SEW EURODRIVE

Manual

PROFI NET
INDUSTRIAL ETHERNET

Drive System for Decentralized Installation
PROFINET IO Interfaces, Field Distributors

Contents

Contents

1 Valid components

This manual applies to the following PROFINET IO products:

Connection module ..Z.1. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/Z21D

Field distributor ..Z.3. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/Z23D

Field distributor ..Z.6. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/Z26F/AF0

Field distributor ..Z.7. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/MM../Z27F.

Field distributor ..Z.8. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/MM../Z28F./AF0

Field distributor ..Z.9. with fieldbus interface	
	4 x I / 2 x IO (M12)
PROFINET IO	MFE52B/MM../Z29F./.

2 General information

2.1 About this documentation

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

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

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 product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

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 product.

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

You must also note the following documents:

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

2.6 Copyright notice

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2.7 Product names and trademarks

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3 Safety notes

3.1 Preliminary information

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

3.2 Operator's duties

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

The operator must ensure that the following works are only performed by qualified personnel:

- Transport
- Storage
- Setup and assembly
- Installation and connection
- Startup
- Maintenance and repair
- Shutdown
- Disassembly
- Waste disposal

Make sure persons working on the product adhere to the following regulations, requirements, documents and information:

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

Make sure that systems with the product installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical equipment and accident prevention regulations.

3.3 Target group

Specialist for mechanical work

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

- Qualification in the field of mechanics according to applicable national regulation.
- They are familiar with this documentation

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Specialist for electrotechnical work

Any electronic work may only be performed by adequately skilled persons (electrically). Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Qualification in the field of electrical engineering according to applicable national regulation.
- They are familiar with this documentation

In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives and laws specified in this documentation. The above mentioned persons must have the authorization expressly issued by the company to operate, program, configure, label and ground devices, systems and circuits in accordance with the standards of safety technology.

Instructed persons

All work in the areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately. The purpose of the instruction is that the persons are capable of performing the required tasks and work steps in a safe and correct manner.

3.4 Designated use

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

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

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

The systems can be mobile or stationary. The motors must be suitable for operation with inverters. Do not connect any other loads to the product. Never connect capacitive loads to the product.

The product can be used to operate the following motors in industrial and commercial systems:

- AC asynchronous motors with squirrel-cage rotor

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

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

Do not use the product as a climbing aid.

3.4.1 Hoist applications

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

- Use mechanical protection devices.
- Perform a hoist startup.

3.5 Functional safety technology

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

3.6 Transport

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

Observe the following notes when transporting the device:

• Ensure that the product is not subject to mechanical impact during transportation.

• Before transportation, cover the connections with the supplied protection caps.

• Only place the product on the cooling fins or on the side without connectors during transportation.

• Always use lifting eyes if available.

If necessary, use suitable, sufficiently dimensioned handling equipment.

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

3.7 Installation/assembly

Ensure that the product is installed and cooled according to the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that components are not deformed and that insulation spaces are maintained, particularly during transportation. Electric components must not be mechanically damaged or destroyed.

Observe the notes in the chapter "Mechanical installation" of the documentation.

3.7.1 Restrictions of use

The following applications are prohibited unless explicitly permitted:

• Use in potentially explosive areas

• Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation

• Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1

• Operation at installation altitudes above 4000 m above sea level

The product can be used at altitudes above 1000 m asl up to 4000 m asl under the following conditions:

• Taking the reduced continuous rated current into consideration, see chapter "Technical data" of the documentation.

- Above 2000 m asl, the air and creeping distances are only sufficient for over-voltage class II according to EN 60664. If the installation requires overvoltage category III according to EN 60664 you have to reduce the overvoltages on the system side from category III to II using additional external overvoltage protection.
- If a protective electrical separation is required, then implement this outside the product at altitudes of more than 2000 m above sea level (protective separation in accordance with EN 61800-5-1 and EN 60204-1)

3.8 Electrical connection

Make yourself familiar with the applicable national accident prevention guidelines before you work on the product.

Perform electrical installation according to the pertinent regulations (e.g. cable cross sections, fusing, protective conductor connection). The documentation at hand contains additional information.

Make sure that all required covers are installed correctly after electrical installation.

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

3.8.1 Required preventive measure

Make sure that the product is correctly attached to the ground connection.

3.9 Protective separation

The product meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. To ensure protective separation, all connected circuits must also meet the requirements for protective separation.

3.10   Startup/operation

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

Make sure that the present transport protection is removed.

Do not deactivate monitoring and protection devices of the machine or system even for a test run.

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

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

Additional preventive measures may be required for applications with increased hazard potential. You have to check the protection devices after each modification.

When in doubt, switch off the product whenever changes occur in relation to normal operation. Possible changes are e.g. increased temperatures, noise, or oscillation. Determine the cause. Contact SEW-EURODRIVE if necessary.

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

Do not separate the connection to the product during operation.

