.

To determine the operating hours performed, proceed as follows:

1. In MOVISUITE®, open the parameter tree of the device.
2. In the parameter tree [4], select the "Status" node.
   ⇨ The **operating hours** performed can be found in the "kWh and operating hours" [3] group.



27021619739284235

[1] Display of operating and drive running hours performed
[2] Display of active power and active energy

26863707/EN – 07/2021

9.2 Inspection and maintenance intervals

The following table shows the inspection and replacement intervals for the device:

Time interval	What to do?	Who is permitted to perform the work?
When the cover/electronics cover is opened after an operating period of ≥ 6 months	When the cover/electronics cover is opened after an operating period of ≥ 6 months, the gasket between the connection box and the cover/electronics cover must always be replaced. The 6-month period can be shortened by harsh ambient/operating conditions, e.g. cleaning with aggressive chemicals or frequent temperature variations.	Specialists at customer site
Each time the cover/electronics cover is opened	Visual inspection of the gasket between connection box and cover/electronics cover: The gasket must be replaced in the event of damage.	Specialists at customer site

26863707/EN – 07/2021

9.3 Inspection and maintenance work

9.3.1 Preliminary work regarding inspection and maintenance

Observe the following notes before you start with inspection/maintenance work:

⚠ WARNING

Risk of injury if the device starts up unintentionally, and danger of electrical voltage.

Dangerous voltages may still be present for up to 5 minutes after disconnection from the line voltage.

- Disconnect the device from the power supply with suitable external measures before you start working on the device and secure it against unintentional reconnection to the voltage supply.
- Secure the output shaft against rotation.
- Before removing the electronics cover, wait for at least the following time: **5 minutes.**

⚠ WARNING

Risk of burns due to hot surfaces.

Serious injuries.

- Let the devices cool down before touching them.

9.3.2 Connection cables

Observe the notes in chapter "Preliminary work for inspection and maintenance".

Check the connection cables for damage at regular intervals and replace if necessary.

9.3.3 Replacing the gasket between connection box and electronics cover

Spare part kit

The gasket is available as a spare part (1, 10 or 50 pieces) from SEW-EURODRIVE.

Content	Part number of gasket for size 1	Part number of gasket for size 2
1 pieces	18187765	28131738
10 pieces	28266161	28278097
50 pieces	28266188	28284356

Work steps with electronics cover size 1

NOTICE

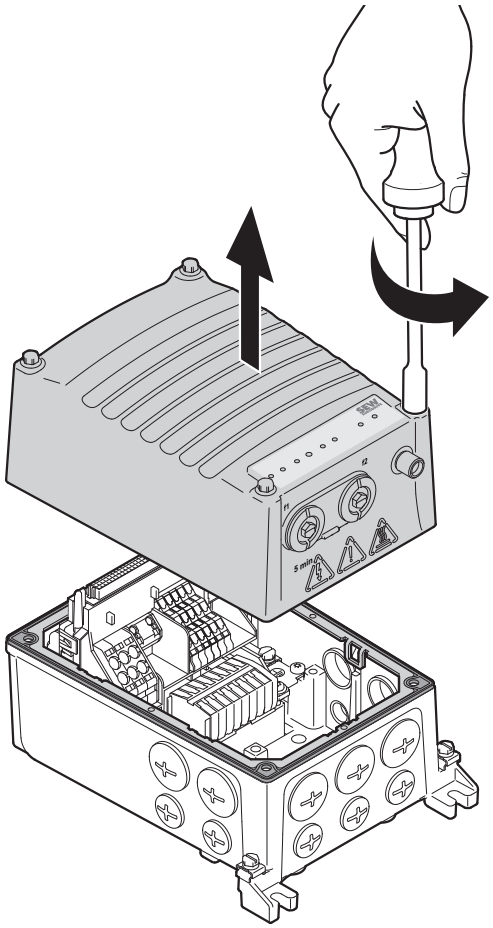
Loss of the guaranteed degree of protection.

Possible damage to property.

- When the cover is removed from the connection box, you have to protect the cover and the wiring space from humidity, dust or foreign particles.
- Make sure that the cover is mounted properly.

26863707/EN – 07/2021

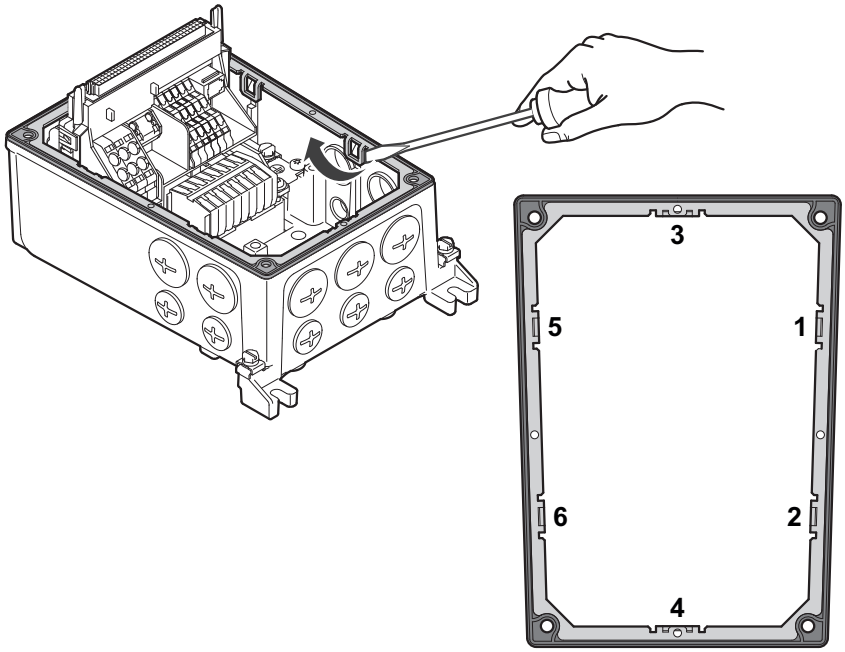
1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Loosen the screws of the electronics cover and remove it.



30561473291

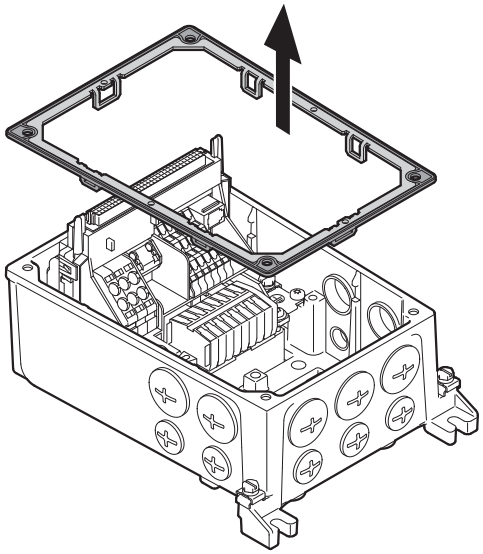
26863707/EN – 07/2021

3. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property. Make sure not to damage the sealing surfaces when removing the gasket. Loosen the used gasket by levering it off the retaining cams.
   ⇨ Doing so will be easier if you adhere to the sequence shown in the figure below.



30561533323

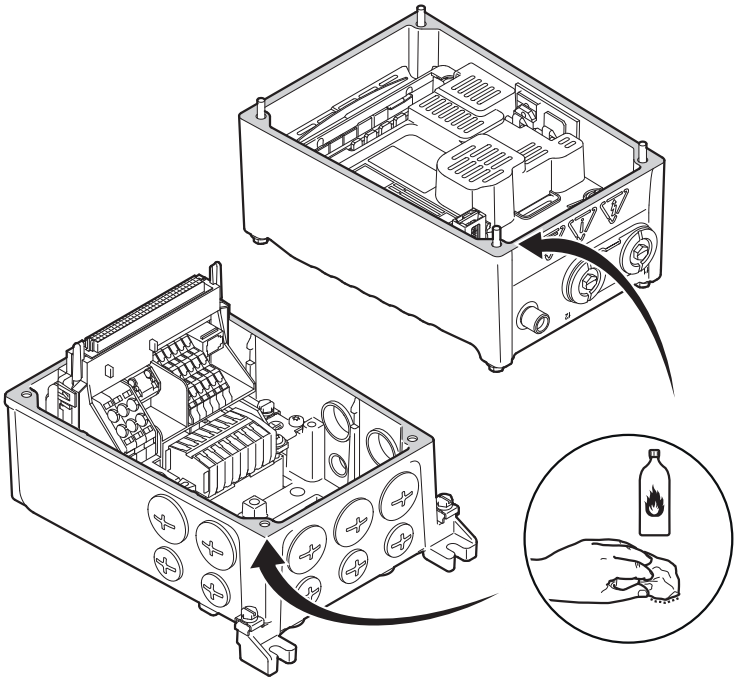
4. Remove the old gasket completely from the connection box.



30561542155

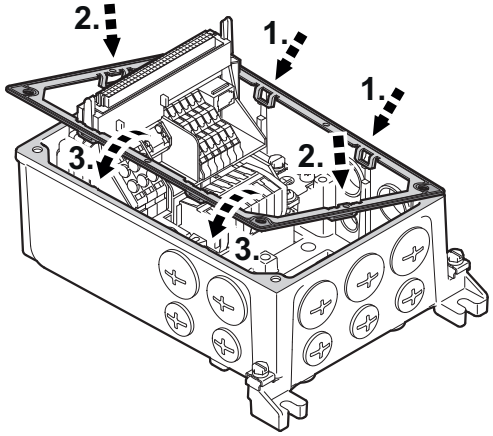
26863707/EN – 07/2021

5. ⚠ **CAUTION!** Risk of injury due to sharp edges. Risk of cutting injuries. Use protective gloves for cleaning. Work may only be carried out by qualified personnel. Clean the sealing surfaces of the connection box and the electronics cover carefully.



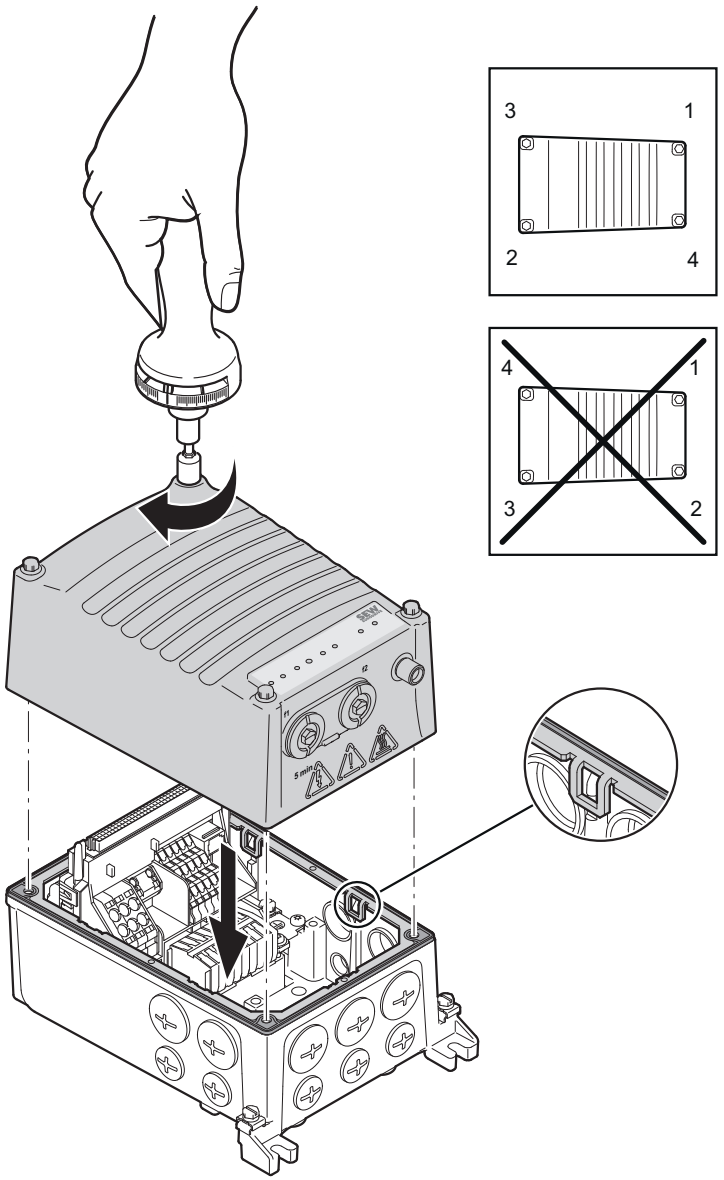
30561550987

6. Place the new gasket on the connection box and fix it in position with the retaining cams. Doing so will be easier if you adhere to the sequence shown in the figure below.



30561559819

7. Check the installation and startup of the device using the applicable operating instructions.
8. Place the electronics cover on the connection box again and fasten it.
   ⇨ Proceed as follows when installing the electronics cover: Insert the screws and tighten them in diametrically opposite sequence step by step with a tightening torque of 6.0 Nm.



30561568651

Work steps with electronics cover size 2

NOTICE

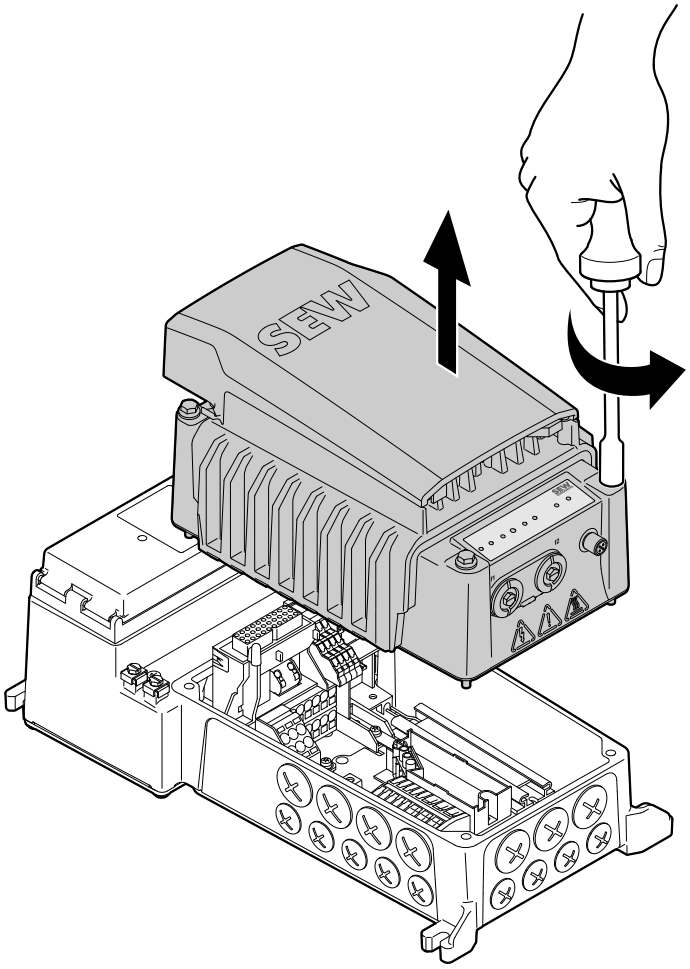
Loss of the guaranteed degree of protection.

Possible damage to property.

- When the cover is removed from the connection box, you have to protect the cover and the wiring space from humidity, dust or foreign particles.
- Make sure that the cover is mounted properly.

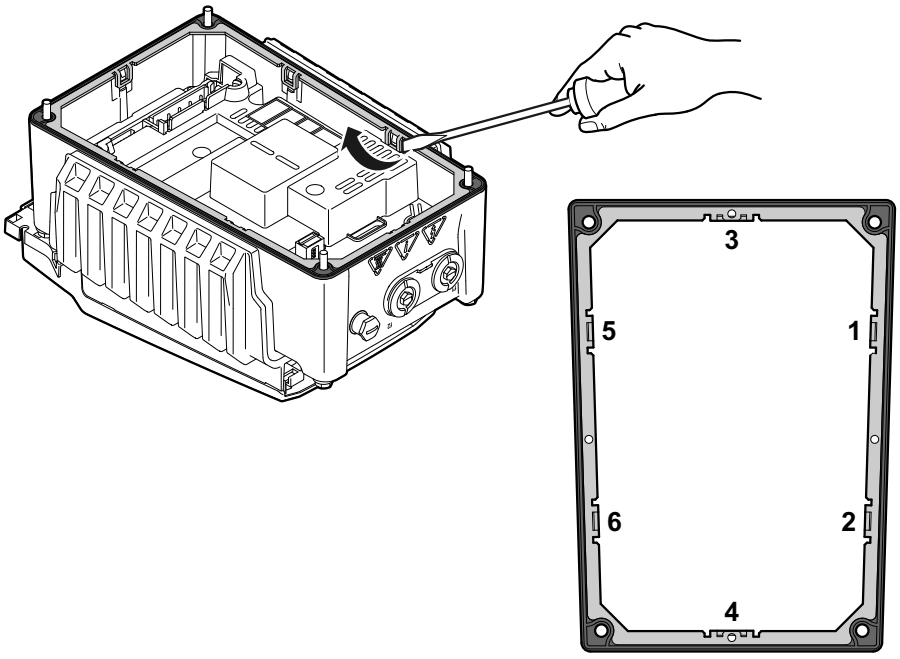
26863707/EN – 07/2021

1. Observe the notes in chapter "Preliminary work for inspection and maintenance".
2. Loosen the screws of the electronics cover and remove it.



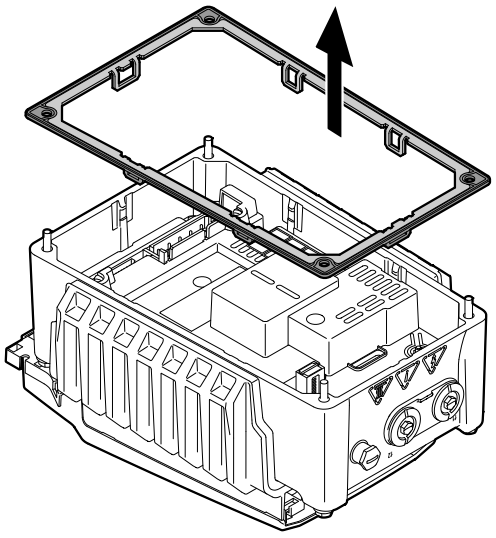
34264815371

3. **NOTICE!** Loss of the guaranteed degree of protection. Possible damage to property can occur. Make sure not to damage the sealing surfaces when removing the gasket.
   Loosen the used gasket by levering it off the retaining cams.
   ⇨ Doing so will be easier if you adhere to the sequence shown in the figure below.



34277781899

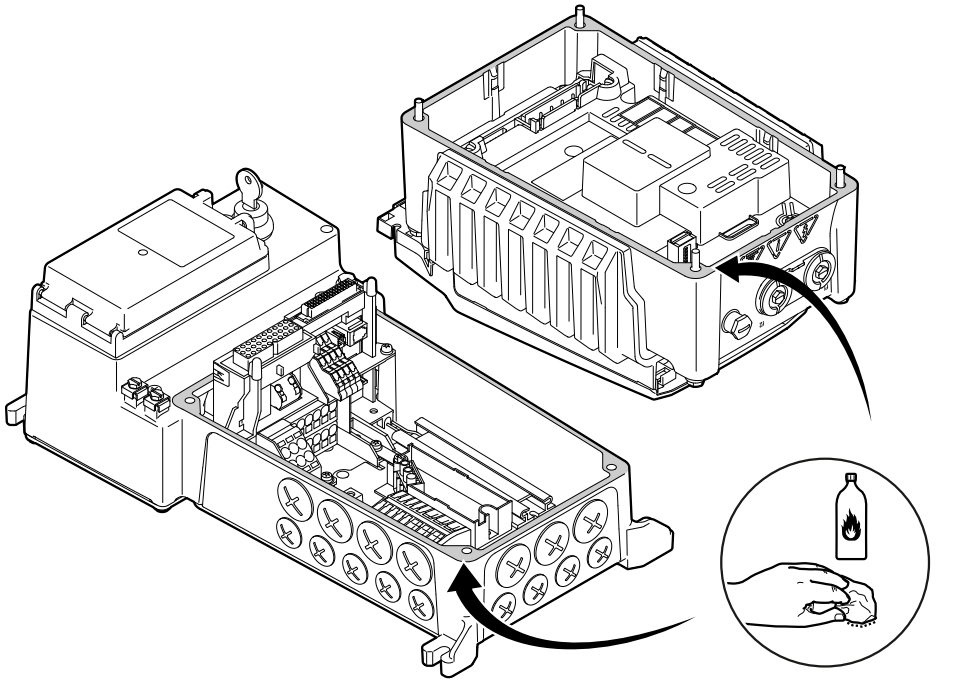
4. Remove the old gasket completely from the electronics cover.



34277788811

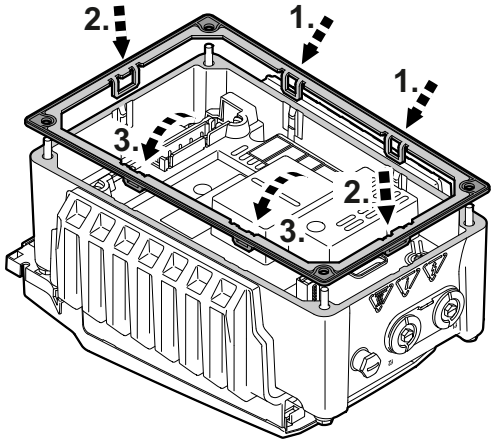
26863707/EN – 07/2021

5. ⚠ **CAUTION!** Risk of injury due to sharp edges. Risk of cutting injuries. Use protective gloves for cleaning. Work may be carried out only by qualified personnel. Clean the sealing surfaces of the connection box and the electronics cover carefully.



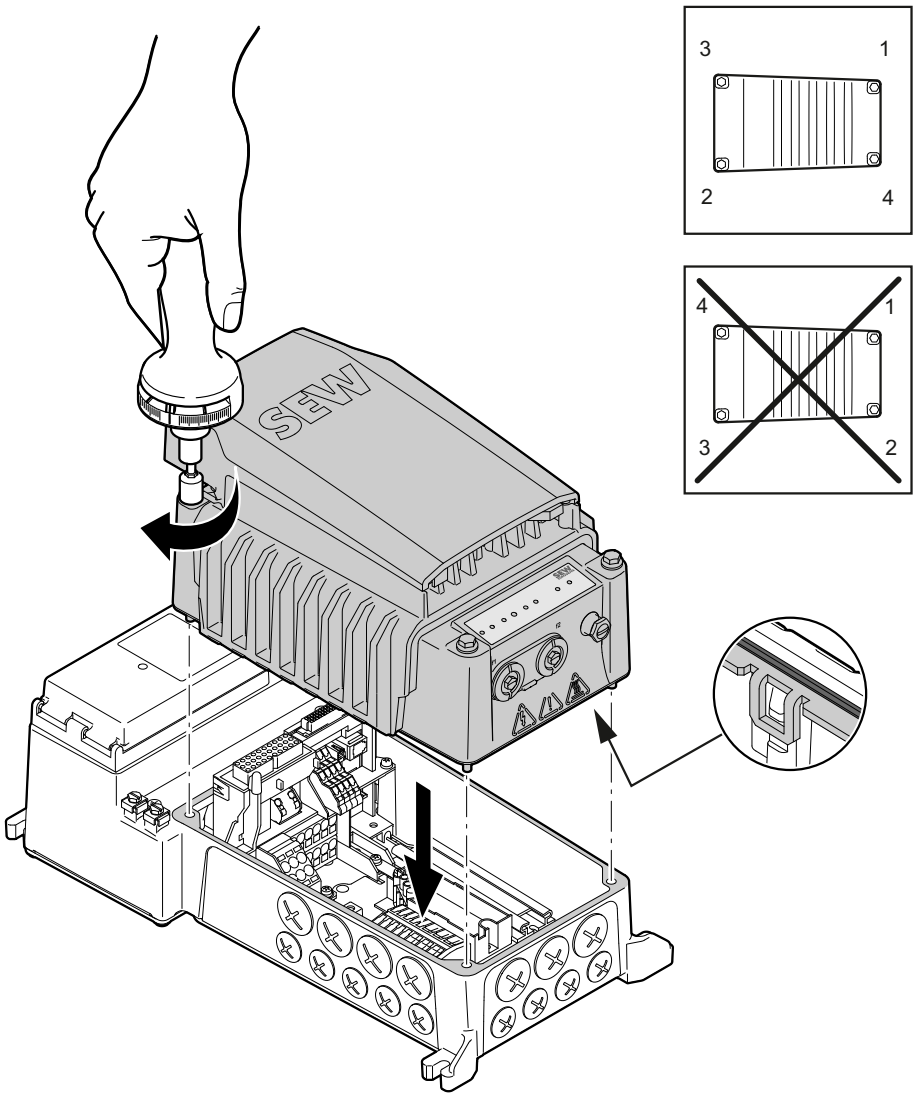
34277795339

6. Place the new gasket on the electronics cover and fix it in position with the retaining cams. Doing so will be easier if you adhere to the sequence shown in the figure below.



34277802635

7. Check the installation and startup of the device using the applicable operating instructions.
8. Place the electronics cover on the connection box again and fasten it.
   ⇨ Proceed as follows when installing the electronics cover: Insert the screws and tighten them in diametrically opposite sequence step by step with a tightening torque of 9.5 Nm.



34277834763

26863707/EN – 07/2021

10 Project planning

10.1 Preliminary information

INFORMATION

Data may differ due to continuous product development.

10.2 SEW-Workbench

The SEW-Workbench is the central configuration software for inverters from SEW-EURODRIVE.

All necessary configurations can be processed, from entering the application to gear unit, motor and inverter calculations. Other features are optimization of various axis cycles, including accessory selection, and a check for errors regarding dimensioning for the entire drive system.

Of course, the SEW-Workbench can also be used to select and dimension all other products from SEW-EURODRIVE, such as decentralized drives and gearmotors. This means the SEW-Workbench allows for dimensioning drive solutions from the entire range of products from SEW-EURODRIVE. The straightforward operation saves a great deal of time and minimizes complexity.

The key features of the SEW-Workbench are:

- Selection of the application
- Calculation of gear unit and motor
- Price-optimized configuration
- Comparison of different solutions
- Inverter calculation
- Multi-axis optimization
- Parameterization of cable and accessories selection
- Dimensioning error check
- Parts list generation
- Electronic catalog with all products

The planning and configuration software SEW-Workbench is available for download from the official SEW-EURODRIVE website.

To use SEW-Workbench, all you need to do is to register via the Online Support once you have downloaded and installed the software or received the data DVD. An Internet update service ensures that the products and functions are always up to date.

26863707/EN – 07/2021

10.3 Schematic workflow for project planning

The following flow diagram illustrates the drive selection procedure for a positioning drive. The drive consists of a gearmotor that is supplied by a frequency inverter.

Necessary information regarding the machine to be driven
- Technical data and environmental conditions
- Positioning accuracy
- Speed setting range
- Travel cycle calculation

↓

Calculation of the relevant application data
- Travel diagram
- Rotational speeds
- Static, dynamic torques
- Regenerative power

↓

Gear unit selection
- Define gear unit size, gear unit ratio and gear unit type
- Check positioning accuracy
- Check gear unit utilization
- Check input speed

↓

Motor selection
- Maximum torque
- With dynamic drives: effective torque at medium speed
- Maximum speed
- Observe dynamic and thermal torque curves
- Motor equipment (brake, plug connector, thermal motor protection, etc.)

↓

Selecting the frequency inverter
- Specify control mode
- Check motor/inverter assignment
- Specify PWM frequency
- Check if the frequency inverters fulfill the duration and overload requirements

↓

Selecting the braking resistor
- Check if the braking resistor fulfills the duration and overload requirements
- Observe braking resistor assignment

↓

Selection of other system components
- Option cards
- Motor and supply system cables
- Signal and encoder cables
- EMC measures

↓

24 V voltage supply selection
- Determine the current demand of the 24 V voltage supply
- Observe the requirements for the voltage tolerance

↓

Ensure that all requirements have been met.

26863707/EN – 07/2021

10.4 Drive selection

For drive selection, in addition to the travel diagram that describes the exact travel cycle, a large number of additional specifications must be made about the operating and ambient conditions.

It is first necessary to have data for the machine to be driven such as mass, setting range, speed, information about the mechanical design and so on in order to select the drive correctly. The appropriate drive can be determined with the calculated torques and speeds of the drive while taking other mechanical requirements such as environmental and operating conditions into account.

For selecting the drive, a decision is to be taken if an asynchronous motor or a synchronous motor is to be used. The extensive product range of SEW-EURODRIVE is available for this purpose.

10.5 Recommendations for motor and inverter selection

The basis for motor selection are the limit characteristic curves of the motors in inverter operation. The limit characteristic curve states the torque characteristic of the motor depending on the speed.

The dynamic and thermal limits must be observed when selecting the motor.

10.5.1 Thermal limit characteristic curve

The mean motor speed and the effective torque are calculated during drive selection to determine the thermal utilization of the motor. The operating point of the motor must lie below the thermal limit characteristic curve of the motor; otherwise the motor will be thermally overloaded.

10.5.2 Dynamic limit characteristic curve

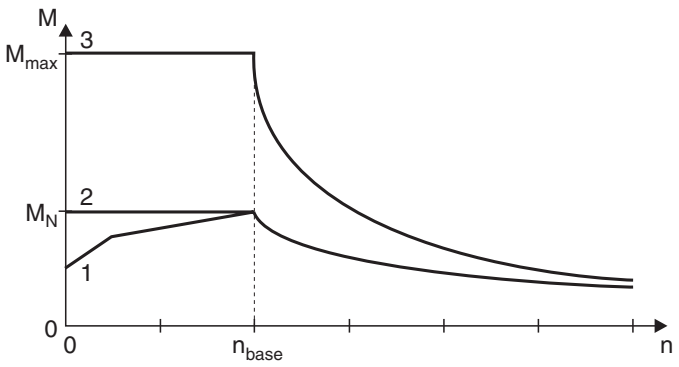
The dynamic limit characteristic curve depicts the maximum torque the motor can generate at a certain speed. Note that the inverter must supply sufficient current for the motor to reach its maximum torque.

The base speed is especially important for configuration. The base speed is the available speed up to the maximum motor torque. In inverter operation, the base speed indicates the beginning of field weakening. The motor torque is limited by the voltage limit characteristic curve in the field-weakening range, and decreases with increasing speed.

M_N is determined by the motor. M_{max} and n_{base} depend on the motor/inverter combination. For the values for M_{max} and n_{base} in control modes VFC^{PLUS}, CFC, and ELSM®, refer to the motor selection tables in chapter "Motor/inverter assignment".

26863707/EN – 07/2021

Typical characteristic curve of asynchronous motors



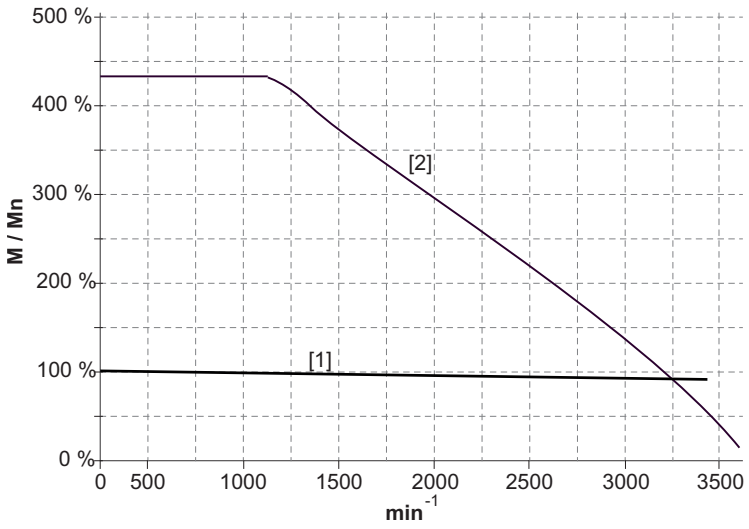
24537317259

[1] S1 operation with self-cooling

[2] S1 operation with external cooling

[3] Mechanical limit for gearmotors

Typical characteristic curve of synchronous motors



9007217201768843

[1] Thermal limit characteristic curve S1 operation

[2] Dynamic limit torque

26863707/EN – 07/2021

10.5.3 Motor selection for asynchronous motors

The mechanical resistance of the motor against the overload, which might exceed the permitted limit values, must be strictly checked.

M_{pk} and n_{base} depend on the motor/inverter combination, as well as on the used control mode.

Asynchronous motors are mainly operated in control mode VFC^{PLUS}. The control mode efficiently adjusts the motor magnetization to the respective operating point. It simultaneously allows for dynamic responses to load shocks at the drive train.

10.5.4 Asynchronous motors in control mode VFC^{PLUS}

The control mode VFC^{PLUS} without encoder allows for dynamic use of the entire speed range of the drive. Reversing and moving through the rotational speed 0 are also possible.

However, continuous operation of asynchronous motors without encoder at low speeds is not possible. The minimum speeds that must not be permanently undercut during operation without encoder are:

- Motor mode: 1% of the asynchronous motor nominal speed.
- Regenerative operation: 10% of the asynchronous motor nominal speed.

INFORMATION

Lifting application with encoder

The control must be designed in such a way that the direction of rotation of the drive can only be reversed when it is at a standstill (with the brake applied).

If the direction of rotation should be changed without standstill, a motor encoder must be used.

The described restrictions do not apply in control mode VFC^{PLUS} with encoder. In comparison to operation without encoder, higher dynamic properties can be achieved with an encoder.

When determining the maximum speed, observe that the breakdown torque M_K is reduced in an quadratic relationship in the field weakening range.

26863707/EN – 07/2021

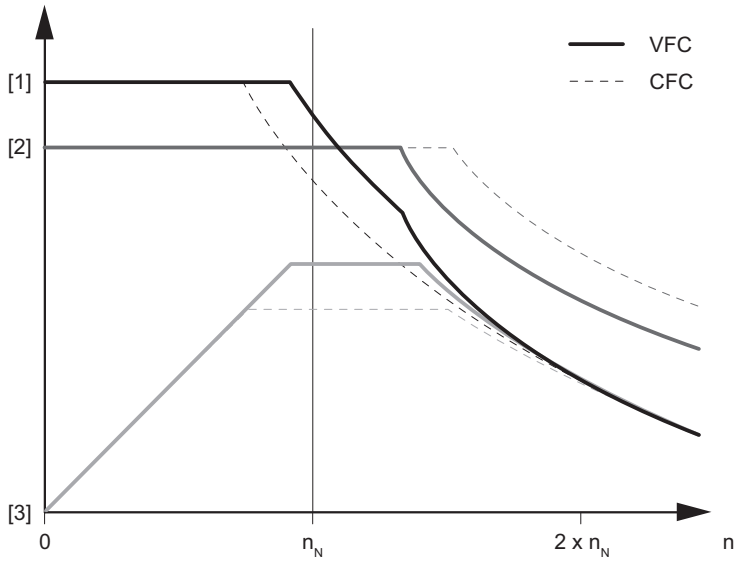
10.5.5 Asynchronous motors in control mode CFC

Either standard asynchronous motors (e.g. DRN.. motors) or asynchronous servomotors (e.g. DRL.. motors) can be used in control mode CFC. SEW-EURODRIVE recommends using asynchronous servomotors to achieve optimum benefit from the advantages of the control mode CFC.

Standard asynchronous motors in control mode CFC

In comparison to control mode VFC^{PLUS}, higher dynamic properties can be achieved using CFC. The full motor magnetization is maintained in each operating state, so that the highest requirements for dynamics are met. Due to the voltage reserves required for this, standard asynchronous motors are operated with a lower base speed in this operating mode than in operating mode VFC^{PLUS}. Power yield and energy efficiency are thus lower.

Speed/torque characteristic for VFC^{PLUS} and CFC in comparison.



19531895051

[1] Torque [2] Current [3] Power rating

10.5.6 Synchronous servomotors in control mode CFC

In general, synchronous servomotors and the corresponding inverters are designed for a high short-time overload capacity. This allows a multiple of the nominal torque.

When using the following CMP.. motors in the higher speed ranges, it is recommended to only set the PWM frequencies 8 kHz or 16 kHz.

- CMP40 – 63 for speed class 6000 min^{-1},
- CMP71 – 100 for speed classes 4500 min^{-1} and 6000 min^{-1}.

SEW-EURODRIVE recommends the use of the following temperature sensors:

- KTY84 – 130 (SEW-EURODRIVE designation: KY)
- Pt1000 (SEW-EURODRIVE designation: PK)

26863707/EN – 07/2021

10.5.7 Synchronous servomotors in control mode ELSM®

The control mode ELSM® allows for dynamic use of the entire speed range of the drive. Reversing and moving through the speed 0 are also possible. The speed must not permanently drop below the minimum speed of approx. 2% of the nominal motor speed.

The nominal output current of the inverter must not be lower than 1.5 × I_0 of the connected motor.

The maximum speed must not be dimensioned higher than the rated speed of the motor.

SEW-EURODRIVE recommends the use of the following temperature sensors:

- KTY84 – 130 (SEW-EURODRIVE designation: KY)
- Pt1000 (SEW-EURODRIVE designation: PK)

Using the ELSM® control mode for hoists and inclining tracks is not permitted.

26863707/EN – 07/2021

10.6 Motor/inverter assignments

The following motor/inverter assignments are valid for MOVIMOT® flexible.

These motor/inverter assignments apply to the edition of these operating instructions. You can find further motor/inverter assignments on the SEW-EURODRIVE homepage www.sew-eurodrive.de under "Online support" -> "Engineering & selection" -> "Motor/inverter characteristics".

10.6.1 Technical data DR.. motors

Key

P_N	Rated power
M_N	Rated torque
n_N	Rated speed
I_N	Rated current
cosφ	Power factor
IE	Short for "International Efficiency" (international efficiency class IE1 – IE4)
$\eta_{50\%}$	Efficiency at 50% of the rated power
$\eta_{75\%}$	Efficiency at 75% of the rated power
$\eta_{100\%}$	Efficiency at 100% of the rated power
I_A/I_N	Starting current ratio
M_A/M_N	Starting torque ratio
M_H/M_N	Ramp-up torque ratio
M_K/M_N	Breakdown torque ratio
m	Mass of the motor
J_{Mot}	Mass moment of inertia of the motor
BE..	Brake used
Z_0 BG	Switching frequency for operation with BG brake control
Z_0 BGE	Switching frequency for operation with BGE brake control
M_B	Braking torque
m_B	Mass of the brakemotor
J_{MOT_BE}	Mass moment of inertia of the brakemotor

26863707/EN – 07/2021

IE3 DRN.. motors, 400 V, 50 Hz, 4-pole

Information on motors

Motor	P_N kW	M_N Nm	n_N min^{-1}	I_N A	cosφ	$\eta_{50\%}$ %	$\eta_{75\%}$ %	$\eta_{100\%}$ %	I_A/I_N	M_A/M_N M_H/M_N	M_K/M_N
DRN63MS4	0.12	0.83	1380	0.4	0.64	58.3	63.9	64.8	3.6	2.7 2.6	2.7
DRN63M4	0.18	1.25	1375	0.57	0.65	65.1	69.4	69.9	3.7	2.6 2.6	2.6
DRN71MS4	0.25	1.7	1405	0.72	0.66	70.1	73.5	73.5	4.3	2.5 2.3	2.5
DRN71M4	0.37	2.5	1415	1.02	0.66	74.3	77.3	77.3	4.8	2.8 2.4	2.8
DRN80MK4	0.55	3.65	1435	1.29	0.75	78.6	81.0	80.8	6.1	2.7 2.1	3.1
DRN80M4	0.75	4.95	1440	1.75	0.74	80.7	82.9	82.9	6.7	3.1 2.7	3.4
DRN90S4	1.1	7.2	1455	2.55	0.73	83.5	85.0	84.5	6.9	2.7 2.1	3.3
DRN90L4	1.5	9.8	1461	3.4	0.74	84.6	86.1	85.6	7.5	2.7 2.0	3.3
DRN100LS4	2.2	14.5	1450	4.75	0.76	86.4	87.5	86.9	7.1	2.9 2.2	3.3
DRN100L4	3	19.7	1456	6.8	0.76	87.3	88.3	87.8	8.2	3.4 2.3	3.7
DRN112M4	4	26	1464	7.9	0.81	88.6	89.4	88.7	8.2	2.4 1.6	3.6
DRN132S4	5.5	36	1461	10.5	0.84	90.6	90.6	89.6	8.3	2.8 2.2	3.5
DRN132M4	7.5	49	1468	15.2	0.78	90.8	91.1	90.4	7.8	3.1 2.4	3.3
DRN132L4	9.2	60	1470	18.7	0.77	90.8	91.6	91.0	8.4	3.7 1.8	3.7
DRN160M4	11	71	1473	21	0.81	91.1	91.7	91.4	7.3	2.6 2.2	3.0

26863707/EN – 07/2021

Further information on motors and brakemotors

Motor	P_N	M_N	n_N	m_{Mot}	J_{mot}	BE..	Z_0 Size BGE	M_B	m_{BMot}	J_{BMot}
	kW	Nm	1/min	kg	10^{-4} kgm^2		1/h	Nm	kg	10^{-4} kgm^2
DRN63MS4	0.12	0.83	1380	4.9	2.95	BE03	1000 1000	1.7	6.8	3.63
DRN63M4	0.18	1.25	1375	5.8	3.76	BE03	1000 1000	2.7	7.6	4.44
DRN71MS4	0.25	1.7	1405	6.8	5.42	BE03	6200 9700	3.4	8.6	6.11
DRN71M4	0.37	2.5	1415	8	7.14	BE05	5000 9000	5	10	8.44
DRN80MK4	0.55	3.65	1435	11	17.1	BE1	3500 8500	7	14	18.6
DRN80M4	0.75	4.95	1440	14	24.7	BE1	3200 8200	10	18	26.2
DRN90S4	1.1	7.2	1455	20	54	BE2	2300 6000	14	24	58.7
DRN90L4	1.5	9.8	1461	23	67.2	BE2	2200 5800	20	27	71.9
DRN100LS4	2.2	14.5	1450	27	81.4	BE5	- 6100	28	33	87.4
DRN100L4	3	19.7	1456	34	112	BE5	- 3700	40	40	118
DRN112M4	4	26	1464	45	178	BE5	- 2900	55	52	183
DRN132S4	5.5	36	1461	56	241	BE11	- 2900	80	71	251
DRN132M4	7.5	49	1468	73	381	BE11	- 1100	110	91	403
DRN132L4	9.2	60	1470	81	439	BE20	- 980	150	110	490
DRN160M4	11	71	1473	115	871	BE20	- 900	150	145	877

26863707/EN – 07/2021

IE1 DR2S.. motors. 400 V, 50 Hz, 4-pole

Information on motors

DR2S.. motor type	P_N kW	M_N Nm	n_N min^{-1}	I_{N2} 400 V A	cosφ	$\eta_{50\%}$ %	$\eta_{75\%}$ %	$\eta_{100\%}$ %	I_A/I_N	M_A/M_N M_H/M_N	M_K/M_N
DR2S56MR4[1)]	0.09	0.62	1380	0.35	0.61	43.9	51.4	54.8	3.0	2.8 2.8	2.9
DR2S56M4[1)]	0.12	0.89	1290	0.39	0.74	48.8	53.8	53.3	2.7	2.0 2.0	2.0
DR2S63MSR4	0.12	0.83	1380	0.4	0.64	55.6	61.0	61.9	3.6	2.7 2.6	2.7
DR2S63MS4	0.18	1.29	1330	0.59	0.71	52.1	57.1	57.0	2.9	2.0 2.0	2.1
DR2S63M4	0.25	1.79	1330	0.78	0.70	59.0	62.5	61.5	3.4	2.3 2.3	2.3
DR2S71MS4	0.37	2.6	1350	1.05	0.73	66.0	68.0	66.0	3.6	2.0 1.8	2.0
DR2S71M4	0.55	3.85	1360	1.52	0.72	69.6	71.7	70.0	4.1	2.4 2.2	2.4
DR2S80MK4	0.75	5.1	1410	1.81	0.76	73.6	75.9	75.3	5.2	2.4 2.0	2.6
DR2S80M4	1.1	7.4	1415	2.45	0.80	79.5	80.3	78.9	5.5	2.5 2.1	2.7

1) DR2S56.. motors will be available from spring 2019.

