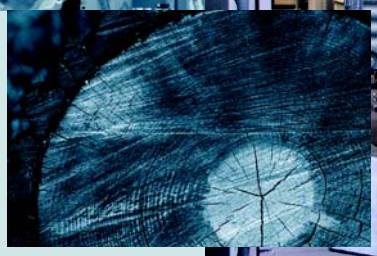
SEW EURODRIVE

MOVIDRIVE® MDX60B / 61B

Edition 04/2008
11697016 / EN

Catalog

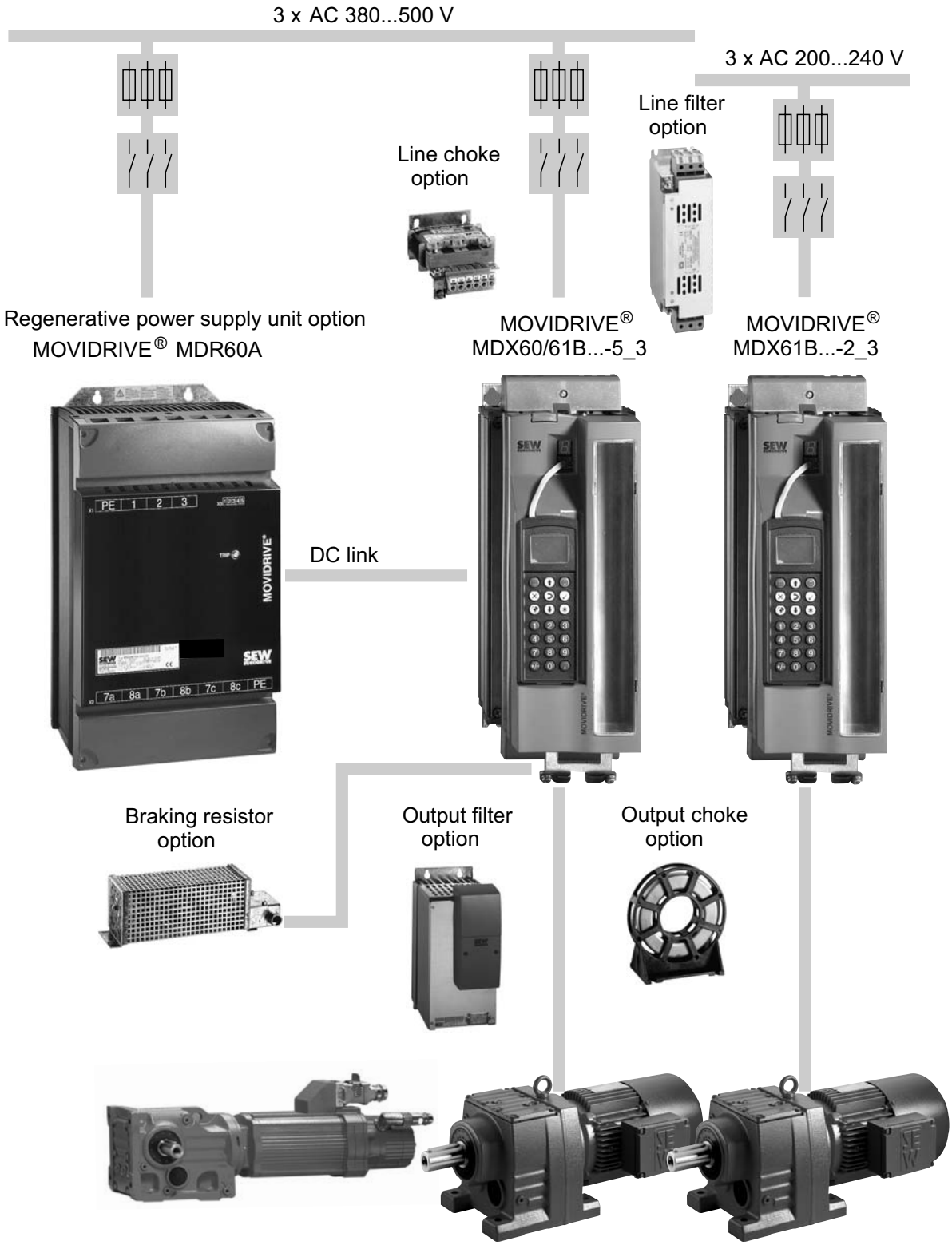


SEW
EURODRIVE

1 System Description

1.1 System Overview MOVIDRIVE® MDX60B/61B

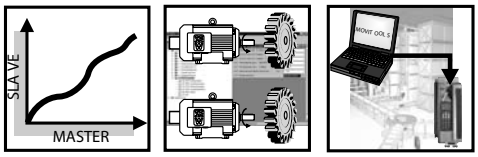
Power components



Encoder and communication options

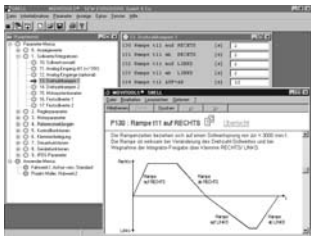
MDX60/61B standard version with IPOS plus® as standard

MDX60/61B application version for using
"Electronic cam", "Internal synchronous operation"
or the application modules.



DBG60B keypad option

MOVITOOLS® operating software



Encoder options

DEH 11B

DEH 21B

DER 11B

DIP 11B

DIO 11B

DRS 11B

Interface adapter option:

UWS 21B

UWS 11A

USB 11A

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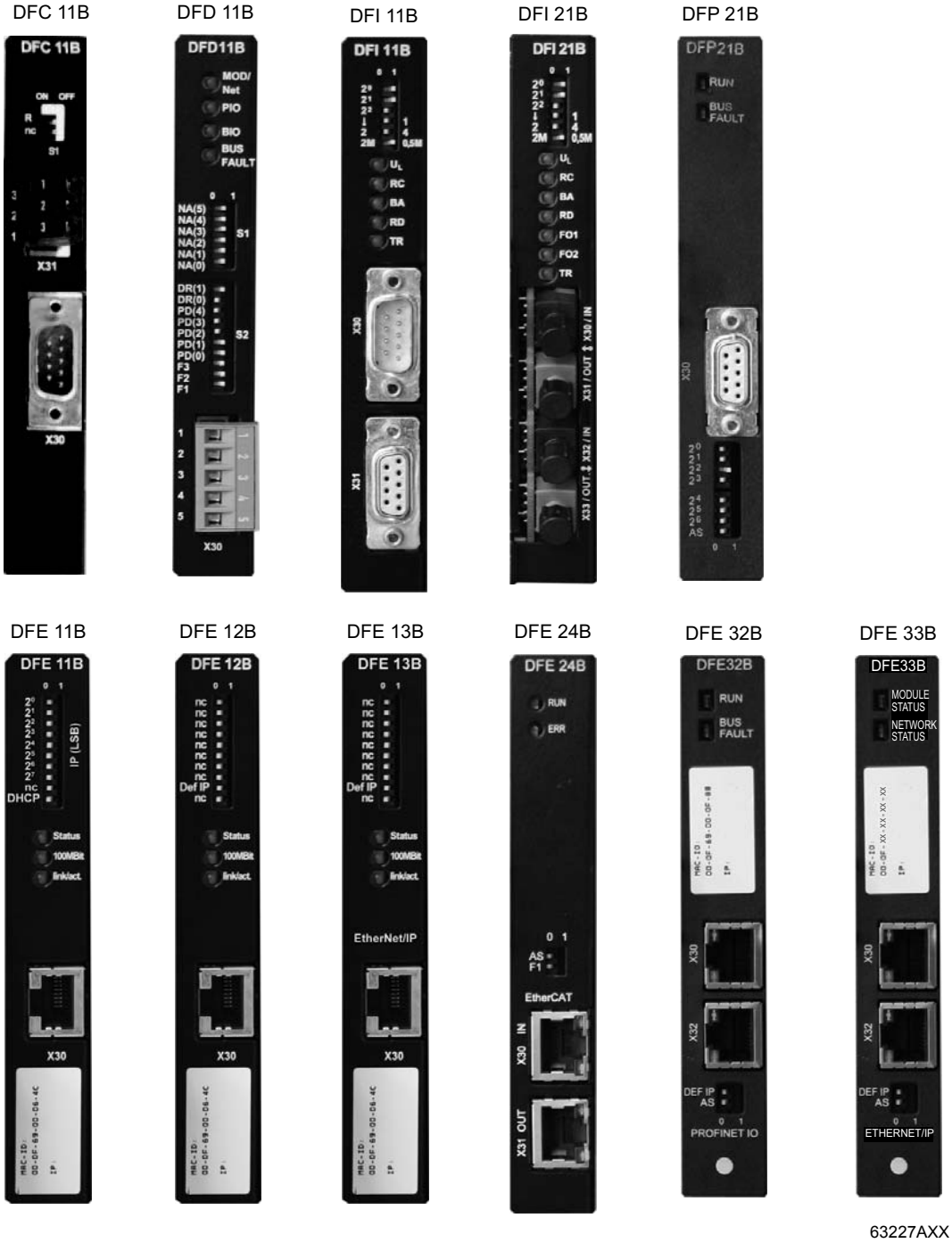
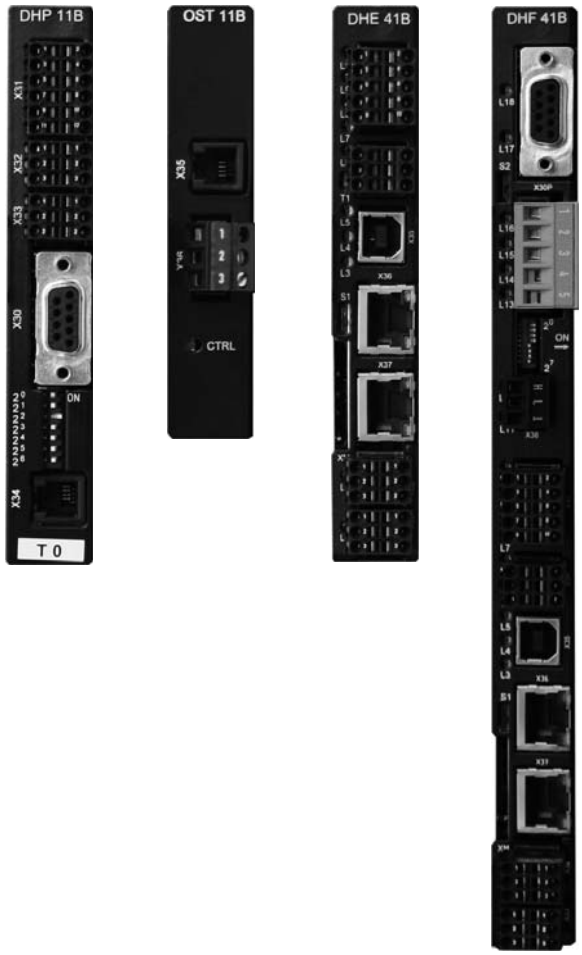
Fieldbus options



Control options

MOVI-PLC®

DHP 11B OST 11B DHE 41B DHF 41B



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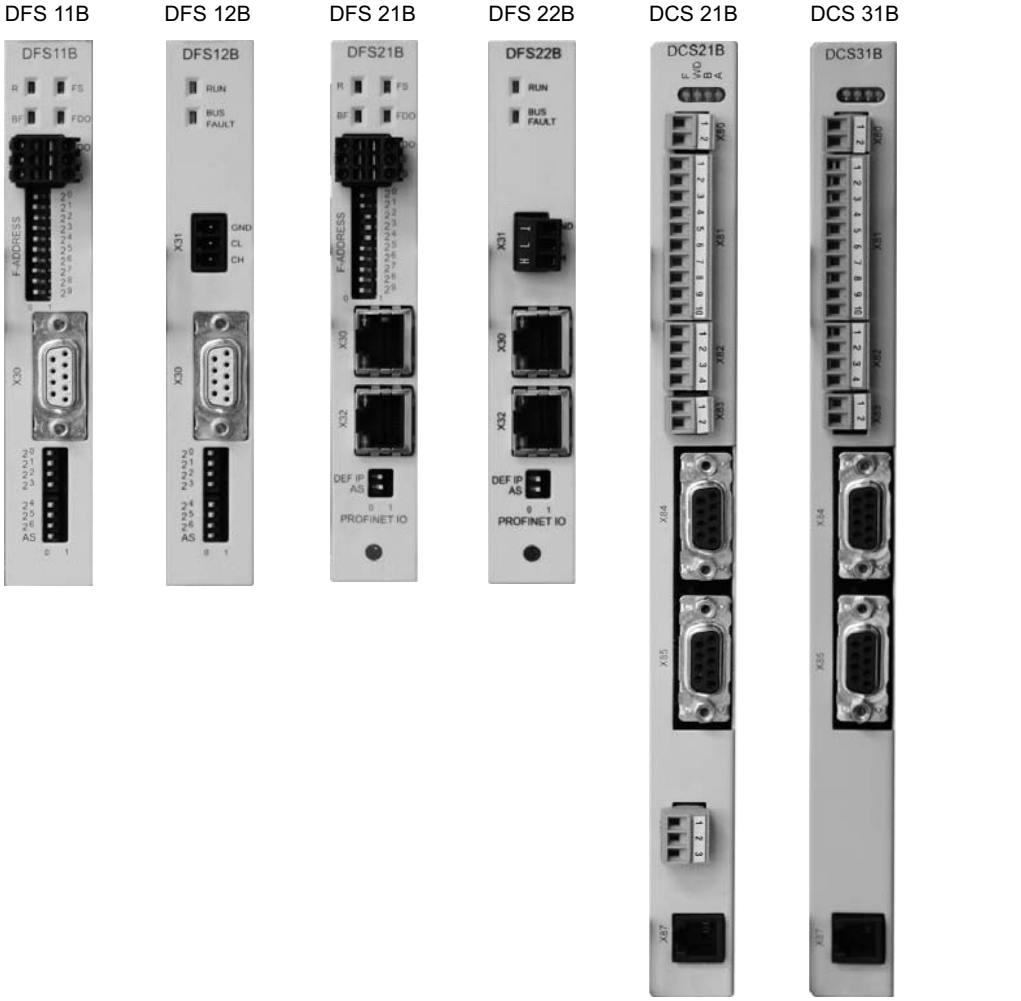
Safety options



General description

MOVIDRIVE® MDX60/61B is the new generation of drive inverters from SEW. The new MOVIDRIVE® B series inverters feature a modular design, provide enhanced functions in the lower power range, more basic functions and greater overload capacity.

AC drives with the latest digital inverter technology can now be used without restrictions in the 0.55 to 160 kW power range. The levels of dynamic performance and control quality that can now be achieved with MOVIDRIVE® for asynchronous AC motors were previously only possible using servo drives or DC motors. The integrated control functionality and the option to extend the drive using technology and communication options creates drive systems that are designed to be particularly cost-effective with regards to the application range, project planning, startup and operation.

Low-emission

The MOVIDRIVE® MDX60B/61B inverters are produced according to particularly low-emission regulations, but with the usual high level of quality. One particular feature is the consistent use of lead-free soldering materials in the production of electronics products. These lead-free processes are in line with the RoHS EU Directive and the law on electronic equipment.

Range of units

The **MOVIDRIVE®** range of units includes three series:

- MOVIDRIVE® MDX60B: Inverter for asynchronous AC motors without encoder feedback. The units are not option-capable.
- MOVIDRIVE® MDX61B: Inverter for asynchronous AC motors with or without encoder feedback, or for asynchronous and synchronous servomotors. The units are option-capable.
- MOVIDRIVE® MDR60A: Regenerative power supply unit; MOVIDRIVE® inverters (400/500 V units) operate in regenerative mode to feed energy back into the supply system.

Unit versions

MOVIDRIVE® MDX60/61B inverters are available in two versions: standard version and application version.

Standard design

The units are equipped with the integrated IPOS$^{plus®}$ positioning and sequence control system as standard. MOVIDRIVE® MDX61B can be expanded with the available options.

The standard version is indicated by the "00" digits at the end of the unit designation.

Application version

In addition to the features of the standard version, these units include the technology functions "electronic cam" and "internal synchronous operation." You can also use all the application modules available in the MOVITOOLS® software package with the application versions.

The application version is indicated by the "0T" digits at the end of the unit designation.

Design with coated printed circuit boards

The units are designed for use in harsh environments. The coating of the printed circuit boards increases their resistivity against environmental conditions.

The version with coated circuit board is indicated by the "00/L" digits at the end of the unit designation.

Modular unit concept

The option-capable MOVIDRIVE® MDX61B units have the following option slots:

- Size 0 (0005 ... 0014) → 2 option slots
  - 1 option slot for encoder connection
  - 1 option slot for a communication option
- Sizes 1 ... 6 (0015 ... 1320) → 3 option slots
  - 1 option slot for encoder connection
  - 1 option slot for a communication option
  - 1 option slot for an expansion option

	NOTES
	• **Installing or removing option cards later is only possible with MDX61B sizes 1 to 6. The firmware of the option cards and the basic unit must be compatible.** • For **MDX61B size 0 units, option cards may only be installed and removed later by SEW-EURODRIVE.** Please take this aspect into account when you place your order/perform project planning.

Size 0 (0005 ... 0014) Sizes 1 ... 6 (0015 ... 1320)

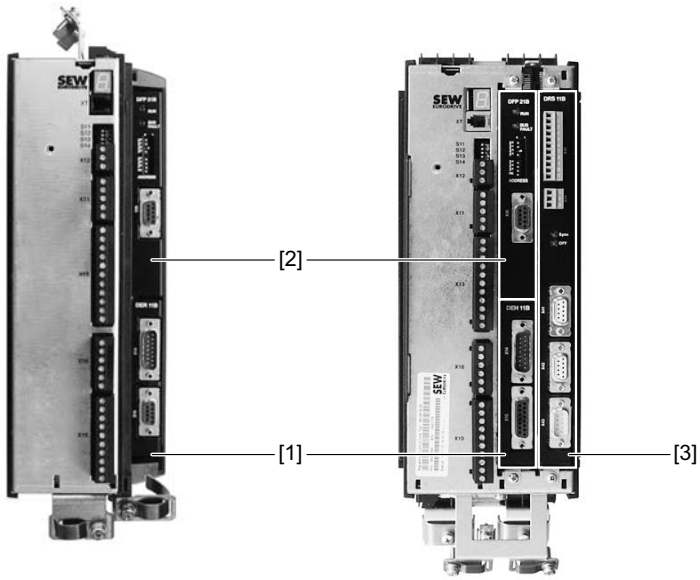


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Figure 1: Option slots for MOVIDRIVE® MDX61B

[1] Encoder slot for encoder option

[2] Fieldbus slot for communication option

[3] Expansion slot for communication option (only sizes 1 - 6)

The modular unit concept allows you to choose the right option according to your application. For example, when you have an asynchronous AC motor with encoder feedback (HIPERFACE®, sin/cos or TTL), you would need the HIPERFACE® encoder card type option DEH11B.

Use	Required option	Option slot
Encoder option		
Asynchronous AC motor with encoder feedback (HIPERFACE®, sin/cos, TTL)	HIPERFACE® encoder card DEH11B	1
Asynchronous or synchronous servomotor with HIPERFACE® encoder		
SSI encoder interface	Absolute encoder card DEH21B	
Synchronous servomotor with resolver	Resolver card type DER11B	
Communication options (fieldbus, control)		
User-programmable MOVI-PLC® controller	MOVI-PLC® *basic* DHP11B controller	2 (3 only if slot 2 is occupied)
Additional RS485 interface (only in combination with option DHP11B)	DHP11B + OST11B	• DHP11B in 2, OST11B in 1 • If 1 is occupied: DHP11B + OST11B in 3
User-programmable MOVI-PLC® controller	MOVI-PLC® *advanced* controller DHE41B	2 (3 only if slot 2 is occupied)
	MOVI-PLC® *advanced* controller DHF41B	3
Additional analog and binary inputs/outputs are required	Input/output card type DIO11B	2 (3 only if slot 2 is occupied)
Integration into a PROFIBUS system	PROFIBUS interface type DFP21B	2
Integration into a PROFIBUS system with PROFIsafe	Fieldbus interface type DFS11B	
Integration into an INTERBUS system	INTERBUS interface type DFI11B / DFI21B	
Integration into an Ethernet system	Ethernet interface type DFE11B, DFE12B, DFE13B, DFE32B; DFE33B	
Integration into an Ethernet system with PROFIsafe	Fieldbus interface type DFS21B	
Integration into an EtherCAT system	EtherCAT interface type DFE24B	
Integration into a DeviceNet system	DeviceNet interface type DFD11B	
Integration into a CANopen system	CANopen interface type DFC11B	
Expansion option		
SSI encoder interface	DIP11B absolute encoder card	3
Phase-synchronous operation	Synchronous operation card DRS11B	
Safety module	DCS21B option (only in conjunction with DFS12B/22B option) / DCS31B	

Control mode

The VFC (Voltage Flux Control) and CFC (Current Flux Control)/SERVO control modes are features of MOVIDRIVE® MDX60B/61B inverters. The continuous calculation of the complete motor model forms the basis for both control modes.

VFC (Voltage Flux Control) control mode	CFC (Current Flux Control)/SERVO control mode
Voltage-controlled control mode for asynchronous AC motors with and without encoder feedback. • With encoder feedback – At least 150 % torque, even with the motor stopped – Characteristics similar to servo operation • Without encoder feedback – at least 150 % torque up to 0.5 Hz	Current-controlled control mode for asynchronous and synchronous servomotors. Encoder feedback is always required. • At least 160 % torque, even with the motor stopped • Maximum precision and concentric running characteristics right down to standstill. • Servo characteristics and torque control even for asynchronous AC motors • Reacts to load changes within a few milli-seconds

System bus (SBus)

The system bus (SBus) is available as standard. It permits several MOVIDRIVE® inverters to be networked together. This system bus enables fast data exchange between the units. The MOVILINK® unit profile is used for communication via the SBus. MOVILINK® is the uniform SEW-EURODRIVE standard for serial communication. The SBus can be switched to CANopen.

MOVILINK®

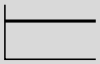
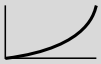
MOVILINK® always uses the same message format independent of the selected interface (SBus, RS232, RS485, fieldbus interfaces). As a result, the control software is independent of the selected interface.

IPOS^{plus}®

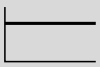
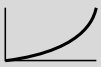
A significant feature of MOVIDRIVE® inverters is that the IPOS^{plus}® positioning and sequence control system is integrated as standard. IPOS^{plus}® enables you to control sequences of motion directly in the inverter, right on the plant floor. That way, load is taken off the master controller and modular concepts can be implemented more easily.

The units at a glance

MOVIDRIVE® MDX60/61B for 3 × AC 380 ... 500 V supply voltage (400/500 V units):

Recommended motor power (VFC)		Contin. output current (CFC)	MOVIDRIVE® type		Size (techn. data)
			MDX60B not option-capable	MDX61B option-capable	
0.55 kW (0.74 HP)	0.75 kW (1.0 HP)	AC 2.0 A	0005-5A3-4-..	0005-5A3-4-..	0 (→ Page 34)
0.75 kW (1.0 HP)	1.1 kW (1.5 HP)	AC 2.4 A	0008-5A3-4-..	0008-5A3-4-..	
1.1 kW (1.5 HP)	1.5 kW (2.0 HP)	AC 3.1 A	0011-5A3-4-..	0011-5A3-4-..	
1.5 kW (2.0 HP)	2.2 kW (3.0 HP)	AC 4.0 A	0014-5A3-4-..	0014-5A3-4-..	
1.5 kW (2.0 HP)	2.2 kW (3.0 HP)	AC 4.0 A	–	0015-5A3-4-..	1 (→ Page 36)
2.2 kW (3.0 HP)	3.0 kW (4.0 HP)	AC 5.5 A	–	0022-5A3-4-..	
3.0 kW (4.0 HP)	4.0 kW (5.4 HP)	AC 7.0 A	–	0030-5A3-4-..	
4.0 kW (5.4 HP)	5.5 kW (7.4 HP)	AC 9.5 A	–	0040-5A3-4-..	
5.5 kW (7.4 HP)	7.5 kW (10 HP)	AC 12.5 A	–	0055-5A3-4-..	2S, 2 (→ Page 37)
7.5 kW (10 HP)	11 kW (15 HP)	AC 16 A	–	0075-5A3-4-..	
11 kW (15 HP)	15 kW (20 HP)	AC 24 A	–	0110-5A3-4-..	
15 kW (20 HP)	22 kW (30 HP)	AC 32 A	–	0150-503-4-..	3 (→ Page 38)
22 kW (30 HP)	30 kW (40 HP)	AC 46 A	–	0220-503-4-..	
30 kW (40 HP)	37 kW (50 HP)	AC 60 A	–	0300-503-4-..	
37 kW (50 HP)	45 kW (60 HP)	AC 73 A	–	0370-503-4-..	4 (→ Page 39)
45 kW (60 HP)	55 kW (74 HP)	AC 89 A	–	0450-503-4-..	
55 kW (74 HP)	75 kW (100 HP)	AC 105 A	–	0550-503-4-..	5 (→ Page 40)
75 kW (100 HP)	90 kW (120 HP)	AC 130 A	–	0750-503-4-..	
90 kW (120 HP)	110 kW 148 HP)	AC 170 A	–	0900-503-4-..	6 (→ Page 41)
110 kW (148 HP)	132 kW (177 HP)	AC 200 A	–	1100-503-4-..	
132 kW (177 HP)	160 kW (215 HP)	AC 250 A	–	1320-503-4-..	

MOVIDRIVE® MDX60/61B for 3 × AC 200 ... 240 V supply voltage (230 V units):

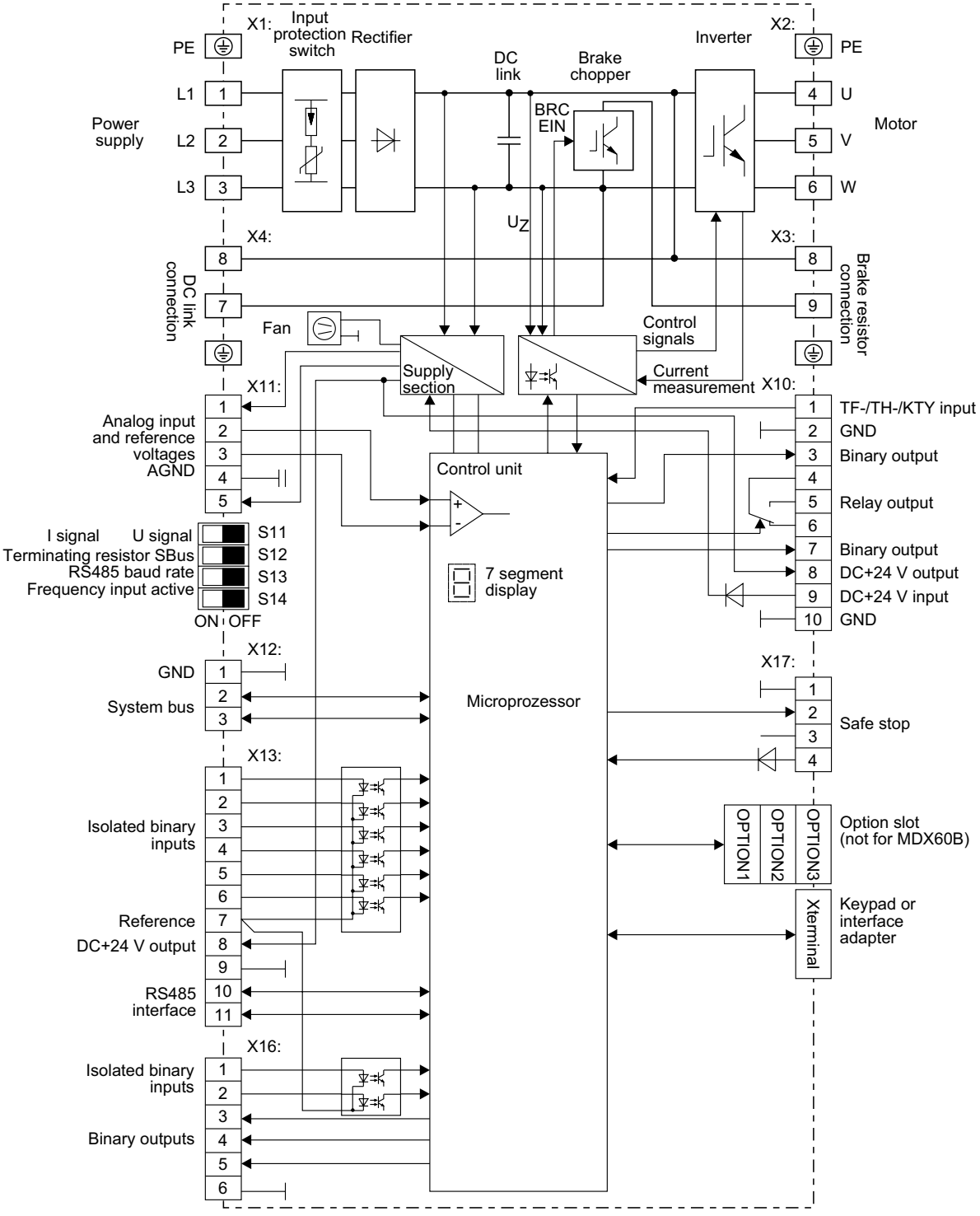
Recommended motor power (VFC)		Contin. output current (CFC)	MOVIDRIVE® type	Size (technical data)
			MDX61B option-capable	
1.5 kW (2.0 HP)	2.2 kW (3.0 HP)	AC 7.3 A	0015-2A3-4-..	1 (→ Page 42)
2.2 kW (3.0 HP)	3.7 kW (5.0 HP)	AC 8.6 A	0022-2A3-4-..	
3.7 kW (5.0 HP)	5.0 kW (7.0 HP)	AC 14.5 A	0037-2A3-4-..	
5.5 kW (7.4 HP)	7.5 kW (10 HP)	AC 22 A	0055-2A3-4-..	2 (→ Page 43)
7.5 kW (10 HP)	11 kW (15 HP)	AC 29 A	0075-2A3-4-..	
11 kW (15 HP)	15 kW (20 HP)	AC 42 A	0110-203-4-..	3 (→ Page 44)
15 kW (20 HP)	22 kW (30 HP)	AC 54 A	0150-203-4-..	
22 kW (30 HP)	30 kW (40 HP)	AC 80 A	0220-203-4-..	4 (→ Page 45)
30 kW (40 HP)	37 kW (50 HP)	AC 95 A	0300-203-4-..	

MOVIDRIVE® MDR60A regenerative power supply units for 400/500 V units:

MOVIDRIVE® MDR60A regenerative power supply units		Size (technical data)	MOVIDRIVE®MDX60B/61B...-5_3
0370-503-00	I_{supply} = AC 66 A, I_{ZK} = DC 70 A	3, 4, 6 (→ page 60)	0005 ... 0370
0750-503-00	I_{supply} = AC 117 A, I_{ZK} = DC 141 A		0005 ... 0750
1320-503-00	I_{supply} = AC 260 A, I_{ZK} = DC 340 A		0005 ... 1320

Block circuit diagram

The following block circuit diagram shows the basic structure and theory of operation of MOVIDRIVE® MDX60B/61B drive inverters.



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1.2 Functions / features

Unit properties

- Wide voltage range
  - 400/500 V units for the voltage range 3 × AC 380 ... 500 V
  - 230 V units for the voltage range 3 × AC 200 ... 240 V
- High overload capacity
  - Size 0: 200 % I_N for at least 60 s
  - Sizes 1 ... 6: 150 % I_N for at least 60 s
  - All sizes: 125 % I_N sustained for operation without overload (pumps, fans)
- With 4 kHz switching frequency, I_N is permitted for an ambient temperature ϑ = 50 °C
- 4Q capability due to integrated brake chopper installed as standard
- Compact unit mounting position for minimum control cabinet space requirement and optimum utilization of control cabinet volume
- Integrated input filter fitted as standard in sizes 0, 1, 2S and 2, adherence to class C2 limit on the input side without any additional measures
- 8 isolated binary inputs and 6 binary outputs, one of which is a relay output; programmable inputs/outputs
- 1 TF/TH/KTY input for motor protection using a PTC thermistor or thermocontact
- 7-segment display for operating and fault states
- Separate DC 24 V voltage input for powering the inverter electronics (parameter setting, diagnostics and data storage even when the supply system is switched off)
- Separable electronic terminals
- Separable power terminals for size 0 and 1 units
- Safe stop according to EN 954-1

Control function

- VFC or CFC control modes for field-oriented operation (asynchronous servo)
- IPOS$^{plus®}$, positioning and sequence control system integrated as standard
- 2 complete parameter sets
- Automatic motor calibration
- Automatic brake control by the inverter
- DC braking to decelerate the motor even in 1Q mode
- Energy-saving function for optimizing the magnetization current automatically
- Slip compensation for high stationary speed accuracy, even without encoder feedback
- Flying restart function for synchronizing the inverter to an already rotating SEW motor
- Hoist capability with all motor systems which can be connected
- Motor stall protection through sliding current limitation in the field weakening range
- Function to hide speed window to avoid mechanical resonances
- Heating current for avoiding condensation in the motor
- Parameter lock for protection against changes to parameters
- Speed controller and encoder input for incremental, Hiperface® or SSI encoders and resolver. Control setting supported conveniently in the user interface.
- Protective functions for complete protection of the inverter and motor (short-circuit, overload, overvoltage/undervoltage, ground fault, excess temperature in the inverter, motor stall prevention, excess temperature in the motor)

- Speed monitoring and monitoring of the motor and regenerative limit power
- Programmable signal range monitoring (speed, current, maximum current)
- Memory for displaying x/t diagrams using SCOPE process data visualization four channels (8 channels, real-time capable)
- Fault memory (5 memory locations) with all relevant operating data at the moment of the fault
- Elapsed-hour counter for hours of operation (unit connected to power supply or DC 24 V) and enable hours (output stage energized)
- Modular option technology for application-specific unit configuration
- Uniform operation, identical parameter setting and the same unit connection technology for the entire MOVIDRIVE® unit series

Setpoint technology

- Ramp switchover (total of 4 ramps)
- Motor potentiometer, can be combined with analog setpoint and internal fixed setpoints
- External setpoint selections: DC (0 ... +10 V, –10 V ... +10 V, 0 ... 20 mA, 4 ... 20 mA)
- S pattern for jerk-free speed changes
- Programmable input characteristic for flexible setpoint processing
- 6 bipolar fixed setpoints which can be mixed with external setpoints and motor potentiometer function
- Primary frequency input
- Adjustable jerk limitation

Communication / operation

- System bus for networking max. 64 MOVIDRIVE® units to one another
- RS485 interface for communication between one PLC/IPC and up to 31 inverters
- Simple startup and parameter setting using the keypad or PC
- Pluggable memory module for quick unit replacement during service

System expansion

- Extensive expansion options, for example:
  - Removable plain text keypad with parameter memory
  - USB11A, RS232 ↔ RS485 interface adapter
  - Fieldbus interface, either PROFIBUS, INTERBUS, Ethernet, DeviceNet, CAN/CANopen
  - Input/output card
  - Braking resistors, line filters, line chokes, output chokes, output filters
- MOVITOOLS® operating software with SCOPE process data visualization
- Application version with access to technology functions and application modules for specific applications
- MOVIDRIVE® MDR60A regenerative power supply unit. Regenerative energy is fed back into the supply system, which removes the thermal load from the control cabinet and saves costs.

Standards / certificates

- UL, cUL, C-Tick approval. The MOVIDRIVE® MDR60A1320-503-00 unit does not have UL or cUL or C-Tick approval. The GOST-R certificate (Russia) is approved for the MOVIDRIVE® range of units.
- Safe disconnection of power and electronic connections according to EN 61800-5-1.
- Compliance with all the requirements for CE certification of machines and plant equipped with MOVIDRIVE® on the basis of the EC Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC. Compliance with EMC product standard EN 61800-3
- Complies with the safety requirement "Safe stop" according to EN 954-1, category 3
- Approved for use in applications for performance level d according to EN ISO 13849-1

1.3 Additional functions of the application version

SEW-EURODRIVE offers additional functions for special applications. You can use these additional functions with MOVIDRIVE® units in the application version (...-0T).

The following additional functions are available:

- Electronic cam disk
- Internal synchronous operation

	NOTE
	Refer to the "Electronic Cam" and "Internal Synchronous Operation" manuals for detailed information about the additional functions.

Electronic cam

You can use the MOVIDRIVE® range of units with "electronic cam" whenever you need to harmonize complex sequences of motion in cyclical machines. This solution gives you much greater flexibility in comparison to the mechanical cam. As a result, it meets the needs of modern production and processing lines.

A user-friendly cam editor supports you during startup. You also have the option of importing existing cam data. You can also set application-specific parameters for the engagement and disengagement phases using the cam editor.

Note the following points:

- The "electronic cam" can only be implemented with MOVIDRIVE® units in application version (...-0T).
- Encoder feedback is mandatory. This is why the "electronic cam" can only be realized in "CFC", "SERVO" and "VFC-n control" operating modes with master/slave connection via X14-X14 or with an SBus connection.
- The "electronic cam" is only available in parameter set 1.
- The "synchronous operation card type DRS11B" option cannot be used together with the "electronic cam" function.

Motors and encoders

Use the following motor types:

- For operation with MOVIDRIVE® MDX61B...-4-0T:
  - CT/CV asynchronous servo motor, high-resolution sin/cos encoder installed as standard or HIPERFACE® encoder.
  - DT/DV/D series AC motors with incremental encoder option, preferably high-resolution sin/cos encoder or HIPERFACE® encoder.
  - Synchronous servomotors DS/CM/CMD/CMP, resolver (installed as standard) or HIPERFACE® encoder

High-resolution speed measurement is required for optimum operation of the electronic cam. The encoders installed as standard on CT/CV and DS/CM/CMD/CMP motors fulfill these requirements. SEW-EURODRIVE recommends using high-resolution sin/cos encoders as incremental encoders if DR/DT/DV/D motors are used.

Example

The figure below shows a typical application for the "electronic cam." Filled yogurt pots are transported for further processing. The "electronic cam" function allows for smooth movement, which is an important requirement for this application.

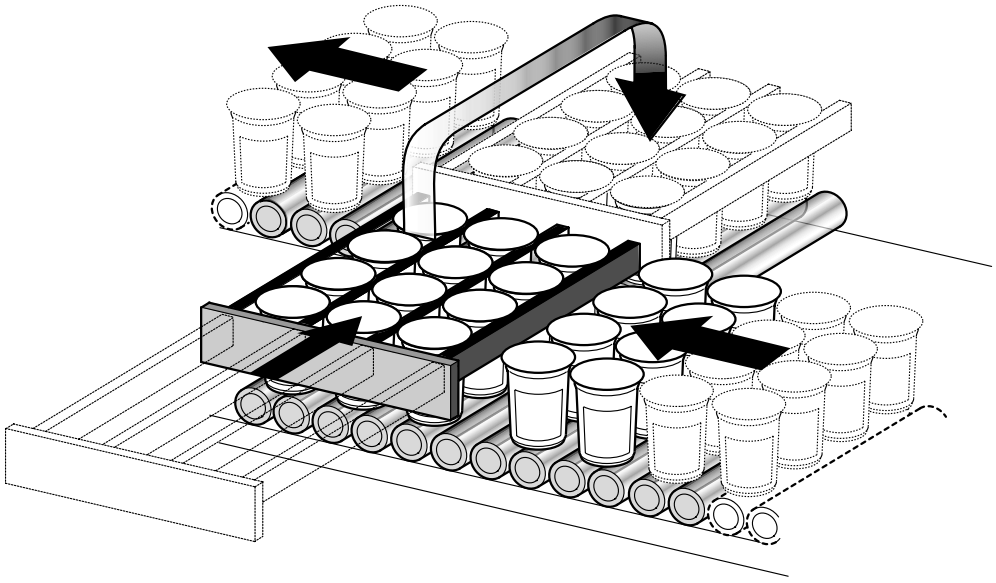

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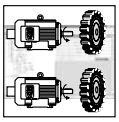
Figure 2: Application example for the "electronic cam."

Internal synchronous operation



You can always use the MOVIDRIVE® range of units with "internal synchronous operation" whenever a group of motors has to be operated at a synchronous angle in relation to one another or with an adjustable proportional ratio (electronic gear). A user-friendly editor guides you through the startup procedure.

Note the following points:

- "Internal synchronous operation" can only be implemented with MOVIDRIVE® MDX61B units in application version (...-0T).
- Encoder feedback is mandatory. This is why "internal synchronous operation" can only be realized in "CFC", "SERVO" and "VFC-n control" operating modes with master/slave connection via X14-X14 or with an SBus connection.
- "Internal synchronous operation" is only available in parameter set 1.
- The "synchronous operation card DRS11B" option cannot be used together with "internal synchronous operation."

Motors and encoders

Use the following motor types for operation with MOVIDRIVE® MDX61B...-4-0T:

- CT/CV asynchronous servo motor, high-resolution sin/cos encoder installed as standard or HIPERFACE® encoder.
- DT/DV/D series AC motors with incremental encoder option, preferably high-resolution sin/cos encoder or HIPERFACE® encoder.
- Synchronous servomotors DS/CM/CMD/CMP, resolver (installed as standard) or HIPERFACE® encoder

High-resolution speed measurement is required for optimum operation of the "internal synchronous operation." The encoders installed as standard on CT/CV and DS/CM/CMD/CMP motors fulfill these requirements. SEW-EURODRIVE recommends using high-resolution sin/cos encoders as incremental encoders if DR/DT/DV/D motors are used.

Example

The figure below shows a typical application for the "internal synchronous operation." Extruder material must be cut to length. The saw receives a start signal and synchronizes with the material. During the sawing process, the saw moves synchronously with the material. At the end of the sawing process the saw moves back to its starting position.

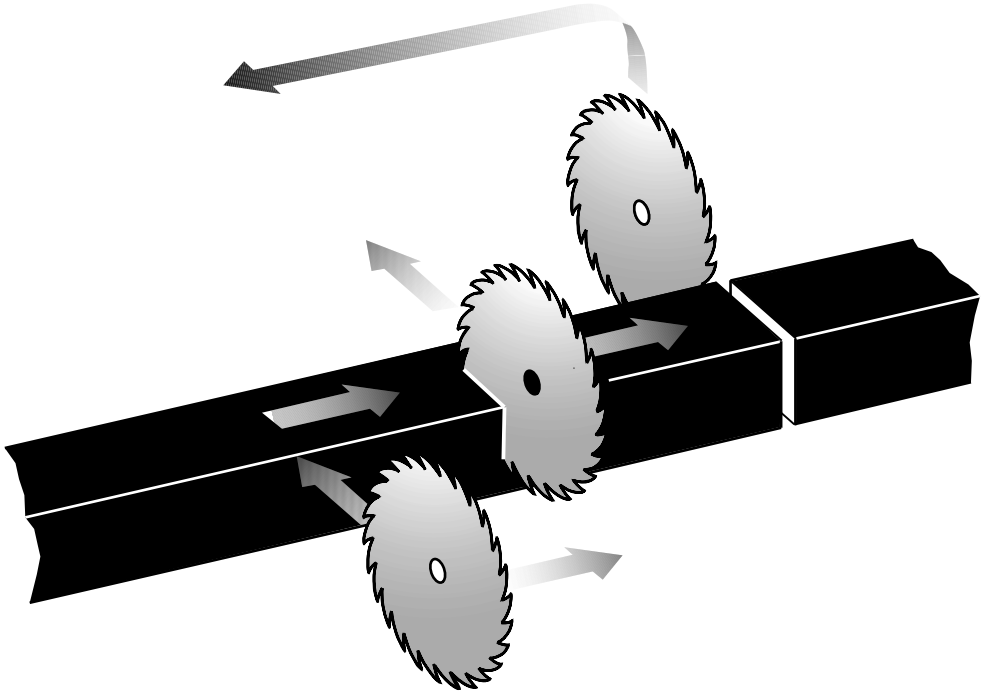


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Figure 3: Typical application for the "internal synchronous operation" function

1.4 Application modules for MOVIDRIVE® MDX61B

The application

The drive application often involves more than just adjusting the speed of a motor. The inverter often has to control motion sequences and take on typical PLC tasks. More and more complex drive applications have to be solved, without this resulting in lengthy project planning and startup.

The solution with MOVIDRIVE®

SEW-EURODRIVE offers various standardized control programs specifically for "positioning," "winding" and "controlling" applications. These programs are called application modules. The application modules are incorporated into the MOVITOOLS® operating software and can be used with units in the technology version.

A user-friendly operator interface guides you through the process of setting the parameters. All you have to do is enter the parameters you need for your application. The application module uses these parameters to generate the control program and loads it into the inverter. MOVIDRIVE® takes over complete control of the motion processes, the load is taken off the machine control and decentralized concepts are easier to implement.

The benefits at a glance

- Wide range of functions
- User-friendly user interface
- You only have to enter the parameters needed for the application
- Guided parameter setting process instead of complicated programming
- No programming know-how required
- No lengthy training, therefore quick project planning and startup
- Control of all movement functions is performed directly in MOVIDRIVE®
- Decentralized concepts can be implemented more easily

Scope of delivery and documentation

The application modules are part of the MOVITOOLS® operating software and can be used with MOVIDRIVE® MDX61B units in application version (...-0T). The individual application manuals can also be downloaded as PDFs from the SEW homepage.

Available application modules

The application modules currently available are listed below. These application modules are explained in the following pages.

Positioning

Linear movement; the inverter manages the movement records:

- Table positioning via terminal or fieldbus

Linear movement; the PLC manages the movement records:

- Bus positioning
- Extended positioning via bus
- Absolute positioning (Rapid/creep speed positioning)

Rotary motion:

- Module positioning via terminals: The inverter manages the movement records
- Module positioning via fieldbus: The PLC manages the movement records

Winding

- Center winder

Controlling

- Flying saw
- DriveSync via fieldbus
- Sensor-based positioning

Application

The following illustration shows an example of how the various SEW application modules are used in a block warehouse.

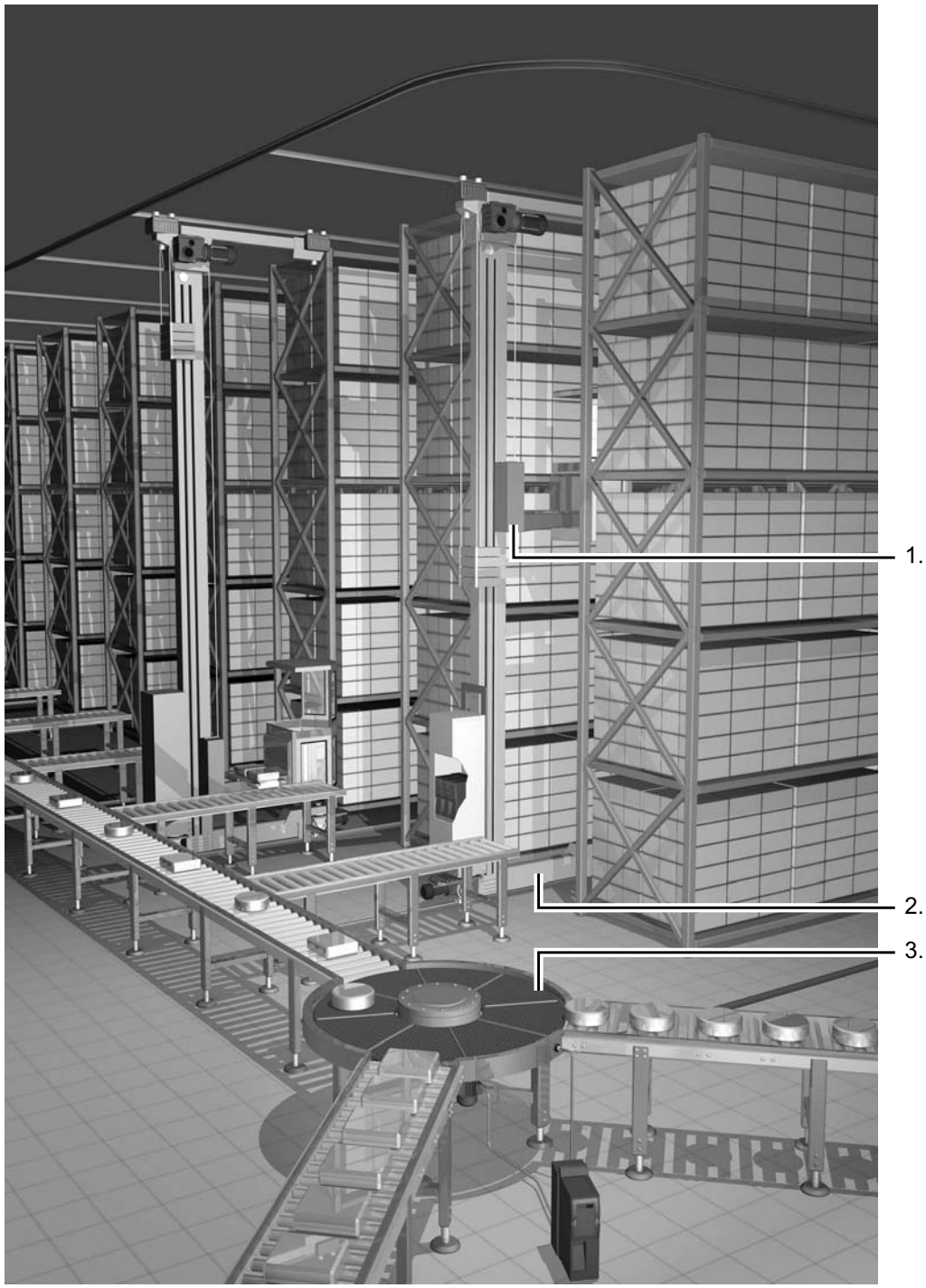

Figure 4: Use in a high-bay warehouse

1. Hoist: Table positioning
2. Travel axis: Absolute value or bus positioning
3. Rotary distributor: Modulo positioning

Positioning

The application modules for the "Positioning" application are suited to all applications where target positions are specified and movement takes place to those positions. Movement can either be linear or rotatory.

Such sequences of motions include trolleys, hoists, gantries, rotary tables, swiveling devices and storage and retrieval units for high-bay warehouses.

Linear positioning

In the case of application modules for linear positioning, SEW-EURODRIVE distinguishes between whether the movement records are administered in the inverter or in the higher-level PLC.

Movement records in the inverter

- **Table positioning via terminals**
- **Table positioning via fieldbus**

These application modules are suited to applications in which movement only has to take place to a limited number of different target positions and in which the highest possible degree of independence from the machine control is required.

Up to 32 movement records can be managed in the inverter in these application modules. A movement record comprises target position, speed and ramp. The target position to which movement is to take place is selected using binary code, by means of the binary inputs of the inverter or via the virtual terminals (fieldbus, system bus). These application modules come with the following range of features:

- Up to 32 table positions can be defined and selected.
- The travel speed can be selected for each positioning movement.
- The ramp can be set separately for each positioning movement.
- Software limit switches can be defined and evaluated.
- Either increment or absolute encoders can be evaluated.
- Guided startup and diagnostics.

There are 4 operating modes for controlling the machine:

- Jog mode: The machine can be moved manually.
- Reference travel: The machine zero is determined automatically for incremental position measurement.
- Teach-In: The saved position can be corrected without a programming device.
- Automatic mode: Higher-level PLC controls the process automatically.

Movement records in the PLC

- **Bus positioning**
- **Extended positioning via bus**

These application modules are suited to applications with a large number of different target positions.

The movement records are managed in the PLC for these application modules. The target position and travel speed are specified via the fieldbus or system bus. These application modules come with the following range of features:

- Any number of target positions can be defined and selected by means of a field-bus/system bus.
- The travel speed can be selected as required via the fieldbus / system bus for each positioning movement.
- Software limit switches can be defined and evaluated.

- Either increment or absolute encoders can be evaluated.
- Straightforward connection to the machine control.
- Guided startup and diagnostics.

There are 3 operating modes for controlling the machine:

- Jog mode: The machine can be moved manually.
- Reference travel: The machine zero is determined automatically for incremental position measurement.
- Automatic mode: Higher-level PLC controls the process automatically.

- **Absolute positioning (rapid/creep speed positioning)**

In this application module, the movement records are also managed in the PLC and specified via the fieldbus or system bus. No motor encoder is required. The absolute encoder mounted on the travel path is used for positioning. This application module comes with the following range of features:

- Any number of target positions can be defined and selected by means of a fieldbus/system bus.
- Software limit switches can be defined and evaluated.
- Only absolute encoders are used for position measurement.
- No motor encoder is required.
- Straightforward connection to the machine control.
- Guided startup and diagnostics.

There are 2 operating modes for controlling the machine:

- Jog mode: The machine can be moved manually.
- Automatic mode: Higher-level PLC controls the process automatically.

Rotational positioning

- **Modulo positioning**

A large number of movements have to be controlled in automated conveyor and logistics applications to transport the material. Linear movements in the form of trolleys or hoists, and rotary movements via rotary tables play an important role in these applications.

Rotary movements are often synchronized (circular transfer tables); the material is fed at a specific degree value. However, there are also many rotational applications in which the material should be moved to its destination by the shortest possible route (distance-optimized positioning) or in which it is only permitted to move to the target position in a defined direction of rotation (positioning with fixed direction of rotation).

The position axis is represented on a numbered circle from 0° to 360° to meet these requirements. The actual position is always in this range.

The "modulo positioning" application module accomplishes these tasks using various operating modes which are selected via binary inputs (16 table positions) or virtual terminals (control via fieldbus, variable positions).

The following operating modes are available for controlling the machine:

- Jog mode
- Teach mode (terminal control only)
- Referencing mode
- Automatic mode with position optimization
- Automatic mode with direction of rotation inhibit (clockwise - counterclockwise)
- Synchronous automatic mode

The "modulo positioning" module offers the following advantages:

- User-friendly user interface
- Only the parameters required for Modulo positioning (number of teeth in the gear unit, speed) have to be entered
- Guided parameter setting instead of complicated programming
- Monitor mode for optimum diagnosis
- Users do not need any programming experience
- Rapid familiarization with the system

Winding

- **Center winder**

The "Central winder" application module is suitable for applications in which endless material, such as paper, plastic, fabrics, sheet metal or wire, must be wound, unwound or rewound continuously.

Control takes place either via the binary inputs of the inverter or using the virtual terminals (fieldbus, system bus).

The "Central winder" application module comes with the following range of features:

- Constant tensile force or web speed independent of the diameter.
- Automatic calculation of the speed-dependent friction factors via a teach-in run.
- Winding characteristics to prevent the winding material from becoming loose.
- Binary selection of 4 different winding cores.
- Diameter can be determined using a diameter calculator (master encoder required) or an analog input (distance sensor required).
- Free-running function (jog).
- CW/CCW winding, winding/unwinding.
- Simple connection to the master controller (PLC).
- Guided startup and diagnostics.

There are 4 operating modes for controlling the machine:

- Jog mode: The machine can be moved to the right or the left manually.
- Teach-in run: The speed-dependent friction factors are determined automatically.
- Automatic mode with constant tension.
- Automatic mode with constant velocity.

Controlling

- **Flying saw**

The "Flying saw" application module is suited to applications in which endless material has to be cut, sawn or pressed, for example in diagonal saws or flying punches.

This application module is used to control the sequence of motion according to specific values. This application module comes with the following range of features:

- Choice of fieldbus or terminal control.
- Cut edge protection or sorting using the "pulling a gap" function.
- Immediate cut function by manual interrupt.
- Counter for material length.
- Straightforward connection to the machine control.
- Guided startup and diagnostics.

There are 4 operating modes for controlling the machine:

- Jog mode: The machine can be moved manually.
- Reference travel: The system reference point is determined.
- Positioning mode
- Automatic mode

- **DriveSync via fieldbus**

The "DriveSync via fieldbus" application module makes it possible to implement conveyor systems and machinery with drives that have to move at a synchronous angle to one another occasionally or permanently.