This may result in dangerous electric arcs damaging the product.

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

1 minute.

Observe the corresponding information signs on the product.

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

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

Risk of burns: The surface temperature of the product can exceed 60 °C during operation.

Do not touch the product during operation.

Let the product cool down before touching it.

4 Device structure

4.1 Fieldbus interface

4.1.1 MFE52 fieldbus interface

The following figure depicts the MFE52 fieldbus interface:
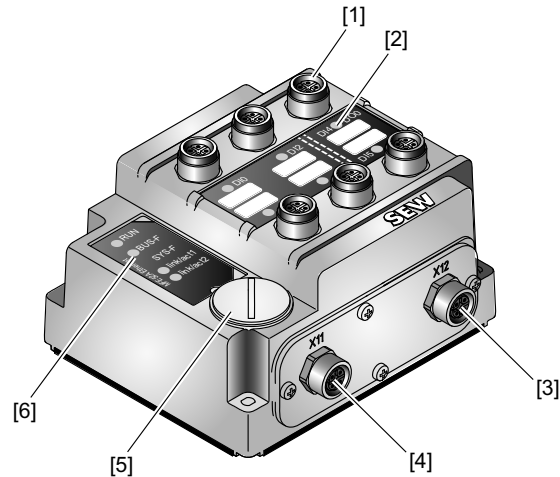
9007202575522315

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

4.1.2 Interface bottom side

The following figure depicts the bottom side of the fieldbus interface:
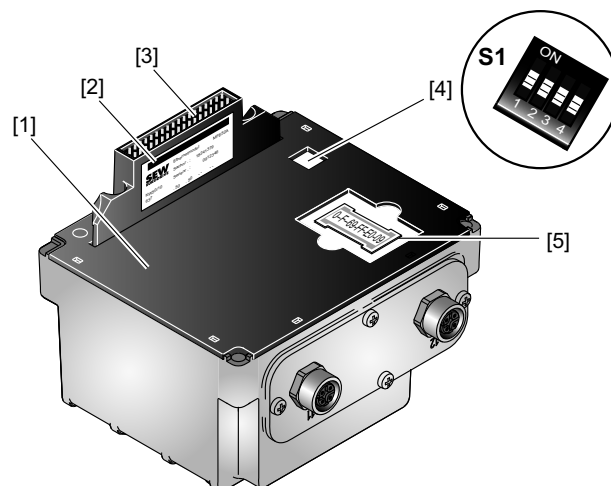
9007202575698955

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

4.1.3 Device structure of MFZ connection module

The following figure shows the MFZ connection module.
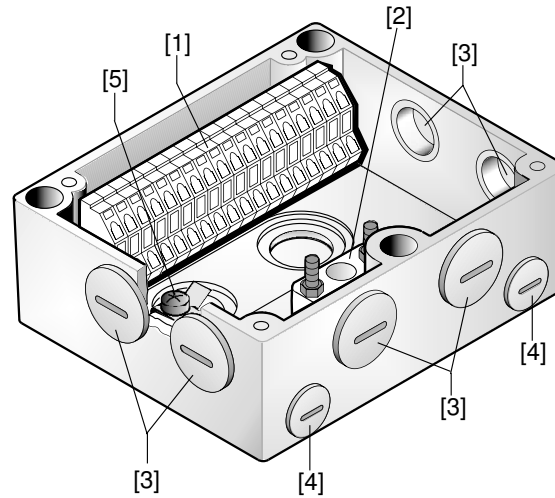
9007200390917003

[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 the PROFINET IO interfaces

4.2.1 Nameplate

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

SEW EURODRIVE	**Ethernetmodul**	**MFE52B**
	P# : 28238761	
	S# : 0912346	
15/16 **443**	**. 10 . 13** – –	– –
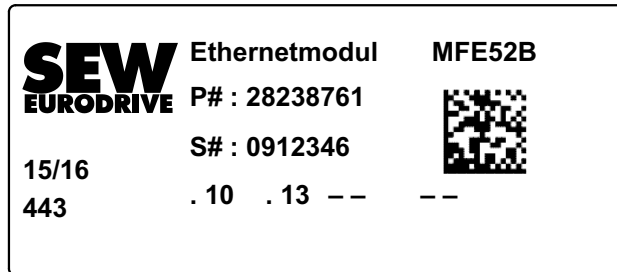
4.2.2 Type designation

The following table shows the type designation of the fieldbus interface **MFE52B/Z21D** as an example:

MFE	**Fieldbus interface**		
	MFP..	=	PROFIBUS
	MQP..	=	PROFIBUS with integrated minicontroller
	MFE..		PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD..	=	DeviceNet™
	MQD..	=	DeviceNet™ with integrated minicontroller
52	**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®
B	**Variant**		
/			
Z21	**Connection module**		
	Z21	=	For PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z31	=	For DeviceNet™
D	**Variant**		

