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SEW
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Operating Instructions



MOVIDRIVE® MDX60B/61B



Table of contents

1	General information.....	7
1.1	About this documentation	7
1.2	Structure of the safety notes	7
1.3	Rights to claim under limited warranty	8
1.4	Exclusion of liability	8
1.5	Other applicable documentation	8
1.6	Product names and trademarks	9
1.7	Copyright notice	9
2	Safety notes	10
2.1	General	10
2.2	Target group	10
2.3	Designated use	11
2.4	Transportation and storage	11
2.5	Setup	11
2.6	Electrical connection	12
2.7	Protective separation	12
2.8	Operation	12
3	Device structure	14
3.1	Type designation, nameplates and scope of delivery	14
3.2	Scope of Delivery	16
3.3	Size 0	18
3.4	Size 1	19
3.5	Size 2S	21
3.6	Size 2	23
3.7	Size 3	25
3.8	Size 4	29
3.9	Size 5	31
3.10	Size 6	33
3.11	Size 7	35
3.12	MOVIDRIVE® MDX62B motor inverter size 7	38
4	Installation	41
4.1	Installation instructions for the basic unit	41
4.2	Removing/installing the keypad	77
4.3	Removing/installing the front cover	78
4.4	Information regarding UL	80
4.5	Shield clamps	84
4.6	Touch guard for power terminals	88
4.7	Wiring diagrams for basic device	95
4.8	Assignment of braking resistors, chokes and filters	102
4.9	Connecting the system bus (SBus 1)	107
4.10	Connecting the RS485 interface	109
4.11	Connecting the DWE11B/12B interface adapter	110
4.12	Connecting the UWS21B interface adapter (RS232 ↔ RS485)	111

4.13	Connecting the USB11A interface adapter	113
4.14	Option combinations for MDX61B.....	115
4.15	Installing and removing option cards	118
4.16	Connecting encoders and resolvers	120
4.17	Connection and terminal description of the DEH11B option (HIPERFACE®)	122
4.18	Connection and terminal description of the DEH21B option.....	124
4.19	Connection and terminal description of the DEU21B option.....	125
4.20	Connection and terminal description of the DER11B (resolver) option.....	127
4.21	Connecting external encoders to X:14.....	129
4.22	Connection of encoder options	130
4.23	Connection of incremental encoder simulation	136
4.24	Master/slave connection	137
4.25	Connection and terminal description of the DIO11B option	138
4.26	Connection and terminal description of the DFC11B option	141
5	Startup	142
5.1	General startup instructions	142
5.2	Preliminary work and resources.....	145
5.3	Startup with DBG60B keypad	146
5.4	Operation of MOVITOOLS® MotionStudio	156
5.5	Starting the motor	160
5.6	Complete parameter list.....	166
6	Operation.....	180
6.1	Operating displays	180
6.2	Information messages.....	182
6.3	Functions of the DBG60B keypad.....	183
6.4	Memory card	188
7	Service	189
7.1	Damages to the device	189
7.2	Fault information	189
7.3	Fault messages and list of faults.....	191
7.4	SEW-EURODRIVE electronics service.....	223
7.5	Extended storage.....	223
7.6	Waste disposal.....	224
8	Technical data of basic device	225
8.1	CE marking, approvals.....	225
8.2	General technical data	226
8.3	MOVIDRIVE® MDX60/61B...-5_3 (AC 400/500 V units)	228
8.4	MOVIDRIVE® MDX61B...-2_3 (AC 230 V units)	238
8.5	MOVIDRIVE® MDX60/61B electronics data	242
8.6	MOVIDRIVE® MDX60B dimension drawings	244
8.7	MOVIDRIVE® MDX61B dimension drawings	248
8.8	IPOS ^{PLUS} ®	258
8.9	DBG60B keypad	260
8.10	DBM60B/DKG60B housing for DBG60B	262

9	Technical data of regenerative power supply unit	263
9.1	MOVIDRIVE® MDR60A/61B regenerative power supply unit	263
10	Technical data of options	278
10.1	HIPERFACE® encoder card DEH11B	278
10.2	Resolver card DER11B.....	279
10.3	DEU21B multi-encoder card	280
10.4	DEH21B/DIP11B absolute encoder card	281
10.5	Connector adapter for device replacement MD_60A - MDX60B/61B.....	283
10.6	DWE11B/12B interface adapter.....	285
10.7	UWS11A interface adapter	286
10.8	UWS21B interface adapter	288
10.9	USB11A interface adapter	290
10.10	DWI11A DC 5 V encoder supply.....	292
10.11	DIO11B input/output board	294
10.12	PROFIBUS DFP21B fieldbus interface	296
10.13	INTERBUS fieldbus interface DFI11B	297
10.14	INTERBUS FOC fieldbus interface DFI21B.....	298
10.15	Fieldbus interface PROFINET IO RT DFE32B	299
10.16	DFE33B fieldbus interface for EtherNet/IP™ and Modbus TCP	301
10.17	EtherCAT® DFE24B fieldbus interface	303
10.18	DeviceNet™ DFD11B fieldbus interface	304
10.19	CAN/CANopen DFC11B fieldbus interface.....	305
10.20	Synchronous operation card DRS11B.....	307
10.21	Fieldbus interface PROFIBUS DP-V1 with PROFIsafe DFS11B.....	309
10.22	Fieldbus interface PROFIBUS DP-V1 with PROFIsafe DFS12B.....	311
10.23	PROFINET IO fieldbus interface with PROFIsafe DFS21B	312
10.24	PROFINET IO fieldbus interface with PROFIsafe DFS22B	314
10.25	MOVISAFE® DCS21B/22B/31B/32B safety module	315
10.26	MOVI-PLC® basic DHP11B controller	317
10.27	OST11B	318
10.28	DHE/DHF/DHR21 and DHE/DHF/DHR41B controller	319
10.29	Safety-related BST brake module.....	324
11	Technical data of external accessories	326
11.1	DMP11B mounting panel.....	326
11.2	DLB11B touch guard.....	327
11.3	DLB21B touch guard (for size 7).....	328
11.4	DLS11B mounting base (for size 7).....	329
11.5	DLH11B wall bracket (for size 7)	330
11.6	DLA11B connection kit (for size 7).....	331
11.7	DLK11B air duct (for size 7).....	332
11.8	DLZ11B DC link coupling (for size 7).....	333
11.9	2Q DLZ12B DC link adapter (for size 7)	334
11.10	4Q DLZ14B DC link adapter (for size 7)	336
12	Technical data of braking resistors, chokes and filters	337
12.1	Braking resistors BW.. / BW...-T / BW...-P	337

12.2	ND.. line chokes	349
12.3	NF...-... line filters	351
12.4	HD... output chokes	355
12.5	HF... output filter	358
13	Declarations of conformity	362
13.1	MOVIDRIVE®	362
13.2	MOVIDRIVE® with DFS11B/DFS21B	363
13.3	MOVIDRIVE® with DCS2.B/DCS3.B	364
14	Address list	365

1 General information

1.1 About this documentation

The current version of the documentation is the original.

This documentation is an integral part of the product. The documentation is written for all employees who assemble, install, start up, and service this product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the machinery and its 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 require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 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.	

1.2.2 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.

Meaning of the hazard symbols

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

Hazard symbol	Meaning
	General hazard

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

1.2.3 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.

1.3 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.

1.4 Exclusion of liability

Read the information in this documentation, otherwise safe operation is impossible. You must comply with the information contained in this documentation to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, SEW-EURODRIVE assumes no liability for defects.

1.5 Other applicable documentation

Observe the corresponding documentation for all further components.

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

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2 Safety notes

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

2.1 General

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

During operation, inverters can have live, bare and movable or rotating parts as well as hot surfaces, depending on their degree of protection.

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

Refer to the documentation for additional information.

2.2 Target group

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

Skilled persons (electrically) in the context of these basic safety notes are all persons familiar with the installation, assembly, startup and operation of the product who possess the necessary qualifications.

All persons involved in any other work, such as transportation, storage, operation and waste disposal, must be trained appropriately.

2.3 Designated use

Drive inverters are components intended for installation in electrical systems or machines.

In case of installation in machines, startup of the inverters (meaning the start of designated use) is prohibited until it is determined that the machine meets the requirements stipulated in the Machinery Directive 2006/42/EC; EN 60204 must be observed.

Startup (i.e. the start of designated use) is only permitted under observance of the EMC Directive (2014/30/EU).

The drive inverters meet the requirements stipulated in low voltage guideline 2014/35/EU. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these inverters.

Adhere to the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

2.3.1 Safety Functions

MOVIDRIVE® MDX60/61B drive inverters may not perform safety functions without higher-level safety systems. Use higher-level safety systems to ensure protection of equipment and personnel.

For safety applications, observe the specifications in the "MOVIDRIVE® MDX60B/61B Functional Safety" manual.

2.4 Transportation and storage

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

2.5 Setup

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

Protect the drive inverters from excessive strain. Ensure that elements are not deformed and/or insulation spaces are maintained, particularly during transportation. Avoid contact with electronic elements and contacts.

Drive inverters contain components that can be damaged by electrostatic energy and improper handling. Prevent mechanical damage or destruction of electric components (may pose health risk).

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, radiation, etc.
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.

2.6 Electrical connection

Observe the applicable national accident prevention guidelines when working on live inverters (e.g. BGV A3).

Electrical installation must be carried out in compliance with pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). For any additional information, refer to the applicable documentation.



▲ WARNING

Electric shock due to charged capacitors. Dangerous voltage levels may still be present inside the device and at the terminals up to 10 minutes after disconnection from the power supply.

Severe or fatal injuries.

- Wait for 10 minutes after the frequency inverter has been separated from the voltage supply. Make sure that the device is de-energized. Only then must you commence any work on the device.
- Observe the corresponding information signs on the frequency inverter.

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

Preventive measures and protection devices must correspond to the regulations in force (e.g. EN 60204 or EN 61800-5-1).

Required preventive measure: Grounding the device.

MOVIDRIVE® B in size 7 is equipped with an additional indicator LED under the lower front cover. If the indicator LED is lit up, DC link voltage is present. Do not touch power connections. Check that there is no voltage present before touching power connections even if the LED display indicates that there is no voltage.

2.7 Protective separation

The device meets all requirements for reliable isolation of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection to ensure reliable isolation.

2.8 Operation

Systems into which the drive inverters are installed must be equipped with additional monitoring and protection devices, if necessary, according to applicable safety regulations; e.g. the German law governing technical equipment (Gesetz über technische Arbeitsmittel), accident prevention regulations, etc. The operating software may be used to make changes to the drive inverter.



⚠ WARNING

Electric shock due to charged capacitors. Dangerous voltage levels may still be present inside the device and at the terminals up to 10 minutes after disconnection from the power supply.

Severe or fatal injuries.

- Wait for 10 minutes after the frequency inverter has been separated from the voltage supply. Make sure that the device is de-energized. Only then must you commence any work on the device.
- Observe the corresponding information signs on the frequency inverter.

Keep all covers and doors closed during operation.

The fact that the status LED and other display elements (such as the display LED on size 7 units) are no longer illuminated does not indicate that the device has been disconnected from the power supply and no longer carries any voltage.

Check that there is no voltage present before touching power connections even if the LED display indicates that there is no voltage.

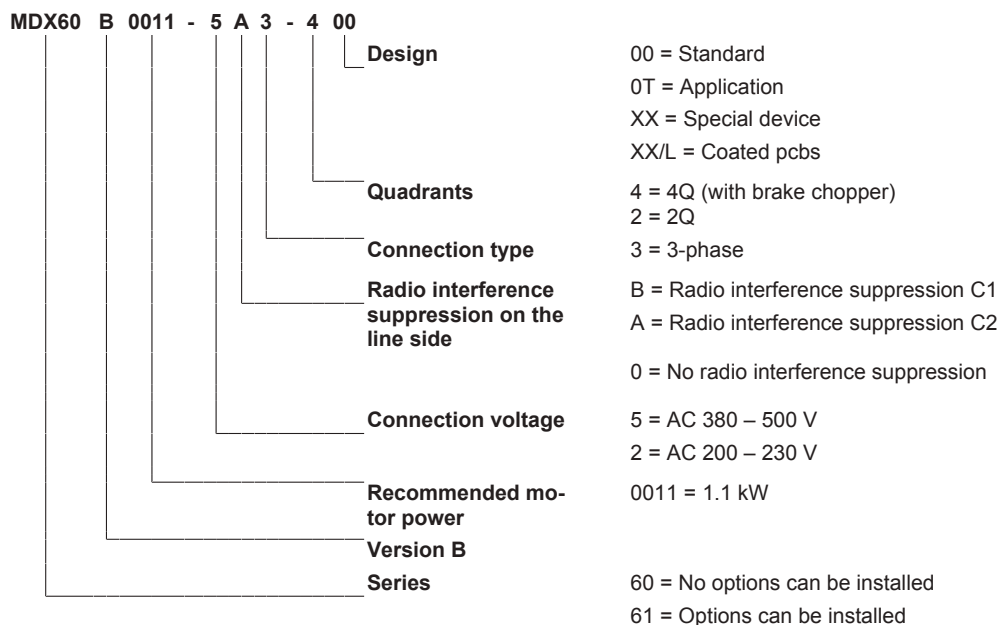
Mechanical blocking or internal safety functions of the device can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive re-starting automatically. If, for safety reasons, this is not permitted for the drive-controlled machine, disconnect the device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

3 Device structure

3.1 Type designation, nameplates and scope of delivery

3.1.1 Type designation

The following diagram shows the type designation of the MOVIDRIVE® MDX60/61B inverter:



3.1.2 System nameplate size 0

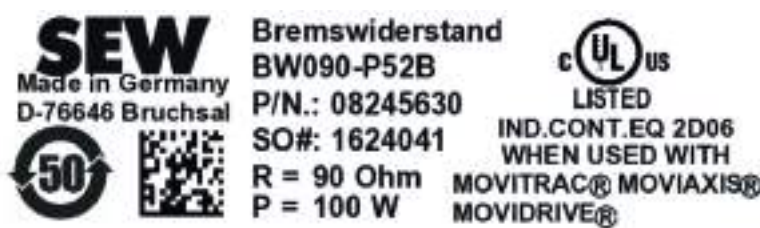
The **system nameplate** for MDX60B/61B size 0 is attached to the side of the device.



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3.1.3 Nameplate for BW090-P52B braking resistor

The BW090-P52B braking resistor is only available for MDX60B/61B size 0.



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3.1.4 System nameplate for sizes 1 – 7

The **system nameplate** is attached to MDX61B.. as follows:

- On the side of the device in size 1 – 6
- On the upper front cover of size 7



18014400309212299

3.1.5 Power section nameplate for sizes 1 – 7

The power section nameplate is attached to MDX61B.. as follows:

- On the side of the device in size 1 – 2
- On the front of the device in size 3 – 6
- Top left inside the size 7 device



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3.1.6 Control unit nameplate for sizes 1 – 7

The control unit nameplate is attached to the front of MDX61B.. size 1 – 7.



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3.1.7 Option card nameplate



9007201054506123

3.2 Scope of Delivery

3.2.1 Sizes 0 – 7

- Connector housing for signal terminals (X10 – X17), connected.
- Plug housing for the power terminals (X1 – X4), connected.
- Pluggable memory card, connected

3.2.2 Size 0

- 1 set of shield clamps for power cable and signal cable, not installed. The set of shield clamps comprises:
 - 2 shield clamps for power cable (2 contact clips each)
 - 1 shield clamp for signal cable (1 contact clip) for MDX60B
 - 1 shield clamp for signal cable (2 contact clips) for MDX61B
 - 6 contact clips
 - 6 screws for attaching the contact clips
 - 3 screws for attaching the contact clips to the device

3.2.3 Sizes 1 – 7

- 1 set of shield clamps for signal cable, not installed. The set of shield clamps comprises:
 - 1 shield clamp for signal cable (1 contact clip)
 - 2 contact clips
 - 2 screws for attaching the contact clips
 - 1 screw for attaching the shield clamp to the device
- Only for size 6: Carrying bar and 2 split pins
- For size 7, you can order the connection set DLA11B (part no. 18223125) with connection screws and 3 PE terminals.
- Sizes 2S and 2:
 - Shield terminal of the power connection ("Shield clamp for power section, sizes 2S and 2" (→ 85))

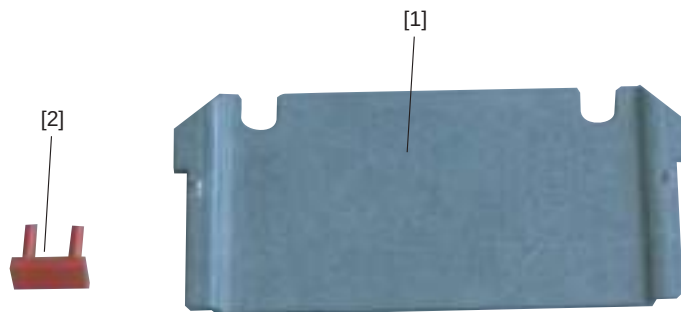
3.2.4 Size 2S

- Accessories set, not installed. The accessories set (→ Following illustration) comprises:
 - 2 mounting feet [1] to be plugged into the heat sink
 - 2 touch guards [2] to be fastened to terminals X4: -U_z/+U_z and -X3:-R(8)/+R(9).

Degree of protection IP20 is achieved as soon as one of the following conditions is fulfilled:

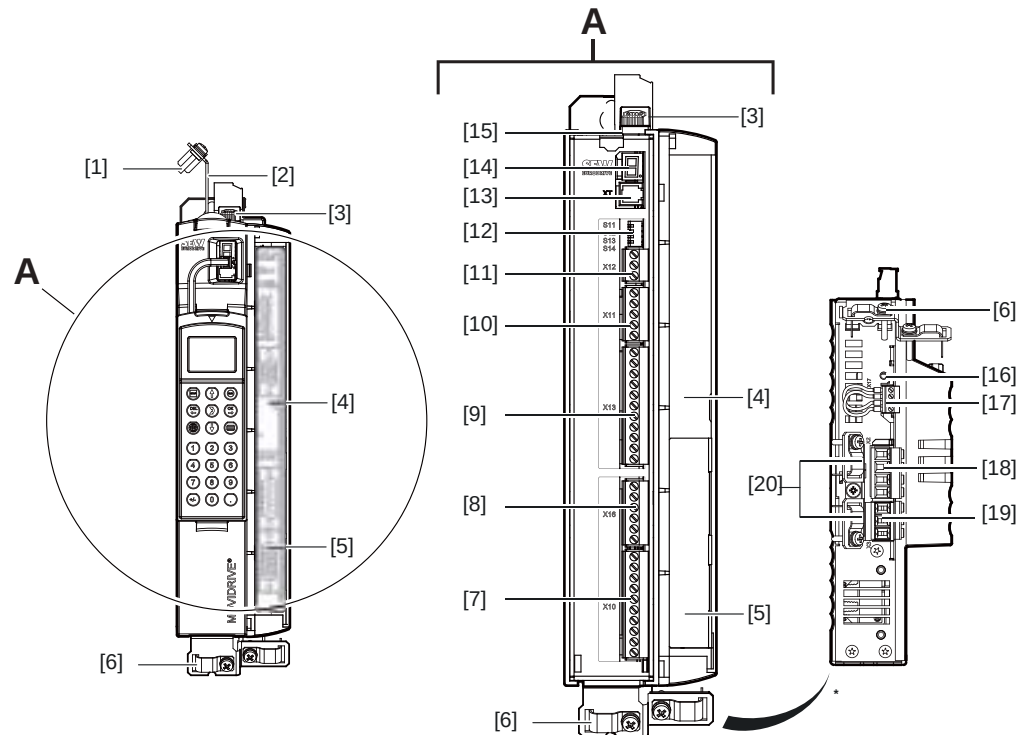
- Touch guard [2] mounted to X3/X4 (→ section "Touch guard")
- An adequately prefabricated cable is connected to X3/X4

If neither of the two conditions is fulfilled, the degree of protection is IP10.



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MDX60/61B-5A3 (AC 400/500 V devices): 0005/0008/0011/0014



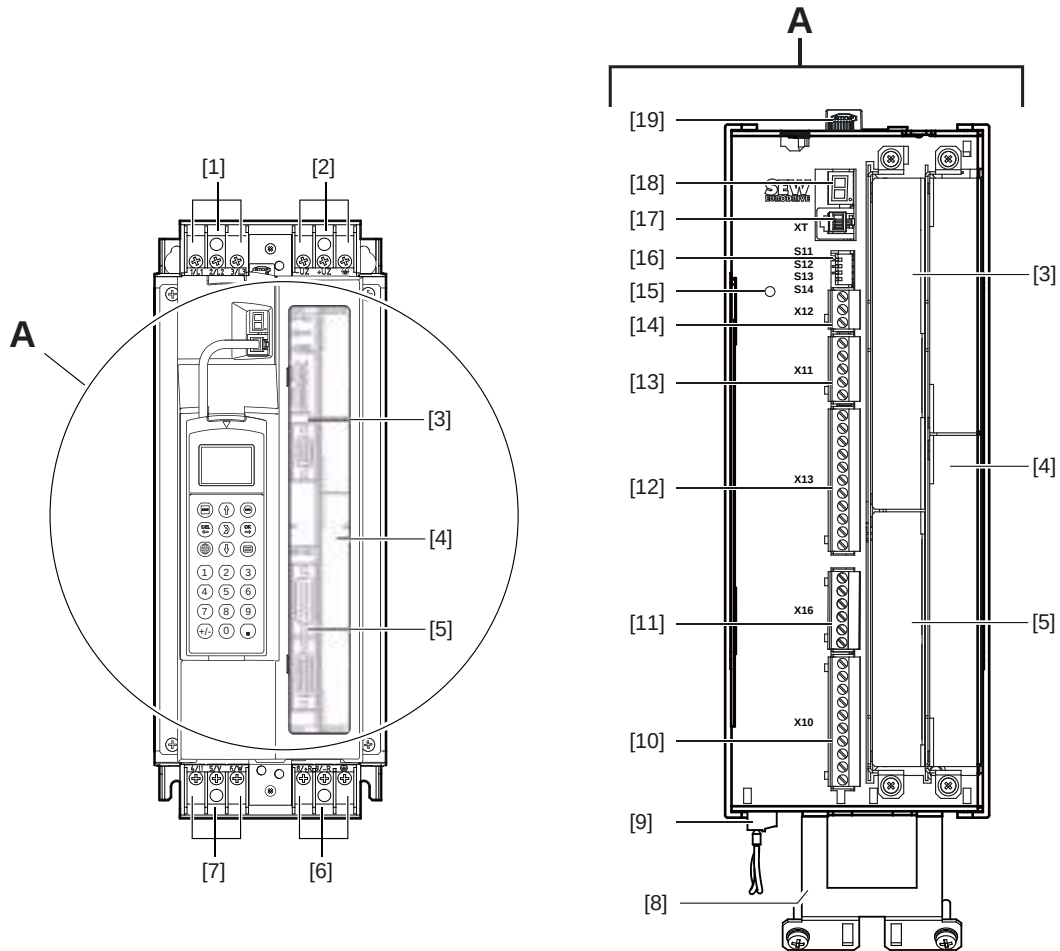
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*View of the bottom of the device

- [1] Power shield clamp for supply system connection and DC link connection
- [2] X4: Connection for DC link coupling $-U_z + U_z$ and PE connection, separable
- [3] X1: Power supply connection L1, L2, L3 and PE connection, separable
- [4] Only with MDX61B: Fieldbus slot
- [5] Only with MDX61B: Encoder slot
- [6] Shield clamp for signal cables MDX61B size 0
- [7] X10: Signal terminal strip for digital outputs and TF/TH input
- [8] X16: Signal terminal strip digital inputs and outputs
- [9] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [10] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [11] X12: Signal terminal strip system bus (SBus)
- [12] DIP switches S11 – S14
- [13] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [14] 7-segment display
- [15] Memory card
- [16] Grounding screw M4 × 14
- [17] X17: Signal terminal block for safety contacts of drive safety function STO
- [18] X2: Motor connection U, V, W and PE connection, separable
- [19] X3: Braking resistor connection +R / –R and PE connection, separable
- [20] Power shield clamp for motor connection and braking resistor connection

MDX61B-5A3 (AC 400/500 V devices): 0015/0022/0030/0040

MDX61B-2A3 (AC 230 V devices): 0015/0022/0037

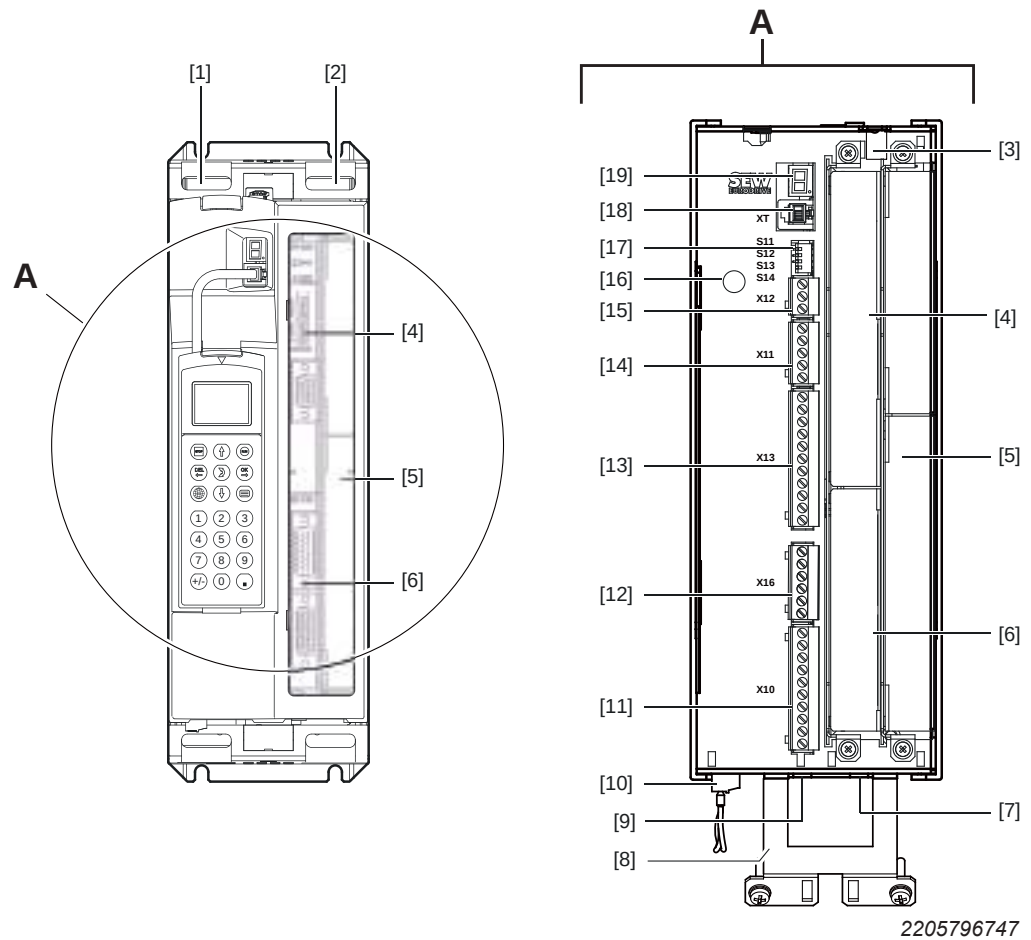


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- [1] X1: Power supply connection 1/L1, 2/L2, 3/L3, separable
- [2] X4: Connection for DC link coupling $-U_z +U_z$, separable
- [3] Fieldbus slot
- [4] Expansion slot
- [5] Encoder slot
- [6] X3: Braking resistor connection 8/+R, 9/-R and PE connection, separable
- [7] X2: Motor connection 4/U, 5/V, 6/W and PE connection, separable
- [8] Shield clamp for signal cables and PE connection
- [9] X17: Signal terminal block for safety contacts of drive safety function STO
- [10] X10: Signal terminal strip for digital outputs and TF/TH input
- [11] X16: Signal terminal strip digital inputs and outputs
- [12] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [13] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [14] X12: Signal terminal strip system bus (SBus)

- [15] Grounding screw M4 × 14
- [16] DIP switches S11 – S14
- [17] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [18] 7-segment display
- [19] Memory card

MDX61B-5A3 (AC 400/500 V devices): 0055/0075



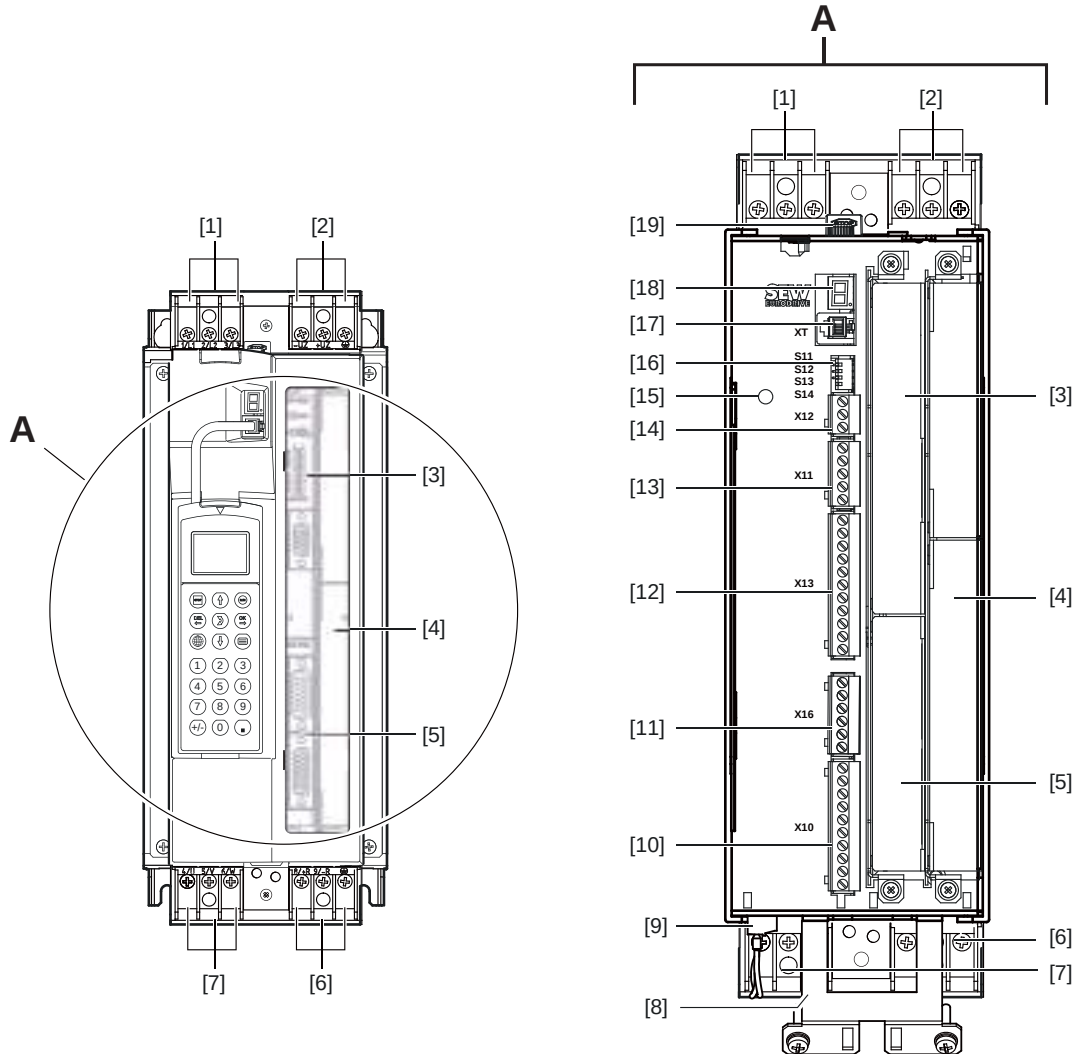
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- [1] X1: Line connection 1/L1, 2/L2, 3/L3
- [2] X4: Connection for DC link coupling $-U_z +U_z$ and PE connection
- [3] Memory card
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R and PE connection
- [8] Shield clamp for signal cables and PE connection
- [9] X2: Motor connection 4/U, 5/V, 6/W
- [10] X17: Signal terminal block for safety contacts of drive safety function STO
- [11] X10: Signal terminal strip for digital outputs and TF/TH input
- [12] X16: Signal terminal strip digital inputs and outputs
- [13] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [14] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [15] X12: Signal terminal strip system bus (SBus)

- [16] Grounding screw M4 × 14
- [17] DIP switches S11 – S14
- [18] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [19] 7-segment display

MDX61B-5A3 (AC 400/500 V devices): 0110

MDX61B-2A3 (AC 230 V devices): 0055/0075



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[1] X1: Line connection 1/L1, 2/L2, 3/L3

[2] X4: Connection for DC link coupling $-U_z$ $+U_z$ and PE connection

[3] Fieldbus slot

[4] Expansion slot

[5] Encoder slot

[6] X3: Braking resistor connection 8/+R, 9/-R and PE connection

[7] X2: Motor connection 4/U, 5/V, 6/W

[8] Shield clamp for signal cables and PE connection

[9] X17: Signal terminal block for safety contacts of drive safety function STO

[10] X10: Signal terminal strip for digital outputs and TF/TH input

[11] X16: Signal terminal strip digital inputs and outputs

- [12] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [13] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [14] X12: Signal terminal strip system bus (SBus)
- [15] Grounding screw M4 × 14
- [16] DIP switches S11 – S14
- [17] XT: Slot for DBG60B keypad or USB/11AUWS21B serial interface
- [18] 7-segment display
- [19] Memory card

Size 3 is available in 2 hardware designs that can be distinguished using the nameplate.

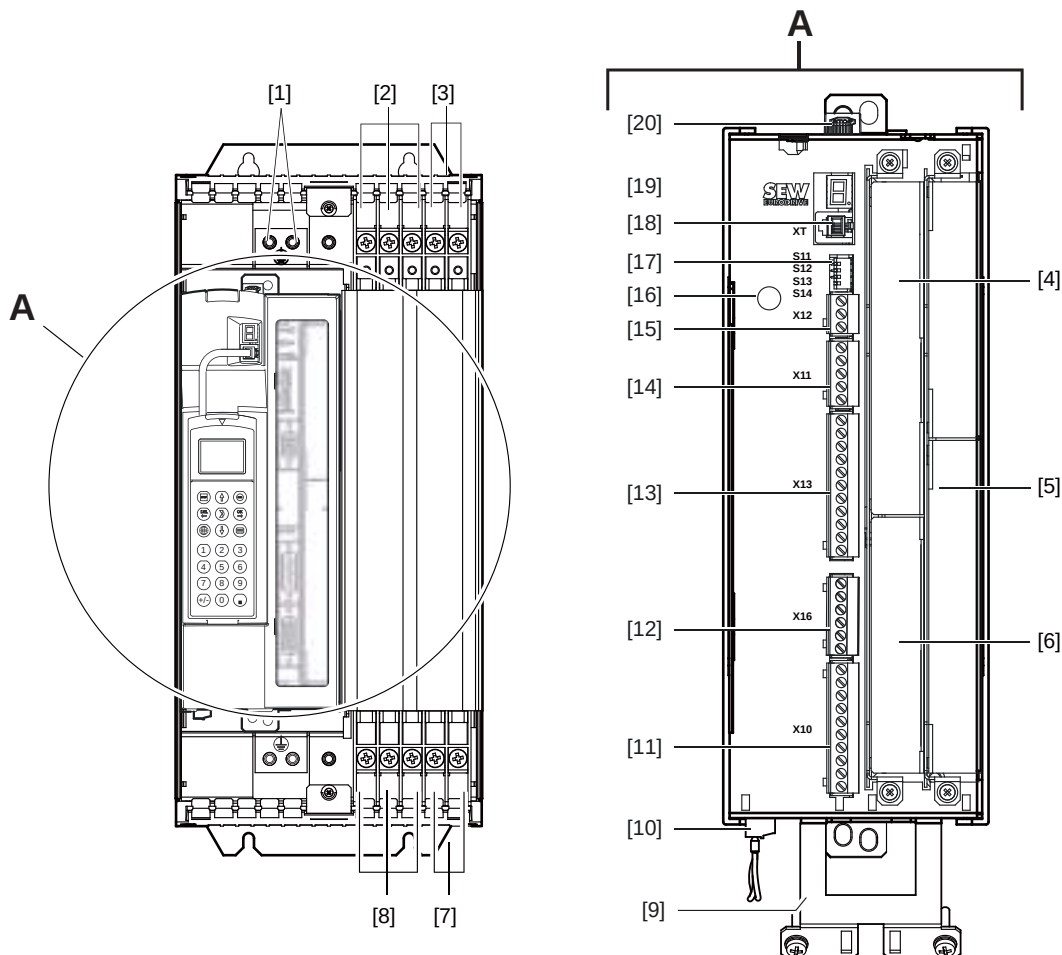
MDX61B-503 (AC 400/500 V devices): 0150/0220/0300

MDX61B-203 (AC 230 V devices): 0110/0150

The version before the redesign does not have entries in the status fields **2** and **5** of the nameplate.



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- [1] PE connection
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X4: Connection for DC link coupling $-U_z + U_z$
- [4] Fieldbus slot

- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R
- [8] X2: Motor connection 4/U, 5/V, 6/W
- [9] Shield clamp for signal cables and PE connection
- [10] X17: Signal terminal block for safety contacts of drive safety function STO
- [11] X10: Signal terminal strip for digital outputs and TF/TH input
- [12] X16: Signal terminal strip digital inputs and outputs
- [13] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [14] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [15] X12: Signal terminal strip system bus (SBus)
- [16] Grounding screw M4 × 14
- [17] DIP switches S11 – S14
- [18] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [19] 7-segment display
- [20] Memory card

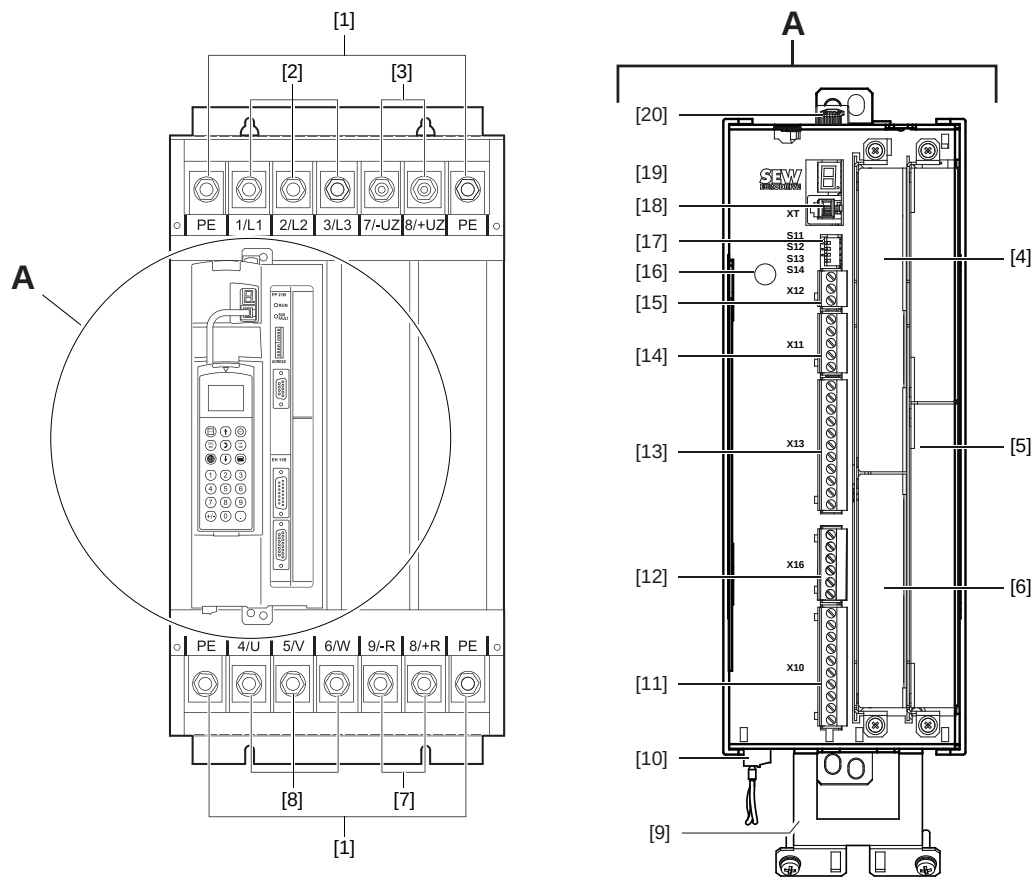
MDX61B-503 (AC 400/500 V units): 0150/0220/0300

MDX61B-203 (AC 230 V units): 0110/0150

The redesigned version has entries in the status fields **2** and **5** of the nameplate



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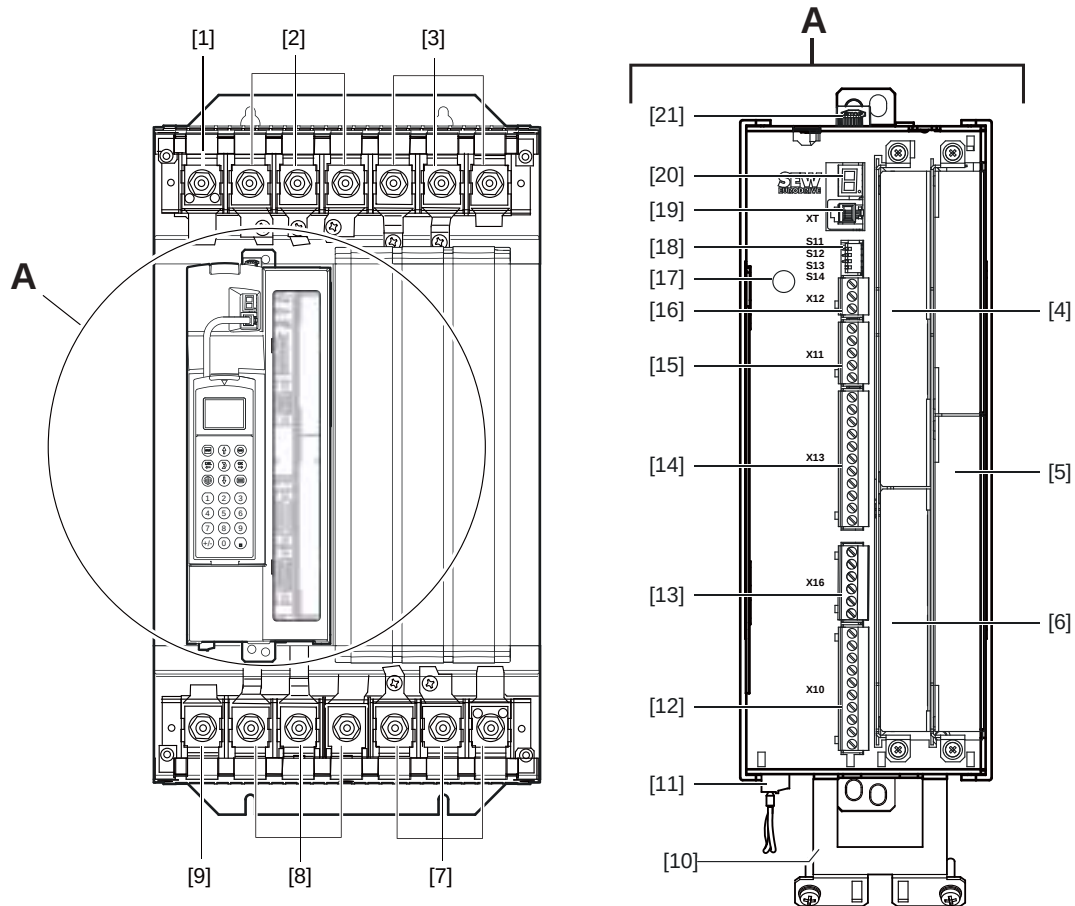
19300062475

- [1] PE connection
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X4: Connection for DC link coupling $-U_z + U_z$
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R
- [8] X2: Motor connection 4/U, 5/V, 6/W
- [9] Shield clamp for signal cables and PE connection
- [10] X17: Signal terminal block for safety contacts of drive safety function STO
- [11] X10: Signal terminal strip for digital outputs and TF/TH input
- [12] X16: Signal terminal strip digital inputs and outputs
- [13] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [14] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [15] X12: Signal terminal strip system bus (SBus)
- [16] Grounding screw M4 × 14
- [17] DIP switches S11 – S14
- [18] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [19] 7-segment display

[20] Memory card

MDX61B-503 (AC 400/500 V devices): 0370/0450

MDX61B-203 (AC 230 V devices): 0220/0300

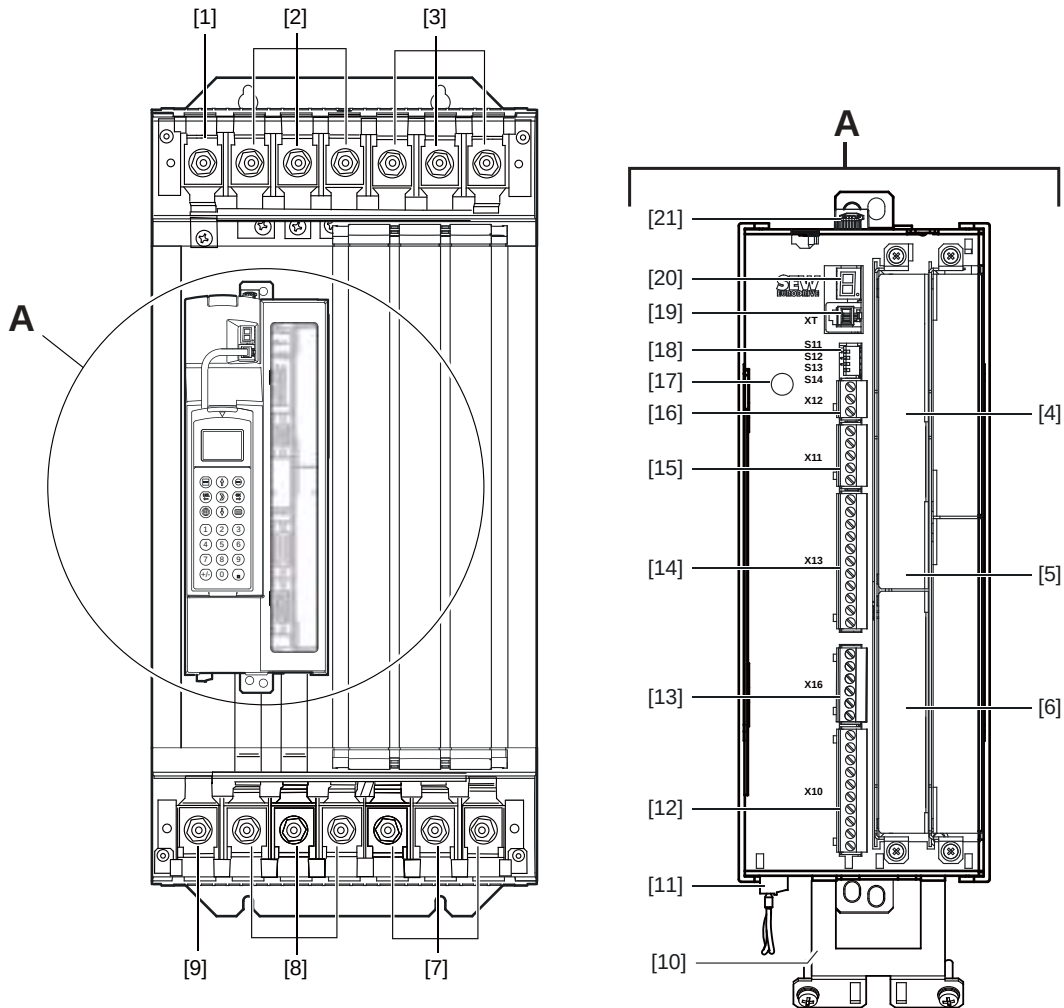


2205800587

- [1] PE connection
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X4: Connection for DC link coupling $-U_z$ $+U_z$ and PE connection
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R and PE connection
- [8] X2: Motor connection 4/U, 5/V, 6/W
- [9] PE connection
- [10] Shield clamp for signal cables
- [11] X17: Signal terminal block for safety contacts of drive safety function STO
- [12] X10: Signal terminal strip for digital outputs and TF/TH input
- [13] X16: Signal terminal strip digital inputs and outputs
- [14] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [15] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage

- [16] X12: Signal terminal strip system bus (SBus)
- [17] Grounding screw M4 × 14
- [18] DIP switches S11 – S14
- [19] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [20] 7-segment display
- [21] Memory card

MDX61B-503 (AC 400/500 V devices): 0550/0750

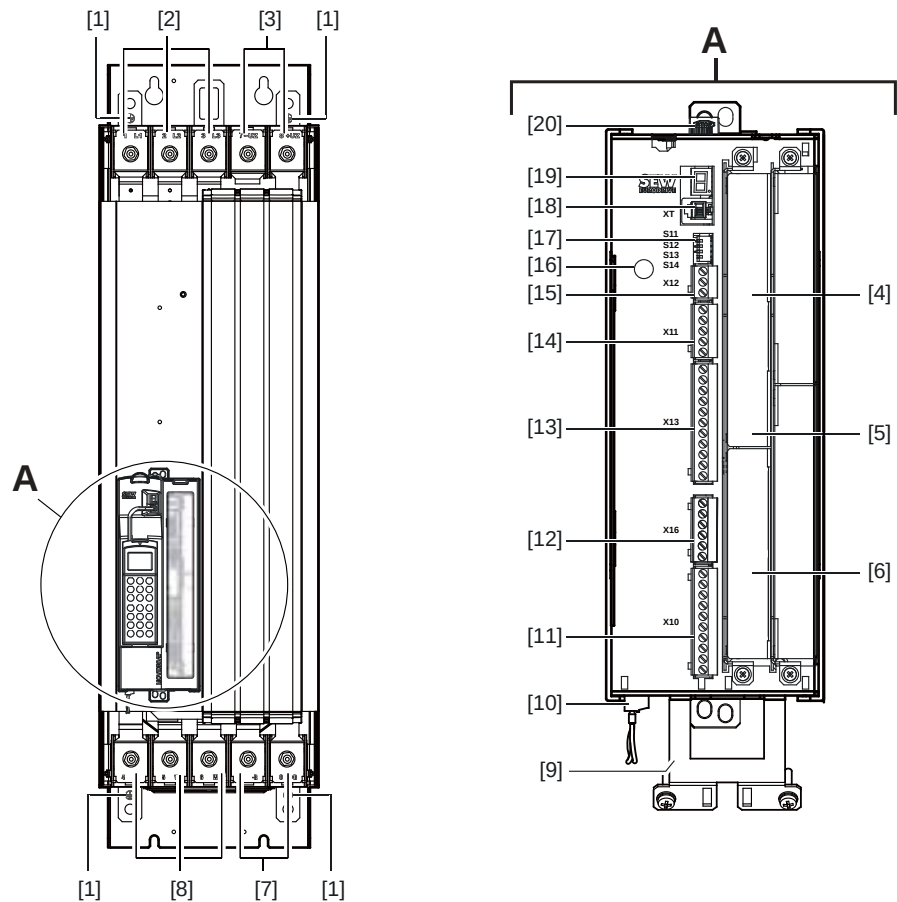


2205802507

- [1] PE connection
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X4: Connection for DC link coupling $-U_z + U_z$ and PE connection
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R and PE connection
- [8] X2: Motor connection 4/U, 5/V, 6/W
- [9] PE connection
- [10] Shield clamp for signal cables
- [11] X17: Signal terminal block for safety contacts of drive safety function STO
- [12] X10: Signal terminal strip for digital outputs and TF/TH input
- [13] X16: Signal terminal strip digital inputs and outputs

- [14] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [15] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [16] X12: Signal terminal strip system bus (SBus)
- [17] Grounding screw M4 × 14
- [18] DIP switches S11 – S14
- [19] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [20] 7-segment display
- [21] Memory card

MDX61B-503 (AC 400/500 V devices): 0900/1100/1320



2205804427

- [1] PE connection
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X4: Connection for DC link coupling $-U_z + U_z$
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] X3: Braking resistor connection 8/+R, 9/-R
- [8] X2: Motor connection 4/U, 5/V, 6/W and PE connection
- [9] Shield clamp for signal cables
- [10] X17: Signal terminal block for safety contacts of drive safety function STO
- [11] X10: Signal terminal strip for digital outputs and TF/TH input
- [12] X16: Signal terminal strip digital inputs and outputs
- [13] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [14] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [15] X12: Signal terminal strip system bus (SBus)
- [16] Threaded hole for grounding screw M4 × 8 or M4 × 10

[17] DIP switches S11 – S14

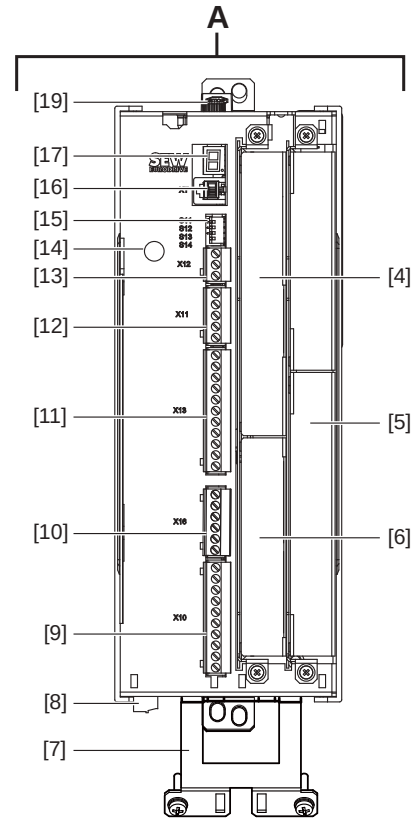
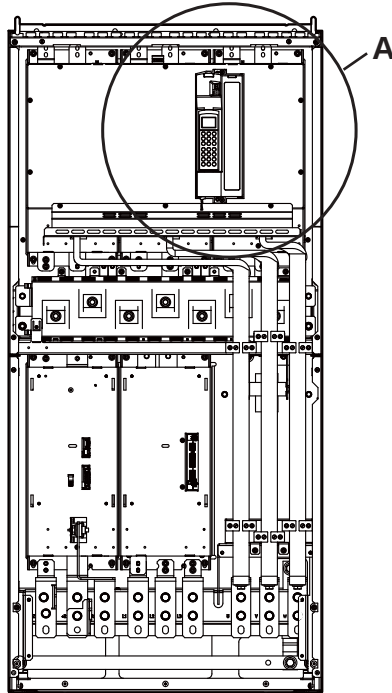
[18] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface

[19] 7-segment display

[20] Memory card

3.11.1 Control unit

MDX61B-503 (AC 400/500 V devices): 1600/2000/2500

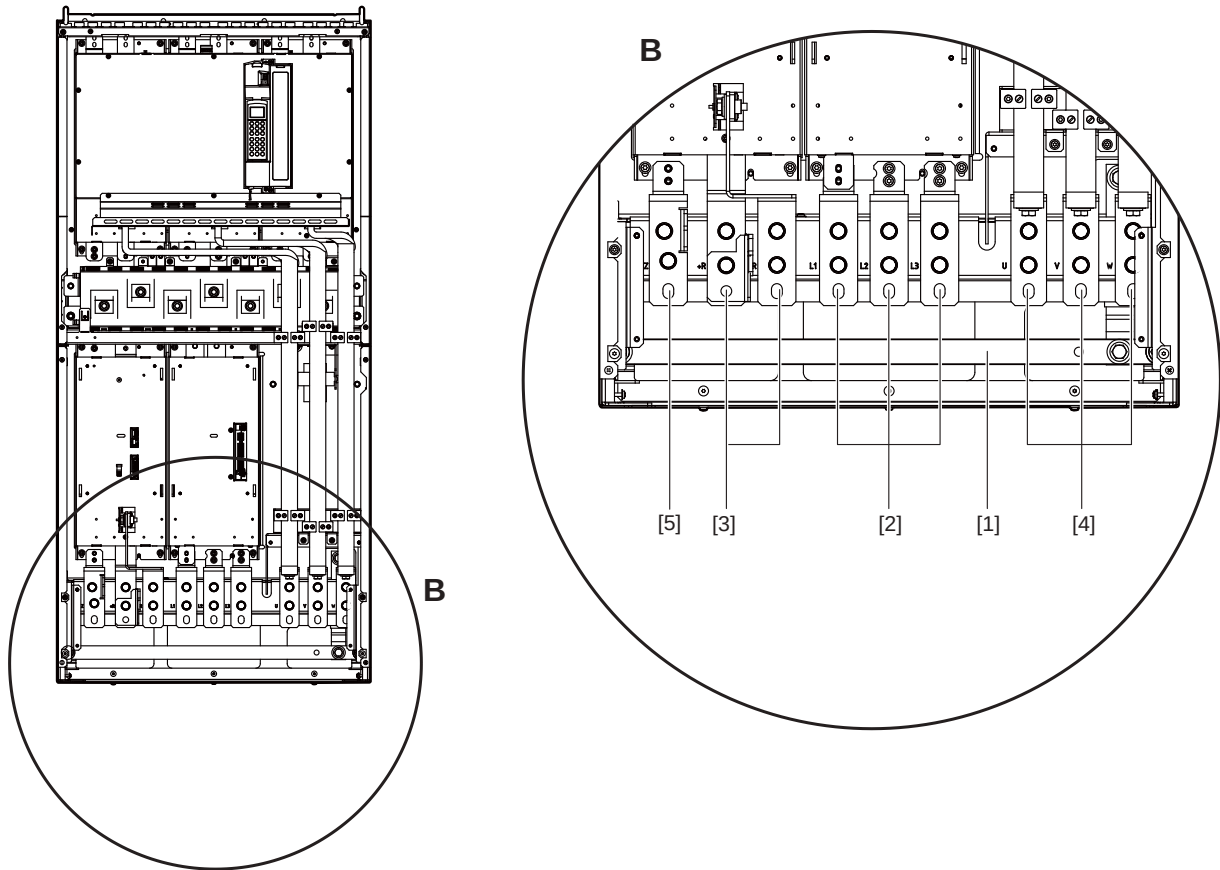


2077051275

- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] Shield clamp for signal cables
- [8] X17: Signal terminal block for safety contacts of drive safety function STO
- [9] X10: Signal terminal strip for digital outputs and TF/TH input
- [10] X16: Signal terminal strip digital inputs and outputs
- [11] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [12] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [13] X12: Signal terminal strip system bus (SBus)
- [14] Grounding screw M4 × 14
- [15] DIP switches S11 – S14
- [16] XT: Slot for DBG60B keypad or USB11A/UWS21B serial interface
- [17] 7-segment display
- [19] Memory card

3.11.2 Power section

MDX61B-503 (AC 400/500 V devices): 1600/2000/2500

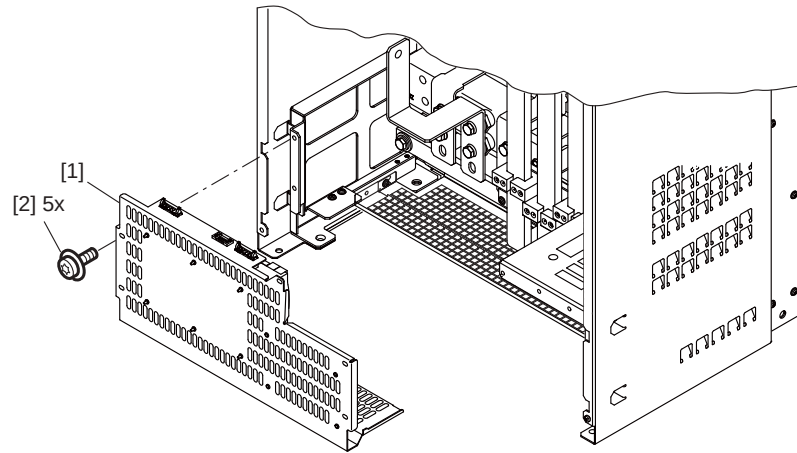


2077053963

- [1] PE connection rail (thickness = 10 mm)
- [2] X1: Line connection 1/L1, 2/L2, 3/L3
- [3] X3: Braking resistor connection 8/+R, 9/-R
- [4] X2: Motor connection 4/U, 5/V, 6/W
- [5] -U₂: Only with DC link adapter accessory

3.11.3 DC power supply unit

MDX61B-503 (AC 400/500 V devices): 1600/2000/2500



20089692683

[1] DC power supply unit

[2] Screw

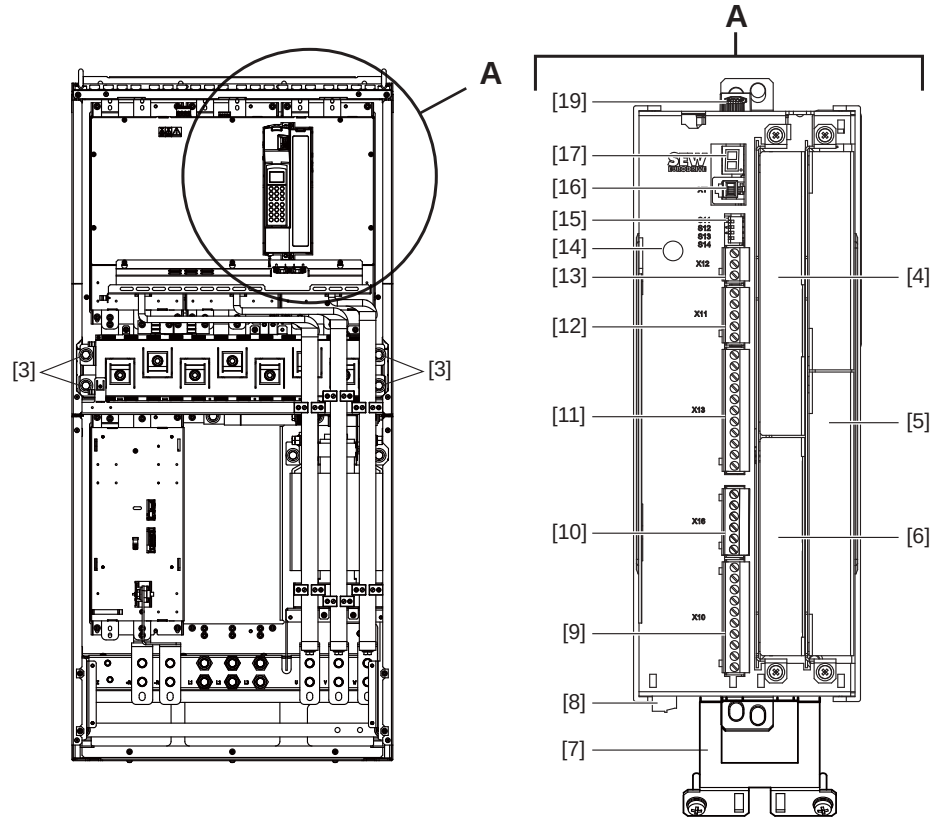
Connections for power supply unit (PE L1 L2 L3)

- Cross section: 6 mm²
- Tightening torque $\leq 4 \text{ mm}^2 = 0.5 \text{ Nm}$
- Tightening torque $> 4 \text{ mm}^2 = 0.7 \text{ Nm} - 0.8 \text{ Nm}$

3.12 MOVIDRIVE® MDX62B motor inverter size 7

3.12.1 Control unit

MDX62B-503 (AC 400/500 V devices): 1600 / 2000 / 2500

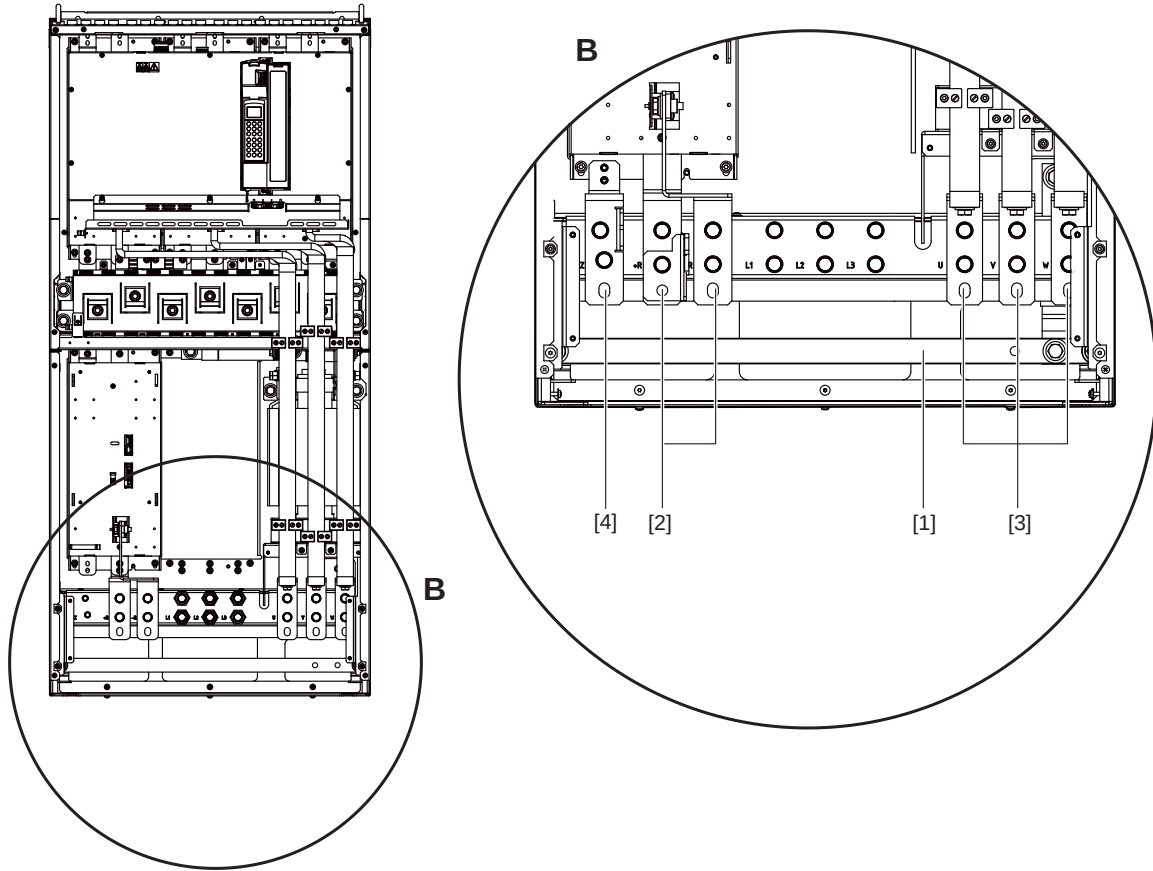


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- [3] Connection for DC link coupling $-U_z + U_z$
- [4] Fieldbus slot
- [5] Expansion slot
- [6] Encoder slot
- [7] Shield clamp for signal cables
- [8] X17: Signal terminal block for safety contacts of drive safety function STO
- [9] X10: Signal terminal strip for digital outputs and TF/TH input
- [10] X16: Signal terminal strip digital inputs and outputs
- [11] X13: Signal terminal strip terminal strip for digital inputs and RS485 interface
- [12] X11: Signal terminal strip for setpoint input AI1 and 10 V reference voltage
- [13] X12: Signal terminal strip system bus (SBus)
- [14] Grounding screw M4 × 14
- [15] DIP switches S11 – S14
- [16] XT: Slot for DBG60B keypad or UWS21B serial interface
- [17] 7-segment display
- [19] Memory card

3.12.2 Power section

MDX62B-503 (AC 400/500 V devices): 1600 / 2000 / 2500

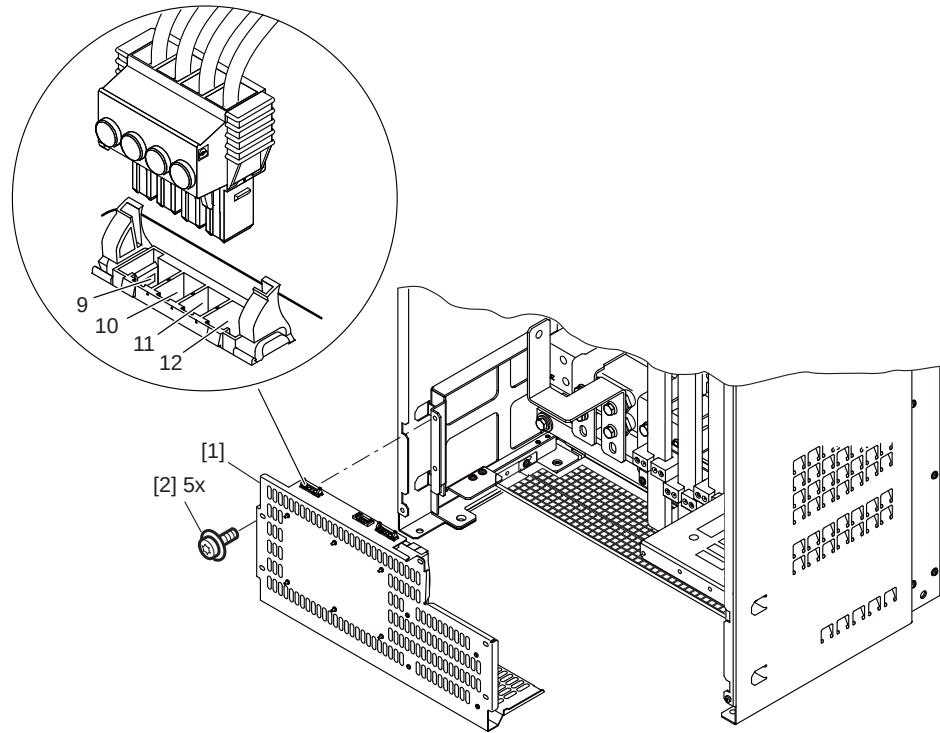


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- [1] PE connection rail (thickness = 10 mm)
- [2] X3: Braking resistor connection 8/+R, 9/-R
- [3] X2: Motor connection 4/U, 5/V, 6/W
- [4] -U₂: Only with DC link adapter accessory

3.12.3 DC power supply unit

MDX62B-503 (AC 400/500 V devices): 1600 / 2000 / 2500



9007201561717259

[1] DC power supply unit

[2] Screw

4 Installation

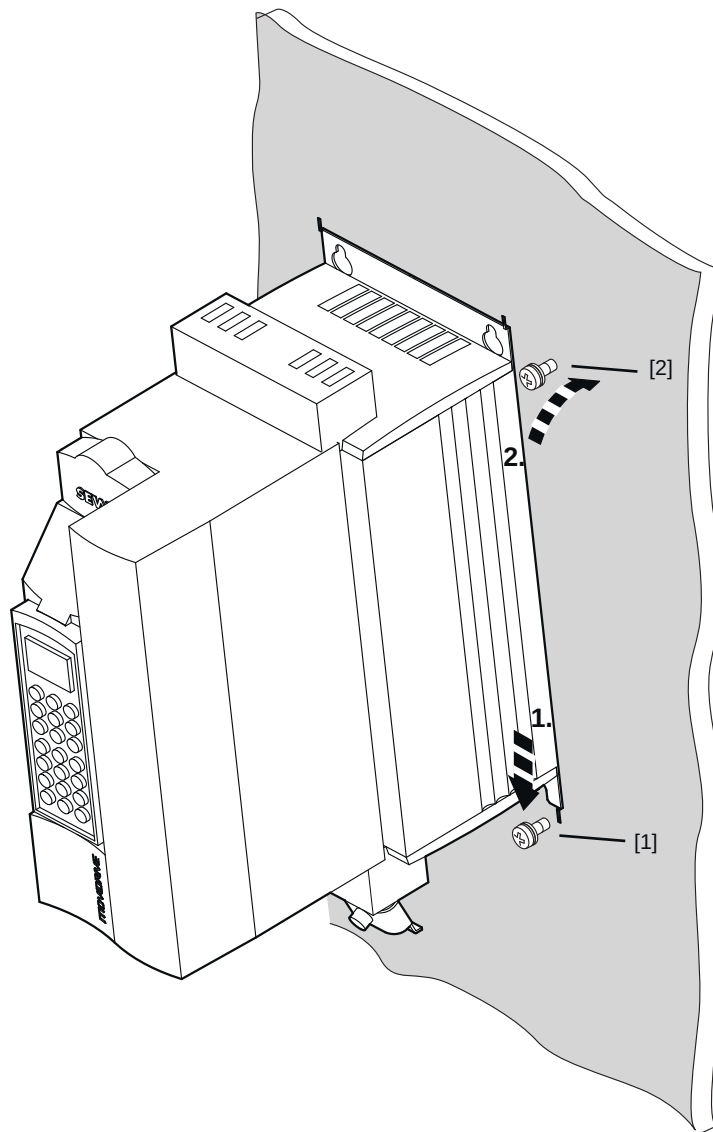
MOVIDRIVE® B application inverters are exclusively suitable for control cabinet installation according to the degree of protection.

4.1 Installation instructions for the basic unit

4.1.1 General installation notes for size 0 – 6

The retaining screws [1] and [2] are screwed into the prepared mounting grid in the control cabinet but not tightened.

1. Place the module with the slotted holes on the device base plate onto the retaining screws [1] from the top.



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2. Push the module backwards to insert the retaining screws [2] into the upper holes in the device base plate.
3. Lower the module.

4. Tighten the retaining screws [1] and [2].

Installation notes for size 7

SEW-EURODRIVE recommends the following SEW accessories for control cabinet installation of MOVIDRIVE® size 7:

- **Mounting base** to be installed under the basic device
 - Fastening the device
 - Integrated grounded cable clamping rail
 - Extended connection space facilitates installation
- **Air duct** for dissipating heat from the control cabinet
 - No increased heating of the control cabinet
 - Reduction of air conditioner power

MOVIDRIVE®	Mounting base	Air duct
MDX61B1600/2000/2500	DLS11B Part number: 18226027	DLK11B Part number: 18226035

4.1.2 Tightening torques

Power terminal tightening torques

Only use original connection elements. Note the permitted tightening torques for MOVIDRIVE® power terminals.

Size	Tightening torque
	Nm
0, 1 and 2S	0.6
2	1.5
3	3.5
4 and 5	14.0
6	20.0
7	70.0

- The permitted tightening torque of the **signal terminals** is 0.6 Nm.

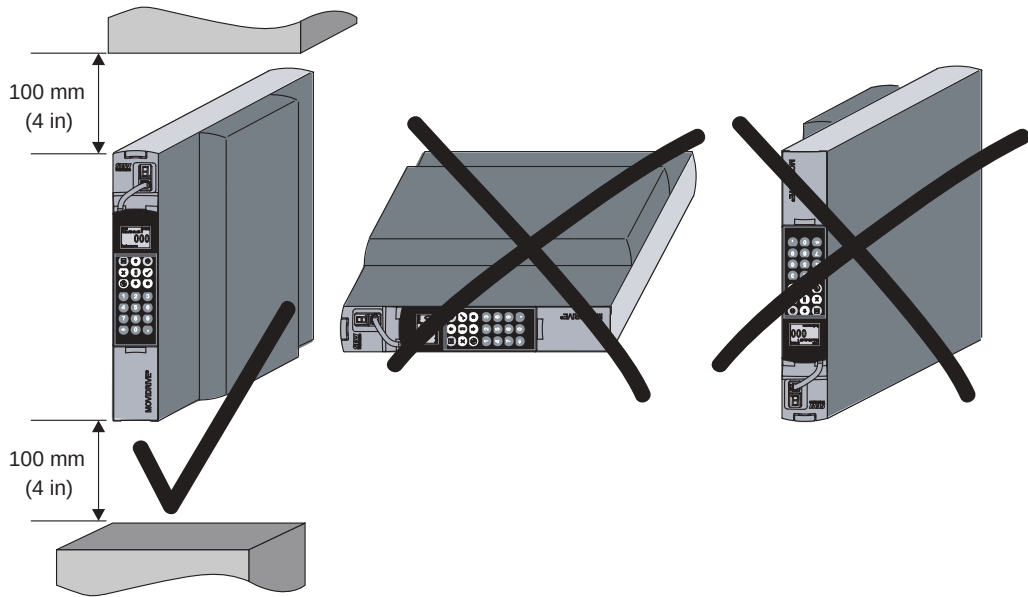
General tightening torques

Note the permitted tightening torques:

Component	Screws	Tightening torque
		Nm
Cover screws	M5 x 25	1.4 – 1.7
Screws with integral disk	M4	1.7
	M5	3.4
	M6	5.7
Conductor rail screws	M10	20

4.1.3 Minimum clearance and mounting position

- Leave at least 100 mm clearance **above and below** the device for optimum cooling. Make sure air circulation in the clearance is not impaired by cables or other installation equipment. With sizes 4, 5 and 6, do not install any components that are sensitive to high temperatures within 300 mm of the top of the device.
- Ensure unobstructed cooling air supply and make sure that air heated by other units cannot be drawn in or reused.
- There is no need for clearance at the sides of the device. You may line up the units directly next to each other.
- Only install the devices **vertically**. Do not install them horizontally, tilted or upside down (→ following figure, applies to all sizes).



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4.1.4 Separate cable ducts

- Route power cables and signal cables in **separate** cable ducts.

NOTICE

Hot surfaces

The heat sink temperature may rise above 70 °C.



⚠ WARNING

Electric shock due to charged capacitors. Dangerous voltage levels may still be present inside the device and at the terminals up to 10 minutes after disconnection from the power supply.

Severe or fatal injuries.

- Wait for 10 minutes after the frequency inverter has been separated from the voltage supply. Make sure that the device is de-energized. Only then must you commence any work on the device.
- Observe the corresponding information signs on the frequency inverter.



4.1.5 Fuses and residual current devices

- Install the fuses at the **beginning** of the supply system lead after the supply bus junction (observe the wiring diagram for basic device, power section and brake).
- SEW-EURODRIVE recommends not to use earth-leakage circuit breakers in plants with frequency inverters as an earth-leakage circuit breaker reduces the plant availability.



⚠ 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.

4.1.6 Supply system and brake contactors

- Only use contactors in utilization category **AC-3** (EN 60947-4-1) as mains and brake contactors.

INFORMATION



- Only use the input contactor **K11** (→ chapter "Wiring diagram for basic device") to **switch the inverter on and off**. Do **not** use it for jog mode. For jog mode, use the commands "Enable/stop", "CW/stop" or "CCW/stop".
- Observe a minimum switch-off time of 10 s for the line contactor K11.

4.1.7 PE connection (EN 61800-5-1)

Earth-leakage currents ≥ 3.5 mA may occur during normal operation. To meet the requirements of EN 61800-5-1 observe the following:

- **Supply system lead $< 10 \text{ mm}^2$:**

Route a **second PE conductor with the cross section of the supply system lead** in parallel to the protective earth via separate terminals or use a **copper protective earth conductor with a cross section of 10 mm^2** .

- **Supply system cable $10 \text{ mm}^2 - 16 \text{ mm}^2$:**

Route a copper PE conductor with the same cable cross section as the supply system cable.

- **Supply system cable $16 \text{ mm}^2 - 35 \text{ mm}^2$:**

Route a copper PE conductor with a cable cross section of 16 mm^2 .

- **Supply system cable $> 35 \text{ mm}^2$:**

Route a copper PE conductor with half the cross section of the supply system cable.

4.1.8 IT systems

- MOVIDRIVE® B is designed for operation on TN and TT systems with a directly grounded star point. Operation on voltage supply systems with a non-grounded star point is permitted. In this case, SEW-EURODRIVE recommends using **earth-leakage monitors with pulse-code measurement** for voltage supply systems with a non-grounded star point (**IT systems**). Using such devices prevents the earth-leakage monitor mis-tripping due to the ground capacitance of the inverter. **No EMC limits are specified for interference emission in voltage supply systems without a grounded star point (IT systems).**
- In size 7, you can deactivate the interference suppression capacitors. Note the information in the "MOVIDRIVE® MDX60B / 61B – Inspection and Maintenance of Size 7" manual.

4.1.9 Cable cross sections

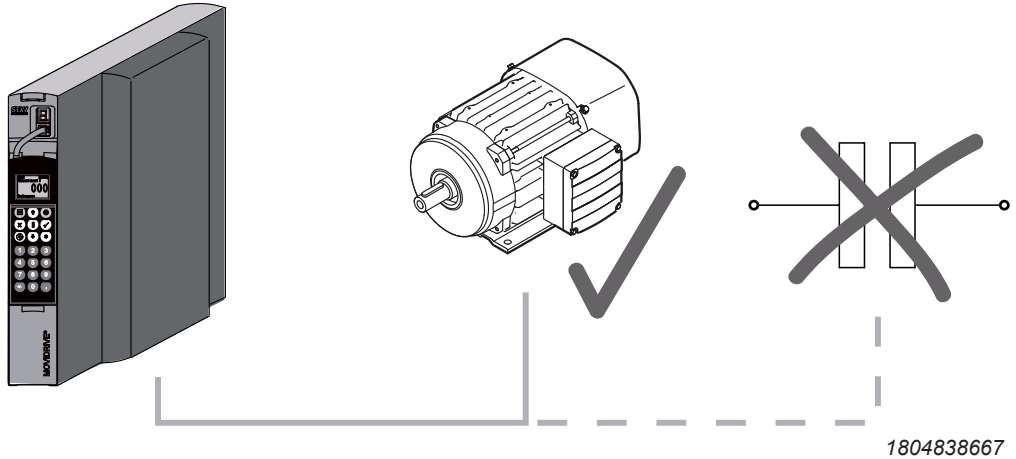
- Line cable: **Core cross section according to nominal input current I_{line}** at nominal load.
- Motor cable: **Cable cross section according to rated output current I_N .**
- Signal cables of basic device (terminals X10, X11, X12, X13, X16):
 - 1 core per terminal $0.20 - 2.5 \text{ mm}^2$ (AWG 24 – 13)
 - 2 cores per terminal $0.25 - 1 \text{ mm}^2$ (AWG 23 – 17)
- Signal cables of terminal X17 and DIO11B terminal expansion board (terminals X20, X21, X22):
 - 1 core per terminal $0.08 - 1.5 \text{ mm}^2$ (AWG 28 – 16)
 - 2 cores per terminal $0.25 - 1 \text{ mm}^2$ (AWG 23 – 17)



NOTICE

MOVIDRIVE® B can suffer irreparable damage if you connect capacitive loads.

- **Only connect ohmic/inductive loads (motors).**
- Never connect capacitive loads.



4.1.11 Permitted mounting the braking resistors



⚠ WARNING

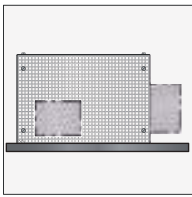
Non-permissible installation might lead to an accumulation of heat in the braking resistor due to reduced convection. A tripping temperature contact or an overheated braking resistor can lead to a system standstill.

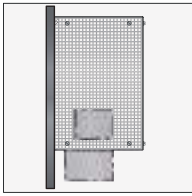
Adhere to the following minimum clearances:

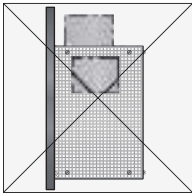
- About 200 mm to adjacent components and walls
- About 300 mm to above components/ceilings

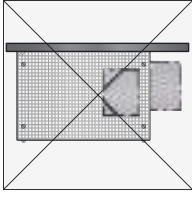
Grid resistors

You must fulfill the following requirements for mounting the grid resistors:

- 

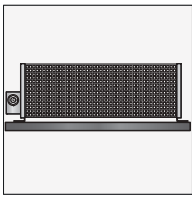
• **Permitted:** Mounting on horizontal surfaces.
- 

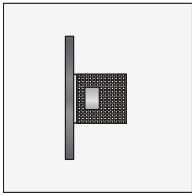
• **Permitted:** Mounting on vertical surfaces with terminals pointing downwards when there is a perforated sheet at the top.
- 

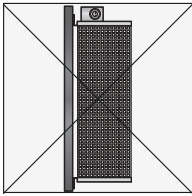
• **Not permitted:** Mounting on vertical surfaces with terminals pointing upwards, to the right or left. (The connection terminals can be placed within the steel grid, where appropriate. Ensure the proper position of connection terminals also in this case).
- 

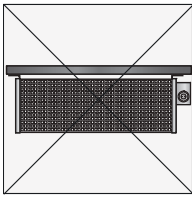
• **Not permitted:** Mounting on vertical surfaces with the terminals facing downwards. (The connection terminals can be placed within the steel grid, where appropriate. Ensure the proper position of connection terminals also in this case).

You must fulfill the following requirements for mounting the wire resistors:

- 

• **Permitted:** Mounting on horizontal surfaces.
- 

• **Permitted:** Mounting on vertical surfaces when there is a perforated sheet at the top or connection terminals at the bottom
- 

• **Not permitted:** Mounting on vertical surfaces when the connection terminals are at the top.
- 

• **Not permitted:** Mounting on horizontal surfaces when the connection terminals are at the bottom.

4.1.12 Connecting braking resistors

- **Use two tightly twisted leads or a 2-core shielded power cable.** Cable cross section according to tripping current I_F of F16. The nominal voltage of the cable must amount to at least $V_0/V = 300 \text{ V}/500 \text{ V}$ (according to DIN VDE 0298).
- Protect the braking resistor (except for BW90-P52B) using a **bimetallic relay** (→ wiring diagram for basic device, power section and brake). Set the **trip current** according to the technical data of the braking resistor. SEW-EURODRIVE recommends using an overcurrent relay from trip class 10 or 10A in accordance with EN 60947-4-1.
- For braking resistors of the **BW...-T / BW...-P** series, the integrated temperature switch/overcurrent relay can be connected using a 2-core shielded cable as an alternative to a bimetallic relay.
- In the documented assignments of drive inverters and **flat-type resistors**, flat-design resistors have an internal thermal protection (non-replaceable fuse) that interrupts the current circuit in the event of overload. Install the flat-type braking resistors together with the appropriate **touch guard**.

4.1.13 Braking resistor operation

- The supply cables to the braking resistors carry a **high pulsed DC voltage** during rated operation.



⚠ WARNING

The surfaces of the braking resistors get very hot when the braking resistors are loaded with P_N .

Risk of burns and fire.

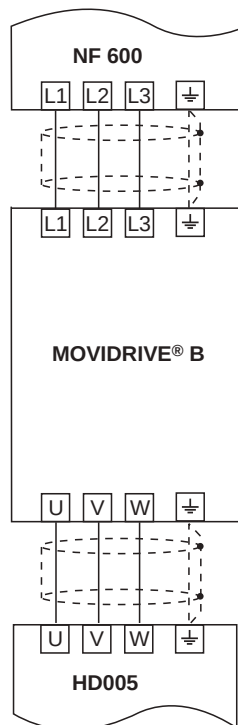
- Choose a suitable installation location. Braking resistors are usually mounted on top of the control cabinet.
- Do not touch the braking resistors.

4.1.14 Binary inputs / binary outputs

- The **digital inputs** are electrically isolated by **optocouplers**.
- The digital outputs are **short-circuit proof** and **external-voltage proof up to DC 30 V**. External voltages > DC 30 V can destroy the digital outputs.

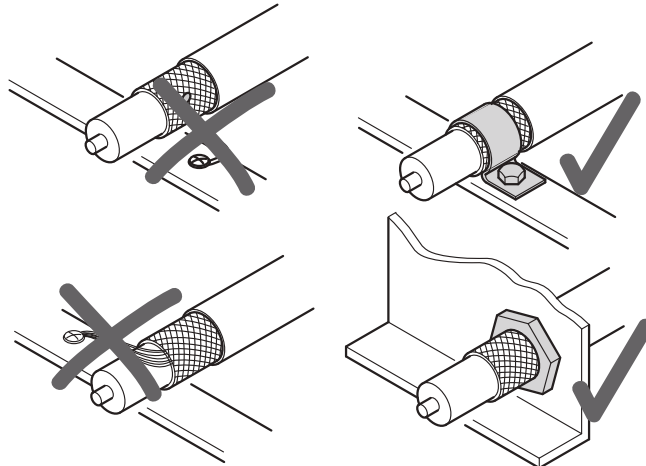
4.1.15 EMC-compliant installation

- All cables except for the power supply line **must be shielded**. As an alternative to the shielding, the option HD.. (output choke) or HF (output filter) can be used for the motor cable to achieve the emitted interference limit values.



Shielded cables

- When using shielded motor cables, e.g. prefabricated motor cables from SEW-EURODRIVE, you must keep the **unshielded conductors** between the shield and connection terminal of the inverter **as short as possible**.
- **Connect the shield by the shortest possible route and make sure it is earthed over a wide area at both ends.** Ground one end of the shield using an interference suppression capacitor (220 nF/50 V) to avoid ground loops. If using double-shielded cables, ground the outer shield on the inverter end and the inner shield on the other end.



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Correct shield connection using metal clamp (shield clamp) or cable gland

- You can also use earthed sheet-metal ducts or metal pipes to shield the cables. Route the power and signal cables separately.
- Ground the **inverter** and **all additional devices** to ensure **high-frequency compatibility** (wide area, metal-on-metal contact between the device housing and ground, e.g. unpainted control cabinet mounting panel).



INFORMATION

- For detailed information on EMC compliant installation, refer to the documentation "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

NF.. line filter

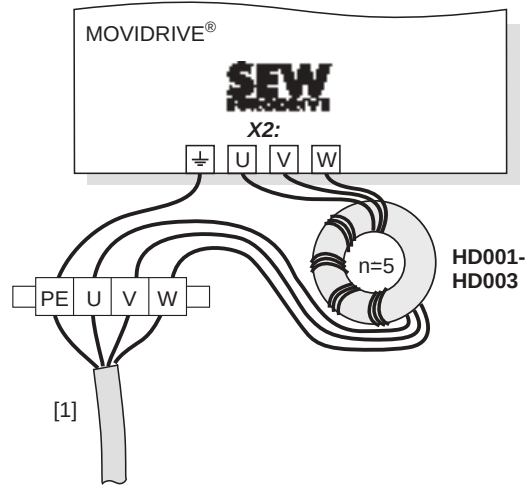
- The NF.. line filter option can be used to maintain the class C1 limit for MOVIDRIVE® MDX60B/61B in size 0 – 5.
- Do not switch between the line filter and MOVIDRIVE® MDX60B/61B.
- Install the line filter **close to the inverter** but outside the minimum clearance for cooling.
- **Keep the length of the cable between the line filter and the application inverter to an absolute minimum, and never more than 400 mm.** Unshielded, twisted cables are sufficient. Use also unshielded lines for the supply system lead.
- SEW-EURODRIVE recommends taking one of the following **EMC measures on the motor side to maintain class C1 and C2 limits:**
 - Shielded motor cable
 - HD... output choke option
 - HF.. output filter option (in operating modes VFC and V/f)

Interference emission category

Compliance with category C2 according to EN 61800-3 has been tested in a CE typical drive system. SEW-EURODRIVE can provide detailed information on request.

HD... output choke

- Install the **output choke close to the inverter** but outside the minimum clearance for cooling.
- For HD001 – HD003: Route **all three phases** (U, V, W) of the motor cable [1] **through the output choke**. To achieve a higher filter effect, do **not** route the **PE conductor** through the output choke.



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Connection of output choke HD001 – HD003

[1] Motor cable

4.1.16 Installation notes for size 6

MOVIDRIVE® devices in size 6 (0900 – 1320) have one fixed lifting eye [1]. Use a crane and the lifting eye [1] to install the device.

⚠ WARNING

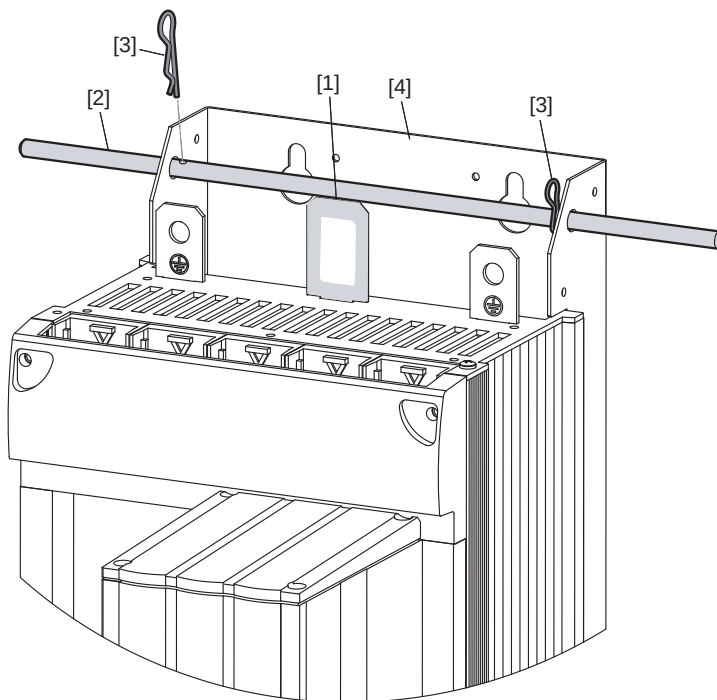


Suspended load.