The program can be used for the master drive and the slave drive. The master works in the "Jog" and "Positioning" operating modes, while the slave drives are operated in "synchronous operation" mode.

If the "Synchronous operation" mode is deselected for the slave drives, they can be operated with free-running in "Jog" and "Positioning" operating modes.

The "DriveSync via fieldbus" application module comes with the following range of features:

- Guided startup as well as extensive diagnostic functions.
- High degree of similarity with "Extended positioning via bus."
- One program module for the master and slave drive.
- The selected IPOS$^{plus®}$ encoder source is also effective in synchronous operation.
- The master value for the "synchronous operation" mode can be adjusted.
- A mechanical vertical shaft can be replaced by transferring the virtual master value via an SBus connection.
- Endless rotation is supported by the modulo function.

Four operating modes are available for controlling the application:

- Jog mode
- Reference travel
- Positioning mode
- Synchronous operation
  - The electrical connection of the master/slave can be made using the X14 encoder connection or an SBus connection.
  - If the SBus connection is used, the content of the send object can be adjusted.
  - Time or position-related sequence of motion for synchronization processes.
  - The startup cycle process can also be started with interrupt control.

- **Sensor-based positioning**

This application module is used to position the drive using an external sensor signal plus an adjustable remaining distance. This application module is especially suitable for applications in the following industrial sectors:

- Materials handling
  - Trolleys
  - Hoists
  - Rail vehicles
- Logistics
  - Storage and retrieval units
  - Transverse carriages

1.5 MOVITOOLS® operating software

Description

MOVITOOLS® is a program package comprising SHELL, SCOPE and the IPOS$^{plus®}$ Compiler. MOVITOOLS® can be used for the MOVIDRIVE® MDX60B/61B and MOVIDRIVE® *compact* range of units.

- SHELL can be used for starting up the drive and setting its parameters in a convenient way.
- SCOPE provides extensive oscilloscope functions for drive diagnostics.
- IPOS$^{plus®}$ Compiler provides a convenient way of writing programs for applications in a high-level language.
- The assembler enables you to write programs directly on the machine.
- The device status shows the status of the connected unit.

Various application modules, such as table positioning, are already stored in MOVITOOLS® as IPOS$^{plus®}$ programs and can be activated using the application version units.

MOVITOOLS® is supplied on a CD-ROM and can also be downloaded from the SEW homepage (http://www.sew-eurodrive.de). MOVITOOLS® can be operated with the following operating systems:

- Windows® 95
- Windows® 98
- Windows NT® 4.0
- Windows® 2000
- Windows® Me
- Windows® XP

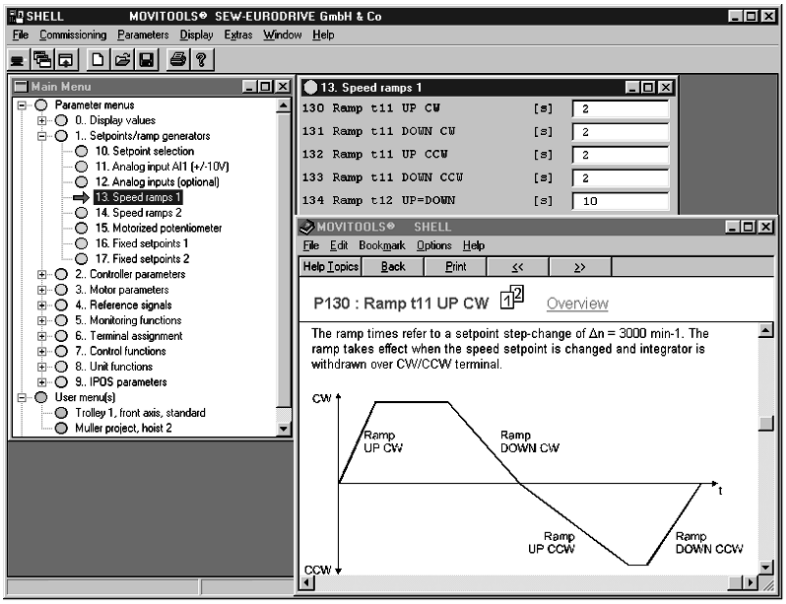

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Figure 5: MOVITOOLS® window

2 Technical Data and Dimension Sheets

2.1 CE-marking, UL approval and C-Tick

CE marking

- Low voltage directive

  MOVIDRIVE® MDX60B/61B inverters comply with the regulations of the Low Voltage Directive 2006/95/EC.
- Electromagnetic compatibility (EMC)

  The designated use of MOVIDRIVE® inverters and regenerative power supply units is as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Variable-speed electrical drives." Provided the installation instructions are complied with, they satisfy the relevant requirements for the CE marking for the entire machine/system in which they are installed, on the basis of the EMC Directive 89/336/EEC. For detailed information on EMC compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.
- Compliance with limit classes C1 or C2 has been tested on a specified test setup. SEW-EURODRIVE can provide detailed information on request.

CE

The CE-mark on the nameplate indicates conformity with the low voltage directive 2006/95/EC. We can provide a declaration of conformity on request.

UL/cUL/GOST-R

c UL us

GOST

UL, cUL approval (USA) and the GOST-R certificate (Russia) have been approved for the entire MOVIDRIVE® unit series. cUL is equivalent to CSA approval.

C-Tick

C-Tick approval has been granted for the entire MOVIDRIVE® range of units. C-Tick certifies conformity with ACMA (Australian Communications and Media Authority) standards.

2.2 General technical data

The following table lists the technical data applicable to all MOVIDRIVE® MDX60B/61B inverters, regardless of their type, version, size and performance.

MOVIDRIVE® MDX60B/61B	All sizes
Interference resistance	Complies with EN 61800-3
Interference emission with EMC compliant installation	Sizes 0 to 6 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, and 2 in accordance with limit value class C2 to EN 61800-3 without additional measures Size 6 in accordance with limit value class C2 to EN 61800-3 with corresponding line filter
Ambient temperature ϑ_U	0 °C...+50 °C at I_D = 100 % I_N and f_{PWM} = 4 kHz 0 °C...+40 °C at I_D = 125 % I_N and f_{PWM} = 4 kHz 0 °C...+40 °C at I_D = 100 % I_N and f_{PWM} = 8 kHz
I_N reduction Ambient temperature	2.5 % I_N per K between 40 °C - 50 °C 3 % I_N per K at 50 °C - 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)
Enclosure EN 60529 (NEMA1) **Sizes 0 to 3** **Sizes 4 to 6**	 IP20 IP00 (power connections) IP10 (power connections) with • fitted plexiglass cover supplied as standard and • shrink tubing (not included in scope of delivery)
Operating mode	Continuous operation 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)
Installation altitude **h**	Up to h ≤ 1000 m (3281 ft) without restrictions. At h ≥ 1000 m (3281 ft), the following restrictions apply: • from 1,000 m (3281 ft) to max. 4000 m (13120 ft): – I_N reduction by 1% per 100 m (328 ft) • from 2000 m (6562 ft) to max. 4000 m (13120 ft): – AC -230 V units: U_N reduction by AC 3 V per 100 m (328 ft) – AC -500 V units: U_N reduction by AC 6 V per 100 m (328 ft) Over 2000 m (6562 ft) only overvoltage class 2, external measures are required for overvoltage class 3. Overvoltage classes according to DIN VDE 0110-1.

1) In case of long-term storage, the unit must be connected to the mains voltage for at least 5 minutes, otherwise the unit's service life may be reduced.

MOVIDRIVE® MDX60B/61B series, size 0

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Figure 6: MOVIDRIVE® MDX60/61B series, size 0

MOVIDRIVE® MDX61B series, sizes 1 to 6

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Figure 7: MOVIDRIVE® MDX61B series, sizes 1 to 6

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

Size 0

MOVIDRIVE® MDX60/61B		0005-5A3-4-0_	0008-5A3-4-0_	0011-5A3-4-0_	0014-5A3-4-0_
Size		0S		0M	
INPUT					
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V			
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %			
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 1.8 A AC 2.3 A	AC 2.2 A AC 2.7 A	AC 2.8 A AC 3.5 A	AC 3.6 A AC 4.5 A
OUTPUT					
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	1.4 kVA	1.6 kVA	2.1 kVA	2.8 kVA
Rated output current[1] (at V_{supply} = 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) I_D (at V_{supply} = 3 × AC 400 V and f_{PWM} = 4 kHz)		AC 2.5 A	AC 3 A	AC 3.8 A	AC 5 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V and f_{PWM} = 8 kHz)		AC 2 A	AC 2.4 A	AC 3.1 A	AC 4 A
Current limitation	I_{max}	Motor and regenerative 200 % I_N, duration depending on capacity utilization			
Internal current limitation		I_{max} = 0..0.200 % adjustable			
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	68 Ω			
Output voltage	U_A	Max. V_{supply}			
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz			
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range			
GENERAL INFORMATION					
Power loss at S_N[2]	P_{Vmax}	42 W	48 W	58 W	74 W
Cooling air consumption		3 m^3/h		9 m^3/h	
Cross section of unit terminals X1, X2, X3, X4		Disconnectable terminal strip 4 mm^2 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_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B standard version Design with coated printed circuit boards	0005-5A3-4-00 0005-5A3-4-00/L	0008-5A3-4-00 0008-5A3-4-00/L	0011-5A3-4-00 0011-5A3-4-00/L	0014-5A3-4-00 0014-5A3-4-00/L
Part number	827 722 2 828 947 6	827 723 0 828 948 4	827 724 9 828 949 2	827 725 7 828 950 6
MDX61B Application version **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	827 726 5 828 951 4	827 727 3 828 952 2	827 728 1 828 953 0	827 729 X 828 954 9
Constant load **Recommended motor power P_{Mot}**	0.55 kW (0.74 HP)	0.75 kW (1.0 HP)	1.1 kW (1.5 HP)	1.5 kW (2.0 HP)
Variable torque load or constant load without overload **Recommended motor power P_{Mot}**	0.75 kW (1.0 HP)	1.1 kW (1.5 HP)	1.5 kW (2.0 HP)	2.2 kW (3.0 HP)
Weight	2.0 kg (4.4 lb)		2.5 kg (5.5 lb)	
Dimensions W × H × D	45 mm × 317 mm × 260 mm (1.8 in x 12.5 in x 10.2 in)		67.5 mm × 317 mm × 260 mm (6.76 cm x 12.5 in x 10.2 in)	

MDX61B standard version (VFC/CFC/SERVO) Design with coated printed circuit boards	0005-5A3-4-00 0005-5A3-4-00/L	0008-5A3-4-00 0008-5A3-4-00/L	0011-5A3-4-00 0011-5A3-4-00/L	0014-5A3-4-00 0014-5A3-4-00/L
Part number	827 730 3 828 955 7	827 731 1 828 956 5	827 732 X 828 957 3	827 733 8 828 958 1
MDX61B Application 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	827 734 6 828 960 3	827 735 4 828 961 1	827 736 2 828 963 8	827 737 0 828 964 6
Weight	2.3 kg (5.1 lb)		2.8 kg (6.2 lb)	
Dimensions W × H × D	72.5 mm × 317 mm × 260 mm (2.85 in ×12.5 in ×10.2 in)		95 mm × 317 mm × 260 mm (3.7 in ×12.5 in ×10.2 in)	
Recommended motor power	→ section "Motor selection"			

Size 1 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0015-5A3-4-0_	0022-5A3-4-0_	0030-5A3-4-0_	0040-5A3-4-0_
INPUT					
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V			
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %			
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 3.6 A AC 4.5 A	AC 5.0 A AC 6.2 A	AC 6.3 A AC 7.9 A	AC 8.6 A AC 10.7 A
OUTPUT					
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	2.8 kVA	3.8 kVA	4.9 kVA	6.6 kVA
Rated output current[1] (at V_{supply} = 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) I_D (at V_{supply} = 3 × AC 400 V and f_{PWM} = 4 kHz)		AC 5 A	AC 6.9 A	AC 8.8 A	AC 11.9 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V and f_{PWM} = 8 kHz)		AC 4 A	AC 5.5 A	AC 7 A	AC 9.5 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization			
Internal current limitation		I_{max} = 0...150 % adjustable			
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	68 Ω			
Output voltage	U_A	Max. V_{mains}			
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz			
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range			
GENERAL INFORMATION					
Power loss at S_N[2]	P_{Vmax}	85 W	105 W	130 W	180 W
Cooling air consumption		40 m^3/h			
Weight		3.5 kg (7.7 lb)			
Dimensions	W × H × D	105 mm × 314 mm × 234 mm (4.13 in × 12.4 in × 9.21 in)			
Cross section of unit terminals X1, X2, X3, X4		Disconnectable terminal strip 4 mm^2 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_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards	**0015-5A3-4-00 0015-5A3-4-00/L**	**0022-5A3-4-00 0022-5A3-4-00/L**	**0030-5A3-4-00 0030-5A3-4-00/L**	**0040-5A3-4-00 0040-5A3-4-00/L**
Part number	827 957 8 1840 013 2	827 958 6 1840 014 0	827 959 4 1840 015 9	827 960 8 1840 016 7
MDX61B Application version Design with coated printed circuit boards	**0015-5A3-4-0T 0015-5A3-4-0T/L**	**0022-5A3-4-0T 0022-5A3-4-0T/L**	**0030-5A3-4-0T 0030-5A3-4-0T/L**	**0040-5A3-4-0T 0040-5A3-4-0T/L**
Part number	827 975 6 1840 031 0	827 976 4 1840 032 9	827 977 2 1840 033 7	827 978 0 1840 034 5
Constant load Recommended motor power P_{Mot}	1.5 kW (2.0 HP)	2.2 kW (3.0 HP)	3.0 kW (4.0 HP)	4.0 kW (5.4 HP)
Variable torque load or constant load without overload Recommended motor power P_{Mot}	2.2 kW (3.0 HP)	3.0 kW (4.0 HP)	4.0 kW (5.4 HP)	5.5 kW (7.4 HP)
Recommended motor power	→ section "Motor selection"			

Sizes 2S, 2 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0055-5A3-4-0_	0075-5A3-4-0_	0110-5A3-4-0_
Size		2S		2
INPUT				
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V		
Supply frequency	f_{supply}	50 Hz ... 60 Hz ±5 %		
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 11.3 A AC 14.1 A	AC 14.4 A AC 18.0 A	AC 21.6 A AC 27.0 A
OUTPUT				
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	8.7 kVA	11.2 kVA	16.8 kVA
Rated output current[1] (at V_{supply} = 3 × AC 400 V)	I_N	AC 12.5 A	AC 16 A	AC 24 A
Continuous output current (= 125 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 15.6 A	AC 20 A	AC 30 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 8 kHz)		AC 12.5 A	AC 16 A	AC 24 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization		
Internal current limitation		I_{max} = 0...150 % adjustable		
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	47 Ω		22 Ω
Output voltage	U_A	Max. V_{mains}		
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz		
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range		
GENERAL INFORMATION				
Power loss at S_N[2]	P_{Vmax}	220 W	290 W	400 W
Cooling air consumption		80 m^3/h		
Weight		6.6 kg (15 lb)		
Dimensions	W × H × D	105 mm × 335 mm × 294 mm (4.13 in ×13.2 in × 11.6 in)		135 mm × 315 mm × 285 mm (5.31 in × 12.4 in × 11.2 in)
Cross section of unit terminals X1, X2, X3, X4		Terminal blocks 4 mm^2 conductor end sleeves 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		1.5 Nm		

1) The system and output currents must be reduced by 20 % from the nominal values for V_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards	**0055-5A3-4-00 0055-5A3-4-00/L**	**0075-5A3-4-00 0075-5A3-4-00/L**	**0110-5A3-4-00 0110-5A3-4-00/L**
Part number	827 961 6 1840 017 5	827 962 4 1840 018 3	827 963 2 1840 019 1
MDX61B Application version Design with coated printed circuit boards	**0055-5A3-4-0T**	**0075-5A3-4-0T**	**0110-5A3-4-0T**
Part number	827 979 9 1840 035 3	827 980 2 1840 036 1	827 981 0 1840 038 8
Constant load Recommended motor power P_{Mot}	5.5 kW (7.4 HP)	7.5 kW (10 HP)	11 kW (15 HP)
Variable torque load or constant load without overload Recommended motor power P_{Mot}	7.5 kW (10 HP)	11 kW (15 HP)	15 kW (20 HP)
Recommended motor power	→ section "Motor selection"		

Size 3 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0150-503-4-0_	0220-503-4-0_	0300-503-4-0_
INPUT				
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V		
Supply frequency	f_{supply}	50 Hz ... 60 Hz ±5 %		
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 28.8 A AC 36 A	AC 41.4 A AC 51.7 A	AC 54 A AC 67.5 A
OUTPUT				
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	22.2 kVA	31.9 kVA	41.6 kVA
Rated output current[1] (at V_{supply} = 3 × AC 400 V)	I_N	AC 32 A	AC 46 A	AC 60 A
Continuous output current (= 125 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 40 A	AC 57.5 A	AC 75 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 8 kHz)		AC 32 A	AC 46 A	AC 60 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization		
Internal current limitation		I_{max} = 0...150 % adjustable		
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	15 Ω	12 Ω	
Output voltage	U_A	Max. V_{mains}		
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz		
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range		
GENERAL INFORMATION				
Power loss at S_N[2]	P_{Vmax}	550 W	750 W	950 W
Cooling air consumption		180 m^3/h		
Weight		15.0 kg (33 lb)		
Dimensions	W × H × D	200 mm × 465 mm × 308 mm (7.87 in × 18.3 in × 12.1 in)		
Cross section of unit terminals X1, X2, X3, X4		M6 screw with washer max. 25 mm^2 Crimp cable lug DIN 46234		
Tightening torque		3.5 Nm		

1) The system and output currents must be reduced by 20 % from the nominal values for V_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards	**0150-503-4-00 0150-503-4-00/L**	**0220-503-4-00 0220-503-4-00/L**	**0300-503-4-00 0300-503-4-00/L**
Part number	827 964 0 1840 020 5	827 965 9 1840 021 3	827 966 7 1840 022 1
MDX61B Application version Design with coated printed circuit boards	**0150-503-4-0T 0150-503-4-0T/L**	**0220-503-4-0T 0220-503-4-0T/L**	**0300-503-4-0T 0300-503-4-0T/L**
Part number	827 982 9 1840 039 6	827 983 7 1840 041 8	827 984 5 1840 042 6
Constant load Recommended motor power P_{Mot}	15 kW (20 HP)	22 kW (30 HP)	30 kW (40 HP)
Variable torque load or constant load without overload Recommended motor power P_{Mot}	22 kW (30 HP)	30 kW (40 HP)	37 kW (50 HP)
Recommended motor power	→ section "Motor selection"		

Size 4 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0370-503-4-0_	0450-503-4-0_
INPUT			
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V	
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %	
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 65.7 A AC 81.9 A	AC 80.1 A AC 100.1 A
OUTPUT			
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	51.1 kVA	62.3 kVA
Rated output current[1] (at V_{supply} = 3 × AC 400 V)	I_N	AC 73 A	AC 89 A
Continuous output current (= 125 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 91 A	AC 111 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 8 kHz)		AC 73 A	AC 89 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization	
Internal current limitation		I_{max} = 0...150 % adjustable	
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	6 Ω	
Output voltage	U_A	Max. V_{mains}	
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz	
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range	
GENERAL INFORMATION			
Power loss at S_N[2]	P_{Vmax}	1200 W	1450 W
Cooling air consumption		180 m^3/h	
Weight		27 kg (60 lb)	
Dimensions	**W × H × D**	280 mm × 522 mm × 307 mm (11.0 in × 20.6 in × 12.1 in)	
Cross section of unit terminals X1, X2, X3, X4		M10 bolt with nut Max. 70 mm^2 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_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards		**0370-503-4-00 0370-503-4-00/L**	**0450-503-4-00 0450-503-4-00/L**
Part number		827 967 5 1840 024 8	827 968 3 1840 025 6
MDX61B Application version Design with coated printed circuit boards		**0370-503-4-0T 0370-503-4-0T/L**	**0450-503-4-0T 0450-503-4-0T/L**
Part number		827 985 3 1840 043 4	827 986 1 1840 044 2
Constant load Recommended motor power	P_{Mot}	37 kW (50 HP)	45 kW (60 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	45 kW (60 HP)	55 kW (74 HP)
Recommended motor power		→ section "Motor selection"	

Size 5 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0550-503-4-0_	0750-503-4-0_
INPUT			
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V	
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %	
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 94.5 A AC 118.1 A	AC 117 A AC 146.3 A
OUTPUT			
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	73.5 kVA	91.0 kVA
Rated output current[1] (at V_{supply} = 3 × AC 400 V)	I_N	AC 105 A	AC 130 A
Continuous output current (= 125 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 131 A	AC 162 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 8 kHz)		AC 105 A	AC 130 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization	
Internal current limitation		I_{max} = 0...150 % adjustable	
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	6 Ω	4 Ω
Output voltage	U_A	Max. V_{mains}	
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz	
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range	
GENERAL INFORMATION			
Power loss at S_N[2]	P_{Vmax}	1700 W	2000 W
Cooling air consumption		360 m^3/h	
Weight		35 kg (77 lb)	
Dimensions	**W × H × D**	280 mm × 610 mm × 330 mm (11.0 in × 24.0 in × 13.0 in)	
Cross section of unit terminals X1, X2, X3, X4		M10 bolt with nut Max. 70 mm^2 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_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards		**0550-503-4-00 0550-503-4-00/L**	**0750-503-4-00 0750-503-4-00/L**
Part number		827 969 1 1840 026 4	827 970 5 1840 027 2
MDX61B Application version Design with coated printed circuit boards		**0550-503-4-0T 0550-503-4-0T/L**	**0750-503-4-0T 0750-503-4-0T/L**
Part number		827 988 8 1840 045 0	827 989 6 1840 046 9
Constant load Recommended motor power	P_{Mot}	55 kW (74 HP)	75 kW (100 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	75 kW (100 HP)	90 kW (120 HP)
Recommended motor power		→ section "Motor selection"	

Size 6 (AC 400/500 V units)

MOVIDRIVE® MDX61B		0900-503-4-0_	1100-503-4-0_	1320-503-4-0_
INPUT				
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 380 V - 500 V		
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %		
Rated supply current[1] (at V_{supply} = 3 × AC 400 V)	I_{supply} 100% 125 %	AC 153 A AC 191 A	AC 180 A AC 225 A	AC 225 A AC 281 A
OUTPUT				
Apparent output power[2] (at V_{supply} = 3 × AC 380...500 V)	S_N	118 kVA	139 kVA	174 kVA
Rated output current[1] (at V_{supply} = 3 × AC 400 V)	I_N	AC 170 A	AC 200 A	AC 250 A
Continuous output current (= 125 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 212 A	AC 250 A	AC 312 A
Continuous output current (= 100 % I_N) I_D (at V_{supply} = 3 × AC 400 V with f_{PWM} = 4 kHz)		AC 170 A	AC 200 A	AC 250 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization		
Internal current limitation		I_{max} = 0...150 % adjustable		
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	2.7 Ω		
Output voltage	U_A	Max. V_{mains}		
PWM frequency	f_{PWM}	Can be set: 4 or 8 kHz		
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range		
GENERAL INFORMATION				
Power loss at S_N[2]	P_{Vmax}	2300 W	2500 W	2700 W
Cooling air consumption		600 m^3/h		
Weight		60 kg (130 lb)		
Dimensions	W × H × D	280 mm × 1,000 mm × 382 mm (11.0 in ×39.37 in × 15.0 in		
Cross section of unit terminals X1, X2, X3, X4		M12 bolt with nut Max. 185 mm^2 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_{supply} = 3 × AC 500 V.
2) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version Design with coated printed circuit boards		**0900-503-4-00 0900-503-4-00/L**	**1100-503-4-00 1100-503-4-00/L**	**1320-503-4-00 1320-503-4-00/L**
Part number		827 971 3 1840 028 0	827 972 1 1840 029 9	827 974 8 1840 030 2
MDX61B Application version Design with coated printed circuit boards		**0900-503-4-0T 0900-503-4-0T/L**	**1100-503-4-0T 1100-503-4-0T/L**	**1320-503-4-0T 1320-503-4-0T/L**
Part number		827 991 8 1840 047 7	827 992 6 1840 048 5	827 993 4 1840 049 3
Constant load Recommended motor power	P_{Mot}	90 kW (120 HP)	110 kW (148 HP)	132 kW (177 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	110 kW (148 HP)	132 kW (177 HP)	160 kW (215 HP)
Recommended motor power		→ section "Motor selection"		

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

Size 1 (AC 230 V units)

MOVIDRIVE® MDX61B		0015-2A3-4-0_	0022-2A3-4-0_	0037-2A3-4-0_
INPUT				
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 200 V - 240 V		
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %		
Rated supply current (at V_{supply} = 3 × AC 230 V)	I_{supply} 100% 125 %	AC 6.7 A AC 8.4 A	AC 7.8 A AC 9.8 A	AC 12.9 A AC 16.1 A
OUTPUT				
Apparent output power[1] (at V_{supply} = 3 × AC 230..0.240 V)	S_N	2.7 kVA	3.4 kVA	5.8 kVA
Rated output current (at V_{supply} = 3 × AC 230 V)	I_N	AC 7.3 A	AC 8.6 A	AC 14.5 A
Continuous output current (= 125 % I_N) (at V_{supply} = 3 × AC 230 V with f_{PWM} = 4 kHz)	I_D	AC 9.1 A	AC 10.8 A	AC 18.1 A
Continuous output current (= 100 % I_N) (at V_{supply} = 3 × AC 230 V with f_{PWM} = 8 kHz)	I_D	AC 7.3 A	AC 8.6 A	AC 14.5 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization		
Internal current limitation		I_{max} = 0...150 % adjustable		
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	27 Ω		
Output voltage	U_A	Max. V_{supply}		
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz		
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range		
GENERAL INFORMATION				
Power loss at S_N[1]	P_{Vmax}	110 W	126 W	210 W
Cooling air consumption		40 m^3/h		
Weight		2.8 kg (6.2 lb)		
Dimensions	W × H × D	105 mm × 314 mm × 234 mm (4.13 in × 312.4 in × 9.21 iin)		
Cross section of unit terminals X1, X2, X3, X4		Separable terminal block 4 mm^2 conductor end sleeve DIN 46228		
Tightening torque		0.6 Nm		

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

MDX61B Standard version		0015-2A3-4-00	0022-2A3-4-00	0037-2A3-4-00
Part number		827 994 2	827 995 0	827 996 9
MDX61B Application version		**0015-2A3-4-0T**	**0022-2A3-4-0T**	**0037-2A3-4-0T**
Part number		828 003 7	828 004 5	828 005 3
Constant load Recommended motor power	P_{Mot}	1.5 kW (2.0 HP)	2.2 kW (3.0 HP)	3.7 kW (5.0 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	2.2 kW (3.0 HP)	3.7 kW (5.0 HP)	5.0 kW (6.7 HP)
Recommended motor power		→ section "Motor selection"		

Size 2 (AC 230 V units)

MOVIDRIVE® MDX61B		0055-2A3-4-0_	0075-2A3-4-0_
INPUT			
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 200 V - 240 V	
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %	
Rated supply current (at V_{supply} = 3 × AC 230 V)	I_{supply} 100% 125 %	AC 19.5 A AC 24.4 A	AC 27.4 A AC 34.3 A
OUTPUT			
Apparent output power[1] (at V_{supply} = 3 × AC 230..0.240 V)	S_N	8.8 kVA	11.6 kVA
Rated output current (at V_{supply} = 3 × AC 230 V)	I_N	AC 22 A	AC 29 A
Continuous output current (= 125 % I_N) (at V_{supply} = 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_{supply} = 3 × AC 230 V with f_{PWM} = 8 kHz)	I_D	AC 22 A	AC 29 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization	
Internal current limitation		I_{max} = 0...150 % adjustable	
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	12 Ω	
Output voltage	U_A	Max. V_{supply}	
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz	
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range	
GENERAL INFORMATION			
Power loss at S_N[1]	P_{Vmax}	300 W	380 W
Cooling air consumption		80 m^3/h	
Weight		5.9 kg (13 lb)	
Dimensions	W × H × D	135 mm × 315 mm × 285 mm (5.31 in × 12.4 in × 11.2 in)	
Cross section of unit terminals X1, X2, X3, X4		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) The performance data applies to f_{PWM} = 4 kHz.

MDX61B Standard version		0055-2A3-4-00	0075-2A3-4-00
Part number		827 997 7	827 998 5
MDX61B Application version		**0055-2A3-4-0T**	**0075-2A3-4-0T**
Part number		828 006 1	828 008 8
Constant load Recommended motor power	P_{Mot}	5.5 kW (7.4 HP)	7.5 kW (10 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	7.5 kW (10 HP)	11 kW (15 HP)
Recommended motor power		→ section "Motor selection"	

Size 3 (AC 230 V units)

MOVIDRIVE® MDX61B		0110-203-4-0_	0150-203-4-0_
INPUT			
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 200 V - 240 V	
Supply frequency	f_{supply}	50 Hz ... 60 Hz ± 5 %	
Rated supply current (at V_{supply} = 3 × AC 230 V)	I_{supply} 100% 125 %	AC 40 A AC 50 A	AC 49 A AC 61 A
OUTPUT			
Apparent output power[1] (at V_{supply} = 3 × AC 230..0.240 V)	S_N	17.1 kVA	21.5 kVA
Rated output current (at V_{supply} = 3 × AC 230 V)	I_N	AC 42 A	AC 54 A
Continuous output current (= 125 % I_N) (at V_{supply} = 3 × 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_{supply} = 3 × AC 230 V with f_{PWM} = 8 kHz)	I_D	AC 42 A	AC 54 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization	
Internal current limitation		I_{max} = 0...150 % adjustable	
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	7.5 Ω	5.6 Ω
Output voltage	U_A	Max. V_{supply}	
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz	
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range	
GENERAL INFORMATION			
Power loss at S_N[1]	P_{Vmax}	580 W	720 W
Cooling air consumption		180 m^3/h	
Weight		14.3 kg (31.5 lb)	
Dimensions	W × H × D	200 mm × 465 mm × 308 mm (7.87 in × 18.3 in × 12.1 in)	
Cross section of unit terminals X1, X2, X3, X4		M6 screw and washer assembly with washer max. 25 mm^2 Crimp cable lug DIN 46234	
Tightening torque		3.5 Nm	

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

MDX61B Standard version		0110-203-4-00	0150-203-4-00
Part number		827 999 3	828 000 2
MDX61B Application version		**0110-203-4-0T**	**0150-203-4-0T**
Part number		828 009 6	828 011 8
Constant load Recommended motor power	P_{Mot}	11 kW (15 HP)	15 kW (20 HP)
Variable torque load or constant load without overload Recommended motor power	P_{Mot}	15 kW (20 HP)	22 kW (30 HP)
Recommended motor power		→ section "Motor selection"	

Size 4 (AC 230 V units)

MOVIDRIVE® MDX61B		0220-203-4-0_	0300-203-4-0_
INPUT			
Rated supply voltage (to EN 50160)	V_{supply}	3 × AC 200 V - 240 V	
Supply frequency	f_{supply}	50 Hz ... 60 Hz ±5 %	
Rated supply current (at V_{supply} = 3 × AC 230 V)	I_{supply} 100% 125 %	AC 72 A AC 90 A	AC 86 A AC 107 A
OUTPUT			
Apparent output power[1] (at V_{supply} = 3 × AC 230..0.240 V)	S_N	31.8 kVA	37.8 kVA
Rated output current (at V_{supply} = 3 × AC 230 V)	I_N	AC 80 A	AC 95 A
Continuous output current (= 125 % I_N) (at V_{supply} = 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_{supply} = 3 × AC 230 V with f_{PWM} = 4 kHz)	I_D	AC 80 A	AC 95 A
Current limitation	I_{max}	Motor and regenerative 150 % I_N, duration depending on capacity utilization	
Internal current limitation		I_{max} = 0...150 % adjustable	
Minimum permitted braking resistor value (4Q operation)	R_{BRmin}	3 Ω	
Output voltage	U_A	Max. V_{supply}	
PWM frequency	f_{PWM}	Can be set: 4 / 8 / 12 / 16 kHz	
Speed range/resolution	n_A / Δn_A	–6000 ... 0 ... +6000 min^{-1} / 0.2 min^{-1} across the entire range	
GENERAL INFORMATION			
Power loss at S_N[1]	P_{Vmax}	1100 W	1300 W
Cooling air consumption		180 m^3/h	
Weight		26.3 kg (57 lb)	
Dimensions	W × H × D	280 mm × 522 mm × 307mm (11.0 in × 20.6 in × 12.1 in)	
Cross section of unit terminals X1, X2, X3, X4		M10 bolt with nut max. 70 mm^2 Press cable lug DIN 46235	
Tightening torque		3.5 Nm	

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

MDX61B Standard version		0220-203-4-00	0300-203-4-00
Part number		828 001 0	828 002 9
MDX61B Application version		**0220-203-4-0T**	**0300-203-4-0T**
Part number		828 012 6	828 013 4
Constant load **Recommended motor power**	P_{Mot}	22 kW (30 HP)	30 kW (40 HP)
Variable torque load or constant load without overload **Recommended motor power**	P_{Mot}	30 kW (40 HP)	37 kW (50 HP)
Recommended motor power		→ section "Motor selection"	

2.5 MOVIDRIVE® MDX60/61B electronics data

MOVIDRIVE® MDX60/61B		General electronics data	
Power supply for setpoint input	X11:1 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	X11:2/X11:3	AI11/AI12: Voltage or current input, can be set with S11 and P11_, sampling interval 1 ms	
(differential input) Operating mode AI11/AI12 Resolution Internal resistance		Voltage input: n1 = DC 0...+10 V or DC –10 V...0...+10 V 12 bit R_i = 40 kΩ (external voltage supply) R_i = 20 kΩ (supply from REF1/REF2)	Current input: n1 = DC 0...20 mA or DC 4...20 mA 11 bit R_i = 250 Ω
Internal setpoints		Parameter set 1: n11/n12/n13 = –6000...0...+6000 rpm Parameter set 2: n21/n22/n23 = –6000...0...+6000 rpm	
Time ranges of the speed ramps at Δn = 3000 rpm		1st ramp t11/t21 Up: 0...2000 s Down: 0..2000 s 2nd ramp t12/t22 Up = down: 0...2000 s Stop ramp t13/t23 Down: 0..0.20 s Emergency ramp t14/t24 Down: 0..0.20 s Motor potentiometer t3 Up: 0.2..0.50 s Down: 0.2..0.50 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: U_{IN} = DC 24 V –15 % / +20 % according to EN 61131-2	
Binary inputs X13:1...X13:6 and X16:1/X16:2 Internal resistance		Isolated (optocoupler), PLC compatible (EN 61131), sampling interval 1 ms DIØØ...DIØ5 and DIØ6/DIØ7 $R_i \approx 3$ kΩ, $I_E \approx$ DC 10 mA	
Signal level		DC +13 V...+30 V= "1" = Contact closed DC–3 V...+5 V = "0" = Contact open	according to EN 61131
Function X13:2...X13:6, X16:1/X16:2	X13:1	DIØØ: fixed assigned with "/Controller inhibit" DIØ1...DIØ5, DIØ6/DIØ7: Selection option → Parameter menu P60_	
Binary outputs[1)] X10:3/X10:7 and X16:3...X16:5		PLC-compatible (EN 61131-2), response time 1ms DBØØ/DOØ2 and DOØ3...DOØ5	
Signal level		"0" = DC 0 V "1" = DC +24 V **Caution:** Do not apply external voltage!	
Function X10:7, X16:3...X16:5	X10:3	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	DOØ1: Load capacity of the relay contacts U_{max} = DC 30 V, I_{max} = DC 800 mA	
Function	X10:4 X10:5 X10:6	DOØ1-C: Shared relay contact DOØ1-NO: Normally open 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 according to CAN specification 2.0, parts A and B, transmission technology according to ISO 11898, max. 64 stations, 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 input	X10:1	TF1: Response threshold at $R_{TF} \geq 2.9$ kΩ ± 10 %	
Reference terminals X12:1/X13:9/X16:6/X10:2/X10:10	X11:4 X13:7	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 DCOM: Reference potential for binary inputs X13:1...X13:6 and X16:1/X16:2 (DIØØ...DIØ5 and DIØ6/DIØ7)	
Permitted cable cross section		One core per terminal: 0.20...20.5 mm^2 (AWG 24...12) Two cores per terminal: 0.25...1 mm^2 (AWG 22...17)	

1) The unit provides a current of I_{max} = DC 400 mA for the DC+24 V outputs (VO24, binary 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
Safety contact	X17:1 X17:2 X17:3 X17:4	DGND: Reference potential for X17:3 VO24: : V_{OUT} = DC 24 V, only to supply X17:4 of the same unit; **it cannot be used** to supply other units. SOV24: Reference potential for DC+24 V input "Safe stop" (safety contact) SVI24: DC+24 V input "Safe stop" (safety contact)
Permitted cable cross section		One core per terminal: 0.08...1.5 mm^2 (AWG 28...16) Two cores per terminal: 0.25 ... 1.0 mm^2 (AWG 23...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
Input capacitance X17:4		Size 0: 27 µF Sizes 1...6: 270 µF
Time for restart Time to inhibit output stage		t_A = 200 ms t_S = 200 ms
Signal level		DC +19.2 V...+30 V= "1" = Contact closed DC–30 V...+5 V = "0" = Contact open

2.6 MOVIDRIVE® MDX60B dimension sheets

Size 0S

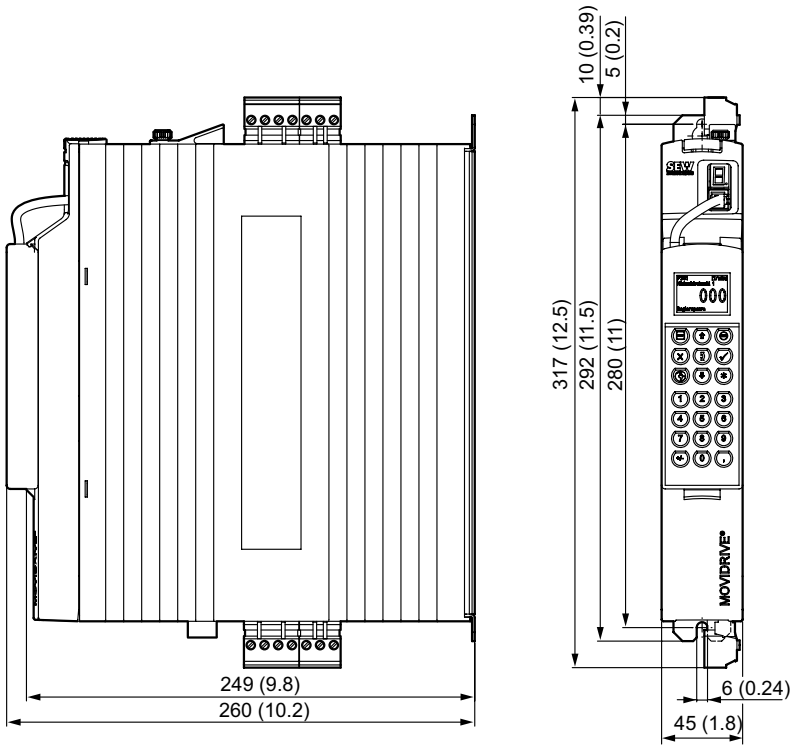

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Figure 8: Dimensions for MDX60B size 0S, dimensions in mm (in)

Size 0S with braking resistor

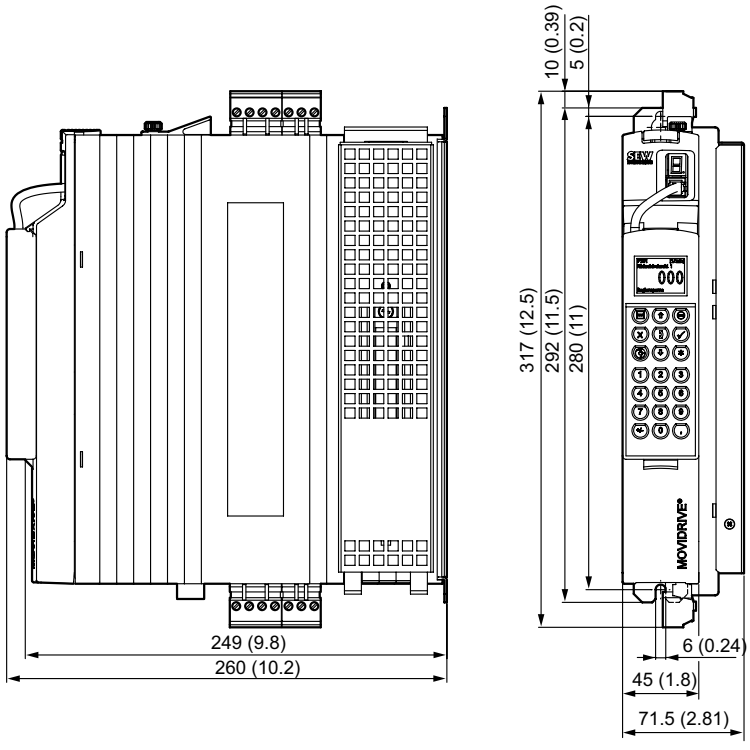

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Figure 9: Dimensions for MDX60B size 0S with braking resistor, dimensions in mm (in)

Size 0M

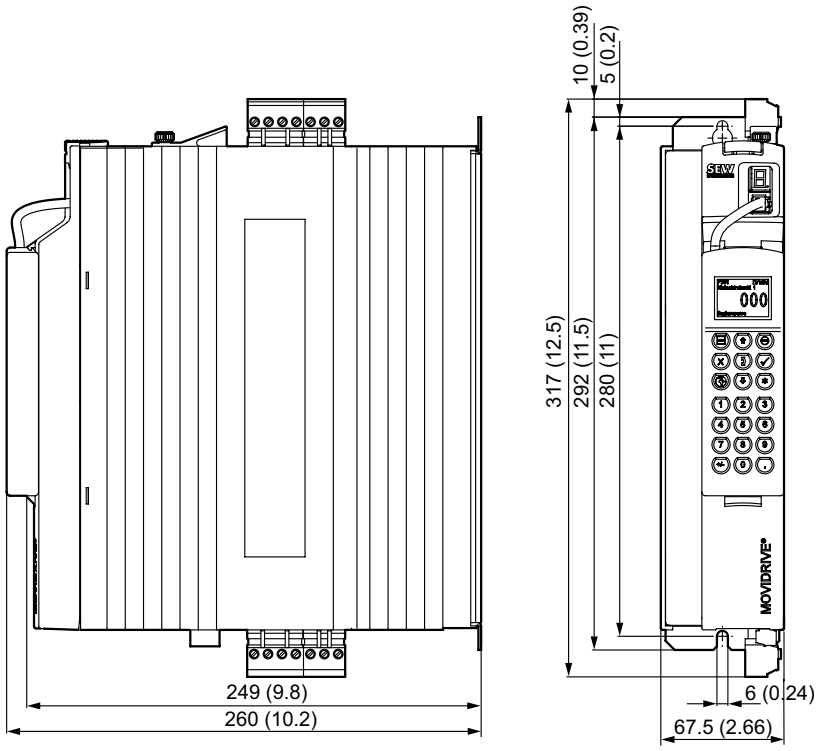

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Figure 10: Dimensions for MDX60B size 0M, dimensions in mm (in)

Size 0M with braking resistor

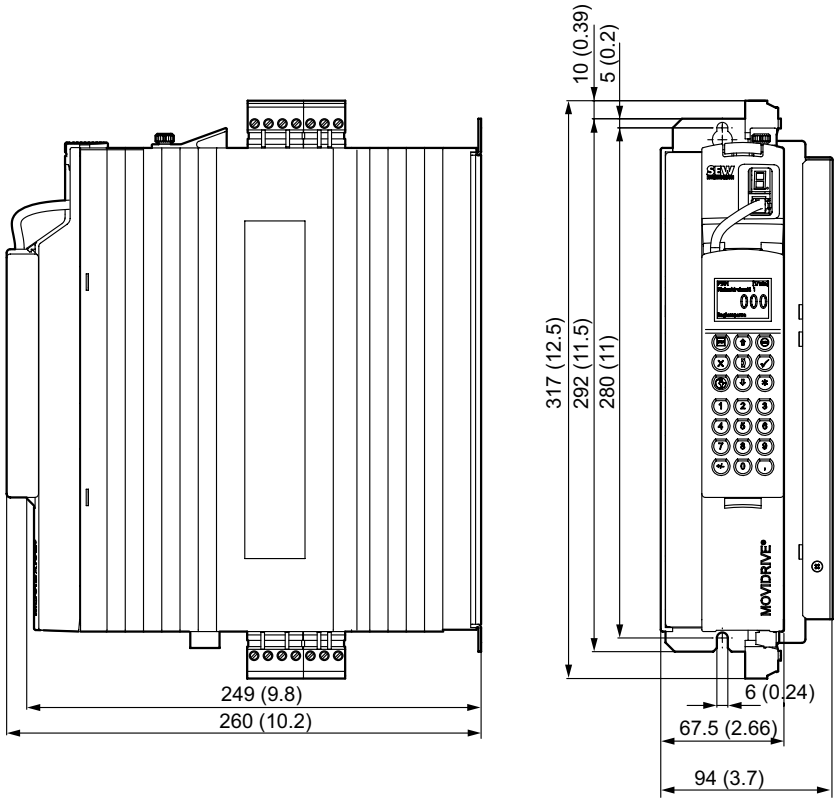

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Figure 11: Dimensions for MDX60B size 0M with braking resistor, dimensions in mm (in)

2.7 MOVIDRIVE® MDX61B dimension sheets

	NOTE
	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.

Size 0S

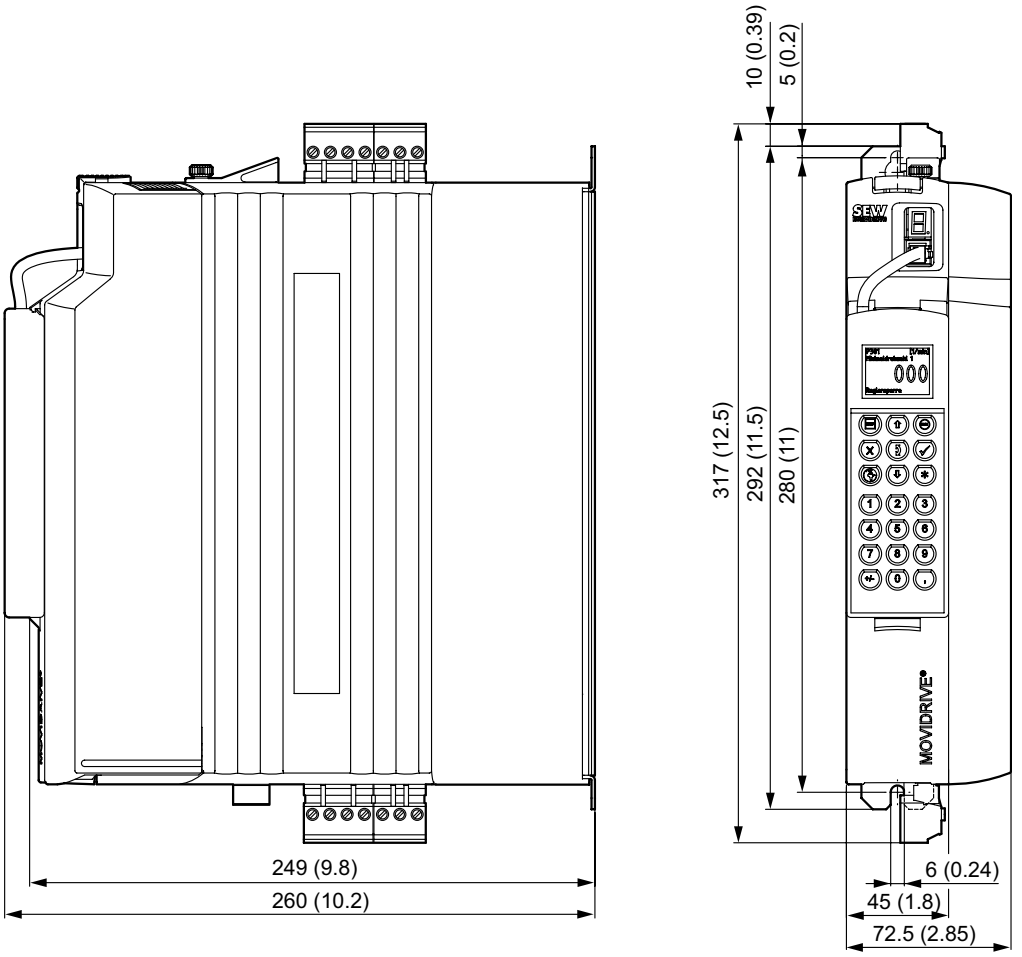

Figure 12: Dimensions for MDX61B size 0S, dimensions in mm (in)

Size 0M

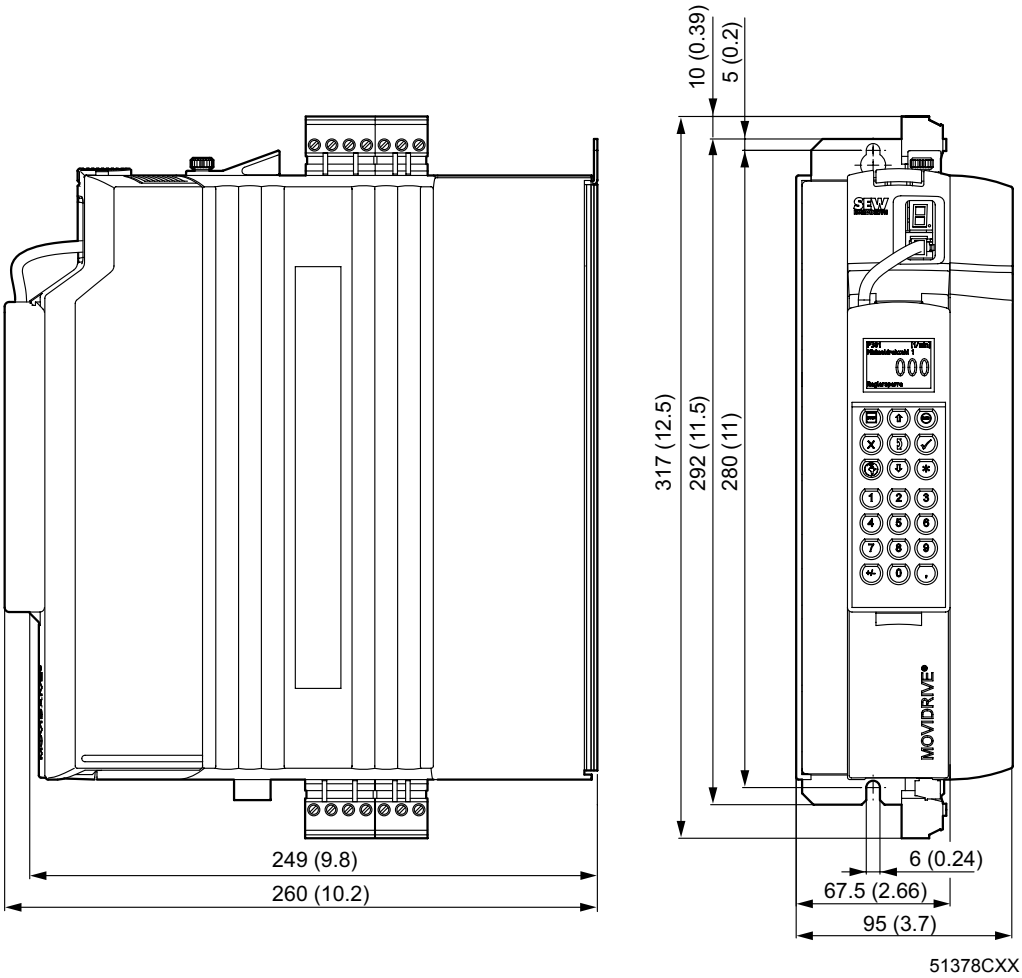

Figure 13: Dimensions for MDX61B size 0M, dimensions in mm (in)

Size 1

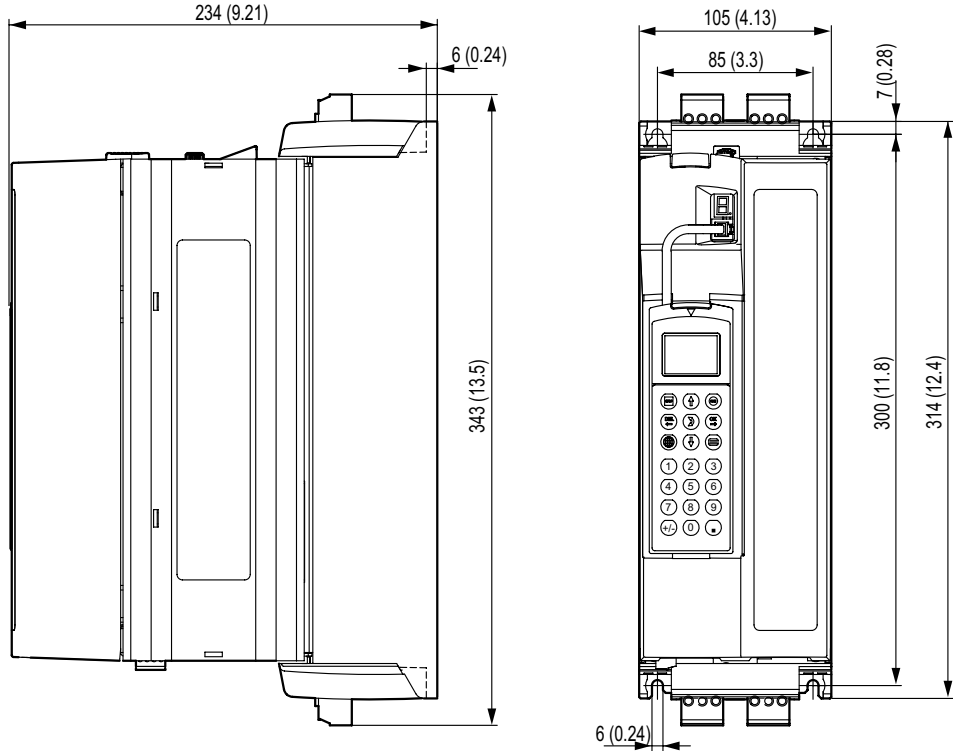

Figure 14: Dimensions for MDX61B size 1, dimensions in mm (in)