4.3 Field distributor

4.3.1 MF../Z.3., MQ../Z.3. field distributors
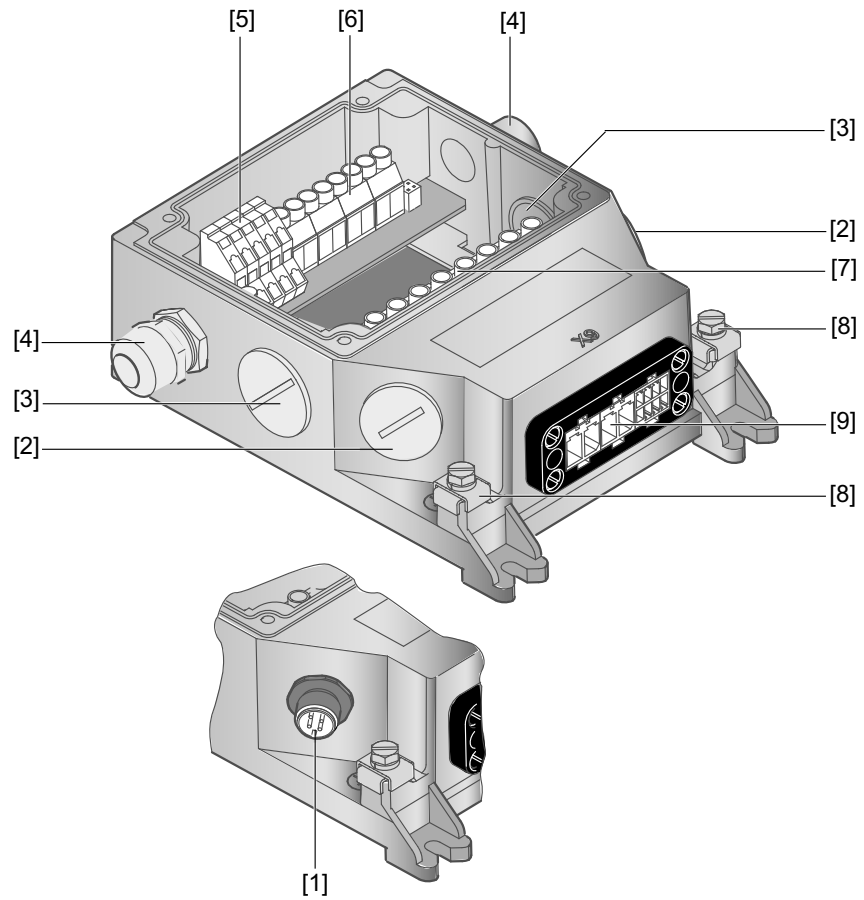
9007200390936971

[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]   Connection PE/equipotential bonding
[9]   Socket for connecting hybrid cable to MOVIMOT® (X9)