Danger of fatal injury if the load falls.

- Do not stand under the suspended load.
- Secure the danger zone.

If a crane is not available, you can push a carrying bar [2] through the rear panel [4] to facilitate installation (included in the delivery scope of size 6). Secure the carrying bar [2] against axial displacement using the split pins [3] (see figure below).



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[1] Fixed lifting eye

[2] Carrying bar (included in the delivery of size 6)

[3] 2 Split pins (included in the delivery of size 6)

[4] Rear panel

4.1.17 Installation notes for size 7

MOVIDRIVE® devices in size 7 (1600 – 2500) have 4 fixed lifting eyes [2] for transport. You may only use these four lifting eyes [2] for installation.

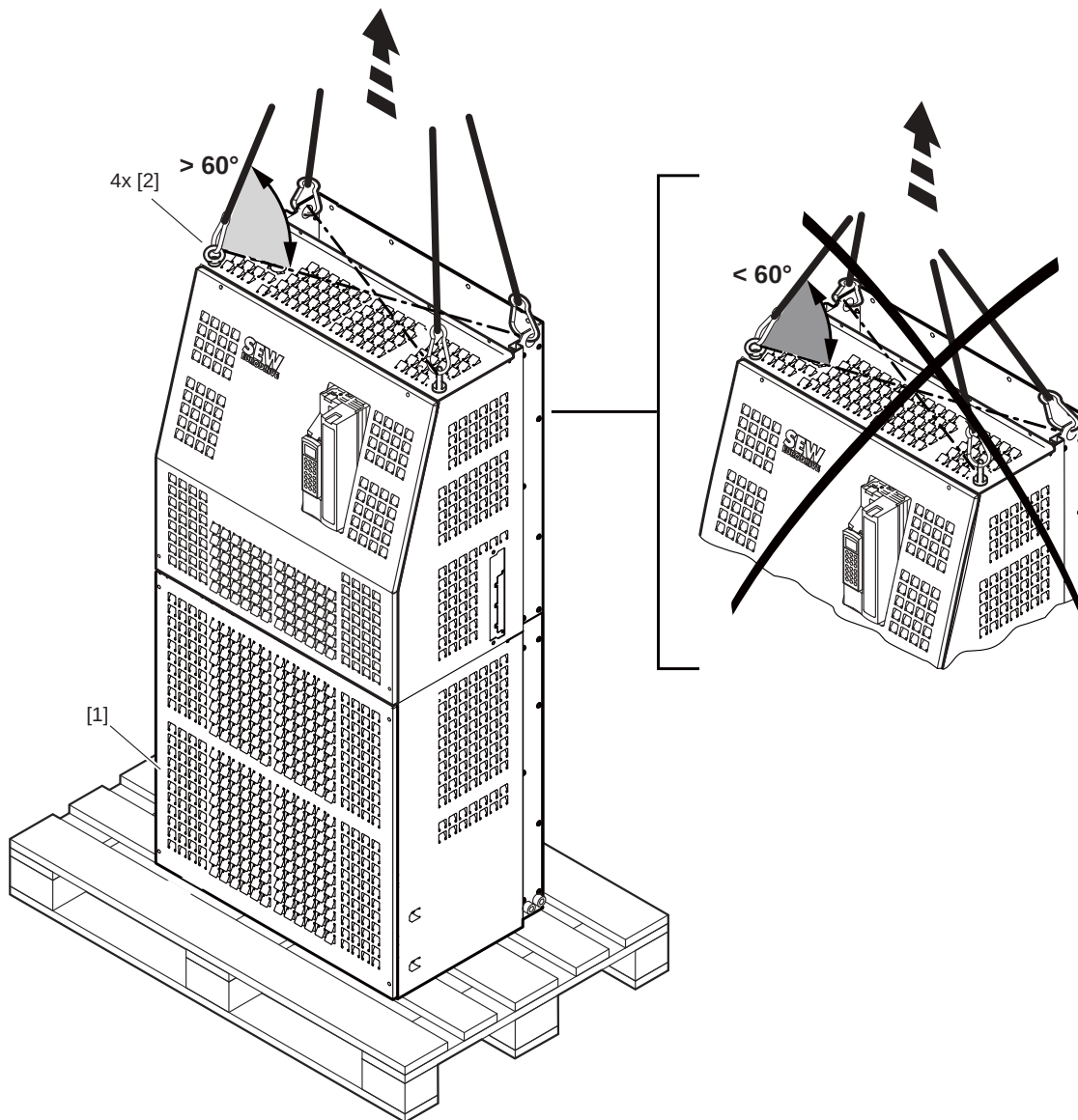
⚠ WARNING



Suspended load.

Danger of fatal injury if the load falls.

- Do not stand under the suspended load.
- Secure the danger zone.
- Always use all 4 lifting eyes.
- Align the lifting eyes with the direction of tension



[1] Installed front cover

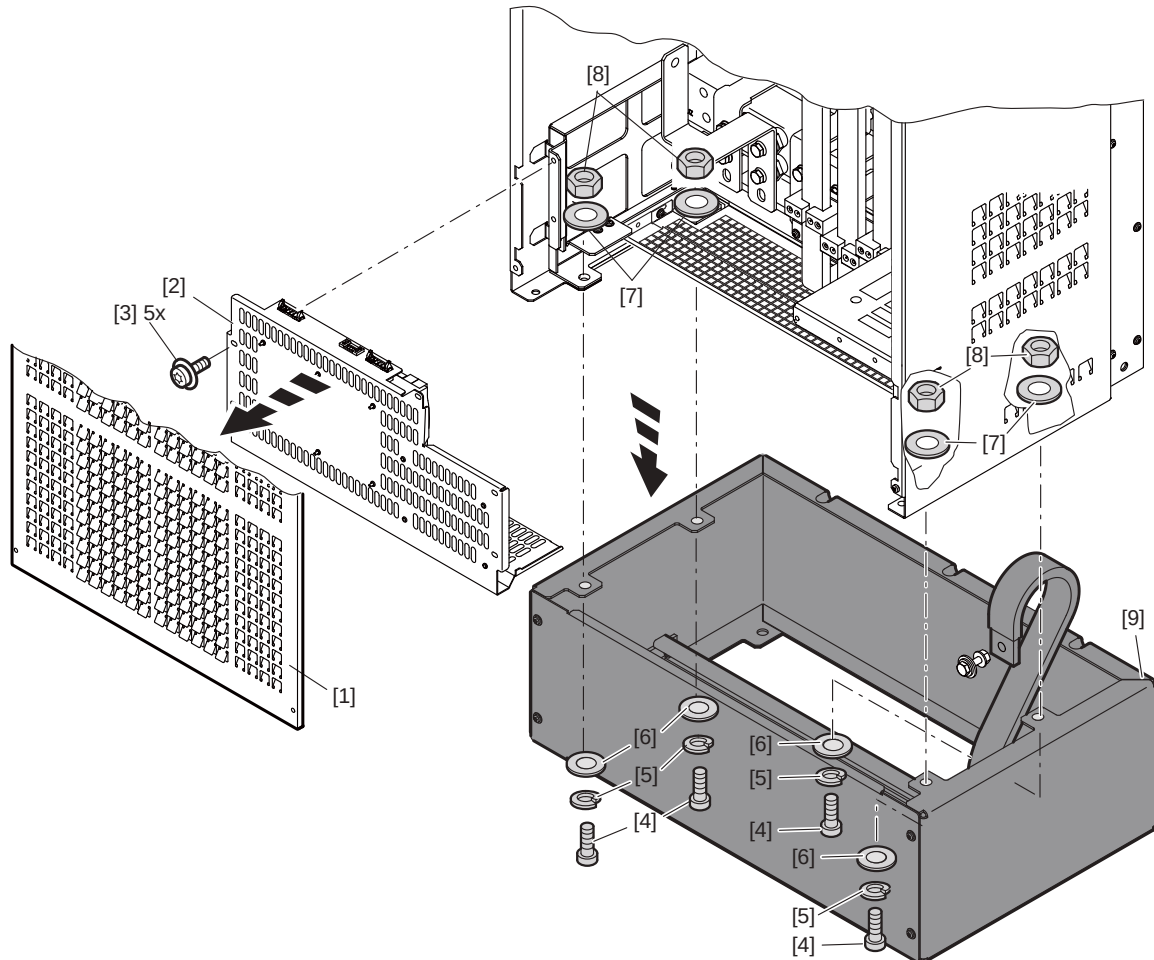
[2] 4 lifting eyes

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4.1.18 Optional scope of delivery for size 7

DLS11B mounting base

The **mounting base DLS11B** with mounting material [9] (part no.: 18226027) is used to install MOVIDRIVE® B, size 7 **on the floor of the control cabinet**. MOVIDRIVE® B size 7 must be screwed onto the mounting base immediately after installation (see following figure). Do not take MOVIDRIVE® B size 7 into operation until the mounting base has been completely mounted.



2076968843

The mounting material (pos. 3 - 8) is enclosed in a plastic bag.

- | | |
|--|-----------------|
| [1] Front cover | [5] Lock washer |
| [2] Insert (for external power supply) | [6] Washer |
| [3] Insert for retaining screws | [7] Washer |
| [4] Machine screw M8 × 30 hexagon socket | [8] M8 nut |

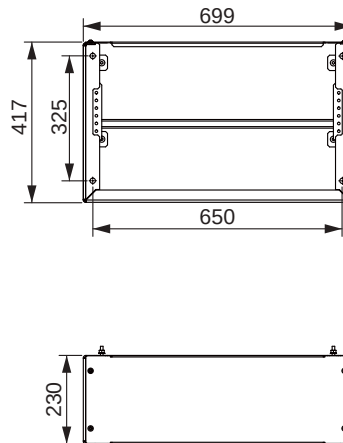
Proceed as follows to install the mounting base [9] to MOVIDRIVE® B, size 7:

1. Loosen (not unscrew!) the 4 retaining screws of the front cover [1] until you can lift it off. Remove the front cover [1].
2. Remove the insert [2]. Loosen the 5 retaining screws [5] to do so.
3. The following steps apply to each of the 4 mounting holes.
 - Position the washer [7] centrally between inverter and mounting base [9].

- Place the lock washer [5] and the washer [6] onto the socket head screw [4] M8×30.
 - Insert the preassembled socket head screw through the mounting hole.
 - Screw the M8 nut [8] onto the socket head screw. Tightening torque 20 Nm. Apply thread locking compound.
4. Replace the insert [2] into the device and fasten it using the 5 retaining screws.
 5. Place the front cover [1] onto the device and fasten it using the 4 retaining screws.

DLS11B mounting base wiring diagram

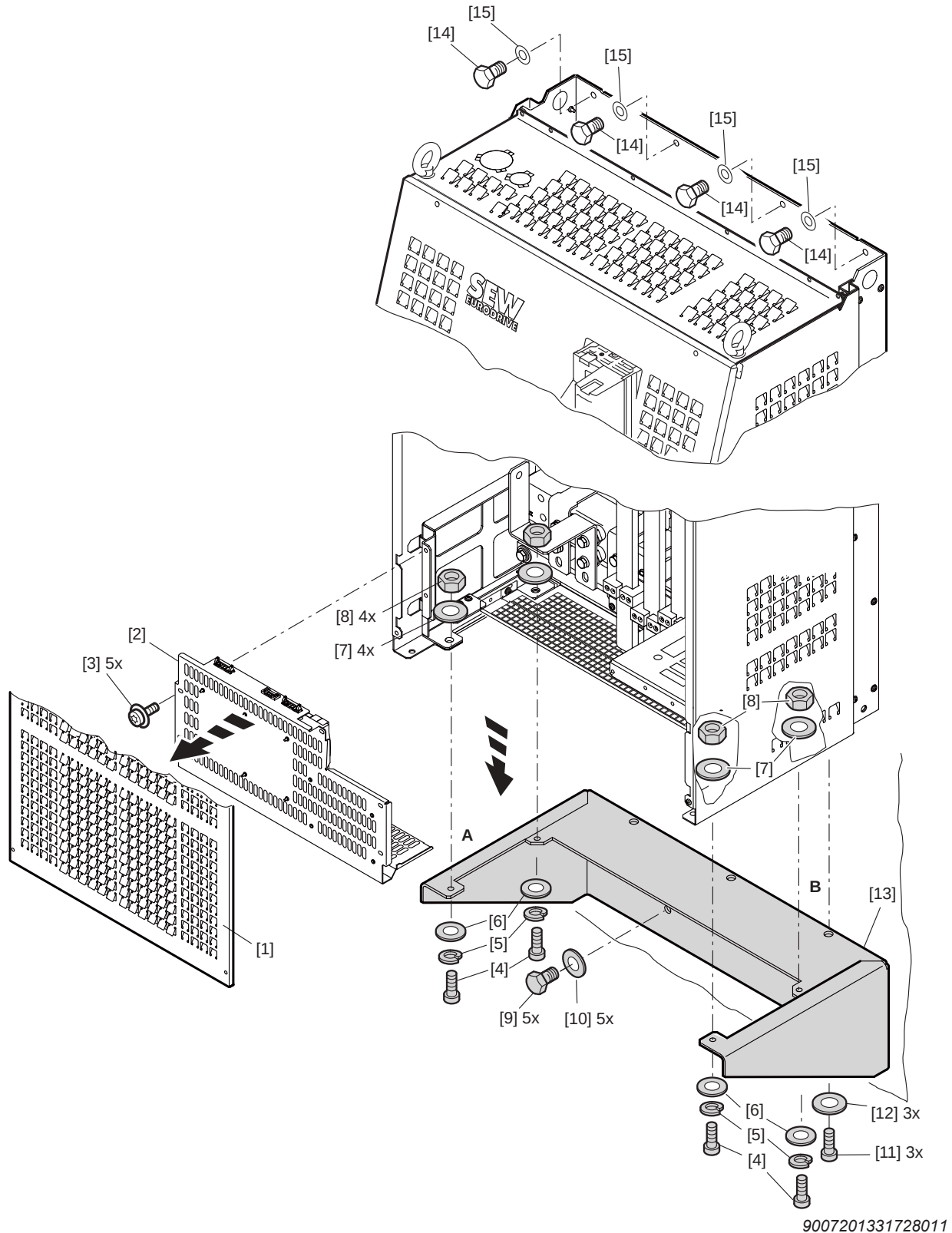
The following figure shows the dimensions of the DLS11B mounting base.



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DLH11B wall bracket

The **wall bracket DLH11B** [13] (part no: 18226108) is used to attach MOVIDRIVE® B size 7 to the wall (see following figure). Do not take MOVIDRIVE® B size 7 into operation until the installation of the device is complete.

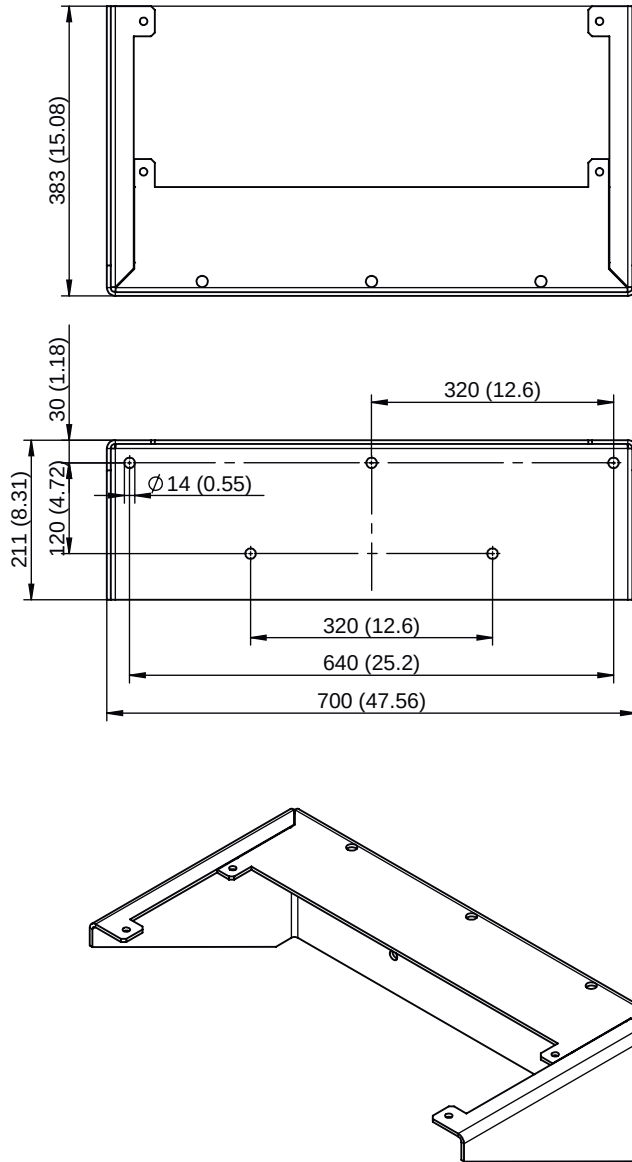


The installation material for wall mounting is not included in the delivery of SEW-EURODRIVE.

Proceed as follows to fasten the wall bracket [13] to MOVIDRIVE® B size 7:

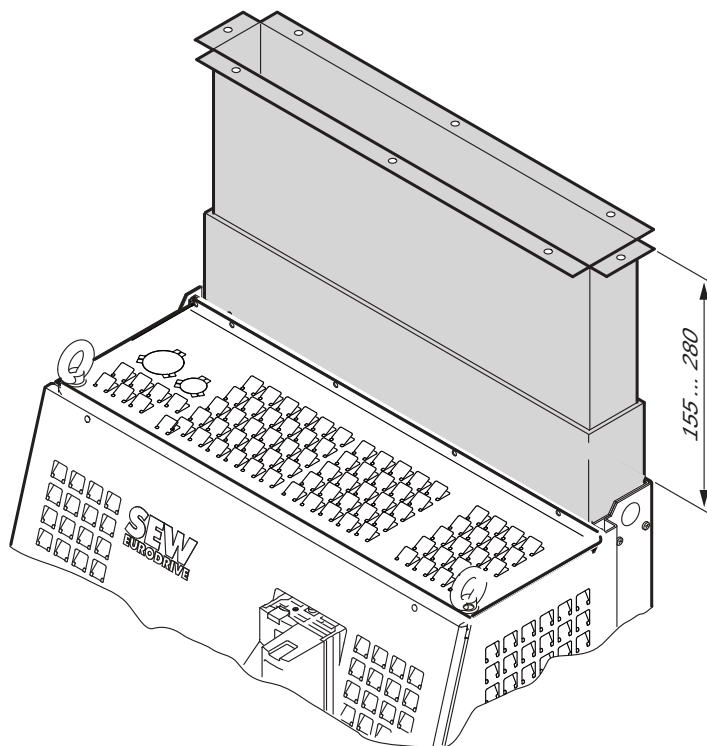
1. Loosen (not unscrew!) the 4 retaining screws of the front cover [1] until you can lift it off. Remove the front cover [1].
2. Remove the insert [2]. Loosen the 5 retaining screws [5] to do so.
3. The wall bracket [13] is screwed onto MOVIDRIVE® B at 5 points [A, B] (see figure above).
 - Place a washer [7] at each point centrally between inverter and wall bracket [13].
 - Place the lock washer [5] and the washer [6] onto the hexagon socket head screw [4] M8 × 30.
 - Insert the preassembled socket head screw through the two mounting holes [A].
 - Screw the M8 nut [8] onto the socket head screw. Tightening torque 20 Nm. Apply thread locking compound.
 - Screw the wall bracket to MOVIDRIVE® B at the 3 mounting bores [B] using the retaining screws [11] and washers [12].
4. Replace the insert [2] into the device and fasten it using the 5 retaining screws.
5. Place the front cover [1] onto the device and fasten it using the 4 retaining screws.
6. To mount MOVIDRIVE® B size 7 to a wall (material not included in the delivery), use
 - 4 retaining screws [14] and washers [15] for the 4 mounting holes at the top of the device and
 - 5 retaining screws [9] and washers [10] for the 5 mounting holes on the wall bracket [13].

Dimension drawing for DLH11B wall bracket



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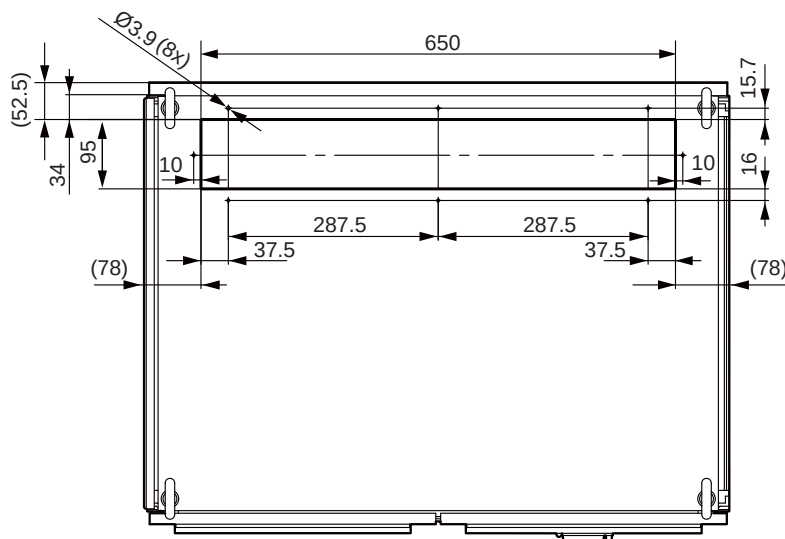
An optional **DLK11B air duct** (part no.: 18226035) is available to dissipate heat of MOVIDRIVE® B size 7. Install the air duct in such a way that it points vertically upwards (see figure below).



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Roof cut-out for DLK11B air duct

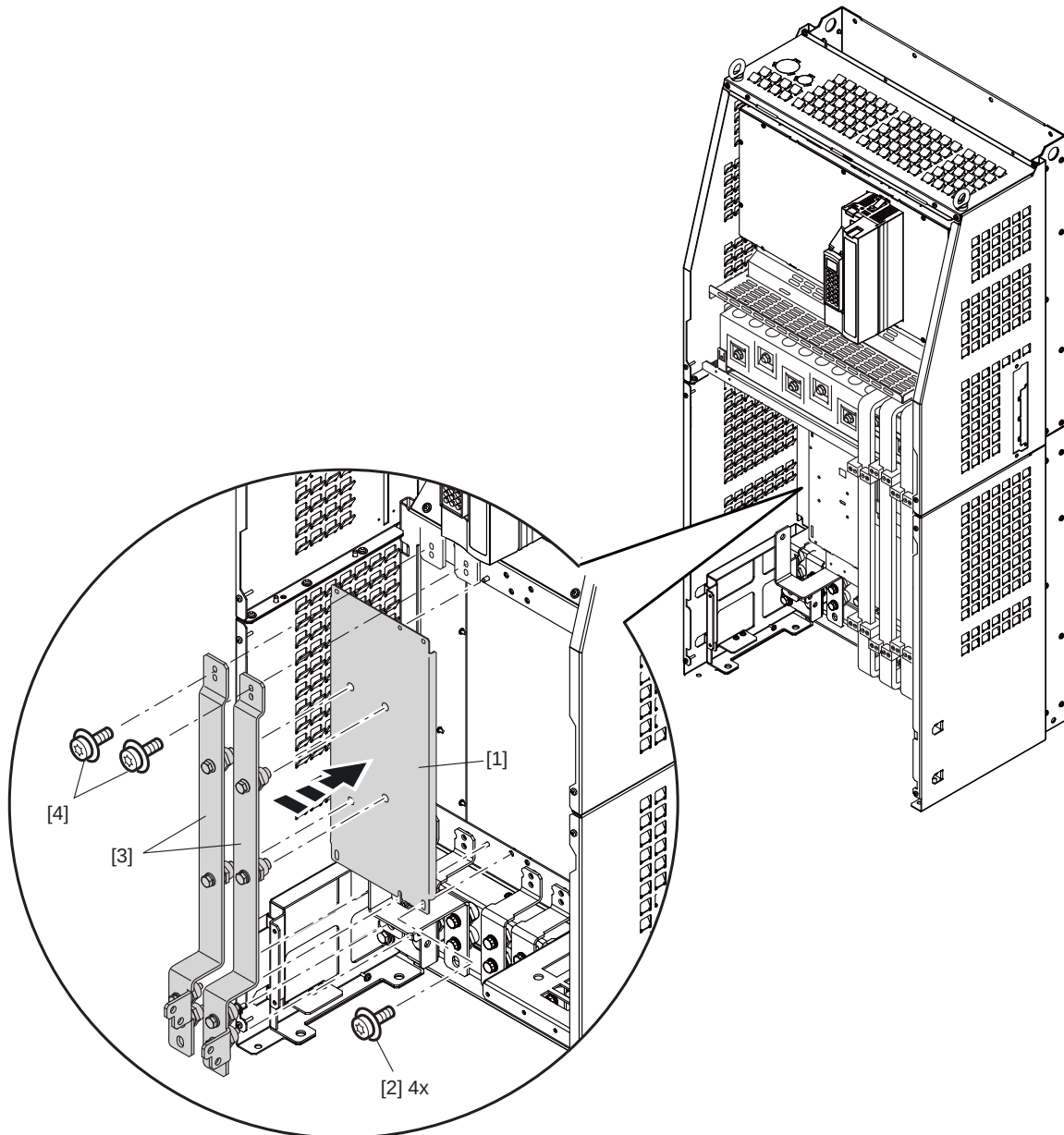
The following figure shows the cut-out of the control cabinet roof for the DLK11B air duct.



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2Q DLZ12B DC link adapter

The DC link adapter **2Q DLZ12B** (part no.: 18227295) can be used to provide a DC link connection at the bottom of the device:



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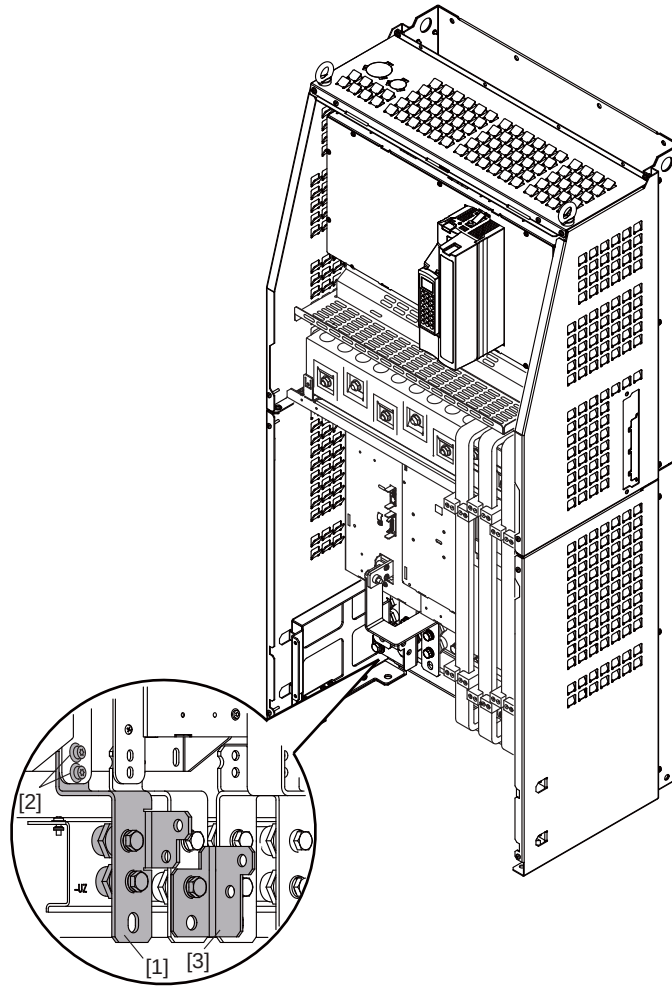
1. Loosen the 4 screws of both the upper and lower cover and remove them.
2. Loosen the 5 screws of the insert and remove it.
3. Place the cover panel on the fastening pin of the slot for the brake chopper module.
4. Position the 2 upper retaining screws [2] of the cover panel [1] in the frame. Position the 2 lower retaining screws of the cover panel in the frame.
5. Screw the insulating spacers tightly to the cover panel [1].
6. Screw the insulating spacers tightly to the frame (bottom).
7. Position the 2 screws of the mounting lug -U_z at the DC link (top left).
8. Position the 2 screws of the mounting lug +U_z at the DC link (top right).

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9. Position the 4 screws of the mounting lug $-U_z$ and $+U_z$ on the insulating spacer.
10. Tighten all screws of the mounting lug $-U_z$ and $+U_z$.
11. Replace the covers.

4Q DLZ14B DC link adapter

The DC link adapter **4Q DLZ14B** (part no.: 18227287) can be used to provide a DC link connection at the bottom of the device:



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1. Loosen the 4 screws of the upper cover and remove it.
2. Loosen the 4 screws of the lower cover and remove it.
3. Position the 2 screws of the conductor rail [1] -U_z on the brake chopper module (bottom left) on the insulating spacer.
4. Position the 2 screws of the conductor rail [1] -U_z on the insulating spacer.
5. Tighten all screws of the mounting lug -U_z.
6. Screw on the angle bracket [3].
7. Replace the covers.

Side panel for DC link coupling

To connect 2 devices via the DLZ11B or DLZ31B DC link coupling side by side, the side panel of MOVIDRIVE® must be opened.

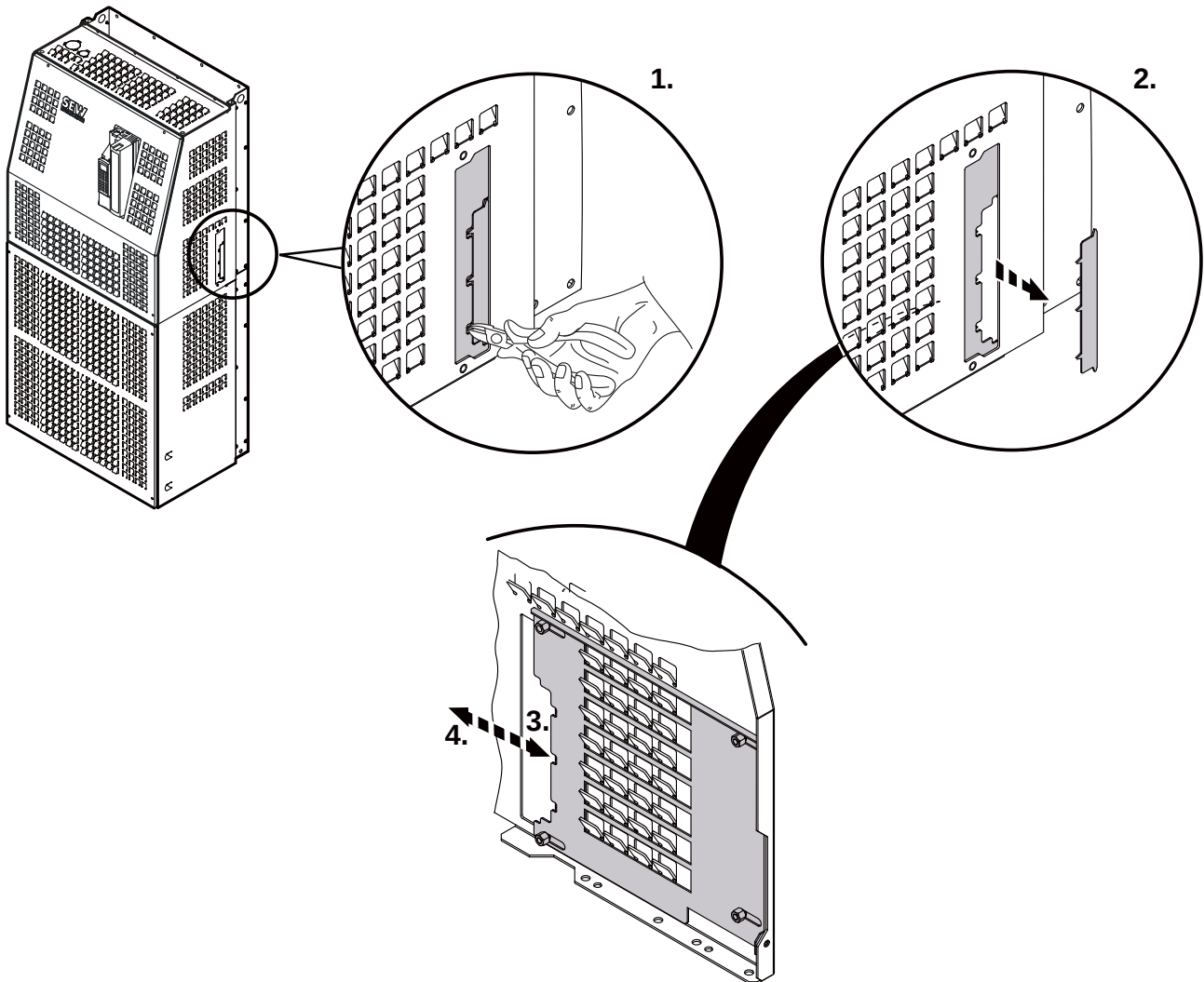
Proceed as follows to prepare MOVIDRIVE® for the side-by-side connection:

⚠ CAUTION

Sharp edges

Minor injuries.

- Wear suitable protective gloves when cutting.



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1. Use cutting pliers to cut an opening according to the figure.
2. Remove the metal you have cut out.
3. When the front cover is open, the sliding door to the DC link connection can be moved.
4. When you screw on the front cover, the sliding door to the DC link connection is closed and fixed.

DLZ11B DC link coupling

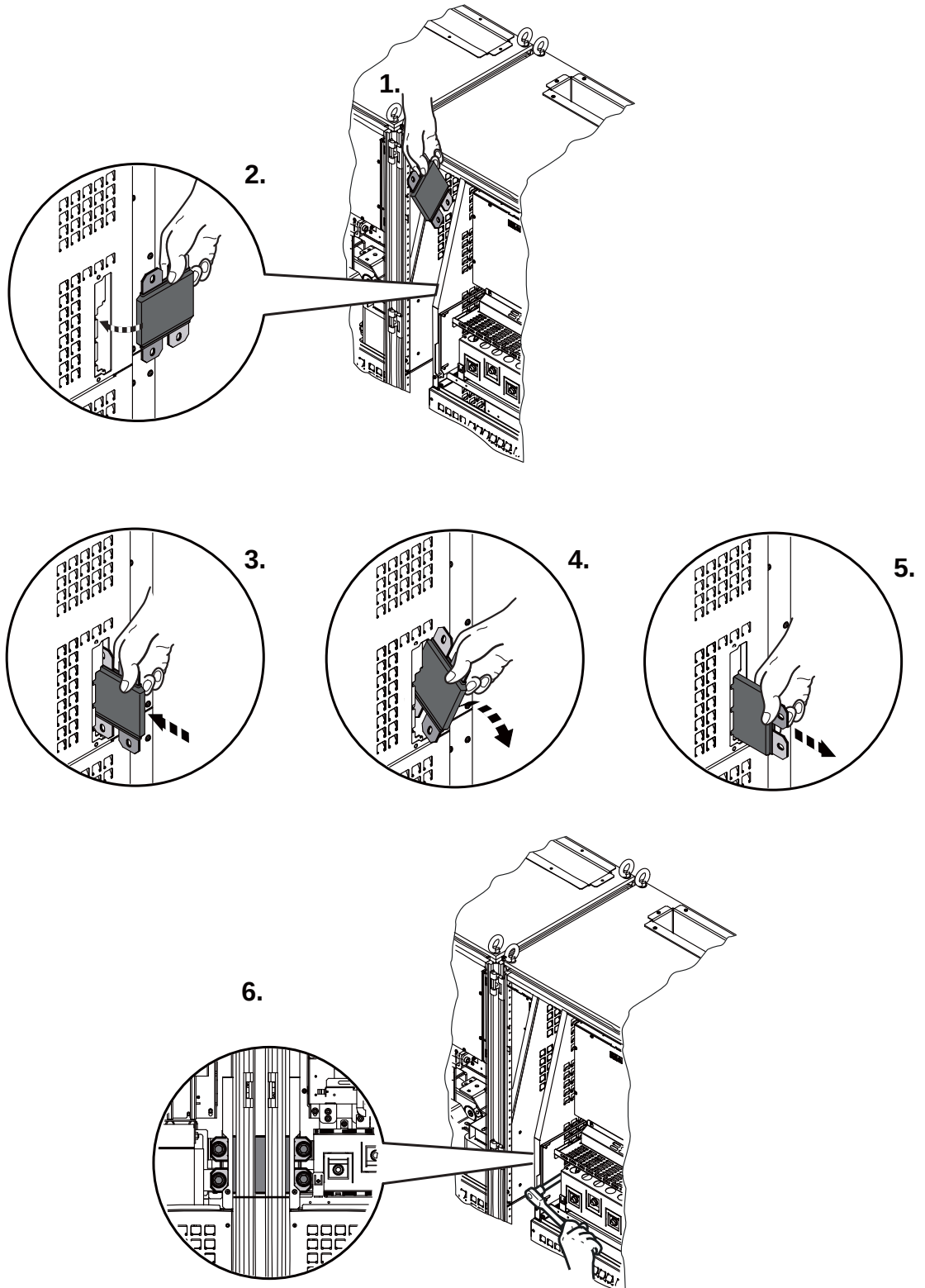
You can use the **DLZ11B DC link coupling** to connect 2 size 7 devices side by side. The DLZ11B DC link coupling is available in three different lengths:

- 100 mm (part number: 18231934)
- 200 mm (part number: 18235662)
- 300 mm (part number: 18235670)

Proceed as follows to connect 2 devices:

1. Depending on the DC link coupling, the units that you want to connect must be installed at ground level and 100 mm, 200 mm or 300 mm apart from each other.
2. Loosen the 4 screws of the upper cover and remove it.
3. Loosen the 4 screws of the lower cover and remove it.
4. Cut the opening in the side panel according to chapter "Side panel for DC link coupling" (→ 65).
5. Insert the DC link connections into the devices.
 - Insert the **100 mm DC link connection** vertically into the device.
 - Turn the 100 mm DC link connection in the device by 90°.
 - Insert the **200 mm and 300 mm DC link connection** into the one device skewed up to the stop.

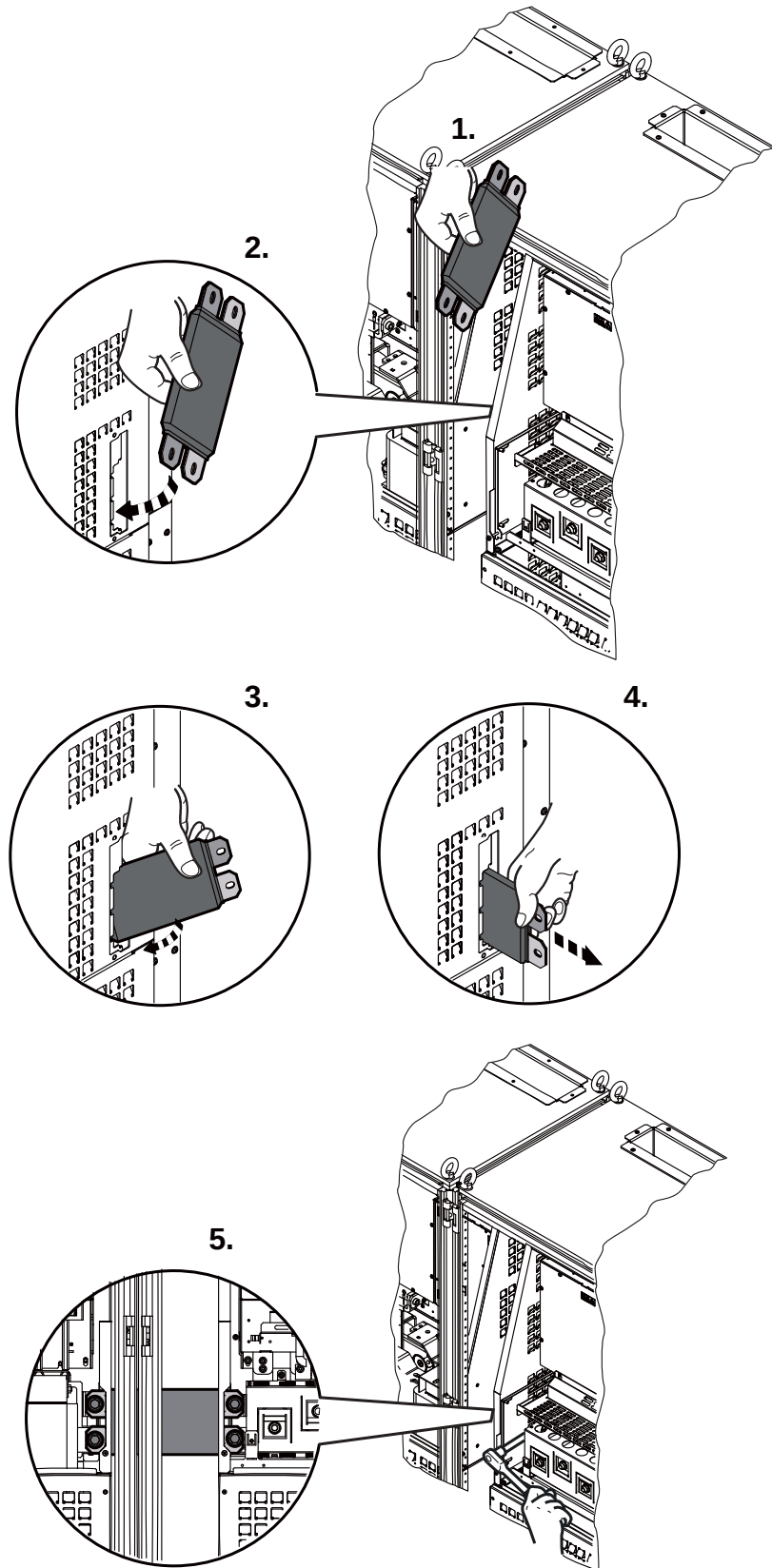
- Tip the DC link connection into the second device from above



- Insert the **200 mm and 300 mm DC link connection** into the one device skewed up to the stop.

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- Tip the DC link connection into the second device from above

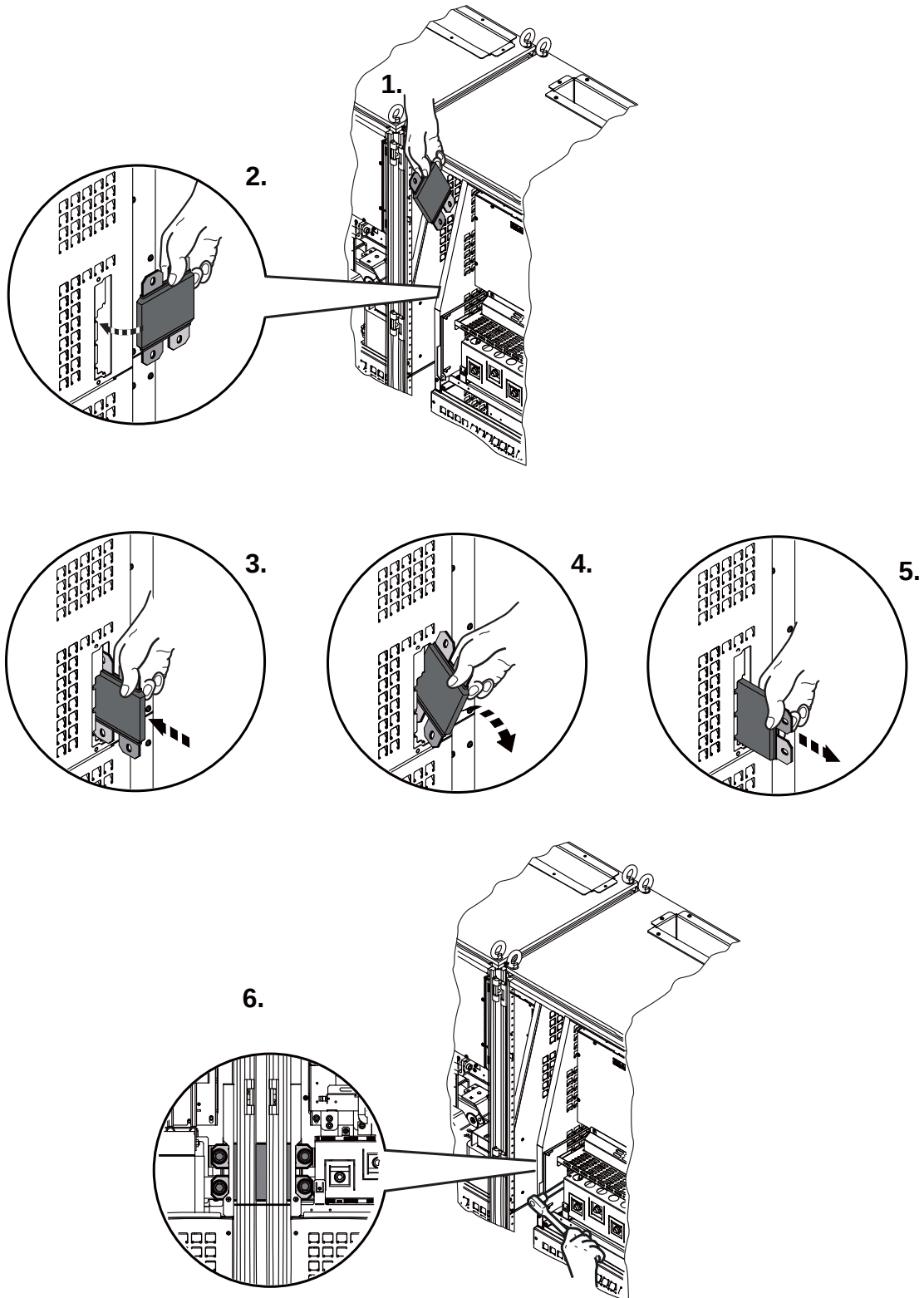


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- Screw the DC link coupling to one device first. Then attach it to the other devices.
 - Tighten the screws.
 - Replace the covers.
6. Screw the DC link coupling to one device first. Then attach it to the other devices.
 7. Tighten the screws.

8. Replace the covers.

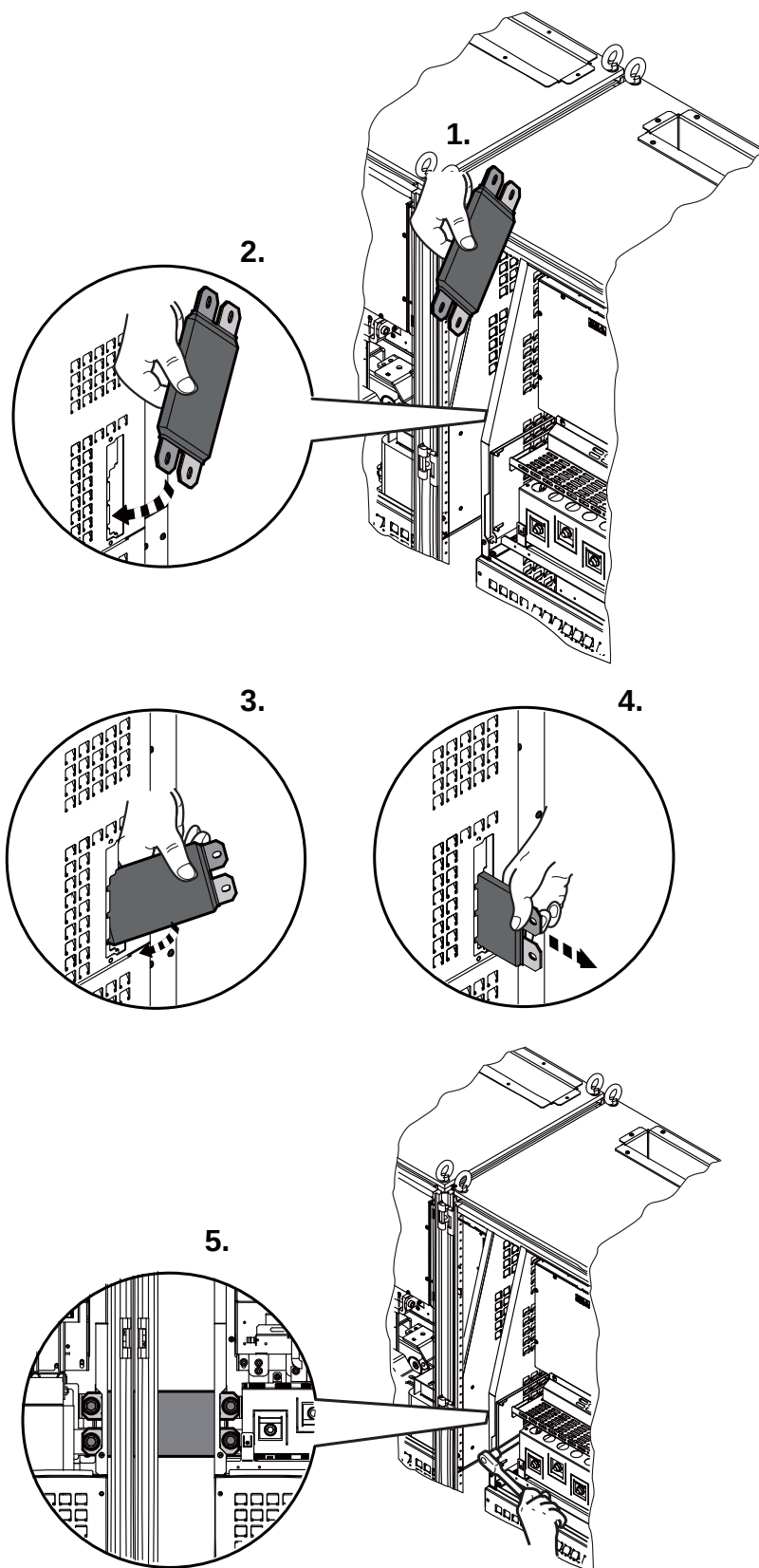


9. Insert the **200 mm and 300 mm DC link connection** into the one device skewed up to the stop.

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10. Tip the DC link connection into the second device from above



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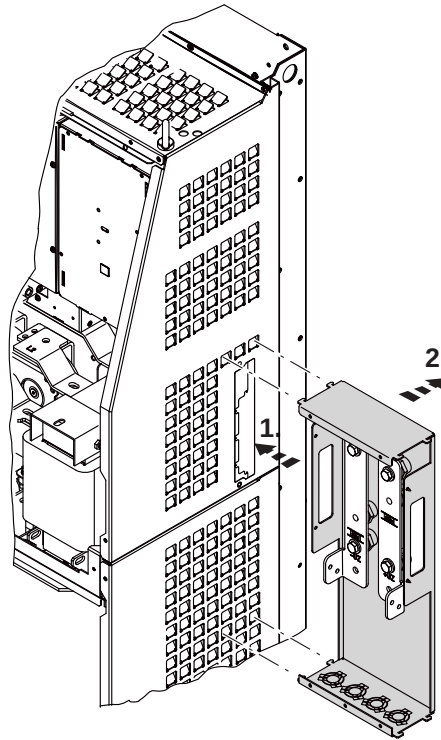
11. Screw the DC link coupling to one device first. Then attach it to the other devices.

12. Tighten the screws.

13. Replace the covers.

DLZ31B DC link coupling

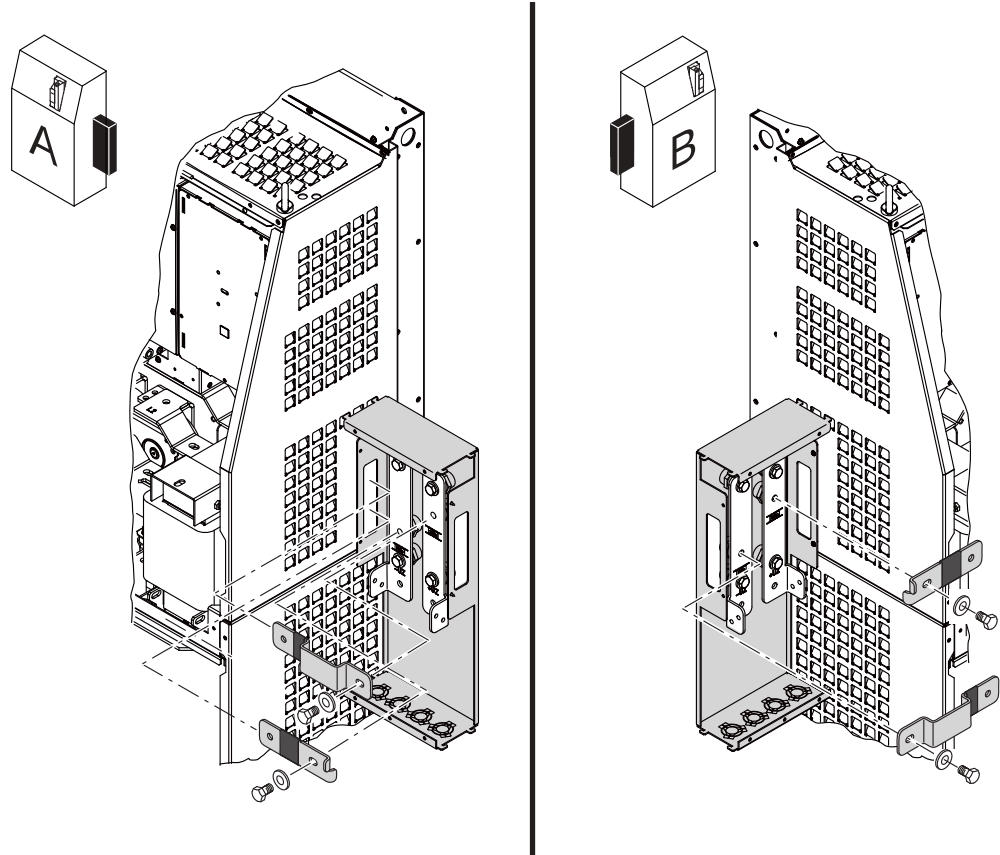
To connect a device in size 7 and a smaller size side by side, you can use the **DLZ31B DC link coupling** (part number: 18236286):



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1. Loosen the 4 screws of the upper cover and remove it.
2. Loosen the 5 screws of the cover of the DC link coupling and remove the cover.
3. Cut the opening in the side panel according to chapter "Side panel for DC link coupling" (→ 65).
4. Mount the DC link coupling to the side panel of the size 7 device.

5. Mount the DC link coupling to the side panel of the size 7 device with 2 tapping screws.



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Insert the DC link connections into the devices. Observe the arrangement of the conductor rails depending on the mounting position.

- Mounting position A: Long conductor rail with bracket at the top, short conductor rail at the bottom
- Mounting position B: Short conductor rail at the top, long conductor rail with bracket at the bottom
- Fasten the DC link connections with screws in the size 7 device first, then in the DC link coupling.
- Tighten the screws.
- Replace the covers.
- Insert the DC link connections into the devices. Observe the arrangement of the conductor rails depending on the mounting position.
 - Mounting position A: Long conductor rail with bracket at the top, short conductor rail at the bottom
 - Mounting position B: Short conductor rail at the top, long conductor rail with bracket at the bottom
- Fasten the DC link connections with screws in the size 7 device first, then in the DC link coupling.
- Tighten the screws.
- Replace the covers.

Connection options per conductor rail

You have the following options to connect the conductor rail:

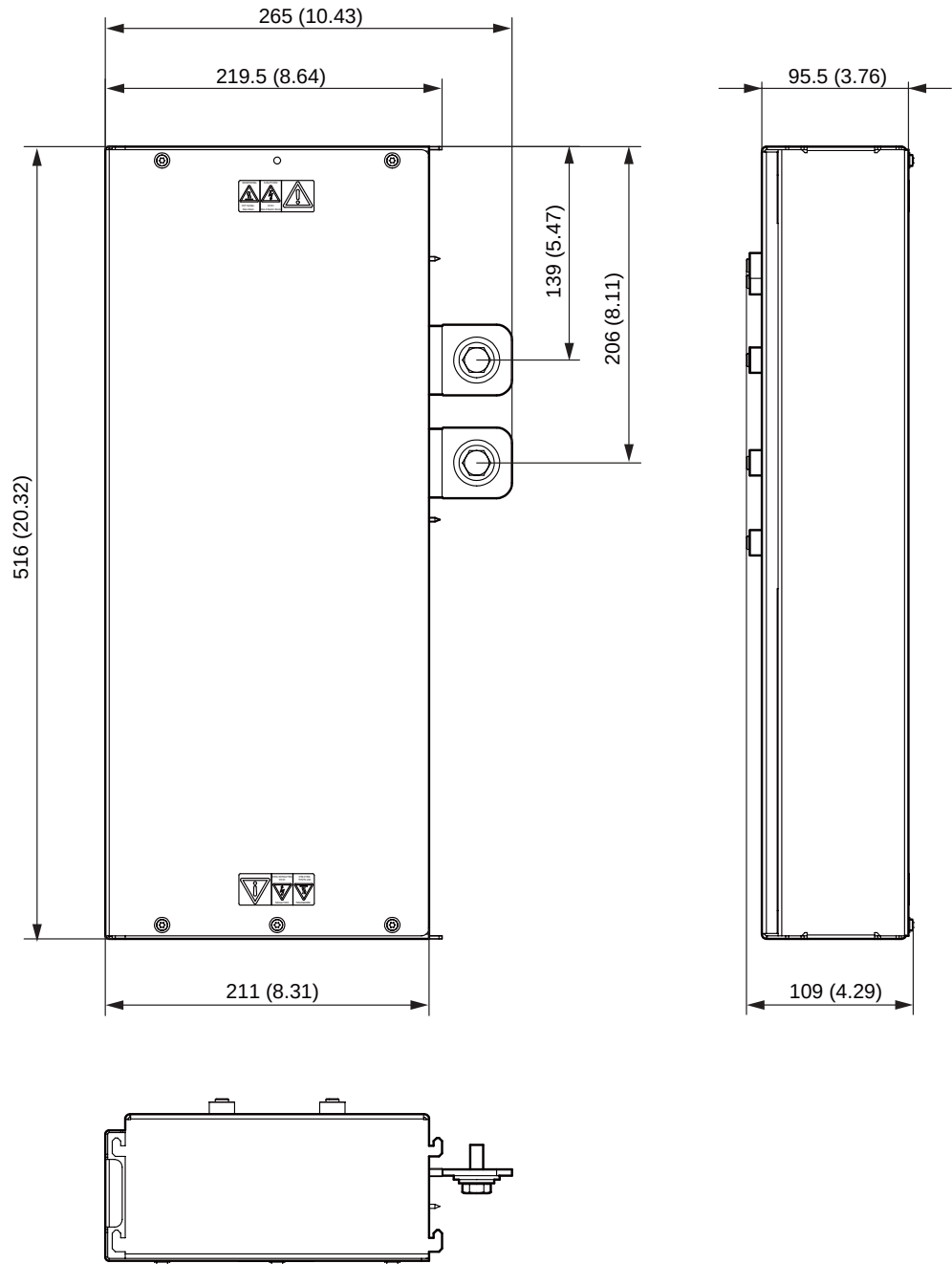
- 2 bores with a 7 mm diameter
- 1 bore with an 11 mm diameter

Observe the following installation notes in addition:

- Connection of max $2 \times 150 \text{ mm}^2$ per conductor rail
- Provide the cable lugs with heat shrink tubing
- Provide for sufficient voltage distance between the screw ends and the metal parts
- There are 4 optional positions for M20 or M32 cable openings
- Use the provided edge protection for cables $\geq 150 \text{ mm}^2$.

DLZ31B DC link coupling dimension drawing

The following figure shows the dimensions of the DLZ31B DC link coupling.



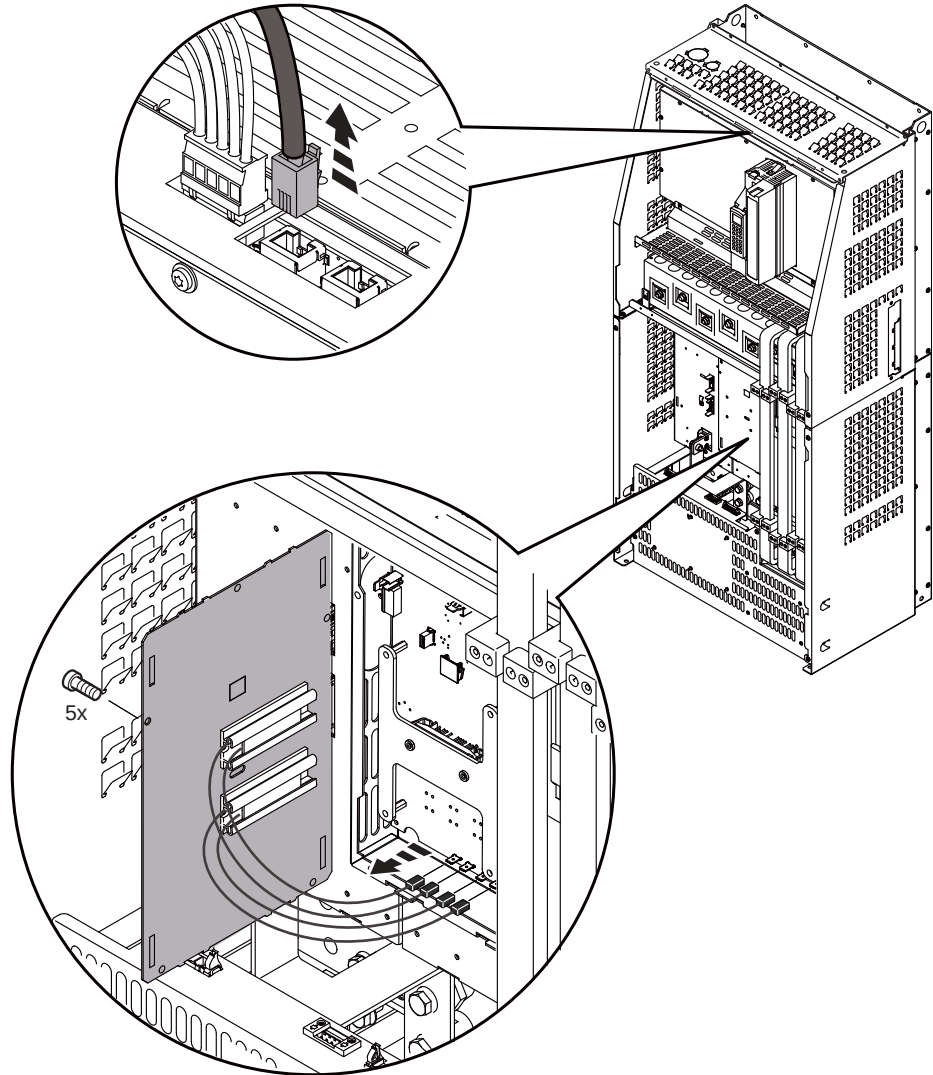
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Conversion to motor inverter

A MOVIDRIVE® MDX61B inverter can be used as MDR62B motor inverter. The following applications can be considered:

- Supply via MDR61B regenerative power supply
- Supply via MOVIDRIVE® MDX61B connection type B

Proceed as follow to operate an inverter as MDX62B motor inverter:



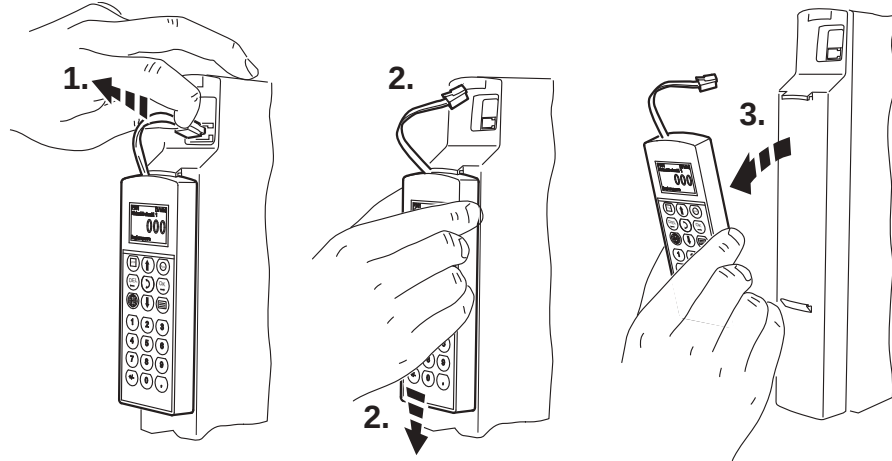
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- Loosen the 4 screws of the upper cover and remove it.
- Loosen the 4 screws of the lower cover and remove it.
- Pull the CAN bus plug (RJ45) at the top of the inverter.
- Loosen the 5 screws of the cover of the precharge and discharge control and remove the cover.
- Pull the 4 flat plugs of the discharge resistors from the board.
- Fasten the loose cables.
- Replace the covers.

4.2 Removing/installing the keypad

4.2.1 Removing the keypad

Proceed as follows:

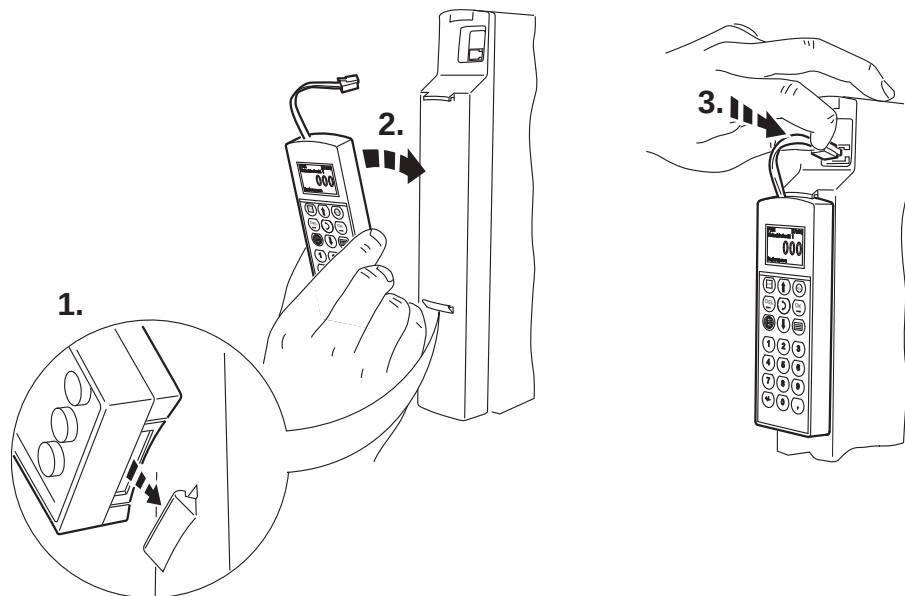


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1. Unplug the connection cable from the XT slot.
2. Carefully push the keypad downwards until it comes off the upper fixture on the front cover.
3. Remove the keypad **forward** (not to the side!).

4.2.2 Installing the keypad

Proceed as follows:



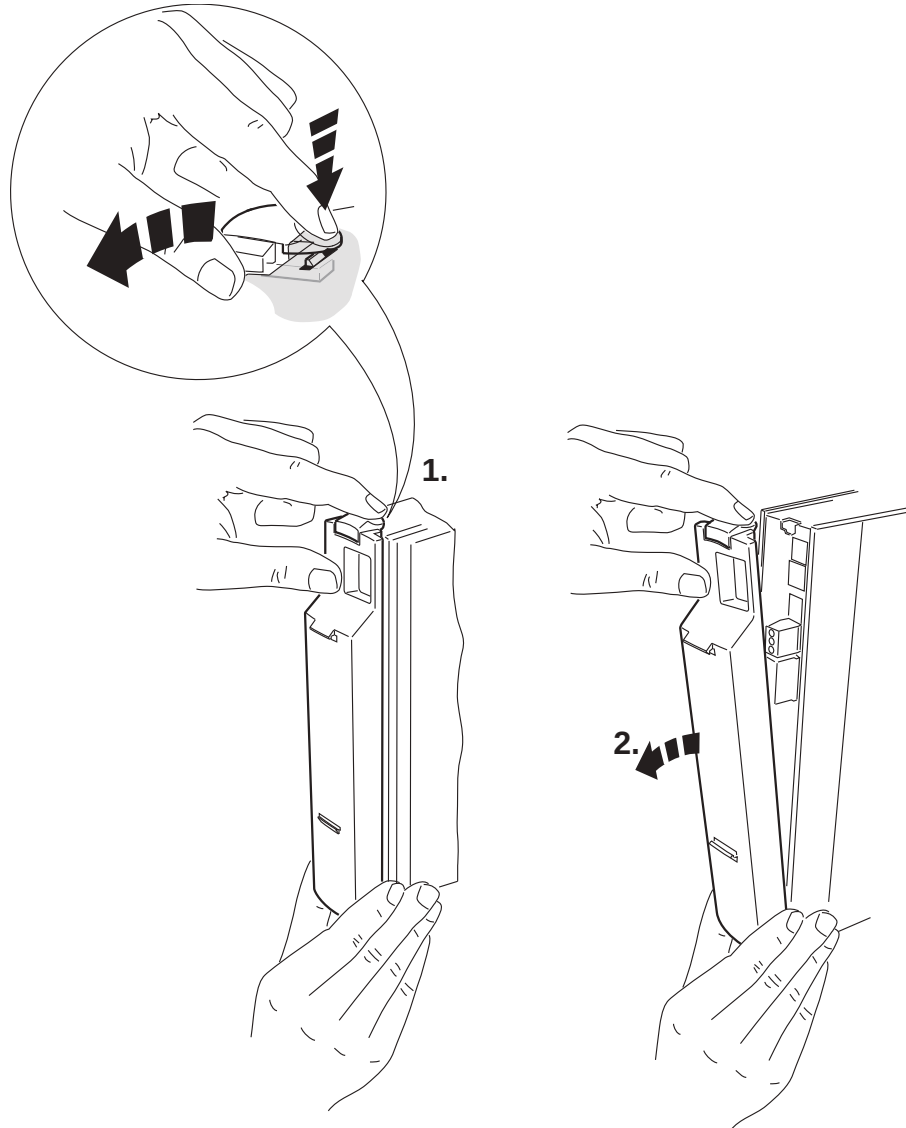
1804922635

1. Place the underside of the keypad onto the lower fixture of the front cover.
2. Push the keypad into the upper fixture of the front cover.
3. Plug the connecting cable into the XT slot.

4.3 Removing/installing the front cover

4.3.1 Removing the front cover

Proceed as follows to remove the front cover:

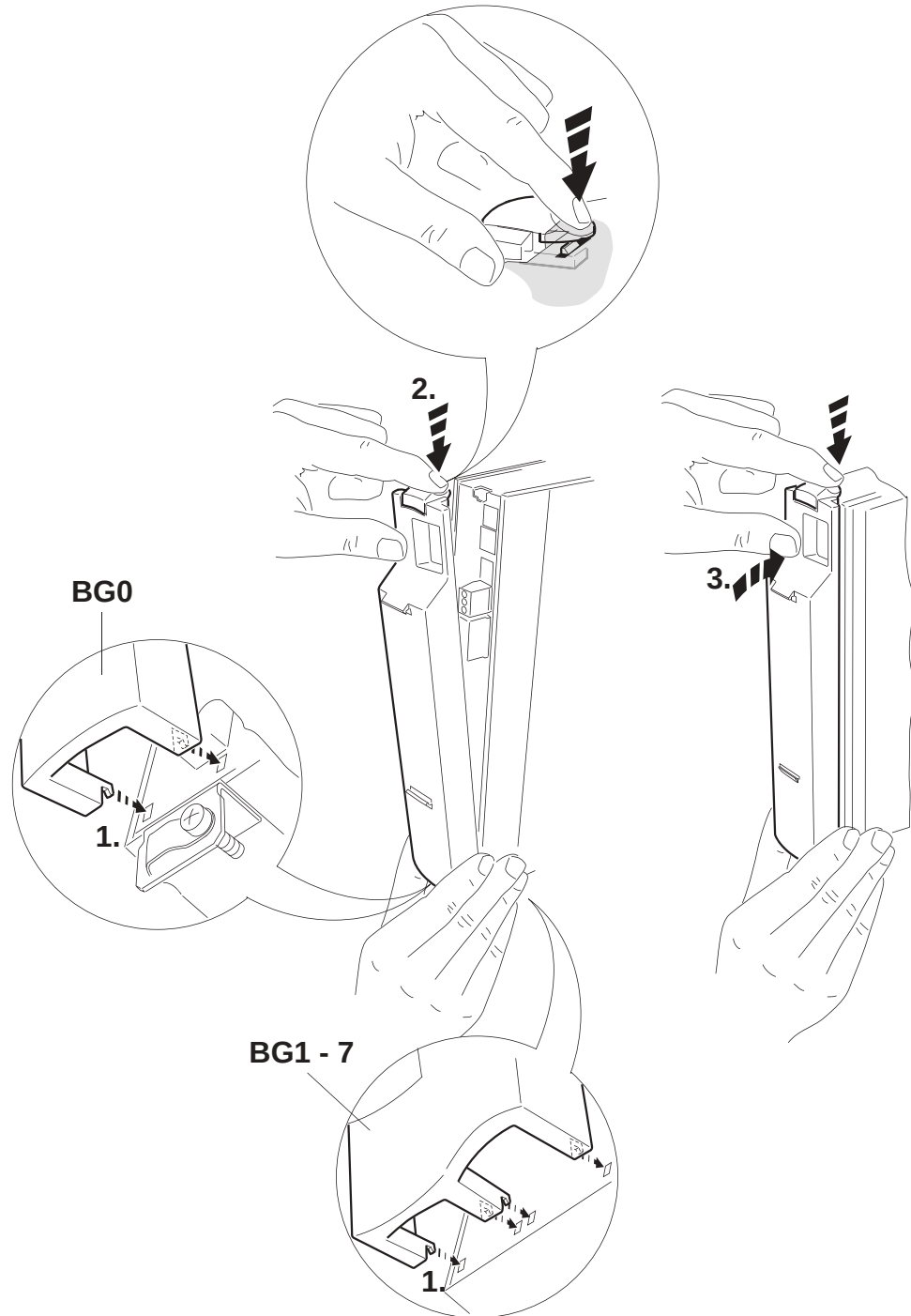


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1. If a keypad is installed, remove it first.
2. Press the grooved clip on top of the front cover.
3. Keep the clip pressed down to remove the front cover.

4.3.2 Installing the front cover

Proceed as follows to install the front cover:



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1. Insert the underside of the front cover into the support.
2. Keep the grooved clip on top of the front cover pressed down.
3. Push the front cover onto the device.

4.4 Information regarding UL

INFORMATION



Due to UL requirements, the following chapter is always printed in English independent of the language of the documentation.

4.4.1 Field wiring power terminals

- Use 75 °C copper wire only - models with suffix 0075, 0110, 0370, 0450, 0550, 0750, 0900, 1100, 1320, 1600, 2000, 2500.

Use 60/75 °C copper wire only - models with suffix 0005, 0008, 0011, 0014, 0015, 0022, 0030, 0037, 0040, 0055, 0150, 0220, 0300.

- Tighten terminals to in-lbs (Nm) as follows:

Series	Size	in-lbs	Nm
MOVIDRIVE® MDX 60B/61B	0XS, 0S, 0L	5	0.6
	1, 2S	5	0.6
	2	13	1.5
	3	31	3.5
	4, 5	120	14
	6	180	20
	7	620	70

Field wiring is to be made using listed ZMVB Lugs - models size 2, 3, 5.

4.4.2 Short circuit current rating

Suitable for use on a circuit capable of delivering not more than

- 200,000 rms symmetrical amperes when protected by fuses and circuit breakers as described in the tables below.
- 65,000 rms symmetrical amperes when protected by ABB and Rockwell Type E Combination Motor controllers as described in the tables below.
- MOVIDRIVE® MDX60B/61B 0005 - 2500 (400 V units only).
Max. voltage is limited to 500 V.
- MOVIDRIVE® MDX60B/61B 0015 - 0300 (230 V units only).
Max. voltage is limited to 240 V.

4.4.3 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.

AC 400/500 V devices

Three Phase 380 V – 500 V Voltage Range				
	SCCR: 200 kA/ 500 V when protected by:	SCCR: 200 kA/ 500 V when protected by	SCCR: 65 kA/ 480 V: when protected by ¹⁾ :	SCCR: 65 kA/ 460 V when protected by:
Model	Non Semiconductor Fuses (currents are maximum values)	Inverse-Time Circuit Breaker (currents are maximum values)	Type E Combination Motor Controller	
MOVIDRIVE® MODEL, 0005 (Size 0S)	15 A / 600 V	25 A / 500 V	ABB, Model MS132-2.5 Rated 480 V, 1 HP	Rockwell Automation Model 140M-C2E-B25, Rated 460 V, 1.5 HP
MOVIDRIVE® MODEL, 0008 (Size 0S)	15 A / 600 V	25 A / 500 V	ABB, Model MS132-4.0 Rated 480 V, 2 HP	Rockwell Automation Model 140M-C2E-B40, Rated 460 V, 3 HP
MOVIDRIVE® MODEL, 0011 (Size 0M)	15 A / 600 V	25 A / 500 V	ABB, Model MS132-4.0 Rated 480 V, 2 HP	Rockwell Automation Model 140M-C2E-B40, Rated 460 V, 3 HP
MOVIDRIVE® MODEL, 0014 (Size 0M)	15 A / 600 V	25 A / 500 V	ABB, Model MS132-6.3 Rated 480 V, 3 HP	Rockwell Automation Model 140M-C2E-B63, Rated 460 V, 5 HP
MOVIDRIVE® MODEL, 0015 (Size 1)	35 A / 600 V	25 A / 500 V	ABB, Model MS132-6.3 Rated 480 V, 3 HP	Rockwell Automation Model 140M-C2E-B63, Rated 460 V, 5 HP
MOVIDRIVE® MODEL, 0022 (Size 1)	35 A / 600 V	25 A / 500 V	ABB, Model MS132-6.3 Rated 480 V, 3 HP	Rockwell Automation Model 140M-C2E-B63, Rated 460 V, 5 HP
MOVIDRIVE® MODEL, 0030 (Size 1)	35 A / 600 V	25 A / 500 V	ABB, Model MS132-10 Rated 480 V, 5 HP	Rockwell Automation Model 140M-C2E-C10, Rated 460 V, 7.5 HP
MOVIDRIVE® MODEL, 0040 (Size 1)	35 A / 600 V	25 A / 500 V	ABB, Model MS132-12 Rated 480 V, 7.5 HP	Rockwell Automation Model 140M-D8E-C16, Rated 460 V, 10 HP
MOVIDRIVE® MODEL, 0055 (Size 2S)	60 A / 600 V	25 A / 500 V	ABB, Model MS132-16 Rated 480 V, 10 HP	Rockwell Automation Model 140M-D8E-C16, Rated 460 V, 10 HP
MOVIDRIVE® MODEL, 0075 (Size 2S)	60 A / 600 V	25 A / 500 V	ABB, Model MS132-20 Rated 480 V, 10 HP	Rockwell Automation Model 140M-D8E-C20, Rated 460 V, 15 HP
MOVIDRIVE® MODEL, 0110 (Size 2)	60 A / 600 V	-	ABB, Model MS132-32 Rated 480 V, 20 HP	Rockwell Automation Model 140M-F8E-C32, Rated 460 V, 25 HP
MOVIDRIVE® MODEL, 0150 (Size 3)	175 A / 600 V	90 A / 500 V	ABB, Model MS450-40E Rated 480 V, 30 HP	Rockwell Automation Model 140M-F8E-C45, Rated 460 V, 30 HP
MOVIDRIVE® MODEL, 0220 (Size 3)	175 A / 600 V	90 A / 500 V	ABB, Model MS495-63E Rated 480 V, 50 HP	-
MOVIDRIVE® MODEL, 0300 (Size 3)	175 A / 600 V	90 A / 500 V	ABB, Model MS495-75E Rated 480 V, 60 HP	-
MOVIDRIVE® MODEL, 0370 (Size 4)	350 A / 600 V	175 A / 500 V	ABB, Model MS495-90E Rated 480 V, 75 HP	-
MOVIDRIVE® MODEL, 0450 (Size 4)	350 A / 600 V	175 A / 500 V	-	-
MOVIDRIVE® MODEL, 0550 (Size 5)	225 A / 600 V	175 A / 500 V	-	-
MOVIDRIVE® MODEL, 0750 (Size 5)	225 A / 600 V	175 A / 500 V	-	-
MOVIDRIVE® MODEL, 0900 (Size 6)	250 A / 600 V	300 A / 500 V	-	-

Three Phase 380 V – 500 V Voltage Range

	SCCR: 200 kA/ 500 V when protected by:	SCCR: 200 kA/ 500 V when protected by:	SCCR: 65 kA/ 480 V: when protected by ¹⁾ :	SCCR: 65 kA/ 460 V when protected by:
Model	Non Semiconductor Fuses (currents are maximum values)	Inverse-Time Circuit Breaker (currents are maximum values)	Type E Combination Motor Controller	
MOVIDRIVE® MODEL, 1100 (Size 6)	300 A / 600 V	300 A / 500 V	-	-
MOVIDRIVE® MODEL, 1320 (Size 6)	400 A / 600 V	300 A / 500 V	-	-
MOVIDRIVE® MODEL, 1600 (Size 7)	400 A / 600 V	600 A / 500 V	-	-
MOVIDRIVE® MODEL, 2000 (Size 7)	500 A / 600 V	600 A / 500 V	-	-
MOVIDRIVE® MODEL, 2500 (Size 7)	600 A / 600 V	600 A / 500 V	-	-

1) Drives employing Type E Combination Motor Controller model MS132-12, -16, -20, -25, -32 must be installed with Current Limiter Series S803W-SCLxxx-SR manufactured by ABB, otherwise SCCR rated 30kA/ 480 Vrms.

AC 230 V devices

Three Phase 200 V – 240 V Voltage Range

	SCCR: 200 kA/ 240 V when protected by:	SCCR: 200 kA/ 240 V when protected by:	SCCR: 65 kA/ 240 V when protected by ¹⁾ :	SCCR: 65 kA/ 240 V when protected by:
Model	Non Semiconductor Fuses (currents are maximum values)	Inverse-Time Circuit Breaker (currents are maximum values)	Type E Combination Motor Controller	
MOVIDRIVE® MODEL, 0015 (Size 1)	30 A / 250 V	25 A / 240 V	ABB, Model MS132-10 Rated 480 V, 5 HP	Rockwell Automation Model 140M-C2E-C10, Rated 460 V, 7.5 HP
MOVIDRIVE® MODEL, 0022 (Size 1)	30 A / 250 V	25 A / 240 V	ABB, Model MS132-10 Rated 480 V, 5 HP	Rockwell Automation Model 140M-C2E-C10, Rated 460 V, 7.5 HP
MOVIDRIVE® MODEL, 0037 (Size 1)	30 A / 250 V	25 A / 240 V	ABB, Model MS132-20 Rated 480 V, 10 HP	Rockwell Automation Model 140M-D8E-C20, Rated 460 V, 15 HP
MOVIDRIVE® MODEL, 0055 (Size 2)	60 A / 250 V	40 A / 240 V	ABB, Model MS132-25 Rated 480 V, 15 HP	Rockwell Automation Model 140M-F8E-C25, Rated 460 V, 20 HP
MOVIDRIVE® MODEL, 0075 (Size 2)	60 A / 250 V	40 A / 240 V	ABB, Model MS450-40E Rated 480 V, 30 HP	Rockwell Automation Model 140M-F8E-C45, Rated 460 V, 30 HP
MOVIDRIVE® MODEL, 0110 (Size 3)	175 A / 250 V	90 A / 240 V	ABB, Model MS450-50E Rated 480 V, 40 HP	-
MOVIDRIVE® MODEL, 0150 (Size 3)	175 A / 250 V	90 A / 240 V	ABB, Model MS495-63E Rated 480 V, 50 HP	-
MOVIDRIVE® MODEL, 0220 (Size 4)	350 A / 250 V	175 A / 240 V	ABB, Model MS495-90E Rated 480 V, 75 HP	-
MOVIDRIVE® MODEL, 0300 (Size 4)	350 A / 250 V	175 A / 240 V	-	-

1) Drives employing Type E Combination Motor Controller model MS132-12, -16, -20, -25, -32 must be installed with Current Limiter Series S803W-SCLxxx-SR manufactured by ABB, otherwise SCCR rated 30kA/ 480 Vrms.

4.4.4 Motor overload protection

The units 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.

4.4.5 Ambient temperature

The units are suitable for an ambient temperature of 40 °C, max. 60 °C with derated output current.

To determine output current rating at higher than 40 °C, the output current should be derated 2.5 % per °C between 40 °C and 50 °C, and 3 % per °C between 50 °C and 60 °C.

INFORMATION



- Use only tested units with a **limited output voltage** ($V_{\max} = \text{DC } 30 \text{ V}$) and **limited output current** ($I_{\max} = 8 \text{ A}$) as an **external DC 24 V voltage source**.

- UL certification does not apply to operation in voltage supply systems with a non-grounded star point (IT systems).

4.4.6 Environmental Conditions

The units are for use in pollution degree 2 environments.

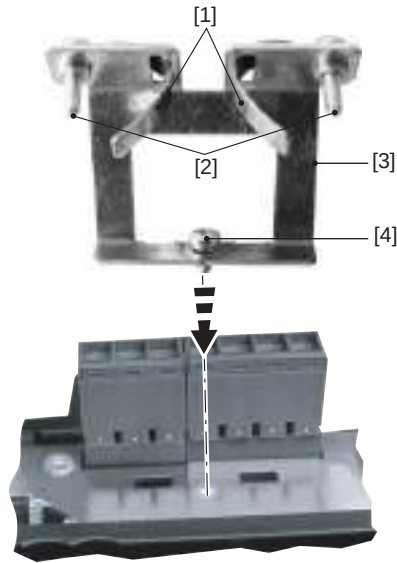
4.5 Shield clamps

4.5.1 Shield clamp for power section, size 0

A set of shield clamps is supplied as standard for the power section of MOVIDRIVE® MDX60B/61B size 0. The shield clamps are not yet installed.

Install the shield clamps for the power section as follows:

- Secure the contact clips to the shield plates.
- Secure the shield clamps to the top and the bottom of the device.

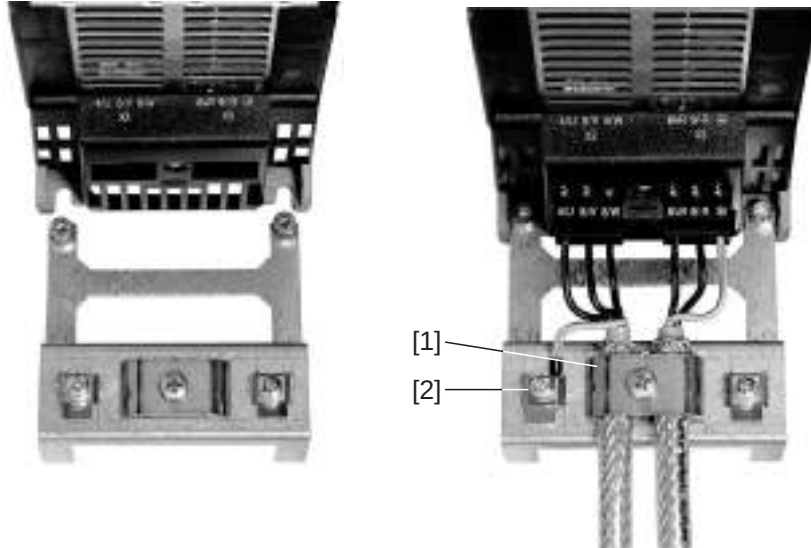


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- [1] Contact clips
- [2] Retaining screws for contact clip
- [3] Shield plate
- [4] Retaining screw for shield clamp

4.5.2 Shield clamp for power section, size 1

A shield clamp is supplied as standard for the power section with MOVIDRIVE® MDX61B size 1. Install this shield clamp on the power section together with the retaining screws of the device.



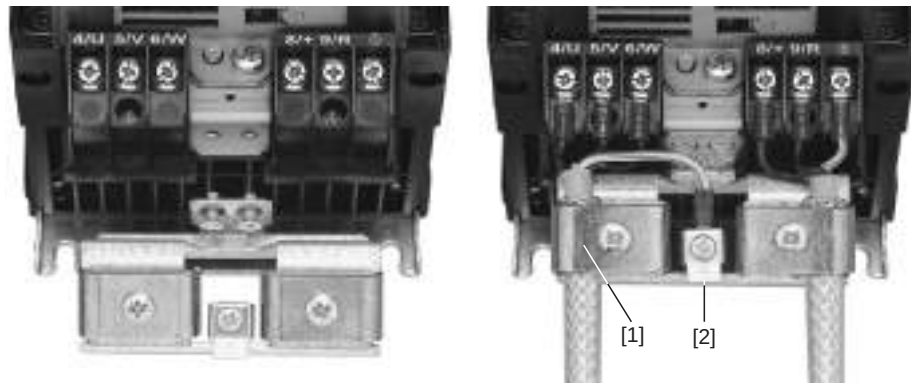
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[1] Power section shield clamp

[2] PE connection

4.5.3 Shield clamp for power section, sizes 2S and 2

A shield clamp for the power section is supplied as standard with two retaining screws with MOVIDRIVE® MDX61B sizes 2S and 2. Install these shield clamp using the two retaining screws.



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[1] Power section shield clamp

[2] PE connection

The shield clamps for the power section provide you with a very convenient way of installing the shield for the motor cable and braking resistor cable. Apply the shield and PE conductor as shown in the figures below.

4.5.4 Shield clamp for power section, sizes 3 to 7

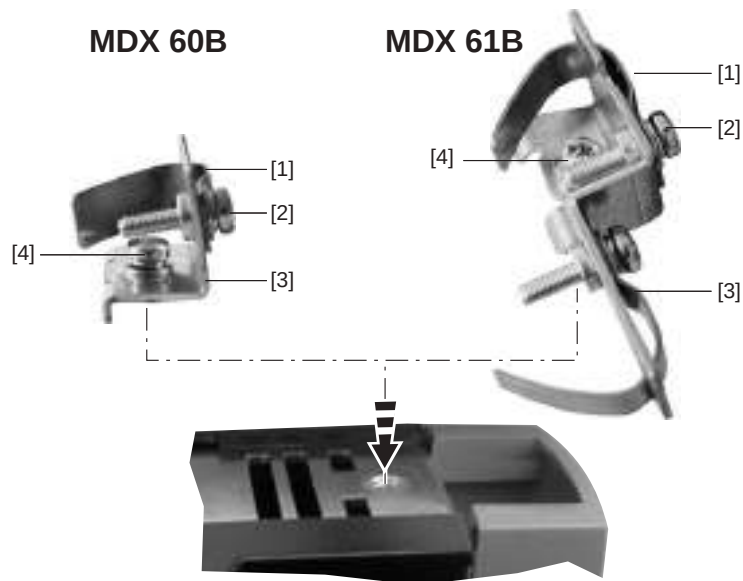
No shield clamps for the power section are supplied with MOVIDRIVE® MDX61B sizes 3 – 7. Use commercially available shield clamps for installing the shielding of motor and brake cables. Apply the shield as closely as possible to the inverter.

4.5.5 Shield clamp for signal cables

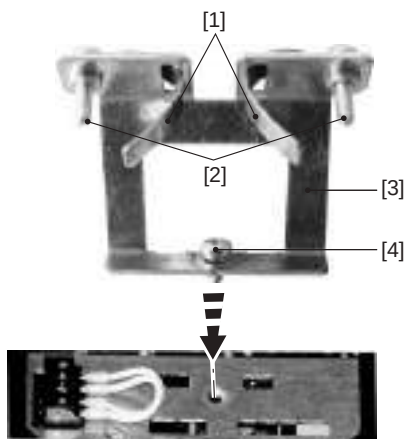
Install the shield clamp for the signal cable as follows:

- If installed, remove the keypad and the front cover.
- Size 0: Attach the shield clamp on the bottom of the device.
- Sizes 1 to 7: Attach the shield clamp on the bottom of the control device.

