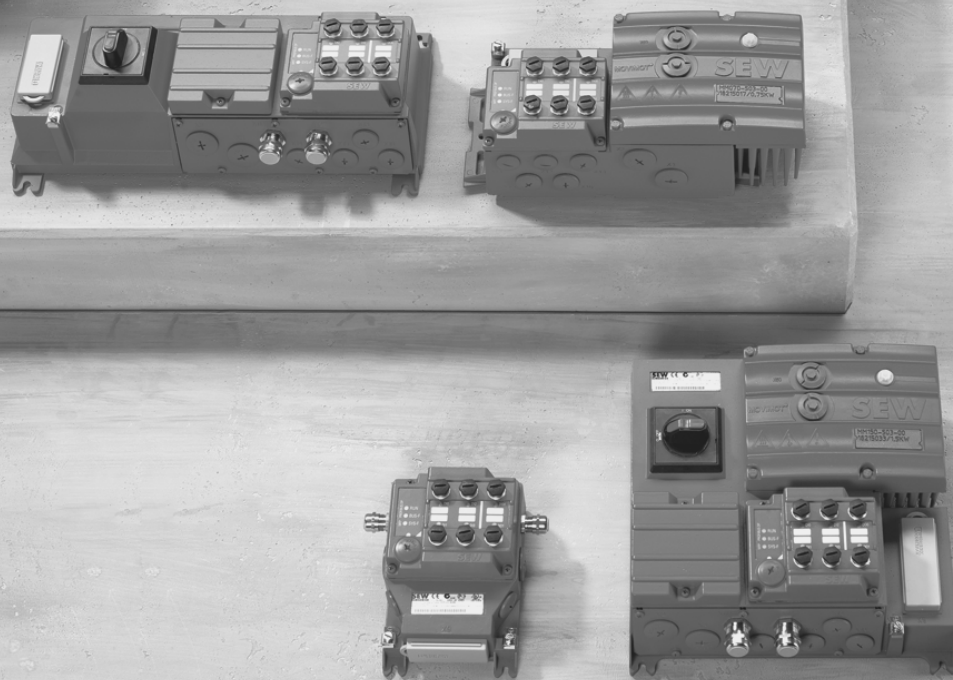




SEW
EURODRIVE

Manual



EtherNet/IP™

Drive System for Decentralized Installation
EtherNet/IP™ Interfaces, Field Distributors



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



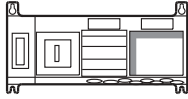

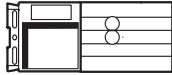

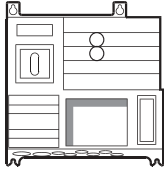

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1 Valid components

1 Valid components

This manual applies to the following EtherNet/IP™ products:

Connection module ..Z.1. with fieldbus interface	
	4 x I / 2 x IO (M12) 
EtherNet/IP™	MFE62A/Z21D
Field distributor ..Z.3. with fieldbus interface	
	4 x I / 2 x IO (M12) 
EtherNet/IP™	MFE62A/Z23D
Field distributor ..Z.6. with fieldbus interface	
	4 x I / 2 x IO (M12) 
EtherNet/IP™	MFE62A/Z26F/AF0
Field distributor ..Z.7. with fieldbus interface	
	4 x I / 2 x IO (M12) 
EtherNet/IP™	MFE62A/MM../Z27F.
Field distributor ..Z.8. with fieldbus interface	
	4 x I / 2 x IO (M12) 
EtherNet/IP™	MFE62A/MM../Z28F./AF0

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2 General information

2.1 About this documentation

This documentation is an integral part of the product. The documentation is intended for all employees who perform assembly, installation, startup, and service work on the product.

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

2.2 Structure of the safety notes

2.2.1 Meaning of signal words

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

Signal word	Meaning	Consequences if disregarded
▲ DANGER	Imminent hazard	Severe or fatal injuries.
▲ WARNING	Possible dangerous situation	Severe or fatal injuries.
▲ CAUTION	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the drive system or its environment.
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

2.2.2 Structure of section-related safety notes

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

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



SIGNAL WORD







Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

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

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

2.2.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

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

2.3 Rights to claim under limited warranty

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

2.4 Exclusion of liability

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

2.5 Other applicable documentation

Note also the following documentation:

- "AC Motor" operating instructions
- "MOVIMOT® MM..D" operating instructions

2.6 Product names and trademarks

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

2.7 Copyright notice

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Unauthorized reproduction, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

3 Safety notes

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

3.1 Preliminary information

The following safety notes are primarily concerned with the use of MFE62 EtherNet/IP™ interfaces/field distributors. If you use other components from SEW-EURODRIVE, also refer to the safety notes for these particular components in the corresponding documentation.

Also observe the additional safety notes provided in the individual chapters of this documentation.

3.2 General information

Never install or operate damaged products. In the event of damage, submit a complaint to the shipping company immediately.

During operation, MOVIMOT® drives can have live and bare parts as well as hot surfaces, depending on their degree of protection.

Unauthorized removal of covers, improper use, or incorrect installation and operation may result in severe injury to persons, or damage to machinery. Consult the documentation for further information.

3.3 Target group

Only qualified personnel is authorized to perform installation, startup, troubleshooting or maintenance (observing EN 60364 and CENELEC HD 384 or DIN VDE 0100 and EN 60664-1, as well as national accident prevention guidelines).

Qualified electricians in the context of these basic safety notes are all persons familiar with setup, assembly, startup and operation of the product who possess the necessary qualifications.

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

3.4 Designated use

Field distributors and fieldbus interfaces are components intended for installation in electrical systems or machines.

In case of installation in machines, startup of the field distributors and fieldbus interfaces (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in the Machinery Directive 2006/42/EC.

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

The field distributors and fieldbus interfaces meet the requirements stipulated in Low Voltage Directive 2006/95/EC. The standards listed in the declaration of conformity are applied to the field distributors and fieldbus interfaces.

Technical data and information on the connection requirements are provided on the nameplate and in the documentation; these must be observed under all circumstances.

3.4.1 Safety functions

Field distributors, fieldbus interfaces and MOVIMOT® inverters may not perform safety functions unless these functions are described and expressly permitted.

If MOVIMOT® inverters are used in safety applications, the supplementary documentation "MOVIMOT® MM..D – Functional Safety" must be observed. Use only those components in safety applications that were explicitly designed and delivered for this purpose by SEW-EURODRIVE.

3.4.2 Hoist applications

When using MOVIMOT® inverters in lifting applications, you must observe the special configuration and settings for lifting applications specified in the operating instructions for MOVIMOT®.

Do not use MOVIMOT® inverters as safety devices in lifting applications.

3.5 Transportation, storage

You must observe the notes on transportation, storage and proper handling. Comply with the requirements for climatic conditions stated in chapter "Technical data" of the manual. Tighten installed eyebolts securely. They are designed to handle the weight of the MOVIMOT® drive. Do not attach any additional loads. Use suitable, sufficiently rated handling equipment (e.g. rope guides) if required.

3.6 Installation

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

Protect the field distributors, fieldbus interfaces and MOVIMOT® inverters from excessive strain.

The following applications are prohibited unless explicitly permitted:

- Use in potentially explosive atmospheres.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications with strong mechanical oscillation and impact loads.

3.7 Electrical connection

Observe the applicable national accident prevention guidelines when working on live field distributors, fieldbus interfaces and MOVIMOT® inverters (e.g. BGV A3).

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

For notes on EMC-compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, refer to the documentation of the MOVIMOT® inverter. The manufacturer of the machine or system is responsible for maintaining the limits established by the EMC legislation.

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

3.8 Safe disconnection

The field distributors and fieldbus interfaces meet all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for protective separation to ensure protective separation.

3.9 Operation

Systems equipped with field distributors, fieldbus interfaces and MOVIMOT® inverters must be equipped with additional monitoring and protection devices according to the applicable safety guidelines, such as the law governing technical equipment, accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased hazard potential.

Do not touch live components or power connections immediately after disconnecting the MOVIMOT® inverter, the field distributor (if present) or the bus module (if present) from the supply voltage because there may still be some charged capacitors. Wait at least for 1 minute after having switched off the supply voltage.

As soon as the supply voltage is present at the field distributor, the fieldbus interfaces and the MOVIMOT® inverter, the housings must be closed, which means that:

- The MOVIMOT® inverter must be screwed on.
- The connection box cover of the field distributor (if present) and the fieldbus interface (if present) must be screwed on.
- The hybrid cable connector must be connected and screwed on.

NOTICE! The maintenance switch of the field distributor (if installed) only disconnects the connected MOVIMOT® drive or motor from the power supply system. The terminals of the field distributor remain connected to the line voltage even after the maintenance switch is activated.

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

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

NOTICE! Risk of burns: The surface temperature of the MOVIMOT® drive and of external options, e.g. the heat sink of the braking resistor, can exceed 60 °C during operation!

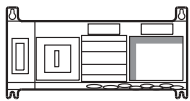
3.10 Supplementary safety notes for field distributors

3.10.1 MFZ.3. field distributor



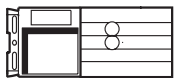
- Disconnect the unit from the power supply system before removing the fieldbus interface or the motor connector. Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.
- The fieldbus interface and the connector of the hybrid cable must be connected to the field distributor and fastened during operation.

3.10.2 MFZ.6. field distributor



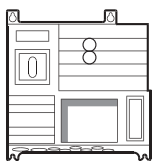
- Before removing the connection box cover for the line connection, disconnect the unit from the power supply system. Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.
- **NOTICE!** The switch only disconnects the MOVIMOT® inverter from the power supply system. The terminals of the field distributor are still connected to the power supply after activating the maintenance switch.
- During operation, the connection box cover for the line connection and the connector of the hybrid cable must be connected to the field distributor and fastened.

3.10.3 MFZ.7. field distributor



- Before removing the MOVIMOT® inverter, disconnect the unit from the power supply system. Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.
- The MOVIMOT® inverter and the connector of the hybrid cable must be connected to the field distributor and fastened during operation.

3.10.4 MFZ.8. field distributor



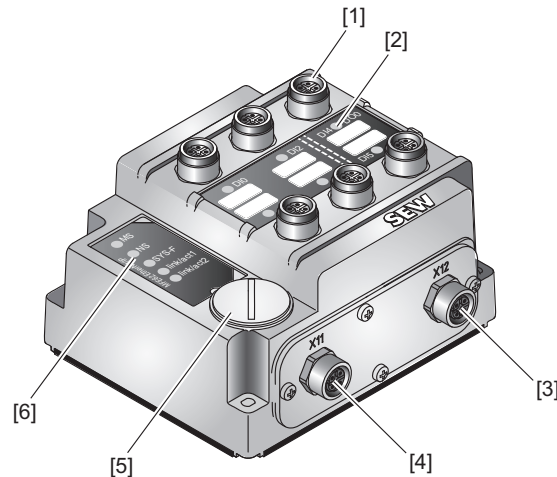
- Disconnect the unit from the power supply system before removing the connection box cover for the power supply connection or the MOVIMOT® inverter. Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.
- **NOTICE!** The maintenance switch only disconnects the connected motor from the power supply system. The terminals of the field distributor are still connected to the power supply after activating the maintenance switch.
- During operation, the terminal box cover for the power supply connection, the MOVIMOT® inverter, and the connector of the hybrid cable must be connected to the field distributor and secured.

4 Unit structure

4.1 Fieldbus interface

4.1.1 MFE62 fieldbus interface

The following figure shows the MFE62A fieldbus interface:

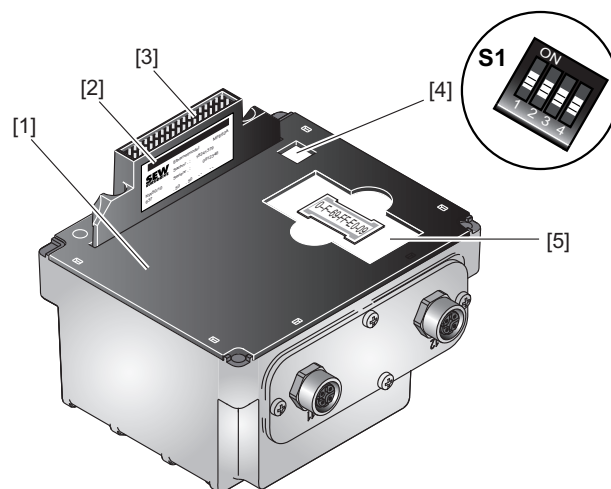


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- [1] M12 connection sockets for digital inputs/outputs
- [2] Status LEDs of digital inputs/outputs
- [3] X12 connection EtherNet/IP™ port 2
- [4] X11 connection EtherNet/IP™ port 1
- [5] Diagnostic interface (below screw fitting)
- [6] Status LEDs

4.1.2 Interface bottom side

The following figure depicts the bottom side of the fieldbus interface:

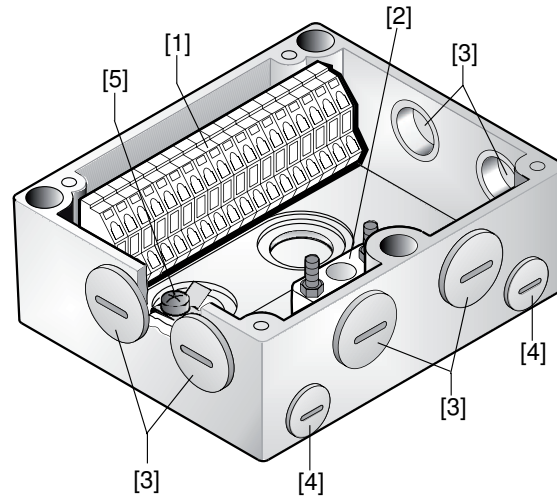


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- [1] Seal
- [2] Nameplate
- [3] Connection to connection module
- [4] DIP switch S1
- [5] Memory card with MAC-ID

4.1.3 Unit structure of MFZ connection module

The following figure shows the MFZ connection module.



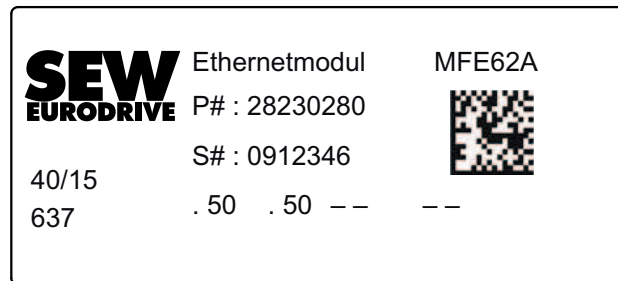
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- [1] Terminal strip X20
 - [2] Isolated terminal block for 24 V through-wiring
(NOTICE: Do not use for shielding.)
 - [3] M20 cable gland
 - [4] M12 cable gland
 - [5] Grounding terminal
- The scope of delivery includes 2 EMC cable glands.

4.2 Type designation of EtherNet/IP™ interface

4.2.1 Nameplate

The following figure gives an example for the nameplate of a fieldbus interface:



4.2.2 Type designation

The following table shows the type designation of the fieldbus interface **MFE62A/Z21D** as an example:

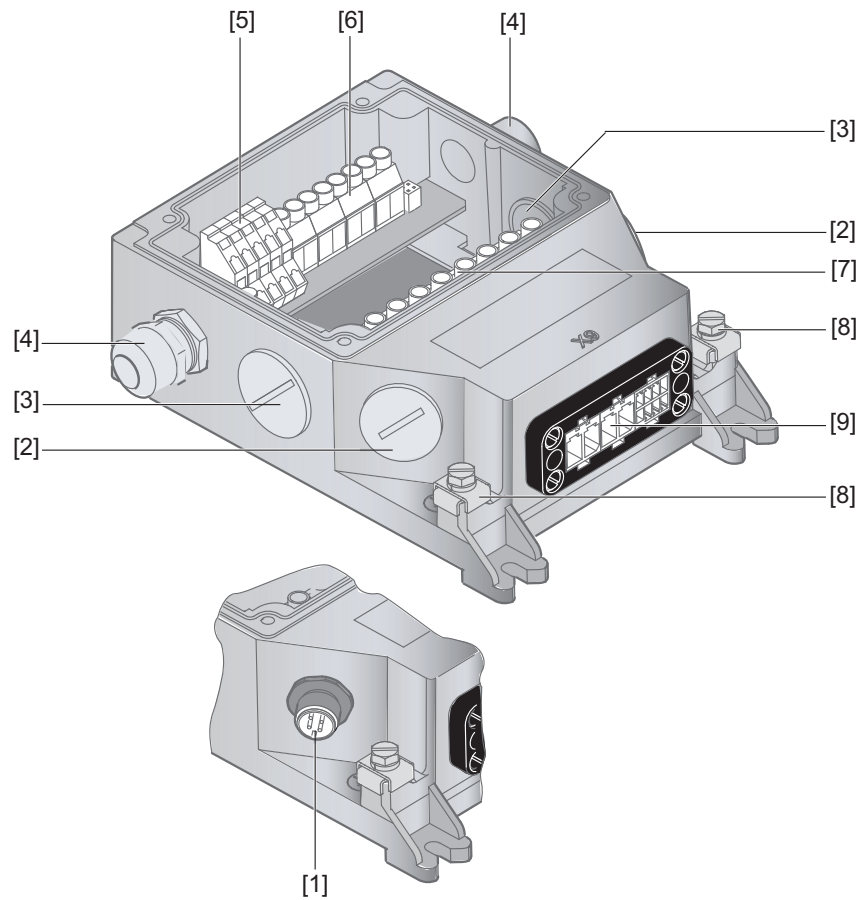
MFE	Fieldbus interface
	MFI.. = INTERBUS
	MFP.. = PROFIBUS
	MQP.. = PROFIBUS with integrated minicontroller
	MFE.. PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD.. = DeviceNet™
	MQD.. = DeviceNet™ with integrated minicontroller
62	Connections
	21 = 4 x I / 2 x O (connection via terminals)
	22 = 4 x I / 2 x O (connection via plug connector + terminals)
	32 = 6 x I (connection via plug connector + terminals)
	52 = 4 x I / 2 x I/O (connection via plug connector + terminals) for PROFINET IO
	62 = 4 x I / 2 x I/O (connection via plug connector + terminals) for EtherNet/IP™
	72 = 4 x I / 2 x I/O (connection via plug connector + terminals) for EtherCAT®
	23 = 4 x I / 2 x O (FOC rugged line, only for INTERBUS)
	33 = 6 x I (FOC rugged line, only for INTERBUS)
A	Variant
/	
Z21	Connection module
	Z11 = For INTERBUS
	Z21 = For PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z31 = For DeviceNet™
D	Variant

4 Unit structure

Field distributor

4.3 Field distributor

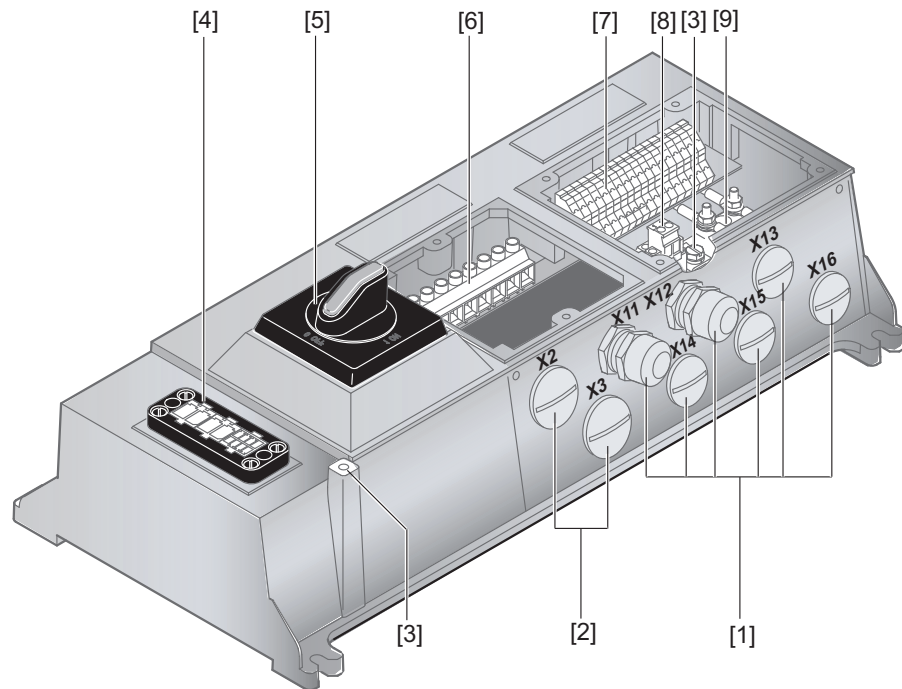
4.3.1 MF../Z.3., MQ../Z.3. field distributors



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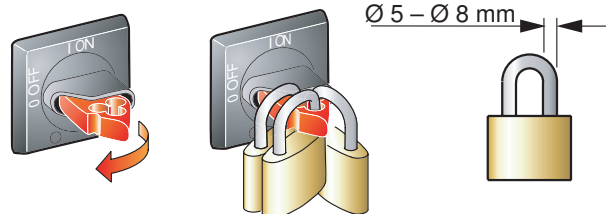
- [1] For DeviceNet™: Micro-style connector/M12 connector (X11)
- [2] 2 x M20 x 1.5
- [3] 2 x M25 x 1.5
- [4] 2 x M16 x 1.5 (2 EMC cable glands included in the delivery)
- [5] Terminals for fieldbus connection (X20)
- [6] Terminals for 24 V connection (X21)
- [7] Terminals for power supply and PE connection (X1)
- [8] Equipotential bonding connection
- [9] Hybrid cable connection to MOVIMOT® (X9)

4.3.2 MF../Z.6., MQ../Z.6. field distributors



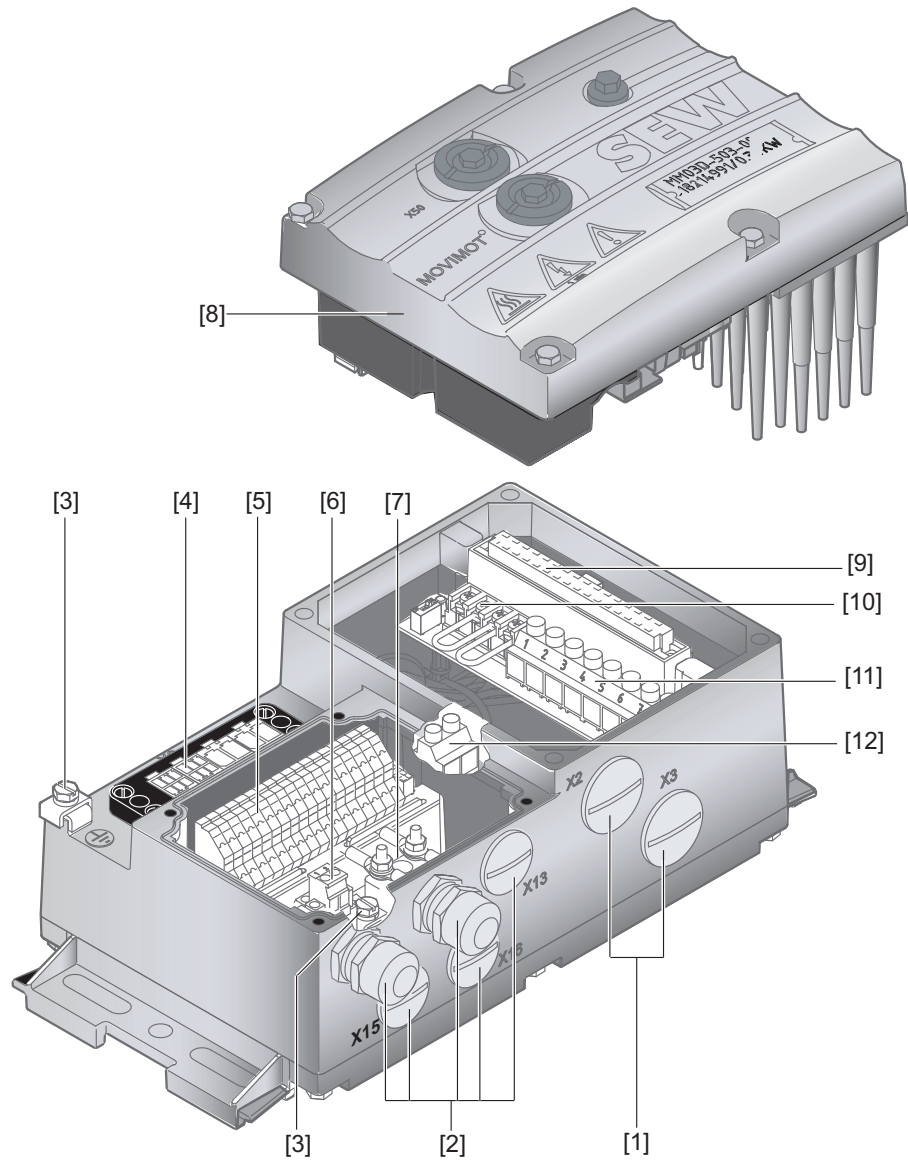
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- [1] 6 x M20 x 1.5 (delivery includes 2 EMC cable glands)
For DeviceNet™: Micro-style connector/M12 connector (X11)
- [2] 2 x M25 x 1.5
- [3] Equipotential bonding connection
- [4] Hybrid cable connection; connection to MOVIMOT® inverter (X9)
- [5] Maintenance switch **with line protection** (triple lock, color: black/red)
Only for MFZ26J design: Optional integrated feedback for position of the maintenance switch.
The feedback is evaluated at digital input DI0 (see chapter "Connection of field-bus interface inputs/outputs").



- [6] Terminals for power supply and PE connection (X1)
- [7] Terminals for bus, sensor, actuator, 24 V connection (X20)
- [8] Pluggable terminal "Safety Power" for 24 V MOVIMOT® supply (X40)
- [9] Terminal block for 24 V through-wiring (X29),
internal connection to 24 V on X20

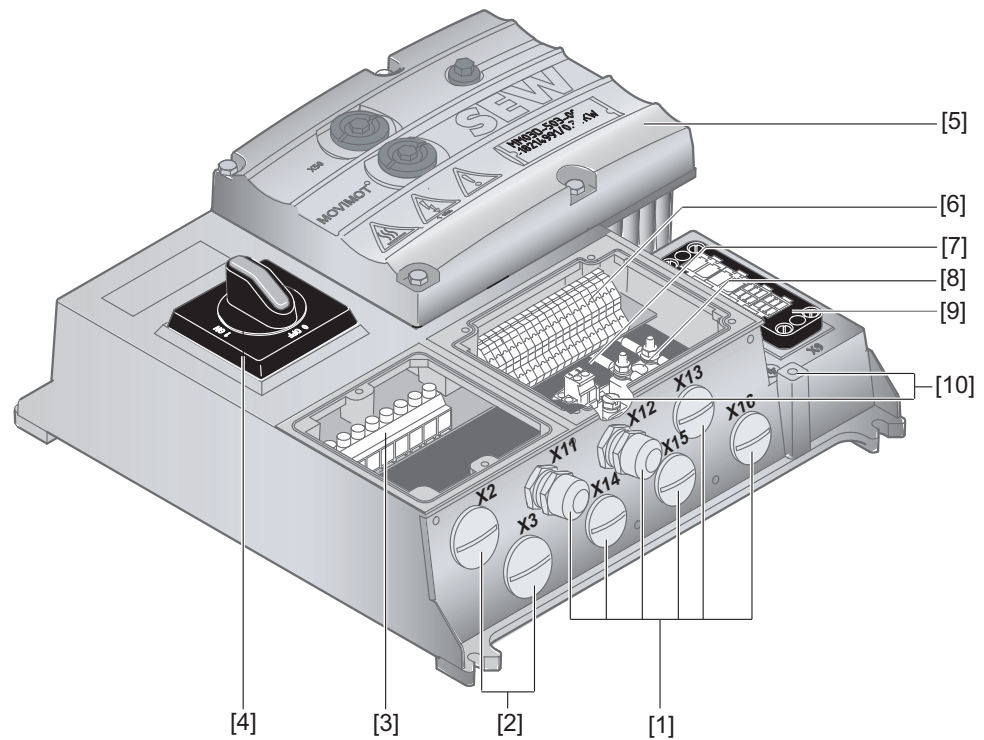
4.3.3 MF../MM../Z.7., MQ../MM../Z.7. field distributors



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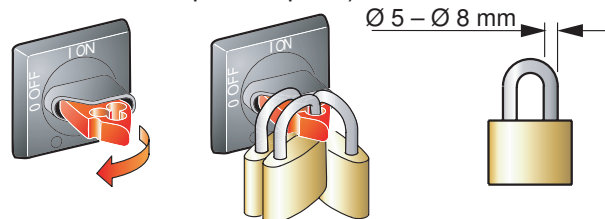
- [1] 2 x M25 x 1.5 cable glands
- [2] 5 x M20 x 1.5 cable glands (delivery includes 2 EMC cable glands)
For DeviceNet™: Micro-style connector/M12 connector (X11)
- [3] Equipotential bonding connection
- [4] Hybrid cable connection; connection to AC motor (X9)
- [5] Terminals for bus, sensor, actuator, 24 V connection (X20)
- [6] Pluggable terminal "Safety Power" for 24 V MOVIMOT® supply (X40)
- [7] Terminal block for 24 V through-wiring (X29),
internal connection to 24 V on X20
- [8] MOVIMOT® inverter
- [9] Connection to MOVIMOT® inverter
- [10] Terminals for enabling the direction of rotation
- [11] Terminals for power supply and PE connection (X1)
- [12] Terminal for integrated braking resistor

4.3.4 MF../MM../Z.8., MQ../MM../Z.8. field distributors



9007200391220363

- [1] 6 x M20 x 1.5 cable glands (delivery includes 2 EMC cable glands)
For DeviceNet™: Micro-style connector/M12 connector (X11)
- [2] 2 x M25 x 1.5 cable glands
- [3] Terminals for power supply and PE connection (X1)
- [4] Maintenance switch (triple lock, color: black/red)
Only with MFPZ28J design: Optional integrated feedback for position of the maintenance switch.
The feedback is evaluated at digital input DI0 (see chapter "Connection of field-bus interface inputs/outputs").



- [5] MOVIMOT® inverter
- [6] Terminals for bus, sensor, actuator, 24 V connection (X20)
- [7] Pluggable terminal "Safety Power" for 24 V MOVIMOT® supply (X40)
- [8] Terminal block for 24 V through-wiring (X29),
internal connection to 24 V on X20
- [9] Hybrid cable connection; connection to AC motor (X9)
- [10] Equipotential bonding connection

4 Unit structure

Type designation of EtherNet/IP™ field distributor

4.4 Type designation of EtherNet/IP™ field distributor

4.4.1 Example MF../Z.3.

The following table shows the type designation of the MF../Z.3. field distributors:

MFE 62A	Fieldbus interface	
	MFI..	= INTERBUS
	MFP../MQP..	= PROFIBUS
	MFE..	= PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD..	= DeviceNet™
/		
Z23	Connection module	
	Z13	= For INTERBUS
	Z23	= for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z33	= For DeviceNet™
A	Variant	

4.4.2 Example MF../Z.6.

The following table shows the type designation of the MF../Z.6. field distributors:

MFE 62A	Fieldbus interface	
	MFI..	= INTERBUS
	MFP../MQP..	= PROFIBUS
	MFE..	= PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD..	= DeviceNet™
/		
Z26	Connection module	
	Z16	= For INTERBUS
	Z26	= for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z36	= For DeviceNet™
F	Variant	
/		
AF0	Connection technology	
	AF0	= Metric cable entry
	AF1	= With micro-style connector/M12 connector for DeviceNet™
	AF2	= M12 plug connector for PROFIBUS
	AF3	= M12 plug connector for PROFIBUS + M12 plug connector for DC 24 V supply

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4.4.3 Example MF../MM../Z.7.

The following table shows the type designation of the MF../MM../Z.7. field distributors:

MFE 62A	Fieldbus interface	
	MFI..	= INTERBUS
	MFP../MQP..	= PROFIBUS
	MFE..	= PROFINET IO, EtherNet/IP™ or EtherCAT®
MFD../MQD..	= DeviceNet™	
/		
MM15D -503-00	MOVIMOT® inverter	
	/	
Z27	Connection module	
	Z17	= For INTERBUS
	Z27	= for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z37	= For DeviceNet™
F	Variant	
0	Connection type	
	0	= ∩
	1	= △

4 Unit structure

Type designation of EtherNet/IP™ field distributor

4.4.4 Example MF../MM../Z.8.

The following table shows the type designation of the MF../MM../Z.8. field distributors:

MFE 62A	Fieldbus interface	
	MFI..	= INTERBUS
	MFP../MQP..	= PROFIBUS
	MFE..	= PROFINET IO, EtherNet/IP™ or EtherCAT®
MFD../MQD..	= DeviceNet™	
/		
MM15D -503-00	MOVIMOT® inverter	
	/	
Z28	Connection module	
	Z18	= For INTERBUS
	Z28	= for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z38	= For DeviceNet™
F	Variant	
0	Connection type	
	0	= ∟
	1	= △
/		
AF0	Connection technology	
	AF0	= Metric cable entry
	AF1	= With micro-style connector/M12 connector for DeviceNet™
	AF2	= M12 plug connector for PROFIBUS
	AF3	= M12 plug connector for PROFIBUS + M12 plug connector for DC 24 V supply

5 Mechanical installation

5.1 Installation instructions

INFORMATION



On delivery, field distributors are equipped with transportation protection covering the plug connector of the outgoing motor circuit (hybrid cable).

This only guarantees the degree of protection IP40. To obtain the specified degree of protection, remove the transport protection and plug on the appropriate mating connector. Screw them together.

5.1.1 Assembly

- Mount field distributors on a level, vibration-proof and torsionally rigid support structure only.
- Use M5 screws and suitable washers for attaching the **MFZ.3** field distributor. Tighten the screws with a torque wrench (permitted tightening torque 2.8 – 3.1 Nm).
- Use M6 screws and suitable washers for installing **MFZ.6**, **MFZ.7** or **MFZ.8** field distributors. Tighten the screws with a torque wrench (permitted tightening torque 3.1 – 3.5 Nm).

5.1.2 Installation in damp locations or in the open

Observe the following notes for mounting the fieldbus interface and the field distributor in damp locations or outdoors:

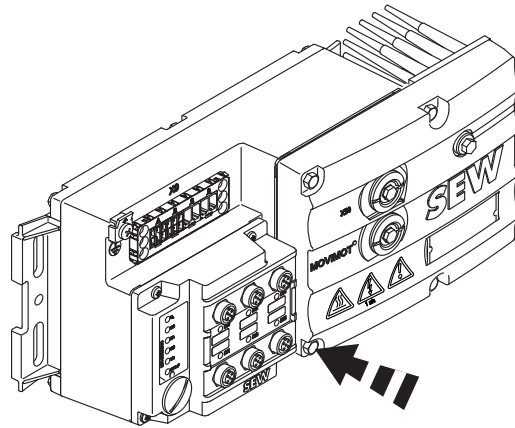
- Use suitable cable glands for the cables. Use reducing adapters, if necessary.
- Seal open cable entries and M12 connection sockets with screw plugs.
- When the cable entry on the side is used, route the cable with a drip loop.
- Thoroughly clean the sealing surface of the fieldbus interface and of the connection box cover before re-installing.

5 Mechanical installation

Tightening torques

5.2 Tightening torques

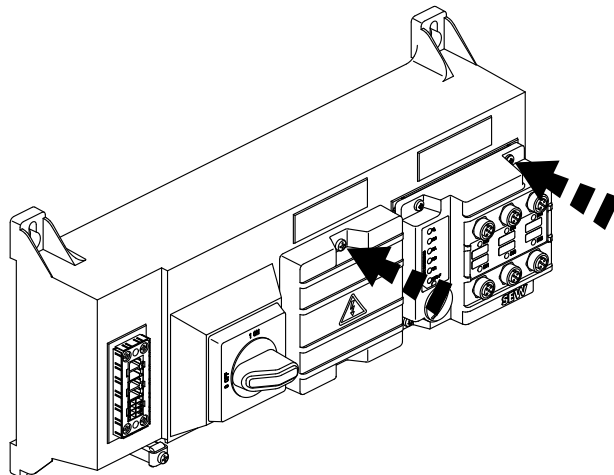
5.2.1 MOVIMOT® inverter



9007200393241611

Tighten the screws for fastening MOVIMOT® using 3.0 Nm in diametrically opposite sequence.