4.3.2 MF../Z.6., MQ../Z.6. field distributors
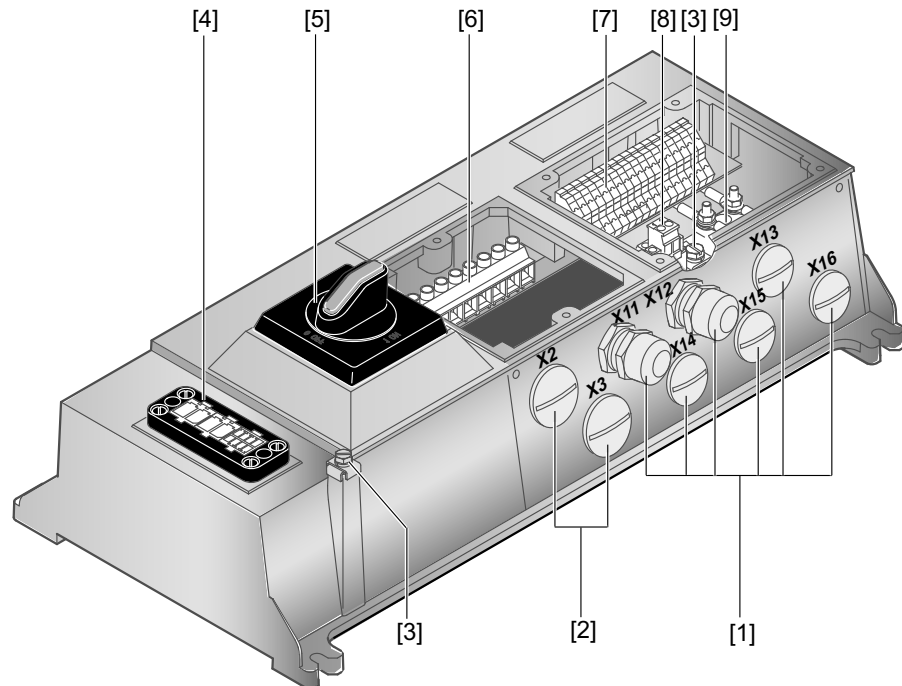
9007200390944651

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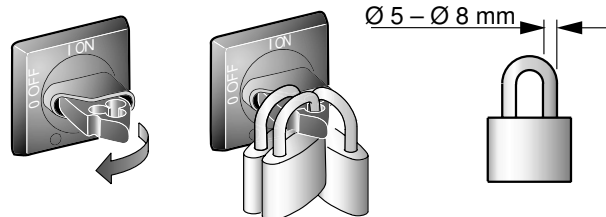
[6] Terminals for power supply and PE connection (X1)
[7] Terminals for bus, sensor, actuator, 24 V connection (X20)
[8] Pluggable terminal "Safety Power" for 24 V MOVIMOT® supply (X40)
[9] Terminal block for 24 V through-wiring (X29),
internal connection to 24 V on X20