Further information for motors and brakemotors

DR2S.. motor type	P_N kW	M_N Nm	n_N min^{-1}	m_{Mot} kg	J_{Mot} 10^{-4} kgm^2	BE..	Z_0 BG BGE h^{-1}	M_B Nm	m_{BMot} kg	J_{BMot} 10^{-4} kgm^2
DR2S56MR4[1)]	0.09	0.62	1380	[2)]	1.1	BE02	10000 -	0.8	[2)]	1.2
DR2S56M4[1)]	0.12	0.89	1290	[2)]	1.1	BE02	10000 -	1.2	[2)]	1.2
DR2S63MSR4	0.12	0.83	1380	4.9	2.95	BE03	10000 10000	1.7	6.8	3.63
DR2S63MS4	0.18	1.29	1330	4.9	2.95	BE03	10000 10000	2.7	6.8	3.63
DR2S63M4	0.25	1.79	1330	5.8	3.76	BE03	10000 10000	3.4	7.6	4.44
DR2S71MS4	0.37	2.6	1350	6.8	5.42	BE05	6200 9700	5	9.2	6.72
DR2S71M4	0.55	3.85	1360	8	7.14	BE1	5000 9000	10	11	8.44
DR2S80MK4	0.75	5.1	1410	11	17.1	BE1	3500 8500	10	14	18.6
DR2S80M4	1.1	7.4	1415	14	24.7	BE2	3200 8200	20	18	29.2

1) DR2S56.. motors will be available from spring 2019.
2) Only available as gearmotor

26863707/EN – 07/2021

10.6.2 Motor/inverter assignments DRN.. motors, f_{PWM} = 4 kHz

Key

I_N	Nominal output current of the inverter
I_{max}	Maximum output current of inverter
M_{pk}	Peak torque of the motor
n_{pk}	Maximum speed at peak torque of the motor
I_{pk}	Inverter output current/nominal output current at peak torque of the motor

MOVIMOT® flexible – 400 V, 50 Hz, VFC^{PLUS}, ⅄ connection

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
DRN63MS4	M_{pk}	Nm	2.25								
	n_{pk}	min^{-1}	925								
	I_{pk}	%	41								
DRN63M4	M_{pk}	Nm	3.25								
	n_{pk}	min^{-1}	955								
	I_{pk}	%	61								
DRN71MS4 (180 W)	M_{pk}	Nm	4.3								
	n_{pk}	min^{-1}	1127								
	I_{pk}	%	74								
DRN71MS4 (250 W)	M_{pk}	Nm	4.25	4.25							
	n_{pk}	min^{-1}	1135	1135							
	I_{pk}	%	77	61							
DRN71M4	M_{pk}	Nm	7.0	7.0	7.0						
	n_{pk}	min^{-1}	1113	1113	1113						
	I_{pk}	%	118	94	74						
DRN80MK4	M_{pk}	Nm	11.3	11.3	11.3	11.3					
	n_{pk}	min^{-1}	1095	1095	1095	1095					
	I_{pk}	%	193	155	121	97					
DRN80M4	M_{pk}	Nm	16.9	16.9	16.9	16.9	16.9				
	n_{pk}	min^{-1}	1034	1034	1034	1034	1034				
	I_{pk}	%	276	221	173	138	100				
DRN90S4	M_{pk}	Nm	21.8	24	24	24	24	24			
	n_{pk}	min^{-1}	1133	1188	1188	1188	1188	1188			
	I_{pk}	%	300	292	228	182	133	104			
DRN90L4	M_{pk}	Nm			32.5	32.5	32.5	32.5	32.5	32.5	32.5
	n_{pk}	min^{-1}			1174	1196	1196	1196	1196	1196	1196
	I_{pk}	%			300	247	180	141	104	79	62
DRN100LS4	M_{pk}	Nm				43.9	48	48	48	48	48
	n_{pk}	min^{-1}				1112	1139	1139	1139	1139	1139
	I_{pk}	%				300	255	201	148	112	88
DRN100L4	M_{pk}	Nm					61	73	73	73	73
	n_{pk}	min^{-1}					1135	1111	1111	1111	1111
	I_{pk}	%					300	292	215	163	128
DRN112M4	M_{pk}	Nm						78.9	94	94	94
	n_{pk}	min^{-1}						1167	1122	1122	1122
	I_{pk}	%						300	262	199	155

26863707/EN – 07/2021

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
DRN132S4	M_{pk}	Nm							109	120	123
	n_{pk}	min^{-1}							1158	1133	1126
	I_{pk}	%							300	250	200
DRN132M4	M_{pk}	Nm								111	114
	n_{pk}	min^{-1}								1253	1249
	I_{pk}	%								250	200
DRN132L4	M_{pk}	Nm									110
	n_{pk}	min^{-1}									1290
	I_{pk}	%									200
DRN160M4	M_{pk}	Nm									116
	n_{pk}	min^{-1}									1313
	I_{pk}	%									200

26863707/EN – 07/2021

MOVIMOT® flexible – 230 V, 50 Hz, VFC^{PLUS}, △ connection

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
DRN63MS4	M_{pk}	Nm	2.25								
	n_{pk}	min^{-1}	2314								
	I_{pk}	%	76								
DRN63M4	M_{pk}	Nm	3.25	3.25							
	n_{pk}	min^{-1}	2306	2306							
	I_{pk}	%	107	85							
DRN71MS4 (180 W)	M_{pk}	Nm	4.3	4.3							
	n_{pk}	min^{-1}	2369	2369							
	I_{pk}	%	129	103							
DRN71MS4 (250 W)	M_{pk}	Nm	4.25	4.25	4.25						
	n_{pk}	min^{-1}	2439	2439	2439						
	I_{pk}	%	133	107	83						
DRN71M4	M_{pk}	Nm	7.0	7.0	7.0	7.0					
	n_{pk}	min^{-1}	2355	2355	2355	2355					
	I_{pk}	%	205	164	128	102					
DRN80MK4	M_{pk}	Nm	11.3	11.3	11.3	11.3	11.3				
	n_{pk}	min^{-1}	2259	2445	2445	2445	2445				
	I_{pk}	%	300	269	210	168	122				
DRN80M4	M_{pk}	Nm		15.3	16.9	16.9	16.9	16.9			
	n_{pk}	min^{-1}		2101	2264	2265	2265	2265			
	I_{pk}	%		300	300	240	175	137			
DRN90S4	M_{pk}	Nm			19.8	24	24	24	24	24	24
	n_{pk}	min^{-1}			2226	2279	2385	2385	2385	2385	2385
	I_{pk}	%			300	300	230	181	133	101	79
DRN90L4	M_{pk}	Nm				24.5	32.5	32.5	32.5	32.5	32.5
	n_{pk}	min^{-1}				2247	2308	2387	2387	2387	2387
	I_{pk}	%				300	300	245	181	137	107
DRN100LS4	M_{pk}	Nm					34	44.2	48	48	48
	n_{pk}	min^{-1}					2238	2167	2280	2280	2280
	I_{pk}	%					300	300	257	195	153
DRN100L4	M_{pk}	Nm						43.3	60.5	66.8	68.5
	n_{pk}	min^{-1}						2264	2186	2158	2150
	I_{pk}	%						300	300	250	200
DRN112M4	M_{pk}	Nm							60.4	66.8	68.5
	n_{pk}	min^{-1}							2271	2251	2246
	I_{pk}	%							300	250	200
DRN132S4	M_{pk}	Nm								66.8	68.5
	n_{pk}	min^{-1}								2298	2294
	I_{pk}	%								250	200

26863707/EN – 07/2021

10.6.3 Motor/inverter assignments DR2S motors, f_{PWM} = 4 kHz

Key

I_N	Nominal output current of the inverter
I_{max}	Maximum output current of inverter
M_{pk}	Peak torque of the motor
n_{pk}	Maximum speed at peak torque of the motor
I_{pk}	Inverter output current/nominal output current at peak torque of the motor

MOVIMOT® flexible – 400 V, 50 Hz, VFC^{PLUS}, ⅄ connection

Inverter			0020	0025	0032	0040	0055
	I_N	A	2	2.5	3.2	4	5.5
	I_{max}	A	6	7.5	9.6	12	16.5
Motor							
DR2S56MR4	M_{pk}	Nm	1.81				
	n_{pk}	min^{-1}	745				
	I_{pk}	%	31				
DR2S56M4	M_{pk}	Nm	1.78				
	n_{pk}	min^{-1}	729				
	I_{pk}	%	30				
DR2S63MSR4	M_{pk}	Nm	2.25				
	n_{pk}	min^{-1}	925				
	I_{pk}	%	41				
DR2S63MS4	M_{pk}	Nm	2.7				
	n_{pk}	min^{-1}	858				
	I_{pk}	%	49				
DR2S63M4	M_{pk}	Nm	4.15				
	n_{pk}	min^{-1}	842				
	I_{pk}	%	72				
DR2S71MS4	M_{pk}	Nm	5.2				
	n_{pk}	min^{-1}	1012				
	I_{pk}	%	97				
DR2S71M4	M_{pk}	Nm	9.3				
	n_{pk}	min^{-1}	945				
	I_{pk}	%	159				
DR2S80MK4	M_{pk}	Nm	13.2	13.2			
	n_{pk}	min^{-1}	1018	1018			
	I_{pk}	%	233	186			
DR2S80M4	M_{pk}	Nm	20	20	20		
	n_{pk}	min^{-1}	1010	1043	1043		
	I_{pk}	%	300	273	213		

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, 50 Hz, VFC^{PLUS}, △ connection

Inverter			0020	0025	0032	0040	0055
	I_N	A	2	2.5	3.2	4	5.5
	I_{max}	A	6	7.5	9.6	12	16.5
Motor							
DR2S56MR4	M_{pk}	Nm	1.81				
	n_{pk}	min^{-1}	2086				
	I_{pk}	%	66				
DR2S56M4	M_{pk}	Nm	1.78				
	n_{pk}	min^{-1}	2064				
	I_{pk}	%	65				
DR2S63MSR4	M_{pk}	Nm	2.25				
	n_{pk}	min^{-1}	2314				
	I_{pk}	%	76				
DR2S63MS4	M_{pk}	Nm	2.7				
	n_{pk}	min^{-1}	2302				
	I_{pk}	%	100				
DR2S63M4	M_{pk}	Nm	4.15				
	n_{pk}	min^{-1}	2213				
	I_{pk}	%	140				
DR2S71MS4	M_{pk}	Nm	5.2				
	n_{pk}	min^{-1}	2311				
	I_{pk}	%	168				
DR2S71M4	M_{pk}	Nm		9.3	9.3		
	n_{pk}	min^{-1}		2178	2178		
	I_{pk}	%		221	173		
DR2S80MK4	M_{pk}	Nm		13.2	13.2		
	n_{pk}	min^{-1}		2241	2344		
	I_{pk}	%		300	253		
DR2S80M4	M_{pk}	Nm			19.6	20	20
	n_{pk}	min^{-1}			2066	2350	2350
	I_{pk}	%			300	297	216

26863707/EN – 07/2021

10.6.4 Technical data MOVIGEAR® classic

Key

J_{mot}	Mass moment of inertia of the motor
n_N	Rated speed
n_{max}	Maximum permitted speed
PK limit	Maximum permitted motor temperature measured on PK
U_N	Nominal voltage
M_0	Standstill torque (thermal continuous torque at low speeds)
I_0	Standstill current
V_{p0} cold	Internal voltage
C_T	Torque constant
R_1	Resistance between connection phase and star point
L_1	Inductance between connection phase and star point
f_N	Frequency at rated speed
eff	Motor efficiency

MOVIGEAR® classic, 400 V, connection type of motor:: 人

For the permitted values for I_{max}, refer to the chapter "Technical data and dimension sheets" > "Permitted currents, speeds and torques" in the "MOVIGEAR® classic MGF..-DSM-C drive unit" operating instructions.

Motor	J_{mot}	n_N	n_{max}	PK limit	U_N	M_0	I_0	V_{p0} cold	V_{p0} cold	C_T	R_1	L_1	Number of poles Motor	f_N	eff
	$kgm^2 \times 10^{-4}$	min^{-1}	min^{-1}	°C	V	Nm	A	V/1000 min^{-1}	V/2000 min^{-1}	Nm/A	Ω	mH		Hz	%
MGF..1-DSM-C	1.38	2000	2000	150	400	2.1	1.11	141	282	1.89	14.7	31.8	8	133.3	81.2 ≙ IE5
MGF..2-DSM-C	7.64	2000	2000	150	400	4.5	1.93	155	310	2.33	4.86	17.4	8	133.3	88.7 ≙ IE5
MGF..4-DSM-C	23.30	2000	2000	150	400	10	3.94	168	336	2.54	1.03	12.7	8	133.3	93.0 ≙ IE5
MGF..4-DSM-C/XT	30.4	2000	2000	150	400	14.3	5.2	181	362	2.75	0,796	10.3	8	133.3	93.7 ≙ IE5

26863707/EN – 07/2021

10.6.5 Motor/inverter assignments MOVIGEAR® classic, 400 V, f_{PWM} = 4/8 kHz

Key

I_N	Nominal output current of the inverter
I_{max}	Maximum output current of inverter
M_{pk}	Peak torque of the motor
n_{pk}	Maximum speed at peak torque of the motor
I_{pk}	Inverter output current/nominal output current at peak torque of the motor

MOVIGEAR® classic – 400 V, rated speed 2000 min^{-1}, f_{PWM} = 4/8 kHz, non-ventilated

Inverter			**0020**	**0025**	**0032**	**0040**	**0055**
	I_N	**A**	**2**	**2.5**	**3.2**	**4**	**5.5**
	I_{max}	**A**	**6**	**7.5**	**9.6**	**12**	**16.5**
Motor							
MGF..1-DSM-C	M_{pk}	Nm	6.3				
	n_{pk}	min^{-1}	1646				
	I_{pk}	%	166				
MGF..2-DSM-C	M_{pk}	Nm	13.5				
	n_{pk}	min^{-1}	1726				
	I_{pk}	%	286				
MGF..4-DSM-C	M_{pk}	Nm		19.2	24.2	30	
	n_{pk}	min^{-1}		1904	1802	1670	
	I_{pk}	%		300	300	300	
MGF..4-DSM-C/XT	M_{pk}	Nm			26	32.1	42.9
	n_{pk}	min^{-1}			1787	1700	1530
	I_{pk}	%			300	300	300

26863707/EN – 07/2021

10.6.6 Technical data of CM3C.. motors

Key

n_N	Rated speed
M_0	Standstill torque (thermal continuous torque at low speeds)
I_0	Standstill current
M_{pk}	Dynamic limit torque
I_{max}	Maximum permitted motor current
m	Mass of the motor
J_{mot}	Mass moment of inertia of the motor

CM3C63 – CM3C100, 400 V system voltage

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	m	J_{mot}
min^{-1}		Nm	A	Nm	A	kg	10^{-4} kgm²
2000	CM3C71S	6.5	3.5	19.5	12.2	6.42	7.4
	CM3C71M	9.5	5.1	28.5	18.4	7,87	10.7
	CM3C71L	14	6.4	42	21.3	10.7	17.1
	CM3C80S	10.5	5.78	31.5	20	10.6	17.6
	CM3C80M	15.6	7.85	46.8	25.7	13	25.2
	CM3C80L	22.8	11.2	68.4	34.9	18	40.6
	CM3C100S	19	8.63	57	31.5	16.5	40
	CM3C100M	26.8	12.5	80.4	43.7	20.2	57.3
	CM3C100L	40	17.5	120	56.8	27.7	92.1
3000	CM3C63S	2.7	2.17	8.1	7.16	3.16	1.3
	CM3C63M	4.9	3.27	14.7	10.7	4.51	2.5
	CM3C63L	6.4	4.04	19.2	12.6	5.85	3.6
	CM3C71S	6.5	5	19.5	17.3	6.42	7.4
	CM3C71M	9.5	7	28.5	25.2	7,87	10.7
	CM3C71L	14	9.5	42	31.6	10.7	17.1
	CM3C80S	10.5	8.24	31.5	28.5	10.6	17.6
	CM3C80M	15.6	10.9	46.8	35.6	13	25.2
	CM3C80L	22.8	16.1	68.4	50.1	18	40.6
	CM3C100S	19	12.8	57	46.5	16.5	40
	CM3C100M	26.8	17.8	80.4	62.1	20.2	57.3
	CM3C100L	40	27.2	120	88.4	27.7	92.1
4500[1)]	CM3C63S	2.7	2.94	8.1	9.69	3.16	1.3
	CM3C63M	4.9	4.63	14.7	15.1	4.51	2.5
	CM3C63L	6.4	5.72	19.2	17.8	5.85	3.6
	CM3C71S	6.5	7.2	19.5	25	6.42	7.4
	CM3C71M	9.5	10.2	28.5	36.8	7,87	10.7
	CM3C71L	14	13.9	42	46.1	10.7	17.1
	CM3C80S	10.5	11.7	31.5	40.5	10.6	17.6
	CM3C80M	15.6	16.3	46.8	53.5	13	25.2
	CM3C80L	22.8	23.1	68.4	72	18	40.6
	CM3C100S	19	18.9	57	69	16.5	40
	CM3C100M	26.8	27.6	80.4	96.2	20.2	57.3
	CM3C100L	40	37.7	120	122	27.7	92.1

26863707/EN – 07/2021

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	m	J_{mot}
min^{-1}		Nm	A	Nm	A	kg	10^{-4} kgm^2
6000[1)]	CM3C63S	2.7	3.71	8.1	12.2	3.16	1.3
	CM3C63M	4.9	6.14	14.7	20	4.51	2.5
	CM3C63L	6.4	7.35	19.2	22.9	5.85	3.6
	CM3C71S	6.5	9.5	19.5	33	6.42	7.4
	CM3C71M	9.5	13.5	28.5	48.6	7,87	10.7
	CM3C71L	14	18.5	42	61.4	10.7	17.1
	CM3C80S	10.5	15.9	31.5	55	10.6	17.6
	CM3C80M	15.6	21.8	46.8	69.5	13	25.2
	CM3C80L	22.8	30.8	68.4	96	18	40.6

1) in preparation

26863707/EN – 07/2021

10.6.7 Motor/inverter assignments for CM3C.. motors, 400 V, f_{PWM} = 4 kHz

Key

I_N	Nominal output current of the inverter
I_{max}	Maximum output current of inverter
M_{pk}	Peak torque of the motor
n_{pk}	Maximum speed at peak torque of the motor
I_{pk}	Inverter output current/nominal output current at peak torque of the motor

MOVIMOT® flexible – 400 V, rated speed 2000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, with encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C71S	M_{pk}	Nm		13.3	16.3	19.3	19.5				
	n_{pk}	min^{-1}		2058	1887	1739	1730				
	I_{pk}	%		300	300	300	221				
CM3C71M	M_{pk}	Nm			17.3	20.9	26.4	28.5			
	n_{pk}	min^{-1}			2228	2075	1843	1757			
	I_{pk}	%			300	300	300	263			
CM3C71L	M_{pk}	Nm				25.7	34.1	41.6	42	42	42
	n_{pk}	min^{-1}				2024	1831	1689	1683	1683	1683
	I_{pk}	%				300	300	300	224	170	133
CM3C80S	M_{pk}	Nm	10.9	13.6	17.2	21.1	27.6	31.5	31.5	31.5	31.5
	n_{pk}	min^{-1}	2642	2502	2321	2137	1858	1690	1690	1690	1690
	I_{pk}	%	300	300	300	300	300	285	210	160	125
CM3C80M	M_{pk}	Nm				23.8	32.1	39.8	46.8	46.8	46.8
	n_{pk}	min^{-1}				2307	2086	1899	1759	1759	1759
	I_{pk}	%				300	300	300	271	206	161
CM3C80L	M_{pk}	Nm						42.3	56.8	61.9	63.3
	n_{pk}	min^{-1}						2278	2056	1979	1959
	I_{pk}	%						300	300	250	200
CM3C100S	M_{pk}	Nm					35.2	43	53.5	56.8	57
	n_{pk}	min^{-1}					1886	1727	1520	1457	1452
	I_{pk}	%					300	300	300	250	197
CM3C100M	M_{pk}	Nm							57.3	62	63.3
	n_{pk}	min^{-1}							1854	1784	1766
	I_{pk}	%							300	250	200
CM3C100L	M_{pk}	Nm								70.2	71.8
	n_{pk}	min^{-1}								2106	2095
	I_{pk}	%								250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 2000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, without encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C71S	M_{pk}	Nm		13.3	16.3	19.3	19.5				
	n_{pk}	min^{-1}		2058	1887	1739	1730				
	I_{pk}	%		300	300	300	221				
CM3C71M	M_{pk}	Nm			17.3	20.9	26.4	28.5			
	n_{pk}	min^{-1}			2228	2075	1843	1757			
	I_{pk}	%			300	300	300	263			
CM3C71L	M_{pk}	Nm				25.7	34.1	41.6	42	42	42
	n_{pk}	min^{-1}				2024	1831	1689	1683	1683	1683
	I_{pk}	%				300	300	300	224	170	133
CM3C80S	M_{pk}	Nm	10.9	13.6	17.2	21.1	27.6	31.5	31.5	31.5	31.5
	n_{pk}	min^{-1}	2642	2502	2321	2137	1858	1690	1690	1690	1690
	I_{pk}	%	300	300	300	300	300	285	210	160	125
CM3C80M	M_{pk}	Nm				23.8	32.1	39.8	46.8	46.8	46.8
	n_{pk}	min^{-1}				2307	2086	1899	1759	1759	1759
	I_{pk}	%				300	300	300	271	206	161
CM3C80L	M_{pk}	Nm						42.3	56.8	61.9	63.3
	n_{pk}	min^{-1}						2278	2056	1979	1959
	I_{pk}	%						300	300	250	200
CM3C100S	M_{pk}	Nm					35.2	43	53.5	56.8	57
	n_{pk}	min^{-1}					1886	1727	1520	1457	1452
	I_{pk}	%					300	300	300	250	197
CM3C100M	M_{pk}	Nm							57.3	62	63.3
	n_{pk}	min^{-1}							1854	1784	1766
	I_{pk}	%							300	250	200
CM3C100L	M_{pk}	Nm								70.2	71.8
	n_{pk}	min^{-1}								2106	2095
	I_{pk}	%								250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 3000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, with encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm	7.04	8.1							
	n_{pk}	min^{-1}	2590	2388							
	I_{pk}	%	300	286							
CM3C63M	M_{pk}	Nm	8.84	10.9	13.5	14.7					
	n_{pk}	min^{-1}	2883	2668	2414	2309					
	I_{pk}	%	300	300	300	267					
CM3C63L	M_{pk}	Nm		11.8	15	18.4	19.2				
	n_{pk}	min^{-1}		2835	2622	2392	2339				
	I_{pk}	%		300	300	300	229				
CM3C71S	M_{pk}	Nm			12.1	14.7	18.8	19.5			
	n_{pk}	min^{-1}			3175	2973	2710	2671			
	I_{pk}	%			300	300	300	248			
CM3C71M	M_{pk}	Nm					20.9	25.1	28.5	28.5	28.5
	n_{pk}	min^{-1}					2965	2742	2561	2561	2561
	I_{pk}	%					300	300	265	202	158
CM3C71L	M_{pk}	Nm						29.8	38.7	41.7	42
	n_{pk}	min^{-1}						2997	2749	2680	2674
	I_{pk}	%						300	300	250	197
CM3C80S	M_{pk}	Nm						25.2	31.5	31.5	31.5
	n_{pk}	min^{-1}						2901	2527	2527	2527
	I_{pk}	%						300	300	228	178
CM3C80M	M_{pk}	Nm						29.7	39.1	42.3	43.1
	n_{pk}	min^{-1}						3067	2754	2664	2642
	I_{pk}	%						300	300	250	200
CM3C80L	M_{pk}	Nm								43.8	44.9
	n_{pk}	min^{-1}								3321	3300
	I_{pk}	%								250	200
CM3C100S	M_{pk}	Nm							40.2	43.2	44
	n_{pk}	min^{-1}							2735	2647	2624
	I_{pk}	%							300	250	200
CM3C100M	M_{pk}	Nm								45.5	46.5
	n_{pk}	min^{-1}								2958	2935
	I_{pk}	%								250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 3000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, without encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm	7.04	8.1							
	n_{pk}	min^{-1}	2590	2388							
	I_{pk}	%	300	286							
CM3C63M	M_{pk}	Nm	8.84	10.9	13.5	14.7					
	n_{pk}	min^{-1}	2883	2668	2414	2309					
	I_{pk}	%	300	300	300	267					
CM3C63L	M_{pk}	Nm		11.8	15	18.4	19.2				
	n_{pk}	min^{-1}		2835	2622	2392	2339				
	I_{pk}	%		300	300	300	229				
CM3C71S	M_{pk}	Nm			12.1	14.7	18.8	19.5			
	n_{pk}	min^{-1}			3175	2973	2710	2671			
	I_{pk}	%			300	300	300	248			
CM3C71M	M_{pk}	Nm					20.9	25.1	28.5	28.5	28.5
	n_{pk}	min^{-1}					2965	2742	2561	2561	2561
	I_{pk}	%					300	300	265	202	158
CM3C71L	M_{pk}	Nm						29.8	38.7	41.7	42
	n_{pk}	min^{-1}						2997	2749	2680	2674
	I_{pk}	%						300	300	250	197
CM3C80S	M_{pk}	Nm						25.2	31.5	31.5	31.5
	n_{pk}	min^{-1}						2901	2527	2527	2527
	I_{pk}	%						300	300	228	178
CM3C80M	M_{pk}	Nm						29.7	39.1	42.3	43.1
	n_{pk}	min^{-1}						3067	2754	2664	2642
	I_{pk}	%						300	300	250	200
CM3C80L	M_{pk}	Nm								43.8	44.9
	n_{pk}	min^{-1}								3321	3300
	I_{pk}	%								250	200
CM3C100S	M_{pk}	Nm							40.2	43.2	44
	n_{pk}	min^{-1}							2735	2647	2624
	I_{pk}	%							300	250	200
CM3C100M	M_{pk}	Nm								45.5	46.5
	n_{pk}	min^{-1}								2958	2935
	I_{pk}	%								250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 4500 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, with encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm	5.38	6.57	8.05	8.1					
	n_{pk}	min^{-1}	4262	3922	3591	3580					
	I_{pk}	%	300	300	300	242					
CM3C63M	M_{pk}	Nm			9.92	12.2	14.7	14.7			
	n_{pk}	min^{-1}			4159	3878	3598	3598			
	I_{pk}	%			300	300	274	216			
CM3C63L	M_{pk}	Nm				13.3	17.9	19.2	19.2	19.2	19.2
	n_{pk}	min^{-1}				4078	3684	3572	3572	3572	3572
	I_{pk}	%				300	300	255	188	143	111
CM3C71S	M_{pk}	Nm					14.1	17.2	19.5	19.5	19.5
	n_{pk}	min^{-1}					4556	4289	4114	4114	4114
	I_{pk}	%					300	300	264	200	156
CM3C71M	M_{pk}	Nm						18.7	23.8	25.4	25.9
	n_{pk}	min^{-1}						4618	4232	4110	4078
	I_{pk}	%						300	300	250	200
CM3C71L	M_{pk}	Nm							27.9	30.3	31
	n_{pk}	min^{-1}							4558	4452	4424
	I_{pk}	%							300	250	200
CM3C80S	M_{pk}	Nm							24.3	26.2	26.7
	n_{pk}	min^{-1}							4339	4182	4141
	I_{pk}	%							300	250	200
CM3C80M	M_{pk}	Nm								29.5	30.1
	n_{pk}	min^{-1}								4742	4709
	I_{pk}	%								250	200
CM3C80L	M_{pk}	Nm									31.4
	n_{pk}	min^{-1}									5193
	I_{pk}	%									200
CM3C100S	M_{pk}	Nm								30.8	31.5
	n_{pk}	min^{-1}								4539	4509
	I_{pk}	%								250	200
CM3C100M	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CM3C100L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 4500 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, without encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm	5.38	6.57	8.05	8.1					
	n_{pk}	min^{-1}	4262	3922	3591	3580					
	I_{pk}	%	300	300	300	242					
CM3C63M	M_{pk}	Nm			9.92	12.2	14.7	14.7			
	n_{pk}	min^{-1}			4159	3878	3598	3598			
	I_{pk}	%			300	300	274	216			
CM3C63L	M_{pk}	Nm				13.3	17.9	19.2	19.2	19.2	19.2
	n_{pk}	min^{-1}				4078	3684	3572	3572	3572	3572
	I_{pk}	%				300	300	255	188	143	111
CM3C71S	M_{pk}	Nm					14.1	17.2	19.5	19.5	19.5
	n_{pk}	min^{-1}					4556	4289	4114	4114	4114
	I_{pk}	%					300	300	264	200	156
CM3C71M	M_{pk}	Nm						18.7	23.8	25.4	25.9
	n_{pk}	min^{-1}						4618	4232	4110	4078
	I_{pk}	%						300	300	250	200
CM3C71L	M_{pk}	Nm							27.9	30.3	31
	n_{pk}	min^{-1}							4558	4452	4424
	I_{pk}	%							300	250	200
CM3C80S	M_{pk}	Nm							24.3	26.2	26.7
	n_{pk}	min^{-1}							4339	4182	4141
	I_{pk}	%							300	250	200
CM3C80M	M_{pk}	Nm								29.5	30.1
	n_{pk}	min^{-1}								4742	4709
	I_{pk}	%								250	200
CM3C80L	M_{pk}	Nm									31.4
	n_{pk}	min^{-1}									5193
	I_{pk}	%									200
CM3C100S	M_{pk}	Nm								30.8	31.5
	n_{pk}	min^{-1}								4539	4509
	I_{pk}	%								250	200
CM3C100M	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CM3C100L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 6000 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, with encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm		5.32	6.65	7.98	8.1				
	n_{pk}	min^{-1}		5564	5114	4768	4741				
	I_{pk}	%		300	300	300	222				
CM3C63M	M_{pk}	Nm				9.39	12.6	14.7	14.7	14.7	14.7
	n_{pk}	min^{-1}				5745	5251	4964	4964	4964	4964
	I_{pk}	%				300	300	286	210	160	125
CM3C63L	M_{pk}	Nm					14.2	17.8	19.2	19.2	19.2
	n_{pk}	min^{-1}					5271	4897	4741	4741	4741
	I_{pk}	%					300	300	241	183	143
CM3C71S	M_{pk}	Nm						13.7	17.5	18.8	19.1
	n_{pk}	min^{-1}						6135	5704	5588	5559
	I_{pk}	%						300	300	250	200
CM3C71M	M_{pk}	Nm							19.1	20.6	21
	n_{pk}	min^{-1}							6167	6021	5982
	I_{pk}	%							300	250	200
CM3C71L	M_{pk}	Nm								23.3	23.8
	n_{pk}	min^{-1}								6426	6395
	I_{pk}	%								250	200
CM3C80S	M_{pk}	Nm								20.1	20.6
	n_{pk}	min^{-1}								6427	6376
	I_{pk}	%								250	200
CM3C80M	M_{pk}	Nm									23.5
	n_{pk}	min^{-1}									6605
	I_{pk}	%									200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 6000 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, without encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CM3C63S	M_{pk}	Nm		5.32	6.65	7.98	8.1				
	n_{pk}	min^{-1}		5564	5114	4768	4741				
	I_{pk}	%		300	300	300	222				
CM3C63M	M_{pk}	Nm				9.39	12.6	14.7	14.7	14.7	14.7
	n_{pk}	min^{-1}				5745	5251	4964	4964	4964	4964
	I_{pk}	%				300	300	286	210	160	125
CM3C63L	M_{pk}	Nm					14.2	17.8	19.2	19.2	19.2
	n_{pk}	min^{-1}					5271	4897	4741	4741	4741
	I_{pk}	%					300	300	241	183	143
CM3C71S	M_{pk}	Nm						13.7	17.5	18.8	19.1
	n_{pk}	min^{-1}						6135	5704	5588	5559
	I_{pk}	%						300	300	250	200
CM3C71M	M_{pk}	Nm							19.1	20.6	21
	n_{pk}	min^{-1}							6167	6021	5982
	I_{pk}	%							300	250	200
CM3C71L	M_{pk}	Nm								23.3	23.8
	n_{pk}	min^{-1}								6426	6395
	I_{pk}	%								250	200
CM3C80S	M_{pk}	Nm								20.1	20.6
	n_{pk}	min^{-1}								6427	6376
	I_{pk}	%								250	200
CM3C80M	M_{pk}	Nm									23.5
	n_{pk}	min^{-1}									6605
	I_{pk}	%									200

26863707/EN – 07/2021

10.6.8 Technical data of CMP.. motors

Key

n_N	Rated speed
M_0	Standstill torque (thermal continuous torque at low speeds)
I_0	Standstill current
M_{pk}	Dynamic limit torque
I_{max}	Maximum permitted motor current
M_{0VR}	Standstill torque with forced cooling fan
I_{0VR}	Standstill current with forced cooling fan
m	Mass of the motor
J_{mot}	Mass moment of inertia of the motor

CMP40 – CMP112, 400 V system voltage

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	M_{0VR}	I_{0VR}	m	J_{mot}
min^{-1}		Nm	A	Nm	A	Nm	A	kg	10^{-4} kgm²
2000	CMP71S	6.4	3.4	19.2	17	8.7	4.6	7	3.04
	CMP71M	9.4	5	30.8	26	13.7	7.3	8.4	4.08
	CMP71L	13.1	6.3	46.9	39	21	10.1	11.4	6.3
	CMP80S	13.4	6.9	42.1	33	18.5	9.5	12.8	8.78
	CMP80M	18.7	9.3	62.6	48	27	13.4	16.5	12.1
	CMP80L	27.5	12.5	107	72	44	20	21.4	18.3
	CMP100S	25.5	13.3	68.3	49	36	18.8	19.8	20.3
	CMP100M	31	14.7	108	69	47	22.3	24.8	27.2
	CMP100L	47	21.8	179	113	70	32.5	34.6	40.9
	CMP112M	30	14.3	88	51	43	21	38.4	74.0
	CMP80S	45	21	136	74	68	32	46.2	103
3000	CMP40S	0.5	1.2	1.9	6.1	–	–	1.3	0.10
	CMP40M	0.8	0.95	3.8	6.0	–	–	1.6	0.15
	CMP50S	1.3	0.96	5.2	5.1	1.7	1.25	2.3	0.42
	CMP50M	2.4	1.68	10.3	9.6	3.5	2.45	3.3	0.67
	CMP50L	3.3	2.2	15.4	13.6	4.8	3.2	4.1	0.92
	CMP63S	2.9	2.15	11.1	12.9	4	3	4.0	1.2
	CMP63M	5.3	3.6	21.4	21.6	7.5	5.1	5.7	1.9
	CMP63L	7.1	4.95	30.4	29.7	10.3	7.2	7.5	2.7
	CMP71S	6.4	4.9	19.2	25	8.7	6.7	7.0	3.1
	CMP71M	9.4	7.5	30.8	39	13.7	10.9	8.4	4.2
	CMP71L	13.1	9.4	46.9	58	21	15.1	11.4	6.3
	CMP80S	13.4	10	42.1	47	18.5	13.8	12.8	9.0
	CMP80M	18.7	13.4	62.6	69	27	19.3	16.5	12.1
	CMP80L	27.5	18.7	107	107	44	30	21.4	18.3
	CMP100S	25.5	19.6	68.3	73	36	27.5	19.8	20.3
	CMP100M	31	21.8	108	102	47	33	24.8	27.2
	CMP100L	47	32.3	179	167	70	48	34.6	40.9
	CMP112S	30	21	88	74	43	30.5	38.4	74.0
	CMP112M	45	32	136	113	68	49	46.2	103

n_N	Motor	M_0	I_0	M_{pk}	I_{max}	M_{0VR}	I_{0VR}	m	J_{mot}
min^{-1}		Nm	A	Nm	A	Nm	A	kg	10^{-4} kgm^2
4500[1)]	CMP40S	0.5	1.2	1.9	6.1	–	–	1.3	0.1
	CMP40M	0.8	0.95	3.8	6.0	–	–	1.6	0.15
	CMP50S	1.3	1.32	5.2	7.0	1.7	1.7	2.3	0.42
	CMP50M	2.4	2.3	10.3	13.1	3.5	3.35	3.3	0.67
	CMP50L	3.3	3.15	15.4	19.5	4.8	4.6	4.1	0.92
	CMP63S	2.9	3.05	11.1	18.3	4	4.2	4.0	1.15
	CMP63M	5.3	5.4	21.4	32.4	7.5	7.6	5.7	1.92
	CMP71S	6.4	7.3	19.2	38	8.7	9.9	7	3.04
6000[1)]	CMP40S	0.5	1.2	1.9	6.1	–	–	1.3	0.1
	CMP40M	0.8	1.1	3.8	6.9	–	–	1.6	0.15
	CMP50S	1.3	1.7	5.2	9	1.7	2.2	2.3	0.42
	CMP50M	2.4	3	10.3	17.1	3.5	4.4	3.3	0.67
	CMP50L	3.3	4.2	15.4	26	4.8	6.1	4.1	0.92
	CMP63S	2.9	3.9	11.1	23.4	4	5.4	4	1.15
	CMP63M	5.3	6.9	21.4	41.4	7.5	9.8	5.7	1.92
	CMP63L	7.1	9.3	30.4	55.8	10.3	13.5	7.5	2.69
	CMP71S	6.4	9.6	19.2	50	8.7	13.1	7	3.13
	CMP71M	9.4	14.7	30.8	76	13.7	21.5	8.4	4.17
	CMP71L	13.1	18.8	46.9	115	21	30	11.4	6.27
	CMP80S	13.4	20	42.1	95	18.5	27.5	12.8	9
	CMP80M	18.7	26.4	62.6	135	27	38	16.5	12.1

1) in preparation

26863707/EN – 07/2021

10.6.9 Motor/inverter assignment for CMP.. motors, 400 V

Key

I_N	Nominal output current of the inverter
I_{max}	Maximum output current of inverter
M_{pk}	Peak torque of the motor
n_{pk}	Maximum speed at peak torque of the motor
I_{pk}	Inverter output current/nominal output current at peak torque of the motor