Size 0



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- [1] Contact clip(s)
- [2] Retaining screw(s) for contact clips
- [3] Shield plate
- [4] Retaining screw for shield terminal

4.6 Touch guard for power terminals



⚠ WARNING

Uncovered power connections.

Severe or fatal injuries from electric shock.

- Install the touch guard according to the regulations.
- Never start the device if the touch guard is not installed.

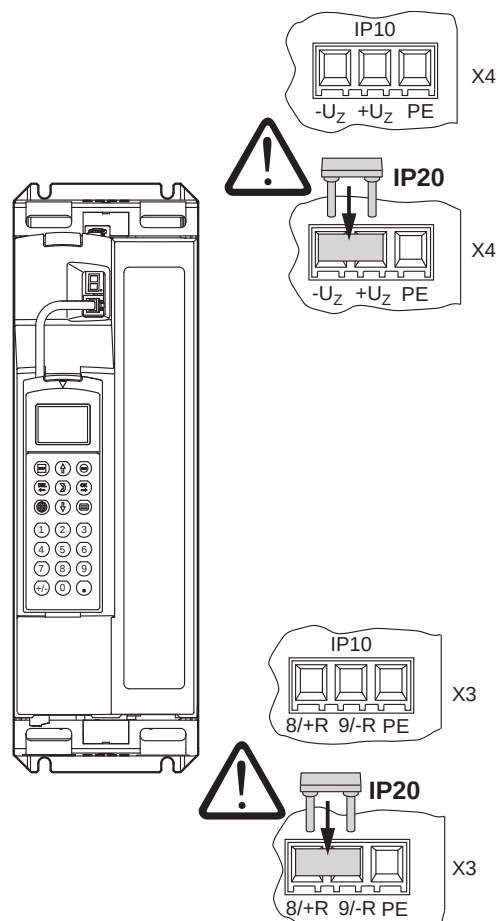
4.6.1 Size 2S

IP20 is achieved for MOVIDRIVE® MDX61B size 2S if one of the following conditions is fulfilled:

- Touch guard is installed on X3 / X4
- An adequate cable is connected to X3 / X4

If neither of the two conditions is fulfilled, the degree of protection is IP10.

The following figure shows the touch guard for MOVIDRIVE® MDX61B size 2S.



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The new hardware versions of size 3 can be recognized by the entries in the status fields 2 and 5 on the nameplate of the power section. Older hardware versions do not have entries in the status fields 2 and 5.

As an example for the current hardware version, the entry in status field 2 is "10" and the entry in status field 5 is "11" in the nameplate shown below.



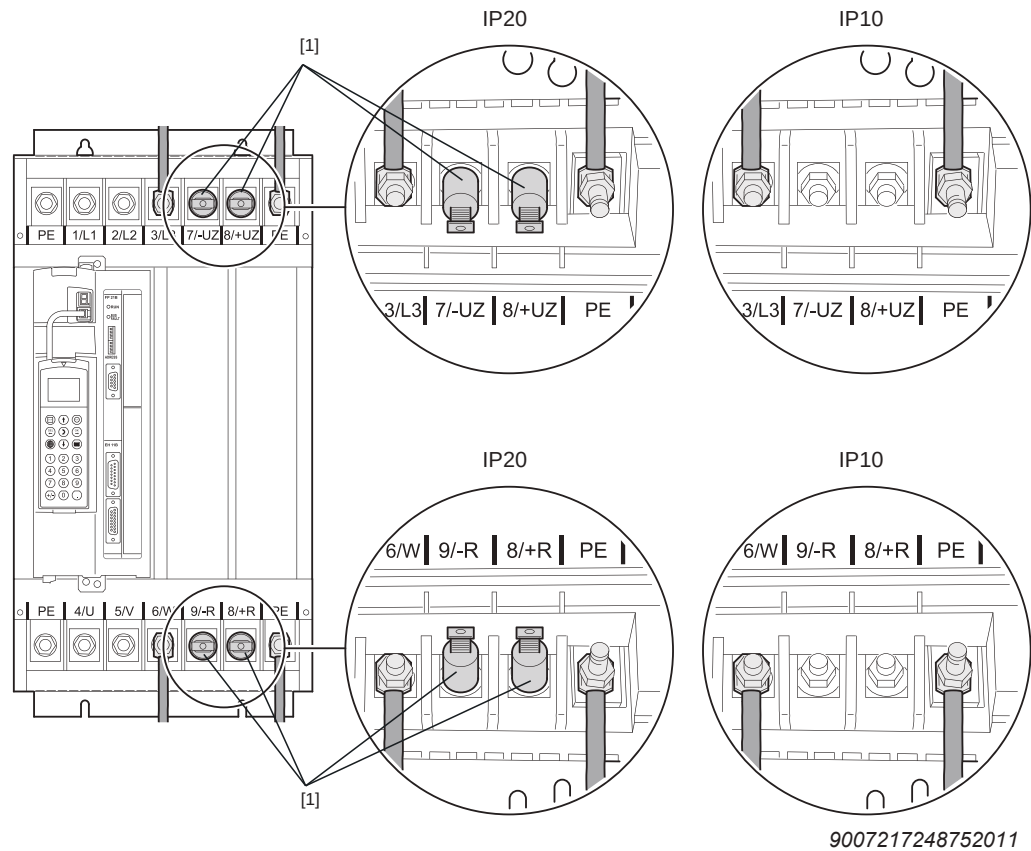
At the factory, the power connections 7/-UZ, 8/+UZ, 9/-R and 8/+R of inverters of size 3 are equipped with insulation caps for protection against contact, see figure. If the insulation caps are removed without connecting cables with insulating tubing, the inverters only have degree of protection IP10.

INFORMATION



- Unused clamping points/connection points (except PE) must be equipped with the depicted insulation caps in order to achieve the degree of protection IP20.

The following figure shows the touch guard for MOVIDRIVE® MDX61B size 3.

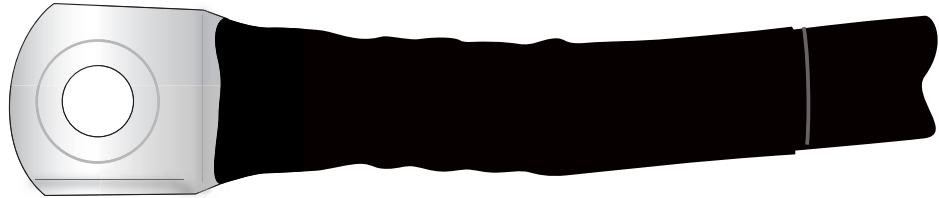


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[1] Insulation caps

Heat shrink tubing

The size 3 inverters have degree of protection IP20 if all power cables (connections X1, X2, X3, X4) are covered with a heat shrink tubing as shown in the following illustration.



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4.6.3 Sizes 4 and 5

IP20 is achieved for MOVIDRIVE® MDX61B sizes 4 and 5 (AC 500 V devices: MDX61B0370/0450/0550/0750; AC 230 V devices: MDX61B0220/0300), as soon as one of the following conditions is fulfilled:

- Power cables with heat shrink tubing and a cable cross section of $\geq 35 \text{ mm}^2$ (AWG2) are connected to X1, X2, X3, X4. The additional DLB11B touch guard does not have to be installed.
- Power cables with heat shrink tubing and a cable cross section of $< 35 \text{ mm}^2$ (AWG2) are connected to X1, X2, X3, X4. The DLB11B touch guard must be installed properly (see section "Installing the DLB11B touch guard").
- The DLB11B touch guard must be connected to power terminals that are not connected. The DLB11B touch guard does not have to be connected to the PE terminals.

If neither of the conditions is fulfilled, the degree of protection is IP10. The **DLB11B touch guard (12 pieces included in the delivery)** is available via the **part number 0823 111 7**.

Installing the DLB11B touch guard

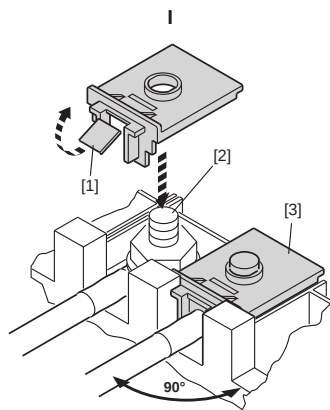
Proceed as follows when installing the **DLB11B touch guard**:

- Figure I: Power terminal with connected power cable with a cable cross section of $< 35 \text{ mm}^2$ (AWG2):

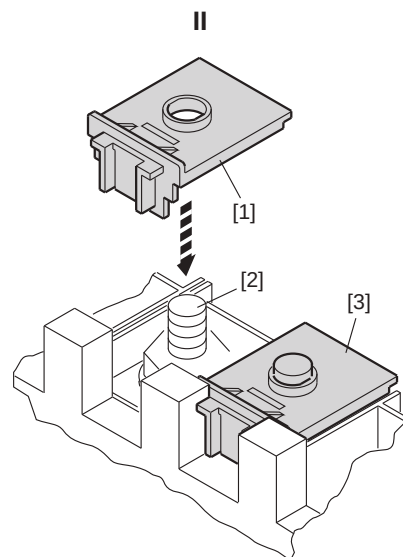
Remove the plastic lug [1] and push the DLB11B touch guard [3] on the respective terminal stud [2] of the power terminal. Make sure that the cable output is straight. Install the safety cover for the power terminals.

- Figure II: Power terminal without connected power cable:

Push the DLB11B touch guard [1] on the respective terminal stud [2]. Install the safety cover for the power terminals.



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- [1] Plastic lug
- [2] Terminal stud
- [3] Correctly mounted touch guard

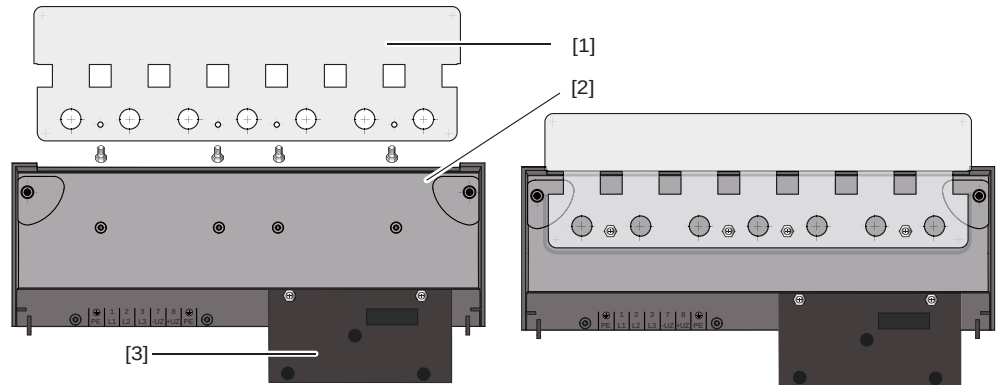
- [1] Touch guard
- [2] Terminal stud
- [3] Correctly mounted touch guard

For additional information on the X1, X2, X3 and X4 power terminals, refer to chapter "Technical data".

4.6.4 Sizes 4 – 6

MOVIDRIVE® size 4 (AC 500 V devices: MDX61B0370/0450; AC 230 V devices: MDX61B0220/0300), size 5 (MDX61B0550/0750) and size 6 (MDX61B0900/1100/1320), two touch guards with eight retaining screws are supplied as standard. Install the touch guard on both safety covers of the power terminals.

The following figure shows the touch guard for MOVIDRIVE® MDX61B sizes 4, 5, and 6.



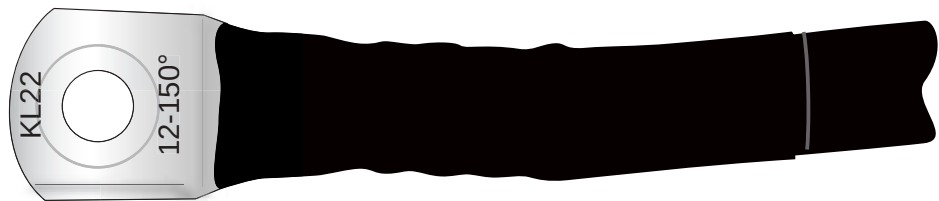
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The touch guard comprises the following parts:

- [1] Cover plate
- [2] Connection plate
- [3] Screen (only for size 5)

IP10 degree of protection is only achieved for the MOVIDRIVE® MDX61B devices sizes 4, 5 and 6 when the following conditions are fulfilled:

- Touch guard is fully installed
- Heat shrink tubing is installed on the power cables of all power terminals (X1, X2, X3, X4) (see following picture)



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INFORMATION

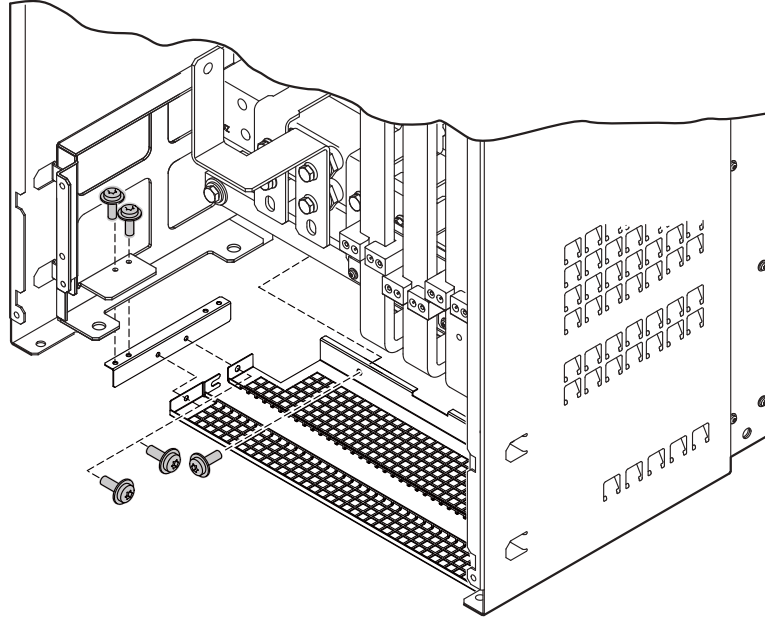


If the above conditions are not met, MOVIDRIVE® device sizes 4, 5 and 6 have degree of protection IP00.

4.6.5 Size 7

Installing the touch guard DLB21B

Degree of protection IP20 is achieved for MOVIDRIVE® MDX61B size 7 when the touch guard DLB21B (part no 18226086) is trimmed to size by the customer and mounted in front and behind the power connections.



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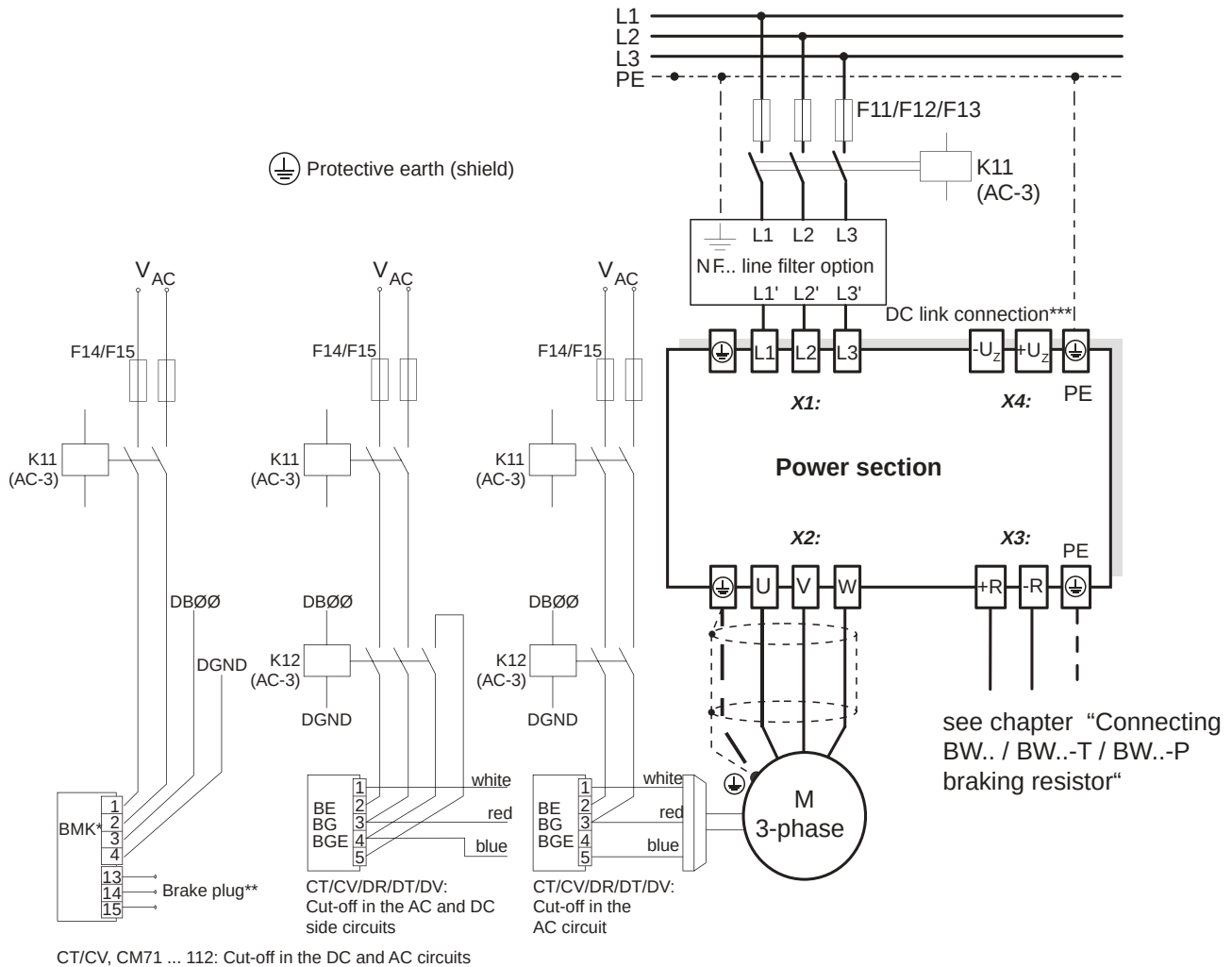
INFORMATION



If the above conditions are not met, MOVIDRIVE® device size 7 has degree of protection IP00.

4.7 Wiring diagrams for basic device

4.7.1 Power section (sizes 0 – 6) and brake



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**** Strictly adhere to the connection sequence of the brake connector.** Incorrect connection will cause irreparable damage to the brake. **Observe the operating instructions of the used motors** when connecting the brake using the terminal box.

******* With sizes 1, 2 and 2S, there is no PE connection next to the supply system connection terminals and motor connection terminals (X1, X2). In this case, use the PE terminal next to the DC link connection (X4).

INFORMATION



Folgen

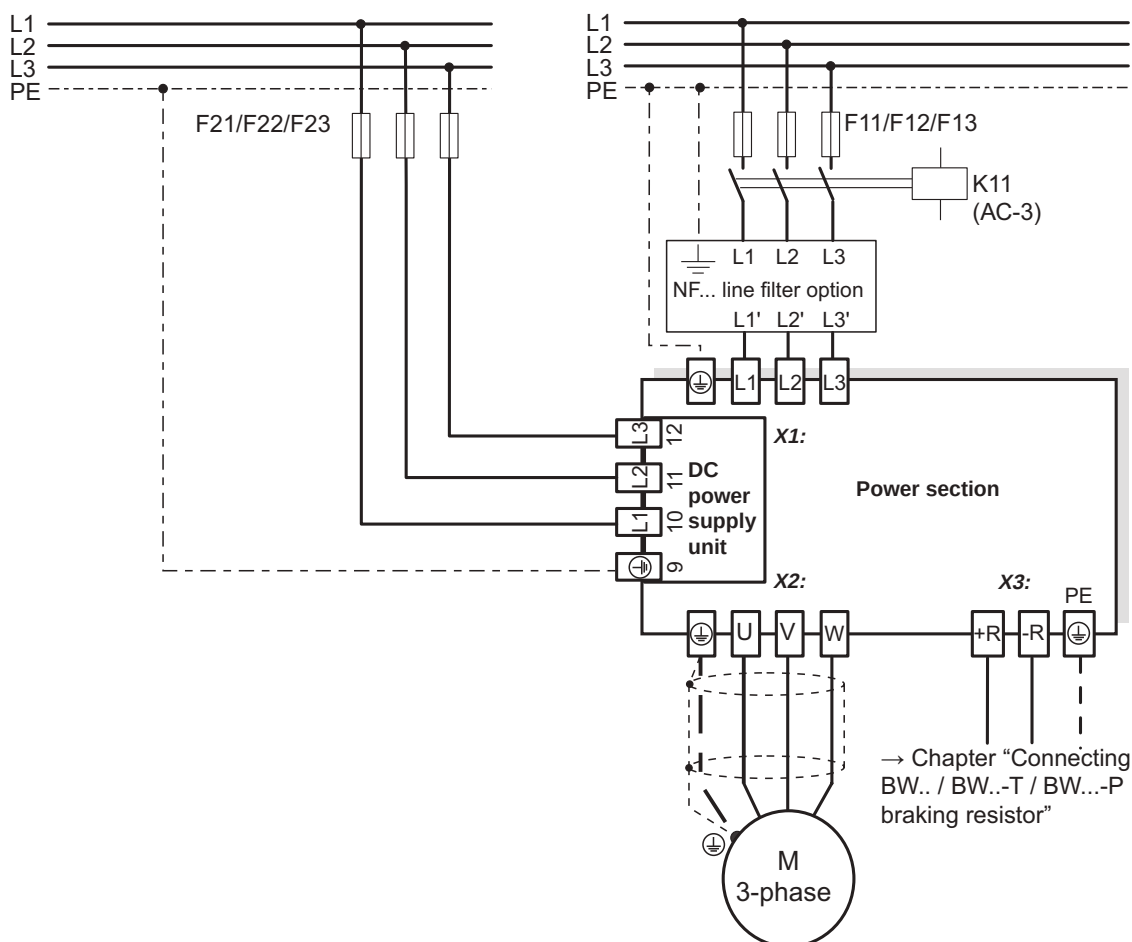
- Connect the brake rectifier using a separate supply system lead.
- **Supply via the motor voltage is not permitted.**

Always switch off the brake on the DC and AC sides with:

- All lifting applications,
- Drives that require a rapid brake response time
- CFC and SERVO operating modes.

4.7.2 Power section and DC power supply unit (size 7)

For connecting the brake, refer to the wiring diagram of size 1 – 6.



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Technical data of DC power supply unit:

- Nominal line current: AC 2.4 A
- Inrush current AC 30 A / AC 380 - 500 V

INFORMATION

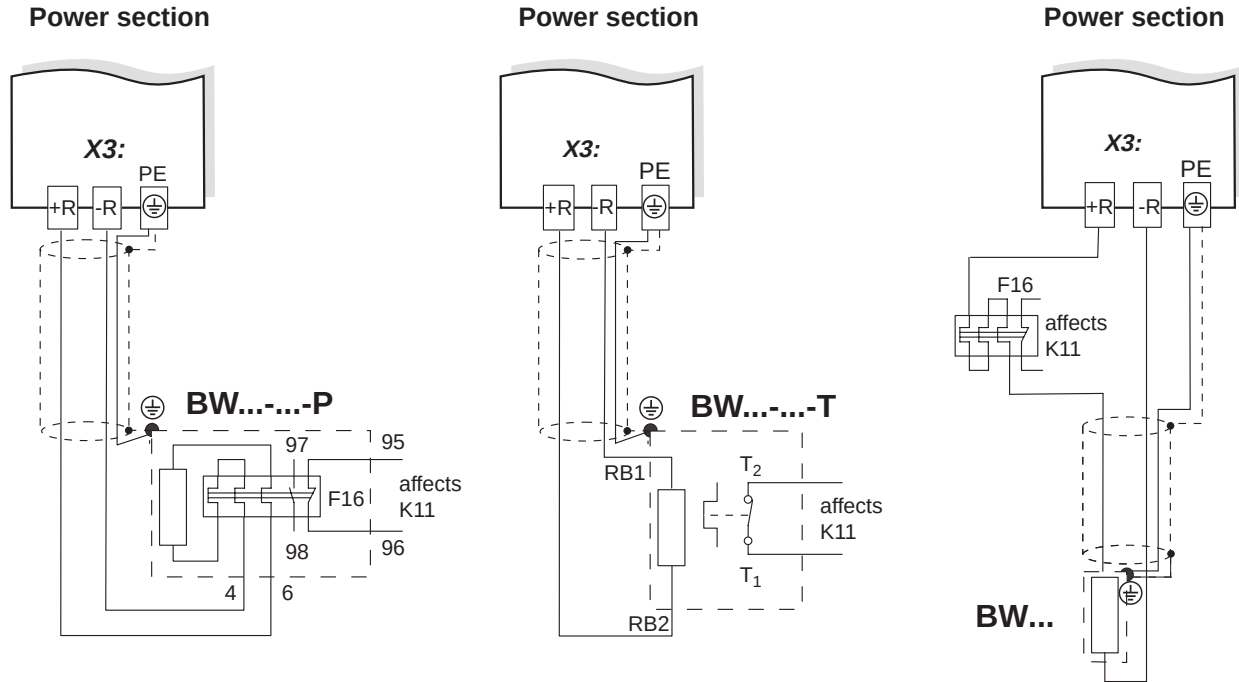


Note that the connection of external +24 V power supply units to the X10:9 control terminal is not permitted in backup mode via power supply unit. Incorrect connection prompts an error message.

4.7.3 Brake rectifier in control cabinet

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

4.7.4 Braking resistor BW... / BW...-T / BW...-P



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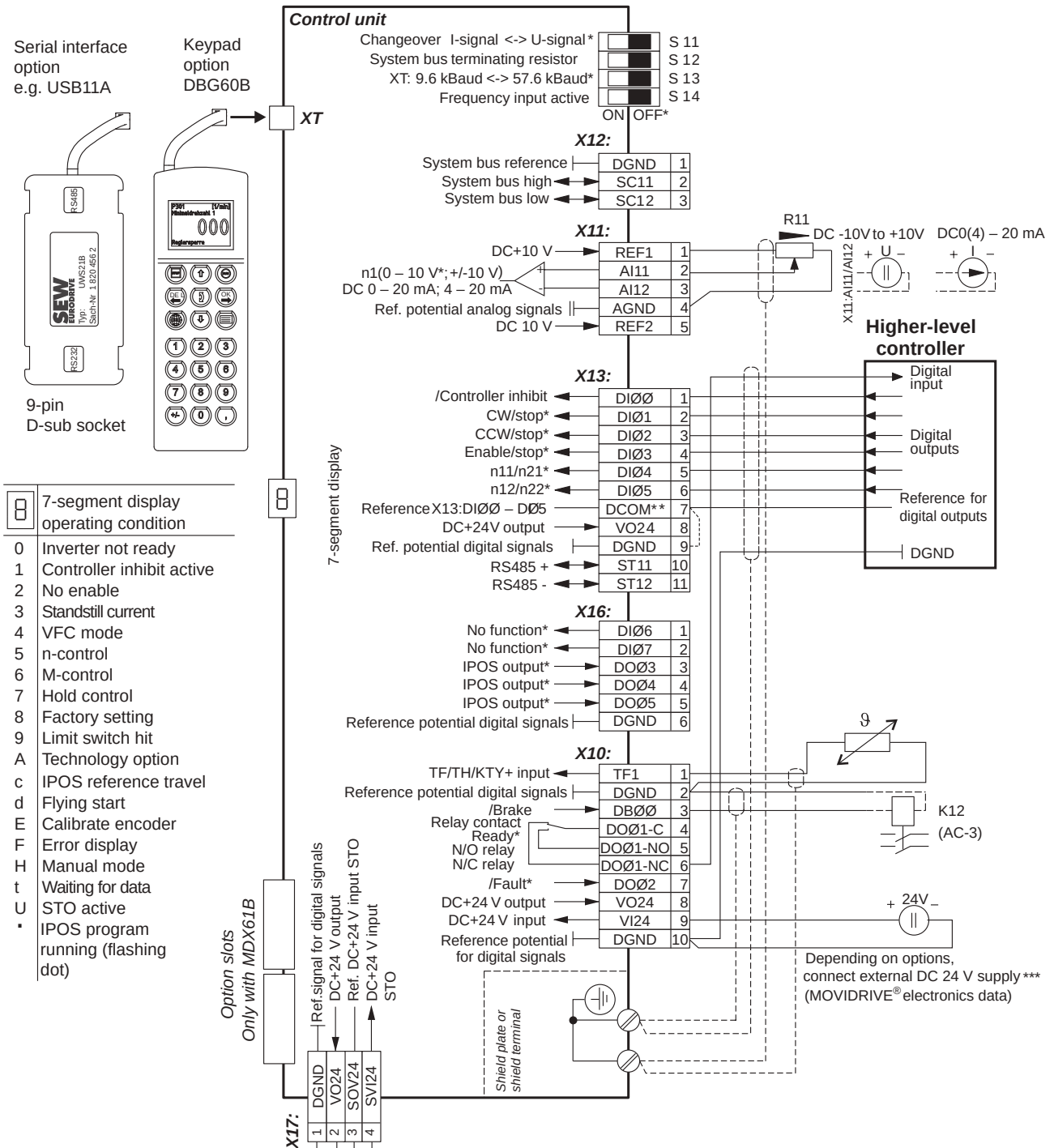
When the signal contact F16 trips, K11 must be opened and DI00/"controller inhibit" must receive a "0" signal. The resistor circuit must not be interrupted.

When the internal temperature switch trips, K11 must be opened and DI00/"controller inhibit" must receive a "0" signal. The resistor circuit must not be interrupted.

When the external bimetallic relay (F16) trips, K11 must be opened and DI00/"controller inhibit" must receive a "0" signal. The resistor circuit must not be interrupted.

Braking resistor type	Overload protection		
	Design specified	Internal temperature switch (..T), (..P)	External bimetallic relay (F16)
BW...	-	-	Required
BW...-T / P	-	One of the 2 options must be selected (internal temperature switch / external bimetallic relay).	
BW...-003 / BW...-005	Adequate	-	Permitted
BW090-P52B	Adequate	-	-

4.7.5 MDX60B/61B signal terminals



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* Factory setting

** If the digital inputs are connected to the DC 24 V voltage supply X13:8 "VO24", install a jumper between X13:7 (DCOM) and X13:9 (DGND) on MOVIDRIVE®.

23534850/EN – 11/2017

DGND (X10, X12, X13, X16, X17) is connected with PE as standard (tapped hole, see chapter "Device structure"). You can establish electrical isolation by removing the M4 × 14 grounding screw. When using a DCS21B/22B/S31B/32B and DEU21B option card, electrical isolation is not possible.

*** External voltage supply via X:10 only for sizes 0 – 6. For size 7, the 24 V backup voltage is realized via the DC power supply.

4.7.6 Description of terminal functions on the basic device (power section and control unit)

Terminal		Function
X1:1/2/3	L1/L2/L3 (PE)	Line connection
X2:4/5/6	U/V/W (PE)	Motor connection
X3:8/9	+R/-R (PE)	Braking resistor connection
X4:	+U _z /-U _z (PE)	DC link connection
9,10,11,12	L1/L2/L3/PE	Connection of switched-mode power supply (only for size 7)
S11:		Changeover I signal DC(0(4) – 20 mA) ↔ U signal DC(-10 V – 0 – 10 V, 0 – 10 V), factory set to U signal.
S12:		Switching system bus terminating resistor on/off; factory setting: OFF.
S13:		Set baud rate for the RS485 interface XT. Either 9.6 or 57.6 baud, factory set to 57.6 baud.
S14:		Switch frequency input on or off, factory setting: switched off.
X12:1	DGND	Reference potential system bus
X12:2	SC11	System bus high
X12:3	SC12	System bus low
X11:1	REF1	DC+10 V (max. DC 3 mA) for setpoint potentiometer
X11:2/3	AI11/12	Setpoint input n1 (differential input or input with AGND reference potential), signal form → P11_ / S11
X11:4	AGND	Reference potential for analog signals (REF1, REF2, AI..., AO...)
X11:5	REF2	DC–10 V (max. DC 3 mA) for setpoint potentiometer
X13:1	DIØØ	Digital , with fixed assignment "/Controller inhibit"
X13:2	DIØ1	Digital input 2, factory set to "CW/stop"
X13:3	DIØ2	Digital input 3, factory set to "CCW/stop"
X13:4	DIØ3	Digital input 4, factory set to "Enable/stop"
X13:5	DIØ4	Digital input 5, factory set to "n11/n21"
X13:6	DIØ5	Digital input 6, factory set to "n12/n22"
X13:7	DCOM	Reference for digital inputs X13:1 – X13:6 (DIØØ – DIØ5) and X16:1/X16:2 (DIØ6 – DIØ7) - Switching digital inputs with DC+24 V external voltage: Connection X13:7 (DCOM) must be connected to the reference potential of the external voltage. - Without jumper X13:7-X13:9 (DCOM-DGND) → Isolated digital inputs - With jumper X13:7-X13:9 (DCOM-DGND) → Non-isolated digital inputs - The digital inputs must be switched with DC+24 V from X13:8 or X10:8 (VO24) → Jumper required X13:7-X13:9 (DCOM-DGND).
X13:8	VO24	Auxiliary voltage output DC+24 V (max. load X13:8 and X10:8 = 400 mA) for external command switches
X13:9	DGND	Reference potential for binary signals
X13:10	ST11	RS485+ (baud rate has a fixed setting of 9.6 kBaud)
X13:11	ST12	RS485-
X16:1	DIØ6	Digital input 7, factory set to "No function"
X16:2	DIØ7	Digital input 8, factory set to "No function"
X16:3	DOØ3	Digital output 3, factory set to "IPOS output"
X16:4	DOØ4	Digital output 4, factory set to "IPOS output"
X16:5	DOØ5	Digital output 5, factory set to "IPOS output"
X16:6	DGND	Reference potential for binary signals
X10:1	TF1	KTY+/TF-/TH connection (connect to X10:2 via TF/TH), factory set to "No response" (→ P835)
X10:2	DGND	Reference potential for binary signals / KTY–
X10:3	DBØØ	Digital output DBØØ with fixed assignment "/Brake", load capacity max DC 150 mA (short-circuit proof, protected against external voltage to DC 30 V)
X10:4	DOØ1-C	Shared contact digital output 1, factory set to "Ready"
X10:5	DOØ1-NO	Normally open contact digital output 1, max. load capacity of relay contacts DC 30 V and DC 0.8 A
X10:6	DOØ1-NC	NC contact digital output 1
X10:7	DOØ2	Digital output DBØ2, factory set to "/Fault", max. load capacity DC 50 mA (short-circuit proof, protected against external voltage to DC 30 V). Selection options for digital outputs 1 and 2 (DOØ1 and DOØ2) → Parameter menu P62_. Do not apply external voltage to digital outputs X10:3 (DBØØ) and X10:7 (DOØ2).
X10:8	VO24	Auxiliary voltage output DC+24 V (max. additional load X13:8 and X10:8 = 400 mA) for external command switches

Terminal		Function
X10:9	VI24	Input DC+24 V voltage supply (backup voltage depending on options, unit diagnosis when supply system off)
X10:10	DGND	Reference potential for binary signals Information on X:10.9: Only connect external backup voltage DC +24 V to sizes 0 – 6. With size 7, the DC power supply unit must be connected to the supply system. Refer to chapter "Power section and DC power supply unit (size 7)" (→ 96).
X17:1	DGND	Reference potential for X17:2
X17:2	VO24	Auxiliary voltage output DC+24 V, only to supply X17:4 on the same device. Maximally 1 additional BST may be connected
X17:3	SOV24	Reference potential for DC +24 V "STO" input (safety contact)
X17:4	SVI24	DC+24 V "STO" input (safety contact)
XT		Only service interface. Option slot: DBG60B / UWS21B / USB11A

4.8 Assignment of braking resistors, chokes and filters

4.8.1 AC 400/500 V devices, size 0

MOVIDRIVE® MDX60/61B...-5A3				0005	0008	0011	0014
Size				0			
Braking resistors BW... / BW...-T	Tripping current	Part number BW...	Part number BW...-T				
BW090-P52B ¹⁾	-	08245630					
BW072-003	I _F = 0.8 A	08260583					
BW072-005	I _F = 1.2 A	08260605					
BW168/BW168-T	I _F = 3.6 A	0820604X	18201334				
BW100-006 BW100-006-T	I _F = 2.4 A	08217017	18204198				
Line chokes		Part number					
ND020-013	Total current = AC 20 A	08260125					
Line filter		Part number					
NF009-503		08274126					
Output chokes	Inner diameter	Part number					
HD001	d = 50 mm	08133255		For cable cross sections 1.5 – 16 mm ² (AWG 16 – 6)			
HD002	d = 23 mm	08135576		For cable cross sections ≤ 1.5 mm ² (AWG 16)			
Output filter (only in operating modes VFC or V/f)		Part number					
HF008-503		0826029X			A		
HF015-503		08260303			B		A
HF022-503		08260311					B

1) Internal thermal overload protection, no bimetallic relay required.

- A** In nominal operation (100%)
B With variable torque load (125%)

4.8.2 AC 400/500 V devices, sizes 1, 2S, and 2

MOVIDRIVE® MDX61B...-5A3				0015	0022	0030	0040	0055	0075	0110
Size				1				2S		2
Braking resistors BW... / BW...-T	Tripping current	Part number BW...	Part number BW...-T							
BW100-005	I _F = 1.0 A	08262691								
BW100-006/ BW100-006-T	I _F = 2.4 A	08217017	18204198							
BW168/BW168-T	I _F = 3.6 A	0820604X	18201334							
BW268/BW268-T	I _F = 4.2 A	08207151	18204171							
BW147/BW147-T	I _F = 5.1 A	08207135	18201342							
BW247/BW247-T	I _F = 6.5 A	08207143	18200842							
BW347/BW347-T	I _F = 9.2 A	08207984	18201350							
BW039-012/ BW039-012-T	I _F = 5.5 A	08216894	18201369							
BW039-026-T	I _F = 8.2 A		18204155							
BW039-050-T	I _F = 11.3 A		18201377							
Line chokes		Part number								
ND020-013	Total current = AC 20 A	08260125								
ND045-013	Total current = AC 45 A	08260133								
Line filter		Part number								
NF009-503		08274126				A				
NF014-503		0827116X				B		A		
NF018-503		08274134						B		
NF035-503		08271283								
Output chokes	Inner diameter	Part number								
HD001	d = 50 mm	08133255		For cable cross sections 1.5 – 16 mm² (AWG 16 – 26)						
HD002	d = 23 mm	08135576		For cable cross sections ≤ 1.5 mm² (AWG 16)						
HD003	d = 88 mm	08135584		For cable cross sections > 16 mm² (AWG 6)						
Output filter (only in operating modes VFC or V/f)		Part number								
HF015-503		08260303		A						
HF022-503		08260311		B	A					
HF030-503		0826032X			B	A				
HF040-503		08263116				B	A			
HF055-503		08263124					B	A		
HF075-503		08263132						B	A	
HF023-403		08257841							B	A
HF033-403		0825785X								B

- A** In nominal operation (100%)
B With variable torque load (125%)

4.8.3 AC 400/500 V devices, sizes 3 and 4

MOVIDRIVE® MDX61B...-503						0150	0220	0300	0370	0450
Size						3			4	
Braking resistors BW... / BW...-T BW...-P	Tripping current	Part number BW...	Part number BW...-T	Part number BW...-P						
BW018-015/ BW018-015-P	I _F = 9.1 A	08216843		18204163					C	C
BW018-035-T	I _F = 13.9 A		18201385						C	C
BW018-075-T	I _F = 20.4 A		18201393						C	C
BW915-T	I _F = 32.7 A		18204139							
BW012-025/ BW012-025-P	I _F = 14.4A	08216800		18204147						
BW012-050-T	I _F = 20.4 A		18201407							
BW012-100-T	I _F = 28.9 A		18201415							
BW106-T	I _F = 47.4 A		18200834							
BW206-T	I _F = 54.8 A		18204120							
Line chokes		Part number								
ND045-013	Total current = AC 45 A	08260133					A			
ND085-013	Total current = AC 85 A	08260141					B			A
ND150-013	Total current = AC 150 A	08255482								B
ND300-0053	Total current = AC 300 A	08277214								
Line filter		Part number								
NF035-503		08271283				A				
NF048-503		08271178				B	A			
NF063-503		08274142					B	A		
NF085-503		08274150						B		A
NF115-503		08274169								B
Output chokes	Inner diameter	Part number								
HD001	d = 50 mm	08133255	For cable cross sections 1.5 – 16 mm² (AWG 16 – 6)							
HD003	d = 88 mm	08135584	For cable cross sections > 16 mm² (AWG 6)							
Output filter (only in operating modes VFC or V/f)		Part number								
HF033-403		0825785X				A	B / H	A / H		
HF047-403		08257868				B	A			
HF450-503		08269483						B		A/H

- A** In nominal operation (100%)
- B** With variable torque load (125%)
- C** Connect two braking resistors in parallel and set twice the tripping current on F16 ($2 \times I_F$)
- D** Connect three braking resistors in parallel and set three times the tripping current on F16 ($3 \times I_F$)
- E** Connect four braking resistors in parallel and set four times the tripping current on F16 ($4 \times I_F$)
- H** Two filter in parallel

4.8.4 AC 400/500 V devices, sizes 5 – 7

MOVIDRIVE® MDX61B...-503			0550	0750	0900	1100	1320	1600	2000	2500
Size			5		6			7		
Braking resistors BW...-T	Tripping current	Part number BW...-T								
BW106-T	$I_F = 47.4 \text{ A}$	18200834			C	C	C	D	E	F
BW206-T	$I_F = 54.8 \text{ A}$	18204120			C	C	C	D	E	F
BW1.4-170	$I_F = 110 \text{ A}$	13301527								
BW003-420-T	$I_F = 129 \text{ A}$	13302345						C	C	C
Line filter		Part number								
NF115-503		08274169	A							
NF150-503		08274177	B	A						
NF210-503		08274185		B		A				
NF300-503		08274193				B				
NF600-503		17963389						B	B	B
Output chokes	Inner diameter	Part number								
HD001	$d = 50 \text{ mm}$	08133255	For cable cross sections $1.5 - 16 \text{ mm}^2$ (AWG 16 – 6)							
HD003	$d = 88 \text{ mm}$	08135584	For cable cross sections $> 16 \text{ mm}^2$ (AWG 6)							
HD004	Connection with M12 bolt	08168857								
HD005	Connection With M12 cable lug, M10 PE connection	17963362						B	B	B
Output filter (only in V/f and VFC operating mode)		Part number								
HF450-503		08269483	H	H						
HF180-403		08299099								
HF325-403		08299483								

- A** In nominal operation (100%)
B With variable torque load (125%)
C Connect two braking resistors in parallel and set twice the tripping current on F16 ($2 \times I_F$)
D Connect three braking resistors in parallel and set three times the tripping current on F16 ($3 \times I_F$)
E Connect four braking resistors in parallel and set four times the tripping current on F16 ($4 \times I_F$)
F Connect five braking resistors in parallel and set five times the tripping current on F16 ($5 \times I_F$)
H Two filter in parallel

4.8.5 AC 230 V devices, sizes 1 – 4

MOVIDRIVE® MDX61B....-2_3				0015	0022	0037	0055	0075	0110	0150	0220	0300
Size				1			2		3		4	
Braking resistors BW...../ BW.....-T BW.....-P	Tripping current	Part number BW....	Part number BW.....-T									
BW039-003	I _F = 2.7 A	08216878										
BW039-006	I _F = 3.9 A	08216886										
BW039-012 BW039-012-T	I _F = 5.5 A	08216894	18201369									
BW039-026-T	I _F = 8.1 A		18204155									
BW027-006	I _F = 4.7 A	08224226										
BW027-012	I _F = 6.6 A	08224234										
BW018-015-T	I _F = 9.1 A		18204163						C	C	C	C
BW018-035-T	I _F = 13.9 A		18201385						C	C	C	C
BW018-075-T	I _F = 20.4 A		18201393						C	C	C	C
BW915-T	I _F = 32.6 A		18204139						C	C	C	C
BW012-025-P	I _F = 14.4 A		18204147									
BW012-050-T	I _F = 20.4 A		18201407									
BW012-100-T	I _F = 28.8 A		18201415									
BW106-T	I _F = 47.4 A		18200834								C	C
BW206-T	I _F = 54.7 A		18204120								C	C
Line chokes		Part number										
ND020-013	Total current = AC 20 A	08260125					A					
ND045-013	Total current = AC 45 A	08260133					B		A			
ND085-013	Total current = AC 85 A	0826014							B		A	
ND150-013	Total current = AC 150 A	08255482									B	
Line filter		Part number										
NF009-503		08274126			A							
NF014-503		0827116X			B	A						
NF018-503		08274134				B						
NF035-503		08271283										
NF048-503		08271178							A			
NF063-503		08274142							B			
NF085-503		08274150									A	
NF115-503		08274169									B	
Output chokes		Part number										
HD001	d = 50 mm	08133255	For cable cross sections 1.5 – 16 mm² (AWG 16 – 6)									
HD002	d = 23 mm	08135576	For cable cross sections ≤ 1.5 mm² (AWG 16)									
HD003	d = 88 mm	08135584	For cable cross sections > 16 mm² (AWG 6)									

A In nominal operation (100%)

B With variable torque load (125%)

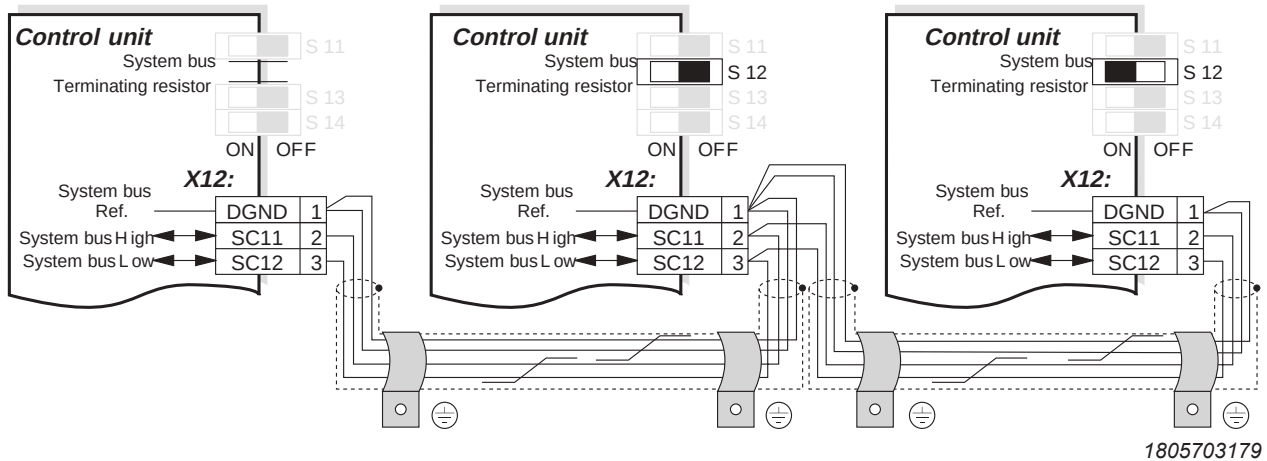
C Connect two braking resistors in parallel and set twice the tripping current on F16 ($2 \times I_F$)

4.9 Connecting the system bus (SBus 1)

Max. 64 CAN bus stations can be addressed via system bus (SBus). Use a repeater after 20 or 30 stations, depending on the length of the cables and the cable capacitance. The SBus supports transmission technology compliant with ISO 11898.

The "Serial Communication" manual contains detailed information about the system bus that can be ordered from SEW-EURODRIVE.

4.9.1 SBus wiring diagram



Cable specification

- Use a 4-core twisted and shielded copper cable (data transmission cable with braided copper shield). The cable must meet the following specifications:
 - Cable cross section 0.25 – 0.75 mm² (AWG 23 – AWG 19)
 - Line resistance 120 Ω at 1 MHz
 - Capacitance per unit length ≤ 40 pF/m at 1 kHz

Suitable cables include CAN bus or DeviceNet™ cables.

Connecting the shield

- Connect the shield to the electronics shield clamp on the inverter or the master controller and make sure it is connected over a wide area at both ends.

Cable length

- The permitted total cable length depends on the baud rate setting of the SBus (P884):
 - 125 kBaud → 500 m
 - 250 kBaud → 250 m
 - **500 kBaud → 100 m**
 - 1000 kBaud → 40 m

Terminating resistor

- Switch on the system bus terminating resistor (S12 = ON) at the start and end of the system bus connection. Switch off the terminating resistor on the other units (S12 = OFF).



NOTICE

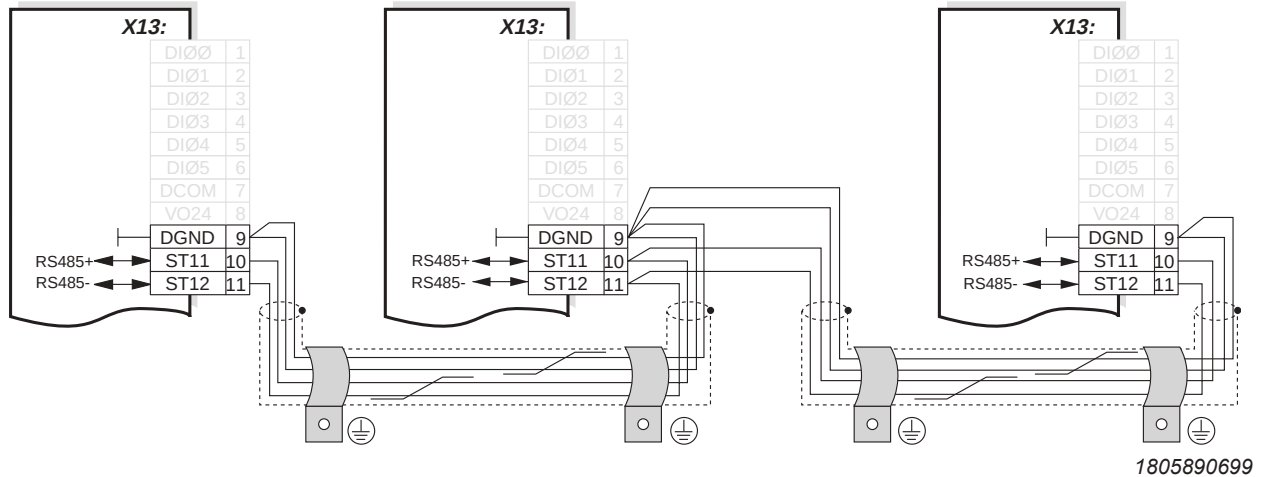
There must not be any potential shift between the devices which are connected together using the SBus. This can restrict the functionality of the device.

Take suitable measures to avoid potential shift, e.g. by connecting the unit ground connectors using a separate cable.

4.10 Connecting the RS485 interface

The RS485 interface (X13:ST11, ST12) can be used for connecting max. 32 MOVIDRIVE® devices, e.g. for master/slave operation, or 31 MOVIDRIVE® devices and a higher-level controller (PLC). The baud rate is set to 9.6 baud by default.

4.10.1 Wiring diagram of the RS485 interface (X13)



Cable specification

- Use a 4-core twisted and shielded copper cable (data transmission cable with braided copper shield). The cable must meet the following specifications:
 - Cable cross section $0.5 \text{ mm}^2 - 0.75 \text{ mm}^2$ (AWG 23 – AWG 19)
 - Line resistance $100 - 150 \Omega$ at 1 MHz
 - Capacitance per unit length $\leq 40 \text{ pF/m}$ at 1 kHz

Shield contact

- Connect the shield to the electronics shield clamp on the inverter or higher-level controller and make sure it is connected over a wide area at both ends.

Cable length

- The permitted total cable length is 200 m.

Terminating resistor

- Dynamic terminating resistors are installed. **Do not connect any external terminating resistors.**

NOTICE



There must not be any difference of potential between the devices which are connected together using the RS485. This can restrict the functionality of the device.

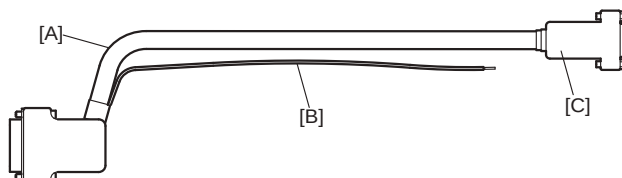
Take suitable measures to avoid potential shift, e.g. by connecting the device ground connectors using a separate cable.

4.11 Connecting the DWE11B/12B interface adapter

4.11.1 Part number and description

- DWE11B, part number 01881876

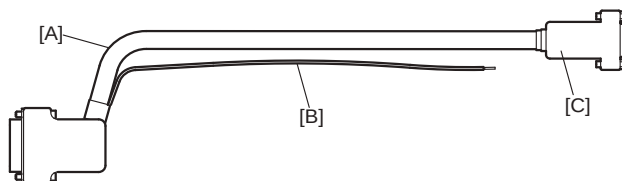
The interface adapter DWE11B (HTL → TTL) in the form of an adapter cable is used to **connect single-ended HTL encoders to the DEH11B/DEH21B options**. Only the A, B and C tracks are connected. The interface adapter is suitable for all HTL encoders that were operated on MOVIDRIVE® A, MDV and MCV and can be connected without any rewiring effort.



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- DWE12B, part number 01881809

The interface adapter DWE12B (HTL → TTL) in the form of an adapter cable is used to **connect push-pull HTL encoders to the DEH11B/DEH21B options**. In addition to the A, B and C track, you will also have to connect the negated tracks. SEW-EURODRIVE recommends using this interface adapter for any new system.



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4.12 Connecting the UWS21B interface adapter (RS232 ↔ RS485)

4.12.1 Part number

Interface adapter option UWS21B: 18204562

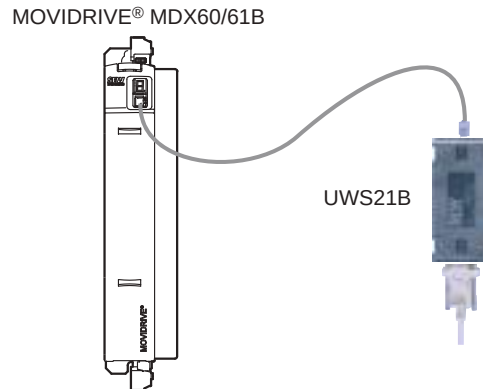
4.12.2 Scope of Delivery

The scope of delivery for the UWS21B option includes:

- UWS21B device
- CD-ROM with MOVITOOLS® MotionStudio
- Serial interface cable with 9-pin sub D socket and 9-pin D-sub connector to connect the UWS21B option to the PC.
- Serial interface cable with two RJ10 connectors to connect UWS21B to MOVIDRIVE®

4.12.3 MOVIDRIVE® – UWS21B connection

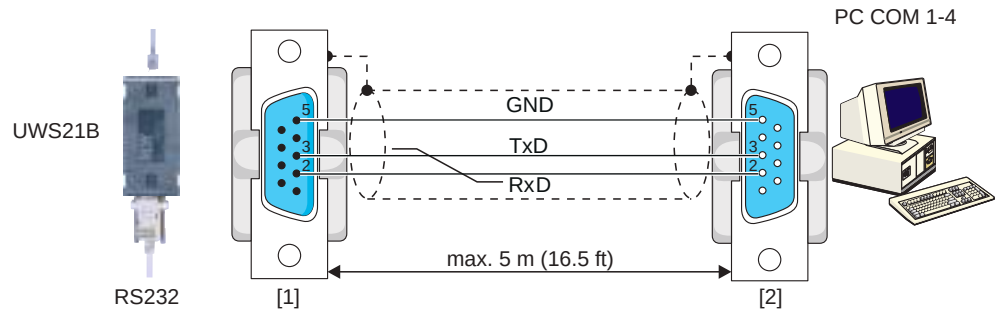
- Use the connection cable included in the delivery to connect the UWS21B option to MOVIDRIVE®.
- Plug the connection cable into the XT terminal socket of MOVIDRIVE®.
- Note that the DBG60B keypad and the UWS21B serial interface cannot be connected to the MOVIDRIVE® at the same time.
- The following figure shows the connection cable between MOVIDRIVE® and UWS21B.



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4.12.4 Connecting UWS21B to PC

- Use the connection cable supplied (shielded RS232 standard interface cable) to connect the UWS21B option to the PC.
- The following figure shows the connection cable between UWS21B and PC (1:1 connection).



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[1] 9-pin D-sub connector

[2] 9-pin D-sub socket

4.13 Connecting the USB11A interface adapter

4.13.1 Part number

Interface adapter option USB11A: 08248311

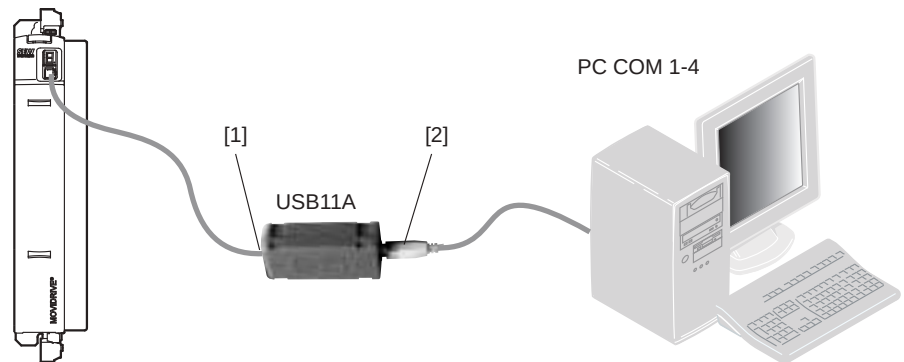
4.13.2 Scope of Delivery

- The scope of delivery for the USB11A includes:
 - USB11A interface adapter
 - USB connection cable PC – USB11A (type USB A-B)
 - Connection cable for MOVIDRIVE® MDX60B/61B – USB11A (RJ10 – RJ10 cable)
 - CD-ROM with drivers and MOVITOOLS® MotionStudio
- The USB11A interface adapter supports USB 1.1 and USB 2.0.

4.13.3 Connecting MOVIDRIVE®-USB11A – PC

- Use the connection cable [1] (RJ10 – RJ10) supplied to connect the USB11A option to MOVIDRIVE®.
- Plug the connection cable [1] into the XT slot of MOVIDRIVE® MDX60B/61B and into the RS485 slot of the USB11A.
- Note that the DBG60B keypad and the USB11A interface adapter cannot be connected to the MOVIDRIVE® at the same time.
- Use the supplied USB connection cable [2] (type USB A-B) to connect the USB11A to the PC.
- The following figure shows the connection cable between MOVIDRIVE MDX60B/61B and USB11A.

MOVIDRIVE® MDX60/61B



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4.13.4 Installation

- Connect the USB11A to a PC and MOVIDRIVE® MDX60B/61B using the connection cables supplied.
- Insert the enclosed CD into the CD drive of your PC and install the driver. The first free COM port on the PC will be assigned to the USB11A interface adapter.

4.13.5 Operation with MOVITOOLS® MotionStudio

- After installation, the PC recognizes the USB11A interface converter after approximately 5 – 10 s.
- Start MOVITOOLS® MotionStudio.

INFORMATION

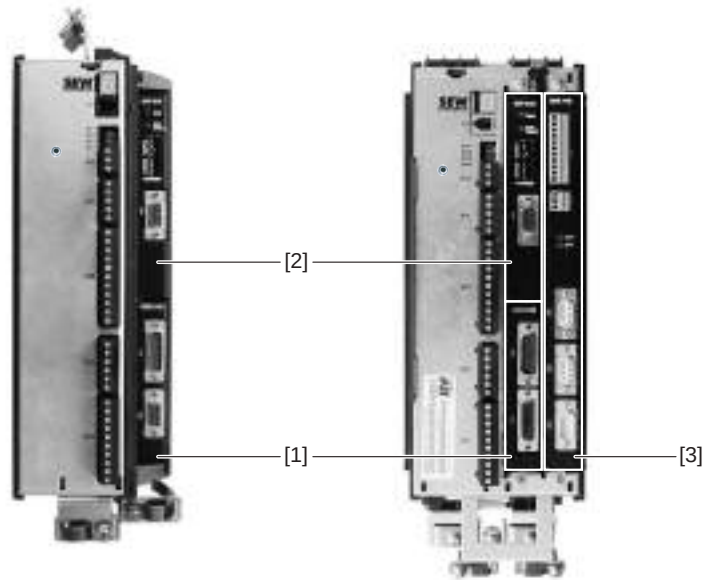


If the connection between the PC and USB11A is interrupted, you have to restart MOVITOOLS® MotionStudio.

4.14 Option combinations for MDX61B

4.14.1 Configuration of option slots

Size 0 (0005 – 0014) Size 1 – 6 (0015 – 1320)



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- [1] Encoder slot for encoder options
- [2] Fieldbus option slot for communication options
- [3] Expansion slot for communication options (only sizes 1 – 6)

4.14.2 Option card combinations for MDX61B

The option cards are different sizes and can only be installed in the matching option slots. Fieldbus interfaces including DHx cannot be combined with one another. The following list shows the possible combinations of option cards for MOVIDRIVE® MDX61B.

Option card	Designation	MOVIDRIVE® MDX61B		
		Encoder slot Size 0 – size 7	Fieldbus slot Size 0 – size 7	Expansion slot Size 1 – size 7
DEH11B	Encoder input incr. / HIPERFACE®	X		
DEH21B ¹⁾	Encoder input absolute encoder	X		
DEU21B ²⁾	Encoder input absolute encoder	X		
DER11B	Encoder input resolver / HIPERFACE®	X		
DFP21B	PROFIBUS fieldbus interface		X	
DFI11B	Interbus fieldbus interface		X	
DFI21B	Interbus FOC fieldbus interface		X	
DFD11B	DeviceNet™ fieldbus interface		X	
DFC11B	CAN/CANopen fieldbus interface		X	
DFE11B DFE12B DFE13B	Ethernet fieldbus interface		X	
DFE32B	PROFINET IO fieldbus interface		X	
DFE33B	EtherNet/IP™ fieldbus interface		X	
DFE24B	EtherCAT® fieldbus interface		X	
DFS11B	PROFIBUS fieldbus interface with PROFIsafe (STO)		X	
DFS12B	PROFIBUS fieldbus interface with PROFIsafe		X	
DFS21B	PROFINET IO fieldbus interface with PROFIsafe (STO)		X	
DCS21B/ 22B/ 31B/ 32B	Safety monitor			X
DIO11B	I/O expansion		X	X ³⁾
DRS11B ²⁾	Phase-synchronous operation			X
DIP11B ¹⁾	SSI encoder interface			
DHP11B	User-programmable MOVI-PLC® <i>basic</i> controller		X	X ³⁾
DHE41B	User-programmable MOVI-PLC® <i>advanced</i> controller		X	X ³⁾
DHF41B	User-programmable MOVI-PLC® <i>advanced</i> controller			X

Option card	Designation	MOVIDRIVE® MDX61B		
		Encoder slot Size 0 – size 7	Fieldbus slot Size 0 – size 7	Expansion slot Size 1 – size 7
DHR41B	User-programmable MOVI-PLC® <i>advanced</i> controller			X
DHP11B + OST11B	DHP11B + OST11B (RS485 inter- face, only in combination with DH- P11B)	OST11B	DHP11B	DHP11B + OS- T11B ⁴⁾

- 1) The option cards DEH21B and DIP11B cannot be combined.
 2) The option cards DEU21B and DRS11B cannot be combined.
 3) When fieldbus option slot is not available
 4) When encoder slot is not available

4.15 Installing and removing option cards

INFORMATION



- For **MOVIDRIVE® MDX61B size 0**, only **SEW-EURODRIVE** is authorized to install or remove option cards.
- For **MOVIDRIVE® MDX61B sizes 1 – 7**, you can install or remove the option cards yourself.

4.15.1 Before you start

Observe the following notes before installing or removing an option card:

NOTICE

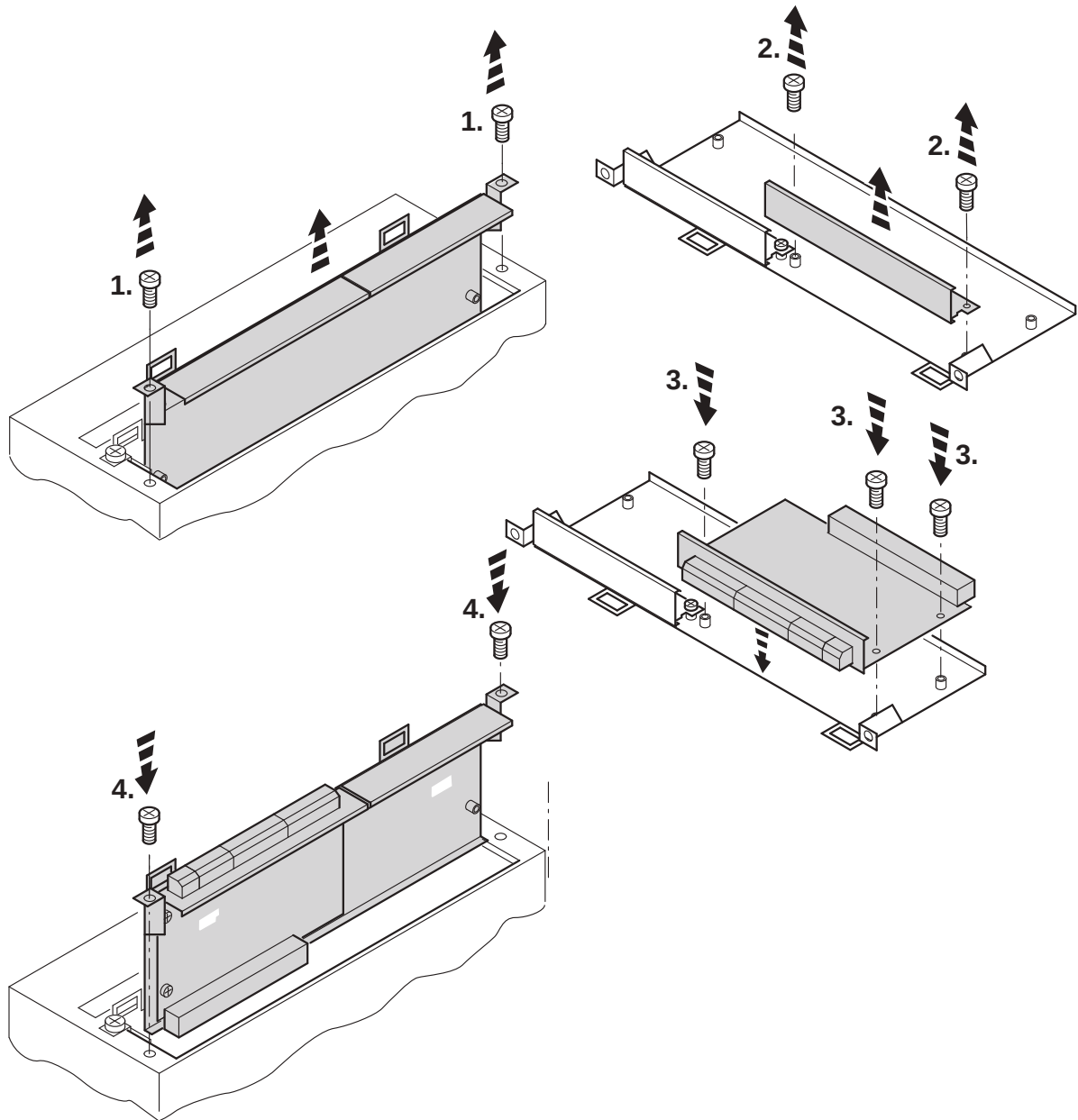
Electrostatic discharge.

Damage to electronic components.

- Disconnect the inverter from the power. Switch off the DC 24 V and the supply voltage.
- Take appropriate measures to protect the option card from electrostatic charge (use discharge strap, conductive shoes, etc.) before touching it.
- **Before installing** the option card, remove the keypad (→ chapter "Removing/installing the keypad") and the front cover (→ chapter "Removing/installing the front cover").
- **After having installed** the option card, replace the keypad (→ chapter "Removing/installing the keypad") and the front cover (→ chapter "Removing/installing the front cover").
- Keep the option card in its original packaging until immediately before you are ready to install it.
- Hold the option card by its edges only. Do not touch any of the components.

4.15.2 Basic procedure for installing/removing an option card

The following figure shows the installation of an option card in MOVIDRIVE® MDX61B sizes 1 – 7.



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1. Remove the retaining screws holding the card retaining bracket. Pull the card retaining bracket out evenly from the slot (do not twist!).
2. Remove the retaining screws of the black cover plate on the card retaining bracket. Remove the black cover plate.
3. Position the option card onto the retaining bracket so that the retaining screws fit into the corresponding bores on the card retaining bracket.
4. Insert the retaining bracket with the installed option card into the slot, pressing slightly so it is seated properly. Secure the option card retaining bracket with the retaining screws.
5. To remove the option card, follow the instructions in reverse order.

4.16 Connecting encoders and resolvers

INFORMATION



Folgen

- The following wiring diagrams do not show the view onto the cable end but the view onto the connection to motor or MOVIDRIVE®.
- The core colors specified in the wiring diagrams are in accordance with IEC 757 and correspond to the core colors used in the prefabricated cables from SEW-EURODRIVE.

4.16.1 General installation notes

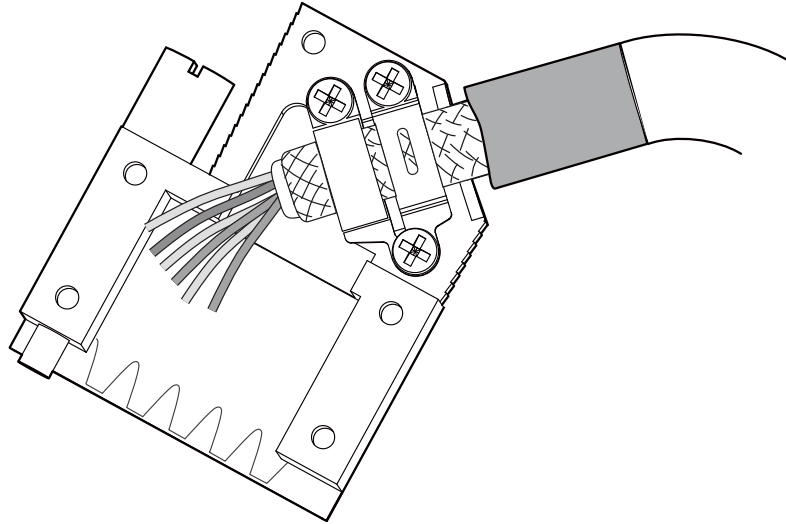
- The D-sub connectors shown in the wiring diagrams have a 4/40 UNC thread.
- Max. line length inverter – encoder/resolver:
 - 50 m at $70 \text{ nF} < \text{capacitance per unit length} \leq 120 \text{ nF/km}$
 - 100 m at $\text{capacitance per unit length} \leq 70 \text{ nF/km}$ with DER11B, DEH11B, DEH21B, 300 m with DEU21B
- Cable cross section: $0.20 - 0.5 \text{ mm}^2$ (AWG 24 – 20)
- If you cut a core of the encoder/resolver cable, insulate the cut-off end of the core.
- Use shielded cables with twisted pair conductors and make sure they are grounded on both ends over a large surface area:
 - At the encoder in the cable gland or in the encoder plug
 - At the inverter in the housing of the D-sub connector
- Route the encoder/resolver cables separately from the power cables.

4.16.2 Shield contact

Connect the shield of the encoder/resolver cable over a large area.

On the inverter

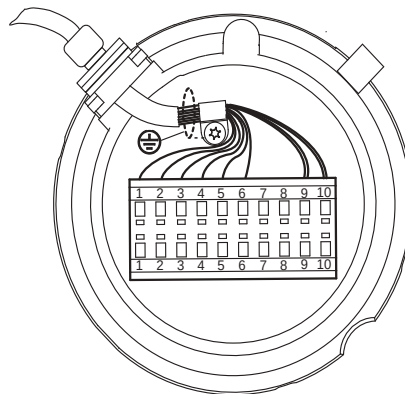
Connect the shield on the inverter end in the housing of the D-sub connector (→ following figure).



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On the encoder/resolver

Connect the shield on the encoder/resolver side at the respective grounding clamps (→ following figure). When using an EMC screw fitting, apply the shield over a wide area in the cable gland. For drives with a plug connector, connect the shield on the encoder plug.



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4.16.3 Prefabricated cables

SEW-EURODRIVE offers prefabricated cables for connecting encoders/resolvers. We recommend using these prefabricated cables.

4.17 Connection and terminal description of the DEH11B option (HIPERFACE®)

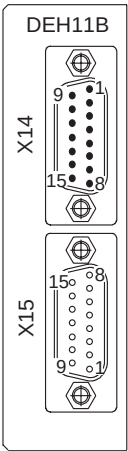
4.17.1 Part number

Option HIPERFACE® encoder card type DEH11B: 08243107

INFORMATION



- The DEH11B option can be installed in MOVIDRIVE® MDX61B sizes 0 – 7. Only SEW-EURODRIVE may install or remove the DEH11B option for MOVIDRIVE® MDX61B size 0.
- The DEH11B option must be plugged into the encoder slot.

Front view of DE-H11B	Description	Terminal	Function
	X14: Input for external encoder or output for incremental encoder simulation Number of pulses of the incremental encoder simulation: • As on X15	X14:1 X14:2 X14:3 X14:4 X14:5/6 X14:7 X14:8 X14:9 X14:10 X14:11 X14:12 X14:13/14 X14:15	(COS+) signal track A (K1) (SIN+) signal track B (K2) Signal track C (K0) DATA+ Reserved Switch between Reference potential DGND (COS-) Signal track A (K1) (SIN-) Signal track B (K2) Signal track C (K0) DATA- Reserved DC+12 V (tolerance range DC 10.5 – 13 V) (max. load X14:15 and X15:15 = DC 650 mA)
	X15: Motor encoder input	X15:1 X15:2 X15:3 X15:4 X15:5 X15:6 X15:7 X15:8 X15:9 X15:10 X15:11 X15:12 X15:13 X15:14 X15:15	(COS+) signal track A (K1) (SIN+) signal track B (K2) Signal track C (K0) DATA+ Reserved Reference potential TF/TH/KTY-/PK Reserved Reference potential DGND (COS-) Signal track A (K1) (SIN-) Signal track B (K2) Signal track C (K0) DATA- Reserved TF/TH/KTY+/PK connection DC+12 V (tolerance range DC 10.5 – 13 V) (max. load X14:15 and X15:15 = DC 650 mA)

INFORMATION



- If X14 is used as an incremental encoder simulation output, the switch-over (X14:7) must be jumpered with DGND (X14:8).
- The DC 12 V supply voltage from X14 and X15 is sufficient to operate encoders by SEW-EURODRIVE (except HTL encoders) with a DC 24 V supply voltage. With all other encoders, check whether they can be connected to the DC 12 V supply voltage.

NOTICE



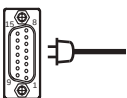
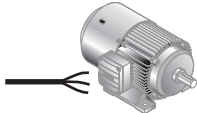
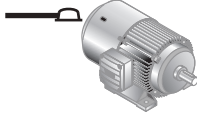
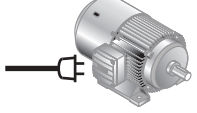
- Do not directly connect HTL encoders to X15 of option DEH11B.
 Doing so can destroy the X15 (motor encoder input) on the DEH11B option.
- Use the DWE11/12 interface adapter

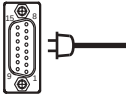
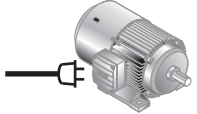
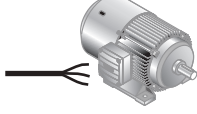
4.17.2 Permissible encoders at X:14

Refer to chapter "Connecting external encoders to X:14" (→ 129).

4.17.3 Permissible encoders at X:15

The following SEW-EURODRIVE encoders can be connected to the option HIPERFACE® encoder card type DEH11B:

Encoder on DR.. series AC motors – MOVIDRIVE®				
Motor type	Encoder	MOVIDRIVE® drive inverters	Motor	Cable
DR71 – DR132	ES7S ES7R AS7W			 13622021 13622048
DR160 – DR225	EG7S EG7R AG7W			
DR71 – DR132	ES7S ES7R AS7W			 13617621 13617648
DR160 – DR225	EG7S EG7R AG7W			
DR315	EH7S			 13602659 13623206

Encoders on DT../DV.. and CM.. series motors – MOVIDRIVE®				
Motor type	Encoder	MOVIDRIVE® drive inverters	Motor	Cable
CM71 – 112 CMP	AS1H ES1H AK0H EK0H AV1H AF1H EG7C			 13324535 13324551
CM71 – 112	AS1H ES1H AV1H AF1H EG7C			 13324578 13324543

4.18 Connection and terminal description of the DEH21B option

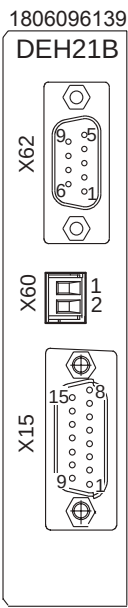
4.18.1 Part number

Encoder card option DEH21B: 18208185

INFORMATION



- For detailed information on the DEH21B option, refer to the manual "MOVIDRIVE® MDX61B DIP11B/DEH21B absolute encoder cards".
- The DEH21B option can be installed in MOVIDRIVE® MDX61B sizes 0 – 7. Only SEW-EURODRIVE staff may install or remove the DEH21B option for MOVIDRIVE® MDX61B size 0.
- The DEH21B option card must be plugged into the encoder slot.
- The DC 24 V voltage supply of an encoder connected to X62 is ensured when X60 is supplied with DC 24 V. Observe chapter "Project planning" in the MOVIDRIVE® MDX60B/61B system manual.

Front view of DEH21B	Description	Terminal	Function
	X62: Absolute encoder connection	X62:1 X62:2 X62:3 X62:4 X62:5 X62:6 X62:7 X62:8 X62:9	Data + Reserved Pulse + Reserved DGND Data – Reserved Pulse – DC 24 V output
	X60: Voltage supply	X60:1 X60:2	24VIN DGND
	X15: Motor encoder input	X15:1 X15:2 X15:3 X15:4 X15:5 X15:6 X15:7 X15:8 X15:9 X15:10 X15:11 X15:12 X15:13 X15:14 X15:15	(COS+) signal track A (K1) (SIN+) signal track B (K2) Signal track C (K0) DATA+ Reserved Reference potential TF/TH/KTY–/PK Reserved Reference potential DGND (COS–) Signal track A (K1) (SIN–) Signal track B (K2) Signal track C (K0) DATA– Reserved TF/TH/KTY+/PK connection DC +12 V (tolerance range DC 10.5 – 13 V) (max. load X15:15 = DC 650 mA)

INFORMATION



The DC 12 V supply voltage from X15 is sufficient to operate SEW encoders (except HTL encoders) with a DC 24 V supply voltage. With all other encoders, check whether they can be connected to the DC 12 V supply voltage.

NOTICE



- Do not directly connect HTL encoders to X15 of option DEH21B.
Doing so can destroy the X15 (motor encoder input) of the DEH21B option.
- Use the DEW11/12 interface adapter

4.19 Connection and terminal description of the DEU21B option

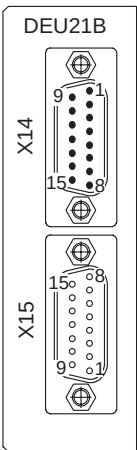
4.19.1 Part number

Multi-encoder card option type DEU21B: 01822696

INFORMATION



- For detailed information on the DEU21B option, refer to the "MOVIDRIVE® MDX61B multi-encoder card DEU21B" manual.
- The DEU21B option can be installed in MOVIDRIVE® MDX61B sizes 0 – 7. Only SEW-EURODRIVE staff may install or remove the DEU21B option for MOVIDRIVE® MDX61B size 0.
- The DEU21B option card must be plugged into the encoder slot.

Front view of DEU21B	Description	Terminal	Function
	X14: Input for external encoder or output for incremental encoder simulation Output for incremental encoder simulation: - Signal level to RS422 - The number of pulses is the same as on X15 motor encoder input	X14:1 X14:2 X14:3 X14:4 X14:5/6 X14:7 X14:8 X14:9 X14:10 X14:11 X14:12 X14:13 X14:14 X14:15	(COS+) signal track A (K1) (SIN+) signal track B (K2) Signal track C (K0) / pulse + DATA+ CANHigh Reserved Switch between Reference potential DGND (COS-) Signal track A (K1) (SIN-) Signal track B (K2) Signal track C (K0) / pulse – DATA- CANLow DC 24 V encoder supply ¹⁾ Reserved DC 12 V encoder supply ²⁾
	X15: Motor encoder input	X15:1 X15:2 X15:3 X15:4 X15:5 X15:6 X15:7 X15:8 X15:9 X15:10 X15:11 X15:12 X15:13 X15:14 X15:15	(COS+) signal track A (K1) (SIN+) signal track B (K2) Signal track C (K0) / pulse + DATA+ Reserved Reference potential TF/TH/KTY-/PK Reserved Reference potential DGND (COS-) Signal track A (K1) (SIN-) Signal track B (K2) Signal track C (K0) / pulse – DATA- DC 24 V encoder supply ¹⁾ TF/TH/KTY+/PK connection DC 12 V (tolerance range DC 10.5 – 13 V) ²⁾

1) If the overall device load on the 24 V level exceeds 400 mA, you must connect an external DC 24 V supply to X10:9/X10:10. Observe the "Project planning" chapter in the MOVIDRIVE® MDX60B/61B system manual

2) The maximum load on X14:15 and X15:15 is DC 650 mA in total.

NOTICE



The connections on X14 and X15 must not be installed or removed during operation. Electrical components in the encoder or on the encoder card could be destroyed.



INFORMATION

- If X14 is used as an incremental encoder simulation output, the switchover (X14:7) must be jumpered with DGND (X14:8).
 - The 24 V encoders from SEW-EURODRIVE (except HTL and HIPERFACE®) have a wide voltage range (DC 10 V – 30 V) and can be supplied alternatively with DC 24 V (PIN13) or DC 12 V (PIN15).
 - If these option cards are used, electrical isolation between DGND and PE is not possible.
-

4.20 Connection and terminal description of the DER11B (resolver) option

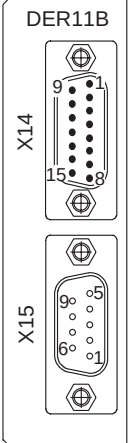
4.20.1 Part number

Resolver card option type DER11B: 08243077

INFORMATION



- The DEU21B, DER11B option can be installed in MOVIDRIVE® MDX61B sizes 0 – 7. Only SEW-EURODRIVE may install or remove the DEU21B, DER11B option for MOVIDRIVE® MDX61B size 0.
- The "Resolver card type DER11B" option can only be used with MOVIDRIVE® MDX61B, not with MDX60B.
- The DER11B option must be plugged into the encoder slot.

Front view of DER11B	Description	Terminal	Function
	X14: Input for external encoder or output for incremental encoder simulation The pulse count of the incremental encoder simulation is always 1024 pulses per revolution	X14:1 X14:2 X14:3 X14:4 X14:5/6 X14:7 X14:8 X14:9 X14:10 X14:11 X14:12 X14:13/14 X14:15	(cos) Signal track A (K1) (sin) Signal track B (K2) Signal track C (K0) DATA+ Reserved Switch between DGND reference potential (cos-) Signal track A (K1) (sin-) Signal track B (K2) Signal track C (K0) DATA- Reserved DC+12 V (tolerance range DC 10.5 – 13 V) (max. load DC 650 mA)
	X15: Resolver input	X15:1 X15:2 X15:3 X15:4 X15:5 X15:6 X15:7 X15:8 X15:9	sin+ (S2) cos+ (S1) Ref.+ (R1) N.C. Reference potential TF/TH/KTY-/PK sin- (S4) cos- (S3) Ref.- (R2) TF/TH/KTY+/PK connection

INFORMATION



- If X14 is used as an incremental encoder simulation output, the switch-over (X14:7) must be jumpered with DGND (X14:8).
- The DC 12 V supply voltage from X14 is sufficient to operate encoders by SEW-EURODRIVE (except HTL encoders) with a DC 24 V supply voltage. With all other encoders, check whether they can be connected to the DC 12 V supply voltage.

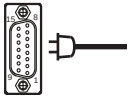
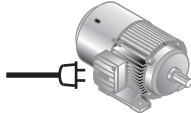
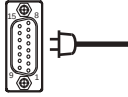
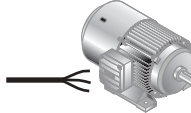
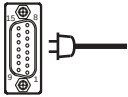
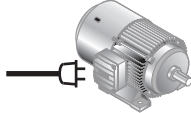
4.20.2 Permissible encoders at X:14

Refer to chapter "Connecting external encoders to X:14" (→ 129).

4.20.3 Resolver at X:15

2-pole resolvers, AC 7 V, 7 kHz, can be connected at X15 (resolver input). The gear ratio of the resolver amplitudes must be approximately $0.5 \pm 10\%$. The control dynamics decrease if the value is lower; the evaluation may be unstable if the value is higher.

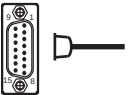
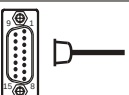
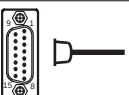
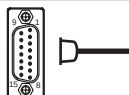
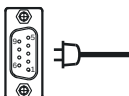
SEW-EURODRIVE offers the following prefabricated cables for connecting resolvers to DER11B:

Encoders on DT../DV.. and CM.. series motors – MOVIDRIVE®				
Motor type	Encoder	MOVIDRIVE® drive inverters	Motor	Cable
CM71 – 112	Resolver			 01994875 01993194
CM71 – 112	Resolver			 01995898 01995901
CMP	Resolver			 01994875 01993194

4.21 Connecting external encoders to X:14

4.21.1 External encoder at DEH11B, DEU21B and DER11B (X:14)

The following external encoders can be connected to connector X14 of the DEH11B option and the DER11B option:

External encoder at DEH11B and DER11B - MOVIDRIVE® (X:14)			
Encoder	MOVIDRIVE® drive inverters	Cable	Details
AS1H ES1H AV1H		 08180156 08181659	
AS1H ES1H AV1H		 18106951 18106978	
EH1S ES1S ES2S EV1S ES1R ES2R EV1R EH1R		 08198691 08181683	
ES1T ES2T EV1T EH1T	 DWI11A X2: 	 01988298 0198828X 081816403	

4.22 Connection of encoder options

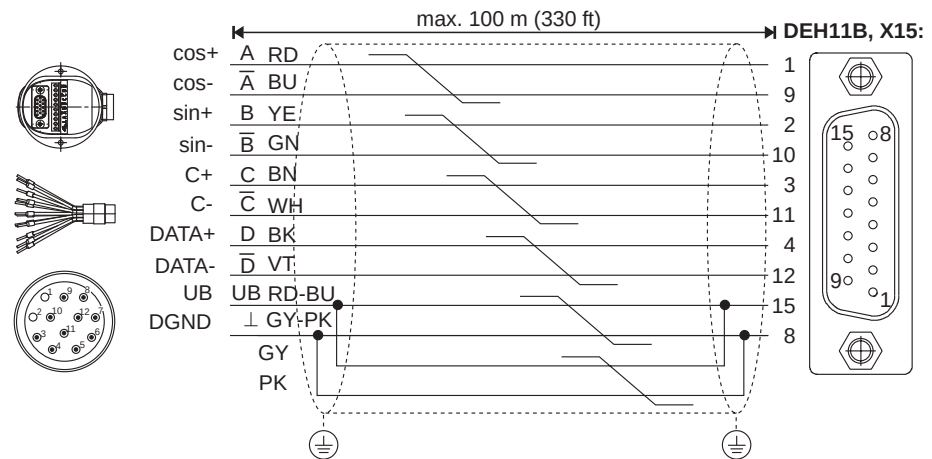
4.22.1 Connection of DEH11B option

Encoder connection at X:15

Depending on the motor type and motor configuration, the encoder is connected via plug connector or terminal box.

DR71 – 315

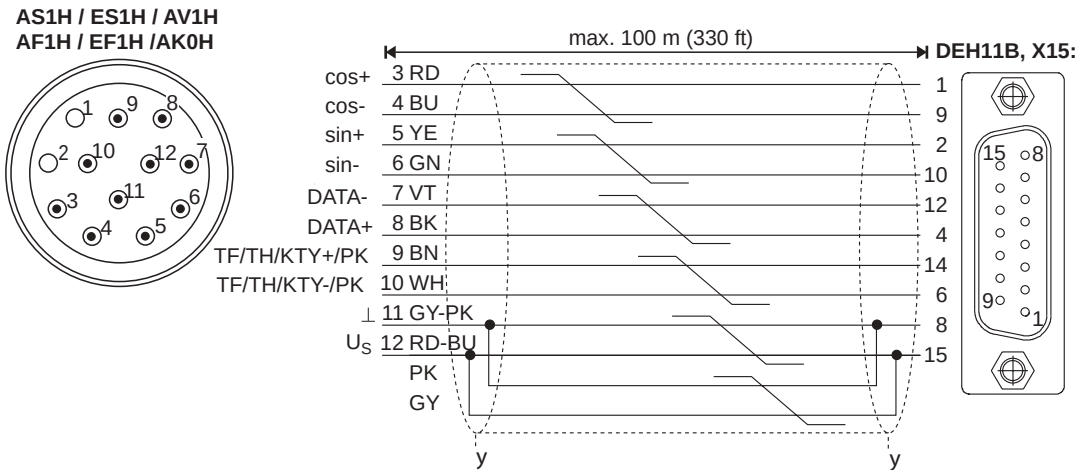
Connect the encoder to the option DEH11B as follows:



18014400817423627

CM71 – 112/CMP with plug connector

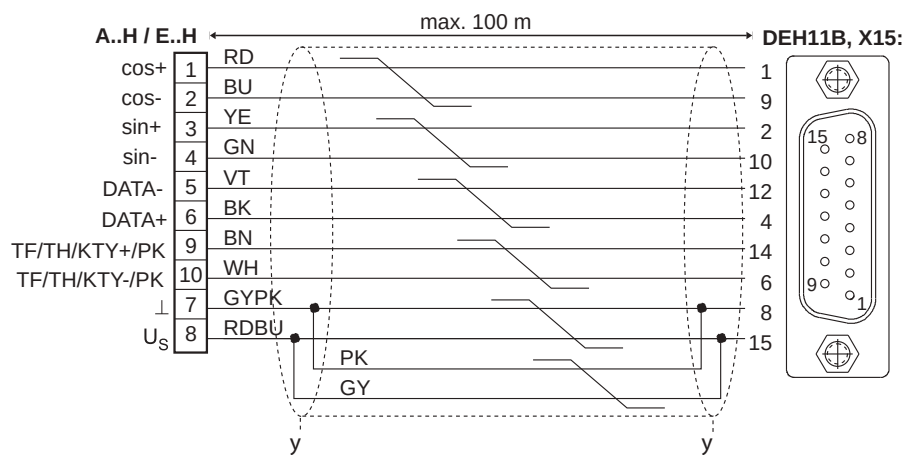
Connect the HIPERFACE® encoder to the DEH11B option as follows:



18014400315547531

CM71 – 112 with terminal box

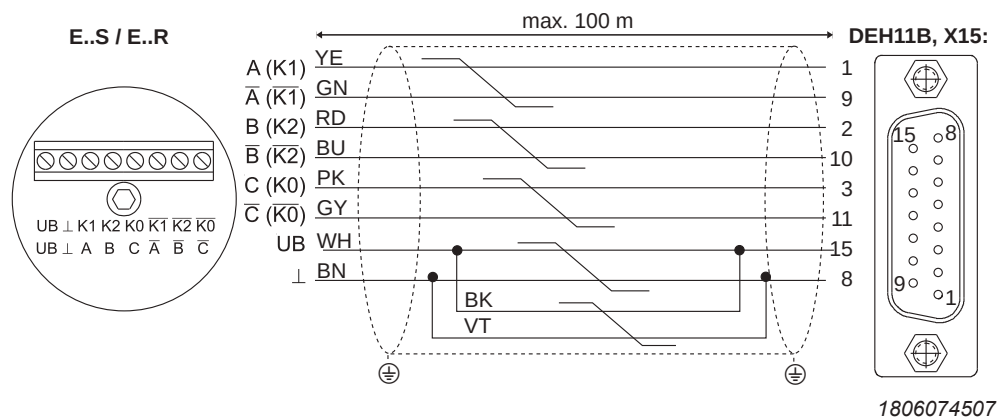
Connect the HIPERFACE® encoder to the DEH11B option as follows:



9007201060812171

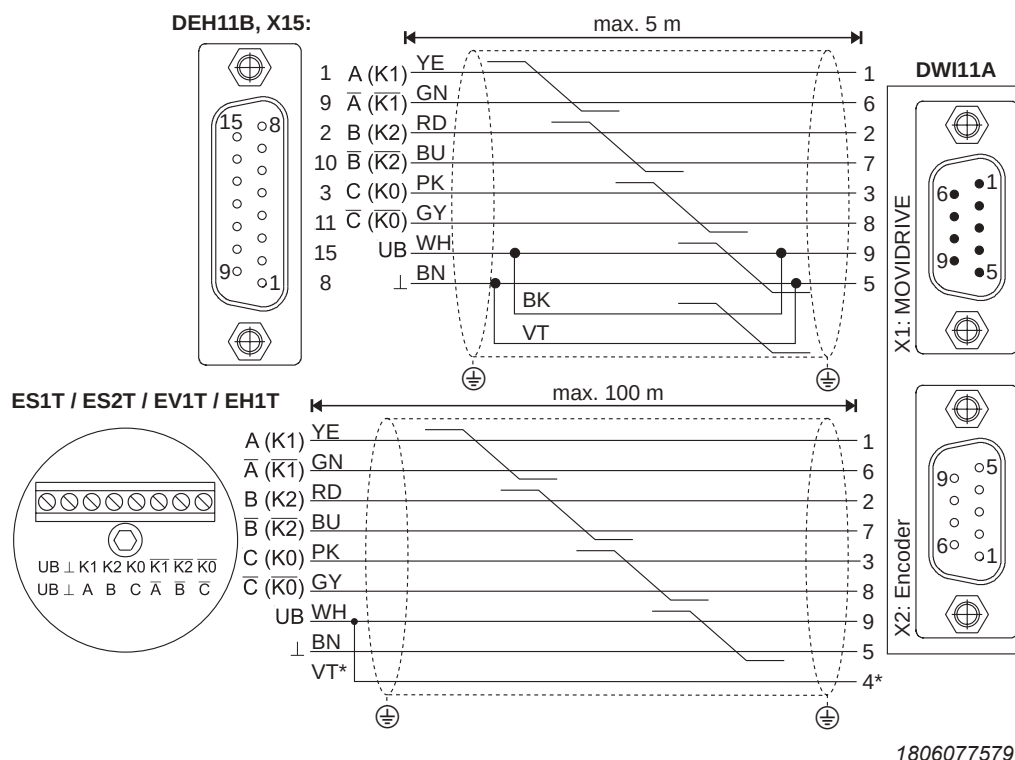
Connection of sin/cos and TTL encoders (DC 24 V)

The high resolution sin/cos encoders and TTL encoders with DC 24 V supply can also be connected to DEH11B. Proceed as follows to connect sin/cos encoders and TTL encoders with DC 24 V supply to the DEH11B option:



Connection of TTL encoder (DC 5 V)

Connect the TTL encoders with a DC 5 V voltage supply via the "DC 5 V encoder supply type DWI11A" option (part no. 08227594). The sensor cable must also be connected to correct the supply voltage of the encoder. Connect this encoder as follows:



* Connect the sensor cable (VT) on the encoder to UB, do not jumper on the DWI11A!