4.3.3 MF../MM../Z.7., MQ../MM../Z.7. field distributors
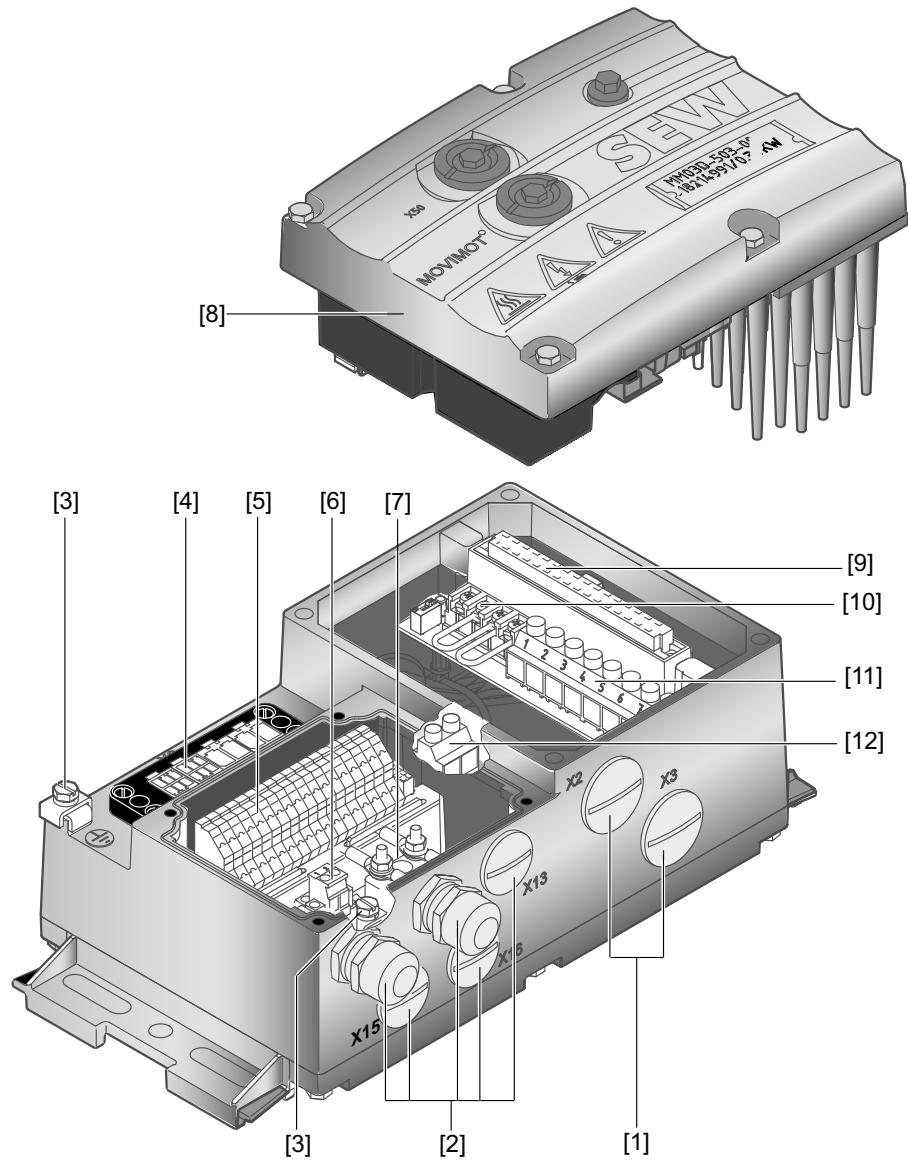
9007200391188619

[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] Connection PE/equipotential bonding
[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
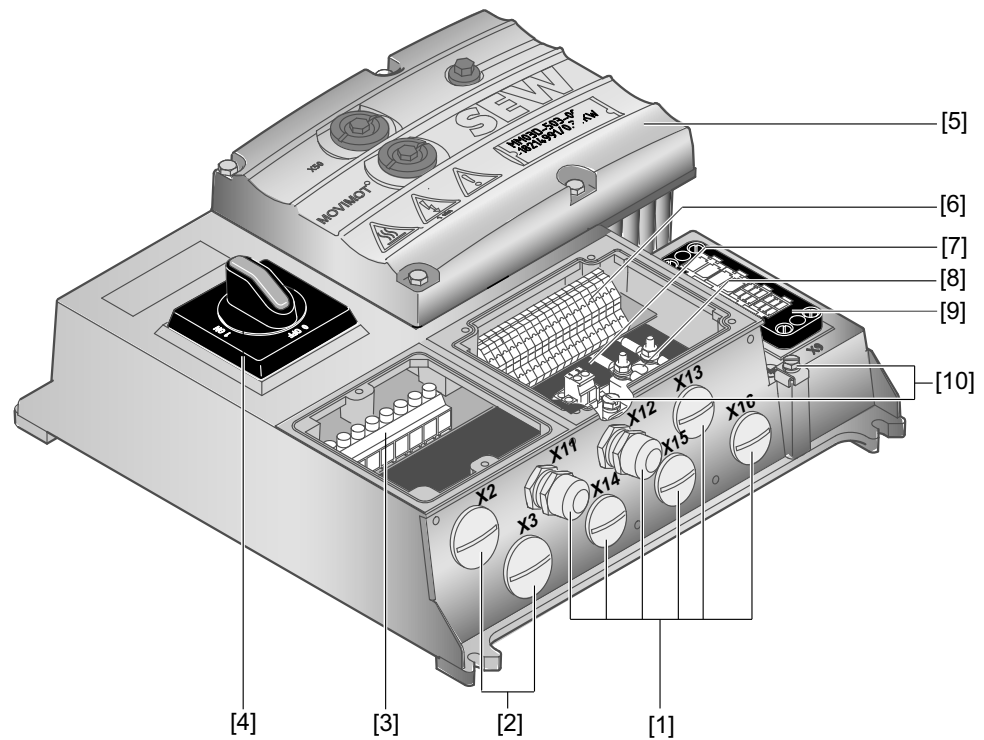
18014399645961355

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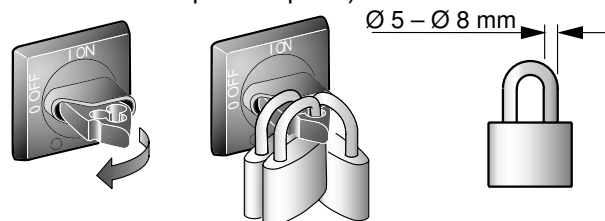
[5]   MOVIMOT® inverter
[6]   Terminals for bus, sensor, actuator, 24 V connection (X20)
[7]   Pluggable terminal "Safety Power" for 24 V MOVIMOT® supply (X40)
[8]   Terminal block for 24 V through-wiring (X29),
internal connection to 24 V on X20
[9]   Hybrid cable connection; connection to AC motor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