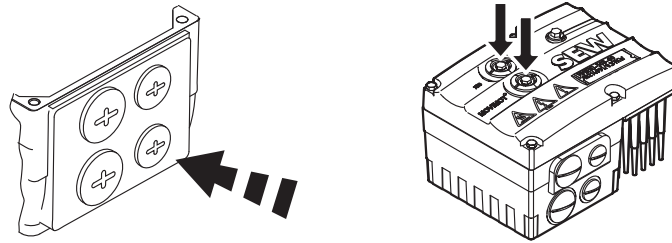
5.2.2 Fieldbus interface / connection box cover



9007200393245323

Tighten the screws on the fieldbus interfaces or connection box cover using 2.5 Nm in diametrically opposite sequence.

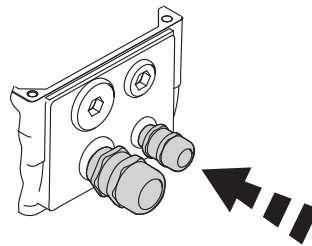
5.2.3 Screw plugs



9007200393250059

Tighten the blanking plugs and the screw plugs of potentiometer f1, and of connection X50, if applicable, using 2.5 Nm.

5.2.4 EMC cable glands



1138616971

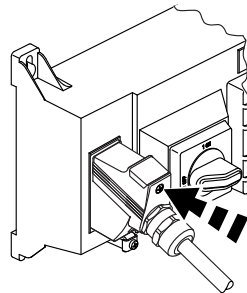
Tighten EMC cable glands supplied by SEW-EURODRIVE using the following torque ratings:

Screw fitting	Tightening torque
M12 x 1.5	2.5 Nm – 3.5 Nm
M16 x 1.5	3.0 Nm – 4.0 Nm
M20 x 1.5	3.5 Nm – 5.0 Nm
M25 x 1.5	4.0 Nm – 5.5 Nm

The cable retention in the cable gland must be able to withstand the following removal force:

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

5.2.5 Motor cable



9007200393364491

Tighten screws for motor cables using 1.2 – 1.8 Nm.

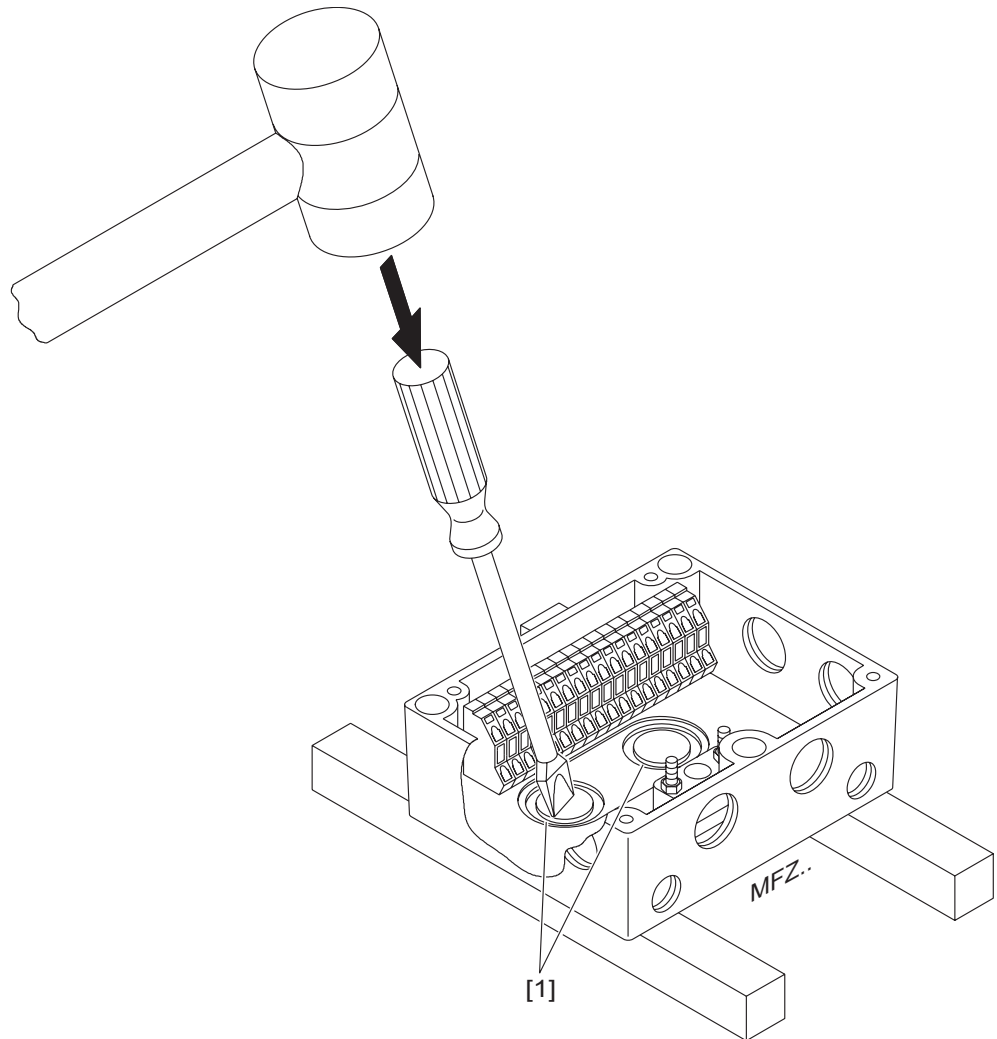
5.3 Fieldbus interfaces MF../MQ..

MF../MQ.. fieldbus interfaces can be installed as follows:

- Installation on MOVIMOT® connection box
- Installation in the field (= mounting close to the motor)

5.3.1 Installation on MOVIMOT® connection box

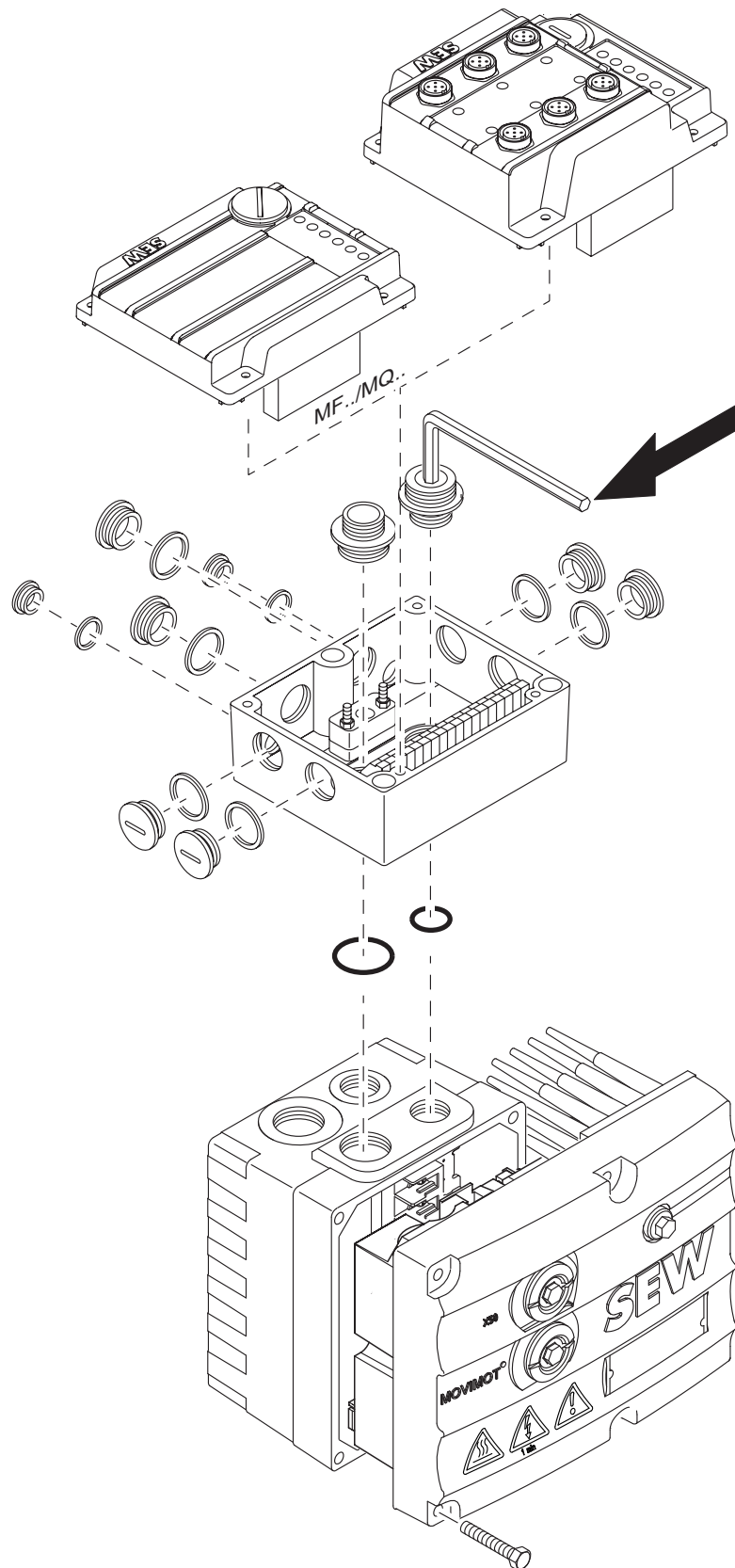
1. Remove the knock outs at the MFZ lower section from the inside as shown in the following figure.



1138656139

- ⇒ If necessary, deburr the break lines that occur after the knock outs [1] have been removed.

2. Mount the fieldbus interface to the MOVIMOT® connection box, according to the following figure.



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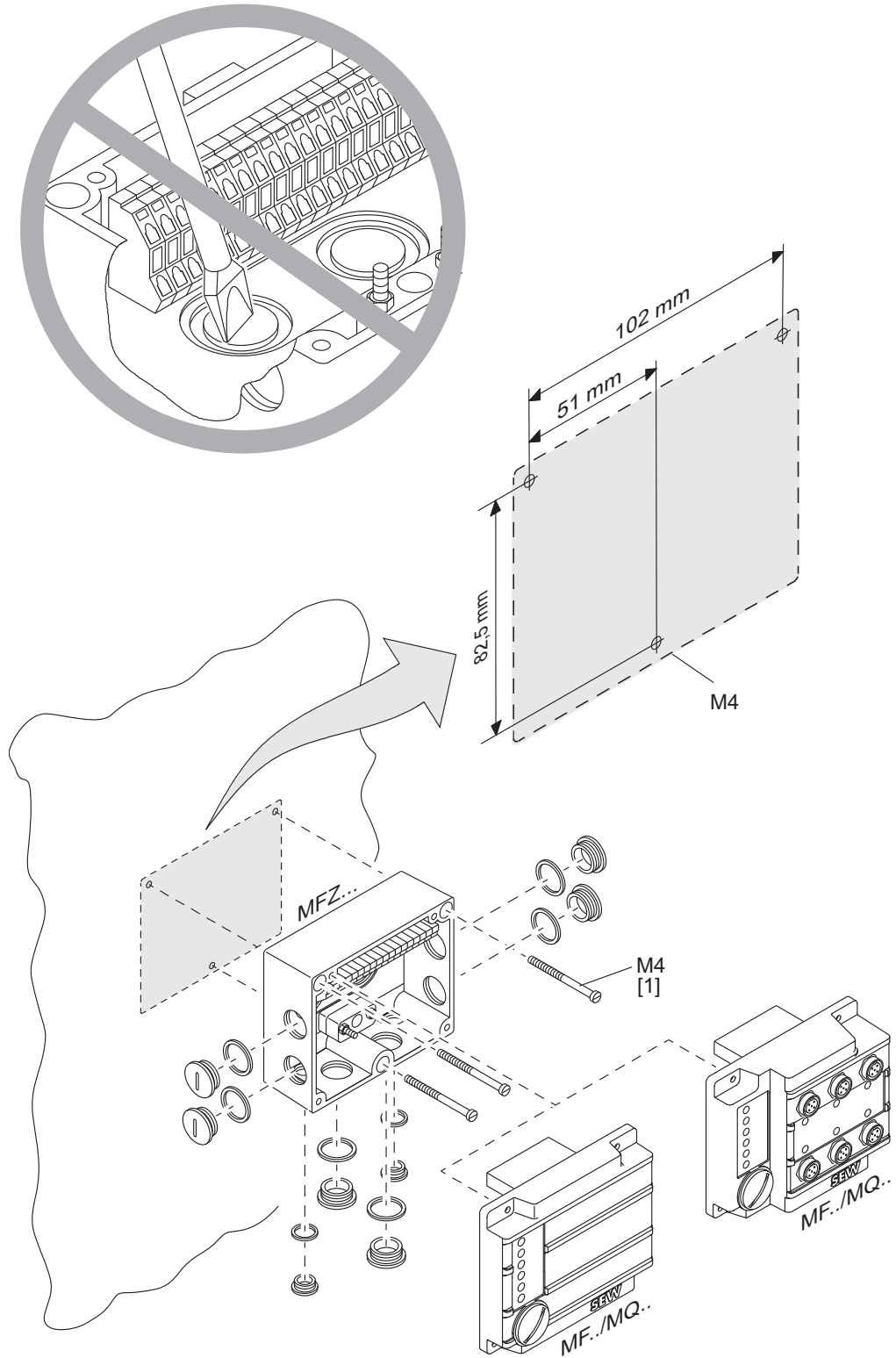
9007200393404939

5 Mechanical installation

Fieldbus interfaces MF../MQ..

5.3.2 Installation in the field

The following figure shows the installation of an MF../MQ.. fieldbus interface close to the motor:



[1] Length of screws min. 40 mm

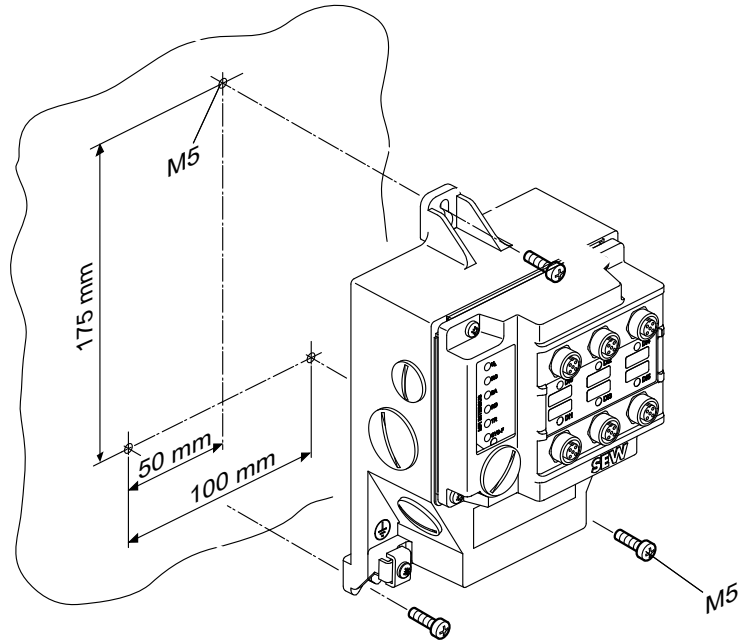
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5.4 Field distributor

5.4.1 Installation of MF../Z.3., MQ../Z.3. field distributors

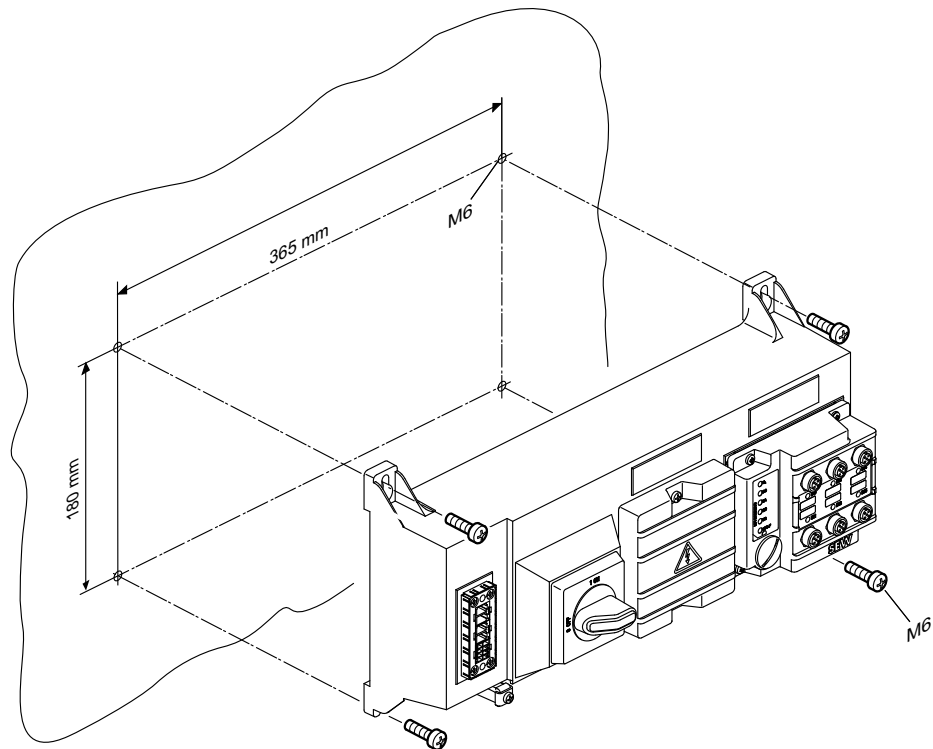
The following figure shows the mounting dimensions for ..Z.3. field distributors:



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5.4.2 Installation of MF../Z.6., MQ../Z.6. field distributors

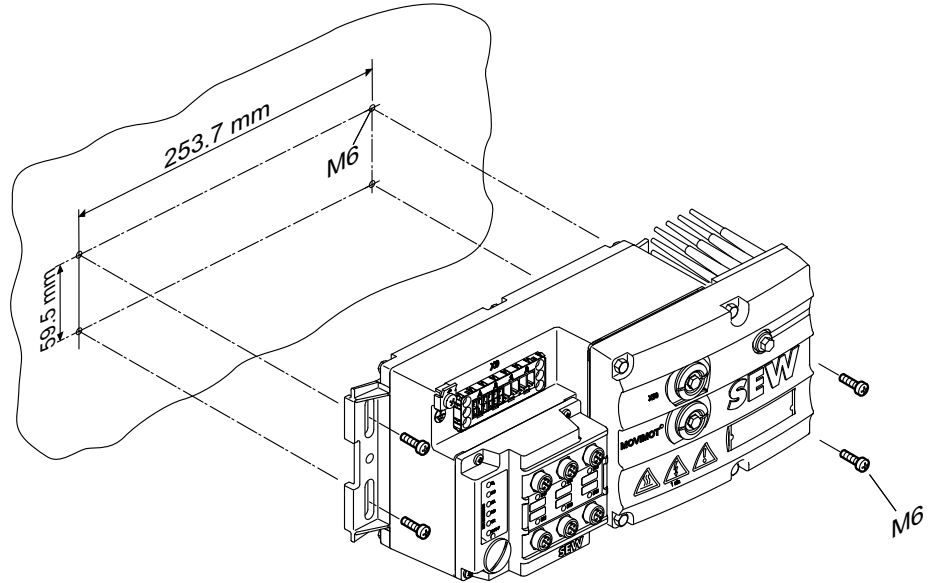
The following figure shows the mounting dimensions for ..Z.6. field distributors:



18014399648277003

5.4.3 Installation of MF../MM../Z.7., MQ../MM../Z.7. field distributors

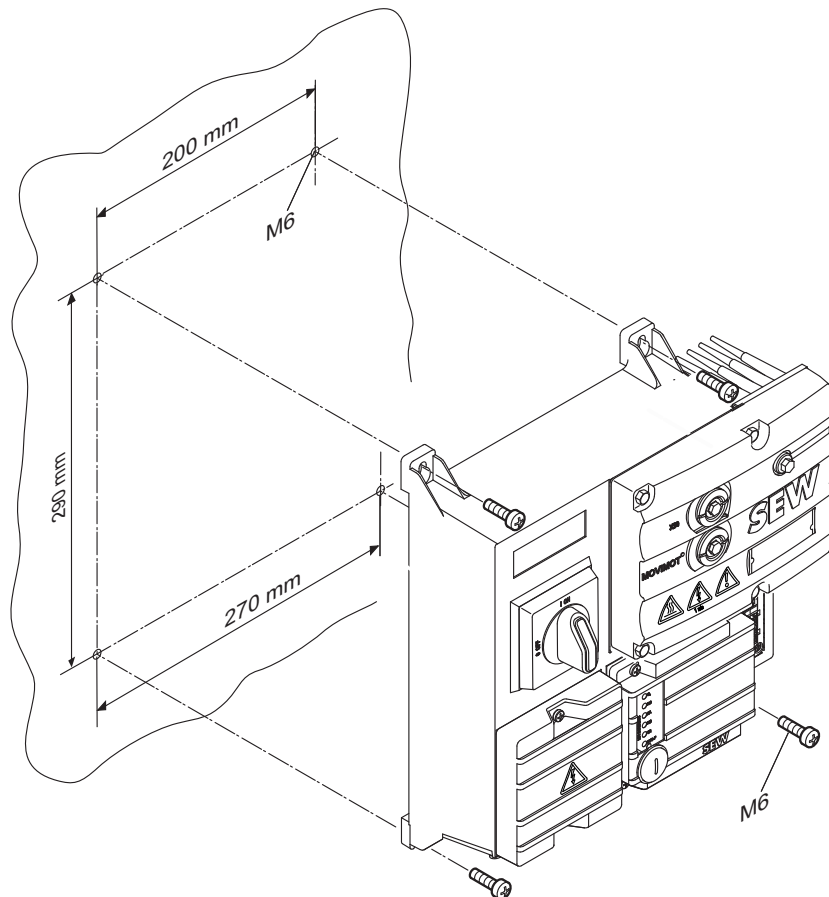
The following figure shows the mounting dimensions for ..Z.7. field distributors:



18014399648313483

5.4.4 Installation of MF../MM../Z.8., MQ../MM../Z.8. field distributors (Size 1)

The following figure shows the mounting dimensions for ..Z.8. field distributors (Size 1):

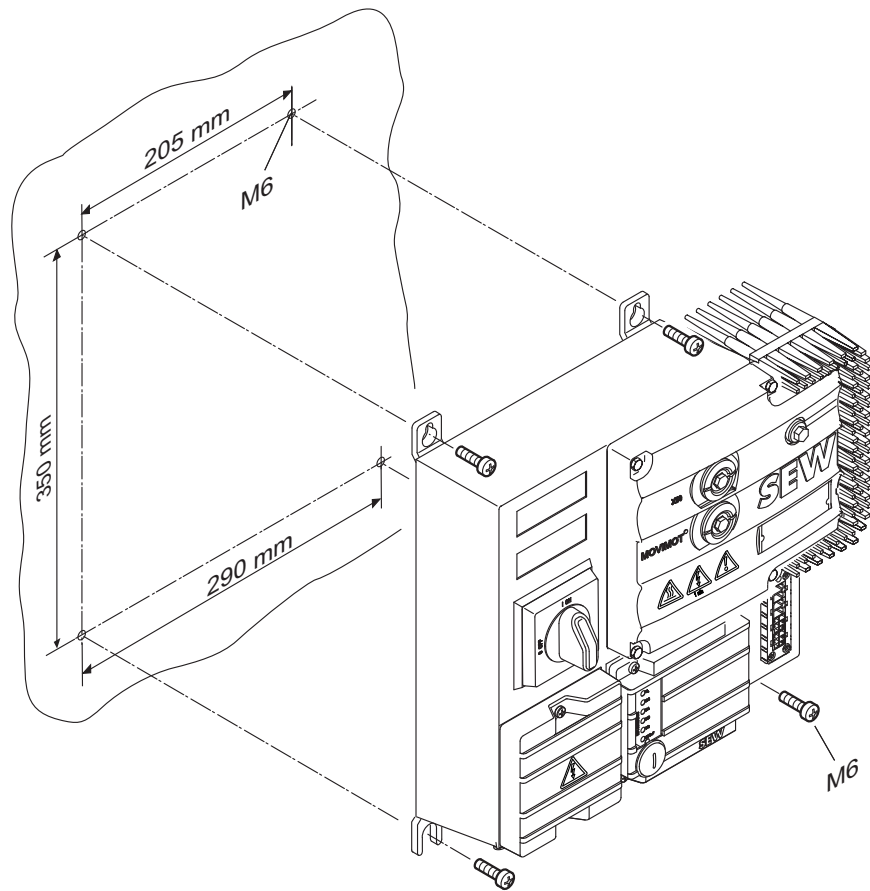


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5.4.5 Installation of MF../MM../Z.8., MQ../MM../Z.8. field distributors (Size 2)

The following figure shows the mounting dimensions for ..Z.8. field distributors (Size 2):



18014399648338187

6 Electrical installation

6.1 Installation planning considering EMC aspects

6.1.1 Notes on arranging and routing installation components

Successful installation of decentralized drives depends on selecting the correct cables, providing correct grounding and a functioning equipotential bonding.

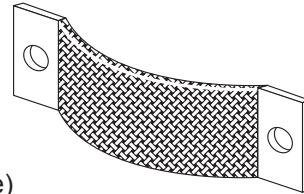
Always adhere to the **relevant standards**. Also observe the following points in particular:

- **Equipotential bonding**

- Low resistance and HF-capable equipotential bonding must be provided independent of the functional earth (PE connection) (see also VDE 0113 or VDE 0100 part 540),

for example by:

- Flat contact surface connection of metal components



- Using flat grounding strips (HF litz wire)

- **Data lines and 24 V supply**

- Route data lines and 24 V supply separately from cables that emit interference (such as control cables of solenoid valves, motor cables).

- **Field distributor**

- We recommend using prefabricated SEW-EURODRIVE hybrid cables, especially designed for connecting field distributors and motors.

- **Cable glands**

- Select only cable glands with a shield connected over a large area. Observe the notes regarding the selection of the cable glands.

- **Cable shields**

- Must have good EMC properties (high screening attenuation).
- It must protect the cable mechanically and serve as shielding.
- Must be connected to a wide area of the unit's metal housing at the cable ends (via EMC metal cable glands). Also observe the further notes regarding the selection of the cable glands.

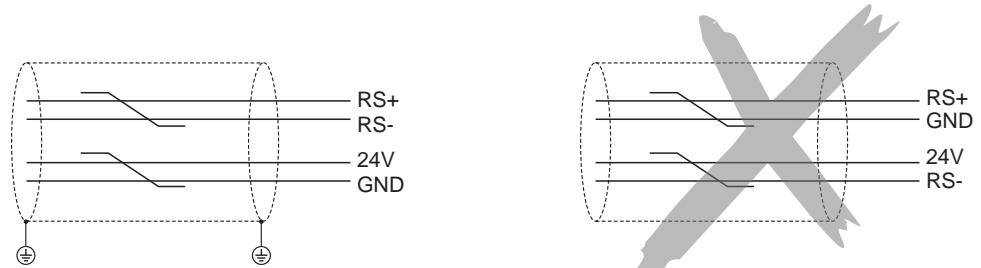
- Additional information is available in the SEW-EURODRIVE publication "**Drive Engineering – Practical Implementation, EMC in Drive Engineering.**"

6.1.2 Example for connection of the MF../MQ.. fieldbus interface and MOVIMOT®

If the MF../MQ.. fieldbus interface and MOVIMOT® are installed separately, the RS485 connection must be implemented as follows:

- **Carrying the DC 24 V supply**

- Use shielded cables.
- Connect the shield to the housing of both units using EMC cable glands.
- Twist the conductors in pairs as shown in the following figure.

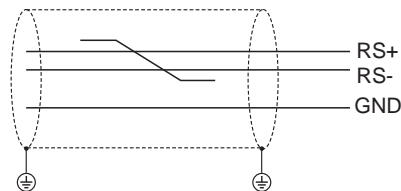


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- **Without carrying the DC 24 V supply**

If the MOVIMOT® drive is supplied with DC 24 V via a separate connection, the RS485 connection must be carried out as follows:

- Use shielded cables.
- Connect the shield to the housing of both units using EMC cable glands. Also observe the further notes regarding the selection of the cable glands.
- Generally provide the GND reference potential.
- Twist the conductors as shown in the following figure.



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6.2 Installation instructions for fieldbus interfaces, field distributors

6.2.1 Connecting supply system leads

- The nominal voltage and frequency of the MOVIMOT® inverter must correspond to the data for the power supply system.
- Dimension the cable cross section according to the input current I_{line} for rated power (see MOVIMOT® operating instructions, "Technical data" chapter).
- Install fuses at the beginning of the power supply cables behind the supply bus junction.

The following fuses are permitted:

- Fuses in utilization category gG
- Power circuit breakers with characteristic B or C
- Motor circuit breaker

Size the fuses according to the cable cross section.

- 3-phase frequency inverters generate a DC current component in the leakage current and can significantly reduce the sensitivity of a residual current device of type A. A type A residual current device is not permitted as protection device.

Only use type B residual current devices.

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

- Use only a line contactor in utilization category AC-3 (EN 60947-4-1) for switching the MOVIMOT® drive.
- SEW-EURODRIVE recommends using earth-leakage monitors with pulse-code measurement in voltage supply systems with a non-grounded star point (IT systems). Using such devices prevents the earth-leakage monitor mis-tripping due to the ground capacitance of the inverter.

6.2.2 Notes on PE connection

▲ WARNING



Electric shock due to incorrect connection of PE.

Severe, fatal injuries

- The permitted tightening torque for the retaining screws is 2.0 – 2.4 Nm.
- Observe the following notes regarding the PE connection.

Prohibited assembly	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with solid connecting wire Permitted for cross section up to max. 2.5 mm ²

[1] Forked cable lug suitable for M5 PE screws

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

- The ground connection (PE) must meet the requirements for plants with high earth-leakage currents.
- This usually means
 - installing a PE connection cable with a minimum cross section of 10 mm²
 - or installing a second PE connection cable in parallel with the original PE connection.

6.2.3 Permitted connection cross section and current carrying capacity of the terminals

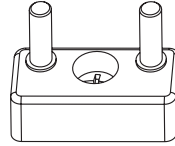
	Power terminals X1, X21 (screw terminals)	Control terminals X20 (cage clamp terminals)
Connection cross section	0.2 mm ² – 4 mm ²	0.08 mm ² – 2.5 mm ²
Current carrying capacity	32 A max. continuous current	12 A max. continuous current

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The permitted tightening torque of the power terminals is 0.6 Nm.

6.2.4 Looping through the DC 24 V supply voltage in the MFZ.1 module terminal box

- There are 2 M4 x 12 studs in the connection area of the DC 24 V supply. The studs can be used for looping the DC 24 V supply voltage.

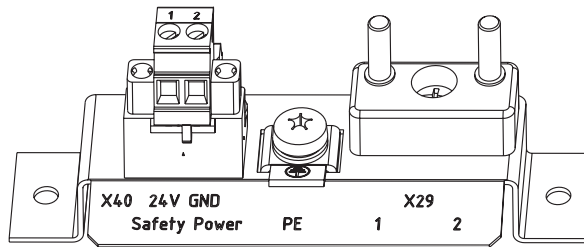


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- The terminal studs have a current carrying capacity of 16 A.
- The permitted tightening torque for the hex nuts of the terminal studs is 1.2 Nm ± 20%.

6.2.5 Additional connection options with MFZ.6, MFZ.7 and MFZ.8 field distributors

- The connection part of the DC 24 V supply comprises an X29 terminal block with two M4 x 12 studs and a pluggable X40 terminal.



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- The X29 terminal block can be used as an alternative to the X20 terminal (see chapter "Unit Structure" in the manual) for looping through the DC 24 V supply voltage. Both studs are connected internally to the 24 V connection at terminal X20.

Terminal assignment			
No.	Name	Function	
X29	1	24 V	0V24 reference potential for module electronics and sensors (studs, jumpered with terminal X20/11)
	2	GND	0V24 reference potential for module electronics and sensors (studs, jumpered with terminal X20/13)

- The plug-in terminal X40 ("Safety Power") is intended for the external DC 24 V supply of the MOVIMOT® inverter using a safety relay.

This setup allows for the operation of a MOVIMOT® drive with FS marking in safety applications. For detailed information, refer to the "MOVIMOT® MM..D – Functional Safety" manual.

Terminal assignment			
No.	Name	Function	
X40	1	24 V	24 V MOVIMOT® voltage supply for disconnection with safety relay
	2	GND	0V24 MOVIMOT® reference potential for disconnection with safety relay

- Terminal X29/1 is factory-jumpered with X40/1 and terminal X29/2 with X40/2, so that the MOVIMOT® inverter is supplied by the same DC 24 V voltage as the fieldbus interface.
- The guide values for both studs are:
 - Current carrying capacity: 16 A
 - Permitted tightening torque for the hex nuts: 1.2 Nm ± 20 %
- The guide values for screw terminal X40 are:
 - Current carrying capacity: 10 A
 - Connection cross section: 0.25 mm² – 2.5 mm²
 - Permitted tightening torque: 0.6 Nm

6.2.6 UL-compliant installation

Routing power terminals in the field

Note the following points for UL-compliant installation:

- Use only 60°/75°C copper conductors.
- The terminals' permitted tightening torque is 1.5 Nm (13.3 lb.in)

Short circuit current rating

Suitable for use in current circuits with a maximum short circuit current of AC 200,000 A_{eff} for the following fuses:

For 240 V systems:

250 V min., 25 A max., fuse
 or 250 V min., 25 A max., circuit breaker

For 500 V systems:

500 V min., 25 A max., fuse
 or 500 V min., 25 A max., circuit breaker

The maximum voltage is limited to 500 V.

Branch circuit protection

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

The following table shows the maximum values for the circuit protection of branch circuits.

Series	Fuse	Circuit breaker
MOVIMOT® MM..D	250 V/500 V minimum, 25 A maximum	250 V/500 V minimum, 25 A maximum

Motor overload protection

MOVIMOT® MM..D is fitted with a load and speed-dependent overload protection with thermal memory in the event of disconnection and power loss.

The trigger threshold is 140% of the rated motor current.

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Ambient temperature

MOVIMOT® MM..D is suitable for an ambient temperature of 40°C, max. 60°C with derated output current. To determine the output current rating at higher than 40°C, the output current should be derated 3.0% per °C between 40°C and 60°C.