4.22.2 Connection of DER11B (resolver) option to X:15

Terminal assignment/pin assignment

CM.. motors: The resolver connections are located in a plug connector or on a 10-pin Wago terminal strip.

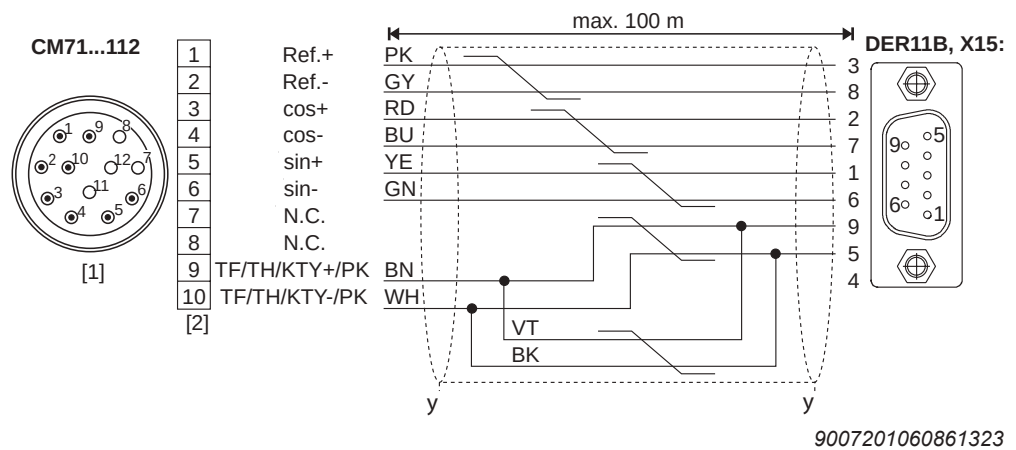
Plug connector CM...: Intercontec, type ASTA021NN00 10 000 5 000

Terminal/pin	Description		Core color in prefabricated cable
1	Ref. +	Reference	Pink (PK)
2	Ref. -		Gray (GY)
3	cos +	Cosine signal	Red (RD)
4	cos -		Blue (BU)
5	sin +	Sine signals	Yellow (YE)
6	sin -		Green (GN)
9	TF/TH/KTY +/PK	Motor protection	Brown (BN) / violet (VT)
10	TF/TH/KTY -/PK		White (WH) / black (BK)

The resolver signals have the same numbering on the 10-pin Phoenix terminal strip and in the plug connectors.

Connection

Connect the resolver as follows:



[1] Plug connector

[2] Terminal strip

4.22.3 Connection of external encoders to the DEH11B and DER11B options

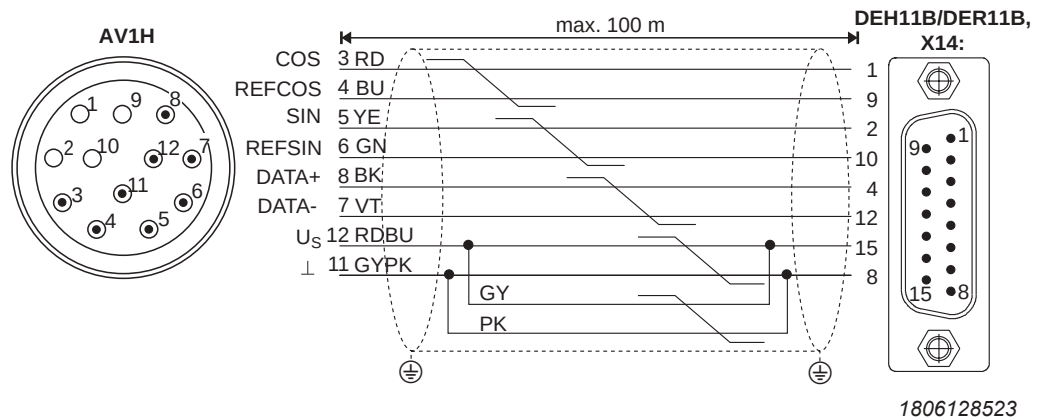
Voltage supply

SEW-EURODRIVE encoders with DC 24 V voltage supply (max. DC 180 mA) are connected directly to X14. These SEW-EURODRIVE encoders are then powered by the inverter.

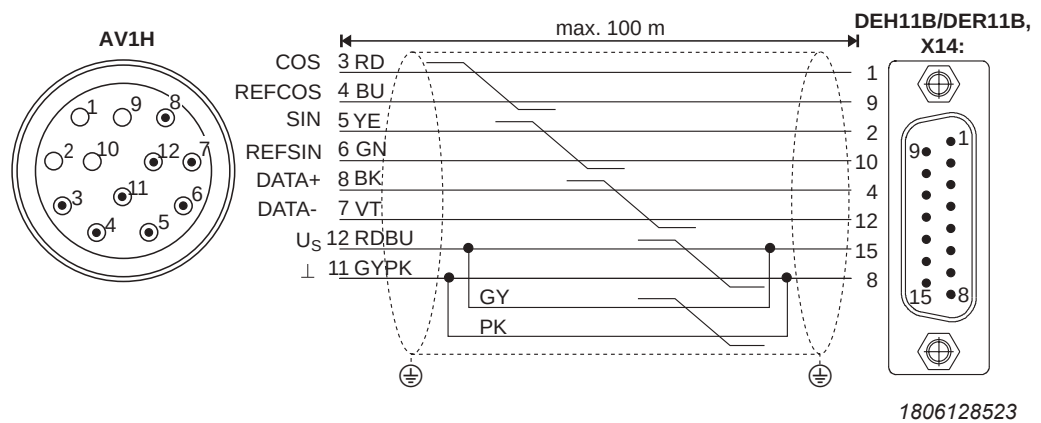
SEW-EURODRIVE encoders with a DC 5 V voltage supply must be connected via the "DC 5 V encoder supply type DWI11A" option (part no. 08227594).

HIPERFACE® encoder connection

Connect the HIPERFACE® encoder AV1H as follows:

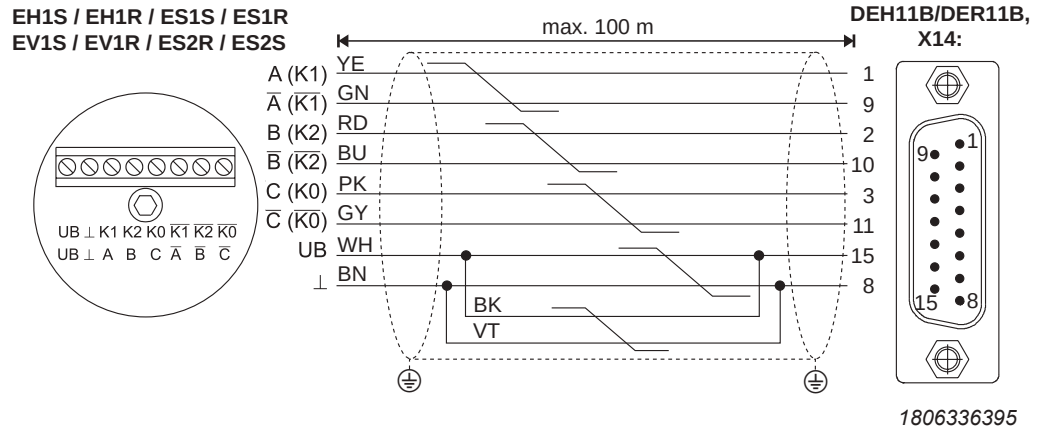


You can still connect HIPERFACE® encoders via a prefabricated cable with conductor end sleeves.



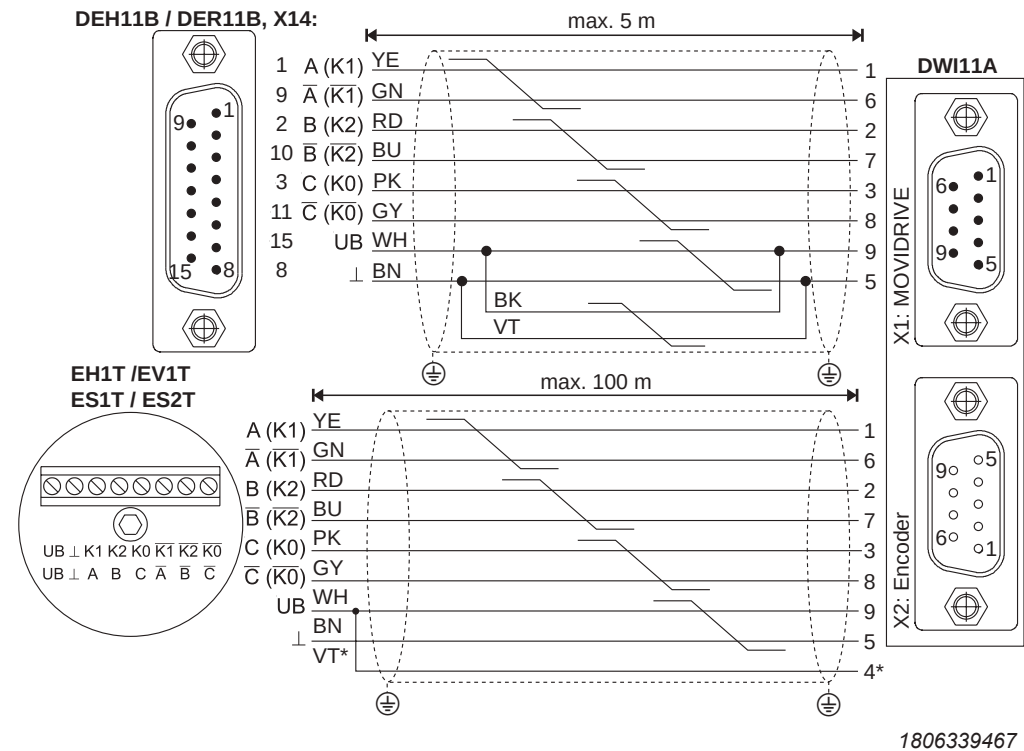
Connection of sin/cos and TTL encoders (DC 24 V)

Proceed as follows to connect sin/cos encoders and TTL encoders with DC 24 V supply:



Connection of TTL encoder (DC 5 V)

DC 5 V encoders with a DC 5 V voltage supply EV1T, EH1T, ES1T, and ES2T must be connected via the "DC 5 V encoder power supply type DWI11A" option (part number 08227594). The sensor cable must also be connected to correct the supply voltage of the encoder. Connect this encoder as follows:



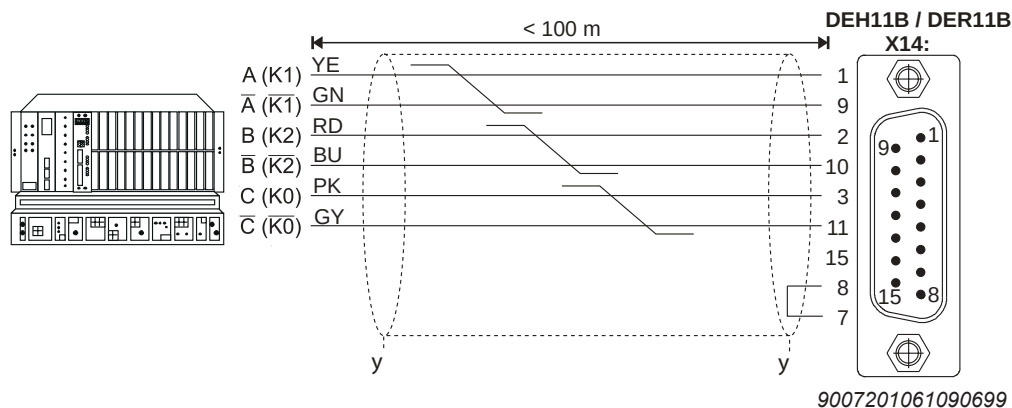
* Connect the sensor cable (VT) on the encoder to UB, do not jumper with DWI11A!

4.23 Connection of incremental encoder simulation

4.23.1 Incremental encoder emulation

Connector X14 of the DEH11B or DER11B option can also be used as the incremental encoder simulation output. For this purpose, you must jumper "switchover" (X14:7) with DGND (X14:8). X14 then delivers the incremental encoder signals with a signal level according to RS422. The number of pulses is:

- With DEH11B as on X15 motor encoder input
- With DER11B 1024 pulses/revolution



Part number of the prefabricated cable:

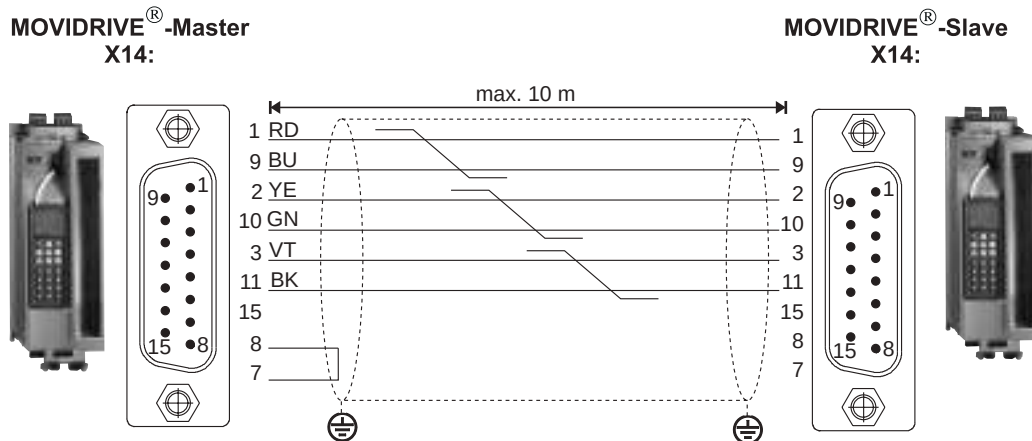
- Option type DEH/DER11B X14: → Incremental encoder simulation
 - For fixed installation: 08197687

4.24 Master/slave connection

4.24.1 Master/slave connection

Connector X14 of the DEH11B, DEU21B or DER11B option can also be used for the "internal synchronous operation" application (master/slave connection of several MOVIDRIVE® devices). For this purpose, you must jumper "switchover" (X14:7) with DGND (X14:8) on the master end.

The following figure shows an X14-X14 connection (= master/slave connection) between two MOVIDRIVE® devices.



1806354443

Part number of the prefabricated cable:

- For fixed installation: 08179581

INFORMATION



- **A maximum of 3 slaves can be connected to the MOVIDRIVE® master.**
- Notice: Do **not** connect X14:7 when connecting the individual MOVIDRIVE® slaves together. **Only jumper the connections X14:7 and X14:8 on the MOVIDRIVE® master.**

4.25 Connection and terminal description of the DIO11B option

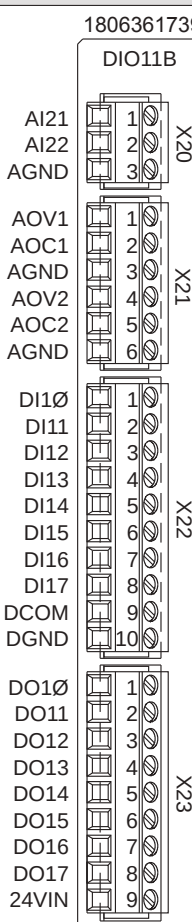
4.25.1 Part number

Option input/output card type DIO11B: 08243085

INFORMATION



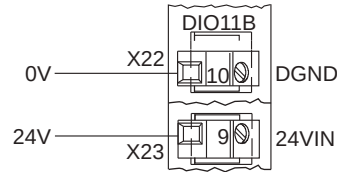
- The "input/output card type DIO11B" option is only possible in conjunction with MOVIDRIVE® MDX61B, not with MDX60B.
- The DIO11B option must be plugged into the fieldbus option slot. If the fieldbus option slot is not available, you can plug the DIO11B input/output card into the expansion slot.
- The **extended handle end** of the plug connectors (terminals X20, X21, X22, X23) may **only be used for removing** the plug connectors (not for plugging them in).

Front view of DIO11B	Terminal	Function
 1806361739 DIO11B AI21 AI22 AGND AOV1 AOC1 AGND AOV2 AOC2 AGND DI10 DI11 DI12 DI13 DI14 DI15 DI16 DI17 DCOM DGND DO10 DO11 DO12 DO13 DO14 DO15 DO16 DO17 24VIN X20 X21 X22 X23	X20:1/2 AI21/22	Setpoint input n2, DC-10 V – 0 – 10 V or DC 0 – 10 V (Differential input or input with AGND reference potential)
	X20:3 AGND	Reference potential for analog signals (REF1, REF2, A., AO..)
	X21:1 AOV1	Analog voltage output V1, factory setting: "actual speed"
	X21:4 AOV2	Analog voltage output V2, factory set to "output current"
	X21:2 AOC1	Analog current output C1, factory setting: actual speed
	X21:5 AOC2	Analog current output C2, factory setting: output current
	X21:3/6 AGND	Reference potential for analog signals (REF1, REF2, AI., AO..)
	X22:1 – 8 DI10 – 17	Digital inputs 1 – 8, factory setting: "No function"
	X22:9 DCOM	Reference potential for the digital inputs DI10 – 17
	X22:10 DGND	Reference potential for binary signals
	X23:1 – 8 DO10 – 17	Digital outputs 1 – 8, factory setting: "No function"
	X23:9 24VIN	Supply voltage DC +24 V for digital outputs DO10 - DO17, non-isolated (reference potential DGND)

4.25.2 Voltage input 24VIN

The 24VIN (X23:9) voltage input serves as DC+24 V supply voltage for the digital outputs DO10 – DO17. Reference potential is DGND (X22:10). The digital outputs do not give a level if the DC+24 V supply voltage is not connected. The supply voltage DC +24 V can also be jumpered from the X10:8 connection of the basic device if the load does not exceed DC 400 mA (current limitation in X10:8).

The following figure shows voltage input 24VIN (X23:9) and reference potential DGND (X22:10).



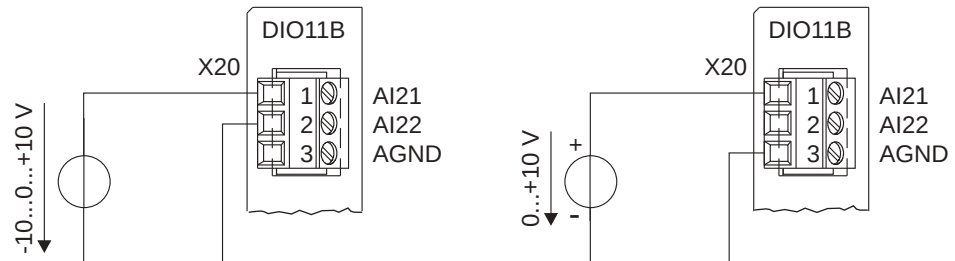
1806364811

4.25.3 Voltage input n2

The analog setpoint input n2 (AI21/22) can be used as a differential input or as an input with AGND reference potential.

The following figure shows the n2 setpoint input.

Differential input Input with AGND reference potential



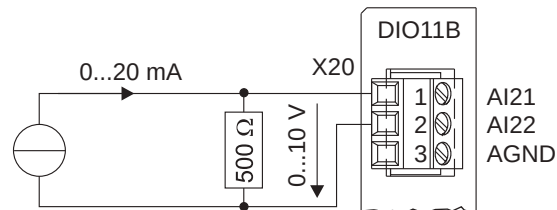
1806367883

4.25.4 Current input n2

You must use an external load if the analog setpoint input n2 (AI21/22) should be used as a current input.

For example $R_B = 500 \Omega \rightarrow DC 0 - 20 \text{ mA} = DC 0 - 10 \text{ V}$

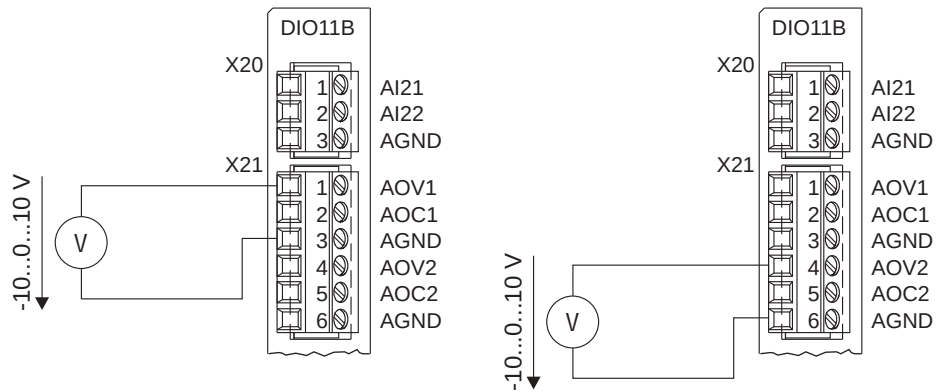
The following figure shows the current input with external load.



1806370955

4.25.5 Voltage outputs AOV1 and AOV2

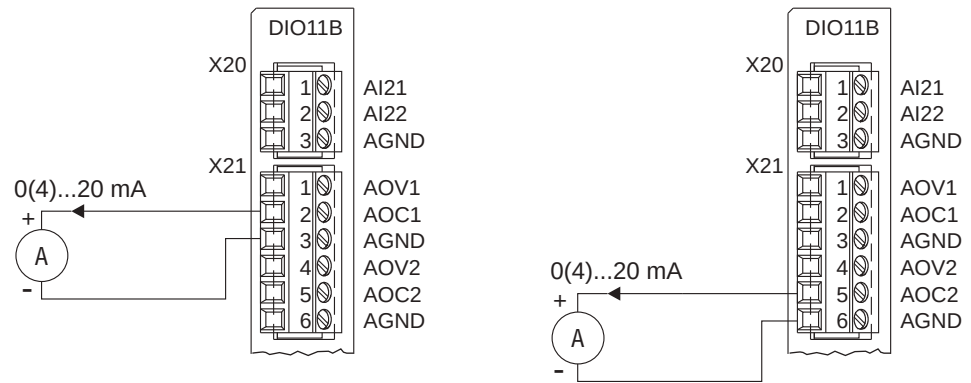
Assign the analog voltage outputs AOV1 and AOV2 in accordance with the following figure:



1806376075

4.25.6 Current outputs AOC1 and AOC2

Assign the analog current outputs AOC1 and AOC2 in accordance with the following figure:



1806377995

4.26 Connection and terminal description of the DFC11B option

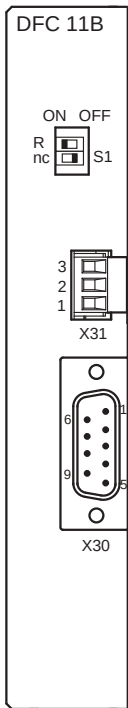
4.26.1 Part number

CAN-Bus interface option type DFC11B: 08243174

INFORMATION



- The "CAN bus interface type DFC11B" option can only be used with MOVIDRIVE® MDX61B, not with MDX60B.
- The DFC11B option must be plugged into the fieldbus option slot.
- The DFC11B option is supplied via MOVIDRIVE® MDX61B. A separate voltage supply is not required.

Front view of DFC11B	Description	DIP switch Terminal	Function
 DFC 11B ON OFF R nc S1 3 2 1 X31 6 9 X30	DIP switch block S1: Sets the terminating resistor	R nc	Terminating resistor for the CAN bus cable Reserved
	X31: CAN bus connection	X31:3 X31:2 X31:1	CAN Low (jumped with X30:2) CAN High (jumped with X30:7) DGND CAN ¹⁾
	X30: CAN bus connection (Sub D9 to CiA standard)	X30:1 X30:2 X30:3 X30:4 X30:5 X30:6 X30:7 X30:8 X30:9	Reserved CAN Low (jumped with X31:3) DGND CAN ¹⁾ Reserved Reserved DGND CAN ¹⁾ CAN High (jumped with X31:2) Reserved

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1) DGND of the CAN bus interface is independent from DGND of the basic device

4.26.2 Connection of MOVIDRIVE® – CAN

The DFC11B option is connected to the CAN bus at X30 or X31 in the same way as the SBus (→ chapter "System bus connection (SBus 1)") in the basic unit (X12). In contrast to the SBus1, SBus2 is electrically isolated and made available via option DFC11B.

5 Startup

5.1 General startup instructions



⚠ WARNING

Uncovered power connections.

Severe or fatal injuries from electric shock.

- Install the touch guard according to the regulations.
- Never start the device if the touch guard is not installed.

5.1.1 Prerequisite

The drive must be configured correctly to ensure that startup is successful. Refer to the MOVIDRIVE® MDX60/61B system manual for detailed project planning notes and an explanation of the parameters.

5.1.2 Parameters of third-party motors

The database stores parameters of SEW-EURODRIVE motors and third-party motors. We do not warrant that the parameter data of the third-party motors is correct and up to date.

5.1.3 VFC operating modes without speed control

MOVIDRIVE® MDX60/61B drive inverters are designed to be taken into operation with the SEW motor which is adapted to the correct power level. The motor can be connected and the drive started immediately in accordance with chapter "Starting the motor" (→ 160).

INFORMATION



The startup functions described in this chapter are used for setting the inverter so it can be adapted optimally to the motor that is connected and to suit the basic conditions.

5.1.4 Motor/inverter combinations

The following tables indicate which inverter/motor combinations this applies to.

400/500 V devices

MOVIDRIVE® MDX60/61B In operating mode VFC	SEW-EURODRIVE motor
0005-5A3-4	DRN80M4
0008-5A3-4	DRN80M4
0011-5A3-4	DRN90S4
0014-5A3-4	DRN90L4
0015-5A3-4	DRN90L4
0022-5A3-4	DRN100LS4
0030-5A3-4	DRN100L4
0040-5A3-4	DRN112M4
0055-5A3-4	DRN132S4
0075-5A3-4	DRN132M4
0110-5A3-4	DRN160M4
0150-503-4	DRN160L4
0220-503-4	DRN180L4
0300-503-4	DRN200L4
0370-503-4	DRN225S4
0450-503-4	DRN225M4
0550-503-4	DRN250M4
0750-503-4	DRN280S4
0900-503-4	DRN280M4
1100-503-4	DRN315S4
1320-503-4	DRN315M4
1600-503-4	DRN315L4
2000-503-4	DRN315H4
2500-503-4	DRN315H4

MOVIDRIVE® MDX60/61B In operating mode VFC	SEW-EURODRIVE motor
0015-2A3-4	DRN90L4
0022-2A3-4	DRN100LS4
0037-2A3-4	DRN112M4
0055-2A3-4	DRN132S4
0075-2A3-4	DRN132M4
0110-203-4	DRN160M4
0150-203-4	DRN160L4
0220-203-4	DRN180L4
0300-203-4	DRN200L4

5.1.5 Lifting applications



▲ WARNING

Danger of fatal injury if the hoist falls.
 Severe or fatal injuries.

5.2 Preliminary work and resources

- Check the installation.
- **Performing startup with the DBG60B keypad:**



⚠ WARNING

Risk of crushing if the motor starts up unintentionally.

Severe or fatal injuries.

- Ensure that the motor cannot start inadvertently, for example, by removing the electronics terminal block X13.
- Additional safety precautions must be taken depending on the application to avoid injury to people and damage to machinery.

- **Performing startup with the DBG60B keypad:**

Plug the connector of the DBG60B keypad into the XT slot.

- **For startup using a PC and MOVITOOLS® MotionStudio:**

Plug an interface adapter (e.g. USB11A) into the XT slot and connect it to the PC with an interface cable (RS232). Install and start MOVITOOLS® MotionStudio on your PC.

- Switch on the supply voltage and, if necessary, the DC 24 V supply.
- Check that the default parameter settings are correct (e.g. factory setting).
- Check the set terminal assignment (→ P60_ / P61_).

INFORMATION



A group of **parameter values** is **changed automatically** at startup.

5.3 Startup with DBG60B keypad

5.3.1 General information

Startup with the DBG60B keypad is only possible in operating modes VFC and V/f. Startup in CFC and SERVO operating modes is only possible using the MOVITOOLS® MotionStudio engineering software.

Required data

The following data is required to ensure startup is successful:

- Motor type (SEW-EURODRIVE or third-party motor)
- Motor data
 - Nominal voltage and nominal frequency.
 - Additionally for third-party motors: Nominal current, nominal power, power factor $\cos \varphi$ and nominal speed.
- Nominal line voltage

The following data is also needed for startup with a speed controller:

- Encoder type and encoder resolution:
- Motor data
 - SEW-EURODRIVE motor: Brake yes or no and flywheel fan (Z fan) yes or no.
 - Third-party motor: Mass moment of inertia of motor, brake and fan
- Stiffness of the closed-loop control system (factory setting = 1; suitable for most applications)

If the drive tends to oscillate → setting < 1

Transient recovery time is too long → Setting > 1

Recommended setting range: 0.80 – 1 – 1.10 (factory setting = 1)

- Converted mass moment of inertia of the load (gear unit + driven machine) on the motor shaft.
- Time required for the shortest ramp

INFORMATION



- Activate encoder monitoring (P504 = "ON") after completing the startup. The function and voltage supply of the encoder will then be monitored.
- If a Hiperface® encoder is connected, it is always monitored regardless of the setting of parameter P504. Encoder monitoring is not a safety function!

5.3.2 Choose the required language

The following text appears on the display when the keypad is switched on for the first time or after activating the start mode:

SEW

EURODRIVE

The symbol for language selection then appears on the display.

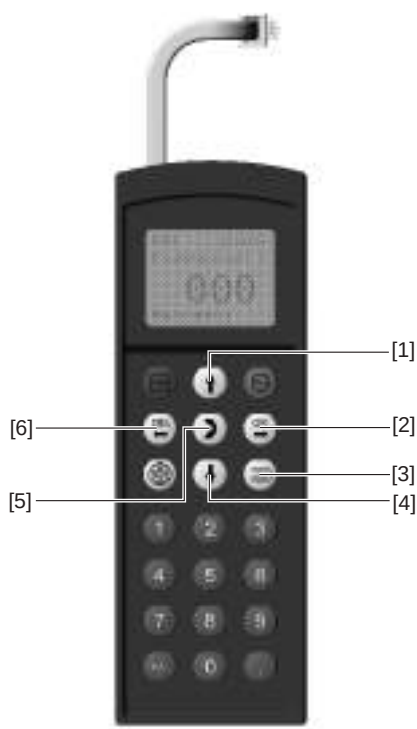


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Proceed as follows to select the language:

- Press the  key. A list of available languages is displayed on the screen.
- Choose the desired language using the  /  keys.
- Confirm your language selection by pressing the  key. The basic display is now shown in your chosen language.

The figure below shows the keys required for startup.



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- | | | | |
|-----|-----|---|---|
| [1] | Key |  | Move up to the next menu item |
| [2] | Key |  | Confirm entry |
| [3] | Key |  | Activate the context menu |
| [4] | Key |  | Move down to the next menu item |
| [5] | Key |  | Change the menu, display mode ↔ edit mode |
| [6] | Key |  | Cancel or abort startup |

INFORMATION



This example refers to a 400 V device.

1. "0" signal at terminal X13:1 (DIØØ "/CONTROL.IN-HIBIT"), e.g. by disconnecting the electronics terminal block X13.

0.00rpm
0.000Amp
CONTROLLER IN-HIBIT

2. Press the  key to activate the context menu.

BASIC VIEW
PARAMETER
MODE
VARIABLE MODE

3. Scroll down using the  key until you have selected the menu item "STARTUP".

MANUAL MODE
STARTUP
COPY TO DBG
COPY TO MDX

4. To commence the startup, press the  key. The first parameter appears. The flashing cursor under the parameter number indicates that the keypad is in display mode.

STARTUP
PREPARE FOR
STARTUP

- Use the  key to switch to edit mode. The flashing cursor disappears.
- Use the  or  key to select "PARAMETER SET 1" or "PARAMETER SET 2".
- Press the  key to confirm your selection.
- Press the  key to return to display mode. The flashing cursor appears again.
- Press the  key to choose the next parameter.

C00*STARTUP
PARAMETER SET
1
PARAMETER SET
2

5. Select either stand-alone motor or group drive. Press the  key to choose the next parameter.

C22*MOTORS
SINGLE MOTOR
IDENT. MOTORS

6. Select the operating mode you require. Press the  key to choose the next parameter.

C26*OPER. MODE
1
STANDARD V/F
VFC

7. Select whether an encoder is to be evaluated. Press the  key to choose the next parameter.

C29*encoder
NO
YES

8. Select the operating mode you require. Press the  key to choose the next parameter.

C36*OPER.MODE
SPEED CONTROL
HOIST

9. Select the motor type. If the motor is not listed, select the list "THIRD-PARTY MOTOR".

Press the  key to choose the next parameter.

C02*MOTOR TYPE
1
DRN80M42
DRN90S4
DRN90L4

C02*MOTOR TYPE
1
THIRD-PARTY MOTOR
DT63K4/DR63S4

10. Enter the rated motor voltage for the selected connection type according to the value specified on the nameplate.

Example: Nameplate 230△ / 400∩ 50 Hz

∩Connection → Enter "400 V".

△Connection → Enter "230 V".

The full torque up to 87 Hz is available in△ connection, as voltage reserves are present (400 V device). After startup, first set parameter *P302 Maximum speed 1* to the value 87 Hz, then start the drive.

Example: Nameplate 400△/690∩ 50 Hz

△Connection → Enter "400 V".

∩Connection not useful. The motor would be subject to field weakening as of 28 Hz.

Press the  key to choose the next parameter.

C03* V
MOT. RATED VOLT
1
400.000

11. Enter the nominal frequency specified on the motor nameplate.

Example: 230△/400∩ 50 Hz

Enter "50 Hz" in ∩ and △ connection.

Press the  key to choose the next parameter.

C04* Hz
NOM. MOT. FREQ.
1
50.000

FOR MOTORS FROM SEW-EURODRIVE

12. The motor values are stored for 2- and 4-pole motors from SEW-EURODRIVE and need not be entered.

FOR THIRD-PARTY MOTORS

12. Enter the following motor nameplate data:

- C10* nominal motor current, note the connection type (Δ or $\triangle$).
- C11* nominal motor power
- C12* power factor $\cos \varphi$
- C13* nominal motor speed

13. Enter the nominal power supply voltage (C05* for motor from SEW-EURODRIVE, C14* for third-party motor).

C05* V
RATED MAINS
VLTG
400.000

14. If no TF/TH is connected to X10:1/2 or X15 → Set "NO RESPONSE". If a TF/TH is connected, set the required error response. To select the sensor, set *P530 Sensor type 1* after startup.

835* RESP. TF-SIG.
NO RESPONSE
DISPLAY ERROR

15. Start the calculation for the startup data by choosing "YES". The process lasts a few seconds.

C06*CALCULATION
NO
YES

FOR MOTORS FROM SEW-EURODRIVE

16. The calculation is performed. After calculation, the next menu item appears automatically.

C06*SAVE
NO
YES

FOR THIRD-PARTY MOTORS

16. For third-party calibration process is required to perform the calculation:

- When prompted, apply a "1" signal to terminal X13:1 (DIØØ "/CONTROL.INHIBIT").
- Apply a "0" signal to terminal X13:1 again after the calibration is complete.
- After calculation, the next menu item appears automatically.

17. Set "SAVE" to "YES". The data (motor parameters) are copied to the non-volatile memory of MOVIDRIVE®.

STARTUP
DATA IS
BEING COPIED...

18. The startup procedure is now complete. Use the  key to return to the context menu.

MANUAL MODE
STARTUP
COPY TO DBG
COPY TO MDX

19. Press the  key to scroll down until the menu item "EXIT" is selected.

SIGNATURE

QUIT

BASIC VIEW

20. Confirm your selection using the  key. The basic display appears.

0.00rpm

0.000Amp

CONTROLLER IN-
HIBIT

5.3.5 Starting up the speed controller

Startup is performed without the speed controller first (→ Section "Startup procedure, steps 1 through 17").

1. The selected operating mode is displayed. If the setting is correct, go to the next menu item.

C00*STARTUP
PARAMETER SET
2
VFC n-control

2. Select the correct encoder type.

C15*ENCODER
TYPE
INCREM. ENCOD.
TTL
SINE ENCODER
RESERVED

3. Set the correct encoder resolution.

C16*ENC. RES-
OLUT.
512 inc
1024 inc
2048 inc

FOR MOTORS FROM SEW-EURODRIVE

4. Enter whether the motor has a brake.

C17*BRAKE
WITHOUT
WITH

5. Set the stiffness of the closed-loop control system.
If the drive tends to oscillate → setting < 1
Transient recovery time is too long → Setting > 1
Recommended setting range: 0.90 – 1 – 1.10

C18*
STIFFNESS
1.000

6. Enter whether the motor has a flywheel fan (Z fan).

C19*Z FAN
WITHOUT
WITH

For THIRD-PARTY MOTORS

4. Enter the moment of inertia of the motor.

D00*
J0 OF THE MOTOR
4.600

5. Set the stiffness of the closed-loop control system.
If the drive tends to oscillate → setting < 1
Transient recovery time is too long → Setting > 1
Recommended setting range: 0.90 – 1 – 1.10

C18*
STIFFNESS
1.000

- | | |
|---|---|
| 6. Enter the moment of inertia of the brake and fan. | D00*
J BRAKE+FAN
1.000 |
| 7. Enter the mass moment of inertia of the load (gear unit + driven machine) extrapolated for the motor shaft. | C20* 10e-4kgm ²
LOAD MOMENT OF INERTIA
0.200 |
| 8. Enter the time for the shortest ramp you want. | C21* s
SHORTEST RAMP
0.100 |
| 9. Start the calculation for the startup data by choosing "YES". The process lasts a few seconds. | C06*CALCULATION

NO
YES |
| 10. The calculation is performed. After calculation, the next menu item appears automatically. | C06*SAVE

NO
YES |
| 11. Set "SAVE" to "YES". The data (motor parameters) are copied to the non-volatile memory of MOVIDRIVE®. | STARTUP
DATA IS
BEING COPIED... |
| 12. The startup procedure is now complete. Use the  key to return to the context menu. | MANUAL MODE
STARTUP
COPY TO DBG
COPY TO MDX |
| 13. Press the  key to scroll down until the menu item "EXIT" is selected. | SIGNATURE
QUIT
BASIC VIEW |
| 14. Confirm your selection using the  key. The basic display appears. | 0.00rpm
0.000Amp
CONTROLLER INHIBIT |
- Once startup is complete, copy the parameter set from MOVIDRIVE® to the DBG60B keypad. You have the following options:
 - In the context menu, select the menu item "COPY TO DBG". Confirm your selection using the  key. The parameter set is copied from MOVIDRIVE® to the DBG60B.

- In the context menu, select the menu item "PARAMETER MODE". Select parameter P807 "MDX → DBG". The parameter set is copied from MOVIDRIVE® to the DBG60B.
- The parameter set can now be copied to other MOVIDRIVE® devices using the DBG60B. Plug the DBG60B keypad into the other inverter. You have the following options to copy the parameter set from DBG60B to another inverter:
 - In the context menu of the new inverter, choose the "COPY TO MDX" menu item and confirm your entry using the  key. The parameter set is copied from DBG60B to MOVIDRIVE®.
 - In the context menu, select the menu item "PARAMETER MODE". Select parameter P806 "DBG → MDX". The parameter set is copied from DBG60B to MOVIDRIVE®.

WARNING

Parameter settings incorrect due to unsuitable data sets.

Severe or fatal injuries.

- In the case of third-party motors, set the correct brake application time (P732 / P735).
- Observe the notes for starting the motor in the section "Starting the Motor" (→ page 102).
- Activate encoder monitoring for TTL and sin/cos encoders (P504 = "ON"). **Encoder monitoring is not a safety function.**



5.3.6 Setting parameters

Proceed in this order to set the parameters:

- Use the  key to call up the context menu. In the context menu, select the "PARAMETER MODE" menu item. Press the  key to confirm your selection. The flashing cursor under the parameter number indicates that the keypad is in parameter mode.
- Use the  key to switch to edit mode. The flashing cursor disappears.
- Pressing the  or  key, you can select or set the correct parameter value.
- Press the  key to confirm the selection or setting.
- Press the  key to switch back to parameter mode again. The flashing cursor appears again.
- Press the  key to choose the next parameter.

5.4 Operation of MOVITOOLS® MotionStudio

5.4.1 About MOVITOOLS® MotionStudio

Jobs

The software package enables you to perform the following tasks with consistency:

- Establishing communication with devices
- Executing functions of the devices

Establishing communication with devices

The SEW Communication Server is integrated into the MOVITOOLS® MotionStudio software package for establishing communication with the units.

The SEW Communication Server allows you to create **communication channels**. Once the channels are established, the devices communicate via these communication channels using their communication options. You can operate up to four communication channels at the same time.

MOVITOOLS® MotionStudio supports the following types of communication channels:

- Serial (RS485) via interface adapters
- System bus (SBus) via interface adapters
- Ethernet
- EtherCAT®
- Fieldbus (PROFIBUS DP/DP-V1)
- Tool Calling Interface

The available channels can vary depending on the device and its communication options.

Executing functions of the devices

The software package enables you to perform the following functions with consistency:

- Parameterization (e. g. in the parameter tree of the device)
- Startup
- Visualization and diagnostics
- Programming

The following basic components are integrated into the MOVITOOLS® MotionStudio software package, allowing you to use the devices to execute functions:

- MotionStudio
- MOVITOOLS®

All functions communicate using **tools**. MOVITOOLS® MotionStudio provides the right tools for every device type.

Technical support

SEW-EURODRIVE offers a 24-hour service hotline.

Simply dial **(+49) 0 18 05** and then enter the letters **SEWHELP** via the telephone keypad. Of course, you can also dial **(+49) 0 18 05 - 7 39 43 57**.

After installation, the following types of help are available to you:

- The documentation is displayed in a help window after you start the software.
If the help window does not appear at the start, deactivate the "Display" check box, in the menu under [Settings] / [Options] / [Help].
If the help window appears again, activate the "Display" check box, in the menu under [Settings] / [Options] / [Help].
- Context-sensitive help is available for the fields which require you to enter values. For example, you can use the <F1> key to display the ranges of values for the device parameters.

5.4.2 First steps

Starting the software and creating the project

To start MOVITOOLS® MotionStudio and create a project, proceed as follows:

1. Start the MOVITOOLS® MotionStudio from the Windows start menu via:
 [Start] / [Programs] / [SEW] / [MOVITOOLS MotionStudio] / [MOVITOOLS MotionStudio]
2. Create a project with a name and directory.

Establishing communication and scanning the network

To establish communication with MOVITOOLS® MotionStudio and to scan the network, proceed as follows:

1. Set up a communication channel to communicate with your units.
 For detailed information on how to configure a communication channel, see the section regarding the relevant communication type.
2. Scan your network (unit scan). Press the [Start network scan] button [1] in the toolbar.
3. Select the unit you want to configure.
4. Right-click to open the context menu.
 This will display unit-specific tools used for executing functions with the units.
5. Select the unit you want to configure.
6. Right-click to open the context menu.
 This will display unit-specific tools used for executing functions with the units.

Starting up the devices (online)

Do the following to start up the devices (online):

1. Switch to the network view.
2. In the toolbar, click on "Switch to online mode" [1].



- [1] "Switch to online mode" icon
3. Select the unit you want to startup.
 4. Open the context menu and select the [Startup] / [Startup] command.
 The Startup wizard opens.
 5. Follow the instructions of the startup wizard and then load the startup data into your unit.

Startup for HTL motor encoders

Adhere to the following startup instructions with DEH11/21B for starting an HTL motor encoder (except DEU21B) on MOVIDRIVE® MDX61B.

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- [1] "SEW encoder type" drop-down list
- [2] "Encoder type" drop-down list
- [3] "PPR count" drop-down list

- Select "Third-party encoder" from the "SEW encoder type" list [1].
- Select "INCREM. ENC. TTL" from the "Encoder type" list [2].
- In the dropdown menu "PPR count" [3] select the PPR count (1024 for SEW HTL encoders) printed on the HTL motor encoder.

5.5 Starting the motor

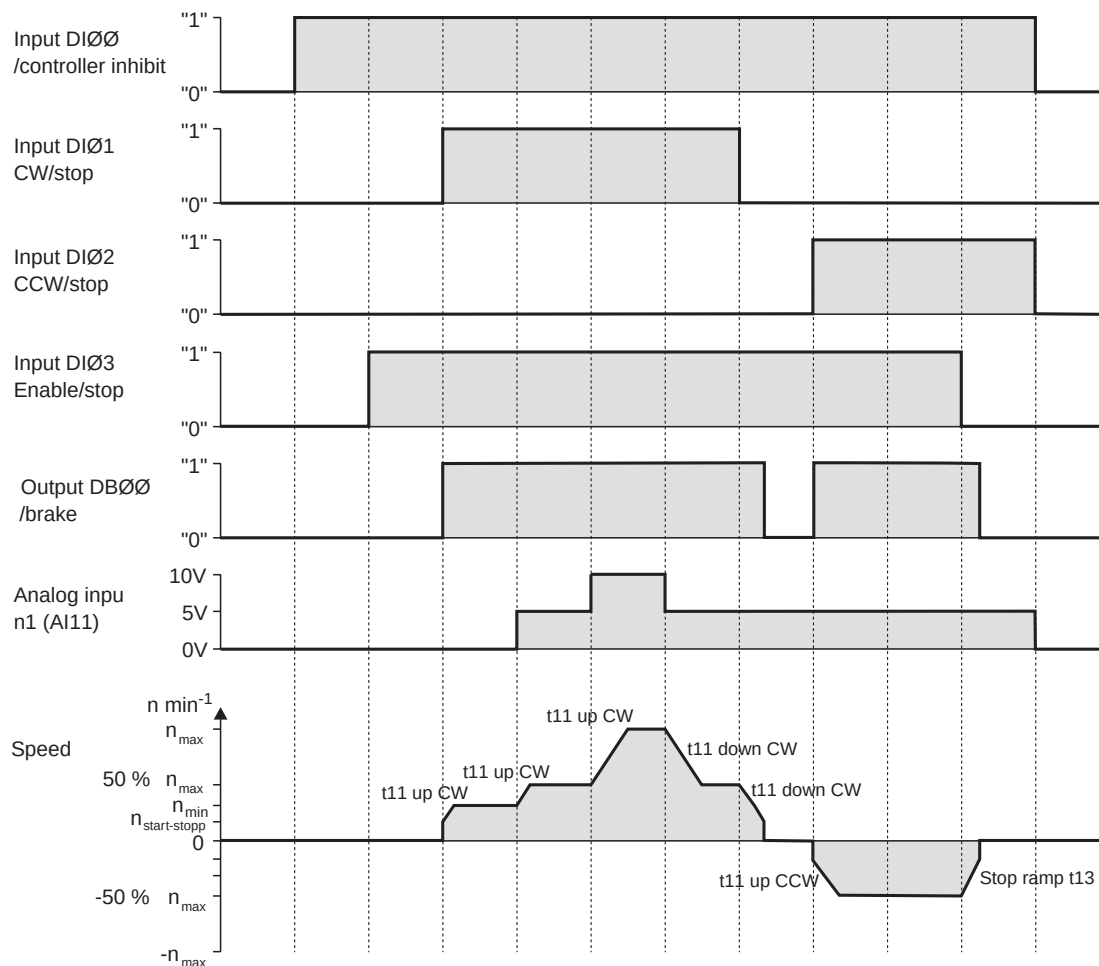
5.5.1 Analog setpoint input

The following table shows the signals that must be present on terminals X11:2 (AI1) and X13:1 – X13:6 (DIØØ – DIØ5) when the "UNIPOL/FIX.SETPT" setpoint is selected (P100) to operate the drive with an analog setpoint input.

Function	X11:2 (AI1) Analog in- put n1	X13:1 (DIØØ) /Control- ler inhibit	X13:2 (DIØ1) CW/Stop	X13:3 (DIØ2) CCW/ stop	X13:4 (DIØ3) Enable/ stop	X13:5 (DIØ4) n11/n21	X13:6 (DIØ5) n12/n22
Controller inhibit	X	"0"	X	X	X	"0"	"0"
Stop	X	"1"	X	X	"0"	"0"	"0"
Enable and stop	X	"1"	"0"	"0"	"1"	"0"	"0"
Clockwise at 50% n_{max}	5 V	"1"	"1"	"0"	"1"	"0"	"0"
Clockwise at n_{max}	10 V	"1"	"1"	"0"	"1"	"0"	"0"
Counterclockwise at 50% n_{max}	5 V	"1"	"0"	"1"	"1"	"0"	"0"
Counterclockwise at n_{max}	10 V	"1"	"0"	"1"	"1"	"0"	"0"

5.5.2 Travel diagram

The following travel diagram shows by way of example how the motor is started with the wiring of terminals X13:1 – X13:4 and analog setpoints. Digital output X10:3 (DBØØ "/Brake") is used for switching braking contactor K12.



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INFORMATION



The motor is not energized in the event of a controller inhibit (DIØØ = "0"). A motor without brake will coast to standstill.

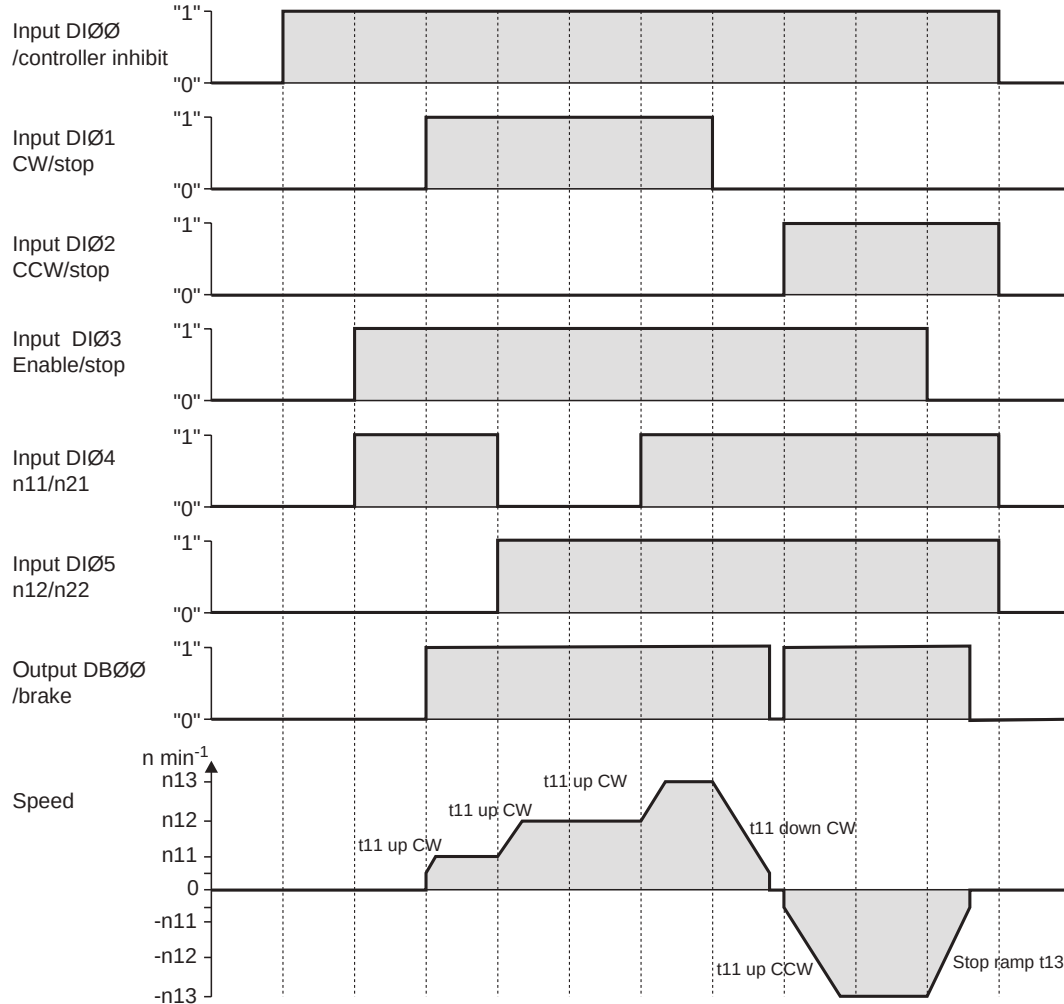
5.5.3 Fixed setpoints

The following table shows the signals that must be present on terminals X13:1 – X13:6 (DIØØ – DIØ5) when the "UNIPOL/FIX.SETPT" setpoint is selected (P100) to operate the drive with the fixed setpoints.

Function	X13:1 (DIØØ) /Controller inhibit	X13:2 (DIØ1) CW/Stop	X13:3 (DIØ2) CCW/stop	X13:4 (DIØ3) Enable/stop	X13:5 (DIØ4) n11/n21	X13:6 (DIØ5) n12/n22
Controller in- hibit	"0"	X	X	X	X	X
Stop	"1"	X	X	"0"	X	X
Enable and stop	"1"	"0"	"0"	"1"	X	X
Clockwise at n11	"1"	"1"	"0"	"1"	"1"	"0"
Clockwise at n12	"1"	"1"	"0"	"1"	"0"	"1"
Clockwise at n13	"1"	"1"	"0"	"1"	"1"	"1"
Counterclock- wise at n11	"1"	"0"	"1"	"1"	"1"	"0"

5.5.4 Travel diagram

The following travel diagram shows an example of how the drive is started with the wiring of terminals X13:1 – X13:6 and internal fixed setpoints. Digital output X10:3 (DBØØ "/Brake") is used for switching braking contactor K12.



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INFORMATION



The motor is not energized in the event of a controller inhibit (DIØØ = "0"). A motor without brake will coast to standstill.

5.5.5 Manual operation

The inverter can be controlled using the DBG60B keypad/MOVITOOLS® MotionStudio in manual operation (context menu → manual operation). The 7-segment display on the unit shows "H" during manual operation.

The digital inputs are then without any functions for the duration of manual operation, with the exception of X13:1 (DIØØ "/Controller inhibit"). Digital input X13:1 (DIØØ "/Controller inhibit") must get a "1" signal to enable the drive to be started in manual operation. The drive can also be stopped in manual operation by X13:1 = "0".

The direction of rotation is not determined by the "CW/stop" or "CCW/stop" digital inputs. Instead, you select the direction of rotation using the DBG60B keypad/MotionStudio. Enter the required speed and then the direction of rotation (+ = CW / – = CCW) using the sign key (+/–).

Manual operation remains active when the power supply is switched off and on; however, the inverter is then inhibited. Use the "Run" key to enable and start the inverter at n_{min} in the selected direction of rotation. The speed is increased and decreased using the ↑ and ↓ keys.

INFORMATION



The signals at the digital inputs take effect as soon as manual operation is finished. Digital input X13:1 (DIØØ) /Controller inhibit does not have to be switched from "1" to "0" and back to "1". The drive can start according to the signals at the digital inputs and the setpoint sources.

▲ WARNING



Risk of crushing if the motor starts up unintentionally.

Severe or fatal injuries.

- Ensure that the motor cannot start unintentionally, for example, by removing the signal terminal block X13.
- Additional safety precautions must be taken depending on the application to avoid injury to people and damage to machinery.

5.5.6 Startup in operating mode "VFC & flying start function"

The parameter *P320 Automatic adjustment* is deactivated in the mode "VFC & Flying start function". It is important that the stator resistance (*P322 IxR compensation 1*) is set correctly to ensure that the flying start function is performed properly.

INFORMATION



Due to exact motor data, the proper function of the flying start function has only been tested with SEW motors. SEW-EURODRIVE does not guarantee a proper function of the flying start function for third-party motors.

Note the following when performing **startup for a motor by SEW-EURODRIVE** with DBG60B or MOVITOOLS® MotionStudio:

The value of the stator resistance (*P322 IxR compensation 1*) is set for a motor by SEW-EURODRIVE at operating temperature (winding temperature 80 °C). For flying start with a cold motor, you have to reduce the stator resistance (*P322 IxR compensation 1*) by 0.34% per Kelvin.

Note the following when performing **startup for a third-party motor** with DBG60B or MOVITOOLS® MotionStudio:

Measure the stator resistance (*P322 IxR compensation 1*) at startup. Proceed as follows:

1. Start up the motor in "VFC" operation mode.
2. Enable the **motor at standstill**.
3. **Note** the value of *P322 IxR compensation 1* (stator resistance) for step 6.
4. Select the operating mode "VFC & Flying start function".
5. Set *P320 "Automatic adjustment 1"* to "Off".
6. In *P322 IxR compensation 1* (stator resistance) enter the **value you noted** in step 3.

5.6 Complete parameter list

5.6.1 General information

- The parameters contained in the standard user menu are marked by a "\ " (= display on the DBG60B keypad).
- The factory setting for the parameter is highlighted in bold.

5.6.2 Display values

Par.	Name	Factory setting
00.	Process values	
000	Rotational speed	-6100 – 0 – 6100 min ⁻¹
\001	User display	"Text"
002	Frequency	0 – 599 Hz
003	Actual position	0 – 2 ³¹ -1 inc.
004	Output current	0 – 250% I _N
005	Active current	-250 – 0 – 250% I _N
\006	Motor utilization 1	0 – 200%
007	Motor utilization 2	0 – 200%
008	DC link voltage	0 – 1000 V
009	Output current	A
01.	Status displays	
010	Inverter status	
011	Operating state	
012	Fault status	
013	Current parameter set	1/2
014	Heat sink temperature	-40 – 0 – 125 °C
015	Power-applied hours	h
016	Drive running hours	h
017	Work	kWh
018	KTY capacity utilization 1	0 – 200%
019	KTY capacity utilization 2	0 – 200%
02.	Analog setpoints	
020	Analog input AI1	-10 – 0 – 10 V
021	Analog input AI2	-10 – 0 – 10 V
022	External current limiting	0 – 100%
03.	Digital inputs of basic device	
030	Digital input DIØØ	/CONTROLLER INHIBIT

Par.	Name	Factory setting
031	Digital input DIØ1	Not in DBG60B
032	Digital input DIØ2	
033	Digital input DIØ3	
034	Digital input DIØ4	
035	Digital input DIØ5	
036	Digital input DIØ6	
037	Digital input DIØ7	
\039	Status of digital inputs DIØØ – DIØ7	
04.	Digital input options	
040	Digital input DI1Ø	Not in DBG60B
041	Digital input DI11	
042	Digital input DI12	
043	Digital input DI13	
044	Digital input DI14	
045	Digital input DI15	
046	Digital input DI16	
047	Digital input DI17	
\048	Status of digital inputs DI1Ø - DI17	
05.	Digital outputs basic device	
050	Digital output DBØØ	Not in DBG60B
051	Digital output DOØ1	
052	Digital output DOØ2	
053	Digital output DOØ3	
054	Digital output DOØ4	
055	Digital output DOØ5	
\059	Status of digital outputs DBØØ, DOØ1 – DOØ5	
06.	Digital output options	
060	Digital output DO1Ø	Not in DBG60B
061	Digital output DO11	
062	Digital output DO12	
063	Digital output DO13	
064	Digital output DO14	
065	Digital output DO15	
066	Digital output DO16	
067	Digital output DO17	
\068	Status of digital outputs DO1Ø - DO17	
07.	Device data	

Par.	Name	Factory setting
070	Device type	
071	Nominal output current	
072	Option 1 encoder slot	
073	Option 2 fieldbus slot	
074	Option 3 expansion slot	
076	Basic device firmware	
077	DBG firmware	Only in DBG60B
078	Technology function	
079	Device design	Standard technology
08.	Fault memory	
\080	Errors t-0	
081	Errors t-1	
082	Errors t-2	
083	Errors t-3	
084	Errors t-4	
09.	Bus diagnostics	
090	PD configuration	
091	Fieldbus type	
092	Fieldbus baud rate	
093	Fieldbus address	
094	PO1 Setpoint	
095	PO2 Setpoint	
096	PO3 Setpoint	
097	PI1 Actual value	
098	PI2 Actual value	
099	PI3 Actual value	

5.6.3 Parameters

Par.	Name	Setting range Factory setting
	Selectable par. Parameter set 1/2	
1..	Setpoints/ramp generators	
10.	Setpoint selection	
\100	Setpoint source	Bipolar/fixed setpoint Unipolar/fixed setpoint RS485/fixed setpoint Fieldbus Motor potentiometer/fixed setpoint Motor potentiometer + analog setpoint Fixed setpoint + AI01 Fixed setpoint * AI01 Master SBus 1 Master RS485 Frequency setpoint input/fixed setpoint
101	Control signal source	Terminals
102	Frequency scaling	0.1 – 10 – 65 kHz
105	Error response to wire break AI1	No response Immediate stop/Fault Rapid stop/Fault Rapid stop/warning
11.	Analog input AI1	
110	AI1 scaling	-10 – 0 – 1 – 10
111	AI1 Offset	-500 – 0 – 500 mV
112	AI1 operating mode	10V, reference potential maximum speed 10V, reference 3000 min ⁻¹ Voltage offset, reference maximum speed Speed offset, reference maximum speed Expert characteristic 0-20 mA, reference maximum speed 4-20 mA, reference maximum speed
113	AI1 voltage offset	-10 – 0 – 10 V
114	AI1 speed offset	-6000 – 0 – 6000 min ⁻¹
115	Filter setpoint	0 – 5 – 100 ms 0 = Setpoint filter off
12.	Analog inputs (optional)	
120	AI2 operating mode	No function 0 – ±10 V + setpoint 1 0 – 10 V current limiting Actual value PID controller
13.	Speed ramps 1	
\130	Ramp t11 up CW	0 – 2 – 2000 s
\131	Ramp t11 down CW	0 – 2 – 2000 s
\132	Ramp t11 up CCW	0 – 2 – 2000 s
\133	Ramp t11 down CCW	0 – 2 – 2000 s
\134	Ramp t12 UP=DOWN	0 – 10 – 2000 s
135	S pattern t12	0 – 3
\136	Stop ramp t13	0 – 2 – 20 s
\137	Emergency stop ramp t14	0 – 2 – 20 s
138	Ramp limit VFC	Yes No
139	Ramp monitoring 1	On Off
14.	Speed ramps 2	
140	Ramp t21 up CW	0 – 2 – 2000 s
141	Ramp t21 down CW	0 – 2 – 2000 s
142	Ramp t21 up CCW	0 – 2 – 2000 s
143	Ramp t21 down CCW	0 – 2 – 2000 s
144	Ramp t22 up=down	0 – 10 – 2000 s
145	S pattern t22	0 – 3

Par.	Name	Setting range Factory setting
Selectable par. Parameter set 1/2		
146	Stop ramp t23	0 – 2 – 20 s
147	Emergency stop ramp t24	0 – 2 – 20 s
149	Ramp monitoring 2	On Off
15.	Motor potentiometer (parameter sets 1 and 2)	
150	Ramp t3 up	0.2 – 20 – 50 s
151	Ramp t3 down	0.2 – 20 – 50 s
152	Save last Save	Yes No
16.	Fixed setpoints 1	
\160	Internal setpoint n11	-6000 – 150 – 6000 min ⁻¹ (% I _N)
\161	Internal setpoint n12	-6000 – 750 – 6000 min ⁻¹ (% I _N)
\162	Internal setpoint n13	-6000 – 1500 – 6000 min ⁻¹ (% I _N)
17.	Fixed setpoints 2	
170	Internal setpoint n21	-6000 – 150 – 6000 min ⁻¹ (% I _N)
171	Internal setpoint n22	-6000 – 750 – 6000 min ⁻¹ (% I _N)
172	Internal setpoint n23	-6000 – 1500 – 6000 min ⁻¹ (% I _N)
2..	Controller parameters	
20.	Speed control (only parameter set 1)	
200	P gain n-controller	0.01 – 2 – 32
201	Time constant n-controller	0 – 10 – 3000 ms
202	Gain Acceleration precontrol	0 – 65
203	Filter acceleration precontrol	0 – 100 ms
204	Filter actual speed value	0 – 32 ms
205	Load precontrol CFC	-150% – 0 – 150%
206	Sampling cycle n-controller	1 ms 0.5 ms
207	Load precontrol VFC	-150% – Off – 150%
21.	Hold controller	
210	P gain hold controller	0.1 – 0.5 – 32
22.	Synchronous operation control	
220	P-gain DRS	1 – 10 – 200
221	Master gear ratio factor	1 – 3 999 999 999
222	Slave gear ratio factor	1 – 3 999 999 999
223	Mode selection	Mode 1 Mode 2 Mode 3 Mode 4 Mode 5 Mode 6 Mode 7 Mode 8
224	Slave counter	-99 999 999 – 10 – 99 999 999 inc.
225	Offset 1	-32767 – 10 – 32767 inc.
226	Offset 2	-32767 – 10 – 32767 inc.
227	Offset 3	-32767 – 10 – 32767 inc.
228	Precontrol filter DRS	0 – 100 ms
23.	Synchronous operation with distance encoder	
230	Distance encoder	Off Equal-ranked Chain
231	Slave-encoder factor	1 – 1000
232	Slave-distance-encoder factor	1 – 1000
233	Distance encoder resolution	128/256/512/1024/2048

Par.	Name Selectable par. Parameter set 1/2	Setting range Factory setting
234	Master encoder PPR count	128/256/512/ 1024 /2048
24.	Synchronous operation with catch up	
240	Synchronous speed	0 – 1500 – 6000 min ⁻¹
241	Synchronous ramp	0 – 2 – 50 s
26.	Process controller parameter	
260	Operating mode	Controller off /control/step response
261	Cycle time	1/5/10 ms
262	The current is	No response /Move closer to setpoint
263	Factor K _p	0 – 1 – 32,767
264	Integral time T _n	0 – 65535 ms
265	Derivative time T _v	0 – 30 ms
266	Precontrol	-32767 – 0 – 32767
27.	Process controller input values	
270	Setpoint source	Parameters /IPOS variable/Analog 1/Analog 2
271	Setpoint	-32767 – 0 – 32767
272	IPOS setpoint address	0 – 1023
273	Time constant	0 – 0.01 – 2000 s
274	Scaling setpoint	-32,767 – 1 – 32,767
275	Actual value source	Analog 1 /analog 2/IPOS variable
276	IPOS actual value address	0 – 1023
277	Actual value scaling	-32,767 – 1 – 32,767
278	Actual offset value	-32767 – 0 – 32767
279	Actual time constant	0 – 500 ms
28.	Process controller limits	
280	Minimum offset + actual value	-32767 – 0 – 32767
281	Maximum offset + actual value	-32767 – 10000 – 32767
282	Minimum output PID controller	-32767 – -1000 – 32767
283	PID controller maximum output	-32767 – 10000 – 32767
284	Process controller minimum output	-32767 – 0 – 32767
285	Process controller maximum output	-32767 – 7500 – 32767
3.	Motor parameters	
30./31.	Limits 1 / 2	
\300/310	Start/stop speed 1 / 2	0 – 150 min ⁻¹
\301/311	Minimum speed 1 / 2	0 – 15 – 6100 min ⁻¹
\302/312	Maximum speed 1 / 2	0 – 1500 – 6100 min ⁻¹
\303/313	Current limit 1 / 2	0 – 150% (size 0: 0 – 200% I _N)
304	Torque limit	0 – 150% (size 0: 0 – 200%)
32./33.	Motor compensation 1/2 (asynchronous)	
\320/330	Automatic adjustment 1/2	On Off
321/331	Boost 1/2	0 – 100%
322/332	IxR adjustment 1	0 – 100%
323/333	Premagnetization time 1/2	0 – 20 s
324/334	Slip compensation 1 / 2	0 – 500 min ⁻¹
34.	Motor protection	
340/342	Motor protection 1/2	Off ON asynchronous motor ON synchronous motor
341/343	Cooling type 1/2	Fan cooled Forced air cooling
344	Interval for motor protection	0.1 – 4 – 20 s
345/346	I _N -U _L monitoring 1/2	0.1 – 500 A
35.	Direction of motor rotation	

Par.	Name	Setting range Factory setting
	Selectable par. Parameter set 1/2	
350/351	Change direction of rotation 1/2	On Off Terminal (only in parameter set 1)
36.	Startup (only available in DBG60B)	
360	Startup	Yes/ No
4..	Reference signals	
40.	Speed reference message	
400	Speed reference value	0 – 1500 – 6000 min ⁻¹
401	Hysteresis	0 – 100 – 500 min ⁻¹
402	Delay time	0 – 1 – 9 s
403	Signal = "1" if:	$n < n_{ref}$ $n > n_{ref}$
41.	Speed window signal	
410	Window center	0 – 1500 – 6000 min ⁻¹
411	Range width	0 – 6000 min ⁻¹
412	Delay time	0 – 1 – 9 s
413	Signal = "1" if:	Internal External
42.	Speed setpoint / actual value comparison	
420	Hysteresis	0 – 100 – 300 min ⁻¹
421	Delay time	0 – 1 – 9 s
422	Signal = "1" if:	$n \neq n_{setpoint}$ $n = n_{setpoint}$
43.	Current reference signal	
430	Current reference value	0 – 100 – 200% I_N
431	Hysteresis	0 – 5 – 30% I_N
432	Delay time	0 – 1 – 9 s
433	Signal = "1" if:	$I < I_{ref}$ $I > I_{ref}$
44	I_{max} signal	
440	Hysteresis	5 – 50% I_N
441	Delay time	0 – 1 – 9 s
442	Signal = "1" if:	$I = I_{max} / I < I_{max}$
5..	Control functions	
50.	Speed monitoring	
500/502	Speed monitoring 1/2	Off Motor mode Regenerative operation Motor/generator mode
501/503	Delay time 1/2	0 – 1 – 10 s
504	Encoder monitoring motor	On Off
505	Distance encoder monitoring	On Off
51.	Synchronous operation monitoring	
510	Positional tolerance slave	10 – 25 – 32768 inc.
511	Lag error prewarning	50 – 99 999 999 inc.
512	Lag error limit	100 – 4000 – 99 999 999 inc.
513	Delay lag error signal	0 – 1 – 99 s
514	Counter LED display	10 – 100 – 32 768 inc.
515	Delay in-position signal	5 – 10 – 2000 ms
516	X41 Encoder monitoring	Off On
517	X41 Pulse count monitoring	Off On

Par.	Name	Setting range
	Selectable par. Parameter set 1/2	Factory setting
518	X42 Encoder monitoring	Off On
519	X42 Pulse count monitoring	Off On
52.	Power off monitoring	
520	Power off response time	0 – 5 s
521	Mains OFF response	Controller inhibit Emergency stop
522	Phase failure monitoring	Off On
53.	Motor thermal protection	
530	Sensor type 1	No sensor TF/TH KTY TF/TH DEU KTY DEU PK PK DEU
531	Sensor type 2	No sensor TF/TH
54.	Gear unit/motor monitoring	
540	Response to drive vibration/warning	Display error
541	Response to drive vibration/fault	Rapid stop/warning
542	Response to oil aging/warning	Display error
543	Response to oil aging/error	Display error
544	Response oil aging/over-temperature	Display error
545	Response oil aging/ready signal	Display error
549	Response to brake wear	Display error
55.	DCS safety module	
550	DCS safety module status	Display value that cannot be changed
551	Digital inputs DCS DI1 – DI8	
552	Digital outputs DCS DO0_P – DO2_M	
553	Serial number DCS	
554	CRC DCS	
555	DCS error response	No response
556	DCS alarm response	Display error Immediate stop/Fault Emergency stop/Fault Rapid stop/Fault Immediate stop/warning Emergency stop/Warning Rapid stop/warning
557	DCS source actual position	Motor encoder (X15) Ext. Encoder (X14) Absolute encoder (X62)
56.	Ex-e motor current limiting	
560	Ex-e motor current limit	On Off
561	Frequency A	0 – 5 – 60 Hz
562	Current limit A	0 – 50 – 150%
563	Frequency B	0 – 10 – 104 Hz
564	Current limit B	0 – 80 – 200%
565	Frequency C	0 – 25 – 104 Hz
566	Current limit C	0 – 100 – 200%
6..	Terminal assignment	
60.	Digital inputs of basic device	
–	Digital input DIØØ	Fixed assignment with: /CONTROLLER INHIBIT
600	Digital input DIØ1	CW/stop

Par.	Name	Setting range
	Selectable par. Parameter set 1/2	Factory setting
601	Digital input DIØ2	CCW/stop
602	Digital input DIØ3	Enable/stop
603	Digital input DIØ4	n11/n21
604	Digital input DIØ5	n12/n22
605	Digital input DIØ6	No function
606	Digital input DIØ7	No function
61.	Digital inputs option	
610	Digital input DI1Ø	No function
611	Digital input DI11	No function
612	Digital input DI12	No function
613	Digital input DI13	No function
614	Digital input DI14	No function
615	Digital input DI15	No function
616	Digital input DI16	No function
617	Digital input DI17	No function
62.	Digital outputs basic device	
–	Digital output DBØØ	Fixed assignment with: /brake
620	Digital output DOØ1	Ready
621	Digital output DOØ2	/Failure
622	Digital output DOØ3	IPOS output
623	Digital output DOØ4	IPOS output
624	Digital output DOØ5	IPOS output
63.	Digital outputs option	
630	Digital output DO1Ø	No function
631	Digital output DO11	No function
632	Digital output DO12	No function
633	Digital output DO13	No function
634	Digital output DO14	No function
635	Digital output DO15	No function
636	Digital output DO16	No function
637	Digital output DO17	No function
64.	Optional analog outputs	
640	Analog output AO1	Actual speed
641	Scaling AO1	-10 – 0 – 1 – 10
642	Operating mode AO1	No function -10V – 10 V 0 – 20 mA 4 – 20 mA
643	Analog output AO2	Output current
644	Scaling AO2	-10 – 0 – 1 – 10
645	Operating mode AO2	No function -10V – 10 V 0 – 20 mA 4 – 20 mA
7..	Control functions	
70.	Duty types	

Par.	Name	Setting range Factory setting
Selectable par. Parameter set 1/2		
700	Operating mode 1	VFC 1 VFC 1 & GROUP VFC 1 & HOIST VFC 1 & DC BRAK. VFC 1 & FLY.START VFC n-control VFC-n-CTRL&GRP. VFC-n-CTRL&HOIST VFC-n-CTRL.&SYNC. VFC-n-CTRL.&IPOS CFC CFC&M-CTRL. CFC&IPOS CFC&SYNC. SERVO SERVO&M-CONTROL SERVO&IPOS SERVO&SYNC.
701	Operating mode 2	VFC 2 VFC 2 & GROUP VFC 2 & HOIST VFC 2 & DC BRAK. VFC 2 & FLY.START
702	Motor category	Rotary Linear
703	Control dynamics	Standard Increased
704	VFC-n with output filter	Yes No
705	Lower limit of premagnetization time	Yes No
706	Flow model: Yrq = 0	Yes No
71.	Standstill current	
710/711	Standstill current 1/2	0 – 50% I _{Mot}
72.	Stop by setpoint function	
720/723	Setpoint stop function 1/2	Off On
721/724	Stop setpoint 1/2	0 – 30 – 500 min ⁻¹
722/725	Start offset 1 / 2	0 – 30 – 500 min ⁻¹
73.	Brake function	
730/733	Brake function 1/2	Off On
731/734	Brake release time 1 / 2	0 – 2 s
732/735	Brake application time 1 / 2	0 – 2 s
74.	Speed skip function	
740/742	Skip window center 1/2	0 – 1500 – 6000 min ⁻¹
741/743	Skip bandwidth 1/2	0 – 300 min ⁻¹
75.	Master/slave function	
750	Slave setpoint	Master/slave off Rotational speed RS485 Speed SBus1 Speed 485 + SBus1 Torque RS485 Torque SBus1 Torque 485 + SBus1 Load distribution RS485 Load distribution SBus1 Load distribution 485 + SBus1
751	Scaling slave setpoint	-10 – 1 – 10
76.	Manual operation	

Par.	Name	Setting range Factory setting
	Selectable par. Parameter set 1/2	
760	Locking Run/Stop keys	On Off
77.	Energy-saving function	
770	Energy-saving function	On Off
78.	Ethernet configuration	
780	IP address	000.000.000.000 – 192.168.10.4 – 223.255.255.255
781	Subnet mask	000,000,000,000 – 255,255,255,000 – 223,255,255,255
782	Default gateway	000.000.000.000 – 223.255.255.255
783	Baud rate	Display value that cannot be changed (0 – 100 – 1000 MBaud)
784	MAC address	Display value that cannot be changed (00-0F-69-XX-XX-XX)
785	EtherNet/IP™ startup configuration	DHCP Saved IP parameters
8..	Device functions	
80.	Setup	
800	User menu	On/off (only in DBG60B)
801	Language	Dependent on DBG60B design
\802	Factory setting	No Standard Delivery state
\803	Parameter lock	On Off
804	Reset statistical data	No Fault memory kWh COUNTER Operating hours
806	Copy DBG → MDX	Yes/ No
807	Copy MDX → DBG	Yes/ No
81.	Serial communication	
810	RS485 address	0 – 99
811	RS485 Group address	100 – 199
812	RS485 timeout interval	0 – 650 s
819	Fieldbus timeout interval	0 – 0.5 – 650 s
82.	Braking operation	
\820/821	4-quadrant operation 1/2	On Off
83.	Error responses	
830	Response to "external error"	Emergency stop/Fault
831	Response "Fieldbus timeout"	Rapid stop/warning
832	Response to "motor overload"	Emergency stop/Fault
833	Response to 'RS485 timeout'	Rapid stop/warning
834	Response to "lag error"	Emergency stop/Fault
\835	Response to 'TF signal'	No response
836/837	Response to 'Timeout SBus 1/2'	Emergency stop/Fault
838	Response to "SW limit switch"	Emergency stop/Fault
839	Response to 'positioning interruption'	Emergency stop/Warning
84.	Reset behavior	
\840	Manual reset	Yes No
841	Auto reset	Yes No
842	Restart time	1 – 3 – 30 s
85.	Scaling actual speed value	
850	Scaling factor numerator	1 – 65535
851	Scaling factor denominator	1 – 65535
852	User unit	1/min

Par.	Name Selectable par. Parameter set 1/2	Setting range Factory setting
86.	Modulation	
860/861	PWM frequency 1/2 VFC	2.5 kHz 4 kHz 8 kHz 12 kHz 16 kHz
862/863	PWM fix 1/2	On Off
864	PWM frequency CFC	2.5 kHz 4 kHz 8 kHz 16 kHz
87.	Process data description	
870	Setpoint description PO1	Control word 1
871	Setpoint description PO2	Setpoint speed
872	Setpoint description PO3	Ramp
873	Actual value description PI1	Status word 1
874	Actual value description PI2	Actual rotational speed
875	Actual value description PI3	Output current
876	PO data enable	Yes No
88./89.	Serial communication SBus 1/2	
880/890	Protocol SBus 1/2	SBus MOVILINK® CANopen Protocol DCS
881/891	SBus address 1/2	0 – 63
882/892	Group address SBus 1/2	0 – 63
883/893	Timeout delay SBus 1/2	0 – 650 s
884/894	Baud rate SBus 1/2	125 kBd 250 kBd 500 kBd 1000 kBd
885/895	Synchronization ID SBus 1/2	0 – 2047
886/896	Address CANopen 1/2	1 – 127
887	Synchronization ext. Controller	On Off
888	Synchronization time	1 – 5 – 10 ms
889/899	Parameter channel 2	On Off
9..	IPOS parameters	
90.	IPOS reference travel	
900	Reference offset	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
901	Reference speed 1	0 – 200 – 6000 min ⁻¹
902	Reference speed 2	0 – 50 – 6000 min ⁻¹
903	Reference travel type	0 – 8
904	Reference travel to zero pulse	Yes No
905	HIPERFACE® offset X15	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
906	Cam distance	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
91.	IPOS Travel parameters	
910	Gain X controller	0.1 – 0.5 – 32
911	Positioning ramp 1	0.01 – 1 – 20 s
912	Positioning ramp 2	0.01 – 1 – 20 s
913	Travel speed CW	0 – 1500 – 6000 min ⁻¹
914	Travel speed CCW	0 – 1500 – 6000 min ⁻¹
915	Speed precontrol	-199.99 – 0 – 100 – 199.99%

Par.	Name	Setting range Factory setting
	Selectable par. Parameter set 1/2	
916	Ramp type	Linear Square Sine Bus ramp Jerk-limited Electronic cam I-synchronous operation Cross Cutter Speed interpolation Position interpolation 12 bit Position interpolation 16 bit
917	Ramp mode	Mode 1 Mode 2 Mode 3
918	Bus setpoint source	0 – 499 – 1023
92.	IPOS monitoring	
920	SW limit switch RIGHT	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
921	SW limit switch LEFT	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
922	Position window	0 – 50 – 32767 inc.
923	Lag error window	0 – 5000 – $(2^{31} - 1)$ inc.
924	'Position monitoring' detection	On/off
93.	Special IPOS functions	
930	Override	On/off
931	IPOS CTRL.W Task 1	Stop / Start / Stop
932	IPOS CTRL.W Task 2	Start/ Stop
933	Jerk time	0.005 – 2 s
938	IPOS speed task 1	0 – 9 additional commands/ms
939	IPOS speed task 2	0 – 9 additional commands/ms
94.	IPOS encoder	
940	IPOS variables edit	On/off
941	Actual position source	Motor encoder (X15) Ext. Encoder (X14) Absolute encoder (X62)
942	Encoder factor numerator	1 – 32767
943	Encoder factor denominator	1 – 32767
944	Encoder scaling ext. Encoder (X14)	x1/x2/x4/x8/x16/x32/x64
945	Distance encoder type (X14)	TTL Sin/cos HIPERFACE® RS485
946	Distance encoder counting direction (X14)	Normal Inverted
947	HIPERFACE® offset X14	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
948	Automatic encoder replacement recognition	On/Off
95.	Absolute encoder	
950	Encoder type	No encoder
951	Counting direction	Normal Inverted
952	Clock frequency	1 – 200%
953	Position offset	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
954	Zero point offset	$-(2^{31} - 1) - 0 - (2^{31} - 1)$ inc.
955	Encoder scaling	x1/x2/x4/x8/x16/x32/x64
96.	IPOS ^{PLUS} ® Modulo function	
960	Module function	Off Short CW CCW
961	Module counter	1 – $(2^{31} - 1)$

Par.	Name	Setting range
	Selectable par. Parameter set 1/2	Factory setting
962	Module denominator	1 – (2 ³¹ – 1)
963	Modulo encoder resolution	0 – 4096 – 20000
97.	IPOS synchronization	
970	DRAM synchronization	Yes/ No
971	Synchronization phase	-2 – 0 – 2 ms

6 Operation

6.1 Operating displays

6.1.1 7-segment display

The 7-segment display shows the operating condition of MOVIDRIVE® and, in the event of an error, an error or warning code.

7-segment display	Device status (high byte in status word 1)	Meaning
0	0	24 V operation (inverter not ready)
1	1	Controller inhibit active
2	2	No enable
3	3	Standstill current
4	4	Approval
5	5	n-control (speed control)
6	6	M-control (torque control)
7	7	Position hold control
8	8	Factory setting
9	9	Limit switch hit
A	10	Technology option
c	12	IPOS ^{PLUS} ® reference travel
d	13	Flying start
E	14	Calibrate encoder
F	Error number	Fault indication (flashing)
H	Status display	Manual mode
t	16	Inverter is waiting for data
rev	17	"STO" active
• (blinking dot)	-	IPOS ^{PLUS} ® program is running
Flashing display	-	STOP via DBG60B
7	-	RAM defective

WARNING

Incorrect interpretation of display U = "STO" active.

Severe or fatal injuries.

- The display U = "STO" is not safety-related and must not be used as a safety function.



6.1.2 DC link voltage display of size 7

INFORMATION



The DC link voltage display goes out about 20 seconds after the power off.

6.1.3 DBG60B keypad

Basic displays:

0.00rpm
0.000Amp
CONTROLLER IN-
HIBIT

Display when X13:1 (DIØØ "/controller inhibit") = "0".

0.00rpm
0.000Amp
NO ENABLE

Display when X13:1 (DIØØ "/controller inhibit") = "1" and in-
verter is not enabled ("enable/stop" = "0").

950.00rpm
0.990Amp
ENABLE (VFC)

Display for enabled inverter.

INFORMATION 6:
VALUE TOO HIGH

Information message

(DEL)=Quit
ERROR 9
STARTUP

Error info

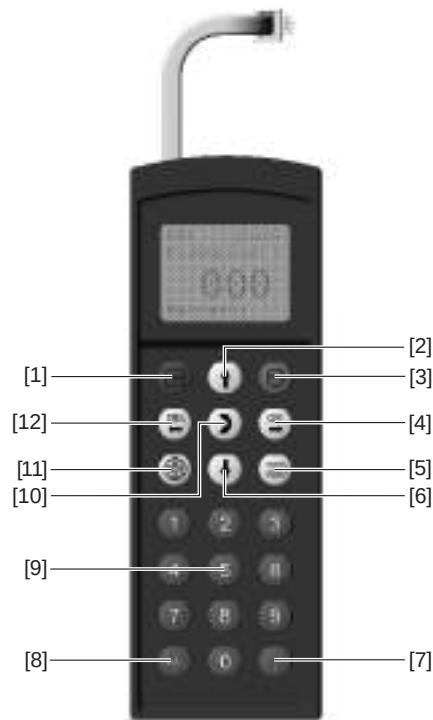
6.2 Information messages

Information messages on the DBG60B (ca. 2 s in duration) or in MOVITOOLS® MotionStudio (message that can be acknowledged):

No .	Text DBG60B/ MotionStudio	Description
1	ILLEGAL INDEX	Index addressed via interface not available.
2	NOT IMPLEMENT.	- Attempt to execute a non-implemented function. - An incorrect communication service has been selected. - Manual operation selected via invalid interface (e.g. fieldbus).
3	READ ONLY VALUE	Attempt to edit a read-only value.
4	PARAM. INHIBITED	Parameter lock P 803 = "ON", parameter cannot be altered.
5	SETUP ACTIVE	Attempt to alter parameters during active factory setting.
6	VALUE TOO HIGH	Attempt to enter a value that is too high.
7	VALUE TOO LOW	Attempt to enter a value that is too low.
8	REQ. CARD MISSING	The option card required for the selected function is missing.
10	ONLY VIA ST1	Manual mode must be completed using X13:ST11/ST12 (RS485).
11	ONLY TERMINAL	Manual operation must be exited via TERMINAL (DBG60B or USB11/UWS21B).
12	NO ACCESS	Access to selected parameter denied.
13	REG. INHIBIT MISSING	Set terminal DIØØ "/Controller inhibit" = "0" for the selected function.
14	INVALID VALUE	Attempt to enter an invalid value.
16	PARAM. NOT SAVED	Overflow of EEPROM buffer, e.g. through cyclic write access. Parameter not stored in non-volatile EEPROM.
17	INVERTER ENABLED	- Parameter to be changed can only be set in the state "CONTROLLER INHIBIT". - You tried to change to manual mode during live operation.

6.3 Functions of the DBG60B keypad

6.3.1 Key assignments for DBG60B



1810609803

[1]	Key		Stop
[2]	Key		Up arrow, moves up to the next menu item
[3]	Key		Start
[4]	Key		OK, confirms the entry
[5]	Key		Activate the context menu
[6]	Key		Down arrow, moves down to the next menu item
[7]	Key		Decimal point
[8]	Key		Sign reversal
[9]	Key	0 – 9	Digits 0 – 9
[10]	Key		Change menu
[11]	Key		Select language
[12]	Key		Delete previous entry

6.3.2 Copy function of the DBG60B

The DBG60B keypad can be used for copying complete parameter sets from one MOVIDRIVE® device to other MOVIDRIVE® devices. Proceed as follows:

- In the context menu, select the menu item "COPY TO DBG". Confirm your selection using the  key.
- After the copying process has finished, plug the keypad in the other inverter.
- In the context menu, select the menu item "COPY TO MDX". Confirm your selection using the  key.

6.3.3 Parameter mode

Proceed as follows to set the parameters in parameter mode:

1. Press the  key to activate the context menu.

BASIC VIEW
**PARAMETER
 MODE**
 VARIABLE MODE
 WAKE UP PARA-
 METER

2. Press the  key to start PARAMETER MODE. The first display parameter P000 "SPEED" is displayed. Use the  or  key to select main parameter groups 0 to 9.

P 000 1/min
 SPEED
 0.0
 CONTROLLER IN-
 HIBIT

3. Use the  or  key to select the desired main parameter group. The flashing cursor is positioned under the number of the main parameter group.

P 1.. SETPOINTS/
 RAMP GENERAT-
 ORS
 CONTROLLER IN-
 HIBIT

4. Press the  key to activate the parameter subgroup selection in the required main parameter group. The flashing cursor moves one position to the right.

P 1.. SETPOINTS/
 RAMP GENERAT-
 ORS
 CONTROLLER IN-
 HIBIT

5. Use the  or  key to select the desired parameter subgroup. The flashing cursor is positioned under the number of the parameter subgroup.

\ 13. SPEED
 RAMPS 1
 CONTROLLER IN-
 HIBIT

6. Press the  key to activate the parameter selection in the required parameter subgroup. The flashing cursor moves one position to the right.

\ 13. SPEED
 RAMPS 1
 CONTROLLER IN-
 HIBIT

7. Use the  or  key to select the desired parameter. The flashing cursor is positioned under the third digit of the parameter number.