4.3.5 MF../MM../Z.9. field distributor

[12] **MOVIMOT® 1**
[12] **MOVIMOT® 2**
[12] **MOVIMOT® 3**
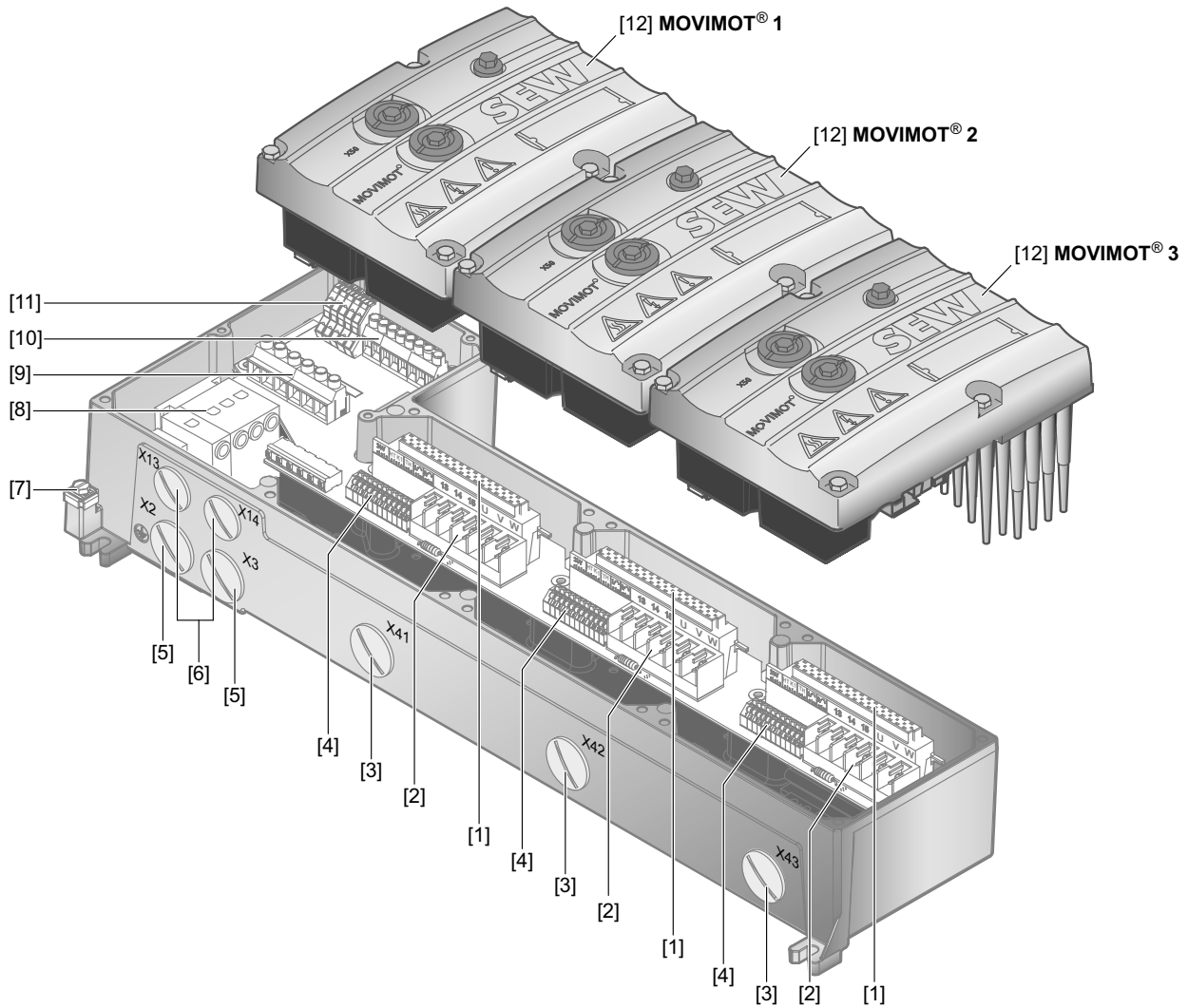
18227105419

[1]   Connection to MOVIMOT® inverter
[2]   Motor power terminals (X4_.)
[3]   3 x M25 x 1.5 cable gland (EMC cable glands supplied as an option)
[4]   Motor control terminals (X6_.)
[5]   2 x M25 x 1.5 cable glands
[6]   2 x M20 x 1.5 cable glands
[7]   Equipotential bonding connection
[8]   Option maintenance switch (triple lock, color: black/red)
      Only with MFZ29J design: Feedback option for position of the maintenance switch.

Ø 5 – Ø 8 mm
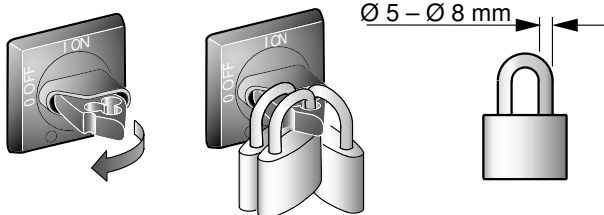
[9]   Terminals for L1 – L3 line connection (X1)
[10] 24 V supply terminals (24 V power bus) (X21)
[11] 24 V distributor terminals (X20)
[12] MOVIMOT® inverter

4.4 Type designation of the PROFINET IO field distributors

4.4.1 Field distributor nameplate

The following figure shows an example of the nameplate of the MFP../MM../Z.8 field distributor:
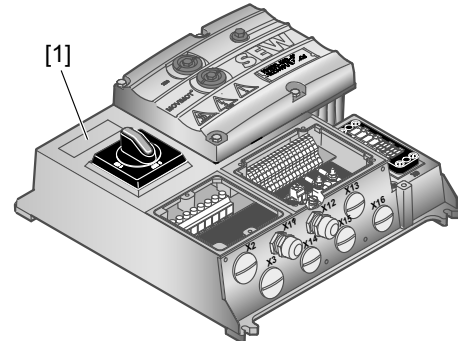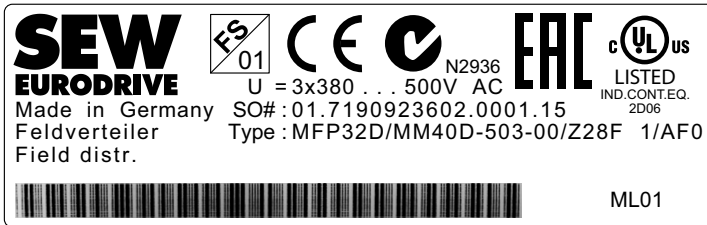
[1]   Nameplate

Only field distributors marked with the FS logo for functional safety may be installed in safety applications. For field distributors marked with the FS logo, the safety function must be described in the documentation.