MOVIMOT® flexible – 400 V, rated speed 2000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, with encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP71S	M_{pk}	Nm	10.9	13	15.3	17.2	19	19.2			
	n_{pk}	min^{-1}	1659	1508	1368	1259	1111	1093			
	I_{pk}	%	300	300	300	300	300	244			
CMP71M	M_{pk}	Nm			17	20.3	25	28	30.8	30.8	30.8
	n_{pk}	min^{-1}			1623	1462	1300	1206	1120	1120	1120
	I_{pk}	%			300	300	300	300	276	210	164
CMP71L	M_{pk}	Nm				23.9	31.4	37.2	43.2	44.4	44.7
	n_{pk}	min^{-1}				1749	1509	1372	1243	1210	1201
	I_{pk}	%				300	300	300	300	250	200
CMP80S	M_{pk}	Nm					29.9	34.9	39.7	41.2	41.7
	n_{pk}	min^{-1}					1471	1355	1241	1208	1199
	I_{pk}	%					300	300	300	250	200
CMP80M	M_{pk}	Nm						39.7	49.6	52.4	53
	n_{pk}	min^{-1}						1576	1405	1362	1352
	I_{pk}	%						300	300	250	200
CMP80L	M_{pk}	Nm							58.7	63.5	64.7
	n_{pk}	min^{-1}							1597	1528	1511
	I_{pk}	%							300	250	200
CMP100S	M_{pk}	Nm							50.3	53.7	54.6
	n_{pk}	min^{-1}							1372	1327	1317
	I_{pk}	%							300	250	200
CMP100M	M_{pk}	Nm							58.6	63.6	65
	n_{pk}	min^{-1}							1603	1533	1516
	I_{pk}	%							300	250	200
CMP100L	M_{pk}	Nm									69
	n_{pk}	min^{-1}									2053
	I_{pk}	%									200
CMP112S	M_{pk}	Nm							57.7	62.4	63.6
	n_{pk}	min^{-1}							1825	1769	1754
	I_{pk}	%							300	250	200
CMP112M	M_{pk}	Nm								68.4	69.9
	n_{pk}	min^{-1}								1993	1980
	I_{pk}	%								250	200

MOVIMOT® flexible – 400 V, rated speed 2000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, without encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP71S	M_{pk}	Nm	10.9	13	15.3	17.2	19	19.2			
	n_{pk}	min^{-1}	1659	1508	1368	1259	1111	1093			
	I_{pk}	%	300	300	300	300	300	244			
CMP71M	M_{pk}	Nm			17	20.3	25	28	30.8	30.8	30.8
	n_{pk}	min^{-1}			1623	1462	1300	1206	1120	1120	1120
	I_{pk}	%			300	300	300	300	276	210	164
CMP71L	M_{pk}	Nm				23.9	31.4	37.2	43.2	44.4	44.7
	n_{pk}	min^{-1}				1749	1509	1372	1243	1210	1201
	I_{pk}	%				300	300	300	300	250	200
CMP80S	M_{pk}	Nm					29.9	34.9	39.7	41.2	41.7
	n_{pk}	min^{-1}					1471	1355	1241	1208	1199
	I_{pk}	%					300	300	300	250	200
CMP80M	M_{pk}	Nm						39.7	49.6	52.4	53
	n_{pk}	min^{-1}						1576	1405	1362	1352
	I_{pk}	%						300	300	250	200
CMP80L	M_{pk}	Nm							58.7	63.5	64.7
	n_{pk}	min^{-1}							1597	1528	1511
	I_{pk}	%							300	250	200
CMP100S	M_{pk}	Nm							50.3	53.7	54.6
	n_{pk}	min^{-1}							1372	1327	1317
	I_{pk}	%							300	250	200
CMP100M	M_{pk}	Nm							58.6	63.6	65
	n_{pk}	min^{-1}							1603	1533	1516
	I_{pk}	%							300	250	200
CMP100L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP112S	M_{pk}	Nm							57.7	62.4	63.6
	n_{pk}	min^{-1}							1825	1769	1754
	I_{pk}	%							300	250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 3000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, with encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.8								
	n_{pk}	min^{-1}	654								
	I_{pk}	%	298								
CMP50S	M_{pk}	Nm	5.2								
	n_{pk}	min^{-1}	561								
	I_{pk}	%	256								
CMP50M	M_{pk}	Nm	7.56	8.88	10.3						
	n_{pk}	min^{-1}	1741	1400	977						
	I_{pk}	%	300	300	299						
CMP50L	M_{pk}	Nm	8.51	10.3	12.4	14.4	15.4				
	n_{pk}	min^{-1}	2032	1734	1386	1041	828				
	I_{pk}	%	300	300	300	300	246				
CMP63S	M_{pk}	Nm	7.08	8.27	9.61	10.8	11.1				
	n_{pk}	min^{-1}	2155	1866	1544	1236	1126				
	I_{pk}	%	300	300	300	300	235				
CMP63M	M_{pk}	Nm		10.5	12.8	15.2	18.7	21.1	21.4	21.4	21.4
	n_{pk}	min^{-1}		2424	2143	1882	1508	1216	1181	1181	1181
	I_{pk}	%		300	300	300	300	300	227	173	135
CMP63L	M_{pk}	Nm			13.4	16.2	20.9	24.9	29.8	30.4	30.4
	n_{pk}	min^{-1}			2731	2482	2107	1825	1479	1434	1434
	I_{pk}	%			300	300	300	300	300	237	185
CMP71S	M_{pk}	Nm			11.7	13.8	16.7	18.3	19.2	19.2	19.2
	n_{pk}	min^{-1}			2425	2228	2005	1866	1771	1771	1771
	I_{pk}	%			300	300	300	300	263	200	156
CMP71M	M_{pk}	Nm					19.1	22.7	26.9	28	28.2
	n_{pk}	min^{-1}					2331	2126	1948	1904	1893
	I_{pk}	%					300	300	300	250	200
CMP71L	M_{pk}	Nm						27.7	35.1	37.3	37.8
	n_{pk}	min^{-1}						2467	2178	2111	2094
	I_{pk}	%						300	300	250	200
CMP80S	M_{pk}	Nm						26.9	33.5	35.3	35.8
	n_{pk}	min^{-1}						2304	2067	2012	1999
	I_{pk}	%						300	300	250	200
CMP80M	M_{pk}	Nm							37.8	40.7	41.5
	n_{pk}	min^{-1}							2377	2290	2269
	I_{pk}	%							300	250	200
CMP80L	M_{pk}	Nm								44.3	45.3
	n_{pk}	min^{-1}								2811	2783
	I_{pk}	%								250	200
CMP100S	M_{pk}	Nm								39.6	40.4
	n_{pk}	min^{-1}								2330	2303
	I_{pk}	%								250	200
CMP100M	M_{pk}	Nm									45.4
	n_{pk}	min^{-1}									2742
	I_{pk}	%									200

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP100L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP112S	M_{pk}	Nm									45.4
	n_{pk}	min^{-1}									2948
	I_{pk}	%									200
CMP112M	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 3000 min^{-1}, f_{PWM} = 4 kHz, non-ventilated, without encoder

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.8								
	n_{pk}	min^{-1}	654								
	I_{pk}	%	298								
CMP50S	M_{pk}	Nm	5.2								
	n_{pk}	min^{-1}	561								
	I_{pk}	%	256								
CMP50M	M_{pk}	Nm	7.56	8.88	10.3						
	n_{pk}	min^{-1}	1741	1400	977						
	I_{pk}	%	300	300	299						
CMP50L	M_{pk}	Nm	8.51	10.3	12.4	14.4	15.4				
	n_{pk}	min^{-1}	2032	1734	1386	1041	828				
	I_{pk}	%	300	300	300	300	246				
CMP63S	M_{pk}	Nm	7.08	8.27	9.61	10.8	11.1				
	n_{pk}	min^{-1}	2155	1866	1544	1236	1126				
	I_{pk}	%	300	300	300	300	235				
CMP63M	M_{pk}	Nm		10.5	12.8	15.2	18.7	21.1	21.4	21.4	21.4
	n_{pk}	min^{-1}		2424	2143	1882	1508	1216	1181	1181	1181
	I_{pk}	%		300	300	300	300	300	227	173	135
CMP63L	M_{pk}	Nm			13.4	16.2	20.9	24.9	29.8	30.4	30.4
	n_{pk}	min^{-1}			2731	2482	2107	1825	1479	1434	1434
	I_{pk}	%			300	300	300	300	300	237	185
CMP71S	M_{pk}	Nm			11.7	13.8	16.7	18.3	19.2	19.2	19.2
	n_{pk}	min^{-1}			2425	2228	2005	1866	1771	1771	1771
	I_{pk}	%			300	300	300	300	263	200	156
CMP71M	M_{pk}	Nm					19.1	22.7	26.9	28	28.2
	n_{pk}	min^{-1}					2331	2126	1948	1904	1893
	I_{pk}	%					300	300	300	250	200
CMP71L	M_{pk}	Nm						27.7	35.1	37.3	37.8
	n_{pk}	min^{-1}						2467	2178	2111	2094
	I_{pk}	%						300	300	250	200
CMP80S	M_{pk}	Nm						26.9	33.5	35.3	35.8
	n_{pk}	min^{-1}						2304	2067	2012	1999
	I_{pk}	%						300	300	250	200
CMP80M	M_{pk}	Nm							37.8	40.7	41.5
	n_{pk}	min^{-1}							2377	2290	2269
	I_{pk}	%							300	250	200

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 4500 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, with encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.8								
	n_{pk}	min^{-1}	654								
	I_{pk}	%	298								
CMP50S	M_{pk}	Nm	4.72	5.2							
	n_{pk}	min^{-1}	2077	1720							
	I_{pk}	%	300	283							
CMP50M	M_{pk}	Nm	5.89	7.07	8.51	9.83	10.3	10.3			
	n_{pk}	min^{-1}	3275	2897	2469	2076	1926	1926			
	I_{pk}	%	300	300	300	300	237	186			
CMP50L	M_{pk}	Nm	6.13	7.5	9.29	11.1	14	15.4	15.4	15.4	15.4
	n_{pk}	min^{-1}	3856	3513	3101	2717	2168	1874	1874	1874	1874
	I_{pk}	%	300	300	300	300	300	279	206	156	122
CMP63S	M_{pk}	Nm	5.42	6.47	7.74	8.95	10.6	11.1	11.1	11.1	11.1
	n_{pk}	min^{-1}	3881	3509	3090	2722	2220	2065	2065	2065	2065
	I_{pk}	%	300	300	300	300	300	260	192	146	114
CMP63M	M_{pk}	Nm			9.24	11.1	14.3	16.9	20.2	21.1	21.3
	n_{pk}	min^{-1}			4105	3771	3258	2874	2416	2285	2251
	I_{pk}	%			300	300	300	300	300	250	200
CMP63L	M_{pk}	Nm				12.1	15.9	19.4	24.3	25.9	26.2
	n_{pk}	min^{-1}				4142	3681	3300	2820	2681	2646
	I_{pk}	%				300	300	300	300	250	200
CMP71S	M_{pk}	Nm					13.1	15.3	17.8	18.3	18.5
	n_{pk}	min^{-1}					3484	3212	2939	2867	2849
	I_{pk}	%					300	300	300	250	200
CMP71M	M_{pk}	Nm						17	21.6	23	23.3
	n_{pk}	min^{-1}						3694	3252	3155	3132
	I_{pk}	%						300	300	250	200
CMP71L	M_{pk}	Nm							25.4	27.5	28
	n_{pk}	min^{-1}							3947	3789	3750
	I_{pk}	%							300	250	200
CMP80S	M_{pk}	Nm								26.2	26.7
	n_{pk}	min^{-1}								3638	3604
	I_{pk}	%								250	200
CMP80M	M_{pk}	Nm								28.6	29.3
	n_{pk}	min^{-1}								4133	4091
	I_{pk}	%								250	200
CMP80L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 4500 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, without encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.8								
	n_{pk}	min^{-1}	654								
	I_{pk}	%	298								
CMP50S	M_{pk}	Nm	4.72	5.2							
	n_{pk}	min^{-1}	2077	1720							
	I_{pk}	%	300	283							
CMP50M	M_{pk}	Nm	5.89	7.07	8.51	9.83	10.3	10.3			
	n_{pk}	min^{-1}	3275	2897	2469	2076	1926	1926			
	I_{pk}	%	300	300	300	300	237	186			
CMP50L	M_{pk}	Nm	6.13	7.5	9.29	11.1	14	15.4	15.4	15.4	15.4
	n_{pk}	min^{-1}	3856	3513	3101	2717	2168	1874	1874	1874	1874
	I_{pk}	%	300	300	300	300	300	279	206	156	122
CMP63S	M_{pk}	Nm	5.42	6.47	7.74	8.95	10.6	11.1	11.1	11.1	11.1
	n_{pk}	min^{-1}	3881	3509	3090	2722	2220	2065	2065	2065	2065
	I_{pk}	%	300	300	300	300	300	260	192	146	114
CMP63M	M_{pk}	Nm			9.24	11.1	14.3	16.9	20.2	21.1	21.3
	n_{pk}	min^{-1}			4105	3771	3258	2874	2416	2285	2251
	I_{pk}	%			300	300	300	300	300	250	200
CMP63L	M_{pk}	Nm				12.1	15.9	19.4	24.3	25.9	26.2
	n_{pk}	min^{-1}				4142	3681	3300	2820	2681	2646
	I_{pk}	%				300	300	300	300	250	200
CMP71S	M_{pk}	Nm					13.1	15.3	17.8	18.3	18.5
	n_{pk}	min^{-1}					3484	3212	2939	2867	2849
	I_{pk}	%					300	300	300	250	200
CMP71M	M_{pk}	Nm						17	21.6	23	23.3
	n_{pk}	min^{-1}						3694	3252	3155	3132
	I_{pk}	%						300	300	250	200
CMP71L	M_{pk}	Nm							25.4	27.5	28
	n_{pk}	min^{-1}							3947	3789	3750
	I_{pk}	%							300	250	200
CMP80S	M_{pk}	Nm								26.2	26.7
	n_{pk}	min^{-1}								3638	3604
	I_{pk}	%								250	200
CMP80M	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP80L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

MOVIMOT® flexible – 400 V, rated speed 6000 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, with encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.51	3.8							
	n_{pk}	min^{-1}	1919	1410							
	I_{pk}	%	300	277							
CMP50S	M_{pk}	Nm	3.97	4.63	5.2						
	n_{pk}	min^{-1}	3648	3134	2683						
	I_{pk}	%	300	300	285						
CMP50M	M_{pk}	Nm	4.64	5.65	6.93	8.22	10.1	10.3	10.3	10.3	10.3
	n_{pk}	min^{-1}	5041	4604	4085	3608	2937	2861	2861	2861	2861
	I_{pk}	%	300	300	300	300	300	244	180	137	107
CMP50L	M_{pk}	Nm		5.77	7.23	8.79	11.4	13.5	15.4	15.4	15.4
	n_{pk}	min^{-1}		5488	5025	4562	3879	3375	2943	2943	2943
	I_{pk}	%		300	300	300	300	300	274	208	163
CMP63S	M_{pk}	Nm		5.33	6.48	7.63	9.36	10.6	11.1	11.1	11.1
	n_{pk}	min^{-1}		5126	4613	4139	3492	3038	2852	2852	2852
	I_{pk}	%		300	300	300	300	300	245	186	145
CMP63M	M_{pk}	Nm				9	11.7	14.2	17.5	18.5	18.7
	n_{pk}	min^{-1}				5442	4837	4342	3730	3555	3511
	I_{pk}	%				300	300	300	300	250	200
CMP63L	M_{pk}	Nm					12.3	15.2	19.6	21	21.4
	n_{pk}	min^{-1}					5627	5172	4539	4345	4296
	I_{pk}	%					300	300	300	250	200
CMP71S	M_{pk}	Nm					10.6	12.8	15.7	16.5	16.7
	n_{pk}	min^{-1}					5110	4661	4217	4106	4079
	I_{pk}	%					300	300	300	250	200
CMP71M	M_{pk}	Nm							17.2	18.6	18.9
	n_{pk}	min^{-1}							4966	4762	4714
	I_{pk}	%							300	250	200
CMP71L	M_{pk}	Nm								21.2	21.7
	n_{pk}	min^{-1}								5778	5719
	I_{pk}	%								250	200
CMP80S	M_{pk}	Nm								20.6	21.1
	n_{pk}	min^{-1}								5359	5300
	I_{pk}	%								250	200
CMP80M	M_{pk}	Nm									22.6
	n_{pk}	min^{-1}									6027
	I_{pk}	%									200
CMP80L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

MOVIMOT® flexible – 400 V, rated speed 6000 min^{-1}, f_{PWM} = 8 kHz, non-ventilated, without encoder (in preparation)

Inverter			0020	0025	0032	0040	0055	0070	0095	0125	0160
	I_N	A	2	2.5	3.2	4	5.5	7	9.5	12.5	16
	I_{max}	A	6	7.5	9.6	12	16.5	21	28.5	31.3	32
Motor											
CMP40S	M_{pk}	Nm	1.89	1.9							
	n_{pk}	min^{-1}	4157	4124							
	I_{pk}	%	300	242							
CMP40M	M_{pk}	Nm	3.51	3.8							
	n_{pk}	min^{-1}	1919	1410							
	I_{pk}	%	300	277							
CMP50S	M_{pk}	Nm	3.97	4.63	5.2						
	n_{pk}	min^{-1}	3648	3134	2683						
	I_{pk}	%	300	300	285						
CMP50M	M_{pk}	Nm	4.64	5.65	6.93	8.22	10.1	10.3	10.3	10.3	10.3
	n_{pk}	min^{-1}	5041	4604	4085	3608	2937	2861	2861	2861	2861
	I_{pk}	%	300	300	300	300	300	244	180	137	107
CMP50L	M_{pk}	Nm		5.77	7.23	8.79	11.4	13.5	15.4	15.4	15.4
	n_{pk}	min^{-1}		5488	5025	4562	3879	3375	2943	2943	2943
	I_{pk}	%		300	300	300	300	300	274	208	163
CMP63S	M_{pk}	Nm		5.33	6.48	7.63	9.36	10.6	11.1	11.1	11.1
	n_{pk}	min^{-1}		5126	4613	4139	3492	3038	2852	2852	2852
	I_{pk}	%		300	300	300	300	300	245	186	145
CMP63M	M_{pk}	Nm				9	11.7	14.2	17.5	18.5	18.7
	n_{pk}	min^{-1}				5442	4837	4342	3730	3555	3511
	I_{pk}	%				300	300	300	300	250	200
CMP63L	M_{pk}	Nm						15.2	19.6	21	21.4
	n_{pk}	min^{-1}						5172	4539	4345	4296
	I_{pk}	%						300	300	250	200
CMP71S	M_{pk}	Nm						12.8	15.7	16.5	16.7
	n_{pk}	min^{-1}						4661	4217	4106	4079
	I_{pk}	%						300	300	250	200
CMP71M	M_{pk}	Nm							17.2	18.6	18.9
	n_{pk}	min^{-1}							4966	4762	4714
	I_{pk}	%							300	250	200
CMP71L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP80S	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP80M	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									
CMP80L	M_{pk}	Nm									
	n_{pk}	min^{-1}									
	I_{pk}	%									

26863707/EN – 07/2021

10.7 Thermal motor protection without temperature sensor

10.7.1 Description

Thermal motor protection without temperature sensor is an inverter function that can protect motors without temperature sensors (e.g. PTC thermistors, bimetallic switches) against overheating. The level of protection is similar to that of a thermal overload relay.

Thermal motor protection without temperature sensor has the following characteristics:

- Reduced cooling especially at lower speeds is taken into account.
- Insufficient cooling conditions and increased ambient temperature are not taken into account.
- In the event of overloads in the low speed range, increased winding temperatures may occur which may damage the winding or lead to premature aging of the motor.
- The cooling of the motor is stronger at low temperatures. For motors with temperature sensor, the temperature sensor measures an overtemperature only at increased motor utilization and switches off the motor. This increased motor utilization is not possible with thermal motor protection without a temperature sensor.

This means that thermal motor protection without a temperature sensor only represents basic protection. For complete thermal motor protection, SEW-EURODRIVE recommends using a temperature sensor.

10.7.2 Requirements

The following requirements must be met to use thermal motor protection without a temperature sensor:

Requirements	
Permitted inverters	• MOVIDRIVE® technology, system, modular • MOVIVITRAC® advanced • Decentralized inverters (MOVIMOT® advanced MOVIMOT® flexible)
Inverter firmware	MOVI-C®, firmware version 7.0 or later
Motor series	DRN.., DR2S..
Motor size	63 – 132M
Number of poles	4

26863707/EN – 07/2021

10.7.3 Boundary conditions

You may only use the thermal motor protection without temperature sensor if the following conditions are met:

Boundary conditions	
General	Observe the instructions in the documentation (operating instructions), in particular the chapters "Project planning" and "Technical data".
Type of cooling	Natural cooling
Ambient temperature	-20 °C to +40 °C
Thermal class of motor winding	155 (F), 180 (H)
Installation altitude	h ≤ 1000 m

You must **not** use the thermal motor protection without temperature sensor with the following motors:

- Motors with forced cooling fan
- Motors without fan
- Non-ventilated motors
- Third-party motors

For motors with speed sensor, SEW-EURODRIVE recommends using a temperature sensor.

10.7.4 Further information

Thermal motor protection without temperature sensor is activated when

- the inverter is in operation
- and the DC 24 V voltage supply is present.

Thermal motor protection without temperature sensor does not take into account the current motor temperature after a switch-on/switch-off process. Do **not** switch an overheated motor off and on again immediately. This leads to an overload again and damages the motor.

Perform a fault reset in the event of a fault message of the thermal motor protection without temperature sensor.

26863707/EN – 07/2021

10.8 Selecting an inverter

The selection of the inverter is based on the course of the output current over time. The required current has to be determined from the required torque characteristic of the connected motor.

The inverters are dimensioned for a nominal output current I_N. In many applications, there is a demand for short-time overload operation. For this purpose, the inverters can be operated with up to 300% of the nominal output current for a short period of time.

For overload operation, make sure that the inverter is not thermally overloaded. For protection of the power components, inverters have various monitoring mechanisms.

The following thermal monitoring functions are available:

- Dynamic utilization

  The periodic current load of the switching power semiconductors lets them heat and cool down cyclically. Due to the different thermal time constants, large temperature differences can occur between power semiconductor and heat sink. Dynamic utilization monitors the permitted temperature of the barrier layer of the power semiconductors.

- Thermal capacity utilization

  The power semiconductors are limited by the maximally permitted temperature during operation. Thermal utilization monitors the heat sink temperature of the power semiconductors.

- Electromechanical utilization (I^2t utilization)

  Electromechanical utilization protects the components that have a large thermal time constant compared to the power semiconductors.

Due to the complexity of the utilization curves, the calculation can only be performed using software. The SEW-Workbench project planning software offers supports for dimensioning an inverter.

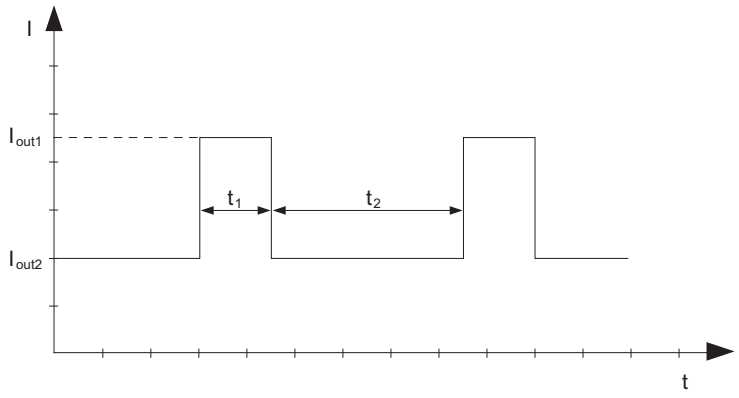
For a rough selection of the inverter without using the project planning software, characteristic load cycles are given in the following section.

26863707/EN – 07/2021

10.8.1 Overload capacity

Load cycle with base load current – typical for the selection of asynchronous and servomotors

The characteristic load cycle consists of a load and a load relief period. In the load relief period, the output current must not exceed the specified value. After this load relief period, overload is possible again.



18014415982173963

Overload capacity at f_{PWM} = 4 kHz, f_A ≥ 3 Hz

Overload current $I_{out\ 1}/I_N$	Overload time t_1	Base load current $I_{out\ 2}/I_N$	Required pause interval t_2
200%	3 s	50%	7 s
200%	3 s	100%	17 s
150%	60 s	100%	60 s
150%	60 s	50%	30 s

26863707/EN – 07/2021

10.8.2 Derating

Due to the following operating and ambient conditions, a reduction of the output current may be necessary.

Derating due to the rotary field frequency

The specified nominal output current I_N of the inverter is the rms value. The increased load on the power semiconductors has to be considered especially for slow rotating fields and rotating fields at standstill. In case of a rotating field at standstill, direct current that can correspond to the peak value of the sine current depending on the phase position is flowing.

It is particularly important to consider output frequencies f_A < 3 Hz.

Observe the overload capacity of the device as stated in chapter "Output at design MMF.1.." (→ 🗎 376).

Derating depending on the installation altitude

Observe the derating according to chapter "Mechanical installation" > "Setting up the device" > "Derating depending on the installation altitude".

Derating depending on the ambient temperature

Also observe derating as specified in chapter "Technical data and dimension sheets" > "Technical data" > "Derating factors" > "Derating depending on the ambient temperature".

26863707/EN – 07/2021

10.9 Selecting the braking resistor

10.9.1 Information on ambient temperature

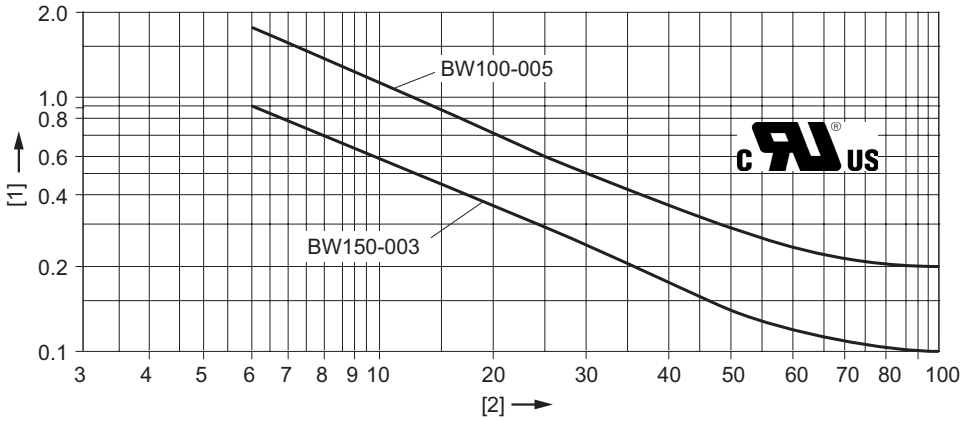
For ambient temperatures of more than +40 °C, the continuous power must be reduced by 4% for every 10 K. The tripping current must be reduced by 2% for every 10 K.

Do not exceed a maximum ambient temperature of 80 °C.

10.9.2 Technical data of BW100-005/K-1.5 and BW150-003/K-1.5

Power diagrams

The following figure shows the rating diagrams of the braking resistors BW100-005/K-1.5, BW150-003/K-1.5:



25298658059

[1] Power in KW
[2] Cyclic duration factor cdf in %

26863707/EN – 07/2021

10.9.3 Selection criteria

The selection of the braking resistor takes place via the SEW-Workbench. The required selection parameters for the braking resistor are calculated during the project planning procedure. Depending on these selection parameters, a braking resistor is selected from the table.

The following selection parameters are the basis for selecting the braking resistor.

Continuous braking power

The minimum required continuous braking power (braking power at 100% cdf) of the braking resistor for load cycles can be calculated using the relative cyclic duration factor cdf and the overload factor k.

If the cyclic duration factor cdf is unknown, it can be calculated from the cycle duration t_{tot} and the braking time t_B using the following formula:

$$cdf = \frac{t_B}{t_{tot}} \text{ x } 100\ \%$$

9007219434171531

ED Cyclic duration factor
t_B Braking time
t_{tot} Cycle duration

INFORMATION

The cycle duration must not exceed 120 s.

The overload factor OF can be determined using the diagrams in chapter "Overload factor OF" and the cyclic duration factor cdf.

The value of the average braking power P_B is taken from the project planning data of the application:

$$P_B = \frac{|P_1| \times t_1 + |P_2| \times t_2 + ... + |P_n| \times t_n}{t_1 + t_2 + ... + t_n}$$

20179436555

P_B Average braking power
P_n Braking power section n
t_n Braking time section n

The minimum required braking power at 100% cdf is calculated using the following formula:

$$P_{100\%ED} = \frac{P_B}{k}$$

20179441035

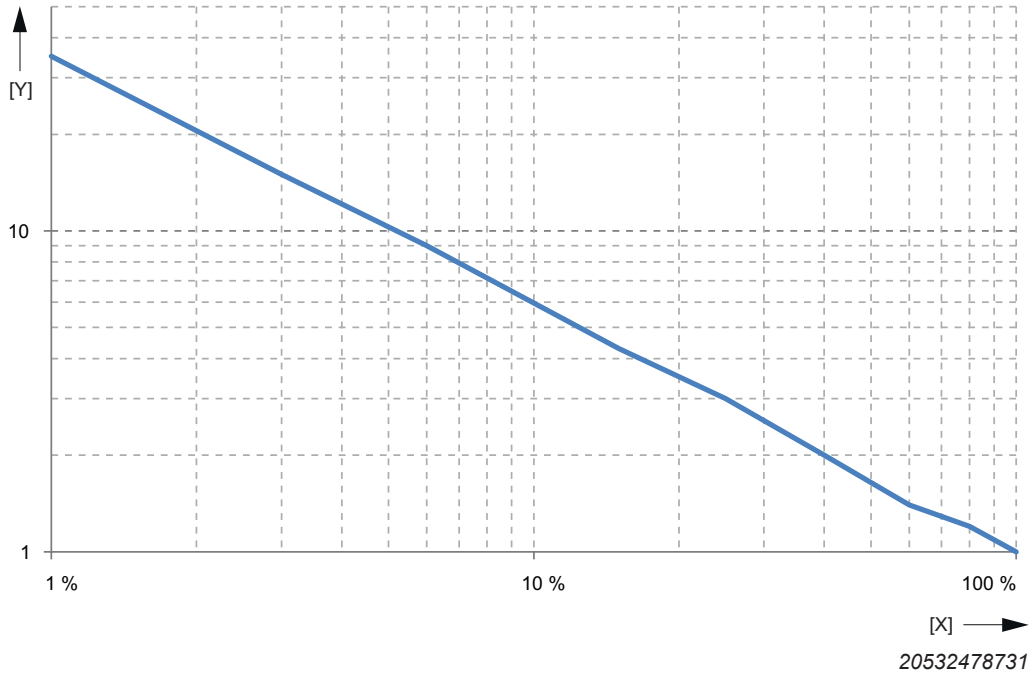
$P_{100\%cdf}$ Braking power at 100% cdf
P_B Average braking power
k Overload factor

The braking power required by the application at 100% cdf must be smaller than or equal to the typical braking power at 100% cdf (continuous braking power) of the braking resistor.

26863707/EN – 07/2021

Overload factor OF

Flatpack resistors



..% ED	1	3	6	15	25	40	60	80	100
OF	35	15	9	4.3	3	2	1.4	1.2	1

26863707/EN – 07/2021

Peak braking power

The maximum permitted peak braking power is specified by the resistance value and the DC link voltage.

The maximum peak braking power required by the application is calculated from the regenerative parts within a cycle.

The peak braking power required by the application must be lower than the maximum permitted peak braking power of the braking resistor.

The permitted peak braking power of the braking resistor is calculated as follows:

$$P_{max} = \frac{U_{ZK\,max}^2}{R \times 1.4}$$

15156065419

P_{max} Maximum peak braking power that the braking resistor can absorb
U_{DCL_max} Maximum DC link voltage
R Braking resistance value

The peak braking power for each braking resistor is specified in chapter "Braking resistors".

Current-carrying capacity of the brake chopper

The resistance value of the braking resistor R_{BR} must not be lower than the minimum permitted braking resistance R_{BRmin}. This ensures that the brake chopper is not damaged.

$$R_{BR} \geq R_{BRmin}$$

The continuous braking power toward the braking resistor must not exceed the apparent output power of the frequency inverter.

26863707/EN – 07/2021

10.9.4 Calculation example

Given

- Peak braking power: 1 kW
- Average braking power: 0.4 kW
- Braking time: 7 s
- Cycle duration: 28 s

Required

- Braking resistor BW...

Calculation

1. **Determining the cyclic duration factor**
   - Cyclic duration factor cdf = braking time/cycle duration
   - Cyclic duration factor cdf = (7 s/28 s) × 100% = 25%

   When selecting the braking resistor, observe the assignment of inverter and braking resistor, see chapter "Technical data and dimension sheers" > "Braking resistors".
2. **Determine the overload capacity**

   Determining the overload factor, e.g. for a flatpack resistor at a cyclic duration factor cdf of 25% from the respective diagram.
   - Overload factor OF = 3.0
3. **Calculating the braking power at 100% cdf**
   - Braking power 100% cdf = average braking power/overload factor
   - Braking power 100% ED = 0.4 W/3.0 = 0.133 kW
   - The braking power of the braking resistor at 100% cdf must be ≥ 0,133 kW.
4. **Selecting the braking resistor**
   - For MOVIMOT® flexible, the minimum permitted braking resistance value = 100 Ω, see chapter "Technical data and dimension sheets".
   - Selected braking resistor: BW100-005/K1.5
   - Resistance value R_{BW} = 100 Ω
   - Peak braking power: 1.8 kW
   - Current-carrying capacity at 100% cdf: 0.2 kW

26863707/EN – 07/2021

10.9.5 Supply cable for braking resistor

Use only shielded cables.

The cable cross section depends on the tripping current I_F.

The nominal voltage of the cable must amount to at least V_0/V = 300 V / 500 V.

10.9.6 Protection against thermal overload of the braking resistor

To avoid thermal damage of the braking resistor as well as subsequent damage, the braking resistor has to be thermally monitored. SEW-EURODRIVE suggests the following options:

- TCB thermal circuit breaker

  The TCB thermal circuit breaker is installed in the control cabinet, connected to the supply cable to the braking resistor and set to the tripping current of the braking resistor. If the measured mean current exceeds the tripping current, an NC contact switches and reports an overload of the braking resistor. The connection of braking resistor and inverter is separated simultaneously, thus ending the generator mode.

- Integrated temperature switch –T

  Braking resistors with the label –T are equipped with an integrated temperature switch. The temperature switch is thermally coupled to the braking resistor and switches an NC contact in case of overtemperature of the braking resistor. The braking resistor-inverter connection is not interrupted. In case of thermal overload, the regenerative operation has to be terminated. SEW-EURODRIVE recommends shielding the connection cable of the temperature switch.

- Thermal overload relay

  A thermal overload relay is installed in the control cabinet, connected to the supply cable to the braking resistor and set to the tripping current of the braking resistor. If the measured mean current exceeds the tripping current, an NC contact switches and reports an overload of the braking resistor. The braking resistor-inverter connection is not interrupted. In case of thermal overload, the regenerative operation has to be terminated.

10.9.7 Parallel connection of braking resistors

It is permitted to connect several identical braking resistors in parallel. The following applies:

- The power connections of the braking resistors must be connected to +R and –R in parallel.
- Each braking resistor requires a separate protection against thermal overload.
- The signal contacts (NC contacts) of the protection devices must be connected in series.

26863707/EN – 07/2021

11 Technical data and dimension sheets

11.1 Markings

11.1.1 CE marking

- Low Voltage Directive:

  The documented device series fulfills the regulations of the low voltage directive 2014/35/EU.

- Electromagnetic compatibility (EMC):

  The devices are designed for use as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Adjustable-speed electrical drives". Provided that the installation notes are followed, the requirements for CE marking of the entire machine/system equipped with these units on the basis of the EMC Directive 2014/30/EU are met. For detailed information about EMC-compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Technology" from SEW-EURODRIVE.

- Ecodesign Directive 2009/125/EC

The CE mark on the nameplate represents conformity with the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

11.1.2 UKCA mark

The UKCA mark states the compliance with the following British guidelines:

- Low Voltage Directive S.I. 2016/1101[1)]
- EMC S. I. 2016/1091
- Machinery Safety S. I. 2008/1597
- Directive S. I. 2012/3032 for limiting the use of certain hazardous substances in electric and electronic equipment
- Ecodesign Regulation S. I. 2019/539

1) For products with functional safety, the requirements from the Low Voltage Directive are fulfilled by the Machinery Safety S.I. 2008/1597.

11.1.3 UL approval

The certification mark UL Listed on the nameplate confirms the UL and cUL approval (USA). cUL is equal to the approval according to CSA.

11.1.4 EAC

The documented device series fulfills the requirements of the technical regulations of the Customs Union of Russia, Kazakhstan, and Belarus.

The EAC marking on the nameplate certifies the conformity with the safety requirements of the Custom Union.

26863707/EN – 07/2021

11.1.5 UA.TR (Declaration of conformity to Technical Regulation of Ukraine)

The UA.TR mark on the nameplate certifies adherence to the technical regulations of Ukraine for the documented device series.

11.1.6 RCM approval

The RCM approval has been granted for the documented unit series.

The RCM mark on the nameplate certifies the conformity with ACMA (Australian Communication and Media Authority).

11.2 General information

11.2.1 Air admission and accessibility

When installing the driven machine, make sure there is enough space in axial and radial direction for a sufficient supply of cooling air and unobstructed heat dissipation.

26863707/EN – 07/2021

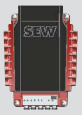
11.3 Technical data

11.3.1 General technical data

Input at design MMF.1..

MOVIMOT® flexible flange size electronics cover		**MMF.1..**				
Size of electronics cover		**Size 1 without cooling fins**			**Size 1 with cooling fins**	
Type of electronics cover		**DFC...-0020...**	**DFC...-0025...**	**DFC...-0032...**	**DFC...-0040...**	**DFC...-0055...**
Nominal output current		**2.0 A**	**2.5 A**	**3.2 A**	**4.0 A**	**5.5 A**
Nominal supply voltage AC (to EN 50160)	U_{line}	3 × AC 380 V – 500 V				
Nominal line current	I_{line}	1.8 A	2.3 A	2.9 A	3.6 A	5.0 A
	I_{max}	6.0 A	7.5 A	9.6 A	12.0 A	12.0 A
Line frequency	f_{line}	50 – 60 Hz ± 5%				

Input at design MMF.2..

MOVIMOT® flexible flange size electronics cover		**MMF.2..**			
Size of electronics cover		**Size 2 without fan**		**Size 2 with fan** 	
Type of electronics cover		**DFC...-0070...**	**DFC...-0095...**	**DFC...-0125...**	**DFC...-0160...**
Nominal output current		**7.0 A**	**9.5 A**	**12.5 A**	**16.0 A**
Nominal supply voltage AC (to EN 50160)	U_{line}	3 × AC 380 V – 500 V			
Nominal line current	I_{line}	6.3 A	8.55 A	11.3 A	14.4 A
	I_{max}	21.0 A	28.5 A	31.25 A	32.0 A
Line frequency	f_{line}	50 – 60 Hz ± 5%			

26863707/EN – 07/2021

Output at design MMF.1..

MOVIMOT® flexible flange size electronics cover		MMF.1..				
Size of electronics cover		Size 1 without cooling fins			Size 1 with cooling fins	
Type of electronics cover		DFC...-0020...	DFC...-0025...	DFC...-0032...	DFC...-0040...	DFC...-0055...
Nominal output current		2.0 A	2.5 A	3.2 A	4.0 A	5.5 A
Motor power asynchronous motor	P_{Mot}	0.55 kW	0.75 kW	1.1 kW	1.5 kW	2.2 kW
Output voltage	V_A	0 – U_{line}				
Nominal output current f_{PWM} = 4 kHz	I_N	2.0 A	2.5 A	3.2 A	4.0 A	5.5 A
Apparent output power	S_N	1.4 kVA	1.7 kVA	2.2 kVA	2.8 kVA	3.8 kVA
Overload capacity of I_N at f_{PWM} = 4 kHz	U_{line} = 400 V	300%				f_{off} < 3 Hz: 220% f_{off} ≥ 3 Hz: 300%
	U_{line} = 500 V	f_{off} < 3 Hz: 270% f_{off} ≥ 3 Hz: 300%				f_{off} < 3 Hz: 200% f_{off} ≥ 3 Hz: 280%
PWM frequency	f_{PWM}	4/8/16 kHz (adjustable)				
Max. output frequency	f_{max}	U/f: 599 Hz VFC^{PLUS}: 250 Hz		CFC: 500 Hz ELSM®: 500 Hz		
Max. permitted cable length		15 m				

26863707/EN – 07/2021

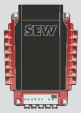
Output at design MMF.2..