BSize 2S

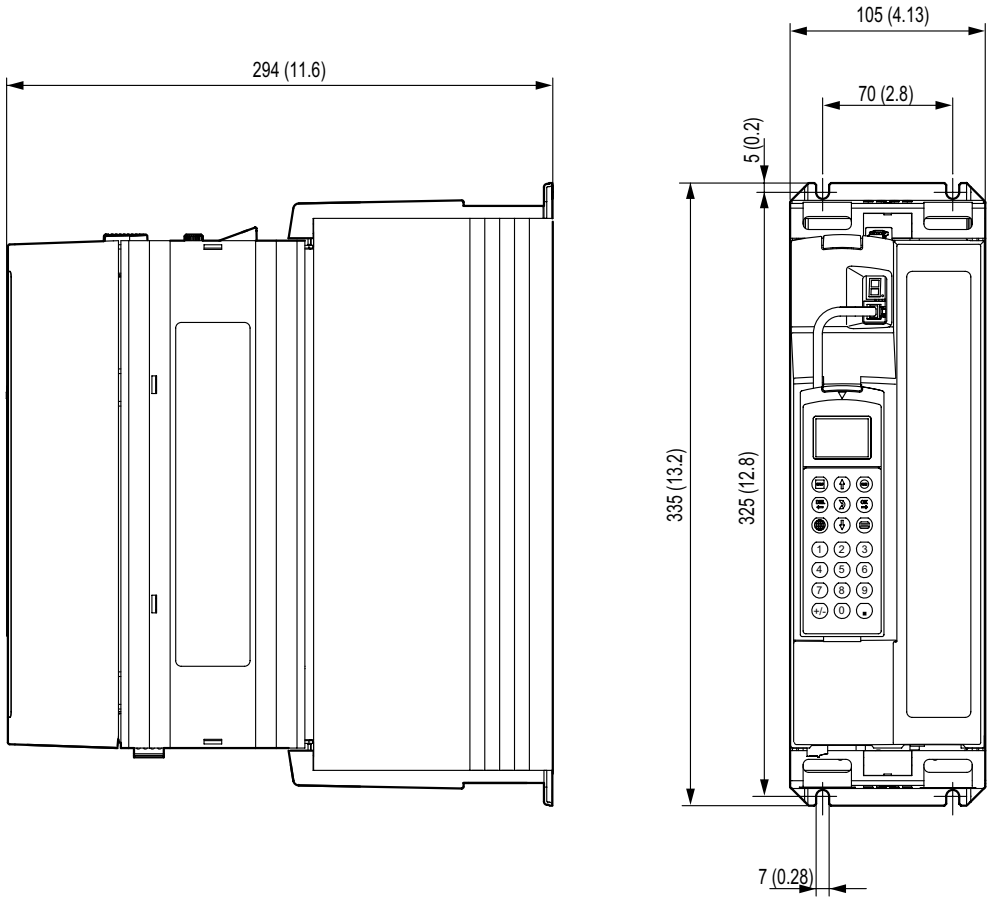

Figure 15: Dimensions for MDX61B size 2S, dimensions in mm (in)

BSize 2

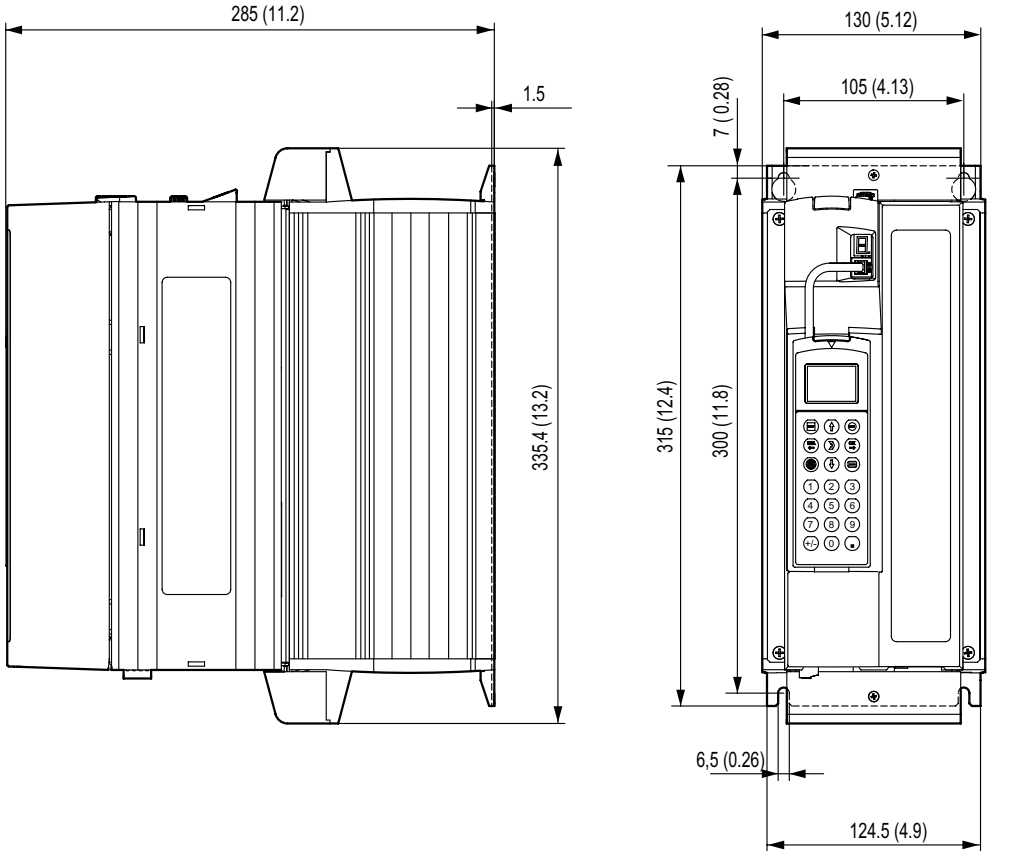

Figure 16: Dimensions for MDX61B size 2, dimensions in mm (in)

BSize 3

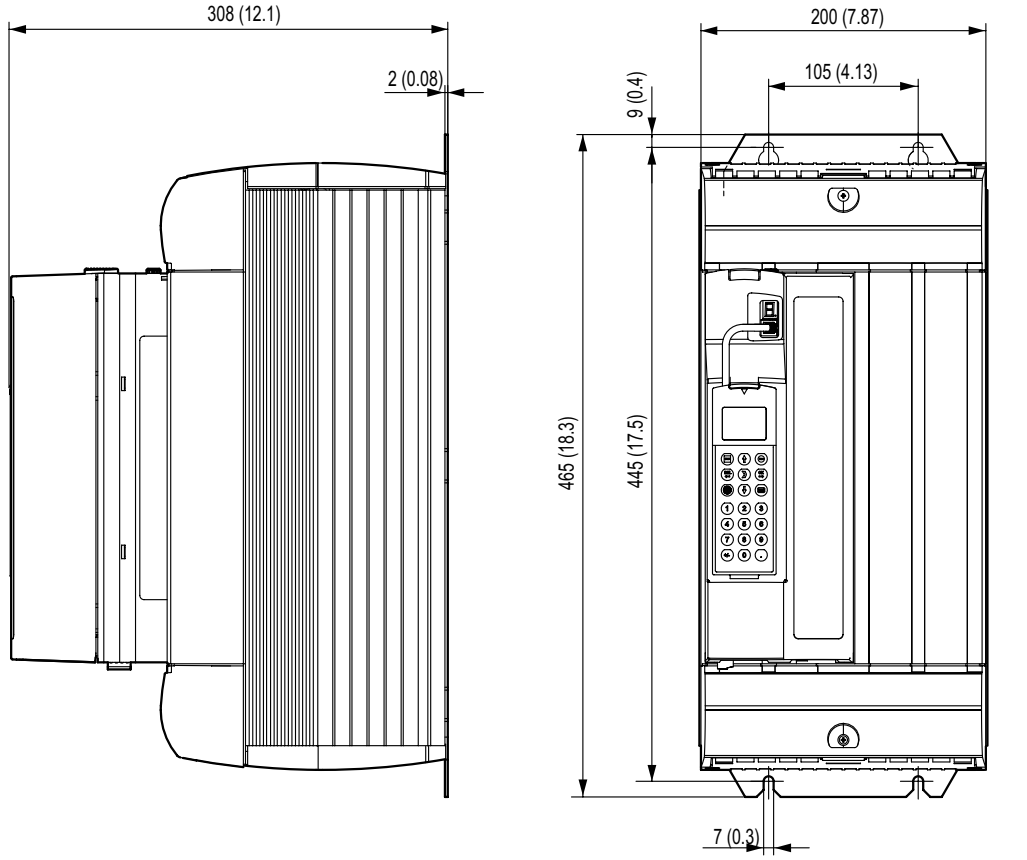

Figure 17: Dimensions for MDX61B size 3, dimensions in mm (in)

BSize 4

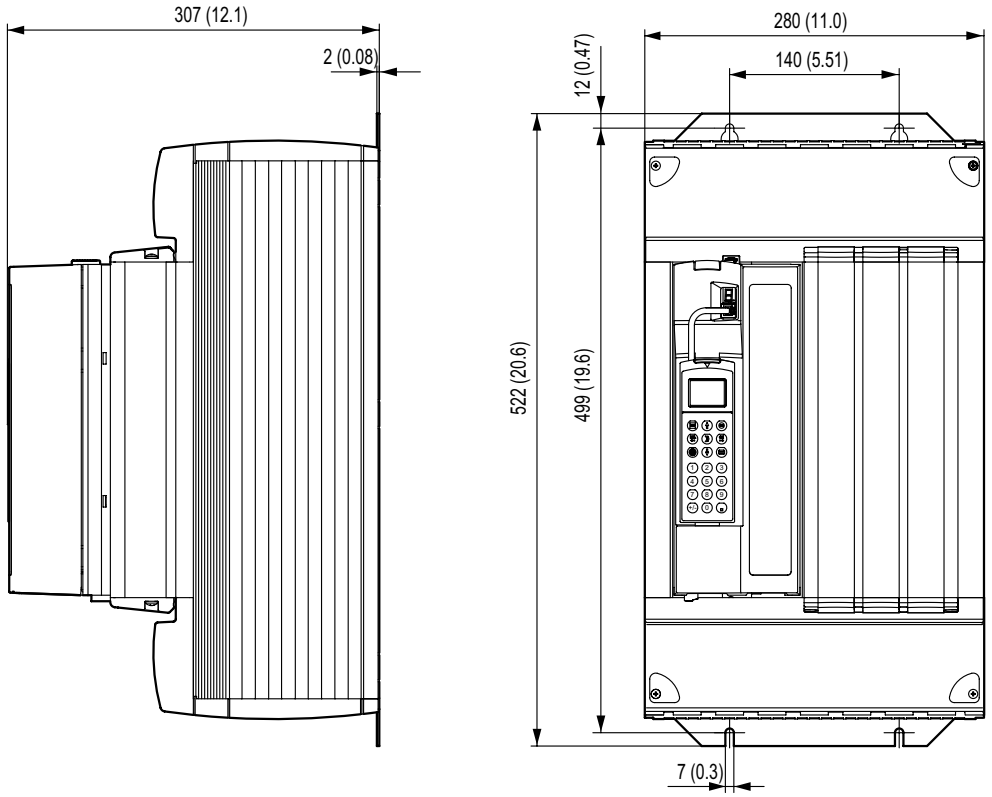

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Figure 18: Dimensions for MDX61B size 4, dimensions in mm (in)

BSize 5

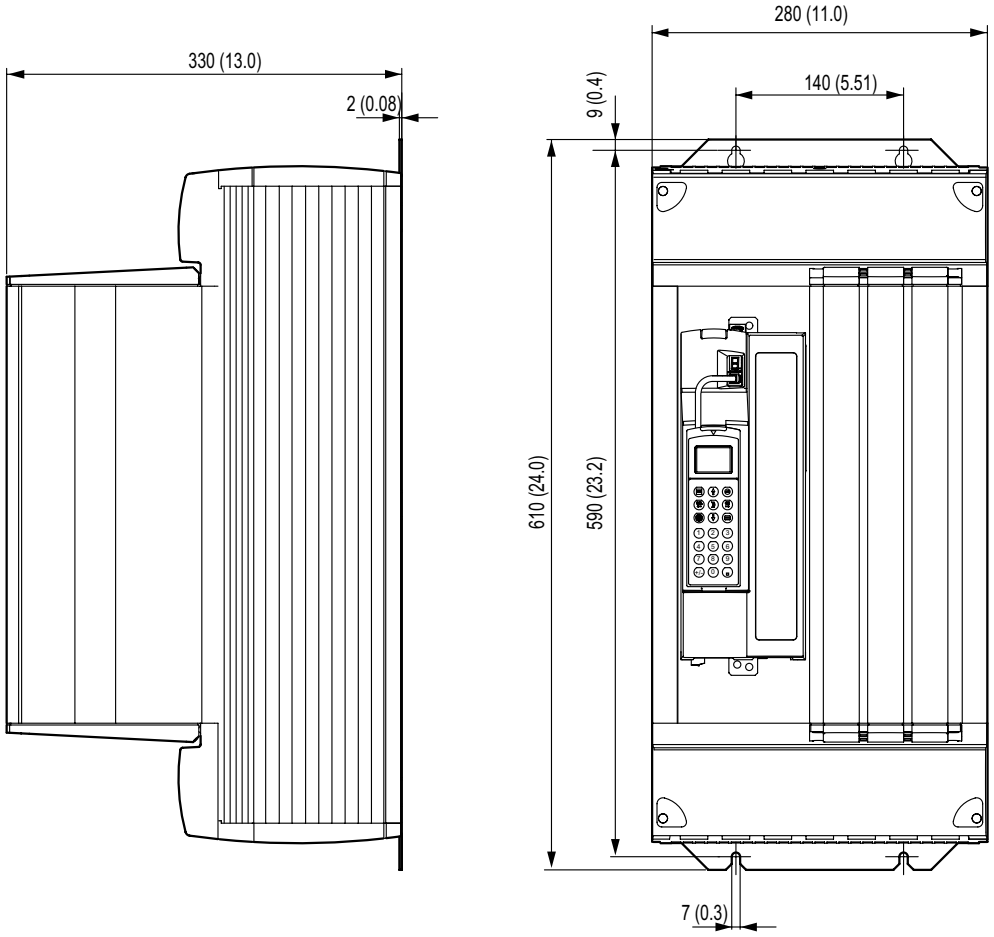

Figure 19: Dimensions for MDX61B size 5, dimensions in mm (in)

BSize 6

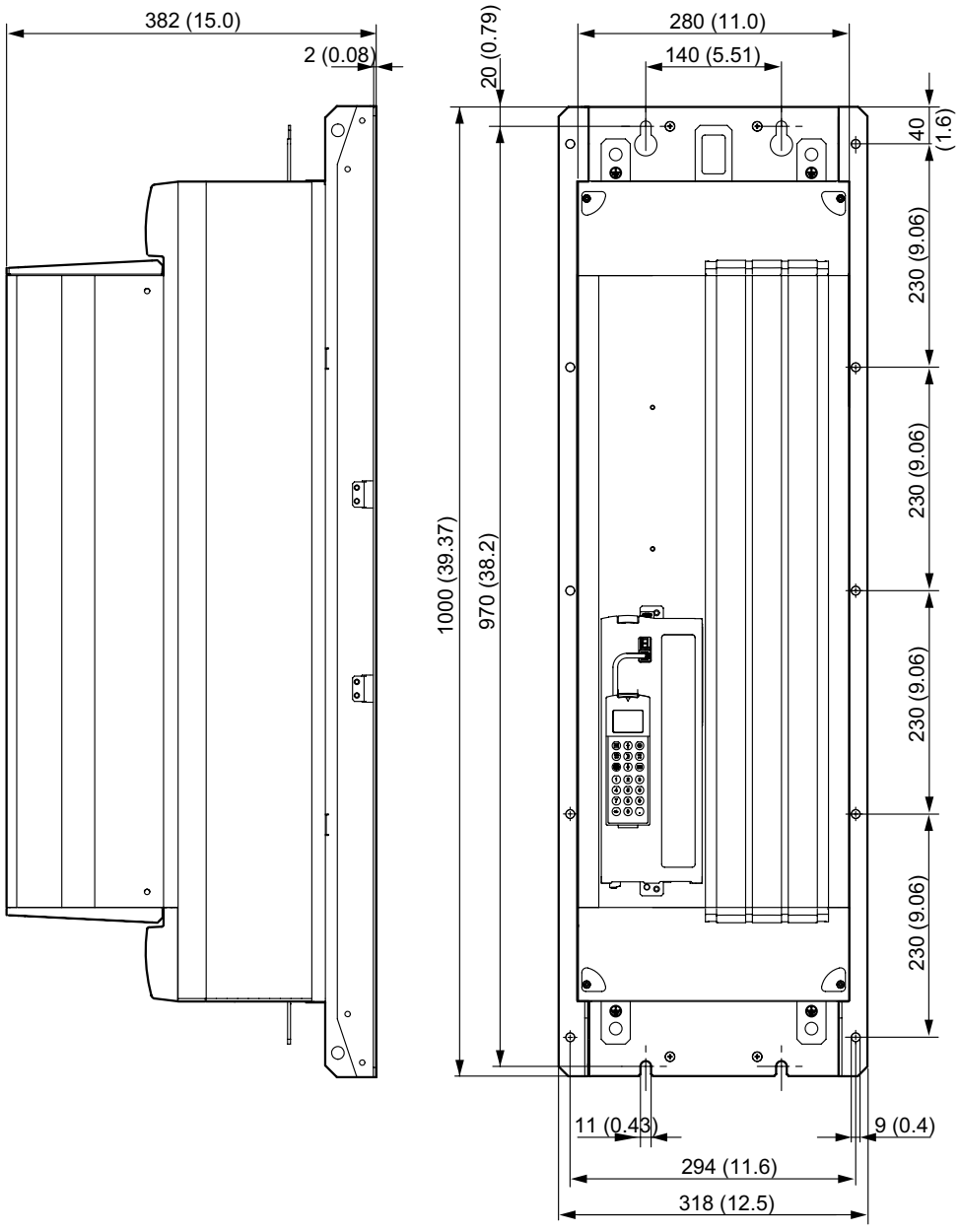

Figure 20: Dimensions for MDX61B size 6, dimensions in mm (in)

2.8 MOVIDRIVE® MDR60A regenerative power supply units

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

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

UL approval

UL and cUL approval has been granted for the entire MOVIDRIVE® MDR60A0370-503-00 and MDR60A0750-503-00 range of units. cUL is equivalent to CSA approval. The MOVIDRIVE® MDR60A1320-503-00 unit does not have UL or cUL approval.

Protection and monitoring functions

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

54512AXX

Figure 21: MOVIDRIVE® MDR60A regenerative power supply units

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.
- Less installation work for several inverter (network and braking resistor connections). However, a braking resistor is required to bring the drive to a controlled stop even when there is a disruption in the supply system.
- Reduction in use of control cabinet capacity and ventilator power if the braking resistor used to have to be installed in the control cabinet.

General technical data

MOVIDRIVE® MDR60A	**0370-503-00 (size 3)** **0750-503-00 (size 4)**	**1320-503-00 (size 6)**
Interference resistance	Complies with EN 61800-3	Meets EN 61000-6-1 and EN 61000-6-2
Interference emission with EMC-compliant installation	Conforms to EN 61800-3 • With NF085-503 line filter (size 3) • With NF150-503 line filter (size 4)	Meets EN 61000-6-4 with line filter NF300-503
Ambient temperature ϑ_U **I_N reduction ambient temperature**	0 °C...+40 °C I_N reduction: 3 % I_N per K to max. 60 °C	0 °C...+40 °C I_N reduction: 3 % I_N per K to max. 55 °C
Climate class	EN 60721-3-3, class 3K3	
Storage temperature[1] ϑ_L	–25 °C...+70 °C (EN 60721-3-3, class 3K3)	–25 °C...+55 °C (EN 60721-3-3, class 3K3)
Cooling type (DIN 41751)	Forced cooling (temperature-controlled fan, response threshold 50 °C)	Forced cooling (temperature-controlled fan, response threshold 45 °C)
Enclosure Size 3 **EN 60529 Size 4** **(NEMA1)**	IP20 IP00 (power connections) IP10 (power connections) • With fitted plexiglass cover supplied as standard • With fitted shrink tubing (not included in scope of delivery)	IP20
Operating mode	Continous duty with 50 % overload	
Overvoltage category	III according to IEC 60664-1 (VDE 0110-1)	
Pollution class	2 according to IEC 60664-1 (VDE 0110-1)	
Installation altitude	Up to h ≤ 1000 m (3281 ft) without restrictions. At h ≥ 1000 m (3281 ft), the following restrictions apply: • from 1,000 m (3281ft) to max. 4000 m (13120 ft): – I_N reduction by 1% per 100 m (328 ft) • from 2000 m (6562 ft) to max. 4000 m (13120 ft): – U_N reduction by AC 6 V per 100 m (328 ft) Over 2000 m (6562 ft) only overvoltage class 2, external measures are required for overvoltage class 3. Overvoltage classes according to DIN VDE 0110-1.	h ≤ 1000 m (3281 ft): No limitation from 1,000 m (3281 ft) to max. 4000 m (13120 ft): I_N reduction: 0.5 % per 100 m (328 ft)

1) In case of long-term storage, the unit must be connected to the mains voltage for at least 5 minutes, otherwise the unit's service life may be reduced.

Technical data for MOVIDRIVE® MDR60A regenerative power supply

MOVIDRIVE® MDR60A	0370-503-00 (size 3)	0750-503-00 (size 4)	1320-503-00 (size 6)
Part number	826 658 1	826 556 9	827 952 7
INPUT			
Rated mains voltage (according to EN 50160) V_{supply}	3 × AC 380 V - 500 V		
Supply frequency f_{supply}	50 Hz - 60 Hz ±5 %		40 Hz - 60 Hz ±10 %
Rated connected load P_N	37 kW	75 kW	132 kW
Rated supply current (at V_{supply} = 3 × AC 400 V) I_{supply}	AC 66 A	AC 117 A	AC 260 A
DC LINK			
Apparent output power (at V_{supply} = 3 × AC 380...500 V) S_A	50 kVA	90 kVA	173 kVA
DC link voltage U_{DClink}	DC 560 V - 780 V		
Rated DC link current I_{DClink}	DC 70 A	DC 141 A	DC 340 A
Max. DC link current I_{DClink_max}	DC 105 A	DC 212 A	DC 410 A
GENERAL INFORMATION			
Power loss at P_N P_{Vmax}	950 W	1700 W	2650 W
Cooling air consumption	180 m^3/h	360 m^3/h	700 m^3/h
Connection for power terminals X1, X2 (L1, L2, L3 for size 6) **Permitted tightening torque** **Permitted cable cross section**	M6 screw with washer 3.5 Nm (31 in-lb) 25 mm^2 (AWG4)	M10 terminal studs 14 Nm (120 in-lb) 70 mm^2 (AWG2/0)	M10 terminal studs 3.5 Nm 25 mm^2 (AWG4)
Connection for DC link connection ±UG **Permitted cable cross section** **Permitted tightening torque**	-	-	150 mm^2 (power supply connection) / 30 Nm (270 in-lb)[1] 185 mm^2 (power supply connection) / 32 Nm (280 in-lb)[1]
Connection for electronics terminalsX3 (X2 for size 6)	Permitted cable cross section: • One conductor per terminal: 0.20...2.5 mm^2 (AWG24...13) • Two conductors per terminal:0.25...1 mm^2 (AWG23...17)		Permitted cable cross section: • 0.8...4 mm^2 (AWG18...12)
Weight	16 kg (35 lb)	24 kg (53 lb)	90 kg (200 lb)
Dimensions **W × H × D**	200 mm × 465 mm × 221 mm (7.87 in x 18.3 in x 8.7 in)	280 mm × 522 mm × 205 mm (11 in x 20.6 in x 8.07 in)	380 mm × 937 mm × 395 mm (15 in x 36.9 in x 15.6 in)
Line choke (always required)	ND085-013 L_N = 0.1 mH Part number 826 014 1	ND200-0033 L_N = 0.03 mH Part number 826 579 8	Already installed
Line filter (optional)	NF085-503, part number 827 415 0	NF150-503, part number 827 417 7	NF300-503, part number 827 419 3
For MOVIDRIVE® MDX60B/61B...-5_3	0005 ... 0370	0005 ... 0750	0005 ... 1320

1) Important: Do not apply tightening torque directly at terminals L1, L2, L3 and ±UG; use a second wrench.

Dimension drawings for MDR60A

Provide at least 100 mm clearance above and below the unit. There is no need for clearance at the sides. You can line up the units directly next to one another. With sizes 4 and 6, do not install any components that are sensitive to high temperatures within 300 mm (11.8 in) of the top of the unit, for example contactors or fuses.

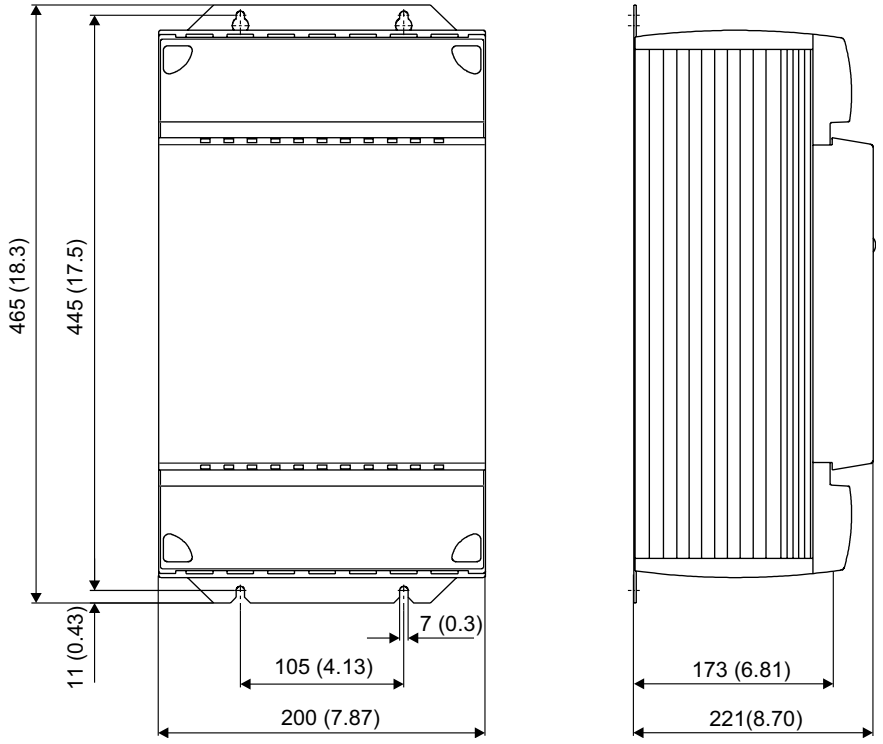

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Figure 22: Dimension drawing, MDR60A size 3, dimensions in mm (in)

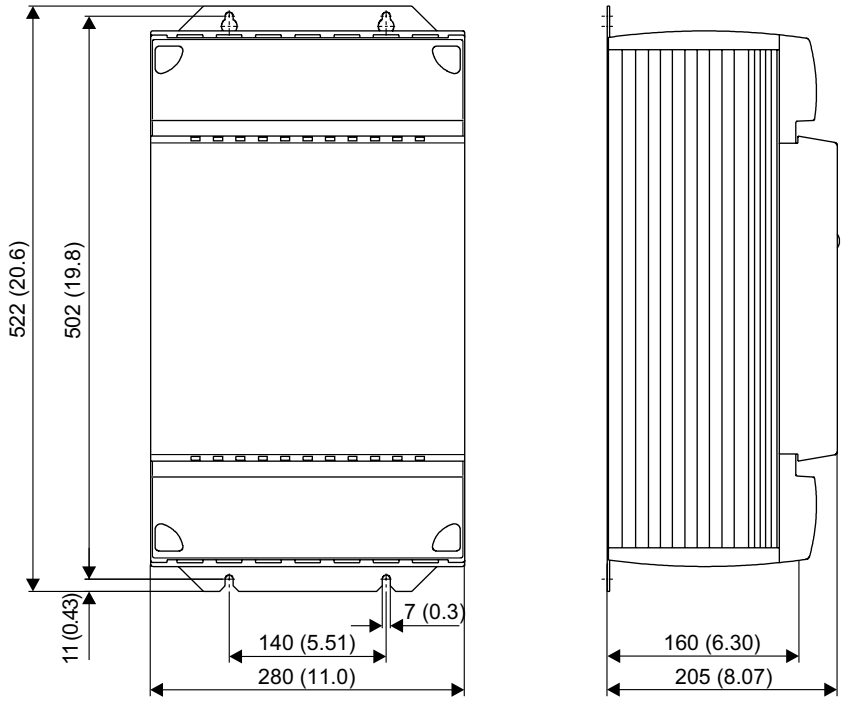

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Figure 23: Dimension drawing, MDR60A size 4, dimensions in mm (in)

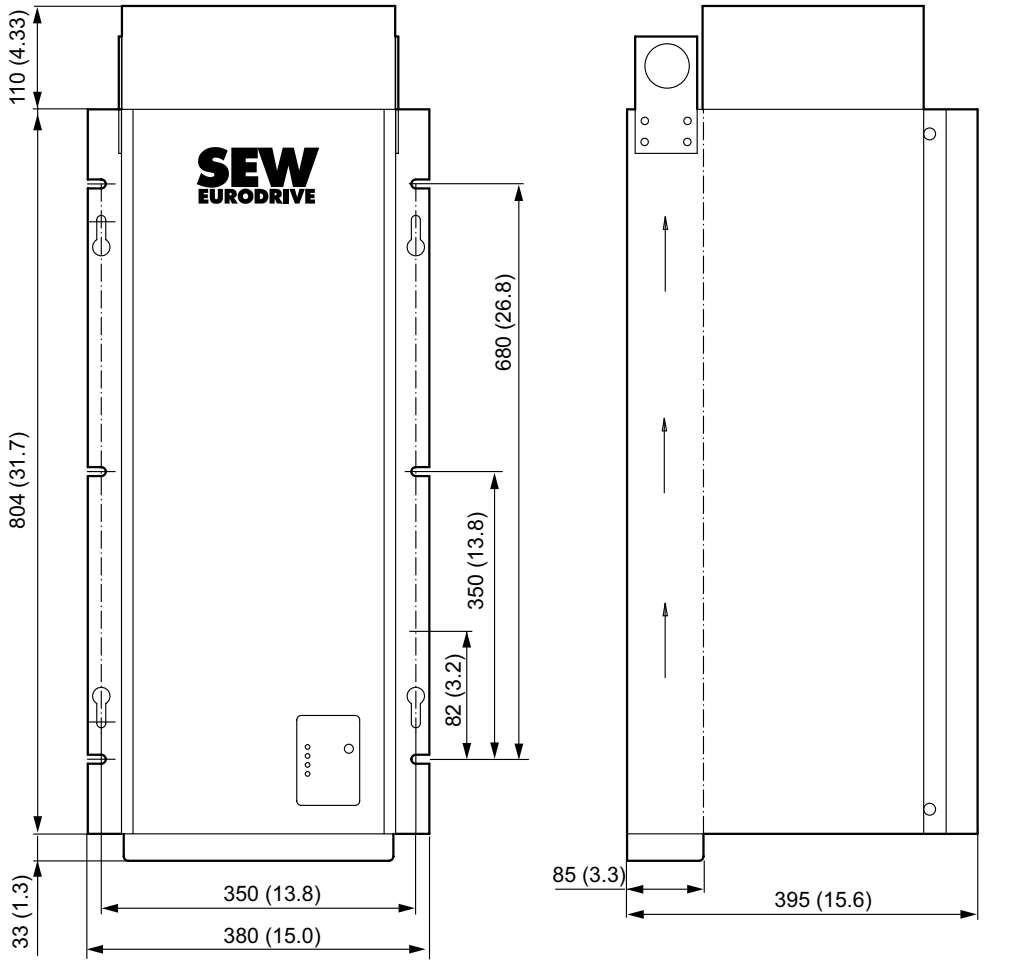


Figure 24: Dimension drawing, MDR60A size 6, dimensions in mm (in)

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 units. The lugs for connection to the regenerative power supply unit and an inverter are supplied with the cable set. Use commercially available 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	814 567 9	814 250 5	814 251 3	817 593 4
For connecting MOVIDRIVE®	0005 ... 0110	0150 ... 0370	0450 ... 0750	0900 ... 1320

NOTE

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

2.9 IPOS$^{plus®}$

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, disregarding any encoder feedback or the selected control mode (VFC, CFC, SERVO). In conjunction with encoder feedback, the IPOS$^{plus®}$ positioning control provides high-performance point-to-point positioning. The IPOS$^{plus®}$ program is written using the MOVITOOLS® software. Starting up the inverter, accessing parameters and editing variables are all possible either with the operating software or the DBG60B keypad (startup in VFC mode only).

Features

- Program execution independent of encoder feedback and operating mode
- The user program is continued even if a unit 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, RS232 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
- Feedforward 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
- Nine types of reference travel
- Possibility of changing the target position, travel speed, positioning ramp and torque while movement is in progress
- Possibility of "Endless positioning"
- Override function
- Cam control
- 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, 2: 1 ... 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 interval 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) 1 output (DC 0...20 mA, DC 4...20 mA)

2.10 DBG60B keypad option

Description

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

Keypad		Language variants	Part number
 56555AXX	**DBG60B-01**	DE/EN/FR/IT/ES/PT/NL (German / English / French / Italian / Spanish / Portuguese / Dutch)	1820 403 1
	DBG60B-02	DE / EN / FR / FI / SV / DA / TR (German / English / French / Finnish / Swedish / Danish / Turkish)	1820 405 8
	DBG60B-03	DE/EN/FR/RU/PL/CS (German / English / French / Russian / Polish / Czech)	1820 406 6
	DBG60B-04	DE / EN / FR / ZH (German / English / French / Chinese)	1820 850 9
	Door installation set[1]	**Description (= scope of delivery)**	**Part number**
	DBM60B	• Housing for DBG60B (IP65) • DKG60B extension cable, length 5 m	824 853 2
	Extension cable	**Description (= scope of delivery)**	**Part number**
	DKG60B	• Length 5 m • 4-core, shielded cable	817 583 7

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 the binary inputs / outputs
- Error 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® units.
- User-friendly startup menu for VFC mode
- Manual control of MOVIDRIVE® B and MOVITRAC® B
- Manual operation of MOVIMOT® (→ Decentralized technology documentation)

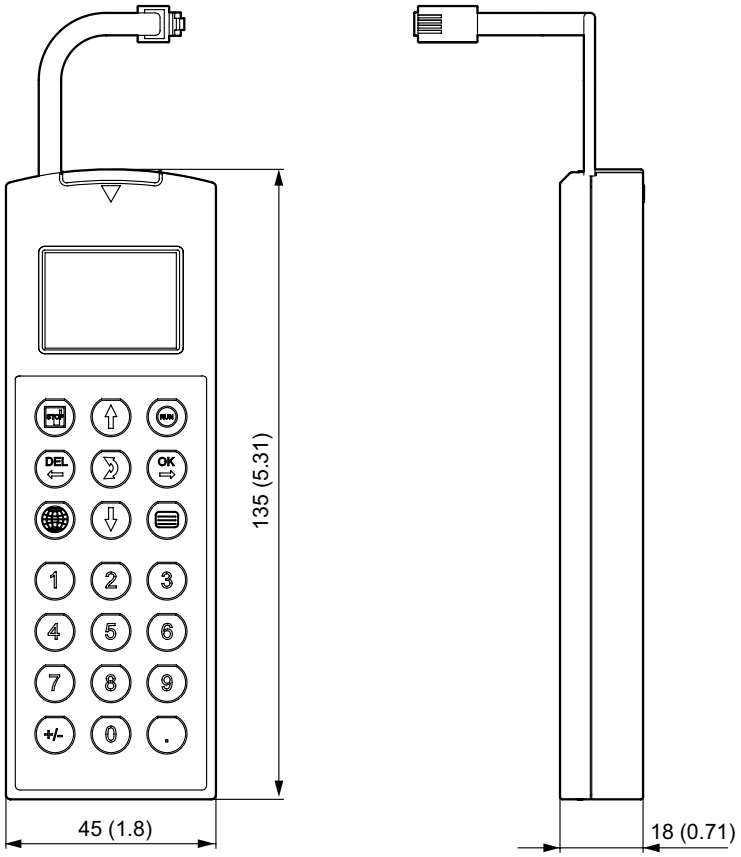
Features

- 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)

	NOTE
	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.

Dimension drawing for DBG60B

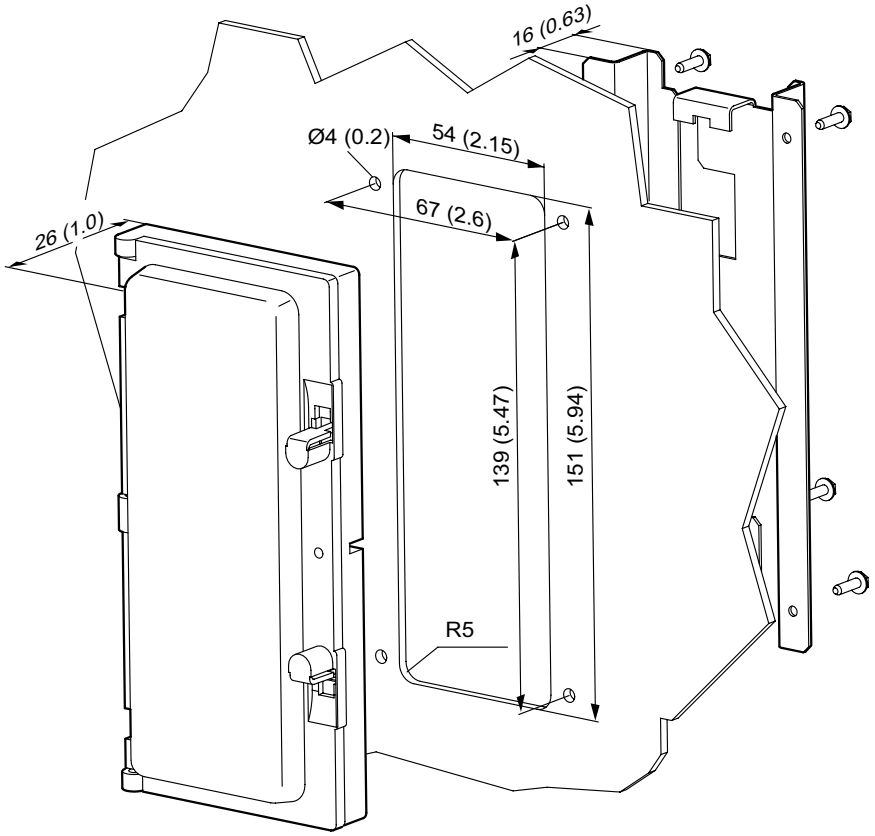
Dimensions in mm (in)



53147CXX

Dimension drawing for installationDBG60B housing

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 housing in enclosure IP65 and a 5 m DKG60B extension cable.



62899AXX

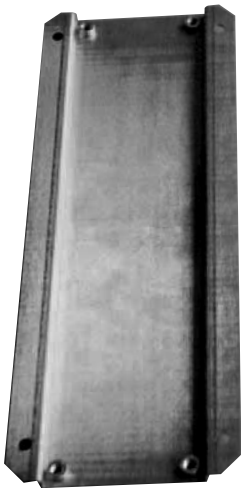
Figure 25: Dimension drawing for DBG60B housing, dimensions in mm (in)

2.11 DMP11B mounting panel option

Part number 818 398 8

Description

DMP11B



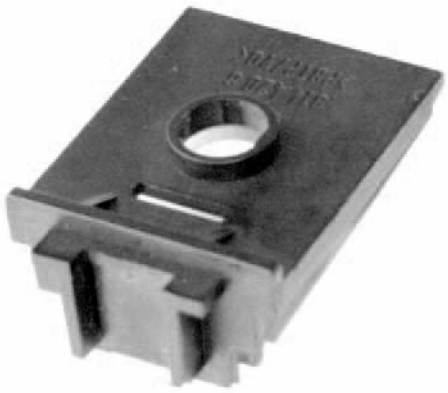
54588AXX

If a MOVIDRIVE® MD_60A size 2 unit 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.

2.12 DLB11B touch guard option

Part number 823 111 7 (12 pieces included in the scope of delivery)

Description



63233AXX

Degree of protection IP20 can be achieved with touch guard DLB11B for the following units:

- MOVIDRIVE® MDX61B size 4 (AC 500 V units: MDX61B0370/0450; AC 230 V units: MDX61B0220/0300)
- MOVIDRIVE® MDX61B size 5 (AC 500 V units: MDX61B0550/0750)
- Regenerative power supply MOVIDRIVE® MDR60A size 4 (MDR600750-503-00)

2.13 HIPERFACE® encoder card option type DEH11B

Part number 824 310 7

Description The option capable MOVIDRIVE® MDX61B units can be equipped with the HIPERFACE® encoder card type DEH11B. The encoder card offers one input for the motor encoder and one input for an external encoder, also referred to as synchronous encoder. The input for the external encoder can also be used as an output for incremental encoder simulation.

Electronics data

Option DEH11B			
 11870AXX	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 AC 1 V_{SS} • TTL encoder with negated tracks • Encoder with signal level to RS422 Encoder power supply: • DC+12 V (tolerance range DC 10.5 - 13 V) • I_{max} = DC 650 mA[1)]
	Motor encoder inputX15:	Permitted encoder types: • HIPERFACE® encoder • sin/cos encoder AC 1 V_{SS} • TTL encoder with negated tracks • Encoder with signal level to RS422 • Permitted resolution: 128/256/512/1024/2048 increments Encoder power supply: • DC+12 V (tolerance range DC 10.5 - 13 V) • I_{max} = DC 650 mA[1)]	

1) Total current load of DC 12 V encoder supply ≤ DC 650 mA.

2.14 Absolute encoder card option type DEH21B/DIP11B

Part numbers

- DEH21B: 1820 818 5
- DIP11B: 824 969 5

Description

The DEH21B and DIP11B options extend the MOVIDRIVE® B system to include an SSI interface for absolute encoders. This option allows the following possibilities 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 distance, even without motor encoder feedback
- Free processing of the absolute position in the IPOS$^{plus®}$ program
- In addition to the basic unit, 8 digital inputs and 8 digital outputs are available with the DIP1B 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

Electronics data for DEH21B

DEH21B option			
 11935AXX	Motor encoder connection X15:		Permitted encoder types: • HIPERFACE® encoder • sin/cos encoder AC 1 V_{SS} • TTL encoder with negated tracks • Encoder with signal level to RS422 • Permitted resolution: 128/256/512/1024/2048 increments Encoder power supply: , • DC+12 V (tolerance range DC 10.5 ... 13 V) • I_{max} = DC 650 mA
	Encoder connection	X62:	SSI encoder input
	Power supply connection	X60:1	24VIN: DC 24 V power supply for encoder connected to X62
	Reference terminal	X60:2	Reference potential 24VIN

Electronics data for DIP11B

DIP11B option			
 11884AXX	Connection binary inputs	X60:1 ... 8	DI10 ... DI17 isolated via optocoupler, PLC compatible (EN 61131), scanning time 1 ms
	Internal resistance Signal level (EN 61131) Function	X60:1 ... 8	$R_i \approx$ 3 kΩ , $I_E \approx$ DC 10 mA DC+13 V ... +30 V = "1" / DC–3 V ... +5 V = "0" DI10 ... DI17: Selection option → Parameter menu P61_
	Connection binary outputs	X61:1 ... 8	DO10 ... 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) Function	X61:1 ... 8	DC +24 V = "1" DC 0 V = "0" **Important**: Do not apply external voltage! DO10 ... DO17: Selection option → Parameter menu P63_
	Encoder connection	X62:	SSI encoder input
	Reference terminals	X60:9 X60:10	DCOM: Reference potential for binary inputs (DI10 ... DI17) DGND: Reference potential for binary signals and 24VIN • Without jumper X60:9-X60:10 (DCOM-DGND) isolated binary inputs • With jumper X60:9-X60:10 (DCOM-DGND) non-isolated binary inputs
	Permitted line 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)
	Voltage input	X61:9	24VIN: Supply voltage DC+24 V for binary outputs DO10 ... DO17 and encoder (mandatory)

2.15 Resolver card option type DER11B

Part number 824 307 7

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

Electronics data

DER11B option			
 11871AXX	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	External encoder input (max. 200 kHz): Permitted encoder types: • HIPERFACE® encoder • sin/cos encoder AC 1 V_{SS} • TTL encoder with negated tracks • Encoder with signal level to RS422 Encoder power supply: • DC+12 V (tolerance range DC 10.5 - 13 V) • I_{max} = DC 650 mA
	Motor encoder input X15:	Resolver 2-pole, U_{ref} = AC 3.5 V_{eff}, 4 kHz U_{in} / U_{ref} = 0.5	
	Maximum cable length:	100 m (328 ft)	

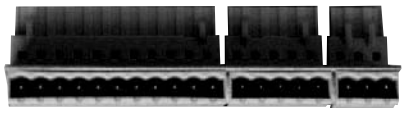
2.16 Connector adapter for unit replacement MD_60A - MDX60B/61B

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

- DAT11B: Terminal adapter, part number 824 671 8

  If the TF/TH option is connected to X10 when operating MOVIDRIVE® MD_A, then X10 can be directly rearranged. The jumper between X10:1 and X10:2 must be removed if a TF/TH option is connected to encoder input X15. Three plugs 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 (binary inputs).

DAT11B



54589AXX

- DAE15B: Encoder adapter X15, part number 817 629 9

  If a motor with encoder on X15 is in operation on an MDV or MCV, the encoder is connected via a 9-pin plug 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 DWE11B/12B option (→ section "DWE11B/12B interface adapter option).

DAE15B

54585AXX

Length of DAE15B: 200 mm ± 20 mm (7.87 in ± 0.79 in)

Cable cross section: 6 x 2 x 0.25 mm^2 (AWG 23)

Terminal of the 15-pin sub D connector (MOVIDRIVE® MDX61B, option DEH11B, X15)	Core color in prefabricated cable	Terminal of 9-pin sub D socket (encoder end)
1	Yellow (YE)	1
2	Red (RD)	2
3	Pink (PK)	3
4	Violet (VT)	4
8	Brown (BN)	5
9	Green (GN)	6
10	Blue (BU)	7
11	Gray (GY)	8
15	White (WH)	9

- DAE14B: Encoder adapter X14, part number 817 630 2

  If a synchronous encoder at X14 is operated on a MOVIDRIVE® MDV, MDS, MCV or MCS unit, connection takes place via a 9-pin socket. Since the DEH11B and DER11B options for MOVIDRIVE® MDX61B come equipped with a 15-pin plug, 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.

DAE14B

54586AXX

Length of DAE14B: 200 mm ± 20 mm (7.87 in ± 0.79 in)

Cable cross section: 6 x 2 x 0.25 mm^2 (AWG 23)

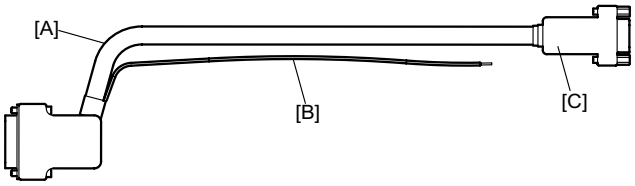
Terminal of 15-pin sub D socket (MOVIDRIVE® MDX61B, option DEH11B/DER11B, X14)	Core color in prefabricated cable	Terminal of the 9-pin sub D connector (encoder end)
1	Yellow (YE)	1
2	Red (RD)	2
3	Pink (PK)	3
7	Violet (VT)	4
8	Brown (BN)	5
9	Green (GN)	6
10	Blue (BU)	7
11	Gray (GY)	8
15	White (WH)	9

2.17 Interface adapter option type DWE11B/12B

Part number and description

- DWE11B, part number 188 187 6

  The interface adapter DWE11B (HTL → TTL) in the form of an adapter cable is used **to connect single-ended HTL encoders to theDEH11B/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.



58748AXX

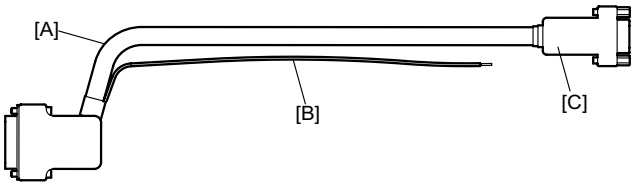
[A] 5 x 2 x 0.25 mm^2 (AWG 23) / length 1000 mm (39.37 in) /
Max. line length inverter - encoder: 100 m (328 ft)

[B] DC 24 V connection for HTL encoder; 1 x 0.5 mm^2 (AWG 20) / length 250 mm (9.84 in)

Signal	Terminal of 9-pin sub D socket [C] (encoder end)
A	1
B	2
C	3
UB	9
GND	5

- DWE12B, part number 188 180 9

  The interface adapter DWE12B (HTL → TTL) in the form of an adapter cable is used **to connect single-ended HTL encoders to theDEH11B/DEH21B option**. In addition to the A, B and C track, you will also have to connect the negated tracks ($\overline{A}$, $\overline{B}$, $\overline{C}$). SEW-EURODRIVE recommends using this interface adapter for any new system.



58748XX

[A] 4 x 2 x 0.25 mm^2 (AWG 23 / length 1000 mm (39.37 in)

Max. line length inverter - encoder: 200 m (656 ft)

[B] DC 24 V connection for HTL encoder; 1 x 0.5 mm^2 (AWG 20) / length 250 mm (9.84 in)

Signal	Terminal of 9-pin sub D socket [C] (encoder end)
A	1
$\overline{A}$	6
B	2
$\overline{B}$	7
C	3
$\overline{C}$	8
UB	9
GND	5

2.18 Interface adapter option type UWS11A

Part number 822 689 X

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 MOVIDRIVE® unit (ST11/ST12).

The UWS11A option requires a DC 24 V voltage supply (I_{max} = DC 50 mA).

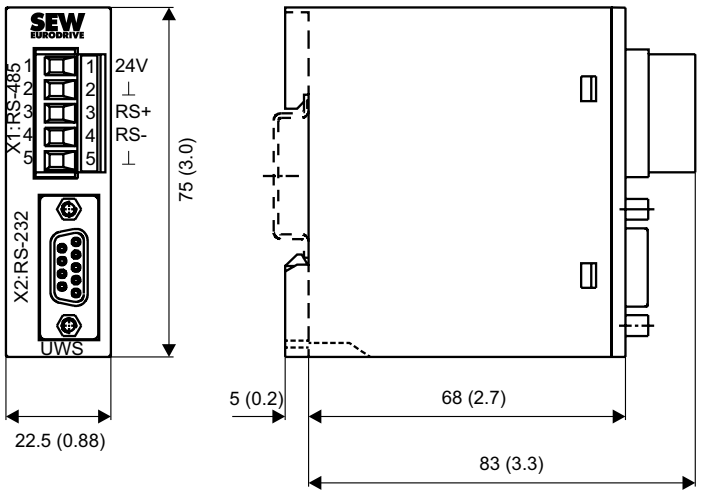
RS232 interface The connection between UWS11A and PC is made using a commercially available serial interface cable (shielded!).

RS485 interface Max. 32 MOVIDRIVE® units can be networked for communication (max. line length 200 m) via the RS485 interface of the UWS11A. Do not connect external terminating resistors because dynamic terminating resistors are already installed!

Permitted cable cross section: One core per terminal 0.20...2.5 mm^2 (AWG 24...12)

Two cores per terminal 0.20...1 mm^2 (AWG 24...17)

Dimension drawing Dimensions, UWS11A, in mm (in)



59322BXX

The UWS11A option is mounted on a mounting rail (EN 50022-35 x 7.5) in the control cabinet.

Technical data

UWS11A	
Part number	822 689 X
Ambient temperature	0 ... 40 °C
Storage temperature	–25 °C ... +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection	IP20
Current consumption	max. DC 50 mA
Weight	150 g (0.35 lb)
Dimensions	83 mm x 75 mm x 22.5 mm (3.3 in x 3.0 in x 0.866 in)

2.19 Interface adapter option type UWS21B

Part number 1820 456 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 MOVIDRIVE® B.

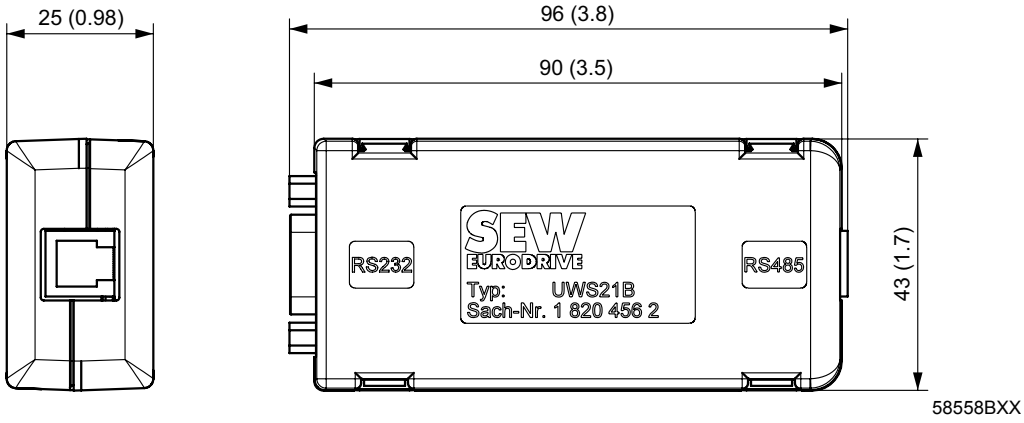
RS232 interface The connection of UWS21B with PC is made using a standard serial interface cable (shielded).

RS485 interface UWS21B and MOVIDRIVE® B are connected using a serial interface cable with RJ10 connectors.

Scope of delivery The scope of delivery for the UWS21B option includes:

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

Dimension drawing Dimensions in mm (in)



Technical data

UWS21B	
Part number	1 820 456 2
Ambient temperature	0 ... 40 °C
Storage temperature	–25 °C ... +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection	IP20
Weight	300 g (0.7 lb)
Dimensions	96 mm x 43 mm x 25 mm (3.8 in x 1.7 in x 0.98 in)

2.20 Interface adapter option type USB11A

Part number 824 831 1

Description Option USB11A enables a PC or laptop with a USB interface to be connected to the XT slot of MOVIDRIVE® B. The USB11A interface adapter supports USB1.1 and USB2.0.

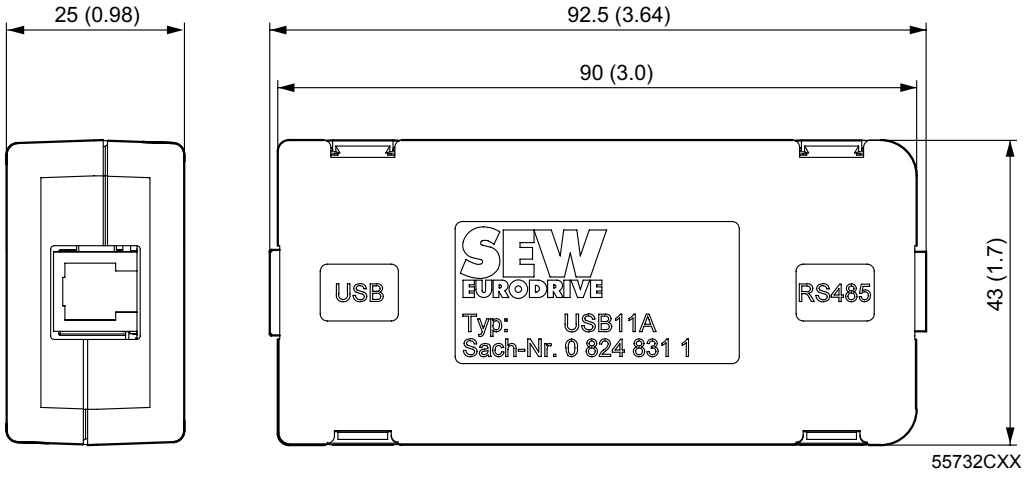
USB11A - PC USB11A is connected to the PC using a commercially available, shielded USB connection cable type USB A-B.

MOVIDRIVE® - USB11A MOVIDRIVE® B and USB11A are connected using a serial interface cable with RJ10 connectors.