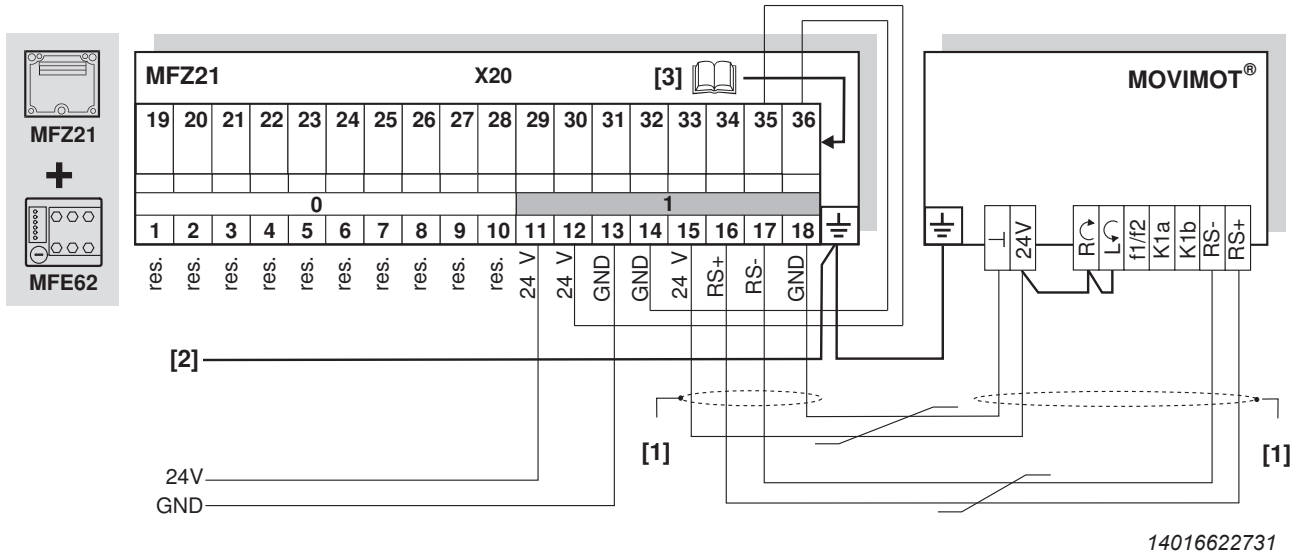
INFORMATION

- Only use certified units with a limited output voltage ($U_{\max} = \text{DC } 30 \text{ V}$) and limited output current ($I \leq 8 \text{ A}$) as an external DC 24 V voltage source
 - The UL certification only applies to operation on voltage supply systems with voltages to ground of max. 300 V. The UL-certification does not apply to operation on voltage supply systems with a non-grounded star point (IT systems).
-

6.3 Connection of MFZ21 connection module with MFE62 to MOVIMOT®

6.3.1 MFZ21 connection module with MFE62 EtherNet/IP™ interface to MOVIMOT®

(for a configuration with 6 inputs or with 4 inputs/2 outputs)



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0 = Potential level 0 **1** = Potential level 1

[1] For separate MF./Z21/MOVIMOT® installation:

Connect the shield of the RS485 cable using the EMC metal cable gland on MFZ and the MOVIMOT® housing.

[2] Ensure equipotential bonding between all bus stations.

[3] Assignment of terminals 19 – 36, see chapter "Connection of the inputs/outputs of the MFE62 fieldbus interface" (→ 46)

Terminal assignment				
No.	Name	Direction	Function	
X20	1 – 10	Res.	Reserved	
	11	24 V	Input	24 V voltage supply for module electronics and sensors
	12	24 V	Output	24 V voltage supply (jumpered with terminal X20/11)
	13	GND	–	0V24 reference potential for module electronics and sensors
	14	GND	–	0V24 reference potential for module electronics and sensors
	15	24 V	Output	24 V voltage supply for MOVIMOT® (jumpered with terminal X20/11)
	16	RS+	Output	Communication link to MOVIMOT® terminal RS+
	17	RS-	Output	Communication link to MOVIMOT® terminal RS-
18	GND	–	0V24 reference potential for MOVIMOT® (jumpered with terminal X20/13)	

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6

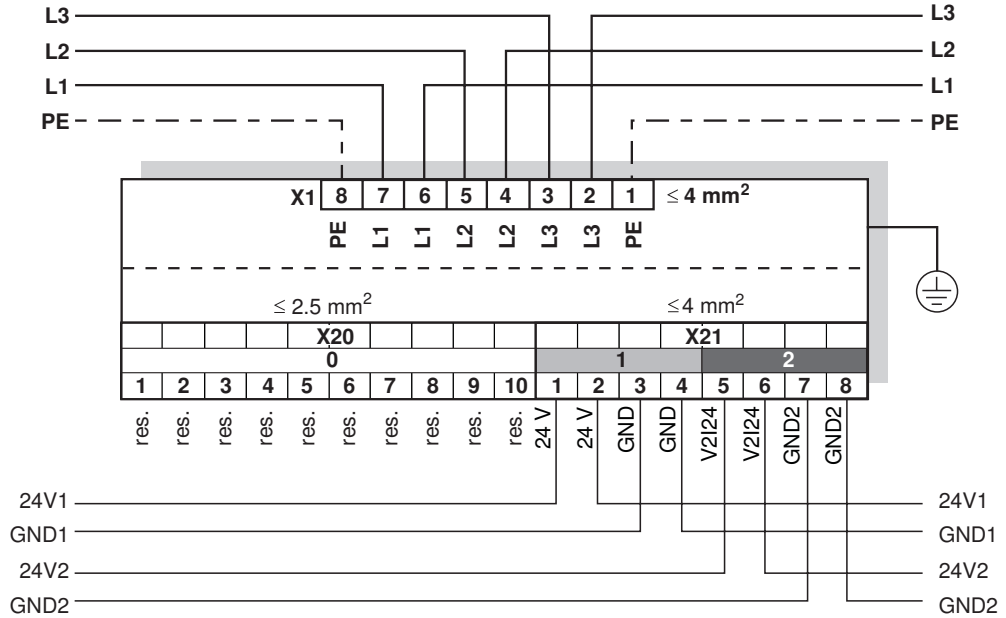
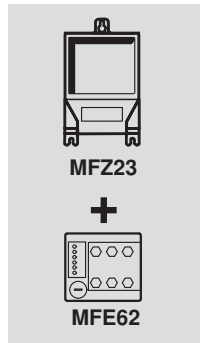
Electrical installation

Connection of MFZ23 field distributor with MFE62

6.4 Connection of MFZ23 field distributor with MFE62

6.4.1 MFZ23 connection module with MFE62 EtherNet/IP™ interface and 2 separate DC 24 V voltage circuits

(only for a configuration with 4 inputs/2 outputs)



14016687243

0 = Potential level 0

1 = Potential level 1

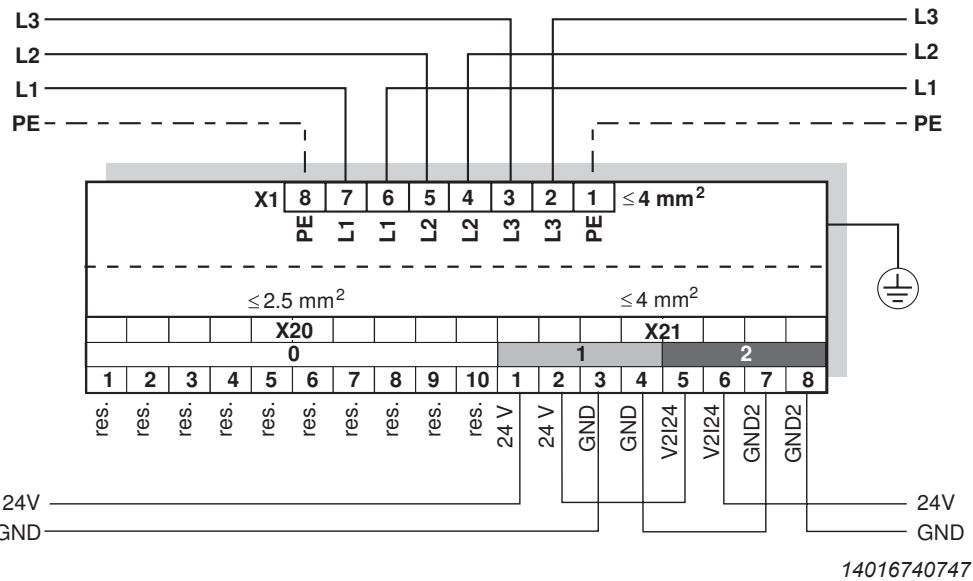
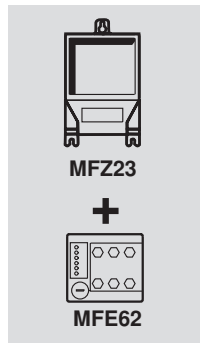
2 = Potential level 2

Terminal assignment				
No.	Name	Direction	Function	
X20 1 – 10	Res.	–	Reserved	
X21	1	24 V	Input	24 V voltage supply for module electronics, DI0 – DI3 sensors and MOVIMOT®
	2	24 V	Output	24 V voltage supply for module electronics, DI0 – DI3 sensors and MOVIMOT® (jumpered with terminal X21/1)
	3	GND	–	0V24 reference potential for module electronics, sensors DI0 - DI3 and MOVIMOT®
	4	GND	–	0V24 reference potential for module electronics, sensors DI0 - DI3 and MOVIMOT®
	5	V2I24	Input	24 V voltage supply for actuators (digital outputs) and sensors DI4 – DI5
	6	V2I24	Output	24 V voltage supply for actuators (digital outputs) and sensors DI4 – DI5 (jumpered with terminal X21/5)
	7	GND2	–	0V24V reference potential for actuators and sensors DI4 – DI5
	8	GND2	–	0V24V reference potential for actuators and sensors DI4 – DI5

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6.4.2 MFZ23 connection module with MFE62 EtherNet/IP™ interface and 1 shared DC 24 V voltage circuit

(for a configuration with 6 inputs or with 4 inputs/2 outputs)



14016740747

0 = Potential level 0 1 = Potential level 1 2 = Potential level 2

Terminal assignment			
No.	Name	Direction	Function
X20 1 – 10	Res.	–	Reserved
X21 1	24 V	Input	24 V voltage supply for module electronics, sensors and MOVIMOT®
2	24 V	Output	24 V voltage supply (jumpered with terminal X21/1)
3	GND	–	0V24 reference potential for module electronics, sensors and MOVIMOT®
4	GND	–	0V24 reference potential for module electronics, sensors and MOVIMOT®
5	V2I24	Input	24 V voltage supply for actuators (digital outputs)
6	V2I24	Output	24 V voltage supply for actuators (digital outputs) (jumpered with terminal X21/5)
7	GND2	–	0V24 reference potential for actuators
8	GND2	–	0V24 reference potential for actuators

6

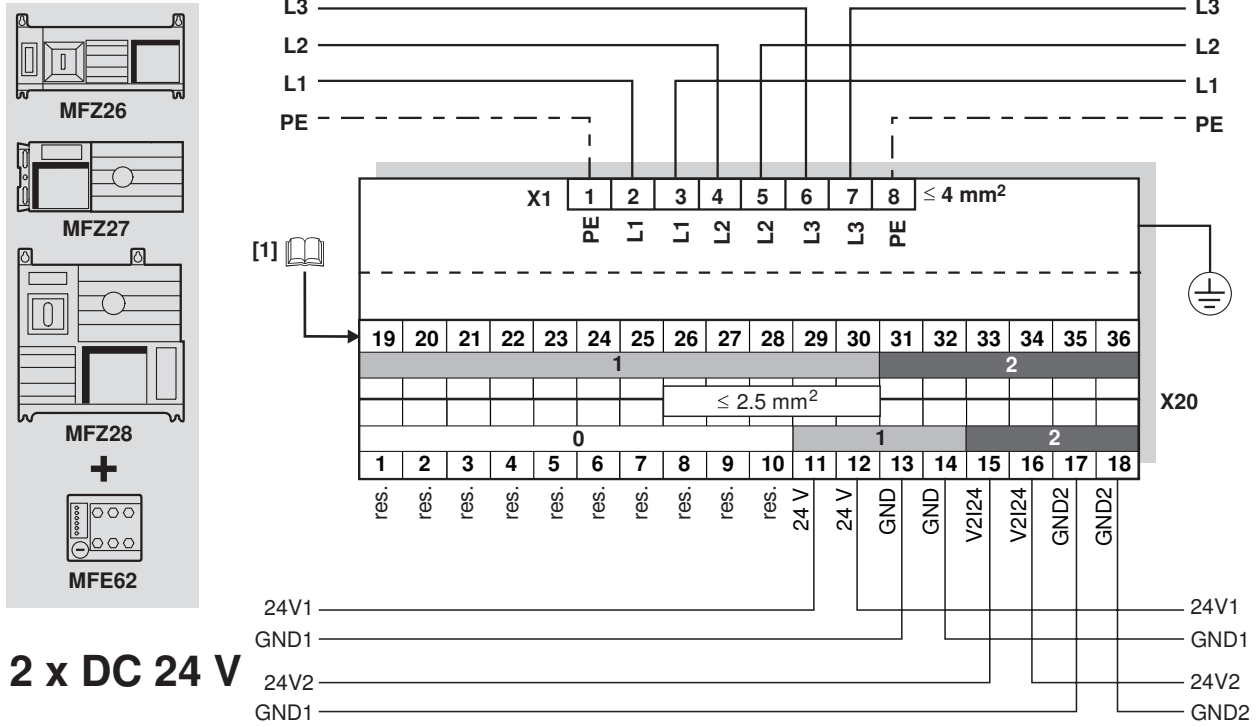
Electrical installation

Connection of field distributors MFZ26, MFZ27, MFZ28 with MFE62

6.5 Connection of field distributors MFZ26, MFZ27, MFZ28 with MFE62

6.5.1 MFZ26, MFZ27, MFZ28 connection modules to MFE62 EtherNet/IP™ interface and 2 separate 24 V DC voltage circuits

(only for a configuration with 4 inputs/2 outputs)



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0 = Potential level 0

1 = Potential level 1

2 = Potential level 2

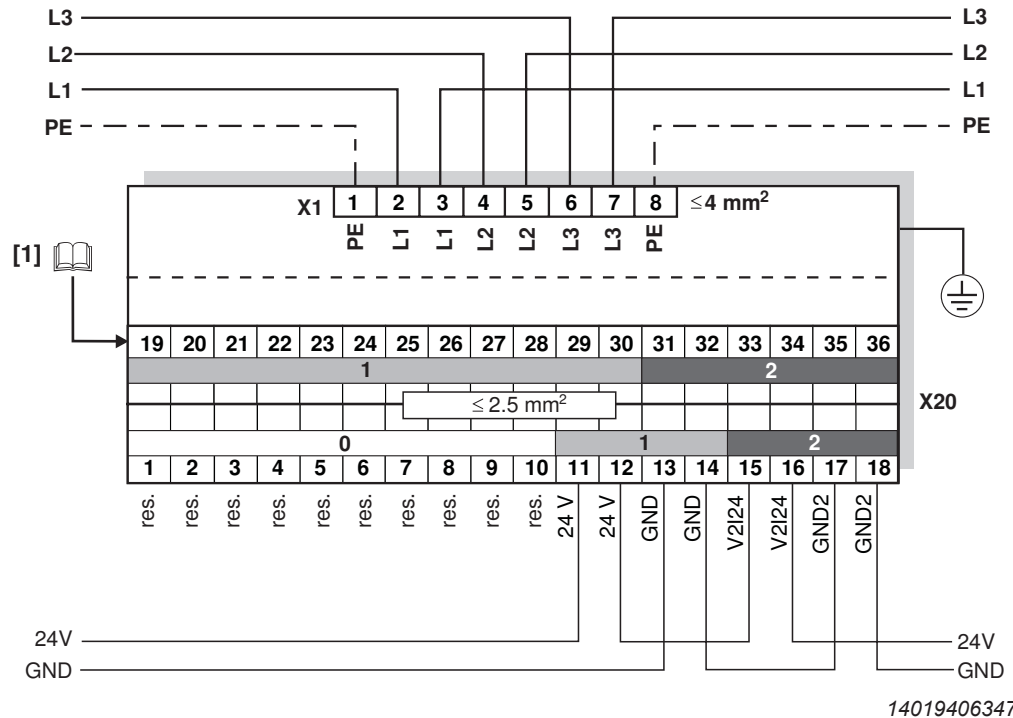
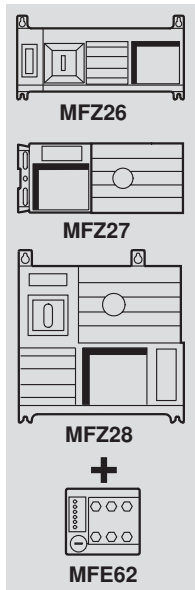
[1] Assignment of terminals 19 – 36, see chapter "Connection of the inputs/outputs of the MFE62 fieldbus interface" (→ 46)

Terminal assignment				
No.	Name	Direction	Function	
X20	1 – 10	Res.	Reserved	
	11	24 V	Input	24 V voltage supply for module electronics and sensors DI0 – DI3
	12	24 V	Output	24 V voltage supply for module electronics and DI0 – DI3 sensors jumpered with terminal X20/11
	13	GND	–	0V24 reference potential for module electronics and sensors DI0 – DI3
	14	GND	–	0V24 reference potential for module electronics and sensors DI0 – DI3
	15	V2I24	Input	24 V voltage supply for actuators and sensors DI4 – DI5
	16	V2I24	Output	24 V voltage supply for actuators and DI4 – DI5 sensors jumpered with terminal X20/15
	17	GND2	–	0V24V reference potential for actuators and sensors DI4 – DI5
18	GND2	–	0V24V reference potential for actuators and sensors DI4 – DI5	

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6.5.2 MFZ26, MFZ27, MFZ28 connection modules with EtherNet/IP™ interface MFE62 and 1 shared DC 24 V voltage circuit

(for a configuration with 6 inputs or with 4 inputs/2 outputs)



1 x DC 24

14019406347

0 = Potential level 0 1 = Potential level 1 2 = Potential level 2

[1] Assignment of terminals 19 – 36, see chapter "Connection of the inputs/outputs of the MFE62 fieldbus interface" (→ 46)

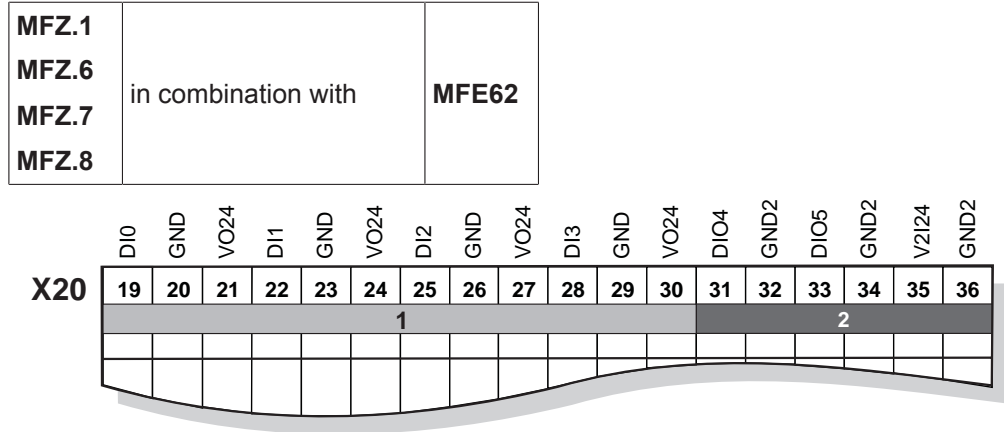
Terminal assignment			
No.	Name	Direction	Function
X20	1 – 10	Res.	Reserved
	11	24 V	Input 24 V voltage supply for module electronics and sensors
	12	24 V	Output 24 V voltage supply (jumpered with terminal X20/11)
	13	GND	– 0V24 reference potential for module electronics and sensors
	14	GND	– 0V24 reference potential for module electronics and sensors
	15	V2I24	Input 24 V voltage supply for actuators (digital outputs)
	16	V2I24	Output 24 V voltage supply for actuators (digital outputs) jumpered with terminal X20/15
	17	GND2	– 0V24V reference potential for actuators (digital outputs)
	18	GND2	– 0V24V reference potential for actuators (digital outputs)

6.6 Connection of the inputs/outputs of the MFE62 fieldbus interface

The fieldbus interface is connected via terminals or M12 plug connectors.

6.6.1 Connection of inputs/outputs via terminals

For fieldbus interfaces with 4 digital inputs and 2 digital inputs/outputs:



3328366859

1 = Potential level 1 2 = Potential level 2

Terminal assignment				
No.	Name	Direction	Function	
X20	19	DI0	Input	Switching signal of sensor DI0 ¹⁾
	20	GND	–	0V24 reference potential for sensor DI0
	21	V024	Output	24 V voltage supply for sensor DI0 ¹⁾
	22	DI1	Input	Control signal of sensor DI1
	23	GND	–	0V24 reference potential for sensor DI1
	24	V024	Output	24 V voltage supply for sensor DI1
	25	DI2	Input	Control signal of sensor DI2
	26	GND	–	0V24 reference potential for sensor DI2
	27	V024	Output	24 V voltage supply for sensor DI2
	28	DI3	Input	Control signal of sensor DI3
	29	GND	–	0V24 reference potential for sensor DI3
	30	V024	Output	24 V voltage supply for sensor DI3

Terminal assignment			
No.	Name	Direction	Function
X20 31	DIO4	Input	Control signal of sensor DI4
		Output	Control signal of actuator DO0
32	GND2	–	0V24 reference potential for sensor DI4
		–	0V24 reference potential for actuator DO0
33	DIO5	Input	Control signal of sensor DI5
		Output	Control signal of actuator DO1
34	GND2	–	0V24 reference potential for sensor DI5
		–	0V24 reference potential for actuator DO1
35	V2I24	Input	24 V voltage supply for actuators (only for MFZ.6, MFZ.7 and MFZ.8: jumpered with terminal 15 or 16)
36	GND2	–	0V24 reference potential for actuators DO0 and DO1 or sensors DI4 and DI5 (only for MFZ.6, MFZ.7 and MFZ.8: jumpered with terminal 17 or 18)

1) This signal is used in conjunction with field distributors MFZ26J and MFZ28J as maintenance switch feedback signal (NO contact). Evaluation via control is possible.

6.6.2 Connection of inputs/outputs via M12 plug connectors

For MFE62 fieldbus interfaces with 4 digital inputs and 2 digital inputs/outputs:

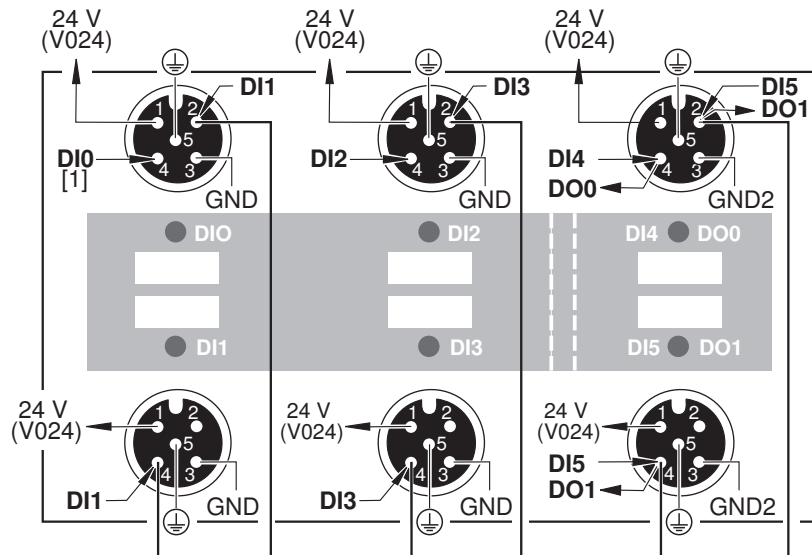
NOTICE

Loss of the ensured degree of protection if the screw plugs of unused M12 connections are not installed or not installed correctly.

Damage to the fieldbus interface.

- Seal all unused M12 connection sockets with screw plugs.

- Connect sensors/actuators using either M12 sockets or terminals.
- When using outputs: Connect 24 V to V2I24/GND2 terminals.
- Connect dual-channel sensors/actuators to DI0, DI2 and DI4/DO0.
DI1, DI3 and DI5/DO1 can no longer be used.

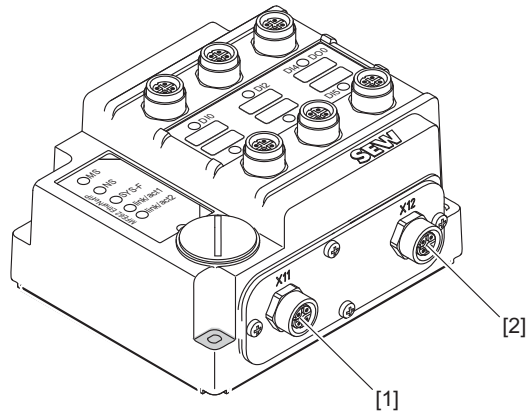


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[1] Do not use DI0 in combination with field distributors MFZ26J and MFZ28J.

6.7 Connection of EtherNet/IP™

The following figure shows the connections of the EtherNet/IP™ bus:



14493430027

- [1] X11, connection EtherNet/IP™, port 1
- [2] X12, connection EtherNet/IP™, port 2

The following table shows the pin assignment of the EtherNet/IP™ ports X11 and X12:

Function		
EtherNet/IP™ interface		
Connection type		
M12, 4-pole, female, D-coded		
Wiring diagram		
3545032843		
Assignment		
No.	Name	Function
1	TX+	Transmit line (+)
2	RX+	Receive line (+)
3	TX-	Transmit line (-)
4	RX-	Receive line (-)

6.7.1 The integrated Ethernet switch

You can use the integrated Ethernet switch to achieve line topologies known from the fieldbus technology. Other bus topologies, such as star or tree, are also possible. Ring topologies are not supported.

INFORMATION



The number of Industrial Ethernet switches connected in line affects the telegram runtime. If a telegram passes through the units, the telegram runtime is delayed by the store & forward function of the Ethernet switch:

This means the more units a telegram has to pass through, the higher the telegram runtime is.

- For a telegram length of 64 bytes by approximately 10 μ s (at 100 Mbit/s)
- For a telegram length of 1500 bytes by approximately 130 μ s (at 100 Mbit/s)

Auto-crossing

The two ports leading out of the Ethernet switch have auto-crossing functionality. This means that they can use both patch and cross-over cables to connect to the next Ethernet node.

Auto-negotiation

The baud rate and duplex mode are negotiated by both Ethernet nodes when establishing the connection. For this purpose, both Ethernet ports of the Ethernet connection support an auto-negotiation functionality and work with a baud rate of either 100 Mbit or 10 Mbit in full duplex or half-duplex mode.

6.7.2 Routing the Ethernet cable



NOTICE

In case of fluctuations in the ground potential, a compensating current may flow via the bilaterally connected shield that is also connected to the protective earth (PE). Make sure you supply adequate equipotential bonding in accordance with relevant VDE regulations in such a case.

Only use shielded cables and connection elements that meet the requirements of category 5, class D according to IEC 11801 edition 2.0.

The following measures ensure the best possible EMC properties:

- Manually tighten the mounting screws on the connectors, modules and equipotential bonding conductors.
- Use only connectors with a metal housing or a metalized housing.
- Route signal and bus cables in separate cable ducts. Do not route them parallel to power cables (motor leads).
- Use metallic, grounded cable racks in industrial environments.
- Route the signal cable and the corresponding equipotential bonding close to each other using the shortest possible route.
- Avoid using plug connectors to extend bus cables.
- Route the bus cables closely along existing grounding surfaces.

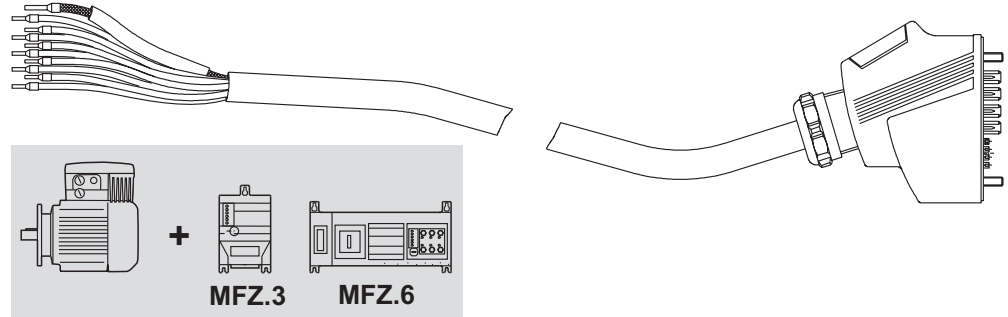
6 Electrical installation

Hybrid cable connection

6.8 Hybrid cable connection

6.8.1 Hybrid cable between MFZ.3. or MFZ.6. field distributor and MOVIMOT®

The following figure shows the hybrid cable for connecting the MOVIMOT® drive part number (01867253).



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The following table shows the terminal assignment of the hybrid cable in the MOVIMOT® connection box:

Terminal assignment	
MOVIMOT® terminal	Wire color/hybrid cable designation
L1	Black/L1
L2	Black/L2
L3	Black/L3
24 V	Red/24 V
⊥	White/0 V
RS+	Orange/RS+
RS-	Green/RS-
PE terminal	Green/yellow + shield end

Note the enabled direction of rotation

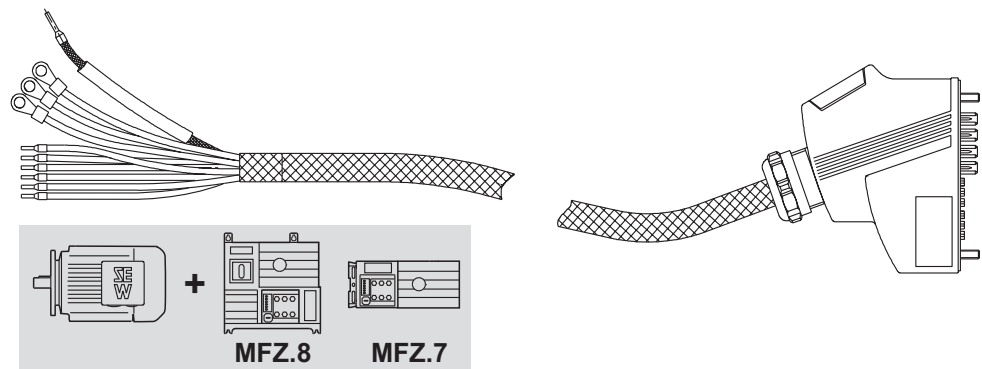
Check to see if requested direction of rotation has been enabled.

	Both directions of rotation are enabled.		Drive is inhibited or is being brought to a standstill.
	Only CCW operation is enabled. Setpoint specifications for CW rotation result in stopping of drive.		Only CW operation is enabled. Pre-selected setpoints for CCW rotation result in stopping of the drive.

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6.8.2 Hybrid cable between MFZ.7. or MFZ.8. field distributor and AC motors

The following figure shows the hybrid cable for connecting the AC motor **part number 01867423**.



1147265675

The following table shows the terminal assignment of the hybrid cable in the motor terminal box:

Terminal assignment	
Motor terminal	Wire color/hybrid cable designation
U1	Black/U1
V1	Black/V1
W1	Black/W1
4a	Red/13
3a	White/14
5a	Blue/15
1a	Black/1
2a	Black/2
PE terminal	Green/yellow + shield end (inner shield)

INFORMATION

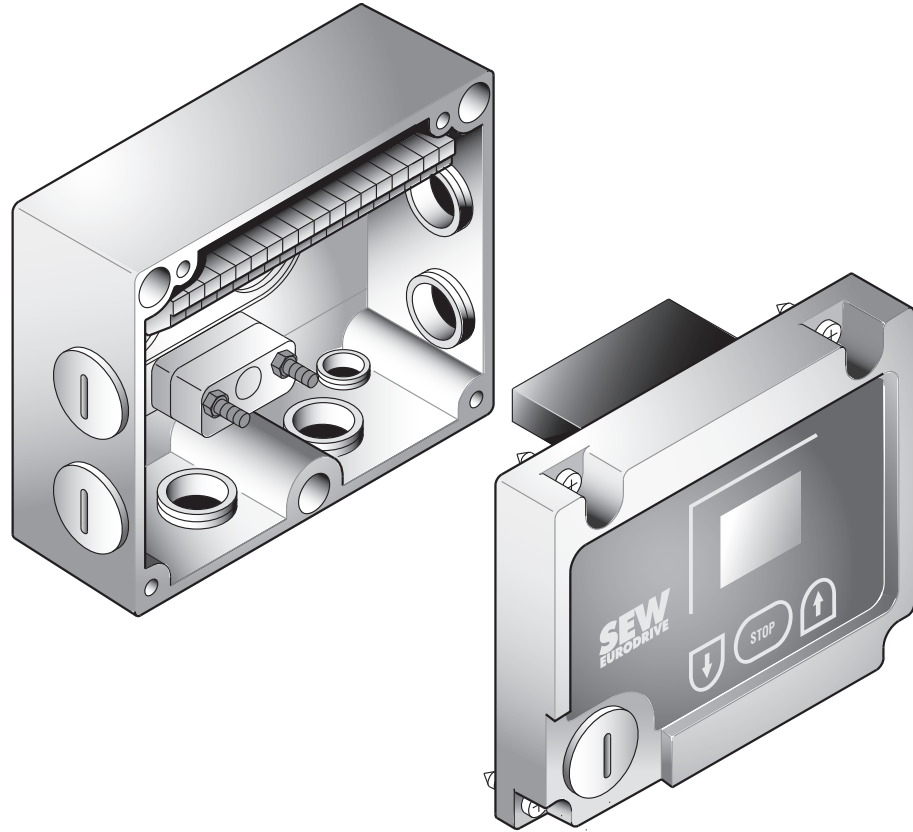


Attach the outer shield of the cable to the housing of the motor terminal box using an EMC metal cable gland.

6.9 MFG11A keypad connection

The MFG11A keypad is used for manual operation.

The MFG11A keypad is plugged into the MFZ.. connection module instead of a field-bus interface.



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For information about functions and operation of the keypad, refer to chapter "MFG11A keypads".

6.10 PC/laptop connection

The fieldbus interfaces have a diagnostic interface (RJ10 plug connector) for startup, parameter setting, and service.

The diagnostic interface is located underneath the screw plug of the fieldbus interface. You must remove the screw plug before plugging in the connector into the diagnostic interface.

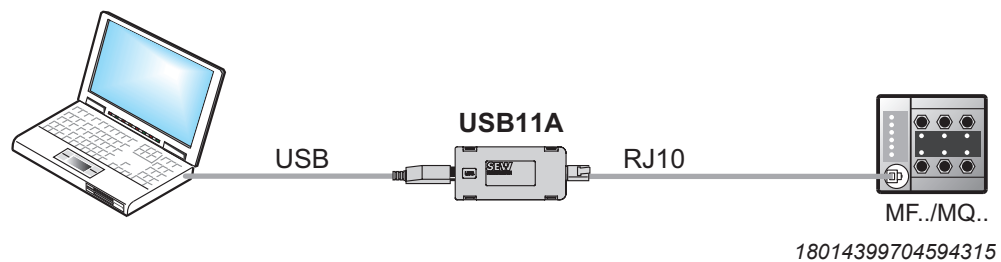
▲ WARNING!

Danger of burns from the hot surfaces of the MOVIMOT® drive (in particular the heat sink).

Severe injuries.

- Wait for the MOVIMOT® drive to cool down sufficiently before touching it.

The diagnostic interface is connected to a commercially available PC/Laptop via the USB11A interface adapter with USB port, part number 08248311:



Scope of delivery:

- USB11A interface adapter
- Cable with RJ10 plug connector
- Interface cable for USB (USB11A)

6.11 Wiring check

In order to prevent injury to persons or damage to the plant, check the wiring as described below before you connect the voltage supply for the first time:

- Remove all fieldbus interfaces from the connection module.
- Disconnect all MOVIMOT® inverters from the connection module (only with MFZ.7, MFZ.8).
- Disconnect all plug connectors of the motor connection (hybrid cable) from the field distributor.
- Check the insulation of the wiring in accordance with applicable national standards.
- Check the grounding.
- Check the insulation between the supply system cable and the DC 24 V cable.
- Check the insulation between supply system cable and communication cable.
- Check the polarity of the DC 24 V cable.
- Check the polarity of the communication line.
- Check the mains phase sequence.
- Ensure equipotential bonding between the fieldbus interfaces.

6.11.1 After the wiring check

- Connect and fasten all motor connections (hybrid cable).
- Plug in and fasten all fieldbus interfaces.
- Install and fasten all MOVIMOT® inverters (only with MFZ.7, MFZ.8).
- Install all connection box covers.
- Seal any plug connections not in use.

7 Startup

7.1 Startup instructions



▲ WARNING

Risk of crushing due to missing or defective protective covers.