\ 132 s
T11 UP CCW
0.13
CONTROLLER IN-
HIBIT
8. Press the  key to activate the setting mode for the selected parameter. The cursor is positioned under the parameter value.

\ 132 s
T11 UP CCW
0.13_
CONTROLLER IN-
HIBIT
9. Use the  or  key to set the required parameter value.

\ 132 s
T11 UP CCW
0.20_
CONTROLLER IN-
HIBIT
10. Press the  key to confirm the setting. To exit the setting mode, press the  key. The flashing cursor is positioned under the third digit of the parameter number again.

\ 132 s
T11 UP CCW
0.20
CONTROLLER IN-
HIBIT
11. Use the  or  key to select another parameter, or press the  key to switch to the menu of the parameter subgroups.

\ 13. SPEED
RAMPS 1
CONTROLLER IN-
HIBIT
12. Use the  or  key to select another parameter subgroup or press the  key to switch to the menu of the main parameter groups.

P 1.. SETPOINTS/
RAMP GENERAT-
ORS
CONTROLLER IN-
HIBIT
13. Use the  key to return to the context menu.

BASIC VIEW
**PARAMETER
MODE**
VARIABLE MODE
WAKE UP PARA-
METER

6.3.4 Variable mode

H... variables are displayed in the variable mode. To call up the variable mode, proceed as follows:

- Press the  key to call up the context menu. Select the "VARIABLE MODE" menu item and confirm with the  key. The variable mode display appears.
- Use the  key to edit the variables.

6.3.5 User menu

The DBG60B keypad has a standard user menu containing the parameters that are used most often. The parameters in the user menu are displayed with a "\" before the parameter number (→ chapter "Complete parameter list"). You can add or delete parameters. You can save a maximum of 50 parameter entries. The parameters are displayed in the order in which they are stored in the inverter. The parameters are not sorted automatically.

- Press the  key to call up the context menu. Select the menu item "USER MENU" and press the OK key to confirm. The user menu with the most frequently used parameters appears.

Adding parameters to the user menu

Proceed in this order to add parameters to the user menu:

- Press the  key to call up the context menu. Select the "PARAMETER MODE" menu item.
- Select desired parameter and press the  key to confirm.
- Use the  key to return to the context menu. In the context menu, select the menu item "ADD Pxxx". "xxx" is the parameter you selected previously. Confirm your selection using the  key. The selected parameter is stored in the user menu.

Deleting parameters from the user menu

Proceed in this order to delete parameters from the user menu:

- Press the  key to call up the context menu. Select the menu item "USER MENU".
- Select the parameter that is to be deleted. Confirm your selection using the  key.
- Use the  key to return to the context menu. In the context menu, select the "DELETE Pxxx" menu item. "xxx" is the parameter you selected previously. Confirm your selection using the  key. The selected parameter is deleted from the user menu.

6.3.6 Wake-up parameter

The wake up parameter is the parameter that is displayed when the DBG60B is switched on. The factory setting for the wake up parameter is the basic display. You can select which parameter should be the wake up parameter. The following options can be used as the wake up parameter:

- Parameter (→ parameter mode)
- Parameter from the user menu (→ user menu)
- H variable (→ variable mode)
- Basic display

Proceed as follows to save a wake-up parameter:

- First select the required parameter in parameter mode.
- In the context menu, select the "XXXX WAKE-UP PARAM." menu item. "XXXX" is the selected wake-up parameter. Confirm your selection using the  key.

6.3.7 IPOS^{PLUS}®

MOVITOOLS[®] MotionStudio is required for programming IPOS^{PLUS}®. You can only use the DBG60B keypad to edit or change IPOS^{PLUS}® variables (H__).

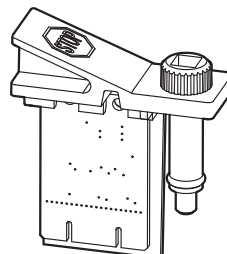
The IPOS^{PLUS}® program is also stored in the DBG60B keypad when it is saved and is consequently also transferred when the parameter set is copied to another MOVIDRIVE[®] unit.

Parameter P931 can be used to start and stop the IPOS^{PLUS}® program from the DBG60B keypad.

6.4 Memory card

The pluggable memory card is installed in the basic unit. The basic data is stored on the memory card and is always up-to-date. If a unit has to be replaced, the system/machine can be operated again quickly without a PC and data backup simply by replugging the memory card. You can install as many option cards as required.

The following figure shows the MDX60B/61B memory card.



1810728715

Part number: 08248834

6.4.1 Notes for replacing the memory card

- Only plug or remove in the memory card when the MOVIDRIVE® B is switched off.
- You can install the memory card from the original unit in a new inverter. The following combinations are permitted:

Original device MOVIDRIVE® MDX60B/61B...	New inverter MOVIDRIVE® MDX60B/61B...
00	00 or 0T
0T	0T

- The same options that were available in the original unit must be installed in the new inverter.

If this is not the case, the error message "79 HW configuration" (hardware configuration) is displayed. You can remedy the error by calling up the "DELIVERY CONDITION" menu item from the context menu (P802 factory setting). This resets the unit to its initial delivery state. You must then restart the unit.

- The counter status of the DRS11B option and the data of the DH..1B and DC-S21B/22B/31B/32B options are not stored on the memory card. When you replace the memory card, you have to install the DRS11B, DH..1B and DC-S21B/22B/31B/32B option cards from the original unit in the new inverter.

If the original unit was a MOVIDRIVE® B size 0 unit with the option DHP11, you have to use a new DHP11B option card with the configuration data set (file name.sewcopy) that you saved previously.

- If an absolute encoder is used as a motor or distance encoder, you must reference the encoder after you have replaced the unit.
- When replacing an absolute encoder, you have to reference it again.

7 Service

7.1 Damages to the device

If necessary, all components of the device are replaced. Only SEW-EURODRIVE is authorized to perform repairs.

7.2 Fault information

7.2.1 Fault memory

The fault memory (P080) stores the last 5 fault messages (faults t-0 – t-4). The oldest fault message is deleted whenever more than 5 fault messages have occurred. The following information is stored when a fault occurs:

Fault that has occurred · Status of digital inputs/outputs · Operating state of the inverter · Inverter status · Heat sink temperature · Speed · Output current · Active current · Unit utilization · DC link voltage · ON hours · Enable hours · Parameter set · Motor utilization.

7.2.2 Switch-off responses

There are 3 switch-off responses depending on the fault; the inverter remains blocked during a failure:

Immediate disconnection

The unit can no longer brake the drive; the output stage goes to high resistance in the event of a fault and the brake is applied immediately (DBØØ "/Brake" = "0").

Rapid stop

The drive is braked with the stop ramp t13/t23. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake application time has elapsed (P732 / P735).

Emergency stop

The drive is braked with the emergency stop ramp t14/t24. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake application time has elapsed (P732 / P735).

A fault message can be acknowledged as follows:

- Switch the supply system off and on again
 - Observe a minimum switch-off time of 10 s for the line contactor K11
- Reset via input terminals, i.e. via an appropriately assigned digital input (DIØ1 – DIØ7 with the basic device, DI1Ø – DI17 with the DIO11B option)
- Manual reset in MOVITOOLS® MotionStudio (P840 = "YES").
- Manual reset using the DBG60B.
- Auto reset performs up to 5 device resets with an adjustable restart time.

WARNING



Risk of crushing if the motor starts up automatically after an auto reset.

Severe or fatal injuries.

- Do not use auto reset with drives where an automatic restart represents a danger to people or units.
- Perform a manual reset.

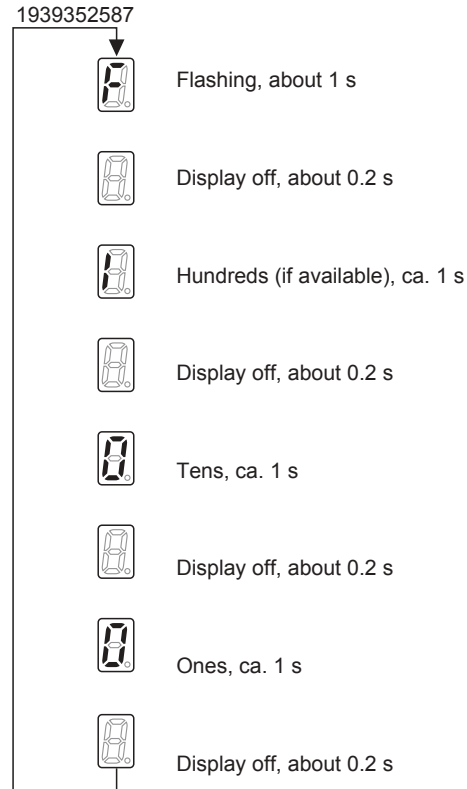
7.2.4 Inverter is waiting for data

If the inverter is controlled via a communication interface (fieldbus, RS485 or SBus) and the power was switched off and back on again or a fault reset was performed, then the enable remains ineffective until the inverter receives valid data again via the interface, which is monitored with a timeout.

7.3 Fault messages and list of faults

7.3.1 Fault message via 7-segment display

The fault code is shown in a 7-segment display. The following display sequence is used (e.g. fault code 100):



Following a reset or if the fault code resumes the value "0", the display switches to the operating display.

7.3.2 Subfault code display

The subfault code is displayed in MOVITOOLS® MotionStudio or in the DBG60B keypad.

7.3.3 Fault list

The factory set fault response is listed in the "Response P" column. (P) indicates that the response is programmable (via *P83_fault response* or with *IPOS^{PLUS}*). In the event of fault 108, (P) indicates that the response can be programmed via *P555 DCS fault response*. In the event of fault 109, (P) indicates that the response can be programmed via *P556 DCS alarm response*.

Fault Code	Designation	Response (P)	Subfault Code	Designation	Possible cause	Measure
00	No fault					
01	Overcurrent	Immediate stop	0	Output stage	- Short circuit at output - Motor too large - Defective output stage - Current supply for current transformer - Ramp limit is deactivated and set ramp time is too short - Defective phase module - Supply voltage 24 V or 24 V generated from it is instable - Interruption or short circuit on the signal lines from the phase modules	- Rectify the short circuit - Connect a smaller motor - Contact the SEW Service if the output stage is defective - Activate P 138 and/or increase ramp time
			1	V _{CE} monitoring or under-voltage monitoring of the gate driver		
			5	Inverter remains in hardware current limit		
			6	V _{CE} monitoring or under-voltage monitoring of the gate driver or overcurrent of the current transformer. ..Phase U		
			7	..Phase V		
			8	..Phase W		
			9	..Phases U and V		
			10	..Phases U and W		
			11	..Phases V and W		
			12	..Phases U and V and W		
			13	Voltage supply of current transformer in line operation		
			14	MFE signal lines		
03	Ground fault	Immediate stop	0	Ground fault	Ground fault - in the motor lead - in the inverter - in the motor	- Eliminate ground fault - Consult SEW Service
04	Brake chopper	Immediate stop	0	DC link voltage too high in 4Q operation	- Too much regenerative power - Braking resistor circuit interrupted - Short circuit in the braking resistor circuit - Braking resistance too high - Brake chopper is defective	- Extend deceleration ramps - Check supply cable to braking resistor - Check technical data of braking resistor - Install a new MOVIDRIVE® if the brake chopper is defective
			1			
06	Line phase failure	Immediate stop	0	Voltage for adapting DC link is periodically too low	- Phase failure - Inadequate line voltage quality	- Check the supply system cable - Check configuration of the supply system - Check supply (fuses, contactor)
			3	Line voltage failure		
			4	Line frequency fault		
07	DC link over-voltage	Immediate stop	0	DC link voltage too high in 2Q operation	DC link voltage too high	- Extend deceleration ramps - Check supply cable to the braking resistor - Check technical data of braking resistor
			1			
			2	DC link voltage too high in 4Q operation ..Phase U		
			3	..Phase V		
			4	..Phase W		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
08	Speed monitoring	Immediate stop (P)	0	Inverter in current limiting or in slip limit	- Speed controller or current controller (in VFC operating mode without encoder) operating at setting limit due to mechanical overload or phase failure in the power supply or motor - Encoder not connected correctly or incorrect direction of rotation n_{max} is exceeded during torque control - In operating mode VFC: Output frequency ≥ 150 Hz - In operating mode V/f: Output frequency ≥ 599 Hz	- Reduce load - Increase deceleration time setting (P501 or P503) - Check encoder connection, swap A/A and B/B pairs if necessary - Check encoder voltage supply - Check current limiting - Extend ramps if necessary - Check motor cable and motor - Check line phases
			3	System limit "actual speed" exceeded. Speed difference between ramp setpoint and actual value for $2 \times$ ramp time higher than expected slip		
			4	Maximum rotating field speed exceeded Maximum rotating field frequency (with VFC max 150 Hz and V/f max 599 Hz) exceeded		
09	Startup	Immediate stop	0	Startup missing	The inverter has not been taken into operation for the selected operating mode	Perform startup for the required operating mode
			1	Wrong operating mode selected		
			2	Wrong encoder type or defective encoder card		
10	IPOS-ILLOP	Emergency stop	0	Invalid IPOS ^{PLUS} ® command	- Incorrect command detected during execution of the IPOS^{PLUS}® program - Incorrect conditions during command execution	- Check the content of the program memory and, if necessary, correct - Load the correct program into the program memory - Check program sequence (→ IPOS^{PLUS}® manual)
11	Overtemperature	Emergency stop (P)	0	Heat sink temperature too high or temperature sensor defective	- Thermal overload of inverter - Temperature sensor of a phase module faulty (size 7)	- Reduce load and/or ensure adequate cooling - Check fan - If F-11 is issued even though the temperatures is obviously not too high, this indicates a faulty temperature sensor of the phase module. Replace the phase module (size 7)
			3	Overtemperature switched-mode power supply		
			6	Heat sink temperature too high or temperature sensor defective.. ..Phase U (size 7)		
			7	..Phase V (size 7)		
			8	..Phase W (size 7)		
13	Control signal source	Immediate stop	0	Control signal source not available, e.g. control signal source fieldbus without fieldbus interface	Control signal source not defined or defined incorrectly	Set correct control signal source (P101)

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
14	Encoder	Immediate stop	0	Encoder not connected, defective encoder, defective encoder cable	- Encoder cable or shield not connected correctly. - Short circuit / broken wire in encoder cable - Encoder is defective. - When 2 inverters are connected via X14 and P505 is set to YES F14 SubC 27.	Check encoder cable and shield for correct connection, short circuit and broken wire
			25	Encoder fault X15 – Speed range exceeded Encoder exceeds 6542 min ⁻¹		
			26	Encoder fault X15 – Card is defective Fault in the quadrant evaluation.		
			27	Encoder fault – encoder connection or encoder is defective		
			28	Encoder fault X15 – Communication fault RS485 channel		
			29	Encoder fault X14 – Communication fault RS485 channel	- Encoder cable or shield not connected correctly. - Short circuit / broken wire in encoder cable - Encoder is defective. - When 2 inverters are connected via X14 and P505 is set to YES F14 SubC 27.	Check encoder cable and shield for correct connection, short circuit and broken wire
			30	Unknown encoder type at X14/X15		
			31	Plausibility monitoring fault Hiperface® X14/X15 Increments have been lost		
			32	Encoder fault X15 Hiperface® Hiperface® encoder at X15 signals a fault		
			33	Encoder fault X14 Hiperface® Hiperface® encoder at X14 signals a fault		
			34	Encoder fault X15 resolver – Encoder connection or encoder is faulty		
17	System fault	Immediate stop	0	"Stack overflow" fault	Inverter electronics disrupted, possibly due to EMC influences	- Check grounding and shielding and improve, if necessary - Consult SEW Service if the fault occurs again.
18				"Stack underflow" fault		
19				"External NMI" fault		
20				"Undefined opcode" fault		
21				"Protection fault"		
22				"Illegal word operand access" fault		
23				"Illegal instruction access" fault		
24				"Illegal external bus access" fault		
25	EEPROM	for rapid stop	0	Read or write fault on EEPROM power section	Access to the EEPROM of the memory card has failed	- Restore factory settings, perform reset and reset parameters. - Consult SEW service if the fault reoccurs - Replace memory card
			11	NV memory read fault NV-RAM inside the unit		
			13	NV memory chip card memory module defective		
			14	NV memory chip card memory card defective		
			16	NV memory initialization fault		
26	External terminal	Emergency stop (P)	0	External terminal	Read external fault signal via programmable input	Eliminate respective cause; reprogram terminal if necessary

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
27	No limit switches	Emergency stop	0	Limit switches missing or wire break	- Wire break/both limit switches missing - Limit switches are swapped over in relation to direction of rotation of motor	- Check wiring of limit switches - Replace limit switch connections - Reprogram terminals
			2	Limit switches reversed		
			3	Both limit switches are active simultaneously		
28	Fieldbus timeout	Rapid stop (P)	0	"Fieldbus timeout" fault	No communication between master and slave within the configured response monitoring	- Check communications routine of the master - Extend fieldbus timeout time (P819)/deactivate monitoring
			2	Fieldbus interface does not boot		
29	Limit switch hit	Emergency stop	0	Hardware limit switch hit	A limit switch was hit in IPOS ^{PLUS} operating mode	- Check travel range - Correct operator program
30	Emergency stop timeout	Immediate stop	0	Timeout stop emergency stop ramp	- Drive overloaded - Emergency stop ramp too short	- Project planning check - Extend emergency stop ramp
31	TF/TH trigger	No response (P)	0	Thermal motor protection fault	- Motor too hot, TF/TH has triggered - TF/TH of the motor not connected or connected incorrectly - Connection between MOVIDRIVE[®] and TF/TH on motor interrupted	- The motor must cool off, then reset the fault - Check connections/link between MOVIDRIVE[®] and TF/TH - If no TF/TH is connected: Jumper X10:1 with X10:2 - Set P835 to "No response".
32	IPOS index overflow	Emergency stop	0	IPOS program defective	Programming principles violated leading to system-internal stack overflow	Check and correct the IPOS ^{PLUS} user program (→ IPOS ^{PLUS} manual)
33	Setpoint source	Immediate stop	0	"Setpoint source not available" For example, fieldbus control signal source without fieldbus interface	Setpoint source not defined or defined incorrectly	Set correct setpoint source (P100)
34	Ramp timeout	Immediate stop	0	Time violation rapid stop ramp	Downward ramps timeout, e.g. due to overload	- Extend the downwards ramps - Eliminate overload
35	Operating mode	Immediate stop	0	Operating mode not available	- Operating mode not defined or defined incorrectly - P916 was used to set a ramp type that requires a MOVIDRIVE[®] device in technology version - P916 was used to set a ramp type that does not match the selected technology function - P916 was used to set a ramp type that does not match the selected synchronization time (P888)	- Use P700 or P701 to set correct operating mode. - Use MOVIDRIVE[®] in technology version (..OT) - From the "Startup → Select technology function..." menu, select the technology function that matches P916 - Check the settings of P916 and P888
			1	Wrong assignment operating mode - hardware		
			2	Wrong assignment operating mode - technology function		
36	Option missing	Immediate stop	0	Hardware is missing or not permitted	- Type of option card not allowed - Setpoint source, control signal source or operating mode not permitted for this option card - Incorrect encoder type set for DIP11B	- Use correct option card - Set correct setpoint source (P100) - Set correct control signal source (P101) - Set correct operating mode (P700 or P701) - Set the correct encoder type
37	System watchdog	Immediate stop	0	"System watchdog overflow" fault	Fault while executing system software	Consult SEW Service
38	System software	Immediate stop	0	"System software" fault	System fault	Consult SEW Service

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
39	Reference travel	Immediate stop (P)	0	"Reference travel" fault	- The reference cam is missing or does not switch - Limit switches are connected incorrectly - Reference travel type was changed during reference travel	- Check reference cam - Check limit switch connection - Check reference travel type setting and required parameters.
40	Boot synchronization	Immediate stop	0	Timeout at boot synchronization with option	- Fault during boot synchronization between inverter and option - Synchronization ID not/incorrectly transmitted	Install a new option card if this fault reoccurs
41	Watchdog option	Immediate stop	0	Fault – Watchdog timer from/to option	- Fault in communication between system software and option software - Watchdog in the IPOS^{PLUS}® program	Consult SEW Service
			17	Watchdog IPOS fault	- An application module has been loaded in a MOVIDRIVE® B unit without technology version - The wrong technology function has been set if an application module is used	- Check IPOS program - Check whether the unit has been activated for the application version (P079) - Check the selected technology function (P078)
42	Lag fault	Immediate stop (P)	0	Positioning lag fault	- Rotary encoder connected incorrectly - Acceleration ramps too short - P component of positioning controller too small - Incorrect speed controller parameters - Value of lag fault tolerance too small	- Check rotary encoder connection - Extend ramps - Set P component to higher value - Reset speed controller parameters - Increase lag fault tolerance - Check wiring of encoder, motor and line phase. - Check whether mechanical system components can move freely or if they are blocked
43	RS485 timeout	Rapid stop (P)	0	Communication timeout at RS485 interface	Fault during communication via interface RS485	Check RS485 connection (e.g. inverter – PC, inverter – DBG60B). Contact SEW Service for advice if necessary
43	RS485 timeout	Rapid stop (P)	3	Manual mode timeout	Communication to source that controls manual operation interrupted. (Independent of the used user interface)	Check connection to control signal source
44	Device utilization	Immediate stop	0	Unit utilization fault	Device utilization ($I \times t$ value) > 125%	- Decrease power output - Extend ramps - If suggested actions not possible, use larger inverter - Reduce load
			8	UL monitoring fault		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
45	Initialization	Immediate stop	0	General fault during initialization	- No parameters set for EEPROM in power section set incorrectly - Option card not in contact with backplane bus	- Restore the factory settings. Contact the SEW Service for advice if the fault still cannot be reset - Insert the option card correctly
			3	Data bus fault during RAM check		
			6	CPU clock fault		
			7	Fault in the current detection		
			10	Fault when setting flash protection		
			11	Data bus fault during RAM check		
			12	Parameter setting fault synchronous operation (internal synchronous operation)		
46	System bus 2 timeout	Rapid stop (P)	0	Timeout system bus CAN2	Fault during communication via system bus 2	Check system bus connection
47	System bus 1 timeout	Rapid stop (P)	0	Timeout system bus CAN1	Fault during communication via system bus 1	Check system bus connection
48	Hardware DRS	Immediate stop	0	Hardware synchronous operation	Only with DRS11B: - Encoder signal from master/distance encoder faulty - Hardware required for synchronous operation is faulty	- Check encoder signals of master/distance encoder - Check encoder wiring - Install a new synchronous operation card
57	"TTL encoder"	Immediate stop	512	X15: Fault in amplitude control	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			16896	X14: Fault in amplitude control		
			514	X15: Incorrectly set numerator/denominator values	Incorrect numerator/denominator values	Correct the numerator/denominator values
			16898	X14: Incorrectly set numerator/denominator values		
58	"Sine-cosine encoder"	Immediate stop	512	X15: Fault in amplitude control	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			514	X15: Track signal fault		
			16896	X14: Fault in amplitude control		
			16897	X14: Initialization		
			16898	X14: Track signal fault		
			513	X15: Initialization	Encoder defective	Replace encoder
			515	C15: Incorrectly set numerator/denominator values	Incorrect numerator/denominator values	Correct the numerator/denominator values
			16899	X14: Incorrectly set numerator/denominator values		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
59	"Encoder communication"	for rapid stop	1	X15: Track signal fault	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection and broken wire - Replace encoder - Providing for EMC measures
			16	Data line fault		
			64 – 576	X15: RS485 communication		
			1088 – 1388	X15: EnDat communication		
			16385	X14: Track signal fault		
			16400	X14: Data line fault		
			16448 – 16832	X14: RS485 communication		
			17472 – 17772	X14: EnDat communication		
			2	X15: Incorrect calibration of encoder	Incorrect encoder calibration or mechanical offset to motor	Delivery state + new startup
			16386	X15: Incorrect calibration of encoder		
			1024	X15: Clocking and/or data line not connected	Clocking and/or data line not connected	Connect clocking and/or data line
			17408	X14: Clocking and/or data line not connected		
77	IPOS control word	No response (P)	0	Invalid control word IPOS	Only in IPOS ^{PLUS} mode: - Attempt was made to set an invalid automatic mode (via external control) - P916 = BUS RAMP is set	- Check serial connection to external controller - Check write values of external controller - Set correct value for P916
78	IPOS SW limit switch	No response (P)	0	Software limit switch hit	Only in IPOS ^{PLUS} mode: Programmed target position is outside travel range delimited by software limit switches	- Check user program - Check position of the software limit switches
79	Hardware configuration	Immediate stop	0	Deviating hardware configuration when replacing the memory card	The following values no longer match after memory card replacement: - Power - Nominal voltage - Variant ID - Device family - Design as Technology/Standard unit - Option cards	Ensure identical hardware or restore delivery state (parameter = factory setting)
80	RAM test	Immediate stop	0	"RAM test" fault	Internal device fault, RAM defective.	Consult SEW Service
81	Start condition	Immediate stop	0	Start condition fault with VFC hoist	Only in "VFC hoist" mode: The motor could not be supplied with the correct amount of current during the pre-magnetizing time: - Nominal motor power too small in relation to rated inverter power - Motor cable cross section too small. Only for operation with a linear motor (as of firmware 18): - The drive has been set to "Enable" although the commutation offset between linear motor and linear encoder is not known. This means that the inverter cannot set the current indicator correctly.	- Check startup data and perform new startup, if necessary. - Check connection between inverter and motor - Check cross section of motor cable and increase if necessary - Perform commutation travel in the "No enable" state and then switch to "Enable" once the inverter has acknowledged in status word bit 25 that commutation was successful.

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
82	Open output	Immediate stop	0	Output open with "VFC hoist"	Only in "VFC hoist" mode: • Two or all output phases are interrupted. • Nominal motor power too small in relation to rated inverter power	- Check connection between inverter and motor - Check startup data and perform new startup, if necessary.
84	Motor protection	Emergency stop (P)	0	"Motor temperature emulation" fault	- Motor utilization too high. I_N-U_L monitoring triggered - P530 set later to "KTY"	- The motor must cool off, then reset the fault - Reduce load - Extend ramps - Observe longer pause times - Check P345/346 - Select a larger motor
			2	Temperature sensor wire break		
			3	No thermal motor model available		
			4	UL monitoring fault		
			11	Temperature sensor short circuit		
86	Memory module	Immediate stop	0	Fault in connection with memory module	- No memory card - Memory card defective	- Tighten knurled screw - Insert and secure memory card - Replace memory card - Load delivery status and parameter set
87	Technology function	Immediate stop	0	Technology function selected with standard unit	A technology function was activated in a standard device	Disable technology function
88	Flying start	Immediate stop	0	"Flying start" fault	Only in VFC n-CTRL operating mode: Actual speed > 6000 rpm when inverter enabled	Only enable a actual speed $\leq 6000 \text{ min}^{-1}$
92	DIP encoder problem	Fault display (P)	1	Stahl WCS3 dirt problem	Encoder signals a fault	Possible cause: Encoder is dirty → clean encoder
93	DIP encoder fault	Emergency stop (P)	0	"Absolute encoder" fault	The encoder signals a fault, e.g. power failure - Connection cable between the encoder and DIP11B does not meet the requirements (twisted pair, shielded) - Clock frequency too high for cable length - Permitted max. speed/acceleration of encoder exceeded - Encoder defective	- Check absolute encoder connection - Check connection cables - Set correct clock frequency - Reduce maximum travel speed or ramp - Replacing absolute encoders.
94	EEPROM checksum	Immediate stop	0	Power section parameters	Inverter electronics disrupted. Possibly due to EMC influence or defect.	Sending in a device for repair
			5	Control unit data		
			6	Power section data		
			7	Invalid version of the configuration data set		
95	DIP plausibility fault	Emergency stop (P)	0	Plausibility monitoring of absolute position	No plausible position could be determined - Incorrect encoder type set - IPOS^{PLUS} travel parameter set incorrectly - Numerator/denominator factor set incorrectly - Zero adjustment performed - Encoder defective	- Set the correct encoder type - Check IPOS^{PLUS} travel parameters. - Check travel speed. - Correct numerator/denominator factor - Reset after zero adjustment - Replacing absolute encoders.
97	Copy fault	Immediate stop	0	Parameter set upload is/was faulty	- Memory card cannot be written or read - Fault during data transmission	- Repeat copying process - Restore delivery state (P802) and repeat copying process
			1	Download of parameter set to unit canceled.		
			2	Not possible to adopt parameters Not possible to adopt parameters from memory card		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
98	CRC fault	Immediate stop	0	"CRC via internal flash" fault	Internal device fault flash memory defective.	Sending in a device for repair
99	IPOS ramp calculation	Immediate stop	0	"Ramp calculation" fault	Only in IPOS ^{PLUS} mode: Positioning ramp is sinusoidal or square and an attempt is made to change ramp times and traveling velocities with enabled inverter.	Rewrite the IPOS ^{PLUS} program so that ramp times and traveling velocities can only be altered when the inverter is inhibited.
100	Vibration – warning	Display fault (P)	0	Vibrations diagnostics warning	Vibration sensor warning (→ "DUV10A" operating instructions)	Determine cause of vibrations. Continue operation until F101 occurs.
101	Vibration fault	Rapid stop (P)	0	Vibration diagnostics fault	Vibration sensor signals fault	SEW-EURODRIVE recommends that you remedy the cause of the vibrations immediately
102	Oil aging warning	Display fault (P)	0	Oil aging warning	Warning signal from the oil aging sensor	Schedule oil change
103	Oil aging fault	Display fault (P)	0	Oil aging fault	Fault message from the oil aging sensor	SEW-EURODRIVE recommends that you change the gear unit oil immediately.
104	Oil aging – overtemperature	Display fault (P)	0	Oil aging overtemperature	Overtemperature signal from the oil aging sensor	- Let oil cool down - Check if the gear unit cools properly
105	Oil aging ready signal	Display fault (P)	0	Oil aging ready signal	Oil aging sensor is not ready for operation	- Check voltage supply of oil aging sensor - Check and, if necessary, replace the oil aging sensor
106	Brake wear	Display fault (P)	0	Brake wear fault	Brake lining worn	Replace brake lining (→ "Motors" operating instructions).
107	Line components	Immediate stop	1	For regenerative power supply only: No feedback signal from main contactor	Main contactor defective	- Check main contactor - Check control cables.
108	DCS fault	Display fault	0	DCS fault		
			1	Configuration data not loaded correctly to DCS..B option.	Connection interrupted while loading the program to the DCS..B option.	- Reload the configuration files. - Then switch the DCS..B option off and on again.
			2	Invalid configuration data for software version of the DCS..B option.	DCS..B option configured using a wrong software version.	- Configure the DCS..B option with the permitted MOVISAFE[®] software version. - Then switch the DCS..B option off and on again.
			3	Unit was programmed with incorrect software interface.	Program or configuration data was loaded into the unit with an incorrect MOVISAFE [®] software.	- Check the DCS..B version and parameterize it again using a valid MOVISAFE[®] software. - Then switch the DCS..B option off and on again.
			4 5	Incorrect reference voltage	- Incorrect reference voltage - Faulty supply voltage of the DCS..B option - Faulty component on the DCS..B option	- Check supply voltage of DCS..B option. - Switch DCS..B option off and on again.
			6 7	Faulty system voltage	- Faulty supply voltage of the DCS..B option - Faulty component on the DCS..B option	- Check supply voltage of DCS..B option. - Switch DCS..B option off and on again.
			10	Incorrect supply voltage.	- DC 24 V supply voltage of the DCS..B option is faulty. - Faulty component on the DCS..B option	- Check supply voltage of DCS..B option. - Switch DCS..B option off and on again.

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
108	DCS fault	Display fault	11	The unit's ambient temperature is not in the defined range	Temperature at the place of operation is not in the permitted range	Check the ambient temperature
			12	Plausibility fault for position changeover	For the position changeover, ZSC, JSS or DMC is permanently activated	- Check ZSC activation - Check JSS activation - Check DMC activation (only for monitoring via position)
			13	Faulty switching of the LOSIDE driver DO02_P / DO02_M	Short circuit of the output	Check wiring at output
			14	Faulty switching of the HISIDE driver DO02_P / DO02_M		
			15	Faulty switching of the LOSIDE driver DO0_M		
			16	Faulty switching of the HISIDE driver DO0_P		
			17	Faulty switching of the LOSIDE driver DO01_M		
			18	Faulty switching of the HISIDE driver DO01_P		
			19	Unit was programmed with incorrect software interface.	Program or configuration data was loaded into the unit with an incorrect MOVISAFE® software.	- Check the DCS..B version and parameterize it again using a valid MOVISAFE® software. - Then switch the DCS..B option off and on again.
			20			
			21	CRC of configuration data invalid.	Configuration data have not been uploaded correctly.	Upload configuration data into unit again.
			22			
108	DCS fault	Display fault	23	Fault during internal transmission of configuration data.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			24			
			25	Fault while calculating firmware configuration data.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			26			
			27	CRC of firmware configuration data invalid.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			28			
			29	Fault during internal transmission of firmware configuration data.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			30			
			31	The range check of the device description is faulty.	Faulty configuration data of the device description.	- Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	32	The range check of the access data is faulty.	Faulty configuration data of the device description.	• Reload the configuration data. Next switch the DCS..B option off and on again. • If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			33	EMU range check is faulty.	Faulty configuration data of the EMU function.	• Undo the changes in the EMU configuration or enter new values. • Reload the configuration data. Next switch the DCS..B option off and on again. • If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			34	PSC range check is faulty.	Faulty configuration data of the PSC function.	• Undo the changes in the PSC configuration or enter new values. • Reload the configuration data. Next switch the DCS..B option off and on again. • If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	35	ESS range check is faulty.	Faulty configuration data of the ESS function.	- Undo the changes in the ESS configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			36	ELC range check is faulty.	Faulty configuration data of the ELC function.	- Undo the changes in the ELC configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			37	OLC range check is faulty.	Faulty configuration data of the OLC function.	- Undo the changes in the OLC configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	38	ZSC range check is faulty.	Faulty configuration data of the ZSC function.	- Undo the changes in the ZSC configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			39	MSC range check is faulty.	Faulty configuration data of the MSC function.	- Undo the changes in the MSC configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			40	DMC range check is faulty.	Faulty configuration data of the DMC function.	- Undo the changes in the DMC configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	41	JSS range check is faulty.	Faulty configuration data of the JSS function.	- Undo the changes in the JSS configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			42	PLC range check is faulty.	Incorrect IL application program.	- Compile the application program again, load it, and switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			43	Shutdown channel range check is faulty.	Internal configuration data fault.	- Undo the changes in the disconnection (configuration) or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	44	Digital output range check is faulty.	Faulty configuration data of digital outputs.	- Undo the changes in the disconnection matrix of the digital outputs or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			45	Digital output range check is faulty.	Faulty configuration data of digital outputs.	- Undo the changes in the disconnection matrix of the digital outputs or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			46	Encoder type range check is faulty.	Incorrectly configured encoder type.	- Undo the changes in the encoder configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
108	DCS fault	Display fault	47	Encoder scaling range check is faulty.	Incorrectly configured encoder distance.	- Undo changes made to the encoder distance (measuring length, resolution or max. speed) or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			48	Encoder position range check is faulty.	Incorrectly configured encoder distance.	- Undo changes made to the encoder distance (measuring length, resolution or max. speed) or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			49	PDM range check is faulty.	Faulty configuration of the PDM function.	- Undo the changes in the PDM configuration or enter new values. - Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
108	DCS fault	Display fault	50	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			51			
			52	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			53			
			54	Internal program fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			55			
			56	Faulty watchdog test.	Faulty feedback of internal shutdown channel of the digital outputs.	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			57			
			58	Faulty process data.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			59			
			62	Internal processing fault in user program.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			63			
108	DCS fault	Display fault	64	Internal processing fault in user program.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			65			
			66	Internal processing fault in user program.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			67			
			68	Internal processing fault of input element	-	- Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			69			
			70	Internal processing fault of input element	-	- Reload the configuration data. Next switch the DCS..B option off and on again. - If the fault occurs again, contact SEW-EURODRIVE Service for the proper MOVISAFE® software version.
			71			
			72	Internal processing fault in user program	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			73			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
108	DCS fault	Display fault	74	Runtime fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			75			
			80	Runtime fault	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			82	Interrupt fault during time monitoring.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			83			
			85	Runtime fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			86			
			87	Program fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			88			
			89	Internal CPU fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			90			
108	DCS fault	Display fault	91	Internal CPU fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			92			
			93	Internal CPU fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			94			
			95	Internal RAM fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			96			
			97	Internal flash fault.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			98			
			99	Internal CPU fault	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			100			
			101	Internal processing fault PROFIsafe.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			102			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
108	DCS fault	Display fault	103	Internal processing fault PROFIsafe.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			104			
			105	Internal processing fault PROFIsafe.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			106			
			107	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			108			
			109	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			110			
108	DCS fault	Display fault	111	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			112			
			113	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			114			
			117	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			118			
			119	Fault during internal data transmission.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
108	DCS fault	Display fault	140	Faulty core voltage DMP1.	- Incorrect core voltage of the DCS..B option. - Faulty component on the DCS..B option	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			141			
			142	Faulty core voltage DMPM.	- Incorrect core voltage of the DCS..B option. - Faulty component on the DCS..B option	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			143			
			156	Faulty RAM test.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			157			
			160	Faulty test of static registers.	-	- Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			161			

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Display fault	0	DCS alarm		
			1	Communication fault back-plane bus MOVIDRIVE® B.	The DCS..B option does not receive any valid data from MOVIDRIVE® B.	• Check hardware connection to MOVIDRIVE® B. • Check firmware version of MOVIDRIVE® B. • Apply braided shield of encoder cable, motor cable, and TF cable over a large area. • Establish equipotential bonding.
			2	Pulse 1 plausibility fault at digital input DI1.	The configured pulse 1 voltage is not present at digital input DI1 (X81:2).	• Check configuration of the DI1 digital input according to configuration and wiring diagram. • Check the wiring.
			3			
			4	Pulse 1 plausibility fault at digital input DI2.	The configured pulse 1 voltage is not present at digital input DI2 (X81:3).	• Check configuration of the DI2 digital input according to configuration and wiring diagram. • Check the wiring.
			5			
			6	Pulse 1 plausibility fault at digital input DI3.	The configured pulse 1 voltage is not present at digital input DI3 (X81:4).	• Check configuration of the DI3 digital input according to configuration and wiring diagram. • Check the wiring.
			7			
			8	Pulse 1 plausibility fault at digital input DI4.	The configured pulse 1 voltage is not present at digital input DI4 (X81:5).	• Check configuration of the DI4 digital input according to configuration and wiring diagram. • Check the wiring.
			9			

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Display fault	10	Pulse 1 plausibility fault at digital input DI5.	The configured pulse 1 voltage is not present at digital input DI5 (X81:7).	• Check configuration of the DI5 digital input according to configuration and wiring diagram. • Check the wiring.
			11			
			12	Pulse 1 plausibility fault at digital input DI6.	The configured pulse 1 voltage is not present at digital input DI6 (X81:8).	• Check configuration digital input DI6 according to configuration and wiring diagram. • Check the wiring.
			13			
			14	Pulse 1 plausibility fault at digital input DI7.	The configured pulse 1 voltage is not present at digital input DI7 (X81:9).	• Check configuration of the DI7 digital input according to configuration and wiring diagram. • Check the wiring.
			15			
			16	Pulse 1 plausibility fault at digital input DI8.	The configured pulse 1 voltage is not present at digital input DI8 (X81:10).	• Check configuration of digital input DI8 according to configuration and wiring diagram. • Check the wiring.
			17			
			18	Pulse 2 plausibility fault at digital input DI1.	The configured pulse 2 voltage is not present at digital input DI1 (X81:2).	• Check configuration of the DI1 digital input according to configuration and wiring diagram. • Check the wiring.
			19			
			20	Pulse 2 plausibility fault at digital input DI2.	The configured pulse 2 voltage is not present at digital input DI2 (X81:3).	• Check configuration of the DI2 digital input according to configuration and wiring diagram. • Check the wiring.
			21			
			22	Pulse 2 plausibility fault at digital input DI3.	The configured pulse 2 voltage is not present at digital input DI3 (X81:4).	• Check configuration of the DI3 digital input according to configuration and wiring diagram. • Check the wiring.
			23			
			24	Pulse 2 plausibility fault at digital input DI4.	The configured pulse 2 voltage is not present at digital input DI4 (X81:5).	• Check configuration of the DI4 digital input according to configuration and wiring diagram. • Check the wiring.
			25			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
109	DCS alarm	Display fault	26	Pulse 2 plausibility fault at digital input DI5.	The configured pulse 2 voltage is not present at digital input DI5 (X81:7).	- Check configuration of the DI5 digital input according to configuration and wiring diagram. - Check the wiring.
			27			
			28	Pulse 2 plausibility fault at digital input DI6.	The configured pulse 2 voltage is not present at digital input DI6 (X81:8).	- Check configuration digital input DI6 according to configuration and wiring diagram. - Check the wiring.
			29			
			30	Pulse 2 plausibility fault at digital input DI7.	The configured pulse 2 voltage is not present at digital input DI7 (X81:9).	- Check configuration of the DI7 digital input according to configuration and wiring diagram. - Check the wiring.
			31			
109	DCS alarm	Display fault	32	Pulse 2 plausibility fault at digital input DI8.	The configured pulse 2 voltage is not present at digital input DI8 (X81:10).	- Check configuration of digital input DI8 according to configuration and wiring diagram. - Check the wiring.
			33			
			34	Plausibility fault in the speed detection.	The difference between the two speed sensors is higher than the configured speed switch-off threshold.	- Check track again with the set data in the encoder configuration. - Check speed sensor. - Use the SCOPE function to set speed signals so that they are congruent.
			35			
			36	Plausibility fault in the position detection.	The difference between the two position signals is higher than the configured increment switch-off threshold.	- Check track with the configured data of the encoder setting. - Check position signal. - Are all signals connected to the 9-pin encoder connector? - Check the encoder connector for correct connection. - Use the SCOPE function to set positions signals so that they are congruent. - If the absolute value is to be used via the backplane bus, it may be necessary to adapt the <i>Switch-off Threshold Incr.</i> parameter.
			37			
109	DCS alarm	Display fault	38	Plausibility fault incorrect position range.	The current position is outside the configured measurement range.	- Check track with the configured data of the encoder setting. - Check position signal, correct offset if necessary. - Use the SCOPE function to set positions signals so that they are congruent.
			39			
			40	Plausibility fault incorrect speed.	The current speed exceeds the configured maximum speed.	- The drive moves outside the permitted and configured speed range. - Check the configuration (encoder screen: max. set speed). - Analyze the speed profile using the SCOPE function.
			41			

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
109	DCS alarm	Display fault	74	Faulty switching behavior of the low-side driver DO1_M.	DC 0 V short circuit at digital output DO1_M (X82:4).	Check wiring at digital output.
			75			
			76	CCW and CW monitoring of DMC safety function activated simultaneously.	Multiple activation of the DMC safety function.	Make sure to activate only one "enable" in the control of the DMC safety function.
			77			
			78	CCW and CW monitoring range of the OLC safety function activated simultaneously.	Multiple activation of the OLC safety function.	Make sure to activate only one "enable" in the control of the OLC safety function.
			79			
			80	CCW and CW monitoring of JSS safety function activated simultaneously.	Multiple activation of the JSS safety function.	Make sure to activate only one "enable" in the control of the JSS safety function.
			81			
			82	Timeout fault MET.	Input element with time monitoring is faulty.	Check input element wiring.
			83			
			84	Timeout fault MEZ.	Two-hand control with time monitoring is faulty.	Check input element wiring.
			85			
			86	EMU1 monitoring fault.	- Faulty output control - Faulty feedback	Check wiring at digital output.
			87			
			88	EMU2 monitoring fault		
			89			
			90	Plausibility fault position changeover.	Position changeover during ZSC, JSS or DMC is permanently activated.	- Check ZSC (SOS) activation. - Check JSS (SDI) activation. - Check DMC (SDI) activation only for monitoring the position.
			91			
109	DCS alarm	Display fault	92	SSI encoder fault.	Encoder step SSI value within one cycle is too large.	- Check encoder configuration. - Check encoder cabling.
			93			
			94	SSI encoder fault.	Plausibility fault for position adjustment.	- Check encoder configuration. - Check encoder cabling.
			95			
			96	Plausibility fault of incremental encoder tracks.	- Different counting signals on A/B encoder tracks. - Defective component at RS485 interface. - Encoder operates outside tolerances of encoder interface.	- Check encoder configuration. - Check encoder cabling. - Check encoder signal levels. - Check maximum counting frequency of incremental encoder.
			97			
			98	Plausibility fault analog/digital comparison at Schmitt trigger output – encoder input X84.	- Connected encoder type does not correspond to the configuration. - Faulty encoder signals - Hardware defective	- Check configuration. - Check connected encoder. - Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			99			
			100	Plausibility fault analog/digital comparison at Schmitt trigger output – encoder input X85.	- Connected encoder type does not correspond to the configuration. - Faulty encoder signals - Hardware defective	- Check configuration. - Check connected encoder. - Replace DCS..B option. - Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			101			
			110	Position processing range check for DCS22B/32B.	Position processing activated for DCS22B/32B options.	- Check configuration data. - Deactivate position processing.
			111			
			112	Faulty OSSD input check.	Faulty OSSD test.	- Check DC 24 V input voltage of all OSSD inputs. - Switch DCS..B option off and on again.
			113			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
109	DCS alarm	Display fault	114	Faulty switching behavior of the high-side driver DO2_P.	DC 24 V short circuit at digital output DO2_P (X83:1).	Check wiring at digital output.
			115			
			116	Faulty switching behavior of the low-side driver DO2_M.	DC 0 V short circuit at digital output DO2_M (X83:2).	Check wiring at digital output.
			117			
			118	Dynamic test for high-side driver DO0_P.	DC 24 V short circuit at digital output DO0_P.	Check wiring at digital output.
			119	Dynamic test for low-side driver DO0_M.	DC 0 V short circuit at digital output DO0_M.	Check wiring at digital output.
			120	Dynamic test for high-side driver DO1_P.	DC 24 V short circuit at digital output DO1_P.	Check wiring at digital output.
			121	Dynamic test for low-side driver DO1_M.	DC 0 V short circuit at digital output DO1_M.	Check wiring at digital output.
			122	Dynamic test for high-side driver DO2_P.	DC 24 V short circuit at digital output DO2_P.	Check wiring at digital output.
			123	Dynamic test for low-side driver DO2_M.	DC 0 V short circuit at digital output DO2_M.	Check wiring at digital output.
			124	Deactivation of digital input test faulty	Digital inputs are still active after deactivation.	- Check digital input wiring. - Switch DCS..B option off and on again. - Replace DCS..B option.
			125			
			134	Plausibility fault in the speed recording	The difference between the two speed sensors is higher than the configured speed switch-off threshold.	- Check track again with the set data in the encoder configuration. - Check speed sensor. - Use the SCOPE function to set speed signals so that they are congruent.
			135			
109	DCS alarm	Display fault	136	Plausibility fault in the position detection.	The difference between the two position signals is higher than the configured increment switch-off threshold.	- Check track with the configured data of the encoder setting. - Check position signal. - Are all signals connected correctly to the 9-pin encoder connector? - Check encoder connector for correct connection. - Use the SCOPE function to set positions signals so that they are congruent.
			137			
			138	Plausibility fault incorrect position range.	The current position is outside the configured measurement range.	- Check track with the configured data of the encoder setting. - Check position signal, correct offset if necessary. - Use the SCOPE function to set positions signals so that they are congruent.
			139			
			140	Plausibility fault incorrect speed.	The current speed exceeds the configured maximum speed.	- The drive moves outside the permitted and configured speed range. - Check the configuration (encoder screen: max. set speed). - Analyze the speed profile using the SCOPE function.
			141			
			142	Plausibility fault incorrect acceleration.	The current acceleration is outside the configured acceleration range. The drive has exceeded the permitted acceleration range	- Check the configuration (encoder screen: max. set speed). - Analyze the speed/acceleration profile using the SCOPE function.
			143			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
109	DCS alarm	Display fault	146	Voltage supply of encoder faulty (E3405 = encoder 1 and E3406 = encoder 2).	The voltage supply of the encoder is not within the defined range (min. DC 20 V / max. DC 29 V).	• Overload in the supply voltage of the encoder; internal polyswitch fuse has tripped. • Check supply voltage of DCS..B option.
			147			
			150	Difference level RS485 driver. Fault Faulty "B" or "Cycle" signal.	• No encoder connection. • Incorrect encoder type connected.	• Check encoder connection. • Check encoder cabling.
			151			
			152	Difference level RS485 driver. Fault Faulty "A" or "DATA" signal.	• No encoder connection. • Incorrect encoder type connected.	• Check encoder connection. • Check encoder cabling.
			153			
			158	Plausibility fault SIN/COS encoder connection.	Incorrect encoder type connected.	Check encoder connection and cabling.
			159			
			164	Plausibility fault - SSI encoder connection (master mode).	Connected encoder type does not correspond to the configuration.	• Check encoder connection and cabling. • Check encoder.
			165			
			166	Plausibility fault SSI encoder connection (slave mode).	Connected encoder type does not correspond to the configuration.	• Check encoder connection and cabling. • Check encoder.
			167			
			186	EMU1 monitoring fault.	Faulty monitoring of the external shutdown channel.	• Check hardware connections. • Pick-up or release time too short. • Check switch contacts.
			187			
			188	EMU2 monitoring fault.	Faulty monitoring of the external shutdown channel.	• Check hardware connections. • Pick-up or release time too short. • Check switch contacts.
			189			
109	DCS alarm	Display fault	190	Plausibility fault position changeover.	Position changeover during ZSC, JSS or DMC is permanently activated.	• Check ZSC (SOS) activation. • Check JSS (SDI) activation. • Check DMC (SDI) activation only for monitoring the position.
			191			
			192	SSI encoder fault.	Encoder step SSI value within one cycle is too large.	• Check encoder configuration. • Check encoder cabling.
			193			
			194	SSI encoder fault.	Plausibility fault for position adjustment.	• Check encoder configuration. • Check encoder cabling.
			195			
			196	Plausibility fault of incremental encoder tracks.	• Different counting signals on A/B encoder tracks. • Defective component at RS485 interface. • Encoder operates outside tolerances of encoder interface.	• Check encoder configuration. • Check encoder cabling. • Check encoder signal levels. • Check maximum counting frequency of incremental encoder.
			197			
			198	Plausibility fault analog/digital comparison at Schmitt trigger output – encoder input X84.	• Connected encoder type does not correspond to the configuration. • Faulty encoder signals • Hardware defective	• Check configuration. • Check connected encoder. • Replace DCS..B option. • Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			199			
			200	Plausibility fault analog/digital comparison at Schmitt trigger output – encoder input X85.	• Connected encoder type does not correspond to the configuration. • Faulty encoder signals • Hardware defective	• Check configuration. • Check connected encoder. • Replace DCS..B option. • Send faulty DCS..B option with fault number to SEW-EURODRIVE for fault diagnostics.
			201			

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
110	"Ex-e protection" fault	Emergency stop	0	Duration of operation below 5 Hz exceeded	Duration of operation below 5 Hz exceeded	- Check configuration - Shorten duration of operation below 5 Hz
113	Analog input wire break	No response (P)	0	AI1 analog input wire break	AI1 analog input wire break	Check wiring
116	"Timeout MOVI-PLC" fault	Rapid stop/warning	0	MOVI-PLC® communication timeout		- Check startup - Check wiring
122	"Absolute encoder option"	Immediate stop	2	X15: Unknown encoder type	Connected encoder type unknown	Replace encoder
			16386	X14: Unknown encoder type		
			1	X15: Plausibility monitoring	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			33	X15: Analog voltages not within tolerance		
			41 – 45	X15: RS485 communication		
			60	X15: Analog voltages not within tolerance		
			63	X15: Position fault, excessive speed, unable to generate position	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			256	X15: Voltage dip		
			257	X15: Interrupted clock or data line		
			258	X15: Change of position		
			261	X15: No high level present	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			513	X15: Plausibility monitoring		
			768	X15: PDO timeout		
			770	X15: Change of position		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
122	"Absolute encoder option"	Immediate stop	16385	X14: Plausibility monitoring	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			16417	X14: Analog voltages not within tolerance		
			16444	X14: Analog voltages not within tolerance		
			16447	X14: Position fault, excessive speed, unable to generate position		
			16425 – 16429	X14: RS485 communication	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			16640	X14: Encoder's fault bit is set		
			16641	X14: Interrupted clock or data line		
			16642	X14: Change of position		
			16645	X14: No high level present	- Encoder cable or shield not connected correctly - Short circuit / broken wire in encoder cable - Encoder defective - EMC interference	- Check encoder cable and shield for correct connection, short circuit and broken wire - Replace encoder - Providing for EMC measures
			16897	X14: Plausibility monitoring		
			17152	X14: PDO timeout		
			17154	X14: Change of position		
			34 – 40	X15: Internal encoder fault	Internal encoder fault	Replace encoder
			46 – 50			
			64 – 67			
			514 – 544			
			772 – 774			
122	"Absolute encoder option"	Immediate stop	16418 – 16424	X14: Internal encoder fault	Internal encoder fault	Replace encoder
			16430 – 16434	X14: Internal encoder fault		
			16448 – 16451	X14: Internal encoder fault		
			16898 – 16928	X14: Internal encoder fault		
			17156 – 17158	X14: Internal encoder fault		

Fault			Subfault		Possible cause	Measure
Code	Designation	Response (P)	Code	Designation		
122	"Absolute encoder option"	Immediate stop	61	X15: Critical transmitter current	Soiled, transmitter broken	Replace encoder
			16445	X14: Critical transmitter current		
			62	X15: Critical encoder temperature	Encoder temperature too high	Reduce motor and ambient temperature
			16446	X14: Critical encoder temperature		
			259	X15: Insufficient clock frequency	Incorrect encoder parameterization	Check encoder parameterization
			260	X15: Encoder signals programmable fault		
			576	X15: Internal encoder warning		
			769	X15: Encoder signals programmable fault		
			16643	X14: Insufficient clock frequency		
			16644	X14: Encoder signals programmable fault		
			16960	X14: Internal encoder warning		
			17153	X14: Encoder signals programmable fault		
			771	X15: Emergency signal		
			17155	X14: Emergency signal		
123	Positioning interruption	Emergency stop (P)	0	Fault "Positioning/Positioning interruption"	Target monitoring when interrupted positioning process is resumed. Target would be overrun.	Perform positioning process without interruption until it is complete
124	Ambient condition	Emergency stop (P)	1	Permitted ambient temperature exceeded	Ambient temperature > 60 °C	• Improve ventilation and cooling conditions • Improve air supply to the control cabinet; check filter mats

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
196	Power section	Immediate stop	1	Discharge resistor	Discharge resistor overload	Observe waiting time for power on/off
			2	Hardware ID precharge/discharge control	Incorrect precharge/discharge controller variant	- Consult SEW Service - Replace precharge/discharge control
			3	Inverter coupling	Defective inverter coupling	- Consult SEW Service - Replace inverter coupling
			4	Inverter coupling reference voltage	Defective inverter coupling	- Consult SEW Service - Replace inverter coupling
			5	Power sections configuration	Different phase modules installed in the unit	- Inform the SEW Service - Check and replace phase modules
			6	Control unit configuration	Control unit line inverter or motor inverter incorrect	Replace or correctly assign the control unit of line and motor inverter
			7	Communication power section control unit	No communication	Check control unit installation
			8	Communication precharge/discharge control inverter coupling	No communication	- Check the cabling. - Consult SEW Service
			10	Communication power section control unit	The inverter coupling does not support protocol	Replace inverter coupling
			11	Communication power section control unit	Faulty communication with inverter coupling at power-up (CRC fault)	Replace inverter coupling
			12	Communication power section control unit	Inverter coupling uses protocol that does not match control unit	Replace inverter coupling
			13	Communication power section control unit	Faulty communication with inverter coupling during operation: more than 1 CRC fault per second	Replace inverter coupling
196	Power section	Immediate stop	14	Control unit configuration	Missing PLD functionality for EEPROM data set size 7	Replace control unit
			15	Inverter coupling fault	Inverter coupling processor has signaled internal fault	- Consult SEW Service if the fault occurs again. - Replace inverter coupling
			16	Inverter coupling fault: PLD version incompatible		Replace inverter coupling
			17	Precharge/discharge control fault	Precharge/discharge control processor has signaled internal fault	- Consult SEW Service if the fault occurs again. - Replace precharge/discharge controller
			18	Defective DC link fan	Faulty DC link fan	- Consult SEW Service - Check whether DC link choke fan is connected or faulty
			19	Communication power section control unit	Faulty communication with inverter coupling during operation: more than 1 internal fault per second	- Consult SEW Service if the fault occurs again. - Replace inverter coupling
			20	Communication power section control unit	The control unit has not sent any messages to the inverter coupling for a while	- Consult SEW Service if the fault occurs again. - Replace inverter coupling
			21	Uz measurement not plausible Phase R	Defective phase module	Consult SEW Service if the fault occurs again.
			22	Ur measurement not plausible Phase S		
			23	Uz measurement not plausible Phase T		

Fault			Subfault			
Code	Designation	Response (P)	Code	Designation	Possible cause	Measure
197	Supply system	Immediate stop	1	Line overvoltage (motor inverter only at start of pre-charging process)	Inadequate line voltage quality	• Check supply (fuses, contactor) • Check configuration of the supply system
			2	Line undervoltage (only with line inverter)		
199	DC link charging	Immediate stop	4	Precharging was aborted	Unable to charge DC link	• Precontrol overload • Connected DC link capacity too high • Short circuit in the DC link; check DC link connection in case of several units

7.4 SEW-EURODRIVE electronics service

7.4.1 Sending a device in for repair

Please contact the SEW-EURODRIVE electronics service if a fault cannot be rectified (→ "Customer and spare parts service").

When you contact the SEW-EURODRIVE electronics service, always quote the digits on the status label so that our service personnel can assist you more effectively.

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

- Serial number (→ nameplate)
- Type designation
- Standard version or application version
- Digits on the status label
- Short description of application (drive application, control via terminals or serial)
- Connected motor (motor type, motor voltage, Δ or Y connection)
- Nature of the fault
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.

7.5 Extended storage

If the device is stored for a long time, connect it to the power supply 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 using the rated 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.

The following stages are recommended:

AC 400/500 V devices:

- 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

AC 230 V devices:

- Stage 1: AC 170 V for 15 minutes
- Stage 2: AC 200 V for 15 minutes
- Stage 3: AC 240 V for 1 hour

After you have completed the regeneration process, the device can be used immediately or stored again for an extended period with maintenance.

7.6 Waste disposal

Please follow the current instructions. Dispose of the following materials in accordance with the regulations in force:

- Electronics scrap (printed circuit boards)
- Plastic (housing)
- Sheet metal
- Copper

8 Technical data of basic device

8.1 CE marking, approvals

8.1.1 CE marking

- Low Voltage Directive

MOVIDRIVE® MDX60B/61B drive inverters comply with the regulations of the Low Voltage Directive 2014/35/EU.

- Electromagnetic compatibility (EMC)

MOVIDRIVE® drive inverters and regenerative power supply units are designed for use as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Variable-speed electrical drives". Provided that you comply with the installation instructions for the SEW components, the CE marking requirements for the entire machine/system in which they are installed are satisfied on the basis of the EMC directive 2014/30/EU. For detailed information on EMC compliant installation, refer to the documentation "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

- Compliance with limit classes C1, C2 or C3 has been tested in a CE-typical drive system. SEW-EURODRIVE provides detailed information on request.



The CE mark on the nameplate indicates conformity with the low voltage directive 2014/35/EU. We can provide a declaration of conformity on request.

8.1.2 UL / cUL / EAC



UL and cUL approval (USA) has been granted for the entire MOVIDRIVE® device series. Only the MOVIDRIVE® MDR60A1320-503-00 is not UL or cUL approved. cUL is equivalent to the CSA approval.



The MOVIDRIVE® device series meets 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.

8.1.3 RCM



RCM approval has been granted for the entire MOVIDRIVE® device family. RCM certifies conformity with ACMA (Australian Communications and Media Authority) standards.

8.1.4 KC



The KC certificate is approved for size 0– 6 of the MOVIDRIVE® device family. The KC certificate states the registration with the Korean RRA (National Radio Research Agency).

8.2 General technical data

The following table lists the technical data applicable to all MOVIDRIVE® MDX60/61B drive inverters, regardless of their type, design, size, and power rating.

MOVIDRIVE® MDX60B/61B	All sizes
Interference immunity	Meets EN 61800-3
Interference emission with EMC compliant installation	Sizes 0 to 7 meet EN 61800-3 Sizes 0 to 5: According to limit value class C1 to EN 61800-3 with a corresponding line filter Sizes 0, 1, 2S, and 2 in accordance with limit value class C2 to EN 61800-3 without additional measures Size 6 and 7 in accordance with limit value class C2 to EN 61800-3 with corresponding line filter
Ambient temperature ϑ_{amb}	0 °C – +50 °C at $I_D = 100\% I_N$ and $f_{PWM} = 4 \text{ kHz}$ / size 7: 2.5 kHz 0 °C – +40 °C at $I_D = 125\% I_N$ and $f_{PWM} = 4 \text{ kHz}$ / size 7: 2.5 kHz 0 °C – +40 °C at $I_D = 100\% I_N$ and $f_{PWM} = 8 \text{ kHz}$ (size 0 – 6) 0 °C – +40 °C at $I_D = 100\% I_N$ and $f_{PWM} = 4 \text{ kHz}$ (size 7)
I_N reduction	2.5% I_N per K at 40 °C to 50 °C
Ambient temperature	3% I_N per K at 50 °C to 60 °C
Climate class	EN 60721-3-3 class 3K3
Storage temperature ¹⁾ ϑ_L	-25 °C – +70 °C (EN 60721-3-3, class 3K3) DBG keypad: -20 °C – +60 °C
Cooling type (DIN 41751)	Forced cooling (temperature-controlled fan, response threshold 45 °C)
Degree of protection EN 60529 (NEMA1) Sizes 0 to 2 Size 3 Sizes 4 to 5 Size 6 Size 7	IP20 • IP10 without touch guard • IP20 (power connections) with connected cable and installed heat shrink tubing (not included in the delivery) or with the delivered protection caps IP00 (power connections) IP10 (power connections) with • fitted Plexiglas cover supplied as standard and • fitted heat shrink tubing (not included in scope of delivery) IP20 (power connections) with • Mounted option DLB11B IP00 (power connections) IP10 (power connections) with • fitted Plexiglas cover supplied as standard and • fitted heat shrink tubing (not included in scope of delivery) IP00 (power connections) IP20 (power connections) with • installed DLB21B touch guard
Operating mode	Continuous duty with 50% overload capacity (size 0: 100%)
Overvoltage category	III according to IEC 60664-1 (VDE 0110-1)
Pollution class	2 according to IEC 60664-1 (VDE 0110-1)
Protection against mechanically active substances	3S1 DIN EN 60721-3-3 / IEC 721-3-3
Protection against chemically active substances	3C2 DIN EN 60721-3-3 / IEC 721-3-3

MOVIDRIVE® MDX60B/61B	All sizes
Installation altitude h	Up to $h \leq 1000$ m without restrictions. The following restrictions apply at $h \geq 1000$ m: • From 1,000 m to max. 4,000 m: – I_N reduction by 1% per 100 m • From 2,000 m to max. 4,000 m: – The safe disconnection of power and electronics connections can no longer be assured above 2000 m. This requires external measures (IEC 60664-1/EN 61800-5-1) – You have to connect an overvoltage protection device in order to reduce the overvoltages from category III to category II.

- 1) In case of extended storage, connect the device to the power supply for at least 5 minutes every two years, otherwise the device's service life may be reduced.

8.3 MOVIDRIVE® MDX60/61B...-5_3 (AC 400/500 V units)

8.3.1 MOVIDRIVE® MDX60/61B0005/0008/0011/0014 size 0 (AC 400/500 V devices)

MOVIDRIVE® MDX60/61B		0005-5A3-4-0_	0008-5A3-4-0_	0011-5A3-4-0_	0014-5A3-4-0_
Size		0S		0M	
INPUT					
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V			
Line frequency	f _{line}	50 Hz – 60 Hz ±5%			
Nominal line current ¹⁾ I _{line}	100%	AC 1.8 A	AC 2.2 A	AC 2.8 A	AC 3.6 A
(at V _{line} = 3 × AC 400 V)	125%	AC 2.3 A	AC 2.7 A	AC 3.5 A	AC 4.5 A
OUTPUT					
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	1.4 kVA	1.6 kVA	2.1 kVA	2.8 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 2 A	AC 2.4 A	AC 3.1 A	AC 4 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V and f _{PWM} = 4 kHz)	I _D	AC 2.5 A	AC 3 A	AC 3.8 A	AC 5 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V and f _{PWM} = 8 kHz)	I _D	AC 2 A	AC 2.4 A	AC 3.1 A	AC 4 A
Max. output frequency	f _{max}	599 Hz			
Current limiting	I _{max}	Motor and generator mode 200% I _N , duration depending on the capacity utilization			
Internal current limit		I _{max} = 0 – 200% adjustable			
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	68 Ω			
Output voltage	V _O	Max. V _{line}			
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz			
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range			
GENERAL					
Power loss at S _N ²⁾	P _{Vmax}	42 W	48 W	58 W	74 W
Cooling air consumption		3 m³/h		9 m³/h	
Cross section of device terminals X1, X2, X3, X4		Separable terminal strips 4 mm² conductor end sleeve DIN 46228			
Tightening torque		0.6 Nm			

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard version		0005-5A3-4-00	0008-5A3-4-00	0011-5A3-4-00	0014-5A3-4-00
Design with coated printed circuit boards		0005-5A3-4-00/L	0008-5A3-4-00/L	0011-5A3-4-00/L	0014-5A3-4-00/L
Part number		8277222	8277230	8277249	8277257
		8289476	8289484	8289492	8289506
MDX61B Application version		0005-5A3-4-0T	0008-5A3-4-0T	0011-5A3-4-0T	0014-5A3-4-0T
Design with coated printed circuit boards		0005-5A3-4-0T/L	0008-5A3-4-0T/L	0011-5A3-4-0T/L	0014-5A3-4-0T/L
Part number		8277265	8277273	8277281	827729X
		8289514	8289522	8289530	8289549
Recommended motor power					
 Constant load	P_{Mot}	0.55 kW	0.75 kW	1.1 kW	1.5 kW
 Variable torque load or constant load without overload	P_{Mot}	0.75 kW	1.1 kW	1.5 kW	2.2 kW
Mass		2.0 kg		2.5 kg	
Dimensions	$W \times H \times D$	45 mm × 317 mm × 260 mm		67.5 mm × 317 mm × 260 mm	
MDX61B standard version (VFC/CFC/SERVO)		0005-5A3-4-00	0008-5A3-4-00	0011-5A3-4-00	0014-5A3-4-00
Design with coated printed circuit boards		0005-5A3-4-00/L	0008-5A3-4-00/L	0011-5A3-4-00/L	0014-5A3-4-00/L

Part number		8277303 8289557	8277311 8289565	827732X 8289573	8277338 8289581
MDX61B technology version (VFC/CFC/SERVO) Design with coated printed circuit boards		0005-5A3-4-0T 0005-5A3-4-0T/L	0008-5A3-4-0T 0008-5A3-4-0T/L	0011-5A3-4-0T 0011-5A3-4-0T/L	0014-5A3-4-0T 0014-5A3-4-0T/L
Part number		8277346 8289603	8277354 8289611	8277362 8289638	8277370 8289646
Mass		2.3 kg		2.8 kg	
Dimensions	W × H × D	72.5 mm × 317 mm × 260 mm		95 mm × 317 mm × 260 mm	
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection			

8.3.2 MOVIDRIVE® MDX61B0015/0022/0030/0040 size 1 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0015-5A3-4-0_	0022-5A3-4-0_	0030-5A3-4-0_	0040-5A3-4-0_
INPUT					
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V			
Line frequency	f _{line}	50 Hz – 60 Hz ±5%			
Nominal line current ¹⁾ I _{line}	100%	AC 3.6 A	AC 5.0 A	AC 6.3 A	AC 8.6 A
(at V _{line} = 3 × AC 400 V)	125%	AC 4.5 A	AC 6.2 A	AC 7.9 A	AC 10.7 A
OUTPUT					
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	2.8 kVA	3.8 kVA	4.9 kVA	6.6 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 4 A	AC 5.5 A	AC 7 A	AC 9.5 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V and f _{PWM} = 4 kHz)	I _D	AC 5 A	AC 6.9 A	AC 8.8 A	AC 11.9 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V and f _{PWM} = 8 kHz)	I _D	AC 4 A	AC 5.5 A	AC 7 A	AC 9.5 A
Max. output frequency	f _{max}	599 Hz			
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization			
Internal current limit		I _{max} = 0 – 150% adjustable			
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	68 Ω			
Output voltage	V _O	Max. V _{line}			
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz			
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range			
GENERAL					
Power loss at S _N ²⁾	P _{Vmax}	85 W	105 W	130 W	180 W
Cooling air consumption		40 m³/h			
Mass		3.5 kg			
Dimensions	W × H × D	105 mm × 314 mm × 234 mm			
Cross section of device terminals X1, X2, X3, X4		Separable terminal strips 4 mm² conductor end sleeve DIN 46228			
Tightening torque		0.6 Nm			

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0015-5A3-4-00	0022-5A3-4-00	0030-5A3-4-00	0040-5A3-4-00
Design with coated printed circuit boards		0015-5A3-4-00/L	0022-5A3-4-00/L	0030-5A3-4-00/L	0040-5A3-4-00/L
Part number		08279578	08279586	08279594	08279608
		18400132	18400140	18400159	18400167
MDX61B application version		0015-5A3-4-0T	0022-5A3-4-0T	0030-5A3-4-0T	0040-5A3-4-0T
Design with coated printed circuit boards		0015-5A3-4-0T/L	0022-5A3-4-0T/L	0030-5A3-4-0T/L	0040-5A3-4-0T/L
Part number		08279756	08279764	08279772	08279780
		18400310	18400329	18400337	18400345
Recommended motor power					
 Constant load	P_{Mot}	1.5 kW	2.2 kW	3.0 kW	4.0 kW
 Variable torque load or constant load without overload	P_{Mot}	2.2 kW	3.0 kW	4.0 kW	5.5 kW
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection			

8.3.3 MOVIDRIVE® MDX61B0055/0075/0110 size 2S, 2 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0055-5A3-4-0_	0075-5A3-4-0_	0110-5A3-4-0_
Size		2S		2
INPUT				
Nominal supply voltage (to EN 50160)	V_{line}	3 × AC 380 V – 500 V		
Line frequency	f_{line}	50 Hz – 60 Hz ±5%		
Nominal line current ¹⁾ I_{line}	100%	AC 11.3 A	AC 14.4 A	AC 21.6 A
(at $V_{line} = 3 \times AC 400 V$)	125%	AC 14.1 A	AC 18.0 A	AC 27.0 A
OUTPUT				
Apparent output power ²⁾ (at $V_{line} = 3 \times AC 380 - 500 V$)	S_N	8.7 kVA	11.2 kVA	16.8 kVA
Nominal output current ¹⁾ (at $V_{line} = 3 \times AC 400 V$)	I_N	AC 12.5 A	AC 16 A	AC 24 A
Continuous output current (= 125% I_N) (at $V_{line} = 3 \times AC 400 V$ with $f_{PWM} = 4 kHz$)	I_D	AC 15.6 A	AC 20 A	AC 30 A
Continuous output current (= 100% I_N) (at $V_{line} = 3 \times AC 400 V$ with $f_{PWM} = 8 kHz$)	I_D	AC 12.5 A	AC 16 A	AC 24 A
Max. output frequency	f_{max}	599 Hz		
Current limiting	I_{max}	Motor and generator mode 150% I_N , duration depending on the capacity utilization		
Internal current limit		$I_{max} = 0 - 150\%$ adjustable		
Permitted minimum braking resistance value (4Q operation)	R_{BWmin}	47 Ω		22 Ω
Output voltage	V_O	Max. V_{line}		
PWM frequency	f_{PWM}	Adjustable: 4/8/12/16 kHz		
Speed range/resolution	$n_R / \Delta n_R$	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range		
GENERAL				
Power loss at S_N ²⁾	P_{Vmax}	180 W	230 W	400 W
Cooling air consumption		80 m ³ /h		
Mass		6.6 kg		
Dimensions	$W \times H \times D$	105 mm × 335 mm × 294 mm		130 mm × 315 mm × 285 mm
Cross section of device terminals X1, X2, X3, X4		Terminal strips 4 mm ² conductor end sleeve DIN 46228		M4 screw and washer assembly with terminal clip 4 mm ² conductor end sleeve DIN 46228 6 mm ² crimp cable lug DIN 46234
Tightening torque		0.6 Nm		1.5 Nm

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
Design with coated printed circuit boards		0055-5A3-4-00/L	0075-5A3-4-00/L	0110-5A3-4-00/L
Part number		08279616 18400175	08279624 18400183	08279632 18400191
MDX61B application version		0055-5A3-4-0T	0075-5A3-4-0T	0110-5A3-4-0T
Design with coated printed circuit boards		0055-5A3-4-0T/L	0075-5A3-4-0T/L	0110-5A3-4-0T/L
Part number		08279799 18400353	08279802 18400361	08279810 18400388
Recommended motor power				
 Constant load	P_{Mot}	5.5 kW	7.5 kW	11 kW
 Variable torque load or constant load without overload	P_{Mot}	7.5 kW	11 kW	15 kW

Recommended motor power	→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection
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8.3.4 MOVIDRIVE® MDX61B0150/0220/0300 size 3 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0150-503-4-0_	0220-503-4-0_	0300-503-4-0_
INPUT				
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V		
Line frequency	f _{line}	50 Hz – 60 Hz ±5%		
Nominal line current ¹⁾ I _{line}	100%	AC 28.8 A	AC 41.4 A	AC 54 A
(at V _{line} = 3 × AC 400 V)	125%	AC 36 A	AC 51.7 A	AC 67.5 A
OUTPUT				
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	22.2 kVA	31.9 kVA	41.6 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 32 A	AC 46 A	AC 60 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 4 kHz)	I _D	AC 40 A	AC 57.5 A	AC 75 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 8 kHz)	I _D	AC 32 A	AC 46 A	AC 60 A
Max. output frequency	f _{max}	599 Hz		
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization		
Internal current limit		I _{max} = 0 – 150% adjustable		
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	15 Ω	12 Ω	
Output voltage	V _O	Max. V _{line}		
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz		
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range		
GENERAL				
Power loss at S _N ²⁾	P _{Vmax}	550 W	750 W	950 W
Cooling air consumption		180 m³/h		
Mass		15.0 kg		
Dimensions	W × H × D	200 mm × 465 mm × 308 mm		
Cross section of device terminals X1, X2, X3, X4		M6 bolt with nut, max. 25 mm², crimp cable lug DIN 46235		
Tightening torque		3.5 Nm		

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0150-503-4-00	0220-503-4-00	0300-503-4-00
Design with coated printed circuit boards		0150-503-4-00/L	0220-503-4-00/L	0300-503-4-00/L
Part number		08279640	08279659	08279667
		18400205	18400213	18400221
MDX61B application version		0150-503-4-0T	0220-503-4-0T	0300-503-4-0T
Design with coated printed circuit boards		0150-503-4-0T/L	0220-503-4-0T/L	0300-503-4-0T/L
Part number		08279829	08279837	08279845
		18400396	18400418	18400426
Recommended motor power				
	P_{Mot}	15 kW	22 kW	30 kW
Constant load				
	P_{Mot}	22 kW	30 kW	37 kW
Variable torque load or constant load without overload				
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection		

Technical data of basic device

MOVIDRIVE® MDX60/61B...-5_3 (AC 400/500 V units)

8.3.5 MOVIDRIVE® MDX61B0370/0450 size 4 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0370-503-4-0_	0450-503-4-0_
INPUT			
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V	
Line frequency	f _{line}	50 Hz – 60 Hz ±5%	
Nominal line current ¹⁾ I _{line}	100%	AC 65.7 A	AC 80.1 A
(at V _{line} = 3 × AC 400 V)	125%	AC 81.9 A	AC 100.1 A
OUTPUT			
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	51.1 kVA	62.3 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 73 A	AC 89 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 4 kHz)	I _D	AC 91 A	AC 111 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 8 kHz)	I _D	AC 73 A	AC 89 A
Max. output frequency	f _{max}	599 Hz	
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization	
Internal current limit		I _{max} = 0 – 150 % adjustable	
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	6 Ω	
Output voltage	V _O	Max. V _{line}	
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz	
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range	
GENERAL			
Power loss at S _N ²⁾	P _{Vmax}	1200 W	1450 W
Cooling air consumption		180 m³/h	
Mass		27 kg	
Dimensions	W × H × D	280 mm × 522 mm × 307 mm	
Cross section of device terminals X1, X2, X3, X4		M10 bolt with nut Max. 70 mm² Press cable lug DIN 46235	
Tightening torque		14 Nm	

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0370-503-4-00	0450-503-4-00
Design with coated printed circuit boards		0370-503-4-00/L	0450-503-4-00/L
Part number		08279675 18400248	08279683 18400256
MDX61B application version		0370-503-4-0T	0450-503-4-0T
Design with coated printed circuit boards		0370-503-4-0T/L	0450-503-4-0T/L
Part number		08279853 18400434	08279861 18400442
Recommended motor power			
	P_{Mot}	37 kW	45 kW
Constant load			
	P_{Mot}	45 kW	55 kW
Variable torque load or constant load without overload			
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection	

8.3.6 MOVIDRIVE® MDX61B0550/0750 size 5 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0550-503-4-0_	0750-503-4-0_
INPUT			
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V	
Line frequency	f _{line}	50 Hz – 60 Hz ±5%	
Nominal line current ¹⁾ I _{line}	100%	AC 94.5 A	AC 117 A
(at V _{line} = 3 × AC 400 V)	125%	AC 118.1 A	AC 146.3 A
OUTPUT			
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	73.5 kVA	91.0 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 105 A	AC 130 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 4 kHz)	I _D	AC 131 A	AC 162 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 8 kHz)	I _D	AC 105 A	AC 130 A
Max. output frequency	f _{max}	599 Hz	
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization	
Internal current limit		I _{max} = 0 – 150% adjustable	
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	6 Ω	4 Ω
Output voltage	V _O	Max. V _{line}	
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz	
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range	
GENERAL			
Power loss at S _N ²⁾	P _{Vmax}	1700 W	2000 W
Cooling air consumption		360 m³/h	
Mass		35 kg	
Dimensions	W × H × D	280 mm × 610 mm × 330 mm	
Cross section of device terminals X1, X2, X3, X4		M10 bolt with nut Max. 70 mm² Press cable lug DIN 46235	
Tightening torque		14 Nm	

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0550-503-4-00	0750-503-4-00
Design with coated printed circuit boards		0550-503-4-00/L	0750-503-4-00/L
Part number		08279691	08279705
		18400264	18400272
MDX61B application version		0550-503-4-0T	0750-503-4-0T
Design with coated printed circuit boards		0550-503-4-0T/L	0750-503-4-0T/L
Part number		08279888	08279896
		18400450	18400469
Recommended motor power			
	P_{Mot}	55 kW	75 kW
Constant load			
	P_{Mot}	75 kW	90 kW
Variable torque load or constant load without overload			
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection	

8.3.7 MOVIDRIVE® MDX61B0900/1100/1320 size 6 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		0900-503-4-0_	1100-503-4-0_	1320-503-4-0_
INPUT				
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V		
Line frequency	f _{line}	50 Hz – 60 Hz ±5%		
Nominal line current ¹⁾ I _{line}	100%	AC 153 A	AC 180 A	AC 225 A
(at V _{line} = 3 × AC 400 V)	125%	AC 191 A	AC 225 A	AC 281 A
OUTPUT				
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	118 kVA	139 kVA	174 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 170 A	AC 200 A	AC 250 A
Continuous output current (= 125 % I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 4 kHz) Temperature range 0 °C – +40 °C	I _D	AC 212 A	AC 250 A	AC 312 A
Continuous output current (= 100% I _N) I _D (at V _{line} = 3 × AC 400 V with f _{PWM} = 8 kHz) Temperature range 0 °C – +50 °C	I _D	AC 170 A	AC 200 A	AC 250 A
Max. output frequency	f _{max}	599 Hz		
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization		
Internal current limit		I _{max} = 0 – 150% adjustable		
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	2.7 Ω		
Output voltage	V _O	Max. V _{line}		
PWM frequency	f _{PWM}	Adjustable: 4 oder 8 kHz		
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range		
GENERAL				
Power loss at S _N ²⁾	P _{Vmax}	1983 W	2240 W	2700 W
Cooling air consumption		600 m³/h		
Mass		60 kg		
Dimensions	W × H × D	280 mm × 1000 mm × 382 mm		
Cross section of device terminals X1, X2, X3, X4		M12 bolt with nut Max. 185 mm² Press cable lug DIN 46235		
Tightening torque		20 Nm		

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0900-503-4-00	1100-503-4-00	1320-503-4-00
Design with coated printed circuit boards		0900-503-4-00/L	1100-503-4-00/L	1320-503-4-00/L
Part number		08279713	08279721	08279748
		18400280	18400299	18400302
MDX61B application version		0900-503-4-0T	1100-503-4-0T	1320-503-4-0T
Design with coated printed circuit boards		0900-503-4-0T/L	1100-503-4-0T/L	1320-503-4-0T/L
Part number		08279918	08279926	08279934
		18400477	18400485	18400493
Recommended motor power				
	P_{Mot}	90 kW	110 kW	132 kW
Constant load				
	P_{Mot}	110 kW	132 kW	160 kW
Variable torque load or constant load without overload				
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection		

8.3.8 MOVIDRIVE® MDX61B1600/2000/2500 size 7 (AC 400/500 V devices)

MOVIDRIVE® MDX61B		1600-503-2-0T/L 1600-503-4-0T/L	2000-503-2-0T/L 2000-503-4-0T/L	2500-503-2-0T/L 2500-503-4-0T/L
INPUT				
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 380 V – 500 V		
Line frequency	f _{line}	50 Hz – 60 Hz ±5%		
Nominal line current ¹⁾ I _{line}	100%	AC 280 A	AC 340 A	AC 435 A
(at V _{line} = 3 × AC 400 V)	125%	AC 340 A	AC 425 A	AC 535 A
OUTPUT				
Maximum output voltage		599 Hz	599 Hz	599 Hz
Apparent output power ²⁾ (at V _{line} = 3 × AC 380 – 500 V)	S _N	208 kVA	263 kVA	326 kVA
Nominal output current ¹⁾ (at V _{line} = 3 × AC 400 V)	I _N	AC 300 A	AC 380 A	AC 470 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 2.5 kHz) Temperature range 0 °C – +40 °C	I _D	AC 375 A	AC 475 A	AC 588 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 400 V with f _{PWM} = 2.5 kHz) Temperature range 0 °C – +50 °C	I _D	AC 300 A	AC 380 A	AC 470 A
Max. output frequency	f _{max}	599 Hz		
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization		
Internal current limit		I _{max} = 0 – 150% adjustable		
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	1.1 Ω		
Output voltage	V _O	Max. V _{line}		
PWM frequency	f _{PWM}	Adjustable: 2.5 or 4 kHz possible		
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range		
GENERAL				
Power loss at S _N ²⁾	P _{Vmax}	2691 W	3182 W	3880 W
Cooling air consumption		1200 m³/h		
Mass		2Q design: 260 kg 4Q variant: 280 kg		
Dimensions	W × H × D	700 mm × 1490 mm × 470 mm		
Conductor rails X1, X2, X3		Connection rail with bore for M12 Max. 2 × 240 mm² Press cable lug DIN 46235		
Tightening torque		70 Nm		
Connections of the DC 24 V power supply unit (PE L1 L2 L3)		Cross section: 6 mm² Tightening torque ≤ 4 mm² = 0.5 Nm Tightening torque > 4 mm² = 0.7 Nm – 0.8 Nm		

1) The system and output currents must be reduced by 20% from the nominal values for $V_{line} = 3 \times AC 500 V$.

2) The performance data applies to $f_{PWM} = 2.5 kHz$.

MDX61B application version		1600-503-2-0T/L	2000-503-2-0T/L	2500-503-2-0T/L
With coated printed circuit boards		1600-503-4-0T/L	2000-503-4-0T/L	2500-503-4-0T/L
Part number		08299765	08299773	08299781
		08299803	08299811	08299838
Recommended motor power				
 Constant load	P_{Mot}	160 kW	200 kW	250 kW
 Variable torque load or constant load without overload	P_{Mot}	200 kW	250 kW	315 kW
Recommended motor power		→ MOVIDRIVE® B system manual or catalog, chapter Basic recommendations for motor selection		

8.4 MOVIDRIVE® MDX61B...-2_3 (AC 230 V units)

8.4.1 MOVIDRIVE® MDX61B0015/0022/0037 size 1 (AC 230 V devices)

MOVIDRIVE® MDX61B		0015-2A3-4-0_	0022-2A3-4-0_	0037-2A3-4-0_
INPUT				
Nominal supply voltage (to EN 50160)	V_{line}	3 × AC 200 V - 240 V		
Line frequency	f_{line}	50 Hz – 60 Hz ±5%		
Nominal supply current I_{line}	100%	AC 6.7 A	AC 7.8 A	AC 12.9 A
(at $V_{line} = 3 \times \text{AC } 230 \text{ V}$)	125%	AC 8.4 A	AC 9.8 A	AC 16.1 A
OUTPUT				
Apparent output power ¹⁾ (at $V_{line} = 3 \times \text{AC } 380 - 240 \text{ V}$)	S_N	2.7 kVA	3.4 kVA	5.8 kVA
Nominal output current (at $V_{line} = 3 \times \text{AC } 230 \text{ V}$)	I_N	AC 7.3 A	AC 8.6 A	AC 14.5 A
Continuous output current (= 125% I_N) (at $V_{line} = 3 \times \text{AC } 230 \text{ V}$ with $f_{PWM} = 4 \text{ kHz}$)	I_D	AC 9.1 A	AC 10.8 A	AC 18.1 A
Continuous output current (= 100% I_N) (at $V_{line} = 3 \times \text{AC } 230 \text{ V}$ with $f_{PWM} = 8 \text{ kHz}$)	I_D	AC 7.3 A	AC 8.6 A	AC 14.5 A
Max. output frequency	f_{max}	599 Hz		
Current limiting	I_{max}	Motor and generator mode 150% I_N , duration depending on the capacity utilization		
Internal current limit		$I_{max} = 0 - 150\%$ adjustable		
Minimum permitted braking resistor value (4Q operation)	R_{BWmin}	27 Ω		
Output voltage	V_O	Max. V_{line}		
PWM frequency	f_{PWM}	Adjustable: 4/8/12/16 kHz		
Speed range/resolution	$n_R / \Delta n_R$	-6000 – 0 – +6000 min^{-1} / 0.2 min^{-1} over the entire range		
GENERAL				
Power loss at $S_N^{1)}$	P_{Vmax}	126 W	142 W	210 W
Cooling air consumption		40 m^3/h		
Mass		2.8 kg		
Dimensions	$W \times H \times D$	105 mm × 314 mm × 234 mm		
Cross section of device terminals X1, X2, X3, X4		Separable terminal strip 4 mm^2 conductor end sleeve DIN 46228		
Tightening torque		0.6 Nm		

1) The performance data applies to $f_{PWM} = 4 \text{ kHz}$.

MDX61B standard design		0015-2A3-4-00	0022-2A3-4-00	0037-2A3-4-00
Part number		08279942	08279950	08279969
MDX61B application version		0015-2A3-4-0T	0022-2A3-4-0T	0037-2A3-4-0T
Part number		08280037	08280045	08280053
Recommended motor power				
	P_{Mot}	1.5 kW	2.2 kW	3.7 kW
Constant load				
	P_{Mot}	2.2 kW	3.7 kW	5.0 kW
Variable torque load or constant load without overload				
Recommended motor power		→ MOVIDRIVE® B system manual, chapter Basic recommendations for motor selection		

8.4.2 MOVIDRIVE® MDX61B0055/0075 size 2 (AC 230 V devices)

MOVIDRIVE® MDX61B		0055-2A3-4-0_	0075-2A3-4-0_
INPUT			
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 200 V - 240 V	
Line frequency	f _{line}	50 Hz – 60 Hz ±5%	
Nominal supply current I _{line}	100%	AC 19.5 A	AC 27.4 A
(at V _{line} = 3 × AC 230 V)	125%	AC 24.4 A	AC 34.3 A
OUTPUT			
Apparent output power ¹⁾ (at V _{line} = 3 × AC 380 – 240 V)	S _N	8.8 kVA	11.6 kVA
Nominal output current (at V _{line} = 3 × AC 230 V)	I _N	AC 22 A	AC 29 A
Continuous output current (= 125% I _N) (at V _{line} = 3 × AC 230 V with f _{PWM} = 4 kHz)	I _D	AC 27.5 A	AC 36.3 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 230 V with f _{PWM} = 8 kHz)	I _D	AC 22 A	AC 29 A
Max. output frequency	f _{max}	599 Hz	
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization	
Internal current limit		I _{max} = 0 – 150% adjustable	
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	12 Ω	
Output voltage	V _O	Max. V _{line}	
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz	
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range	
GENERAL			
Power loss at S _N ¹⁾	P _{Vmax}	330 W	423 W
Cooling air consumption		80 m³/h	
Mass		5.9 kg	
Dimensions	W × H × D	130 mm × 315 mm × 285 mm	
Cross section of device terminals X1, X2, X3, X4		M4 screw and washer assembly with terminal clip 4 mm² conductor end sleeve DIN 46228 6 mm² crimp cable lug DIN 46234	
Tightening torque		1.5 Nm	

1) The performance data applies to $f_{PWM} = 4 \text{ kHz}$.

MDX61B standard design		0055-2A3-4-00	0075-2A3-4-00
Part number		08279977	08279985
MDX61B application version		0055-2A3-4-0T	0075-2A3-4-0T
Part number		08280061	08280088
Recommended motor power			
	P_{Mot}	5.5 kW	7.5 kW
Constant load			
	P_{Mot}	7.5 kW	11 kW
Variable torque load or constant load without overload			
Recommended motor power		→ MOVIDRIVE® B system manual, chapter Basic recommendations for motor selection	

Technical data of basic device

MOVIDRIVE® MDX61B...-2_3 (AC 230 V units)

8.4.3 MOVIDRIVE® MDX61B0110/0150 size 3 (AC 230 V devices)

MOVIDRIVE® MDX61B		0110-203-4-0_	0150-203-4-0_
INPUT			
Nominal supply voltage (to EN 50160)	V_{line}	3 × AC 200 V - 240 V	
Line frequency	f_{line}	50 Hz – 60 Hz ±5%	
Nominal supply current I_{line}	100%	AC 40 A	AC 49 A
(at $V_{line} = 3 \times AC 230 V$)	125%	AC 50 A	AC 61 A
OUTPUT			
Apparent output power ¹⁾ (at $V_{line} = 3 \times AC 380 - 240 V$)	S_N	17.1 kVA	21.5 kVA
Nominal output current (at $V_{line} = 3 \times AC 230 V$)	I_N	AC 42 A	AC 54 A
Continuous output current (= 125% I_N) (at $V_{line} = 3 \times AC 230 V$ with $f_{PWM} = 4 kHz$)	I_D	AC 52.5 A	AC 67.5 A
Continuous output current (= 100% I_N) (at $V_{line} = 3 \times AC 230 V$ with $f_{PWM} = 8 kHz$)	I_D	AC 42 A	AC 54 A
Max. output frequency	f_{max}	599 Hz	
Current limiting	I_{max}	Motor and generator mode 150% I_N , duration depending on the capacity utilization	
Internal current limit		$I_{max} = 0 - 150\%$ adjustable	
Permitted minimum braking resistance value (4Q operation)	R_{BWmin}	7.5 Ω	5.6 Ω
Output voltage	V_O	Max. V_{line}	
PWM frequency	f_{PWM}	Adjustable: 4/8/12/16 kHz	
Speed range/resolution	$n_R / \Delta n_R$	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range	
GENERAL			
Power loss at S_N ¹⁾	P_{Vmax}	580 W	760 W
Cooling air consumption		180 m ³ /h	
Mass		14.3 kg	
Dimensions	$W \times H \times D$	200 mm × 465 mm × 308 mm	
Cross section of device terminals X1, X2, X3, X4		M6 bolt with nut, max. 25 mm ² , crimp cable lug DIN 46235	
Tightening torque		3.5 Nm	

1) The performance data applies to $f_{PWM} = 4 kHz$.