4.4.2 Type designation MF../Z.3.

The following table shows the type designation for **MF../Z.3.** field distributors as an example:

MFE 52B	Fieldbus interface		
	MFP../MQP..	=	PROFIBUS
	MFE..	=	PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD..	=	DeviceNet™
/			
Z23	**Connection module**		
	Z23	=	for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z33	=	For DeviceNet™
D	**Variant**		

4.4.3 Type designation MF../Z.6.

The following table shows the type designation for **MF../Z.6.** field distributors as an example:

MFE 52B	**Fieldbus interface**		
	MFP../MQP..	=	PROFIBUS
	MFE..	=	PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD..	=	DeviceNet™
/			
Z26	**Connection module**		
	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

4.4.4 Type designation MF../MM../Z.7.

The following table shows the type designation for **MF../MM../Z.7.** field distributors as an example:

MFE 52B	**Fieldbus interface**
	MFP../MQP.. = PROFIBUS
	MFE.. = PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD.. = DeviceNet™
/	
MM15D -503-00	**MOVIMOT® inverter**
/	
Z27	**Connection module**
	Z27 = for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z37 = For DeviceNet™
F	**Variant**
0	**Connection type**
	0 = ⅄
	1 = △
/	
BW1	**Braking resistor** (option)
	BW1 = Braking resistor for MOVIMOT® MM03 – MM15

4.4.5 Type designation MF../MM..Z.8.

The following table shows the type designation for **MF../MM../Z.8.** field distributors as an example:

MFE 52B	**Fieldbus interface**		
	MFP../MQP..	=	PROFIBUS
	MFE..	=	PROFINET IO, EtherNet/IP™ or EtherCAT®
	MFD../MQD..	=	DeviceNet™
/			
MM15D -503-00	**MOVIMOT® inverter**		
/			
Z28	**Connection module**		
	Z28	=	for PROFIBUS, PROFINET IO, EtherNet/IP™ and EtherCAT®
	Z38	=	For DeviceNet™
F	**Variant**		
0	**Connection type**		
	0	=	人
	1	=	△
/			
BW1	**Braking resistor** (option)		
	BW1	=	Braking resistor for MOVIMOT® MM03 – MM15
	BW2	=	Braking resistor for MOVIMOT® MM22 – MM40
/			
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

4.4.6 Type designation MF../MM..Z.9.

The following table shows the type designation for **MF../MM../Z.9.** field distributors as an example:

MFE 52B	**Fieldbus interface** MFE.. = PROFINET IO
I	
MM15D -503-00	**MOVIMOT®inverter** No designation = without inverter MM..D-...-.. = MOVIMOT® inverter
I	
Z29	**Connection module** Z29 = for PROFINET IO
F	**Variant** N = without maintenance switch F = with maintenance switch J = with maintenance switch and feedback
0	**Connection type** 0 = ⅄ 1 = △
I	
BW1	**Braking resistor** (option) BW1 = Braking resistor for MOVIMOT® MM03 – MM15
I	
3	**Number of MOVIMOT®inverters** 0 = without inverter 1 = 1 MOVIMOT® inverter 2 = 2 identical MOVIMOT® inverters 3 = 3 identical MOVIMOT® inverters

5 Mechanical installation

5.1 Installation instructions

> **INFORMATION**
>
> **i**
>
> 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 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**, **MFZ.8** or **MFZ.9** field distributors. Tighten screws with 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.