Severe or fatal injuries.

- Install the protective covers of the unit according to the regulations, see the operating instructions of the gear unit.
- Never start the unit if the protective covers are not installed.



▲ WARNING

Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

- Disconnect the inverter from the power. Observe the minimum switch-off time after disconnection from the supply system:
 - 1 minute



▲ WARNING

Danger of burns due to hot surfaces of the unit (e.g. the heat sink).

Serious injuries.

- Do not touch the unit until it has cooled down sufficiently.



▲ WARNING

Unit malfunction due to incorrect unit setting.

Severe or fatal injuries.

- The installation may only be carried out by qualified personnel.
- Only use settings that are suitable for operation.

INFORMATION



- Switch off the DC 24 V voltage supply before removing/installing the fieldbus interface.
- The bus connection of the incoming and outgoing fieldbus is integrated in the connection module, which means the fieldbus can be operated even when the module electronics have been disconnected.
- In addition, observe the notes in chapter "Supplementary Field Distributor Startup Information" of the manual.

INFORMATION



- Remove the paint protection cap from the status LED before startup. Remove the paint protection film from the nameplates before startup.
- Observe a minimum switch-off time of 2 seconds for the line contactor.

7.2 TCP/IP addressing and subnetworks

7.2.1 Introduction

The settings for the address of the IP protocol are made using the following parameters

- MAC ID
- IP address
- Subnet mask
- Standard gateway

The addressing mechanisms and subdivision of the IP networks into subnetworks are explained in this chapter to help you set the parameters correctly.

7.2.2 MAC ID

The MAC (**M**edia **A**ccess **C**ontroller) ID is the basis for all address settings. The MAC ID is a worldwide unique 6-byte value (48 bits) assigned to the Ethernet device. The MAC address of Ethernet devices from SEW-EURODRIVE is 00-0F-69-xx-xx-xx. The MAC ID is difficult to handle for larger networks. This is why freely assignable IP addresses are used.

7.2.3 IP address

The IP address is a 32-bit value that uniquely identifies a node in the network. An IP address is represented by 4 decimal numbers separated by decimal points.

Example: 192.168.10.4

Each decimal number stands for one byte (= 8 bits) of the address and can also be represented using binary code (see following table).

Byte 1		Byte 2		Byte 3		Byte 4
11000000	.	10101000	.	00001010	.	00000100

The IP address comprises a network address and a node address (see following table).

Network address	Node address
192.168.10	4

The part of the IP address that denotes the network and the part that identifies the node are determined by the network class and the subnet mask.

Node addresses cannot consist of only zeros or ones (binary) because they represent the network itself or a broadcast address.

7.2.4 Network classes

The first byte of the IP address determines the network class and as such represents the division into network addresses and node addresses.

Range of values Byte 1	Network class	Complete network address (example)	Explanation
0 – 127	A	10.1.22.3	10 = network address 1.22.3 = node address
128 – 191	B	172.16.52.4	172.16 = network address 52.4 = node address
192 – 223	C	192.168.10.4	192.168.10 = network address 4 = node address

This rough division is not sufficient for a number of networks. They also use an explicit, adjustable subnet mask.

7.2.5 Subnetwork mask

A subnet mask is used to divide the network classes into even finer sections. Like the IP address, the subnet mask is represented by 4 decimal numbers separated by decimal points.

Example: 255.255.255.128

Each decimal number stands for one byte (= 8 bits) of the subnet mask and can also be represented using binary code (→ following table).

Byte 1		Byte 2		Byte 3		Byte 4
11111111	.	11111111	.	11111111	.	10000000

If you compare the IP addresses with the subnet masks, you see that in the binary representation of the subnet mask all ones determine the network address and all the zeros determine the node address (see following table).

		Byte 1		Byte 2		Byte 3		Byte 4
IP address	decimal	192	.	168	.	10	.	129
	binary	11000000	.	10101000	.	00001010	.	10000001
Subnet mask	decimal	255	.	255	.	255	.	128
	binary	11111111	.	11111111	.	11111111	.	10000000

The class C network with the address 192.168.10. is further subdivided by the subnet mask 255.255.255.128. 2 networks are created with the address 192.168.10.0 and 192.168.10.128.

The following node addresses are permitted in the two networks:

- 192.168.10.1 – 192.168.10.126
- 192.168.10.129 – 192.168.10.254

The network nodes use logic AND operation for the IP address and the subnet mask to determine whether there is a communication partner in the same network or in a different network. If the communication partner is in a different network, the standard gateway is addressed for passing on the data.

7.2.6 Standard gateway

The standard gateway is also addressed via a 32-bit address. The 32-bit address is represented by 4 decimal numbers separated by decimal points.

Example: 192.168.10.1

The standard gateway establishes a connection to other networks. In this way, a network node that wants to address another node can use logic AND operation with the IP address and the subnet mask to decide whether the desired node is located in the same network. If this is not the case, the node addresses the standard gateway (router), which must be part of the actual network. The standard gateway then takes on the job of transmitting the data packages.

7.3 Setting the IP address parameters

7.3.1 Initial startup

On delivery, the MFE fieldbus interface has the following IP address parameters:

Standard IP address	Subnet mask
192.168.10.4	255.255.255.0

7.3.2 Changing the IP address parameters after initial startup

INFORMATION



With Ethernet units, the IP address is assigned via the engineering system of the IO controller. In this case, it is not mandatory to set the IP address using MOVITOOLS® MotionStudio.

The IP address parameters can be accessed via the Ethernet fieldbus connection or the service interface.

You can change the IP address parameters via Ethernet by one of the following methods:

- Using the MOVITOOLS® MotionStudio software.
- Using the "SEW Address Editor" (→ 62).

If the IP address parameters have been assigned to the fieldbus interface unit via a DHCP server, you can only change the parameters by adjusting the settings of the DHCP server.


The ways of changing the IP address parameters only come into effect once the supply voltage (including DC 24 V) has been switched off and back on again.

You can set the type of IP address assignment via the *DHCP Startup Control* parameter in the parameter tree of the MFE fieldbus interface in MOVITOOLS® MotionStudio.

- "Stored IP parameters" setting
The stored IP address parameters are used.
- "DHCP" setting
The IP address parameters are requested by a DHCP server.

7.3.3 SEW Address Editor

You can also use the SEW Address Editor to access the IP settings of the fieldbus interface without the Ethernet settings of the PC and fieldbus interface having to match.

The IP settings of all SEW-EURODRIVE units can be defined and displayed in the local subnetwork using the Address Editor in MOVITOOLS® MotionStudio. For more information, refer to chapter "MOVITOOLS® MotionStudio – Operation" (→  111) in the fieldbus interface manual.

- In this way, you can determine the necessary settings for the PC from an application during operation. This gives you access with the necessary diagnostics and engineering tools via Ethernet.
- When starting up a unit, the IP settings for the MFE fieldbus interface can be assigned without changing the network connections or PC settings. This is **not** possible if parameter *DHCP Startup Control* is set to "DHCP".

For safe assignment of the units displayed in the Address Editor, a label with the MAC ID of the unit is attached to the memory card of the fieldbus interface (for connection via X11 and X12).

7.4 Startup procedure

INFORMATION



This chapter describes the startup procedure for MOVIMOT® MM..D in **Easy** mode. For information on the startup of MOVIMOT® MM..D in Expert mode, refer to the "MOVIMOT® MM..D" operating instructions.

▲ WARNING

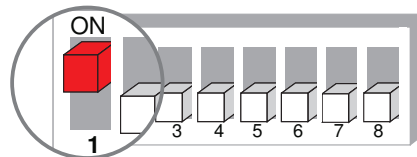


Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

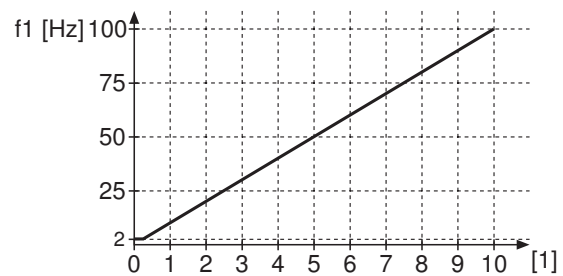
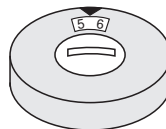
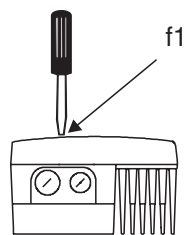
- Disconnect the inverter from the power. Observe the minimum switch-off time after disconnection from the supply system:
 - **1 minute**

1. Check for correct installation of the MOVIMOT® inverter and the EtherNet/IP™ interface (MFZ21, MFZ23, MFZ26, MFZ27 or MFZ28).
2. Set DIP switch S1/1 of the MOVIMOT® inverter (see corresponding MOVIMOT® operating instructions) to "ON" (= address 1).



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3. Unscrew the screw plug above the setpoint potentiometer f1 on the MOVIMOT® inverter.
4. Set the maximum speed using setpoint potentiometer f1.



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[1] Potentiometer setting

5. **NOTICE!** Loss of warranted degree of protection if the screw plugs of the f1 setpoint potentiometer or the X50 diagnostics interface are installed incorrectly or not at all. Damage to the MOVIMOT® inverter. Make sure the screw plug of the setpoint potentiometer has a seal and screw it in.

6. Set minimum frequency f_{min} with switch f2.



Function	Setting										
Detent setting	0	1	2	3	4	5	6	7	8	9	10
Minimum frequency f_{min} [Hz]	2	5	7	10	12	15	20	25	30	35	40

7. If the ramp time is not specified via fieldbus (2 PD), set the ramp time at switch t1 of the MOVIMOT® inverter.

⇒ The ramp times are based on a setpoint step change of 1500 1/min (50 Hz).

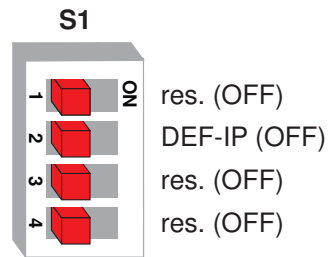


Function	Setting										
Detent setting	0	1	2	3	4	5	6	7	8	9	10
Ramp time t1 [s]	0.1	0.2	0.3	0.5	0.7	1	2	3	5	7	10

8. Check to see if requested direction of rotation has been enabled on the MOVIMOT® inverter.

CW/stop	CCW/stop	Meaning
Activated	Activated	<ul style="list-style-type: none"> Both directions of rotation are enabled.
Activated	Not activated	<ul style="list-style-type: none"> Only CW operation is enabled. Setpoint selection for CCW rotation will stop the drive.
Not activated	Activated	<ul style="list-style-type: none"> Only CCW operation is enabled. Setpoint selection for CW rotation will stop the drive.
Not activated	Not activated	<ul style="list-style-type: none"> The unit is inhibited or the drive is brought to a stop.

9. Make sure that DIP switch S1/2 "DEF-IP" of the MFE EtherNet/IP™ interface is set to "OFF".



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10. Place the MOVIMOT® inverter and the MFE housing cover on the field distributor and screw them on.
11. Switch on the DC 24 V supply voltage of the MFE EtherNet/IP™ interface and the MOVIMOT® inverter.
 - ⇒ Startup has been completed successfully when the "MS" LED at the MFE.. fieldbus interface lights up green.
12. Configure the MFE EtherNet/IP™ interface at the EtherNet/IP™ controller.

INFORMATION



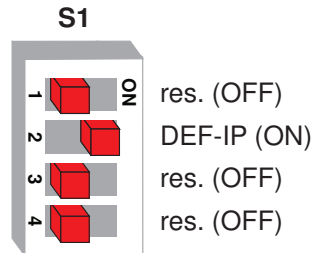
With EtherNet/IP™, no further settings are necessary on the drive.

The entire EtherNet/IP™ configuration is performed via software tools. For more information about configuration, refer to chapter "EtherNet/IP™ configuration" in the manual.

7.5 Resetting the IP address to its default value

To reset the IP address to its default value, proceed as follows:

1. Disconnect the 24 V voltage supply.
2. Remove the MFE Ethernet interface from the field distributor.
3. At the MFE Ethernet interface, set DIP switch S1/2 "DEF-IP" to "ON".

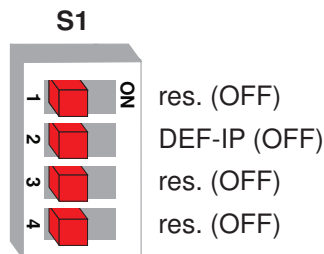


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⇒ This sets the address parameters to the following default values:

IP address: 192.168.10.4
Subnet mask: 255.255.255.0
Gateway: 0.0.0.0

4. Re-install the MFE Ethernet interface on the field distributor.
5. Turn on the 24 V voltage supply and wait until the "MS" LED lights up green.
6. Remove the MFE Ethernet interface from the field distributor.
7. At the MFE Ethernet interface, set DIP switch S1/2 "DEF-IP" to "OFF".



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⇒ This resets the IP address to the delivery state.

8. Re-set the IP address if necessary.
9. Switch on the line voltage of the field distributor.

8 EtherNet/IP™ configuration

This chapter provides information on configuration of the EtherNet/IP™ master.

Requirements for correct configuration are:

- The correct connection according to chapter "Electrical installation" (→ 34).
- The correct setting of IP address parameters of the EtherNet/IP™ interface.

8.1 Validity of the EDS file for the MFE62A EtherNet/IP™ interface

NOTICE

Damage to the unit due to malfunction due to a modified EDS file.

Damages to the unit.

- Changes or additions to the EDS file are **not** permitted. SEW-EURODRIVE assumes no liability for malfunctions of the unit caused by a modified EDS file.

The following EDS file is required for proper operation of the MFE62 EtherNet/IP™ interface:

- SEW_GATEWAY_MFE62A.eds

INFORMATION



The EDS file is available in the section "Online Support" of the SEW-EURODRIVE homepage www.sew-eurodrive.de.

8.2 Configuration of the EtherNet/IP™ master

The configuration procedure depends on the version of the programming software RSLogix.

- For RSLogix versions up to version V19, the EDS file cannot be used directly. In this case, use the general device GenericDevice and set the communication properties manually.
- The EDS file can be used for RSLogix versions higher than version V20.

8.2.1 Configuration with RSLogix 5000 up to version V19

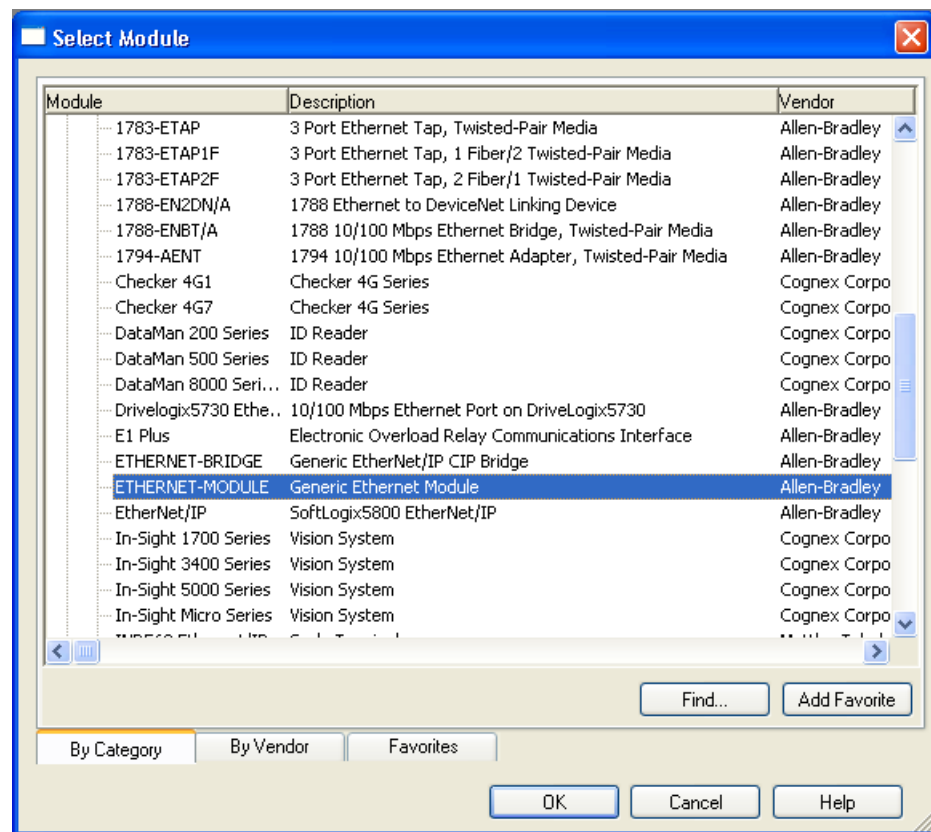
The following example describes configuration of the Allen Bradley control ControlLogix 1756-L61 with the RSLogix 5000 programming software, Version V19, by Rockwell Automation.

For the Ethernet communication, a 1756-EN2TR EtherNet/IP™ interface is used.

Proceed as follows:

1. Start the RSLogix 5000 program and select the view "Controller Organizer" (tree structure on left part of the window).
2. Select the EtherNet/IP™ interface (1756-EN2TR in this case) in the folder "I/O configuration".
3. Right-click on the „1756-EN2TR“ EtherNet/IP™ interface. Select the command [New Module] from the context menu.

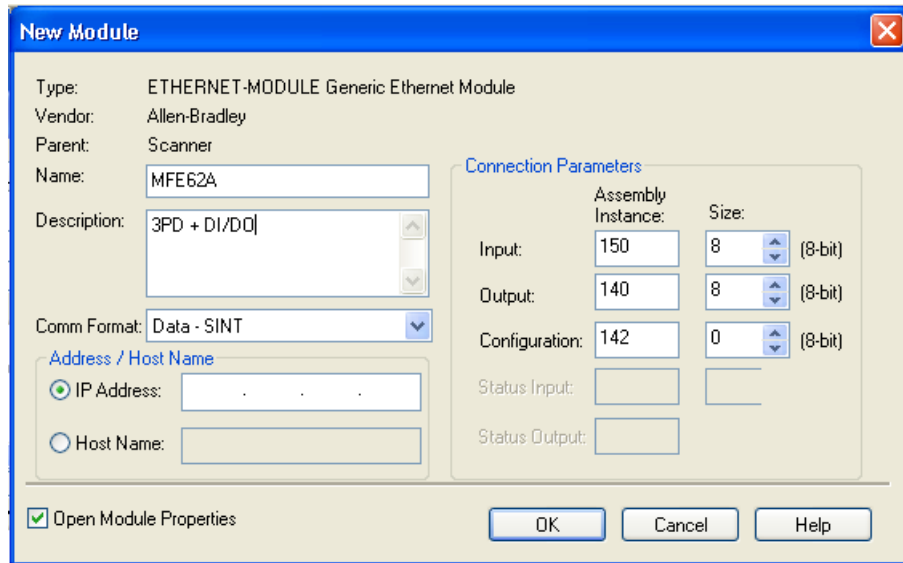
⇒ A module catalog is displayed.



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4. Select "ETHERNET MODULE" in the "Communication" category.

5. Click [OK].
 - ⇒ The "New module" window opens.



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6. In the edit box "Name", enter the name of the EtherNet/IP™ interface with which the data are stored in the controller tags.
7. Enter the required IP address of the EtherNet/IP™ interface in the edit box "IP address".
8. Select either data format "Data-INT" or "Data-SINT" from the drop-down list "Comm-Format".
 - ⇒ The process data always contain 16 bits (INT).
9. Set the connection parameters in the group "Connection Parameters" according to your configuration.

Depending on the required connection and the process data arrangement, the communication format and the assembly instance must be adjusted according to the following table:

No.	Connection name	Input instance		Output instance		Configuration instance	
		In-stance	Size	In-stance	Size	In-stance	Size
1	3PD + DI/DO	150	8 SINT 4 INT	140	8 SINT 4 INT	142	0
2	2PD + DI/DO	150	6 SINT 3 INT	140	6 SINT 3 INT	143	0
3	3PD	150	6 SINT 3 INT	140	6 SINT 3 INT	144	0
4	2PD	150	4 SINT 2 INT	140	4 SINT 2 INT	145	0
5	Customer Exclusive Owner	150	10 SINT 5 INT	140	10 SINT 5 INT	141	5
6	Customer Input Only	Not possible					
7	Retrofitting 3PD + DI/DO	150	7 SINT	140	7 SINT	146	0
8	Retrofitting 2PD + DI/DO	150	5 SINT	140	5 SINT	147	0

- When selecting the connection "Customer Exclusive Owner", the dimensioning must be set in the first 5 bytes of the configuration array, in the project controller tag.

See chapter "Configuration while using the Customer Exclusive connection" (→ 76).

- When replacing an existing DeviceNet™ interface with an EtherNet/IP™ interface, select the configurations no. 3, 4, 7 or 8. Thus, the compatibility of the function blocks (AOI) to the DeviceNet™ can be established.

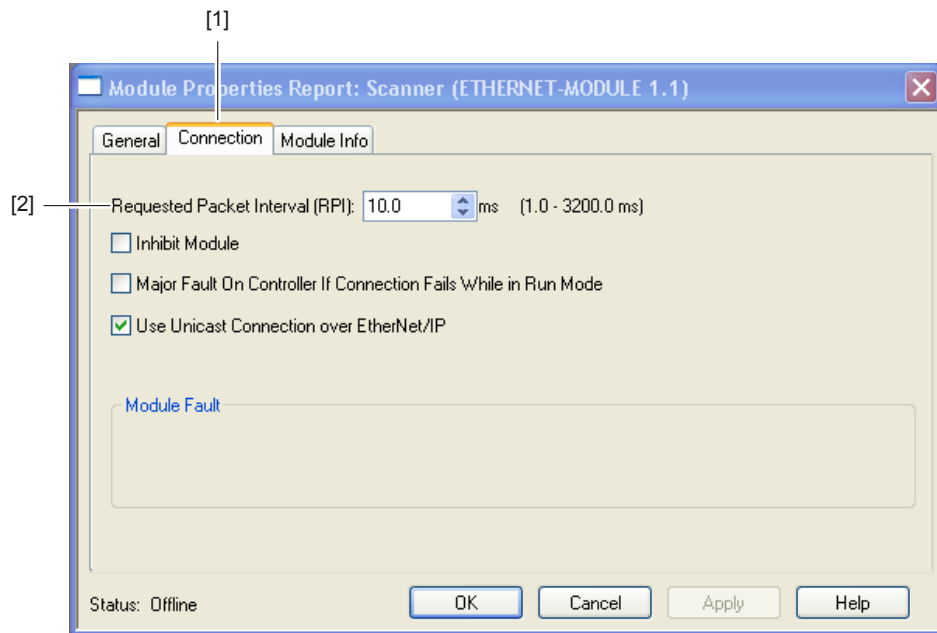
For additional information on retrofitting, refer to chapter "Unit replacement DeviceNet™ interface -> EtherNet/IP™ interface" (→ 132).

10. Activate the check box "Open Module Properties".

11. Click [OK].

⇒ The window "Module Properties Report: Scanner" is displayed.

12. Open the "Connection" tab.



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13. Enter the cycle time (data rate) in the "Requested Packet Interval (RPI)" entry field.
The unit supports a cycle time of a minimum of 5 ms. Longer cycle times can be implemented without any problems.

14. Click [OK].

⇒ The device is included in the project and the settings are adopted.

8.2.2 Configuration with RSLogix 5000 up to version V20

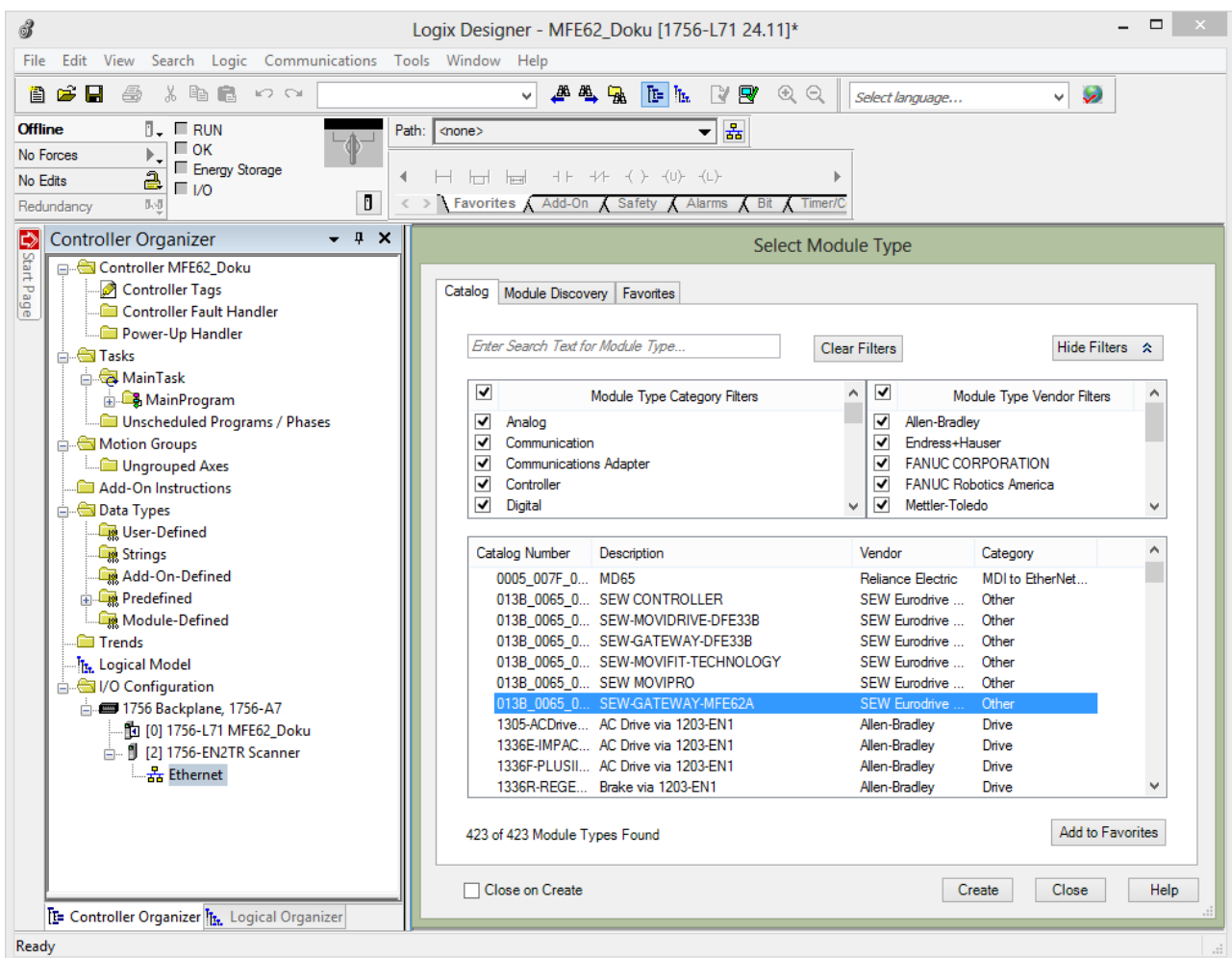
The following example describes configuration of the Allen Bradley controller Control-Logix 1756-L71 with the programming software Studio 5000 Logix Designer, version V24 (up to Version V20: RSLogix 5000) by Rockwell Automation.

For the Ethernet communication, a 1756-EN2TR EtherNet/IP™ interface is used.

Proceed as follows:

1. Start the program Studio 5000 Logix Designer and select the view "Controller Organizer" (tree structure on left part of the window).
2. Select the EtherNet/IP™ interface (1756-EN2TR in this case) in the folder "I/O configuration".
3. Right-click on the „1756-EN2TR“ EtherNet/IP™ interface. Select the command [New Module] from the context menu.

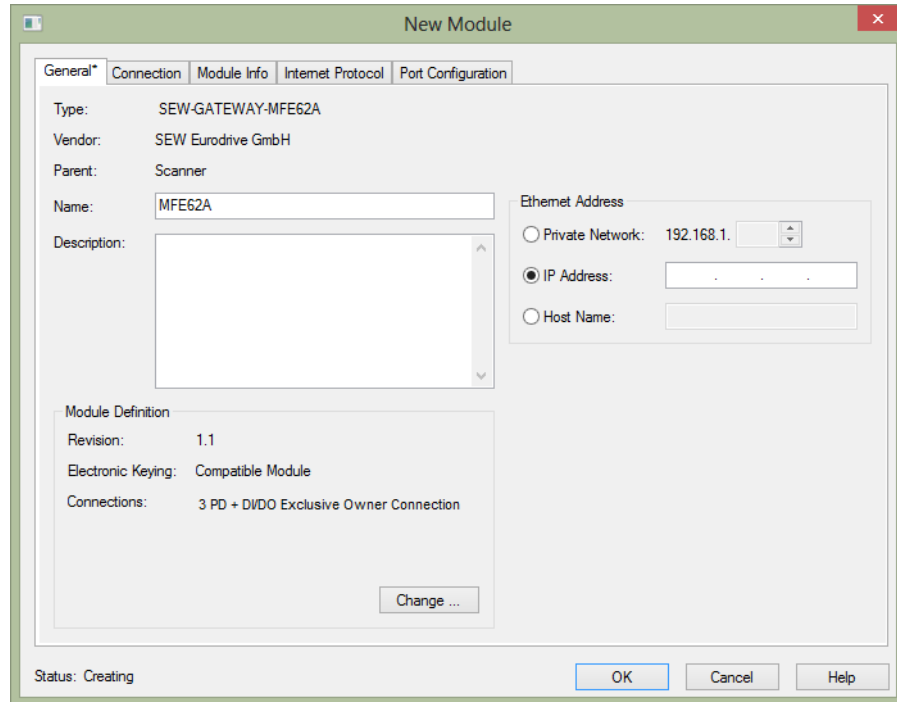
⇒ A module catalog is displayed.



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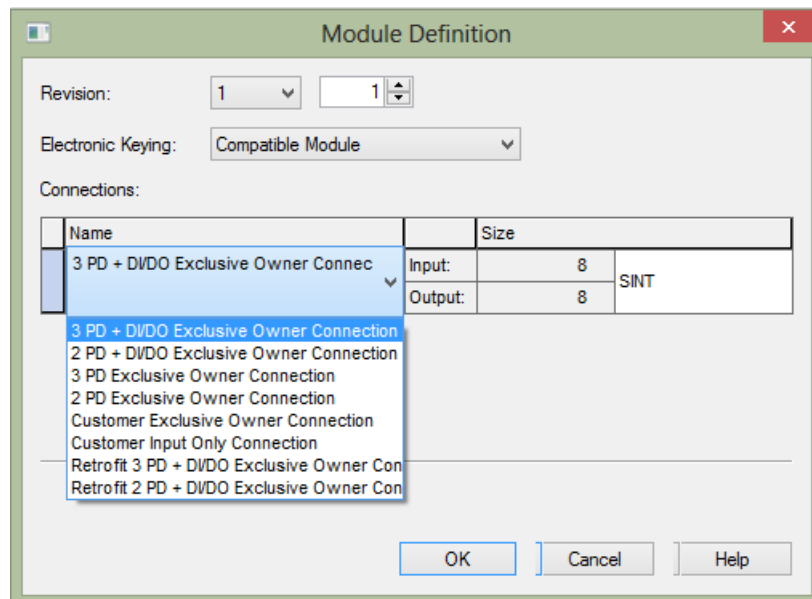
4. Enter "MFE" in the search field and press the <Enter> key.
 - ⇒ If the EDS file was installed correctly, the EtherNet/IP™ interface is displayed in the catalog.
5. Select the entry "SEWGATEWAY-MFE62A".

6. Click the [Create] button.
- ⇒ The "New module" window opens.



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7. In the edit box "Name", enter the name of the EtherNet/IP™ interface with which the data are stored in the controller tags.
8. Enter the required IP address of the EtherNet/IP™ interface in the edit box "IP address".
9. In the "Module Definition" group, click the [Change] button.
- ⇒ The "Module definition" window opens.



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10. Select the communication format and the process data arrangement.

The following table shows various settings:

No.	Connection name	File size	Description
1	3PD + DI/DO	8 bytes	<ul style="list-style-type: none"> • 3PI (6 bytes) and digital input values are received. • 6PO (6 bytes) and digital output set-points are sent.
2	2PD + DI/DO	6 bytes	<ul style="list-style-type: none"> • 2PI (4 bytes) and digital input values are received. • 2PO (4 bytes) and digital output set-points are sent.
3	3PD	6 bytes	<ul style="list-style-type: none"> • 3PI (6 bytes) are received. • 3PO (6 bytes) are sent.
4	2PD	4 bytes	<ul style="list-style-type: none"> • 2PI (4 bytes) are received. • 2PO (4 bytes) are sent.
5	Customer Exclusive	10 bytes	<ul style="list-style-type: none"> • An individual configuration can be selected in the controller tags. • Standard: Max. possible connection <ul style="list-style-type: none"> – 3PD – DI/DO – MFE status
6	Customer Input Only	4 – 10 bytes	<ul style="list-style-type: none"> • Only input data is received. No output data is sent.
7	Retrofitting 3PD + DI/DO	7 bytes	<ul style="list-style-type: none"> • 3PD and DI/DO are selected in relation to the DeviceNet™ interface.
8	Retrofitting 2PD + DI/DO	5 bytes	<ul style="list-style-type: none"> • 2PD and DI/DO are selected in relation to the DeviceNet™ interface.

INFORMATION

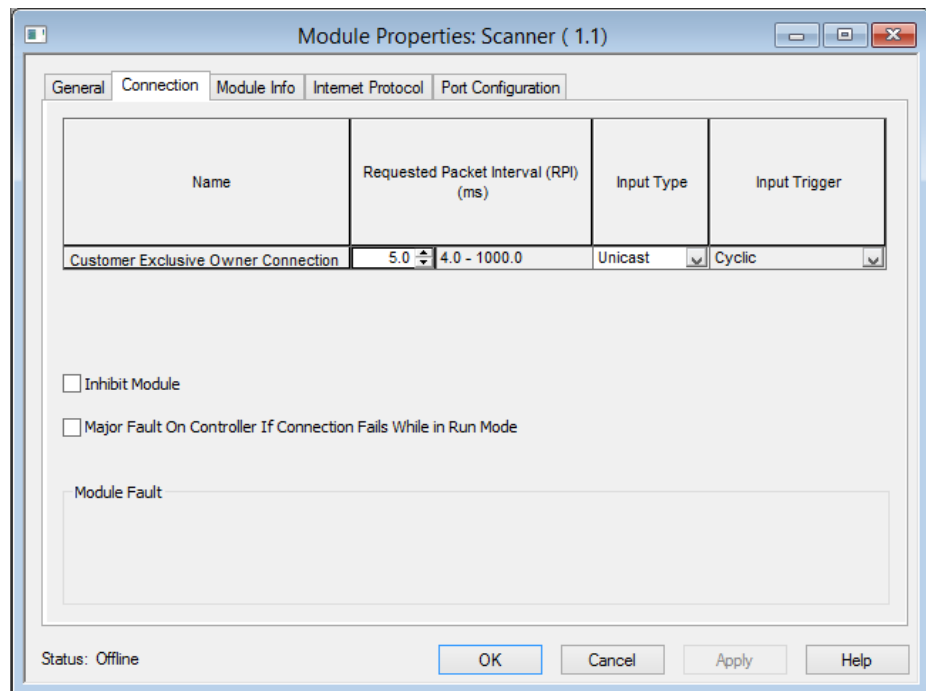


In case you use a predefined connection (No. 1, 2, 3, 4, 7, 8), no further settings in the configuration tags are required.

- For further information on retrofitting from DeviceNet™ to EtherNet/IP™, refer to chapter "Unit replacement DeviceNet™ interface -> EtherNet/IP™ interface" (→ 132).
- When selecting the connection "Customer Exclusive Owner", the dimensioning must be set in the first 5 bytes of the configuration array, in the project controller tag.

See chapter "Configuration while using the Customer Exclusive connection" (→ 76).