MOVIMOT® flexible flange size electronics cover		MMF.2..			
Size of electronics cover		Size 2 without fan		Size 2 with fan	
Type of electronics cover		DFC...-0070...	DFC...-0095...	DFC...-0125...	DFC...-0160...
Nominal output current		7.0 A	9.5 A	12.5 A	16.0 A
Motor power asynchronous motor	P_{Mot}	3.0 kW	4.0 kW	5.5 kW	7.5 kW
Output voltage	V_A	0 – U_{line}			
Nominal output current f_{PWM} = 4 kHz	I_N	7.0 A	9.5 A	12.5 A	16.0 A
Apparent output power	S_N	4.9 kVA	6.6 kVA	8.7 kVA	11.1 kVA
Overload capacity of I_N at f_{PWM} = 4 kHz, U_{line} = 400 V	U_{line} = 400 V	f_{off} < 3 Hz: 235% f_{off} ≥ 3 Hz: 300%		f_{off} < 3 Hz: 195% f_{off} ≥ 3 Hz: 250%	f_{off} < 3 Hz: 155% f_{off} ≥ 3 Hz: 200%
	U_{line} = 500 V	f_{off} < 3 Hz: 215% f_{off} ≥ 3 Hz: 300%		f_{off} < 3 Hz: 175% f_{off} ≥ 3 Hz: 250%	f_{off} < 3 Hz: 140% f_{off} ≥ 3 Hz: 200%
PWM frequency	f_{PWM}	4/8/16 kHz (adjustable)			
Max. output frequency	f_{max}	U/f: 599 Hz VFC^{PLUS}: 250 Hz		CFC: 500 Hz ELSM®: 500 Hz	
Max. permitted cable length		15 m			

26863707/EN – 07/2021

Brake chopper and braking resistor

MOVIMOT® flexible flange size electronics cover		MMF.1..				
Size of electronics cover		**Size 1 without cooling fins**			**Size 1 with cooling fins**	
Type of electronics cover		**DFC...-0020...**	**DFC...-0025...**	**DFC...-0032...**	**DFC...-0040...**	**DFC...-0055...**
Nominal output current		**2.0 A**	**2.5 A**	**3.2 A**	**4.0 A**	**5.5 A**
Minimum braking resistance	R_{BWmin}	100 Ω				
Brake chopper Continuous power		550 W	750 W	900 W	900 W	900 W
Brake chopper Peak power		300% × apparent output power S_N × 0.9				225% S_N x 0.9

MOVIMOT® flexible flange size electronics cover		MMF.2..			
Size of electronics cover		**Size 2 without fan**		**Size 2 with fan** 	
Type of electronics cover		**DFC...-0070...**	**DFC...-0095...**	**DFC...-0125...**	**DFC...-0160...**
Nominal output current		**7.0 A**	**9.5 A**	**12.5 A**	**16.0 A**
Minimum braking resistance	R_{BWmin}	47 Ω		33 Ω	
Brake chopper Continuous power		4.9 kW	6.6 kW	8.7 kW	11.1 kW
Brake chopper Peak power		300% × apparent output power S_N × 0.9		250% S_N x 0.9	200% S_N x 0.9

26863707/EN – 07/2021

Installation location

MOVIMOT® flexible flange size electronics cover		MMF.1.. and MMF.2..	
Ambient temperature		See chapter "Environmental conditions"	
Degree of protection	IP	**Devices without fan:** (MMF.1.. and MMF.2.. without fan)	IP65 according to EN 60529 • Enclosed housing • All cable bushings are sealed • With MMF3..: Cover screw plug at the protective housing of the front module is tightened (tightening torque: 1.2 – 1.4 Nm)
		Devices with fan: (MMF.2.. with fan)	IP54 according to EN 60529 • Enclosed housing • All cable bushings are sealed
Pollution class		2 in accordance with IEC 60664-1	
Overvoltage category		III in accordance with IEC 60664-1	
Installation altitude	h	Up to h ≤ 1000 m: without restrictions The following restrictions apply to altitudes > 1000 m: • From 1000 m to max. 3800 m: I_N reduction by 1% per 100 m • From 2000 m to max. 3800 m: To maintain protective separation and the air gaps and creeping distances in accordance with EN 61800-5-1, you have to connect an overvoltage protection device in order to reduce the overvoltages from category III to category II.	
Proof of mechanical strength		**MMF1. Size 1:**	• 3M7 according to DIN EN 60721-3-3: 1995 • 5M2 according to DIN EN 60721-3-5: 1997
		MMF3. Size 1: and **MMF3. Size 2:**	• 3M5 according to DIN EN 60721-3-3: 1995 • 5M1 according to DIN EN 60721-3-5: 1997

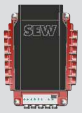
26863707/EN – 07/2021

General design MMF.1..

MOVIMOT® flexible flange size electronics cover		MMF.1..				
Size of electronics cover		**Size 1 without cooling fins**			**Size 1 with cooling fins**	
Type of electronics cover		**DFC...-0020...**	**DFC...-0025...**	**DFC...-0032...**	**DFC...-0040...**	**DFC...-0055...**
Nominal output current		**2.0 A**	**2.5 A**	**3.2 A**	**4.0 A**	**5.5 A**
Power section Nominal power loss	P_V	19 W	24 W	31 W	40 W	58 W
Permitted number of times power may be switched on/ off		1 × per minute				
Minimum switch-off time for Power off		10 s				
Operating mode		S1, DB according to EN 60034-1				
Type of cooling		Natural cooling				
Signaling functions		Display elements on the housing to indicate the device state				
Required preventive measure		Grounding the device				
Current carrying capacity of terminals		See chapter "Current carrying capacity of the terminals". For more information, refer to chapter "Electrical installation" > "Installation instructions" > "Permitted cable cross section of terminals"				
Interference immunity		EN 61800-3; 2. Environment (industrial environment)				
Interference emission		EN 61800-3 category C3 (with IT systems, **no** EMC category is specified)				
Mass		MMF1. = 3.5 kg MMF3. = 5.0 kg			MMF1. = 4.0 kg MMF3. = 5.5 kg	

26863707/EN – 07/2021

General design MMF.2..

MOVIMOT® flexible flange size electronics cover		MMF.2..			
Size of electronics cover		**Size 2 without fan**		**Size 2 with fan** 	
Type of electronics cover		**DFC...-0070...**	**DFC...-0095...**	**DFC...-0125...**	**DFC...-0160...**
Nominal output current		**7.0 A**	**9.5 A**	**12.5 A**	**16.0 A**
Power section Nominal power loss	P_V	90 W	120 W	153 W	191 W
Permitted number of times power may be switched on/ off		1 × per minute			
Minimum switch-off time for Power off		10 s			
Operating mode		S1, DB according to EN 60034-1			
Type of cooling		Natural cooling		Cooling by fan	
Signaling functions		Display elements on the housing to indicate the device state			
Required preventive measure		Grounding the device			
Current carrying capacity of terminals		See chapter "Current carrying capacity of the terminals". For more information, refer to chapter "Electrical installation" > "Installation instructions" > "Permitted cable cross section of terminals"			
Interference immunity		EN 61800-3; 2. Environment (industrial environment)			
Interference emission		EN 61800-3 category C3 (with IT systems, **no** EMC category is specified)			
Mass		9.5 kg	9.5 kg	10 kg	10 kg

26863707/EN – 07/2021

11.3.2 Environmental conditions

Environmental conditions	
Climatic conditions	• Extended storage: EN 60721-3-1 class 1K2 Ambient temperature -25 °C to +70 °C • Transport: EN 60721-3-2 class 2K3 Ambient temperature -25 °C to +70 °C • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3K3 Ambient temperature -20 °C to +60 °C (standard), -30 °C to +60 °C[1] (in preparation) Non-condensing, no moisture condensation. $I_{N\ motor}$ reduction: 3% I_N per K at 40 °C to 60 °C
Chemically active substances	• Extended storage: EN 60721-3-1 class 1C2 • Transport: EN 60721-3-2 class 2C2 • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3C2
Mechanically active substances	• Extended storage: EN 60721-3-1 class 1S1 • Transport: EN 60721-3-1 class 2S1 • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3S1

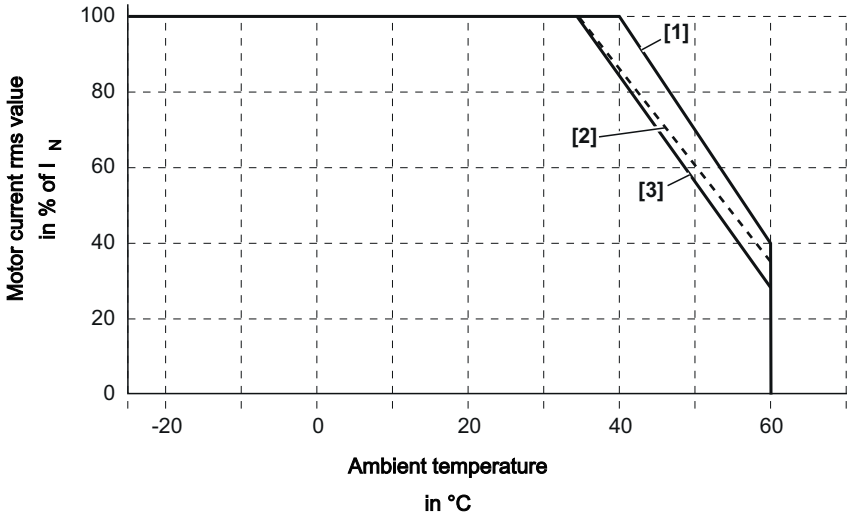
1) For ambient temperatures below -20 °C not all designs (e.g. designs with M23 plug connector) are available.

26863707/EN – 07/2021

11.3.3 Derating factors

Derating depending on the ambient temperature

The following figure shows the $I_{N\ motor}$ reduction depending on the ambient temperature:



31311096843

[1] 3 % I_N per K at 40 °C to 60 °C
[2] 2.5 % I_N per K at 35 °C to 60 °C
Only for MOVIMOT® flexible with an electronics cover 5.5 A and option /B (brake control)
[3] 3 % I_N per K at 35 °C to 60 °C
Only for MOVIMOT® flexible with an electronics cover 9.5 A and nominal supply voltage U_{line} > 3 x AC 400 V

Derating depending on the installation altitude

Observe the derating according to chapter "Mechanical installation" > "Setting up the device" > "Derating depending on the installation altitude".

Notes

INFORMATION

Derating is based on typical operating conditions with a supply voltage of 24 V (sensor supply, input voltage of STO input).

11.3.4 Current carrying capacity of terminals

Current carrying capacity of terminals		
Line terminals	X1	24 A (max. loop-through current)
Control terminals	X9	10 A (max. loop-through current)

11.3.5 DC 24 V supply

Input for the independent backup voltage supply of the electronics		
DC 24 V input	24V_IN	U_{IN} = DC 24 V -10%/+20% according to EN 61131-2
	0V24_IN	Current consumption: I_E ≤ 500 mA, typically 100 mA for electronics • Plus up to 100 mA, for sensor supply

11.3.6 DC 24 V output

Internal voltage supply for the sensors		
DC 24 V output X9	24V_OUT	U_{OUT} = DC 24 V -10%/+20% according to EN 61131-2
	0V24_OUT	External-voltage-proof and short-circuit proof Permitted output current: I_{OUT} ≤ 100 mA

11.3.7 Digital inputs

Digital inputs	
Number of inputs	4
Input type	PLC-compatible according to EN 61131-2 (digital inputs type 3) DI01 – DI04: R_i ≈ 4.5 kΩ, sampling cycle ≤ 2 ms Signal level DC +11 to +30 V = "1" = Contact closed DC -3 to +5 V = "0" = Contact open
Sensor/actuator supply	DC 24 V to EN 61131-2, External-voltage-proof and short-circuit proof
Maximum line length	30 m
Permitted total current for internal supply	100 mA (total of all connected sensors/actuators, maximum individual load: 100 mA)
Permitted total current for external supply	100 mA (total of all connected sensors/actuators, maximum individual load: 100 mA)

11.3.8 Relay output

Relay output	
Response time	≤ 15 ms
Contact details	DC 24 V/50 mA (DC 12 according to IEC 60947-5-1) (only SELV or PELV circuits)

26863707/EN – 07/2021

11.3.9 Technical data for the AS-interface

Technical data

AS-Interface	
External electronics supply	AS-Interface: 29.5 – 31.6 V (AS-Interface power supply unit according to EN 50295) I_E AS-Interface: ≤ 50 mA (typically 30 mA at 30 V)
Control input	Pin AS+: Connection of the AS-interface data line Pin AS- : Connection of the AS-interface data line

slave profile

Slave profile AS-Interface							
Slave type	**Number of data bits**	**AS-Interface slave profile**	**I/O configu-ration**	**ID code**	**Ext. ID-code 1**	**Ext. ID code 2**	**Address range**
Binary slave	4DI/4DO	S-7.F	7_{hex}	–	F_{hex} [1]	–	1 – 31
A/B-slave	4DI/4DO	S-7.A.7	7_{hex}	A_{hex}	7_{hex}	–	1A – 31A, 1B – 31B
	8DI/8DO	S-7.A.A	7_{hex}	A_{hex}	A_{hex}	–	1A – 31A, 1B – 31B
Double slave	4DI/4DO	A: S-7.A.7 B: S-7.A.5	7_{hex} 7_{hex}	A_{hex} A_{hex}	7_{hex} 5_{hex}	–	1A and 1B – 31A and 31B
	8DI/8DO	A: S-7.A.A B: S-7.A.5	7_{hex} 7_{hex}	A_{hex} A_{hex}	A_{hex} 5_{hex}	–	1A and 1B – 31A and 31B

1) The external ID code1 can be changed for the binary slave.

11.3.10 Electronics data – Safety sub-function

The table below shows the technical data for the drive unit relating to the integrated safety technology.

The safe digital inputs comply with type 3 according to IEC 61131-2.

Reference potential for the F_STO_P1 and F_STO_P2 is F_STO_M (contact at terminal X9:11).

		Terminal designation	General electronics data		
Safety contact STO		X9			
Electrical data of inputs F_STO_P1, F_STO_P2			**Minimum**	**Typical**	**Maximum**
Input voltage range		X9:1 and X9:21	DC -3 V	DC 24 V	DC 30 V
Input capacitance against STO_M			–	300 pF	500 pF
Input capacitance against GND			–	300 pF	500 pF
Power consumption at DC 24 V	F_STO_P1		–	150 mW	200 mW
	F_STO_P2		–	150 mW	200 mW
	Sum[1]		–	300 mW	400 mW
Input voltage for ON status (STO)			DC 11 V	–	–
Input voltage for OFF status (STO)			–	–	DC 5 V
Permitted leakage current of the external safety controller			–	–	1 mA
Technical data					
Time from disconnecting the safety voltage until deactivation of the rotating field			–	1.5 ms	10 ms 2 ms[2]
Time from connecting the safety voltage until activation of the rotating field			–	–	110 ms

1) Each drive unit always requires a power consumption of 300 mW.

2) Only when a safety card by SEW-EURODRIVE is used

26863707/EN – 07/2021

11.3.11 Technical data of encoder options /AZ1Z

Encoder option	Single-turn resolution (Position resolution per motor revolution)		Multi-turn resolution (Max. counter for complete motor revolutions)		Interface connection:
/AZ1Z Multiturn absolute encoder	12 bits	4096 inc.	16 bits	32 767 -32 768	MOVILINK® DDI, coaxial

11.3.12 Technical data of the CBG.. keypads

Keypad	CBG11A	CBG21A
Part number	28232646	28238133
Interfaces	D-sub, 9-pin, female (CAN interface)	
	USB 2.0 mini B, female (PC connection)	
Operating temperature	0 to 60 °C	
Degree of protection	IP40 according to EN 60529	
Dimensions H × W × D	100 × 45 × 20 mm	110 × 65 × 20 mm
Display size H × W	23 × 28.5 mm	37 × 49 mm
Screen diagonal	1.5" (38 mm)	2.4" (61 mm)
Display resolution H × W	64 × 78 pixels	240 × 320 pixels

26863707/EN – 07/2021

11.4 Brake control

INFORMATION

MOVIMOT® flexible has the following brake control types:

- HV brake control (integrated in the electronics cover, duty type option /B)
- DC 24 V brake control (integrated in the connection box of MOVIMOT® flexible, option /BES)

→ If you install an electronics cover with HV brake control onto a MOVIMOT® flexible with DC 24 V brake control, only the DC 24 V brake control is active.

→ Do not operate 3-line DC 24 V brakes at the DC 24 V brake control.

Supported brakes	HV brake control[1)]	DC 24 V brake control[2)]
Brake types	Brakemotors from SEW-EURODRIVE with a 2 or 3-wire brake, e.g.: • BE.. • BZ..	Brakemotors from SEW-EURODRIVE with a 2-wire DC brake, e.g.: • BP.. • BK.. 3-wire brakes are not permitted, e.g.: • BZ.. with 24 V
	Third-party motors with 2 or 3-wire brake	Third-party motors with 2-wire DC brake 3-wire brakes are not permitted.
Nominal voltage of the brake	AC 110 V to AC 500 V DC 50 V to DC 225 V	DC 24 V
Holding current of the brake (I_H)	max. 0.6 A	max. 3.0 A

Control modes	HV brake control[1)]	DC 24 V brake control[2)]
Control of the brake	PWM frequency from DC link of the inverter	DC 24 V brake control via integrated /BES brake rectifier. Voltage supply of the integrated /BES brake rectifier must be realized externally using the X1523 plug connector.
	Voltage level of the DC link: DC 540 V to DC 970 V	

Preferred brakes	HV brake control[1)]	DC 24 V brake control[2)]
Preferred brakes allow for extended functionality in combination with the HV brake control, see "Extended functions of the brake control with preferred brakes".	Brake from SEW-EURODRIVE: • BE.. • BZ..	For DC 24 V brake control, no preferred brakes are available.
	With nominal voltage: • AC 120 V • AC 230 V • AC 400 V	

26863707/EN – 07/2021

Functions of the brake control	HV brake control[1)]	DC 24 V brake control[2)]
Standard functions	Voltage-controlled PWM control	Apply/release brake
	Apply/release brake	
Extended functions of the brake control with preferred brakes	Current-controlled PWM control	The integrated /BES brake rectifier does not extend the range of functions.
	Brake is released faster	
	Dissipating the regenerative energy	
	More functions (in preparation)	

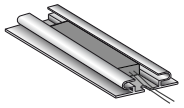
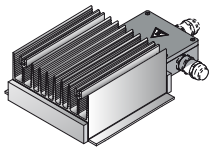
1) See duty type /B on the nameplate of the electronics cover.

2) See /BES option on the nameplate of the MOVIMOT® flexible device.

11.5 Braking resistors

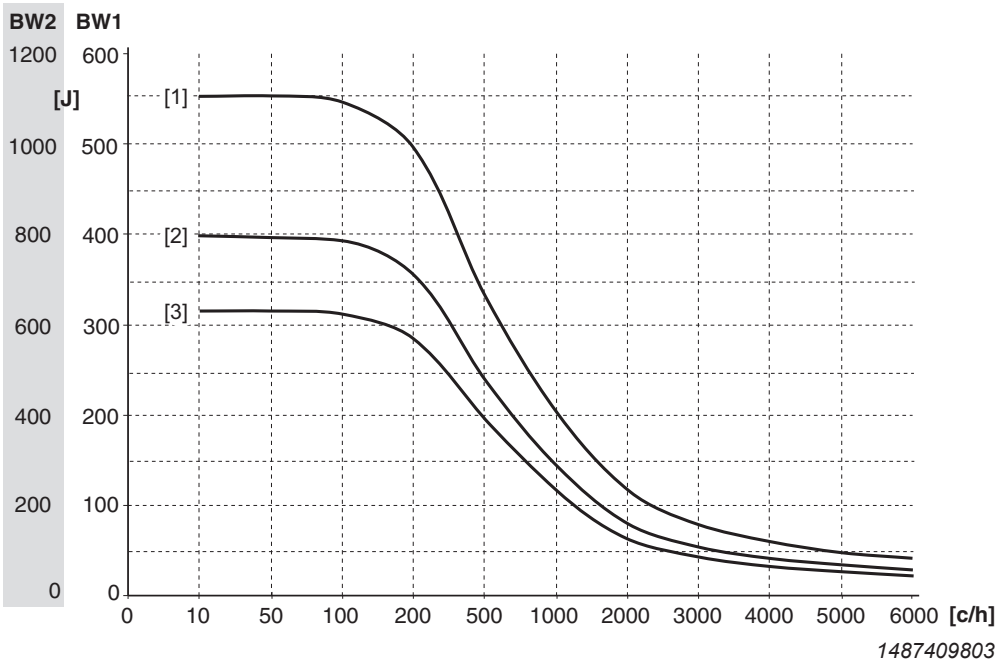
11.5.1 Overview

MOVIMOT® flexible is equipped with a brake chopper. The following table shows their possible use in regenerative mode:

Application	Inverter	Dissipation of regenerative energy
		Brake chopper
Small amount of regenerative energy	MOVIMOT® flexible	Integrated braking resistor 
Medium/large amount of regenerative energy	MOVIMOT® flexible	External braking resistor 

11.5.2 Integrated BW1/BW2 braking resistor

The following diagram shows the current-carrying capacity of the BW1/BW2 braking resistor per braking operation:



[1] Deceleration ramp 10 s
[2] Deceleration ramp 4 s
[3] Deceleration ramp 0.2 s
c/h Cycles/hour

Calculation example

The known values are:

- Average braking power: 144 W
- Deceleration ramp: 2 s
- 200 brake applications per hour

Calculating the energy from the power of the deceleration ramp:

$$W = P \times t$$
$$W = 144\ W \times 2\ s$$
$$W = 288\ J$$

25296909835

For the deceleration ramp of 2 s, you can use deceleration ramp [3] (0.2 s) in the diagram. Use the characteristic curve with the shorter deceleration ramp because a shorter deceleration ramp means more braking energy.

The diagram permits 290 J of braking energy for the 0.2 s deceleration ramp and 200 cycles per hour. In this case, the required 288 J can be dissipated via BW1.

11.5.3 External braking resistor

Operation with external braking resistor is necessary for applications with a large amount of regenerative energy.

The following table shows the external braking resistors.

26863707/EN – 07/2021

Overview of external braking resistors

Technical data

The following table shows technical data of the external braking resistors.

Braking resistor Type	Part number	Resistance in Ω	Continuous power in W
BW150-003/K-1.5	8282927	150	100
BW150-006-T	17969565	150	600
BW100-005/K-1.5	8282862	100	200
BW100-009-T	17969573	100	900
BW068-006-T[1)]	17970008	68	600
BW068-012-T[1)]	17970016	68	1200
BW050-008-001[1)]	17962242	50	800
BW033-012-01[1)]	17962196	33	1200

1) These braking resistors are not permitted in conjunction with MOVIGEAR® performance.

Assignment

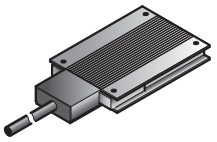
The following table shows the assignment of the external braking resistors to the electronics covers:

Electronics cover									
Size	**Size 1 without cooling fins**			**Size 1 with cooling fins**		**Size 2 without fan**		**Size 2 with fan**	
Nominal output current in A	**2.0**	**2.5**	**3.2**	**4.0**	**5.5**	**7.0**	**9.5**	**12.5**	**16.0**
Performance class in kW	**0.55**	**0.75**	**1.1**	**1.5**	**2.2**	**3.0**	**4.0**	**5.5**	**7.5**
Braking resistor									
Type	**Assignment**[1)]								
BW150-003/K-1.5	x	x	x	x	x	x	x	x	x
BW150-006-T	x	x	x	x	x	x	x	x	x
BW100-005/K-1.5	x	x	x	x	x	x	x	x	x
BW100-009-T	x	x	x	x	x	x	x	x	x
BW068-006-T[2)]						x	x	x	x
BW068-012-T[2)]						x	x	x	x
BW050-008-001[2)]						x	x	x	x
BW033-012-01[2)]								x	x

1) "x": You can use the braking resistor together with this electronics cover.

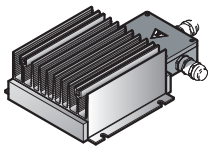
2) These braking resistors are not permitted in conjunction with MOVIGEAR® performance.

BW100-005/K-1.5, BW150-003/K-1.5



Type	BW100-005/K-1.5	BW150-003/K-1.5
Part number	08282862	08282927
Function	Dissipating the regenerative energy	
Degree of protection	IP65	IP65
Resistance	100 Ω	150 Ω
Power rating in S1, 100% cdf	200 W	100 W
Dimensions W × H × D	252 × 15 × 80 mm	146 × 15 × 80 mm
Cable length	1.5 m	1.5 m
Assigned grids	BS-005 (part number: 0813152X)	

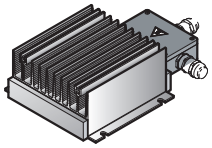
BW150-006-T, BW100-009-T



Type	BW150-006-T	BW100-009-T
Part number	17969565	17969573
Function	Dissipating the regenerative energy	
Degree of protection	IP66	IP66
Resistance	150 Ω	100 Ω
Power rating in S1, 100% cdf	600 W	900 W
Dimensions W × H × D	285 × 75 × 174 mm	435 × 75 × 174 mm
Prescribed connection cable	Shielded cables with a temperature resistance of $T_{amb} \geq 90$ °C (194 °F)	
Maximum permitted cable length	15 m	15 m

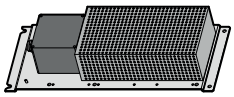
26863707/EN – 07/2021

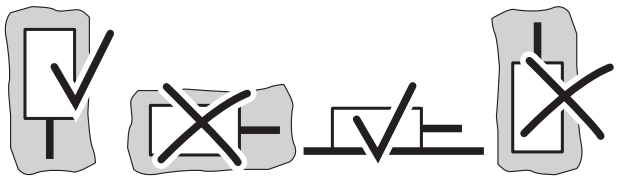
BW068-006-T, BW068-012-T



	BW068-006-T	BW068-012-T
Part number	17970008	17970016
Function	Dissipating the regenerative energy	
Degree of protection	IP66	IP66
Resistance	68 Ω	68 Ω
Power in S1, 100% cdf	600 W	1200 W
Dimensions W x H x D	285 × 75 × 174 mm	635 × 75 × 174 mm
Prescribed connection cables	Shielded cables with a temperature resistance of T_{amb} ≥ 90 °C (194 °F)	
Maximum permitted cable length	15 m	15 m

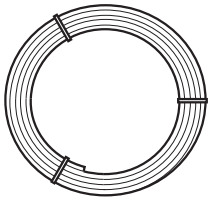
BW050-008-01, BW033-012-T



	BW050-008-01	BW033-012-01
Part number	17962242	17962196
Function	Dissipating the regenerative energy	
Degree of protection	IP65	IP65
Resistance	50 Ω	33 Ω
Power in S1, 100% cdf	800 W	1200 W
Mounting positions		
Dimensions W x H x D	550 × 105 × 230 mm	550 × 105 × 230 mm
Prescribed connection cables	Shielded cables with a temperature resistance of T_{amb} ≥ 90 °C (194 °F) Max. connection cross-section at the terminals of the drive unit: 4 mm^2	
Maximum permitted cable length	15 m	15 m

Connection cable

The following cable is available for connecting the external braking resistors:

Device	Connection cable	Length	Braking resistor
MOVIMOT® advanced MOVIMOT® performance MOVIGEAR® performance MOVIMOT® flexible	Part number: 13230409 [1)] Type: LEONI LEC 001637 4Gx2.5 mm^2, shielded, halogen-free (cable roll) 	30 m	BW150-006-T BW100-009-T BW068-006-T[2)] BW068-012-T[2)] BW050-008-01[2)] BW033-012-01[2)]

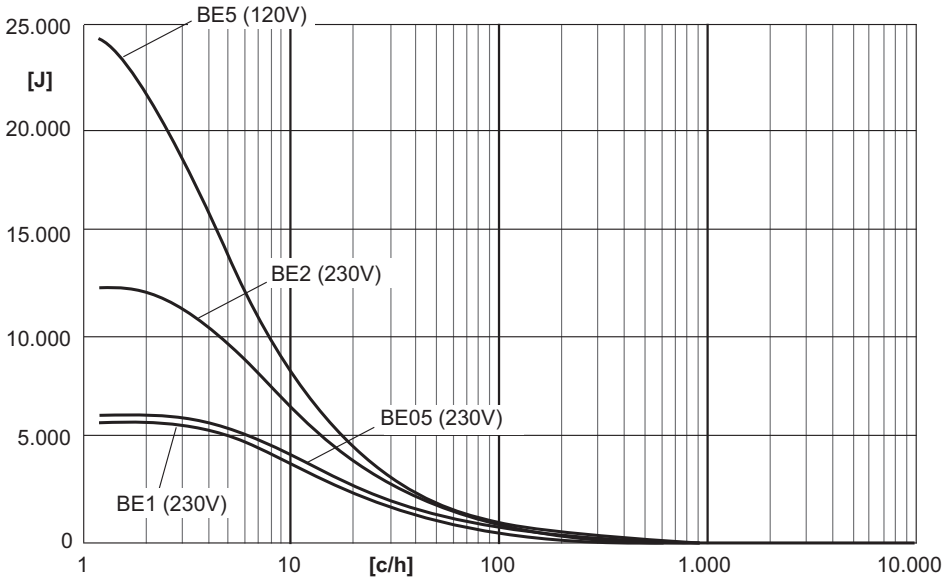
1) This cable is intended exclusively for the power connection. For braking resistors with a thermo contact (-T), you must also connect a cable for evaluating the thermo contact. For additional information, refer to the data sheet of the braking resistor.

2) These braking resistors are not permitted in conjunction with MOVIGEAR® performance.

26863707/EN – 07/2021

4Q operation for motors with mechanical brake

- The brake coil can be used as a braking resistor in 4-Q operation.
- Brake voltage is generated internally within the unit, which means it independent of the grid.
- Should the regenerative load capacity not be sufficient for the application, refer to chapter "4Q operation with integrated brake and external braking resistor".
- The following figure shows the current-carrying capacity of the DR.. motor brake coils:



1583372939

The current-carrying capacity of the brake coils for the BE11 and BE20 brakes is in preparation.

The capacity of the brake coils of the CM3C.. motor series is in preparation.

4Q operation with integrated brake and external braking resistor

4Q operation with external braking resistor is necessary for applications with a large amount of regenerative energy.

NOTICE

In case of incorrect assignment of the inverters, an overload may occur at the braking resistor and damage the braking resistor.

Damage to braking resistor.

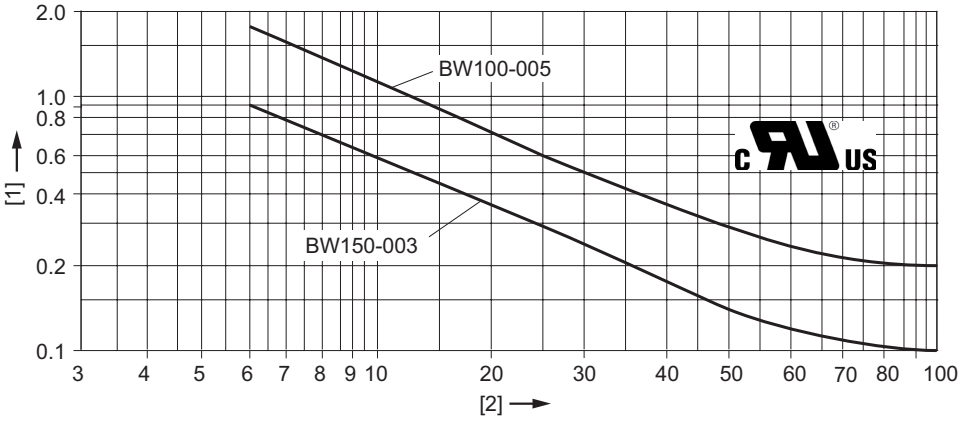
- Observe the assignment of the braking resistor to the inverter and the project planning guidelines.

Flat-type resistors have internal thermal protection (fuse cannot be replaced) that interrupts the current circuit in the event of overload. Additional components for thermal monitoring are not necessary.

11.5.4 Technical data of BW100-005/K-1.5 and BW150-003/K-1.5

Power diagrams

The following figure shows the rating diagrams of the braking resistors BW100-005/K-1.5, BW150-003/K-1.5:

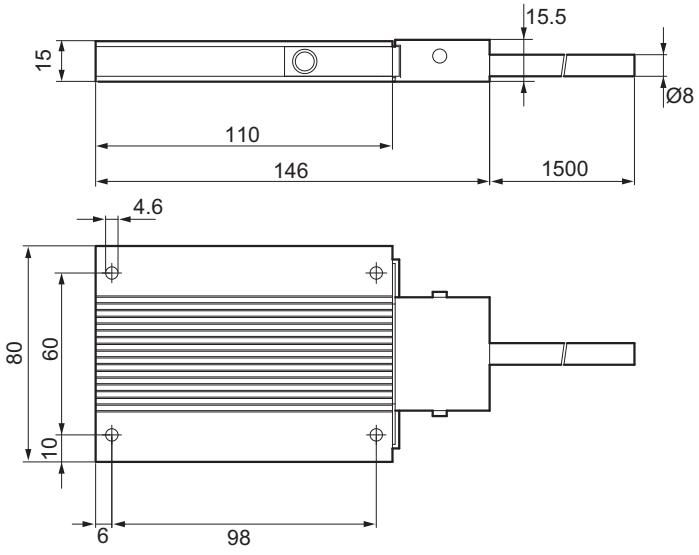


25298658059

[1] Power in KW
[2] Cyclic duration factor cdf in %

Dimension drawing of BW150-003/K-1.5

The following figure shows the dimensions of the external braking resistor BW150-003/K-1.5:

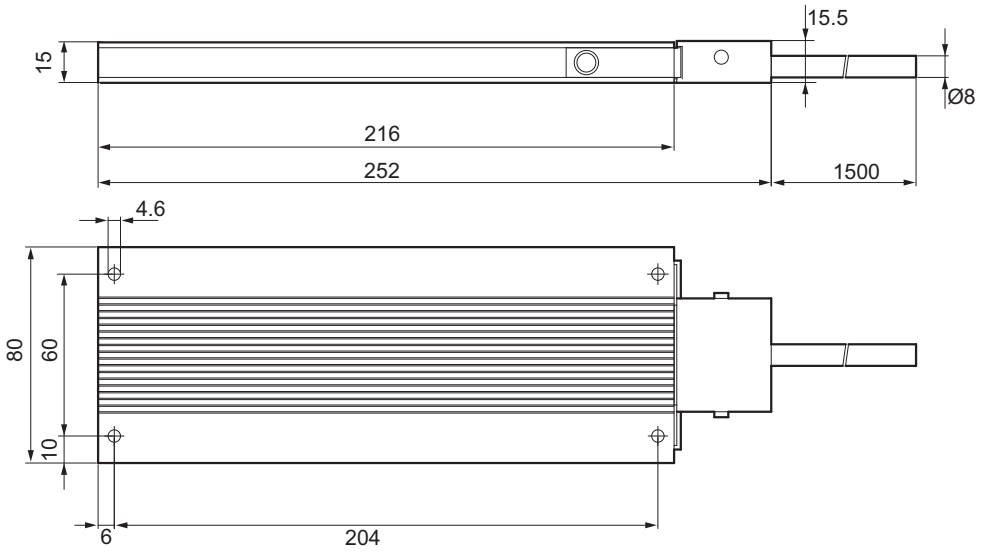


25298773259

26863707/EN – 07/2021

Dimension drawing BW100-005/K-1.5 (option /EBW)

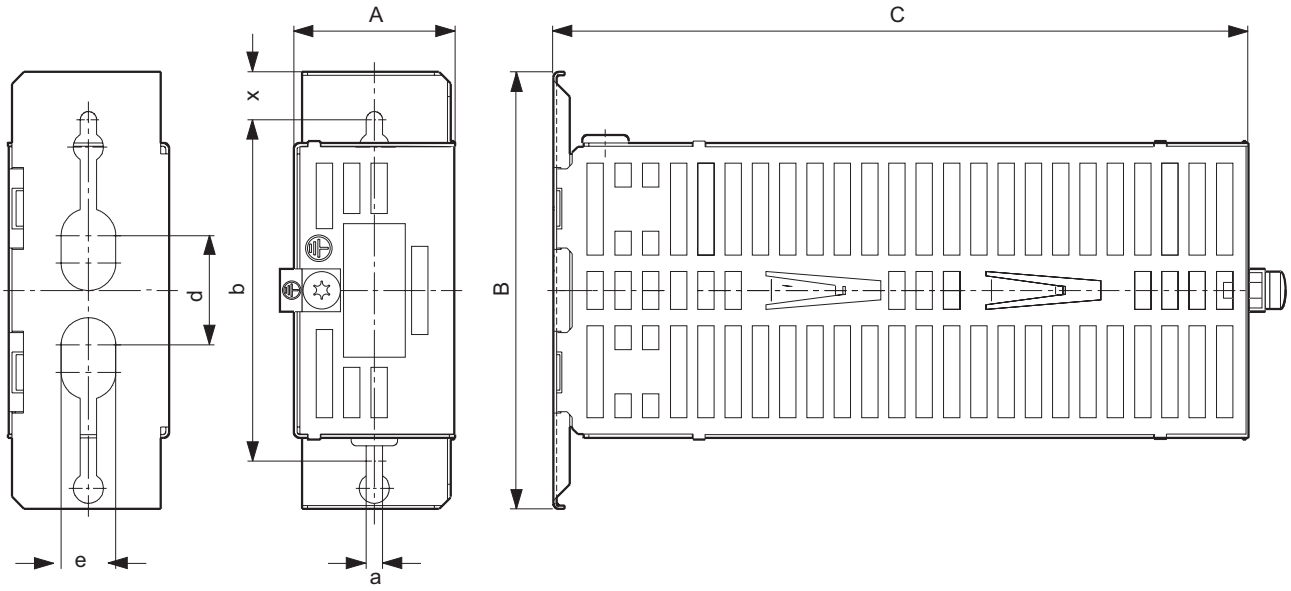
The following figure shows the dimensions of the external braking resistor BW100-005/K-1.5:



25298780043

Dimension drawing for the BS.. protective grid

The following figure shows the dimensions of the BS-005 protective grid:



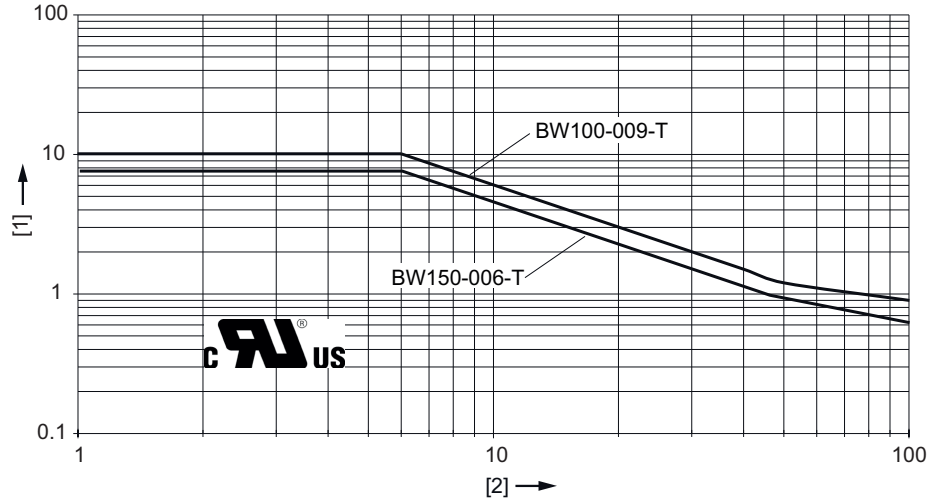
25842294795

Type	Main dimensions in mm			Mounting dimensions mm					Mass kg
	A	B	C	b	d	e	a	x	
BS-005	60	160	252	125	4	20	6	17.5	0.5

11.5.5 Technical data of BW150-006-T and BW100-009-T

Power diagrams

The following figure shows the rating diagrams of the braking resistors BW150-006-T and BW100-009-T:

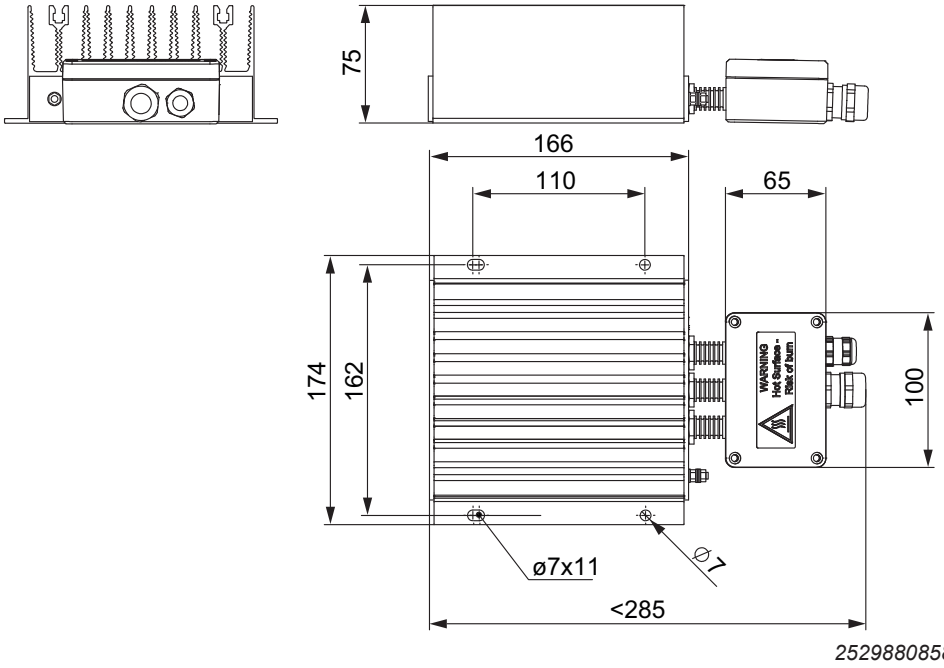


25298798219

[1] Power in KW
[2] Cyclic duration factor cdf in %
ED Cyclic duration factor of the braking resistor, based on a cycle time of 120 s.