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 connectors to connect USB11A and MOVIDRIVE® B
- CD-ROM with drivers and MOVITOOLS®

Dimension drawing Dimensions in mm (in)



55732CXX

Technical data

USB11A	
Part number	824 831 1
Ambient temperature	0 ... 40 °C
Storage temperature	–25 °C ... +70 °C (according to EN 60721-3-3, class 3K3)
Degree of protection	IP20
Weight	300 g (80.7 lb)
Dimensions	92.5 mm x 43 mm x 25 mm (3.64 in x 1.7 in x 0.98 in)

2.21 DC 5 V encoder power supply option type DWI11A

Part number 822 759 4

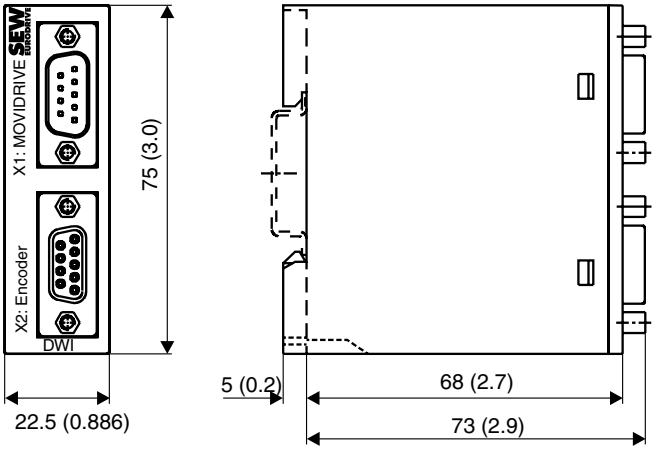
Description If you are using an incremental encoder with a DC 5 V encoder power supply, install the DC 5 V encoder power supply option type DWI11A between the inverter and the incremental encoder. This option provides a regulated DC 5 V power supply for the encoder. For this purpose, the DC 12 V power 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 power supply are not allowed to be connected directly to the encoder inputs X14: and X15: . This would cause irreparable damage to the encoder.

	NOTE
	Note that if a short circuit occurs in the sensor cable, the connected encoder may be exposed to a voltage higher than permitted.

Recommendation Use prefabricated cables from SEW for the encoder connection.

Dimension drawing Dimensions in mm (in)



01315DXX

The DWI11A option is mounted on a support rail (EN 50022-35 x 7.5) in the control cabinet.

Technical data

DC 5 V encoder power supply option type DWI11A	
Part number	822 759 4
Voltage input	DC 10...30 V, I_{max} = DC 120 mA
Encoder power supply	DC +5 V (up to $U_{max} \approx$ +10 V), I_{max} = DC 300 mA
Max. line length that can be connected	100 m (9,997.44 cm) total Use a shielded twisted-pair cable (A and $\overline{A}$, B and $\overline{B}$, C and $\overline{C}$) for connecting the encoder to the DWI11A and the DWI11A to MOVIDRIVE®.

2.22 Input/output card type DIO11B option

Part number 824 308 5

Description The number of inputs/outputs of the basic MOVIDRIVE® B unit can be expanded using 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 binary inputs/outputs are the same as the basic unit (→ parameter group P6__, Terminal assignment).

Electronics data

DIO11B option			
 11872AXX	Setpoint input n2	X20:1/X20:2	AI21/AI22: Voltage input Differential input or input with AGND reference potential
	AI21/AI22 operating mode Resolution Internal resistance		n2 = DC 0...+10 V or DC -10 V...0...+10 V 12 bit, sampling time 1 ms R_i > 40 kΩ
	Analog outputs	X21:1/X21:4	AOV1/AOV2: Voltage outputs DC-10 V...0...+10 V, I_{max} = DC 10 mA, short-circuit proof and protected against external voltage to DC 30 V, selection option → parameter menu P64_
		X21:2/X21:5	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 Resolution		5 ms 12 bit
	Binary inputs X22:1...X22:8 Internal resistance		Isolated (optocoupler), PLC compatible (EN 61131) DI1Ø...DI17 $R_i \approx 3$ kΩ, $I_E \approx$ DC 10 mA Sampling interval 1 ms
	Signal level		DC+13 V...+30 V= "1" = Contact closed DC-3 V...+5 V = "0" = Contact open — Fulfills EN 61131
	Function	X22:1...X22:8	DI10...DI17: Selection option → Parameter menu P61_
	Binary outputs	X23:1...X23:8	DO1Ø...DO17: PLC-compatible (EN 61131-2), response time 1ms
	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 terminals X20:3/X21:3/X21:6		AGND: Reference potential for analog signals (AI21/AI22/AO_1/AO_2) DCOM: Reference potential for binary inputs X22:1...X22:8 (DI1Ø...DI17)
		X22:9 X22:10	DGND: Reference potential for binary signals, reference potential for DC 24 V power supply
	Voltage input	X23:9	24VIN: Supply voltage DC +24 V for binary outputs DO1Ø...DO17
	Permitted line 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)

Functions

- 8 binary inputs
- 8 binary 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)

2.23 PROFIBUS fieldbus interface option type DFP21B

Part number 824 240 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® are available from the SEW homepage (http://www.sew-eurodrive.de) under "Software" 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 rapid cyclic data exchange; e.g. setpoints or binary commands, between central automation units (PROFIBUS master) and decentralized peripheral units (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.

Electronics data

DFP21B option		
 11873AXX	Protocol option	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 sub D socket, pin assignment to IEC 61158
	Bus terminator	Not integrated, implement using suitable PROFIBUS connector with terminating resistors that can be activated
	Station address	1 ... 125, adjustable 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

2.24 INTERBUS fieldbus interface option type DFI11B

Part number 824 309 3

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 inverter can be controlled and configured in a user-friendly way.

Electronics data

DFI11B option		
 11874AXX	Supported baud rates	500 kBaud and 2 MBaud, can be selected via DIP switch
	Connection technology	Remote bus input: 9-pin D-sub connector Remote bus 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

2.25 INTERBUS-LWL fieldbus interface option type DFI21B (FO)

Part number 824 311 5

Description MOVIDRIVE® B can be equipped with a fieldbus interface for the non-proprietary and standardized INTERBUS sensor/actuator bus system INTERBUS with fiber optic cables (INTERBUS-LWL).

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 inverter can be controlled and configured in a user-friendly way.

Electronics data

DFI21B option		
 11875AXX	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

2.26 DFE11B fieldbus interface option Modbus/TCP

Part number 1820 036 2

Description The MOVIDRIVE® MDX61B inverter enables you to use the DFE11B option to connect to higher-level automation, project planning and visualization systems via Ethernet (MODUBUS/TCP protocol) thanks to its powerful, universal fieldbus interface. You can use option DFE11B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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).

Electronics data

Option DFE11B		
 11876AXX	Application protocols	• **MODBUS/TCP** (Transmission Control Protocol) to control and set parameters for the inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®. • **DHCP** (Dynamic Host Configuration Protocol) to assign address parameter automatically.
	Port numbers used	• 502 (MODBUS) • 300 (SMLP) • 80 (HTTP) • 67 / 68 (DHCP)
	Ethernet services	• ARP • ICMP (Ping)
	Automatic baud rate detection	10 MBaud / 100 MBaud
	Max. number of process data	10 process data
	Connection technology	RJ45 plug connector
	Addressing	4 byte IP address
	Tools for startup	• MOVITOOLS® MotionStudio software • DBG60B keypad

Functions

- MODBUS/TCP protocol
- RJ45 plug connector, star-type cabling
- Up to 10 process data and parameter data items can be transferred at the same time
- Three ways to allocate the IP address:
  1. Set the node address manually (byte 0 or IP address)
  2. Make the setting using the DBG60B keypad and MOVITOOLS®
  3. Use the DHCP server
- Engineering access using MOVITOOLS® via Ethernet-TCP/IP
- Inverter diagnostics using a standard browser (e.g. Internet Explorer) via the integrated Web server:
  – Transfer display values
  – Configure DFE11B (after login)

2.27 PROFINET IO RT type DFE12B fieldbus interface option

Part number 1820 563 1

Description The MOVIDRIVE® MDX61B inverter enables you to use the DFE12B 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 DFE12B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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).

Electronics data

Option DFE12B		
 11877AXX	Application protocols	• **PROFINET IO** to control and configure the drive inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®.
	Port numbers used	• 34962 - 34964 (PROFINET IO) • 300 (SMLP) • 80 (HTTP)
	Ethernet services	• ICMP (ping) • ARP
	Transmission rate	100 MBit full duplex
	Transmission process	100BASETX
	Max. number of process data	10 process data
	Connection technology	RJ45 plug connector
	Auto-negation	Yes
	GSD file	GSDML-V1.0-SEW-DFE12B-xxxxxxxx.xml (xxxxxxxx is a placeholder for year/month/day)
	SEW manufacturer ID	$010A_{hex}$
	Device ID	0001_{hex}
	Alarms	Diagnostic alarm in the event of a unit fault (can be activated)
	Diagnostics	Yes
	Configuration via PROFINET	In preparation
	Max. number of connections	3
	Tools for startup	• MOVITOOLS® MotionStudio software • DBG60B keypad

Functions

- PROFINET IO protocol
- RJ45 plug connector, star-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® via Ethernet TCP/IP
- Inverter diagnostics using a standard browser (e.g. Internet Explorer) via the integrated Web server:
  - Transfer display values
  - DFE11B configuration (after login)

2.28 PROFINET IO RT type DFE32B fieldbus interface option

Part number 1821 345 6

Description The MOVIDRIVE® MDX61B 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 DFE32B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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).

Electronics data

DFE32B option		
 11878AXX	Application protocol	• **PROFINET IO** (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®.
	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 version 5.40 and higher. • DBG60B keypad
	Firmware status of MOVIDRIVE® MDX61B	Firmware version 824 854 0.17 or higher (→ display with P076)

Functions

- PROFINET IO protocol
- Two RJ45 plug connectors for star or line shaped 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® 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)

2.29 DFE13B EtherNet/IP fieldbus interface option

Part number 1820 565 8

Description The MOVIDRIVE® MDX61B inverter enables you to use the DFE13B option to connect to higher-level automation, project planning and visualization systems via Ethernet (EtherNet/IP protocol) thanks to its powerful, universal fieldbus interface. You can use option DFE13B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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).

Electronics data

Option DFE13B		
 11879AXX	Application protocols	• **EtherNet/IP** (Industrial Protocol) 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®. • **DHCP** (Dynamic Host Configuration Protocol) to assign address parameter automatically.
	Port numbers used	• 44818 (Ethernet/IP TCP) • 2222 (EtherNet/IP UDP) • 300 (SMLP) • 80 (HTTP) • 67 / 68 (DHCP)
	Ethernet services	• ARP • ICMP (Ping)
	Automatic baud rate detection	10 MBaud / 100 MBaud
	Max. number of process data	10 process data
	Connection technology	RJ45 plug connector
	Addressing	4 byte IP address
	Manufacturer ID	$013B_{hex}$
	Tools for startup	• MOVITOOLS® MotionStudio software • DBG60B keypad

Functions

- EtherNet/IP protocol
- RJ45 plug connector, star-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. Make the setting using the DBG60B keypad and MOVITOOLS®
  2. Use the DHCP server
- Engineering access using MOVITOOLS® via Ethernet TCP/IP
- Inverter diagnostics using a standard browser (e.g. Internet Explorer) via the integrated Web server:
  - Transfer display values
  - DFE13B configuration (after login)

2.30 DFE33B EtherNet/IP fieldbus interface option

Part number 1821 346 4

Description The MOVIDRIVE® MDX61B inverter enables you to use the DFE33B option to connect to higher-level automation, project planning and visualization systems via Ethernet (EtherNet/IP protocol) thanks to its powerful, universal fieldbus interface. You can use option DFE33B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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).

Electronics data

DFE33B option		
 11880AXX	Application protocol	• **EtherNet/IP** (Industrial Protocol) 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®. • **DHCP** (Dynamic Host Configuration Protocol) to assign address parameter automatically.
	Port numbers used	• 44818 (EtherNet/IP TCP) • 2222 (EtherNet/IP UDP) • 300 (SMLP) • 80 (HTTP) • 67 / 68 (DHCP)
	Ethernet services	• ARP • ICMP (Ping)
	ISO / OSI layer 2	Ethernet II
	Automatic baud rate detection	10 MBaud / 100 MBaud
	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)	$013B_{hex}$
	Tools for startup	• MOVITOOLS® MotionStudio version 5.40 and higher. • DBG60B keypad
	Firmware status of MOVIDRIVE® MDX61B	Firmware version 824 854 0.17 or higher (→ display with P076)

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. Make the setting using the DBG60B keypad and MOVITOOLS®
  2. Use the DHCP server
- Engineering access using MOVITOOLS® 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)

2.31 EtherCAT fieldbus interface option type DFE24B

Part number 1821 126 7

Description The MOVIDRIVE® MDX61B 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 option DFE24B to communicate directly with the inverters via EtherCAT and operate the MOVITOOLS® software to change parameters and IPOS$^{plus®}$ programs.

Electronics data

DFE24B option		
 11881AXX	Standards	IEC 61158, IEC 61784-2
	Baud rate	100 Mbaud full duplex
	Connection technology	Two RJ45 plug connectors
	Bus terminator	Not integrated as bus termination is activated automatically.
	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)
	MOVIDRIVE® B firmware status	824 854 0.18 or higher (→ isplay with P076)
	Tools for startup	• MOVITOOLS® MotionStudio version 5.40 and higher. • DBG60B keypad

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

2.32 DeviceNet fieldbus interface option type DFD11B

Part number 824 972 5

Description The MOVIDRIVE® MDX61B inverter in conjunction with the DFD11B option allows connection to higher-level automation, project planning and visualization systems via the open and standardized DeviceNet fieldbus system thanks to the option's high-performance universal fieldbus interface.

The DeviceNet fieldbus interface type DFD11B can be plugged into the fieldbus slot on all MOVIDRIVE® MDX61B units. The DFD11B option enables communication with the machine control for a maximum of 10 process data. You need an EDS file to be able to integrate the DFD11B in the machine control. You can download this file from the SEW homepage in the Software section.

Electronics data

DFD11B option		
 11882AXX	Communication protocol	Master/slave connection set according to DeviceNet specification version 2.0
	Number of process data words	Can be set using DIP switch: • 1 ... 10 process data words • 1 ... 4 process data words with bit-strobe I/O
	Baud rate	125, 250 or 500 kbaud, can be set using DIP switch
	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-pole Phoenix terminal • Pin assignment according to DeviceNet specification
	MAC ID	0 ... 63, can be set using 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 software • DBG60B keypad

2.33 CANopen fieldbus interface option type DFC11B

Part number 824 317 4

Description The MOVIDRIVE® MDX61B 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 units from SEW-EURODRIVE.

The DFC11B fieldbus interface type can be plugged into the fieldbus slot on all MOVIDRIVE® MDX61B units. in this way, a second system bus (CAN) on MOVIDRIVE® is made available. The DFC11B option enables communication with the machine control 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 homepage in the Software section.

Electronics data

DFC11B option		
 11883AXX	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 Sub-D plug connector X30 (plug assigned to CIA standard) or terminal X31
	Permitted line 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® MotioStudio software • DBG60B keypad

Functions

- CAN Layer 2 and communication profile MOVILINK® or CANopen
- Electrical isolation via optocoupler

	NOTE
	If electrical isolation is not required, the CAN-Bus can be connected directly to the basic unit at X12:SC11/SC12 without the DFC11B option. This does not effect the functionality.

2.34 Synchronous operation board option type DRS11B

Part number 824 672 6

Description The DRS11B option enables a group of motors to run in angular synchronous operation or in an adjustable proportional relationship. For detailed information, refer to the "Synchronous Operation Board Type DRS11B" 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 slave motors. The motors must be equipped with encoders. The DRS11B option is plugged into the expansion slot.

Option DRS11B		
 11885AXX	Binary inputs X40:1...X40:6	EINGØ...EING5: isolated (opto-coupler) PLC compatible (EN 61131) $R_i \approx 3\ k\Omega$, $I_E \approx$ DC 10 mA Sampling interval 5 ms
	Internal resistance	
	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 • INP1 = Offset 1 • INP2 = Offset 2 • INP3 = Offset 3 • INP4 = IPOS$^{plus®}$ variable H477.0 • INP5 = IPOS$^{plus®}$ variable H477.1
	Binary outputs X40:9/X40:10	OUTPØ/OUTP1: PLC compatible (EN 61131-2) Response time 5 ms
	Signal level	"0" = DC 0 V "1" = DC+24 V **Caution:** Do not apply external voltage!
	Function	Fixed assignment with: • OUTPØ = IPOS$^{plus®}$ variable H476.0 • OUTP1 = IPOS$^{plus®}$ variable H476.1 I_{max} = DC 50 mA, short-circuit proof, protected against external voltage to DC 30 V
	Reference terminals X40:11 X40:7	DGND: Reference potential for binary signals DCOM: Reference potential for binary inputs X40:1...X40:6 (INPØ...INP5)
	Voltage output X40:8	VO24: Voltage output DC +24 V, max. DC 100 mA
	Synchronous encoder input X41: Encoder power supply	Max. 200 kHz, signal level according to RS422 or sin/cos DC +24 V, I_{max} = 650 mA[1)] 9-pin D-sub socket
	Master encoder input X42: Encoder power supply	Max. 200 kHz, signal level according to RS422 or sin/cos DC+24 V, I_{max} = DC 650 mA[1)] 9-pin D-sub socket
	Encoder simulation output X43:	Signal level to RS422 9-pin D-sub connector
	Voltage input X44:1 X44:2 X44:3	GND DC+24 V supply voltage for binary outputs X40:9/X40:10 and encoder GND
	Permitted line 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)

1) Total current load (X41 **and** X42) of the DC 24 V encoder supply ≤ DC 650 mA

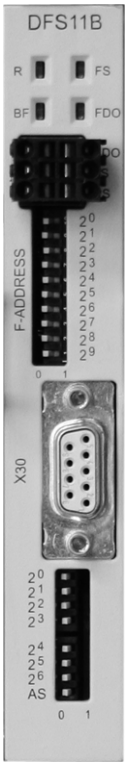
2.35 PROFIBUS DP-V1 with PROFIsafe fieldbus interface option type DFS11B

Part number 1820 962 9

Description MOVIDRIVE® B can be equipped with a 12 Mbaud fieldbus interface DFS11B for the PROFIBUS-DP-V1 serial bus system with PROFIsafe. In addition to cyclical and acyclical data exchange, safety-oriented communication takes place that allows to switch a safe F-DO output. The device master data (GSD) and type files for MOVIDRIVE® are available from the SEW homepage (http://www.sew-eurodrive.de) under "Software" to help with project planning and facilitate startup.

For more detailed information, refer to the "Fieldbus Interface DFS11B PROFIBUS DP-V1 with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

Electronics data

DFS11B option		
 11892AXX	PROFIBUS protocol options	PROFIBUS DP and DP-V1 according 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 terminator	Not integrated, implement using suitable PROFIBUS plug with terminating resistors that can be switched on.
	Station address	1 ... 125, adjustable 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 software • DBG60B keypad
	F address	1 ... 1022 DIP switch for setting the failsafe address
	Ambient temperature	0 to 55 °C

Safety part

Safety characteristics	
Highest possible safety category	• SIL 3 according to EN 61508 • Category 4 according to EN 954-1 • Performance level e according to EN ISO 13849-1
System structure	2 channels with diagnostics (1002D)
Type of operating mode	"High demand" rate according to EN 61508
Probability of dangerous failure per hour (PFH value)	<1.00E-09 (1 FIT)
Proof test interval (EN61508)	10 years, after which the component must be replaced with a new one
Repair time	100 hours
Safe status	Value "0" for all safety-oriented F-DO process values (output disabled)
Safe output	
P-M switch (from load voltage supply)	DC 24 V output according to EN 61131-2, protected against short circuits and overloads
Rated current	1A
Leakage current (at "0" signal)	Typically –2 mA (with 2 V / 1 kΩ load resistance) (Note: 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	Response 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 → output switches)	≤ 25 ms
Maximum line length	30 m

2.36 PROFIBUS DP-V1 with PROFIsafe fieldbus interface option type DFS12B

Part number 1820 963 7 (in preparation)

Description MOVIDRIVE® B can be equipped with a 12 Mbaud fieldbus interface DFS12B for the PROFIBUS-DP-V1 serial bus system with PROFIsafe. In addition to the cyclical and acyclical data exchange, safety-oriented communication takes place in conjunction with the DCS21B option. The device master data (GSD) and type files for MOVIDRIVE® are available from the SEW homepage (http://www.sew-eurodrive.de) under "Software" to help with project planning and facilitate startup.

For more detailed information, refer to the "Fieldbus Interface DFS12B PROFIBUS DP-V1 with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

Electronics data

DFS12B option		
 11893AXX	PROFIBUS protocol options	PROFIBUS DP and DP-V1 according 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 terminator	Not integrated, implement using suitable PROFIBUS plug with terminating resistors that can be switched on.
	Station address	1 ... 125, adjustable 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 software • DBG60B keypad
	F address	The failsafe address is set using the DCS21B option
	Ambient temperature	0 to 55 °C

2.37 PROFINET IO with PROFIsafe fieldbus interface option, type DFS21B

Part number 1821 183 6

Description

The MOVIDRIVE® MDX61B inverter enables you to use the DFS21B 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 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® software to change parameters and IPOS$^{plus®}$ programs. An integrated Web server lets the user access diagnostic values quickly and easily using a standard browser (e.g. Internet Explorer).

For more detailed information, refer to the "Fieldbus Interface DFS21B PROFINET IO with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

Electronics data

DFS21B option		
 11894AXX	Application protocol	• **PROFINET IO** (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®.
	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 version 5.40 and higher. • DBG60B keypad
	F address	1 ... 1022 DIP switch for setting the failsafe address
	Firmware status of MOVIDRIVE® MDX61B	Firmware version 824 854 0.17 or higher (→ display with P076)
	Ambient temperature	0 to 55 °C

Safety part

Safety characteristics	
Highest possible safety category	• SIL 3 according to EN 61508 • Category 4 according to EN 954-1 • Performance level e according to EN ISO 13849-1
System structure	2 channels with diagnostics (1oo2D)
Type of operating mode	"High demand" rate according to EN 61508
Probability of dangerous failure per hour (PFH value)	<1.00E-09 (1 FIT)
Proof test interval (EN61508)	10 years, after which the component must be replaced with a new one
Repair time	100 hours
Safe status	Value "0" for all safety-oriented F-DO process values (output disabled)
Safe output	
P-M switch (from load voltage supply)	DC 24 V output according to EN 61131-2, protected against short circuits and overloads
Rated current	1A
Leakage current (at "0" signal)	Typically –2 mA (with 2 V / 1 kΩ load resistance) (Note: 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	Response 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® → output switches)	≤ 25 ms
Maximum line length	30 m

2.38 PROFINET IO with PROFIsafe fieldbus interface option, type DFS22B

Part number 1821 184 4

Description The MOVIDRIVE® MDX61B 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 DCS21B option. You can use option DFS22B to communicate directly with the inverters via Ethernet and operate the MOVITOOLS® 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 "Fieldbus Interface DFS22B PROFINET IO with PROFIsafe" manual. You can order this manual from SEW-EURODRIVE.

Electronics data

DFS22B option		
 11895AXX	Application protocol	• **PROFINET IO** (Ethernet frames with frame identification 8892_{hex}) to control and set parameters for the inverter. • **HTTP** (Hypertext Transfer Protocol) for diagnostics using a Web browser. • **SMLP** (Simple Movilink Protocol), protocol used by MOVITOOLS®.
	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 version 5.40 and higher. • DBG60B keypad
	F address	The failsafe address is set using the DCS21B option
	Firmware status of MOVIDRIVE® MDX61B	Firmware version 824 854 0.17 or higher (→ display with P076)
	Ambient temperature	0 ... 55 °C

2.39 MOVISAFE® DCS21B/31B safety module option

Part numbers

- DCS21B complete with prefabricated cable DAE34B (CAN bus connection between DCS21B X86 and DFS21B X31): 1821 895 4
- DCS21B without prefabricated cable: 1820 392 2
- DCS31B: 1820 958 0

Description

The DCS21B and DCS31B 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-oriented manner, the DCS21B option must be used together with the DFS12B fieldbus interface (PROFIBUS DP-V1) or DFS22B (PROFINET IO). The DCS21B/31B option is plugged into the expansion slot.

For detailed information, refer to the "Safety Monitor DCS21B/31B" manual, which you can order from SEW-EURODRIVE.

Electronics data

DCS21B/31B option		
 11890AXX	 11891AXX	LED alarm/error LED watchdog LED system B LED system A X80: Power supply connection X81: Connection binary inputs X82: Connection of binary outputs DO0, DO1 X83: Connection of binary output DO2 X84: Connection of incremental, sin/cos or absolute encoder (encoder 1) X85: Connection of incremental, sin/cos or absolute encoder (encoder 2) X86: CAN bus connection (only for DCS21B) X87: Connection of service interface

2.40 MOVI-PLC® basic DHP11B.. controller option

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.. types	Description
1820 472 4	DHP11B-T0	MOVI-PLC® *basic* controller
1820 822 3	DHP11B-T1	Application version I (in addition to version T0, enables additional functions including electronic cam and synchronous operation)
1820 823 1	DHP11B-T2	Application version II (in addition to version T1, enables additional functions including handling)

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 units at the same time (MOVIDRIVE® B/compact, MOVITRAC® 07/B, MOVIAXIS®, MOVIMOT®).

Electronics data

MOVI-PLC® *basic* DHP11B.. option		
 11886AXX	Status displays	LEDs for the voltage supply to the I/Os, firmware, program, PROFIBUS, System buses
	Fieldbus	• PROFIBUS DP and DP-V1 to IEC 61158 • Automatic detection of baud rate from 9.6 kbaud to 12 Mbaud • Bus termination with suitable connector to implement • GSD file SEW_6007.GSD • DP ident. number 6007_{hex} (24579_{dec}) • Maximum 32 process data
	System bus	• 2 system buses (CAN) for control of 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 and CAN 2 (in preparation)
	Connection technology	• PROFIBUS: 9-pole sub-D connector according to IEC 61158 • System buses and I/Os: plug-in terminals • RS485: RJ10
	Binary 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 kByte • Retain: 24 kByte
	Tools for startup	MOVITOOLS® MotionStudio with integrated PLC editor (Programming languages IL, ST, LD, FBD, CFC, SFC; libraries to optimize control of the inverters)

2.41 OST11B option

Part number 1820 544 5

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 MOVI-PLC® *basic* 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...

Electronics data

OST11B option		
 11887AXX	RS485 interface COM2 X35:1 ... X35:4 X36:1 ... X36:3	• For connection of an Engineering PC, a DOP11A/B operator terminal or a gear-motor with integrated frequency inverter MOVIMOT® • I/O standard, 57.6 kBaud, max. total cable length 200 m, integrated dynamic terminating resistor permanently installed
	Potential level	COM2 is isolated from the MOVI-PLC® *basic* DHP11B.. controller

2.42 MOVI-PLC® advanced controller option DH.41B

Part numbers

The MOVI-PLC® *advanced* DH.41B.. controller is available in 2 mounting position designs which differ in the fieldbus interfaces.

Part number	Unit design of MOVI-PLC® *advanced* DH.41B	Fieldbus interfaces
1821 160 7	DHE41B	Ethernet TCP/IP, UDP
1821 161 5	DHF41B	Ethernet TCP/IP, UDP, PROFIBUS DP-V1

The MOVI-PLC® *advanced* controller DH.41B is available as

- **control card** MOVI-PLC® *advanced* DH.41B als option for the MOVIDRIVE® B and MOVITRAC® B inverters and for MOVIAXIS® servo inverters
- **compact controller** MOVI-PLC® *advanced* DHE41B/UOH11B or DHF41B/UOH21B prepared for installation on a DIN rail. As a compact controller, it is designed for controlling inverters.

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® *advanced* controller DH.41B is equipped with numerous communication interfaces.

The two system bus interfaces CAN 1 and CAN 2 are used primarily for connecting and controlling several inverters and integrating decentralized I/O modules. SEW-EURODRIVE recommends connecting a maximum of 256 inputs and 256 outputs to the MOVI-PLC® *advanced* DH.41B controller.

This machine module can be operated via the integrated fieldbus interface with a higher-level controller.

Engineering is carried out using the powerful Ethernet 1 interface or USB interface (in preparation).

An operator terminal (e.g. DOP11A/B) or a MOVIMOT® gearmotor with integrated frequency inverter are connected to the RS485 interfaces.

Electronics data for DHE41B

MOVI-PLC® *advanced* DHE41B option		
 11888AXX	Electrical supply	The following applies for all units (MDX, MX, compact controller): • You will have to supply the binary inputs and outputs with DC 24 V (X31:1/2) separately. Integrated in MOVIDRIVE® MDX61B: • Power consumption: P_{max} = 6.8 W • The MOVI-PLC® *advanced* DHE41B controller is supplied by MOVIDRIVE® MDX61B via backplane connector. • In the case of disconnection from the power supply, continued function is guaranteed by DC 24 backup (external DC 24 V supply to X10:9/10 of MOVIDRIVE® MDX61B required). Installed in the MOVIAXIS® master module (MXM): • Power consumption: P_{max} = 8.5 W • U = DC 24 V (–15 % / +20 %) • I_{max} = 600 mA • The MOVI-PLC® *advanced* DHE41B.. controller can be supplied by the MOVIAXIS® switched mode power supply module (MXS) or from an external voltage supply. For this purpose, connect X5 between the individual devices. • If the MOVI-PLC® *advanced* DHE41B controller is supplied with DC 24 V by the MOVIAXIS® switched-mode power supply, then the functioning of the MOVI-PLC® *advanced* DHE41B.. controller is ensured when disconnected from the power supply source (external DC 24 V supply required on X16 of the MOVIAXIS® switched-mode power supply module).
	Potential levels	The MOVI-PLC® *advanced* DHE41B controller has the following potential levels: • Potential control / CAN 1 / COM1 • Potential COM2 • Potential binary inputs and outputs • Potential system bus CAN 2
	Memory	• Program memory: 8 MByte (for application program, incl. IEC libraries) • Data memory: 4 MByte (for IEC application) • Retain data: 32 kByte • System variables (retain): 8 kByte
	Binary inputs X31:3...X31:10 Internal resistance Signal level	Isolated (optocoupler), PLC-compatible (IEC 61131-2), cycle time 1 ms, available unfiltered and filtered (filter constant ca. 2 ms) Can be configured as binary input or output X31:6...X31:10 are interrupt capable (response time <100 ms) $R_i \approx 3\ k\Omega$, $I_E \approx 10$ mA DC (+13 V...+30 V) = "1" = Contact closed (according to IEC 61131) DC (–3 V...+5 V) = "0" = Contact open (according to IEC 61131)
	Binary outputs X31:3...X31:10 Signal level	PLC compatible, (IEC 61131-2) response time 1 ms Can be configured as binary input or output Maximum permitted output current I_{A_max} = DC 150 mA per binary output All 8 binary outputs can be subject to the maximum approved output current I_{A_max} load at the same time. "0" = 0 V "1" = DC+24 V

MOVI-PLC® *advanced* DHE41B option		
	System bus CAN 2 X32:1 ... X32:3 System bus CAN 1 X33:1 ... X33:3	• System bus CAN 1 and CAN 2 to CAN specification 2.0, parts A and B, transmission technology to ISO 11898, max. 64 stations, • 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 connectors 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 • Connection options: Engineering PC, other controller, Intranet
	USB	USB 1.0 for connecting an engineering PC (in preparation)
	RS485 Interface COM1/2 X34:1 ... X34:4	• For connection of an engineering PC, a DOP11A/B operator terminal or a MOVIMOT® gearmotor with integrated 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 • Includes: – Firmware – IEC program – Data • At least 128 MB memory • Designs, part numbers, and functions: – OMH41B-T0: 1821 204 2 Functions: Handling of speed control, positioning, e.g. with the MPLCMotion_MDX library – OMH41B-T1: 1821 205 0 Functions: Additional: cam disk, electronic gear, cam controller, for example – OMH41B-T2: 1821 206 9 Functions: Additional, for example handling
	Engineering	Engineering takes place via one of the following interfaces: • Ethernet 2 (X37) • In preparation: USB (X35) The engineering of all SEW components connected to the MOVI-PLC® *advanced* DHE41B controller can be carried out using the MOVI-PLC® *advanced* DHE41B controller. Engineering of the MOVI-PLC® *advanced* DHE41B controller cannot be performed via the inverters. • MOVITOOLS® MotionStudio PC software with PLC-Editor

Electronics data for DHF41B

	NOTE
	For connections identical with DHE41B, refer to the "Electronics data for DHE41B" section.

MOVI-PLC® *advanced* DHF41B option		
 11889AXX	Potential levels	The MOVI-PLC® *advanced* DHF41B controller has the following potential levels: • Potential control / CAN 1 / COM1 • Potential COM2 • Potential binary inputs and outputs • Potential system bus CAN 2 • Potential PROFIBUS
	PROFIBUS connection X30P:1 ... X30P:9	Via 9-pin sub D connector, pin assignment according to IEC 61158
	Bus terminator	Not integrated. Activate bus termination with suitable PROFIBUS connector with switchable terminating resistors
	Automatic baud rate recognition	9.6 kBaud ... 12 MBaud
	Protocol options	PROFIBUS DP and DP-V1 to IEC 61158
	GSD file	SEW_6007.GSD
	DP ID number	Not yet assigned
	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
	Communication protocol	Master/slave connection set according to DeviceNet specification version 2.0
	Number of process data words	• Programmable via IEC function (0 ... 64 process data words) • A parameter channel can be used as option in addition to the process data words.
	Baud rate	125, 250 or 500 kBaud, can be set using DIP switches 2^6 and 2^7
	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
	MAC ID	0 ... 63, can be set using DIP switch 2^0 ... 2^5 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

2.43 Braking resistor type BW... option / BW...-T / BW...-P

General

- Braking resistors BW... / BW...-T and BW...-P match the technical features of the MOVIDRIVE® 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 (176 °F).

PTC resistor BW090-P52B

- Direct installation on MOVIDRIVE® MDX60B/61B size 0 (0005 ... 0014) (→ section "Dimension Drawings MOVIDRIVE® MDX60B")
- The MOVIDRIVE® units 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).

Flat-type braking resistors

- Protection against contact (IP54)
- Internal thermal overload protection (non-replaceable fuse)
- Touch guard and mounting rail attachment available from SEW 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, section "Selecting the braking resistor")
- 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 also protecting the wire and grid resistors against overload using a bimetallic relay with trip characteristics of trip class 10 or 10A (in accordance with EN 60947-4-1). Set the trip 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 of 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 resistor surfaces will heat up under a load of P_N. Make sure that you select an installation site that will accommodate these high temperatures. As a rule, braking resistors are therefore mounted on the control cabinet roof.

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).

UL and cUL approval

Type BW... braking resistors are UL and cUL approved in conjunction with MOVIDRIVE® B inverters. SEW-EURODRIVE will provide a certificate on request. The BW...-T and BW...-P braking resistors have cRUus approval independent of the MOVIDRIVE® inverters.

Parallel connection

Two braking resistors with the same value must be connected in parallel for some inverter/resistor combinations. In this case, the trip 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.

Assignment to AC 400/500 V units (...-5_3)

Braking resistor type BW...		**BW090-P52B**	**BW100-005**	**BW100-006**	**BW072-003**	**BW072-005**	**BW168**	**BW268**
Part number		824 563 0	826 269 1	821 701 7	826 058 3	826 060 5	820 604 X	820 715 1
Braking resistor type BW...-T				**BW100-006-T**			**BW168-T**	**BW268-T**
Part number				1820 419 8			1820 133 4	1820 417 1
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 at	**50 % cdf[1)]**	0.15 kW	0.60 kW	1.1 kW	0.31 kW	0.60 kW	1.4 kW	2.2 kW
	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 **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 %	
Trip current (of F16)	I_F	-	0.8 A_{RMS}	2.4 A_{RMS}	0.6 A_{RMS}	1 A_{RMS}	3.4 A_{RMS}	4.2 A_{RMS}
Design		PTC	Flat-design	Wire resistor on ceramic core	Flat-design		Wire resistor on ceramic core	
Connections / Tightening torque		Cable	Cable	Ceramic terminals 2.5 mm^2 (AWG13) 0.5 Nm	Cable		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_U	–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	820 713 5	820 714 3	820 798 4	821 689 4		
Braking resistor type BW...-T	**BW147-T**	**BW247-T**	**BW347-T**	**BW039-012-T**	**BW039-026-T**	**BW039-050-T**
Part number	1820 134 2	1820 084 2	1820 135 0	1820 136 9	1820 415 5	1820 137 7
Continuous braking power (= 100% cdf) **Load capacity at 50 % cdf[1)]** **25 % cdf** **12 % cdf** **6 % cdf**	1.2 kW 2.2 kW 3.8 kW 7.2 kW 11 kW	2.0 kW 3.6 kW 6.4 kW 12 kW 19 kW	4.0 kW 7.2 kW 12.8 kW 20 kW[2)] 20 kW[2)]	1.2 kW 2.1 kW 3.8 kW 7.2 kW 11.4 kW	2.6 kW 4.7 kW 8.3 kW 15.6 kW 24.0 kW[2)]	5.0 kW 8.5 kW 15.0 kW 24.0 kW[2)] 24.0 kW[2)]
	Observe **regenerative power limit** of the inverter! (= 150 % of the recommended motor power → technical data)					
Resistance value R_{BW}	47 Ω ±10 %			39 Ω ±10 %		
Trip current (of F16) I_F	5 A_{RMS}	6.5 A_{RMS}	9.2 A_{RMS}	5.5 A_{RMS}	8.1 A_{RMS}	11.3 A_{RMS}
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 (AWG18) / 1.6 Nm					M8 stud / 6 Nm
Degree of protection	IP20 (when installed)					
Ambient temperature ϑ_U	–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	821 684 3			
Braking resistor type BW...-T/-P	**BW018-015-P**	**BW018-035-T**	**BW018-075-T**	**BW915-T**
Part number	1820 416 3	1820 138 5	1820 139 3	1820 413 9
Continuous braking power (= 100% cdf) **Load capacity at 50 % cdf[1)]** **25 % cdf** **12 % cdf** **6 % cdf**	1.5 kW 2.5 kW 4.5 kW 6.7 kW 11.4 kW	3.5 kW 5.9 kW 10.5 kW 15.7 kW 26.6 kW	7.5 kW 12.7 kW 22.5 kW 33.7 kW 52.2 kW[2)]	16 kW 27.2 kW 48 kW 62.7 kW[2)] 62.7 kW[2)]
	Observe **regenerative power limit** of the inverter! (= 150 % of the recommended motor power → technical data)			
Resistance value R_{BW}	18 Ω ±10 %			15 Ω ±10 %
Trip current (of F16) I_F	9.1 A_{RMS}	13.9 A_{RMS}	20.4 A_{RMS}	32.6 A_{RMS}
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	Bolt M8 / 6 Nm		
Degree of protection	IP20 (when installed)			
Ambient temperature ϑ_U	–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	821 680 0				
Braking resistor type BW...-T/-P	**BW012-025-P**	**BW012-050T**	**BW012-100-T**	**BW106-T**	**BW206-T**
Part number	1820 414 7	1820 140 7	1820 141 5	1820 083 4	1820 412 0
Continuous braking power (= 100% cdf) Load capacity 50 % cdf[1)] at 25 % cdf 12 % cdf 6 % cdf	2.5 kW 4.2 kW 7.5 kW 11.2 kW 19.0 kW	5.0 kW 8.5 kW 15.0 kW 22.5 kW 38.0 kW	10 kW 17 kW 30 kW 45 kW 76 kW	13.5 kW 23 kW 40 kW 61 kW 102 kW	18 kW 30.6 kW 54 kW 81 kW 136.8 kW
	Observe **regenerative power limit** of the inverter! (= 150 % of the recommended motor power → technical data)				
Resistance value R_{BW}	12 Ω ±10 %			6 Ω ±10 %	
Trip current (of F16) I_F	14.4 A_{RMS}	20.4 A_{RMS}	28.8 A_{RMS}	47.4 A_{RMS}	54.7 A_{RMS}
Design	Grid resistor				
Connections / Tightening torque	Ceramic terminals 2.5 mm^2 (AWG13) / 0.5 Nm BW012-025-P: Terminals 4 mm^2 (AWG12) / 1 Nm			Bolt M8 / 6 Nm	
Degree of protection	IP20 (when installed)				
Ambient temperature ϑ_U	–20 ... +40 °C				
Type of cooling	KS = Self-cooling				
For MOVIDRIVE® (recommended)	0300			0370...0750 and 2 × parallel with 0900/1100/1320[2)]	

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 trip current are doubled.

Assignment to AC 230 V units (...-2_3)

Braking resistor type BW...		BW039-003	BW039-006	BW039-012		BW027-006	BW027-012		
Part number		821 687 8	821 688 6	821 689 4		822 422 6	822 423 4		
Braking resistor type BW...-T				BW039-012-T	BW039-026-T			BW018-015-P	BW018-035-T
Part number				1820 136 9	1820 415 5			1820 416 3	1820 138 5
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[2]	6.0 kW[2]	5.7 kW	8.7 kW[2]	11.4 kW	13.0 kW[2]
		Observe **regenerative power limit** of the inverter! (= 150 % of the recommended motor power → technical data)							
Resistance value	R_{BW}	39 Ω ±10 %				27 Ω ±10 %		18 Ω ±10 %	
Trip current (of F16)	I_F	2.7 A_{RMS}	3.9 A_{RMS}	5.5 A_{RMS}	8.1 A_{RMS}	4.7 A_{RMS}	6.6 A_{RMS}	9.1 A_{RMS}	13.9 A_{RMS}
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_U	–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 $T_D \leq$ 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.

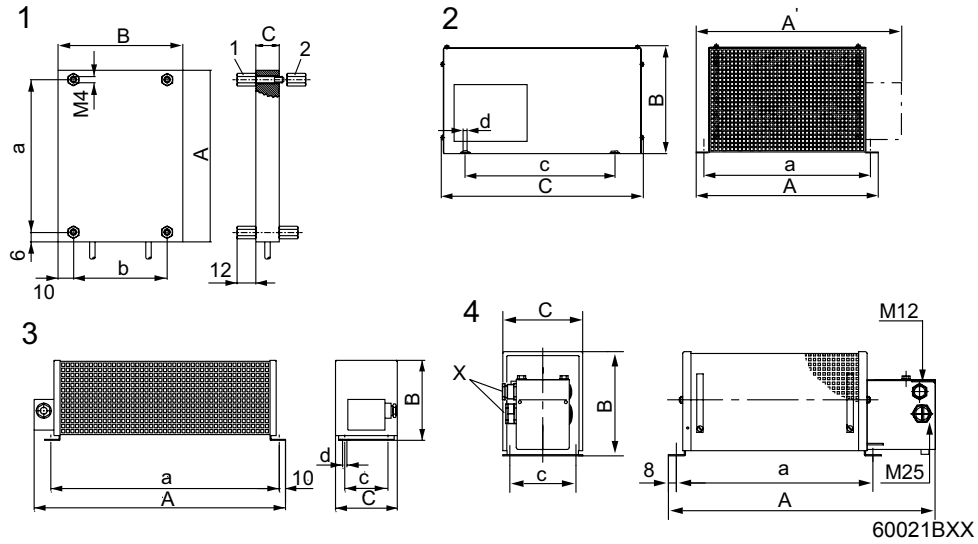
Braking resistor type BW...-T/-P		BW018-075-T	BW915-T	BW012-025-P	BW012-050-T	BW012-100-T	BW106-T	BW206-T
Part number		1820 139 3	1820 413 9	1820 414 7	1820 140 7	1820141 5	1820 083 4	1820 412 0
Continuous braking power (= 100% cdf)		7.5 kW	15.6 kW[2]	2.5 kW	5.0 kW	10 kW	13.5 kW	18 kW
Load capacity	50 % 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[2]	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[2]	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 **regenerative power limit** of the inverter! (= 150 % of the recommended motor power → technical data)						
Resistance value	R_{BW}	18 Ω ±10 %	15 Ω ±10 %	12 Ω ±10 %			6 Ω ±10 %	
Trip current (of F16)	I_F	20.4 A_{RMS}	32.6 A_{RMS}	14.4 A_{RMS}	20.4 A_{RMS}	28.8 A_{RMS}	47.4 A_{RMS}	54.7 A_{RMS}
Design		Grid resistor						
Connections / Tightening torque		M8 stud / 6 Nm						
Degree of protection		IP20 (when installed)						
Ambient temperature	ϑ_U	–20 ... +40 °C						
Type of cooling		KS = Self-cooling						
For MOVIDRIVE® (recommended)		2 × parallel with 0110[3]		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 $T_D \leq$ 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.

Technical data of the braking resistor BW...-T / BW...-P

BW...-T / BW...-P	
Connection cross section for signal contact	1 x 2.5 mm^2
Switching capability of the thermostat's signal contact	• DC 2 A / DC 24 V (DC11) • AC 2 A / AC 230V (AC11)
Switch contact (NC)	according to EN 61800-5-1

Dimension drawing braking resistors BW... / BW...-T / BW...-P



BW... :

- 1 = Flat design
  The connecting lead is 500 mm (19.7 in) long. The scope of delivery includes four 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.

Type BW...	Mounting position	Main dimensions mm (in)			Fastening parts mm (in)			Cable gland	Weight kg (lb)
BW..-T/ BW...-P		A/A'	B	C	a	b/c	d		
BW106-T	2	795 (31.3)	270 (10.6)	490 (19.3)	770(30.3)	380 (15)	10.5 (0.41)	-	32 (71)
BW206-T	2	995 (39.2)	270 (10.6)	490 (19.3)	970 (38.2)	380 (15)	10.5 (0.41)	-	40 (88)
BW012-025	2	295 (11.6)	260 (10.2)	490 (19.3)	270 (10.6)	380 (15)	10.5 (0.41)	M12 + M25	8.0 (18)
BW012-025-P	2	295/355 (11.6)/(14)	260 (10.2)	490 (19.3)	270 (10.6)	380 (15)	10.5 (0.41)	M12 + M25	8.0 (18)
BW012-050-T	2	395 (15.6)	260 (10.2)	490 (19.3)	370 (14.6)	380 (15)	10.5 (0.41)	-	12 (26)
BW012-100-T	2	595 (23.4)	270 (10.6)	490 (19.3)	570 (22.4)	380 (15)	10.5 (0.41)	-	21 (46)
BW915-T	2	795 (31.3)	270 (10.6)	490 (19.3)	770 (30.3)	380 (15)	10.5 (0.41)	-	30 (66)
BW018-015	3	620 (24.4)	120 (4.72)	92 (3.6)	544 (21.4)	64 (2.5)	6.5 (0.26)	PG11	4.0 (8.8)
BW018-015-P	4	649 (25.6)	120 (4.72)	185 (7.28)	530 (20.9)	150 (5.91)	6.5 (0.26)	M12 + M25	5.8 (13)
BW018-035-T	2	295 (11.6)	270 (10.6)	490 (19.3)	270 (10.6)	380 (15)	10.5 (0.41)	-	9.0 (20)
BW018-075-T	2	595 (23.4)	270 (10.6)	490 (19.3)	570 (22.4)	380 (15)	10.5 (0.41)	-	18.5 (40.8)
BW027-006	3	486 (19.1)	120 (4.72)	92 (3.6)	430 (16.9)	64 (2.5)	6.5 (0.26)	PG11	2.2 (4.9)
BW027-012	3	486 (19.1)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	PG11	4.3 (9.5)
BW039-003	3	286 (11.3)	120 (4.72)	92 (3.6)	230 (9.06)	64 (2.5)	6.5 (0.26)	PG11	1.5 (3.3)
BW039-006	3	486 (19.1)	120 (4.72)	92 (3.6)	430 (16.9)	64 (2.5)	6.5 (0.26)	PG11	2.2 (4.9)
BW039-012	3	486 (19.1)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	PG11	4.3 (9.5)
BW039-012-T	4	549 (21.6)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	M12 + M25	4.9 (11)
BW039-026-T	4	649 (25.6)	120 (4.72)	275 (10.8)	530 (20.9)	240 (9.45)	6.5 (0.26)	M12 + M25	7.5 (17)
BW039-050-T	2	395 (15.6)	260 (10.2)	490 (19.3)	370 (14.6)	380 (15)	10.5 (0.41)	-	12 (26)
BW147	3	465 (18.3)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	PG13.5	4.3 (9.5)
BW147-T	4	549 (21.6)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	M12 + M25	4.9 (11)
BW247	3	665 (26.2)	120 (4.72)	185 (7.28)	626 (24.6)	150 (5.91)	6.5 (0.26)	PG13.5	6.1 (13)
BW247-T	4	749 (29.5)	120 (4.72)	185 (7.28)	626 (24.6)	150 (5.91)	6.5 (0.26)	M12 + M25	9.2 (20)
BW347	3	670 (26.4)	145 (5.71)	340 (13.4)	630 (24.8)	300 (11.8)	6.5 (0.26)	PG13.5	13.2 (29.1)
BW347-T	4	749 (29.5)	210 (8.27)	185 (7.28)	630 (24.8)	150 (5.91)	6.5 (0.26)	M12 + M25	12.4 (27.3)
BW168	3	365 (14.4)	120 4.72)	185 (7.28)	326 (12.8)	150 (5.91)	6.5 (0.26)	PG13.5	3.5 (7.7)
BW168-T	4	449 (17.7)	120 (4.72)	185 (7.28)	326 (12.8)	150 (5.91)	6.5 (0.26)	M12 + M25	3.6 (7.9)
BW268	3	465 (18.3)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	PG13.5	4.3 (9.5)
BW268-T	4	549 (21.6)	120 (4.72)	185 (7.28)	426 (16.8)	150 (5.91)	6.5 (0.26)	M12 + M25	4.9 (11)
BW072-003	1	110 (4.33)	80 (3.1)	15 (0.59)	98 (3.9)	60 (2.4)	–	-	0.3 (0.7)
BW072-005	1	216 (8.5)	80 (3.1)	15 (0.59)	204 (8.03)	60 (2.4)	–	-	0.6 (1)
BW100-005	1	216 (8.5)	80 (3.1)	15 (0.59)	204 (8.03)	60 (2.4)	–	-	0.6 (1)
BW100-006	4	486 (19.1)	120 (4.72)	92 (3.6)	430 (16.9)	64 (2.5)	6.5 (0.26)	PG11	2.2 (4.9)
BW100-006-T	4	549 (21.6)	120 (4.72)	92 (3.6)	430 (16.9)	80 (3.1)	6.5 (0.26)	M12 + M25	3.0 (6.6)

Touch guard BS... A BS.. touch guard is available for braking resistors in flat design.

Touch guard	BS003	BS005
Part number	813 151 1	813 152 X
for braking resistor	BW027-003 BW072-003	BW027-005 BW072-005 BW100-005

Dimensions drawing for BS...

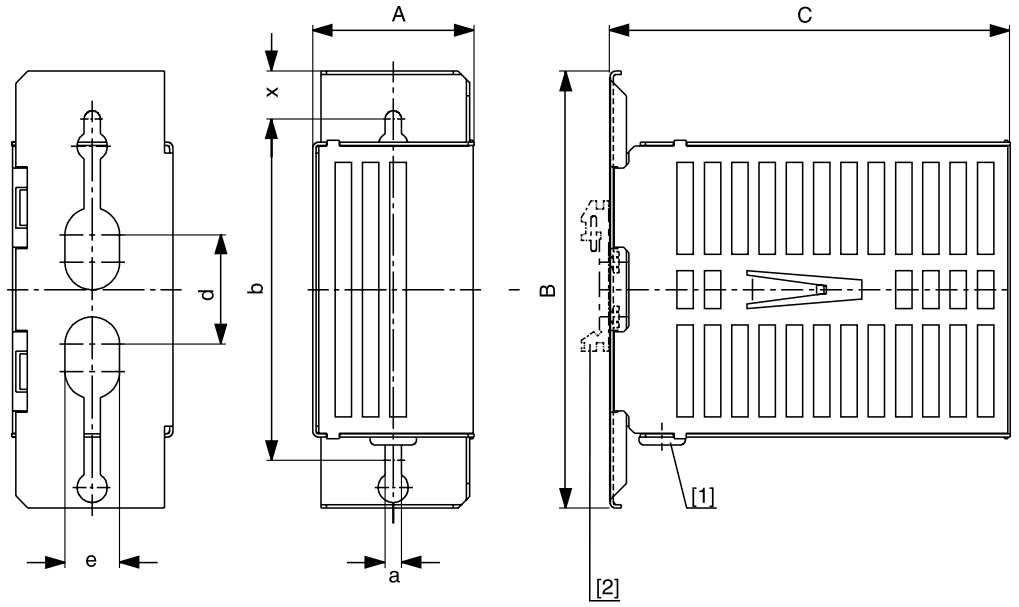


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Figure 26: Dimension drawing, BS touch guard with grommet [1] and support rail mounting [2]

Type	Main dimensions mm (in)			Mounting dimensions mm (in)					Weight kg (lb)
	A	B	C	b	d	e	a	x	
BS-003	60 (2.4)	160 (6.3)	146 (5.75)	125 (4.92)	40 (1.6)	20 (0.79)	6 (0.2)	17.5 (0.69)	0.35 (0.77)
BS-005	60 (2.4)	160 (6.3)	252 (9.92)	125 (4.92)	4 (1.6)	20 (0.79)	6 (0.2)	17.5 (0.69)	0.5 (1)

Mounting rail installation A mounting rail attachment HS001 is available from SEW-EURODRIVE, part number 822 194 4, for mounting the touch guard on a mounting rail.

DKB11A heat sink for braking resistors in flat design

Part number 814 345 5

Description The DKB11A heat sink for braking resistors in flat design provides a space-saving means for mounting the braking resistors (BW072-005, BW100-005) beneath MOVIDRIVE® size 1 units (400/500 V units: 0015...0040; 230 V units: 0015...0037). The resistor is inserted into the heat sink and attached using the supplied screws (M4 x 20).

Dimension drawing

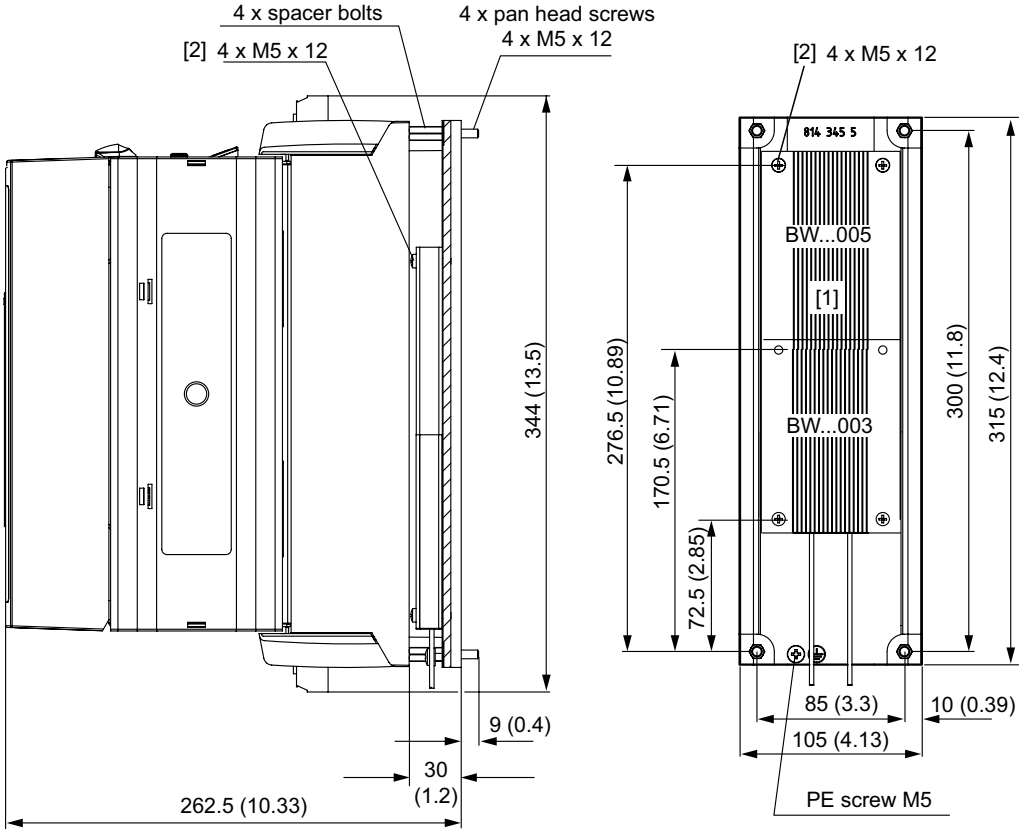

Figure 27: Dimensions, DKB11A heat sink for brake resistors in flatpack design, all in mm (in)

[1] Mounting surface for the braking resistor

[2] Retaining screws are not included in the delivery scope

2.44 Line choke option type ND..

- To increase overvoltage protection.
- To limit the charging current when several inverters are connected together in parallel on the input end with shared mains contactors (rated current of line choke = total of inverter currents).
- ND.. line filters have cRUus approval independent of the MOVIDRIVE® inverters.