11. Open the "Connection" tab.



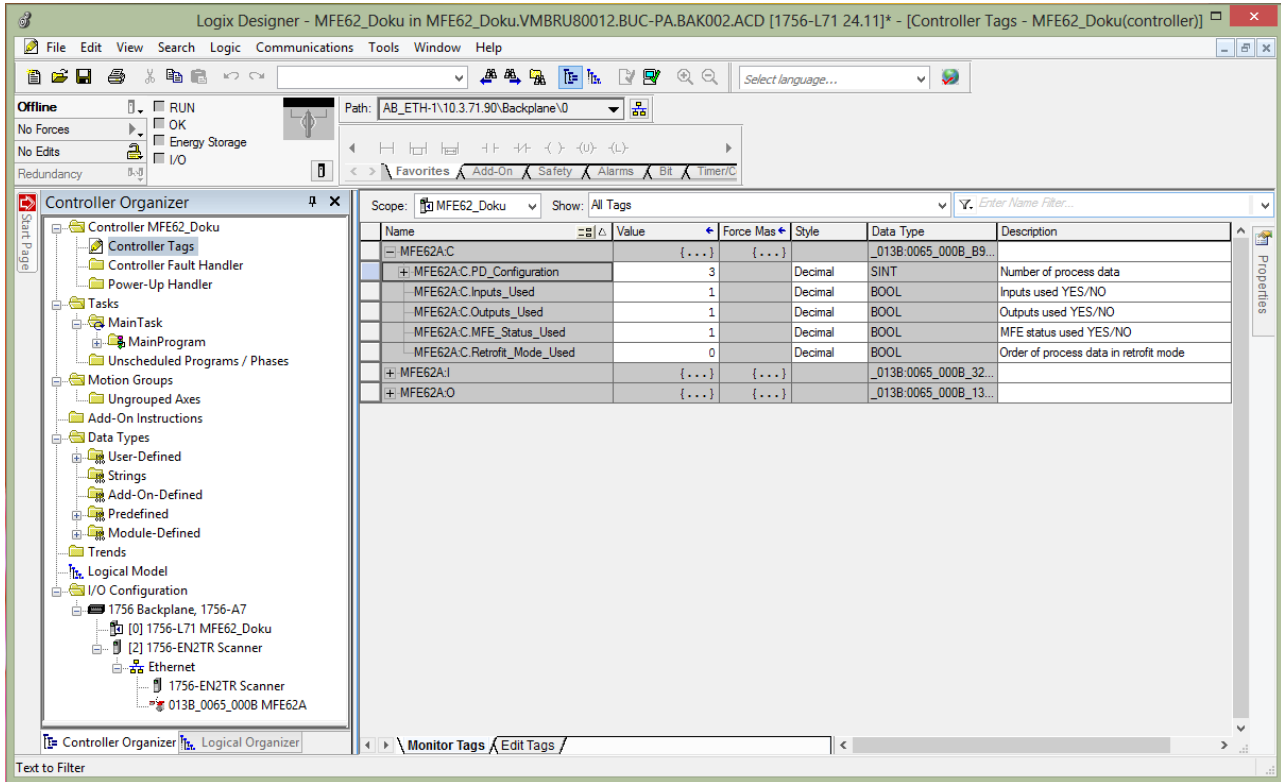
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12. Enter the cycle time (data rate) in the "Requested Packet Interval (RPI)" entry field. The unit supports a cycle time of a minimum of 5 ms. Longer cycle times can be implemented without any problems.
 13. Choose the input type from the drop-down list "input type". Depending on the network configuration, e.g. if a redundant master or an HMI panel is integrated in the network, you can either select "Unicast" or Multicast" connection.
 14. Click [OK].
- ⇒ The device is included in the project and the settings are adopted.

8.3 Configuration while using the Customer Exclusive connection

The MFE62A EtherNet/IP™ interface allows for setting various interface configurations.

In the RSLogix software, switch to the "Controller Tags" menu.



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The process data configuration can be set using the displayed variables.

The following table shows possible configurations:

No.	Tag name	Valid values	Description
1	PD_Configuration	3/2/0	• Number of process data
2	Inputs_Used	1/0	• The values of 4 or 6 digital inputs are received.
3	Outputs_Used	1/0	• The values of the digital outputs are sent.
4	MFE_Status_Used	1/0	• The MFE status is sent in PO.
5	Retrofit_Mode_Used	1/0	• Only 1 byte is used for DI/DO. • The process data arrangement is compatible to the DeviceNet™ interface.

- As standard configuration, all possible options (Status + DI/DO + 3PD) are used.

• **NOTE**

You can choose between 6DI or 4DI/2DO.

The function is assigned via the configuration.

- The process data configuration of the EtherNet/IP™ interface cannot be changed during operation.

Exception:

In case a wrong or invalid configuration is set before network startup, the value of a valid configuration can be **temporarily** changed. To keep this temporary configuration, save the online tags.

This is possible, as the control with the wrong configuration could not establish communication. The control attempts to establish the communication until a valid configuration is present.

- When you assign the value "0" to the tag **"PD_Configuration"**, the EtherNet/IP™ interface will not establish a communication to a lower-level MOVIMOT® inverter.

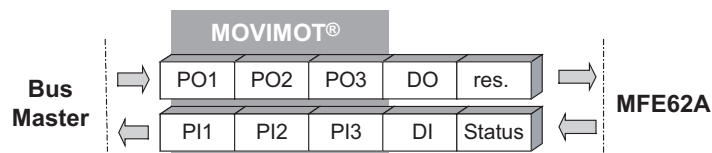
The EtherNet/IP™ interface thus operates as a node for digital inputs and outputs.

- In case you use the Customer Exclusive Owner Connection, **always 10 bytes (5PD)** are transferred.

This also applies, when single parts of the configuration are deactivated (e.g. no digital outputs, 2PD at the MOVIMOT® inverter).

When predefined configurations are used, the number of transferred bytes is adjusted accordingly.

The process data for all configurations are sent as follows:



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8.4 Device Level Ring topology

8.4.1 Description

INFORMATION



The MFE62A EtherNet/IP™ interface only supports announce telegrams. Beacon telegrams on the fieldbus are ignored and just forwarded by the MFE62A EtherNet/IP™ interface.

If a **Device Level Ring** topology (DLR topology) is used, 2 new telegrams are shown on the fieldbus. Both telegrams can be used to detect single fault locations in the ring.

- **Announce telegrams** are sent cyclically every 1 s.

No special hardware of the ring components is required to process the announce telegrams.

The MFE62A EtherNet/IP™ interface only supports announce telegrams.

- **Beacon telegrams** are sent cyclically every 400 µs by the ring supervisor.

A special hardware of the devices in the ring is required to process the beacon telegrams.

Beacon telegrams are ignored and just forwarded by the MFE62A EtherNet/IP™ interface.

8.4.2 Ring fault detection

If Beacon telegrams that are sent to the first port of the ring supervisor are not received by the second port of the ring supervisor, the ring supervisor detects a ring fault.

If the telegrams do not run through the entire ring, the ring supervisor sends a non-cyclical announce telegram. This non-cyclical announce telegram leads to a status change of the EtherNet/IP™ interface. The network is automatically restored.

INFORMATION



Use less than 50 ring nodes in one DLR network. If more than 50 nodes are used in one DLR network, you have to consider the following:

- The risk of faults in the DLR network increases.
- The times for fault rectification in a faulty DLR network increase.

→ If your application requires more than 50 nodes, Rockwell Automation recommends to split up the nodes in separate but linked DLR networks.¹⁾

1) See user guideline by Rockwell Automation "EtherNet/IP Embedded Switch Technology – Linear and Device-level Ring Topologies", Appendix A.

8.4.3 Ring fault rectification

If a single fault location in the ring causes a fault and the rectification takes longer than the fieldbus timeout interval, you can increase the fieldbus timeout (timeout interval) by increasing the cycle time.

The timeout interval of the EtherNet/IP™ interface is calculated as follows:

$$T_{Timeout} = RPI \times 32$$

T_{Timeout} Timeout interval (fieldbus timeout) in ms
RPI Cycle time RPI (**R**equested **P**acket **I**nterval) in ms

The unit supports a cycle time of a minimum of 5 ms.

The minimum timeout interval of the fieldbus is thus 160 ms (5 ms × 32).

8.4.4 Hardware and software configuration

There is no need to make any special settings in the MFE62A EtherNet/IP™ interface for the configuration of a DLR network. All configurations are carried out in the ring supervisor.

INFORMATION

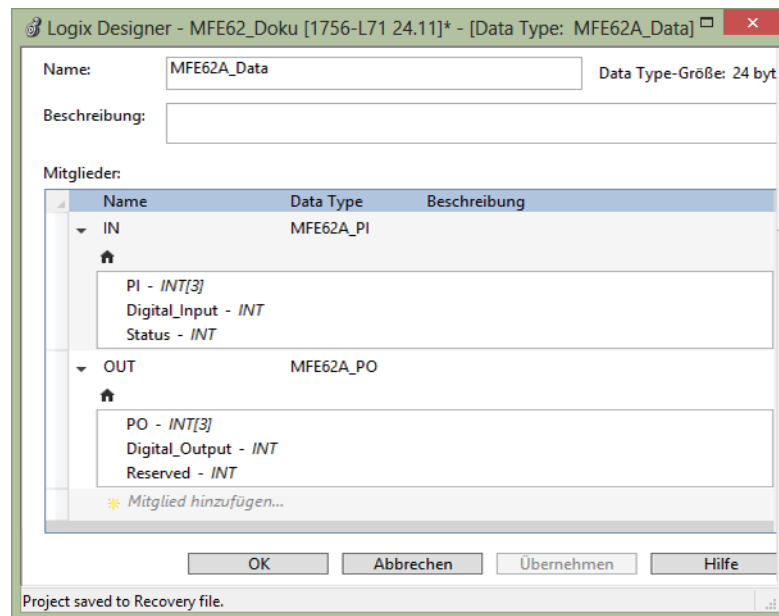


For information on this configuration, refer to the user guideline by Rockwell Automation "EtherNet/IP™ Embedded Switch Technology – Linear and Device Level Ring Topologies".

8.5 Project planning examples

8.5.1 Process data exchange with Studio 5000 Logix Designer

1. Start up the MOVIMOT® drive, see chapter "Startup procedure" (→ 63).
2. Set the IP address in the device, see chapter "IP address" (→ 58).
3. Configure the master, see chapter "Configuration of the EtherNet/IP™ master" (→ 67).
4. Configure the EtherNet/IP™ interface, see chapter "Configuration while using the Customer Exclusive connection" (→ 76).
5. Create a user-defined data type. It allows you to organize the process data in a structure and simplifies access to the process data.



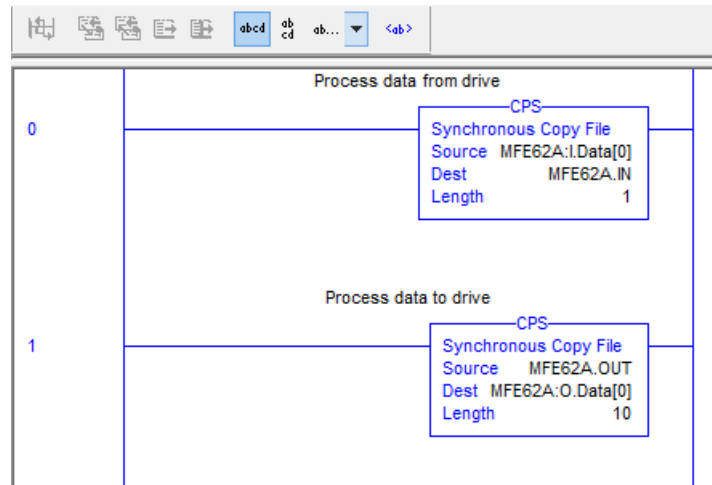
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⇒ You can access the process data interface with explicit variable names with the created data type.

Name	Usage	Value	Force Mask	Style	Data Type	Description
MFE62A	Local	{ ... }	{ ... }		MFE62A_Data	
MFE62A.IN		{ ... }	{ ... }		MFE62A_PI	
MFE62A.IN.PI		{ ... }	{ ... }	Hex	INT[3]	
MFE62A.IN.PI[0]		16#0004		Hex	INT	Status Word 1 M...
MFE62A.IN.PI[1]		16#0000		Hex	INT	Actual Output Curr...
MFE62A.IN.PI[2]		16#2d04		Hex	INT	Status Word 2 M...
MFE62A.IN.Digital_Input		16#0000		Hex	INT	Digital Inputs
MFE62A.IN.Status		16#0000		Hex	INT	Status Word MFE62
MFE62A.OUT		{ ... }	{ ... }		MFE62A_PO	
MFE62A.OUT.PO		{ ... }	{ ... }	Hex	INT[3]	
MFE62A.OUT.PO[0]		16#0000		Hex	INT	Control Word 1 M...
MFE62A.OUT.PO[1]		16#0000		Hex	INT	Setpoint Speed
MFE62A.OUT.PO[2]		16#0000		Hex	INT	Setpoint Ramp
MFE62A.OUT.Digital_Output		16#0000		Hex	INT	Digital Outputs
MFE62A.OUT.Reserved		16#0000		Hex	INT	

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6. To enable process data exchange between the fieldbus interface and the control, insert CPS instructions at the beginning of the MainRoutine. The length designation in the CPS instructions depends on the data type of the destination.
 - ⇒ During copying of the data in the user-defined data structure (from controller to fieldbus interface), the values of a structure are copied.
 - ⇒ During copying of the data from the user-defined data structure to the output data (from the fieldbus interface to controller), 10 bytes (SINT) are copied.



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7. Save the project and transfer it to the controller.

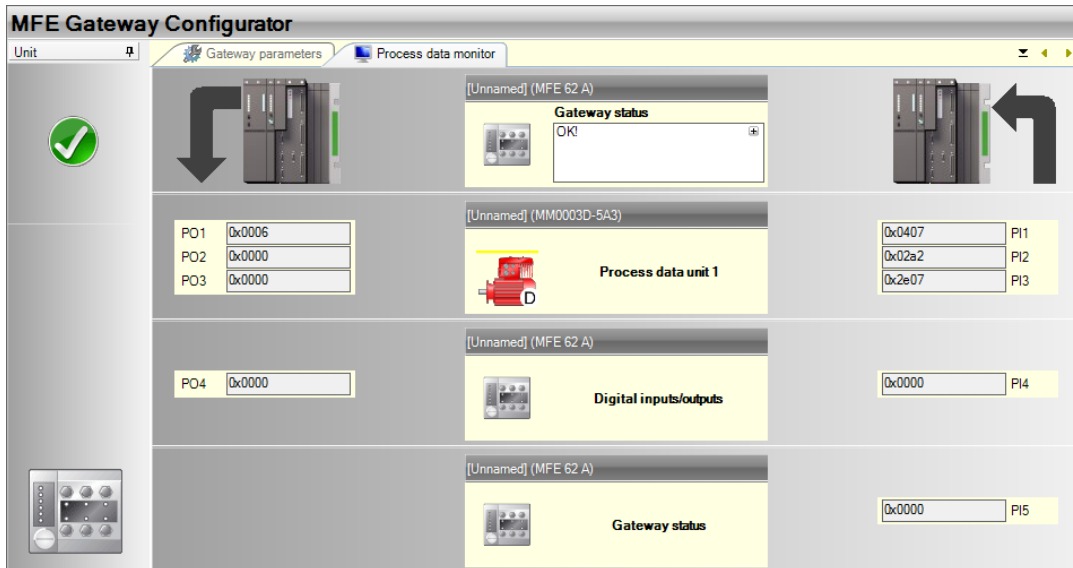
8. Switch to RUN mode of the controller.

Name	Usage	Value	Force Mask	Style	Data Type	Description
MFE62A	Local	{...}	{...}		MFE62A_Data	
MFE62A.IN		{...}	{...}		MFE62A_PI	
MFE62A.IN.PI		{...}	{...}	Decimal	INT[3]	
MFE62A.IN.PI[0]		16#0407		Hex	INT	Status Word 1 M...
MFE62A.IN.PI[1]		16#014a		Hex	INT	Actual Output Curr...
MFE62A.IN.PI[2]		16#2e07		Hex	INT	Status Word 2 M...
MFE62A.IN.Digital_Input		16#0000		Hex	INT	Digital Inputs
MFE62A.IN.Status		16#0000		Hex	INT	Status Word MFE62
MFE62A.OUT		{...}	{...}		MFE62A_PO	
MFE62A.OUT.PO		{...}	{...}	Decimal	INT[3]	
MFE62A.OUT.PO[0]		16#0006		Hex	INT	Control Word 1 M...
MFE62A.OUT.PO[1]		16#0400		Hex	INT	Setpoint Speed
MFE62A.OUT.PO[2]		16#0000		Hex	INT	Setpoint Ramp
MFE62A.OUT.Digital_Out...		16#0000		Hex	INT	Digital Outputs
MFE62A.OUT.Reserved		16#0000		Hex	INT	

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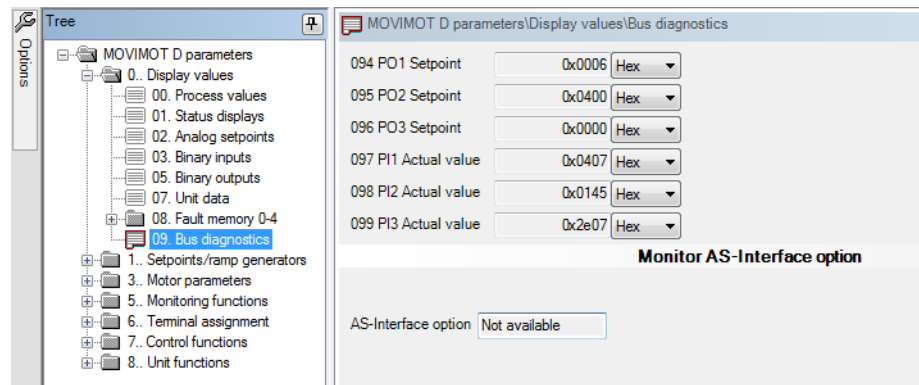
9. Check if the process data correspond to the following values:

⇒ To the values that are displayed in "MFE Gateway Configurator" for the MFE62A EtherNet/IP™ interface.



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⇒ To the values that are displayed in the Gateway Configurator software for the EtherNet/IP™ interface.



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8.5.2 Access to the MOVIMOT® device parameters

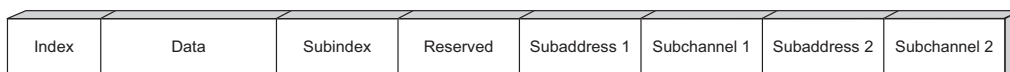
By using a register object, the MOVIMOT® device parameters can be accessed via the MFE62A EtherNet/IP™ interface.

INFORMATION



With exception of the IP address, no parameters are saved to the MFE62A EtherNet/IP™ interface.

The SEW-EURODRIVE parameter channel has the following structure:

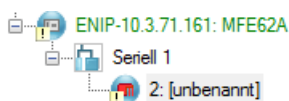


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For MOVIMOT® with EtherNet/IP™ interface, the routing information Subaddress 1 and Subchannel 1 are used. The device parameter can only be addressed with index and subindex. The routing information Subaddress 2 and Subchannel 2 are not used.

Enter the following values for the routing information:

Routing information	Value
Subaddress 1	Address displayed in the network view of MOVITOOLS® MotionStudio.
Subchannel 1	1
Subaddress 2	0
Subchannel 2	0



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Reading parameters

The following example shows, how to read the *P302* parameter maximum speed of the MOVIMOT® drive via the EtherNet/IP™ interface.

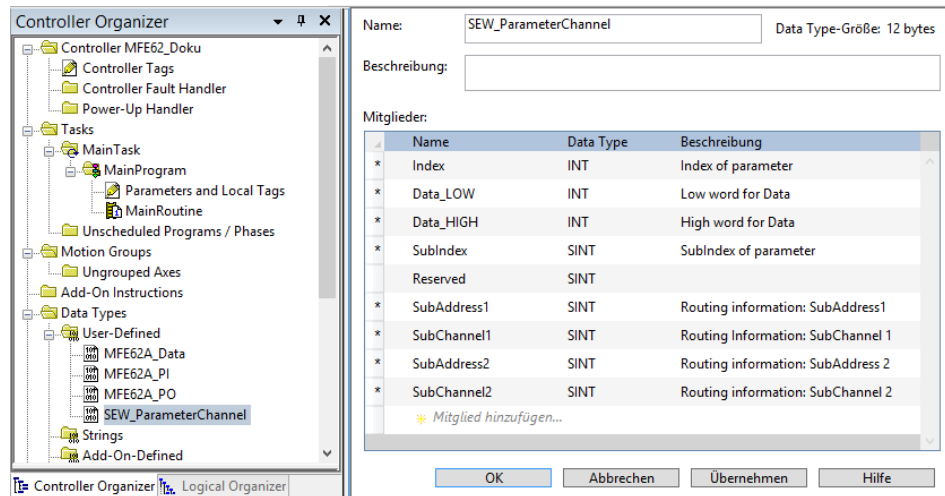
Proceed as follows to read MOVIMOT® parameter:

1. Create the user-defined data type "SEW_ParameterChannel". It allows you to organize the data elements of the parameter channel in a structure and simplifies access to the data elements.

INFORMATION



To ensure proper operation of the parameter channel, you must **not** change the order of the variables. The data types must match the figure.

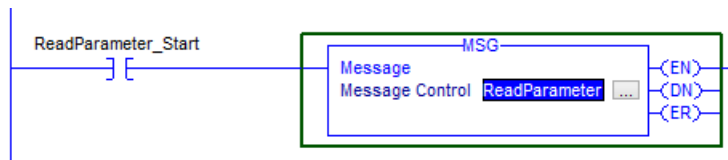


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2. Create the following controller tags:


Name	Data type
ReadParameter_Start	BOOLEAN
ReadParameter_Response	SEW_ParameterChannel
ReadParameter_Request	SEW_ParameterChannel
ReadParameter_Data	DINT
ReadParameter	MESSAGE

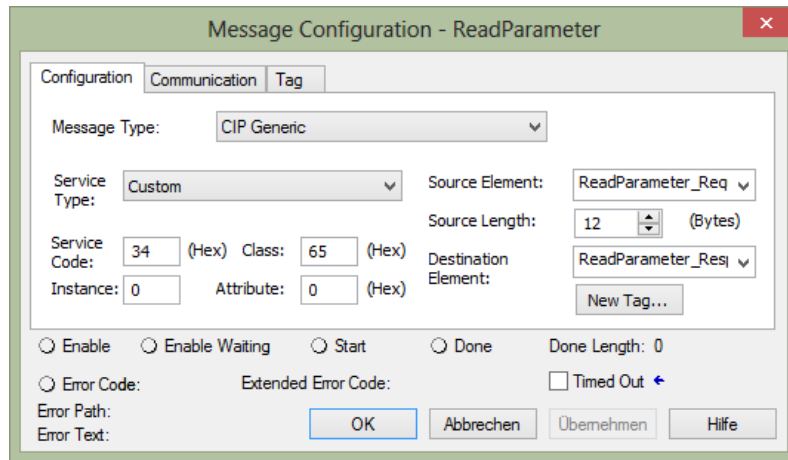
3. To be able to perform the read request, adapt the program of the controller as follows:



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4. Click the button  in the MSG block.
 - ⇒ The following window is displayed.

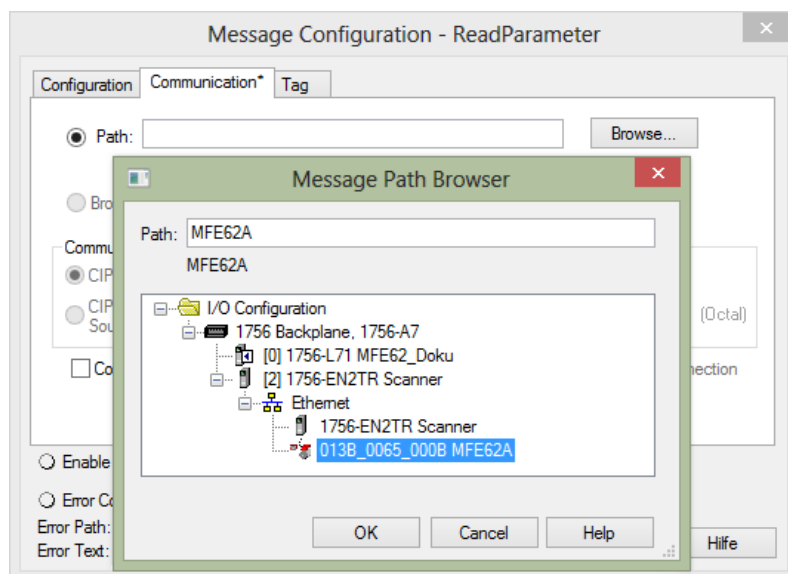


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5. Insert the following values here:

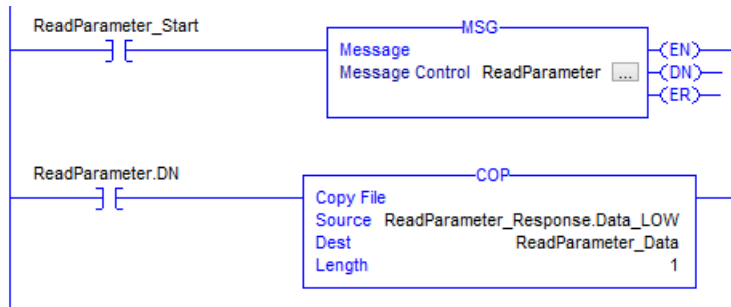
Window element	Setting/value
Source Element	ReadParameterRequest.Index
Source Length (Bytes)	12
Destination	ReadParameterResponse.Index
Class (Hex)	65
Instance	0
Attribute (Hex)	0
Service Code (Hex)	34

6. Open the "Communication" tab.
7. Click on the [Browse] button next to the edit box "Path".
 - ⇒ The "Message Path Browser" window is displayed.



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8. Via "I/O configuration" > "Ethernet", select the target device with which you want to establishing communication.
9. Do **not** activate the check box "Connected". Both the controller and the EtherNet/IP™ interface only allow a limited number of connections.
10. Add the following additional "COP" command to the controller program. The "COP" command copies both INT variables "ReadParameter_Request.Data_LOW" and "ReadParameter_Request.Data_HIGH" to the DINT variable "ReadParameter_Data":



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11. Save the project and transfer it to the controller.
12. Enter the following controller tags values:

Name	Value	Force Mask	Style	Data Type
ReadParameter_Start	1		Decimal	BOOL
ReadParameter_Response	{...}	{...}		SEW_ParameterC...
+ ReadParameter_Response.Index	8517		Decimal	INT
+ ReadParameter_Response.Data_LOW	-14656		Decimal	INT
+ ReadParameter_Response.Data_HIGH	45		Decimal	INT
+ ReadParameter_Response.SubIndex	0		Decimal	SINT
+ ReadParameter_Response.Reserved	0		Decimal	SINT
+ ReadParameter_Response.SubAddress1	2		Decimal	SINT
+ ReadParameter_Response.SubChannel1	1		Decimal	SINT
+ ReadParameter_Response.SubAddress2	0		Decimal	SINT
+ ReadParameter_Response.SubChannel2	0		Decimal	SINT
ReadParameter_Request	{...}	{...}		SEW_ParameterC...
+ ReadParameter_Request.Index	8517		Decimal	INT
+ ReadParameter_Request.Data_LOW	0		Decimal	INT
+ ReadParameter_Request.Data_HIGH	0		Decimal	INT
+ ReadParameter_Request.SubIndex	0		Decimal	SINT
+ ReadParameter_Request.Reserved	0		Decimal	SINT
+ ReadParameter_Request.SubAddress1	2		Decimal	SINT
+ ReadParameter_Request.SubChannel1	1		Decimal	SINT
+ ReadParameter_Request.SubAddress2	0		Decimal	SINT
+ ReadParameter_Request.SubChannel2	0		Decimal	SINT
+ ReadParameter_Data	3000000		Decimal	DINT
+ ReadParameter	{...}	{...}		MESSAGE

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Controller tag	Value
ReadParameter_Start	1
ReadParameter_Request.Index	Index of the parameter to be read
ReadParameter_Request.SubAddress 1	2
ReadParameter_Request.SubChannel 1	1
ReadParameter_Request.SubAddress 2	0

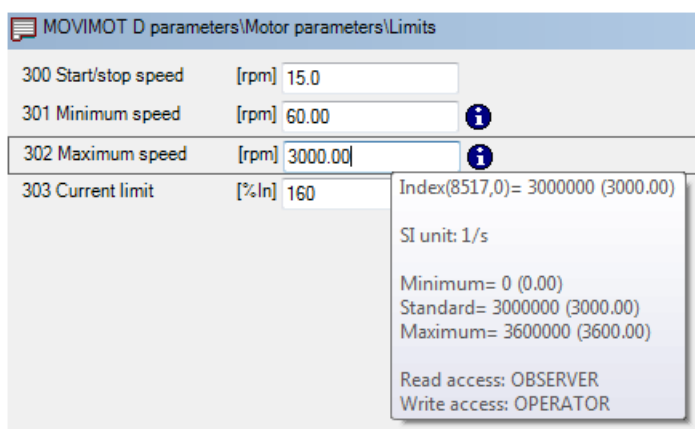
21916381/EN – 11/2015

Controller tag	Value
ReadParameter_Request.SubChannel 2	0

13. Switch to RUN mode of the controller.

- ⇒ If the read request is answered, the controller tag "ReadParameter_Response.Index" displays the read index. The controller tags "ReadParameter_Response.Data_LOW" and "ReadParameter_Response.Data_HIGH" contain the low word and high word of the read data. The actual data are shown in the "ReadParametersResponse.Data" controller tag.
- ⇒ In this example, the value (3000 min⁻¹) of the parameter *P302 maximum speed* (Index 8517.0) was read.

14. Check process data. The read process data should now match the values in the parameter tree of the engineering software MOVITOOLS® MotionStudio.



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- ⇒ The tooltip displays index, subindex, factor, etc. of the parameter.

Writing parameters

The following example shows, how to set the *P302* parameter maximum speed of the MOVIMOT® drive via the EtherNet/IP™ interface.

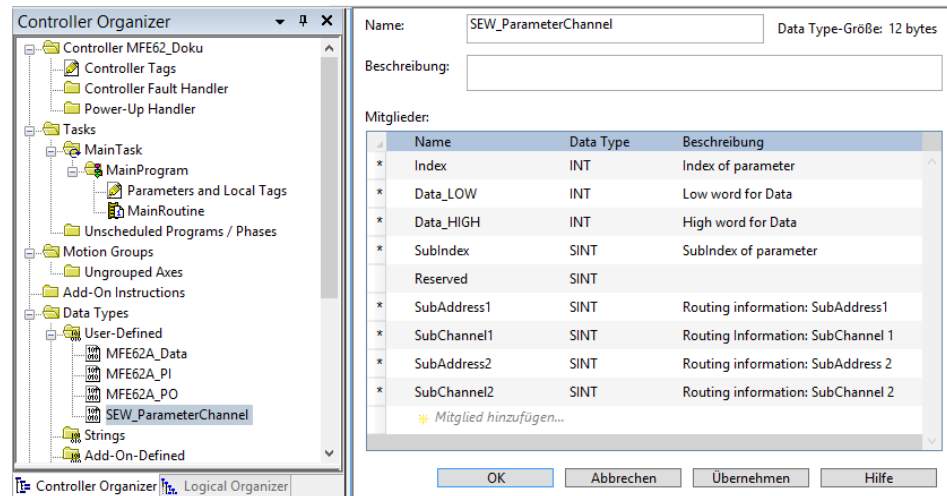
To write parameters to the MOVIMOT® inverter, proceed as follows:

1. Create the user-defined data type "SEW_ParameterChannel". It allows you to organize the data elements of the parameter channel in a structure and simplifies access to the data elements.

INFORMATION



To ensure proper operation of the parameter channel, you must **not** change the order of the variables. The data types must match the figure.

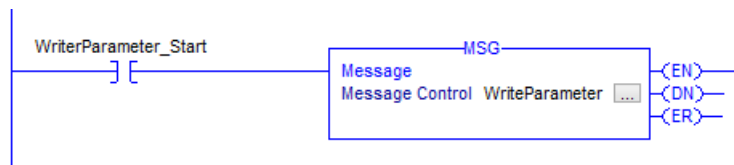


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2. Create the following controller tags:

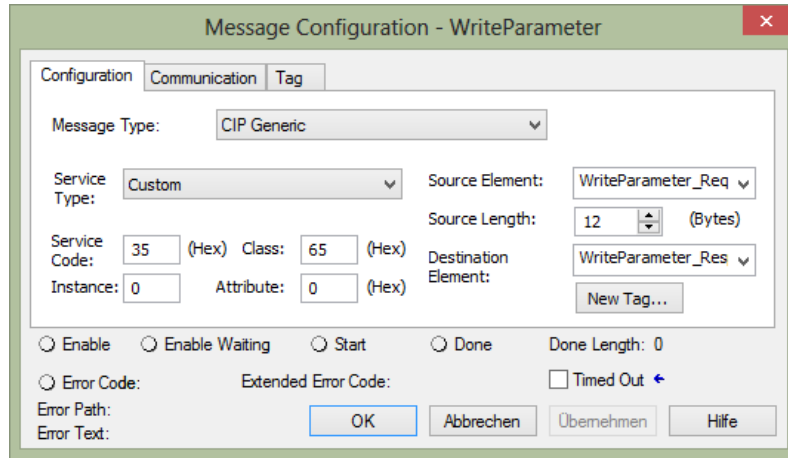
Name	Data type
WRITEParameter_Start	BOOLEAN
WRITEParameter_Response	SEW_ParameterChannel
WRITEParameter_Request	SEW_ParameterChannel
WRITEParameter_Data	DINT
WRITE parameter	MESSAGE

3. To be able to perform the write request, adapt the program of the controller as follows:



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4. Click the button  in the MSG block.
 - ⇒ The "Message Configuration – Write Parameter" window is displayed.

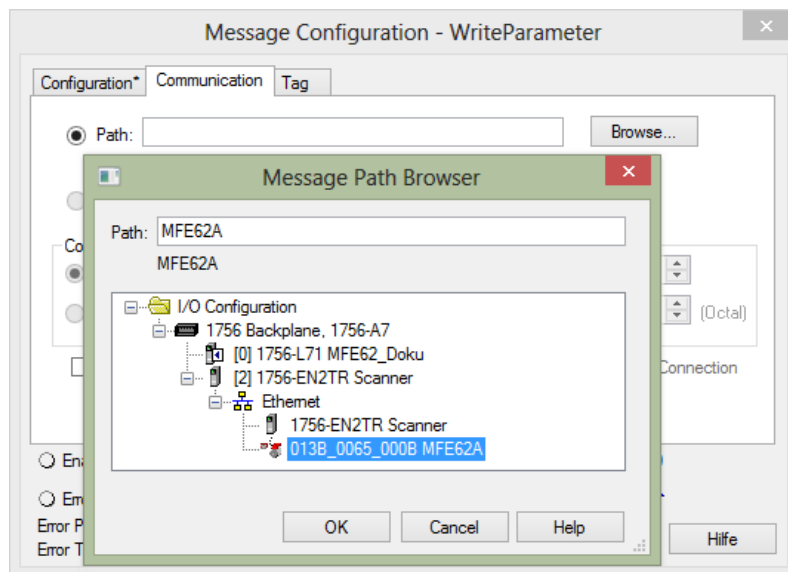


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5. Make the following settings in the specified sequence.

Window element	Setting/value
Source Element	WriteParameterRequest.Index
Source Length (Bytes)	12
Destination	WriteParameterResponse.Index
Class (Hex)	65
Instance	0
Attribute (Hex)	0
Service Code (Hex)	35

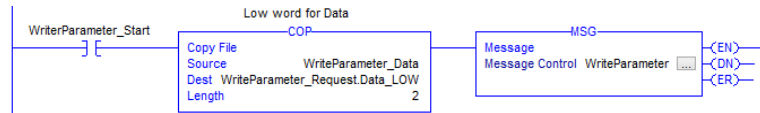
6. Open the "Communication" tab.
7. Click on the [Browse] button next to the edit box "Path".
 - ⇒ The "Message Path Browser" window is displayed.