Dimension drawing of BW150-006-T

The following figure shows the dimensions of the external braking resistor BW150-006-T:

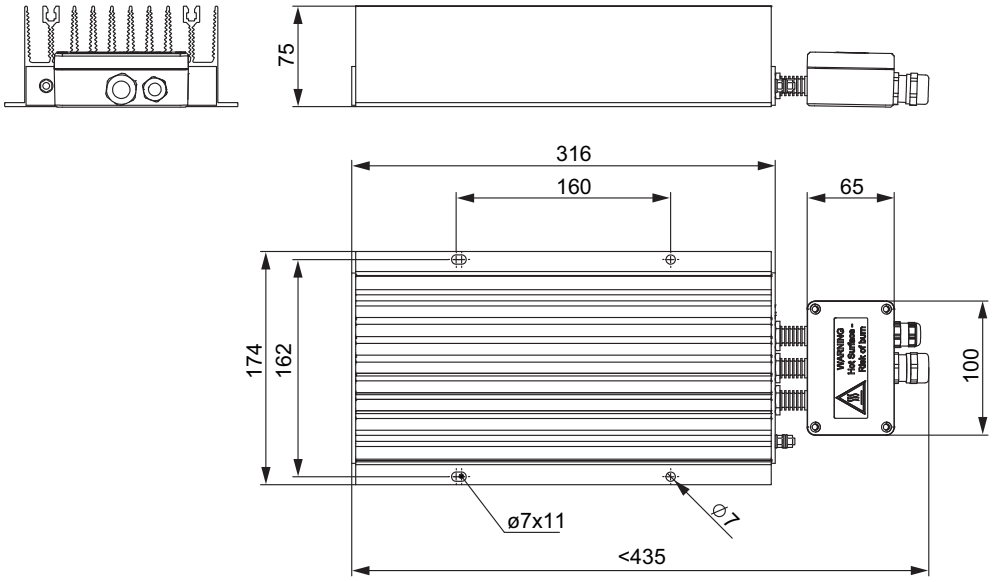


25298808587

26863707/EN – 07/2021

Dimension drawing of BW100-009-T

The following figure shows the dimensions of the external braking resistor BW100-009-T:

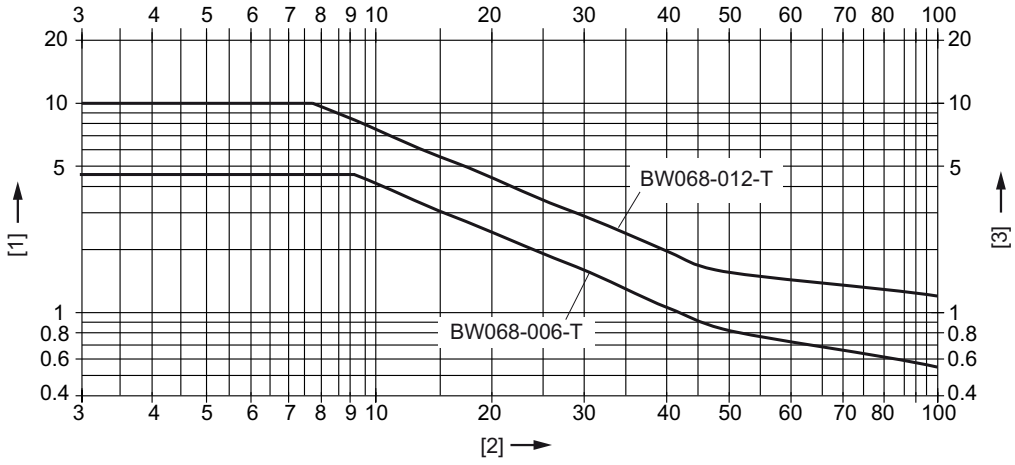


25298815755

11.5.6 Technical data of BW068-006-T and BW068-012-T

Power diagrams

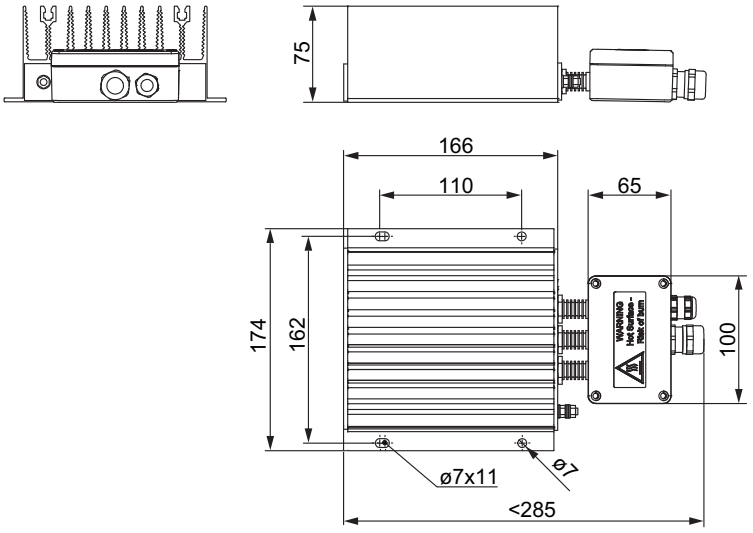
The following figure shows the power diagrams of the BW068-006-T and BW068-012-T braking resistors according to UL approval:



34606950539

Dimension drawing of BW068-006-T

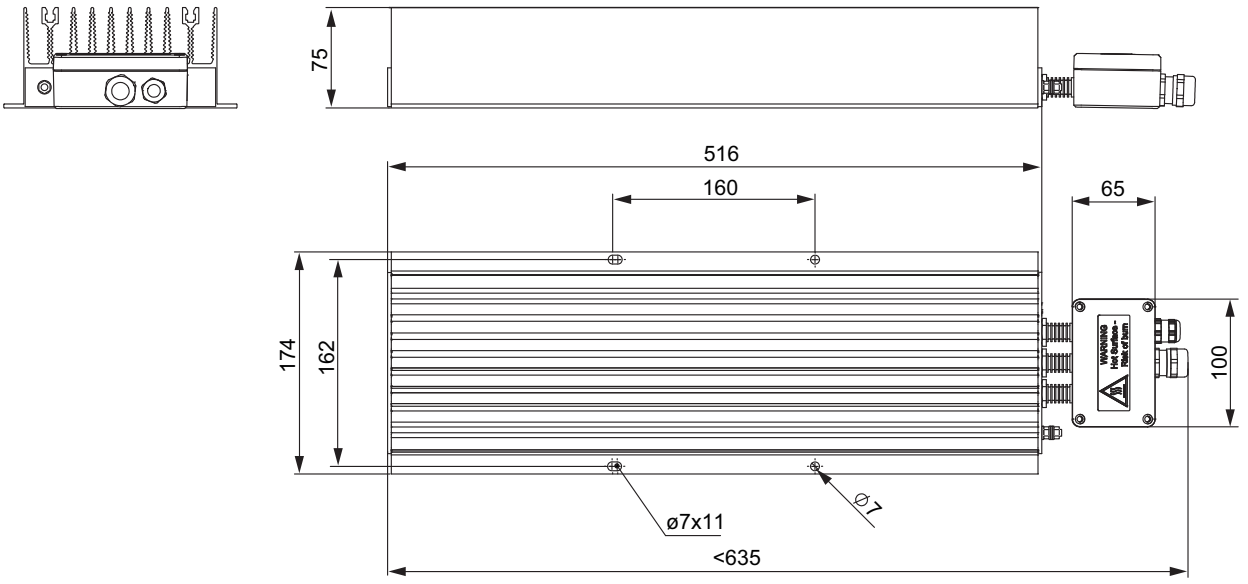
The following figure shows the dimensions of the external braking resistor BW068-006-T:



34606358411

Dimension drawing of BW068-012-T

The following figure shows the dimensions of the external braking resistor BW068-012-T:



25298820747

11.5.7 Technical data of BW050-008-01 and BW033-012-01

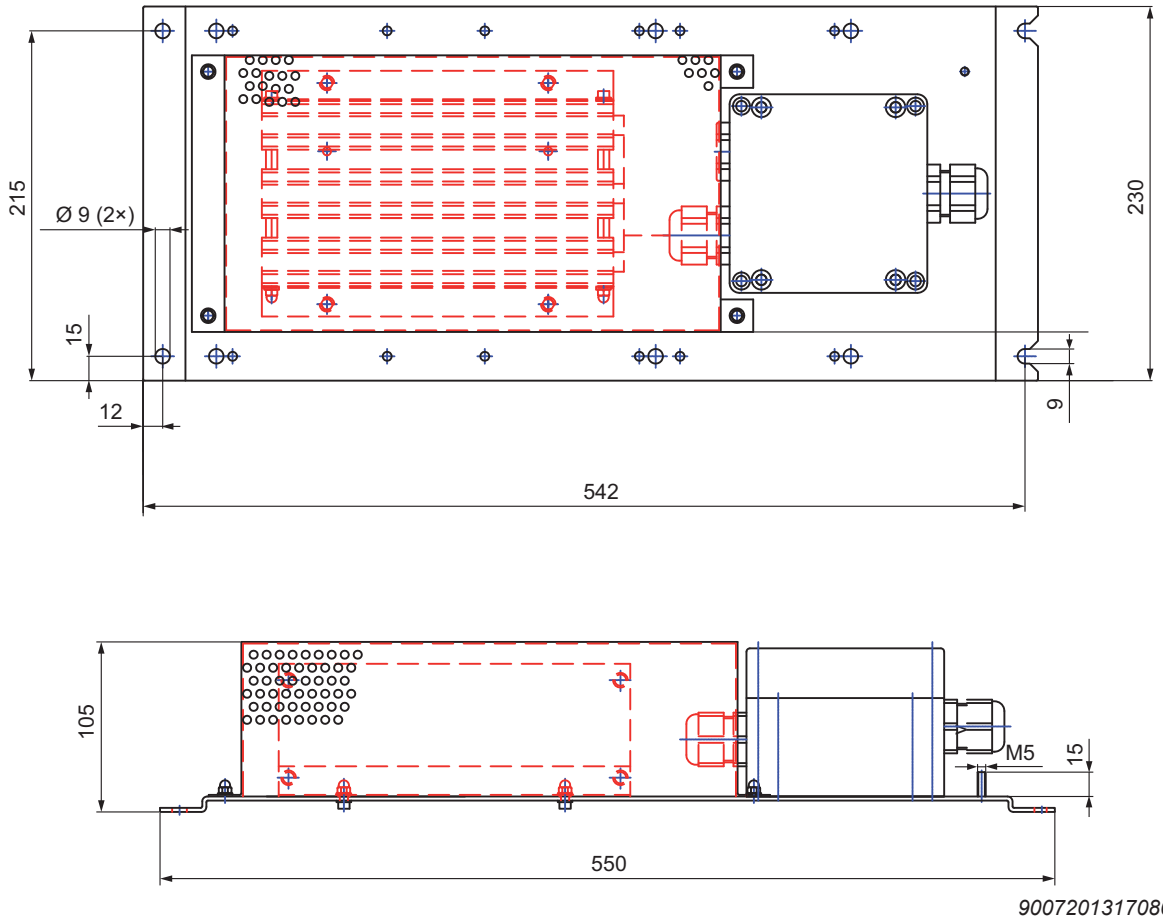
Continuous braking power

The following table shows the continuous braking power of the BW050-008-01 and BW033-012-01 braking resistors:

Braking resistor		BW050-008-01		BW033-012-01	
Continuous braking power		according to IEC	UL compliant	according to IEC	UL compliant
	100% cdf	0.8 kW	0.48 kW	1.2 kW	0.72 kW
	50% cdf	1.6 kW	1 kW	2.4 kW	1.5 kW
	25% cdf	3 kW	2 kW	4.5 kW	3 kW
	12% cdf	4.4 kW	4.4 kW	6.6 kW	6.6 kW
	6% cdf	7.2 kW	7.2 kW	10.8 kW	10.8 kW
	3% cdf	12 kW	12 kW	18 kW	18 kW
	2% cdf	15.4 kW	15.4 kW	23.1 kW	23.1 kW
	1% cdf	28.8 kW	28.8 kW	43.2 kW	43.2 kW

Dimension drawing of BW050-008-01, BW033-012-01

The following figure shows the dimensions of the external braking resistor BW068-006-T:



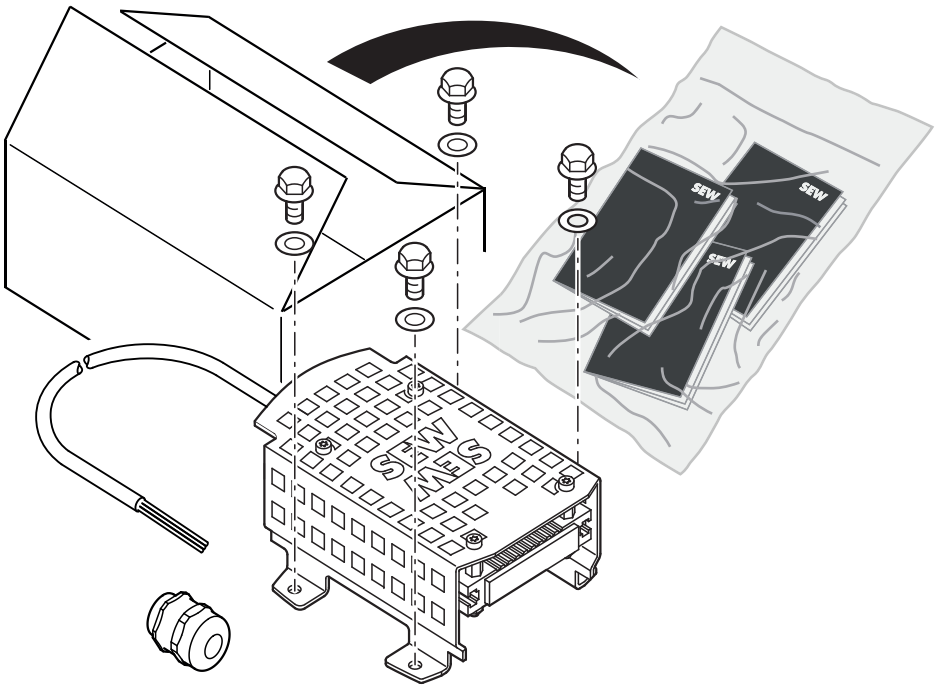
9007201317080331

11.6 Mounting kit for braking resistor BW...-.../..C

INFORMATION

- The BW...-.../..C braking resistor must always be mounted and installed by the customer.
- Observe the installation instructions "Braking resistor BW...-.../..C".

The following figure shows the mounting kit for braking resistor BW...-.../..C:



9007224553569547

26863707/EN – 07/2021

11.6.1 Assignment

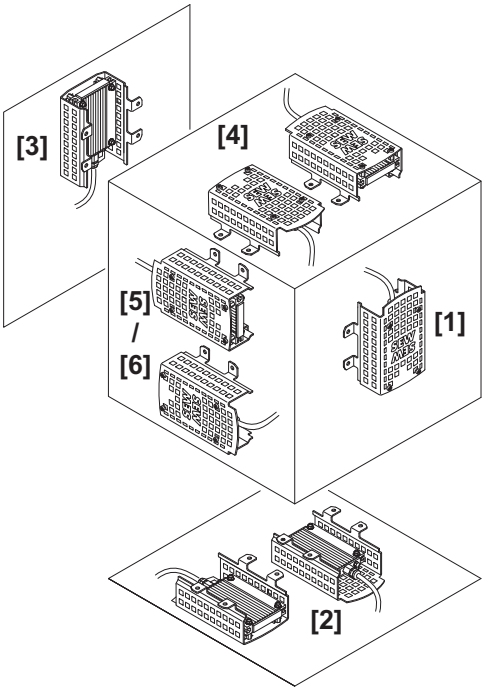
Installation	Mounting kit	
	Part number	Type
Wall mounting	18272886	BW100-001/K-1.5/M2C
	18272908	BW100-002/K-1.5/M2C
	18272894	BW100-001/K-1.5/M4C
	18272916	BW100-002/K-1.5/M4C

11.6.2 Technical data

Type	BW100-001/.../...	BW100-002/.../...
Nominal continuous power at T_{amb}~40 °C	100 W	200 W
Resistance value R_{BW}	100 Ω ±10%	100 Ω ±10%
Design	Flat design	
Connections	3 × AWG 20 l = 150 cm	
Degree of protection (EN 60529)	IP66	
Operating temperature range	-25 °C to +40 °C	
Type of cooling	Natural convection	
Housing temperature at nominal continuous power at T_{amb}~40 °C	< 300 °C	
Conformity	CE/UL/CSA	
Derating at T_U> 40 °C	5% per 10 K to 60 °C	

26863707/EN – 07/2021

11.6.3 Current-carrying capacity



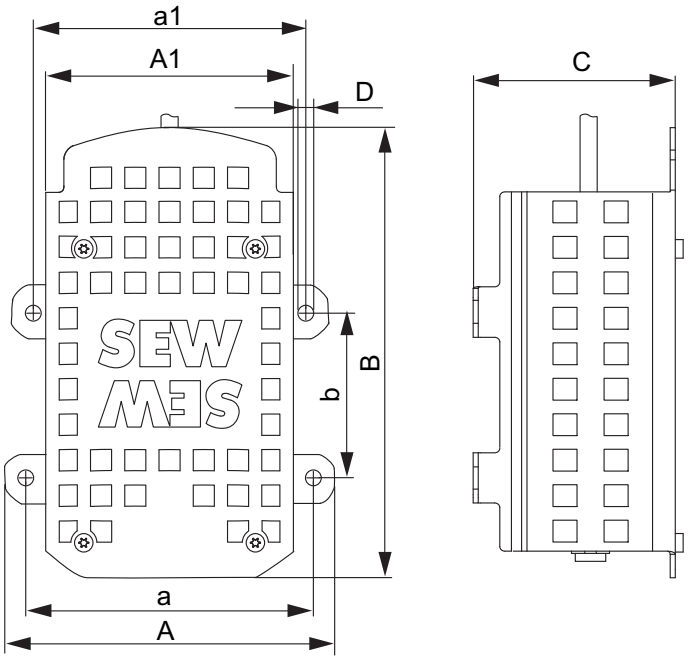
25893524363

BW100-001/.../...	Current-carrying capacity at % cdf in W				
ED	**[1]**	**[2]**	**[3]**	**[4]**	**[5] / [6]**
100%	100	100	100	100	100
50%	150	150	150	150	150
25%	250	250	250	250	250
12%	300	300	300	300	300
6%	500	500	500	500	500
cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration TD ≤ 120 s					

BW100-002/.../...	Current-carrying capacity at % cdf in W				
ED	**[1]**	**[2]**	**[3]**	**[4]**	**[5] / [6]**
100%	200	200	200	160	160
50%	300	300	300	240	240
25%	500	500	500	400	400
12%	600	600	600	480	480
6%	1000	1000	1000	800	800
cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration TD ≤ 120 s					

26863707/EN – 07/2021

11.6.4 Dimension drawing



9007224554230283

	A	A1	B	C	D	a	a1	b
	mm	mm	mm	mm	mm	mm	mm	mm
18272886 (BW100-001/K-1.5/M2C)	126.0	89.0	148.2	61.8	7	111.0	106.0	54.7
18272908 (BW100-002/K-1.5/M2C)								
18272894 (BW100-001/K-1.5/M4C)	158.0	94.0	149.0	61.8	7	144.0	142.0	82.0
18272916 (BW100-002/K-1.5/M4C)								

26863707/EN – 07/2021

11.7 Line choke

The line choke can be used as an option:

- To support overvoltage protection
- To smoothen the line current
- For protection in the event of distorted line voltage
- To limit the charging current, for example, when several inverters are connected together in parallel on the input end (nominal current of line choke = total of nominal input currents)

11.7.1 UL and cUL approval

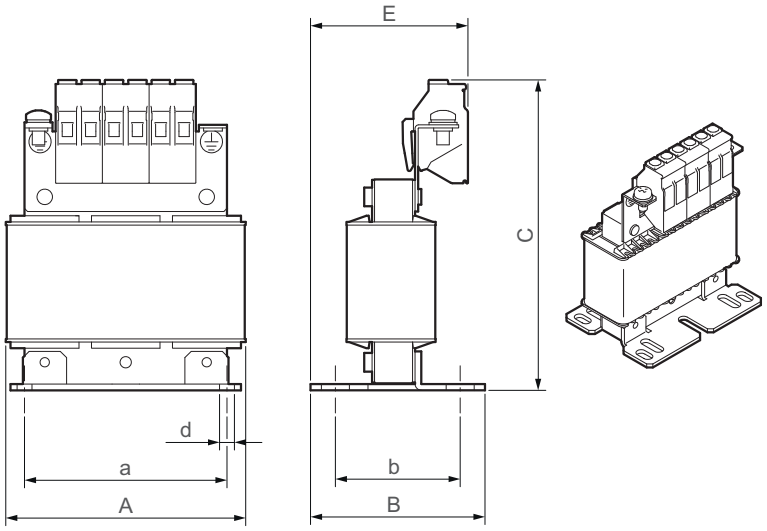
The listed line chokes have cRUus approval independent of the drive unit.

11.7.2 Technical data

Line choke	ND0070-503	ND0160-503	ND0300-503	ND0420-503
Part number	17984173	17984181	17983800	17983819
Nominal line voltage U_N	3 × AC 230 V – 500 V 50/60 Hz			
Nominal current I_N	7 A	16 A	30 A	42 A
Nominal inductance	0.36 mH	0.2 mH	0.1 mH	0.045 mH
Nominal power loss	4 W	9 W	11 W	13 W
Ambient temperature ϑ_{amb}	-10 °C – 45 °C (reduction: 3% I_N up to maximum 60 °C)			
Connection contacts L1/L2/L3 – L1'/L2'/L3'	0.2 – 4 mm²		0.2 – 10 mm²	2.5 – 16 mm²
Tightening torque L1/L2/L3 – L1'/L2'/L3'	0.5 – 1 Nm		1.2 – 2 Nm	2.5 Nm
PE connection contact	M4		M5	
Tightening torque PE	1.5 Nm		3 Nm	
Degree of protection	IPXXB in accordance with EN 60529			
Mass	0.5 kg	1.3 kg	1.95 kg	1.82 kg

26863707/EN – 07/2021

11.7.3 Dimension drawing



31249196171

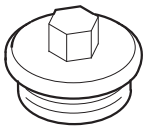
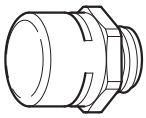
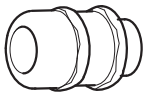
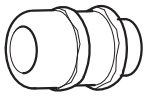
Line choke	Main dimensions in mm				Mounting dimensions in mm			Connection
	A	B	C	E	a	b	d	PE
ND0070-503	78	57	105	56	65	40	4.8	M4
ND0160-503	96	70	120	65	71	54	4.8	M4
ND0300-503	121	86	145	86	105	70	4.8	M5
ND0420-503	121	86	150	90	105	70	4.8	M5

26863707/EN – 07/2021

11.8 Screw fittings

The following tables show the screw fittings available from SEW-EURODRIVE:

11.8.1 Cable glands / screw plugs / pressure compensation

Type of screw fitting	Image	Content	Size	Tightening torque[1)]	Outer cable diameter	Part number
Screw plugs external hexagon (made of stainless steel)		10 pieces	M16 × 1.5	6.8 Nm	–	18247342
		10 pieces	M25 × 1.5	6.8 Nm	–	18247350
Pressure compensation screw fittings (made of stainless steel)		1 piece	M16 × 1.5	4 Nm	–	28214617
EMC-compliant cable gland (brass, nickel-plated)		10 pieces	M16 × 1.5	4 Nm	5 to 9 mm	18204783
		10 pieces	M25 × 1.5	7 Nm	11 to 16 mm	18204805
EMC-compliant cable gland (made of stainless steel)		10 pieces	M16 × 1.5	4 Nm	5 to 9 mm	18216366
		10 pieces	M25 × 1.5	7 Nm	11 to 16 mm	18216382

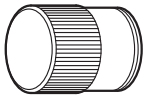
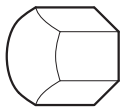
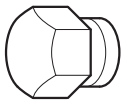
1) The specified torques must be adhered to with a tolerance of +/- 10%.

The cable retention in the cable gland must withstand the following removal force of the cable from the cable gland:

- Cable with outer diameter > 10 mm: ≥ 160 N
- Cable with outer diameter < 10 mm: = 100 N

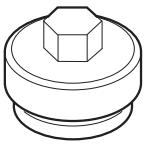
26863707/EN – 07/2021

11.8.2 Screw fittings:Plug connectors

Type of screw fitting	Figure	Content	Size	Tightening torque[1)]	Part number
M23 plug (made of stainless steel)		1 piece	M23 × 1.5	Tighten fully	19094558
M12 plug for plug connector with male thread (made of stainless steel)		10 pcs	M12 × 1.0	2.3 Nm	18202799
M12 plug for plug connector with female thread (made of stainless steel)		10 pcs	M12 × 1.0	2.3 Nm	18202276

1) The specified torques must be adhered to with a tolerance of +/- 10%.

11.8.3 Screw fittings of the potentiometer

Type of screw fitting	Image	Content	Size	Tightening torque[1)]	Part number
Hexagon head screw plug for potentiometer (stainless steel)		10 piece	M24 × 1.5	6.8 Nm	18241077

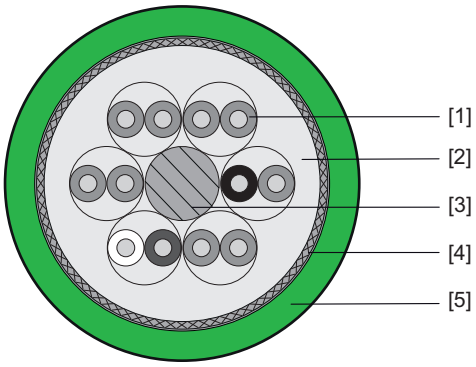
1) The specified torques must be adhered to with a tolerance of +/- 10%.

26863707/EN – 07/2021

11.9 Connection cables

11.9.1 Specification of signal cables for digital inputs and relay output

Mechanical design

		HELUKABEL® Li9Y91YC11Y-HF
Mechanical design		 *29747895691*
[1]	**Cores**	6 conductor pairs, 2 × 0.25 mm² Copper
	Insulation	Polypropylene, 0.24 mm
	Colors	DIN 47100 yellow/green, pink/gray, blue/red, black/purple, pink-and gray/ red and blue, brown/white
[2]	**Inner sheathing**	TPE-O, halogen-free
	Color	Nature
[3]	**Filler**	–
[4]	**Shield**	Braided copper wires, tinned optical coverage min. 85%
[5]	**Outer cable jacket**	TPU, halogen-free
	Color	Green, similar to RAL 2018
	Label	SEW EURODRIVE 150665 Li9Y91YC11Y-HF 6x 2 x 0.25QMM E170315 c AWM STYLE 20233 AWM I/II A/B 80 °C 300 V FT1 - DESINA - *week/year of production*
	Diameter	**15.6 mm**

26863707/EN – 07/2021

Technical data

The following table shows the technical data of the signal cable:

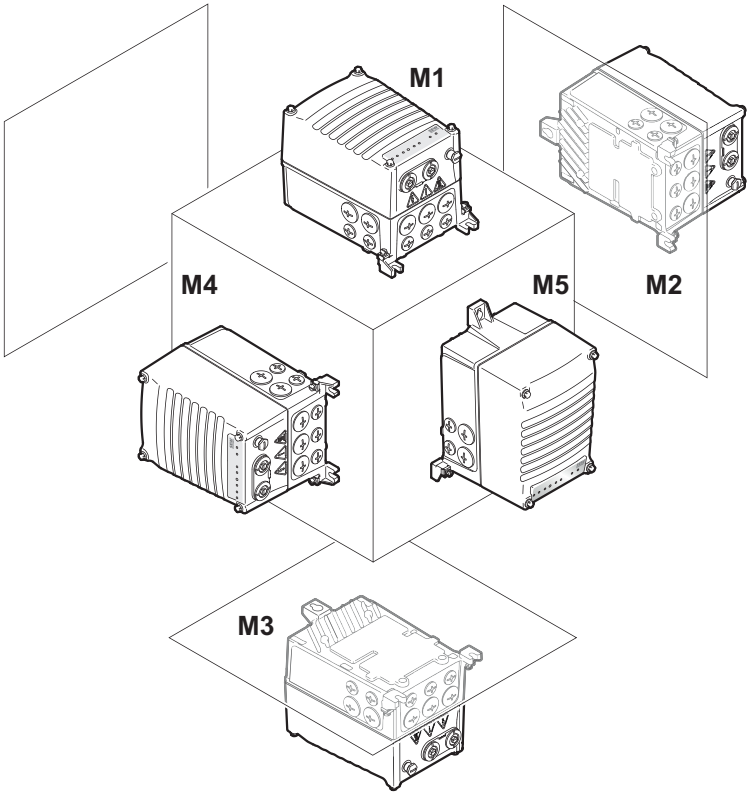
Properties	Type: HELUKABEL® Li9Y91YC11Y-HF SEW EURODRIVE 150665
UL properties	UL758 (AWM) UL Style 20223 (sheath) UL Style 10493 (insulation)
RoHS conformity	Yes
Test voltage core/ core	AC 1.5 kV 50 Hz/1 min.
Test voltage core/ shield	AC 1.5 kV 50 Hz/1 min.
Operating voltage	Max. AC 300 V (UL)
Insulation resistance	≥ 500 MΩ/km
Operating temperature	-50 °C to +80 °C (fixed installation) -30 °C to +80 °C (cable carrier) -20 °C to +60 °C (cable carrier with mechanical load)
Outer diameter	**15.6 mm**
Bending radiuses	Min. 5 × outer diameter (fixed installation)
	Min. 8 × outer diameter (cable carrier)
Bending cycles	Min. 10 million
Acceleration	Max. 20 m/s^2
Torsion	Max. ±30 °/m
Chemical properties	• Oil resistance according to DIN 60811-404, HD 22.10 Appendix A
	• Flame retardant according to IEC 60332-1-2, UL758 cable flame test
	• Halogen-free according to DIN VDE 0472 T.815 • Silicon-free

26863707/EN – 07/2021

11.10 Mounting positions

11.10.1 Design MMF1.

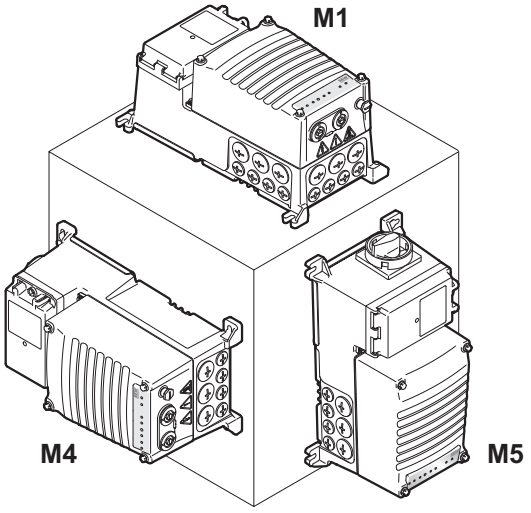
The following mounting positions are possible for the device:



30568734347

11.10.2 Design MMF3.

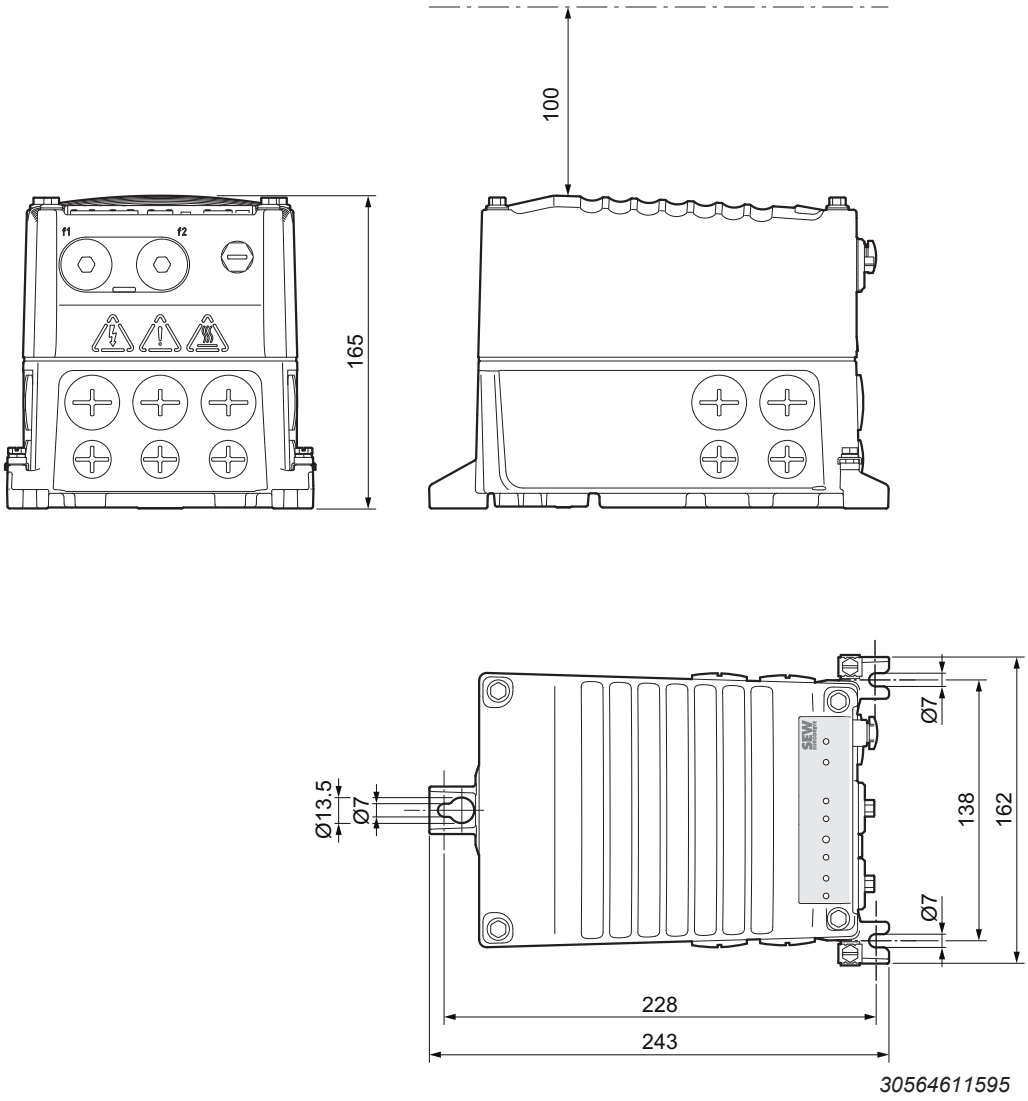
The following mounting positions are possible for the device:



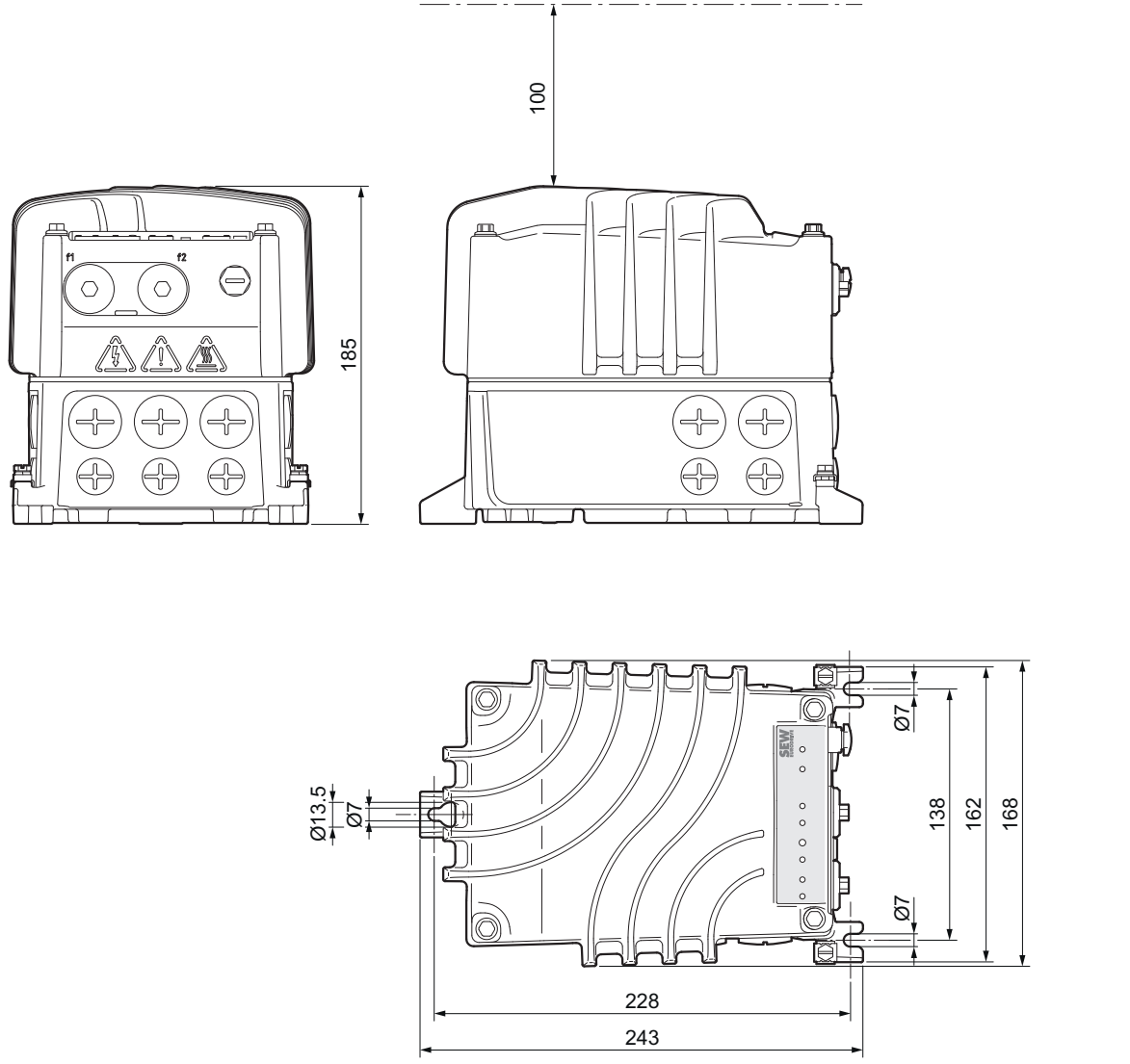
30568739595

11.11 Device dimension drawings

11.11.1 Design MMF1.

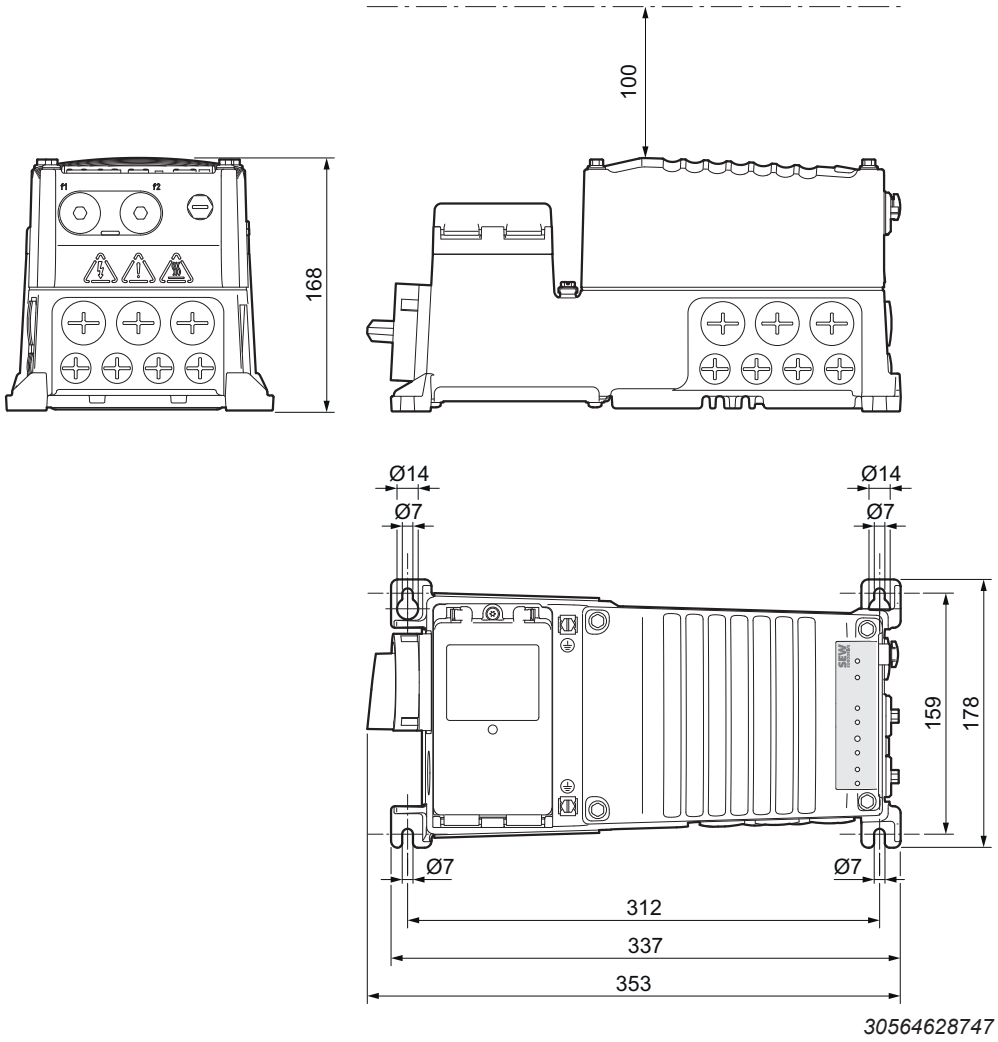


11.11.2 Design MMF1. with cooling fins



30564620171

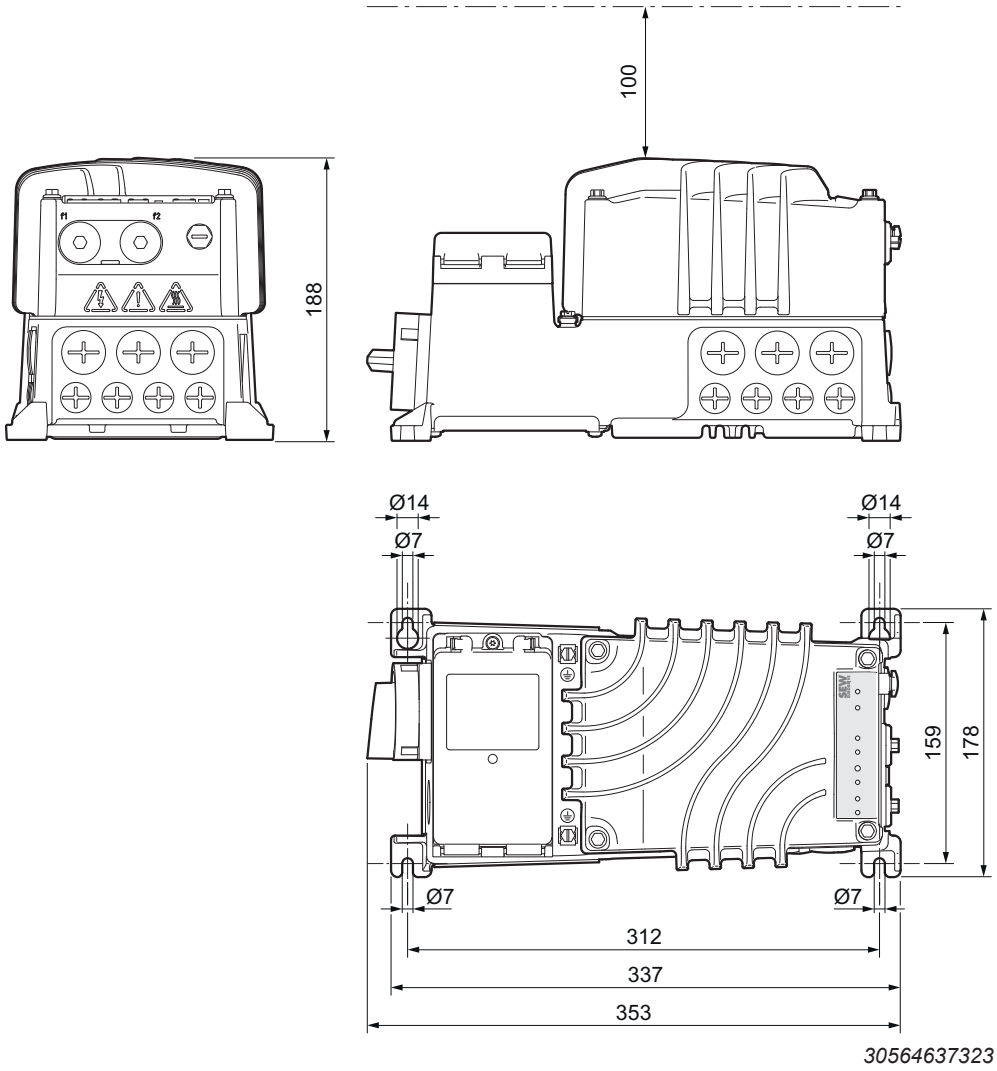
11.11.3 MMF31 design



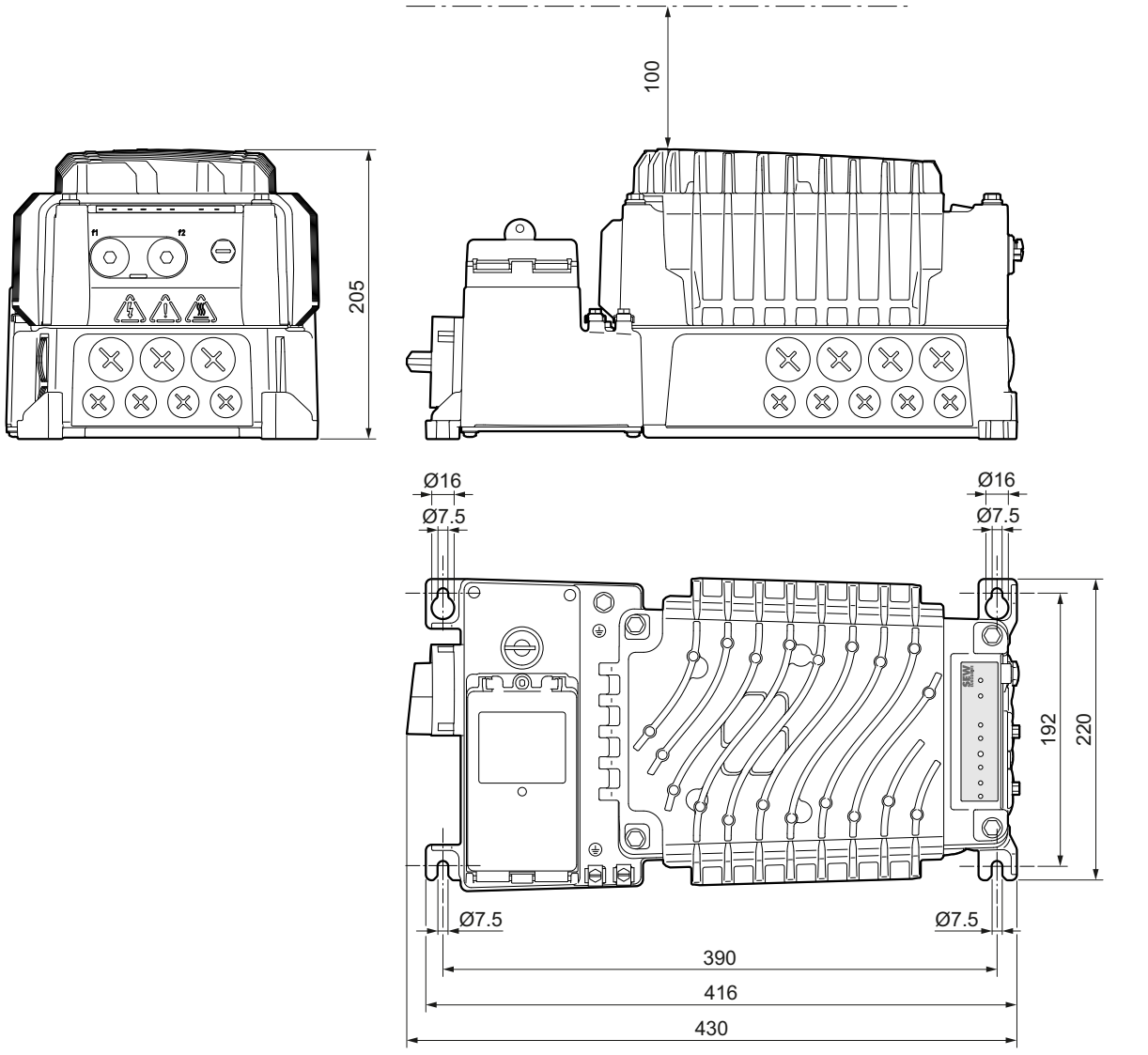
30564628747

26863707/EN – 07/2021

11.11.4 Design MMF31 with cooling fins



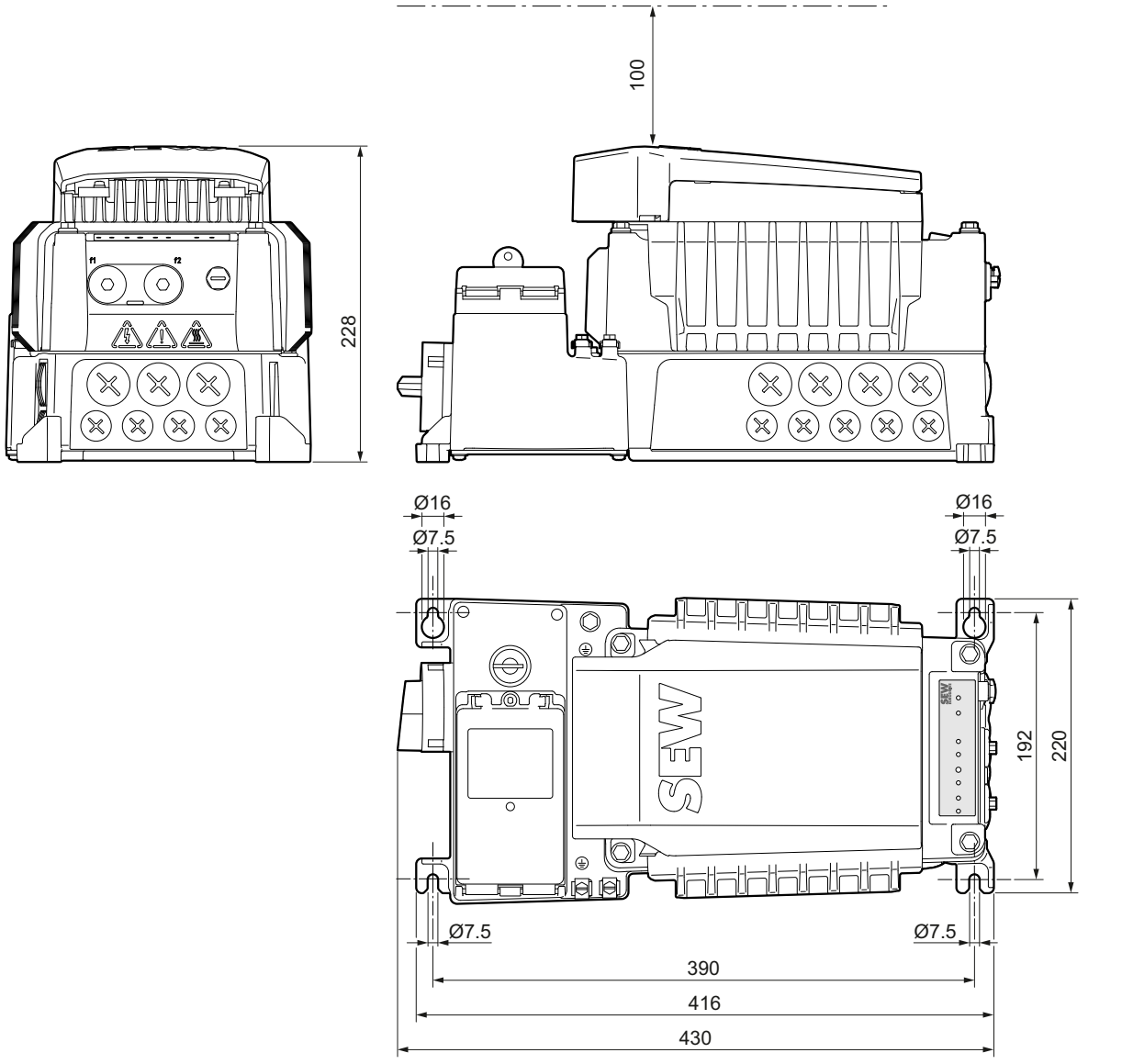
11.11.5 MMF32 design



34352309771

26863707/EN – 07/2021

11.11.6 Design MMF32 with fan

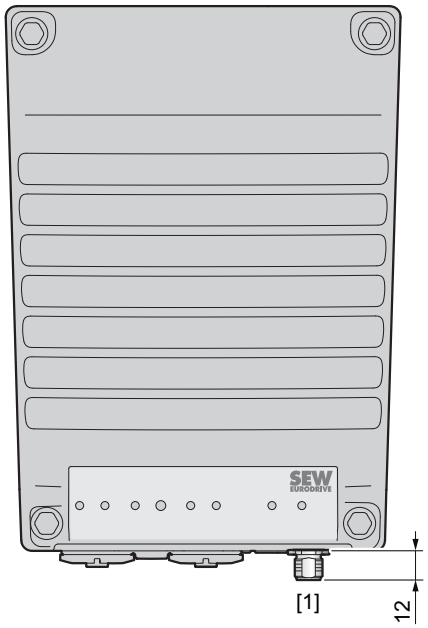


34237222027

11.12 Dimension drawings of plug connectors in the electronics cover

11.12.1 Electronics cover size 1

The following figure shows the additional dimensions of the plug connector.



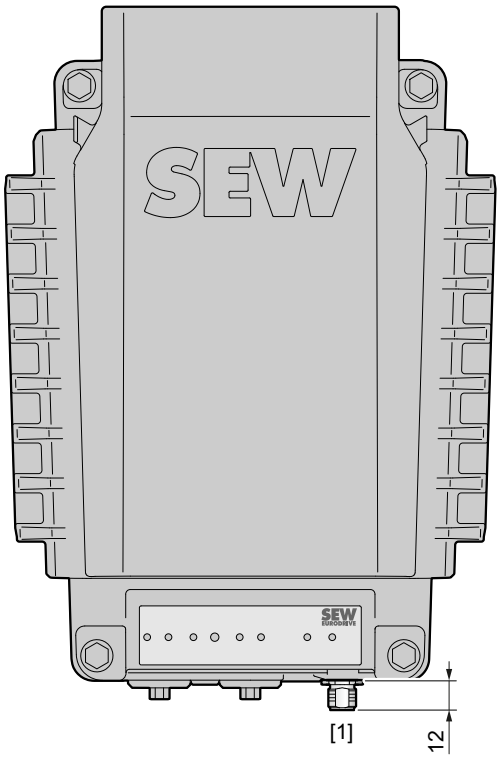
9007229877301643

[1] M12 plug connector, male

26863707/EN – 07/2021

11.12.2 Electronics cover size 2

The following figure shows the additional dimensions of the plug connector.



34337103371

[1] M12 plug connector design, male

26863707/EN – 07/2021

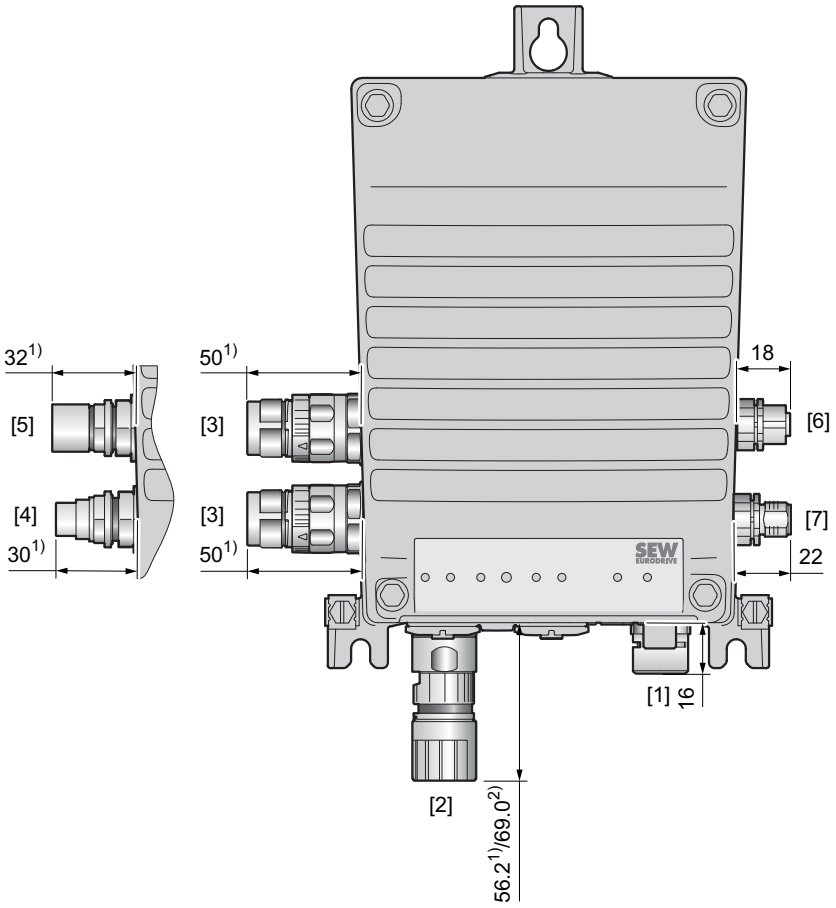
11.13 Dimension drawings of plug connectors in the connection box

11.13.1 Design MMF1.

Plug connectors

INFORMATION

- The following figure shows an example of the additional dimensions of the optional plug connectors for a possible plug connector configuration.
- For more information, refer to chapter "Plug connector positions".



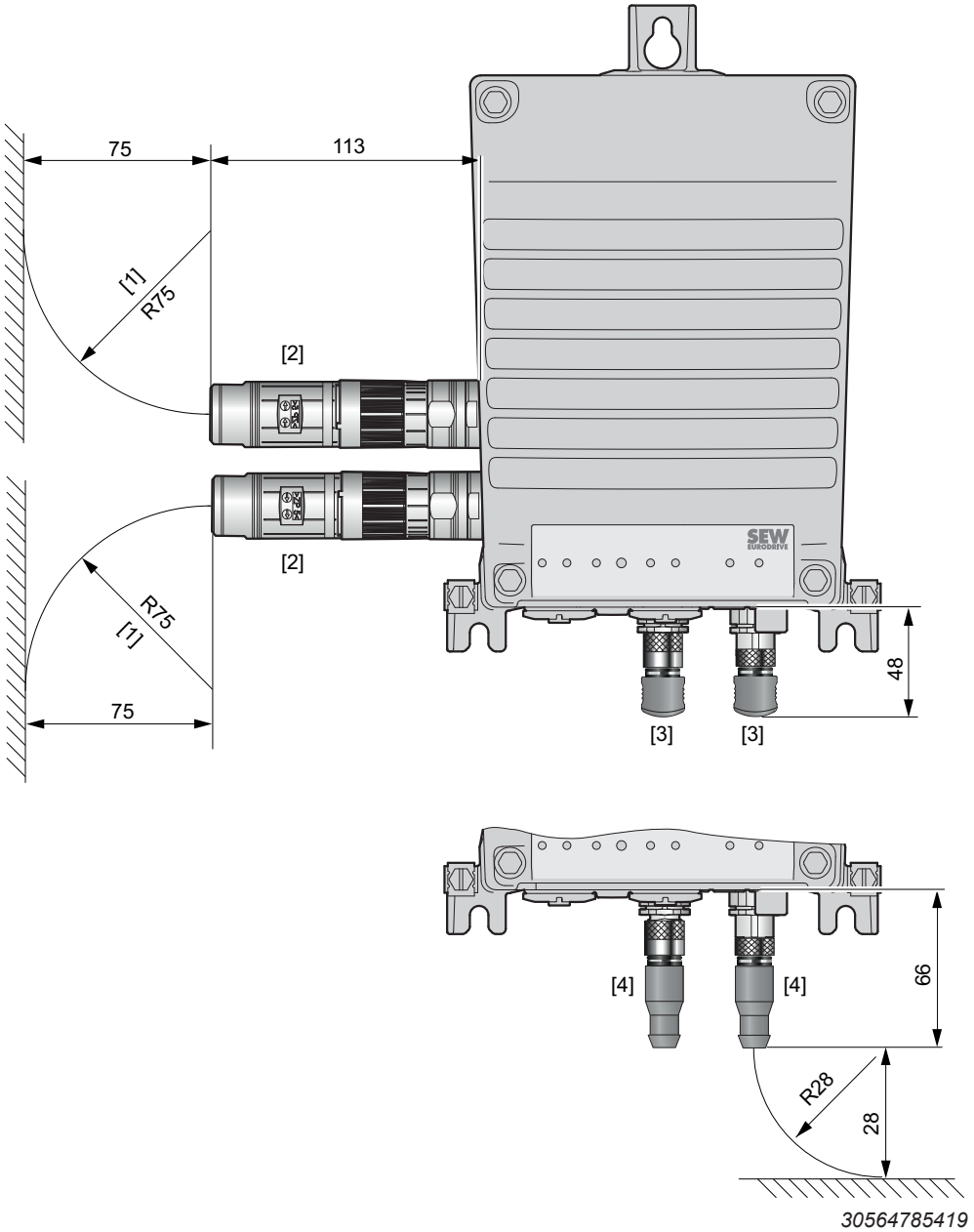
31249323659

1) "Straight" plug connector variant M23
2) "Right-angle" plug connector variant M23
[1] Optional pressure compensation
[2] Plug connector design M23, with union nut, female
[3] Plug connector design M23, without union nut, female
[4] Plug connector design MQ15-X-Power, without union nut, male
[5] Plug connector design MQ15-X-Power, with union nut, female
[6] M12 plug connector, female
[7] M12 plug connector, male

Plug connector including mating connector

INFORMATION

- The following figure shows the additional dimensions/bending radii of the optional plug connectors including mating connector in connection with prefabricated cables from SEW-EURODRIVE.
- For more information, refer to chapter "Plug connector positions".



[1] Bending radius
[2] "Straight" plug connector variant M23
[3] "Right-angle" plug connector variant M12
[4] "Straight" plug connector variant M12

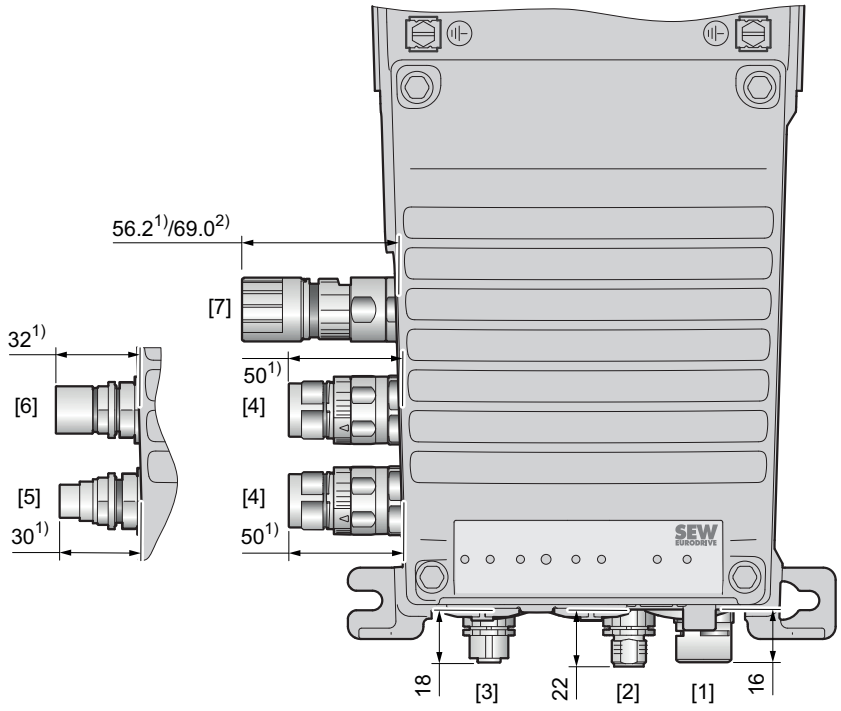
26863707/EN – 07/2021

11.13.2 MMF31 design

Plug connectors

INFORMATION

- The following figure shows an example of the additional dimensions of the optional plug connectors for a possible plug connector configuration.
- For more information, refer to chapter "Plug connector positions".



31249349515

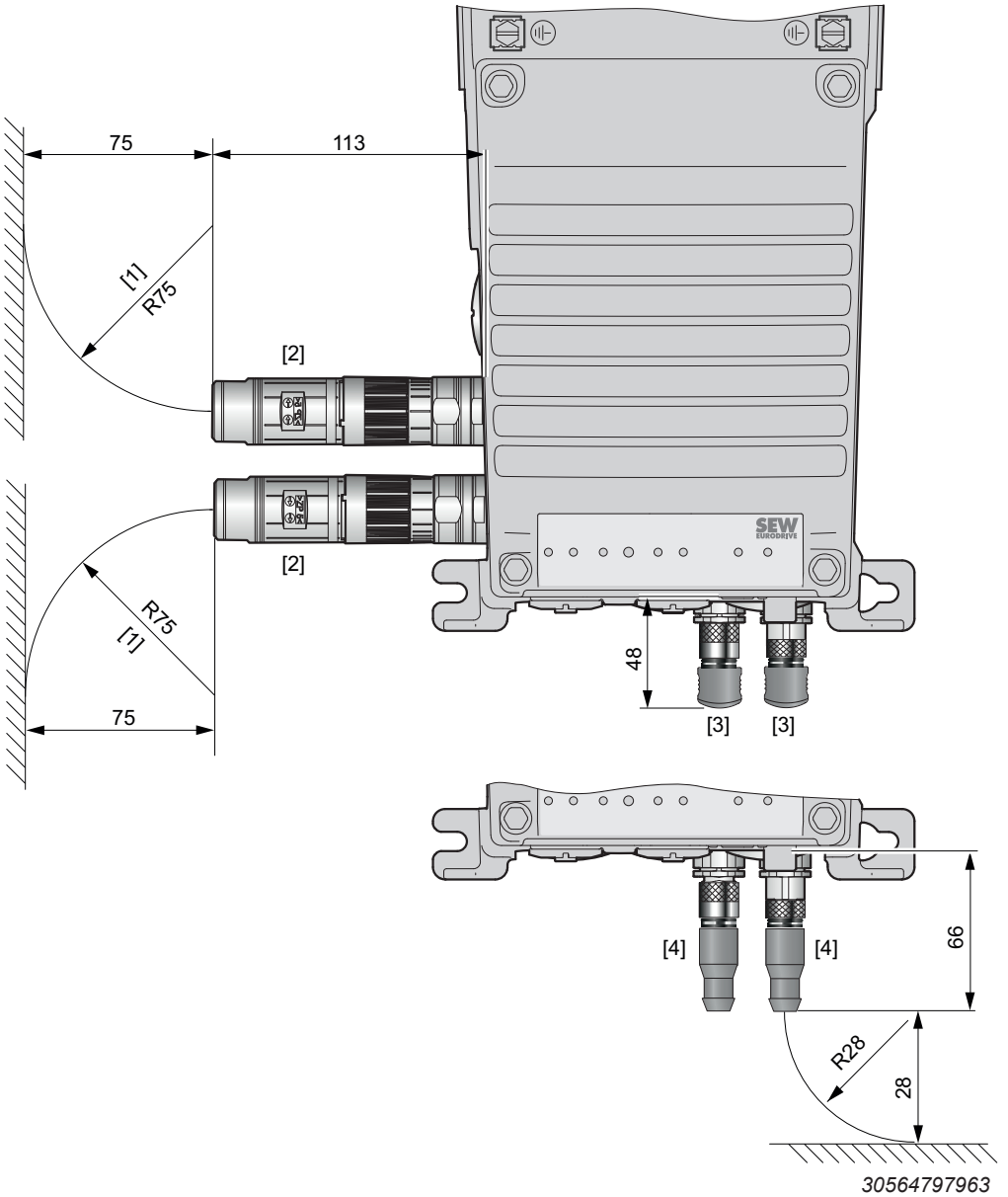
1) "Straight" plug connector variant M23
2) "Right-angle" plug connector variant M23
[1] Optional pressure compensation
[2] M12 plug connector, male
[3] M12 plug connector, female
[4] Plug connector design M23, without union nut, female
[5] Plug connector design MQ15-X-Power, without union nut, male
[6] Plug connector design MQ15-X-Power, with union nut, female
[7] Plug connector design M23, with union nut, female

26863707/EN – 07/2021

Plug connector including mating connector

INFORMATION

- The following figure shows the additional dimensions/bending radii of the optional plug connectors including mating connector in connection with prefabricated cables from SEW-EURODRIVE.
- For more information, refer to chapter "Plug connector positions".



[1] Bending radius
[2] "Straight" plug connector variant M23
[3] "Right-angle" plug connector variant M12
[4] "Straight" plug connector variant M12

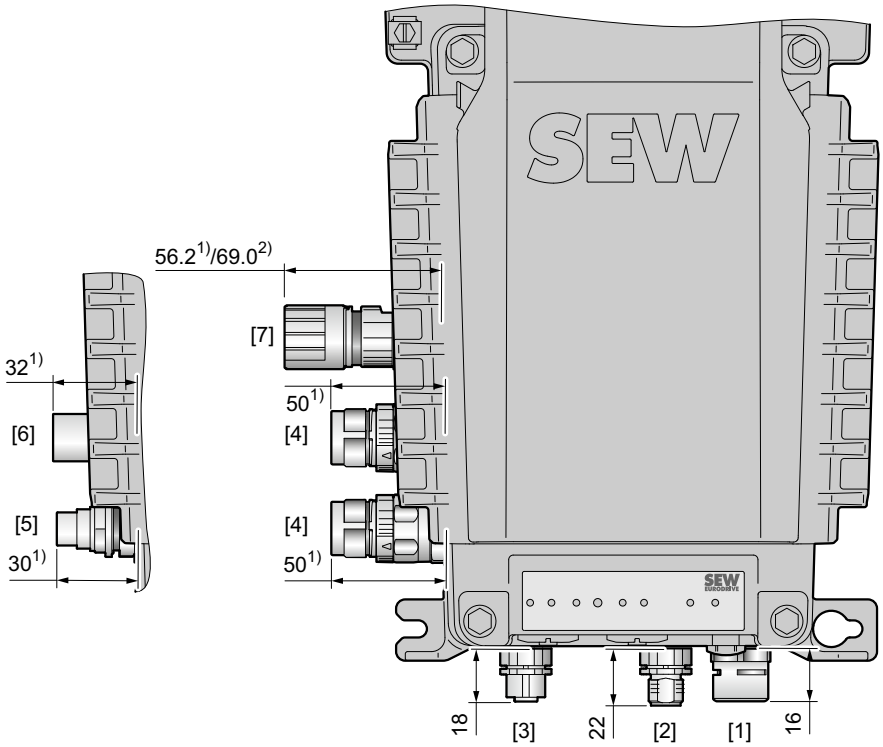
26863707/EN – 07/2021

11.13.3 MMF32 design

Plug connectors

INFORMATION

- The following figure shows an example of the additional dimensions of the optional plug connectors for a possible plug connector configuration.
- For more information, refer to chapter "Plug connector positions".

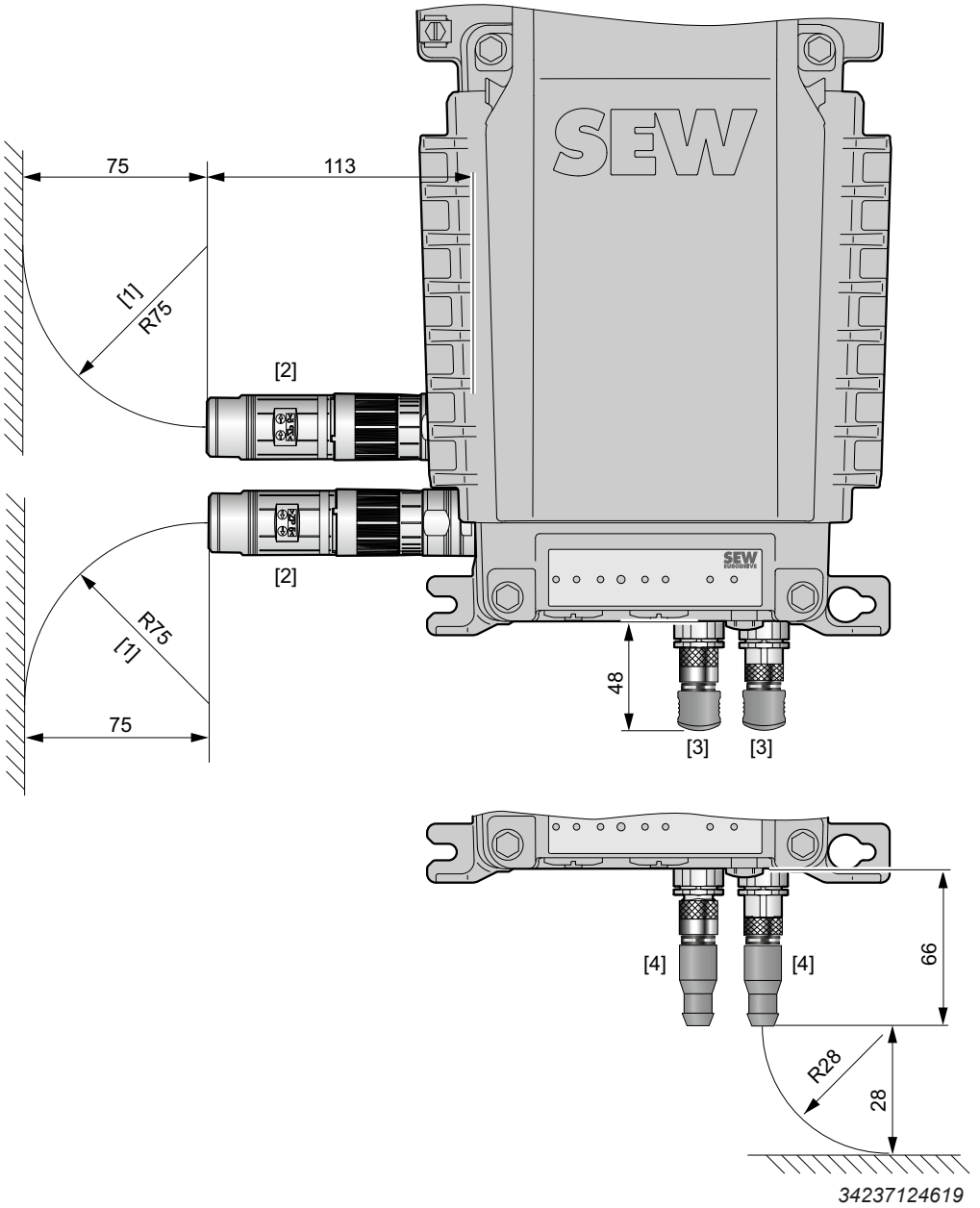


34237212299

Plug connector including mating connector

INFORMATION

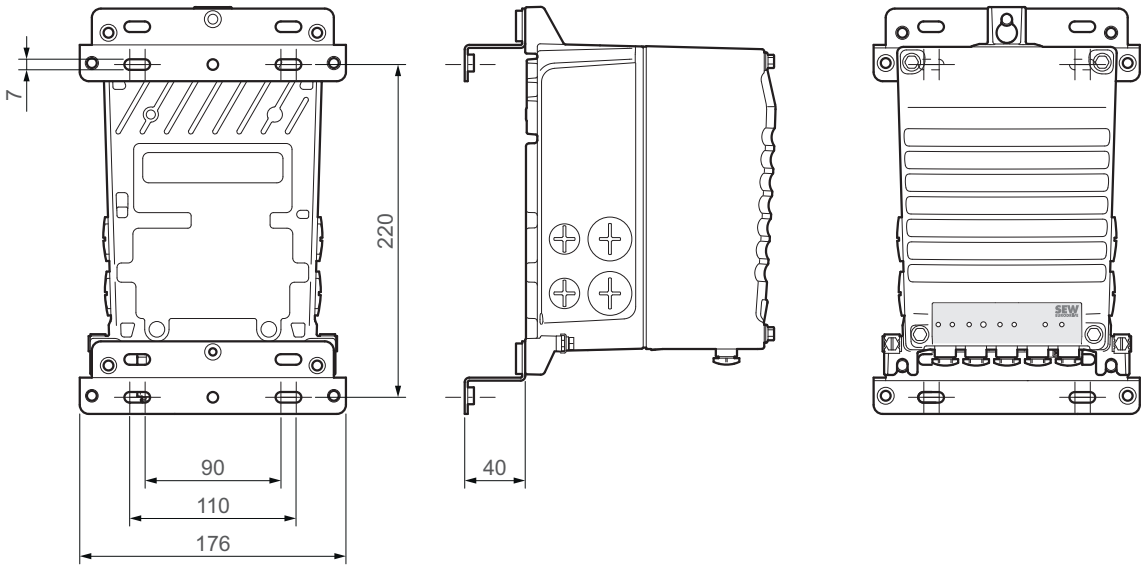
- The following figure shows the additional dimensions/bending radii of the optional plug connectors including mating connector in connection with prefabricated cables from SEW-EURODRIVE.
- For more information, refer to chapter "Plug connector positions".



26863707/EN – 07/2021

11.14 Dimension drawing of M01 mounting panel

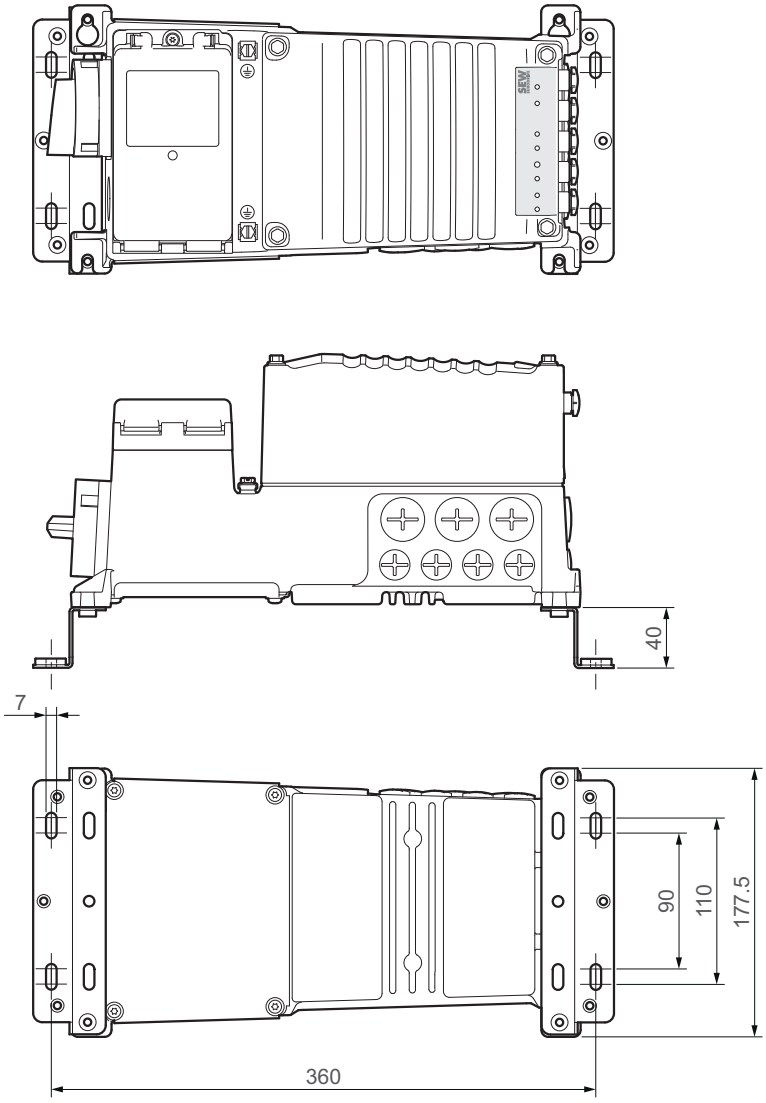
11.14.1 Design MMF1.