Line choke type		ND020-013	ND030-023[1)]	ND045-013	ND085-013	ND150-013	ND200-0033	ND300-0053
Part number		826 012 5	827 151 8	826 013 3	826 014 1	825 548 2	826 579 8	827 721 4
Rated power supply voltage V_{supply} (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_U		–25 ... +45 °C						
Degree of protection		IP00 (EN 60529)						
Connections		Terminal strips 4 mm² (AWG12)	Terminal strips 2.5 mm²... 10 mm² (AWG13 ... AWG8)	Terminal strips 10 mm² (AWG8)	Terminal strips 35 mm² (AWG2)	M10 stud PI: M8 stud		M12 stud PI: 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 units (MDX60/61B...-5_3)								
Rated operation (100 %)		0005...0075	0110...0220		0300...0450 and MDR60A0370	0550/0750	MDR60A 0750	0900...1320
Increased power (125 %)		0005...0075	0110/0150		0220...0370	0450...0750		
Assignment to 230 V units (MDX61B...-2_3)								
Rated 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 in connection type A or B (→ system manual MOVIDRIVE® MDR60A regenerative power supply)

2) If more than one MOVIDRIVE® is connected to a line choke, the **total value of the rated currents** of the connected units **must not exceed the rated current of the line choke**!

Dimension drawings for ND...

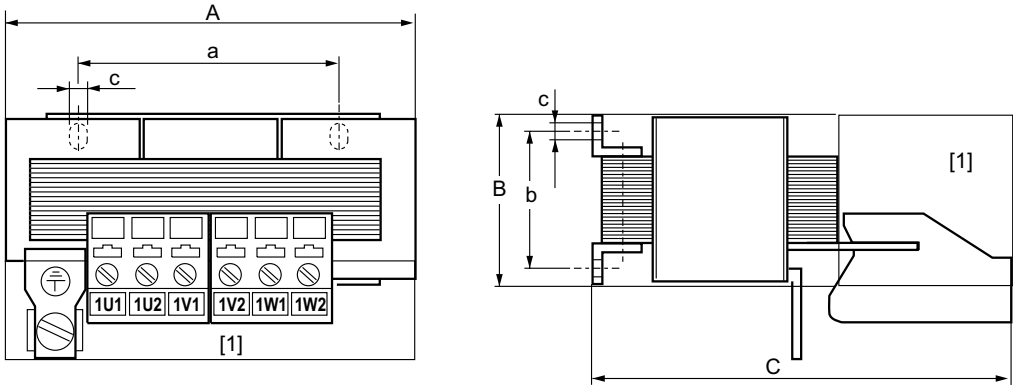

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Figure 28: Dimension drawing for line chokes ND020.. / ND030.. / ND045.. / ND085..

[1] Space for installation terminals Input: 1U1, 1V1, 1W1
Any mounting position Output: 1U2, 1V2, 1W2

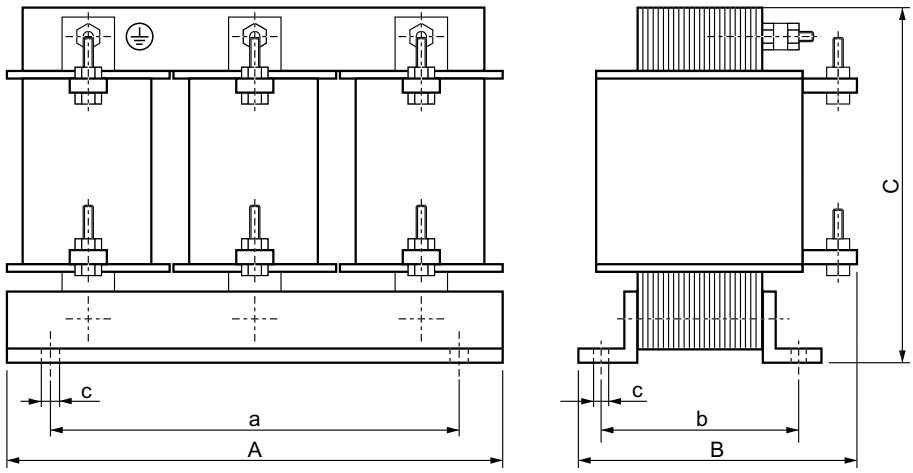

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Figure 29: Dimension drawing for line chokes ND150.. / ND200.. / ND300..

Line choke type	Main dimensions mm (in)			Mounting dimensions mm (in)		Hole dimension mm (in)	Weight
	A	B	C	a	b	c	kg (lb)
ND020-013	85 (3.3)	60 (2.4)	120 (4.72)	50 (2)	31 - 42 (1.2 - 1.7)	5 - 10 (0.2 - 0.39)	0.5 (1)
ND030-023 **ND045-013**	125 (4.92)	95 (3.7)	170 (6.69)	84 (3.3)	55-75 (2.2 - 3)	6 (0.24)	2.5 (5.5)
ND085-013	185 (7.28)	115 (4.53)	235 (9.25)	136 (5.35)	56 - 88 (2.2 - 3.5)	7 (0.28)	8 (18)
ND150-013	255 (10)	140 (5.51)	230 (9.06)	170 (6.69)	77 (3)	8 (0.31)	17 (37)
ND200-0033	250 (9.84)	160 (6.3)	230 (9.06)	180 (7.09)	98 (3.9)	8 (0.31)	15 (33)
ND300-0053	300 (11.8)	190 (7.48)	295 (11.6)	255 (10)	145 (5.71)	11 (0.43)	35 (77)

2.45 Line filter type NF...-... option

- To suppress interference emission on the line side of inverters.
- Do not switch between the NF... line filter and MOVIDRIVE®.
- NF.. line filters have cRUus approval independent of the MOVIDRIVE® inverters.

Line filter type	NF009-503	NF014-503	NF018-503	NF035-503	NF048-503
Part number	827 412 6	827 116 X	827 413 4	827 128 3	827 117 8
Rated mains voltage U_N (gemäß EN 50160)	3 × AC 380 V - 500 V, 50/60 Hz				
Rated 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
Earth-leakage current at V_N	< 25 mA	< 25 mA	< 25 mA	< 25 mA	< 40 mA
Ambient temperature ϑ_U	–25 ... +40 °C				
Degree of protection	IP20 (EN 60529)				
Connections L1-L3/L1'-L3' **Tightening torque L1-L3/L1'-L3'** **Connection PE** **Tightening torque PE**	4 mm² (AWG 10) 0.8 Nm M5 stud 3.4 Nm			10 mm² (AWG 8) 1.8 Nm M5 stud 3.4 Nm	10 mm² (AWG 8) 1.8 Nm M6 stud 5.5 Nm
Assignment to AC 400/500 V units (MDX60/61B...-5_3)					
Rated operation (100 %)	0005...0040	0055/0075	-	0110/0150	0220
Increased power (125 %)	0005...0030	0040/0055	0075	0110	0150
Assignment to 230 V units (MDX61B...-2_3)					
Rated 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	NF300-503
Part number	827 414 2	827 415 0	827 416 9	827 417 7	827 418 5	827 419 3
Rated mains voltage U_N (according to EN 50160)	3 × AC 380 V - 500 V, 50/60 Hz					
Rated current I_N	AC 63 A	AC 85 A	AC 115 A	AC 150 A	AC 210 A	AC 300 A
Power loss at I_N P_V	30 W	35 W	60 W	90 W	150 W	180 W
Earth-leakage current at V_N	< 30 mA	< 30 mA	< 30 mA	< 30 mA	< 40 mA	< 45 mA
Ambient temperature ϑ_U	–25 ... +40 °C					
Degree of protection	IP20 (EN 60529)					
Connections L1-L3/L1'-L3' **Tightening torque L1-L3/L1'-L3'** **Connection PE** **Tightening torque PE**	16 mm² (AWG 6) 3 Nm M6 5.5 Nm	35 mm² (AWG 2) 3.7 Nm M8 12.8 Nm	50 mm² (AWG1/0) 3.7 Nm M10 23.8 Nm	50 mm² (AWG1/0) 3.7 Nm M10 23.8 Nm	95 mm² (AWG4/0) 20 Nm M10 23.8 Nm	150 mm² (AWG300-2) 30 Nm M12 36 Nm
Assignment to AC 400/500 V units (MDX60/61B...-5_3)						
Rated operation (100 %)	0300	0370/0450	0550	0750	0900/1100	1320
Increased power (125 %)	0220	0300/0370	0450	0550/0750	0900	1100/1320
Assignment to 230 V units (MDX61B...-2_3)						
Rated operation (100 %)	0150	0220	0300	-	-	-
Increased power (125 %)	0110/0150	-	0220/0300	-	-	-

Dimension drawing for NF...

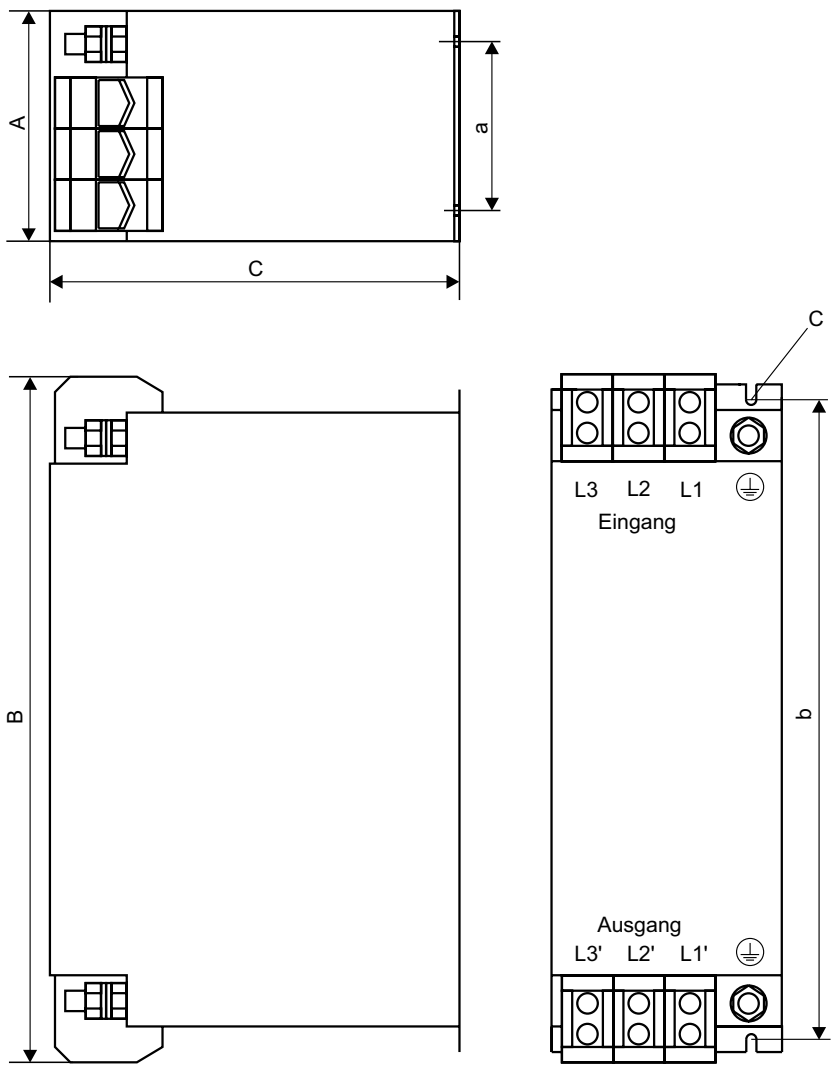


Figure 30: Dimension drawing for NF line filter

Any mounting position

Line filter type	Main dimensions mm (in)			Mounting dimensions mm (in)		Hole dimension mm (in)	PE connection	Weight
	A	B	C	a	b	c		kg (lb)
NF009-503	55 (2.2)	195 (7.68)	80 (3.1)	20 (0.78)	180 (7.09)	5.5 (0.22)	M5	0.8 (2)
NF014-503		225 (8.86)			210 (8.27)			0.9 (2)
NF018-503	50 (1.97)	255 (10)			240 (9.45)			1.1 (2.4)
NF035-503	60 (2.36)	275 (10.8)	100 (3.94)	30 (1.18)	255 (10)			1.7 (3.7)
NF048-503		315 (12.4)			295 (11.6)		M6	2.1 (4.6)
NF063-503	90 (3.54)	260 (10.2)		60 (2.36)	235 (9.25)	6.5 (0.26)		2.4 (5.3)
NF085-503		320 (12.6)	140 (5.51)		255 (10)		M8	3.5 (7.7)
NF115-503	100 (3.94)	330 (13)	155 (6.1)	65 (2.56)			M10	4.8 (11)
NF150-503								5.6 (12.3)
NF210-503	140 (5.51)	450 (17.7)	190 (7.48)	102 (4.02)	365 (14.4)			8.9 (20)
NF300-503	170 (6.69)	540 (21.3)	230 (9.06)	125 (4.92)	435 (17.1)		M12	12.2 (26.9)

2.46 HD... output choke option

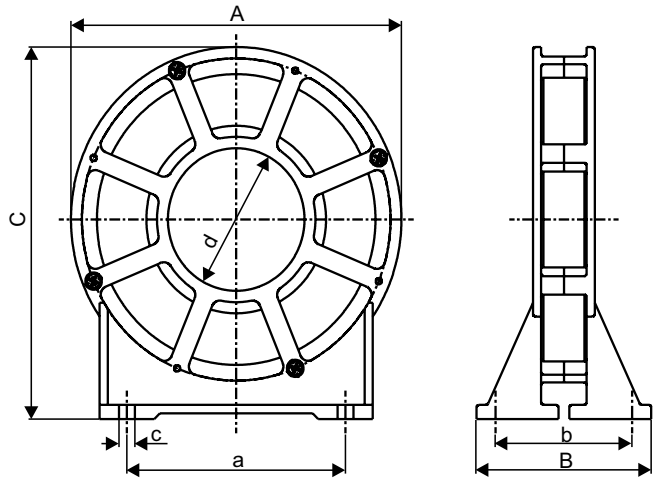
- For suppression of interference from the unshielded motor cable. For HD001 to HD003 we recommend routing the motor cable through the output choke with 5 loops. Only 5 loops are possible if the cable has a large diameter. To make up for this, 2 or 3 output chokes should be connected in series. Connect in series two output chokes in case of 4 windings and three output chokes in case of 3 windings.
- Output chokes HD001 to HD003 are allocated using the cable cross sections of the motor feeders. Consequently, there is no separate assignment table for the AC 230 V units.
- The HD004 output choke is assigned to size 6 units (0900... 1320).

Output choke type	HD001[1)]	HD002[1)]	HD003 output choke[1)]	HD004[2)]
Part number	813 325 5	813 557 6	813 558 4	816 885 7
Max. power loss P_{Vmax}	15 W	8 W	30 W	100 W
For cable cross sections/connections/ tightening torque	1.5...16 mm^2 (AWG 16...6)	≤ 1.5 mm^2 (AWG 16)	≥ 16 mm^2 (AWG 6)	M12 terminal stud 20 Nm
Degree of protection	-	-	-	IP10

1) The output choke type HD... is not a UL/cUL-relevant component.

2) UL/cUL approval is not available for the HD0044 output choke

Dimension drawing for HD



HD001
HD002
HD003

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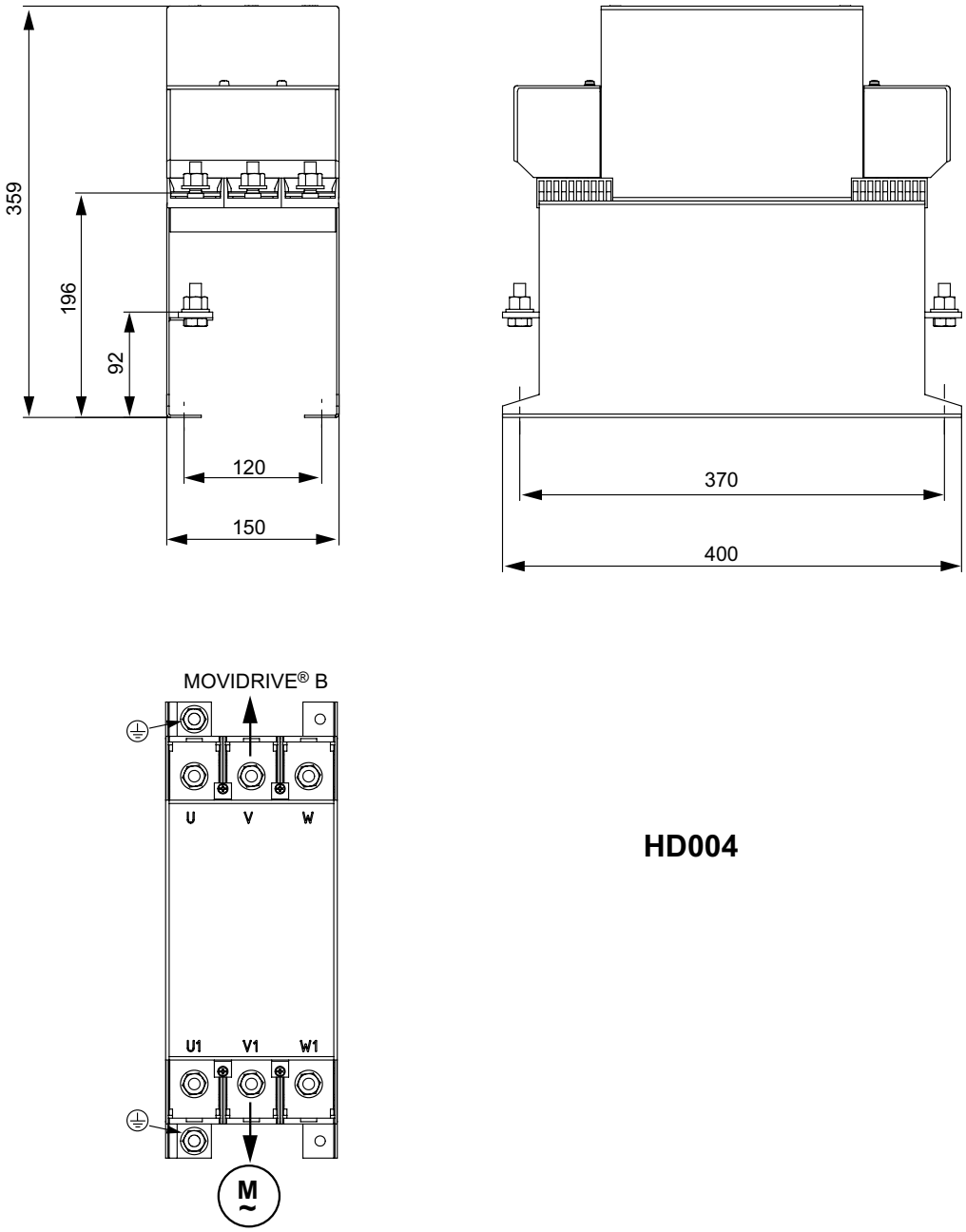

HD004

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Output choke type	Main dimensions mm (in)			Mounting dimensions mm (in)		Inner ∅ mm (in)	Hole dimension mm (in)	Weight
	A	B	C	a	b	d	c	kg (lb)
HD001	121 (4.76)	64 (2.5)	131 (5.16)	80 (3.1)	50 (2.0)	50 (2.0)	5.8 (0.23)	0.5 (1)
HD002	66 (2.6)	49 (1.9)	73 (2.9)	44 (1.7)	38 (1.5)	23 (0.91)		0.2 (0.4)
HD003	170 (6.69)	64 (2.5)	185 (7.28)	120 (4.72)	50 (2.0)	88 (3.5)	7.0 (0.28)	1.1 (2.4)
HD004	150 (5.91)	400 (15.7)	360 (14.2)	120 (4.72)	370 (14.6)	-	9.0 (0.35)	12.5 (27.6)

2.47 Output filter option type HF...

HF... output filters are sine filters used to smooth output voltage from inverters. HF... output filters (with the exception of HF450-503) are approved to UL/cUL in combination with MOVIDRIVE® 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 non-SEW motors which are not suitable for inverters
- for protection against overvoltage spikes in long motor cables (> 100 m)

Please read the following notes carefully:

NOTES

- Operate output filters in V/f and VFC operating modes only. Do not use output filters in CFC and SERVO operating modes.
- Do not use output filters in hoist applications.
- During project planning of the drive, take into account the voltage drop in the output filter and consequently the reduced motor torque available. This applies particularly to AC 230 V units 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	826 029 X	826 030 3	826 031 1	826 032 X	826 311 6	826 312 4
Rated voltage U_N	3 × AC 230 V - 500 V, 50/60 Hz[2]					
Earth-leakage current at U_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 to EN 61800-3					
Ambient temperature ϑ_U	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 %					
Weight	3.1 kg (6.8 lb)	4.4 kg (9.7 lb)			10.8 kg (23.8 lb)	
Assignment to AC 400/500 V units (MDX60/61B...-5_3)						
Voltage drop at I_N ΔU	< 6.5 % (7.5 %) at AC 400 V / < 4 % (5 %) at AC 500 V and f_{Amax} = 50 Hz (60 Hz)					
Rated throughput current[3] $I_{N\ 400\ V}$ (at V_{supply} = 3 × AC 400 V) Rated throughput current[3] $I_{N\ 500\ V}$ (at V_{supply} = 3 × AC 500 V)	AC 2.5 A AC 2 A	AC 4 A AC 3 A	AC 6 A AC 5 A	AC 8 A AC 6 A	AC 10 A AC 8 A	AC 12 A AC 10 A
Rated 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 230 V units (MDX61B...-2_3)						
Voltage drop at I_N ΔU	-	< 18.5 % (19 %) at AC 230 V with f_{Amax} = 50 Hz (60 Hz)				
Rated throughput current[3] $I_{N\ 230\ V}$ (at V_{supply} = 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
Rated operation (100 %) [3]	-	-	0015/0022	-	0037	0055
Increased power (125 %) [3]	-	-	0015/0022	-	-	0037

1) Approved to UL/cUL in combination with MOVIDRIVE® inverters. SEW-EURODRIVE will provide a certificate on request.

2) A reduction of 6 % I_N per 10 Hz applies above f_A = 60 Hz for the rated through current I_N.

3) Only applies to operation without $V_{DC\ link}$ connection. For operating the inverter with $V_{DC\ link}$ 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
Part number	826 313 2	825 784 1	825 785 X	825 786 8	826 948 3
Rated voltage U_N	3 × AC 230 V - 500 V, 50/60 Hz[2]				
Earth-leakage current at U_N ΔI	0 mA				
Power loss at I_N P_V	135 W	90 W	120 W	200 W	400 W
Interference emission via unshielded motor cable	According to limit value class C1 to EN 61800-3				
Ambient temperature ϑ_U	0 ... +45 °C (reduction: 3 % I_N per K to max. 60 °C)				
Degree of protection (EN 60529)	IP 20	IP20			IP 10
Connections / tightening torque	M4 terminal stud 1.6 Nm ± 20 %	35 mm² (AWG 2) 3.2 Nm			
Weight	10.8 kg (23.8 lb)	15.9 kg (35.1 lb)	16.5 kg (36.4 lb)	23 kg (51 lb)	32 kg (71 lb)
Assignment to AC 400/500 V units (MDX60/61B...-5_3)					
Voltage drop at I_N ΔU	< 6.5 % (7.5 %) at AC 400 V / < 4 % (5 %) at AC 500 V and f_{Amax} = 50 Hz (60 Hz)				
Rated throughput current[3] $I_{N\ 400\ V}$ (at V_{supply} = 3 × AC 400 V)	AC 16 A	AC 23 A	AC 33 A	AC 47 A	AC 90 A
Rated throughput current[3] $I_{N\ 500\ V}$ (at V_{supply} = 3 × AC 500 V)	AC 13 A	AC 19 A	AC 26 A	AC 38 A	AC 72 A
Rated operation (100 %) [3]	0075	0110	0150/0300[4]	0220	0370/0450/ 0550[4]/0750[4]/ 0900[4]
Increased power (125 %) [3]	0055	0075	0110/0220[4]	0150	0300/0370/0450[4] /0550[4]/0750[4]
Assignment to 230 V units (MDX61B...-2_3)					
Voltage drop at I_N ΔU	< 18.5 % (19 %) at AC 230 V with f_{Amax} = 50 Hz (60 Hz)				
Rated throughput current[3] $I_{N\ 230\ V}$ (at V_{supply} = 3 × AC 230 V)	AC 29 A	AC 42 A	AC 56.5 A	AC 82.6 A	AC 156 A
Rated operation (100 %) [3]	0075	0110	0150/0300[4]	0220	0300
Increased power (125 %) [3]	0055	0075	0110/0220[4]	0150	0220/0300

1) Approved to UL/cUL in combination with MOVIDRIVE® inverters. SEW-EURODRIVE will provide a certificate on request.

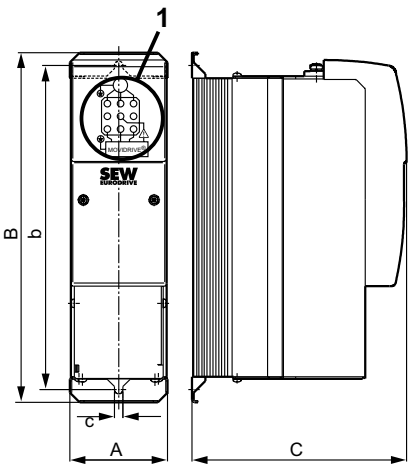
2) A reduction of 6 % I_N per 10 Hz applies above f_A = 60 Hz for the rated through current I_N.

3) Only applies for operation without $V_{DC\ link}$ connection. For operation with V_Z connection, observe the project planning instructions in the MOVIDRIVE® MDX60/61B system manual, section "Project Planning/Connecting the optional power components."

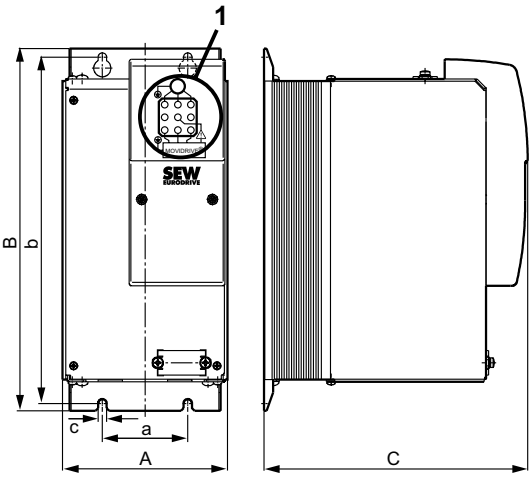
4) Connect **two HF... output filters together in parallel** for operation with these MOVIDRIVE® units.

Dimension drawings for HF...-503 output filters

HF008/015/022/030-503



HF040/055/075-503



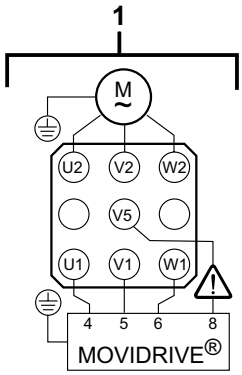


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Figure 31: Dimension drawings for output filters HF008...075-503

Only the mounting position shown in the dimension drawing is permitted.

Output filter type	Main dimensions mm (in)			Mounting dimensions mm (in)		Hole dimension mm (in)	Ventilation clearances[1] mm (in)	
	A	B	C	a	b	c	Top	Bottom
HF008 / 015 / 022 / 030-503	80 (3.1)	286 (11.3)	176 (6.93)	-	265 (10.4)	7 (0.3)	100 (3.94)	100 (3.94)
HF040/055/075-503	135 (5.31)	296 (11.7)	216 (8.5)	70 (2.8)	283 (11.1)			

1) There is no need for clearance at the sides. You can line up the units next to one another.

HF450-503

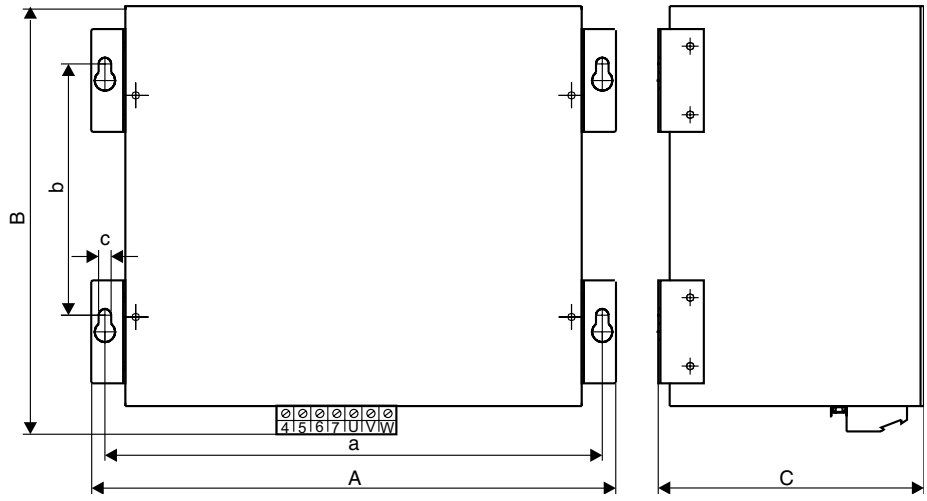

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Figure 32: Dimension drawing for output filter HF450-503

Only the mounting position shown in the dimension drawing is permitted

Output filter type	Main dimensions mm (in)			Mounting dimensions mm (in)		Hole dimension mm (in)	Ventilation clearances mm (in)	
	A	B	C	a	b	c	Top	Bottom
HF450-503	465 (18.3)	385 (15.2)	240 (9.45)	436 (17.2)	220 (8.66)	8.5 (0.33)	100 (3.94)	100 (3.94)

Dimension drawing for HF...-403 output filter

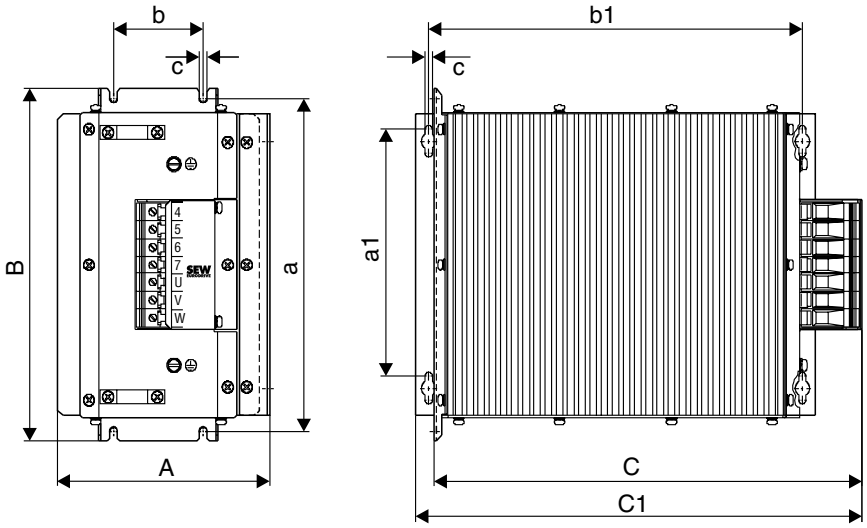

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Figure 33: Dimension drawing for HF...-403 output filter

Type	Main dimensions mm (in)			Mounting dimensions mm (in)				Hole dimension mm (in)	Ventilation clearances mm (in)		
				Standard mounting position		Horizontal mounting position					
	A	B	C/C1	a	b	a1	a2	c	At the side	Top	Bottom
HF023-403	145 (5.71)	284 (11.2)	365/390 (14.4/15.4)	268 (10.6)	60 (2.4)	210 (8.27)	334 (13.1)	6.5 (0.26)	je 30 (1.2)	150 (5.91)	150 (5.91)
HF033-403											
HF047-403	190 (7.48)	300 (11.8)	385/400 (15.2/15.7)	284 (11.2)	80 (3.1)						

2.48 Prefabricated cables

Overview

SEW offers cable sets and prefabricated cables for straightforward and fault-free connection of various system components to MOVIDRIVE®. The cables are prefabricated in 1 m steps to the required length. It is necessary to differentiate between whether the cables are intended for fixed routing or for cable carrier applications.

1. Cable sets for DC link connection MDR → MDX
2. Motor cables and extension cables for connecting CM motors
3. Motor cables and extension cables for connecting DS, CMD and CMP motors.
4. VR forced cooling fan cable and extension cable
5. Connection to DEH11B/DEH21B/DER11B: Encoder cable and extensions cable (Hiperface®, incremental encoder), resolver cable and extension cable in plug and terminal box design for motors.

1. Cable sets for DC link connection MDR → MDX

Description

SEW-EURODRIVE strongly recommends using the cable sets listed in the table below. 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 units. The lugs for connection to the regenerative power supply unit and an inverter are supplied with the cable set. Use commercially available cable lugs to connect other inverters. In this case, connect inverters in star configuration to the regenerative power supply unit. Use a busbar subdistributor if the DC link terminals of the regenerative power supply unit are not sufficient.

Installation type

Only fixed routing is possible.

Cable set type	DCP12A	DCP13A	DCP15A	DCP16A
Part number	814 567 9	814 250 5	814 251 3	817 593 4
For connecting MOVIDRIVE®	0015...0110	0150...0370	0450...0750	0900...1320

2. Prefabricated cables and extension cables for connecting CM motors to MDX

Motor cables The cables are equipped with a connector for motor connection and conductor end sleeves for inverter connection.

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	199 179 5	Fixed installation	CM..SM51
4×1.5 mm² + 3×1.0 mm²	199 189 2		CM..BR SB51
4×2.5 mm²	199 181 7		CM..SM52
4×2.5 mm² + 3×1.0 mm²	199 191 4		CM..BR SB52
4×4 mm²	199 183 3		CM..SM54
4×4 mm² + 3×1.0 mm²	199 193 0		CM..BR SB54
4×6 mm²	199 185 X		CM..SM56
4×6 mm² + 3×1.5 mm²	199 195 7		CM..BR SB56
4×10 mm²	199 187 6		CM..SM59
4×10 mm² + 3×1.5 mm²	199 197 3		CM..BR SB59

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	1 333 114 0	Cable carrier installation	CM..SM51
4×1.5 mm² + 3×1.0 mm²	1 333 116 7		CM..BR SB51
4×2.5 mm²	1 333 115 9		CM..SM52
4×2.5 mm² + 3×1.0 mm²	1 333 117 5		CM..BR SB52
4×4 mm²	199 184 1		CM..SM54
4×4 mm² + 3×1.0 mm²	199 194 9		CM..BR SB54
4×6 mm²	199 186 8		CM..SM56
4×6 mm² + 3×1.5 mm²	199 196 5		CM..BR SB56
4×10 mm²	199 188 4		CM..SM59
4×10 mm² + 3×1.5 mm²	199 198 1		CM..BR SB59

Extension cable The cables are equipped with a connector and adapter for extending the CM motor cable.

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	199 549 9	Fixed installation	CM..SM51
4×1.5 mm² + 3×1.0 mm²	199 199 X		CM..BR SB51
4×2.5 mm²	199 551 0		CM..SM52
4×2.5 mm² + 3×1.0 mm²	199 201 5		CM..BR SB52
4×4 mm²	199 553 7		CM..SM54
4×4 mm² + 3×1.0 mm²	199 203 1		CM..BR SB54
4×6 mm²	199 555 3		CM..SM56
4×6 mm² + 3×1.5 mm²	199 205 8		CM..BR SB56
4×10 mm²	199 557 X		CM..SM59
4×10 mm² + 3×1.5 mm²	199 207 4		CM..BR SB59

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	1 333 118 3	Cable carrier installation	CM..SM51
4×1.5 mm² + 3×1.0 mm²	1 333 120 5		CM..BR SB51
4×2.5 mm²	1 333 119 1		CM..SM52
4×2.5 mm² + 3×1.0 mm²	1 333 121 3		CM..BR SB52
4×4 mm²	199 554 5		CM..SM54
4×4 mm² + 3×1.0 mm²	199 204 X		CM..BR SB54
4×6 mm²	199 556 1		CM..SM56
4×6 mm² + 3×1.5 mm²	199 206 6		CM..BR SB56
4×10 mm²	199 558 8		CM..SM59
4×10 mm² + 3×1.5 mm²	199 208 2		CM..BR SB59

3. Prefabricated cables and extension cables for connecting DS/CMD/CMP motors

Motor cables The cables are equipped with a connector for motor connection and conductor end sleeves for inverter connection.

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	590 454 4	Fixed installation	DS56 / CMD.. / CMP.. SM11
4×1.5 mm² + 2×1 mm²	1 332 485 3		DS56..B / CMD..BP / CMP..BP SB11
4×2.5 mm²	590 455 2		DS56 / CMD.. / CMP.. SM12
4×2.5 mm² + 2×1 mm²	1 333 213 9		DS56..B / CMD..BP / CMP..BP SB12
4×4 mm²	590 456 0		DS56 / CMD.. / CMP.. SM14
4×4 mm² + 2×1 mm²	1 333 214 7		DS56..B / CMD..BP / CMP..BP SB14

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	590 624 5	Cable carrier installation	DS56 / CMD.. / CMP.. SM11
4×1.5 mm² + 2×1 mm²	1 333 122 1		DS56..B / CMD..BP / CMP..BP SB11
4×2.5 mm²	590 625 3		DS56 / CMD.. / CMP.. SM12
4×2.5 mm² + 2×1 mm²	1 333 215 5		DS56..B / CMD..BP / CMP..BP SB12
4×4 mm²	590 480 3		DS56 / CMD.. / CMP.. SM14
4×4 mm² + 2×1 mm²	1 333 216 3		DS56..B / CMD..BP / CMP..BP SB14

Extension cables The cables are equipped with a connector and adapter for extending the motor cable.

Number of cores and line cross section	Part number	Installation type	for motor
4×1.5 mm²	1 333 245 7	Cable carrier installation	DS56 / CMD.. / CMP.. SM11
4×1.5 mm² + 2×1 mm²	1 333 248 1		DS56..B / CMD..BP / CMP..BP SB11
4×2.5 mm²	1 333 246 5		DS56 / CMD.. / CMP.. SM12
4×2.5 mm² + 2×1 mm²	1 333 250 3		DS56..B / CMD..BP / CMP..BP SB12
4×4 mm²	1 333 247 3		DS56 / CMD.. / CMP.. SM14
4×4 mm² + 2×1 mm²	1 333 251 1		DS56..B / CMD..BP / CMP..BP SB14

4. Prefabricated cables and extension cables for connecting VR forced cooling fans

VR forced cooling fan cable:

Number of cores and line cross section	Part number	Installation type
3×1 mm²	198 634 1	Fixed installation
3×1 mm²	199 560 X	Cable carrier installation

Extension cable for the VR forced cooling fan cable:

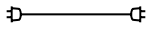
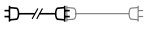
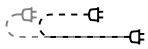
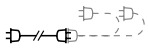
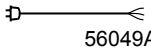
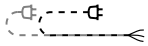
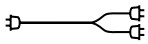
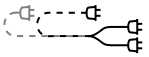
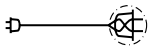
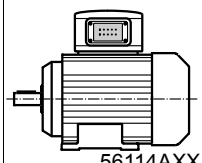
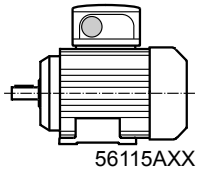
Number of cores and line cross section	Part number	Installation type
3×1 mm²	199 561 8	Fixed installation
3×1 mm²	199 562 6	Cable carrier installation

5. Prefabricated cables for connecting options DEH11B / DEH21B / DER11B

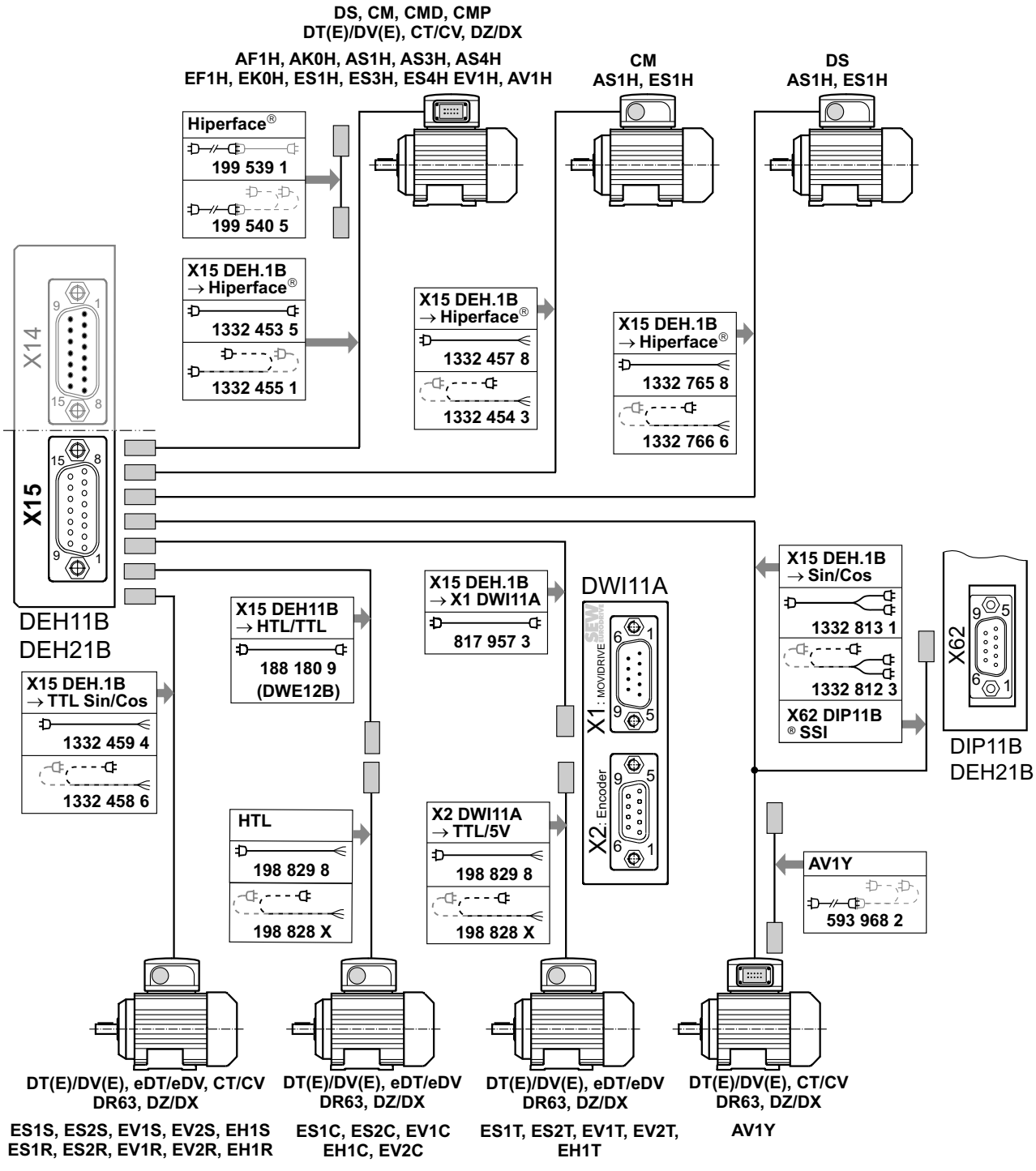
The following overviews show the possible connections for the DEH11B/DEH21B and DER11B options.

Meaning of the symbols

The connection cables are assigned a part number and a symbol. The symbols have the following meaning:

Symbol	Meaning
 56047AXX	Connection cable connector → connector for fixed installation
 56051AXX	Extension connection cable connector → connector for fixed installation
 56048AXX	Connection cable connector → connector for cable carrier installation
 56052AXX	Extension connection cable connector → connector for cable carrier installation
 56049AXX	Connection cable connector → terminal box for fixed installation
 56050AXX	Connection cable connector → terminal box for cable carrier installation
 56053AXX	Connection cable connector → Y connector for fixed installation
 56054AXX	Connection cable connector → Y connector for cable carrier installation
 56489AXX	Connection cable connector → connector with crossed A/B track for reversing the direction of rotation (for fixed installation)
 56112AXX	Encoder connection via plug connector
 56113AXX	Encoder connection via encoder terminal strip
 56114AXX	Connection via plug connector on the motor side
 56115AXX	Connection via terminal box on the motor side

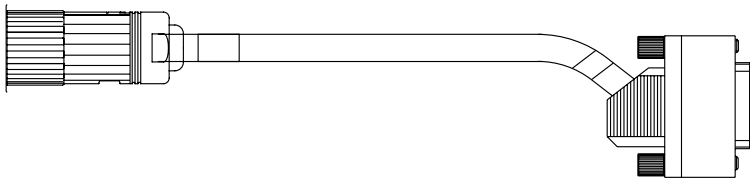
Connection options at X15 X15 DEH11B/DEH21B



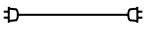
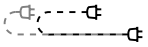
62907AXX

	NOTE
	For the individual wiring diagrams, refer to the section "Installation" in the MOVIDRIVE® MDX60B/61B" operating instructions.

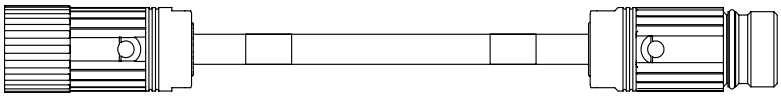
- Cable to connect HIPERFACE® encoders AF1H, AK0H, AS1H, AS3H, AS4H, EF1H, EK0H, ES1H, ES3H, ES4H, EV1H, AV1H with plug connector connection on the motor side to DS, CM, CMD, CMP, DT, DV, DT(E), DV(E), CT, CV, DZ or DX motors.



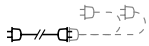
56135AXX

Type	Installation	Part number
DEH11B/21B X15 → DS/CM/CMD/CMP/DT/DV/DT(E)/DV(E)/CT/CV/DZ/DX motors with AF1H, AK0H, AS1H, AS3H, AS4H, EF1H, EK0H, ES1H, ES3H, ES4H, EV1H, AV1H	 56047AXX	1332 453 5
	 56048AXX	1332 455 1

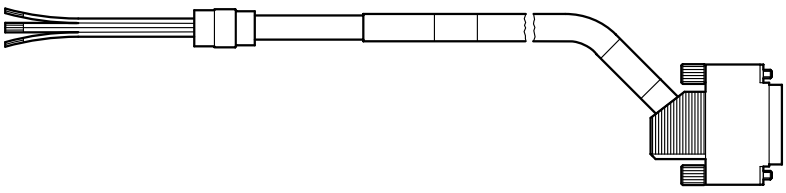
- Extension cable to connect HIPERFACE® encoders AF1H, AK0H, AS1H, AS3H, AS4H, EF1H, EK0H, ES1H, ES3H, ES4H, EV1H, AV1H with plug connector connection on the motor side to DS, CM, CMD, CMP, DT, DV, DT(E), DV(E), CT, CV, DZ or DX motors.



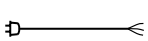
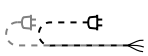
56136AXX

Type	Installation	Part number
DEH11B/21B X15 → DS/CM/CMD/CMP/DT/DV/DT(E)/DV(E)/CT/CV/DZ/DX motors with AF1H, AK0H, AS1H, AS3H, AS4H, EF1H, EK0H, ES1H, ES3H, ES4H, EV1H, AV1H	 56051AXX	199 539 1
	 56052AXX	199 540 5

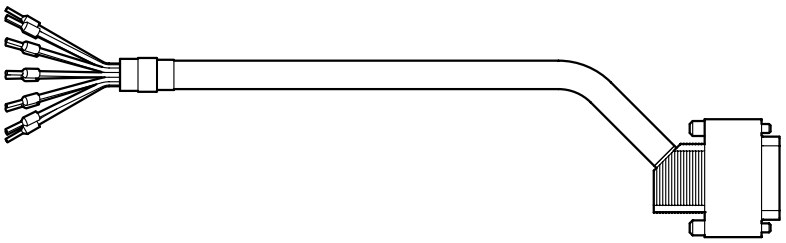
- Cable to connect HIPERFACE® encoders AS1H, ES1H, AF1H, EF1H with terminal box connection on the motor side to CM motors.



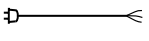
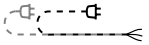
56137AXX

Type	Installation	Part number
DEH11B/21B X15 → CM motors with AS1H, ES1H, AF1H, EF1H	 56049AXX	1332 457 8
	 56050AXX	1332 454 3

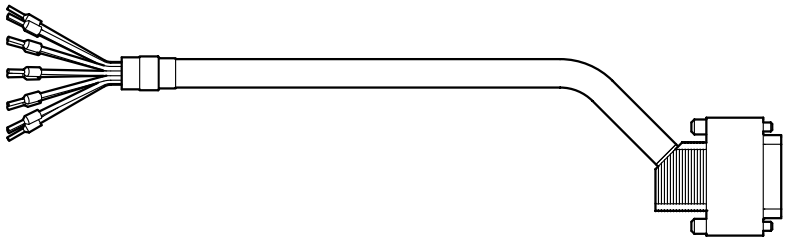
- Cable to connect HIPERFACE® encoders AS1H, ES1H, AF1H, EF1H with terminal box connection on the motor side to DS motors.



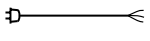
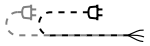
56132AXX

Type	Installation	Part number
DEH11B/21B X15 → DS motors with AS1H, ES1H, AF1H, EF1H	 56049AXX	1332 765 8
	 56050AXX	1332 766 6

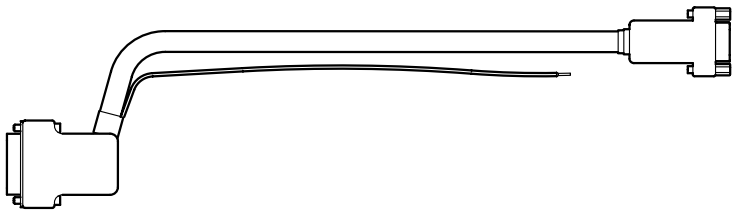
- Cable to connect sin/cos encoders ES1S, ES2S, EV1S, EV2S, EH1S, ES1R, ES2R, EV1R, EV2R, EH1R with terminal box connection on the motor side to CT, CV, DT(E), DV(E), eDT, eDV, DR, DZ and DX motors.



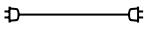
56132AXX

Type	Installation	Part number
DEH11B/21B X15 → DT(E)/DV(E)/eDT/eDV/CT/CV/DR/DZ/DX motors with sin/cos encoders ES1S, ES2S, EV1S, EV2S, EH1S, ES1R, ES2R, EV1R, EV2R, EH1R	 56049AXX	1332 459 4
	 56050AXX	1332 458 6

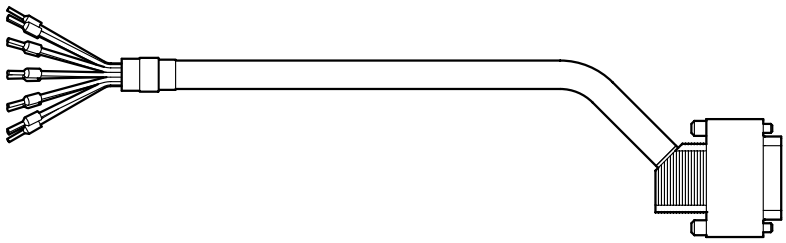
- Cable (option DWE12B, interface adapter HTL → TTL) to connect push-pull HTL encoders at X15 of option (→ section "Interface adapter DWE11B/12B").



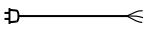
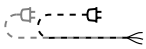
59109AXX

Type	Installation	Part number
DEH11B/21B X15 → Option DWE12B (connection for push-pull HTL encoders)	 56047AXX	188 180 9

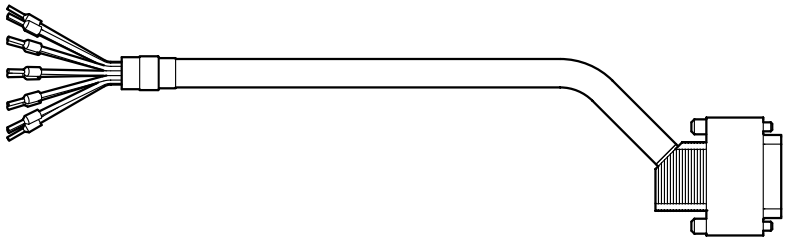
- Cable to connect push-pull HTL encoders ES1C, ES2C, EV1C, EV2C, EH1C with terminal box connection on the motor side to DT(E), DV(E), eDT, eDV, DR, DZ and DX motors.



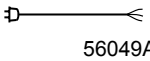
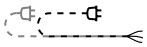
56132AXX

Type	Installation	Part number
Push-pull HTL encoders ES1C, ES2C, EV1C, EV2C, EH1C → DT(E)/DV(E)/eDT/eDV/DR/DZ/DX motors	 56049AXX	198 829 8
	 56050AXX	198 828 X

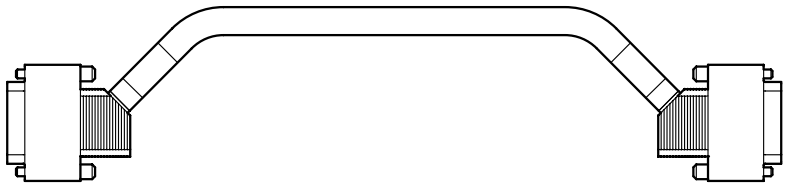
- Cable to connect DC 5 V TTL sensors ES1T, ES2T, EV1T, EV2T, EH1T with terminal box connection on the motor side (DT(E), DV(E), eDT, eDV, DR, DZ or DX motors) to DC 5 V encoder power supply type DWI11A.



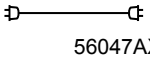
56132AXX

Type	Installation	Part number
DC 5 V TTL sensors ES1T, ES2T, EV1T, EV2T, EH1T→ DWI11A X2	 56049AXX	198 829 8
	 56050AXX	198 828 X

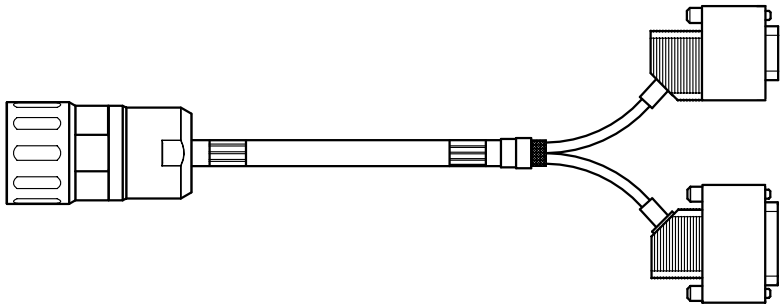
- Cable to connect the DC 5 V encoder power supply type DWI11A via plug connector.