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8. Via "I/O configuration" > "Ethernet", select the target device with which you want to establish communication.
9. Do **not** activate the check box "Connected". Both the controller and the EtherNet/IP™ interface only allow a limited number of connections.
10. Add the following additional "COP" command to the controller program. The "COP" command copies the DINT variable "WriteParameter_Data" to the INT variables "WriteParameter_Request.Data_LOW" and "WriteParameter_Request.Data_HIGH".



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11. Save the project and transfer it to the controller.
12. Enter the following controller tags values:

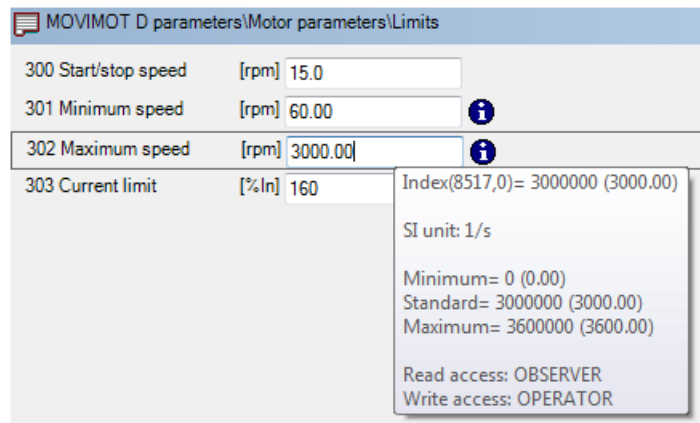
Name	Value	Force Mask	Style	Data Type
WriteParameter_Start	1		Decimal	BOOL
WriteParameter_Response	{...}	{...}		SEW_ParameterC...
WriteParameter_Response.Index	8517		Decimal	INT
WriteParameter_Response.Data_LOW	16#c6c0		Hex	INT
WriteParameter_Response.Data_HIGH	16#002d		Hex	INT
WriteParameter_Response.SubIndex	0		Decimal	SINT
WriteParameter_Response.Reserved	0		Decimal	SINT
WriteParameter_Response.SubAddress1	2		Decimal	SINT
WriteParameter_Response.SubChannel1	1		Decimal	SINT
WriteParameter_Response.SubAddress2	0		Decimal	SINT
WriteParameter_Response.SubChannel2	0		Decimal	SINT
WriteParameter_Request	{...}	{...}		SEW_ParameterC...
WriteParameter_Request.Index	8517		Decimal	INT
WriteParameter_Request.Data_LOW	16#c6c0		Hex	INT
WriteParameter_Request.Data_HIGH	16#002d		Hex	INT
WriteParameter_Request.SubIndex	0		Decimal	SINT
WriteParameter_Request.Reserved	0		Decimal	SINT
WriteParameter_Request.SubAddress1	2		Decimal	SINT
WriteParameter_Request.SubChannel1	1		Decimal	SINT
WriteParameter_Request.SubAddress2	0		Decimal	SINT
WriteParameter_Request.SubChannel2	0		Decimal	SINT
WriteParameter_Data	3000000		Decimal	DINT

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Controller tag	Value
WriteParameter_Start	1
WriteParameter_Request.Index	Index of the parameter to be written
WriteParameter_Data	Value to be written in the parameter
WriteParameter_Request.SubAddress 1	2
WriteParameter_Request.SubChannel 1	1
WriteParameter_Request.SubAddress 2	0
WriteParameter_Request.SubChannel 2	0

13. Switch to RUN mode of the controller.
 - ⇒ The write request is executed once.

- ⇒ If the write request is answered, the controller tag "WriteParameter_Response.Index" displays the written index. The controller tags "WriteParameter_Response.Data_HIGH" and "WriteParameter_Response.Data_LOW" contain the written data.
 - ⇒ In this example, the parameter *P302 maximum speed* was set to 3000 min⁻¹.
14. Check if the process data correspond to the values that are displayed in the parameter tree of the MOVITOOLS® MotionStudio engineering software. As an alternative, the check can be performed in the PLC Editor.



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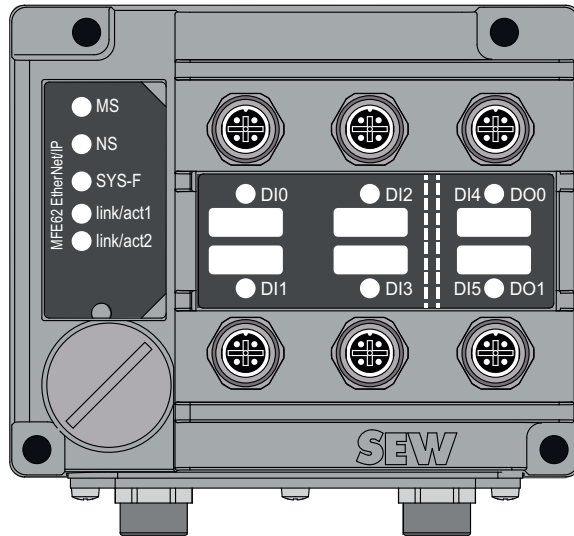
- ⇒ The tooltip displays index, subindex, factor, etc. of the parameter.

9 Function

9.1 Meaning of LED display

The MFE EtherNet/IP™ interface has 5 LEDs for diagnostic purposes.

- The "MS" LED indicates the operating state of the MFE fieldbus interface.
- The "NS" LED indicates the operating state of the EtherNet/IP™ network.
- "SYS-F" LED for displaying system errors.
- The "Link/act1" LED indicates the activity of the EtherNet/IP™ port 1 (X11).
- The "Link/act2" LED indicates the activity of the EtherNet/IP™ port 2 (X12).



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9.1.1 LEDs "MS" and "NS"

The following table lists the statuses of the "MS" (Module Status) and "NS" (Network Status) LEDs:

LED		Meaning	Measure
MS Off	NS Off	MFE62 not ready for operation. No DC 24 V supply.	<ul style="list-style-type: none"> • Check DC 24 V supply. • Switch MFE62 on again. • If this occurs repeatedly, replace MFE62.
MS Red/ green Flashing	NS Red/ green Flashing	MFE62 is performing an LED test. This status should only be activated briefly during startup.	-

LED		Meaning	Measure
MS Red Flashing	NS Red Lights up	Conflict detected while assigning the IP address. Another station in the network uses the same IP address.	<ul style="list-style-type: none"> • Check whether there is a unit in the network with the same IP address. • Change the IP address of the MFE62. • Check the DHCP settings for assigning an IP address of the DHCP server (only when a DHCP server is used).
MS Red Lights up	NS X	Error in the MFE62 assembly hardware.	<ul style="list-style-type: none"> • Switch MFE62 on again. • Restore MFE62 to factory settings. • If this occurs repeatedly, replace MFE62.
MS Green Flashing	NS Off	MFE62 does not have any IP parameters yet. Starting TCP IP stack. If the status continues and the DHCP DIP switch is activated, MFE62 waits for data from the DHCP server.	<ul style="list-style-type: none"> • Set DIP switch S11/1 of the DHCP server to "OFF". • Check the DHCP server connection (only if DHCP is activated and the status continues).
MS Green Lights up	NS X	MFE62 assembly hardware OK.	-
MS X	NS Red Flashing	Timeout delay of the controlling connection has expired. The state is reset by restarting communication.	<ul style="list-style-type: none"> • Check the bus connection of the MFE62. • Check the master/scanner. • Check all the cables in the Ethernet.
MS X	NS Green Flashing	No controlling connection.	-
MS X	NS Green Lights up	There is no controlling connection to a master/scanner.	-

X Any state

9.1.2 "SYS-F" LED

The following table shows the statuses of the "SYS-F" LED:

LED	Meaning	Measure
SYS-F		
Off	Standard operating state. MFE is currently exchanging data with the MOVIMOT® inverter.	-
Red Lights up	MFE cannot exchange data with the MOVIMOT® drive.	Check the RS485 wiring between MFE and MOVIMOT® drive. Check the voltage supply of the MOVIMOT® drive.
Red Flashing (2 s cycle)	MFE initialization error or serious unit error	Use MOVITOOLS® MotionStudio to read out the fault status. Determine cause and acknowledge error.

9.1.3 LEDs "Link/act1" and "Link/act2"

The following table shows the statuses of the "Link/act1" and "Link/act2" LEDs:

LED	Meaning
Green Lights up	Ethernet cable connects device to other Ethernet stations.
Red Flashing	"Localizing" function activated. The LED flashes red when the "Localize" check box was activated in the MOVITOOLS® MotionStudio Address Editor.
Yellow Lights up	Ethernet communication is active.

10 Supplementary Field Distributor Startup Information

The startup procedure is described in the chapter "Startup".

In addition, observe the following notes on the startup of field distributors.

10.1 MF../Z.6. field distributor

10.1.1 Maintenance switch

The maintenance/line protection switch of the Z.6. field distributor protects the hybrid cable against overload and switches the following supplies:

- Power supply and
- DC 24 V supply

▲ WARNING

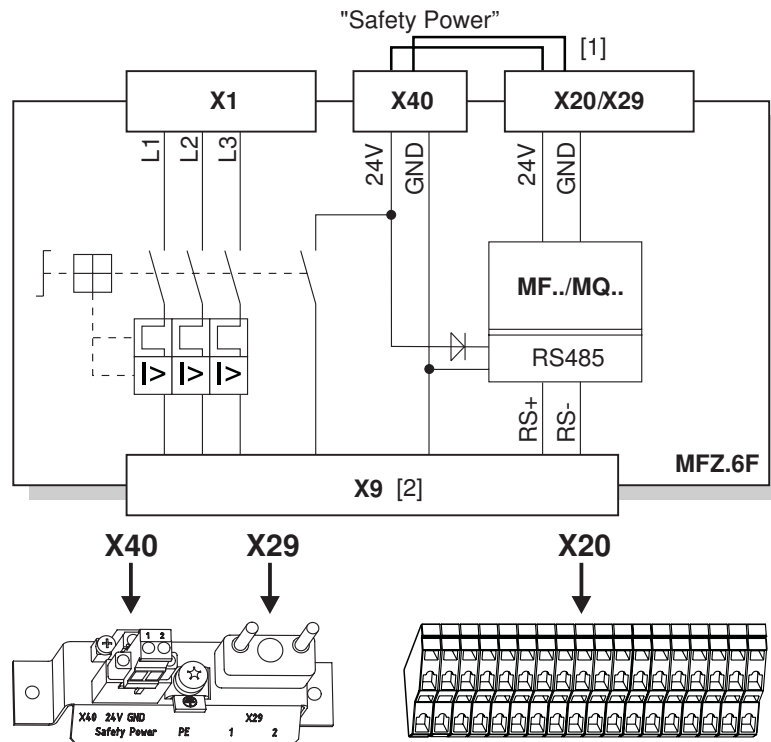


Electric shock caused by dangerous voltages in the connection box and field distributor.

The maintenance/miniature circuit breaker disconnects only the MOVIMOT® drive from the power supply system, not the field distributor.

- Disconnect the field distributor from the power supply. Observe the minimum switch-off time after disconnection from the supply system:
 - 1 minute

Block diagram:



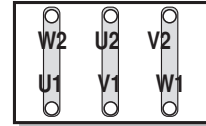
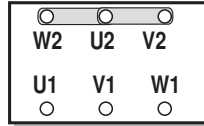
[1] Jumper to supply the MOVIMOT® drive with DC 24 V voltage for the fieldbus interface (installed at the factory)

[2] Hybrid cable connection

10.2 MF../MM../Z.7. field distributor

10.2.1 Checking the connection type of the motor

Use the following figure to check that the selected connection type is identical for the field distributor and the connected motor.

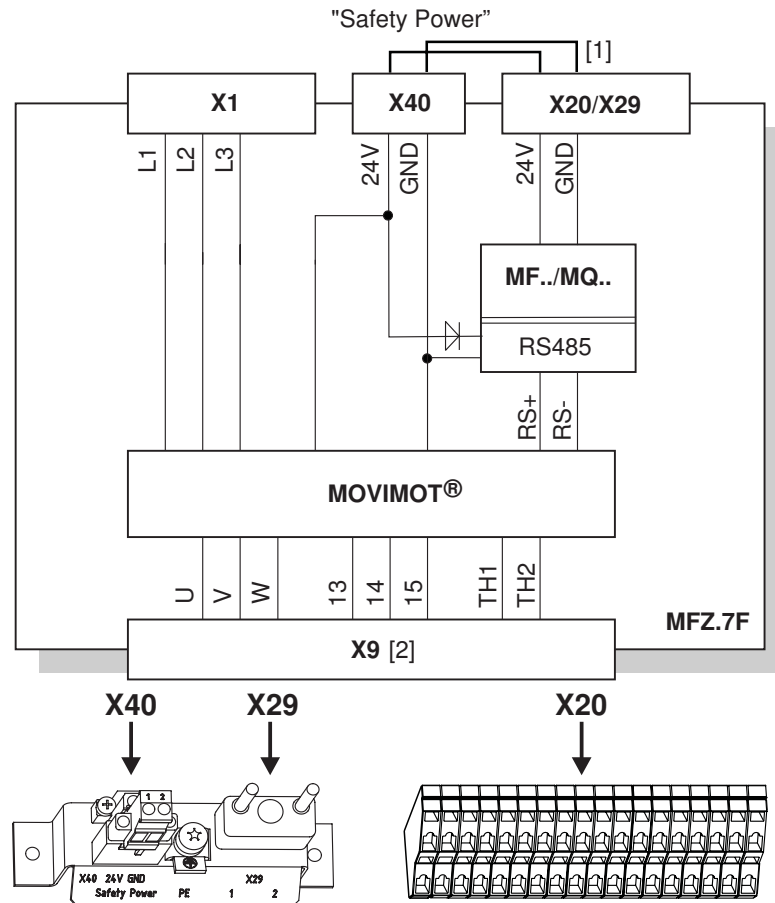


INFORMATION



For brake motors: Do not install brake rectifiers inside the terminal box of the motor!

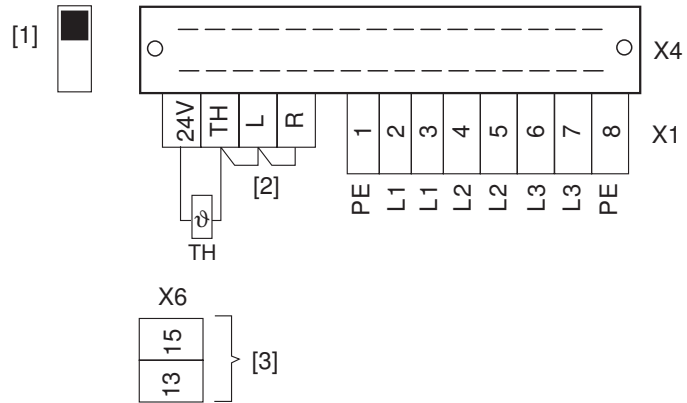
Block diagram:



[1] Jumper to supply the MOVIMOT® drive with DC 24 V voltage for the fieldbus interface (installed at the factory)

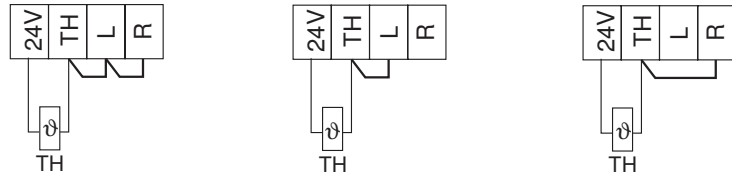
[2] Hybrid cable connection

10.2.2 Internal wiring of the MOVIMOT® inverter in the field distributor



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- [1] DIP switch for setting the connection type
Make sure that the connection type of the connected motor corresponds with the setting of the DIP switch.
- [2] **Note the enabled direction of rotation**
 (Both directions of rotation are enabled as standard)
 Both directions of rotation are enabled Only **CCW** direction of rotation is enabled Only **CW** direction of rotation is enabled



- [3] Connection for internal braking resistor (in motors without brake only)

10.3 MF../MM../Z.8. field distributor

10.3.1 Maintenance switch

The maintenance switch of the Z.8. field distributor switches the following supplies:

- Power supply and
- DC 24 V supply

⚠ WARNING

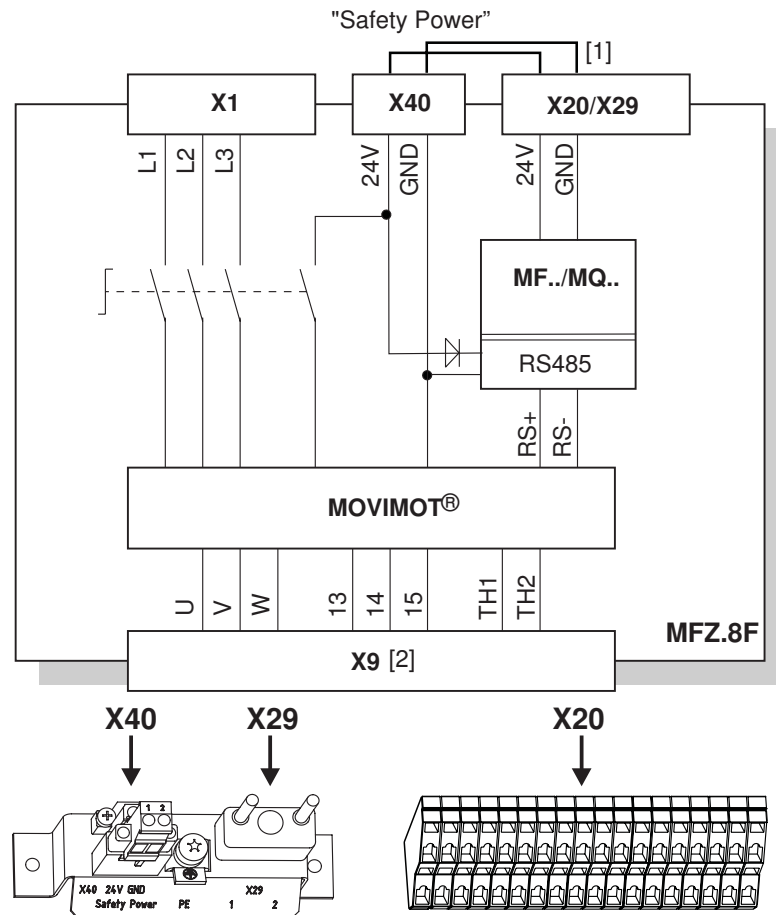


Electric shock caused by dangerous voltages in the connection box and field distributor.

The maintenance/miniature circuit breaker disconnects only the MOVIMOT® drive from the power supply system, not the field distributor.

- Disconnect the inverter from the power. Observe the minimum switch-off time after disconnection from the supply system:
 - 1 minute

Block diagram:



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[1] Jumper to supply the MOVIMOT® drive with DC 24 V voltage for the fieldbus interface (installed at the factory)

[2] Hybrid cable connection

10.3.2 Checking the connection type of the motor

Use the following figure to check that the selected connection type is identical for the field distributor and the connected motor.



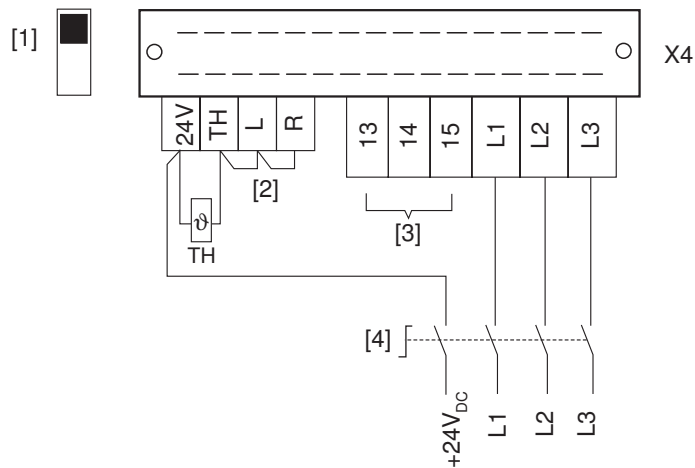
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INFORMATION



For brake motors: Do not install brake rectifiers inside the terminal box of the motor!

10.3.3 Internal wiring of the MOVIMOT® inverter in the field distributor



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- [1] DIP switch for setting the connection type
Make sure that the connection type of the connected motor corresponds with the setting of the DIP switch.
- [2] **Note the enabled direction of rotation**
 (Both directions of rotation are enabled as standard)
 Both directions of rotation are enabled Only **CCW** direction of rotation is enabled Only **CW** direction of rotation is enabled
- [3] Connection for internal braking resistor (in motors without brake only)
- [4] Maintenance switch

10.4 MOVIMOT® inverter integrated in field distributor

The following chapter describes the differences in the use of the MOVIMOT® inverter integrated in the field distributor compared to use when it is integrated in the motor.

10.4.1 Different factory settings for MOVIMOT® integrated in the field distributor

Note the differences in the factory settings when using MOVIMOT® integrated in Z.7 or Z.8. field distributors.

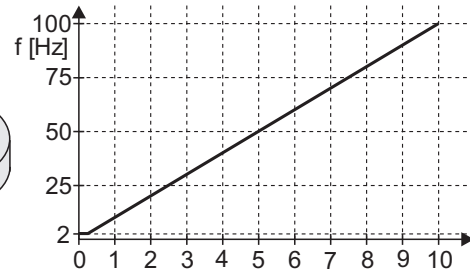
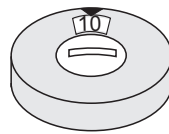
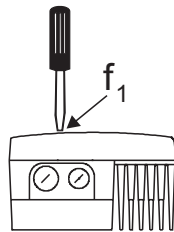
The remaining settings are identical to those for MOVIMOT® integrated in the motor.

Refer to the operating instructions of the respective MOVIMOT® drive.

DIP switch S1:

S1	1	2	3	4	5	6	7	8
Meaning	RS485 address				Motor protection	Motor performance level	PWM frequency	No-load damping
	2 ⁰	2 ¹	2 ²	2 ³				
ON	1	1	1	1	Off	Motor one stage smaller	Variable (16, 8, 4 kHz)	On
OFF	0	0	0	0	On	Adjusted	4 kHz	Off

Setpoint potentiometer f1:



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[1] Factory setting

10.4.2 Additional functions for MOVIMOT® integrated in the field distributor

The following additional functions are available when MOVIMOT® is integrated in the Z.7./Z.8. field distributor (to a limited extent). A detailed description of the additional functions can be found in the respective MOVIMOT® operating instructions.

Additional function		Restriction
1	MOVIMOT® with increased ramp times	–
2	MOVIMOT® with adjustable current limiting (fault if limit is exceeded)	–
3	MOVIMOT® with adjustable current limiting (switchable using terminal f1/f2)	Not available
4	MOVIMOT® with bus configuration	Not available
5	MOVIMOT® with motor protection in Z.7./Z.8. field distributor	–
6	MOVIMOT® with maximum 8 kHz PWM frequency	–
7	MOVIMOT® with rapid start/stop	The mechanical brake can only be controlled by MOVIMOT®. It is not possible to control the brake using the relay output.
8	MOVIMOT® with minimum frequency 0 Hz	–
10	MOVIMOT® with minimum frequency 0 Hz and reduced torque at low frequencies	–
11	Monitoring of line phase failure deactivated	–
12	MOVIMOT® with rapid start/stop and motor protection in Z.7. and Z.8. field distributors	The mechanical brake can only be controlled by MOVIMOT®. It is not possible to control the brake using the relay output.
14	MOVIMOT® with deactivated slip compensation	–

INFORMATION

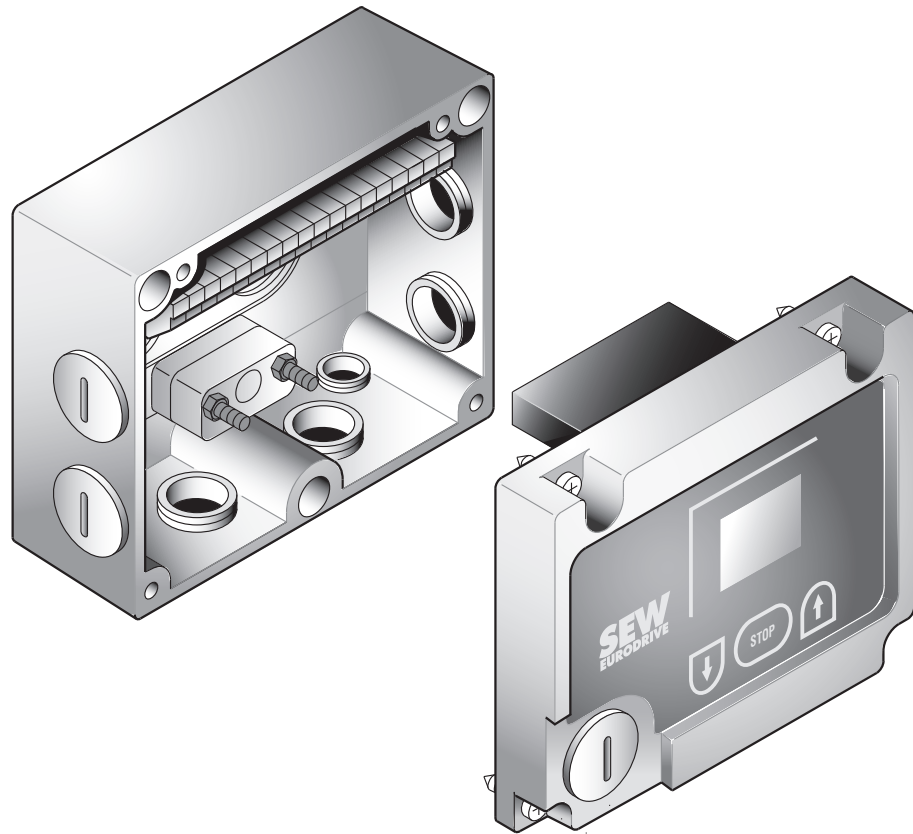


Do not use additional function 9 "MOVIMOT® for lifting applications" and additional function 13 "MOVIMOT® for lifting applications with extended n-monitoring" when the MOVIMOT® inverter is integrated in the Z.7./Z.8. field distributor.

11 MFG11A keypad













11.1 Function

The MFG11A keypad is plugged onto any MFZ.. connection module instead of a field-bus interface, and so allows manual control of a MOVIMOT® drive.



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11.2 Use

Operation of the MFG11A option	
Display	<p>Negative display value e.g.  = CCW operation.</p> <p>Positive display value e.g.  = CW operation.</p> <p>The display value is based on the speed set using the setpoint potentiometer f1. Example: Display "50" = 50% of the speed set with the setpoint potentiometer. Notice: If the display is "0," the drive is rotating at f_{min}.</p>
Increase speed	<p>For CW direction:  For CCW direction: </p>
Reduce speed	<p>For CW direction:  For CCW direction: </p>
Inhibit MOVIMOT® drive	<p>Press the button:  Display = </p>
Enable MOVIMOT® drive	<p> or </p> <p>NOTICE! After enable, the MOVIMOT® drive accelerates to the speed and in the direction of rotation saved last.</p>
Change in direction of rotation	<p> Until display = </p>

INFORMATION



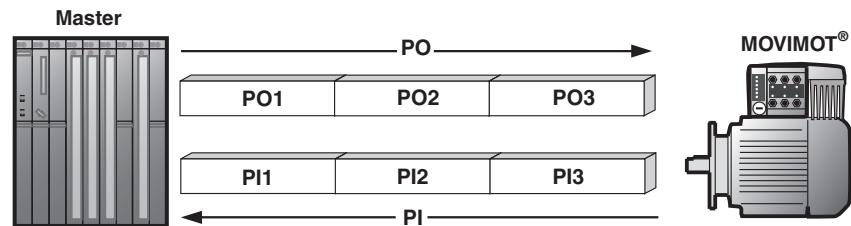
When the 24 V supply is switched back on, the module is always in STOP status (display = OFF). When selecting the direction using the arrow keys, the drive (setpoint) starts from 0.

12 MOVILINK® device profile

12.1 Coding of the process data

The same process data information is used for control and setpoint selection in all fieldbus systems. The coding of the process data takes place according to the uniform MOVILINK® profile for SEW-EURODRIVE drive inverters. The following variants are available for MOVIMOT® drives:

- 2 process data words (2 PD)
- 3 process data words (3 PD)



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PO = Process output data
 PO1 = Control word
 PO2 = Speed (%)
 PO3 = Ramp

PI = Process input data
 PI1 = Status word 1
 PI2 = Output current
 PI3 = Status word 2

12.1.1 2 process data words

For controlling the MOVIMOT® inverter via 2 process data words, the higher-level controller sends the process output data "Control word" and "Speed [%]" to the MOVIMOT® inverter. The MOVIMOT® inverter sends the process input data "Status word 1" and "Output current" to the higher-level controller.

12.1.2 3 process data words

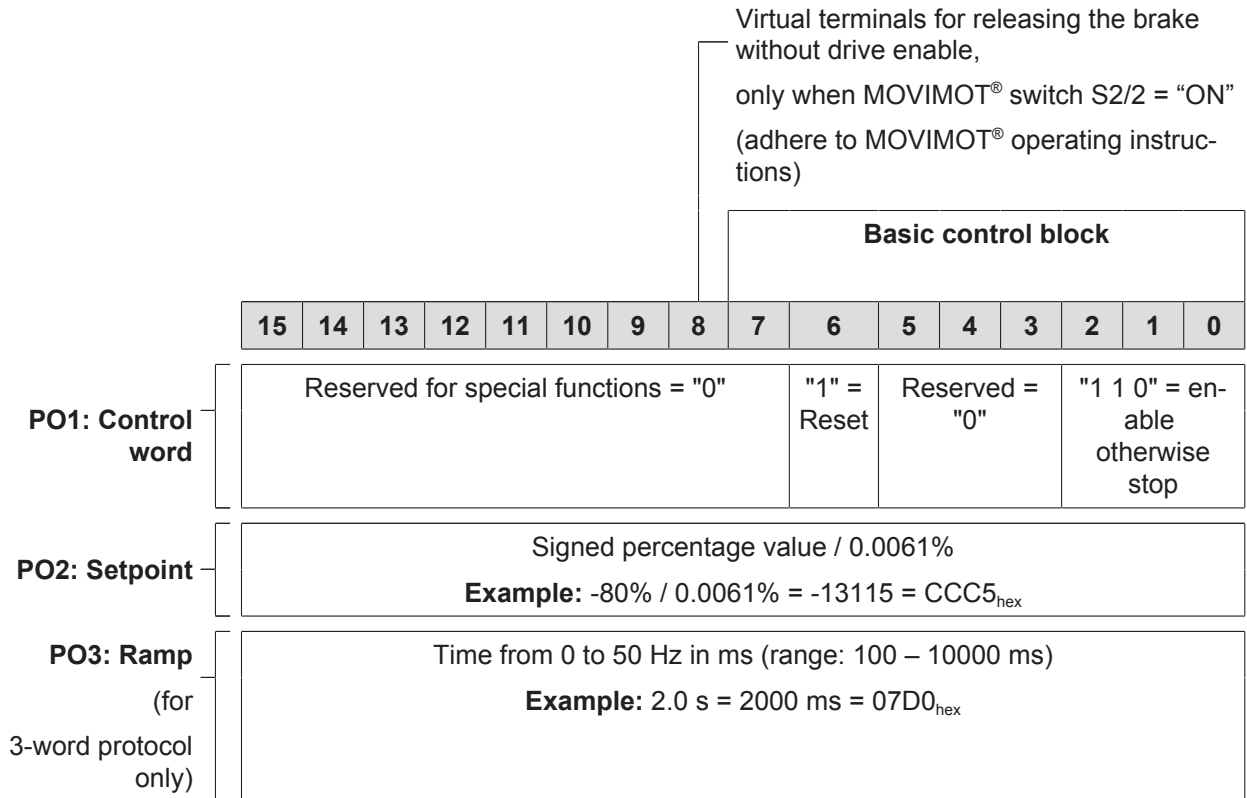
When control uses 3 process data words, the ramp is sent as the additional process output data word and status word 2 is sent as the third process input data word.

12.1.3 Process output data

Process output data is sent from the higher-level controller to the MOVIMOT® inverter (control information and setpoints). They only take effect in the MOVIMOT® inverter if the RS485 address in the MOVIMOT® inverter (DIP switches S1/1 to S1/4) is set to a value other than "0".

The MOVIMOT® drive can be controlled via the following process output data:

- PO1: Control word
- PO2: Speed [%] (setpoint)
- PO3: Ramp



Control word bit 0 – 2

The "Enable" control command is set with bits 0 – 2 by entering the control word = 0006_{hex}. The CW and/or CCW input terminal must also be set to +24 V (jumpered) to enable the MOVIMOT® drive.

The "Stop" control command is issued by resetting bit 2 = "0." Use the stop command 0002_{hex} to enable compatibility with other SEW-EURODRIVE inverter series. MOVIMOT® inverter always triggers a stop with the current ramp whenever bit 2 = "0," regardless of the status of bit 0 and bit 1.

Control word, bit 6 = reset

In the event of a malfunction, the fault can be acknowledged by setting bit 6 = "1" (Reset). For reasons of compatibility, any control bits not assigned must be set to the value "0".

Speed [%]

The speed setpoint is given as a relative value in percentage and refers to maximum speed set using the setpoint potentiometer f1.

Coding: $C000_{\text{hex}} = -100\%$ (counterclockwise rotation)
 $4000_{\text{hex}} = +100\%$ (clockwise rotation)
 $\rightarrow 1 \text{ digit} = 0.0061\%$

Example: $80\% f_{\text{max}}$, CCW rotation:

Calculation: $-80\% / 0.0061 = -13115_{\text{dec}} = CCC5_{\text{hex}}$

Ramp

The current integrator in the process output data word PO3 is transferred if the process data exchange takes place using three process data words. The integrator ramp set with switch t1 is used if the MOVIMOT® drive is controlled using 2 process data words.