31257836171

26863707/EN – 07/2021

11.14.2 MMF31 design

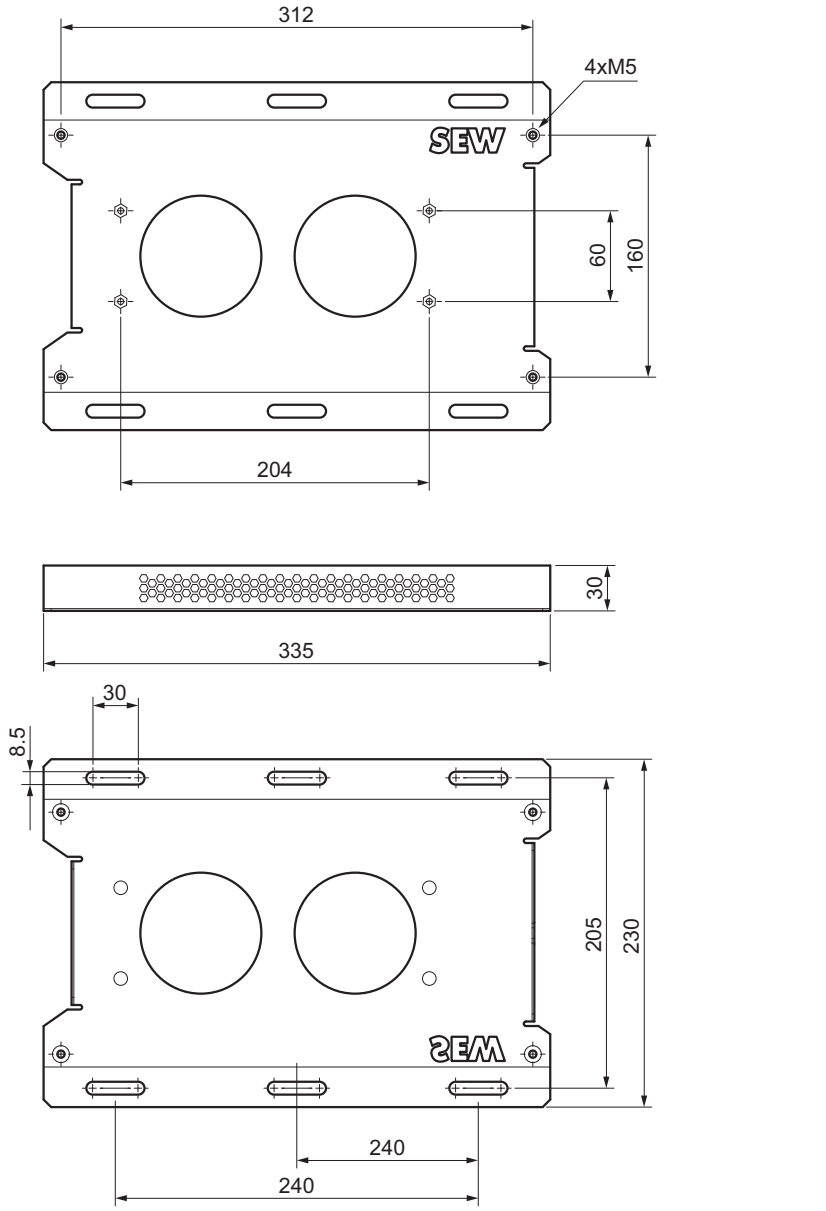


31257838603

26863707/EN – 07/2021

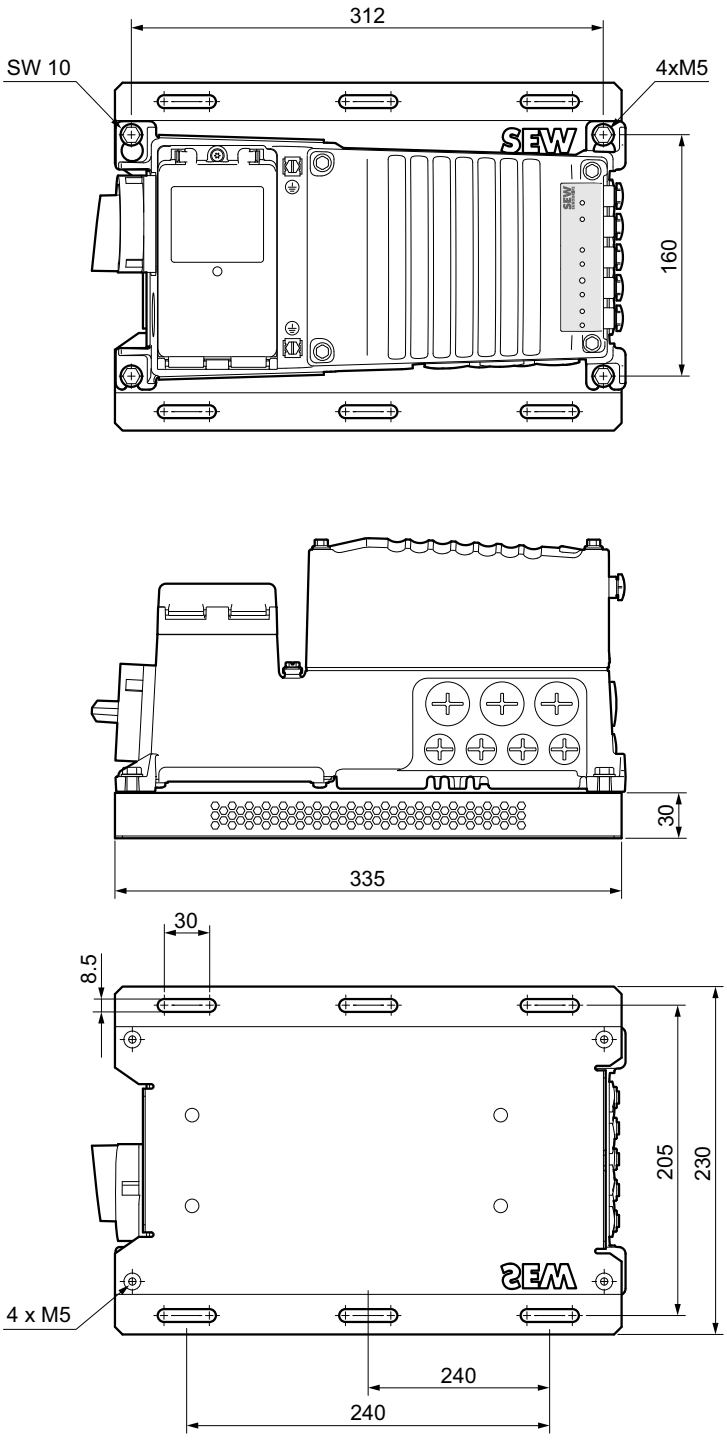
11.15 Dimension drawing of M31 mounting panel

11.15.1 M31 mounting panel



34795566219

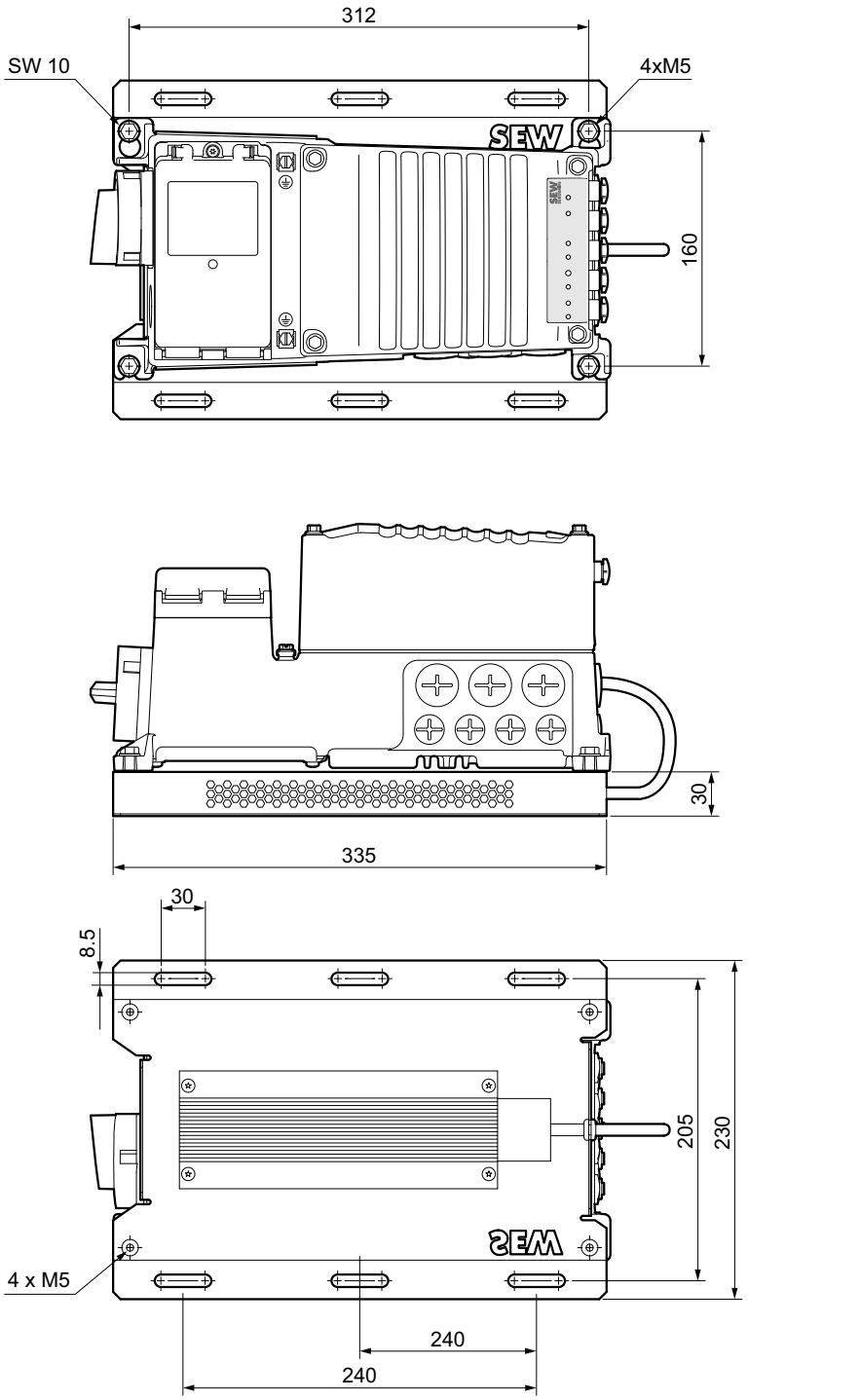
11.15.2 Design MMF31../M31



34795571595

26863707/EN – 07/2021

11.15.3 Design MMF31../M31/EBW



34795569163

12 Functional safety

12.1 General information

12.1.1 Underlying standards

The safety assessment of the device is based on the following standards and safety classes:

Underlying standards	
Safety class/ underlying standard	• Performance Level (PL) according to EN ISO 13849-1 • Safety Integrity Level (SIL) according to EN 61800-5-2 • Safety Integrity Level Claim Limit (SIL_{CL}) according to EN 62061

Observe the versions of the applicable standards as specified on the declaration of conformity or on the TÜV certificate.

26863707/EN – 07/2021

12.2 Integrated Safety Technology

12.2.1 MOVIMOT® flexible

The safety technology of the decentralized inverter described below has been developed and tested in accordance with the following safety requirements:

- Safety Integrity Level 3 according to EN 61800-5-2, EN 61508.
- PL e according to EN ISO 13849-1.

This was certified by TÜV Rheinland. Copies of the TÜV certificate and the corresponding report are available from SEW-EURODRIVE on request.

12.2.2 Safe condition

For safety-related operation of the drive unit, Safe Torque Off is defined as safe state (see STO safety subfunction). The safety concept is based on this definition.

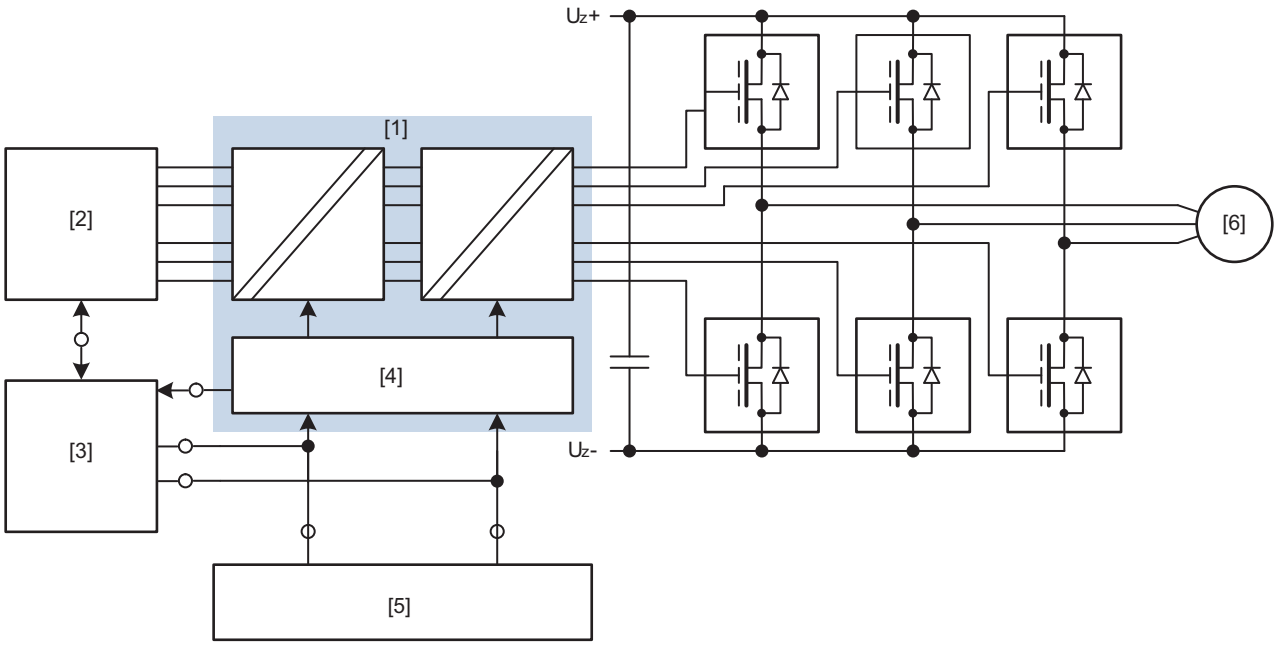
12.2.3 Safety concept

The drive unit is supposed to be able to perform the safety subfunction "Safe Torque Off" according to EN 61800-5-2:

- The drive unit can be connected to an external safety controller or safety relay. This external safety controller/safety relay disconnects the safety-related STO input via a 2-pole 24 V switching signal (sourcing/sinking) when a connected command device (e.g. emergency stop button with latching function) is activated. This activates the STO function of the drive unit.
- An internal, dual-channel structure with diagnostics prevents the generation of pulse trains at the power output stage (IGBT).
- Instead of galvanic isolation of the drive from the supply system by means of contactors or switches, the disconnection of the STO input described here safely prevents the control of the power semiconductors in the output stage. The rotary-field generation for the respective motor is deactivated even though the line voltage is still present.
- When the STO safety subfunction is activated, the PWM signals generated by the drive unit are interrupted by the STO circuit and not transmitted to the IGBTs.
- If the STO function detects a discrepancy between both channels, the PWM signals are inhibited. The inhibit can be revoked by a 24 V reset, or by a device reset if F_STO_P1 and F_STO_P2 are not controlled with 24 V.
- The STO safety subfunction can be activated externally e.g. via an external safety device via the STO input.

26863707/EN – 07/2021

12.2.4 Schematic representation of the safety concept



23543720971

[1] STO function
[2] Drive control
[3] Internal safety card (optional)
[4] Diagnostics and inhibiting unit
[5] External safety controller (optional)
[6] Motor

26863707/EN – 07/2021

12.2.5 Safety subfunctions

The following safety subfunctions can be used.

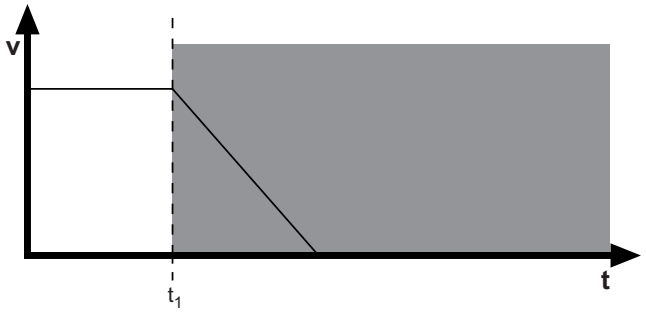
STO (Safe Torque Off according to EN 61800-5-2)

- STO (safe torque off according to EN 61800-5-2) by disconnecting the STO input.

  If the STO function is activated, the frequency inverter no longer supplies power to the motor for generating torque. This safety subfunction corresponds to a non-controlled stop according to EN 60204-1, stop category 0.

  The STO input must be disabled by a suitable external safety controller/safety relay.

  The following figure shows the STO function:



2463228171

v	Speed
t	Time
t_1	Point of time when STO is triggered
	Disconnection range

26863707/EN – 07/2021

SS1(c) (SS1-t) (Safe Stop 1, with time control according to EN 61800-5-2

- SS1(c) (SS1-t) (safe stop 1, with time control according to EN 61800-5-2) by means of suitable external control (e.g. safety relay with delayed disconnection).

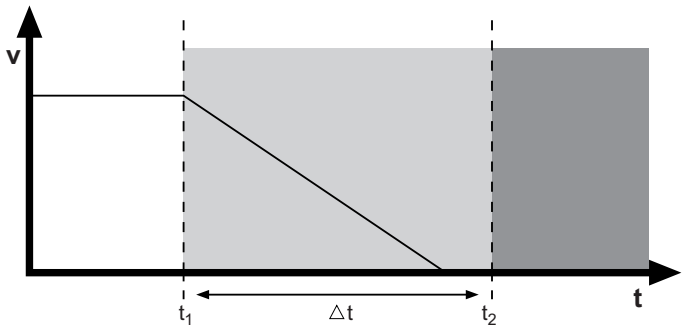
  The following sequence is mandatory:

  – Decelerate the drive using an appropriate deceleration ramp specified via set-points.

  – Disconnect the STO input (= triggering the STO function) after a specified safety-related time delay.

  This safety subfunction corresponds to a controlled stop according to EN 60204-1, stop category 1.

  The following figure illustrates the SS1(c) (SS1-t) function:



2463226251

v	Speed
t	Time
t_1	Point of time when brake ramp is initiated
t_2	Point of time when STO is triggered
Δt	Delay time until STO is triggered
	Safe time delay range
	Disconnection range

26863707/EN – 07/2021

12.2.6 Restrictions

- Note that if the drive does not have a mechanical brake or if the brake is defective, the drive may coast to a halt (depending on the friction and mass moment of inertia of the system). In the event of regenerative loads or with axes that are loaded with gravitational forces or driven externally, the drive can even accelerate. This must be taken into account in a risk assessment of the system/machine. Additional safety measures might have to be implemented (e.g. safety brake system).

  The drive unit cannot be used without an additional brake system for application-specific safety subfunctions that require active deceleration (braking) of the dangerous movement.
- When using the SS1(c) (SS1-t) function as described in the chapter "Functional safety" > "Integrated safety technology" > "Safety subfunctions", the deceleration ramp of the drive is not monitored with respect to safety. In the event of a fault, deceleration may fail during the delay time or, in the worst-case, there might be an acceleration. In this case, the STO function is only activated after the set time delay has expired. The resulting danger must be taken into account in the risk assessment of the system/machine. Additional safety measures might have to be implemented.
- The STO function cannot prevent a possible jerk or DC braking.

⚠ WARNING

The safety concept is suitable only for performing mechanical work on driven system/machine components.

Severe or fatal injuries.

Hazardous voltages are present in the connection box when the STO signal is disconnected.

- Before working on the electric part of the drive system, disconnect it from the supply voltage using an appropriate external disconnecting device, and secure it against unintentional reconnection to the voltage supply.

⚠ WARNING

Electric shock due to incompletely discharged capacitors.

Severe or fatal injuries.

- Observe a minimum switch-off time of 5 minutes after disconnecting the power supply.

INFORMATION

The brake and DynaStop® are not safety-related. If the parameter *Apply brake/ DynaStop® in STO state (Index 8501.3)* is enabled, the following happens when the STO function is triggered:

- The brake is applied.
- DynaStop® is activated.

26863707/EN – 07/2021

12.3 Safety conditions

The requirement for safe operation is that the safety subfunctions of the drive unit are properly integrated into an application-specific, higher-level safety function. A system/machine-specific risk assessment must be carried out by the system/machine manufacturer and taken into account for the use of the drive system with the drive unit.

The system/machine manufacturer and the user are responsible for the compliance of the system/machine with the applicable safety regulations.

The following requirements are mandatory when installing and operating the drive unit in safety-related applications:

- Approved devices.
- Installation requirements.
- Requirements on external safety controllers and safety relays.
- Startup requirements.
- Operation requirements.

12.3.1 Approved devices

The following device variants are permitted for safety-related applications:

Decentralized inverter	Nominal output current
MOVIMOT® flexible	2.0 – 16.0 A

26863707/EN – 07/2021

12.3.2 Requirements on the installation

- The wiring technology used must comply with the standard EN 60204-1.
- The STO control cables must be routed according to EMC guidelines and as follows:
  - Shielded cables must be permanently (fixed) installed and protected against external damage, or equivalent measures must be taken.
  - Adhere to the regulations in force for the application.
  - The STO control cables from the external safety device to the axis must be installed with a cable length ≤ 100 m.
  - The user must take suitable measures to ensure that STO control cables are routed separately from the power lines of the drive. This does not apply to cables approved by SEW-EURODRIVE specifically for this application case.
- The STO function does not detect short circuits or interference voltage in the supply line. For this reason, one of the following 2 requirements must always be met:
  - No parasitic voltages can occur in the STO control cables.
  - The external safety controller can detect a crossfault from an external potential to the STO control lines.
- Observe without fail the values specified for safety components when designing the safety circuits.
- The STO signal (F_STO_P1, F_STO_P2, and F_STO_M) must not be used for feedback.
- For safety controllers/safety relays, you must only use grounded voltage sources with protective electrical separation (PELV) in accordance with EN 61131-2 and EN 60204-1.
- If several voltage sources are used, each voltage source must be connected to a PE system.
- When planning the installation, observe the technical data of the devices.
- The supply voltages 0V24 V_OUT and 24V_OUT of the device may only be used to supply the STO input. The cable length must not exceed 30 m.

  This connection variant is not permitted for STO group disconnection.
- When the STO control cables are routed into the connection box to terminal X9 of the connection unit, the cable ends must be covered with conductor end sleeves and the cables must be fixed close to terminal X9 using cable ties. Other low-voltage signals can be bundled together with the STO signals.
- To use the drive unit in safety-related applications, remove the jumpers labeled with "Caution, remove jumper for safety operation" from the STO terminal X9. No labeled jumpers are available for those designs where the STO connection is performed using plug connectors. The installed jumper is relevant to the function.

26863707/EN – 07/2021

12.3.3 Requirements on the external safety controller

A safety relay can be used as an alternative to a safety controller. The following requirements apply analogously.

- The safety controller and all other safety-related subsystems must be approved for at least the safety class required in the overall system for the respective application-related safety function.

  The following table shows an example of the required safety class of the safety controller:

Application	Safety controller requirements
Performance level d according to EN ISO 13849-1, SIL 2 according to EN 62062	Performance level d according to EN ISO 13849-1 SIL 2 according to EN 61508
Performance level e according to EN ISO 13849-1, SIL 3 according to EN 62061	Performance level e according to EN ISO 13849-1, SIL 3 according to EN 61508

- The wiring of the safety controller must be suitable for the required safety class (see manufacturer documentation). The STO input of the device can be switched with 2 poles (sourcing output, sourcing/sinking, or serial sourcing), or with 1 pole (sourcing).
- The values specified for the safety controller must be strictly adhered to when designing the circuit.
- Electro-sensitive protective equipment (such as light grid or scanner) according to EN 61496-1 and emergency stop buttons must not be directly connected to the STO input. The connection must be made using safety relays, safety controllers, etc.
- To ensure protection against unintended restart in accordance with EN ISO 14118, the safe control system must be designed and connected in such a way that resetting the command device alone does not lead to a restart. A restart may be carried out only after a manual reset of the safety circuit.
- If no fault exclusion is used for the STO wiring according to EN ISO 13849-2 or DIN EN 61800-5-2, the external safety device must detect the following faults in the STO wiring within 20 s depending on the connection type:
  - 2-pole sourcing output:

    Short circuit of 24 V at F_STO_P1 or F_STO_P2 (Stuck-at 1)

    Crossfault between F_STO_P1 and F_STO_P2
  - 2-pole sourcing/sinking:

    Short circuit of 24 V at F_STO_P1 (Stuck-at 1)

    Short circuit of 0 V at F_STO_M (Stuck-at 0)
  - 2-pole serial sourcing:

    Fault exclusion is mandatory
  - 1-pole sourcing output:

    Short circuit of 24 V at F_STO_P (Stuck-at 1)

2-pole sourcing output:

- Test pulses can be used when the device is switched on or off.
  - The test pulses on both sourcing channels must be switched with a time delay. However, additional switch-off test pulses may occur simultaneously.

26863707/EN – 07/2021

  - The test pulses in both sourcing channels must not exceed 1 ms.
  - The next switch-off test pulse in one sourcing channel must only occur after a 2 ms time period.
  - A maximum of 3 switch-on test pulses may be generated in sequence at an interval of 2 ms. Wait for at least 500 ms after any package before you generate another switch-on test pulse or another switch-on test pulse package.
  - The signal levels must be read back by the safety controller and compared to the expected value.
  - The signal levels may have a maximum temporal discrepancy of 130 ms. In case of a larger temporal discrepancy, the device changes to the STO fault state (F20.11).

2-pole sourcing/sinking:

- Test pulses can be used when the device is switched on or off.
  - The test pulses in the sourcing and sinking channel must not exceed 1 ms.
  - The next switch-off test pulse in the sourcing or sinking channel must only occur after a 2 ms time period.
  - A maximum of 3 switch-on test pulses may be generated in sequence at an interval of 2 ms. Wait for at least 500 ms after any package before you generate another switch-on test pulse or another switch-on test pulse package.
  - The signal levels must be read back by the safety controller and compared to the expected value.

2-pole serial sourcing:

- Fault exclusion in the connection lead is mandatory if no external test pulses are possible.

1-pole sourcing output:

- Test pulses can be used when the device is switched on or off.
  - The test pulse in the sourcing channel must not exceed 1 ms.
  - The next switch-off test pulse may only occur after a time period of 2 ms at the earliest.
  - A maximum of 3 switch-on test pulses may be generated in sequence at an interval of 2 ms. Wait for at least 500 ms after any package before you generate another switch-on test pulse or another switch-on test pulse package.
  - The signal levels must be read back by the safety controller and compared to the expected value.

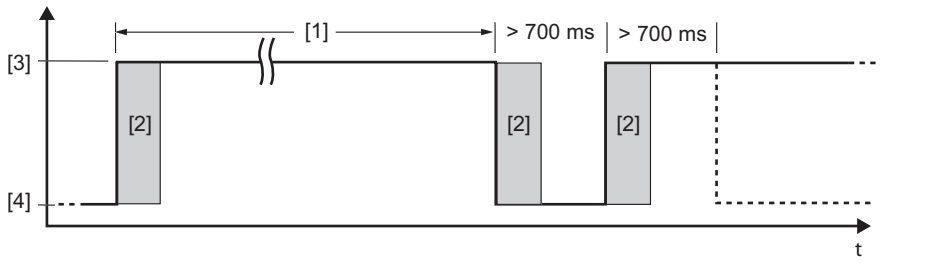
26863707/EN – 07/2021

12.3.4 Requirements on startup

- To validate the implemented safety subfunctions, they must be documented and checked after successful startup.
- Observe the restrictions for safety subfunctions in chapter "Restrictions". Non-safety-related parts and components that affect the result of the test (e.g. motor brake) must be deactivated, if necessary.
- For using the drive unit in safety-relevant applications, it is essential that you perform and record startup checks for the disconnecting device and correct wiring.

12.3.5 Requirements on operation

- Operation is only allowed within the limits specified in the data sheets. This principle applies to the external safety controller as well as to the drive unit.
- The built-in diagnostic function is limited in the case of a permanently enabled or permanently disabled STO input. Advanced diagnostic functions are performed only upon a level change of the STO signal. This is why the safety subfunction via STO input must be triggered with connected line voltage at least once every 12 months for PL d according to EN ISO 13849-1 and SIL 2 according to EN 61800-5-2, and at least once every 3 months for PL e according to EN ISO 13849-1 and SIL 3 according to EN 61800-5-2 to achieve a complete test coverage. Adhere to the following test procedure.



15205932683

[1] Maximum 12 months with PL d/SIL 2
Maximum 3 months with PL e/SIL 3

[2] Internal diagnostics

[3] High: No STO

[4] Low: STO active

- To achieve complete test coverage after a device reset (e.g. after connecting the line voltage), the test transition (STO active → not active) can only be started > 700 ms later. The device signals "ready for operation" or "STO – Safe Torque Off" if it is not in fault state.
- A detected hardware fault in the internal switch-off channels for STO will lead to a locking fault state of the drive unit. If the fault is reset (e.g. by switching the line voltage on/off or by a low level at the STO input for at least 30 ms), a complete test with internal diagnostics according to the above-mentioned test procedure must be performed. If the fault occurs again, replace the device or contact SEW-EURODRIVE Service.

26863707/EN – 07/2021

12.4 Connections variants

12.4.1 General information

Generally, all the connection variants listed in this documentation are permitted for safety-relevant applications as long as the basic safety concept is met. This means you have to make sure that the DC 24 V safety inputs are operated by an external safety relay or a safety controller, in this way preventing an automatic restart.

All the safety conditions stipulated in the chapters "Integrated safety technology", "Safety conditions", and "Connection variants" must be satisfied on a primary basis for the basic selection, installation, and application of the safety components such as safety relay, emergency stop switch, and the approved connection variants.

The wiring diagrams are block diagrams whose only purpose is to show the safety subfunction(s) with the relevant components. For reasons of clarity, circuit-related measures that usually always have to be implemented are not shown in the diagram. These measures are e.g.:

- Ensuring the availability of touch guards.
- Handling overvoltages and undervoltages.
- Avoiding installation errors.
- Detecting ground faults or short circuits in externally installed lines.
- Guaranteeing the required interference immunity against electromagnetic interference.

26863707/EN – 07/2021

12.4.2 Requirements

Using safety relays

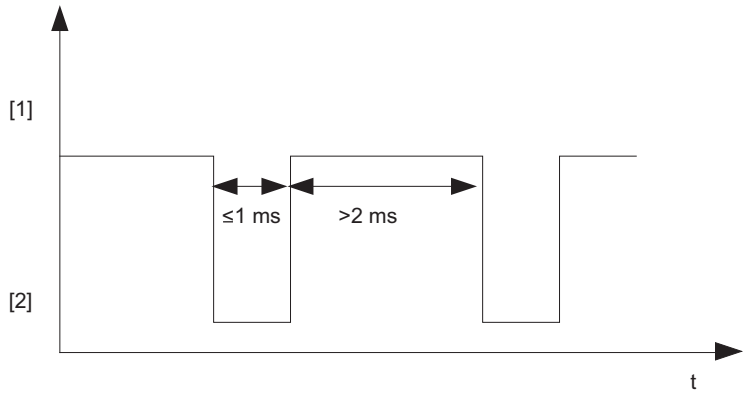
The requirements of the manufacturers of safety relays (such as protecting the output contacts against welding) or of other safety components must be strictly observed. For cable routing, the basic requirements apply as described in this documentation.

For connecting the drive unit with the safety relays, observe the installation requirements in chapter "Functional safety" > "Safety conditions" > "Installation requirements".

All instructions by the manufacturer of the safety relay used in the particular application must be observed.

Using safety controllers

The switch-off test pulse of the used safe digital outputs (F-DO) must be ≤ 1 ms and another switch-off test pulse must only occur 2 ms later at the earliest.



15214338827

[1] High

[2] Low

INFORMATION

If the safety-related control voltage plug at the STO input is switched off (STO activated), you must observe chapter "Functional safety" > "Safety conditions" > "Requirements for the external safety controller" with regard to the test pulses.

INFORMATION

If F_STO_P1, F_STO_P2 are connected to DC 24 V, and F_STO_M is connected to GND, STO is deactivated.

26863707/EN – 07/2021

Switching off the STO signal for several drive units (STO group disconnection)

The STO signal for several drive units can be provided by a single safety relay. The following requirements must be met:

- The total cable length is limited to max. 100 m. Any other instructions published by the manufacturer on the use of the safety device (for the respective application) must also be observed.
- The maximum output current and the maximally permitted contact load of the safety device must be observed.
- You must comply with the permitted signal levels at the STO input and all other technical data of the device. The routing of the STO control cables and the voltage drop must be considered.
- Other requirements of the safety manufacturer (such as protecting the output contacts against welding) must be strictly observed. The basic requirements for cable routing also apply.
- A calculation based on the technical data of the device must be performed separately for each case of STO group disconnection.
- A maximum of 20 drive units may be used in one STO group disconnection.

26863707/EN – 07/2021

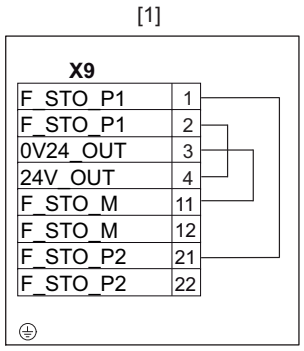
12.4.3 Connection via terminal X9

For detailed information on terminal X9, refer to chapter "Electrical Installation" > "Terminal assignment".

Wiring diagrams

Delivery state

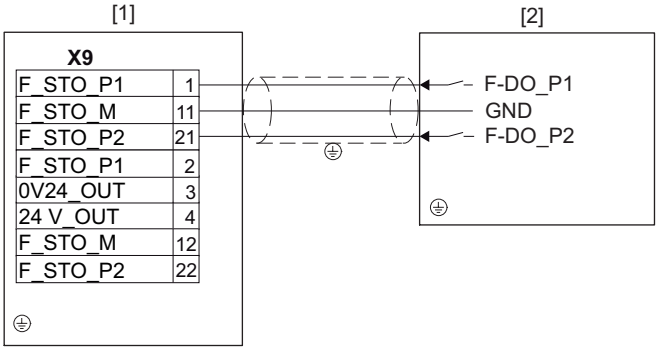
In delivery state, the terminals at the connection for safe disconnection X9 are jumpered. The jumpers are marked with the text "Caution, remove jumper for safety operation". To use the drive unit in safety-related applications, remove the jumpers from the STO terminal X9.



9007222815498379

[1] Drive unit

2-pole sourcing



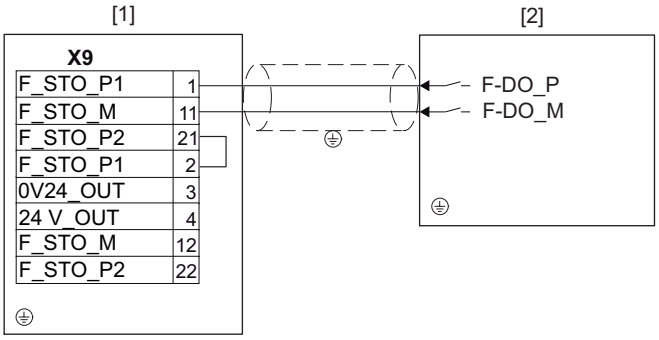
9007222818851979

[1] Drive unit
[2] External safety device

26863707/EN – 07/2021

2-pole sourcing/sinking

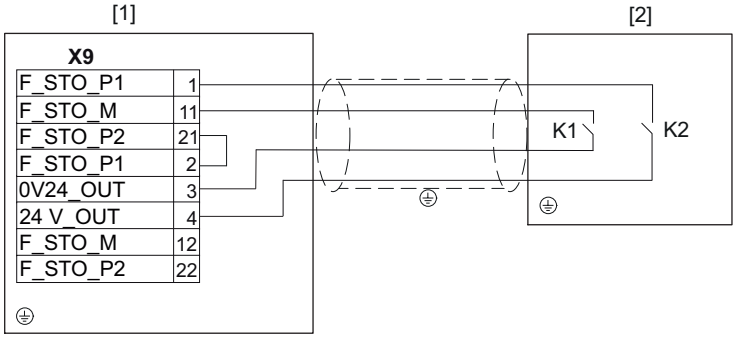
Example 1



9007222818872587

[1] Drive unit
[2] External safety device

Example 2



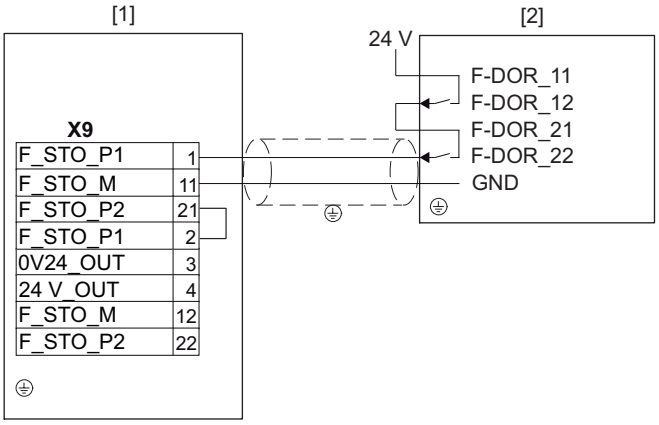
34106433163

[1] Drive unit
[2] External safety device

Observe the following notes:

- The supply voltages 0V24_OUT and 24V_OUT must not be used to supply the external safety device.
- This connection variant (example 2) is only permitted if a fault can be excluded for the cable between the drive unit and the external safety device. Fault exclusion between any 2 conductors in a cable according to EN ISO 13849-2 is possible if the cable is permanently (fixed) installed and protected against external damage, for example, by using cable duct or armored conduit.