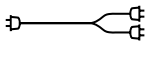
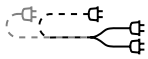
56109AXX

Type	Installation	Part number
DEH11B/21B X15 → DWI11A X1	 56047AXX	817 957 3

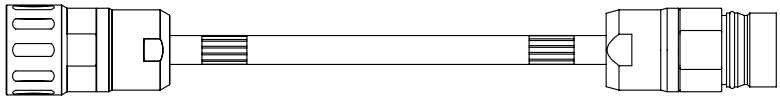
- Y cable to connect the AV1Y absolute encoder with plug connector on the motor side to DT(E), DV(E), CT, CV, DR, DZ and DX motors. The following encoder tracks are evaluated with the Y cable:
  - SSI track of the AV1Y absolute encoder and at DIP11B/DEH21B X62
  - sin/cos track of the AV1Y absolute encoder at DEH11B X15



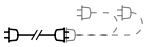
59321AXX

Type	Installation	Part number
DEH11B X15 → AV1Y and DIP11B/DEH21B X62	 56053AXX	1332 813 1
	 56054AXX	1332 812 3

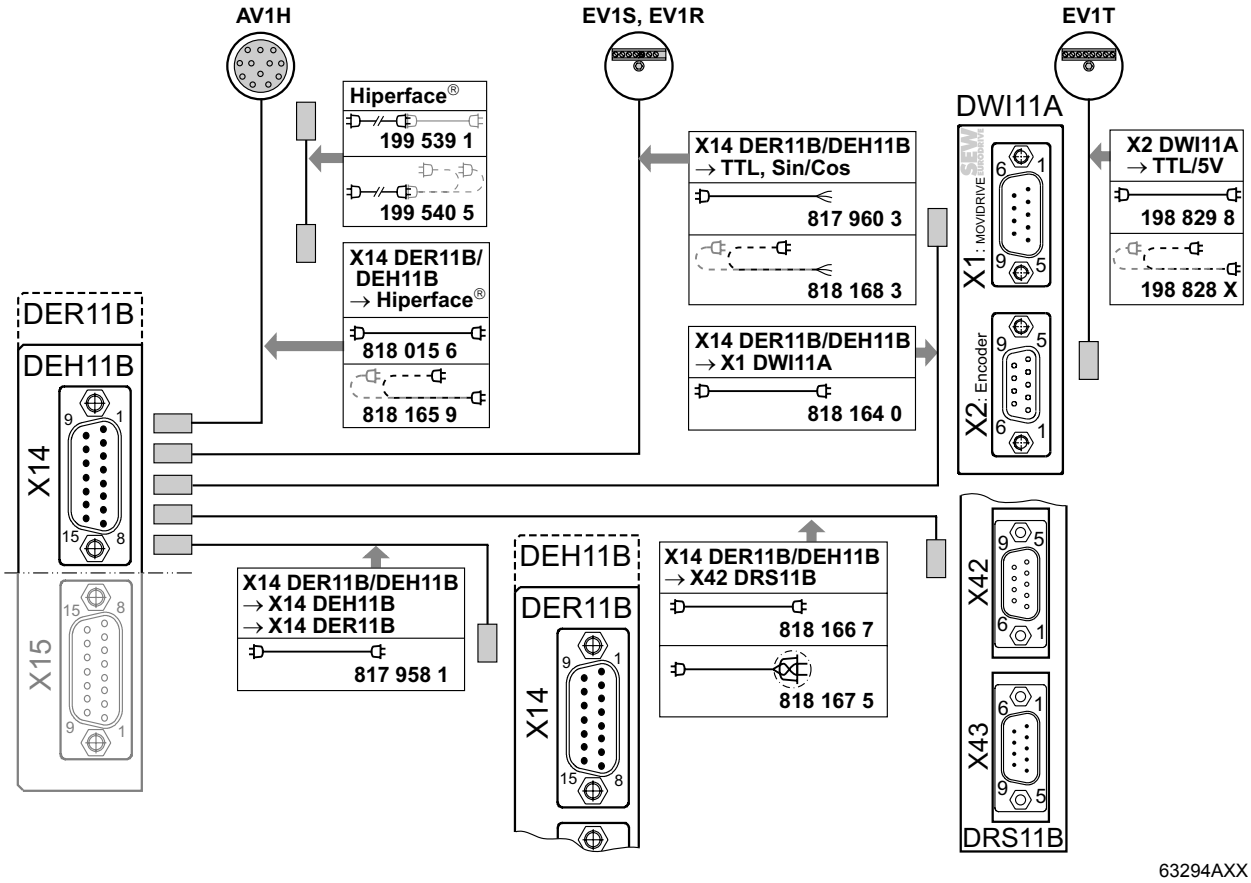
- Extension cable to connect the AV1Y absolute encoder with plug connector on the motor side to DT(E), DV(E), CT, CV, DR, DZ und DX motors.



56131AXX

Type	Installation	Part number
DT(E)/DV(E)/CT/CV/DR/DZ/DX motors → AV1Y	 56052AXX	593 968 2

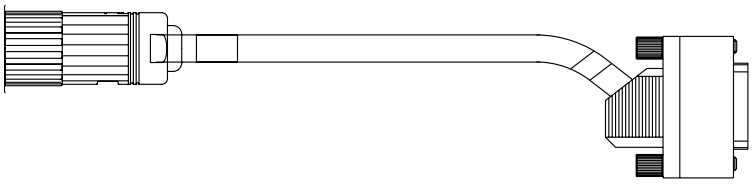
Connection options at X14, DEH11B / DER11B



63294AXX

	NOTE For the individual wiring diagrams, refer to the section "Installation" in the MOVIDRIVE® MDX60B/61B" operating instructions.

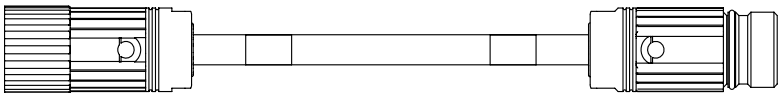
- Cable to connect external HIPERFACE® encoders AV1H, AS1H, ES1H, AF1H, EF1H via plug connector.



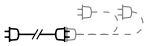
56130AXX

Type	Installation	Part number
DEH11B / DER11B X14 → AV1H, AS1H, ES1H, AF1H, EF1H	56047AXX	818 015 6
	56048AXX	818 165 9

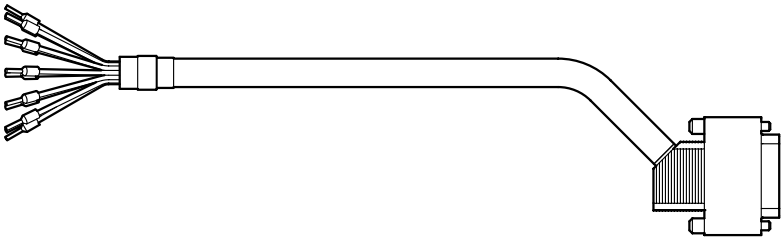
- Cable to connect external HIPERFACE® encoders AV1H, AS1H, ES1H, AF1H, EF1H via plug connector.



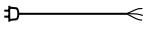
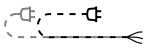
56131AXX

Type	Installation	Part number
DEH11B / DER11B X14 → AV1H, AS1H, ES1H, AF1H, EF1H	 56051AXX	199 539 1
	 56052AXX	199 540 5

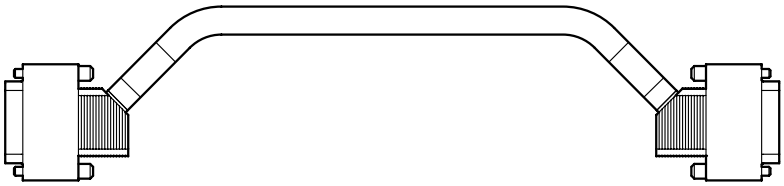
- Cable to connect external sin/cos encoders via encoder terminal strip.



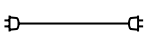
56132AXX

Type	Installation	Part number
DEH11B / DER11B X14 → sin/cos encoders	 56049AXX	819 869 1
	 56050AXX	818 168 3

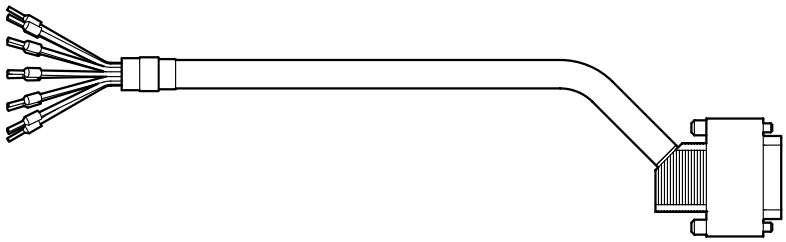
- Cable to connect the DC 5 V encoder power supply type DWI11A via plug connector.



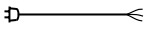
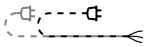
56109AXX

Type	Installation	Part number
DEH11B / DER11B X14 → DWI11A X1	 56047AXX	818 164 0

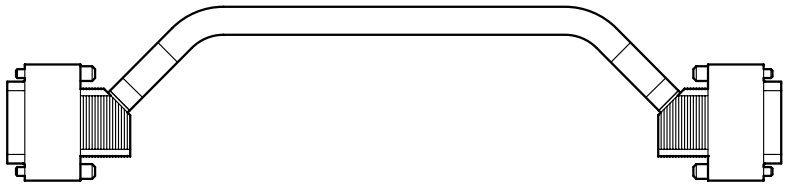
- Cable to connect an external DC 5 V TTL sensor to the DC 5 V encoder power supply type DWI11A via encoder terminal strip.



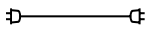
56132AXX

Type	Installation	Part number
DC 5 V TTL sensor → DWI11A X2	 56049AXX	198 829 8
	 56050AXX	198 828 X

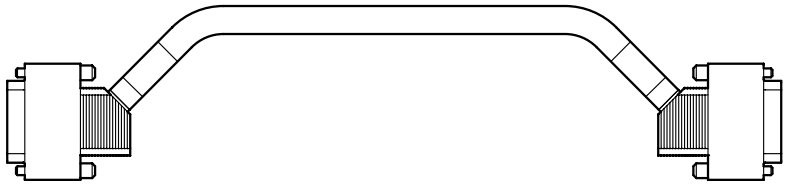
- Cable to connect a master/slave connection.



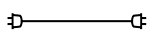
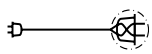
56109AXX

Type	Installation	Part number
DEH11B/DER11B X14 → DER11B/DEH11B X14	 56047AXX	817 958 1

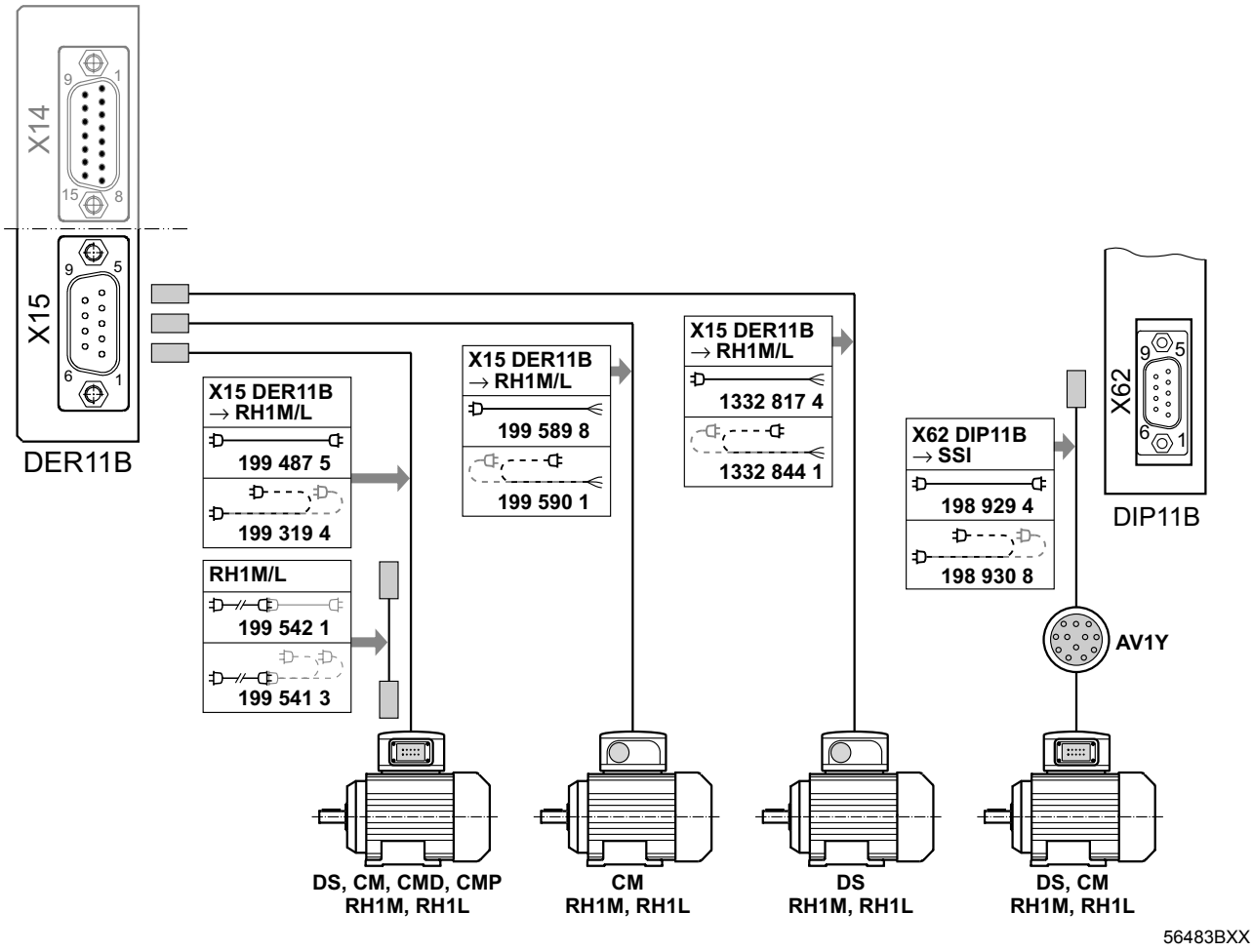
- Cable to connect the encoder simulation (DEH11B/DER11B:X14) of the master to terminal X42 of option DRS11B.



56109AXX

Type	Installation	Part number
DEH11B/DER11B X14 → DRS11B X42 (master and slave turn in the same direction)	 56047AXX	0818 166 7
DEH11B/DER11B X14 → DRS11B X42 (master and slave turn in opposite directions)	 56489AXX	0818 167 5

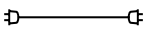
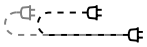
Connection options at X15 DER11B



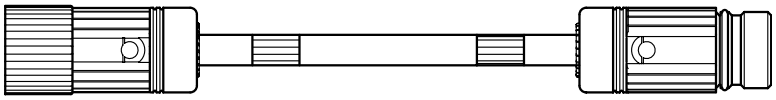
	NOTE
	For the individual wiring diagrams, refer to the section "Installation" in the MOVIDRIVE® MDX60B/61B" operating instructions.

- Cable to connect resolvers RH1M / RH1L with plug connector connection on the motor side to DS, CM, CMD or CMP motors.

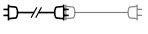
56138AXX

Type	Installation	Part number
DER11B X15 → DS/CM/CMD/CMP motors with RH1M/RH1L	 56047AXX	199 487 5
	 56048AXX	199 319 4

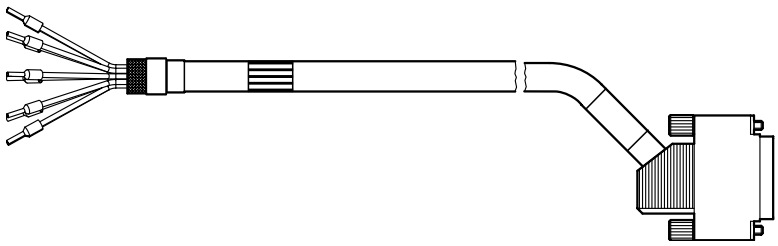
- Extension cable to connect resolvers RH1M / RH1L with plug connector connection on the motor side to DS, CM, CMD or CMP motors.



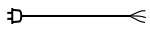
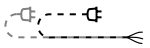
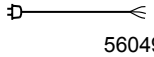
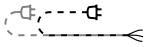
56139AXX

Type	Installation	Part number
DER11B X15 → DS/CM/CMD/CMP motors with RH1M/RH1L	 56051AXX	199 542 1
	 56052AXX	199 541 3

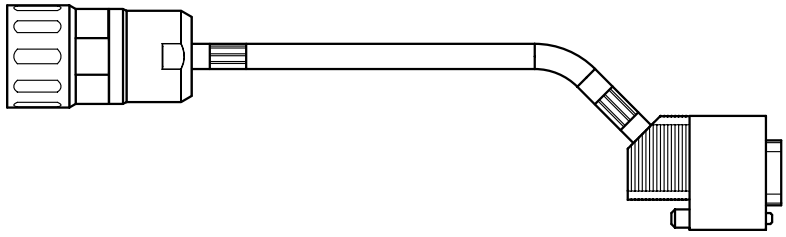
- Cable to connect resolvers RH1M / RH1L with terminal box connection on the motor side to CM and DS motors.



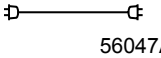
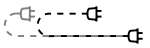
56142AXX

Type	Installation	Part number
DER11B X15 → CM motors with RH1M/RH1L	 56049AXX	199 589 8
	 56050AXX	199 590 1
DER11B X15 → DS motors with RH1M/RH1L	 56049AXX	1332 817 4
	 56050AXX	1332 844 1

- CM and DS motors with integrated resolver: Additional cable to connect the AV1Y absolute encoder with plug connector connection on the motor side to DIP11B X62.



56143AXX

Type	Installation	Part number
DS/CM motors with AV1Y→ DIP11B X62	 56047AXX	198 929 4
	 56048AXX	198 930 8

3 Motor Selection

3.1 Basic recommendations for motor selection

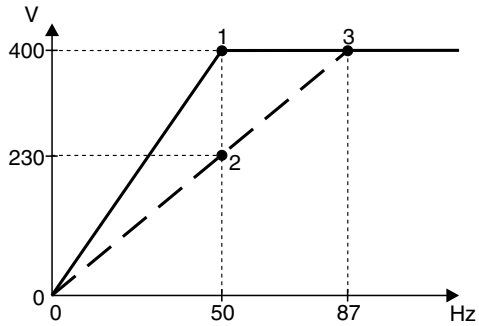
- Only use motors with at least thermal class F.
- Use TF thermistors or TH winding thermostats. TH should be preferred for group drives on one inverter. The series connection of the TH contacts (normally closed) is not subject to limitation when both monitoring functions are used.
- For group drives, we recommend that the motors should not differ from one another by more than 3 motor types.
- Use 4-pole motors if possible. This recommendation particularly applies to gear-motors that are operated with a high oil filling level due to their vertical mounting position.
- Generally speaking, the motor can be operated at its listed power without forced cooling if the operating conditions differ from S1 operation, e.g. positioning drive with 1:20 speed range in S3 operation.
- Do not select a motor that is too big, particularly for delta connection. Otherwise, the inverter may trigger a short circuit fault.
- A MOVIDRIVE® MDX61B with HIPERFACE® encoder card type DEH11B option or with DER11B resolver card option is required for speed control. In this case, the motor must be equipped with an encoder (HIPERFACE®, sin/cos or TTL) or resolver.

3.2 Motor selection for asynchronous AC motors (VFC)

Voltage / frequency characteristics

The operating mode VFC runs the asynchronous motor on a load-dependent voltage/frequency curve. The continuous calculation of the motor model enables the full motor torque to be utilized right down to the lowest speeds. This characteristic curve is set by entering the rated motor voltage and the rated motor frequency in the startup function. The setting determines the speed-dependent torque and power characteristics of the asynchronous motor.

The following figure shows an example of the voltage/frequency characteristic curves of an asynchronous AC motor 230 / 400 V, 50 Hz.



63199AXX

Figure 34: Voltage/frequency characteristics of the asynchronous motor

1 Star connection; 400 V, 50 Hz

2 Delta connection: 230 V, 50 Hz

3 Delta connection: 400 V, 87 Hz

The inverter output voltage V_{out} is limited by the connected supply voltage. The "rated supply voltage" input value in the startup function limits the effective value of the maximum output voltage. This restriction is used whenever the connected motor has a lower rated voltage than the power supply of the inverter. Enter the maximum permitted motor voltage. Furthermore, make sure that the "rated supply voltage" input value is less than or equal to the supply voltage of the inverter.

Speed/torque characteristics

The field weakening range starts when the set maximum output voltage of the inverter is reached. Consequently, the speed range of the motor is divided into two ranges:

- Basic speed range → constant torque with increasing power
- Field weakening range → constant power with an inversely proportionate decrease in torque.

When determining the maximum speed in the field weakening range, note that the rated torque M_N (in relation to the rated speed, e.g. n_N = 1500 1/min) falls in inverse proportion and the breakdown torque M_K is reduced in an inverse quadratic relationship. The M_K/M_N ratio is a motor-specific parameter. The MOVIDRIVE® stall protection limits the speed when the maximum possible torque is reached.

The following figure shows an example of different motor characteristic curves in the basic speed range and in the field weakening range.

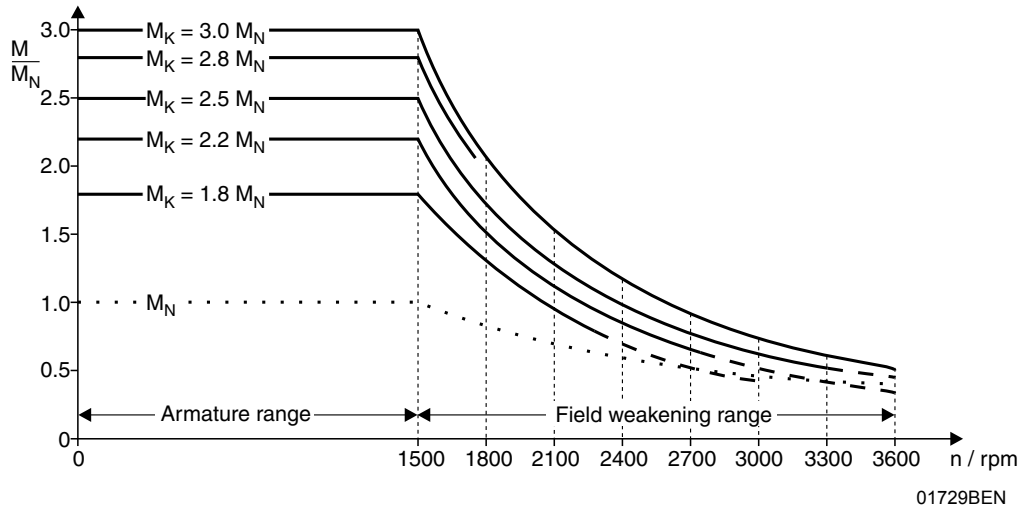
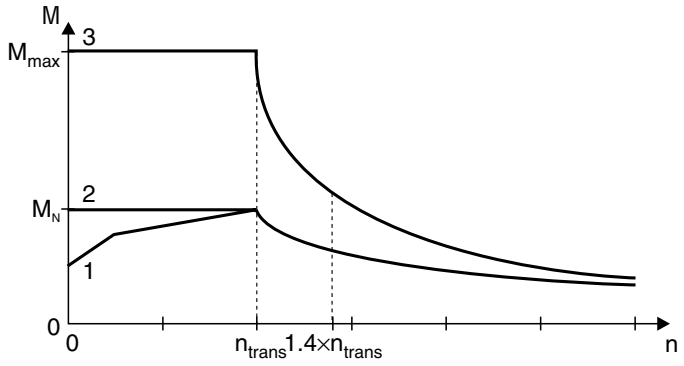


Figure 35: Quadratically falling breakdown torque

With gearmotors, the maximum motor speed depends on the size and mounting position of the gear unit. The speed should not exceed 3000 1/min due to the resulting noise and oil churning losses.

Typical speed/torque characteristics

M_N is determined by the motor. M_{max} and n_{Erans} depend on the motor/inverter combination. You can refer to the motor selection tables for CFC mode for the values of n_{trans}, M_N and M_{max}.



01651BDE

Figure 36: Speed/torque characteristic curve in CFC operating mode

[1] With integrated cooling

[2] With forced cooling

[3] Maximum torque

Dynamic applications ($P_{inverter}$ greater than P_{motor})

Observe the following notes for dynamic applications in which the inverter power is significantly greater than the motor power:

- The startup function sets the current limit of the inverter (P303/P313) to 150 % of the rated motor current. The value of the current limit is based on the rated inverter current. As a result, 150 % of the rated motor current is less than 150 % of the rated inverter current (value of P303/P313). For dynamic applications, this parameter must be manually set to a higher value.
- The startup function sets the slip compensation parameter (P324/P334) to the rated slip of the motor. In the case of VFC-n-CONTROL, the internal slip limiting function allows the slip to reach max. 150 % of this setting. Consequently, the motor develops at most 150 % of the rated motor torque. For higher torque ratings, the slip compensation parameter (P324) must be increased accordingly.

	NOTE
	Set parameter P324 "Slip compensation" to **max. 130 % of the rated slip of the motor** for **stable operation**.

Combinations with $P_{inverter}$ greater than $4 \times P_{motor}$

For inverter/motor combinations in which the inverter power is greater than four times the motor power, special measures must be taken during project planning and startup. The reason for this is the large difference between the rated inverter current and the rated motor current.

Therefore, note the following measures:

- Perform project planning for connecting the motor in a delta connection. This increases the motor current by a factor of $\sqrt{3}$ and lowers the unfavorable ratio.
- If this measure does not suffice, start up the motor in VFC & GROUP or V/f operating mode. In these operating modes, the inverter simulates a supply system with constant voltage and frequency with a constant V/f ratio.

Motor selection with delta/star connection type (AC 230/400 V / 50 Hz)

Motors for AC 380 V / 60 Hz can also be allocated on the basis of this selection table.

P_{max} in kW (HP) for operation on MOVIDRIVE® MDX60/61B...-5_3 (AC 400/500 V units)							
Connection		⅄ / AC 400 V[1]				Δ / AC 230 V[2]	
Cooling		Own		Forced		Own	Forced
f_{min} - f_{max}	**Hz**	10 - 50 / 6 - 60 5 - 70 / 5.5 - 80		≤ 2.5 - 50 / ≤ 3 - 60[3]		9 - 87	≤ 2.5 - 87[3]
n_{min} - n_{max}	**1/min**	300 - 1500 / 180 - 1800 150 - 2100 / 165 - 2400		≤ 75 - 1500 / ≤ 90 - 1800		270 - 2610	≤ 75 - 2610
Speed range		1:5 / 1:10 / 1:15		≥ 1:20		1:10	≥ 1:20
Motor type[4]	**Rated power P_n kW (HP)**	**$P = P_{reduced}$**		**$P = P_n$**		**$P = P_{increased}$[5]**	
		kW (HP)	**MDX[6] 60/61B...-5_3**	**kW (HP)**	**MDX[6] 60/61B...-5_3**	**kW (HP)**	**MDX[6] 60/61B...-5_3**
DR63S4	**0.12 (0.16)**					0.18	**0005**
DR63M4	**0.18 (0.24)**			0.18	**0005**	0.25	
DR63L4	**0.25 (0.34)**	0.18 (0.24)	**0005**	0.25 (0.34)		0.37 (0.5)	
DT71D4	**0.37 (0.5)**	0.25 (0.34)	**0005/0015**	0.37 (0.5)	**0005/0015**	0.55 (0.74)	**0005/0015**
DT80K4	**0.55 (0.74)**	0.37 (0.5)		0.55 (0.74)		0.75 (1.0)	**0008/0015**
DT80N4	**0.75 (1.0)**	0.55 (0.74)		0.75 (1.0)	**0008/0015**	1.1 (1.5)	**0011/0015**
DT90S4	**1.1 (1.5)**	0.75 (1.0)	**0008/0015**	1.1 (1.5)	**0011/0015**	1.5 (2.0)	**0014/0015**
DT90L4	**1.5 (2.0)**	1.1 (1.5)	**0011/0015**	1.5 (2.0)	**0014/0015**	2.2 (3.0)	**0022**
DV100M4	**2.2 (3.0)**	1.5 (2.0)	**0014/0015**	2.2 (3.0)	**0022**	3.0 (4.0)	**0030**
DV100L4	**3.0 (4.0)**	2.2 (3.0)	**0022**	3.0 (4.0)	**0030**	4.0 (5.4)	**0040**
DV112M4	**4.0 (5.4)**	3.0 (4.0)	**0030**	4.0 (5.4)	**0040**	5.5 (7.4)	**0055**
DV132S4	**5.5 (7.4)**	4.0 (5.4)	**0040**	5.5 (7.4)	**0055**	7.5 (10)	**0075**
DV132M4	**7.5 (10)**	5.5 (7.4)	**0055**	7.5 (10)	**0075**	9.2 (12)	**0110**
DV132ML4	**9.2 (12)**	7.5 (10)	**0075**	9.2 (12)	**0110**	11 (15)	
DV160M4	**11 (15)**	9.2 (12)	**0110**	11 (15)		15 (20)	**0150**
DV160L4	**15 (20)**	11 (15)		15 (20)	**0150**	18.5 (24.8)	**0220**
DV180M4	**18.5 (24.8)**	15 (20)	**0150**	18.5 24.8)	**0220**	22 (30)	**0300**
DV180L4	**22 (30)**	18.5 (24.8)	**0220**	22 (30)		30 (40)	**0370**
DV200L4	**30 (40)**	22 (30)		30 (40)	**0300**	37 (50)	
DV225S4	**37 (50)**	30 (40)	**0300**	37 (50)	**0370**	45 (60)	**0450**
DV225M4	**45 (60)**	37 (50)	**0370**	45 (60)	**0450**	55 (74)	**0550**
DV250M4	**55 (74)**	45 (60)	**0450**	55 (74)	**0550**	75 (100)	**0750**
DV280S4	**75 (100)**	55 74)	**0550**	75 (100)	**0750**	90 (120)	**0900**
D280M4	**90 (120)**	75 (100)	**0750**	90 (120)	**0900**	110 (148)	**1100**
D315S4	**110 (148)**	90 (120)	**0900**	110 (148)	**1100**	132 (177)	**1320**
D315M4	**132 (177)**	110 (148)	**1100**	132 (177)	**1320**		
D315M4a	**160 (215)**	132 (177)	**1320**				

1) Also applies to motors with AC 460 V or AC 500 V rated voltage and for AC 400/690 V motors in Δ connection.

2) Also applies to motors with AC 266 V or AC 290 V rated voltage.

3) Without speed control: f_{min} = 0.5 Hz

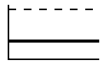
4) In load type S3 (40 % c.d.f.), the motor must not be operated at its listed power (P = P_n) even without forced-cooling. Example: P_{stat} = 2 kW, P_{dyn} = 2.5 kW → selected motor DV100M4 (P_n = 2.2 kW).

5) $P_{increased}$ means that the motor is operated at the power of the next larger motor (one frame size), rather than with the $\sqrt{3}$–fold power.

6) In each application, the units listed here permit intermittent loads of up to two times the rated load with size 0 (0005 ... 0014) and up to 1.5 times the rated load with sizes 1 ... 6 (0015 ... 1320). With variable torque load and constant load without overload, each inverter can also be operated with an increased continuous output power (→ chapter Technical Data). The continuous output current of 125 % of the rated unit current is only available at f_{PWM} = 4 kHz.

Examples for motor selection delta/star AC 230/400 V

Trolley drive



Constant load with overload (acceleration) and low load during travel:

- P_{travel} = 1.3 kW
- P_{max} = 13 kW
- n_{min} = 270 1/min, setting range 1:10
- n_{max} = 2610 1/min

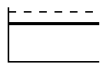
In inverter mode with adapted power (P = P_n), the motor can output 150 % of its listed power during the acceleration phase. This means:

$P_{Mot} = P_{max} : 1.5 = 13\ kW : 1.5 = 8.67\ kW$

A DV132M4 motor with delta connection (P_n = 9.2 kW) is selected.

According to the selection table (→ page 147) allocates a MOVIDRIVE® MDX61B0110 (P = P_n) is allocated.

Hoist drive



High constant load with short-term overload (acceleration):

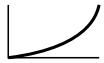
- P_{max} = 26 kW
- $P_{const.}$ = 20 kW
- Setting range 1:15, low speed only for positioning
- Brake applied when the drive is at a standstill
- Load type S3 (40 % c.d.f.)

The inverter can yield 150 % of its rated current during acceleration. Consequently, a MOVIDRIVE® MDX61B0220 is selected.

In view of the load type (S3, 40 % cdf), the selection table allocates motor type DV180L4 (P_n = 22 kW) in a star connection.

For more information, refer to the "Project planning for hoists" section

Fan/pump



Variable torque load with the following power values:

- P_{max} = 4.8 kW
- n_{max} = 1400 1/min, continuous duty with n_{max}

The motor can be operated at its listed power (P = P_n) even without forced cooling due to the quadratically falling torque. Therefore, the motor type DV132S4 in star connection (P_n = 5.5 kW) is sufficient.

The selection table allocates a MOVIDRIVE® MDX61B0055 (P = P_n). However, as there is a variable torque load without overload, the inverter can be operated with increased output power. Consequently, a MOVIDRIVE® MDX61B0040 is sufficient.

Motor selection in double-star/star circuit type (AC 230/460 V / 60 Hz)

P_{max} in kW (HP) for operation on MOVIDRIVE® MDX60/61B...-5_3 (AC 400/500 V units)							
Connection		⅄ / AC 460 V				⅄ ⅄ / AC 230 V	
Cooling		Own		Own	Forced	Own	Forced
f_{min} - f_{max}	**Hz**	6 - 90		10 - 60	0 - 60[1]	10 - 120	0 - 120[1]
n_{min} - n_{max}	**1/min**	180 - 2700		300 - 1800	0 - 1800	300 - 3600	0 - 3600
Speed range		1:15		1:6	≥ 1:15	1:12	≥ 1:20
Motor type	**Rated power P_n kW (HP)**	**$P = P_{reduced}$**		**$P = P_n$**		**$P = P_{increased}$[2]**	
		kW (HP)	**With MDX60/61B...-5_3[3]**	**kW (HP)**	**With MDX60/61B...-5_3[3]**	**kW (HP)**	**With MDX60/61B...-5_3[3]**
DR63S4	**0.12 (0.16)**					0.18 (0.24)	**0005**
DR63M4	**0.18 (0.24)**			0.18 (0.24)	**0005**	0.25 (0.34)	
DR63L4	**0.25 (0.34)**	0.18 (0.24)	**0005**	0.25 (0.34)		0.37 (0.5)	
DT71D4	**0.37 (0.5)**	0.25 (0.34)	**0005/0015**	0.37 (0.5)	**0005/0015**	0.75 (1.0)	**0008/0015**
DT80K4	**0.55 (0.74)**	0.37 (0.5)		0.55 (0.74)		1.1 (1.5)	**0011/0015**
DT80N4	**0.75 (1.0)**	0.55 (0.74)		0.75 (1.0)	**0008/0015**	1.5 (2.0)	**0014/0015**
DT90S4	**1.1 (1.5)**	0.75 (1.0)	**0008/0015**	1.1 (1.5)	**0011/0015**	2.2 (3.0)	**0022**
DT90L4	**1.5 (2.0)**	1.1 (1.5)	**0011/0015**	1.5 (2.0)	**0014/0015**	3.0 (4.0)	**0030**
DV100M4	**2.2 (3.0)**	1.5 (2.0)	**0014/0015**	2.2 (3.0)	**0022**	4.0 5.4)	**0040**
DV100L4	**3.7 (5.0)**	2.2 (3.0)	**0022**	3.0 (4.0)	**0030**	5.5 (7.4)	**0055**
DV112M4	**4.0 (5.4)**	3.0 (4.0)	**0030**	4.0 (5.4)	**0040**	7.5 (10)	**0075**
DV132S4	**5.5 (7.4)**	4.0 (5.4)	**0040**	5.5 (7.4)	**0055**	9.2 (12)	**0110**
DV132M4	**7.5 (10)**	5.5 (7.4)	**0055**	7.5 (10)	**0075**	11 (15)	
DV132ML4	**9.2 (12)**	7.5 (10)	**0075**	9.2 (12)	**0110**	15 (20)	**0150**
DV160M4	**11 (15)**	9.2 (12)	**0110**	11 (15)		18.5 (24.8)	**0220**
DV160L4	**15 (20)**	11 (15)		15 (20)	**0150**	22 (30)	
DV180M4	**18.5 (24.8)**	15 (20)	**0150**	18.5 (24.8)	**0220**	30 (40)	**0300**
DV180L4	**22 (30)**	18.5 (24.8)	**0220**	22 (30)		37 (50)	**0370**
DV200L4[4]	**30 (40)**	22 (30)		30 (40)	**0300**	45 (60)	**0450**
DV225S4[4]	**37 (50)**	30 (40)	**0300**	37 (50)	**0370**	55 (74)	**0550**
DV225M4[4]	**45 (60)**	37 (50)	**0370**	45 (60)	**0450**	75 (100)	**0750**
DV250M4[5]	**55 (74)**	45 (60)	**0450**	55 (74)	**0550**	90 (120)	**0900**
DV280S4[5]	**75 (100)**	55 (74)	**0550**	75 (100)	**0750**	110 (148)	**1100**
D280M4[5]	**90 (120)**	75 (100)	**0750**	90 (120)	**0900**	132 (177)	**1320**
D315S4	**110 (148)**	90 (120)	**0900**	110 (148)	**1100**		
D315M4	**132 (177)**	110 (148)	**1100**	132 (177)	**1320**		
D315M4a	**160 (215)**	132 (177)	**1320**				

1) Without speed control: f_{min} = 0.5 Hz

2) $P_{increased}$ means that the motor is operated at the power of the next larger motor (one frame size), rather than with the $\sqrt{3}$–fold power.

3) In each application, the units listed here permit intermittent loads of up to two times the rated load with size 0 (0005 ... 0014) and up to 1.5 times the rated load with sizes 1 ... 6 (0015 ... 1320). With variable torque load and constant load without overload, each inverter can also be operated with an increased continuous output power (→ chapter Technical Data). The continuous output current of 125 % of the rated unit current is only available at f_{PWM} = 4 kHz.

4) Maximum permitted motor speed n_{max} = 3000 1/min

5) Maximum permitted motor speed n_{max} = 2600 1/min

Motor selection in delta connection type (AC 230 V / 50 Hz)

P_{max} kW (HP) for operation on MOVIDRIVE® MDX61B...-2_3 (AC 230 V units)					
Connection		Δ / AC 230 V			
Cooling		Own		Forced	
f_{min} - f_{max}	**Hz**	10 - 50 6 - 60 5 - 70 / 5.5 - 80		≤ 2.5 - 50 / ≤ 3 - 60[1]	
n_{min} - n_{max}	**1/min**	300 - 1500 180 - 1800 150 - 2100 / 165 - 2400		≤ 75 - 1500 / ≤ 90 - 1800	
Speed range		1:5 1:10 1:15		≥ 1:20	
Motor type[2]	**Rated power P_n kW (HP)**	**$P = P_{reduced}$**		**$P = P_n$**	
		kW (HP)	**Mit MDX61B...-2_3[3]**	**kW (HP)**	**Mit MDX61B...-2_3[3]**
DT71D4	**0.37 (0.5)**	0.25 (0.34)	**0015**	0.37 (0.5)	**0015**
DT80K4	**0.55 (0.74)**	0.37 (0.5)		0.55 (0.74)	
DT80N4	**0.75 (1.0)**	0.55 (0.74)		0.75 (1.0)	
DT90S4	**1.1 (1.5)**	0.75 (1.0)		1.1 (1.5)	
DT90L4	**1.5 (2.0)**	1.1 (1.5)		1.5 (2.0)	
DV100M4	**2.2 (3.0)**	1.5 (2.0)		2.2 (3.0)	**0022**
DV100L4	**3.0 (4.0)**	2.2 (3.0)	**0022**	3.0 (4.0)	**0030**
DV112M4	**4.0 (5.4)**	3.0 (4.0)	**0030**	4.0 (5.4)	**0040**
DV132S4	**5.5 (7.4)**	4.0 (5.4)	**0040**	5.5 (7.4)	**0055**
DV132M4	**7.5 (10)**	5.5 (7.4)	**0055**	7.5 (10)	**0075**
DV132ML4	**9.2 (12)**	7.5 (10)	**0075**	9.2 (12)	**0110**
DV160M4	**11 (15)**	9.2 (12)	**0110**	11 (15)	
DV160L4	**15 (20)**	11 (15)		15 (20)	**0150**
DV180M4	**18.5 (24.8)**	15 (20)	**0150**	18.5 (24.8)	**0220**
DV180L4	**22 (30)**	18.5 (24.8)	**0220**	22 (30)	**0300**
DV200L4	**30 (40)**	22 (30)		30 (40)	
DV225S4	**37 (50)**	30 (40)	**0300**	-	

1) Without speed control: f_{min} = 0.5 Hz

2) In load type S3 (40 % c.d.f.), the motor must not be operated at its listed power (P = P_n) even without forced-cooling. Example: P_{stat} = 2 kW, P_{dyn} = 2.5 kW → selected motor DV100M4 (P_n = 2.2 kW).

3) The units listed here permit intermittent loads of up to 1.5 times the rated load in the specific application. With variable torque load and constant load without overload, each inverter can also be operated with an increased continuous output power (→ chapter Technical Data). The continuous output current of 125 % of the rated unit current is only available at f_{PWM} = 4 kHz.

Motor selection in double-star connection type (AC 230 V / 60 Hz)

P_{max} kW (HP) for operation on MOVIDRIVE® MDX61B...-2_3 (AC 230 V units)					
Connection		⅄⅄ / AC 230 V			
Cooling		Own		Own	Forced
f_{min} - f_{max}	**Hz**	6 - 90		10 - 60	0 - 60[1]
n_{min} - n_{max}	**1/min**	180 - 2700		300 - 1800	0 - 1800
Speed range		1:15		1:6	≥ 1:15
Motor type	**Rated power P_n kW (HP)**	**P = $P_{reduced}$**		**P = P_n**	
		kW (HP)	**Mit MDX61B...-2_3[2]**	**kW (HP)**	**Mit MDX61B...-2_3[2]**
DT71D4	**0.37 (0.5)**	0.25 (0.34)	**0015**	0.37 (0.5)	**0015**
DT80K4	**0.55 (0.74)**	0.37 (0.5)		0.55 (0.74)	
DT80N4	**0.75 (1.0)**	0.55 (0.74)		0.75 (1.0)	
DT90S4	**1.1 (1.5)**	0.75 (1.0)		1.1 (1.5)	
DT90L4	**1.5 (2.0)**	1.1 (1.5)		1.5 (2.0)	
DV100M4	**2.2 (3.0)**	1.5 (2.0)		2.2 (3.0)	**0022**
DV100L4	**3.7 (5.0)**	2.2 (3.0)	**0022**	3.0 (4.0)	**0030**
DV112M4	**4.0 (5.4)**	3.0 (4.0)	**0030**	4.0 (5.4)	**0040**
DV132S4	**5.5 (7.4)**	4.0 (5.4)	**0040**	5.5 (7.4)	**0055**
DV132M4	**7.5 (10)**	5.5 (7.4)	**0055**	7.5 (10)	**0075**
DV132ML4	**9.2 (12)**	7.5 (10)	**0075**	9.2 (12)	**0110**
DV160M4	**11 (15)**	9.2 (12)	**0110**	11 (15)	
DV160L4	**15 (20)**	11 (15)		15 (20)	**0150**
DV180M4	**18.5 (24.8)**	15 (20)	**0150**	18.5 (24.8)	**0300**
DV180L4	**22 (30)**	18.5 (24.8)	**0220**	22 (30)	**0370**
DV200L4	**30 (40)**	22 (30)		30 (40)	
DV225S4	**37 (50)**	30 (40)	**0300**	-	

1) Without speed control: f_{min} = 0.5 Hz

2) The units listed here permit intermittent loads of up to 1.5 times the rated load in the specific application. With variable torque load and constant load without overload, each inverter can also be operated with an increased continuous output power (→ chapter Technical Data). The continuous output current of 125 % of the rated unit current is only available at f_{PWM} = 4 kHz.

3.3 Motor selection for asynchronous servomotors (CFC)

	NOTE
	The torque limit (M limit) is set automatically by the startup function of the MOVITOOLS® operating software. Do not increase this automatically set value! SEW-EURODRIVE recommends always using the latest version of MOVITOOLS® for startup. The latest MOVITOOLS® version can be downloaded from our homepage (www.sew-eurodrive.com).

Motor characteristics

Drives in CFC modes are characterized by their ability to control torque directly and quickly. This means it achieves a high level of dynamic overload capacity (up to $3 \times M_N$) and a very high speed and control range (up to 1:5000). Stable speed and positioning accuracy meet the high requirements of servo technology. This behavior is implemented using field-oriented control. The current components for magnetization (I_d) and torque generation (I_q) are controlled separately. One prerequisite for the CFC operating modes is that the motor must always be equipped with an encoder.

The inverter needs to know exact data about the motor connected to calculate the motor model. This data is made available by the MOVITOOLS® operating software with the startup function. CFC operating modes are only possible with 4-pole SEW-motors (CT/CV or DT/DV/D), not with the other SEW motors or non-SEW motors. The necessary motor data for the CFC operating modes are stored in MOVIDRIVE® for the 4-pole SEW motors.

Magnetization current

Dynamic drives that have to accelerate without delay are also energized at standstill without load. The magnetizing current I_d flows at standstill. The inverter must be able to supply this current constantly in applications in which the output stage is permanently enabled, for example in CFC & M-CONTROL mode. In particular in the case of large motors with a slip frequency ≤ 2 Hz, you have to refer to the diagrams in Sec. "Load capacity of the units at low output frequencies" to check whether the inverter can supply the current. Also check whether the thermal characteristics of the motor are suitable (forced cooling fan) for this. For the magnetization current I_d, refer to the motor tables (CT/CV → page 156, DT/DV/D → page 161).

CFC mode with speed control

There is no need to differentiate between the load types quadratic, dynamic and static when performing project planning for the CFC operating mode. Project planning for an asynchronous motor in CFC mode is carried out in accordance with the following requirements:

1. Effective torque requirement at average application speed.

   $M_{r.m.s.} < M_{N\_mot}$

   The operating point must lie below the characteristic curve for the continuous torque (Figure 36, curve 2). If this operating point lies below the characteristic curve for forced cooling (Figure 36, curve 1), then no forced cooling is required.

2. Maximum torque needed across the speed curve.

   $M_{max} < M_{dyn\_mot}$

   This operating point must lie below the characteristic curve for the maximum torque of the motor/MOVIDRIVE® combination (Figure 36, curve 3).

3. Maximum speed

   Do not configure the maximum speed of the motor higher than 1.4 times the transition speed. The maximum torque available will then still be approx. 110 % of the continuous rated torque of the motor; also, the input speed for the gear unit connected to the motor output will still be less than 3000 1/min with delta connection.

   $n_{max} < 1.4 \times n_{Eck} < 3000$ 1/min

Cooling the motor

Self-cooling of asynchronous motors is based on the integrated fan, which means self-cooling depends on the speed. The integrated fan does not provide cooling for the motor at low speeds and standstill. Forced cooling may be necessary in case of a high static load or a high effective torque.

CFC mode with torque control (CFC & M-CONTROL)

This operating mode permits direct torque control of the asynchronous motor in the basic speed range ($n \leq n_{Eck}$). The setpoint sources of the speed-controlled CFC mode can also be used for torque control. All speed setpoint sources (except for bus setpoints) are interpreted as current setpoint sources. Assign "Current" to a process data word for fieldbus control. The settings for evaluating the analog input (→ P11_, parameter description) also remain in effect. The fixed setpoints (P16_, P17_) can be entered either in the unit (1/min) or (%$I_{N\_inverter}$) (→ MOVITOOLS®).

The following relationship exists between the units:

3000 1/min = 150 % rated inverter current

The torque on the output shaft can then be calculated for the basic speed range ($n \leq n_{trans}$) using the following formulae:

Specification of a setpoint for the motor torque in %$I_{N\_inverter}$:

$$M = k_T \times I_{n\_inverter} \times Setpoint$$

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Specification of a setpoint for the motor torque in rpm:

$$M = k_T \times 1.5 \times I_{n\_inverter} \times \frac{Setpoint}{3000\ rpm}$$

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$I_{n\_inverter}$ = Rated output current of the inverter

k_T = Torque constant = M_n / I_{q_n}

M_n and I_{q_n} are motor-specific parameters. For the values of the torque constants k_T and the motor-specific parameters M_n and I_{q_n}, refer to the motor tables (DT/DV/D → page 161, CT/CV → page 155).

In addition to the current I_q for creating the torque, the inverter also needs to supply the magnetization current I_d. The actual inverter output current I_{tot} can be calculated using the following formulae:

Specification of a setpoint for the motor torque in %$I_{N\_inverter}$:

$$I_{tot} = \sqrt{\left(Setpoint \times I_{n\_inverter}\right)^2 + I_{d\_N}^2}$$

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Specification of a setpoint for the motor torque in rpm:

$$I_{tot} = \sqrt{\left(Setpoint \times 1.5 \times I_{n\_inverter} \times \frac{1}{3000\ rpm}\right)^2 + I_{d\_N}^2}$$

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I_{q_n} = Nominal value for the current, which generates the torque, according to the motor table

I_{d_n} = Nominal value for the magnetization current, according to the motor table

CT/CV asynchronous servomotors

SEW offers CT/CV asynchronous servomotors especially for operating with MOVIDRIVE® in the CFC operating modes. These motors have the following characteristics:

High power yield

The optimum winding of CT/CV motors permits a high power yield.

Classification into speed classes

CT/CV motors are available in four speed classes. The division into speed classes ensures optimum utilization of torque and speed.

With sin/cos encoder as standard

As standard, CT/CV motors are equipped with a high-resolution sin/cos encoder (ES1S, ES2S, EV1S).

With TF or TH motor protection as standard

The winding temperature of the three motor phases is monitored using temperature sensors (TF). The thermistor can be connected to the TF/TH input of MOVIDRIVE®. The temperature is then monitored by MOVIDRIVE®; no additional monitoring unit is required.

Bimetallic switches (TH) can also be used instead of thermistors. The bimetallic switches are also connected to the TF/TH input.

Thermal classification F as standard

CT/CV motors have thermal classification F as standard.

Reinforced pinion spigot

CT/CV motors can generate up to three times their rated motor torque during dynamic operation. For this reason, these motors are equipped with reinforced pinion spigots for direct mounting to gear units to enable them to transmit the high torque levels reliably.

Either DT/DV/D motors or CT/CV motors can be used in CFC mode. SEW-EURODRIVE recommends using CT/CV motors to achieve optimum benefit from the advantages of CFC mode.

	Advantage	Disadvantage
CFC mode with DT/DV/D motor selection → page 163	Standard motor version	Slower transition speed than the CT/CV motor.
		The power yield of the motor is less than the rated motor power.
		In terms of the power yield, the mass inertia is greater than that of the CT/CV motors.
		The maximum torque is limited for some of the inverter/motor combinations due to mechanical rigidity.
CFC mode with CT/CV motor Motor selection → page 157	Higher transition speed than DT/DV/D motor.	No IEC standard motor
	Usually with a power yield one motor type higher.	
	Based on the power yield of a lower mass moment of inertia.	Higher current demand due to higher power yield; therefore a larger inverter has to be assigned.
	Motor is designed for dynamic operation.	