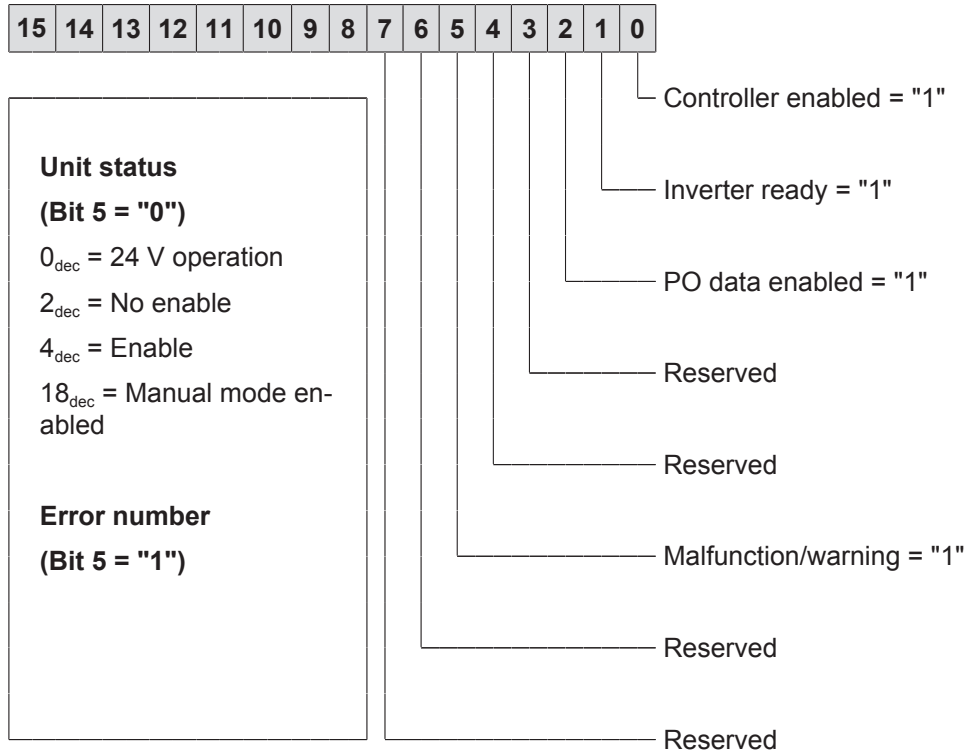
Coding: 1 digit = 1 ms
Range: 100 – 10000 ms
Example: $2.0 \text{ s} = 2000 \text{ ms} = 2000_{\text{dec}} = 07D0_{\text{hex}}$

12.1.4 Process input data

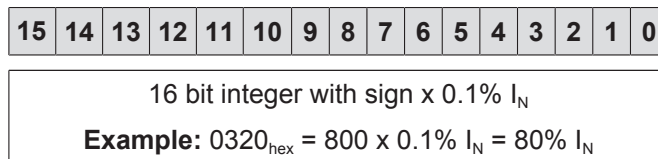
The MOVIMOT® inverter sends the process input data back to the higher-level controller. The process input data contains information on statuses and actual values. The MOVIMOT® drive supports the following process input data:

- PI1: Status word 1
- PI2: Output current
- PI3: Status word 2

PI1: Status word 1

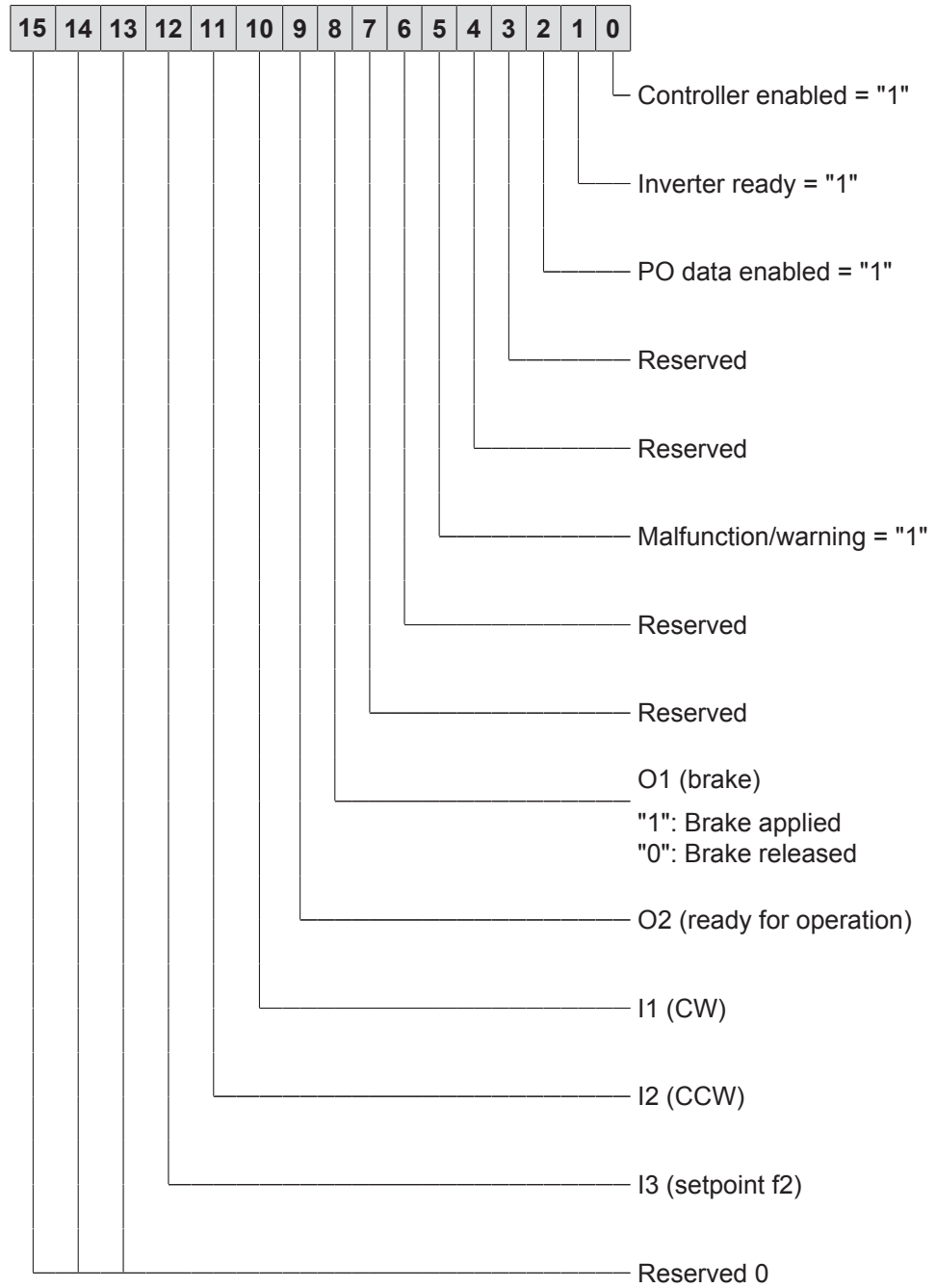


PI2: Actual current value



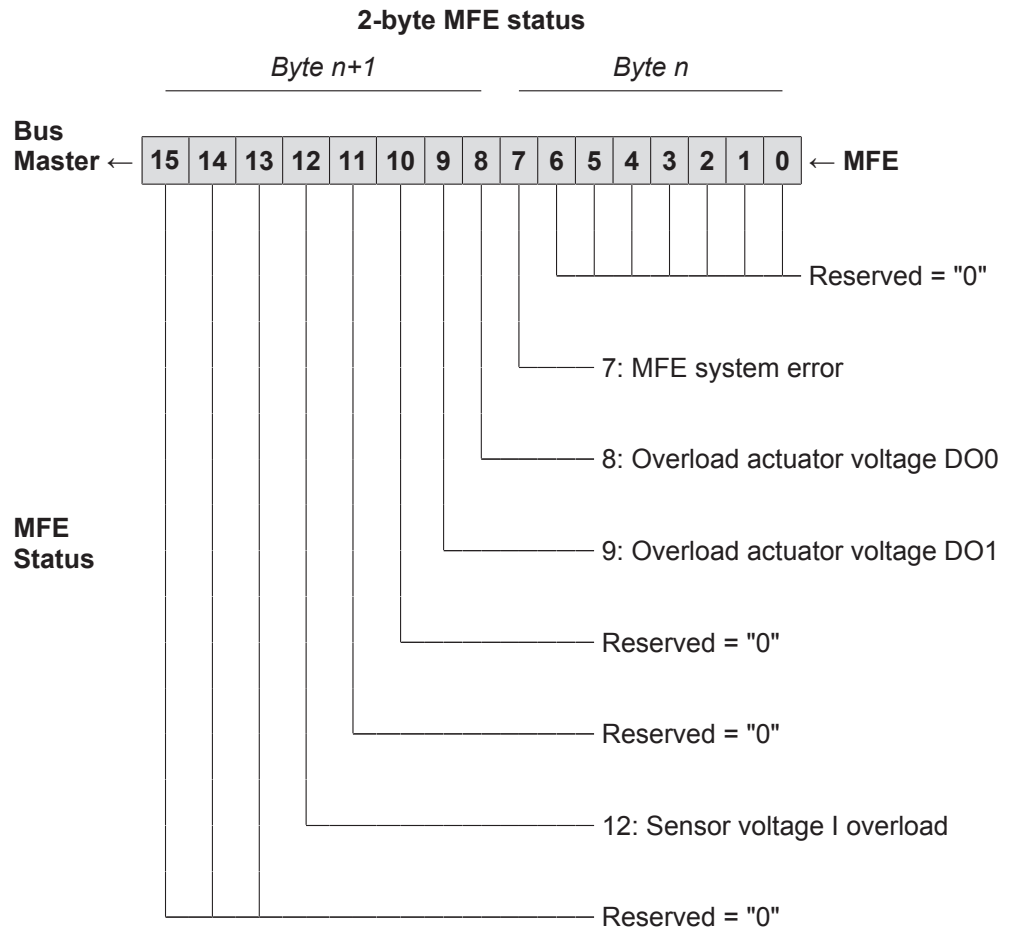
PI3: Status word 2

(only for 3-word protocol)



12.2 MFE status word

The following figure shows the assignment of the MFE fieldbus interface status word:



The following table shows the diagnostic information of the MFE fieldbus interface set up for evaluation in the higher-level PLC application. The signals are transferred to the controller via parameters and, if necessary, via the process data channel. The logical communication status "0" signals the status OK for each signal to ensure that no asynchronous startup sequences from the bus master and the PLC can cause incorrect diagnostic messages when the systems are started up (bus startup with user data = 0).

MFE status bit	Diagnostic name via bus	Function and coding
0	Reserved	–
1	Reserved	–
2	Reserved	–
7	MFE system error	MFE system error 1 = MFE system error occurred 0 = OK For further information, refer to parameter index 8310.
8	Overload actuator voltage DO0	Short circuit/overload of the actuator supply for output DO0 1 = Short circuit/overload DO0 0 = OK
9	Overload actuator voltage DO1	Short circuit/overload of the actuator supply for output DO1 1 = Short circuit/overload DO1 0 = OK
10	Reserved	–
11	Reserved	–
12	Overload sensor voltage group I	Short circuit/overload of the sensor supply group I (VO24-I) 1 = short circuit/overload sensor supply 0 = Sensor supply OK
13	Reserved	–
14	Reserved	–
15	Reserved	–

13 Operation of MOVITOOLS® MotionStudio

13.1 About MOVITOOLS® MotionStudio

13.1.1 Tasks

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

- Establishing communication with units
- Executing functions of the units

13.2 First steps

13.2.1 Starting the software and creating a project

Proceed as follows:

1. Select the following item from the Windows start menu: [Start] / [Programs] / [SEW] / [MOVITOOLS MotionStudio] / [MOVITOOLS MotionStudio]
⇒ MOVITOOLS® MotionStudio is started.
2. Create a project with a name and directory.

13.2.2 Establishing communication and scanning the network

Proceed as follows:

1. Set up a communication channel to communicate with your units.
⇒ For detailed information on how to configure a communication channel and regarding the relevant communication type, refer to chapter "Communication via ...".
2. Scan your network (unit scan) via the icon [1] in the toolbar.



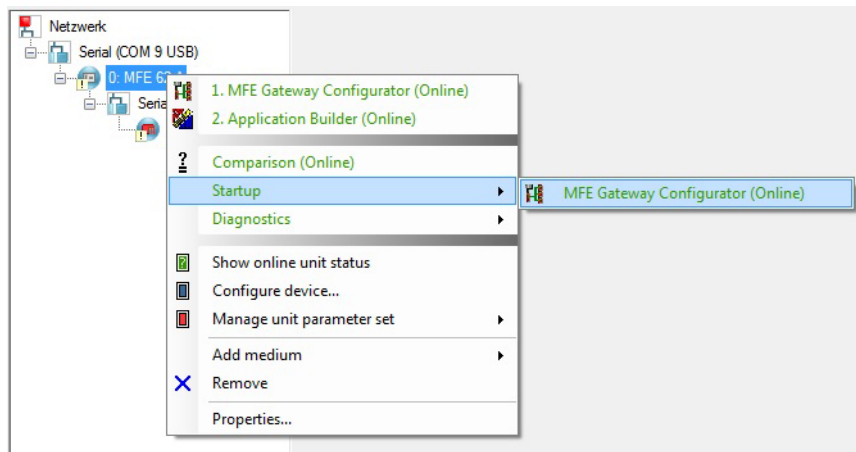
[1]

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13.2.3 Configuring units

Proceed as follows to configure a unit:

1. Select the unit (usually the power section [1]) in the network view.
2. Right-click to open the context menu and display the tools for configuring the unit.



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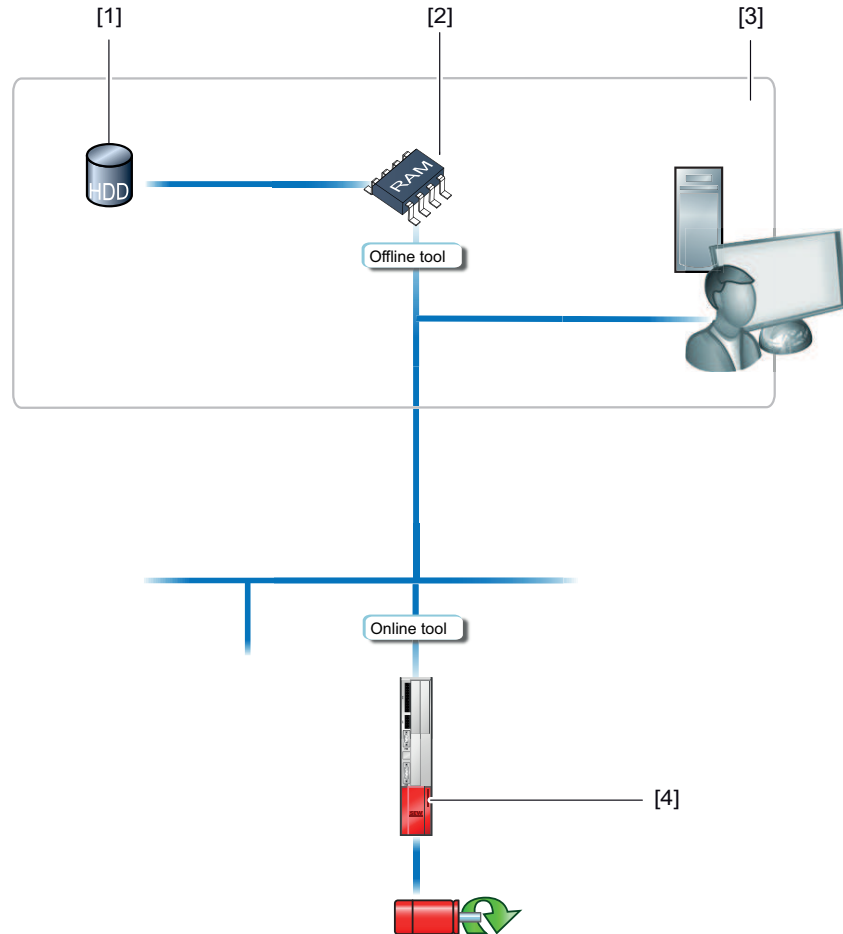
The example shows the context menu with the tools for a fieldbus interface. The communication mode is set to "online" and the unit is scanned in the network view.

13.3 Connection Mode

13.3.1 Overview

MOVITOOLS® MotionStudio differentiates between "online" and "offline" connection mode. You determine the connection mode yourself. Depending on the selected connection mode, you can choose offline or online tools specific to your unit.

The following figure illustrates the two types of tools:



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- [1] Hard drive of the engineering PC
- [2] RAM of the engineering PC
- [3] Engineering PC
- [4] Unit

Tools	Description
Offline tools	<p>Changes made using offline tools affect "ONLY" the RAM [2] at first.</p> <ul style="list-style-type: none"> • Save your project so that the changes can be stored on the hard disk [1] of your engineering PC [3]. • Execute the "Download (PC->unit)" function if you want to transfer the changes to your unit [4] as well. This is only possible, when the PC is connected to the device via USB.

Tools	Description
Online tools	<p>Changes made using online tools affect "ONLY" the unit [4] at first.</p> <ul style="list-style-type: none"> • Perform the "Upload (unit->PC)" function if you want to transfer the changes to your RAM. • Save your project so that the changes can be stored on the hard disk [1] of your engineering PC [3].

INFORMATION



- The "Online" connection status is **NOT** a response message which informs you that you are currently connected to the unit or that your unit is ready for communication. If you need this response message, pay attention to the chapter "Setting up the cyclic availability test" in the online help (or in the manual) of MOVITOOLS® MotionStudio.
- Project management commands (such as "download" and "upload"), the online device status, and the "device scan" operate independently of the set connection mode.
- MOVITOOLS® MotionStudio starts up in the connection state that you set before you closed down.

13.3.2 Selecting the communication mode (online or offline)

Proceed as follows to set the connection mode:

1. Select the connection mode:

- ⇒ "Switch to online mode" [1] for functions (online tools) that should directly influence the unit.
- ⇒ "Switch to offline mode" [2] for functions (offline tools) that should influence your project.



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[1] "Switch to online mode" icon

[2] "Switch to offline mode" icon

2. Select the device node.
3. Right-click to open the context menu and display the tools for configuring the unit.

13.4 Serial communication (RS485) via interface adapters

13.4.1 PC/laptop connection

The fieldbus interfaces have a diagnostic interface (RJ10 plug connector) for startup, parameter setting, and service.

The diagnostic interface is located underneath the screw plug of the fieldbus interface.

You must remove the screw plug before plugging in the connector into the diagnostic interface.

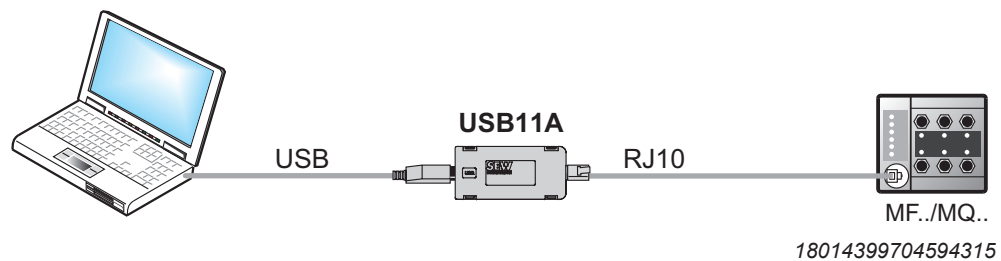
▲ WARNING!

Danger of burns from the hot surfaces of the MOVIMOT® drive (in particular the heat sink).

Severe injuries.

- Wait for the MOVIMOT® drive to cool down sufficiently before touching it.

The diagnostic interface is connected to a commercially available PC/Laptop via the USB11A interface adapter with USB port, part number 08248311:



Scope of delivery:

- USB11A interface adapter
- Cable with RJ10 plug connector
- Interface cable for USB (USB11A)

Installing the drivers

The drivers for the USB11A interface adapter are installed during installation of MOVITOOLS® MotionStudio.

Proceed as follows:

1. Make sure that you have local administrator rights on your PC/laptop.
2. Connect the USB11A interface adapter to a free USB port on your PC/laptop.
 - ⇒ Your PC will detect the new hardware and launch the hardware wizard.
 - ⇒ The interface adapter is ready for operation.

Checking the COM port of the USB11A on the PC/laptop

Proceed as follows:

1. Select the following item from the Windows start menu on your PC/laptop: [Start] / [Settings] / [Control Panel] / [System].
2. Open the "Hardware" tab.
3. Click on the [Device manager] button.
4. Open the "Connections (COM and LPT)" folder.
 - ⇒ The virtual COM port assigned to the interface adapter is displayed (e.g. "USB Serial Port (COM3)").
5. To avoid conflicts with another COM port, change the COM port of the USB11A interface adapter:
 - Select the COM port of USB11A in the device manager.
 - In the context menu, click the [Properties] command and assign the USB11A to another COM port.
 - Restart your PC/laptop for the changes to become effective.

13.4.2 Configuring the serial communication

Proceed as follows:

- ✓ There is a serial connection between your PC/laptop and the units you want to configure via the USB11A interface adapter.

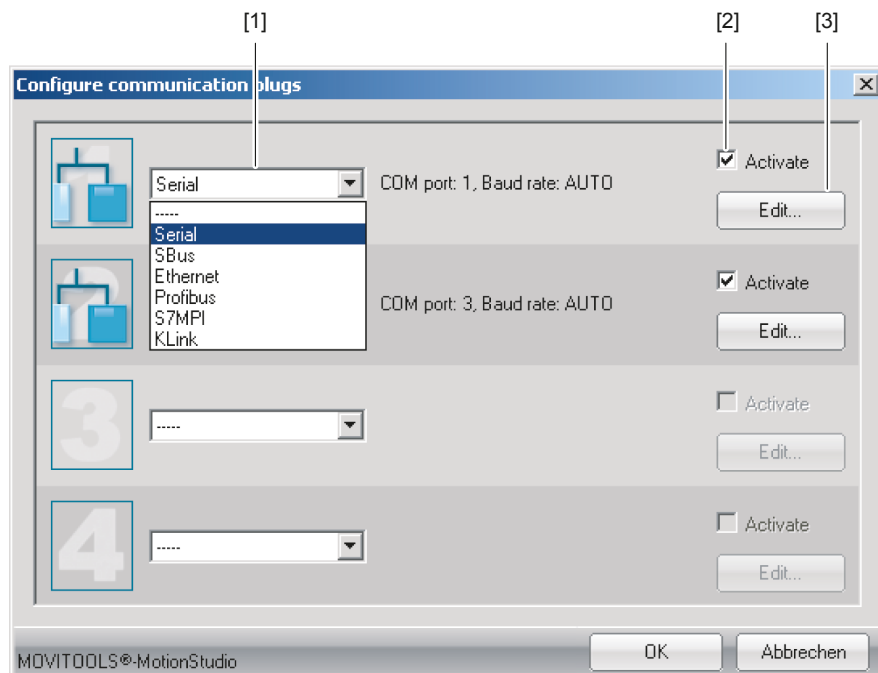
1. Click the icon [1] in the toolbar.



[1]

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⇒ The following window is displayed.



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2. From the list [1], select "Serial" as the communication type.

⇒ In the example, "Serial" is activated as the communication type for the first communication channel [2].

3. Click the button [3].

⇒ This displays the settings for the communication type "Serial".



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4. It might be necessary to change the preset communication parameters on the tab pages "Basic settings" and "Extended settings". Refer to chapter Serial communication parameter (RS485) for a detailed description of the communication parameters.

13.4.3 Serial communication parameter (RS485)

The following table describes the [Basic setting] for the serial (RS485) communication channel:

Communication parameter	Description	Information
COM port	Serial port connected to the interface adapter	<ul style="list-style-type: none"> If there is no value entered here, the SEW Communication Server uses the first available port.
Baud rate	Transmission speed with which the connected PC communicates with the unit in the network via the communication channel.	<ul style="list-style-type: none"> Possible values: <ul style="list-style-type: none"> 9.6 kBit/s 57.6 kBit/s AUTO (default setting) Find the correct value for the connected unit in the documentation. If you set "AUTO", the units are scanned with both baud rates in succession. If you do not set "AUTO", you must configure the baud rate to 57.6 kBit/s. Set the initial value for automatic baud rate detection under [Settings] > [Options] > [Communication].

The following table describes the [Extended setting] for the serial (RS485) communication channel:

Communication parameter	Description	Information
Parameter telegrams	Telegram with 1 single parameter	Used to transfer 1 single parameter of a unit.
Multi-byte telegrams	Telegram with several parameters	Used to transfer the complete parameter set of a unit.
Timeout	Waiting time in [ms] that the master waits for a response from the slave after it has made a request.	<ul style="list-style-type: none"> Default setting: <ul style="list-style-type: none"> 100 ms (parameter telegram) 350 ms (multi-byte telegram) If not all units are detected during a network scan of communication problems occur, increase the values as follows: <ul style="list-style-type: none"> 300 ms (parameter telegram) 1000 ms (multi-byte telegram)
Retries	Number of request retries after the timeout is exceeded	Default setting: 3

13.5 Communication via Ethernet

13.5.1 PC connection via Ethernet

The following figure shows the connection of a PC/laptop to the Ethernet interface of the MFE fieldbus interface:



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The following table shows the IP address and the subnet mask of the Ethernet port of the MFE fieldbus interface:

Standard IP address	192.168.10.4
Subnet mask	255.255.255.0

13.5.2 Address Editor

Overview

Address Editor is a free software tool from SEW-EURODRIVE. It is available once the "MOVITOOLS® MotionStudio" engineering software is installed. However, it is used separately.

You can use Address Editor to establish communication with your units via Ethernet and to address the units.

If you use a patch cable to connect the Ethernet interface of your engineering PC to the Ethernet, the Address Editor detects all Ethernet nodes in the connected network segment (local network).

In contrast to "MOVITOOLS® MotionStudio", you do **not** need to set the IP address of the engineering PC to the local network.

Perform the following process steps after you have added Ethernet nodes to a network:

1. "Starting the Address Editor" (→ 120)
2. "Searching Ethernet nodes" (→ 121)
3. Once you have found the added Ethernet nodes, you have two options:
 - ⇒ "Setting the detected Ethernet nodes according to the network (addressing)" (→ 122)
 - ⇒ "Setting the engineering PC appropriately for the network" (→ 123)

Starting the Address Editor

You can use Address Editor immediately after installing MOVITOOLS® MotionStudio.

Proceed as follows:

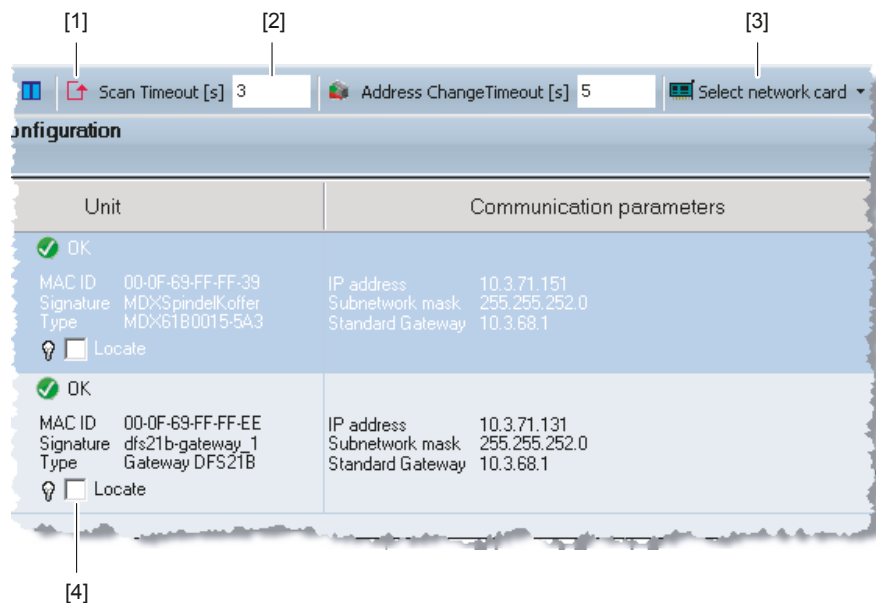
1. Close MOVITOOLS® MotionStudio.
2. Select the following item from the Windows start menu: [Start] / [Programs] / [SEW] / [MOVITOOLS MotionStudio] / [Address Editor]

Searching Ethernet nodes

You can use the Address Editor to find Ethernet nodes in a network. It can also be used for detecting new Ethernet nodes. The Address Editor also helps you locate the Ethernet interface of detected Ethernet nodes.

Proceed as follows:

1. Start the Address Editor.
2. Select "Ethernet" as the interface for PC and unit. To do so, activate the appropriate radio button.
3. Click [Next] to continue.
4. Wait until the network scan starts **automatically**. The default setting for the waiting time is 3 s (edit box [2]).
 - ⇒ The current addresses of all Ethernet nodes in the connected network will be displayed.
5. If no units are detected during the network scan, check the wiring or if you have installed (activated) several network cards in your PC.
6. Proceed as follows to search the units with a specific network card:
 - Select the required card. To do so, click the icon [3] in the toolbar.
 - Start the network scan **manually**. To do so, click the icon [1] in the toolbar.



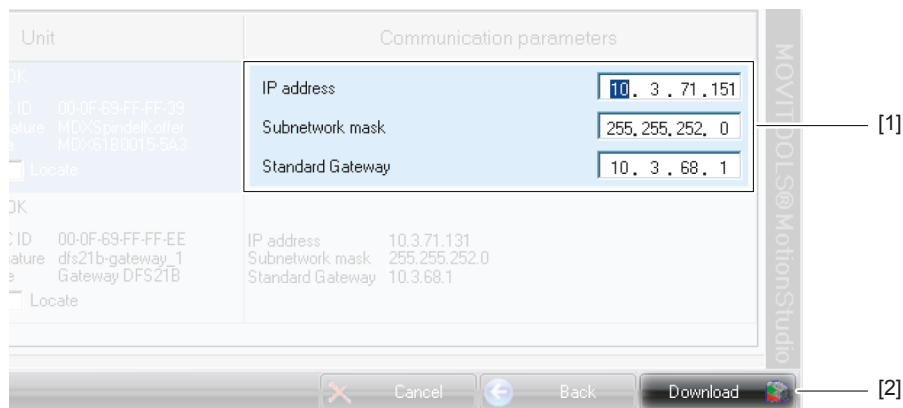
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7. Activate the check box [4] to localize an Ethernet node.
 - ⇒ The "link/act "LED of the first Ethernet interface of the respective Ethernet node will flash green.

Setting the detected Ethernet nodes according to the network (addressing)

Proceed as follows:

1. Start the Address Editor and scan the network.
2. Double-click in the area behind the setting [1] you want to change. You can change the following settings:
 - IP address of the node
 - IP address of the subnetwork mask
 - IP address of the standard gateway



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3. Press the enter key to confirm your changes.
4. To transfer the address changes to the Ethernet node, click the icon [2].
5. For the changed settings to become effective, switch off the unit and restart it afterwards.

Setting the engineering PC appropriately for the network

Proceed as follows:

1. From the Windows start menu, choose Control Panel and "Network and Internet" ("Network and Sharing Center" in the classic view).
2. Click [Manage network connection].
 - ⇒ A list opens with all existing network connections.
3. Select the respective network connection.
4. Choose the command [Properties] from the context menu.
5. Select the internet protocol "IPv4".
6. Click on the [Properties] button.
7. For the subnet mask and standard gateway, enter the same IP addresses that are used for the other Ethernet nodes in this local network.
8. For the engineering PC, enter an IP address that meets the following conditions:
 - In the group that defines the **network**, the address segment for the engineering PC must correspond to that of the other Ethernet nodes.
 - In the group that defines the **node**, the address segment for the engineering PC must differ from the other nodes.
 - The last group must not contain the values "0", "4", "127" and "255".

INFORMATION



In the IP address of the subnet mask (such as 255.255.255.0), the values in the groups have the following meaning:

- "255" defines the address of the network where the stations are located.
- "0", defines the address of the actual node to distinguish it from other nodes.

9. Confirm with [OK].
10. Click [OK] again to close the window.

13.5.3 Configuring the communication channel via Ethernet

Proceed as follows:

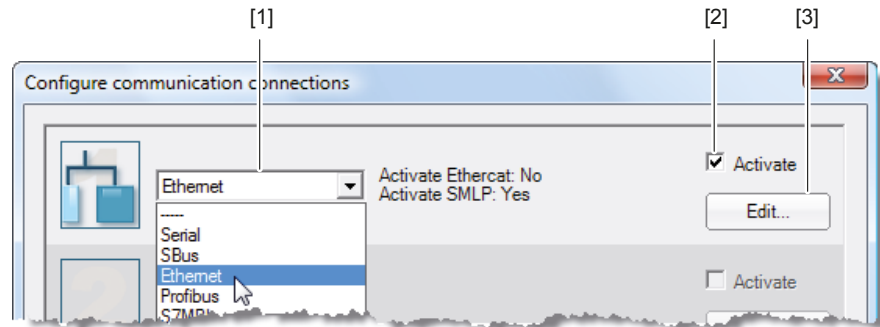
1. Click the icon [1] in the toolbar.



[1]

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- ⇒ This opens the "Configure communication connections" window.



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2. From the drop-down list [1], select "Ethernet" as the communication type.
 - ⇒ In the example, "Ethernet" is activated as the communication type for the first communication channel [2].
3. Click the button [3].
 - ⇒ This displays the settings for the communication type "Ethernet".
4. Set up the SMLP protocol in the "SMLP settings" tab. **SMLP** stands for **Simple MOVILINK® Protocol**. This is the SEW-EURODRIVE unit protocol and is transmitted directly via TCP/IP.
5. Set the parameters. Proceed as described in chapter "Setting communication parameters for SMLP" (→ 125).

13.5.4 Setting communication parameters for SMLP

Proceed as follows:

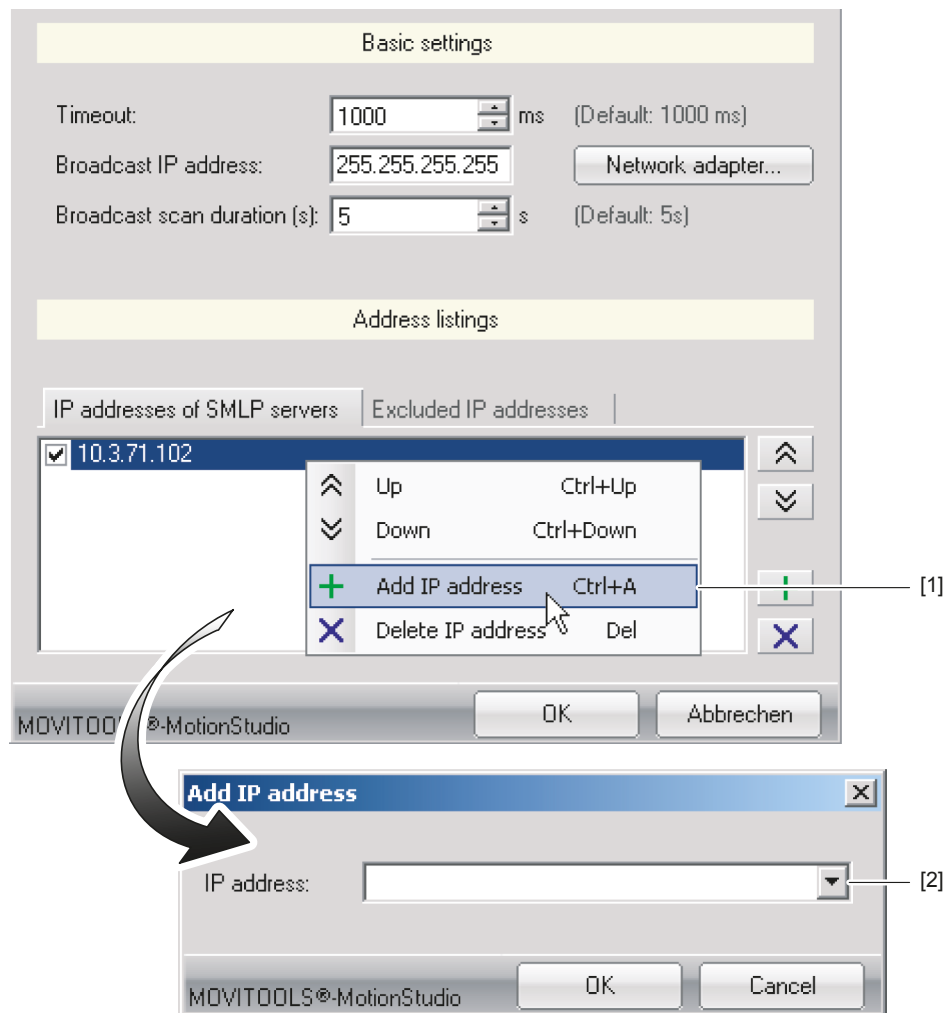
1. Change the set communication parameters if necessary. A detailed description of the communication parameters is available in the chapters "Communication parameters for SMLP" (→ 126) and "Communication ports used" (→ 127).

INFORMATION



During a unit scan, the system recognizes only units that are in the same (local) network segment as the PC/laptop that is running MOVITOOLS® MotionStudio.

2. If you have units that are outside the local network segment, add the IP addresses of these units to the list of SMLP servers. Proceed as follows:
 - Select the address list.
 - Select the [Add IP address] [1] command from the context menu.



- Enter the IP address in the input field [2] and click the [OK] button.