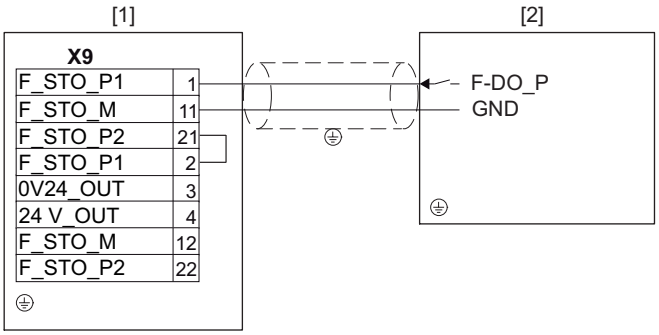
2-pole serial sourcing



9007222818944907

[1] Drive unit
[2] External safety device

1-pole sourcing

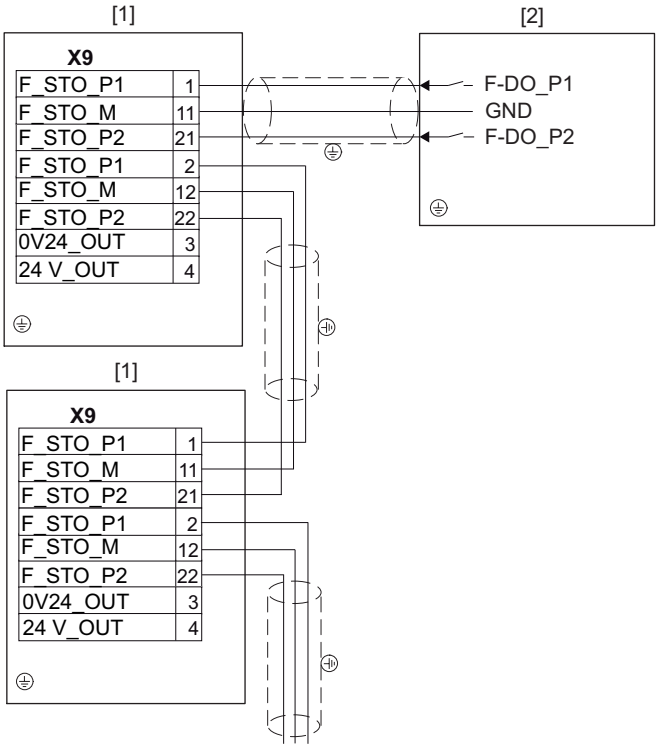


9007222819398155

[1] Drive unit
[2] External safety device

26863707/EN – 07/2021

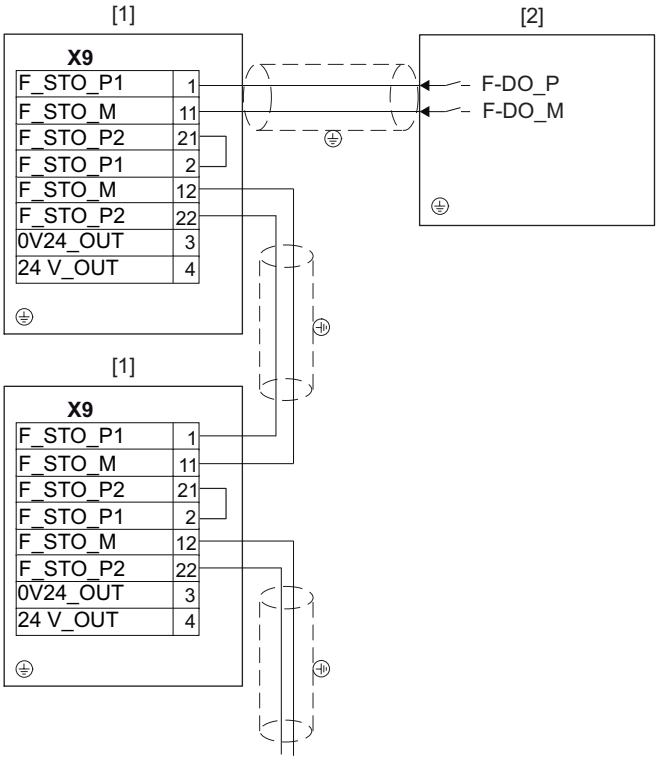
STO group disconnection, 2-pole, sourcing



25228151435

[1] Drive unit
[2] External safety controller

STO group disconnection, 2-pole, sourcing/sinking

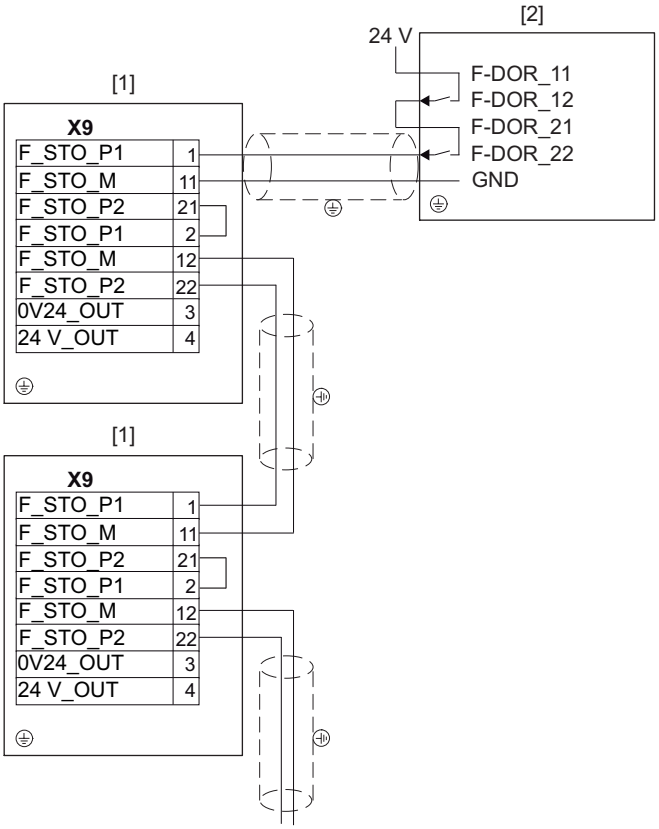


25228157067

[1] Drive unit
[2] External safety controller

26863707/EN – 07/2021

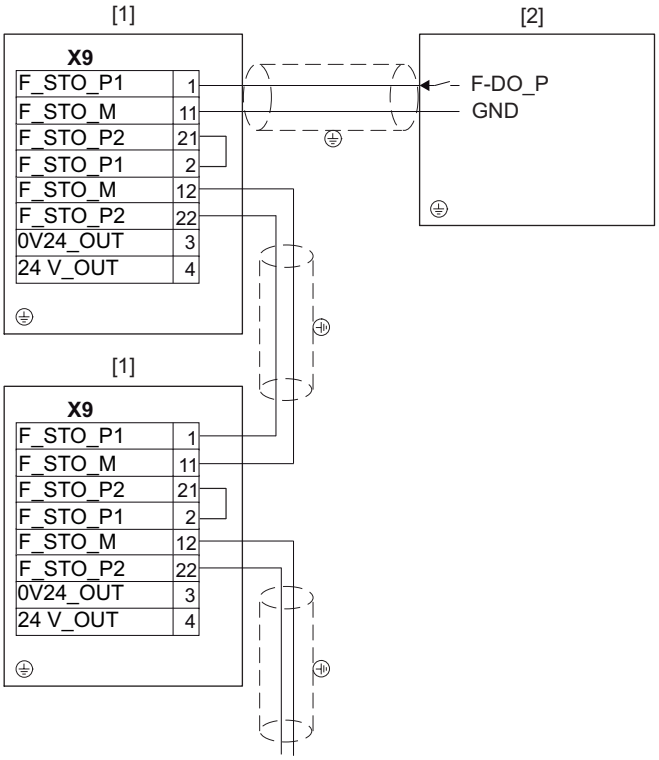
STO group disconnection, 2-pole, serial sourcing



25229441035

[1] Drive unit
[2] External safety controller

STO group disconnection, 1-pole, sourcing



25229445003

[1] Drive unit
[2] External safety controller

26863707/EN – 07/2021

12.4.4 Connection via M12 plug connector X5504/X5505

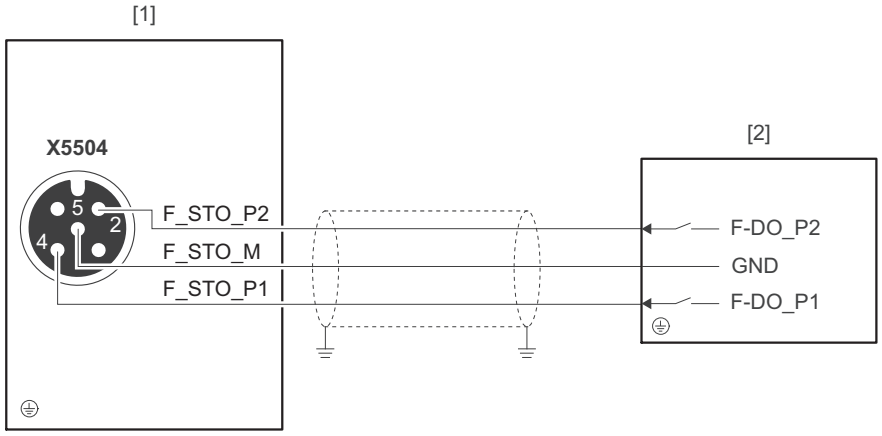
For further information on the connection of X5504/X5505, refer to chapter "Electrical installation" > "Assignment of optional plug connectors".

Wiring diagrams

Delivery state

In the delivery state, plug connector X5504 is not connected, this means the STO input is active. According to the safety concept, X5504 must be connected or temporarily jumpered using the optionally available STO jumper plug for staring up the unit.

2-pole sourcing

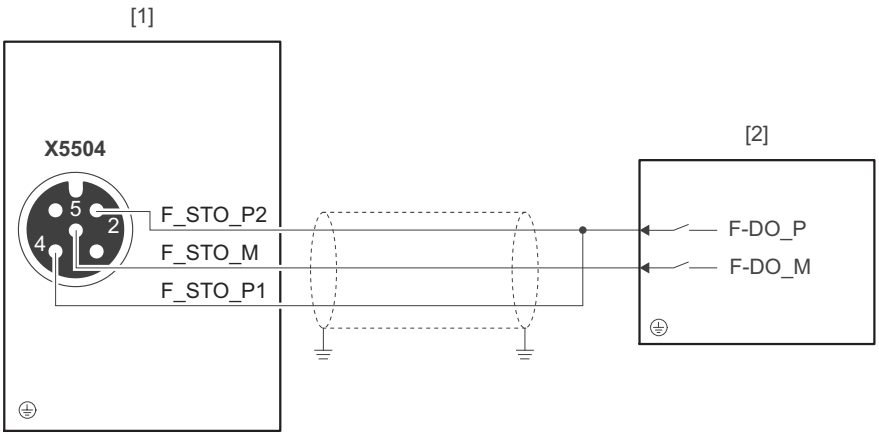


23876274315

[1] Drive unit
[2] External safety device

2-pole sourcing/sinking

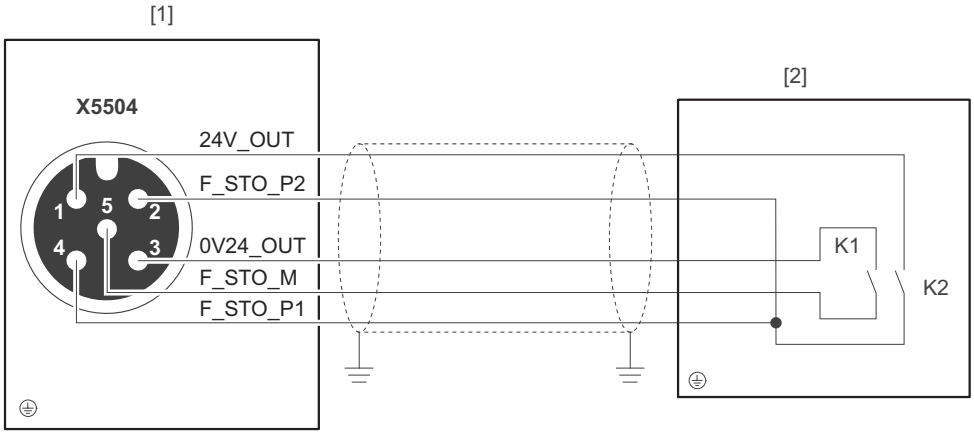
Example 1



23876260491

[1] Drive unit
[2] External safety device

Example 2



34216188171

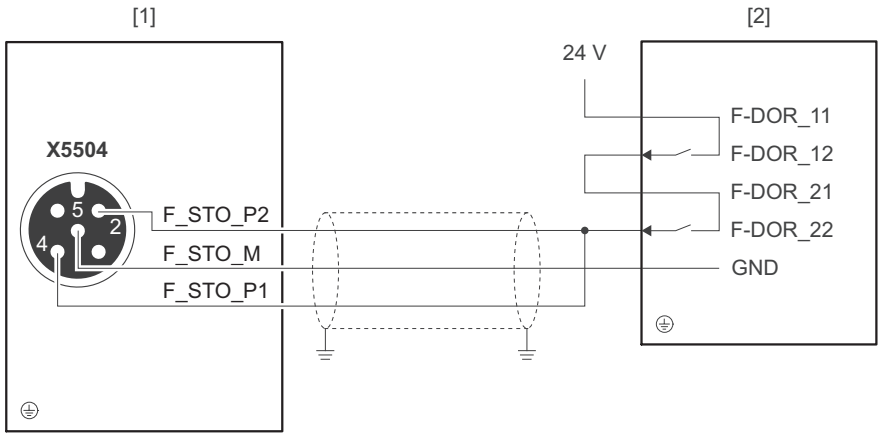
[1] Drive unit
[2] External safety device

Observe the following notes:

- The supply voltages 0V24_OUT and 24V_OUT must not be used to supply the external safety device.
- This connection variant (example 2) is only permitted if a fault can be excluded for the cable between the drive unit and the external safety device. Fault exclusion between any 2 conductors in a cable according to EN ISO 13849-2 is possible if the cable is permanently (fixed) installed and protected against external damage, for example, by using cable duct or armored conduit.

26863707/EN – 07/2021

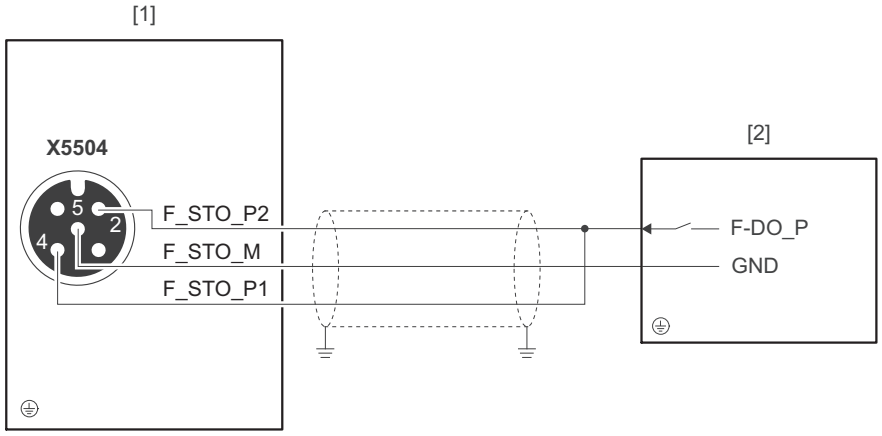
2-pole serial sourcing



23875551243

[1] Drive unit
[2] External safety device

1-pole sourcing

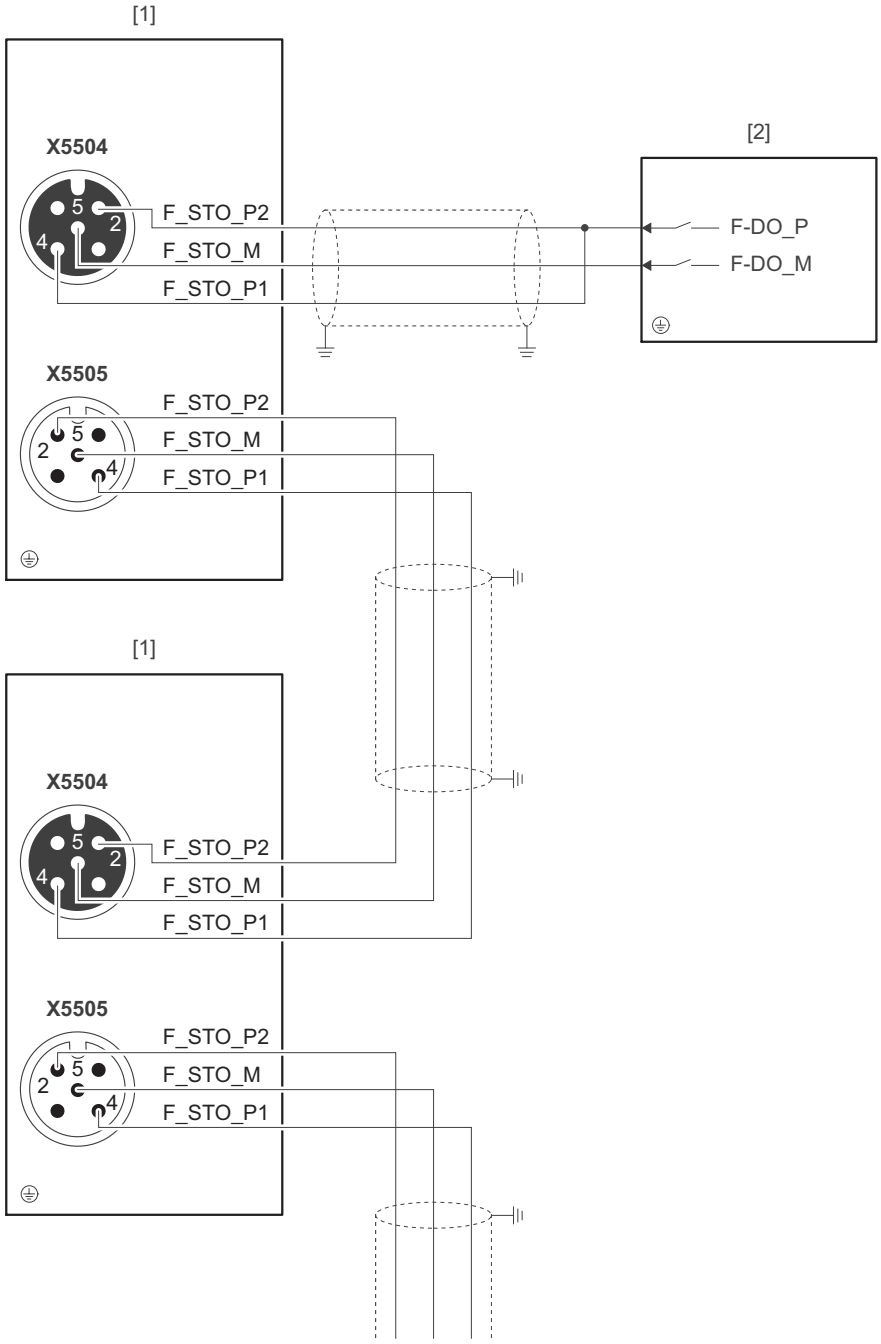


23875545995

[1] Drive unit
[2] External safety device

26863707/EN – 07/2021

STO group disconnection, 2-pole, sourcing/sinking



9007223142162187

[1] Drive unit
[2] External safety device

STO jumper plug

⚠ WARNING

Safe disconnection of the device is not possible when the jumper plug is used.

Severe or fatal injuries can occur.

- Only use the jumper plug if the device is not used to fulfill any safety function.

26863707/EN – 07/2021

⚠ WARNING

Disabling of the safety-related disconnection of further devices due to parasitic voltages when using an STO jumper plug.

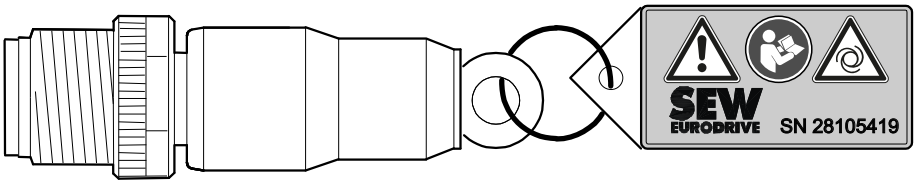
Severe or fatal injuries.

- Only use the STO jumper plug when all incoming and outgoing STO connections have been removed from the device.

A printed red tag is attached to the STO jumper plug.

The STO jumper plug can be connected to the STO plug connector X5504 of the device. The STO jumper plug deactivates the safety functions of the device.

The following figure shows the STO jumper plug with the printed **red** tag, part number 28105419:



25247142411

26863707/EN – 07/2021

12.5 Safety characteristics

	Characteristic values in accordance with	
	EN 61800-5-2	**EN ISO 13849-1**
Tested safety class/underlying standards	Safety integrity level 3	Performance level e
Probability of a dangerous failure per hour (PFH value)	2.5×10^{-9} 1/h	
Service life	20 years, after which the component must be replaced with a new one.	
Proof test interval	> 20 years	-
Safe state	Safe Torque Off (STO)	
Safety subfunction	STO, SS1[1)] according to EN 61800-5-2	

1) With suitable external control

INFORMATION

With 1-pole wiring, the realizable performance level according to EN ISO 13849 is reduced to PL d. For the wiring between safety relay and STO input, an fault exclusion is necessary.

26863707/EN – 07/2021

13 Address list

Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 319 47 56 / +375 17 378 47 58 Fax +375 17 378 47 54 http://www.sew-eurodrive.by sew@sew-eurodrive.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue du Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be info@sew.be
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Jvl / Ind Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

26863707/EN – 07/2021

Cameroon			
Sales	Douala	SEW-EURODRIVE SARLU Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 12 35 Fax +237 233 39 02 10 www.sew-eurodrive.ci/ info@sew-eurodrive.cm
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2001 Ch. de l'Aviation Dorval Quebec H9P 2X6	Tel. +1 514 367-1124 Fax +1 514 367-3677 n.paradis@sew-eurodrive.ca
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMPA Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

26863707/EN – 07/2021

Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Service	Vejle	SEW-EURODRIVE A/S Bødkervej 2 7100 Vejle	Tel. +45 43 9585 00 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Loomäe tee 1, Lehmja küla 75306 Rae vald Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee info@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
	Tornio	SEW-EURODRIVE Oy Lossirannankatu 5 95420 Tornio	Tel. +358 201 589 300 Fax +358 3 780 6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales	Hagenau	SEW USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00

26863707/EN – 07/2021

France			
Assembly Sales Service	Bordeaux	SEW USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 dtcbordeaux@usocome.com
	Hagenau	SEW USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 dtchaguenau@usocome.com
	Lyon	SEW USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 dtclyon@usocome.com
	Nantes	SEW USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 dtcnantes@usocome.com
	Paris	SEW USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 dtcparis@usocome.com

Gabon
Representation: Cameroon

Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production / Precision Gear Units	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Straße 12 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
	MAXOLU-TION® Factory Automation	SEW-EURODRIVE GmbH & Co KG Eisenbahnstraße 11 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 43 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909551-21 Fax +49 89 909551-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-10 Fax +49 2173 8507-50 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Bremen	SEW-EURODRIVE GmbH & Co KG Allerkai 4 28309 Bremen	Tel. +49 421 33918-10 Fax +49 421 33918-22 tb-bremen@sew-eurodrive.de

26863707/EN – 07/2021

Germany			
	Hamburg	SEW-EURODRIVE GmbH & Co KG Hasselbinnen 11 22869 Schenefeld	Tel. +49 40298109-60 Fax +49 40298109-70 dc-hamburg@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Greece			
Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
Iceland			
Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 https://vov.is/ vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited 302, NOTUS IT PARK, Sarabhai Campus, Beside Notus Pride, Genda Circle, Vadodara 390023 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
Sales Service	Gurgaon	SEW-EURODRIVE India Private Limited Drive Center Gurugram Plot no 395, Phase-IV, UdyogVihar Gurugram , 122016 Haryana	Tel. +91 99588 78855 salesgurgaon@seweurodriveindia.com

26863707/EN – 07/2021

Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com
Ireland			
Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie
Israel			
Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE S.a.s. di SEW S.r.l. & Co. Via Bernini,12 20033 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 27 21 21 81 05 Fax +225 27 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Kazakhstan			
Sales Service	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	Representative Office SEW-EURODRIVE Representative office in Uzbekistan 95A Amir Temur ave, office 401/3 100084 Tashkent	Tel. +998 97 134 01 99 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn

26863707/EN – 07/2021

Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service Assembly	Bouskoura	SEW-EURODRIVE Morocco SARL Parc Industriel CFCIM, Lot. 55/59 27182 Bouskoura Grand Casablanca	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB MINING & INDUSTRIAL SUPPLIES CC Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com

26863707/EN – 07/2021

Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com sales@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L Nu Guazu No. 642 casi Campo Esperanza Santisima Trinidad Asuncion	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

26863707/EN – 07/2021

Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 http://www.sialco.ro sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» 188660, Russia, Leningrad Region, Vse-volozhsky District, Korabselki, Aleksandra Nevskogo str. building 4, block 1 P.O. Box 36 195220 St. Petersburg	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn
Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bernolákovo	SEW-Eurodrive SK s.r.o. Priemyselná ulica 6267/7 900 27 Bernolákovo	Tel.+421 2 48 212 800 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

26863707/EN – 07/2021

South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE Korea Co., Ltd. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE Korea Co., Ltd. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
Assembly Service	Siheung	SEW-EURODRIVE Korea Co., Ltd. 35, Emtibeui 26-ro 58beon-gil, Siheung-si, Gyeonggi-do	http://www.sew-eurodrive.kr
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981
Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd Simunye street Matsapha, Manzini	Tel. +268 7602 0790 Fax +268 2 518 5033 charles@cgtrading.co.sz www.cgtradingswaziland.com
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

26863707/EN – 07/2021

Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Ana Merkez Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Assembly Sales Service	Dnipropetrovsk	SEW-EURODRIVE, LLC Robochya str., bld. 23-B, office 409 49008 Dnipro	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
United Arab Emirates			
Drive Technology Center	Dubai	SEW-EURODRIVE FZE PO Box 263835 Jebel Ali Free Zone – South, P.O. Box Dubai, United Arab Emirates	Tel. +971 (0)4 8806461 Fax +971 (0)4 8806464 info@sew-eurodrive.ae
Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
	Additional addresses for service provided on request!		
Vietnam			
Sales	Ho Chi Minh City	SEW-EURODRIVE PTE. LTD. RO at Hochiminh City Floor 8, KV I, Loyal building, 151-151 Bis Vo Thi Sau street, ward 6, District 3, Ho Chi Minh City, Vietnam	Tel. +84 937 299 700 huytam.phan@sew-eurodrive.com
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn
Zambia			
Representation: South Africa			

26863707/EN – 07/2021

Index

Numerical

4Q operation
- In motors with mechanical brake 395
- With external braking resistor 395

A

Acceleration 174
Air admission and accessibility 374
Ambient temperature 382
AS-Interface
- Interface 154
- LED "AS-i" 239
- LED displays 235
- Technical data 385

Assembly
- Requirements 38
- Safety notes 12

AUX PWR 151
AZ1Z 387

B

Brake coil
- Regenerative current-carrying capacity 395

Braking resistor
- Current-carrying capacity 390
- External 390
- Integrated 390
- Overview 389
- Technical data 390

Braking resistor, external 390
- BW033-012-01 393
- BW050-008-01 393
- BW068-006-T 393
- BW068-012-T 393
- BW100-005/K-1.5 392
- BW100-009-T 392
- BW150-003/K-1.5 392
- BW150-006-T 392

Braking resistors, external 395
BW033-012-01 401
BW050-008-01 401
BW068-006-T 400
BW068-012-T 399, 400
BW1, BW2 390
BW100-005/K-1.5 ..... 367, 396, 397
BW100-009-T 398, 399
BW150-003/K-1.5 ..... 367, 396
BW150-006-T 398
BW68-006-T 399

C

Cable cross section
- Control terminals X9 63
- Line terminals X1_a 62
- Line terminals X1_b 62
- Terminals X2_A 62
- Terminals X3 62

Cable entries 18
Cable glands 408
Cable routing 56, 77
Cable shielding 56, 77
CBG.. keypad
- Startup 205, 207
- Technical data 387

CBG11A keypad 207
CBG21A keypad 205
CE marking 373
Circuit breaker 65
Connection
- Braking resistor 82, 83, 84
- Cable routing 77
- Cable shielding 77
- Connection diagram 76
- Ethernet 82, 83, 84
- Installation topology 71
- Motor 78, 79, 80, 81
- PC 155
- Plug connector 91
- STO 82, 83, 84
- Supply system 82, 83, 84
- Terminal assignment 72

Connection box 28
Connection cable
- Notes 92

Connection cables
- Cable routing 92
- Cable types 92
- Inspection and maintenance 314

26863707/EN – 07/21

Prefabricated cables with plug connectors 93
Third-party cable with plug connector 93
Connection unit
Nameplate 35
Type designation 35
Control elements 170, 171
Cooling
Derating 12
Installation altitude 12
Copyright notice 8
Cover
Internal 28
CSA 373
cUL 373
Current carrying capacity of terminals 383

D

DC 24 V output 384
DC 24 V supply 384
Deceleration 174
Decimal separator 8
Derating 12
Derating depending on
Ambient temperature 383
Installation altitude 44, 366, 383
The rotating field frequency 366
Derating factors 383
Description of mounting positions 412
Determining the operating hours 312
Device
Disposing of 311
Installing 39
Mounting 45
Mounting with mounting panel 48, 50
Replacing 307
Device replacement 304
Device structure
Cable entry positions 18
Connection unit nameplate 35
Electronics 27
Electronics nameplate 32
MOVIMOT® flexible MMF1. 15
MOVIMOT® flexible MMF31 16
MOVIMOT® flexible MMF32 17
Nameplate device 21
Nameplate plug connector positions 24
Nameplate positions 20
Diagnostics
Fault messages 230
LED displays 235
MOVISUITE® 230
Digital inputs 384
Dimension drawings
BS-005 protective grid 397
BW033-012-01 401
BW050-008-01 401
BW068-006-T 400
BW068-012-T 400
BW100-005/K-1.5 397
BW100-009-T 399
BW150-003/K-1.5 396
BW150-006-T 398
Device 413, 415, 417
Device with cooling fins 414, 416
Device with fan 418
Line choke 407
M01 mounting panel 427
M31 mounting panel 429
Dimension drawings of plug connectors
At the electronics cover 419, 420
In the connection box 421
DIP switch
Description 177
Drive selection 325
DynaStop® 221
Disabling for the startup procedure 213
Functional description 221
In connection with STO 224

E

EAC 373
Easy mode 169
Electrical installation 13
Safety notes 13
Electronics
Connection box 28
Electronics cover (inside) 28
Electronics cover (outside) 31
Nameplate 32
Type designation 32
Electronics cover
Minimum installation clearance 41

26863707/EN – 07/21

Mounting ... 40
Outside ... 31
Removing ... 43
Electronics data ... 386
Embedded safety notes ... 7
EMC ... 56
EMC cable glands
Cable shielding ... 85
Installation ... 85
EMC-compliant cable glands
Overview ... 408
Encoder
AZ1Z ... 387
Technical data ... 387
Engineering plug connector X4142 ... 157
Equipotential bonding ... 57
At the connection box (option) ... 60
Error
Switch-off responses ... 231, 233
Ethernet cable
Cable routing ... 77
Cable selection ... 77
Cable shielding ... 77
Expert mode ... 169
Extended storage ... 309

F

Fault
Fault messages ... 230, 231
Reset ... 235
Fault messages
Evaluating ... 230
With parameterizable response ... 231
Functional safety ... 432
Approved devices ... 438
Characteristic safety values ... 458
Connection variants ... 443
Installation ... 439
Installation requirements ... 439
Integrated safety technology ... 433
Operational requirements ... 442
Representation of the safety concept ... 434
Requirements for external safety control ... 440
Requirements on connection variants ... 444
Restrictions ... 437
Safe state ... 433
Safe Torque Off (STO) ... 435
Safety concept ... 433
Safety controllers, external ... 440
Safety controllers, requirements ... 444
Safety relays, requirements ... 444
Safety-related conditions ... 438
Standards ... 432
Startup ... 442
Startup, requirements ... 442
STO (Safe Torque Off) ... 435
STO signal for group disconnection ... 445
Wiring diagrams ... 446, 453
Functional safety technology
Safety note ... 11

H

Hazard symbols
Meaning ... 7
Hybrid cable for digital inputs ... 410

I

Inspection
Connection cables ... 314
Determining the operating hours ... 312
Inspection intervals ... 313
Preliminary work ... 314
Installation
Blanking plugs ... 51
Device ... 39
Electronics cover ... 39, 54
EMC cable glands ... 52
Engineering plug connector X4142 ... 157
Fastening dimensions ... 45, 46, 47
Mounting clearances ... 45, 46, 47
Mounting panel ... 48, 49, 50
Installation (electrical) ... 56
Cable routing ... 56, 77
Cable selection ... 77
Cable shielding ... 56, 77
Connection diagram ... 76
EMC-compliant installation ... 56
Equipotential bonding ... 57
Ethernet cable ... 77
Installation altitude ... 69
Installation instructions ... 60
Installation topology ... 71

26863707/EN – 07/21

Leakage currents ... 68
Line contactor ... 66
Line protection ... 65
PC connection ... 155
PE connection ... 67
Plug connector ... 91
Plug connector assignment ... 111, 154
Protection devices ... 68
Residual current device ... 65
Supply system cables ... 62
Terminal activation ... 63, 65
Terminal actuation ... 64
Terminal assignment ... 72
UL-compliant installation ... 69
Installation (mechanical) ... 45, 46, 47
Installation notes ... 37
Installing the device ... 39
Installing the electronics cover ... 39
Removing the electronics cover ... 39
Required tools and resources ... 38
Requirements ... 38
Tightening torques ... 51
Installation altitude ... 69
Installation instructions ... 60
Installation notes
Derating ... 12
Installation altitude > 1000 m ... 12
Installation topology ... 71
Integrated safety technology ... 433

K

Keypad
Component ... 161
PC connection at X4142 ... 162
PC connection to the front module of MMF3. ... 164
PC connection to X31 ... 163
Scope of delivery ... 161
Keypad CBG11A ... 207
Keypad CBG21A ... 205

L

Leakage currents ... 68
LED displays ... 235
"DRIVE" status LED ... 236
LED "AS-i" ... 239
Lifting applications ... 11
Line choke
Dimension drawings ... 407
Technical data ... 406
UL and cUL approval ... 406
Use ... 406
Line contactor ... 66
Line protection ... 65
Load disconnector ... 217

M

Maintenance
Connection cables ... 314
Determining the operating hours ... 312
Maintenance intervals ... 313
Preliminary work ... 314
Manual mode with MOVISUITE®
Activation/deactivation ... 219
Control ... 219
Motor connection
Motor with digital interface ... 80, 81
Motor without digital interface ... 78, 79
Motor/inverter assignment ... 330
Mounting panel
Dimension drawings ... 427, 429
Scope of delivery ... 48, 49
Mounting positions ... 412
MOVISUITE®
Control ... 219
Evaluating fault messages ... 230
Manual mode ... 218, 219
Other functions ... 220
Startup procedure ... 202

N

Nameplate
Connection unit ... 35
Device ... 21
Electronics ... 32
Position ... 20
Notes
Cable routing and cable shielding ... 77
Derating ... 383
Designation in the documentation ... 6
Install a new inverter ... 304
Installation ... 37

26863707/EN – 07/21

Installing the device ... 39
Installing the electronics cover ... 40
Meaning of the hazard symbols ... 7
PE connection ... 67
Removing the electronics cover ... 43

O

Operation
DynaStop® ... 221
Manual mode with MOVISUITE® ... 218
Safety notes ... 14
Options
/AZ1Z ... 387

P

Paint protection cap ... 166
Paint protection film ... 166
Parameterization mode ... 169
PC connection
To the front module of MMF3. ... 164
to X31 (RJ10) ... 158, 163
To X32 of MMF3 ... 159
to X4142 (M12) ... 156, 162
to X4142 of MMF3. ... 160
Using the keypad ... 161
With USM21A interface adapter ... 155
PE connection
Installation ... 67
Leakage currents ... 68
Notes ... 67
Plug connector ... 91
Assignment ... 111, 154
Designation key ... 91
Plug connector positions ... 24, 94, 104
Plug connector variant ... 105
Self-assembled plug connectors ... 109
with mating connector ... 422, 424, 426
Plug connectors
Connection cable ... 92
Plug connectors dimension drawing
at the electronics cover ... 419
In the connection box ... 421
Plug connectors, dimension drawing
At the electronics cover ... 420
Position
Cable entries ... 18
Nameplates ... 20
Potentiometer f1 ... 172
Potentiometer f2 ... 173
Potentiometer t1 ... 174
Process data configuration ... 209
Product names ... 8
Project planning
Drive selection ... 325
Sequence ... 324
SEW-Workbench ... 323
Protection devices ... 68
Protective cover ... 165
Protective separation ... 13, 68

R

RCM ... 374
Relay output ... 384
Releasing the brake / deactivating DynaStop®
Activating function ... 222
Information ... 222
Repair ... 308
Replace the gaskets ... 314
Replacement
Device ... 307
Electronics cover ... 304
Memory module ... 306
Required tools and resources ... 38
Reset ... 235
Residual current device ... 65
Restriction of use ... 12
Rights to claim under limited warranty ... 8

S

Safety functions ... 11
Safety notes
Assembly ... 12
Bus systems ... 10
Designation in the documentation ... 6
Installation ... 12
Installation altitude > 1000 m ... 12
Meaning of the hazard symbols ... 7
Operation ... 14
Preliminary information ... 9
Regenerative operation ... 13
Startup ... 14
Structure of embedded ... 7

26863707/EN – 07/21

Structure of section-related 6
Transportation 12
Scope of delivery
Interface adapter 155
Keypad 161
Screw fittings 408
Plug connector 409
Potentiometer 409
Pressure compensation 408
Screw plugs 408
Section-related safety notes 6
Selection
Braking resistor 367
Inverter 364
Sensor inputs 384
Separation, protective 13
Service
Device replacement 304
Fault messages 230, 231
LED displays 235
MOVISUITE® 230
Resetting fault messages 235
SEW-EURODRIVE Service 308
Switch-off responses 231, 233
SEW-Workbench 323
Shutdown 308
Signal words in safety notes 6
Speed setpoint f1 172
Speed setpoint f2 173
Startup
Checklist 204
DIP switch 175
Lifting applications 166
Requirements for startup 168
Safety notes 14
Startup notes 165
Startup procedure 202
Startup with the CBG11A keypad 207
Startup with the CBG21A keypad 205
STO
Brake in connection with STO 229
Connection 82
DynaStop® in conjunction with STO 224
Jumper plug 456
Plug connector 103
Plug connectors 97, 100
STO jumper plug 143, 456
Storage 308
Storage conditions 309
Supply system cables 62
Switch disconnector 14, 216
Switch-off responses 231, 233

T

Target group 10
Technical data
Ambient conditions 382
AS-Interface 385
CBG.. keypad 387
Current carrying capacity of terminals 383
DC 24 V output 384
DC 24 V supply 384
Derating factors 383
Description of mounting positions 412
Digital inputs 384
DRN.. motors 330
Encoder 387
General technical data 375
Integrated braking resistor 390
Line choke 406
Mounting positions 412
Relay output 384
Screw fittings 408
Terminal activation 63
Control terminals X9 65
Line terminals X1 63
Terminals X3 for braking resistor 65
Terminal actuation
Terminals X2_A for brake 64
Terminals X2_A for motor 64
Terminals X2_A for temperature sensor 64
Terminal assignment 72
Tightening torques 51
Blanking plugs 51
Electronics cover 54
EMC cable glands 52
Torque specifications 38
Trademarks 8
Type designation
Connection unit 35
Device 21

26863707/EN – 07/21

Electronics 32
Plug connector 91

U

UA.TR 374
UKCA mark 373
UL approval 373
USM21A interface adapter
PC connection at X4142 156
PC connection to X31 158
Scope of delivery 155

V

Validity 432
Voltage systems, permitted 60

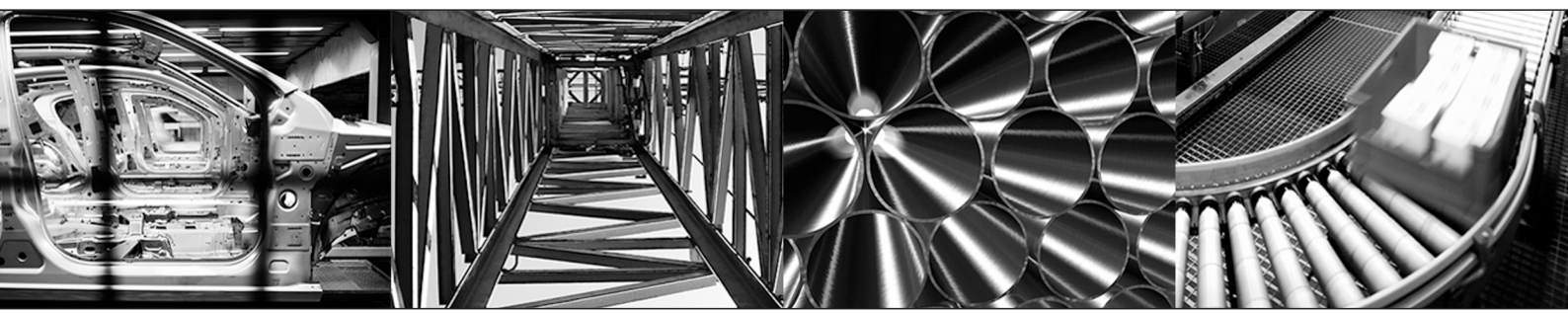
W

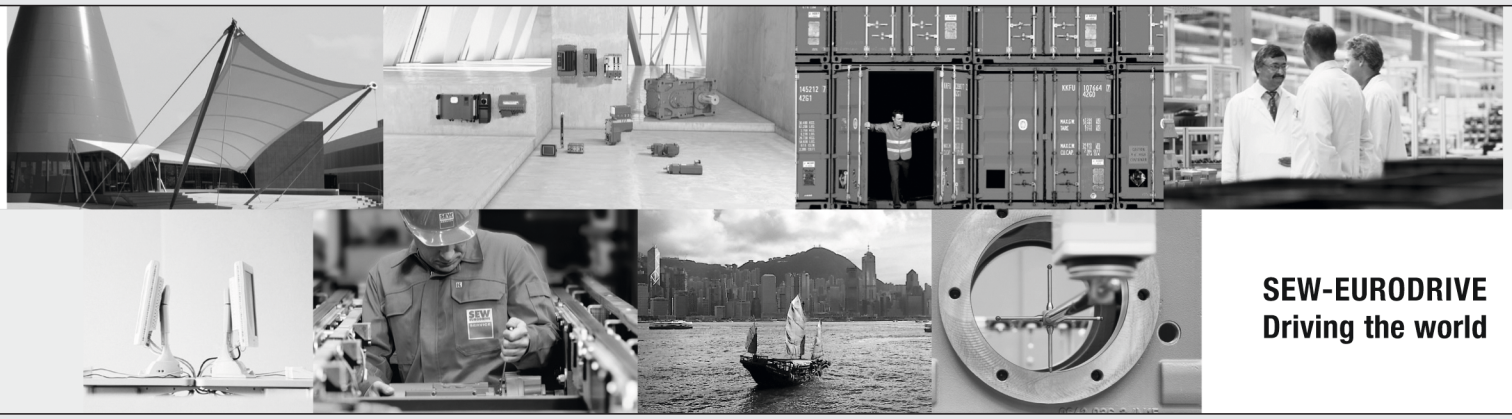
Waste disposal 311

X

X1203_1
Assignment 111
Connection cables 112
X1203_2
Assignment 111
Connection cables 112
X1206
Assignment 117, 119
X1523
Assignment 148
Connection cables 149
X1524
Assignment 151
X2041
Assignment 125
X2104
Assignment 120
Connection cables 121
X2242
Assignment 118
X2313
Connection cables, available 153
X4142
Assignment 152
X4271
Assignment 154
X5135
Assignment 147
X5136
Assignment 144
Connection cables 145
X5504
Assignment 133
Connection cables 134
X5505
Assignment 138
Connection cables 139

26863707/EN – 07/21





SEW-EURODRIVE
Driving the world

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Str. 42
76646 BRUCHSAL
GERMANY
Tel. +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com
➞ **www.sew-eurodrive.com**