Motor table CT/CV

n_N 1/min	Motor	M_N Nm (lb in)	I_N A	I_{q_n} A	I_{d_n} A	k_T Nm/A (lb in(A)	U_N V	J_{Mot} 10^{-4} kgm²	J_{BMot} 10^{-4} kgm²
	CT71D4	3 (27)	1.4	1.21	0.69	2.48 (21.9)	360	4.6	5.5
	CT80N4	5 (44)	2.1	1.65	1.30	3.0 (27)	350	8.7	9.6
	CT90L4	10 (88.5)	3.65	3.13	1.89	3.2 (28)	345	34	39.5
	CV100M4	15 (133)	4.7	4.15	2.25	3.61 (32)	345	53	59
	CV100L4	26 (230)	8.5	7.9	3.21	3.29 (29.1)	320	65	71
	CV132S4	37 (327)	11.5	10.4	4.83	3.56 (31.5)	340	146	158
1200	CV132M4	50 (440)	15.5	14.2	6.18	3.52 (31.2)	340	280	324
	CV132ML4	61 (540)	18.2	16.7	7.43	3.66 (32.4)	345	330	374
	CV160M4	73 (650)	22.5	20.3	9.73	3.60 (31.9)	335	400	440
	CV160L4	95 (840)	30	26.7	14.2	3.56 (31.5)	330	925	1030
	CV180M4	110 (974)	36	30.2	19.7	3.65 (32.3)	330	1120	1226
	CV180L4	125 (1110)	39.5	33.8	20.5	3.7 (33)	345	1290	1396
	CV200L4	200 (1770)	58	53.2	23.7	3.76 (33.3)	330	2340	2475
	CT71D4	3 (30)	1.9	1.67	0.95	1.80 (15.9)	355	4.6	5.5
	CT80N4	5 (40)	2.9	2.28	1.79	2.19 (19.4)	350	8.7	9.6
	CT90L4	10 (89)	5	4.32	2.61	2.32 (20.5)	345	34	39.5
	CV100M4	15 (130)	6.5	5.73	3.10	2.62 (23.2)	345	53	59
	CV100L4	26 (230)	11.7	10.9	4.41	2.39 (21.2)	320	65	71
	CV132S4	37 (330)	15.8	14.4	6.67	2.58 (22.8)	340	146	158
1700	CV132M4	48 (420)	21	19.2	8.7	2.50 (22.1)	335	280	324
	CV132ML4	58 (510)	26.5	23.8	11.2	2.44 (21.6)	320	330	374
	CV160M4	71 (630)	30.5	27.2	13.4	2.60 (23)	340	400	440
	CV160L4	89 (790)	39.5	34.5	19.5	2.58 (22.8)	335	925	1030
	CV180M4	105 (929)	48	39.7	27.2	2.64 (23.4)	335	1120	1226
	CV180L4	115 (1020)	56	46.6	30.7	2.47 (21.9)	325	1290	1396
	CV200L4	190 (1680)	79	71.2	33.4	2.67 (23.6)	325	2340	2475
	CT71D4	3 (27)	2.4	2.1	1.20	1.43 (12.7)	345	4.6	5.5
	CT80N4	5 (44)	3.65	2.87	2.26	1.74 (15.4)	340	8.7	9.6
	CT90L4	10 (88.5)	6.4	5.44	3.29	1.84 (16.3)	335	34	39.5
	CV100M4	15 (130)	8.2	7.23	3.91	2.07 (18.3)	335	53	59
	CV100L4	25 (221)	14.3	13.2	5.56	1.9 (17)	310	65	71
	CV132S4	37 (330)	19.9	18.1	8.41	2.05 (18.1)	335	146	158
2100	CV132M4	48 (425)	26	23.7	10.75	2.03 (18)	330	280	324
	CV132ML4	58 (510)	30.5	27.5	12.9	2.1 (19)	340	330	374
	CV160M4	70 (620)	38	33.9	16.9	2.07 (18.3)	330	400	440
	CV160L4	88 (780)	49.5	43	24.6	2.05 (18.1)	330	925	1030
	CV180M4	100 (885)	59	47.7	34.2	2.1 (19)	325	1120	1226
	CV180L4	115 (1020)	64	53.7	35.4	2.14 (18.9)	345	1290	1396
	CV200L4	175 (1550)	91	80.1	41.2	2.16 (19.1)	325	2340	2475
	CT71D4	3 (27)	3.35	2.9	1.65	1.04 (9.2)	350	4.6	5.5
	CT80N4	4.5 (40)	4.75	3.6	3.11	1.26 (11.2)	345	8.7	9.6
	CT90L4	9.5 (84)	8.4	7.12	4.54	1.33 (11.8)	345	34	39.5
	CV100M4	15 (133)	11.3	9.95	5.39	1.51 (13.4)	345	53	59
	CV100L4	21 (190)	17	15.2	7.65	1.38 (12.2)	310	65	71
	CV132S4	35 (310)	26.5	23.6	11.6	1.49 (13.2)	340	146	158
3000	CV132M4	45 (400)	34.5	31.2	15.1	1.44 (12.7)	335	280	324
	CV132ML4	52 (460)	41.5	36.9	19.3	1.41 (12.5)	320	330	374
	CV160M4	64 (570)	48.5	42.6	23.3	1.50 (13.3)	340	400	440
	CV160L4	85 (752)	67	57.2	33.9	1.49 (13.2)	340	925	1030
	CV180M4	93 (820)	77	61.1	47.2	1.52 (13.5)	335	1120	1226
	CV180L4	110 (974)	94	77	53.1	1.43 (12.7)	325	1290	1396
	CV200L4	145 (1280)	110	94.1	57.8	1.54 (13.6)	330	2340	2475

CT/CV motor selection

1. Rated speed n_N = 1200 1/min:

Assignment of MOVIDRIVE® MDX61B0005-5A3 ... MDX61B0040-503 (sizes 0 and 1):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)							
			0005	0008	0011	0014	0015	0022	0030	0040
CT71D4	M_{max}	Nm (lb in)	7.7 (68)	7.7 (68)						
	n_{Eck}	1/min	429	429						
CT80N4	M_{max}	Nm (lb in)		14.0 (124)	16.0 (142)	16.0 (142)	16.0 (142)			
	n_{Eck}	1/min		627	550	550	550			
CT90L4	M_{max}	Nm (lb in)				25.0 (221)	18.0 (159)	26.0 (230)	31.0 (274)	
	n_{Eck}	1/min				794	928	781	678	
CV100M4	M_{max}	Nm (lb in)						29.0 (257)	37.0 (327)	45.0 (398)
	n_{Eck}	1/min						883	781	678
CV100L4	M_{max}	Nm (lb in)							33.0 (292)	46.0 (407)
	n_{Eck}	1/min							1050	934

Assignment of MOVIDRIVE® MDX61B0055-503 ... MDX61B0550-503 (sizes 2 ... 5):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)								
			0055	0075	0110	0150	0220	0300	0370	0450	0550
CV100L4	M_{max}	Nm (lb in)	61.0 (540)	75.0 (664)							
	n_{Eck}	1/min	800	666							
CV132S4	M_{max}	Nm (lb in)	64.0 (566)	84.0 (743)	110 (974)						
	n_{Eck}	1/min	992	915	826						
CV132M4	M_{max}	Nm (lb in)		82.0 (726)	125 (1110)	150 (1330)					
	n_{Eck}	1/min		1010	877	806					
CV132ML4	M_{max}	Nm (lb in)			129 (1140)	174 (1540)	183 (1620)				
	n_{Eck}	1/min			890	781	774				
CV160M4	M_{max}	Nm (lb in)			125 (1110)	169 (1500)	220 (1950)				
	n_{Eck}	1/min			986	909	838				
CV160L4	M_{max}	Nm (lb in)				163 (1440)	240 (2120)	295 (2610)			
	n_{Eck}	1/min				1045	954	922			
CV180M4	M_{max}	Nm (lb in)					240 (2120)	320 (2830)	360 (3190)		
	n_{Eck}	1/min					1050	986	1005		
CV180L4	M_{max}	Nm (lb in)					245 (2170)	325 (2880)	360 (3190)	360 (3190)	
	n_{Eck}	1/min					960	909	947	1035	
CV200L4	M_{max}	Nm (lb in)						325 (2880)	400 (3540)	495 (4380)	565 (5000)
	n_{Eck}	1/min						1010	986	947	941

2. Rated speed n_N = 1700 1/min:

Assignment of MOVIDRIVE® MDX61B0005-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor			MOVIDRIVE® MDV60A...-5_3 (AC 400/500 V units) in CFC operating modes (P700)										
			0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
CT71D4	M_{max}	Nm (lb in)	7.0 (62)	7.7 (68)	7.7 (68)								
	n_{Eck}	1/min	986	890	890								
CT80N4	M_{max}	Nm (lb in)			13.0 (115)	16.0 (142)	13.0 (115)	16.0 (142)					
	n_{Eck}	1/min			1125	992	1150	992					
CT90L4	M_{max}	Nm (lb in)						18.0 (159)	24.0 (212)	31.0 (274)			
	n_{Eck}	1/min						1400	1285	1150			
CV100M4	M_{max}	Nm (lb in)							26.0 (230)	36.0 (319)	45.0 (398)		
	n_{Eck}	1/min							1365	1230	1145		
CV100L4	M_{max}	Nm (lb in)								32.0 (283)	44.0 (389)	57.0 (504)	75.0 (664)
	n_{Eck}	1/min								1535	1425	1300	1115
CV132S4	M_{max}	Nm (lb in)										60.0 (531)	91.0 (805)
	n_{Eck}	1/min										1470	1330
CV132M4	M_{max}	Nm (lb in)											87.4 (774)
	n_{Eck}	1/min											1484
CV132ML4	M_{max}	Nm (lb in)											83.0 (735)
	n_{Eck}	1/min											1560

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B0900-503 (sizes 3 ... 6):

Motor			MOVIDRIVE® MDV60A...-5_3 (AC 400/500 V units) in CFC operating modes (P700)							
			0150	0220	0300	0370	0450	0550	0750	0900
CV132S4	M_{max}	Nm (lb in)	110 (974)							
	n_{Eck}	1/min	1295							
CV132M4	M_{max}	Nm (lb in)	118 (1040)	150 (1330)						
	n_{Eck}	1/min	1370	1295						
CV132ML4	M_{max}	Nm (lb in)	114 (1010)	166 (1470)	183 (1620)					
	n_{Eck}	1/min	1485	1330	1345					
CV160M4	M_{max}	Nm (lb in)	120 (1060)	176 (1560)	220 (1950)					
	n_{Eck}	1/min	1420	1310	1255					
CV160L4	M_{max}	Nm (lb in)		171 (1510)	225 (1990)	280 (2480)	295 (2610)			
	n_{Eck}	1/min		1470	1400	1330	1395			
CV180M4	M_{max}	Nm (lb in)		168 (1490)	225 (1990)	280 (2480)	345 (3050)	360 (3190)		
	n_{Eck}	1/min		1555	1510	1460	1400	1505		
CV180L4	M_{max}	Nm (lb in)			210 (1860)	260 (2300)	320 (2830)	360 (3190)	360 (3190)	
	n_{Eck}	1/min			1510	1480	1435	1470	1665	
CV200L4	M_{max}	Nm (lb in)					345 (3050)	410 (3630)	515 (4560)	565 (5000)
	n_{Eck}	1/min					1460	1425	1380	1445

3. Rated speed n_N = 2100 1/min:

Assignment of MOVIDRIVE® MDX61B0008-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
			0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
CT71D4	M_{max}	Nm (lb in)	6.6 (58)	7.7 (68)	7.7 (68)	7.7 (68)						
	n_{Eck}	1/min	1470	1320	1320	1320						
CT80N4	M_{max}	Nm (lb in)			13 (115)	9.7 (86)	14 (124)	16 (142)				
	n_{Eck}	1/min			1535	1755	1510	1420				
CT90L4	M_{max}	Nm (lb in)						18 (159)	26 (230)	31 (274)		
	n_{Eck}	1/min						1845	1675	1620		
CV100M4	M_{max}	Nm (lb in)							28 (248)	38 (336)	45 (398)	
	n_{Eck}	1/min							1760	1625	1580	
CV100L4	M_{max}	Nm (lb in)								34 (301)	44 (389)	68 (602)
	n_{Eck}	1/min								1980	1870	1615
CV132S4	M_{max}	Nm (lb in)										72 (637)
	n_{Eck}	1/min										1850

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
			0150	0220	0300	0370	0450	0550	0750	0900	1100	1320
CV100L4	M_{max}	Nm (lb in)	75.0 (664)									
	n_{Eck}	1/min	1555									
CV132S4	M_{max}	Nm (lb in)	97 (859)	110 (974)								
	n_{Eck}	1/min	1720	1785								
CV132M4	M_{max}	Nm (lb in)	95 (841)	138 (1220)	150 (1330)							
	n_{Eck}	1/min	1850	1670	1695							
CV132ML4	M_{max}	Nm (lb in)	97 (859)	143 (1270)	183 (1620)							
	n_{Eck}	1/min	1790	1660	1550							
CV160M4	M_{max}	Nm (lb in)		138 (1220)	183 (1620)	220 (1950)						
	n_{Eck}	1/min		1790	1690	1625						
CV160L4	M_{max}	Nm (lb in)			177 (1570)	220 (1950)	270 (2390)	295 (2610)				
	n_{Eck}	1/min			1880	1825	1740	1780				
CV180M4	M_{max}	Nm (lb in)				220 (1950)	270 (2390)	320 (2830)	360 (3190)			
	n_{Eck}	1/min				1940	1895	1835	1935			
CV180L4	M_{max}	Nm (lb in)					275 (2430)	330 (2920)	360 (3190)	360 (3190)		
	n_{Eck}	1/min					1710	1670	1805	1985		
CV200L4	M_{max}	Nm (lb in)						330 (2920)	410 (3630)	500 (4430)	565 (5000)	
	n_{Eck}	1/min						1830	1790	1745	1870	

4. Rated speed n_N = 3000 1/min:

Assignment of MOVIDRIVE® MDX61B0011-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)								
			0011	0014	0015	0022	0030	0040	0055	0075	0110
CT71D4	M_{max}	Nm (lb in)	6 (53)	7.7 (68)	6 (53)	7.7 (68)					
	n_{Eck}	1/min	2380	2095	2380	2095					
CT80N4	M_{max}	Nm (lb in)				9.7 (86)	13 (120)	16 (140)			
	n_{Eck}	1/min				2565	2360	2200			
CT90L4	M_{max}	Nm (lb in)						18 (160)	24 (210)	31 (270)	
	n_{Eck}	1/min						2660	2495	2370	
CV100M4	M_{max}	Nm (lb in)							27 (240)	35 (310)	45 (400)
	n_{Eck}	1/min							2555	2430	2460
CV100L4	M_{max}	Nm (lb in)								31 (270)	49 (430)
	n_{Eck}	1/min								2850	2645
CV132S4	M_{max}	Nm (lb in)									51 (450)
	n_{Eck}	1/min									2745

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
			0150	0220	0300	0370	0450	0550	0750	0900	1100	1320
CV100L4	M_{max}	Nm (lb in)	65 (580)	75 (660)								
	n_{Eck}	1/min	2425	2370								
CV132S4	M_{max}	Nm (lb in)	69 (610)	101 (894)	110 (974)							
	n_{Eck}	1/min	2650	2460	2610							
CV132M4	M_{max}	Nm (lb in)	66 (580)	97 (860)	101 (894)	110 (974)						
	n_{Eck}	1/min	2810	2670	2515	2450						
CV132ML4	M_{max}	Nm (lb in)		94 (830)	124 (1100)	152 (1350)	183 (1620)					
	n_{Eck}	1/min		2765	2655	2545	2445					
CV160M4	M_{max}	Nm (lb in)		98 (870)	131 (1160)	161 (1420)	197 (1740)	220 (1950)				
	n_{Eck}	1/min		2630	2555	2470	2370	2385				
CV160L4	M_{max}	Nm (lb in)				155 (1370)	192 (1700)	230 (2040)	285 (2520)	295 (2610)		
	n_{Eck}	1/min				2680	2620	2555	2440	2630		
CV180M4	M_{max}	Nm (lb in)					190 (1680)	230 (2040)	290 (2570)	350 (3100)	360 (3190)	
	n_{Eck}	1/min					2750	2705	2635	2560	2920	
CV180L4	M_{max}	Nm (lb in)						210 (1860)	270 (2390)	325 (2880)	360 (3190)	360 (3190)
	n_{Eck}	1/min						2680	2630	2575	2855	3170
CV200L4	M_{max}	Nm (lb in)							285 (2520)	350 (3100)	455 (4030)	565 (5000)
	n_{Eck}	1/min							2625	2590	2535	2475

DT/DV/D motor tables

Characteristic values for delta/star AC 230/400 V / 50 Hz

Motor	M_N	Mass moment of inertia J_M		Star ⅄ (AC 400 V)				Delta Δ (AC 230 V)			
		Without brake	With brake	I_n	I_{q_n} [1]	I_{d_n} [1]	k_T [1]	I_n	I_{q_n} [1]	I_{d_n} [1]	k_T [1]
	Nm (lb in)	10^{-4} kgm²		A	A	A	Nm/A (lb in/A)	A	A	A	Nm/A (lb in/A)
DT71D4	2.6 (23)	4.6	5.5	1.15	0.95	0.65	2.69 (23.8)	1.99	1.64	1.13	1.56 (14)
DT80K4	3.9 (34.5)	6.6	7.5	1.75	1.44	1	2.68 (23.7)	3.03	2.49	1.73	1.55 (13.7)
DT80N4	5.2 (46)	8.7	9.6	2.1	1.67	1.27	3.11 (27.5)	3.64	2.89	2.2	1.79 (15.8)
DT90S4	7.5 (66)	25	31	2.80	2.39	1.46	3.13 (27.7)	4.85	4.14	2.53	1.81 (16)
DT90L4	10.2 (90.3)	34	40	3.55	2.93	2	3.48 (30.8)	6.15	5.07	3.46	2.01 (17.8)
DV100M4	15.0 (133)	53	59	4.7	4.12	2.24	3.61 (32)	8.14	7.14	3.88	2.09 (18.5)
DV100L4	20.5 (181)	65	71	6.3	5.6	2.98	3.66 (32.4)	10.9	9.70	5	2.11 (18.7)
DV112M4	26.9 (238)	98	110	8.7	7.85	3.75	3.43 (30.4)	15.1	13.6	6.5	1.98 (17.5)
DV132S4	36.7 (325)	146	158	11	9.9	4.7	3.69 (32.7)	19.1	17.2	8.14	2.13 (18.9)
DV132M4	50.1 (443)	280	330	15.5	14.2	6.15	3.53 (31.2)	26.9	24.6	10.7	2.04 (18.1)
DV132ML4	61.0 (540)	330	380	18.1	16.5	7.46	3.7 (33)	31.4	28.6	12.9	2.13 (18.9)
DV160M4	72.9 (645)	398	448	22.5	20.3	9.70	3.59 (31.8)	39.0	35.2	16.8	2.07 (18.3)
DV160L4	98.1 (868)	925	1060	29.5	26.1	13.7	3.75 (33.2)	51.1	45.28	23.7	2.17 (19.2)
DV180M4	121 (1070)	1120	1255/1350 [2]	37	21.7	19.1	3.82 (33.8)	64.1	54.9	33.1	2.2 (19)
DV180L4	143 (1266)	1290	1425/1520 [1]	42.5	37.4	20.3	3.83 (33.9)	73.6	64.7	35.1	2.21 (19.6)
DV200L4	195 (1726)	2340	2475/2570 [2]	55	49.9	23.1	3.91 (34.6)	95.3	86.5	39.9	2.25 19.9)
DV225S4	240 (2120)	3010	3145/3240 [2]	67	61.6	26.4	3.9 (34.5)	116	107	45.7	2.25 (19.9)
DV225M4	292 (2584)	3570	3705/3800 [2]	83	74.8	36.1	3.9 (34.5)	143.8	130	62.4	2.26 (20)
DV250M4	356 (3151)	6300	6600/6730 [2]	102	91.7	44.7	3.88 (34.3)	177	159	77.4	2.24 (19.8)
DV280S4	484 (4284)	8925	9225/9355 [2]	138	120.4	67.5	4.02 (35.6)	239	209	117	2.32 (20.5)
DV280M4	581 (5142)	8925	9225/9355 [2]	170	149	81.9	3.9 (34.5)	295	258	142	2.25 (19.9)
D315S4	707 (6257)	20000	[3]	192	180	67.0	3.93 (34.8)	-	-	-	-
D315M4	849 (7514)	24000		235	209	106	4.06 (35.9)	-	-	-	-
D315M4a	1028 (9098)	31000		295	259	140	3.97 (35.1)	-	-	-	-

1) Applies in the basic speed range up to n_{Eck}.

2) Double disc brake

3) On request

Characteristic values for double-star/star AC 230/460 V / 60 Hz

(according to MG1, NEMA Design B to DT80K4, NEMA Design C from DT80N4)

Motor	M_N	Mass moment of inertia J_M		Star ⅄ (AC 460 V)				Double-star ⅄⅄ (AC 230 V)			
		Without brake	With brake	I_n	I_{q_n} [1]	I_{d_n} [1]	k_T [1]	I_n	I_{q_n} [1]	I_{d_n} [1]	k_T [1]
	Nm (lb in)	10^{-4} kgm²		A	A	A	Nm/A (lb in/A)	A	A	A	Nm/A (lb in/A)
DT71D4	2.1 (19)	4.6	5.5	1	0.76	0.65	2.74 (24.3)	2	1.52	1.30	1.37 (12.1)
DT80K4	3.1 (27)	6.6	7.5	1.45	1.06	0.98	2.92 (25.8)	2.9	2.12	1.96	1.46 (12.9)
DT80N4	4.2 (37)	8.7	9.6	1.85	1.39	1.21	3.03 (26.8)	3.7	2.78	2.42	1.51 (13.4)
DT90S4	6.1 (54)	25	31	2.6	1.87	1.79	3.25 (28.8)	5.2	3.74	3.58	1.62 (14.3)
DT90L4	8.3 (73)	34	40	3.1	2.49	1.84	3.34 (29.6)	6.2	4.98	3.68	1.67 (14.8)
DT100M4	12.1 (107)	53	59	4.1	3.59	1.97	3.37 (29.8)	8.2	7.18	3.94	1.69 (15)
DT100L4	21 (186)	65	71	6.6	5.98	2.78	3.51 (31.1)	13.2	12	5.56	1.76 (15.6)
DV112M4	22.1 (196)	98	110	7	6.13	3.37	3.61 (32)	14	12.3	6.74	1.80 (15.9)
DV132S4	30.5 (270)	146	158	9.4	8.61	3.76	3.54 (31.3)	18.8	17.2	7.52	1.77 (15.7)
DV132M4	41.2 (365)	280	330	13.7	11.9	6.87	3.48 (30.8)	27.4	23.7	13.7	1.74 (15.4)
DV132ML4	50.5 (447)	330	380	16.4	14.4	7.83	3.50 (31)	32.8	28.8	15.76	1.75 (15.5)
DV160M4	60.4 (535)	398	448	20	17.4	9.92	3.48 (30.8)	40	34.7	19.8	1.74 (15.4)
DV160L4	81.4 (720)	925	1060	27	23.2	13.7	3.50 (31)	54	46.5	27.5	1.75 (15.5)
DV180M4	100 (885)	1120	1255/1350 [2]	31.5	28.1	14.3	3.56 (31.5)	63	56.1	28.6	1.78 (15.8)
DV180L4	119 (1053)	1290	1425/1520 [2]	40	34.5	20.2	3.45 (30.5)	80	69	40.4	1.72 (15.2)
DV200L4	163 (1443)	2340	2475/2570 [2]	47.5	44.6	16.3	3.65 (32.3)	95	89.3	32.5	1.83 (16.2)
DV225S4	201 (1779)	3010	3145/3240 [2]	59	55.1	21	3.65 (32.3)	118	110.	42	1.82 (16.1)
DV225M4	244 (2160)	3570	3705/3800 [2]	70	64.6	27	3.78 (33.5)	140	129	54	1.89 (16.7)
DV250M4	296 (2620)	6300	6600/6730 [2]	87	78.5	37.6	3.77 (33.4)	174	157	75.2	1.89 (16.7)
DV280S4	402 (3558)	8925	9225/9355 [2]	118	107	50.8	3.77 (33.4)	236	213	102	1.89 (16.7)
D280M4	580 (5133)	14500	[3]	162	153	51.7	3.79 (33.5)	324	306	103	1.89 (16.7)
D315S4	707 (6257)	20000	[3]	201	188	69.8	3.76 (33.3)	-	-	-	-
D315M4	849 (7514)	24000	[3]	246	219	111	3.87 (34.3)	-	-	-	-
D315M4a	1028 (9098)	31000	[3]	308	271	147	3.79 (33.5)	-	-	-	-

1) Applies in the basic speed range up to n_{Eck}.

2) Double disc brake

3) On request

DT/DV/D motor selection in delta/star connection type (AC 230/400 V / 50 Hz)

1. Motors AC 230/400 V / 50 Hz in ⅄ connection or motors AC 400/690 V / 50 Hz in △ connection

Assignment of MOVIDRIVE® MDX61B0005-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the CFC operating modes (P700)										
⅄ AC 400 V / 50 Hz		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
DT71D4	M_{max} Nm (lb in)	4.6 (41)										
	n_{Eck} 1/min	883										
DT80K4	M_{max} Nm (lb in)	6.9 (61)	6.9 (61)									
	n_{Eck} 1/min	813	813									
DT80N4	M_{max} Nm (lb in)	9.3 (82)	9.3 (82)	9.3 (82)	9.3 (82)	9.3 (82)						
	n_{Eck} 1/min	915	922	922	922	922						
DT90S4	M_{max} Nm (lb in)		13.5 (119)	13.5 (119)	13.5 (119)	13.5 (119)						
	n_{Eck} 1/min		960	1011	1011	1011						
DT90L4	M_{max} Nm (lb in)				18.3 (162)	18.3 (162)	18.3 (162)					
	n_{Eck} 1/min				1082	973	1088					
DV100M4	M_{max} Nm (lb in)						26.8 (237)	26.8 (237)	26.8 (237)			
	n_{Eck} 1/min						941	1043	1056			
DV100L4	M_{max} Nm (lb in)							36.8 (326)	36.8 (326)	36.8 (326)		
	n_{Eck} 1/min							890	1005	1011		
DV112M4	M_{max} Nm (lb in)								47.1 (417)	48.4 (428)	48.4 (428)	
	n_{Eck} 1/min								915	1030	1062	
DV132S4	M_{max} Nm (lb in)									66.1 (585)	66.1 (585)	66.1 (585)
	n_{Eck} 1/min									1011	1171	1222
DV132M4	M_{max} Nm (lb in)		**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 400 V.								81.7 (723)	90.2 (798)
	n_{Eck} 1/min										1011	1145
DV132ML4	M_{max} Nm (lb in)											110 (974)
	n_{Eck} 1/min											1082
DV160M4	M_{max} Nm (lb in)											125 (1110)
	n_{Eck} 1/min											986

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
⅄ AC 400 V / 50 Hz		0150	0220	0300	0370	0450	0550	0750	0900	1100	1320
DV132M4	M_{max} Nm (lb in)	90.2 (798)									
	n_{Eck} 1/min	1152									
DV132ML4	M_{max} Nm (lb in)	110 (974)									
	n_{Eck} 1/min	1165									
DV160M4	M_{max} Nm (lb in)	131 (1160)	131 (1160)								
	n_{Eck} 1/min	1133	1197								
DV160L4	M_{max} Nm (lb in)	172 (1520)	177 (1520)	177 (1520)							
	n_{Eck} 1/min	1050	1306	1350							
DV180M4	M_{max} Nm (lb in)		217 (1920)	217 (1920)	217 (1920)						
	n_{Eck} 1/min		1222	1453	1517						
DV180L4	M_{max} Nm (lb in)		231.2 (2046)	258 (2280)	258 (2280)	258 (2280)					
	n_{Eck} 1/min		1018	1152	1299	1370					
DV200L4	M_{max} Nm (lb in)			339.5 (3005)	351 (3110)	351 (3110)	351 (3110)				
	n_{Eck} 1/min			1018	1171	1350	1466				
DV225S4	M_{max} Nm (lb in)				414.7 (3670)	433 (3830)	433 (3830)	433 (3830)			
	n_{Eck} 1/min				954	1082	1222	1363			
DV225M4	M_{max} Nm (lb in)					502.6 (4448)	526 (4660)	526 (4660)			
	n_{Eck} 1/min					1037	1146	1344			
DV250M4	M_{max} Nm (lb in)						586.5 (5191)	641 (5670)	641 (5670)		
	n_{Eck} 1/min						1018	1133	1357		
DV280S4	M_{max} Nm (lb in)							735.4 (6509)	871 (7710)	871 (7710)	
	n_{Eck} 1/min							1082	1184	1344	
DV280M4	M_{max} Nm (lb in)								941 (8330)	1000 (8851)	1000 (8851)
	n_{Eck} 1/min								1139	1254	1478
D315S4	M_{max} Nm (lb in)									1150 (10180)	1273 (11270)
	n_{Eck} 1/min									1088	1203
D315M4	M_{max} Nm (lb in)										1453 (12860)
	n_{Eck} 1/min										1024
D315M4a	M_{max} Nm (lb in)										1374 (12160)
	n_{Eck} 1/min										1107

Note: The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 400 V.

2. Motors AC 230/400 V / 50 Hz in delta connection:

Assignment of MOVIDRIVE® MDX61B0008-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
Δ AC 230 V / 50 Hz		**0008**	**0011**	**0014**	**0015**	**0022**	**0030**	**0040**	**0055**	**0075**	**0110**
DT71D4	M_{max} Nm (lb in)	4.6 (41)	4.6 (41)	4.6 (41)	4.6 (41)						
	n_{Eck} 1/min	2054	2054	2054	2054						
DT80K4	M_{max} Nm (lb in)		6.9 (61)	6.9 (61)	6.9 (61)	6.9 (61)					
	n_{Eck} 1/min		1869	1869	1850	1869					
DT80N4	M_{max} Nm (lb in)			9.3 (82)	9.3 (82)	9.3 (82)					
	n_{Eck} 1/min			2080	1869	2080					
DT90S4	M_{max} Nm (lb in)					13.5 (119)	13.5 (119)	13.5 (119)			
	n_{Eck} 1/min					1971	2246	2304			
DT90L4	M_{max} Nm (lb in)						18.3 (162)	18.3 (162)	18.3 (162)		
	n_{Eck} 1/min						1946	2342	2387		
DV100M4	M_{max} Nm (lb in)							26.8 (237)	26.8 (237)	26.8 (237)	
	n_{Eck} 1/min							1862	2214	2298	
DV100L4	M_{max} Nm (lb in)	**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 400 V.							36.8 (326)	36.8 (326)	36.8 (326)
	n_{Eck} 1/min								1779	2080	2188
DV112M4	M_{max} Nm (lb in)									45.5 (403)	48.4 (403)
	n_{Eck} 1/min									1779	2163
DV132S4	M_{max} Nm (lb in)										66.1 (585)
	n_{Eck} 1/min										2086

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
Δ AC 230 V / 50 Hz		**0150**	**0220**	**0300**	**0370**	**0450**	**0550**	**0750**	**0900**	**1100**	**1320**
DV112M4	M_{max} Nm (lb in)	48.4 (428)									
	n_{Eck} 1/min	2195									
DV132S4	M_{max} Nm (lb in)	66.1 (585)	66.1 (585)								
	n_{Eck} 1/min	2458	2496								
DV132M4	M_{max} Nm (lb in)	90.2 (798)	90.2 (798)								
	n_{Eck} 1/min	1939	2310								
DV132ML4	M_{max} Nm (lb in)		110 (974)	110 (974)							
	n_{Eck} 1/min		2176	2291							
DV160M4	M_{max} Nm (lb in)		131 (1160)	131 (1160)	131 (1160)						
	n_{Eck} 1/min		1894	2246	2348						
DV160L4	M_{max} Nm (lb in)			177 (1570)	177 (1570)	177 (1570)					
	n_{Eck} 1/min			2010	2336	2560					
DV180M4	M_{max} Nm (lb in)				217 (1920)	217 (1920)	217 (1920)				
	n_{Eck} 1/min				2061	2445	2720				
DV180L4	M_{max} Nm (lb in)					258 (2280)	258 (2280)	258 (2280)			
	n_{Eck} 1/min					1837	2131	2458			
DV200L4	M_{max} Nm (lb in)						341.8 (3025)	351 (3110)	351 (3110)		
	n_{Eck} 1/min						1843	2182	2643		
DV225S4	M_{max} Nm (lb in)							425 (3760)	433 (3830)	433 (3830)	
	n_{Eck} 1/min							1715	2138	2394	
DV225M4	M_{max} Nm (lb in)								526 (4660)	526 (4660)	526 (4660)
	n_{Eck} 1/min								1952	2253	2630
DV250M4	M_{max} Nm (lb in)	**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 400 V.							542 (4800)	641 (5670)	641 (5670)
	n_{Eck} 1/min								1843	1837	2227
DV280S4	M_{max} Nm (lb in)									638.2 (5649)	823.2 (7286)
	n_{Eck} 1/min									1946	1920

DT/DV/D motor selection in double-star/star connection type (AC 230/460 V / 60 Hz)

1. Motors AC 230460 V / 60 Hz in star connection:

Assignment of MOVIDRIVE® MDX61B0005-5A3 ... MDX61A0110-503 (size 0 ... 2):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)										
⅄ AC 460 V / 60 Hz		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
DT80K4	M_{max} Nm (lb in)	7.0 (62)										
	n_{Eck} 1/min	1101										
DT80N4	M_{max} Nm (lb in)	9.3 (82)	9.3 (82)	9.3 (82)	9.3 (82)	9.3 (82)						
	n_{Eck} 1/min	1133	1146	1146	1146	1146						
DT90S4	M_{max} Nm (lb in)			13.5 (119)	13.5 (119)	13.5 (119)						
	n_{Eck} 1/min			1325	1350	1312						
DT90L4	M_{max} Nm (lb in)				18.3 (162)	18.3 (162)	18.3 (162)					
	n_{Eck} 1/min				1312	1152	1318					
DV100M4	M_{max} Nm (lb in)						26.8 (237)	26.8 (237)				
	n_{Eck} 1/min						1363	1510				
DV100L4	M_{max} Nm (lb in)							35.6 (315)	36.8 (326)	36.8 (326)		
	n_{Eck} 1/min							1069	1197	1210		
DV112M4	M_{max} Nm (lb in)							35.8 (317)	48.4 (428)	48.4 (428)		
	n_{Eck} 1/min							1197	1139	1312		
DV132S4	M_{max} Nm (lb in)								48.7 431)	65 (580)	66 584)	
	n_{Eck} 1/min								1069	992	1101	
DV132M4	M_{max} Nm (lb in)		**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 460 V.							60.8 (538)	80 (708)	90 (797)
	n_{Eck} 1/min									1152	1088	1222
DV132ML4	M_{max} Nm (lb in)											110 (974)
	n_{Eck} 1/min											1171
DV160M4	M_{max} Nm (lb in)											120 (1062)
	n_{Eck} 1/min											1133

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
⅄ AC 460 V / 60 Hz		0150	0220	0300	0370	0450	0550	0750	0900	1100	1320
DV132ML4	M_{max} Nm (lb in)	110 (974)									
	n_{Eck} 1/min	1267									
DV160M4	M_{max} Nm (lb in)	131 (1159)	131 (1159)								
	n_{Eck} 1/min	1261	1319								
DV160L4	M_{max} Nm (lb in)	161 (1420)	177 (1570)								
	n_{Eck} 1/min	1158	1370								
DV180M4	M_{max} Nm (lb in)	164 (1450)	217 (1921)	217 (1921)							
	n_{Eck} 1/min	1139	1177	1350							
DV180L4	M_{max} Nm (lb in)		228 (2018)	258 (2283)	258 (2283)						
	n_{Eck} 1/min		1082	1197	1325						
DV200L4	M_{max} Nm (lb in)			323 (2859)	351 (3107)	351 (3107)					
	n_{Eck} 1/min			1024	1107	1248					
DV225S4	M_{max} Nm (lb in)			318 (2815)	391 (3460)	433 (3830)	433 (3830)				
	n_{Eck} 1/min			1101	1075	1146	1286				
DV225M4	M_{max} Nm (lb in)				401 (3550)	494 (4370)	526 (4660)	526 (4660)			
	n_{Eck} 1/min				1082	1056	1139	1325			
DV250M4	M_{max} Nm (lb in)						576 (5100)	641 (5670)			
	n_{Eck} 1/min						1261	1370			
DV280S4	M_{max} Nm (lb in)							711 (6290)	871 (7710)	871 (7710)	
	n_{Eck} 1/min							1421	1478	1664	
D280M4	M_{max} Nm (lb in)							712 (6300)	946 (8370)	1045 (9249)	
	n_{Eck} 1/min							1338	1318	1382	
D315S4	M_{max} Nm (lb in)									1099 (9727)	1273 (11270)
	n_{Eck} 1/min									1325	1408
D315M4	M_{max} Nm (lb in)										1387 (12280)
	n_{Eck} 1/min										1242
D315M4a	M_{max} Nm (lb in)										1308 (11580)
	n_{Eck} 1/min										1344

Note: The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 460 V.

2. Motors AC 230/460 V / 60 Hz in double star connection:

Assignment of MOVIDRIVE® MDX61B0008-5A3 ... MDX61B0110-503 (sizes 0 ... 2):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
⅄ ⅄ AC 230 V / 60 Hz		0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
DT71D4	M_{max} Nm (lb in)	4.6 (41)	4.6 (41)	4.6 (41)	4.6 (41)						
	n_{Eck} 1/min	2771	2989	2989	2989						
DT80K4	M_{max} Nm (lb in)		7 (62)	7 (62)	7 (62)	7 (62)					
	n_{Eck} 1/min		2733	2822	2688	2822					
DT80N4	M_{max} Nm (lb in)			9.3 (82)	8.3 (73)	9.3 (82)	9.3 (82)				
	n_{Eck} 1/min			2835	2586	2874	2970				
DT90S4	M_{max} Nm (lb in)					11.9 (105)	13.5 (119)	13.5 (119)			
	n_{Eck} 1/min					2637	2931	3462			
DT90L4	M_{max} Nm (lb in)						16.4 (145)	18.3 (162)	18.3 (162)		
	n_{Eck} 1/min						2605	3014	3354		
DV100M4	M_{max} Nm (lb in)							23.1 (204)	26 (230)	26.8 (237)	
	n_{Eck} 1/min							3142	3360	3680	
DV100L4	M_{max} Nm (lb in)								31.5 (279)	36.8 (326)	36.8 (326)
	n_{Eck} 1/min								2470	2605	3014
DV112M4	M_{max} Nm (lb in)									41.4 (366)	48.4 (428)
	n_{Eck} 1/min									2534	2989
DV132S4	M_{max} Nm (lb in)										62.4 (552)
	n_{Eck} 1/min										2234

Note: The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 460 V.

Assignment of MOVIDRIVE® MDX61B0150-503 ... MDX61B1320-503 (sizes 3 ... 6):

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in CFC operating modes (P700)									
⅄ ⅄ AC 230 V / 60 Hz		0150	0220	0300	0370	0450	0550	0750	0900	1100	1320
DV132S4	M_{max} Nm (lb in)	66 (584)									
	n_{Eck} 1/min	2573									
DV132M4	M_{max} Nm (lb in)	80 (708)	90.2 (798)								
	n_{Eck} 1/min	2349	2707								
DV132ML4	M_{max} Nm (lb in)		110 (974)	110 (974)							
	n_{Eck} 1/min		2496	2880							
DV160M4	M_{max} Nm (lb in)		115 (1018)	131 (1159)	131 (1159)						
	n_{Eck} 1/min		2451	2688	2963						
DV160L4	M_{max} Nm (lb in)			150 (1328)	177 (1567)	177 (1567)					
	n_{Eck} 1/min			2458	2515	2918					
DV180M4	M_{max} Nm (lb in)				189 (1673)	217 (1921)	217 (1921)				
	n_{Eck} 1/min				2355	2458	2771				
DV180L4	M_{max} Nm (lb in)					220 (1947)	258 (2283)	258 (2283)			
	n_{Eck} 1/min					2285	2291	2720			
DV200L4	M_{max} Nm (lb in)						281 (2487)	350 (3098)	351 (3107)		
	n_{Eck} 1/min						2208	2163	2662		
DV225S4	M_{max} Nm (lb in)							346 (3062)	433 (3832)	433 (3832)	
	n_{Eck} 1/min							2291	2362	2694	
DV225M4	M_{max} Nm (lb in)	**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 460 V.						354 (3133)	471 (4169)	526 (4655)	526 (4655)
	n_{Eck} 1/min							2278	2240	2336	2803
DV250M4	M_{max} Nm (lb in)								459 (4062)	547 (4841)	641 (5673)
	n_{Eck} 1/min								2656	2630	2771
DV280S4	M_{max} Nm (lb in)									533 (4717)	681 (6027)
	n_{Eck} 1/min									2963	2925

DT/DV motor selection with delta connection type (AC 230 V / 50 Hz)

Motors AC 230/400 V / 50 Hz in delta connection:

Motor			MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in CFC operating modes (P700)								
Δ AC 230 V / 50 Hz			0015	0022	0037	0055	0075	0110	0150	0220	0300
DT80K4	M_{max}	Nm (lb in)	6.9 (61)								
	n_{Eck}	1/min	813								
DT80N4	M_{max}	Nm (lb in)	9.3 (82)								
	n_{Eck}	1/min	922								
DT90S4	M_{max}	Nm (lb in)	13.5 (119)	13.5 (119)							
	n_{Eck}	1/min	1011	1011							
DT90L4	M_{max}	Nm (lb in)	18.3 (162)	18.3 (162)	18.3 (162)						
	n_{Eck}	1/min	998	1068	1088						
DV100M4	M_{max}	Nm (lb in)		25.5 (226)	26.8 (237)						
	n_{Eck}	1/min		922	1056						
DV100L4	M_{max}	Nm (lb in)			36.8 (326)	36.8 (326)					
	n_{Eck}	1/min			973	1011					
DV112M4	M_{max}	Nm (lb in)				48.4 (428)	48.4 (428)				
	n_{Eck}	1/min				1037	1062				
DV132S4	M_{max}	Nm (lb in)				66.1 (585)	66.1 (585)	66.1 (585)			
	n_{Eck}	1/min				1024	1190	1222			
DV132M4	M_{max}	Nm (lb in)					85.4 (756)	90.2 (798)	90.2 (798)		
	n_{Eck}	1/min					998	1152	1152		
DV132ML4	M_{max}	Nm (lb in)						110 (974)	110 (974)	110 (974)	
	n_{Eck}	1/min						1082	1165	1165	
DV160M4	M_{max}	Nm (lb in)						126 (1115)	131 (1159)	131 (1159)	
	n_{Eck}	1/min						979	1120	1197	
DV160L4	M_{max}	Nm (lb in)							167 (1478)	177 (1567)	177 (1567)
	n_{Eck}	1/min							1056	1306	1350
DV180M4	M_{max}	Nm (lb in)		**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 230 V.						217 (1921)	217 (1921)
	n_{Eck}	1/min								1222	1382
DV180L4	M_{max}	Nm (lb in)								231 (2045)	258 (2283)
	n_{Eck}	1/min								1017	1069
DV200L4	M_{max}	Nm (lb in)									307 (2717)
	n_{Eck}	1/min									1030

DT/DV motor selection with double-star connection type (AC 230 V / 60 Hz)

Motors AC 230/460 V / 60 Hz in double star connection:

Motor			MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in CFC operating modes (P700)								
⅄ ⅄ AC 230 V / 60 Hz			0015	0022	0037	0055	0075	0110	0150	0220	0300
DT80N4	M_{max}	Nm (lb in)	9.3 (82)								
	n_{Eck}	1/min	1146								
DT90S4	M_{max}	Nm (lb in)	13.5 (119)	13.5 (119)							
	n_{Eck}	1/min	1267	1338							
DT90L4	M_{max}	Nm (lb in)	17.2 (152)	18.3 (162)	18.3 (162)						
	n_{Eck}	1/min	1146	1210	1325						
DV100M4	M_{max}	Nm (lb in)		20.7 (183)	26.8 (237)						
	n_{Eck}	1/min		1459	1517						
DV100L4	M_{max}	Nm (lb in)			36.8 (326)	36.8 (326)					
	n_{Eck}	1/min			1056	1210					
DV112M4	M_{max}	Nm (lb in)			37.2 (329)	48.4 (428)	48.4 (428)				
	n_{Eck}	1/min			1190	1248	1338				
DV132S4	M_{max}	Nm (lb in)				57 (504)	66.1 (585)	66.1 (585)			
	n_{Eck}	1/min				1030	1062	1120			
DV132M4	M_{max}	Nm (lb in)					71.7 (635)	90.2 (798)	90.2 (798)		
	n_{Eck}	1/min					1114	1165	1222		
DV132ML4	M_{max}	Nm (lb in)						106 (938)	110 (974)		
	n_{Eck}	1/min						1101	1235		
DV160M4	M_{max}	Nm (lb in)						104 (921)	131 (1159)	131 (1159)	
	n_{Eck}	1/min						1165	1146	1318	
DV160L4	M_{max}	Nm (lb in)							133 (1177)	177 (1567)	177 (1567)
	n_{Eck}	1/min							1190	1267	1395
DV180M4	M_{max}	Nm (lb in)		**Note:** The maximum torque M_{max} is limited to 180 % of the rated motor torque M_N. The data is based on a supply voltage of AC 230 V.						208 (1841)	217 (1921)
	n_{Eck}	1/min								1101	1203
DV180L4	M_{max}	Nm (lb in)								195 (1726)	236 (2089)
	n_{Eck}	1/min								1107	1075
DV200L4	M_{max}	Nm (lb in)								210 (1859)	253 (2239)
	n_{Eck}	1/min								1082	1062
DV225S4	M_{max}	Nm (lb in)									247 (2186)
	n_{Eck}	1/min									1133

3.4 Motor selection for synchronous servomotors (SERVO)

	NOTE
	The torque limit (M limit) is set automatically by the startup function of the MOVITOOLS® operating software. Do not increase this automatically set value! We recommend always using the latest version of MOVITOOLS® for startup. The latest MOVITOOLS® version can be downloaded from our homepage (www.sew-eurodrive.com).

Motor characteristics

The requirements on a servo drive include speed dynamics, stable speed and positioning accuracy. DS/CM/CMD/CMP motors with MOVIDRIVE® meet these requirements.

Technically speaking, these are synchronous motors with permanent magnets on the rotor and a mounted resolver. The required characteristics, namely a constant torque over a wide speed range (up to 6000 1/min), a high speed and control range and a high overload capacity, are achieved using control with MOVIDRIVE®. The mass moment of inertia of the servomotor is lower than that of the asynchronous motor. This means it is optimally suited to applications requiring dynamic speeds.

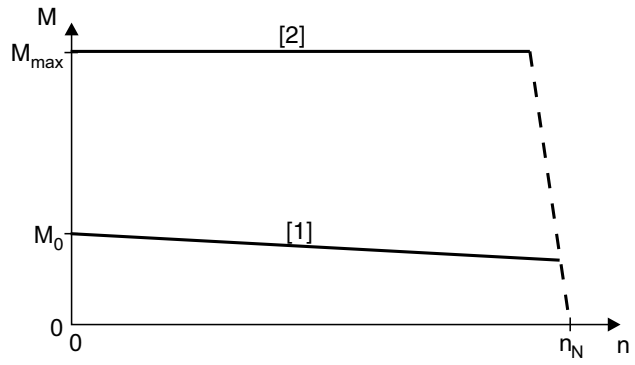

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Figure 37: Speed/torque characteristic curve of DS/CM/CMD/CMP servomotors

[1] Continuous torque

[2] Maximum torque

M_0 and M_{max} are determined by the motor. The attainable M_{max} can also be less, depending on the inverter.

Refer to the motor selection tables (DS/CM/CMD/CMP) the values for M_0.

Refer to the motor selection tables (DS/CM/CMD/CMP) for the values for M_{max}.

Basic recommendations

The necessary motor data for the SERVO operating modes are stored in MOVIDRIVE® for the SEW motors.

Speed is the correcting variable in the SERVO operating modes with speed control. Torque is the correcting variable in the SERVO operating modes with torque control (SERVO & M-CONTROL).

SERVO mode with speed control

There is no need to differentiate between the load types quadratic, dynamic and static when performing project planning for the SERVO operating mode. Project planning for a synchronous motor is carried out in accordance with the following requirements:

1. Effective torque requirement at average application speed.

   $M_{eff} < M_0$

   The operating point must lie below the characteristic curve for the continuous torque (Figure 37, curve 1). The continuous torque of the CM series can be increased by 40 % by forced cooling if this operating point lies above the characteristic curve for self-cooling.

2. Maximum torque needed across the speed curve.

   $M_{max} < M_{dyn\_mot}$

   This operating point must lie below the characteristic curve for the maximum torque of the motor/MOVIDRIVE® combination (Figure 37, curve 2).

3. Maximum speed

   The maximum speed must not be configured higher than the rated speed of the motor. Planetary gear units should be used for speeds greater than 3000 1/min as a result of the high input speed.

   $n_{max} \leq n_N$

SERVO mode with torque control (SERVO & M-CTRL.)

This operating mode enables the servomotor to be controlled directly with torque control. The setpoint sources of the speed controlled SERVO mode can also be used for torque control. All speed setpoint sources (except for bus setpoints) are interpreted as current setpoint sources. Assign "Current" to a process data word for fieldbus control. The settings for evaluating the analog input (→ P11_, parameter description) also remain in effect. The fixed setpoints (P16_, P17_) can be entered either in the unit (1/min) or (%$I_{N\_inverter}$) (→ MOVITOOLS®).

The following relationship exists between the units:

3000 1/min = 150 % rated inverter current

The torque at the output shaft of the servomotor can be calculated using the following formula:

$$M = \frac{M_0}{I_0} \times \frac{150\ \%\ \times I_{n\_inverter} \times n_{setp}}{3000\ 1/min}$$

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M_0 Continuous static torque according to the motor tables DS/CM/CMD/CMP

I_0 Continuous static torque according to the motor tables DS/CM/CMD/CMP

Motor table DS/CM

Characteristic values at V_{max} = AC 230 V / AC 400 V

n_N 1/min	Motor	Without forced cooling fan M_0 Nm (lb in)	I_0 [1] A	I_0 [2] A	With forced cooling fan VR M_{0_VR} Nm (lb in)	I_{0_VR} [1] A	I_{0_VR} [2] A	I_{max} [1] A	I_{max} [2] A	Mass moment of inertia J_M Without brake 10^{-4} kgm²	With brake 10^{-4} kgm²
2000	CM71S	5.0 (44)	2.2	3.95	7.3 (65)	3.2	5.7	8.8	15.8	4.85	6.89
	CM71M	6.5 (58)	3.0	5.3	9.4 (83)	4.2	7.7	12.0	21.0	6.27	8.31
	CM71L	9.5 (84)	4.2	7.4	13.8 (122)	6.1	10.7	16.8	29.5	9.1	11.1
	CM90S	11.0 (97.4)	4.9	8.7	16.0 (142)	7.1	12.6	19.6	35.0	14.3	19.8
	CM90M	14.5 (128)	6.9	12.1	21.0 (186)	10.0	17.5	28.0	48.5	18.6	24.1
	CM90L	21.0 (186)	9.9	17.1	30.5 (270)	14.4	25.0	40.0	68.0	27.1	32.6
	CM112S	23.5 (208)	10.0	18.0	34.0 (301)	14.5	26.0	40.0	72	67.4	87.5
	CM112M	31.0 (274)	13.5	24.5	45.0 (398)	19.6	35.5	54.0	98	87.4	108
	CM112L	45.0 (398)	20.0	35.5	65.0 (575)	29.0	51.0	80.0	142	128	148
	CM112H	68.0 (602)	30.5	52.0	95.0 (841)	42.5	73.0	122	208	189	209
3000	DS56M	1.0 (8.9)	1.65	1.65	-	-	-	6.6	6.6	0.47	0.85
	DS56L	2.0 (18)	2.4	2.4	-	-	-	9.6	9.6	0.82	1.2
	DS56H	4.0 (36)	2.8	4.7	-	-	-	11.2	19	1.53	1.88
	CM71S	5.0 (44)	3.3	5.9	7.3 (65)	4.8	8.6	13.2	23.5	4.85	6.89
	CM71M	6.5 (58)	4.3	7.6	9.4 (83)	6.2	11.0	17.2	30.5	6.27	8.31
	CM71L	9.5 (84)	6.2	11.1	13.8 (122)	9.0	16.1	25.0	44.5	9.1	11.1
	CM90S	11.0 (97.4)	7.3	12.7	16.0 (142)	10.6	18.4	30.0	51	14.3	19.8
	CM90M	14.5 (128)	10.1	17.4	21.0 (186)	14.6	25.0	40.0	70	18.6	24.1
	CM90L	21.0 (186)	14.4	25.5	30.5 (270)	21.0	37.0	58.0	102	27.1	32.6
	CM112S	23.5 (208)	15.0	27.0	34.0 (301)	22.0	39.0	60.0	108	67.4	87.5
	CM112M	31.0 (274)	20.5	35.0	45.0 (398)	30.0	51.0	82.0	140	87.4	108
	CM112L	45.0 (398)	30.0	48.0	65.0 (575)	44.0	70.0	120	192	128	148
	CM112H	68.0 (602)	43.0	73.0	95.0 (841)	60.0	102	172	292	189	209
4500	DS56M	1.0 (8.9)	1.65	1.65	-	-	-	6.6	6.6	0.47	0.85
	DS56L	2.0 (18)	2.4	-	-	-	-	9.6	-	0.82	1.2
	DS56H	4.0 (36)	4.0	-	-	-	-	16.0	-	1.53	1.88
	CM71S	5.0 (44)	4.9	8.5	7.3 (65)	7.2	12.3	20.0	34	4.85	6.89
	CM71M	6.5 (58)	6.6	11.3	9.4 (83)	9.6	16.4	26.0	45	6.27	8.31
	CM71L	9.5 (84)	9.6	17.1	13.8 (122)	14.0	25.0	38.0	68	9.1	11.1
	CM90S	11.0 (97.4)	11.1	18.9	16.0 (142)	16.2	27.5	44.0	76	14.3	19.8
	CM90M	14.5 (128)	14.7	26.0	21.0 (186)	21.5	37.5	59.0	104	18.6	24.1
	CM90L	21.0 (186)	21.6	39.0	30.5 (270)	31.5	57	86.0	156	27.1	32.6
	CM112S	23.5 (208)	22.5	38.5	34.0 (301)	32.5	56	90.0	154	67.4	87.5
	CM112M	31.0 (274)	30.0	54.0	45.0 (398)	44.0	78	120	216	87.4	108
	CM112L	45.0 (398)	46.0	78.0	65.0 (575)	67.0	113	184	312	128	148
	CM112H	68.0 (602)	66.0	-	95.0 (841)	92.0	-	264	-	189	209
6000	DS56M	1.0 (8.9)	1.65	-	-	-	-	6.6	-	0.47	0.85
	DS56L	2.0 (18)	2.75	-	-	-	-	11.0	-	0.82	1.2
	DS56H	4.0 (36)	5.3	-	-	-	-	21.0	-	1.53	1.88
	CM71S	5.0 (44)	6.5	11.6	7.3 (65)	7.2	16.8	26.0	46.5	4.85	6.89
	CM71M	6.5 (58)	8.6	14.1	9.4 (83)	9.6	20.5	34.0	56	6.27	8.31
	CM71L	9.5 (84)	12.5	21.5	13.8 (122)	14.0	31.0	50.0	86	9.1	11.1
	CM90S	11.0 (97.4)	14.5	23.5	16.0 (142)	16.2	34.0	58.0	94	14.3	19.8
	CM90M	14.5 (128)	19.8	37.0	21.0 (186)	21.5	54	79.0	148	18.6	24.1
	CM90L	21.0 (186)	29.5	51.0	30.5 (270)	31.5	74	118.0	204	27.1	32.6

1) For DS/CM synchronous servomotors with AC 400 V system voltage

2) For DS/CM synchronous servomotors with AC 230 V system voltage

	NOTE
	Additional project planning instructions and information on the DS/CM synchronous servomotors can be found in the "Servo Gearmotors" catalog, which can be ordered from SEW-EURODRIVE.