13.5.5 Communication parameters for SMLP

The following table shows the communication parameters for SMLP:

Communication parameter	Description	Information
Timeout	Waiting time in ms that the client waits for a reply from the server after it has made a request.	<ul style="list-style-type: none"> • Default setting: 1000 ms • If a delay of the communication causes failure, increase the value.
Broadcast IP address	IP address of the local network segment within which the unit scan is carried out.	In the default setting, the unit scan only retrieves units in the local network segment.
IP address SMLP server	IP address of the SMLP server or of other units that are to be included in the unit scan but are outside the local network segment.	<ul style="list-style-type: none"> • Enter the IP address of units that are to be included in the unit scan but are outside the local network segment. • If you are operating an indirect communication from Ethernet to PROFIBUS, enter the IP address of the controller.
Excluded IP address	IP addresses of units that should not be included in the unit scan.	Enter the IP address of units that should not be included in the unit scan. This can be units that are not ready for communication (e.g. because they have not been started up yet).

13.5.6 Communication ports used

The following table shows the communication ports that MOVITOOLS® MotionStudio uses:

Application	No. of the communication port	Description
ETH server	300 (TCP/UDP)	For the services of the SMLP and for using a PC as Ethernet gateway
SEW communication server	301 (TCP)	For communication between MOVITOOLS® MotionStudio and the SEW communication server
Offline data server	302 (TCP)	For communication of MOVITOOLS® MotionStudio in off-line mode
MOVIVISION® server	303 (TCP)	For communication with a PC with active MOVIVISION® server
Reserved	304	–
TCI server	305 (TCP)	For communication via TCI (Tool Calling Interface by Siemens)
EcEngineeringServer-RemoteControl	306 (UDP)	For direct communication (without master) with the slaves
EcEngineeringServer-Mailbox-Gateway	307 (UDP)	For direct communication (without master) with the slaves and for communication via a mailbox gateway
MOVI-PLC® visualization	308 (TCP/UDP)	For communication between MOVI-PLC® and the 3D simulation of MOVITOOLS® MotionStudio

14 Service

INFORMATION



For information on service and maintenance of the MOVIMOT® inverters, refer to the respective operating instructions.

14.1 Bus diagnostics with MOVITOOLS® MotionStudio

14.1.1 Fieldbus diagnostics with the gateway configurator

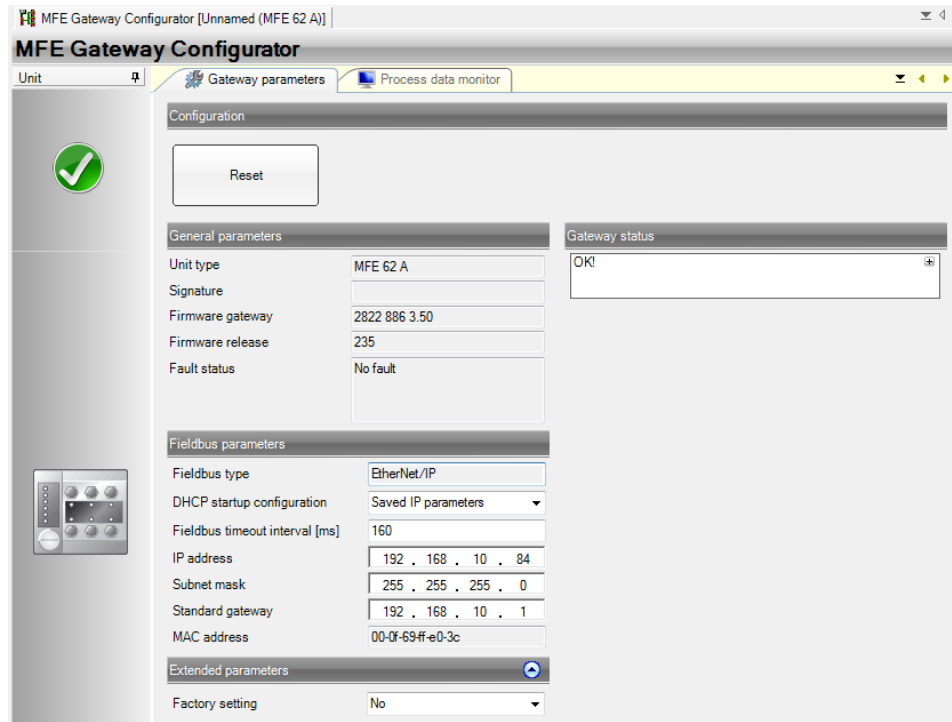
MF../MQ.. fieldbus interfaces are equipped with a diagnostics interface for startup and service.

This interface allows for bus diagnostics with the "Gateway Configurator" add-in of the operating software MOVITOOLS® MotionStudio.

1. Connect the PC/laptop with the MFE fieldbus interface.
⇒ See chapter "PC/Laptop connection".
2. Perform an online scan.
3. Right-click on the communication unit and select "Startup" > "Gateway Configurator" from the menu.

Gateway parameters

MOVITOOLS® MotionStudio opens the "MFE gateway configurator" add-in:

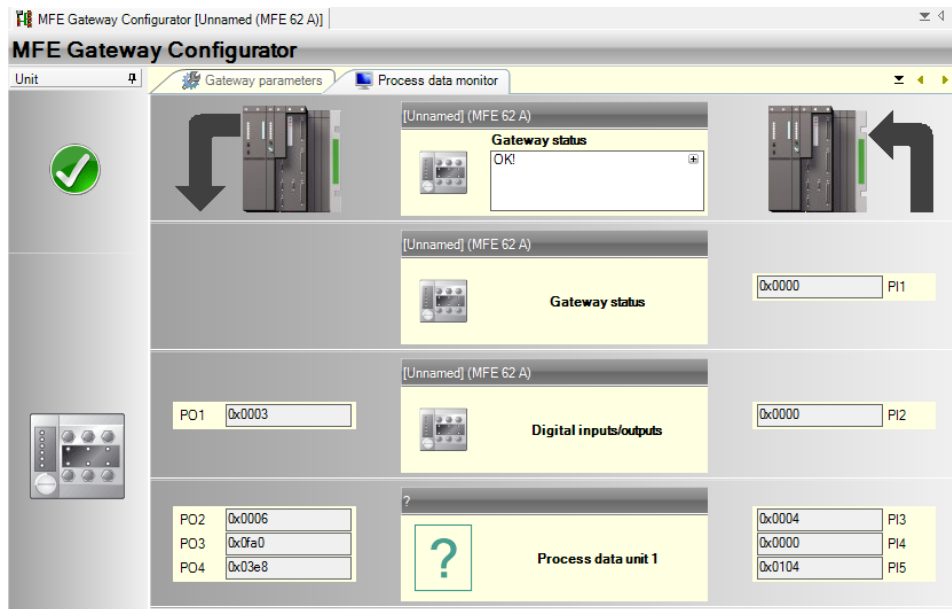


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The tab shows the parameters and the status of the fieldbus interface.

Process data monitor

Switch to the "Process data monitor" tab.



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The process data monitor allows for an easy way to diagnose the process data that are exchanged between the fieldbus interface and the fieldbus master.

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14.1.2 Fieldbus Interfaces error table

Code	Meaning	Response	Possible cause	Measure
25	EEPROM	Rapid stop of MOVIMOT® drives DO = 0	Error while accessing EEPROM	<ul style="list-style-type: none"> • Activate "Delivery state" settings, perform reset and set parameters again. • If the problem occurs again, contact SEW-EURODRIVE Service.
28	Fieldbus timeout	Process output data = 0 DO = 0 (can be switched off)	No communication between master and slave within the projected response monitoring.	<ul style="list-style-type: none"> • Check master communication routine.
37	Watchdog error	Communication to MOVIMOT® stopped DO = 0	Error while executing system software	<ul style="list-style-type: none"> • Contact SEW-EURODRIVE Service.
28	System software error			
45	Initialization error		Error after self-test during reset	<ul style="list-style-type: none"> • Perform a reset. If the problem occurs again, contact SEW-EURODRIVE Service.
98	CRC sum error		MFE detected a faulty CRC sum in the internal flash memory.	<ul style="list-style-type: none"> • Contact SEW-EURODRIVE Service.
111	MOVIMOT® Timeout	No response	MOVIMOT® could not be addressed by the MFE within the timeout interval.	<ul style="list-style-type: none"> • Check voltage supply and RS485 wiring. • Check address of configured nodes.
112	Periphery error		Short circuit digital output Overload digital output Overload sensor supply	<ul style="list-style-type: none"> • Analyze MFE status word and correct fault.

14.2 Unit replacement

14.2.1 Notes on replacing units

The MFE fieldbus interface allows for a quick unit replacement. The MFE fieldbus interface is equipped with a replaceable memory card on which all Ethernet parameters are automatically stored.

If the MFE fieldbus interface has to be replaced, the plant can be started up again quickly by simply re-plugging the memory card.

14.2.2 Replacing units

**▲ WARNING**

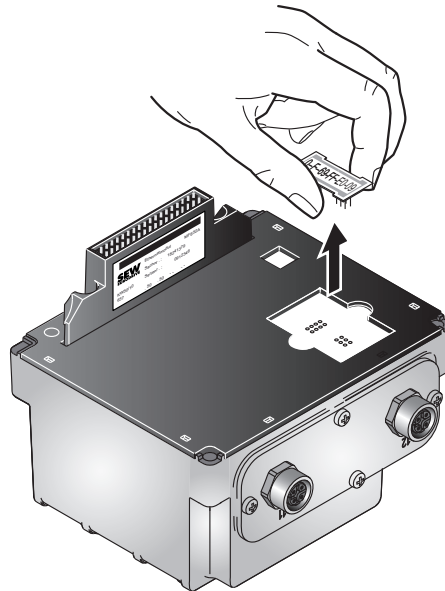
Electric shock due to charged capacitors.

Severe or fatal injuries.

- Disconnect the field distributor from the power supply. Observe the minimum switch-off time after disconnection from the supply system:
 - **1 minute**

Proceed as follows to replace the MFE fieldbus interface:

1. Loosen the retaining screws and remove the MFE fieldbus interface from the field distributor.
2. Remove the memory card from the old MFE fieldbus interface.
3. **NOTICE!** Damage to the memory card.
Make sure that the memory card does not get jammed. This would deform the pins and damage the memory card.



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4. Insert the memory card into the lower part of the new MFE fieldbus interface.
5. Place the new MFE fieldbus interface on the field distributor. Fasten the MFE fieldbus interface with 4 screws to the field distributor.
6. Switch on the field distributor with the new MFE fieldbus interface.
 - ⇒ Parameters saved to the memory card are automatically adopted and available.

14.3 Unit replacement DeviceNet™ interface -> EtherNet/IP™ interface

This chapter describes, how to exchange an MFD11 DeviceNet™ interface at the MOVIMOT® drive by an MFE62A EtherNet/IP™ interface.



▲ WARNING

Electric shock due to charged capacitors.

Severe or fatal injuries.

- Disconnect the field distributor from the power supply. Observe the minimum switch-off time after disconnection from the supply system:

– **1 minute**

Proceed as follows to replace the fieldbus interface:

1. Loosen the retaining screw and remove the MFD11 DeviceNet™ interface from the MFZ.. connection module of the MOVIMOT® drive.
2. Place the MFE62A EtherNet/IP™ interface on the MFZ.. connection module of the MOVIMOT® drive. Fasten the MFE62A EtherNet/IP™ interface with 4 screws.
 - ⇒ As the 24 V supply is already applied in case of DeviceNet™ communication, the DeviceNet™ interface can be exchanged with an EtherNet/IP™ interface without an additional 24 V supply.
3. Switch on the DC 24 V supply voltage of the MFE62A EtherNet/IP™ interface and the MOVIMOT® inverter.
4. Configure the EtherNet/IP™ interface with the RSLogix software at the EtherNet/IP™ master, see chapter "Configuring EtherNet/IP™".
5. Depending on the process data configuration of the DeviceNet™ device, select process data configuration no. 3, 4, 7 or 8 during the configuration:

No.	Connection name	Input/output instance	Config-uration	File size	Description
3	3PD	150/140	144	6 bytes	<ul style="list-style-type: none"> • 3PI (6 bytes) are received. • 3PO (6 bytes) are sent.
4	2PD	150/140	145	4 bytes	<ul style="list-style-type: none"> • 2PI (4 bytes) are received. • 2PO (4 bytes) are sent.
7	Retrofitting 3PD + DI/DO	150/140	146	7 bytes	<ul style="list-style-type: none"> • 3PD and DI/DO are selected in relation to the DeviceNet™ interface.
8	Retrofitting 2PD + DI/DO	150/140	147	5 bytes	<ul style="list-style-type: none"> • 2PD and DI/DO are selected in relation to the DeviceNet™ interface.

When process data configuration no. 7 and 8 are used, the present module (Add On Instruction) for DeviceNet™ devices does **not** need to be changed.

14.4 Extended storage

If a unit with inverter is being stored for a long time, connect it to the mains voltage for at least 5 minutes every 2 years. Otherwise, the service life of the unit may be reduced.

14.4.1 Procedure when maintenance has been neglected

Electrolytic capacitors are used in the inverters. They are subject to aging effects when de-energized. This effect can damage the capacitors if the unit is connected using the nominal voltage after a longer period of storage.

If you have not performed maintenance regularly, SEW-EURODRIVE recommends that you increase the line voltage slowly up to the maximum voltage. This can be done, for example, by using a variable transformer for which the output voltage has been set according to the following overview. After you have completed the regeneration process, the unit can be used immediately or stored again for an extended period with maintenance.

The following stages are recommended:

AC 400/500 V units:

- Step 1: AC 0 V to AC 350 V within a few seconds
- Step 2: AC 350 V for 15 minutes
- Step 3: AC 420 V for 15 minutes
- Step 4: AC 500 V for 1 hour

14.5 Disposal

This product consists of:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic components

Dispose of all components in accordance with applicable regulations!

15 Technical data

15.1 Technical data of the MFE62A EtherNet/IP™ interface

MFE62A electrical specifications	
Part number	28230280
MFE electronics supply	U = +24 V +/- 25 %, I _E ≤ 150 mA
Electrical insulation	<ul style="list-style-type: none"> • EtherNet/IP™ connection isolated • Between logic and 24 V supply voltage • Between logic and periphery/drive via optocoupler
Bus connection technology	2 x M12 plug connector
Shielding	Via EMC metal cable glands
Digital inputs (sensors)	PLC-compatible according to EN 61131-2 (digital inputs type 1), R _i ≈ 3.0 kΩ, Sampling cycle about 5 ms
Signal level	15 V – +30 V: "1" = contact closed -3 V – +5 V: "0" = contact open
Sensor supply	DC 24 V according to EN 61131-2, Interference-voltage-proof and short-circuit-proof
Rated current	Σ 500 mA
Internal voltage drop	max. 1 V
Digital outputs (actuators)	PLC-compatible to EN 61131-2, interference-voltage-proof and short-circuit-proof
Signal level	"0" = 0 V "1" = 24 V
Rated current	500 mA
Leakage current	max. 0.2 mA
Internal voltage drop	max. 1 V
Length of RS485 cable	30 m between MFE and drive if installed separately
Ambient temperature	-25 °C – 60 °C
Storage temperature	-25 °C – 85 °C
Degree of protection	IP65 (installed on MFZ.. connection module, all plug connections sealed)

Specifications of EtherNet/IP™	
Supported baud rates	10 and 100 Mbit/s
Connection technology	M12 plug connector
Integrated switch	Supports auto-crossing, auto-negotiation
Permitted cable types	Category 5 and higher, class D according to IEC 11801
Maximum cable length (from switch to switch)	100 m according to IEEE 802.3

Specifications of EtherNet/IP™	
Addressing	4 byte IP address or MAC-ID (00-0F-69-xx-xx-xx) Can be configured using the DHCP server or MOVITOOLS® MotionStudio Address default value: 192.168.10.4
Vendor ID	013B _{hex}
EDS file name	SEW_GATEWAY_MFE62A.eds
ICO file name	SEW_GATEWAY_MFE62A.ico

15.2 Technical data for field distributors

15.2.1 MF../Z.3 field distributor

MF../Z.3.	
Ambient temperature	-25 °C – 60 °C
Storage temperature	-25 °C – 85 °C
Degree of protection	IP65 (fieldbus interface and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet/IP™, EtherCAT®, INTERBUS, DeviceNet™
Permitted motor cable length	Max. 30 m (with SEW-EURODRIVE hybrid cable, type B) If the motor cable cross section is smaller than the supply system lead cross section, note the line fusing!
Weight	Approx. 1.3 kg

15.2.2 MF../Z.6. field distributor

MF../Z.6.	
Maintenance switch	Switch disconnecter and line protection Type: ABB MS 325 – 9 + HK20 Switching: black/red, triple lock
Ambient temperature	-25 °C – 55 °C
Storage temperature	-25 °C – 85 °C
Degree of protection	IP65 (fieldbus interface, power supply connection cover and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet™, EtherCAT®, INTERBUS, DeviceNet™
Permitted motor cable length	max. 30 m (with SEW-EURODRIVE hybrid cable, type B)
Weight	Approx. 3.6 kg

15.2.3 MF../MM../Z.7. field distributor

MF../MM../-503-00/Z.7.	
Ambient temperature	-25 °C – 40 °C (P_N reduction: 3% I_N per K to max. 60 °C)
Storage temperature	-25 °C – 85 °C
Degree of protection	IP65 (fieldbus interface, power supply connection cover and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet/IP™, EtherCAT®, INTERBUS, DeviceNet™
Permitted motor cable length	15 m (with SEW-EURODRIVE hybrid cable, type A)
Weight	Approx. 3.6 kg

15.2.4 MF../MM../Z.8. field distributor

MF../MM../-503-00/Z.8.	
Maintenance switch	Switch disconnecter Type: ABB OT16ET3HS3ST1 Switching: black/red, triple lock
Ambient temperature	-25 °C – 40 °C (P_N reduction: 3% I_N per K to max. 55 °C)
Storage temperature	-25 °C – 85 °C
Degree of protection	IP65 (fieldbus interface, power supply connection cover and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet/IP™, EtherCAT®, INTERBUS, DeviceNet™
Permitted motor cable length	15 m (with SEW-EURODRIVE hybrid cable, type A)
Weight	Size 1: approx. 5.2 kg Size 2: approx. 6.7 kg

16 Declaration of conformity

EC Declaration of Conformity

SEW
EURODRIVE

900040110

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

declares under sole responsibility that the

field distributors of the series	MF../Z.3. MQ../Z.3. MF../Z.6. MQ../Z.6. MF../Z.7. MQ../Z.7. MF../Z.8. MQ../Z.8.
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are in conformity with

Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	4)
Applied harmonized standards:	EN 50178:1997 EN 61000-6-2:2005 EN 61000-6-3:2001+ A11:2004	

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

Bruchsal 04.12.13

Place	Date	Johann Soder Managing Director Technology	a) b)
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- a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents

EC Declaration of Conformity

SEW
EURODRIVE

900030210

Translation of the original text

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



declares under sole responsibility that the

frequency inverters of the series **MOVIMOT® D**possibly in connection with **AC motor**

are in conformity with

Machinery Directive **2006/42/EC**

This includes the fulfillment of the protection targets for "electrical power supply" in accordance with annex I No. 1.5.1 according to the Low Voltage Directive 73/23/EEC and 2006/95/EC.

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

Applied harmonized standards:
EN ISO 13849-1:2008
EN 61800-5-2: 2007
EN 60034-1:2010
EN 61800-5-1:2007
EN 60664-1:2007
EN 61800-3:2004 + A1:2012

- 4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. For the assessment, the product was installed in a typical plant configuration.

Bruchsal **04.12.2014**

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

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

17 Address list

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghroune Bellevue 16200 El Harrach Alger	Tel. +213 21 8214-91 Fax +213 21 8222-84 http://www.reducom-dz.com info@reducom-dz.com
Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at
Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com
Belarus			
Sales	Minsk	Foreign Enterprise Industrial Components RybalkoStr. 26 BY-220033 Minsk	Tel. +375 17 298 47 56 / 298 47 58 Fax +375 17 298 47 54 http://www.sew.by sales@sew.by
Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue 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
Brazil			
Production Sales Service	São Paulo	SEW-EURODRIVE Brasil Ltda. Estrada Municipal José Rubim, 205 – Rodovia Santos Dumont Km 49 Indaiatuba – 13347-510 – SP	Tel. +55 19 3835-8000 sew@sew.com.br
Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 fial.sc@sew.com.br
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@bever.bg

Cameroon

is supported by Germany

Canada

Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca

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 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
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China

Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co., Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

Colombia

Assembly Sales Service	Bogota	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 sew@sew-eurodrive.com.co
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Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 Hour Service	+420 800 739 739 (800 SEW SEW)	Service Tel. +420 255 709 632 Fax +420 235 358 218 servis@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Copenhagen	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 95 8500 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies Building 10, Block 13005, First Industrial Zone, Obour City Cairo	Tel. +202 44812673 / 79 (7 lines) Fax +202 44812685 http://www.copam-egypt.com copam@copam-egypt.com
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 FIN-15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 FI-03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Hagenau 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-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles F-67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 00
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet F-38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15

France

Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles F-44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin F-77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88

Gabon

is supported by Germany.

Germany

Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 – D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production / Industrial Gears	Bruchsal	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str. 10 D-76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf P.O. Box Postfach 1220 – D-76671 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
	Östringen	SEW-EURODRIVE GmbH & Co KG, Werk Östringen Franz-Gurk-Straße 2 D-76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzter Weg 1 D-08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 D-12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 D-67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 D-66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 D-89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 D-97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			+49 800 SEWHELP +49 800 7394357

Great Britain

Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
		Drive Service Hotline / 24 Hour Service	Tel. 01924 896911

Greece

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

Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyi út 13. H-1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu
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Iceland

Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 IS-104 Reykjavik	Tel. +354 585 1070 Fax +354 585)1071 http://www.varmaverk.is vov@vov.is
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India

Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 http://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com

Indonesia

Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari Jl.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

Ireland

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

Assembly Sales Service	Solaro	SEW-EURODRIVE di R. Blicke & Co.s.a.s. Via Bernini, 14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 79 97 81 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
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Ivory Coast

Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci
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Japan

Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp hamamatsu@sew-eurodrive.co.jp
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Kazakhstan

Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	SEW-EURODRIVE LLP Representative office in Mongolia Suite 407, Tushig Centre Seoul street 23, Sukhbaatar district, Ulaanbaatar 14250	Tel. +976-77109997 Fax +976-77109997 http://www.sew-eurodrive.mn sew@sew-eurodrive.mn

Kenya

is supported by Tanzania

Latvia

Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com
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Lebanon

Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Beirut Saudi Arabia, Syria)		Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com

Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C LT-63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Madagascar			
Sales	Antananarivo	Ocean Trade BP21bis. Andraharo Antananarivo 101 Madagascar	Tel. +261 20 2330303 Fax +261 20 2330330 oceantrabp@moov.mg
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexiko			
Assembly Sales Service	Quéretaro	SEW-EURODRIVE MEXICO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Quéretaro C.P. 76220 Quéretaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	SEW-EURODRIVE LLP Representative office in Mongolia Suite 407, Tushig Centre Seoul street 23, Sukhbaatar district, Ulaanbaatar 14250	Tel. +976-77109997 Fax +976-77109997 http://www.sew-eurodrive.mn sew@sew-eurodrive.mn
Morocco			
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Namibia			
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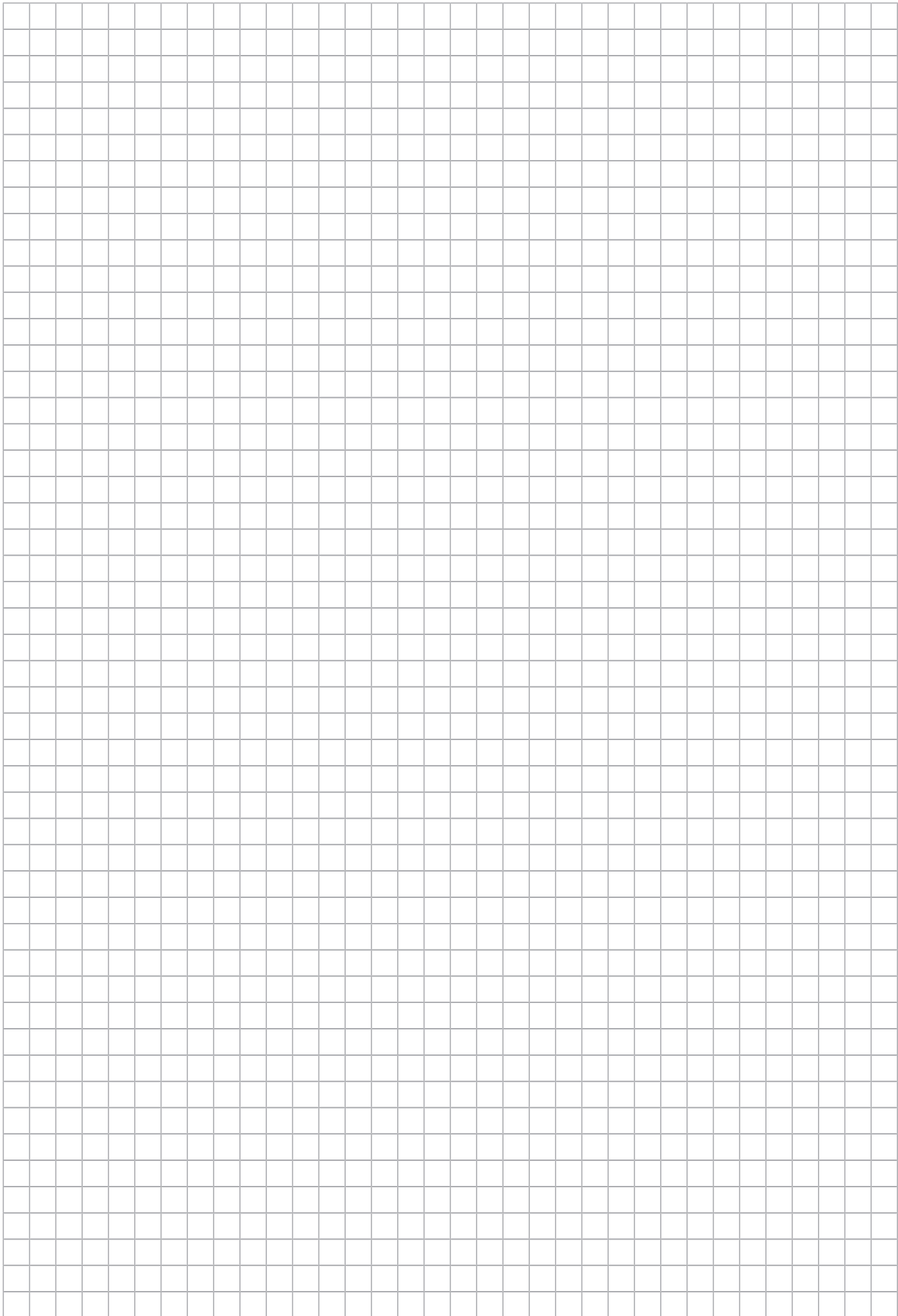
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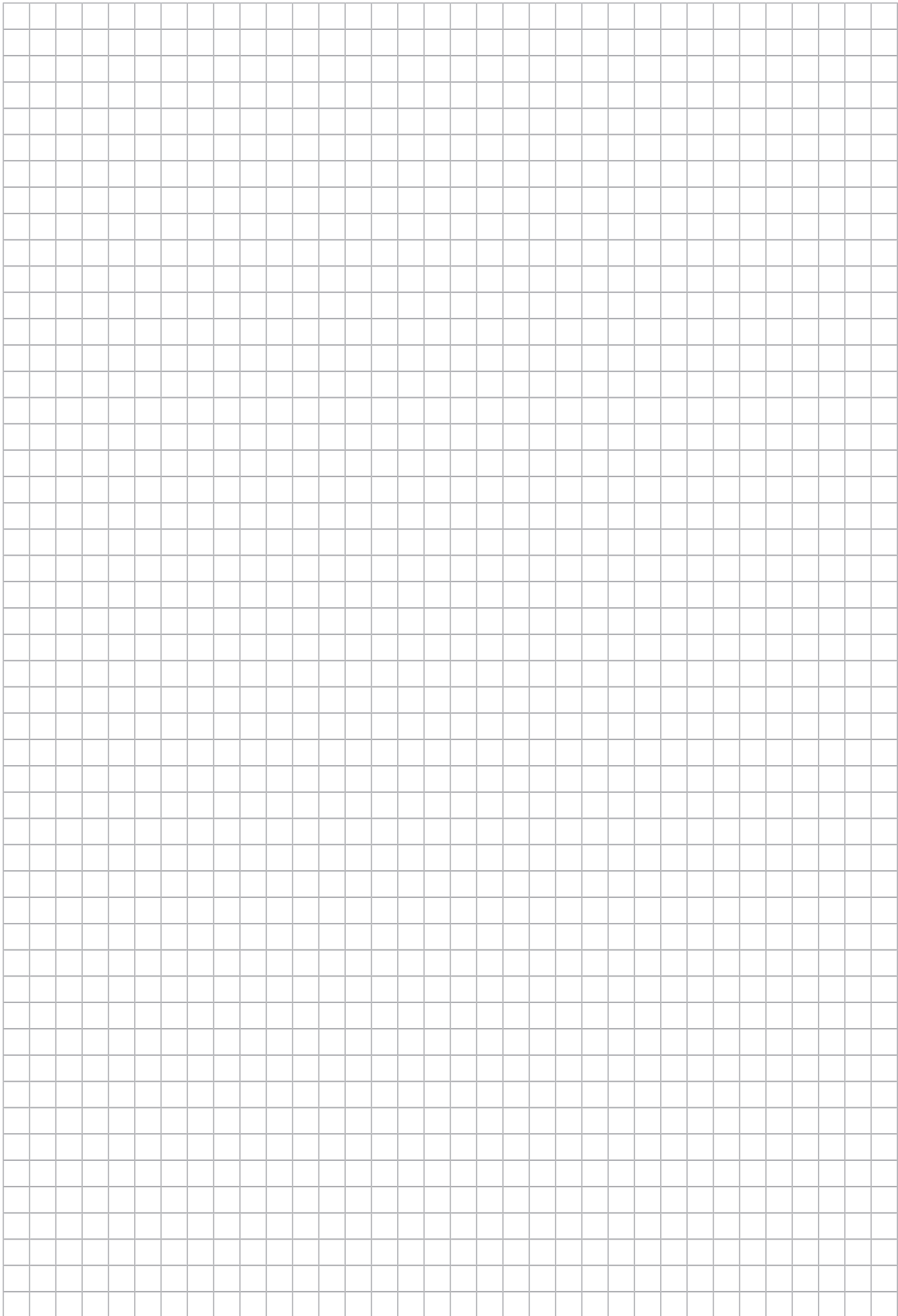
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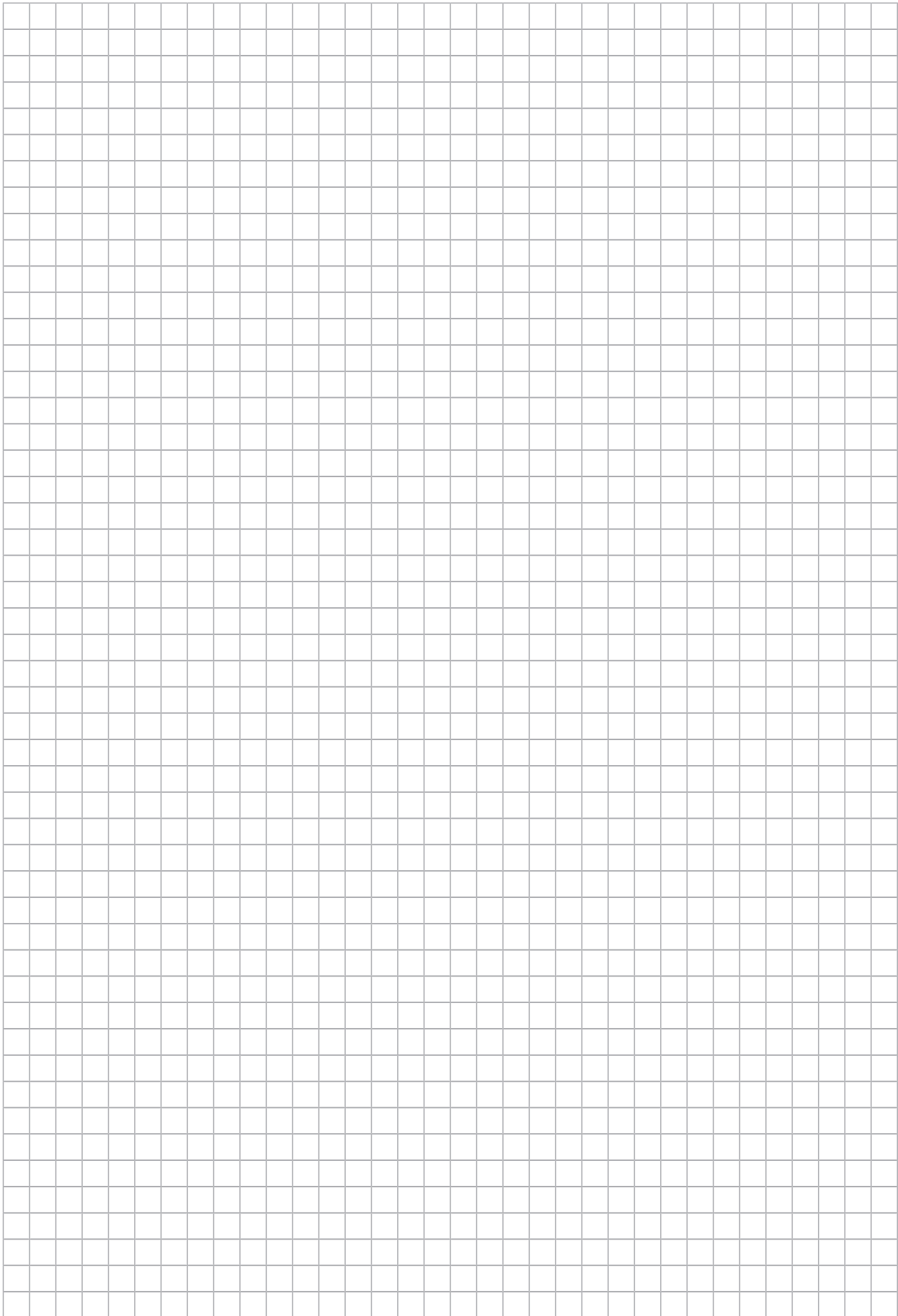
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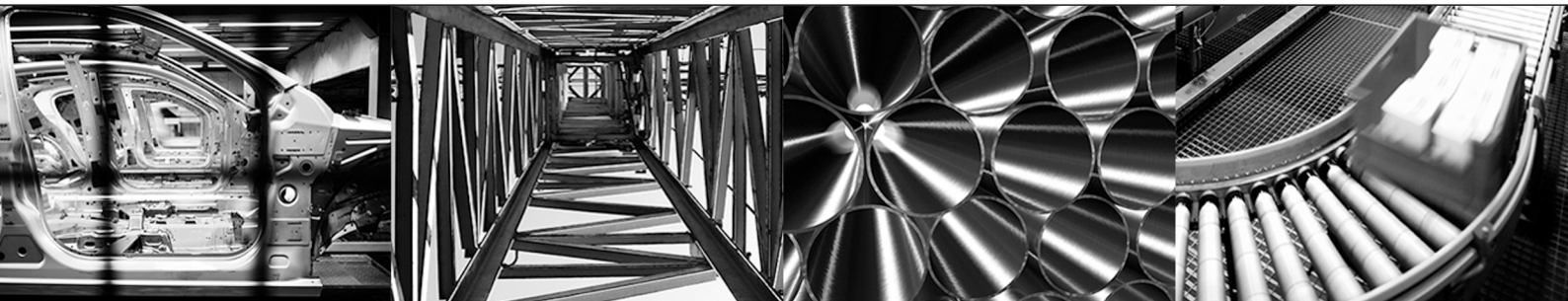
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