MDX61B standard design		0110-203-4-00	0150-203-4-00
Part number		08279993	08280002
MDX61B application version		0110-203-4-0T	0150-203-4-0T
Part number		08280096	08280118
Recommended motor power			
	P_{Mot}	11 kW	15 kW
Constant load			
	P_{Mot}	15 kW	22 kW
Variable torque load or constant load without overload			
Recommended motor power		→ MOVIDRIVE® B system manual, chapter Basic recommendations for motor selection	

8.4.4 MOVIDRIVE® MDX61B0220/0300 size 4 (AC 230 V devices)

MOVIDRIVE® MDX61B		0220-203-4-0_	0300-203-4-0_
INPUT			
Nominal supply voltage (to EN 50160)	V _{line}	3 × AC 200 V - 240 V	
Line frequency	f _{line}	50 Hz – 60 Hz ±5%	
Nominal supply current I _{line}	100%	AC 72 A	AC 86 A
(at V _{line} = 3 × AC 230 V)	125%	AC 90 A	AC 107 A
OUTPUT			
Apparent output power ¹⁾ (at V _{line} = 3 × AC 380 – 240 V)	S _N	31.9 kVA	37.8 kVA
Nominal output current (at V _{line} = 3 × AC 230 V)	I _N	AC 80 A	AC 95 A
Continuous output current (= 125 % I _N) (at V _{line} = 3 × AC 230 V with f _{PWM} = 4 kHz)	I _D	AC 100 A	AC 118 A
Continuous output current (= 100% I _N) (at V _{line} = 3 × AC 230 V with f _{PWM} = 8 kHz)	I _D	AC 80 A	AC 95 A
Max. output frequency	f _{max}	599 Hz	
Current limiting	I _{max}	Motor and generator mode 150% I _N , duration depending on the capacity utilization	
Internal current limit		I _{max} = 0 – 150% adjustable	
Permitted minimum braking resistance value (4Q operation)	R _{BWmin}	3 Ω	
Output voltage	V _O	Max. V _{line}	
PWM frequency	f _{PWM}	Adjustable: 4/8/12/16 kHz	
Speed range/resolution	n _R / Δn _R	-6000 – 0 – +6000 min ⁻¹ / 0.2 min ⁻¹ over the entire range	
GENERAL			
Power loss at S _N ¹⁾	P _{Vmax}	1100 W	1300 W
Cooling air consumption		180 m³/h	
Mass		26.3 kg	
Dimensions	W × H × D	280 mm × 522 mm × 307 mm	
Cross section of device terminals X1, X2, X3, X4		M10 bolt with nut max. 70 mm² Press cable lug DIN 46235	
Tightening torque		3.5 Nm	

1) The performance data applies to $f_{PWM} = 4 \text{ kHz}$.

MDX61B standard design		0220-203-4-00	0300-203-4-00
Part number		08280010	08280029
MDX61B application version		0220-203-4-0T	0300-203-4-0T
Part number		08280126	08280134
Recommended motor power			
	P_{Mot}	22 kW	30 kW
Constant load			
	P_{Mot}	30 kW	37 kW
Variable torque load or constant load without overload			
Recommended motor power		→ MOVIDRIVE® B system manual, chapter Basic recommendations for motor selection	

8.5 MOVIDRIVE® MDX60/61B electronics data

MOVIDRIVE® MDX60/61B		General electronics data	
Voltage supply X11:1 For setpoint input X11:5		REF1: DC +10 V +5%/-0%, I_{max} = DC 3 mA REF2: DC -10 V +0%/-5%, I_{max} = DC 3 mA	Reference voltages for setpoint potentiometer
Setpoint input n1 (differential input) X11:2/X11:3 Operating mode AI11/AI12 Resolution Accuracy Internal resistance		AI11/AI12: Voltage or current input, can be set with S11 and P11_, sampling cycle 1 ms Voltage input: n1 = DC 0 – +10 V or DC -10 V – 0 – +10 V 12-bit $\pm 0.2\%$ (40 mV) R_i 40 k Ω (external voltage supply) R_i = 20 k Ω (supply of REF1/REF2)	Current input: n1 = DC 0 – 20 mA or DC 4 – 20 mA 11-bit $\pm 0.2\%$ (40 mV) R_i = 250 Ω
Internal setpoints		Parameter set 1: n11/n12/n13 = -6000 – 0 – +6000 min ⁻¹ Parameter set 2: n21/n22/n23 = -6000 – 0 – +6000 min ⁻¹	
Time ranges of the speed ramps with Δn = 3000 min ⁻¹		1. Ramp t11/t21 2. Ramp t12/t22 Stop ramp t13/t23 Emergency stop ramp t14/t24 Motor potentiometer t3	Up: 0 – 2000 s Down: 0 – 2000 s Up = Down: 0 – 2000 s Down: 0 – 20 s Down: 0 – 20 s Up: 0.2 – 50 s Down: 0.2 – 50 s
Auxiliary voltage output ¹⁾ X13:8/X10:8		VO24: V_{OUT} = DC 24 V, maximum current carrying capacity I_{max} = DC 400 mA	
External voltage supply ¹⁾ X10:9		VI24: V = DC 24 V -15%/+20% to EN 61131-2 With size 7, connect 24 V backup voltage via the DC power supply unit. No connection at the control unit	
Digital inputs X13:1 – X13:6 and X16:1/X16:2 Internal resistance Signal level Function X13:1 X13:2 – X13:6, X16:1/X16:2		Isolated (optocoupler), PLC-compatible (EN 61131 type 2), sampling cycle 1 ms DIØØ – DIØ5 and DIØ6/DIØ7 $R_i \approx 3$ k Ω , $I_E \approx$ DC 10 mA DC +13 V – +30 V = "1" = contact closed DC -3 V – +5 V = "0" = contact open DIØØ: With fixed assignment "/Controller inhibit" DIØ1 – DIØ5, DIØ6/DIØ7: Selection option → Parameter menu P60_	According to EN 61131
Digital output ¹⁾ X10:3/X10:7 and X16:3 – X16:5 Signal level Function X10:3 X10:7, X16:3 – X16:5		PLC-compatible (EN 61131-2), response time 1 ms DBØØ/DOØ2 and DOØ3 – DOØ5 "0" = DC 0 V "1" = DC +24 V Important: Do not apply external voltage! DBØØ: With fixed assignment "/Brake", I_{max} = DC 150 mA, short-circuit proof, protected against external voltage to DC 30 V DOØ2, DOØ3 – DOØ5: Selection option → Parameter menu P62_ I_{max} = DC 50 mA, short-circuit proof, protected against external voltage to DC 30 V	
Relay output X10:4 – X10:6 Function X10:4 X10:5 X10:6		DOØ1: Current-carrying capacity of the relay contacts V_{max} = DC 30 V, I_{max} = DC 800 mA DOØ1-C: Shared relay contact DOØ1-NO: NO contact DOØ1-NC: NC contact	Selection option → Parameter menu P62_
System bus (SBus) X12:1 X12:2 X12:3		DGND: Reference potential SC11: SBus high SC12: SBus low	CAN bus to CAN specification 2.0, parts A and B, transmission technology to ISO 11898, max. 64 participants, terminating resistor (120 Ω) can be activated using DIP switches
RS485 interface X13:10 X13:11		ST11: RS485 + ST12: RS485 -	EIA standard, 9.6 kBaud, max. 32 stations Max. cable length 200 m Dynamic terminating resistor with fixed installation
TF/TH/KTY/PK input X10:1		TF1: Response threshold at $R_{TF} \geq 2.9$ k $\Omega \pm 10\%$	

1) The device provides a current of I_{max} = DC 400 mA for the DC+24 V outputs (VO24, digital outputs). If this value is insufficient, a DC 24 V voltage supply must be connected to X10:9 (VI24).

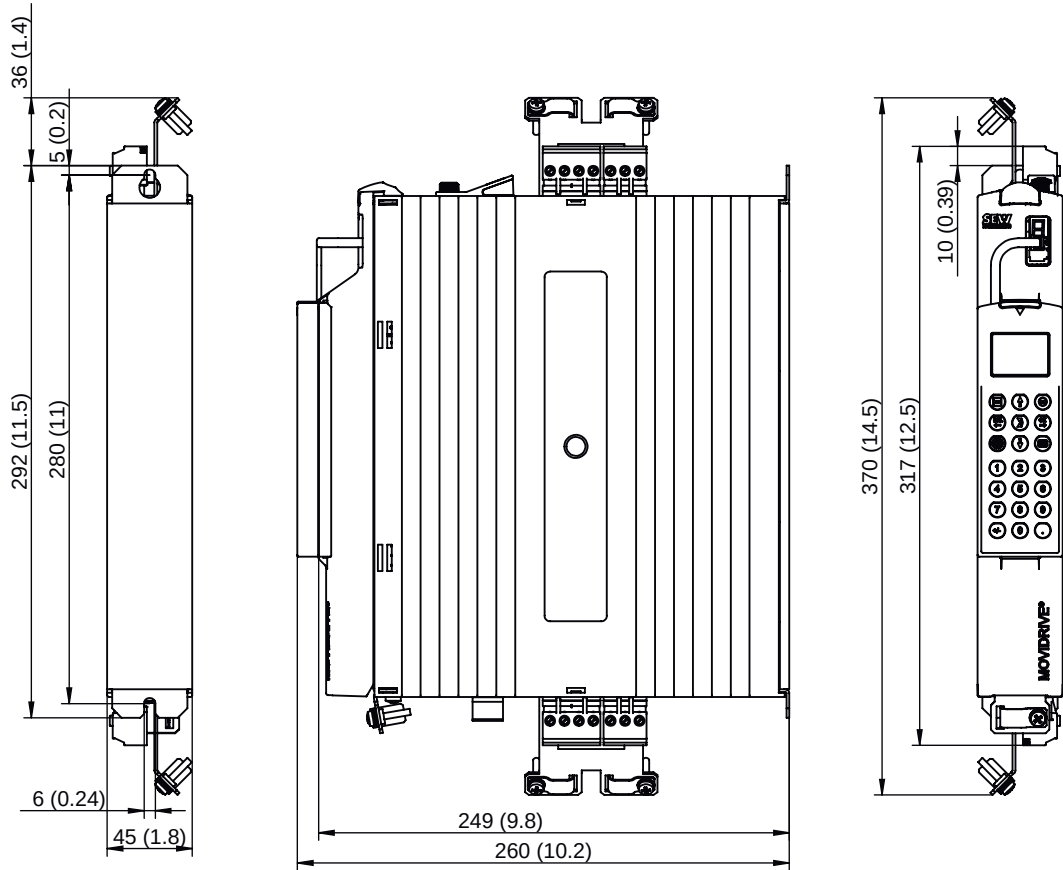
MOVIDRIVE® MDX60/61B		General electronics data	
Reference terminals X11:4 X12:1/X13:9/X16:6/X10:2/X10:10		AGND: Reference potential for analog signals and terminals X11:1 and X11:5 (REF1/REF2) DGND: Reference potential for binary signals, system bus, RS485 interface and TF/TH	

MOVIDRIVE® MDX60/61B		General electronics data	
Permitted cable cross section	X13:7	DCOM: Reference potential of digital inputs X13:1 – X13:6 and X16:1/X16:2 (DIØØ – DIØ5 and DIØ6/DIØ7)	
		One core per terminal:	0.20 – 2.5 mm² (AWG 24 – 12)
		Two cores per terminal:	0.25 – 1 mm² (AWG 22 – 17)
		Tightening torque:	0.6 Nm
Safety contact	X17:1	DGND: Reference potential for X17:2	
Input capacitance	X17:2	VO24: V _{OUT} = DC 24 V, only to supply X17:4 of the same device plus maximally 1 BST; must not be used to supply other devices	
	X17:3	SOV24: Reference potential for DC +24 V "STO" input (safety contact)	
	X17:4	SVI24: DC+24 V "STO" input (safety contact)	
	Permitted cable cross section		One core per terminal:
		Two cores per terminal:	0.25 – 1.0 mm² (AWG23 – 17)
Power consumption X17:4		Size 0:	3 W
		Size 1:	5 W
		Size 2, 2S:	6 W
		Size 3:	7.5 W
		Size 4:	8 W
		Size 5:	10 W
		Size 6:	6 W
		Size 7:	6 W
Input capacitance	X17:4	Size 0:	27 µF
		Sizes 1 – 7:	270 µF
Time for restart		t _A = 200 ms	
Time to inhibit output stage		t _S ≤ 100 ms	

8.6 MOVIDRIVE® MDX60B dimension drawings

8.6.1 MOVIDRIVE® MDX60B size 0S

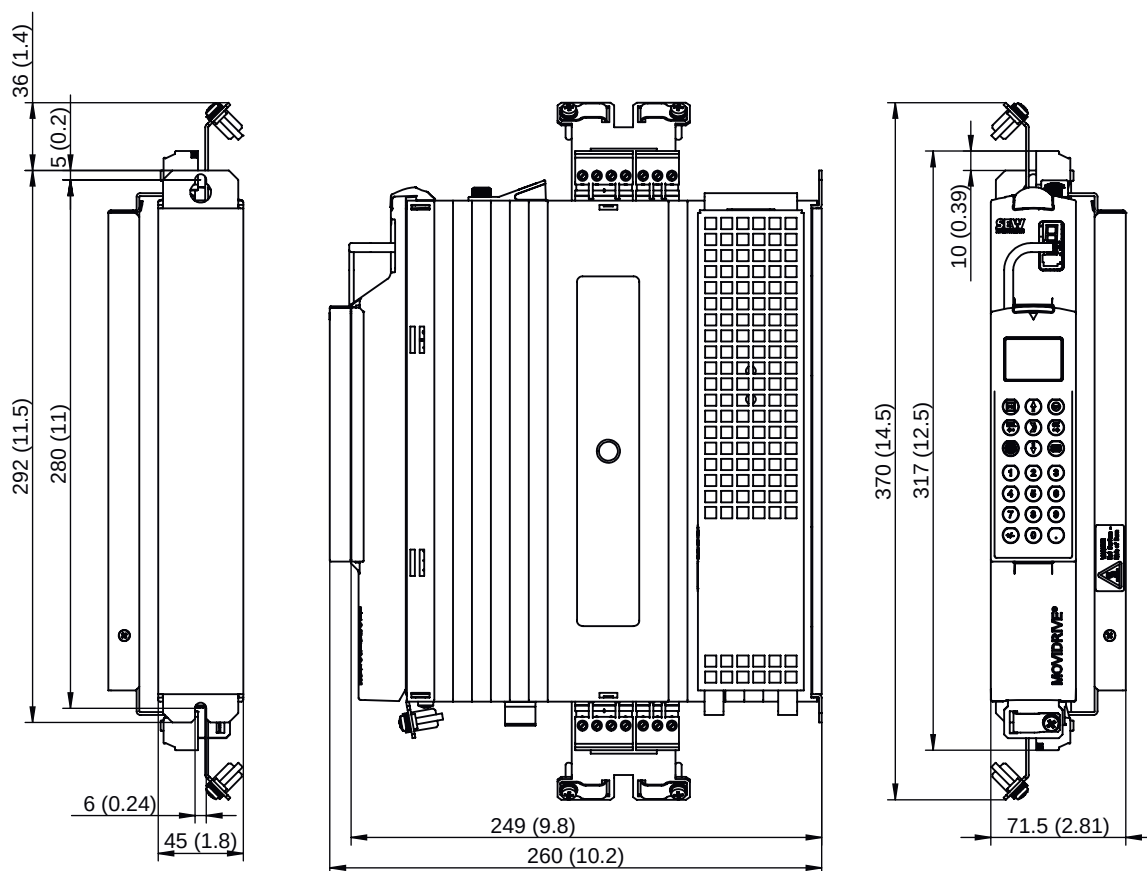
The following dimension drawing shows MDX60B size 0S, dimensions in mm (in)



9007201195536907

8.6.2 MOVIDRIVE® MDX60B, size 0S with mounted braking resistor

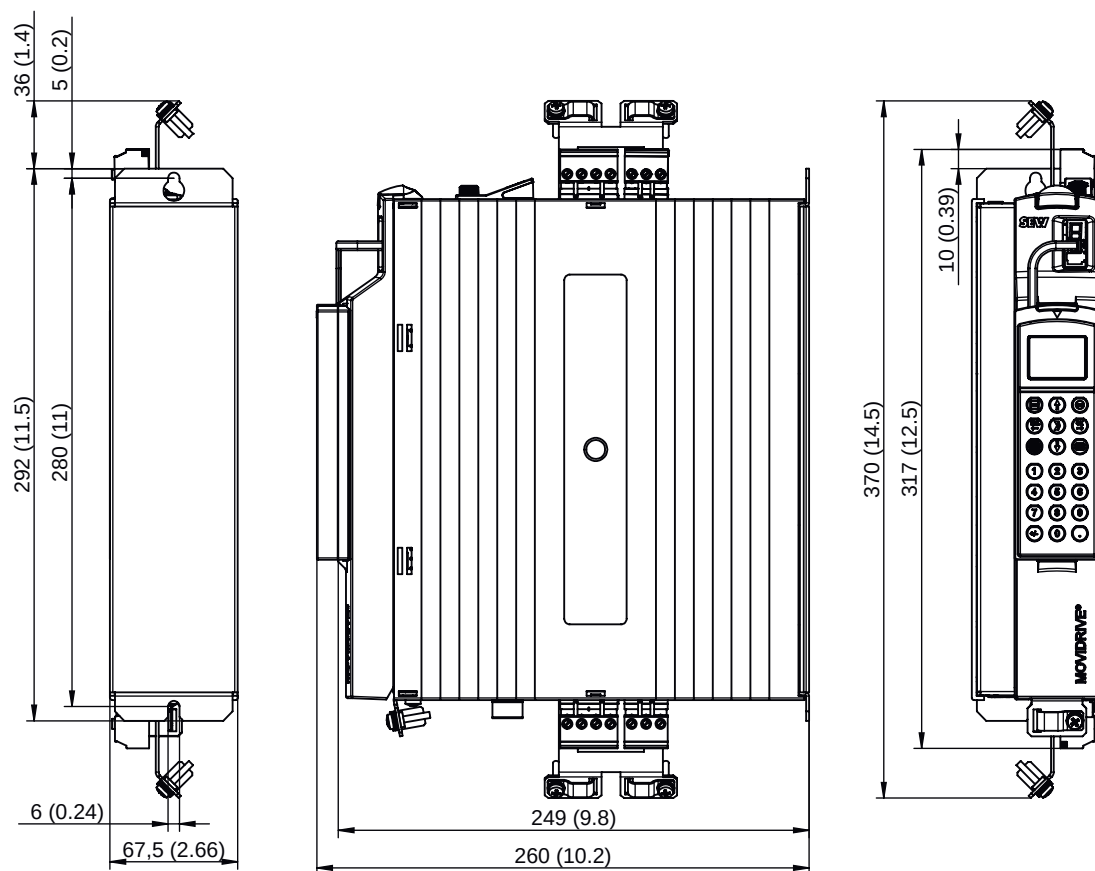
The following dimension drawing shows MDX60B size 0S with braking resistor, dimensions in mm (in)



9007201195539979

8.6.3 MOVIDRIVE® MDX60B size 0M

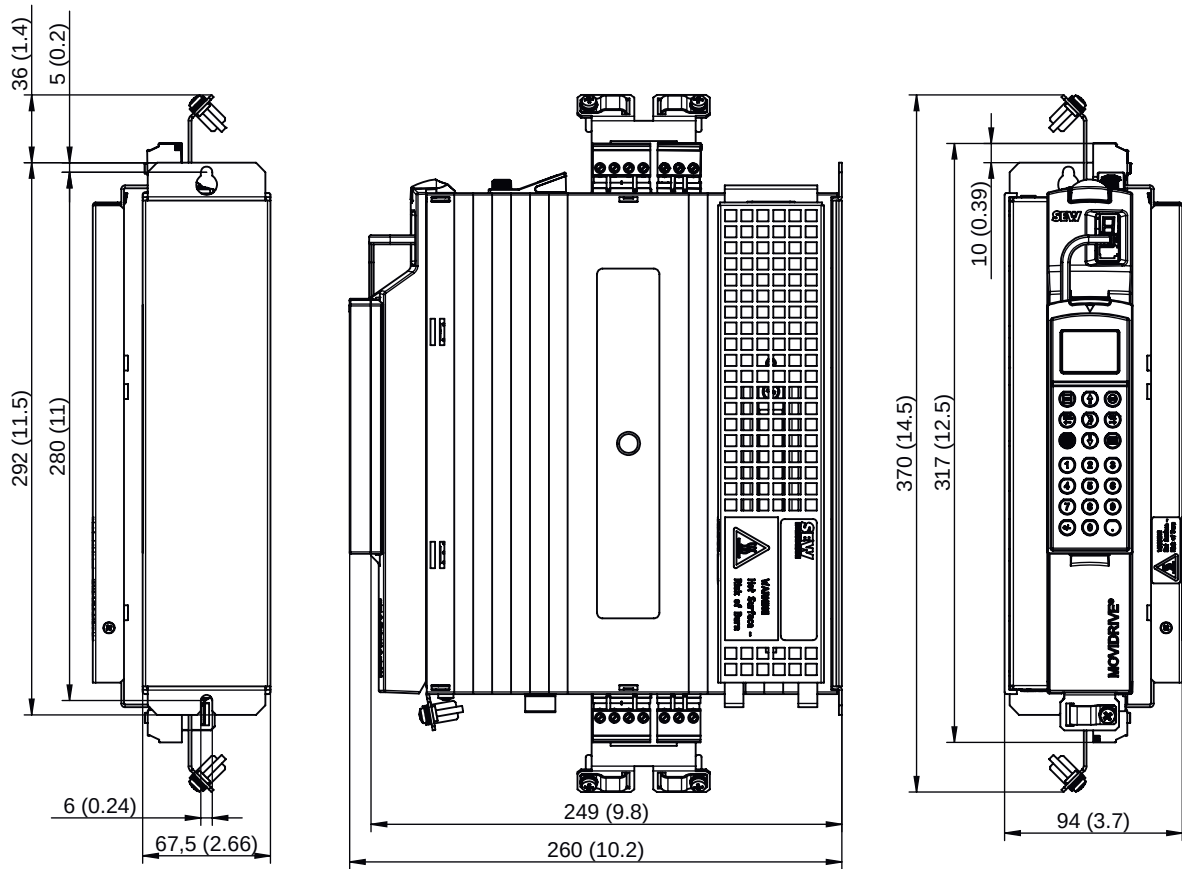
The following dimension drawing shows MDX60B size 0M, dimensions in mm (in)



9007201195584907

8.6.4 MOVIDRIVE® MDX60B size 0M with mounted braking resistor

The following dimension drawing shows MDX60B size 0M with braking resistor, dimensions in mm (in)



9007201195587979

8.7 MOVIDRIVE® MDX61B dimension drawings

INFORMATION

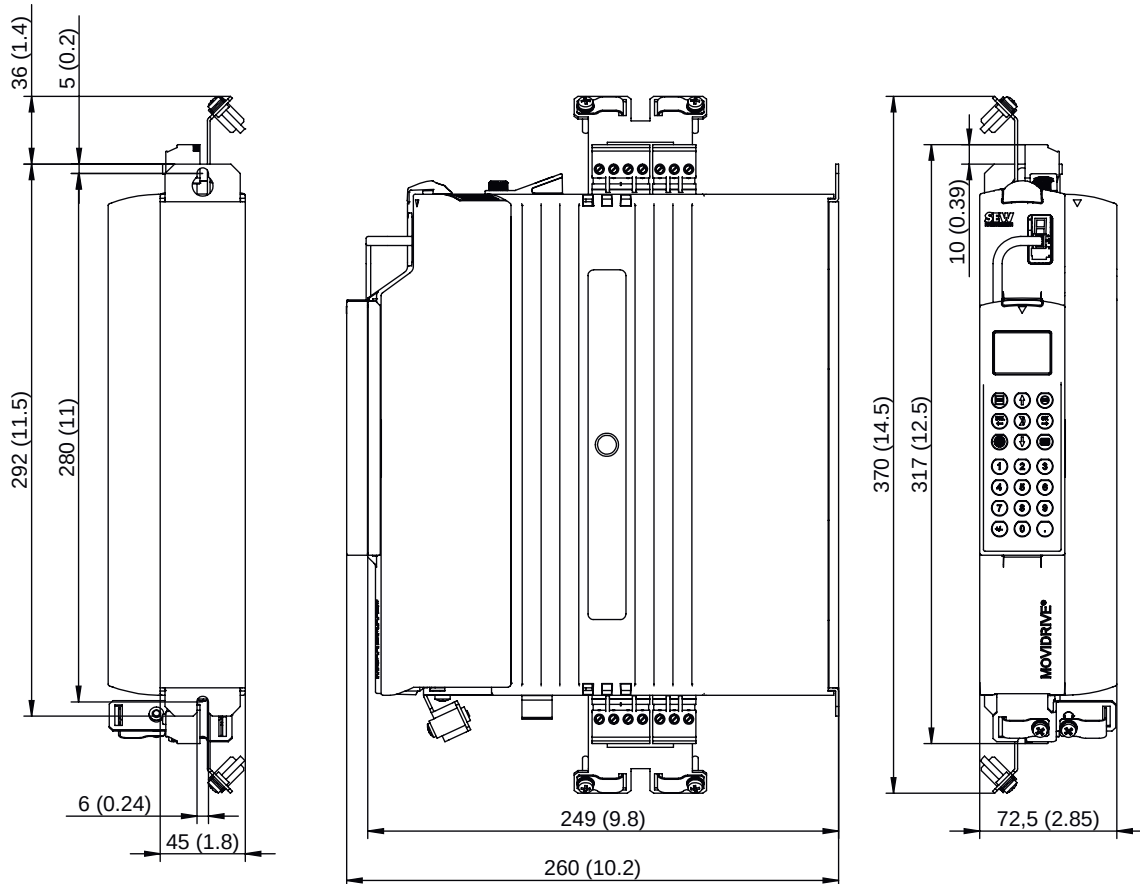


With MOVIDRIVE®

For MOVIDRIVE® MDX61B size 0, installing a braking resistor does not affect the dimensions. Therefore, MOVIDRIVE® MDX61B size 0 dimensions are displayed without an installed braking resistor.

8.7.1 MOVIDRIVE® MDX61B size 0S

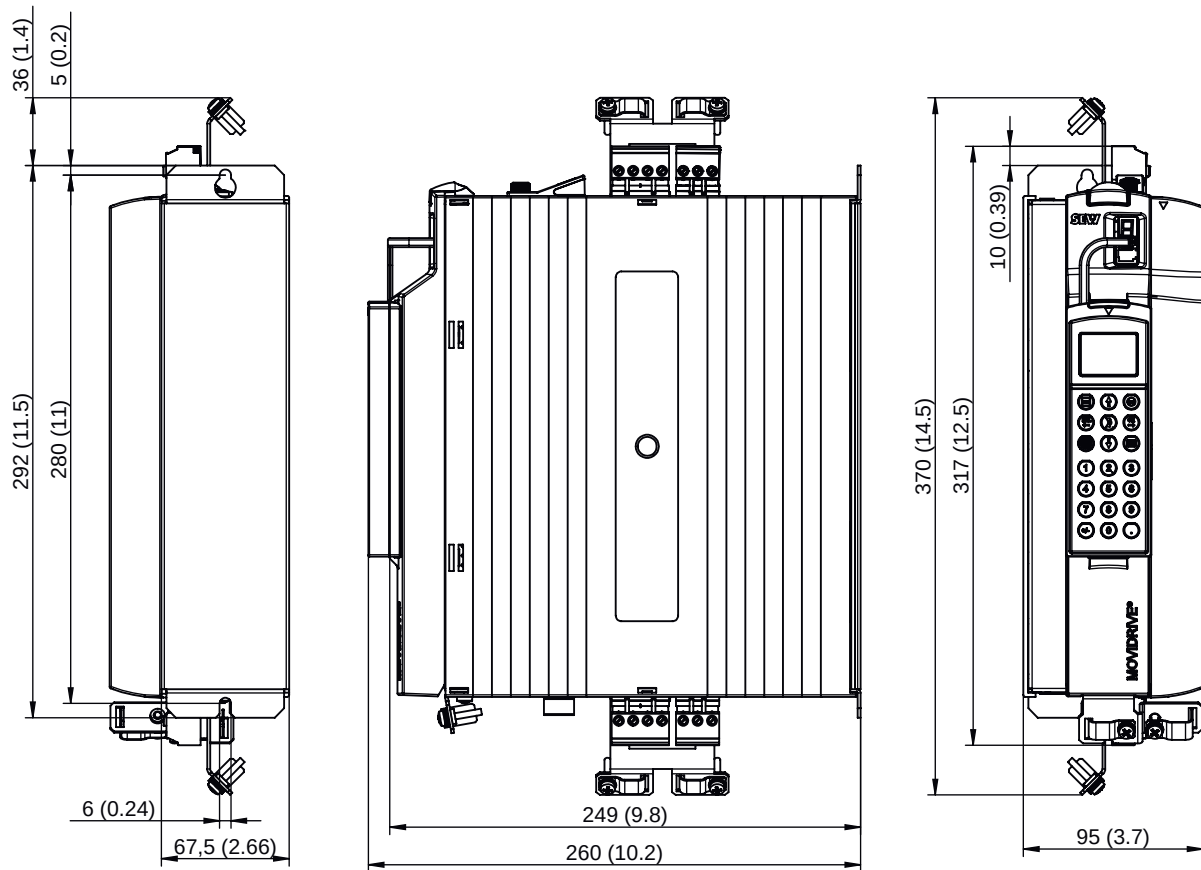
The following dimension drawing shows MDX61B size 0S, dimensions in mm (in)



9007201195592331

8.7.2 MOVIDRIVE® MDX61B size 0M

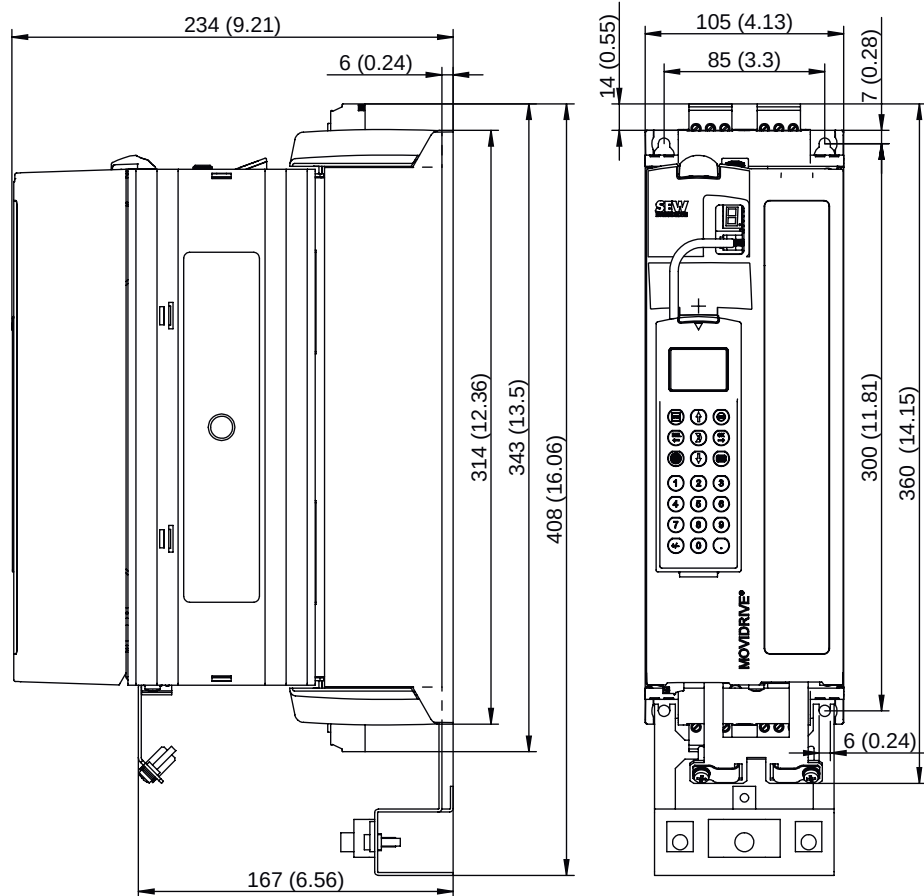
The following dimension drawing shows MDX61B size 0M, dimensions in mm (in)



9007201313669643

8.7.3 MOVIDRIVE® MDX61B size 1

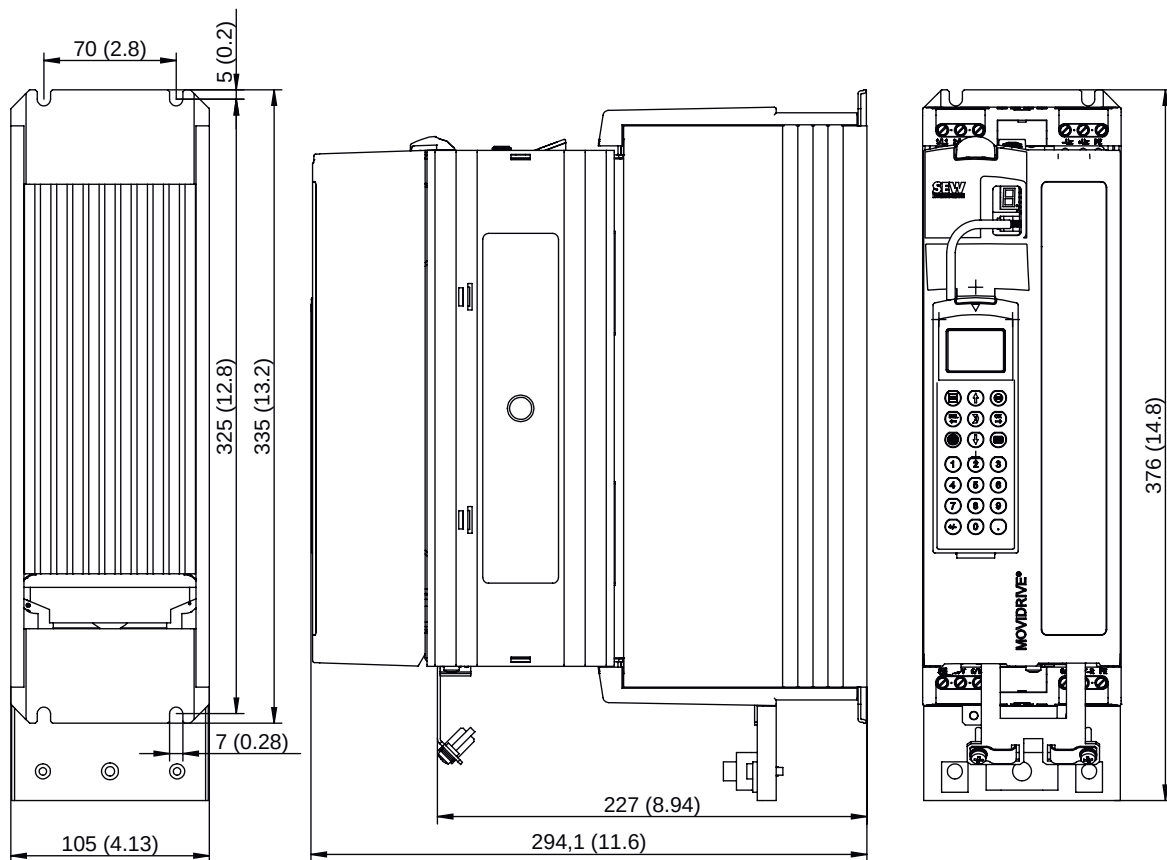
The following dimension drawing shows MDX61B size 1, dimensions in mm (in)



9007201313674123

8.7.4 MOVIDRIVE® MDX61B size 2S

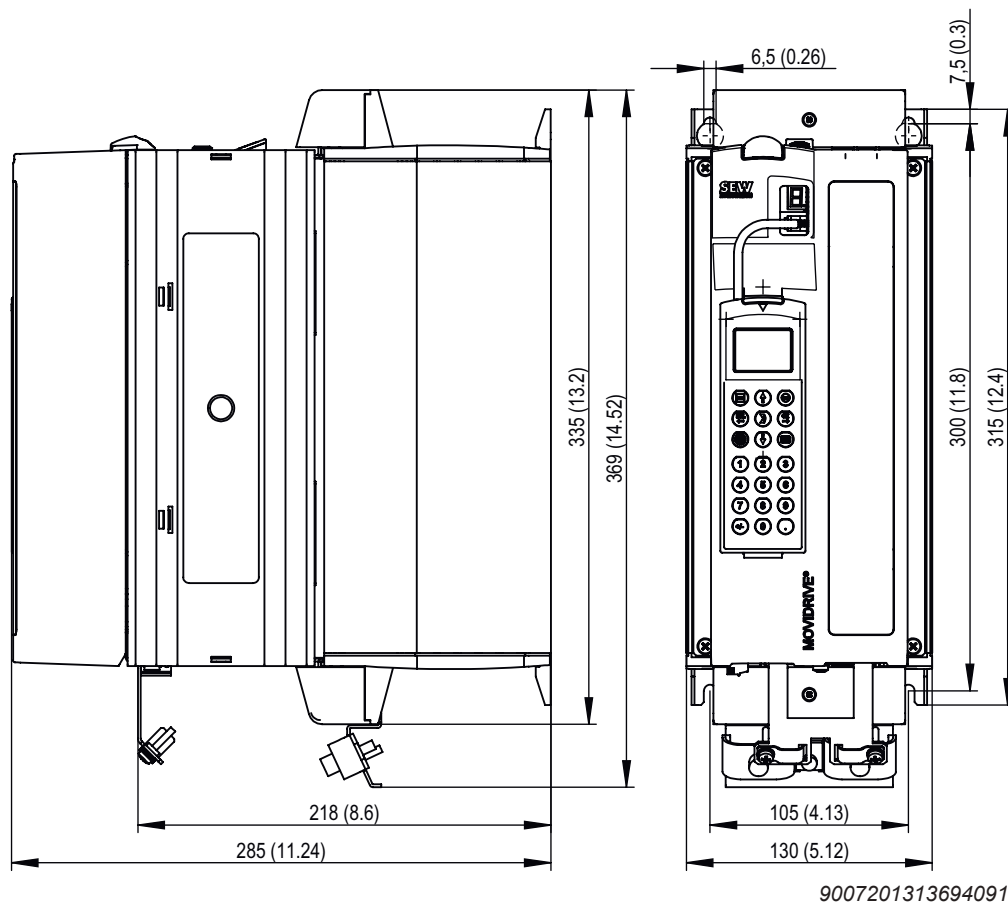
The following dimension drawing shows MDX61B size 2S, dimensions in mm (in)



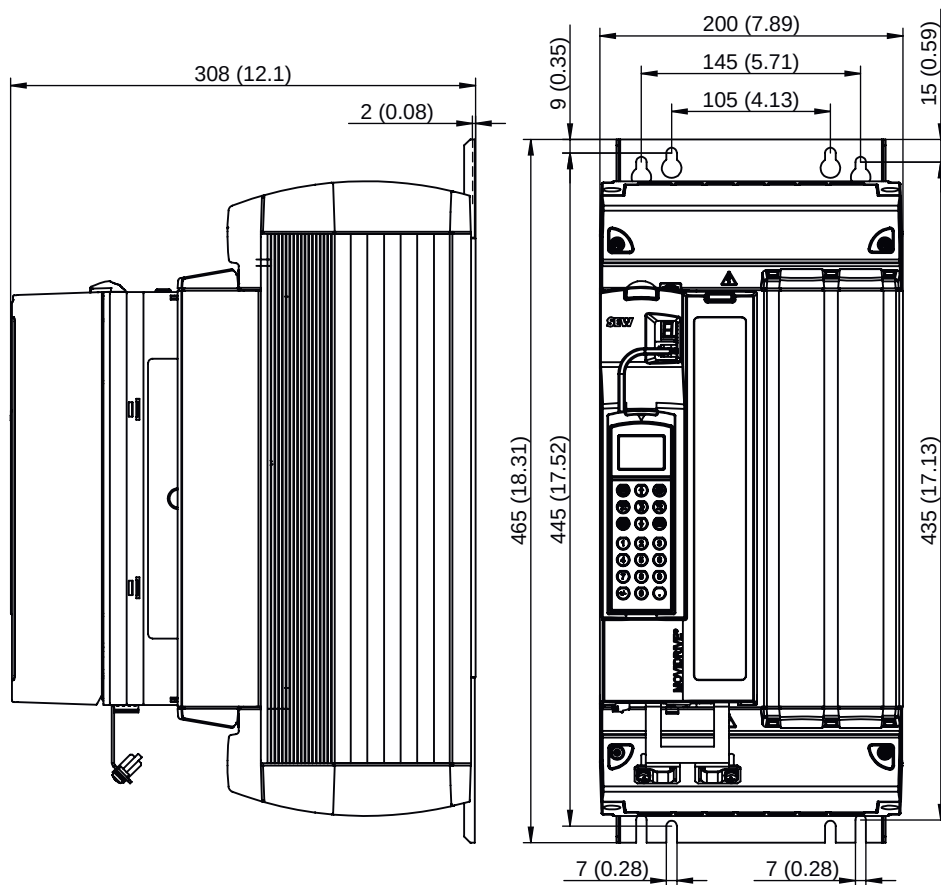
9007201313689995

8.7.5 MOVIDRIVE® MDX61B size 2

The following dimension drawing shows MDX61B size 2, dimensions in mm (in)



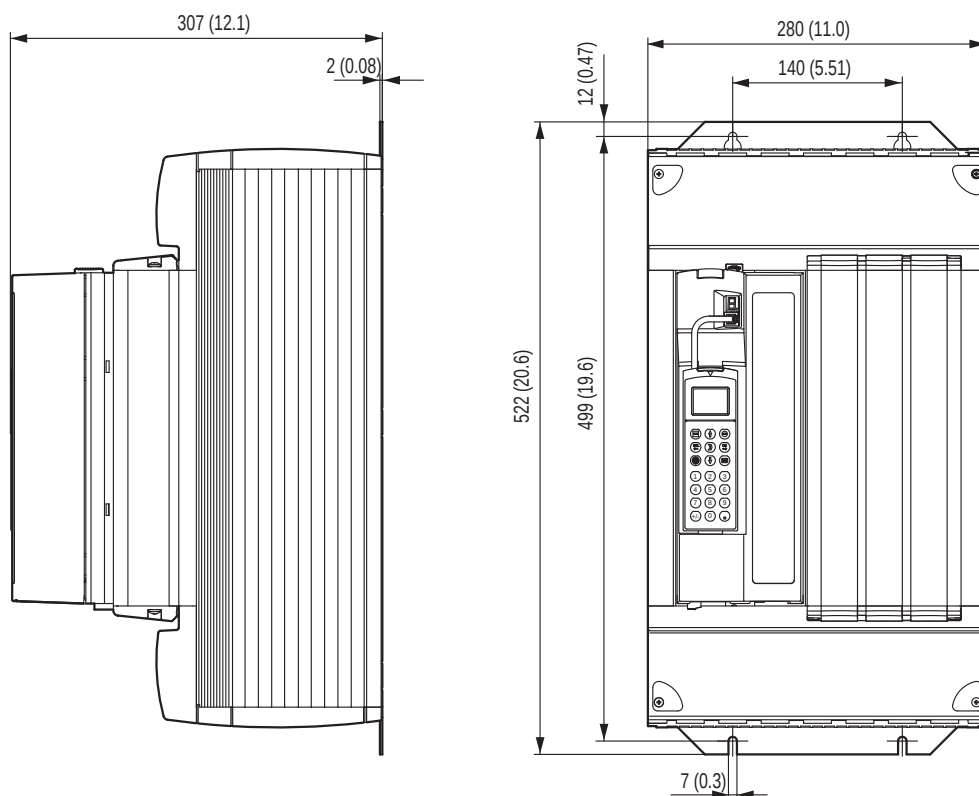
The following dimension drawing shows MDX61B size 3, dimensions in mm (in)



9007201313697675

8.7.7 MOVIDRIVE® MDX61B size 4

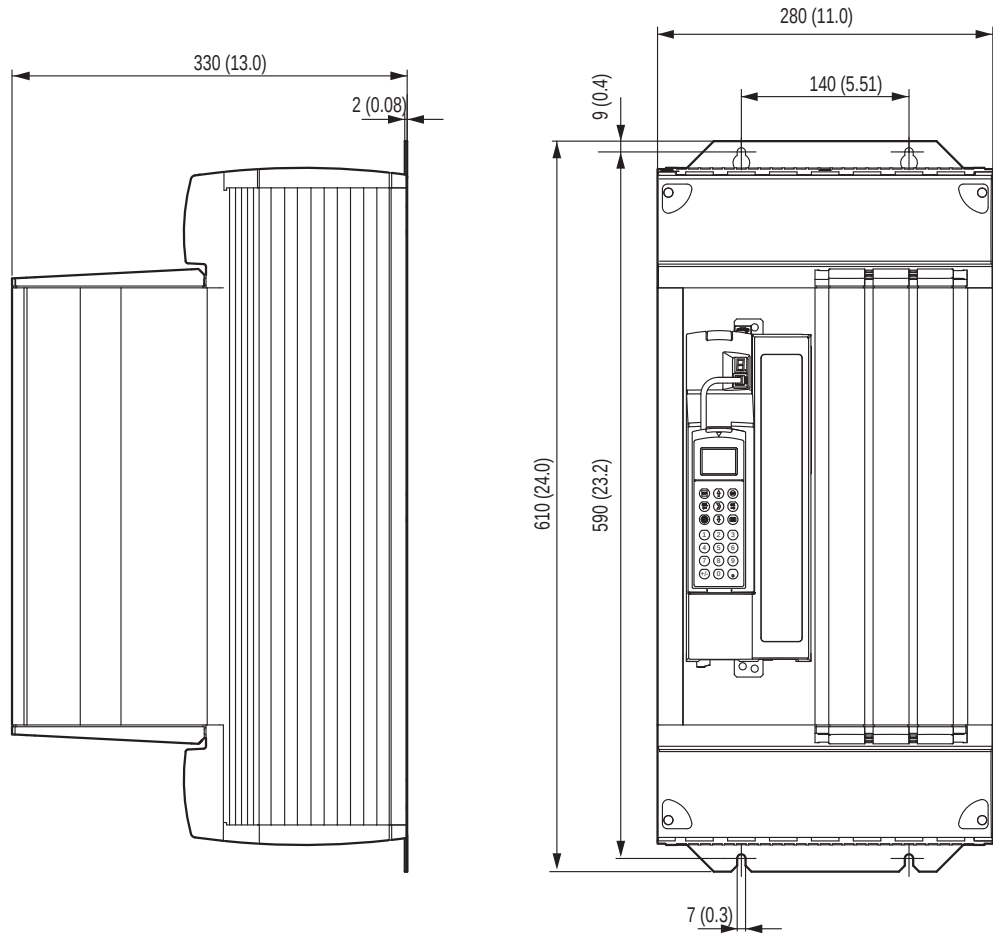
The following dimension drawing shows MDX61B size 4, dimensions in mm (in)



2058960267

8.7.8 MOVIDRIVE® MDX61B size 5

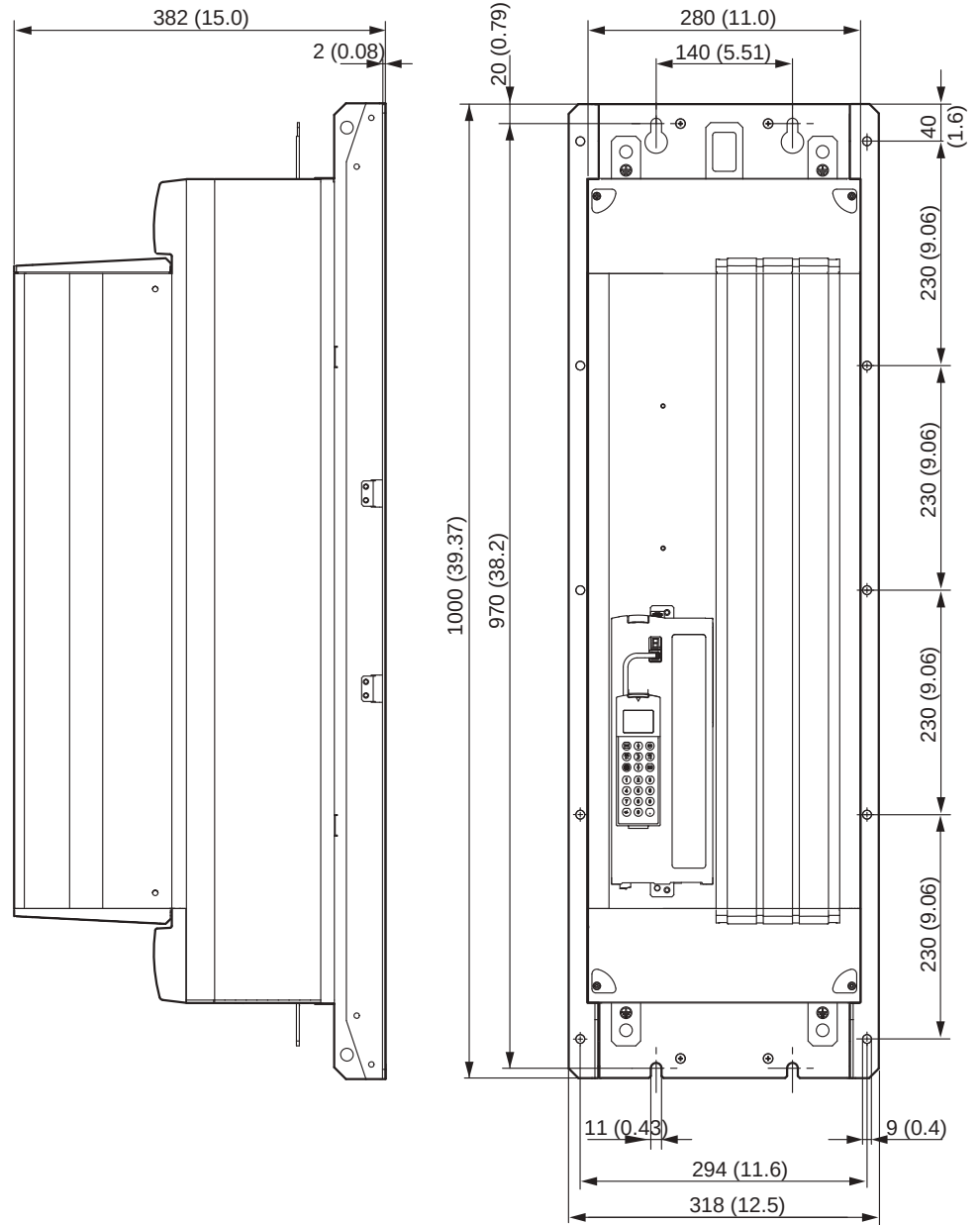
The following dimension drawing shows MDX61B size 5, dimensions in mm (in)



2058963851

8.7.9 MOVIDRIVE® MDX61B size 6

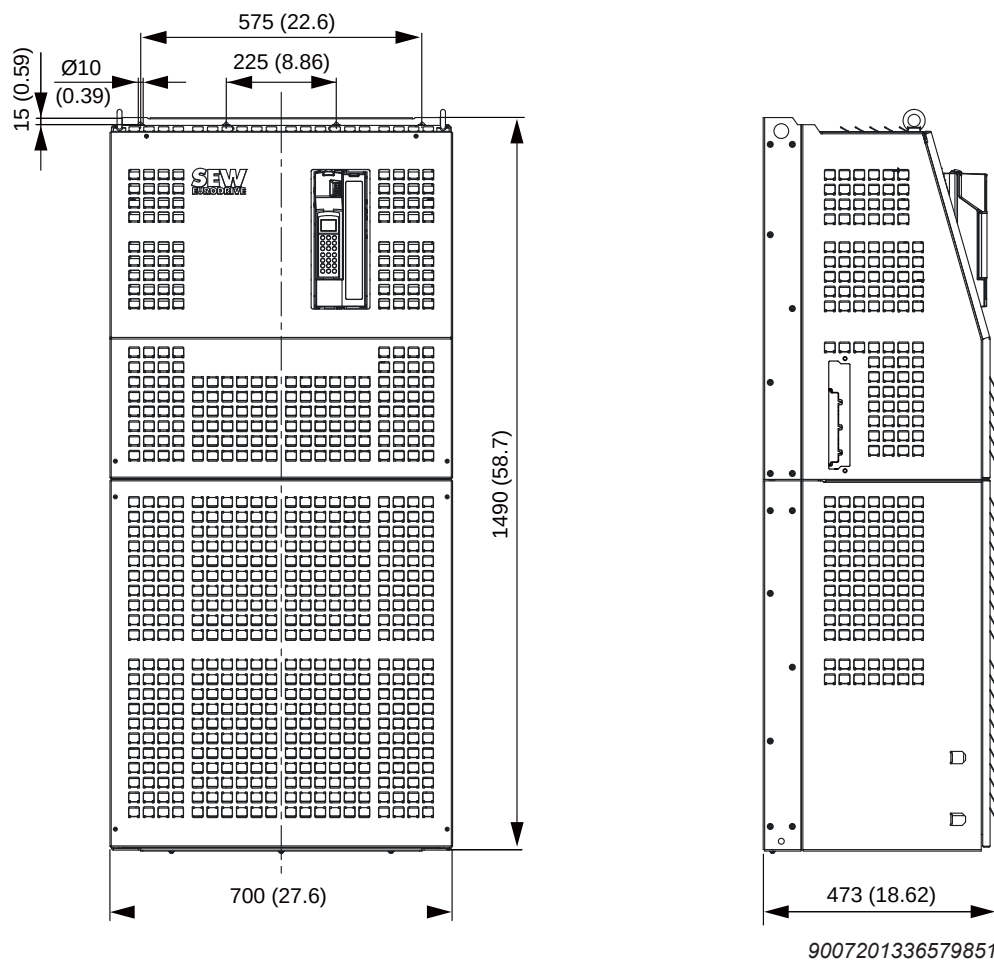
The following dimension drawing shows MDX61B size 6, dimensions in mm (in)



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8.7.10 MOVIDRIVE® MDX61B size 7

The following dimension drawing shows MDX61B size 7, dimensions in mm (in)



8.8 IPOS^{PLUS}®

8.8.1 Description

IPOS^{PLUS}® positioning and sequence control is integrated into every MOVIDRIVE® inverter as standard. With IPOS^{PLUS}® control functions and positioning tasks can be performed either simultaneously or independently of one another.

The IPOS^{PLUS}® sequence control system makes it possible to run a user program, regardless of any encoder feedback or the selected control mode (VFC, CFC, SERVO). In conjunction with encoder feedback, the IPOS^{PLUS}® positioning control provides a high-performance point-to-point positioning capability. The IPOS^{PLUS}® program is written using the MOVITOOLS® engineering software. Starting up the inverter, accessing parameters and editing variables are all possible either with the software or the DBG60B keypad (startup in VFC mode only).

8.8.2 Properties

- Program execution independent of encoder feedback and operating mode
- The user program is continued even if a device malfunction occurs (troubleshooting is possible in the user program)
- Three user programs can be run in parallel and independently of one another (task 1, task 2 and task 3, each of them interrupt-capable)
- The user programs programmed in assembler can contain up to 3200 program lines
- User-friendly and comprehensive control options for the inverter
- Access to all available options
- Extensive options for communication via system bus (SBus), RS485, and fieldbus (direct communication with MOVIMOT® is possible)
- Processing of digital and analog input/output signals

With encoder feedback only

- Positioning with selectable travel speed, positioning ramp and jerk limitation
- Precontrol for position, speed and torque control loops with minimized lag error
- Two touch probe inputs
- Ramp types: Linear, jerk limited, sine, and square
- Status and monitoring functions: Lag error monitoring, position signal, software and hardware limit switches
- 9 types of reference travel
- Possibility of changing the target position, travel speed, positioning ramp and torque while movement is in progress
- "Endless positioning" is possible
- Override function
- Cam switch
- Synchronous operation and electronic cam

Max. program length of task 1, task 2 and task 3	Total of ca. 3200 program lines
Command processing time per program line	Task 1: 1 – 10 commands/ms can be configured Task 2: 2 – 11 commands/ms can be configured Task 3: at least 1 command/ms (typical is 40 commands/ms)
Variables	1024, of which 128 (0 – 127) can be stored to non-volatile memory; range of values: $-2^{31} - +(2^{31}-1)$
Touch probe inputs	2 inputs, processing time < 100 µs
Sampling cycle of digital and analog inputs	1 ms
Digital inputs/outputs	8 inputs/5 outputs
Analog inputs/outputs	1 input (DC 0 – 10 V, DC±10 V, DC 0 – 20 mA, DC 4 – 20 mA) 1 input (DC 0 – 10 V, DC±10 V) 2 outputs (DC 0 – 20 mA, DC 4 – 20 mA, DC±10 V)

8.9 DBG60B keypad

8.9.1 Description

The basic version of MOVIDRIVE® does not have a DBG60B keypad, but can be upgraded to include the keypad as an option.

Keypad	Language variants		Part no.
	DBG60B-10	DE/EN/FR/IT/ES/PT/NL/FI/SV/DA/TR/RU/PL/CS/ ZH (German/English/French/Italian/Spanish/Portuguese/Dutch/Finnish/Swedish/Danish/Turkish/ Russian/Polish/Czech/Chinese)	28229150
	Door installation set ¹⁾	Description (= scope of delivery)	Part no.
	DBM60B	• Housing for DBG60B (IP65) • DKG60B extension cable, length 5 m	08248532
	Extension cable	Description (= scope of delivery)	Part no.
	DKG60B	• length 5 m • 4-core, shielded cable	08175837

1) The DBG60B keypad is not included in the scope of delivery and must be ordered separately.

Functions

- Display process values and status
- Status displays of digital inputs/outputs
- Fault memory and error reset queries
- Option to display and set the operating parameters and service parameters
- Data backup and transfer of parameter sets to other MOVIDRIVE® devices
- User-friendly startup menu for VFC mode
- Manual control of MOVIDRIVE® B and MOVITRAC® B
- Manual operation of MOVIMOT® (→ Decentralized technology documentation)

- Illuminated text display, range of languages
- Keypad with 21 keys
- Selection between user menu, detailed parameter menu and startup menu in VFC mode (CFC and SERVO startup is not possible with the DBG60B)
- Can be plugged into MOVIDRIVE®
- Can be connected via extension cable DKG60B (5 m)
- Degree of protection IP40 (EN 60529)

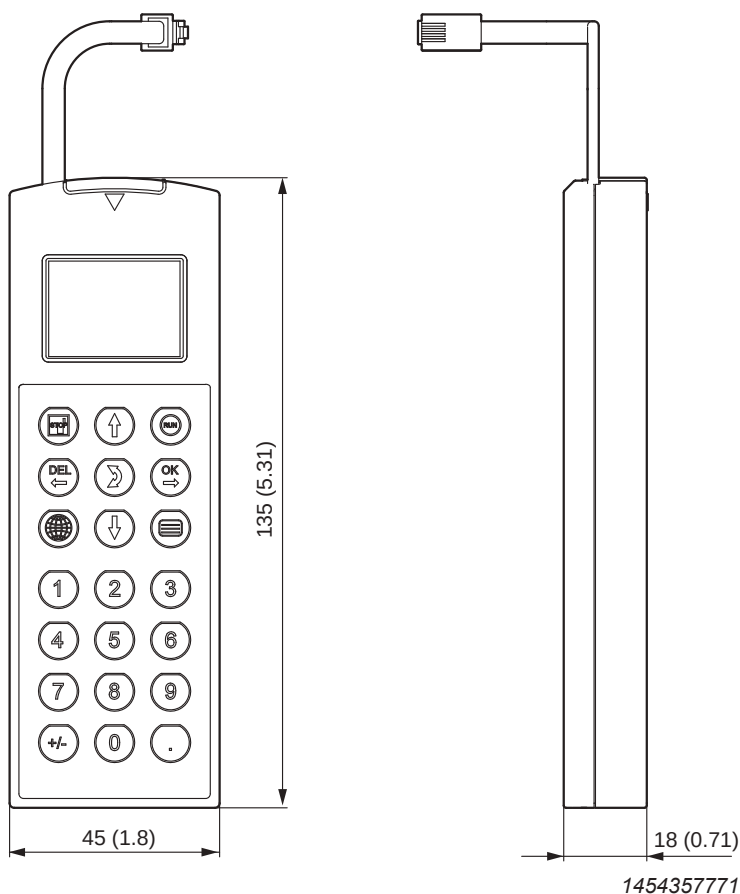
INFORMATION



The DBG60B keypad option and the interface adapter are plugged into the same inverter slot (XT) and therefore cannot be used at the same time.

8.9.2 Dimension drawing for DBG60B

The following figure shows the mechanical dimensions in mm (in).



All dimensions in mm (in)

8.10 DBM60B/DKG60B housing for DBG60B

8.10.1 Description

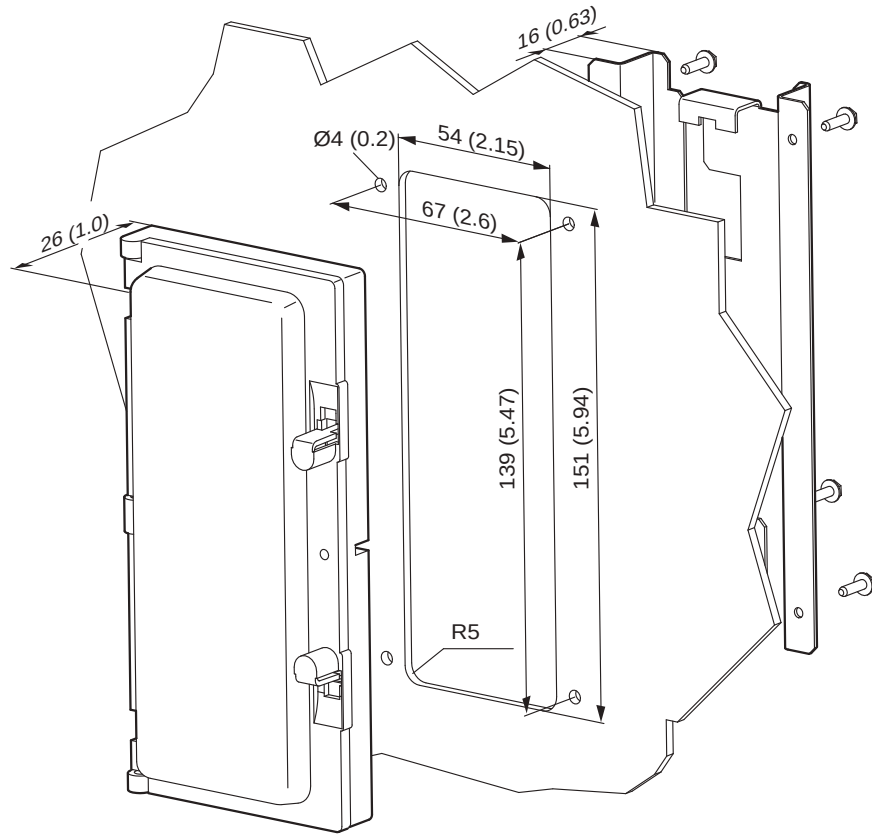
The DBM60B option can be used to mount the keypad close to the inverter (e.g. in the control cabinet door). The DBM60B option consists of a housing in IP65 degree of protection, and a 5 m DKG60B extension cable.

Part numbers

- DBM60B: 08248532
- DKG60B: 08175837

8.10.2 Dimension drawing DBM60B/DKG60B

The following figure shows the mechanical dimensions in mm (in).



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All dimensions in mm (in)

9 Technical data of regenerative power supply unit

9.1 MOVIDRIVE® MDR60A/61B regenerative power supply unit

MOVIDRIVE® drive inverters operating in regenerative mode (4Q operation) can use the MOVIDRIVE® MDR60A/61B regenerative power supply unit as an alternative to braking resistors. The prerequisite is a powerful supply system. For more detailed information, refer to the "MOVIDRIVE® MDR60A/61B Regenerative Power Supply Unit" system manual. This manual can be ordered from SEW-EURODRIVE.

MOVIDRIVE® MDR60A/61B supplies the DC link circuit of the connected MOVIDRIVE® drive inverters with electrical power from the supply system in motor operation and returns regenerative power to the supply system in regenerative operation.

9.1.1 UL approval



UL and cUL approval has been granted for MOVIDRIVE® MDR60A0150-503-00, MDR60A0370-503-00, MDR60A0750-503-00, MDR61B1600-503-00, and MDR61B2500-503-00 devices. cUL is equivalent to CSA approval. The MOVIDRIVE® MDR60A1320-503-00 does not have UL or cUL approval.

9.1.2 Protection and monitoring functions

- Monitoring and protection against thermal overload.
- Detection of power failure within one supply system half-wave.
- Overvoltage protection.



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9.1.3 Features of a regenerative power supply unit compared to an inverter with braking resistors

- Energy balance: Regenerative power is fed back into the supply system instead of being converted into waste heat.
- Reduced complexity of installation when there are several inverters (mains and braking resistor connections). However, a braking resistor is required for bringing the drive to a controlled stop even when there is a disruption in the supply system.
- Reduction in use of control cabinet space and fan power if the braking resistor was previously installed in the control cabinet.

9.1.4 General technical data

MOVIDRIVE® MDR60A regenerative power supply unit

MOVIDRIVE® MDR60A	0150-503-00 (size 2) 0370-503-00 (size 3) 0750-503-00 (size 4)	1320-503-00 (size 6)
Interference immunity	Meets EN 61800-3	Meets EN 61000-6-1 and EN 61000-6-2
Interference emission with EMC-compliant installation	Meets EN 61800-3: • With line filter NF035-503 (MDR60A0150-503-00) • With line filter NF048-503 (MDR60A0150-503-00) • With line filter NF085-503 (MDR60A0370-503-00) • With line filter NF150-503 (MDR60A0750-503-00)	Meets EN 61000-6-4 with line filter NF300-503
Ambient temperature ϑ_{amb}	0 °C – +40 °C	0 °C – +40 °C
Ambient temperature derating	I_N reduction: 3% I_N per K up to 60 °C	I_N reduction: 3% I_N per K up to 55 °C
Climate class	EN 60721-3-3, class 3K3	
Storage temperature ¹⁾ ϑ_F	-25 °C – +70 °C (EN 60721-3-3, class 3K3)	-25 °C – +55 °C (EN 60721-3-3, class 3K3)
Cooling types (DIN 51751)	External cooling (temperature-controlled fan, response threshold 50 °C)	External cooling (temperature-controlled fan, response threshold 45 °C)
Degree of protection EN 60529 (NEMA1)	Size 2 IP20 Size 3 IP20 Size 4 IP00 IP10 • With fitted plexiglass cover supplied as standard • With fitted heat shrink tubing (not included in delivery) IP20 • With fitted DLB11B touch guard	IP20
Operating mode	Continuous duty	
Overvoltage category	III according to IEC 60664-1 (VDE 0110-1)	
Installation altitude	At $h \leq 1000$ m without restrictions At $h \geq 1000$ m, the following restrictions apply: • From 1000 m to max. 4000 m: – I_N reduction by 1% per 100 m • From 2000 m to max. 4000 m: – The protective separation of power and electronics connections can no longer be assured above 2000 m. This requires external measures (IEC 60664-1/EN 61800-5-1) – You have to connect an overvoltage protection device in order to reduce the overvoltages from category III to category II.	At $h \leq 1000$ m: No limitation From 1000 m to max. 4000 m: I_N reduction: 0.5% per 100 m

1) In case of extended storage, connect the device to the power supply for at least 5 minutes every two years, otherwise the device's service life may be reduced.

MOVIDRIVE® MDR61B regenerative power supply unit

MOVIDRIVE® MDR61B	1600-503-00/L (size 7) 2500-503-00/L (size 7)
Interference immunity	Meets EN 61800-3
Interference emission with EMC-compliant installation	Meets EN 61800-3: • With NF600-503 line filter
Ambient temperature ϑ_{amb} Ambient temperature derating	0 °C – +50 °C at $I_D = 100\% I_{DC}$ 0 °C – +40 °C at $I_D = 125\% I_{DC}$ 2.5% I_{DC} per K at 40 °C – +50 °C 3% I_{DC} per K at 50 °C – +60 °C
Climate class	EN 60721-3-3, class 3K3
Storage temperature ¹⁾ ϑ_F	-25 °C – +70 °C (EN 60721-3-3, class 3K3)
Cooling types (DIN 51751)	External cooling (temperature-controlled fan, response threshold 50 °C)
Degree of protection EN 60529 (NEMA1)	IP00 IP20 • With fitted DLB31B touch guard
Operating mode	Continuous duty
Overvoltage category	III according to IEC 60664-1 (VDE 0110-1)
Pollution class	2 according to IEC 60664-1 (VDE 0110-1)
Installation altitude	At $h \leq 1000$ m without restrictions The following restrictions apply at $h \geq 1000$ m: • From 1000 m to max. 4000 m – I_N reduction by 1% per 100 m • From 2000 m to max. 4000 m – Above an installation altitude of 2000 m the protective separation of power and electronic connections is not ensured. In this case, external measures are required: (IEC 60664-1/EN 61800-5-1) – You have to connect an overvoltage protection device in order to reduce the overvoltages from category III to category II.

1) In case of extended storage, connect the device to the power supply for at least 5 minutes every two years, otherwise the device's service life may be reduced.

Technical data of regenerative power supply unit

MOVIDRIVE® MDR60A/61B regenerative power supply unit

9.1.5 Technical data of MOVIDRIVE® MDR60A/61B and MDX62B

MOVIDRIVE® MDR60A0150/0370 size 2 and size 3

MOVIDRIVE® MDR60A Standard design Design with coated printed circuit boards		Size 2 0150-503-00 0150-503-00/L	Size 3 0370-503-00 0370-503-00/L
Part number		18252710 18252729	08266581 08296723
INPUT			
Nominal voltage (according to EN 50160)	V_{line}	3 × AC 380 V – 500 V	
Line frequency	f_{line}	50 Hz – 60 Hz ± 5%	
Rated connected load	P_N	15 kW	37 kW
Nominal line current (at $V_{line} = 3 \times AC\ 400\ V$)	I_{line}	AC 29 A	AC 66 A
ELECTRONICS TERMINALS			
Digital inputs		PLC-compatible (EN 61131), sampling cycle 1 ms	
Internal resistance		$R_i \approx 3.0\ k\Omega$, $I_E \approx 10\ mA$	
Signal level		+13 V – +30 V = "1" = contact closed -3 V – +5 V = "0" = contact open	
Digital outputs		PLC-compatible (EN 61131-2), response time 1 ms, short-circuit proof, $I_{max} = 50\ mA$	
Signal level		"0" = 0 V, "1" = +24 V, Important: Do not apply external voltage	
DC LINK			
Apparent output power (at $V_{line} = 3 \times AC\ 380 - 500\ V$)	S_A	25 kVA	50 kVA
DC link voltage (at nominal supply current I_{line})	$V_{DC\ link}$	DC 560 V – 780 V	
Nominal DC link current (at nominal current I_{line})	$I_{DC\ link}$	DC 35 A	DC 70 A
Max. DC link current	$I_{DClink\ max}$	DC 53 A	DC 105 A
GENERAL			
Power loss at P_N	P_{Vmax}	120 W	950 W
Cooling air consumption		100 m³/h	180 m³/h
Connection for power terminals	X1, X2	Separable terminal strips Conductor end sleeve DIN 46228	Screw and washer assembly M6
Permitted tightening torque		1.8 Nm	3.5 Nm
Permitted cable cross section		6 mm² (AWG9) PE: M4 with 1.5 Nm	25 mm²
Electronics terminals connection	X3	Permitted cable cross section • One conductor per terminal: 0.20 – 2.5 mm² (AWG 24 – 13) • Two conductors per terminal: 0.25 – 1 mm² (AWG 23 – 17) Tightening torque 0.6 Nm	
Mass		4 kg	16 kg
Dimensions	W × H × D	118 mm × 320 mm × 127 mm	200 mm × 465 mm × 221 mm
Line choke (always required)		ND045-013, $L_N = 0.1\ mH$ Part number 08260133	ND085-013 $L_N = 0.1\ mH$ Part number 08260141
Line filter (optional)		NF035-503 up to 15 kW Part number 8271283 NF048-503 up to 22 kW (15 kW × 125%) Part number 08271178	NF085-503, Part number 08274150
For MOVIDRIVE® MDX60B/61B...-5_3		0005 – 0150	0005 – 0370
Recommended line fuse		63 A	100 A

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MOVIDRIVE® MDR60A0750/1320 size 4 and size 6

MOVIDRIVE® MDR60A		Size 4	Size 6
Standard design		0750-503-00	1320-503-00 ¹⁾
Design with coated printed circuit boards		0750-503-00/L	–
Part number		08265569 08296731	08279527
INPUT			
Nominal voltage (according to EN 50160)	V_{line}	3 × AC 380 V – 500 V	
Line frequency	f_{line}	50 Hz – 60 Hz ± 5%	40 Hz – 60 Hz ± 10%
Rated connected load	P_N	75 kW	160 kW
Nominal line current (at $V_{line} = 3 \times AC 400 V$)	I_{line}	AC 117 A	AC 260 A
ELECTRONICS TERMINALS			
Digital inputs		Isolated (optocoupler), PLC-compatible (EN 61131), sampling cycle 1 ms	–
Internal resistance		$R_i \approx 3.0 k\Omega$, $I_E \approx 10 mA$	
Signal level		+13 V – +30 V = "1" = Contact closed -3 V – +5 V = "0" = Contact open	
Digital outputs		PLC-compatible (EN 61131-2), response time 1 ms, short-circuit proof, $I_{max} = 50 mA$	
Signal level		"0" = 0 V, "1" = +24 V, Important: Do not apply external voltage.	
DC LINK			
Apparent output power (at $V_{line} = 3 \times AC 380 - 500 V$)	S_A	90 kVA	175 kVA
DC link voltage	$V_{DC link}$	DC 560 V – 780 V	
Nominal DC link current (at nominal line current I_{line})	$I_{DC link}$	DC 141 A	DC 324 A
Max. DC link current (at nominal line current I_{line})	$I_{DC link_max}$	DC 212 A	Motor: • DC 486 A regenerative: • DC 410 A
GENERAL			
Power loss at P_N	P_{Vmax}	1700 W	2400 W
Cooling air consumption		360 m³/h	880 m³/h
Connection for power terminals (L1, L2, L3 for size 6)	X1, X2	M10 terminal studs	M10 terminal studs
Permitted tightening torque		14 Nm	25 – 30 Nm ²⁾
Permitted cable cross section		70 mm² (AWG2/0)	185 mm² (AWG6/0)
Connection for power terminals SKS 1 – 3		–	Terminals not connected
Connection for electronics terminals (X2 X3 with size 6)		Permitted cable cross-section: • One conductor per terminal: 0.20 – 2.5 mm² (AWG 24 – 13) • Two conductors per terminal: 0.25 – 1 mm² (AWG 23 – 17) Tightening torque 0.6 Nm	Permitted cable cross-section: • 0.75 – 2.5 mm² (AWG18 – 14) Terminals A1/A2: • 0.75 – 4 mm² (AWG18 – 12) Tightening torque 0.6 Nm
Mass		24 kg	100 kg
Dimensions	W × H × D	280 mm × 522 mm × 205 mm	378 mm × 942 mm × 389.5 mm
Line choke (always required)		ND200-0033 $L_N = 0.03 mH$ Part number 08265798	Installed in the basic device
Line filter (optional)		NF150-503, Part number 08274177	NF300-503, Part number 08274193
For MOVIDRIVE® MDX60B/61B...-5 3		0005 – 0750	0005 – 1600

Technical data of regenerative power supply unit

MOVIDRIVE® MDR60A/61B regenerative power supply unit

MOVIDRIVE® MDR60A	Size 4	Size 6
Standard design	0750-503-00	1320-503-00 ¹⁾
Design with coated printed circuit boards	0750-503-00/L	–
Recommended line fuse	175 A	500 A

1) The listed technical data applies to devices with serial no. DCV200xxx. For devices of the previous series with no. DCV185xxx, refer to the provided documentation and the data on the nameplate

2) Note: Do not apply tightening torque directly at terminals L1, L2, L3 and $\pm$ UG; use a second wrench.

MOVIDRIVE® MDR61B1600/2500 size 7

MOVIDRIVE® MDR61B		Size 7	
		1600-503-00/L	2500-503-00/L
Part number		18250955	18250963
INPUT			
Nominal voltage (according to EN 50160)	V_{line}	3 × AC 380 V – 500 V	
Line frequency	f_{line}	50 Hz – 60 Hz ± 5%	
Rated connected load	P_N	160 kW	250 kW
Nominal line current (at $V_{line} = 3 \times AC 400 V$)	I_{line}	AC 250 A	AC 400 A
ELECTRONICS TERMINALS			
Digital inputs		Isolated (optocoupler), PLC-compatible (EN 61131), sampling cycle 1 ms	
Internal resistance		$R_i \approx 3.0 k\Omega$, $I_E \Omega 10 mA$	
Signal level		+13 V – +30 V = "1" = Contact closed -3 V – +5V = "0" = Contact open	
3 digital outputs		PLC-compatible (EN 61131-2), response time 1 ms, short-circuit proof, $I_{max} = 50 mA$	
Signal level		"0" = 0 V, "1" = +24 V, Important: Do not apply external voltage.	
1 isolated relay contact		max. load capacity of relay contacts DC 30 V, DC 0.08 A	
DC LINK			
Apparent output power (at $V_{line} = 3 \times AC 380 - 500 V$)	S_A	173 kVA	271 kVA
DC link voltage	$V_{DC link}$	DC 620 V – 780 V	
Nominal DC link current (at nominal line current I_{line})	$I_{DC link}$	DC 255 A	DC 407 A
Max. DC link current (at nominal line current I_{line})	I_{DClink_max}	DC 382 A	DC 610 A
Max. continuous DC link current (at nominal line current I_{line})	I_{DClink_Dmax}	DC 318 A	DC 508 A
GENERAL			
Power loss at P_N	P_{Vmax}	5000 W	6600 W
Cooling air consumption		1400 m³/h	
Connection for power terminals	L1, L2, L3	Connection rail with bore for M12 Max. 2 × 240 mm² Press cable lug DIN 46235	
Tightening torque		70 Nm	
DC link coupling option		- DLZ11B/100 mm (part number: 18231934) - DLZ11B/200 mm (part number: 18235662) - DLZ11B/300 mm (part number: 18235670)	
Electronics terminals connection X2		Permitted cable cross-section: - One conductor per terminal: 0.20 – 2.5 mm² (AWG 24 – 12) - Two conductors per terminal: 0.25 – 1 mm² (AWG 22 – 17) Tightening torque: 0.6 Nm	
External voltage supply		Connect 24 V backup voltage via the DC power supply unit. No connection at the control unit.	
Mass		385 kg	475 kg
Dimensions	W × H × D	899 mm × 1490 mm × 473 mm	
Choke		Installed in the basic device	
Line filter (optional)		NF600-503 Part number 17963389	
For MOVIDRIVE® MDX60B/61B...-5_3		0005 – 2500	
Recommended line fuse		315 A (gS)	500 A (gS)

Technical data of regenerative power supply unit

MOVIDRIVE® MDR60A/61B regenerative power supply unit

MOVIDRIVE® MDX62B1600/2000/2500 size 7

MOVIDRIVE® MDX62B		Size 7		
2-Q devices (without brake chopper)		1600-503-2-0T/L	2000-503-2-0T/L	2500-503-2-0T/L
4-Q devices (with brake chopper)		1600-503-4-0T/L	2000-503-4-0T/L	2500-503-4-0T/L
Part number		18250459 18250483	18250467 18250491	18250475 18250505
INPUT				
DC link voltage	$V_{DC \text{ link}}$	Supply via DC link connection DC 537 V – 780 V		
OUTPUT				
Apparent output power ¹⁾ (at $V_{line} = 3 \times AC \ 380 - 500 \text{ V}$)	S_N	208 kVA	263 kVA	326 kVA
Nominal output current ¹⁾ (at $V_{line} = 3 \times AC \ 400 \text{ V}$)	I_N	AC 300 A	AC 380 A	AC 470 A
Continuous output current (= 125% I_N) (at $V_{line} = 3 \times AC \ 400 \text{ V}$ with $f_{PWM} = 2.5 \text{ kHz}$)	I_D	AC 375 A	AC 475 A	AC 588 A
Continuous output current (= 100% I_N) (at $V_{line} = 3 \times AC \ 400 \text{ V}$ with $f_{PWM} = 2.5 \text{ kHz}$ Temperature range 0 °C – +50 °C)	I_D	AC 300 A	AC 380 A	AC 470 A
Current limiting	I_{max}	Motor and generator mode 150% I_N , duration depending on the capacity utilization		
Internal current limiting		$I_{max} = 0 - 150\%$ adjustable		
Permitted minimum braking resistance value (4Q operation)	R_{BWmin}	1.1 Ω		
Output voltage	V_O	Max. V_{line}		
PWM frequency	f_{PWM}	Adjustable: 2.5 or 4 kHz possible		
Speed range/resolution	$n_A/\Delta n_A$	-6000 – 0 – +6000 min^{-1} / 0.2 min^{-1} over the entire range		
GENERAL				
Power loss at $S_N^{1)}$	P_{Vmax}	3000 W	3600 W	4400 W
Cooling air consumption		1200 m^3/h		
Mass		2Q design: 180 kg 4Q variant: 200 kg		
Dimensions	$W \times H \times D$	700 mm $\times$ 1490 mm $\times$ 470 mm		
Conductor rails X1, X2, X3		Connection rail with bore for M12 Max. 2 $\times$ 240 mm^2 Press cable lug DIN 46235		
Tightening torque		70 Nm		
 Constant load Recommended motor power	P_{Mot}	160 kW	200 kW	250 kW
 Variable torque load or constant load without overload Recommended motor power	P_{Mot}	200 kW	250 kW	315 kW

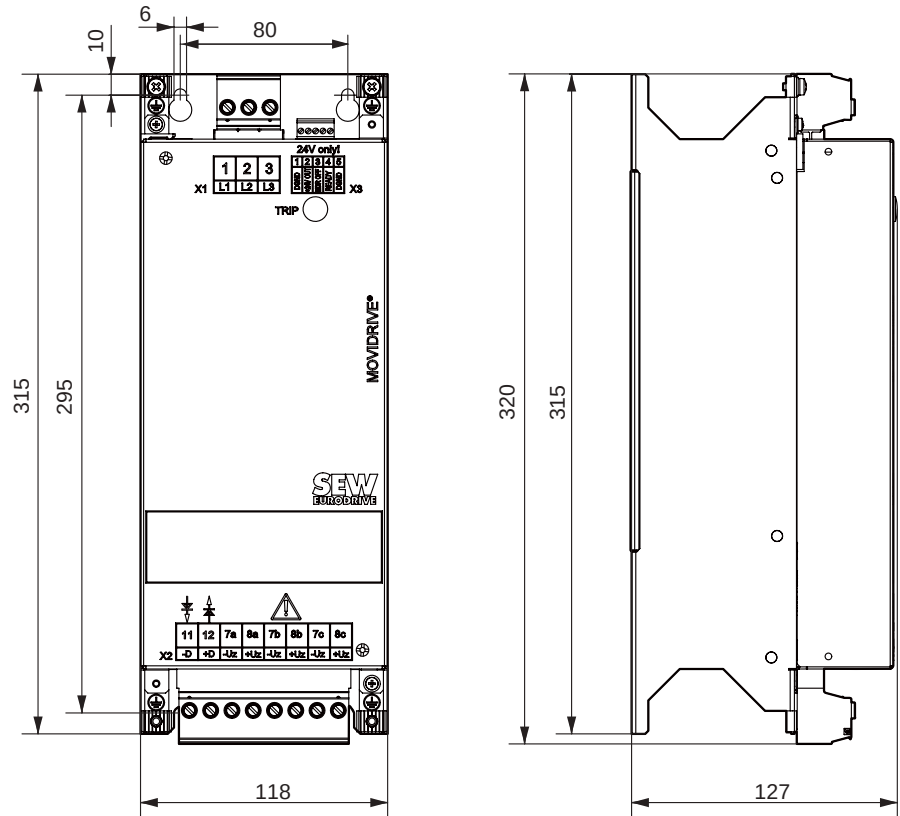
1) The performance data applies to $f_{PWM} = 2.5 \text{ kHz}$

9.1.6 Dimension drawings

MOVIDRIVE® MDR60A0150 size 2

Observe the following minimum clearance for control cabinet installation:

- 100 mm above and below
- No clearance required on the side



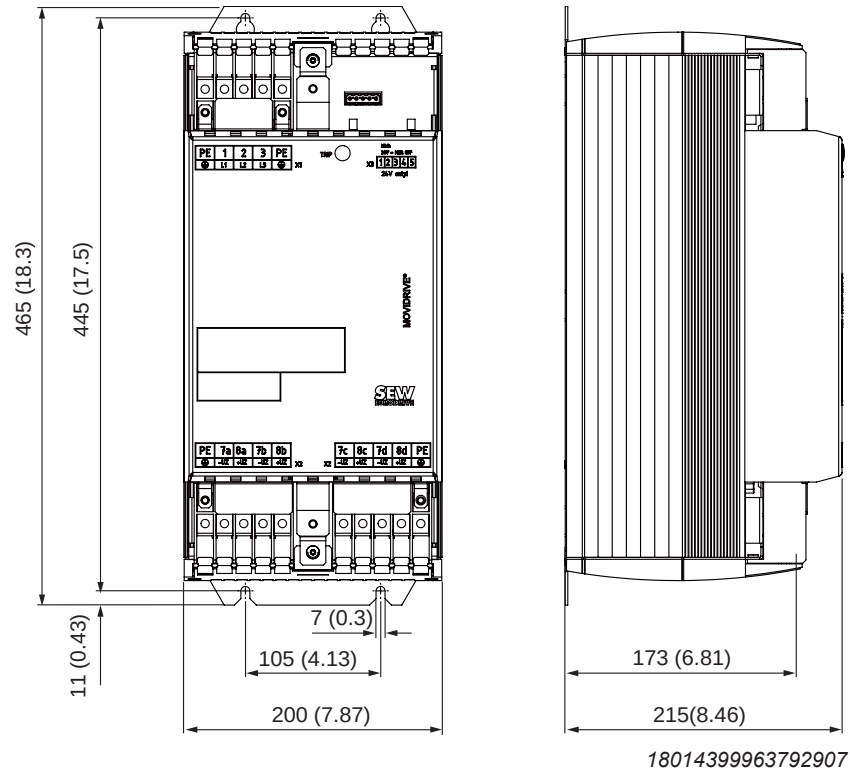
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All dimensions in mm (in)

MOVIDRIVE® MDR60A0370 size 3

Observe the following minimum clearance for control cabinet installation:

- 100 mm above and below
- No clearance required on the side

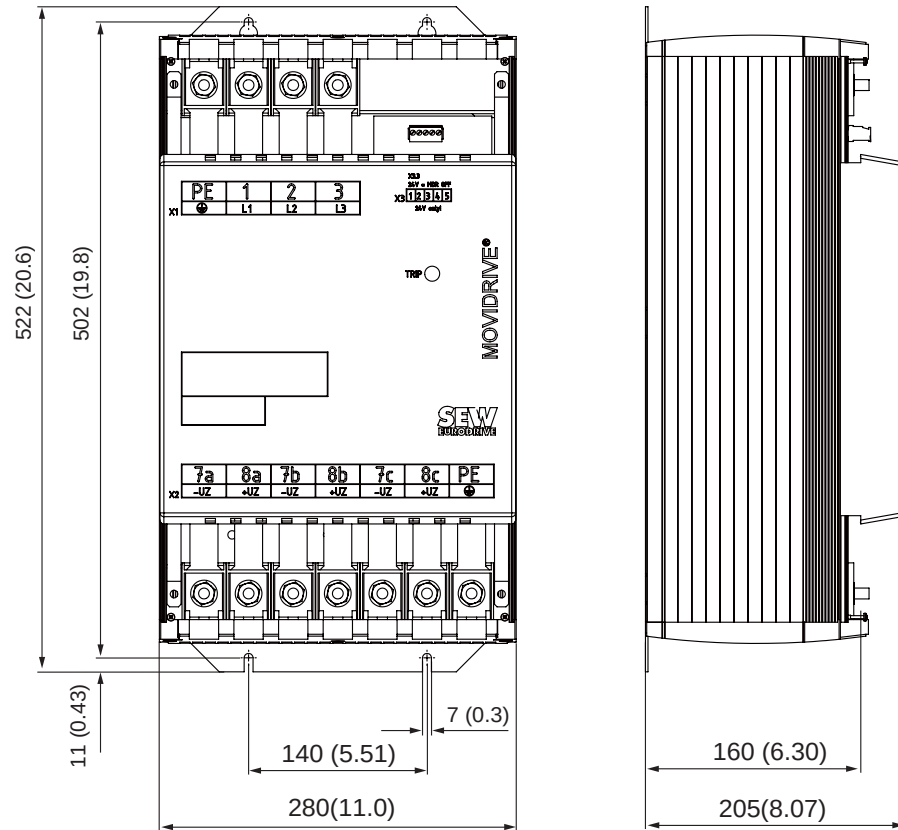


All dimensions in mm (in)

MOVIDRIVE® MDR60A0750 size 4

Observe the following minimum clearance for control cabinet installation:

- 100 mm above and below
- The minimum distance above the inverter for installing temperature-sensitive components, such as contactors or fuses, is 300 mm
- No clearance required on the side



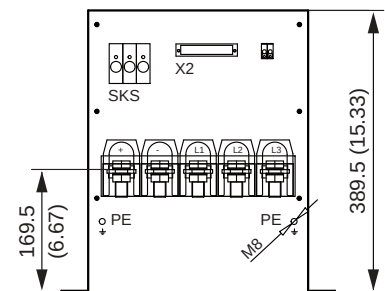
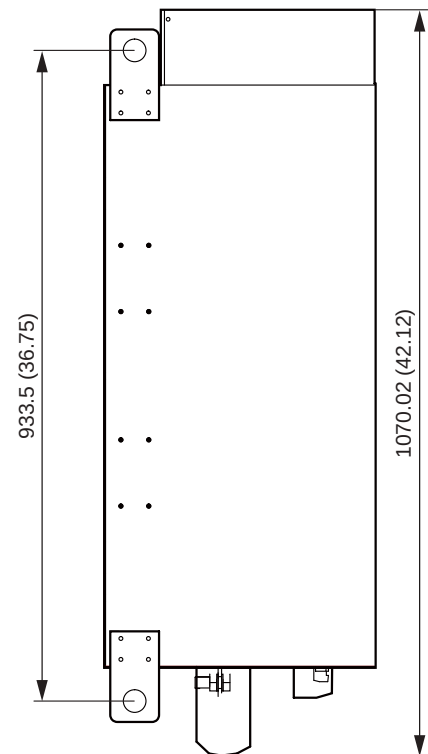
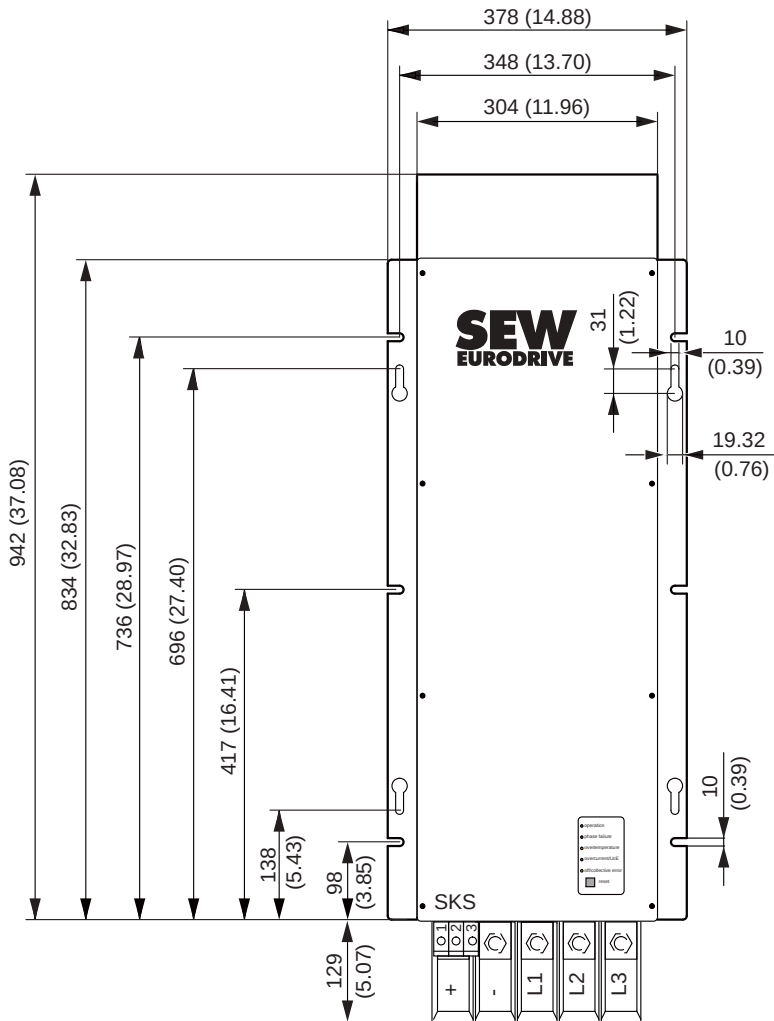
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All dimensions in mm (in)

MOVIDRIVE® MDR60A1320 size 6

Observe the following minimum clearance for control cabinet installation:

- 100 mm above
- Do not install any components that are sensitive to high temperatures within 300 mm above the device, for example contactors or fuses
- No clearance required below
- 70 mm on the side



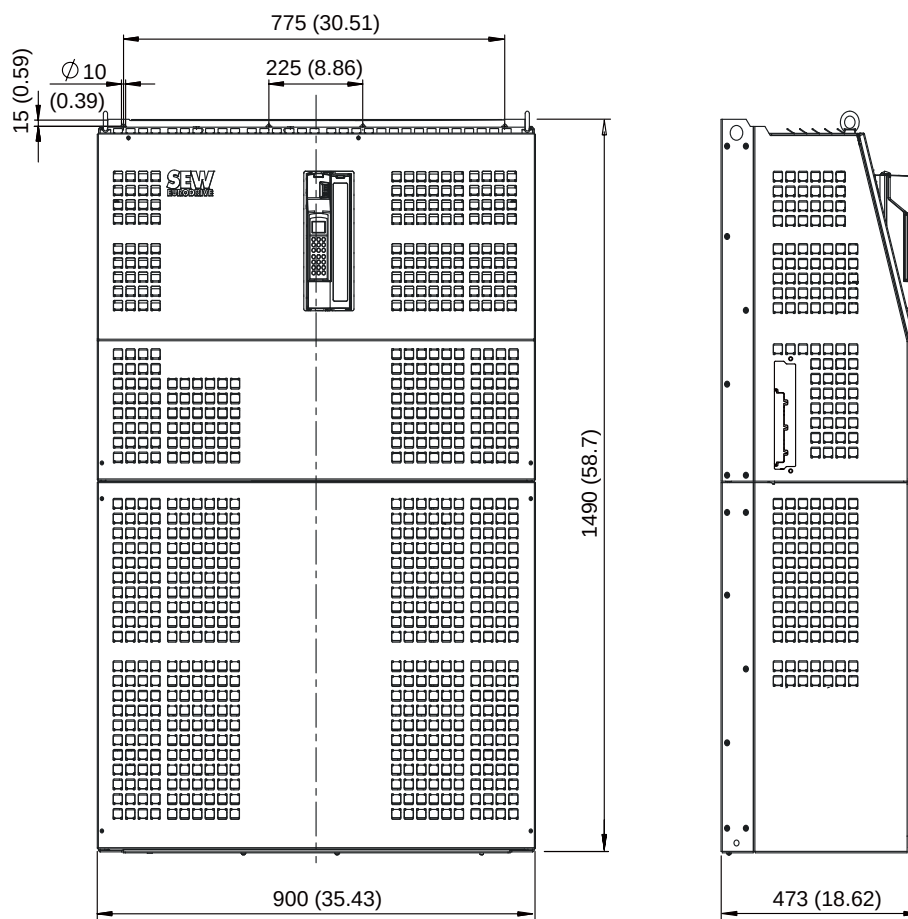
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All dimensions in mm (in)

MOVIDRIVE® MDR61B1600/2500 size 7

Observe the following minimum clearance for control cabinet installation:

- 100 mm above
- Do not install any components that are sensitive to high temperatures within 300 mm above the device, for example contactors or fuses
- Mounting on a base (e.g. DLS31B mounting base) is recommended due to the choke ventilation
- No clearance required on the side

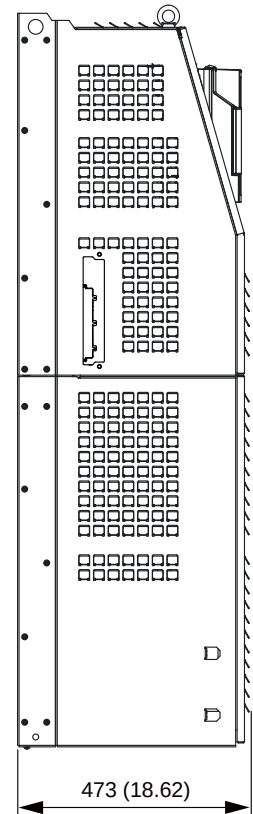
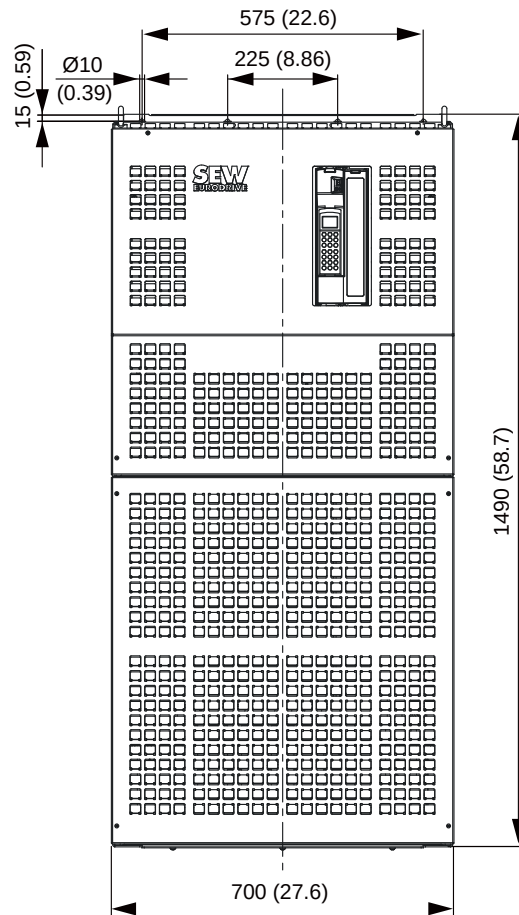


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MOVIDRIVE® MDX62B1600/2000/2500 size 7

Observe the following minimum clearance for control cabinet installation:

- 100 mm above
- Do not install any components that are sensitive to high temperatures within 300 mm above the device, for example contactors or fuses
- No clearance required below
- No clearance required on the side



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9.1.7 DC link connection

SEW-EURODRIVE recommends using the following cable sets for the DC link connection. These cable sets offer the appropriate dielectric strength and are also color-coded. Color coding is necessary because cross-polarity and ground faults could cause irreparable damage to the connected equipment.