DS/CM motor selection (AC 400 V system voltage)

1. Rated speed n_N = 2000 1/min:

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)															
			0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300	0370	0450
CM71S	M_{max}	Nm (lb in)	8.9 (79)	10.5 (93)	13.1 (116)	15.6 (138)	12.7 (112)	15.9 (141)	16.5 (146)									
CM71M	M_{max}	Nm (lb in)	8.6 (76)	10.3 (91)	13.1 (116)	16.2 (143)	12.7 (112)	16.7 (148)	19.8 (175)	21.5 (190)								
CM71L	M_{max}	Nm (lb in)		10.8 (96)	13.9 (123)	17.7 (157)	13.5 (119)	18.2 (161)	22.5 (199)	28.4 (251)	31.4 (278)							
CM90S	M_{max}	Nm (lb in)			13.9 (123)	17.8 (158)	13.4 (119)	18.4 (163)	23.2 (205)	30.6 (271)	38.2 (338)	39.4 (349)						
CM90M	M_{max}	Nm (lb in)				16.8 (149)	12.6 (112)	17.3 (153)	21.9 (194)	29.5 (261)	38.0 (336)	46.9 (415)	52.5 (465)					
CM90L	M_{max}	Nm (lb in)						17.5 (155)	22.2 (196)	30.1 (266)	39.3 (348)	49.6 (439)	70.3 (622)	75.8 (671)				
CM112S	M_{max}	Nm (lb in)						19.3 (171)	24.6 (218)	33.4 (296)	43.6 (386)	54.8 (485)	76.2 (674)	81.9 (725)				
CM112M	M_{max}	Nm (lb in)							23.9 (212)	32.6 (289)	42.9 (380)	54.7 (484)	79.3 (702)	99.6 (882)	108.0 (956)			
CM112L	M_{max}	Nm (lb in)									42.0 (372)	53.9 (477)	80.3 (711)	104.9 (928	141.5 (1252)	156.8 (1388)		
CM112H	M_{max}	Nm (lb in)										53.2 (471)	80.1 (709)	106.5 (943)	150.3 (1330)	189.2 (1675)	220.1 (1948)	237.0 (2100)

2. Rated speed n_N = 3000 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)								
		0005	0008	0011	0014	0015	0022	0030	0040	0055
DS56M	M_{max} Nm (lb in)	2.4 (21)	2.8 (25)	3.6 (32)	3.8 (34)	3.5 (31)	3.8 (34)			
DS56L	M_{max} Nm (lb in)	3.3 (29)	4.0 (35)	5.1 (45)	6.4 (57)	4.9 (43)	6.6 (58)	7.6 (67)		
DS56H	M_{max} Nm (lb in)	5.7 (50)	6.8 (60)	8.8 (78)	11.2 (99)	8.5 (75)	11.5 (102)	14.3 (127)	15.0 (133)	
CM71S	M_{max} Nm (lb in)	6.0 (53)	7.2 (64)	9.2 (81)	11.6 (103)	8.9 (79)	11.9 (105)	14.3 (127)	16.5 (146)	
CM71M	M_{max} Nm (lb in)		7.2 (64)	9.3 (82)	11.9 (105)	9.0 (80)	12.2 (108)	15.1 (134	19.1 (169)	21.5 (190)
CM71L	M_{max} Nm (lb in)			9.5 (84)	12.2 (108)	9.2 (81)	12.6 (112)	15.9 (141)	21.0 (186)	26.2 (232)
CM90S	M_{max} Nm (lb in)				12.0 (106)	9.0 (80)	12.4 (110)	15.7 (139)	21.2 (188)	27.4 (243)
CM90M	M_{max} Nm (lb in)						11.8 (104)	15.0 (133)	20.4 (181)	26.6 (235)
CM90L	M_{max} Nm (lb in)								20.7 (183)	27.3 (242)
CM112S	M_{max} Nm (lb in)								22.2 (196)	29.3 (259)
CM112M	M_{max} Nm (lb in)									28.2 (250

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)								
		0075	0110	0150	0220	0300	0370	0450	0550	0750
CM71L	M_{max} Nm (lb in)	30.8 (273)	31.5 (279)							
CM90S	M_{max} Nm (lb in)	34.0 (301)	39.2 (347)							
CM90M	M_{max} Nm (lb in)	33.7 (298)	47.8 (423)	51.6 (457)						
CM90L	M_{max} Nm (lb in)	34.7 (307)	51.1 (452)	65.6 (581)	75.6 (669)					
CM112S	M_{max} Nm (lb in)	37.4 (331)	54.8 (485)	69.8 (618)	81.9 (725)					
CM112M	M_{max} Nm (lb in)	36.2 (320)	54.0 (478)	70.7 (626)	95.7 (847)	108.0 (956)				
CM112L	M_{max} Nm (lb in)	35.8 (317)	53.9 (477)	71.6 (634)	101.0 (894)	126.9 (1123)	147.4 (1305)	156.8 (1388)		
CM112H	M_{max} Nm (lb in)		56.6 (501)	75.7 (670)	108.6 (961)	139.9 (1238)	167.0 (1478)	197.1 (1744)	223.2 (1975)	237.0 (2098)

3. Rated speed n_N = 4500 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)							
		0005	0008	0011	0014	0015	0022	0030	0040
DS56M	M_{max} Nm (lb in)	2.4 (21)	2.8 (25)	3.6 (32)	3.8 (34)	3.5 (31)	3.8 (34)		
DS56L	M_{max} Nm (lb in)	3.3 (29)	4.0 (35)	5.1 (45)	6.4 (57)	4.9 (43)	6.6 (58)	7.6 (67)	
DS56H	M_{max} Nm (lb in)	4.0 (35)	4.8 (42)	6.2 (55)	7.9 (70	6.0 (53)	8.2 (73)	10.3 (91)	13.7 (121)
CM71S	M_{max} Nm (lb in)			6.3 (56)	8.1 (72)	6.1 (54)	8.3 (73)	10.4 (92)	13.4 (119)
CM71M	M_{max} Nm (lb in)				7.9 (70)	5.9 (52)	8.1 (72)	10.2 (90)	13.6 (120)
CM71L	M_{max} Nm (lb in)						8.2 (73)	10.4 (92)	14.0 (124)
CM90S	M_{max} Nm (lb in)							10.4 (92)	14.1 (125)
CM90M	M_{max} Nm (lb in)								14.0 (124)

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)											
		0055	0075	0110	0150	0220	0300	0370	0450	0550	0750	0900	1100
DS56H	M_{max} Nm (lb in)	15.2 (135)											
CM71S	M_{max} Nm (lb in)	16.1 (142)	16.5 (146)										
CM71M	M_{max} Nm (lb in)	17.1 (151)	20.3 (180)	21.3 (189)									
CM71L	M_{max} Nm (lb in)	18.1 (160)	22.5 (199)	30.3 (268)	31.2 (276)								
CM90S	M_{max} Nm (lb in)	18.4 (163)	23.4 (207)	33.6 (297)	39.2 (347)								
CM90M	M_{max} Nm (lb in)	18.4 (163)	23.5 (208)	34.6 (306)	44.5 (394)	52.1 (461)							
CM90L	M_{max} Nm (lb in)	18.2 (161)	23.3 (206)	34.7 (307)	45.8 (405)	63.4 (561)	75.0 (664)						
CM112S	M_{max} Nm (lb in)	19.5 (173)	25.0 (221)	37.4 (331)	49.2 (435)	67.5 (597)	81.9 (725)						
CM112M	M_{max} Nm (lb in)		24.6 (218)	37.1 (328)	49.4 (437)	69.6 (616)	87.4 (774)	101.5 (898)	108.0 (956)				
CM112L	M_{max} Nm (lb in)			35 (310)	46.8 (414)	67.2 (595)	86.9 (769)	104.1 (921)	123.5 (1093)	140.7 (1245)	156.8 (1388)		
CM112H	M_{max} Nm (lb in)					70.9 (628)	92.5 (819)	112.1 (992)	135.5 (1199)	157.7 (1396)	189.4 (1676)	231.6 (2050)	237.0 (2098)

4. Rated speed n_N = 6000 1/min:

Motor			MOVIDRIVE® MDX61B...-5_3 (AC 400/500 V units) in the SERVO operating modes (P700)															
			0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150	0220	0300	0370	0450
DS56M	M_{max}	Nm (lb in)	2.4 (21)	2.8 (25	3.6 (32)	3.8 (34)	3.5 (31)	3.8 (34)										
DS56L	M_{max}	Nm (lb in)	2.9 (26)	3.5 (31)	4.5 (40)	5.7 (50)	4.3 (38)	5.8 (51)	7.3 (65)	7.6 (67)								
DS56H	M_{max}	Nm (lb in)			4.7 (42)	6.0 (53)	4.5 (40)	6.2 (55)	7.9 (70)	10.5 (93)	13.6 (120)	15.1 (134)						
CM71S	M_{max}	Nm (lb in)				6.1 (54)	4.6 (41)	6.3 (56)	8.0 (71)	10.6 (94)	13.3 (118)	15.8 (140)	16.5 (146)					
CM71M	M_{max}	Nm (lb in)						6.2 (55)	7.9 (70)	10.6 (94)	13.7 (121)	16.8 (149)	21.3 (189)					
CM71L	M_{max}	Nm (lb in)							8.0 (71)	10.8 (96)	14.1 (125)	17.9 (158)	25.2 (223)	30.7 (272)	31.4 (278)			
CM90S	M_{max}	Nm (lb in)								10.8 (96)	14.2 (126)	18.1 (160)	26.6 (235)	34.2 (303)	39.4 (349)			
CM90M	M_{max}	Nm (lb in)									13.7 (121)	17.5 (155)	26.1 (231)	34.3 (304)	46.9 (415)	51.9 (459)		
CM90L	M_{max}	Nm (lb in)										17.1 (151)	25.6 (227)	33.9 (300)	48.0 (425)	60.9 (539)	71.3 (631)	75.2 (666)

DS/CM motor selection (AC 230 V system voltage)

1. Rated speed n_N = 2000 1/min:

Motor		MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in SERVO operating modes (P700)								
		0015	0022	0037	0055	0075	0110	0150	0220	0300
CM71S	M_{max} Nm (lb in)	12.9 (114)	14.6 (129)	16.5 (146)						
CM71M	M_{max} Nm (lb in)	13.1 (116)	15.1 (134)	21.4 (189)						
CM71L	M_{max} Nm (lb in)	14.0 (124)	16.3 (144)	25.6 (227)	31.3 (277)					
CM90S	M_{max} Nm (lb in)	13.8 (122)	16.2 (143)	26.8 (237)	38.0 (336)	39.6 (350)				
CM90M	M_{max} Nm (lb in)	13.1 (116)	15.4 (136)	25.8 (228)	38.2 (338)	48.1 (426)	52.0 (460)			
CM90L	M_{max} Nm (lb in)		15.8 (140)	26.6 (235)	40.0 (354)	51.9 (459)	70.9 (628)	74.9 (663)		
CM112S	M_{max} Nm (lb in)			28.3 (250)	42.7 (378)	55.1 (488)	74.7 (661)	81.9 (725)		
CM112M	M_{max} Nm (lb in)			27.4 (243)	41.6 (368)	54.6 (483)	76.8 (680)	94.4 (836)	108.0 (956)	
CM112L	M_{max} Nm (lb in)				41.7 (369)	55.0 (487)	79.2 (701)	100.2 (887)	139.3 (1233)	156.8 (1388)
CM112H	M_{max} Nm (lb in)					56.6 (501)	82.2 (728)	105.5 (934)	153 (1350)	177.9 (1575)

2. Rated speed n_N = 3000 1/min:

Motor		MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in SERVO operating modes (P700)								
		0015	0022	0037	0055	0075	0110	0150	0220	0300
DS56M	M_{max} Nm (lb in)	3.8 (34)								
DS56L	M_{max} Nm (lb in)	7.6 (67)								
DS56H	M_{max} Nm (lb in)	9.2 (81)	10.7 (95)	15.3 (135)						
CM71S	M_{max} Nm (lb in)	9.1 (81)	10.6 (94)	15.8 (140)	16.5 (146)					
CM71M	M_{max} Nm (lb in)	9.3 (82)	10.9 (97)	17.2 (152)	21.5 (190)					
CM71L	M_{max} Nm (lb in)	9.4 (83)	11.0 (97)	18.2 (161)	25.8 (228)	31.0 (274)	31.4 (278)			
CM90S	M_{max} Nm (lb in)	9.5 (84)	11.2 (99)	18.7 (166)	27.7 (245)	35.1 (311)	39.5 (350)			
CM90M	M_{max} Nm (lb in)			18.1 (160)	27.2 (241)	35.3 (312)	48.4 (428)	52.2 (462)		
CM90L	M_{max} Nm (lb in)			17.9 (158)	27.1 (240)	35.5 (314)	50.5 (447)	63.1 (558)	75.2 (666)	
CM112S	M_{max} Nm (lb in)			18.8 (166)	28.7 (254)	37.7 (334)	53.4 (473)	66.3 (587)	81.9 (725)	
CM112M	M_{max} Nm (lb in)				29.1 (258)	38.4 (340)	55.3 (489)	69.9 (619)	97.0 (859)	108.0 (956)
CM112L	M_{max} Nm (lb in)					40.6 (359)	58.9 (521)	75.4 (667)	108.8 (963)	125.9 (1114)
CM112H	M_{max} Nm (lb in)						58.4 (517)	75.3 (666)	111.1 (983)	131.1 (1160)

3. Rated speed n_N = 4500 1/min:

Motor		MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in SERVO operating modes (P700)								
		0015	0022	0037	0055	0075	0110	0150	0220	0300
DS56M	M_{max} Nm (lb in)	3.8 (34)								
CM71S	M_{max} Nm (lb in)	6.4 (57)	7.5 (66)	12.1 (107)	16.3 (144)	16.5 (146)				
CM71M	M_{max} Nm (lb in)	6.3 (56)	7.4 (65)	12.2 (108)	17.4 (154)	21.0 (186)	21.4 (189)			
CM71L	M_{max} Nm (lb in)		7.2 (64)	12.1 (107)	17.9 (158)	22.8 (202)	29.9 (265)	31.3 (277)		
CM90S	M_{max} Nm (lb in)			12.6 (112)	19.0 (168)	24.8 (219)	34.4 (304)	39.6 (350)		
CM90M	M_{max} Nm (lb in)			12.1 (107)	18.3 (162)	24.1 (213)	34.3 (304)	42.8 (379)	52.0 (460)	
CM90L	M_{max} Nm (lb in)				17.7 (157)	23.4 (207)	33.7 (298)	42.9 (380)	61.4 (543)	70.5 (624)
CM112S	M_{max} Nm (lb in)				20.0 (177)	26.5 (235)	38.2 (338)	48.6 (430)	68.3 (605)	77.7 (688)
CM112M	M_{max} Nm (lb in)					24.8 (219)	36.1 (320)	46.3 (410)	67.4 (597)	78.5 (695)

4. Rated speed n_N = 6000 1/min:

Motor		MOVIDRIVE® MDX61B...-2_3 (AC 230 V units) in SERVO operating modes (P700)								
		0015	0022	0037	0055	0075	0110	0150	0220	0300
CM71S	M_{max} Nm (lb in)	4.7 (42)	5.6 (50)	9.2 (81)	13.2 (117)	15.9 (141)	16.6 (147)			
CM71M	M_{max} Nm (lb in)	5.0 (44)	5.9 (52)	9.9 (88)	14.6 (129)	18.2 (161)	21.4 (189)			
CM71L	M_{max} Nm (lb in)			9.6 (85)	14.5 (128)	18.7 (166)	25.6 (227)	30.3 (268)	31.4 (278)	
CM90S	M_{max} Nm (lb in)			10.2 (90)	15.4 (136)	20.1 (178)	28.5 (252)	35.3 (312)	39.4 (349)	
CM90M	M_{max} Nm (lb in)				12.9 (114)	17.0 (150)	24.5 (217)	31.2 (276)	44.3 (392)	50.6 (448)
CM90L	M_{max} Nm (lb in)					17.9 (158)	25.9 (229)	33.1 (293)	48.3 (427)	56.5 (500)

Motor table CMD

Characteristic values at V_{max} = AC 400 V

n_N 1/min	Motor	M_0 Nm (lb in)	I_0 A	I_{max} A	Mass moment of inertia J_M 10^{-4} kgm^2
1200	**CMD93S**	2.4 (21)	1.55	8.1	1.23
	CMD93M	4.2 (37)	2.5	16.2	2.31
	CMD93L	6.0 (50)	3.5	22.9	3.38
	CMD138S	6.7 (59	3.9	13.2	6.4
	CMD138M	12.1 (107)	5.5	25.5	11.4
	CMD138L	16.5 (146)	8	40.2	16.5
2000	**CMD138S**	6.7 (59)	7.4	25.0	6.5
	CMD138M	12.1 (107)	11.4	53.0	11.4
	CMD138L	16.5 (146)	15.1	76.0	16.5
3000	**CMD70S**	0.7 (6)	1.04	5.8	0.261
	CMD70M	1.1 (9.7)	1.36	7.9	0.45
	CMD70L	1.9 (17)	1.96	17.7	0.83
	CMD93S	2.4 (21)	2.32	12.2	1.23
	CMD93M	4.2 (37)	3.6	23.2	2.31
	CMD93L	6.0 (53)	6	39.7	3.38
4500	**CMD55S**	0.25 (2.2)	0.7	4.1	0.087
	CMD55M	0.45 (4)	0.95	6.1	0.15
	CMD55L	0.9 (8)	1.5	12.2	0.267

CMD motor selection (AC 400 V system voltage)

1. Rated speed n_N = 1200 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)											
		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150
CMD93S	M_{max} Nm (lb in)	5.8 (51)	6.7 (59)	8.1 (72)	10 (89)	7.9 (70)	10 (89)						
CMD93M	M_{max} Nm (lb in)		8.2 (73)	10.5 (93)	13.3 (118)	10.2 (90)	13.6 (120)	16.6 (147)	20.6 (182)	22 (190)			
CMD93L	M_{max} Nm (lb in)			10.5 (93)	13.5 (119)	10.1 (89)	14.0 (124)	17.6 (156)	23.1 (204)	28.6 (253)	33 (290)		
CMD138S	M_{max} Nm (lb in)				12.5 (111)	9.8 (87)	12.8 (113)	15.2 (135)	17 (150)				
CMD138M	M_{max} Nm (lb in)							21.9 (194)	27.9 (247)	33.3 (295)	37.8 (335)	39 (350)	
CMD138L	M_{max} Nm (lb in)									36.8 (326)	45.0 (398)	59 (520)	62 (550)

2. Rated speed n_N = 2000 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)						
		0040	0055	0075	0110	0150	0220	0300
CMD138S	M_{max} Nm (lb in)	11.9 (105)	14.7 (130)	17 (150)				
CMD138M	M_{max} Nm (lb in)			23.7 (210)	31.8 (281)	37.2 (329)	38.8 (343)	
CMD138L	M_{max} Nm (lb in)				37.4 (331)	47.1 (417)	59.6 (528)	62 (550)

3. Rated speed n_N = 3000 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)											
		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150
CMD70S	M_{max} Nm (lb in)	2.2 (19)	2.5 (22)	3 (27)									
CMD70M	M_{max} Nm (lb in)	3.2 (28)	3.7 (33)	4.5 (40)	5.2 (46)	4.4 (39)	5 (44)						
CMD70L	M_{max} Nm (lb in)	3.8 (34)	4.5 (40)	5.8 (51)	7.4 (65)	5.7 (50)	7.6 (67)	9.1 (81)	10.6 (94)	11 (97)			
CMD93S	M_{max} Nm (lb in)		4.8 (42)	6.0 (53)	7.3 (65)	5.8 (51)	7.5 (66)	8.8 (78)	10 (86)				
CMD93M	M_{max} Nm (lb in)				9.5 (84)	7.2 (64)	9.8 (87)	12.3 (109)	15.9 (141)	19.5 (173)	22 (190)		
CMD93L	M_{max} Nm (lb in)								13.9 (123)	18.1 (160)	22.5 (199)	30.7 (272)	33 (290)

4 Rated speed n_N = 4500 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)							
		0005	0008	0011	0014	0015	0022	0030	0040
CMD55S	M_{max} Nm (lb in)	1.2 (11)							
CMD55M	M_{max} Nm (lb in)	1.8 (16)	2 (18)	2.3 (20)					
CMD55L	M_{max} Nm (lb in)	2.5 (22)	2.9 (26)	3.7 (33)	4.5 (40)	3.6 (32)	4.6 (41)	5.4 (48)	6 (53)

Motor table CMP

Characteristic values at V_{max} = AC 400 V

n_N 1/min	Motor	Without forced cooling fan M_0 Nm (lb in)	Without forced cooling fan I_0 A	With forced cooling fan M_{0_VR} Nm (lb in)	With forced cooling fan I_{0_VR} A	I_{max} [A]	Mass moment of inertia J_M Without brake 10^{-4} kgm^2	Mass moment of inertia J_M With brake 10^{-4} kgm^2
3000	**CMP40S**	0.5 (4)	1.2	-	-	6.1	0.104	0.132
	CMP40M	0.8 (7)	0.95	-	-	6.0	0.148	0.176
	CMP50S	1.3 (12)	0.96	1.7 (15)	1.25	5.1	0.415	0.481
	CMP50M	2.4 (21)	1.68	3.5 (31)	2.45	9.6	0.667	0.733
	CMP50L	3.3 (29)	2.2	4.8 (42)	3.2	13.6	0.919	0.985
	CMP63S	2.9 (26)	2.15	4 (35)	3	12.9	1.148	1.489
	CMP63M	5.3 (47)	3.6	7.5 (66)	5.1	21.6	1.919	2.260
	CMP63L	7.1 (63)	4.95	10.3 (91.2)	7.2	29.7	2.689	3.030
4500	**CMP40S**	0.5 (4)	1.2	-	-	6.1	0.104	0.132
	CMP40M	0.8 (7)	0.95	-	-	6	0.148	0.176
	CMP50S	1.3 (12)	1.32	1.7 (15)	1.7	7	0.415	0.481
	CMP50M	2.4 (21)	2.3	3.5 (31)	3.35	13.1	0.667	0.733
	CMP50L	3.3 (29)	3.15	4.8 (42)	4.6	19.5	0.919	0.985
	CMP63S	2.9 (26)	3.05	4 (35)	4.2	18.3	1.148	1.489
	CMP63M	5.3 (47)	5.4	7.5 (66)	7.6	32.4	1.919	2.260
	CMP63L	7.1 (63)	6.9	10.3 (91.2)	10	41.4	2.689	3.030
6000	**CMP40S**	0.5 (4)	1.2	-	-	6.1	0.104	0.132
	CMP40M	0.8 (7)	1.1	-	-	6.9	0.148	0.176
	CMP50S	1.3 (12)	1.7	1.7 (15)	2.2	9	0.415	0.481
	CMP50M	2.4 (21)	3	3.5 (31)	4.4	17.1	0.667	0.733
	CMP50L	3.3 (29)	4.2	4.8 (42)	6.1	26	0.919	0.985
	CMP63S	2.9 (26)	3.9	4 (35)	5.4	23.4	1.148	1.489
	CMP63M	5.3 (47)	6.9	7.5 (66)	9.8	41.4	1.919	2.260
	CMP63L	7.1 (63)	9.3	10.3 (91.2)	13.5	55.8	2.689	3.030

CMP motor selection (AC 400 V system voltage)

1. Rated speed n_N = 3000 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)										
		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110
CMP40S	M_{max} Nm (lb in)	1.5 (13)	1.7 (15)	1.9 (17)		1.9 (17)	1.9 (17)					
CMP40M	M_{max} Nm (lb in)	3.0 (27)	3.3 (29)	3.8 (34)		3.8 (3.4)						
CMP50S	M_{max} Nm (lb in)	4.5 (40)	5.0 (44)	5.2 (46)		5.2 (46)						
CMP50M	M_{max} Nm (lb in)	5.4 (48)	6.3 (56)	7.7 (68)	9.3 (82)	7.6 (67)	9.4 (83)	10.3 (91)				
CMP50L	M_{max} Nm (lb in)	5.9 (52)	6.9 (61)	8.7 (77)	10.7 (95)	8.4 (74)	11.0 (97)	13.1 (116)	15.4 (136)			
CMP63S	M_{max} Nm (lb in)	5.2 (46)	6.0 (53)	7.3 (65)	8.7 (77)	7.1 (63)	8.8 (78)	10.1 (89)	11.1 (98)			
CMP63M	M_{max} Nm (lb in)	6.0 (53)	7.1 (63)	8.9 (79)	11.1 (98)	8.7 (77)	11.3 (100)	13.7 (121)	17.0 (150)	20.0 (177)	21.4 (189)	
CMP63L	M_{max} Nm (lb in)			9.0 (80)	11.3 (100)	8.7 (77)	11.6 (103)	14.4 (127)	18.6 (165)	23.0 (204)	27.0 (239)	30.4 (269)

2. Rated speed n_N = 4500 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)											
		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150
CMP40S	M_{max} Nm (lb in)	1.5 (13)	1.7 (15)	1.9 (17)		1.9 (17)	1.9 (17)						
CMP40M	M_{max} Nm (lb in)	3.0 (27)	3.3 (29)	3.8 (34)		3.8 (34)							
CMP50S	M_{max} Nm (lb in)	3.5 (31)	4.1 (36)	4.8 (42)	5.2 (46)	4.7 (42)	5.2 (46)						
CMP50M	M_{max} Nm (lb in)	4.1 (36)	4.8 (42)	6.0 (53)	7.4 (65)	5.9 (52)	7.6 (67)	9.0 (80)	10.3 (91)				
CMP50L	M_{max} Nm (lb in)	4.2 (37)	5.0 (44)	6.3 (56)	7.9 (70)	6.1 (54)	8.2 (73)	10.0 (89)	12.7 (112)	15.1 (134)	15.4 (136)		
CMP63S	M_{max} Nm (lb in)	3.8 (34)	4.5 (40)	5.6 (50)	6.8 (60)	5.4 (48)	7.0 (62)	8.2 (73)	9.9 (88)	11.1 (98)			
CMP63M	M_{max} Nm (lb in)			6.2 (55)	7.8 (69)	6.0 (53)	8.0 (71)	9.9 (88)	12.7 (112)	15.6 (138)	18.3 (162)	21.4 (189)	
CMP63L	M_{max} Nm (lb in)				8.3 (73)	6.4 (57)	8.6 (76)	10.7 (95)	14.1 (125)	17.8 (158)	21.6 (191)	28.2 (250)	30.4 (269)

3. Rated speed n_N = 6000 1/min:

Motor		MOVIDRIVE® MDX61B...-5_3 (AC 400 V units) in SERVO operating modes (P700)												
		0005	0008	0011	0014	0015	0022	0030	0040	0055	0075	0110	0150	0220
CMP40S	M_{max} Nm (lb in)	1.5 (13	1.7 (15)	1.9 (17)		1.9 (17)	1.9 (17)							
CMP40M	M_{max} Nm (lb in)	2.6 (23)	3.0 (27)	3.6 (32)	3.8 (34)	3.5 (31)	3.8 (34)							
CMP50S	M_{max} Nm (lb in)	2.9 (26)	3.3 (29)	4.1 (36)	4.8 (42)	4.0 (35)	4.9 (43)	5.2 (46)						
CMP50M	M_{max} Nm (lb in)		3.8 (34)	4.8 (42)	6.0 (53)	4.6 (41)	6.1 (54)	7.4 (65)	9.2 (81)	10.3 (91)				
CMP50L	M_{max} Nm (lb in)		3.8 (34)	4.8 (42)	6.1 (54)	4.7 (42)	6.3 (56)	7.8 (69)	10.2 (90)	12.5 (111)	14.7 (130)	15.4 (136)		
CMP63S	M_{max} Nm (lb in)		3.6 (32)	4.5 (40)	5.6 (50)	4.4 (39)	5.8 (51)	6.9 (61)	8.6 (76)	10.0 (89)	11.1 (98)			
CMP63M	M_{max} Nm (lb in)				6.3 (56)	4.8 (42)	6.5 (58)	8.0 (71)	10.4 (92)	13.0 (115)	15.6 (138)	20.0 (177)	21.4 (189)	
CMP63L	M_{max} [Nm (lb in)						6.5 (58)	8.1 (72)	10.8 (96)	13.8 (122)	17.0 (150)	23.3 (206)	28.1 (249)	30.4 (269)

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	Regensburg	SEW-EURODRIVE GmbH & Co KG Im Gewerbepark A15 D-93059 Regensburg	Tel. +49 941 46668-68 Fax +49 941 46668-66 tb-regensburg@sew-eurodrive.de
	Rhein-Main	SEW-EURODRIVE GmbH & Co KG Niederstedter Weg 5 D-61348 Bad Homburg	Tel. +49 6172 9617-0 Fax +49 6172 9617-50 tb-rheinmain@sew-eurodrive.de
	Stuttgart	SEW-EURODRIVE GmbH & Co KG Friedrich-List-Straße 46 D-70771 Leinfelden-Echterdingen	Tel. +49 711 16072-0 Fax +49 711 16072-72 tb-stuttgart@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 14 D-89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 tb-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 D-97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 tb-wuerzburg@sew-eurodrive.de
	Zwickau / Meerane	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg1 D-08393 Meerane	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 tb-zwickau@sew-eurodrive.de

France			
Production **Sales** **Service**	**Haguenau**	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	**Forbach**	SEW-EUROCOME Zone Industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly **Sales** **Service**	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62, avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Paris	SEW-USOCOME Zone industrielle 2, rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Technical Offices	**Alsace Franche-Comté**	SEW-USOCOME 1, rue Auguste Gasser F-68360 Soultz	Tel. +33 3 89 74 51 62 Fax +33 3 89 76 58 71
	Alsace Nord	SEW-USOCOME 15, rue Mambourg F-68240 Sigolsheim	Tel. +33 3 89 78 45 11 Fax +33 3 89 78 45 12
	Aquitaine	SEW-USOCOME Parc d'activités de Magellan 62, avenue de Magellan B.P.182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09

France			
	Ardennes Lorraine	SEW-USOCOME 7, rue de Prény F-54000 Nancy	Tel. +33 3 83 96 28 04 Fax +33 3 83 96 28 07
	Bourgogne	SEW-USOCOME 10, rue de la Poste F-71350 Saint Loup Géanges	Tel. +33 3 85 49 92 18 Fax +33 3 85 49 92 19
	Bretagne Ouest	SEW-USOCOME 4, rue des Châtaigniers F-44830 Brains	Tel. +33 2 51 70 54 04 Fax +33 2 51 70 54 05
	Centre Auvergne	SEW-USOCOME 27, avenue du Colombier F-19150 Laguenne	Tel. +33 5 55 20 12 10 Fax +33 5 55 20 12 11
	Centre Pays de Loire	SEW-USOCOME 9, rue des Erables F-37540 Saint Cyr sur Loire	Tel. +33 2 47 41 33 23 Fax +33 2 47 41 34 03
	Champagne	SEW-USOCOME Impasse des Ouises F-10120 Saint André les Vergers	Tel. +33 3 25 79 63 24 Fax +33 3 25 79 63 25
	Lyon Nord-Est	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 03 Fax +33 4 72 15 37 15
	Lyon Ouest	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 04 Fax +33 4 72 15 37 15
	Lyon Sud-Est	SEW-USOCOME Montée de la Garenne F-26750 Génissieux	Tel. +33 4 75 05 65 95 Fax +33 4 75 05 65 96
	Nord	SEW-USOCOME 348, rue Léon Garet F-62520 Le Touquet	Tel. +33 3 21 90 21 40 Fax +33 3 21 90 21 44
	Normandie	SEW-USOCOME 5 rue de la Limare F-14250 Brouay	Tel. +33 2 31 37 92 86 Fax +33 2 31 74 68 15
	Paris Est	SEW-USOCOME Résidence Le Bois de Grâce 2, allée des Souches Vertes F-77420 Champs sur Marne	Tel. +33 1 64 68 40 50 Fax +33 1 64 68 45 00
	Paris Ouest	SEW-USOCOME 42 avenue Jean Jaurès F-78580 Maule	Tel. +33 1 30 90 89 86 Fax +33 1 30 90 93 15
	Paris Picardie	SEW-USOCOME 25 bis, rue Kléber F-92300 Levallois Perret	Tel. +33 1 41 05 92 74 Fax +33 1 41 05 92 75
	Paris Sud	SEW-USOCOME 6. chemin des Bergers Lieu-dit Marchais F-91410 Roinville sous Dourdan	Tel. +33 1 60 81 10 56 Fax +33 1 60 81 10 57
	Provence	SEW-USOCOME Résidence Les Hespérides Bât. B2 67, boulevard des Alpes F-13012 Marseille	Tel. +33 4 91 18 00 11 Fax +33 4 91 18 00 12
	Pyrénées	SEW-USOCOME 179, route de Grazac F-31190 Caujac	Tel. +33 5 61 08 15 85 Fax +33 5 61 08 16 44

France			
	Sud-Atlantique	SEW-USOCOME 12, rue des Pinsons F-44120 Vertou	Tel. +33 2 40 80 32 23 Fax +33 2 40 80 32 13

Algeria			
Sales	**Alger**	Réducom 16, rue des Frères Zaghnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr

Argentina			
Assembly **Sales** **Service**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar http://www.sew-eurodrive.com.ar

Australia			
Assembly **Sales** **Service**	**Melbourne**	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
	Perth	SEW-EURODRIVE PTY. LTD. 105 Robinson Avenue Belmont, W.A. 6104	Tel. +61 8 9478-2688 Fax +61 8 9277-7572 enquires@sew-eurodrive.com.au
	Brisbane	SEW-EURODRIVE PTY.LTD. 1 /34 Collinsvale St Rocklea, Queensland, 4106	Tel. +61 7 3272-7900 Fax +61 7 3272-7901 enquires@sew-eurodrive.com.au
Technical Offices	**Adelaide**	SEW-EURODRIVE PTY. LTD. Unit 1/601 Anzac Highway Glenelg, S.A. 5045	Tel. +61 8 8294-8277 Fax +61 8 8294-2893 enquires@sew-eurodrive.com.au
	Townsville	SEW-EURODRIVE PTY. LTD. 12 Leyland Street Garbutt, QLD 4814	Tel. +61 7 4779 4333 Fax +61 7 4779 5333 enquires@sew-eurodrive.com.au

Austria			
Assembly **Sales** **Service**	**Wien**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://sew-eurodrive.at sew@sew-eurodrive.at
Technical Offices	**Linz**	SEW-EURODRIVE Ges.m.b.H. Reuchlinstr. 6/3 A-4020 Linz	Tel. +43 732 655 109-0 Fax +43 732 655 109-20 tb-linz@sew-eurodrive.at
	Graz	SEW-EURODRIVE Ges.m.b.H. Grabenstraße 231 A-8045 Graz	Tel. +43 316 685 756-0 Fax +43 316 685 755 tb-graz@sew-eurodrive.at
	Dornbirn	SEW-EURODRIVE Ges.m.b.H. Lustenauerstraße 27/1 A-6850 Dornbirn	Tel. +43 5572 3725 99-0 Fax +43 5572 3725 99-20 tb-dornbirn@sew-eurodrive.at

Bangladesh			
Sales	**Dhaka**	Jainex Industrial and Engineering Ltd B 12 Apon Nibash East Nasirabad Bangladesh	Tel. +880 1713103502 Fax +880 31 613041 jainexbd@onlinectg.net

Belarus			
Sales	**Minsk**	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel.+375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by

Belgium			
Assembly **Sales** **Service**	**Brüssel**	SEW Caron-Vector S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	**Industrial Gears**	SEW Caron-Vector S.A. Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be
Technical Office	**Vlaanderen**	SEW Caron-Vector S.A. Verlorenbroodstraat, 122, bus 6 B-9820 Merelbeke	Tel. +32 92 1686 25 Fax +32 92 2741 55

Brazil			
Production **Sales** **Service**	**Sao Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 – Rodovia Presidente Dutra Km 208 Guarulhos – 07251-250 - SP SAT – SEW ATENDE – 0800 7700496	Tel. +55 11 6489-9133 Fax +55 11 6480-3328 http://www.sew.com.br sew@sew.com.br
	Additional addresses for service in Brazil provided on request!		

Bulgaria			
Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago de Chile**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

China			
Production **Assembly** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
Assembly **Sales** **Service**	**Suzhou**	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267891 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn

Colombia			
Assembly **Sales** **Service**	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sewcol@sew-eurodrive.com.co

Croatia			
Sales **Service**	**Zagreb**	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Sales	**Praha**	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121234 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Technical Offices	**Brno**	SEW-EURODRIVE CZ S.R.O. Křenová 52 CZ -60200 Brno	Tel. +420 543256151 + 543256163 Fax +420 543256845
	Hradec Králové	SEW-EURODRIVE CZ S.R.O. Čechova 498 CZ-50202 Hradec Králové	Tel. +420 495510141 Fax +420 495521313
	Plzeň	SEW-EURODRIVE CZ S.R.O. Areal KRPA a.s. Zahradni 173/2 CZ-32600 Plzeň	Tel. +420 378775300 Fax +420 377970710
	Klatovy	SEW-EURODRIVE CZ S.R.O. Technická kancelář Klatovy Domažlická 800 CZ-33901 Klatovy	Tel. +420 376310729 Fax +420 376310725

Denmark			
Assembly **Sales** **Service**	**Kopenhagen**	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk

Egypt			
Sales **Service**	**Cairo**	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 + 1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg

Estonia			
Sales	**Tallin**	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly **Sales** **Service**	**Lahti**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Technical Offices	**Helsinki**	SEW-EURODRIVE OY Luutnantintie 5 FIN-00410 Helsinki	Tel. +358 201 589-300 Fax + 358 9 5666-311 sew@sew.fi
	Vaasa	SEW-EURODRIVE OY Hietasaarenkatu 18 FIN-65100 Vaasa	Tel. +358 201 589-300 Fax +358 6 3127-470 sew@sew.fi
	Rovaniemi	SEW-EURODRIVE OY Valtakatu 4 A FIN-96100 Rovaniemi	Tel. +358 201 589-300 Fax +358 201 589-239 sew@sew.fi
Production **Assembly** **Service**	**Karkkila**	SEW Industrial Gears OY Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Gabon			
Sales	**Libreville**	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12

Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Technical Offices	**London**	SEW-EURODRIVE Ltd. 764 Finchely Road, Temple Fortune GB-London N.W.11 7TH	Tel. +44 20 8458-8949 Fax +44 20 8458-7417
	Midlands	SEW-EURODRIVE Ltd. 5 Sugar Brook court, Aston Road, Bromsgrove, Worcs B60 3EX	Tel. +44 1527 877-319 Fax +44 1527 575-245
	Scotland	SEW-EURODRIVE Ltd. Scottish Office No 37 Enterprise House Springkerse Business Park GB-Stirling FK7 7UF Scotland	Tel. +44 17 8647-8730 Fax +44 17 8645-0223

Greece			
Sales **Service**	**Athen**	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr

Greece			
Technical Office	**Thessaloniki**	Christ. Boznos & Son S.A. Maiandrou 21 562 24 Evosmos, Thessaloniki	Tel. +30 2 310 7054-00 Fax +30 2 310 7055-15 info@boznos.gr

Hong Kong			
Assembly **Sales** **Service**	**Hong Kong**	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 2 7960477 + 79604654 Fax +852 2 7959129 contact@sew-eurodrive.hk

Hungary			
Sales **Service**	**Budapest**	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu

Iceland			
Sales	**Reykjavik**	Vélaverk ehf. Bolholti 8, 3h. IS - 105 Reykjavik	Tel. +354 568 3536 Fax +354 568 3537 velaverk@velaverk.is

India			
Assembly **Sales** **Service**	**Vadodara**	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com sales@seweurodriveindia.com subodh.ladwa@seweurodriveindia.com
Technical Offices	**Bangalore**	SEW-EURODRIVE India Private Limited 308, Prestige Centre Point 7, Edward Road Bangalore - 560052 - Karnataka	Tel. +91 80 22266565 Fax +91 80 22266569 salesbang@seweurodriveindia.com ganesh@seweurodriveindia.com
	Kolkata	SEW EURODRIVE India Private Limited 2nd floor, Room No. 35 Chowringhee Court 55, Chowringhee Road Kolkata - 700 071 - West Bengal	Tel. +91 33 22827457 Fax +91 33 22894204 saleskal@seweurodriveindia.com a.j.biswas@seweurodriveindia.com
	Chandigarh	SEW EURODRIVE India Private Limited Sujit Kumar Mishra H.No.5464/3 Modern Housing Complex Manimajra Chandigarh -160101	Tel. +91 9878469579 Fax +91 1722738664 saleschand@seweurodriveindia.com
	Chennai	SEW-EURODRIVE India Private Limited 2nd Floor, Josmans Complex, No. 5, McNichols Road, Chetpet Chennai - 600031 - Tamil Nadu	Tel. +91 44 42849813 Fax +91 44 42849816 saleschen@seweurodriveindia.com c.v.shivkumar@seweurodriveindia.com
	Coimbatore	SEW-EURODRIVE India Private Limited Office No 60 Arpee Centre (Opp Annapoorna Hotel) 420 N, NSR Road, Saibaba Colony Coimbatore 641 0111 - Tamil Nadu	Tel. +91 422 2455420 Fax +91 422 2443988 salescmb@seweurodriveindia.com p.selvakumar@seweurodriveindia.com
	Madgaon	SEW-EURODRIVE India Private Limited Flat No.-G1, Shivas-Laxmi Prasad Co-Operative Housing Society, Padmanarayan Estate, Near Jivottaam Math, Gagole Madgao, Goa - 403 602	samrat.chakravorty@seweurodriveindia.com

India			
	Hyderabad	SEW-EURODRIVE India Private Limited 408, 4th Floor, Meridian Place Green Park Road Amerpeet Hyderabad - 500016 - Andhra Pradesh	Tel. +91 40 23414698 Fax +91 40 23413884 saleshyd@seweurodriveindia.com ma.choudary@seweurodriveindia.com
	Mumbai	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza, J.B. Nagar, Andheri Kurla Road, Andheri (E) Mumbai - 400059 - Maharashtra	Tel. +91 22 28348440 Fax +91 22 28217858 salesmumbai@seweurodriveindia.com p.s.ray@seweurodriveindia.com
	New Delhi	SEW-EURODRIVE India Private Limited 418-419, Suneja Tower-1 District Centre, Janak Puri New Delhi 110 058	Tel. +91 11 25544111 Fax +91 11 25544113 salesdelhi@seweurodriveindia.com vikram.juneja@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Office No. 2 & 7, First Floor, Triveni Apartment Model Colony, Gokhale Road Pune 411016 - Maharashtra	Tel. +91 20 25671751 Fax +91 20 25661668 salespune@seweurodriveindia.com praveen.hosur@seweurodriveindia.com
	Raipur	SEW-EURODRIVE India Private Limited Flat No-0-102, First Floor Satyam Appt., Golchha Park Nr Mining Office, Ring Road-1 Raipur 492 001 - Chhattisgarh	Tel. +91 9893290624 sutanu.sarkar@seweurodriveindia.com

Indonesia			
Technical Office	**Jakarta**	SEW-EURODRIVE Pte Ltd. Jakarta Liaison Office, Menara Graha Kencana Jl. Perjuangan No. 88, LT 3 B, Kebun Jeruk, Jakarta 11530, Indonesia	Tel. +62 21 5359066 Fax +62 21 5363686 Service Hotline: +65 61000 739 sew@cbn.net.id

Ireland			
Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alperton.ie http://www.alperton.ie

Israel			
Sales	**Tel-Aviv**	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il

Italy			
Assembly **Sales** **Service**	**Milano**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Technical Offices	**Bologna**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via della Grafica, 47 I-40064 Ozzano dell'Emilia (Bo)	Tel. +39 051 65-23-801 Fax +39 051 796-595
	Caserta	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Carlo III Km. 23,300 I-81020 S. Nicola la Strada (Caserta)	Tel. +39 0823 219011 Fax +39 0823 421414
	Firenze	RIMA Via Einstein, 14 I-50013 Campi Bisenzio (Firenze)	Tel. +39 055 898 58-21 Fax +39 055 898 58-30

Italy			
	Pescara	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Viale Europa,132 I-65010 Villa Raspa di Spoltore (PE)	Tel. +39 085 41-59-427 Fax +39 085 41-59-643
	Torino	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Filiale Torino c.so Unione Sovietica 612/15 - int. C I-11035 Torino	Tel. +39 011 3473780 Fax +39 011 3473783
	Verona	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via P. Sgulmero, 27/A I-37132 Verona	Tel. +39 045 89-239-11 Fax +39 045 97-6079

Ivory Coast			
Sales	**Abidjan**	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36

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
Technical Offices	**Fukuoka**	SEW-EURODRIVE JAPAN CO., LTD. C-go, 5th-floor, Yakuin-Hiruzu-Bldg. 1-5-11, Yakuin, Chuo-ku Fukuoka, 810-0022	Tel. +81 92 713-6955 Fax +81 92 713-6860 sewkyushu@jasmine.ocn.ne.jp
	Osaka	SEW-EURODRIVE JAPAN CO., LTD. B-Space EIRAI Bldg., 3rd Floor 1-6-9 Kyoumachibori, Nishi-ku, Osaka, 550-0003	Tel. +81 6 6444--8330 Fax +81 6 6444--8338 sewosaka@crocus.ocn.ne.jp
	Tokyo	SEW-EURODRIVE JAPAN CO., LTD. Izumi-Bldg. 5 F 3-2-15 Misaki-cho Chiyoda-ku, Tokyo 101-0061	Tel. +81 3 3239-0469 Fax +81 3 3239-0943 sewtokyo@basil.ocn.ne.jp

Korea			
Assembly **Sales** **Service**	**Ansan-City**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr
Technical Offices	**Daegu**	SEW-EURODRIVE KOREA Co., Ltd. No.1108 Sungan officetel 87-36, Duryu 2-dong, Dalseo-ku Daegu 704-712	Tel. +82 53 650-7111 Fax +82 53 650-7112
	DaeJeon	SEW-EURODRIVE KOREA Co., Ltd. No. 1502, Hongin officetel 536-9, Bongmyung-dong, Yusung-ku Daejeon 305-301	Tel. +82 42 828-6461 Fax +82 42 828-6463
	Kwangju	SEW-EURODRIVE KOREA Co., Ltd. 4fl., Dae-Myeong B/D 96-16 Unam-dong, Buk-ku Kwangju 500-170	Tel. +82 62 511-9172 Fax +82 62 511-9174

Korea			
	Seoul	SEW-EURODRIVE KOREA Co., Ltd. No.504 Sunkyung officetel 106-4 Kuro 6-dong, Kuro-ku Seoul 152-054	Tel. +82 2 862-8051 Fax +82 2 862-8199

Latvia			
Sales	**Riga**	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com

Lebanon			
Sales	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com

Lithuania			
Sales	**Alytus**	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly **Sales** **Service**	**Brüssel**	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be

Malaysia			
Assembly **Sales** **Service**	**Johore**	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
Technical Offices	**Kota Kinabalu**	SEW-EURODRIVE Sdn Bhd (Kota Kinabalu Branch) Lot No. 2,1st Floor, Inanam Baru Phase III, Miles 5.1 /2, Jalan Tuaran, Inanam 89350 Kota Kinabalu Sabah, Malaysia	Tel. +60 88 424792 Fax +60 88 424807
	Kuala Lumpur	SEW-EURODRIVE Sdn. Bhd. No. 2, Jalan Anggerik Mokara 31/46 Kota Kemuning Seksyen 31 40460 Shah Alam Selangor Darul Ehsan	Tel. +60 3 5229633 Fax +60 3 5229622 sewpjy@po.jaring.my
	Kuching	SEW-EURODRIVE Sdn. Bhd. Lot 268, Section 9 KTLD Lorong 9, Jalan Satok 93400 Kuching, Sarawak East Malaysia	Tel. +60 82 232380 Fax +60 82 242380
	Penang	SEW-EURODRIVE Sdn. Bhd. No. 38, Jalan Bawal Kimsar Garden 13700 Prai, Penang	Tel. +60 4 3999349 Fax +60 4 3999348 seweurodrive@po.jaring.my

Mexico			
Assembly **Sales** **Service**	**Queretaro**	SEW-EURODRIVE MEXIKO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Queretaro C.P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Morocco			
Sales	**Casablanca**	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu

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. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Technical Office	**Palmerston North**	SEW-EURODRIVE NEW ZEALAND LTD. C/-Grant Shearman, RD 5, Aronui Road Palmerston North	Tel. +64 6 355-2165 Fax +64 6 355-2316 sales@sew-eurodrive.co.nz

Norway			
Assembly **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES 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			
Technical Office	**Manila**	SEW-EURODRIVE Pte Ltd Manila Liaison Office Suite 110, Ground Floor Comfoods Building Senator Gil Puyat Avenue 1200 Makati City	Tel. +63 2 894275254 Fax +63 2 8942744 sewmla@i-next.net

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl

Poland			
Technical Office	**Tychy**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Nad Jeziorem 87 PL-43-100 Tychy	Tel. +48 32 2175026 + 32 2175027 Fax +48 32 2277910
	Bydgoszcz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Fordońska 246 PL-85-959 Bydgoszcz	Tel. +48 52 3606590 Fax +48 52 3606591
	Poznań	SEW-EURODRIVE Polska Sp.z.o.o. ul. Romana Maya 1, pokój 202 PL-61-371 Poznań	Tel. +48 61 8741640 Fax +48 61 8741641
	Szczecinek	SEW-EURODRIVE Polska Sp.z.o.o. ul. Mickiewicza 2 pok. 36 PL-78-400 Szczecinek	Tel. +48 94 3728820 Fax +48 94 3728821

Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Technical Offices	**Lisboa**	SEW-EURODRIVE, LDA. Tertir Edifício Lisboa Gabinete 119 P-2615 Alverca do Ribatejo	Tel. +351 21 958-0198 Fax +351 21 958-0245 esc.lisboa@sew-eurodrive.pt
	Porto	SEW-EURODRIVE, LDA. Av. 25 de Abril, 68 4440-502 Valongo	Tel. +351 229 350 383 Fax +351 229 350 384 MobilTel. +351 9 32559110 esc.porto@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucureşti**	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Technical Office	**Yekaterinburg**	ZAO SEW-EURODRIVE Kominterna Str. 16 Office 614 RUS-620078 Ekaterinburg	Tel. +7 343 310 3977 Fax +7 343 310 3978 eso@sew-eurodrive.ru
	Irkutsk	ZAO SEW-EURODRIVE 5-Armii Str., 31 RUS-664011 Irkutsk	Tel. +7 3952 25 5880 Fax +7 3952 25 5881 iso@sew-eurodrive.ru
	Moskau	ZAO SEW-EURODRIVE RUS-107023 Moskau	Tel. +7 495 9337090 Fax +7 495 9337094 mso@sew-eurodrive.ru
	Novosibirsk	ZAO SEW-EURODRIVE pr. K Marksa, d.30 RUS-630087 Novosibirsk	Tel. +7 383 3350200 Fax +7 383 3462544 nso@sew-eurodrive.ru
	Togliatti	ZAO SEW-EURODRIVE Sportivnaya Str. 4B, office 2 Samarskaya obl. RUS-445057 Togliatti	Tel. +7 8482 710529 Fax +7 8482 810590

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 senemeca@sentoo.sn

Serbia			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SCG-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.co.yu

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-83554 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za dross@sew.co.za
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za

South Africa			
	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za
Technical Offices	**Port Elizabeth**	SEW-EURODRIVE PTY LTD. 5 b Linsay Road Neave Township 6000 Port Elizabeth	Tel. +27 41 453-0303 Fax +27 41 453-0305 dswanepoel@sew.co.za
	Richards Bay	SEW-EURODRIVE PTY LTD. 25 Eagle Industrial Park Alton Richards Bay P.O. Box 458 Richards Bay 3900	Tel. +27 35 797-3805 Fax +27 35 797-3819 dtait@sew.co.za

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Technical Offices	**Barcelona**	Delegación Barcelona Avenida Francesc Maciá 40-44 Oficina 3.1 E-08206 Sabadell (Barcelona)	Tel. +34 93 7162200 Fax +34 93 7233007
	Lugo	Delegación Noroeste Apartado, 1003 E-27080 Lugo	Tel. +34 639 403348 Fax +34 982 202934
	Madrid	Delegación Madrid Gran Via. 48-2° A-D E-28220 Majadahonda (Madrid)	Tel. +34 91 6342250 Fax +34 91 6340899
	Seville	MEB Pólogono Calonge, C/A Nave 2 - C E-41.077 Sevilla	Tel. +34 954 356 361 Fax +34 954 356 274 mebsa.sevilla@mebsa.com
	Valencia	MEB Músico Andreu i Piqueres, 4 E-46.900 Torrente (Valencia)	Tel. +34 961 565 493 Fax +34 961 566 688 mebsa.valencia@mebsa.com

Sri Lanka			
Sales	**Colombo**	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se
Technical Offices	**Göteborg**	SEW-EURODRIVE AB Gustaf Werners gata 8 S-42131 Västra Frölunda	Tel. +46 31 70968-80 Fax +46 31 70968-93
	Malmö	SEW-EURODRIVE AB Borrgatan 5 S-21124 Malmö	Tel. +46 40 68064-80 Fax +46 40 68064-93
	Stockholm	SEW-EURODRIVE AB Björkholmsvägen 10 S-14125 Huddinge	Tel. +46 8 44986-80 Fax +46 8 44986-93

Sweden			
	Skellefteå	SEW-EURODRIVE AB Trädgårdsgatan 8 S-93131 Skellefteå	Tel. +46 910 7153-80 Fax +46 910 7153-93

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Technical Offices	**Rhaetian Switzerland**	André Gerber Es Perreyres CH-1436 Chamblon	Tel. +41 24 445 3850 Fax +41 24 445 4887
	Bern / Solothurn	Rudolf Bühler Muntersweg 5 CH-2540 Grenchen	Tel. +41 32 652 2339 Fax +41 32 652 2331
	Central Switzerland and Ticino	Beat Lütolf Baumacher 11 CH-6244 Nebikon	Tel. +41 62 756 4780 Fax +41 62 756 4786
	Zürich	René Rothenbühler Nörgelbach 7 CH-8493 Saland	Tel. +41 52 386 3150 Fax +41 52 386 3213
	Bodensee and East Switzerland	Markus Künzle Eichweg 4 CH-9403 Goldach	Tel. +41 71 845 2808 Fax +41 71 845 2809

Taiwan (R.O.C.)			
Sales	**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
	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Hwa South Road, Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net

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
Technical Offices	**Bangkok**	SEW-EURODRIVE (Thailand) Ltd. 6th floor, TPS Building 1023, Phattanakarn Road Suanluang Bangkok,10250	Tel. +66 2 7178149 Fax +66 2 7178152 sewthailand@sew-eurodrive.com
	Hadyai	SEW-EURODRIVE (Thailand) Ltd. Hadyai Country Home Condominium 59/101 Soi.17/1 Rachas-Utid Road. Hadyai, Songkhla 90110	Tel. +66 74 359441 Fax +66 74 359442 sewthailand@sew-eurodrive.com
	Khonkaen	SEW-EURODRIVE (Thailand) Ltd. 4th Floor, Kaow-U-HA MOTOR Bldg, 359/2, Mitraphab Road. Muang District Khonkaen 40000	Tel. +66 43 225745 Fax +66 43 324871 sew-thailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service 5, Rue El Houdaibiah 1000 Tunis	Tel. +216 71 4340-64 + 71 4320-29 Fax +216 71 4329-76 tms@tms.com.tn

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Technical Offices	**Adana**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Kizilay Caddesi 8 Sokak No 6 Daðtekin Is Merkezi Kat 4 Daire 2 TR-01170 SEYHAN / ADANA	Tel. +90 322 359 94 15 Fax +90 322 359 94 16
	Ankara	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Özcelik Is Merkezi, 14. Sok, No. 4/42 TR-06370 Ostim/Ankara	Tel. +90 312 3853390 / +90 312 3544715 / +90 312 3546109 Fax +90 312 3853258
	Bursa	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Besevler Küçük Sanayi Parkoop Parçacilar Sitesi 48. Sokak No. 47 TR Nilüfer/Bursa	Tel. +90 224 443 4556 Fax +90 224 443 4558
	Izmir	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. 1203/11 Sok. No. 4/613 Hasan Atli Is Merkezi TR-35110 Yenisehir-Izmir	Tel. +90 232 4696264 Fax +90 232 4336105

Ukraine			
Sales **Service**	**Dnepropetrovsk**	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
Sales	**Kiev**	SEW-EURODRIVE GmbH S. Oleynika str. 21 02068 Kiev	Tel. +380 44 503 95 77 Fax +380 44 503 95 78 kso@sew-eurodrive.ua
	Donetsk	SEW-EURODRIVE GmbH 25th anniversary of RKKA av. 1-B, of. 805 Donetsk 83000	Tel. +380 62 38 80 545 Fax +380 62 38 80 533 dso@sew-eurodrive.ua

Uruguay			
Sales	**Montevideo**	SEW-EURODRIVE Uruguay, S. A. German Barbato 1526 CP 11200 Montevideo	Tel. +598 2 90181-89 Fax +598 2 90181-88 sewuy@sew-eurodrive.com.uy

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	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 Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com

USA			
	Philadelphia/PA	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
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net

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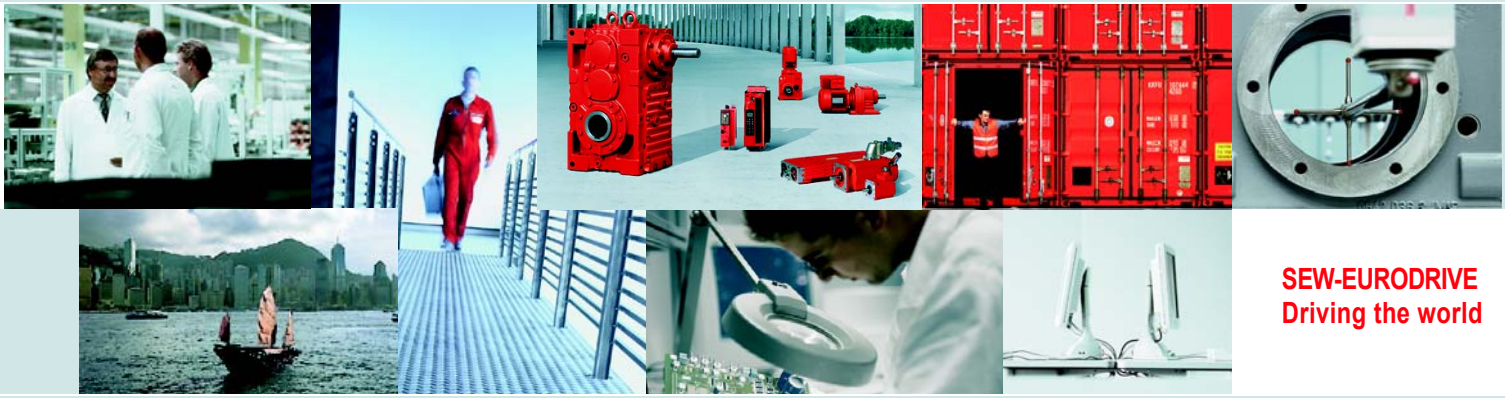

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