The length of the cables restricts the DC link connection to the permitted length of 5 m. They can also be cut to length by the customer for connecting several devices. The cable lugs for connection to the regenerative power supply unit and an inverter are supplied with the cable set. Use commercially available cable lugs for connecting additional inverters. The inverters must then be connected to the regenerative power supply unit in star configuration.

Cable set type	DCP12A	DCP13A	DCP15A	DCP16A
Part number	08145679	08142505	08142513	08175934
For connecting MOVIDRIVE®	0005 – 0110	0150 – 0370	0450 – 0750	0900 – 1320

INFORMATION



Refer to the "MOVIDRIVE® MDR60A/61B Regenerative Power Supply Unit and MDX62B Motor Inverter" system manual for information on the DC link connection. This system manual can be ordered from SEW-EURODRIVE.

10 Technical data of options

10.1 HIPERFACE® encoder card DEH11B

10.1.1 Part number

08243107

10.1.2 Description

Option-capable MOVIDRIVE® MDX61B devices can be equipped with the HIPERFACE® encoder card type DEH11B. The encoder card offers one input for motor encoder and one input for external encoder, also referred to as a distance encoder. The input for the external encoder can also be used as an output for incremental encoder simulation.

10.1.3 Electronics data

Option DEH11B		
	Output for incremental encoder simulation or External encoder input X14:	Output for incremental encoder simulation: • Signal level to RS422 • The number of pulses is the same as on X15 motor encoder input External encoder input (max. 200 kHz): Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC\ 1\ V$ • TTL encoder with negated tracks • Encoder with signal level to RS422 Encoder voltage supply: • DC +12 V (tolerance range DC 10.5 – 13 V) • $I_{max} = DC\ 650\ mA^{1)}$
	Motor encoder input X15:	Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC\ 1\ V$ • TTL encoder with negated tracks • Encoder with signal level to RS422 • Permitted pulses per resolution: 128/256/512/1024/2018 increments Encoder voltage supply: • DC +12 V (tolerance range DC 10.5 – 13 V) • $I_{max} = DC\ 650\ mA$

1) Total current load of DC 12 V encoder supply $\leq DC\ 650\ mA$

10.2 Resolver card DER11B

10.2.1 Part number

08243077

10.2.2 Description

Option-capable MOVIDRIVE® MDX61B devices can be equipped with resolver card type DER11B. The resolver card offers one input for the resolver as motor encoder and one input for external encoder, also referred to as a distance encoder. The input for the external encoder can also be used as an output for incremental encoder simulation.

10.2.3 Electronics data

DER11B option		
	Output for incremental encoder simulation or External encoder input X14:	Output for incremental encoder simulation: • Signal level to RS422 • The number of pulses is 1024 pulses/revolution
	Motor encoder input X15:	Resolvers 2-pole, $V_{ref} = AC\ 7\ V$, 7 kHz $V_{in}/V_{ref} = 0.5 \pm 10\%$
	Maximum cable length	100 m
External encoder input (max. 200 kHz): Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC\ 1\ V$ • TTL encoder with negated tracks • Encoder with signal level to RS422 Encoder voltage supply: • DC +12 V (tolerance range DC 10.5 – 13 V) • $I_{max} = DC\ 650\ mA$		

10.3 DEU21B multi-encoder card

10.3.1 Part number

18221696

10.3.2 Description

Option-capable MOVIDRIVE® MDX61B units can be equipped with a DEU21B multi-encoder card. The encoder card provides one input for the motor encoder and one input for an external encoder, also referred to as a distance encoder.

Both encoder inputs can evaluate incremental and absolute encoders. The input for the external encoder can also be used as an output for incremental encoder simulation.

10.3.3 Electronics data

Option DEU21B ¹⁾		
	External encoder connection X14: Output for incremental encoder simulation: • Signal level to RS422 • The number of pulses is the same as on X15 motor encoder input	Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC\ 1\ V$ • CANopen encoder • TTL encoder with negated tracks • HTL encoder • SSI encoder • SSI Combi encoder • EnDat encoder • Encoder with signal level to RS422 • Permitted pulses per resolution: 2-4096 Increments Encoder voltage supply: • DC 24 V encoder supply • DC 12 V encoder supply²⁾
	Motor encoder connection X15:	Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC\ 1\ V$ • TTL encoder with negated tracks • HTL encoder • SSI encoder (not for speed control) • SSI Combi encoder • EnDat encoder • Encoder with signal level to RS422 • Permitted pulses per resolution: 2-4096 Increments Encoder voltage supply: • DC 24 V encoder supply³⁾ • DC 12 V encoder supply²⁾

1) The card has a fixed DGND-PE connection. Removing the EMC screw at the basic device has no effect.

2) The maximum load on X14:15 and X15:15 is DC 650 mA in total.

3) If the overall device load on the 24 V level exceeds 400 mA, you must connect an external DC 24 V supply to X10:9/X10:10. Observe the "Project planning" chapter in the "MOVIDRIVE® MDX60B/61B" system manual

10.4 DEH21B/DIP11B absolute encoder card

10.4.1 Part numbers

- DEH21B: 18208185
- DIP11B: 08249695

10.4.2 Description

The DEH21B and DIP11B options extend the MOVIDRIVE® B system to include an SSI interface for absolute encoders. This enables the following options for IPOS^{PLUS}® positioning:

- No reference travel required when the system is started or after a power failure
- Positioning can take place either with the absolute encoder or the incremental encoder/resolver installed on the motor
- No position switch needed on the travel path, even without motor encoder feedback
- Free processing of the absolute position is possible via the IPOS^{PLUS}® program
- In addition to the basic device, 8 digital inputs and 8 digital outputs are available with the DIP11B option
- The absolute encoder can be mounted either on the motor or along the track (e.g. high-bay warehouse)
- Simple encoder adjustment with user-guided startup
- Endless positioning in combination with activated modulo function

10.4.3 Electronics data for DEH21B

DEH21B option			
	Motor encoder connection	X15:	Permitted encoder types: • HIPERFACE® encoder • Sin/cos encoder $V_{SS} = AC 1 V$ • TTL encoder with negated tracks • Encoder with signal level to RS422 • Permitted pulses per resolution: 128/256/512/1024/2048 increments Encoder voltage supply: • DC +12 V (tolerance range 10.5 – 13 V) • $I_{max} = DC 650 mA$
	Encoder connection	X62:	SSI encoder input
	Connection		24VIN: DC 24 V supply voltage for encoder connected to X62
	Voltage supply	X60:1	
	Reference terminal	X60:2	Reference potential 24VIN

10.4.4 Electronics data for DIP11B

DIP11B option		
	Digital input connection	X60:1 – 8
	Internal resistance	$R_i \approx 3 \text{ k}\Omega$, $I_E \approx \text{DC } 10 \text{ mA}$
	Signal level (EN 61131)	DC +13 V – +30 V = "1" / DC-3 V – +5 V = "0"
	Function	X60:1 – 8
		DI10 – DI17; Selection option → Parameter menu P61_
	Digital input connection	X61:1 – 8
		DO1 – DO17, PLC-compatible (EN 61131), short-circuit proof and protected against external voltage to DC 30 V
		Response time 1 ms
	Signal level (EN 61131)	DC +24 V = "1", DC 0 V = "0" Important: Do not apply external voltage!
	Function	X61:1 – 8
		DO10 – DO17: Selection option → Parameter menu P63_
	Encoder connection	X62:
		SSI encoder input
	Reference terminals	X60:9
		X60:10
		DCOM: Reference potential for digital inputs (DI10 – DI17)
		DGND: Reference potential for binary signals and 24VIN
		• Without jumper X60:9 – X60:10 (DCOM-DGND) isolated digital inputs
		• With jumper X60:9 – X60:10 (DCOM-DGND) non-isolated digital inputs
	Permitted cable cross section	One core per terminal: 0.08 – 1.5 mm ² (AWG28 – 16)
		Two cores per terminal: 0.25 – 1 mm ² (AWG22 – 17)
		Tightening torque 0.6 Nm
	Voltage input	X61:9
		24VIN: Supply voltage DC +24 V for digital outputs DO10 – DO17 and encoder (mandatory)

10.5 Connector adapter for device replacement MD_60A - MDX60B/61B

The following adapters are available for quick replacement of a MOVIDRIVE® A with a MOVIDRIVE® B during system operation.

- DAT11B: Terminal adapter, part number 08246718

If the TF/TH option is connected to X10 when using MOVIDRIVE® MD_A, then X10 can be directly replugged. The jumper between X10:1 and X10:2 must be removed if a TF/TH option is connected to encoder input X15. Three connectors have to be rewired. You can avoid such rewiring work by using the DAT11B terminal adapter. Using this adapter will prevent incorrect connection and save time. The terminal adapter is required for terminals X11 (analog input), X12 (SBus) and X13 (digital inputs).

DAT11B



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- DAE15B: Encoder adapter X15, part number 08176299

If a motor with encoder on X15 is in operation on an MDV or MCV, the encoder is connected via a 9-pin connector to MOVIDRIVE® A. Since the DEH11B option for MOVIDRIVE® MDX61B comes equipped with a 15-pin socket, you will either have to convert the encoder cable or use the encoder adapter. The encoder adapter DAE15B for connecting sin/cos and TTL encoders can be inserted directly between the existing encoder cable with a 9-pin connector and the 15-pin socket on DEH11B. This step makes for fail-safe and fast connection of existing drives. HTL encoders have to be connected to MOVIDRIVE® B with the option DWE11B/12B (→ chapter "DWE11B/12B interface adapter option").

DAE15B



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- Length of DAE15B: 200 mm ± 20 mm
Cable cross section: 6 x 2 x 0.25 mm² (AWG 23)
- DAE14B: Encoder adapter X14, part number 08176302

If a distance encoder at X14 is operated on a MOVIDRIVE® MDV, MDS, MCV, or MCS, connection is made using a 9-pin socket. Since the DEH11B and DER11B options for MOVIDRIVE® MDX61B come equipped with a 15-pin connector, you will either have to rework the encoder cable or use the DAE14B encoder adapter. The DAE14B encoder adapter can be plugged directly between the existing encoder cable with 9-pin socket and the 15-pin connector on the DEH11B//DER11B option. This step makes for fail-safe and fast connection of existing drives.

Technical data of options

Connector adapter for device replacement MD_60A - MDX60B/61B

DAE14B



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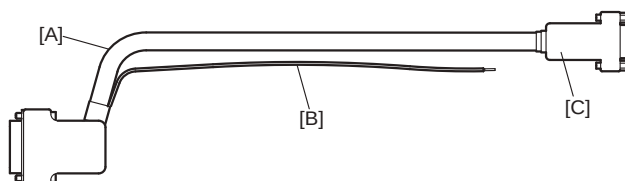
- Length of DAE14B: 200 mm ± 20 mm
Cable cross section: 6 x 2 x 0.25 mm² (AWG 23)

10.6 DWE11B/12B interface adapter

10.6.1 Part number and description

DWE11B, part number 01881876

- The interface adapter DWE11B (HTL→TTL) in the form of an adapter cable is used to **connect single-ended HTL encoders to the DEH11B/DEH21B option**. Only the A, B and C tracks are connected. The interface adapter is suitable for all HTL encoders that were operated on MOVIDRIVE® A, MDV and MCV and can be connected without any rewiring effort.



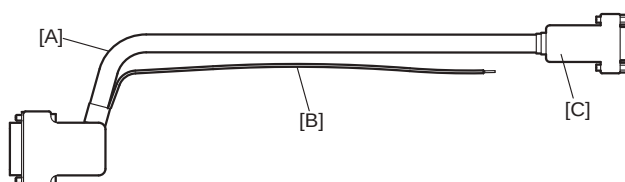
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- [A] 5 x 2 x 0.25 mm² (AWG 23) / length 1000 mm / max. cable length inverter – encoder: 100 m
[B] DC 24 V connection for HTL encoder; 1 x 0.5 mm² (AWG 20) / length 250 mm

Signal	Terminal of 9-pin D-sub socket [C] (encoder end)
A	1
B	2
C	3
UB	9
GND	5

DWE12B, part number 01881809

- The interface adapter DWE12B (HTL → TTL) in the form of an adapter cable is used to **connect push-pull HTL encoders to the DEH11B/DEH21B options**. In addition to the A, B, and C track, you will also have to connect the negated tracks ($\bar{A}$, $\bar{B}$, $\bar{C}$). SEW-EURODRIVE recommends using this interface adapter for any new system.



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- [A] 4 x 2 x 0.25 mm² (AWG 23) / length 1000 mm / max. cable length inverter – encoder: 200 m
[B] DC 24 V connection for HTL encoder; 1 x 0.5 mm² (AWG 20) / length 250 mm

Signal	Terminal of 9-pin D-sub socket [C] (encoder end)
A	1
$\bar{A}$	6
B	2
$\bar{B}$	7
C	3
$\bar{C}$	8
UB	9
GND	5

10.7 UWS11A interface adapter

10.7.1 Part number

0822689X

10.7.2 Description

The UWS11A option converts RS232 signals, for example from the PC, into RS485 signals. These RS485 signals can then be routed to the RS485 interface of the inverter.

The UWS11A option requires a DC 24 V voltage supply.

10.7.3 RS232 interface

The connection between UWS11A and PC is made using a commercially available serial interface cable (shielded!).

10.7.4 RS485 interface

Max. 32 inverters can be networked for communication (max. line length 200 m) via the RS485 interface of the UWS11A. Do not connect external terminating resistors as dynamic terminating resistors are already installed.

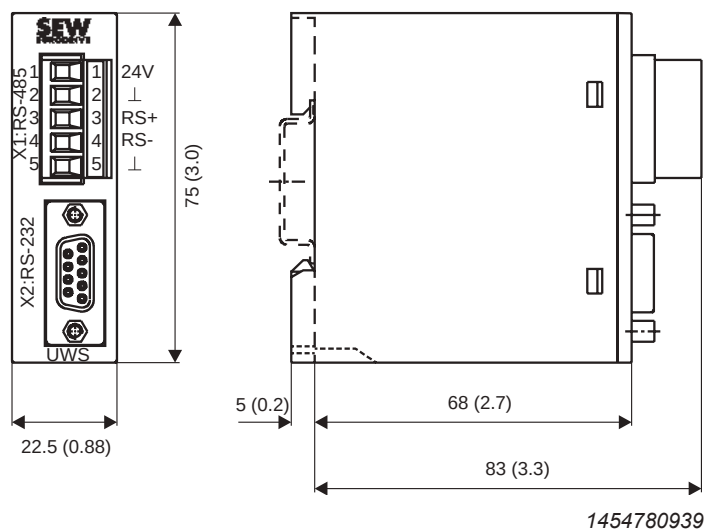
Permitted cable cross-section: 1 core per terminal 0.20 – 2.5 mm² (AWG 24 - 12)

2 cores per terminal 0.20 – 1 mm² (AWG 24 – 17)

10.7.5 Technical data

UWS11A		
Part number		0822689X
Ambient temperature		0 °C to 40 °C
Storage temperature		-25 °C – +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection		IP20
Voltage supply		DC 24 V (I _{max} = 50 mA)
Current consumption		max. DC 50 mA
Mass		150 g
Dimensions		83 mm × 75 mm × 22.5 mm
Terminal assignment		
X1: RS485	1 / 24 V	DC +24 V voltage input
	2 / ⊥	Reference potential
	3 / RS+	RS485+
	4 / RS-	RS485-
	5 / ⊥	Reference potential
X2: RS232	1	No function
	2	TxD
	3	RxD
	4	No function
	5	Reference potential
	6 – 9	No function

Dimension drawing of UWS11A



All dimensions in mm (in)

The UWS11A option is mounted on a mounting rail (EN 50022-35 × 7.5) in the control cabinet.

10.8 UWS21B interface adapter

10.8.1 Part number

18204562

10.8.2 Description

The UWS21B option converts RS232 signals, for example from the PC, into RS485 signals. These RS485 signals can then be routed to the XT slot of the inverter.

10.8.3 RS232 interface

The connection between UWS21B and PC is made using a commercially available serial interface cable (shielded!).

10.8.4 RS485 interface

UWS21B and inverter are connected using a serial interface cable with RJ10 connectors.

10.8.5 Scope of delivery

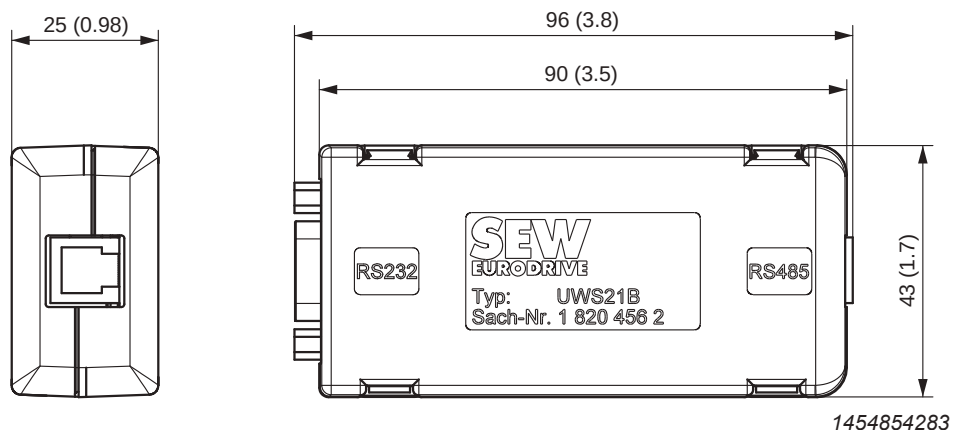
The scope of delivery for the UWS21B option includes:

- UWS21B
- Serial interface cable with 9-pin D-sub socket and 9-pin D-sub connector for the UWS21B – PC connection.
- Serial interface cable with two RJ10 plugs to connect UWS21B and inverter.
- CD-ROM with MOVITOOLS® MotionStudio engineering software

10.8.6 Technical data

UWS21B	
Part number	18204562
Ambient temperature	0 °C to 40 °C
Storage temperature	–25 °C to +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection	IP20
Mass	300 g
Dimensions	96 mm × 43 mm × 25 mm

Dimension drawing for UWS21B



All dimensions in mm (in)

10.9 USB11A interface adapter

10.9.1 Part number

08248311

10.9.2 Description

Option USB11A enables a PC or laptop with a USB interface to be connected to the XT slot of the inverter. The USB11A interface adapter supports USB 1.1 and USB 2.0.

10.9.3 USB11A – PC

USB11A is connected to the PC using a commercially available, shielded USB connection cable type USB A-B.

10.9.4 MOVIDRIVE® – USB11A

The inverter and USB11A are connected using a serial interface cable with RJ10 connectors.

10.9.5 Scope of delivery

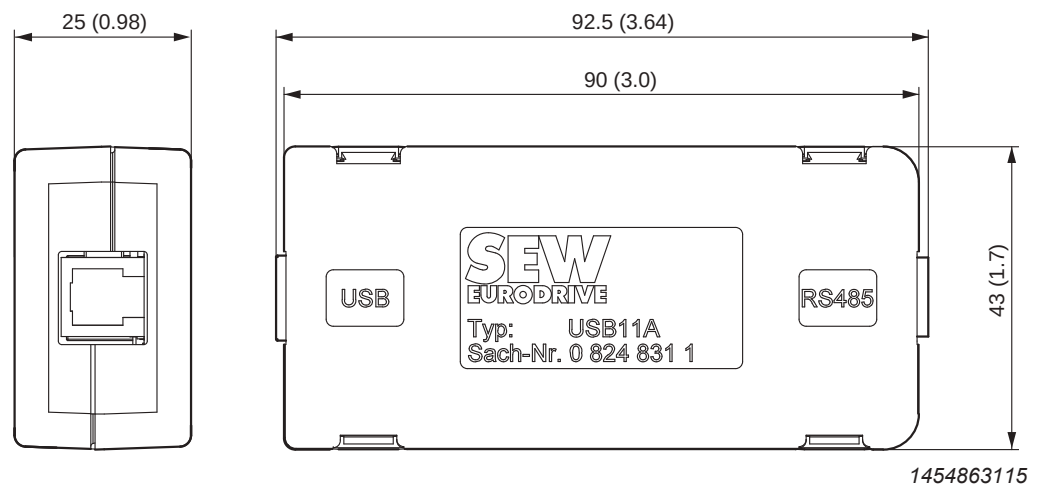
The scope of delivery for the USB11A option includes:

- USB11A interface adapter
- USB connection cable to connect USB11A – PC
- Serial interface cable with two RJ10 plugs to connect inverter and USB11A
- CD-ROM with drivers and MOVITOOLS® MotionStudio engineering software

10.9.6 Technical data

USB11A	
Part number	08248311
Ambient temperature	0 – 40 °C
Storage temperature	–25 °C to +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection	IP20
Mass	300 g
Dimensions	92.5 mm × 43 mm × 25 mm

All dimensions in mm (in)



10.10 DWI11A DC 5 V encoder supply

10.10.1 Part number

08227594

10.10.2 Description

If you are using an incremental encoder with a DC 5 V encoder supply, install the DC 5 V encoder supply option type DWI11A between the inverter and the incremental encoder. This option provides a regulated DC 5 V power supply for the encoder. For this purpose, the DC 12 V power supply for the encoder inputs is converted to DC 5 V by means of a voltage controller. A sensor line is used to measure the supply voltage at the encoder and compensate the voltage drop along the encoder cable.

Incremental encoders with DC 5 V encoder supply must not be connected directly to the encoder inputs X14: and X15:.. This would cause irreparable damage to the encoder.

INFORMATION

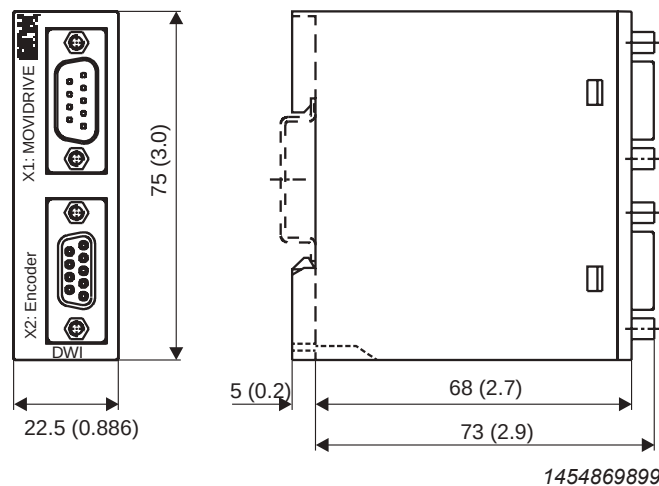


If a short circuit occurs in the sensor cable, the connected encoder may be exposed to a voltage higher than permitted.

10.10.3 Recommendation

Use prefabricated cables from SEW-EURODRIVE for the encoder connection.

10.10.4 Dimension drawing



All dimensions in mm (in)

The DWI11A option is mounted on a support rail (EN 50022-35 × 7.5) in the control cabinet.

10.10.5 Technical data

DC 5 V encoder supply option type DWI11A	
Part number	08227594
Voltage input	DC 10 – 30 V, $I_{\max}$ = DC 120 mA
Encoder voltage supply	DC +5 V (to $V_{\max} \approx +10$ V), $I_{\max}$ = DC 300 mA
Max. line length that can be connected	100 m total Use a shielded twisted-pair cable (A and A , B and B , C and C) for connecting the encoder to the DWI11A and the DWI11A to MOVIDRIVE®.
Encoder types that can be connected	• sin/cos encoder VSS = AC 1 V • TTL encoder with negated tracks • Encoder with signal level to RS422

10.11 DIO11B input/output board

10.11.1 Part number

08243085

10.11.2 Description

The number of inputs/outputs of the basic MOVIDRIVE® B device can be expanded with the DIO11B option. The DIO11B option is plugged into the fieldbus slot. If the fieldbus slot is not available, you can plug the DIO11B option into the expansion slot. The programmable signal types of the additional digital inputs/outputs are the same as the basic device (→ parameter group P6___, terminal assignment).

10.11.3 Electronics data

Option DIO11B			
	Setpoint input n2	X20:1/X20:2	AI21/AI22: Voltage input Differential input or input with AGND reference potential n2 = DC 0 V – +10 V or DC -10 V – +10 V 12 bit, sampling cycle 1 ms R _i = 40 kΩ +/- 100 mV (± 0.5% of 20 V)
	Operating mode AI21/AI22		
	Resolution		
	Internal resistance		
	Accuracy		
	Analog outputs	X21:1/X21:4 X21:2/X21:5	AOV1/AOV2: Voltage outputs DC-10 V to 0 to +10 V, I _{max} = DC 10 mA, short-circuit proof and protected against external voltage to DC 30 V, selection option → parameter menu P64_ AOC1/AOC2: Current outputs DC 0(4) – 20 mA, max. output voltage DC 15 V, short-circuit proof and protected against external voltages up to DC 30 V, selection option → parameter menu P64_
	Response time		5 ms
	Resolution		10 Bit
	Accuracy of the analog input		0.5% of 20 V ± 100 mV
	Accuracy of the analog output		0.2% of 20 V ± 40 mV
	Digital inputs		Isolated (optocoupler), PLC-compatible (EN 61131) DIØ – DI17
	X22:1 – X22:8		R _i ≈ 3 kΩ, I _E ≈ DC 10 mA Sampling cycle 1 ms
	Internal resistance		
	Signal level		DC +13 V – +30 V = "1" = contact closed DC -3 V – +5 V = "0" = contact open According to EN 61131
	Function	X22:1 – X22:8	DI10 – DI17: Selection option → Parameter menu P61_
	Digital outputs	X23:1 – X23:8	DO1Ø – DO17: PLC-compatible (EN 61131-2), response time 1 ms
	Signal level		"0" = DC 0 V "1" = DC +24 V
	Function	X23:1 – X23:8	DO10 – DO17: Selection option → Parameter menu P63_ I _{max} = DC 50 mA, short-circuit proof, and protected against external voltage to DC 30 V
	Reference terminal X20:3/X21:3/X21:6		ANGND: Reference potential for analog signals (AI21/AI22/AO_1/AO_2)
	X22:9		DCOM: Reference potential for digital inputs X22:1 – X22:8 (DI1Ø – DI17)
	X22:10		DGND: Reference potential for binary signals, reference potential for DC 24 V power supply
	Voltage input	X23:9	24VIN: DC +24 V supply voltage for digital outputs DO1Ø – DO17
	Permitted cable cross section		One core per terminal: 0.08 – 1.5 mm ² (AWG 28 – 16) Two cores per terminal: 0.25 – 1 mm ² (AWG 22 – 17) Tightening torque: 0.6 Nm

10.11.4 Functions

- 8 digital inputs
- 8 digital outputs
- 1 analog differential input (DC 0 – 10 V, DC -10 V – +10 V, DC 0 – 20 mA with corresponding load)
- 2 analog outputs (DC -10 V – +10 V, DC 0 – 20 mA, DC 4 – 20 mA)

10.12 PROFIBUS DFP21B fieldbus interface

10.12.1 Part number

08242402

10.12.2 Description

MOVIDRIVE® B can be equipped with a 12 Mbaud fieldbus interface for the PROFIBUS-DP serial bus system. The device master data (GSD) and type files for MOVIDRIVE® B are available from the SEW website (<http://www.sew-eurodrive.de>) to help with project planning and facilitate startup.

PROFIBUS-DP (Decentralized Periphery) is primarily used at the sensor/actuator level where fast response times are required. The principal task of PROFIBUS-DP is to exchange data, e.g. setpoints or binary commands, in rapid cycles between central automation equipment (PROFIBUS master) and decentralized peripheral devices (e.g. drive inverters). The DFP21B option supports PROFIBUS-DP and DP-V1. Consequently, MOVIDRIVE® B can be controlled via PLC and PROFIBUS-DP/DP-V1.

10.12.3 Electronics data

DFP21B option		
	Protocol variant	PROFIBUS-DP and DPV1 to IEC 61158
	Baud rate	Automatic detection of baud rate from 9.6 kbaud to 12 Mbaud
	Connection technology	9-pin D-sub socket, pin assignment to IEC 61158
	Bus termination	Not integrated, implement using suitable PROFIBUS connector with terminating resistors that can be activated
	station address	1 – 125, can be set via DIP switches
	GSD file name	DP: SEW_6003.GSD DP-V1: SEWA6003.GSD
	DP ID number	6003 _{hex} (24579 _{dec})
	Max. number of process data	10 process data entries

10.13 INTERBUS fieldbus interface DFI11B

10.13.1 Part number

08243093

10.13.2 Description

MOVIDRIVE® B can be equipped with a fieldbus interface for the non-proprietary and standardized INTERBUS sensor/actuator bus system.

INTERBUS is defined in EN 50254/DIN 19258 and, as far as its function is concerned, it consists of a process data channel and a parameter data channel. Intelligent actuators such as the MOVIDRIVE® B drive inverters can be controlled and configured in a user-friendly way.

10.13.3 Electronics data

DFI11B option		
	Supported baud rates	500 kBaud and 2 MBaud, can be selected via DIP switch
	Connection technology	Fieldbus input: 9-pin D-sub connector Fieldbus output: 9-pin D-sub socket RS485 transmission technology, 6-core shielded and twisted-pair cable
	DP identity numbers	E3 _{hex} = 227 _{dec} (1 PCP word) E0 _{hex} = 224 _{dec} (2 PCP words) E1 _{hex} = 225 _{dec} (4 PCP words) 38 _{hex} = 56 _{dec} (microprocessor not ready) 03 _{hex} = 3 _{dec} (no PCP word)
	Max. number of process data	6 process data entries

10.14 INTERBUS FOC fieldbus interface DFI21B

10.14.1 Part number

08243115

10.14.2 Description

MOVIDRIVE® B can be equipped with a fieldbus interface for the non-proprietary and standardized sensor/actuator bus system INTERBUS/INTERBUS with optical fibers (INTERBUS FOC).

INTERBUS is defined in EN 50254/DIN 19258 and, as far as its function is concerned, it consists of a process data channel and a parameter data channel. Intelligent actuators such as the MOVIDRIVE® B drive inverters can be controlled and configured in a user-friendly way.

10.14.3 Electronics data

DFI21B option		
	Supported baud rates	500 kBaud and 2 MBaud, can be selected via DIP switch
	Connection technology	F-SMA connector
	DP identity numbers	E3 _{hex} = 227 _{dec} (1 PCP word) E0 _{hex} = 224 _{dec} (2 PCP words) E1 _{hex} = 225 _{dec} (4 PCP words) 38 _{hex} = 56 _{dec} (microprocessor not ready) 03 _{hex} = 3 _{dec} (no PCP word)
	Max. number of process data	6 process data entries

10.15 Fieldbus interface PROFINET IO RT DFE32B

10.15.1 Part number

18213456

10.15.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFE32B option to connect to higher-level automation, project planning and visualization systems via Ethernet (PROFINET IO protocol) thanks to its powerful, universal fieldbus interface. You can use option DFS32B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® MotionStudio engineering software to change parameters and IPOS^{PLUS}® programs. An integrated Web server makes it possible for the user to access diagnostic values quickly and easily using a standard browser (e.g. Internet Explorer).

10.15.3 Electronics data

DFE32B option		
	Application protocols	• PROFINET IO (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the drive inverter. • HTTP (Hypertext Transfer Protocol) for diagnostics using a web browser. • SMLP (Simple MOVILINK® Protocol), protocol used by MOVITOOLS® MotionStudio.
	Port numbers used	• 300 (SMLP) • 80 (HTTP)
	Ethernet services	• ARP • ICMP (ping)
	ISO / OSI layer 2	Ethernet II
	Baud rate	100 Mbaud in full duplex process
	Connection technology	Two RJ45 plug connectors with integrated switch and auto-crossing
	Addressing	4 byte IP address or MAC-ID (00:0F:69:xx:xx:xx)
	Manufacturer ID (Vendor ID)	010A _{hex}
	Tools for startup	• MOVITOOLS® MotionStudio engineering software • DBG60B keypad
	Maximum number of process data:	10

10.15.4 Functions

- PROFINET IO protocol
- Two RJ45 plug connectors for star or line type cabling
- Up to 10 process data and PROFINET diagnostic parameter data items can be transferred at the same time
- The PROFINET IO controller assigns the IP address
- Engineering access using MOVITOOLS® MotionStudio via Ethernet TCP/IP
- Inverter diagnostics using a standard browser (e.g. Internet Explorer) via the integrated Web server:
 - Transfer display values
 - DFE32B configuration (after login)

10.16 DFE33B fieldbus interface for EtherNet/IP™ and Modbus TCP

10.16.1 Part number

18213464

10.16.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFE33B option to connect to higher-level automation, project planning and visualization systems via Ethernet (EtherNet/IP™ and Modbus TCP protocol) thanks to its powerful, universal fieldbus interface. You can use option DFS33B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® MotionStudio engineering software to change parameters and IPOS^{PLUS}® programs. An integrated Web server makes it possible for the user to access diagnostic values quickly and easily using a standard browser (e.g. Internet Explorer).

10.16.3 Electronics data

DFE33B option		
	Application protocols	• EtherNet/IP™ (Ethernet Industrial Protocol) or Modbus TCP to control and parameterize the drive inverter. • HTTP (Hypertext Transfer Protocol) for diagnostics using a Web browser. • SMLP (Simple MOVILINK® Protocol), protocol used by MOVITOOLS® MotionStudio. • DHCP (Dynamic Host Configuration Protocol) to assign address parameter automatically.
	Port numbers used	• 44818 EtherNet/IP™ (TCP) • 2222 EtherNet/IP™ (UDP) • 502 Modbus TCP • 300 SMLP (TCP, UDP) • 80 HTTP • 67 / 68 DHCP
	Ethernet services	• ARP • ICMP (ping)
	ISO / OSI layer 1/2	Ethernet II
	ISO / OSI layer 4/5	TCP/IP and UDP/IP
	Automatic baud rate detection	10 MBaud / 100 MBaud
	Connection technology	2 x RJ45 with integrated switch and autocrossing
	Addressing	4 byte IP address or MAC-ID (00-0F-69-xx-xx-xx)
	Manufacturer ID (Vendor ID)	• 013B_{hex} (EtherNet/IP™) • "SEW-EURODRIVE" (Modbus TCP)
	Tools for startup	• MOVITOOLS® MotionStudio engineering software • DBG60B keypad
	Maximum number of process data:	10

10.16.4 Functions

- EtherNet/IP™ protocol
- Two RJ45 plug connectors for star or line type cabling
- Up to 10 process data and parameter data items can be transferred at the same time
- Two ways to allocate the IP address:
 1. Setting via DBG60B keypad and MOVITOOLS® MotionStudio
 2. Use the DHCP server to assign the IP address
- Engineering access using MOVITOOLS® MotionStudio via Ethernet TCP/IP
- Inverter diagnostics using a standard browser (e.g. Internet Explorer) via the integrated Web server:
 - Transfer display values
 - DFE33B configuration (after login)

10.17 EtherCAT® DFE24B fieldbus interface

10.17.1 Part number

18211267

10.17.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFE24B option to connect to higher-level automation, project planning and visualization systems via EtherCAT® thanks to its powerful, universal fieldbus interface. You can use the DFE24B option to communicate with the inverters via the EtherCAT® master and operate the MOVITOOLS® MotionStudio engineering software via EtherCAT® to change parameters and IPOS^{PLUS}® programs.

10.17.3 Electronics data

DFE24B option		
	Standards	IEC 61158, IEC 61784-2
	Baud rate	100 MBaud full duplex
	Connection technology	Two RJ45 plug connectors
	Bus termination	Not integrated because bus termination is automatically activated.
	OSI layer	Ethernet II
	station address	Setting via EtherCAT® master (→ Display with P093)
	XML file name	SEW_DFE24B.xml
	Vendor ID	0x59 (CANopenVendor ID)
	EtherCAT® services	• CoE (CANopen over EtherCAT®) • VoE (Simple MOVILINK® protocol over EtherCAT®)
	Maximum number of process data:	10
	Tools for startup	• MOVITOOLS® MotionStudio engineering software • DBG60B keypad

10.17.4 Functions

- EtherCAT®
- Two RJ45 plug connectors for line type cabling
- Simultaneous communication of up to 10 process data and parameter data as well as access (Rx, Tx) to 8 IPOS^{PLUS}® variables
- Automatic addressing via EtherCAT® master
- Engineering access using MOVITOOLS® MotionStudio via EtherCAT®

10.18 DeviceNet™ DFD11B fieldbus interface

10.18.1 Part number

08249725

10.18.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFD11B option to connect to higher-level automation, project planning and visualization systems via the non-proprietary and standardized DeviceNet™ fieldbus system.

The type DFD11B DeviceNet™ fieldbus interface can be plugged into the fieldbus slot. The DFD11B option enables communication with the higher-level controller for a maximum of 10 process data. You need an EDS file to be able to integrate the DFD11B in the higher-level control. You can download this file from the SEW-EURODRIVE website.

10.18.3 Electronics data

Option DFD11B		
	Communication protocol	Master/slave connection set acc. to DeviceNet™ specification version 2.0
	Number of process data words	Adjustable via DIP switches: • 1 – 10 process data words • 1 – 4 process data words with bit-strobe I/O
	Baud rate	125, 250 or 500 kBaud, to be set via DIP switches
	Bus cable length	For thick cable according to DeviceNet™ specification 2.0 appendix B: • 500 m at 125 kbaud • 250 m at 250 kbaud • 100 m at 500 kBaud
	Transmission level	ISO 11 98 - 24 V
	Connection technology	• 2-wire bus and 2-wire supply voltage DC 24 V with 5-pin Phoenix terminal • Pin assignment according to DeviceNet™ specification
	MAC ID	0 – 63, can be set via DIP switch Max. 64 stations
	Supported services	• Polled I/O: 1 – 10 words • Bit strobe I/O: 1 – 4 words • Explicit messages: – Get_Attribute_Single – Set_Attribute_Single – Reset – Allocate_MS_Connection_Set – Release_MS_Connection_Set
	Tools for startup	• MOVITOOLS® MotionStudio engineering software • DBG60B keypad

10.19 CAN/CANopen DFC11B fieldbus interface

10.19.1 Part number

08243174

10.19.2 Description

The MOVIDRIVE® MDX61B drive inverter in conjunction with the DFC11B option allows connection to higher-level automation, project planning and visualization systems via the open and standardized CANopen fieldbus system thanks to the option's high-performance universal fieldbus interface. You can also access parameters and process data using the MOVILINK® protocol designed especially for devices from SEW-EURODRIVE.

The DFC11B fieldbus interface can be plugged into the fieldbus slot. In this way, a second system bus (CAN) on MOVIDRIVE® is made available. The DFC11B option enables communication with the higher-level controller for a maximum of 10 process data. You need an EDS file to be able to integrate the DFC11B in the higher-level CANopen control. You can download this file from the SEW-EURODRIVE website.

10.19.3 Electronics data

DFC11B option		
	Communication profile	- SEW-MOVILINK® - CANopen - CAN Layer 2
	Number of process data words	1 – 10 process data words
	Baud rate	Setting using parameter P894: 125 kBaud/250 kBaud/500 kBaud/1 MBaud
	Connection technology	9-pole D-sub connector X30 (pin assigned to CIA standard) or terminal X31
	Permitted cable cross section X31 (CAN bus connection)	One core per terminal: 0.20 – 2.5 mm ² (AWG24 – 12) Two cores per terminal: 0.25 – 1 mm ² (AWG22 – 17)
	Terminating resistor	120 Ω (set using DIP switch S1-R)
	Addressing	Setting via parameter P891 (SBus MOVILINK®) or P896 (CANopen)
	Tools for startup	- MOVITOOLS® MotionStudio engineering software - DBG60B keypad

10.19.4 Functions

- CAN Layer 2 and communication profile MOVILINK® or CANopen
- Electrical isolation via optocoupler

INFORMATION



If electrical isolation is not required, the CAN-Bus can be connected directly to the basic device at X12:SC11/SC12 without the DFC11B option. This does not effect the functionality.

10.20 Synchronous operation card DRS11B

10.20.1 Part number

08246726

10.20.2 Description

The DSR11B option allows for a group of motors to be operated in phase-synchronous operation in relation to one another, or with an adjustable proportional relationship. For detailed information, refer to the "DRS11B Synchronous Operation Card" manual, which can be ordered from SEW-EURODRIVE. The basis for synchronous operation is the continuous comparison of the rotor angle positions of the master and the slave motors. Therefore, the motors must be equipped with encoders. The DRS11B option is plugged into the expansion slot.

10.20.3 Electronics data

Option DRS11B		
	Digital inputs	X40:1 – X40:6
	Internal resistance	EINGØ – EING5: isolated (optocoupler) PLC-compatible (EN 61131) $R_i \approx 3 \text{ k}\Omega$, $I_E \approx \text{DC } 10 \text{ mA}$ Sampling cycle 5 ms
	Signal level	DC +13 V – +30 V = "1" = contact closed DC -3 V – +5 V = "0" = contact open
	Function	Fixed assignment with: - EINGØ = Free-running - EING1 = offset 1 - EING2 = offset 2 - EING3 = offset 3 - EING4 = IPOS^{PLUS}® variable H477.0 - EING5 = IPOS^{PLUS}® variable H477.1
	Digital outputs	X40:9/X40:10
	Signal level	OUTPØ/OUTP1: PLC-compatible (EN 61131-2) Response time 5 ms "0" = DC 0 V "1" = DC +24 V Important: Do not apply external voltage!
	Function	Fixed assignment with: - AUSGØ = IPOS^{PLUS}® variable H476.0 - AUSG1 = IPOS^{PLUS}® variable H476.1 $I_{\text{max}} = \text{DC } 50 \text{ mA}$, short-circuit proof, protected against external voltage to DC 30 V
	Reference terminals	X40:11 X40:7
	Voltage output	X40:8 VO24: Voltage output DC +24 V, max. DC 100 mA
	Distance encoder input	X41:
	Encoder voltage supply	Max. 200 kHz, signal level according to RS422 or sin/cos DC +24 V, $I_{\text{max}} = 650 \text{ mA}^{1)}$ 9-pin D-sub socket
	Master encoder input	X42:
	Encoder voltage supply	Max. 200 kHz, signal level according to RS422 or sin/cos DC +24 V, $I_{\text{max}} = \text{DC } 650 \text{ mA}$ 9-pin D-sub socket
	Encoder simulation output	X43:
	Voltage input	X44:1 X44:2 X44:3
	Permitted cable cross section	GND DC +24 V supply voltage for digital outputs X40:9/X40:10 and encoder GND One core per terminal: 0.08 – 1.5 mm ² (AWG28 – 16) Two cores per terminal: 0.25 – 1 mm ² (AWG22 – 16) Tightening torque: 0.6 Nm

1) Total current load (X41 and X42) of the DC 24 V encoder supply $\leq \text{DC } 650 \text{ mA}$

10.21 Fieldbus interface PROFIBUS DP-V1 with PROFIsafe DFS11B

10.21.1 Part number

18238408

10.21.2 Description

MOVIDRIVE® B can be equipped with the 12 Mbaud fieldbus interface DFS11B for the serial bus system PROFIBUS DP-V1 with PROFIsafe. In addition to cyclical and acyclical data exchange, safety-related communication takes place that allows to switch a safe F-DO output. The device master data (GSD) and type files for MOVIDRIVE® B are available from the SEW website (<http://www.sew-eurodrive.de>) to help with project planning and facilitate startup.

For more detailed information, refer to the "DFS11B Fieldbus Interface PROFIBUS DP-V1 with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

10.21.3 Electronics data

DFS11B option		
	PROFIBUS protocol variants	PROFIBUS-DP and DP-V1 to IEC 61158
	Automatic baud rate detection	9.6 kBaud – 12 MBaud
	Connection technology	9-pin D-sub socket - Pin assignment acc. to IEC 61158
	Bus termination	Not integrated, implement using suitable PROFIBUS connector with terminating resistors that can be activated.
	Station address	1 – 125, can be set via DIP switches
	GSD file name	SEW_600C.GSD
	DP ID number	600C = 24588 _{hex}
	Diagnostics data	- Max. 8 bytes - Standard diagnostics: 6 bytes
	Tools for startup	- MOVITOOLS® MotionStudio engineering software - DBG60B keypad
	F address	1 – 1022 DIP switch for setting the failsafe address
	Ambient temperature	0 – 55 °C

10.21.4 Safety section

Safety characteristics	
Maximum possible safety class	• SIL 3 according to EN 61508 • Performance level e according to EN ISO 13849-1
System structure	2 channels with diagnostics (1002D)
Operating mode selection	"High demand" rate according to EN 61508
Probability of dangerous failure per hour (PFH value)	< 1.00E-09 (1 FIT)
Proof test interval (EN 61508)	20 years, after which the component must be replaced with a new one
Repair time	100 hours
Safe state	Value "0" for all safety-related F-DO process values (output disabled)
Safe output	
Sourcing/sinking (from load voltage supply)	DC 24 V output according to EN 61131-2, protected against short circuits and overloads
Rated current	1A
Leakage current (for "0" signal)	Typically -2 mA (with 2 V / 1 kΩ load resistance) (Information: Current flows from F-DO_M to F-DO_P)
Internal voltage drop (P and M output)	max. 3 V
Short-circuit protection	Electronic, response value: 2.8 A – 9 A
Overload protection	Trigger value: 1.4 A – 1.6 A
Load resistance range	24 kΩ – 1 kΩ
Voltage limitation when switching off inductive loads	Typically -70 V
Response time (command via PROFIsafe → the output switches)	≤ 25 ms
Maximum line length	30 m

10.22 Fieldbus interface PROFIBUS DP-V1 with PROFIsafe DFS12B

10.22.1 Part number

28204239

10.22.2 Description

MOVIDRIVE® B can be equipped with the 12 Mbaud fieldbus interface DFS12B for the serial bus system PROFIBUS DP-V1 with PROFIsafe. In addition to cyclical and acyclical data exchange, safety-related communication takes place in conjunction with the DCS21B/22B option. The device master data (GSD) and type files for MOVIDRIVE® B are available from the SEW website (<http://www.sew-eurodrive.de>) to help with project planning and facilitate startup.

For more detailed information, refer to the "DFS12B Fieldbus Interface PROFIBUS DP-V1 with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

10.22.3 Electronics data

DFS12B option		
	PROFIBUS protocol variants	PROFIBUS-DP and DP-V1 to IEC 61158
	Automatic baud rate detection	9.6 kBaud – 12 MBaud
	Connection technology	9-pin D-sub socket - Pin assignment acc. to IEC 61158
	Bus termination	Not integrated, implement using suitable PROFIBUS connector with terminating resistors that can be activated.
	station address	1 – 125, can be set via DIP switches
	GSD file name	SEW_600C.GSD
	DP ID number	600C = 24588 _{hex}
	Diagnostics data	- Max. 8 bytes - Standard diagnostics: 6 bytes
	Tools for startup	- MOVITOOLS® MotionStudio engineering software - DBG60B keypad
	F address	The failsafe address is set using the DCS21B/22B option
	Ambient temperature	0 – 55 °C

10.23 PROFINET IO fieldbus interface with PROFIsafe DFS21B

10.23.1 Part number

18238637

10.23.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFE21B option to connect to higher-level automation, project planning and visualization systems via Ethernet (PROFINET IO protocol) thanks to its powerful, universal fieldbus interface. In addition to cyclical and acyclical data exchange, safety-related communication takes place that allows to switch a safe F-DO output. You can use option DFS21B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® MotionStudio engineering software to change parameters and IPOS^{PLUS}® programs. An integrated Web server makes it possible for the user to access diagnostic values quickly and easily using a standard browser (e.g. Internet Explorer).

For more detailed information, refer to the "DFS21B Fieldbus Interface PROFINET IO with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

10.23.3 Electronics data

DFS21B option		
	Application protocols	• PROFINET IO (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the drive inverter. • HTTP (Hypertext Transfer Protocol) for diagnostics using a Web browser. • SMLP (Simple MOVILINK® Protocol), protocol used by MOVITOOLS® MotionStudio.
	Port numbers used	• 300 (SMLP) • 80 (HTTP)
	Ethernet services	• ARP • ICMP (ping)
	ISO/OSI layer 2	Ethernet II
	Baud rate	100 Mbaud in full duplex process
	Connection technology	Two RJ45 plug connectors with integrated switch and auto-crossing
	Addressing	4 byte IP address or MAC-ID (00:0F:69:xx:xx:xx)
	Manufacturer ID (Vendor ID)	010A _{hex}
	Tools for startup	• MOVITOOLS® MotionStudio engineering software • DBG60B keypad
	F address	1 – 1022 DIP switch for setting the failsafe address
	Ambient temperature	0 – 55 °C

10.23.4 Safety section

Safety characteristics	
Maximum possible safety class	- SIL 3 according to EN 61508 - Performance level e according to EN ISO 13849-1
System structure	2 channels with diagnostics (1oo2D)
Operating mode selection	"High demand" rate according to EN 61508
Probability of dangerous failure per hour (PFH value)	< 1.00E-09 (1 FIT)
Proof test interval (EN 61508)	20 years, after which the component must be replaced with a new one
Repair time	100 hours
Safe state	Value "0" for all safety-related F-DO process values (output disabled)
Safe output	
Sourcing/sinking (from load voltage supply)	DC 24 V output according to EN 61131-2, protected against short circuits and overloads
Rated current	1A
Leakage current (for "0" signal)	Typically -2 mA (with 2 V / 1 kΩ load resistance) (Information: Current flows from F-DO_M to F-DO_P)
Internal voltage drop (P and M output)	max. 3 V
Short-circuit protection	Electronic, response value: 2.8 A – 9 A
Overload protection	Trigger value: 1.4 A – 1.6 A
Load resistance range	24 kΩ – 1 kΩ
Voltage limitation when switching off inductive loads	Typically -70 V
Response time (command via PROFIsafe → the output switches)	≤ 25 ms
Maximum line length	30 m

10.24 PROFINET IO fieldbus interface with PROFIsafe DFS22B

10.24.1 Part number

28204247

10.24.2 Description

The MOVIDRIVE® MDX61B drive inverter enables you to use the DFS22B option to connect to higher-level automation, project planning and visualization systems via Ethernet (PROFINET IO RT protocol) thanks to its powerful, universal fieldbus interface. In addition to cyclical and acyclical data exchange, safety-oriented communication takes place in conjunction with the DCS21/22B option. You can use option DFS22B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® MotionStudio engineering software to change parameters and IPOS^{PLUS}® programs. An integrated Web server makes it possible for the user to access diagnostic values quickly and easily using a standard browser (e.g. Internet Explorer).

For more detailed information, refer to the "DFS22B Fieldbus Interface PROFINET IO with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

10.24.3 Electronics data

DFS22B option		
	Application protocols	PROFINET IO (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the drive inverter. HTTP (Hypertext Transfer Protocol) for diagnostics using a web browser. SMLP (Simple MOVILINK® Protocol), protocol used by MOVITOOLS® MotionStudio.
	Port numbers used	300 (SMLP) 80 (HTTP)
	Ethernet services	- ARP - ICMP (ping)
	ISO/OSI layer 2	Ethernet II
	Baud rate	100 Mbaud in full duplex process
	Connection technology	Two RJ45 plug connectors with integrated switch and auto-crossing
	Addressing	4 byte IP address or MAC-ID (00:0F:69:xx:xx:xx)
	Manufacturer ID (Vendor ID)	010A _{hex}
	Tools for startup	- MOVITOOLS® MotionStudio engineering software - DBG60B keypad
	F address	The failsafe address is set using the DCS21B/22B option
	Ambient temperature	0 – 55 °C

10.25 MOVISAFE® DCS21B/22B/31B/32B safety module

10.25.1 Part numbers

- DCS21B safety module with prefabricated DAE34B cable: 28200993
- DCS21B safety module for replacement (without DAE34B): 28200977
- DCS22B safety module with prefabricated DAE34B cable: 28207572
- DCS22B safety module for replacement (without DAE34B): 18247369
- DCS31B safety module: 28200985
- DCS32B safety module: 18247377

10.25.2 Description

The DCS21B/22B and DCS31B/32B options of the MOVISAFE® series are designed as expansion options for functional safety. They are capable of performing various drive monitoring functions, such as standstill, speed, direction of rotation or position monitoring. Additionally, sensor signals can be processed via safe inputs and outputs and MOVIDRIVE® B can be switched off according to stop categories 0, 1, or 2.

To being able to communicate with a higher-level safety controller in a safety-related manner, the DCS21B/22B option must be used together with the DFS12B fieldbus interface (PROFIBUS DP-V1) or DFS21B (PROFINET IO). The DCS2.B/3.B option is plugged into the expansion slot.

For more detailed information refer to the manual "MOVIDRIVE® MDX61B Safety Module Option MOVISAFE® DCS21B/22B/31B/32B" that can be ordered from SEW-EURODRIVE or downloaded from the official website.

INFORMATION



EMC screw

Removing the EMC screw is without effect as this card has a fixed DGND-PE connection.

For more detailed information on prefabricated cables for connecting MOVIDRIVE® B, refer to the manual "MOVIDRIVE® MDX61B Safety Module Option MOVISAFE® DCS21B/22B/31B/32B" that can be ordered from SEW-EURODRIVE or downloaded from the official website.

10.25.3 Electronics data

Option DCS21B/22B/31B/32B

		LED alarm/error
		LED watchdog
		LED system B
		LED system A
		X80: Voltage supply connection
		X81: Digital input connection
		X82: Connection of digital outputs DO0, DO1
		X83: Connection of digital output DO2
		X84: Connection of incremental, sin/cos, HTL, or absolute encoder (encoder 1)
		X85: Connection of incremental, sin/cos, HTL, or absolute encoder (encoder 2)
		X86: CAN bus connection (only for DCS21B/22B)
		X87: Connection for service interface

10.26 MOVI-PLC® basic DHP11B controller

10.26.1 Part numbers

The MOVI-PLC® *basic* controller DHP11B.. is available in 3 versions, which differ in the modules available from a range of libraries.

Part number	MOVI-PLC® basic DHP11B device design	Description
18204724	DHP11B-T0	MOVI-PLC® <i>basic</i> controller
18208223	DHP11B-T1	Application version I (in addition to version T0, enables additional functions including electronic cam and synchronous operation)
18208231	DHP11B-T2	Application version II (in addition to version T1, enables additional functions including handling)

10.26.2 Description

MOVI-PLC® is a series of controllers available from SEW-EURODRIVE. MOVI-PLC® can be programmed by users according to IEC 61131-3 and PLCopen.

The MOVI-PLC® *basic* controller DHP11B is equipped with a PROFIBUS DP-V1 slave interface, two SBus interfaces (CAN), RS485 and eight digital inputs/outputs, five of which are interrupt-capable. MOVI-PLC® *basic* DHP11B can control 12 devices at the same time (MOVIDRIVE® B/compact, MOVITRAC® B, MOVIAXIS®, MOVIMOT®).

10.26.3 Electronics data

MOVI-PLC® basic DHP11B option

	Status displays	LEDs for the voltage supply to the I/Os, firmware, program, PROFIBUS, system bus
	Fieldbus	- PROFIBUS DP and DP-V1 acc. to IEC 61158 - Automatic detection of baud rate from 9.6 kbaud to 12 Mbaud - Bus connection implemented with suitable connector - GSD file SEW_6007.GSD - DP ID number 6007_{hex} (24579_{dec}) - Maximum 32 process data
	System bus	2 system buses (CAN) to control 12 inverters and CANopen I/O modules - CAN layer 2 (SCOM cyclic, acyclic) or via the SEW MOVILINK® protocol - Baud rate: 125 kbaud – 1 Mbaud - External bus terminator - Address range: 0 – 127
	Engineering	Via RS485, PROFIBUS and the system buses
	Panel operation	via RS485
	Connection technology	- PROFIBUS: 9-pole D-sub connector according to IEC 61158 - System buses and I/Os: Plug-in terminals - RS485: RJ10
	Digital inputs/outputs	8 I/Os to IEC 61131-2; can be configured as inputs or outputs. Five are interrupt-capable
	Memory	- Program: 512 kByte - Data: 128 kB - Retain: 24 kB
	Tools for startup	MOVITOOLS® MotionStudio with integrated PLC Editor (programming languages IL, ST, LD, FBD, CFC, SFC; libraries for optimized inverter control)

10.27 OST11B

10.27.1 Part number

18205445

10.27.2 Description

Option OST11B provides an additional RS485 interface (COM2) for MOVI-PLC® *basic* DHP11B in terminal design or as an engineering interface. Only use option OST11B in conjunction with the MOVI-PLC® *basic* controller DHP11B.

When the MOVI-PLC® *basic* DHP11B option is plugged into the fieldbus slot, option OST11B is plugged into the encoder slot. When the MOVI-PLC® *basic* DHP11B option is plugged into the expansion slot, option OST11B is installed in the expansion slot above the option MOVI-PLC® *basic* DHP11B.

10.27.3 Electronics data

OST11B option		
	RS485 interface COM2 X35:1 – X35:4 X36:1 – X36:3	- For connection of an Engineering PC, a DOP11A/B operator terminal or a gearmotor with integrated frequency inverter MOVIMOT® - I/O standard, 57.6 kBd, max. total cable length 200 m, integrated dynamic terminating resistor permanently installed
	Potential level	COM2 is galvanically isolated from the MOVI-PLC® <i>basic</i> DHP11B controller.

10.28 DHE/DHF/DHR21 and DHE/DHF/DHR41B controller

Three types of DH.21B/41B controllers are available, which differ in the fieldbus interfaces:

DH.21B/41B design	Fieldbus interfaces
DHE21B/41B	Ethernet TCP/IP, UDP
DHF21B/41B	Ethernet TCP/IP, UDP, PROFIBUS DP-V1, DeviceNet™
DHR21B/41B	Ethernet TCP/IP, UDP, PROFINET, EtherNet/IP™, ModbusTCP/IP

10.28.1 Description

Freely programmable motion and logic controller (MOVI-PLC®)

The controller can be operated as freely programmable motion and logic controller MOVI-PLC® when using SD memory cards of the type OMH41B. MOVI-PLC® is a series of programmable motion and logic controllers. It allows drive solutions, logic processes and sequence controls to be automated simply and efficiently using IEC 61131-3 compliant programming languages.

- MOVI-PLC® is a **universal** solution because it is able to control the entire portfolio of SEW inverters and offers a simple upgrade to a more powerful MOVI-PLC® version thanks to the universal execution of the programs.
- MOVI-PLC® is **scalable** due to several different hardware platforms (standard, advanced, etc.) and modular software concepts (libraries for numerous applications).
- MOVI-PLC® is **powerful** due to extensive technologies (such as electronic cam, synchronous operation) and the control of demanding applications (such as material handling).

MOVI-PLC® standard performance class

- DH.21B controllers enable coordinated single axis movements and integration of external inputs/outputs as well as Drive Operator Panels (DOP). The DH.21B.. option is therefore suitable for use as a module controller or stand-alone controller for machines of medium complexity.

MOVI-PLC® advanced performance class

- The DH.41B controller is characterized by a greater variety of interfaces and a higher performance level, which allows complex calculations and interpolated movements, for example. The DH.41B option is therefore suitable for the automation of cells and machines. The integrated Ethernet interface enables direct connection of the DH.41B controller to the control level.

Configurable application controller (CCU)

The controller can be used as configurable application controller (CCU) by using SD memory cards of the type OMC41B. Only standardized application modules created by SEW-EURODRIVE can be executed. The application modules can be started up quickly and conveniently by graphical configuration. A defined process data interface provides this functionality to a higher-level controller. A process data monitor with control mode is available to support the startup procedure.

CCU standard performance class

The "CCU standard" performance class is intended for application modules with single-axis functionality and medium response times. A maximum of 16 axes can be connected to a configurable application controller. The following application modules are available and can be started up using the *AxisConfigurator* tool.

- Velocity control
- Cam positioning
- Bus positioning with 6 process data
- Single-axis universal module

CCU advanced performance class

The "CCU advanced" performance class is intended for application modules with single-axis and multi-axis functionality and fast response times. The following application modules are available:

- Single-axis functionality:
 - Velocity control
 - Cam positioning
 - Bus positioning with 6 process data words
 - Single-axis universal module
- Multi-axis functionality:
 - SyncCrane
 - Energy-efficient SRS

10.28.2 DHE21B/41B electronics data

DHE21B/41B option		
	Part number	DHE21B option: 18236073 DHE41B option: 18211607
	Potential levels	Option DHE21B/41B has the following potential levels: • Potential control / CAN 1 / COM1 • Potential COM2 • Potential digital inputs and outputs • Potential system bus CAN 2
	Memory	• Retain data: 32 kB • System variables (retain): 8 kB Program memory: • DHE21B: 2 MB (for user program, incl. IEC libraries) • DHE41B: 6 MB (for user program, incl. IEC libraries) Data memory: • DHE21B: 4 MByte (for IEC application) • DHE41B: 8 MB (for IEC application)
	CAN 2 system bus X32:1 – X32:3 System bus CAN 1 X33:1 – X33:3	• System bus CAN 1 and CAN 2 to CAN specification 2.0, part A and B, transmission technology to ISO 11898 • The CAN 2 system bus is electrically isolated • Max. 64 stations per CAN system bus • Max. 64 SCOM transmit objects / 32 receive objects per CAN system bus • Address range 0 – 127 • Baud rate: 125 kBaud – 1 MBaud • If X32 or X33 is the bus terminator, you must connect a terminating resistor (120 Ω) externally • You can remove connector X32 or X33 without interrupting the system bus • The system bus can be run in layer 2 (SCOM cyclic, acyclic) or in accordance with the SEW MOVILINK® protocol
	Ethernet 1 X36	System bus, reserved
	Ethernet 2 X37	• TCP/IP • Possible connections: engineering PC, other control, intranet
	USB	USB 1.0 to connect an engineering PC (in preparation)
	RS485 Interface COM1/2 X34:1 – C34:4	• For connection of a DOP11A/B operator terminal or a gearmotor with integrated MOVIMOT® frequency inverter • E/A standard, 57.6 / 9.6 kBaud, max. cable length 200 m • Dynamic terminating resistor with fixed installation
	SD memory card	• PC-readable • Contents – Firmware – IEC program – Data • At least 128 MB memory
	Engineering	Engineering takes place via one of the following interfaces: • Ethernet 2 (X37) • USB (X35) Engineering for all SEW-EURODRIVE components connected to the MOVI-PLC® <i>advanced</i> DHE41B control card can be performed using the MOVI-PLC® <i>advanced</i> DHE41B control card. Engineering of the MOVI-PLC® <i>advanced</i> DHE41B controller cannot be performed via the inverters. • MOVITOOLS® engineering software • MotionStudio with PLC Editor

10.28.3 DHF21B/41B electronics data

INFORMATION



For connections identical with DHE41B, refer to the "DHE41B electronics data" section.

DHF21B/41B option		
	Part number	- DHF21B: 18236081 - DHF41B: 18211615
	Potential levels	Option DHF21B/41B has the following potential levels: - Potential control / CAN 1 / COM1 - Potential COM2 - Potential digital inputs and outputs - Potential system bus CAN 2 - Potential PROFIBUS
	PROFIBUS connection X30P:1 - X30P:9	Via 9-pin D-sub connector, pin assignment according to IEC 61158
	Automatic baud rate detection	9.6 kBaud - 12 MBaud
	SD memory card	- PC-readable - Contents - Firmware - IEC program - Data - At least 128 MB memory
	DeviceNet™ connection X30D:1 – X30D:5	2-wire bus and 2-wire supply voltage DC 24 V with 5-pole Phoenix terminal - Pin assignment according to DeviceNet™ specification

10.28.4 DHR21B/41B electronics data

INFORMATION



Connections identical with those of the DHE21B/41B and DHF21B/41B options are described chapters "DHE21B/41B option" and "DHF21B/41B option".

DHR21B/41B option		
	Part number	- DHR21B: 18236103 - DHR41B: 18216323
	Electrical supply	Installed in MOVIDRIVE® MDX61B: - Power consumption: $P_{max} = 9.5 \text{ W}$ Installed in the MOVIAXIS® master module (MXM): - Power consumption: $P_{max} = 12 \text{ W}$
	Ethernet connection X30-1, X30-2	Via RJ45 socket, pin assignment according to IEC 11801 Integrated Ethernet switch with auto-crossing and auto-negotiation functionality.
	SD memory card	- PC-readable - Contents - Firmware - IEC program - Data - At least 128 MB memory
	Engineering	Additional engineering access via PROFINET, EtherNet/IP™ and Modbus TCP/IP interface (X30:1/2)

10.29 Safety-related BST brake module

10.29.1 Part numbers

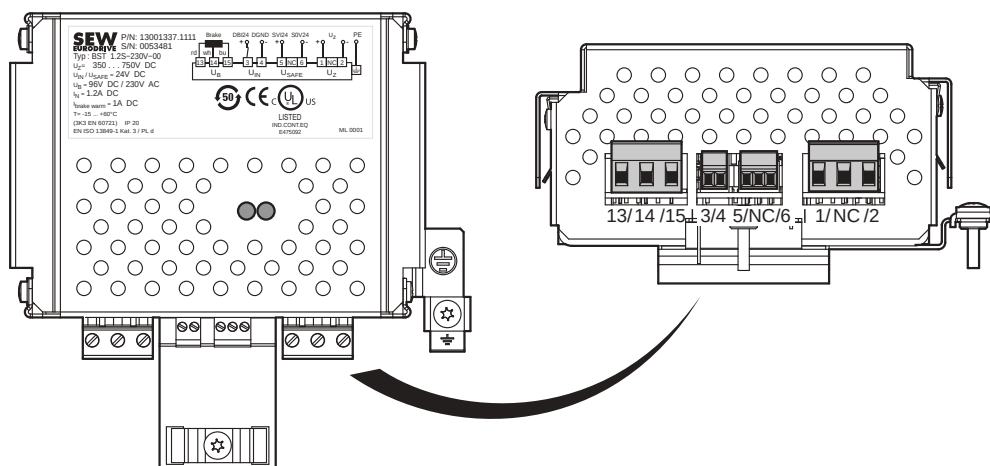
The safety-related brake module is available in three variants:

Type designation	Part number	Approved SEW disk brakes
BST 0.6S-460V-00	08299714	All brake coils with a brake coil voltage of AC 460 V and a coil power ≤ 120 W. Several brake coils can be connected for redundant systems. In this case, the total power must not exceed 120 W.
BST 0.7S-400V-00	13000772	All brake coils with a brake coil voltage of AC 400 V and a coil power ≤ 120 W. Several brake coils can be connected for redundant systems. In this case, the total power must not exceed 120 W.
BST 1.2S-230V-00	13001337	All brake coils with a brake coil voltage of AC 230 V and a coil power ≤ 120 W. Several brake coils can be connected for redundant systems. In this case, the total power must not exceed 120 W.

10.29.2 Description

- The safety-related BST brake module enables the connection of an external fail-safe safety switching device/safety controller. The safety switching device disconnects the safety-related control voltage V_{safe} when a connected control device (e.g. emergency stop device) is activated.
- UL approved
- Disconnecting the safety-related control voltage V_{safe} means the connected brake is disconnected from the power supply. The power supply required for releasing the connected brake is interrupted safely.
- Instead of separating the brake control galvanically from the power supply using contactors or switches, the disconnection procedure described here prevents the power semiconductors in the safety-related BST brake module from being activated, in this way ensuring safe disconnection. This means that all connected brakes are de-energized although the supply voltage is still present at the safety-related BST brake module.

10.29.3 Electronics data



9007202044464779

Terminal		Function
1	+U _Z	DC link voltage input +
2	+U _Z	DC link voltage input -
5	SVI24	Input for safety-related control voltage V _{safe}
6	S0V24	Reference potential for safety-related control voltage V _{safe}
3	DBI24	Functional control voltage V _{IN} input
4	DGND	Reference potential for functional control voltage V _{IN}
13	RD	Brake output
14	WH	
15	BU	
		Ground connection

11 Technical data of external accessories

11.1 DMP11B mounting panel

11.1.1 Part number

08183988

11.1.2 Description

DMP11B



1454393867

If a MOVIDRIVE® MD_60A size 2 device is to be replaced by MOVIDRIVE® MDX61B size 2S, the MDX61B size 2S can be fitted on the existing mounting plate with the DMP11B mounting panel. New retaining holes do not have to be drilled.

11.2 DLB11B touch guard

11.2.1 Part number

08231117 (Scope of delivery 12 pieces)

11.2.2 Description



1454399115

Degree of protection IP20 can be achieved for the following devices with DLB11B touch guard:

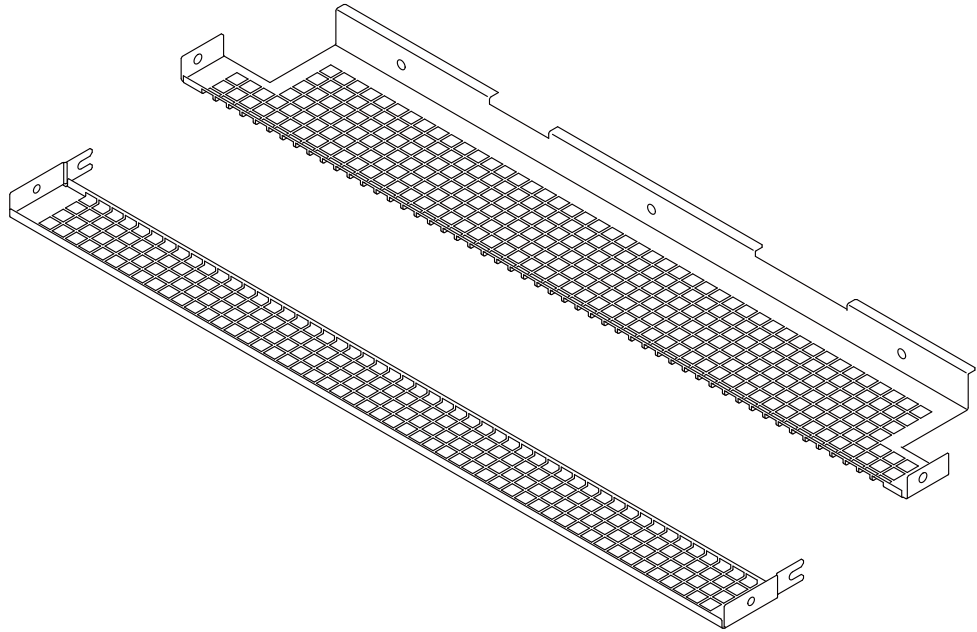
- MOVIDRIVE® MDX61B size 4 (AC 500 V devices: MDX61B0370/0450; AC 230 V devices: MDX61B0220/0300)
- MOVIDRIVE® MDX61B size 5 (AC 500 V devices: MDX61B0550/0750)
- Regenerative power supply MOVIDRIVE® MDR60A size 4 (MDR600750-503-00)

11.3 DLB21B touch guard (for size 7)

11.3.1 Part number

18226086

11.3.2 Description



2422310283

You can use the DLB21B touch guard to achieve degree of protection IP20 for the following devices:

- MOVIDRIVE® MDX61B size 7
(AC 500 V devices: MDX61B1600/2000/2500)

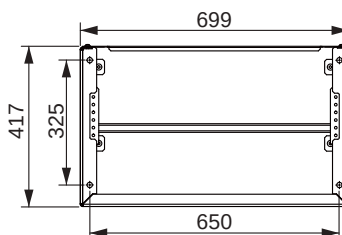
Fixing material for the touch guard is included in the scope of delivery. The customer must adapt the touch guard to the individual cable routing (cutting the hole matrix for supply system and motor cables).

11.4 DLS11B mounting base (for size 7)

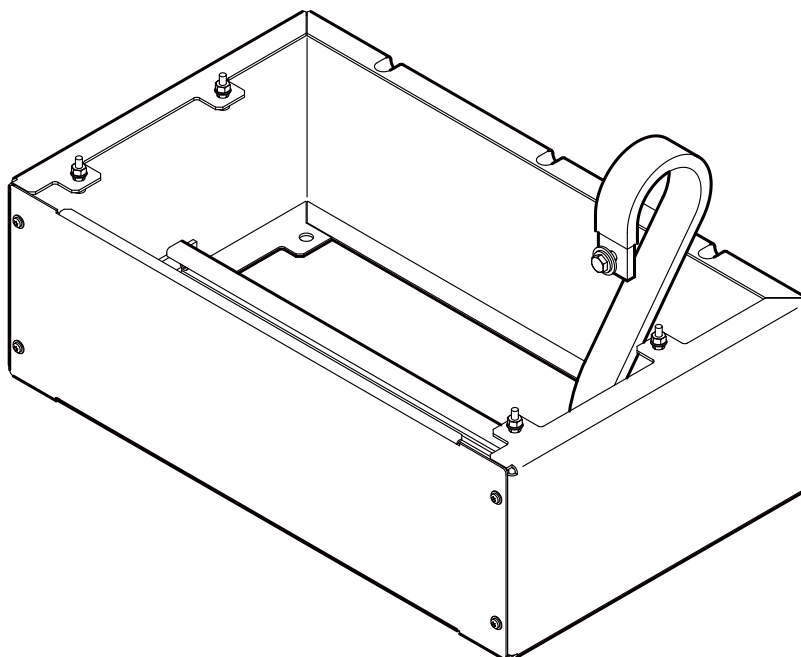
11.4.1 Part number

18226027

11.4.2 Description



2076984331



2422224267

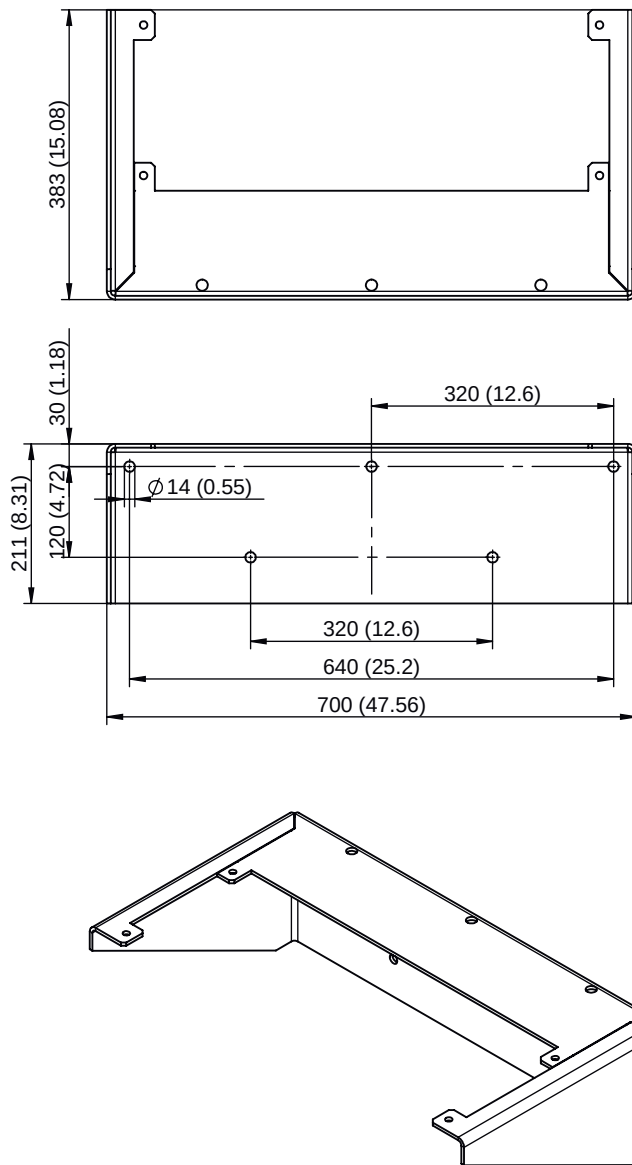
The mounting base is designed specifically for installation of MOVIDRIVE® B size 7 (MDX61B1600/2000/2500) in the control cabinet. The base is equipped with an integrated cable clamping rail. It ensures sufficient space for connecting the supply system and motor cables. The front cover can be removed for installation work. Fixing material for mounting the inverter to the mounting base is included in the scope of delivery.

11.5 DLH11B wall bracket (for size 7)

11.5.1 Part number

18226108

11.5.2 Description



9007201676959499

The wall bracket is used for attaching MOVIDRIVE® B size 7 (MDX61B1600/2000/2500) to a wall. The fixing material for mounting the inverter to the wall bracket is included in the scope of delivery. The fixing material for mounting the bracket to the wall is not included in the scope of delivery.

11.6 DLA11B connection kit (for size 7)

11.6.1 Part number

18223125

11.6.2 Description

Connection material for connecting supply system and motor cables with cross sections up to 240 mm² to the following devices:

- MOVIDRIVE® MDX61B size 7
(AC 500 V devices: MDX61B1600/2000/2500)

The connection kit includes the following material:

- 9 × bolts M12×30
- 9 × M12 nuts
- Lock washers
- Washers
- 3 × PE terminals for PE busbar (up to 240 mm²)

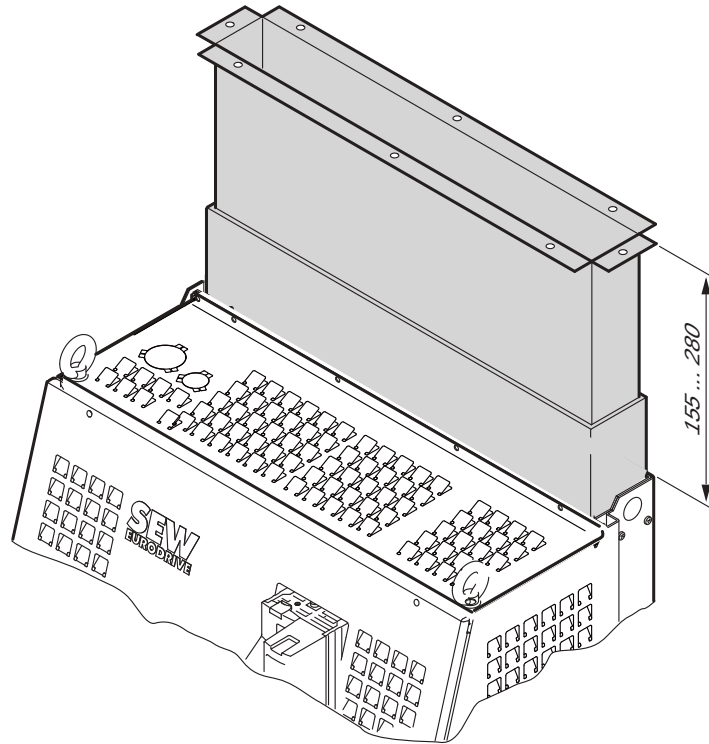
11.7 DLK11B air duct (for size 7)

11.7.1 Part number

18226035

11.7.2 Description

The following figure shows the air duct for dissipating heat from MOVIDRIVE® B size 7 (MDX61B1600/2000/2500):



18014400586472715

The air duct extends the integrated device air duct of size 7 to the control cabinet roof to dissipate heat from the control cabinet. It improves the temperature management. A prerequisite is that air can be dissipated via the control cabinet roof (dust protection, etc.).

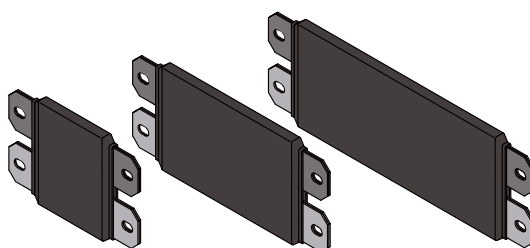
11.8 DLZ11B DC link coupling (for size 7)

11.8.1 Part number

The DLZ11B DC link coupling is available in three different lengths:

Type	Part number
DLZ11B / 100 mm	18231934
DLZ11B / 200 mm	18235662
DLZ11B / 300 mm	18235670

11.8.2 Description



9007201677055883

DC link connection to connect inverters and size 7 regenerative power supply unit side by side.

- MOVIDRIVE® MDX61B size 7
(MDX61B1600/2000/2500)
- MOVIDRIVE® MDR61B regenerative power supply size 7
(MDR61B1600/2500)
- MOVIDRIVE® MDX62B motor inverter size 7

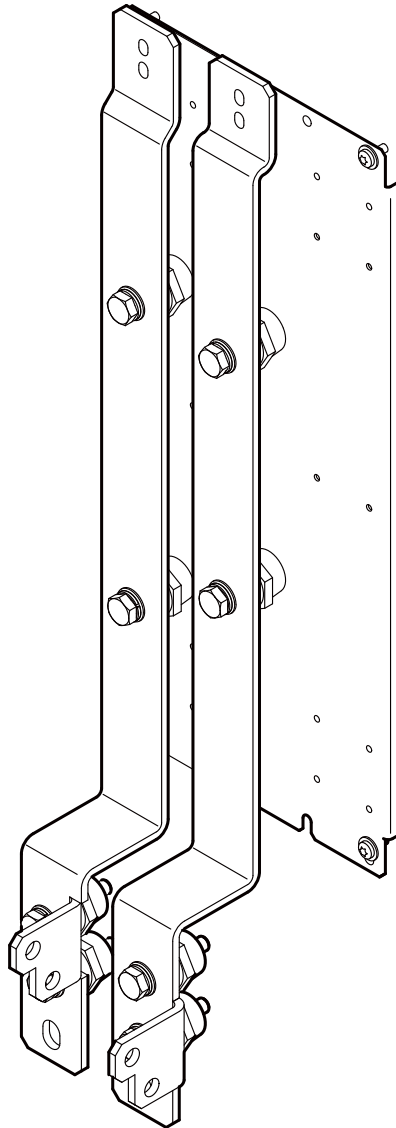
The DC link connection (+U_z; -U_z) of size 7 can be connected on the side as standard. The DLZ11B DC link coupling can be used to connect two size 7 MOVIDRIVE® B devices. Depending on the DC link coupling, the devices must be installed at a distance of 100 mm, 200 mm, or 300 mm; tolerance range: approx. 4 mm. Two insulated conductor rails and fixing material are included in the delivery.

11.9 2Q DLZ12B DC link adapter (for size 7)

11.9.1 Part number

18227295

11.9.2 Description



2422222347

DC link adapter for routing the DC link connection to the bottom of the device.

For devices:

- MDX61B1600-503-2-0T/L
 - MDX61B2000-503-2-0T/L
 - MDX61B2500-503-2-0T/L
- and
- MDX62B1600-503-2-0T/L

- MDX62B2000-503-2-0T/L
- MDX62B2500-503-2-0T/L

The DC link connection (+U_z; -U_z) of size 7 can be connected on the side as standard. The 2Q DC link adapter provides a connection option for +U_z and -U_z at the bottom of the device.

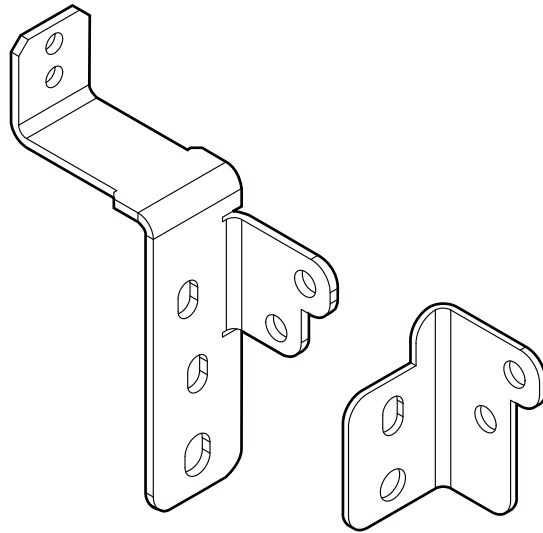
The DC link adapter can be used for DC link coupling with MOVIDRIVE® B sizes 0 – 6.

11.10 4Q DLZ14B DC link adapter (for size 7)

11.10.1 Part number

18227287

11.10.2 Description



2435823499

DC link adapter for routing the DC link connection to the bottom of the device.

For devices:

- MDX61B1600-503-4-0T/L
- MDX61B2000-503-4-0T/L
- MDX61B2500-503-4-0T/L

and

- MDX62B1600-503-4-0T/L
- MDX62B2000-503-4-0T/L
- MDX62B2500-503-4-0T/L

The DC link connection (+U_z; -U_z) of size 7 can be connected on the side as standard. The 4Q DC link adapter provides a connection option for +U_z and -U_z at the bottom of the device. The DC link adapter should be used for DC link coupling with MOVIDRIVE® B sizes 0 – 6.

12 Technical data of braking resistors, chokes and filters

12.1 Braking resistors BW.. / BW...-T / BW...-P

12.1.1 General information

- Braking resistors BW... / BW...-T and BW...-P match the technical features of the MOVIDRIVE® drive inverters.
- Take account of a power reduction of 4% per 10 K from an ambient temperature of 40 °C. Do not exceed a maximum ambient temperature of 80 °C.

PTC resistor BW090-P52B

- Direct installation on MOVIDRIVE® MDX60B/61B size 0 (0005 – 0014) (→ chapter "Dimensions drawings for MOVIDRIVE® MDX60B")
- The MOVIDRIVE® devices can be lined up even with mounted braking resistor BW090-P52B.
- The resistor protects itself (reversible) against regenerative overload by changing abruptly to high resistance and no longer consuming any more energy. The inverter then switches off and signals a brake chopper fault (F04).

Flatpack resistors

- Protection against contact (IP54)
- In the documented assignments of drive inverters and flat-design resistors, flat-design resistors have an internal thermal protection (non-replaceable fuse) that interrupts the current circuit in the event of overload. The project planning guidelines and the documented assignments of drive inverter and braking resistor must be adhered to.
- Touch guard and mounting rail attachment available from SEW-EURODRIVE as accessories

Wire and grid resistors

- Perforated sheet cover (IP20) open to mounting surface
- The short-term load capacity of the wire and grid resistors is higher than in the flat-type braking resistors (→ MOVIDRIVE® MDX60B/61B system manual, chapter "Braking resistor selection")
- A temperature switch is integrated in the BW...-T braking resistor
- A thermal overcurrent relay is integrated in the BW...-P braking resistor

SEW-EURODRIVE recommends implementing additional protection against overload for the wire and grid resistors by using a bimetallic relay with trip characteristics of trip class 10 or 10 A (in accordance with EN 60947-4-1). Set the tripping current to the value I_F (→ following tables). Do not use electronic or electromagnetic fuses because these can be triggered even in case of short-term excess currents that are still within the tolerance range.

For braking resistors in the BW...-T / BW...-P series, you can connect the integrated temperature sensor / overcurrent relay using a 2-core, shielded cable as an alternative to a bimetallic relay. The cable entry for the BW...-T and BW...-P braking resistors can be run from the front or the back (→ dimension drawing for BW... / BW...-T / BW...-P braking resistors). Use filler plugs for tapped holes that are not connected.

The surfaces of the resistors get very hot if loaded with P_N . Make sure that you select an installation site that will accommodate these high temperatures. For this reason, braking resistors are usually mounted on top of the control cabinet.

The performance data listed in the tables below show the load capacity of the braking resistors according to their cyclic duration factor (cyclic duration factor = cdf of the braking resistor in % in relation to a cycle duration ≤ 120 s).

12.1.2 UL and cUL approval

Type BW... braking resistors are UL and cUL approved in conjunction with MOVIDRIVE® B drive inverters. SEW-EURODRIVE will provide certification on request. The BW...T and BW...-P braking resistors have cRUus approval independent of the MOVIDRIVE® inverter.

12.1.3 Parallel connection

Two braking resistors with the same value must be connected in parallel for some inverter/resistor combinations. In this case, the tripping current must be set on the bimetallic relay to twice the value of I_F entered in the table. For the BW...-T BW...-P braking resistors, the temperature switch/overcurrent relay must be connected in series.

12.1.4 Mounting position

Only horizontal mounting positions are permitted for BW braking resistors, with the exception of flatpack design.

Make sure to provide a clearance of 20 cm on the sides and 30 cm above the braking resistors.

12.1.5 Assignment to AC 400/500 V devices (...-5_3)

Braking resistor type BW...	BW090-P52B	BW100-005	BW100-006	BW072-003	BW072-005	BW168	BW268
Part number	08245630	08262691	08217017	08260583	08260605	0820604X	08207151
Braking resistor type BW...-T			BW100-006-T			BW168-T	BW268-T
Part number			18204198			18201334	18204171
Continuous braking power (= 100% cdf)	0.10 kW	0.45 kW	0.6 kW	0.23 kW	0.45 kW	0.8 kW	1.2 kW
Load capacity 50% cdf ¹⁾	0.15 kW	0.60 kW	1.1 kW	0.31 kW	0.60 kW	1.4 kW	2.2 kW
At 25% cdf	0.2 kW	0.83 kW	1.9 kW	0.42 kW	0.83 kW	2.6 kW	3.8 kW
12% cdf	0.4 kW	1.11 kW	3.6 kW	0.58 kW	1.11 kW	4.8 kW	7.2 kW
6% cdf	0.7 kW	2.00 kW	5.7 kW	1.00 kW	2.00 kW	7.6 kW	11 kW
	Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)						
Resistance value R _{BW}	90 Ω ±35%	100 Ω ±10%		72 Ω ±10%		68 Ω ±10%	
Tripping current (of F16) I _F	-	1 A	2.4 A	0.6 A	1 A	3.4 A	4.2 A
Design	PTC	Flat design	Wire resistor on ceramic core	Flat design		Wire resistor on ceramic core	
Connections / Tightening torque	Cables	Cables	Ceramic terminals 2.5 mm ² (AWG13) 0.5 Nm	Cables		Ceramic terminals 2.5 mm ² (AWG13) 0.5 Nm	
Degree of protection	IP20	IP54	IP20 (when installed)	IP54		IP20 (when installed)	
Ambient temperature ϑ_{amb}	-20 – +40 °C						
Type of cooling	KS = self-cooling						
For MOVIDRIVE® (recommended)	0005 – 0014	0005 – 0022	0015 – 0040	0005 – 0014		0005 – 0040	0015 – 0040

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration $T_D \leq 120$ s.

Braking resistor type BW...	BW147	BW247	BW347	BW039-012		
Part number	08207135	08207143	08207984	08216894		
Braking resistor type BW...-T	BW147-T	BW247-T	BW347-T	BW039-012-T	BW039-026-T	BW039-050-T
Part number	18201342	18200842	18201350	18201369	18204155	18201377
Continuous braking power (= 100% cdf)	1.2 kW	2.0 kW	4.0 kW	1.2 kW	2.6 kW	5.0 kW
Load capacity 50% cdf ¹⁾	2.2 kW	3.6 kW	7.2 kW	2.1 kW	4.7 kW	8.5 kW
At 25% cdf	3.8 kW	6.4 kW	12.8 kW	3.8 kW	8.3 kW	15.0 kW
12% cdf	7.2 kW	12 kW	20 kW ²⁾	7.2 kW	15.6 kW	24.0 kW ²⁾
6% cdf	11 kW	19 kW	20 kW ²⁾	11.4 kW	24.0 kW	24.0 kW ²⁾
	Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)					
Resistance value R_{BW}	47 Ω $\pm$ 10%			39 Ω $\pm$ 10%		
Tripping current (of F16) I_F	5 A	6.5 A	9.2 A	5.5 A	8.1 A	11.3 A
Design	Wire resistor on ceramic core					Grid resistor
Connections / Tightening torque	Ceramic terminals 2.5 mm ² (AWG13) / 0.5 Nm BW347-T: Ceramic terminals 10 mm ² (AWG8) / 1.6 Nm					M8 stud / 6 Nm
Degree of protection	IP20 (when installed)					
Ambient temperature ϑ_{amb}	-20 – +40 °C					
Type of cooling	KS = self-cooling					
For MOVIDRIVE® (recommended)	0055/0075			0110		

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration $T_D \leq 120$ s.

2) Physical power limit due to DC link voltage and resistance value

Braking resistor type BW...	BW018-015			
Part number	08216843			
Braking resistor type BW...-T/P	BW018-015-P	BW018-035-T	BW018-075-T	BW915-T
Part number	18204163	18201385	18201393	18204139
Continuous braking power (= 100% cdf)	1.5 kW	3.5 kW	7.5 kW	16 kW

Technical data of braking resistors, chokes and filters

Braking resistors BW... / BW...-T / BW...-P

Braking resistor type BW...	BW018-015			
Load capacity 50% cdf ¹⁾	2.5 kW	5.9 kW	12.7 kW	27.2 kW
At 25% cdf	4.5 kW	10.5 kW	22.5 kW	48 kW
12% cdf	6.7 kW	15.7 kW	33.7 kW	62.7 kW ²⁾
6% cdf	11.4 kW	26.6 kW	52.2 kW ²⁾	62.7 kW ²⁾
	Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)			
Resistance value R _{BW}	18 Ω ±10%			15 Ω ±10%
Tripping current (of F16) I _F	9.1 A	13.9 A	20.4 A	32.6 A
Design	Wire resistor on ceramic core	Grid resistor		
Connections / Tightening torque	BW018-015: -Ceramic terminals 2.5 mm ² (AWG13) / 0.5 Nm BW018-015-P: Terminal 2.5 mm ² (AWG13) / 1 Nm	M8 bolts/6 Nm		
Degree of protection	IP20 (when installed)			
Ambient temperature ϑ_{amb}	-20 – +40 °C			
Type of cooling	KS = self-cooling			
For MOVIDRIVE® (recommended)	0150/0220 and 2 × parallel with 0370/0450 ³⁾			0220

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration $T_D \leq 120$ s.

2) Physical power limit due to DC link voltage and resistance value

3) When connected in parallel, the load capacity and trip current are doubled.

Braking resistor type BW...-	BW012-025		
Part number	08216800		
Braking resistor type BW...-T/-P	BW012-025-P	BW012-050-T	BW012-100-T
Part number	18204147	18201407	18201415
Continuous braking power (= 100% cdf)	2.5 kW	5.0 kW	10 kW
Load capacity 50% cdf ¹⁾	4.2 kW	8.5 kW	17 kW
At 25% cdf	7.5 kW	15.0 kW	30 kW
12% cdf	11.2 kW	22.5 kW	45 kW
6% cdf	19.0 kW	38.0 kW	76 kW
Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)			
Resistance value R_{BW}	12 $\Omega \pm 10\%$		
Tripping current (of F16) I_F	14.4 A	20.4 A	28.8 A
Design	Grid resistor		
Connections / Tightening torque	M8 bolts/6 Nm		
Degree of protection	IP20 (when installed)		
Ambient temperature ϑ_{amb}	-20 – +40 °C		
Type of cooling	KS = self-cooling		
For MOVIDRIVE® (recommended)	0300		

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration $T_D \leq 120$ s.

Braking resistor type BW...-T/-P	BW106-T	BW206-T	BW1.4-170	BW003-420-T
Part number	18200834	18204120	13301527	13302345
Continuous braking power (= 100% cdf)	13.5 kW	18 kW	17 kW	42 kW
Load capacity 50% cdf ¹⁾	23 kW	30.6 kW	29 kW	71 kW
At 25% cdf	40 kW	54 kW	51 kW	126 kW
12% cdf	61 kW	81 kW	76 kW	189 kW
6% cdf	102 kW	136.8 kW	129 kW	319 kW
Resistance value R_{BW}	6 $\Omega \pm 10\%$		1.4 $\Omega \pm 10\%$	2.5 $\Omega \pm 10\%$

Braking resistor type BW...-T/-P	BW106-T	BW206-T	BW1.4-170	BW003-420-T
Tripping current (of F16) I _F	47.4 A	54.7 A	110 A	129 A
Design	Grid resistor			
Connections / Tightening torque	M8 bolts/6 Nm		Bolt M12 / 15.5 Nm	
Degree of protection	IP20 (when installed)			
Ambient temperature ϑ_{amb}	-20 °C – +40 °C			
Type of cooling	KS = self-cooling			
For MOVIDRIVE® (recommended)	0370 – 0750 and 2 × parallel with 0900/1100/1320 ²⁾		1600/2000/2500	

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration $T_D \leq 120$ s

2) When connected in parallel, the load capacity and tripping current are doubled.

12.1.6 Assignment to AC 230 V devices (...-2_3)

Braking resistor type BW...	BW039-003	BW039-006	BW039-012		BW027-006	BW027-012		
Part number	08216878	08216886	08216894		8224226	8224234		
Braking resistor type BW...-T			BW039-012-T	BW039-026-T			BW018-015-P	BW018-035-T
Part number			18201369	18204155			18204163	18201385
Continuous braking power (= 100% cdf)	0.3 kW	0.6 kW	1.2 kW	2.6 kW	0.6 kW	1.2 kW	1.5 kW	3.5 kW
Load capacity 50% cdf ¹⁾	0.5 kW	1.1 kW	2.1 kW	4.6 kW	1.1 kW	2.1 kW	2.5 kW	5.9 kW
At 25% cdf	1.0 kW	1.9 kW	3.8 kW	6.0 kW ²⁾	1.9 kW	3.8 kW	4.5 kW	10.5 kW
12% cdf	1.8 kW	3.6 kW	6.0 kW ²⁾	6.0 kW ²⁾	3.6 kW	7.2 kW	6.7 kW	13.0 kW ²⁾
6% cdf	2.8 kW	5.7 kW	6.0 kW	6.0 kW ²⁾	5.7 kW	8.7 kW	11.4 kW	13.0 kW ²⁾
	Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)							
Resistance value R_{BW}	39 $\Omega \pm 10\%$				27 $\Omega \pm 10\%$		18 $\Omega \pm 10\%$	
Tripping current (of F16) I_F	2.7 A	3.9 A	5.5 A	8.1 A	4.7 A	6.6 A	9.1 A	13.9 A
Design	Wire resistor						Grid resistor	
Connections / Tightening torque	Ceramic terminals 2.5 mm ² (AWG12) / 0.5 Nm							M8 stud / 6 Nm
Degree of protection	IP20 (when installed)							
Ambient temperature ϑ_{amb}	-20 – +40 °C							
Type of cooling	KS = self-cooling							
For MOVIDRIVE® (recommended)	0015/0022				0015 – 0037		2 × parallel with 0110 ³⁾	

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration of TD ≤ 120 s.

2) Physical power limit due to DC link voltage and resistance value

3) When connected in parallel, the load capacity and trip current are doubled.

Braking resistor type BW...-T/-P	BW018-075-T	BW915-T	BW012-025-P	BW012-050-T	BW012-100-T	BW106-T	BW206-T
Part number	18201393	18204139	18204147	18201407	18201415	18200834	18204120
Continuous braking power (= 100% cdf)	7.5 kW	15.6 kW	2.5 kW	5.0 kW	10 kW	13.5 kW	18 kW
Load capacity 50% cdf ¹⁾	12.7 kW	15.6 kW ²⁾	4.2 kW	8.5 kW	17 kW	23 kW	30.6 kW
At 25% cdf	13.0 kW	15.6 kW ²⁾	7.5 kW	15.0 kW	19.6 kW ²⁾	39.2 kW ²⁾	39.2 kW ²⁾
12% cdf	13.0 kW ²⁾	15.6 kW ²⁾	11.2 kW	19.6 kW	19.6 kW ²⁾	39.2 kW ²⁾	39.2 kW ²⁾
6% cdf	13.0 kW ²⁾	15.6 kW ²⁾	19.0 kW	19.6 kW ²⁾	19.6 kW ²⁾	39.2 kW ²⁾	39.2 kW ²⁾
	Observe the regenerative power limit of the inverter. (= 150% of the recommended motor power → Technical Data)						
Resistance value R_{BW}	18 $\Omega \pm 10\%$	15 $\Omega \pm 10\%$	12 $\Omega \pm 10\%$			6 $\Omega \pm 10\%$	
Tripping current (of F16) I_F	20.4 A	32.6 A	14.4 A	20.4 A	28.8 A	47.4 A	54.7 A
Design	Grid resistor						
Connections / Tightening torque	M8 stud / 6 Nm						
Degree of protection	IP20 (when installed)						
Ambient temperature ϑ_{amb}	-20 – +40 °C						
Type of cooling	KS = self-cooling						
For MOVIDRIVE® (recommended)	2 × parallel with 0110		0055/0075			0150 and 2 × parallel with 0220/0300 ³⁾	

1) cdf = Cyclic duration factor of the braking resistor in relation to a cycle duration T D ≤ 120 s.

2) Physical power limit due to DC link voltage and resistance value

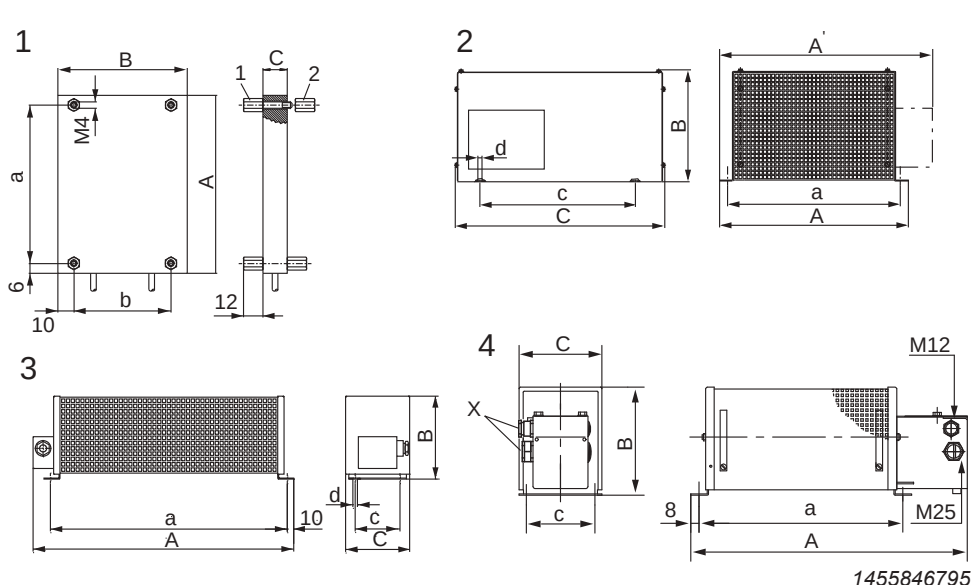
3) When connected in parallel, the load capacity and tripping current are doubled.

12.1.7 Technical data of BW...-T / BW...-P braking resistors

BW...-T / BW...-P	
Connection cross section for signal contact/tightening torque	1 x 2.5 mm ² / 1 Nm
Switching capacity of the temperature switch signal contact	• DC 2 A / DC 24 V (DC11) • AC 2 A / AC 230 V (AC11)
Switch contact (NC contact)	According to EN 60730

12.1.8 Dimension drawing of BW.../BW...-T/BW...-P braking resistors

The following figure shows the mechanical dimensions in mm (in).



BW... :

- 1 = Flat design
The connection lead is 500 mm long. The scope of delivery includes 4 M4 stud bolts each of type 1 and 2.
- 2 = Grid resistor
- 3 = Wire resistor
- 4 = Wire resistor with temperature switch (-T/-P)
Cable entry (X) is possible from both sides.

Mounting position 1

BW... type	Main dimensions in mm			Fastening parts mm			Cable gland	Mass kg
BW...-T/BW...-P	A/A'	B	C	a	b/c	d		
BW072-003	110	80	15	98	60	–	–	0.3
BW072-005	216	80	15	204	60	–	–	0.6
BW100-005	216	80	15	204	60	–	–	0.6
BW047-005	216	80	15	204	60	–	–	0.6

Mounting position 2

BW... type	Main dimensions in mm			Fastening parts mm			Cable gland	Mass kg
BW...-T/BW...-P	A/A'	B	C	a	b/c	d		
BW106-T	795	270	490	770	380	10.5	–	32
BW206-T	995	270	490	970	380	10.5	–	40
BW012-025	295	260	490	270	380	10.5	M12 + M25	8.0
BW012-025-P	295/355	260	490	270	380	10.5	M12 + M25	8.0
BW012-050-T	395	260	490	370	380	10.5	–	12
BW012-100-T	595	270	490	570	380	10.5	–	21
BW915-T	795	270	490	770	380	10.5	–	30
BW018-035-T	295	270	490	270	380	10.5	–	9.0
BW018-075-T	595	270	490	570	380	10.5	–	18.5
BW039-050-T	395	260	490	370	380	10.5	–	12
BW206-120-T	595	270	490	570	380	10.5	2×2×M8	22.0

Mounting position 3

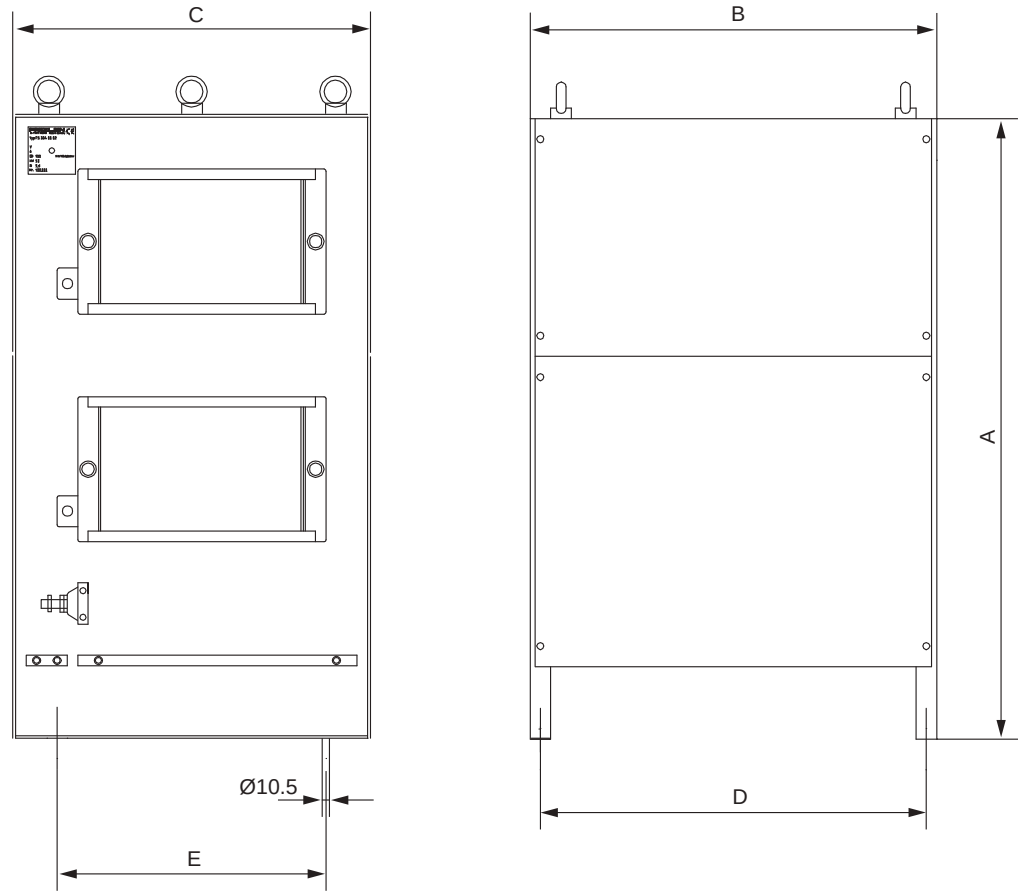
BW... type	Main dimensions in mm			Fastening parts mm			Cable gland	Mass kg
BW...-T/BW...-P	A/A'	B	C	a	b/c	d		
BW018-015	620	120	92	544	64	6.5	PG11	4.0
BW027-006	486	120	92	430	64	6.5	PG11	2.2
BW027-012	486	120	185	426	150	6.5	PG11	4.3
BW039-003	286	120	92	230	64	6.5	PG11	1.5
BW039-006	486	120	92	430	64	6.5	PG11	2.2
BW039-012	486	120	185	426	150	6.5	PG11	4.3
BW147	465	120	185	426	150	6.5	PG13.5	4.3
BW247	665	120	185	626	150	6.5	PG13.5	6.1
BW347	670	145	340	630	300	6.5	PG13.5	13.2
BW168	365	120	185	326	150	6.5	PG13.5	3.5
BW268	465	120	185	426	150	6.5	PG13.5	4.3

Mounting position 4

BW... type	Main dimensions in mm			Fastening parts mm			Cable gland	Mass kg
BW...-T/BW...-P	A/A'	B	C	a	b/c	d		
BW018-015-P	649	120	185	530	150	6.5	M12 + M25	5.8
BW039-012-T	549	120	185	426	150	6.5	M12 + M25	4.9
BW039-026-T	649	120	275	530	240	6.5	M12 + M25	7.5
BW147-T	549	120	185	426	150	6.5	M12 + M25	4.9
BW247-T	749	120	185	626	150	6.5	M12 + M25	9.2
BW347-T	749	210	185	630	150	6.5	M12 + M25	12.4
BW168-T	449	120	185	326	150	6.5	M12 + M25	3.6
BW268-T	549	120	185	426	150	6.5	M12 + M25	4.9
BW100-006	486	120	92	430	64	6.5	PG11	2.2
BW100-006-T	549	120	92	430	80	6.5	M12 + M25	3.0

12.1.9 Dimension drawings of BW1.4-170 and BW003-420-T braking resistors

The following figure shows the mechanical dimensions in mm.



2649275275

BW... type	Main dimensions in mm					Mass kg
BW...-T/BW...-P	A	B	C	D	E	
BW1.4-170	460	795	490	770	380	51
BW003-420-T	710	995	490	970	380	93

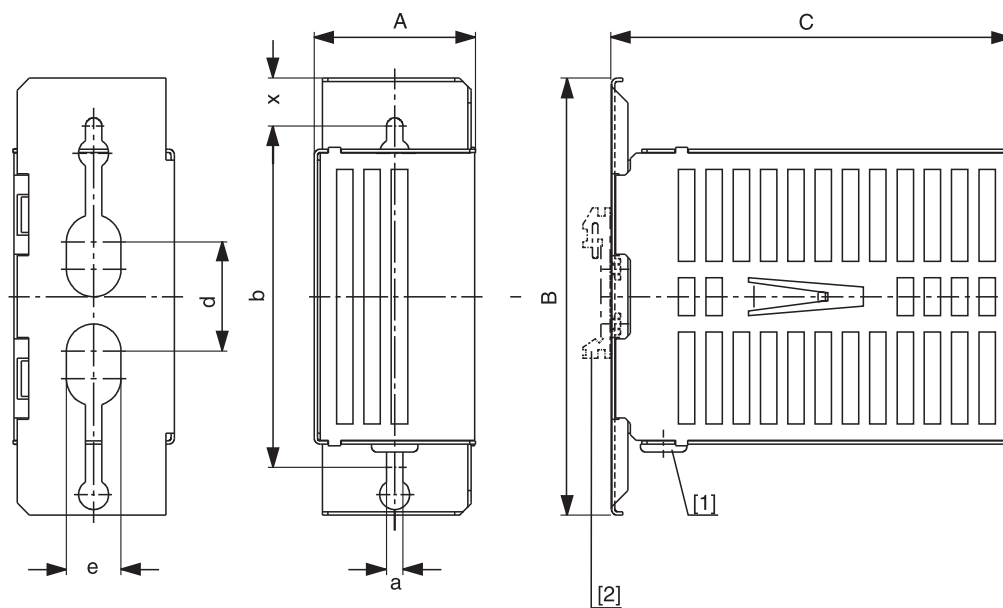
12.1.10 BS... touch guard

Description

A BS.. touch guard is available for braking resistors in flat design.

Touch guard	BS003	BS005
Part number	08131511	0813152X
for braking resistor	BW027-003 BW072-003	BW027-005 BW072-005 BW100-005

Dimension drawing for BS...



1455849867

[1] Grommet

[2] Support rail mounting

Type	Main dimensions in mm			Mounting dimensions mm					Mass kg
	A	B	C	b	d	e	a	x	
BS-003	60	160	146	125	40	20	6	17.5	0.35
BS-005	60	160	252	125	4	20	6	17.5	0.5

Mounting rail installation

A mounting rail attachment HS001 is available from SEW-EURODRIVE, part number 8221944, for mounting the touch guard on a mounting rail.

12.1.11 DKB11A heat sink for braking resistors in flatpack design

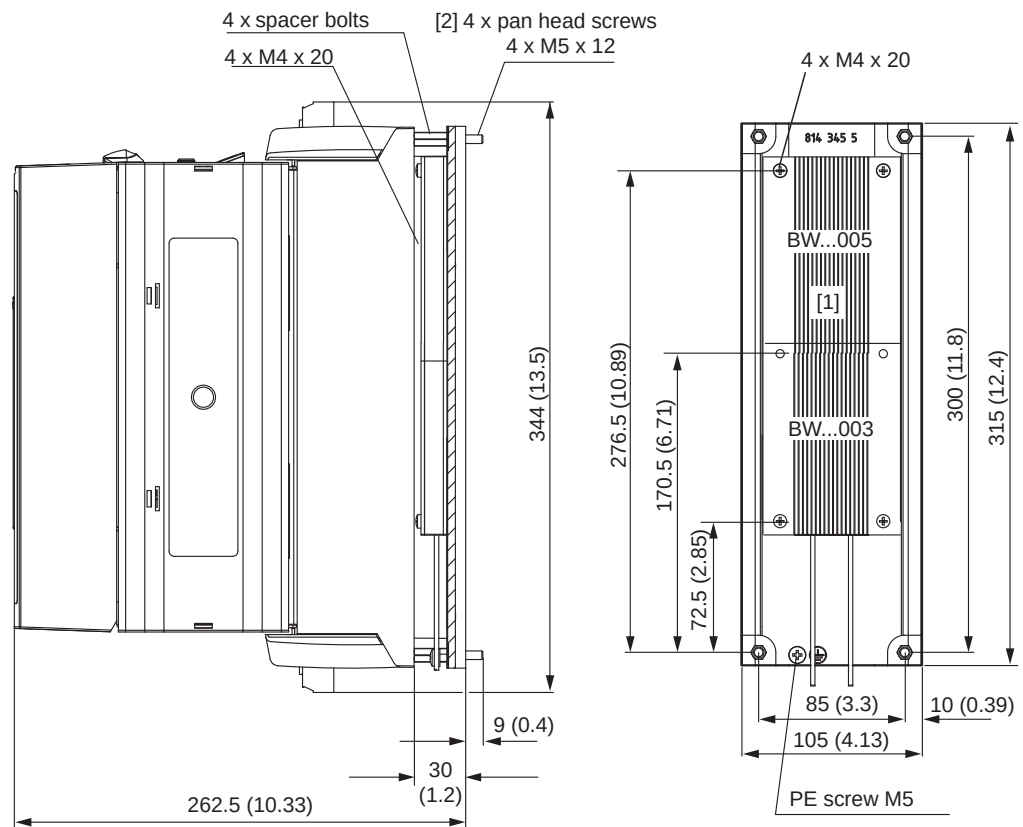
Part number

08143455

Description

The DKB11A heat sink for braking resistors in flatpack design provides a compact means for mounting the braking resistors (BW072-005, BW100 – 005) beneath MOVIDRIVE® B size 1 (400/500 V devices: 0015 – 0040; 230 V devices: 0015 – 0037). The resistor is inserted into the heat sink and attached using the supplied screws (M4 × 20).

Dimension drawing



1455852939

All dimensions in mm (in)

- [1] Mounting surface for the braking resistor
- [2] You need 4 × M5 × 12 screws to mount the device on the heat sink. These screws are not included in the scope of delivery.

12.2 ND.. line chokes

Using line chokes is optional:

- To support overvoltage protection
- To smoothen the line current, to reduce harmonics
- For protection in the event of distorted line voltage
- To limit the charging current when several inverters are connected together in parallel on the input end with a shared line contactor (nominal current of line choke = total of inverter currents).

ND.. line chokes have cRUus approval independent of the inverter.

Use is required under the following circumstances:

- When operating 5 or more inverters that are switched on simultaneously. The line choke limits overvoltages caused by the switching.

The following use is recommended:

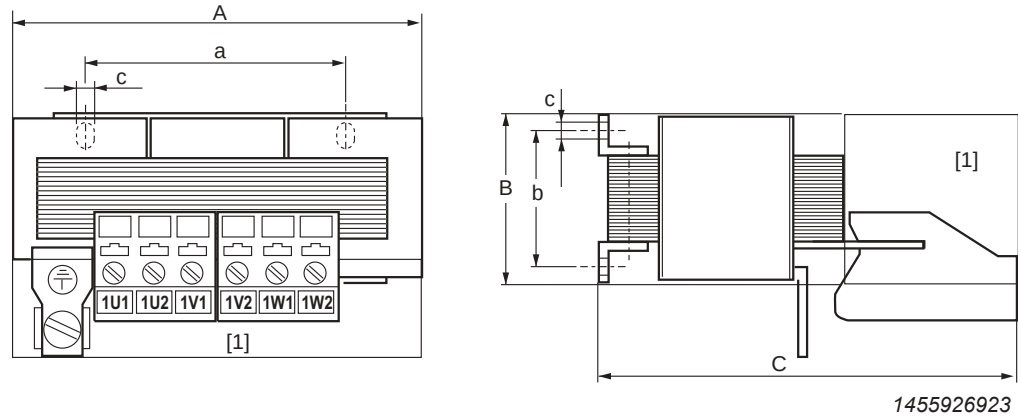
- In supply systems with many switching elements such as regenerative power supply units or thyristor controllers

Line choke type	ND020-013	ND030-023 ¹⁾	ND045-013	ND085-013	ND150-013	ND200-0033	ND300-0053
Part number	08260125	08271518	08260133	08260141	08255482	08265798	08277214
Nominal line voltage V _N (according to EN 50160)	3 × AC 380 V – 500 V, 50/60 Hz						
Rated current ²⁾ I _N	AC 20 A	AC 30 A	AC 45 A	AC 85 A	AC 150 A	AC 200 A	AC 300 A
Power loss at I _N P _V	10 W	30 W	15 W	25 W	65 W	100 W	280 W
Inductance L _N	0.1 mH	0.2 mH	0.1 mH	0.1 mH	0.1 mH	0.03 mH	0.05 mH
Ambient temperature ϑ_{amb}	-25 – +45 °C						
Degree of protection	IP00 (EN 60529)						
Connections	Terminal strips 4 mm ² (AWG12)	Terminal strips 2.5 mm ² – 10 mm ² (AWG13 – AWG8)	Terminal strips 10 mm ² (AWG8)	Terminal strips 35 mm ² (AWG2)	M10 stud PE: M8 stud		M12 stud PE: 2 × M10
Tightening torque	0.6 – 0.8 Nm	max. 2.5 Nm		3.2 – 3.7 Nm	M10 stud: 10 Nm PE: 6 Nm		M12 stud: 15.5 Nm PE: 10 Nm
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)							
Nominal operation (100%)	0005 – 0075	0110/0150	0110 – 0220 and MDR60A0150	0300 – 0450 and MDR60A0370	0550/0750	MDR60A 0750	0900 – 1320
Increased power (125%)	0005 – 0075	0110	0110/0150	0220 – 0370	0450 – 0750		
Assignment to AC 230 V devices (MDX61B...-2_3)							
Nominal operation (100%)	0015 – 0055	-	0075/0110	0150/0220	0300	-	-
Increased power (125%)	0015 – 0037	-	0055/0075	0110/0150	0220/0300	-	-

1) Use ND030-023 for DC link connection without regenerative power supply unit with connection type A or B

2) If more than one MOVIDRIVE® device is connected to a line choke, the total value of the rated currents of the connected devices must not exceed the nominal current of the line choke.

12.2.1 Dimension drawing for line chokes ND020.. / ND030.. / ND045.. / ND085..

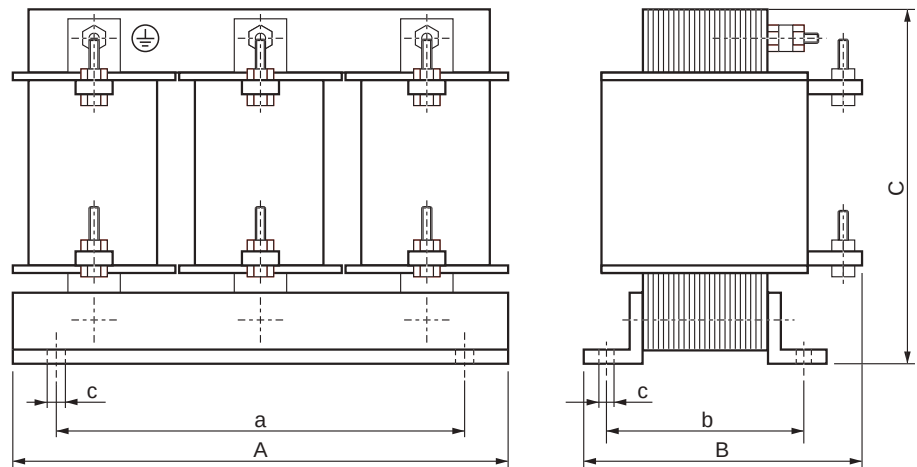


[1] Space for installation terminals
Any mounting position

Input: 1U1, 1V1, 1W1
Output: 1U1, 1V2, 1W2

Line choke type	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm	Mass
	A	B	C	a	b	c	kg
ND020-013	85	60	120	50	31 - 42	5 - 10	0.5
ND030-023	125	95	170	84	55-75	6	2.5
ND045-013							
ND085-013	185	115	235	136	56 - 88	7	7

12.2.2 Dimension drawing for line chokes ND150.. / ND200.. / ND300..



Line choke type	Connection screws	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm	Mass
		A	B	C	a	b	c	kg
ND150-013	M10 × 40	255	140	230	170	77	8	17
ND200-0033	M10 × 40	250	160	230	180	98	8	15
ND300-0053	M12 × 40 ¹⁾	300	190	295	255	145	11	35

1) Except PE: M10 × 30

12.3 NF...-... line filters

- To suppress interference emission on the line side of inverters.
- Do not switch between the NF... line filter and inverter.
- NF.. line filters have cRUus approval independent of inverter.

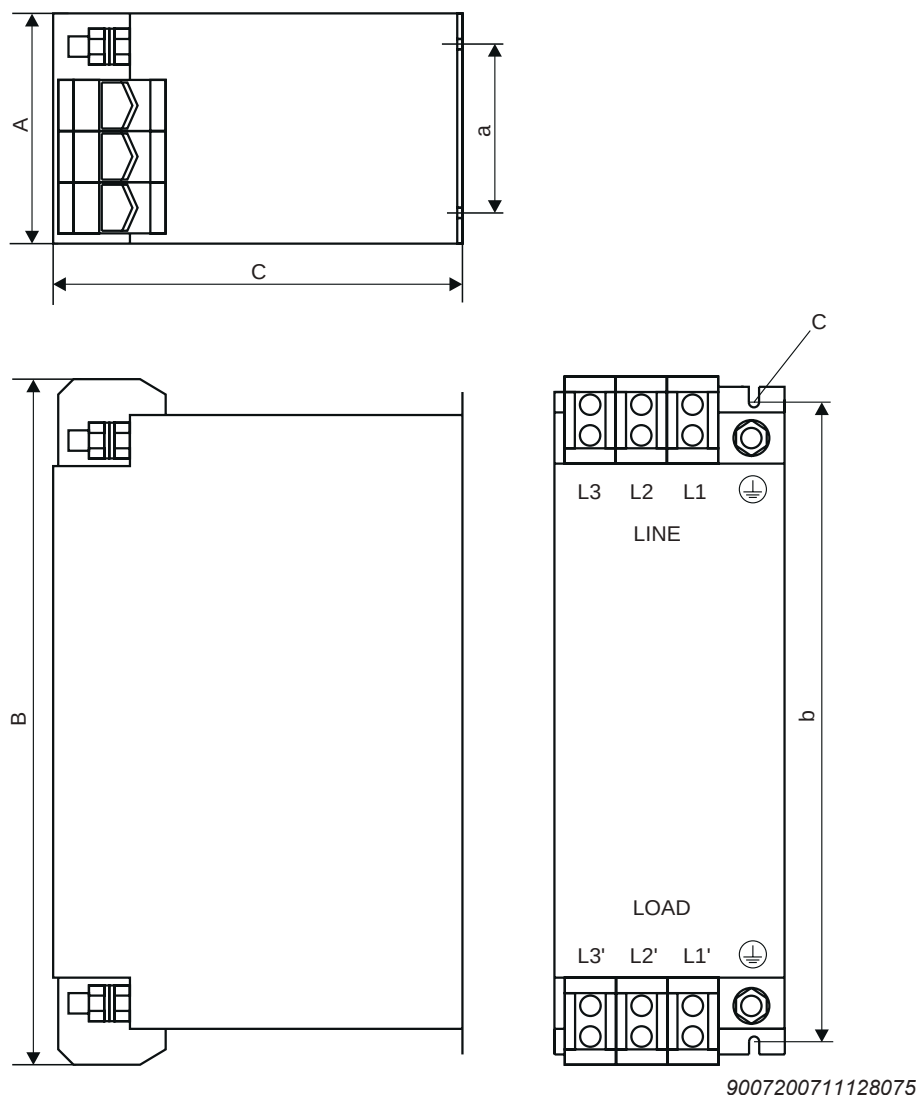
Line filter type	NF009-503	NF014-503	NF018-503	NF035-503	NF048-503
Part number	08274126	0827116X	08274134	08271283	08271178
Nominal line voltage V _N (according to EN 50160)	3 × AC 200 V – 500 V, 50/60 Hz				
Nominal current I _N	AC 9 A	AC 14 A	AC 18 A	AC 35 A	AC 48 A
Power loss at I _N P _V	6 W	9 W	12 W	15 W	22 W
Leakage current at V _N	< 25 mA	< 25 mA	< 25 mA	< 25 mA	< 40 mA
Ambient temperature ϑ_{amb}	-25 – +40 °C				
Degree of protection	IP20 (EN 60529)				
Connections L1-L3/L1'-L3'	4 mm ² (AWG 10)			10 mm ² (AWG 8)	10 mm ² (AWG 8)
Tightening torque L1-L3/L1'-L3'	0.8 Nm			1.8 Nm	1.8 Nm
Connection PE	M5 stud			M5 stud	M6 stud
Tightening torque PE	3.4 Nm			3.4 Nm	5.5 Nm
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)					
Nominal operation (100%)	0005 – 0040	0055/0075	-	0110/0150	0220
Increased power (125%)	0005 – 0030	0040/0055	0075	0110	0150
Assignment to AC 230 V devices (MDX61B...-2_3)					
Nominal operation (100%)	0015/0022	0037	-	0055/0075	0110
Increased power (125%)	0015	0022	0037	0055/0075	-

Line filter type	NF063-503	NF085-503	NF115-503	NF150-503	NF210-503
Part number	08274142	08274150	08274169	08274177	08274185
Nominal line voltage V_N (according to EN 50160)	3 × AC 200 V – 500 V, 50/60 Hz				
Nominal current I_N	AC 63 A	AC 85 A	AC 115 A	AC 150 A	AC 210 A
Power loss at $I_N P_V$	30 W	35 W	60 W	90 W	150 W
Leakage current at V_N	< 30 mA	< 30 mA	< 30 mA	< 30 mA	< 40 mA
Ambient temperature ϑ_{amb}	-25 – +40 °C				
Degree of protection	IP20 (EN 60529)				
Connections L1-L3/L1'-L3'	16 mm ² (AWG 6)	35 mm ² (AWG 2)	50 mm ² (AWG1/0)	50 mm ² (AWG1/0)	95 mm ² (AWG4/0)
Tightening torque L1-L3/L1'-L3'	4 Nm	4.5 Nm	6 Nm	6 Nm	12 Nm
Connection PE	M6	M8	M10	M10	M10
Tightening torque PE	3.9 Nm	9 Nm	17 Nm	17 Nm	17 Nm
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)					
Nominal operation (100%)	0300	0370/0450	0550	0750	0900/1100
Increased power (125%)	0220	0300/0370	0450	0550/0750	0750/0900
Assignment to AC 230 V devices (MDX61B...-2_3)					
Nominal operation (100%)	0150	0220	0300	-	-
Increased power (125%)	0110/0150	-	0220/0300	-	-

Line filter type	NF300-503	NF600-503
Part number	08274193	17963389
Nominal line voltage V_N (according to EN 50160)	3 × AC 380 V – 500 V, 50/60 Hz	
Nominal current I_N	AC 300 A	AC 600 A
Power loss at $I_N P_V$	180 W	44 W
Leakage current at V_N	< 45 mA	< 6 mA
Ambient temperature ϑ_{amb}	-25 – +40 °C	
Degree of protection	IP20 (EN 60529)	IP00 (EN 60529)

Line filter type	NF300-503	NF600-503
Connections L1-L3/L1'-L3'	150 mm ² (AWG300-2)	Connection rail with bore for M12 Max. 2 × 240 mm ²
Tightening torque L1-L3/L1'-L3'	20 Nm	70 Nm
Connection PE	M12	M12
Tightening torque PE	17 Nm	36 Nm
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)		
Nominal operation (100%)	1320/1600	2000/2500
Increased power (125%)	1100/1320	1600/2000/2500
Assignment to AC 230 V devices (MDX61B...-2_3)		
Nominal operation (100%)	-	-
Increased power (125%)	-	-

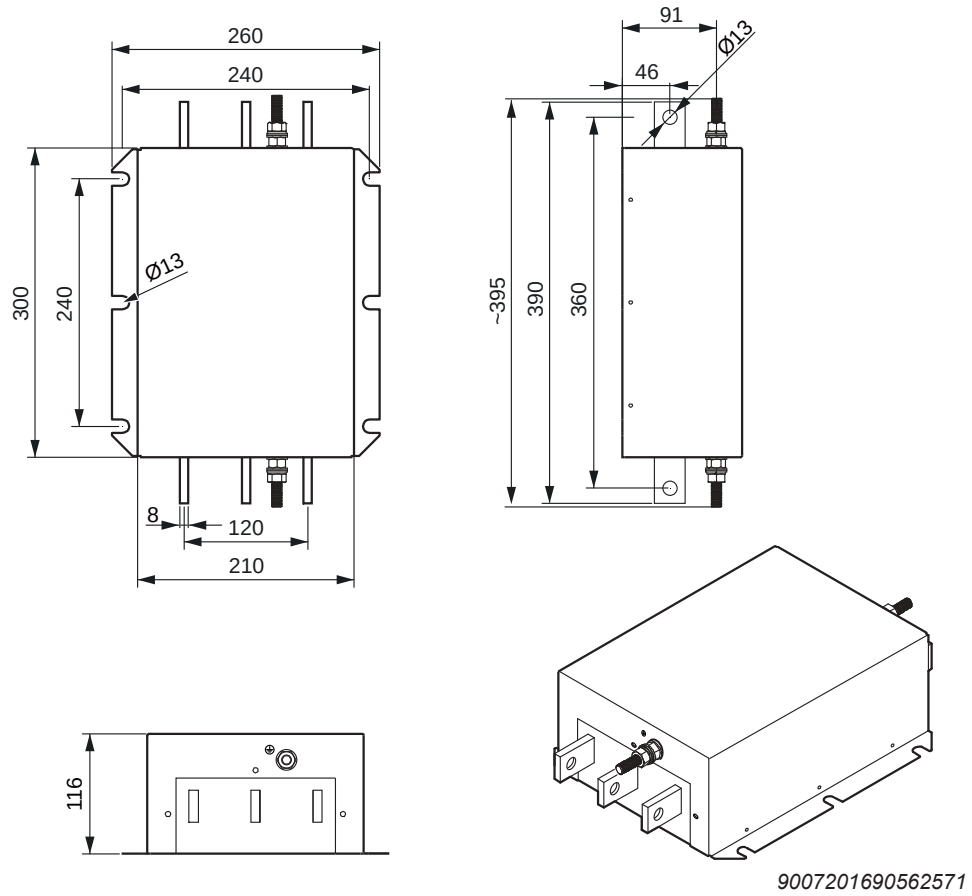
12.3.1 Dimension drawing of NF009-503 – NF300-503 line filter



Any mounting position

Line filter type	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm	PE connection	Mass
	A	B	C	a	b			c
NF009-503	55	195	80	20	180	5.5	M5	0.8
NF014-503		225			210			0.9
NF018-503		50			255			240
NF035-503	60	275	100	255	1.7			
NF048-503		315		295	M6		2.1	
NF063-503		260		235		2.4		
NF085-503	90	320	140	60	255	6.5	M8	3.5
NF115-503	100	330	155	65			M10	4.8
NF150-503								5.6
NF210-503								8.9
NF300-503	170	540	230	125				435

12.3.2 Dimension drawing of NF600-503 line filter



Any mounting position

Line filter type	PE connection	Mass
		kg
NF600-503	M12	16.8

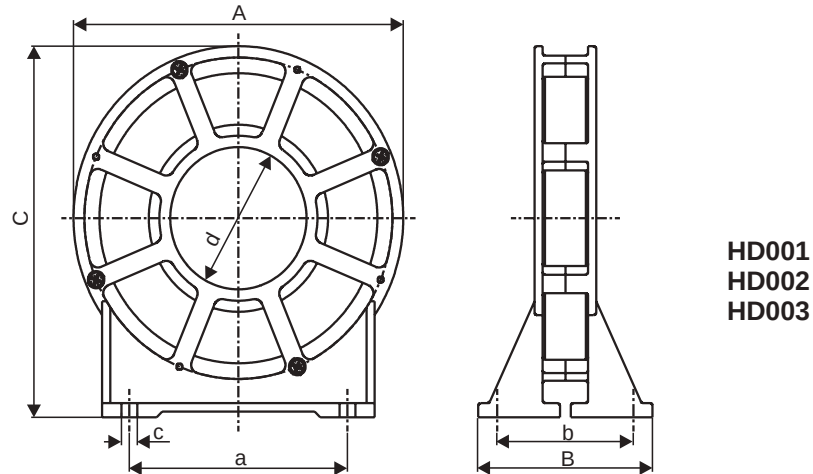
12.4 HD... output chokes

- For suppression of interference from the unshielded motor cable. For HD001 to HD003 we recommend routing the motor cable through the output choke with 5 loops. Less than 5 loops are possible if the cable has a large diameter. To make up for this, 2 or 3 output chokes should be connected in series. If you use 4 loops, connect 2 output chokes in series, and if you use 3 loops, connect 3 output chokes.
- Output chokes HD001 to HD003 are allocated using the cable cross sections of the motor cables. Consequently, there is no separate assignment table for the AC 230 V devices.
- The HD004 output choke is assigned to size 6 devices (0900 – 1320).
- The HD005 output choke is assigned to size 7 devices (1600 – 2500).

Output choke type	HD001	HD002	HD003	HD004	HD005
Part number	08133255	08135576	08135584	08168857	17963362
Maximum power loss Power loss P_{Vmax}	15 W	8 W	30 W	100 W	162
For cable cross sections/con- nections/ Tightening torque	1.5 – 16 mm ² (AWG 16 – 6)	≤ 1.5 mm ² (AWG 16)	≥ 16 mm ² (AWG 6)	Terminal stud M12 36 Nm	M12 cable lugs 70 Nm PE connection M12 36 Nm
Degree of protection	-	-	-	IP10	IP00
UL/cUL approval	No UL/cUL relevant component			Yes	Yes

12.4.1 Dimension drawing HD001 – HD003

The following figure shows the mechanical dimensions in mm (in):

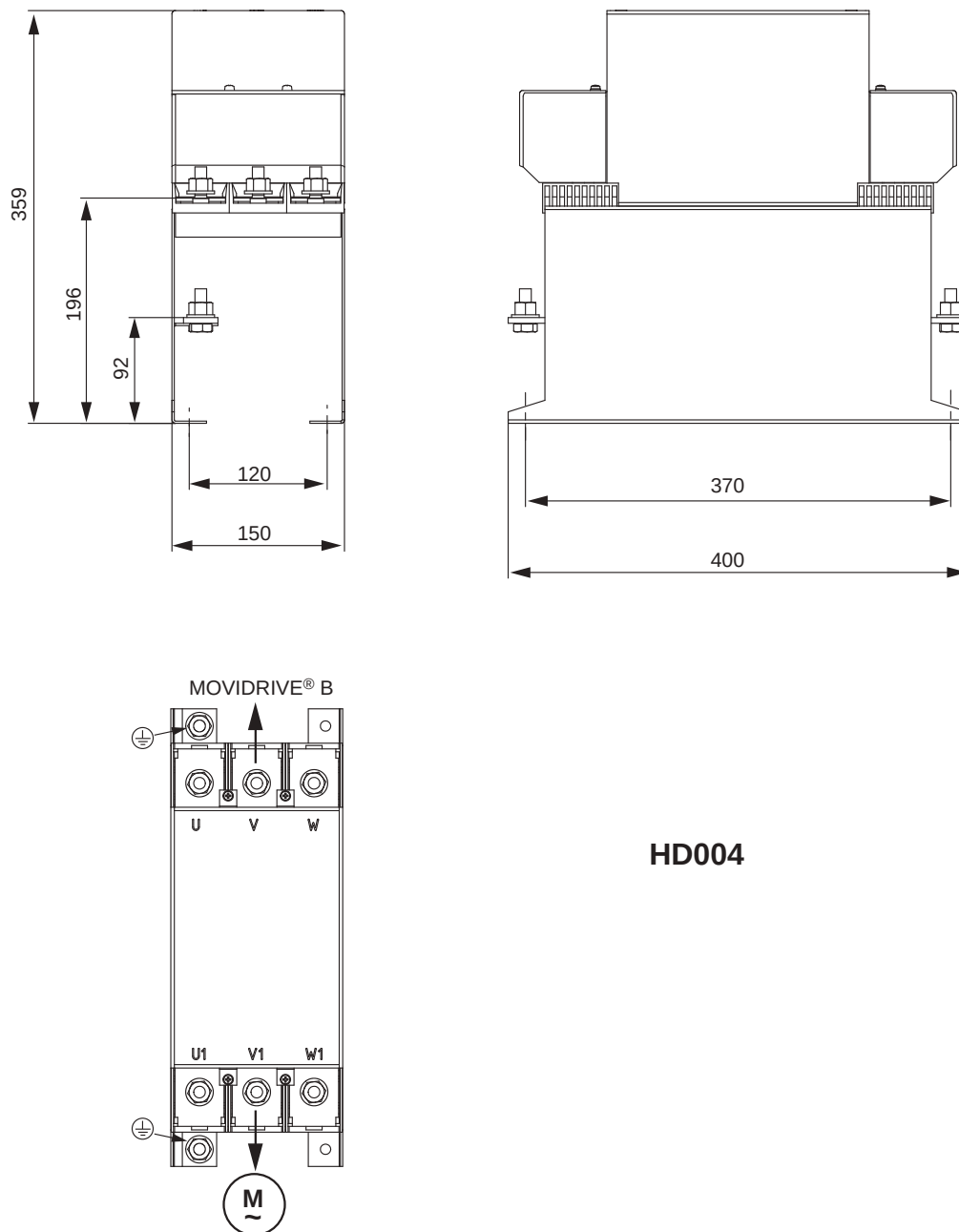


1456392203

Output choke type	Main dimensions in mm			Mounting dimensions mm		Inner diameter in mm	Hole dimension mm	Weight
	A	B	C	a	b	d	c	kg
HD001	121	64	131	80	50	50	5.8	0.5
HD002	66	49	73	44	38	23		0.2
HD003	170	64	185	120	50	88	7.0	1.1

12.4.2 Dimension drawing of HD004

The following figure shows the mechanical dimensions in mm (in):

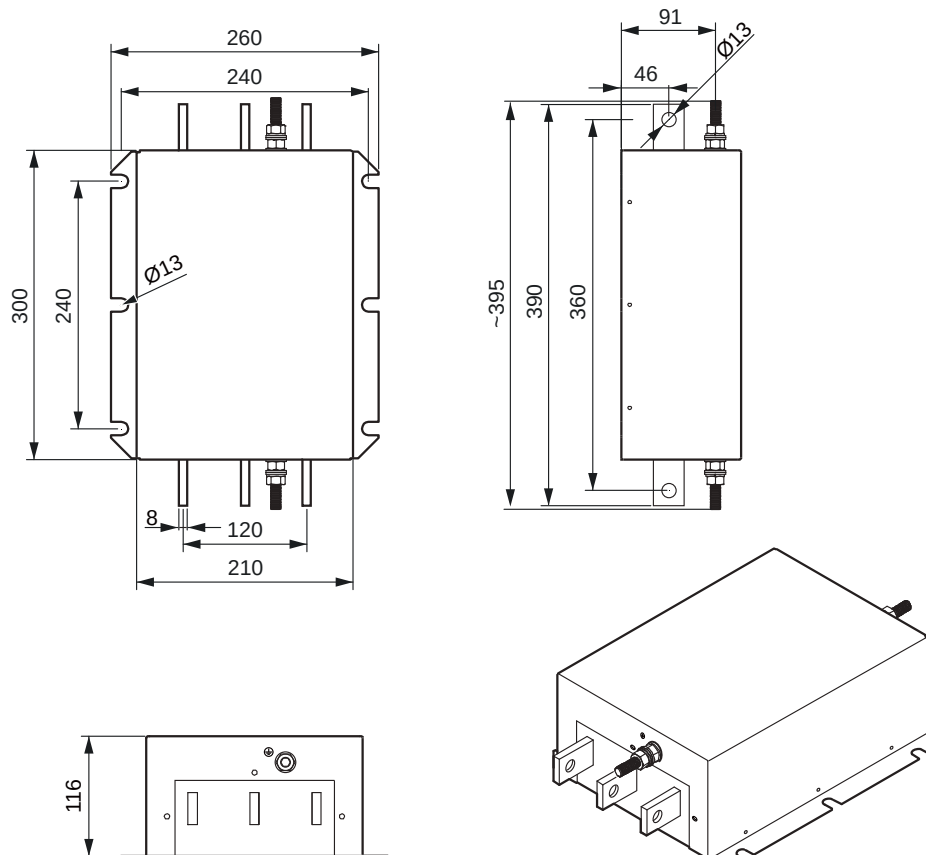


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Output choke type	Main dimensions in mm			Mounting dimensions mm		Inner diameter in mm	Hole dimension mm	Mass
	A	B	C	a	b	d	c	kg
HD004	150	400	360	120	370	–	9.0	12.5

12.4.3 Dimension drawing of HD005

The following figure shows the mechanical dimensions in mm (in).



9007201690562571

Output choke type	PE connection	Mass
		kg
HD005	M12	16

12.5 HF... output filter

HF... output filters are sine filters used to smooth output voltage of inverters. HF... output filters (with the exception of HF450-503, HF180-403, HF325-403) are approved to UL/cUL in combination inverters.

HF... output filters are used in the following cases:

- In group drives (several motor leads in parallel); the discharge currents in the motor cables are suppressed.
- To protect the motor winding insulation of third-party motors which are not suitable for inverters.
- For protection against overvoltage peaks in long motor cables (> 100 m).

Observe the following notes:

INFORMATION



- Output filters must only be operated in V/f and VFC operating modes.
- Do not use output filters in hoist applications.
- During project planning of the drive, take the voltage drop in the output filter into account and the reduced motor torque that results. This applies particularly to AC 230 V devices with output filters.

Output filter type	HF008-503 ¹⁾	HF015-503 ¹⁾	HF022-503 ¹⁾	HF030-503 ¹⁾	HF040-503 ¹⁾	HF055-503 ¹⁾
Part number	0826029X	08260303	08260311	0826032X	08263116	08263124
Nominal voltage V _N	3 × AC 230 V – 500 V, 50/60 Hz ²⁾					
Leakage current at V _N ΔI	0 mA					
Power loss at I _N P _V	25 W	35 W	55 W	65 W	90 W	115 W
Interference emission via unshielded motor cable	According to limit value class C1/C2 in accordance with EN 61800-3 ³⁾					
Ambient temperature ϑ _{amb}	0 – +45 °C (reduction: 3% I _N per K to max. 60 °C)					
Degree of protection (EN 60529)	IP20					
Connections / Tightening torque	M4 terminal stud 1.6 Nm ± 20%					
Mass	3.1 kg	4.4 kg			10.8 kg	
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)						
Voltage drop at I _N ΔU	< 6.5% (7.5%) at AC 400 V / < 4% (5%) at AC 500 V with f _{Amax} = 50 Hz (60 Hz)					
Nominal through current ⁴⁾ I _{N 400 V} (at V _{line} = 3 × AC 400 V)	AC 2.5 A	AC 4 A	AC 6 A	AC 8 A	AC 10 A	AC 12 A
Nominal throughput current I _{N 500 V} (at V _{line} = 3 × AC 500 V)	AC 2 A	AC 3 A	AC 5 A	AC 6 A	AC 8 A	AC 10 A
Nominal operation (100%) ³⁾	0005 – 0011	0014 / 0015	0022	0030	0040	0055
Increased power (125%) ³⁾	0005	0008 / 0011	0014 / 0015	0022	0030	0040
Assignment to AC 230 V devices (MDX61B...-2_3)						
Voltage drop at I _N ΔU	-	< 18.5 % (19 %) at AC 230 V with f _{Amax} = 50 Hz (60 Hz)				
Nominal throughput current I _{N 230 V} (at V _{line} = 3 × AC 230 V)	AC 4.3 A	AC 6.5 A	AC 10.8 A	AC 13 A	AC 17.3 A	AC 22 A
Nominal operation (100%) ³⁾	–	–	0015/0022	–	0037	0055
Increased power (125%) ³⁾	–	–	0015/0022	–	–	0037

1) UL/cUL approved in combination with MOVIDRIVE® drive inverters. SEW-EURODRIVE will provide certification on request.

2) A reduction of 6% I_N per 10 Hz applies above $f_A = 60$ Hz for the nominal through current I_N .

3) Observe the chapter on EMC-compliant installation according to EN 61800-3 in the SEW documentation

4) Only applies for operation without VDC link connection. For operating the inverter with VDC link connection, observe the project planning notes in the system manual of the respective inverter.

Output filter type	HF075-503 ¹⁾	HF023-403 ¹⁾	HF033-403 ¹⁾	HF047-403 ¹⁾	HF450-503	HF180-403	HF325-403
Part number	08263132	08257841	0825785X	08257868	08269483	08299099	08299102
Nominal voltage V_N	3 × AC 230 V – 500 V, 50/60 Hz ²⁾						
Leakage current at V_N ΔI	0 mA						
Power loss at I_N P_V	135 W	90 W	120 W	200 W	400 W	860 W	1430 W
Interference emission via unshielded motor cable	According to limit value class C1/C2 in accordance with EN 61800-3 ³⁾						
Ambient temperature ϑ_{amb}	0 – +45 °C (reduction: 3% I_N per K to max. 60 °C)					-25 – +85 °C	
Degree of protection (EN 60529)	IP 20	IP20			IP 10	IP00	IP00
Connections / Tightening torque	M4 terminal stud 1.6 Nm ± 20 %	35 mm ² (AWG 2) 3.2 Nm				M10 terminal studs / 70 mm ² (AWG 3/0) 30 Nm	
Mass	10.8 kg	15.9 kg	16.5 kg	23 kg	32 kg	85.3 kg	170 kg
Assignment to AC 400/500 V devices (MDX60/61B...-5_3)							
Voltage drop at I_N ΔU	< 6.5% (7.5%) at AC 400 V / < 4% (5%) at AC 500 V with $f_{Amax} = 50$ Hz (60 Hz)						
Nominal through current ⁴⁾ $I_{N 400 V}$ (at $V_{line} = 3 \times AC 400 V$)	AC 16 A	AC 23 A	AC 33 A	AC 47 A	AC 90 A	AC 180 A	AC 325 A
(at $V_{line} = 3 \times AC 400 V$) Nominal throughput current $I_{N 500 V}$ (at $V_{line} = 3 \times AC 500 V$)	AC 13 A	AC 19 A	AC 26 A	AC 38 A	AC 72 A	AC 180 A	AC 325 A
Nominal operation (100%) ³⁾	0075	0110	0150/0300 ⁵⁾	0220	0370/0450/ 0550 ⁵⁾ /0750 ⁵⁾ / 0900 ⁵⁾	0550/0750/0 900	1100/1320
Increased power (125%) ³⁾	0055	0075	0110/0220 ⁵⁾	0150	0300/0370/0 450 /0550 ⁵⁾ /0750 ⁵⁾	0550/0750	0900/1100/1 320
Assignment to AC 230 V devices (MDX61B...-2_3)							
Voltage drop at I_N ΔU	< 18.5% (19%) at AC 230 V with $f_{Amax} = 50$ Hz (60 Hz)						
Nominal throughput current $I_{N 230 V}$ (at $V_{line} = 3 \times AC 230 V$)	AC 29 A	AC 42 A	AC 56.5 A	AC 82.6 A	AC 156 A	–	–
Nominal operation (100%) ³⁾	0075	0110	0150/0300 ⁵⁾	0220	0300	–	–
Increased power (125%) ³⁾	0055	0075	0110/0220 ⁵⁾	0150	0220/0300	–	–

1) Approved to UL/cUL in combination with MOVIDRIVE® drive inverters. SEW-EURODRIVE will provide certification on request.

2) A reduction of 6% I_N per 10 Hz applies above $f_A = 60$ Hz for the nominal through current I_N .

3) Observe the chapter on EMC-compliant installation according to EN 61800-3 in the SEW documentation

4) Only applies for operation without Uz connection. For operation with Uz connection, observe the project planning notes in the MOVIDRIVE® MDX60/61B system manual, section "Project Planning/Connecting the optional power components".

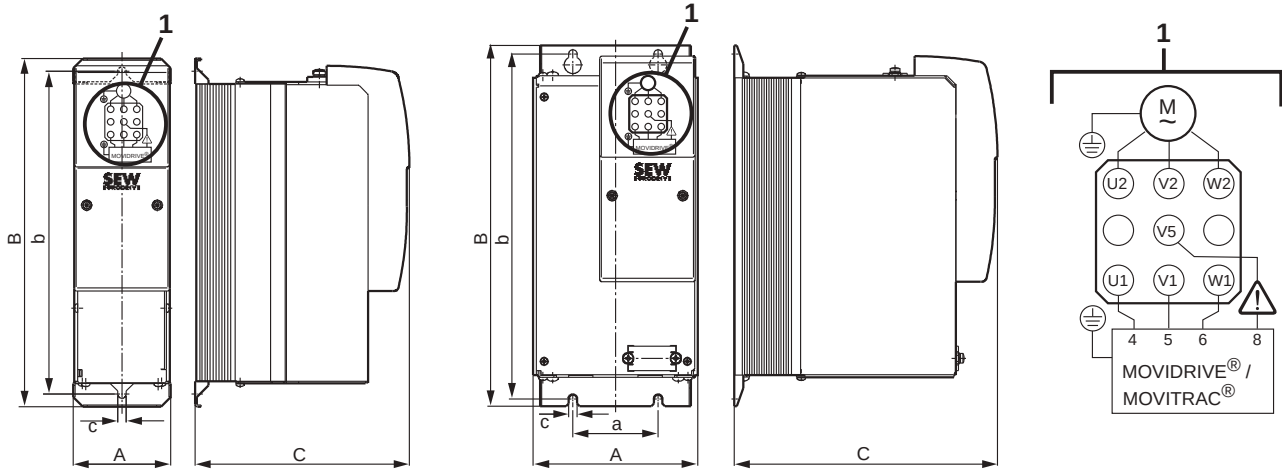
5) Connect two HF...-... output filters in parallel for operation with these MOVIDRIVE® devices.

12.5.1 Dimension drawings of HF...-503 output filters

The following figures show the mechanical dimensions in mm (in).

HF008/015/022/030-503

HF040/055/075-503



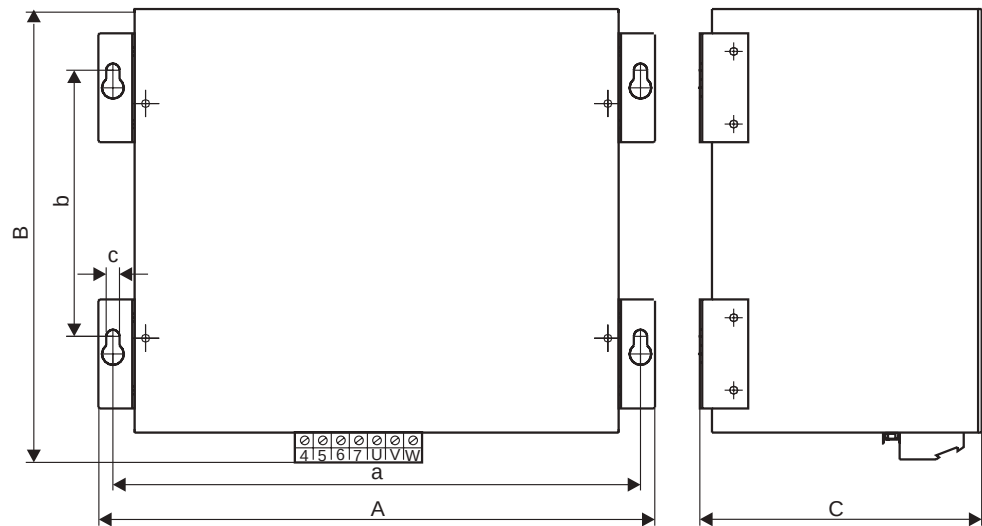
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Only the mounting position shown in the dimension drawing is permitted.

Output filter type	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm	Ventilation clearances ¹⁾ mm	
	A	B	C	a	b		Top	Bottom
HF008/015/022/030-503	80	286	176	—	265	7	100	100
HF040/055/075-503	135	296	216	70	283			

1) There is no need for clearance at the sides. You can line up the devices next to one another.

HF450-503



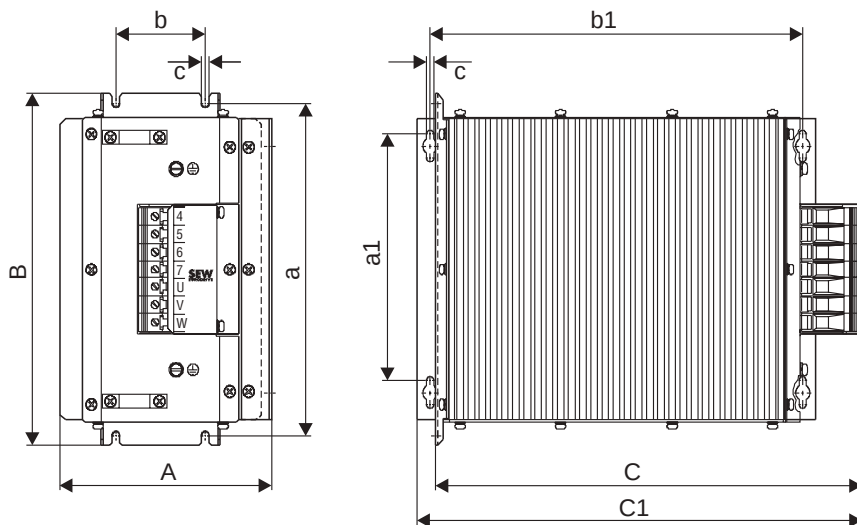
1472827659

Only the mounting position shown in the dimension drawing is permitted.

Output filter type	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm	Ventilation clearances mm	
	A	B	C	a	b		Top	Bottom
HF450-503	465	385	240	436	220	8.5	100	100

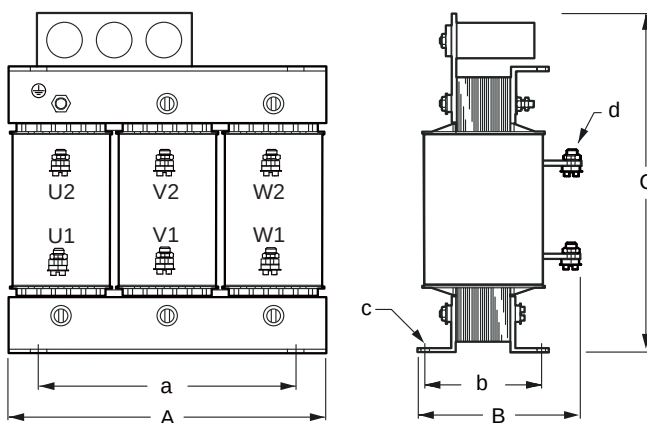
12.5.2 Dimension drawings of HF...-403 output filters

The following figures show the mechanical dimensions in mm (in).



1472830731

Type	Main dimensions in mm			Mounting dimensions mm				Hole di- mension mm	Ventilation clearances mm		
				Standard installa- tion		Horizontal mount- ing position					
	A	B	C/C1	a	b	a1	b1		c	On the side	Top
HF023-403	145	284	365/390	268	60	210	334	6.5	30 each	150	150
HF033-403											
HF047-403	190	300	385/400	284	80						



2705456011

The ring cable lug must be attached directly to the copper clip.
Only the mounting positions depicted in the dimension drawing are permitted

Output filter type	Main dimensions in mm			Mounting dimensions mm		Hole dimension mm		Ventilation clearances mm		
	A	B	C	a	b	c	d	On the side	Top	Bottom
HF180-403	480	260	510	430	180	18 x 13	11	192 each	510	510
HF325-403	480	300	730	430	230	18 x 13	11	192 each	730	730

13 Declarations of conformity

13.1 MOVIDRIVE®

13.1.1 Declaration of conformity

EU Declaration of Conformity



Translation of the original text

900230310/EN

SEW-EURODRIVE GmbH & Co. KG

Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the following products

Frequency inverters of the product family **MOVIDRIVE® MDX6.B.....-...-.../.**

in accordance with

Machinery Directive

**2006/42/EC
(L 157, 09.06.2006, 24-86)**

This includes the fulfillment of the protection targets for "electrical power supply" in accordance with annex I No. 1.5.1 according to the Low Voltage Directive 73/23/EEC -- Note: 2014/35/EU is currently valid

EMC Directive

**2014/30/EU
(L 96, March 29, 2014, 79-106)**

4)

RoHS Directive

**2011/65/EU
(L 174, July 1, 2011, 88-110)**

Applied harmonized standards:

**EN ISO 13849-1:2008/AC:2009
EN 61800-5-1:2007
EN 61800-3:2004/A1:2012
EN 50581:2012**

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. For the assessment, the product was installed in a typical plant configuration.

Bruchsal

21.06.2017



Place

Date

Johann Soder

Managing Director Technology

a) b)

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

13.2 MOVIDRIVE® with DFS11B/DFS21B

13.2.1 Declaration of conformity

EU Declaration of Conformity



Translation of the original text

900010510/EN

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

declares under sole responsibility that the following products

Frequency inverters of the product family MOVIDRIVE® MDX6.B....-3-.../.
with built-in DFS11B PROFIBUS-DP-V1 with PROFIsafe
DFS21B PROFINET IO with PROFIsafe

in accordance with

Machinery Directive 2006/42/EC
(L 157, 09.06.2006, 24-86)

This includes the fulfillment of the protection targets for "electrical power supply" in accordance with annex I No. 1.5.1 according to the Low Voltage Directive 73/23/EEC -- Note: 2014/35/EU is currently valid.

EMC Directive 2014/30/EU 4)
(L 96, March 29, 2014, 79-106)

RoHS Directive 2011/65/EU
(L 174, July 1, 2011, 88-110)

Applied harmonized standards: EN ISO 13849-1:2008/AC:2009
EN 61800-5-1:2007
EN 61800-3:2004/A1:2012
EN 50581:2012

Other applied standards: EN 61508:2001 (part 1-7)
EN 62061:2005

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. For the assessment, the product was installed in a typical plant configuration.

Bruchsal 19.06.2017

Place Date

Johann Soder
Managing Director Technology

a) b)

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

13.3 MOVIDRIVE® with DCS2.B/DCS3.B

13.3.1 Declaration of conformity

EU Declaration of Conformity



Translation of the original text

901920513/EN

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

declares under sole responsibility that the following products

Frequency inverters of the product family MOVIDRIVE® MDX6.B....-3-.../.

with built-in

DCS2.B with DFS12B PROFIBUS-DP-V1 with PROFIsafe
 DCS2.B with DFS22B PROFINET IO with PROFIsafe
 DCS3.B

in accordance with

Machinery Directive

2006/42/EC
 (L 157, 09.06.2006, 24-86)

This includes the fulfillment of the protection targets for "electrical power supply" in accordance with annex I No. 1.5.1 according to the Low Voltage Directive 73/23/EEC -- Note: 2014/35/EU is currently valid

EMC Directive

2014/30/EU
 (L 96, March 29, 2014, 79-106)

4)

RoHS Directive

2011/65/EU
 (L 174, July 1, 2011, 88-110)

Applied harmonized standards:

EN ISO 13849-1:2008/AC:2009
 EN 61800-3:2004/A1:2012
 EN 61800-5-1:2007
 EN 61800-5-2:2007
 EN 50581:2012

Other applied standards:

EN 61508:2001 (part 1-7)
 EN 62061:2005

4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. For the assessment, the product was installed in a typical plant configuration.

Freely programmable safety controller for monitoring drive systems, suitable for SIL 3 IEC 61508:2010 and PL e according to EN ISO 13849-1:2008. An EC type examination was carried out for the safety module by the following testing institute: TÜV Rheinland Industrie Service GmbH, Alboinstr. 56, 12103 Berlin, Germany. ID of notified body NB 0035

Bruchsal

23.06.2017

Place

Date

Johann Soder

Managing Director Technology

a) b)

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



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Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue de Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@sew-eurodrive.be
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	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
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Sales	Tallin	ALAS-KUUL AS Reti tee 4 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@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
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 Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocom.com sew@usocom.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
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 Fax +33 5 57 26 39 09

France

Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88

Gabon

Sales	Libreville	SEW-EURODRIVE SARL 183, Rue 5.033.C, Lalala à droite P.O. Box 15682 Libreville	Tel. +241 03 28 81 55 +241 06 54 81 33 http://www.sew-eurodrive.cm sew@sew-eurodrive.cm
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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	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
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 Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dankritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 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
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@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

Germany			
	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
Drive Service Hotline / 24 Hour Service			Tel. 01924 896911
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. Csillaghegyi 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 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
India			
Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 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
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

Indonesia			
	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	Alpertone Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alpertone.ie info@alpertone.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 di R. Blickle & Co.s.a.s. Via Bernini,14 20020 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 21 21 81 05 Fax +225 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 hamamatsu@sew-eurodrive.co.jp
Kazakhstan			
Sales	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	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Naryn zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn
Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz
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 , Beirut Saudi Arabia, Syria)		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
Mexiko			
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@sew-eurodrive.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@sew-eurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Narny zam street 62 Union building, Suite A-403-1 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	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 Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
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 bolaji.adekunle@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 Com- mercial 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 De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	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
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Sambia

representation: South Africa

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
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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
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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
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Slovakia

Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel. +421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk

Slovenia

Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
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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 Prospect 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

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
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South Korea			
	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
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 PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz
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
Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Hareket Sistemleri San. Ve TIC. Ltd. Sti 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	ООО «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днеп	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
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Uruguay

Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esquina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy
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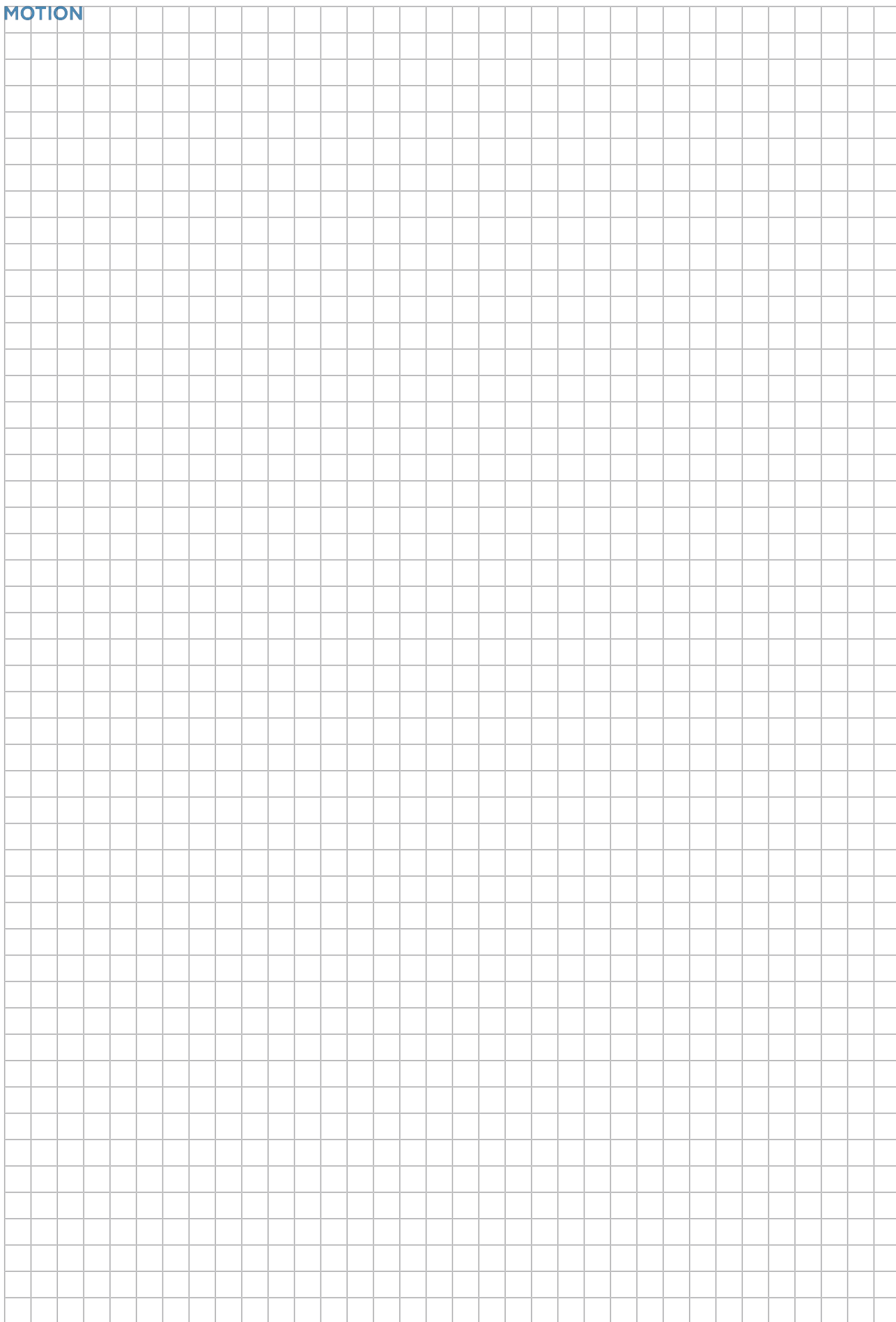
USA

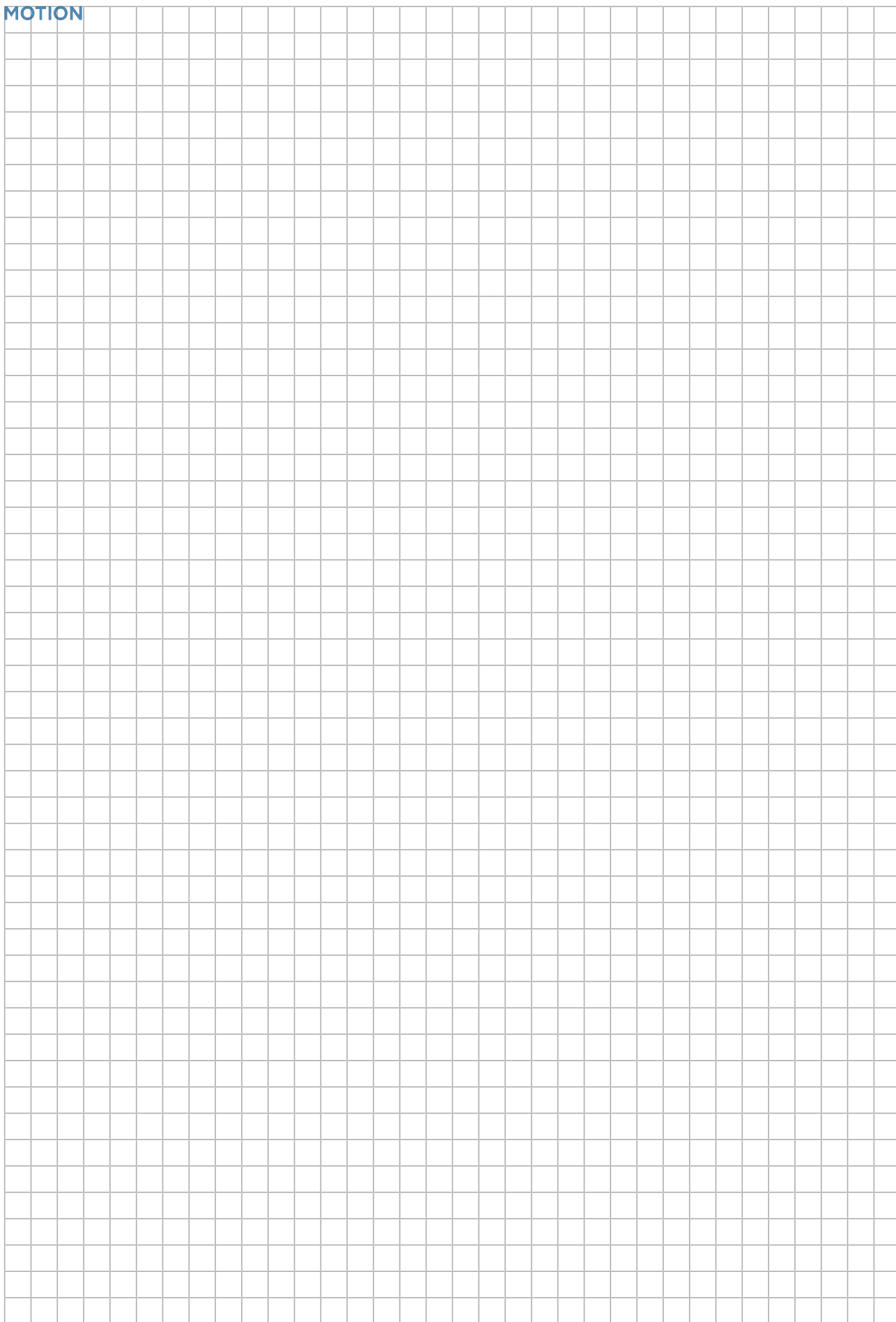
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com 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

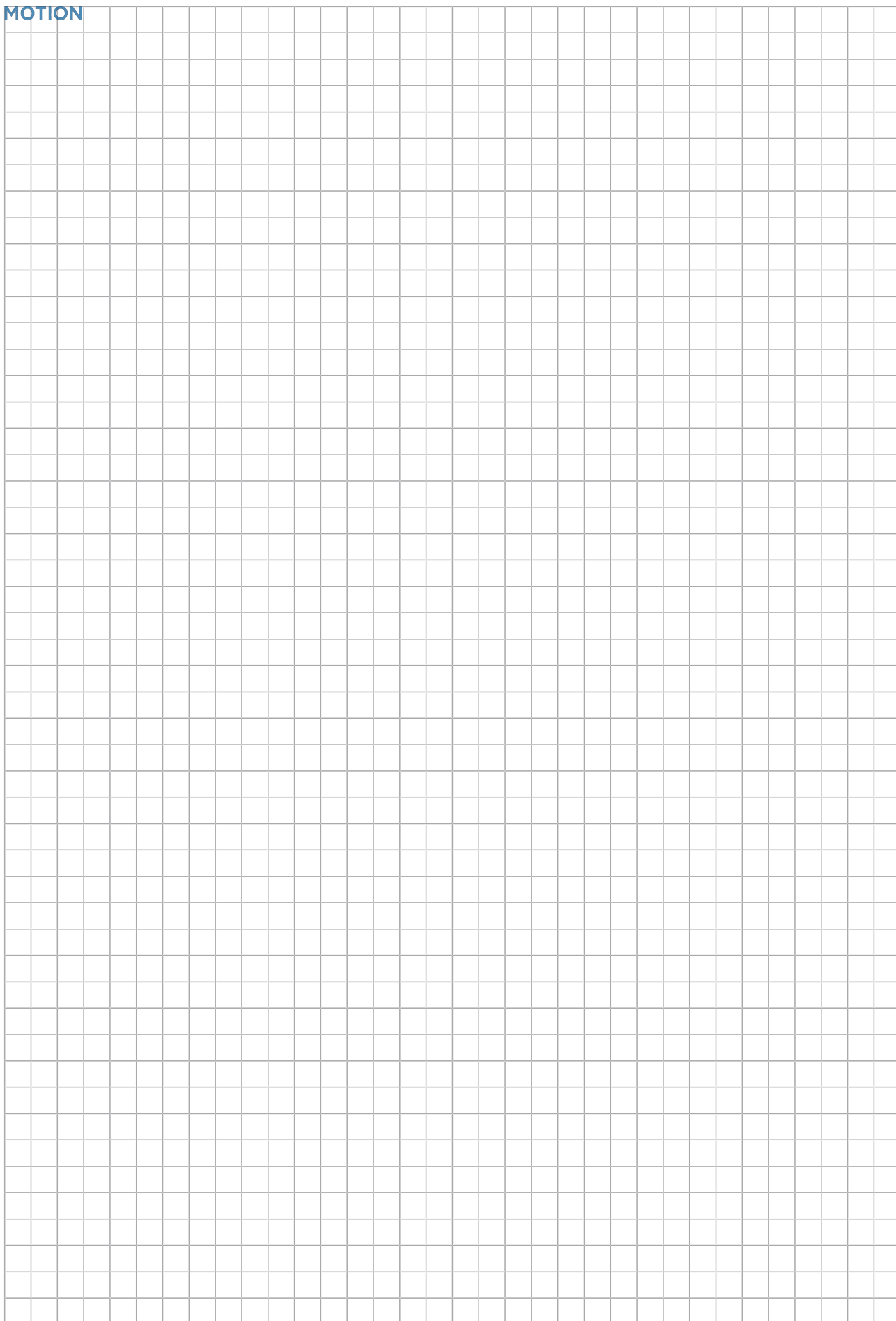
Additional addresses for service provided on request!

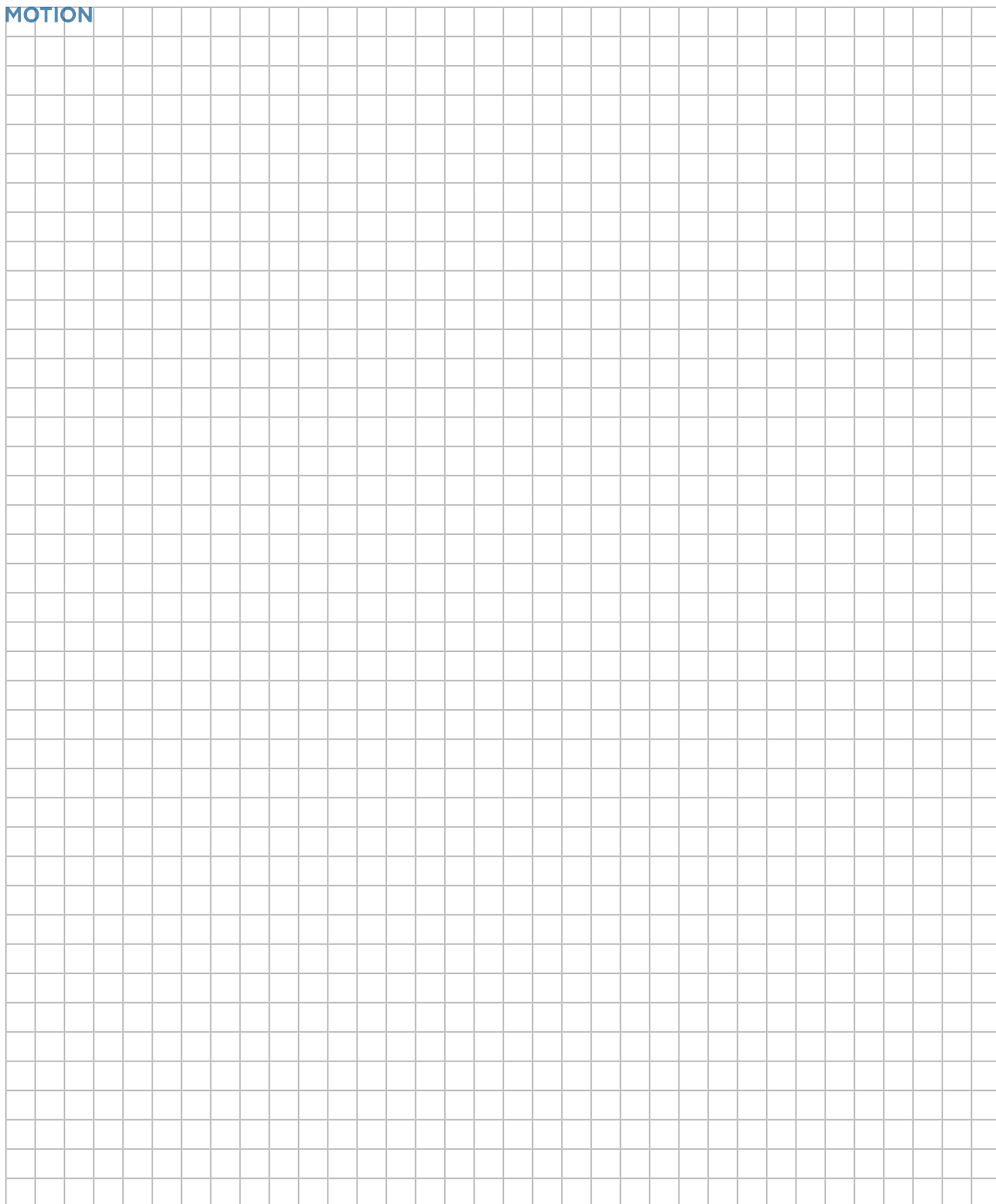
Vietnam

Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	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











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