5.2   Tightening torques

5.2.1   MOVIMOT® inverter
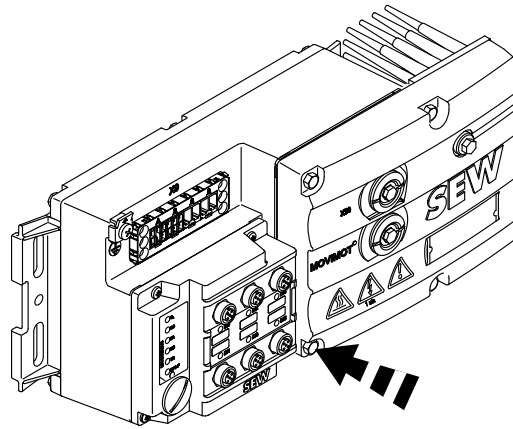
9007200393241611

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

5.2.2   Fieldbus interface / connection box cover
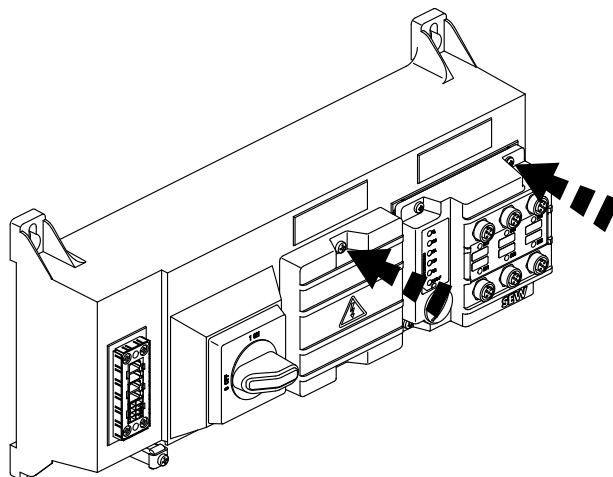
9007200393245323

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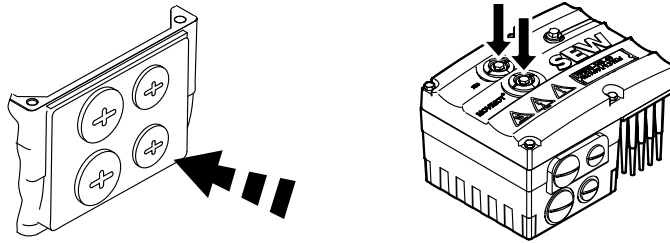
5.2.3 Screw plugs

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
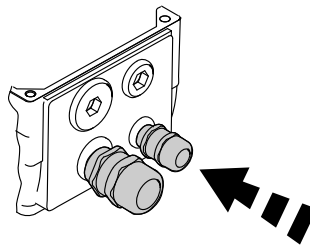
1138616971

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
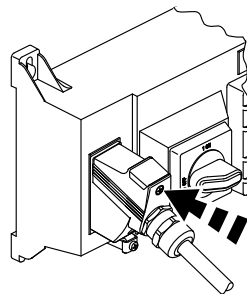
9007200393364491

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.
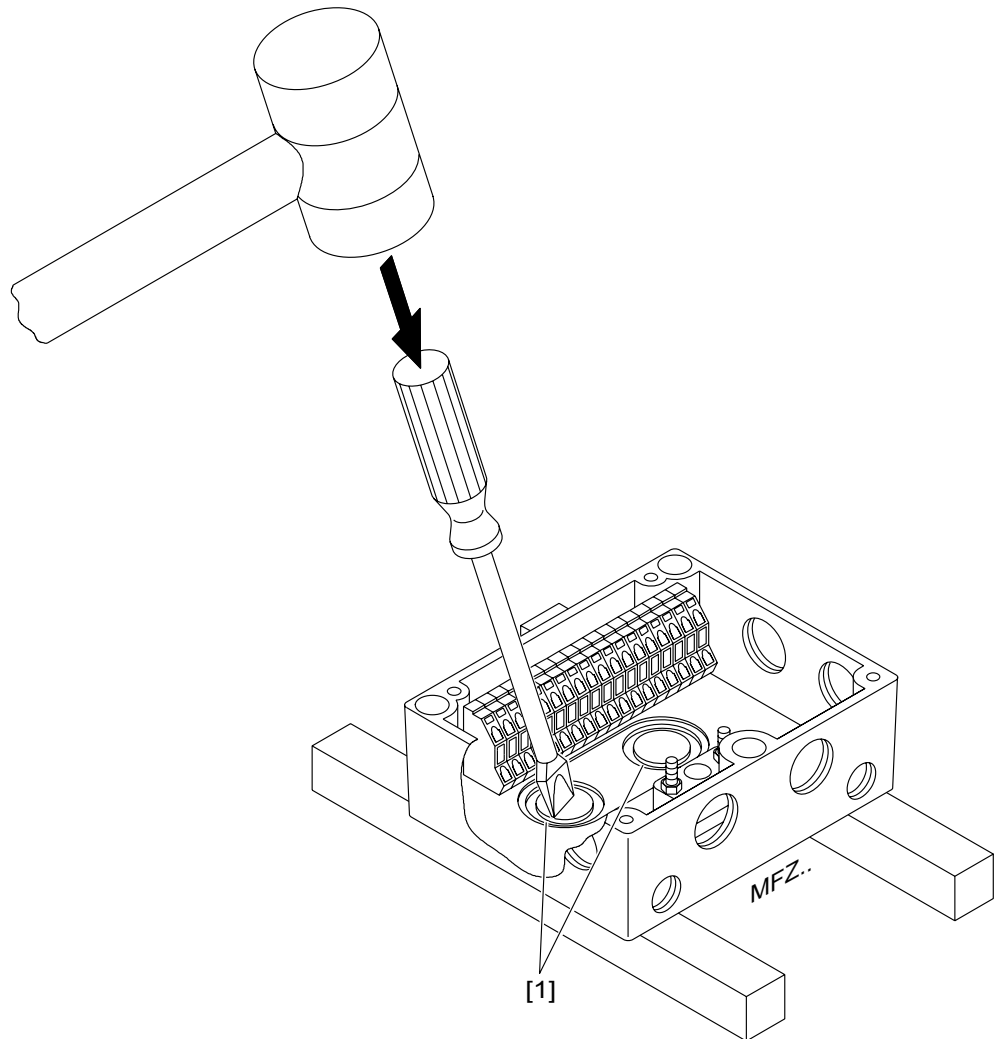
1138656139

⇨ 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.
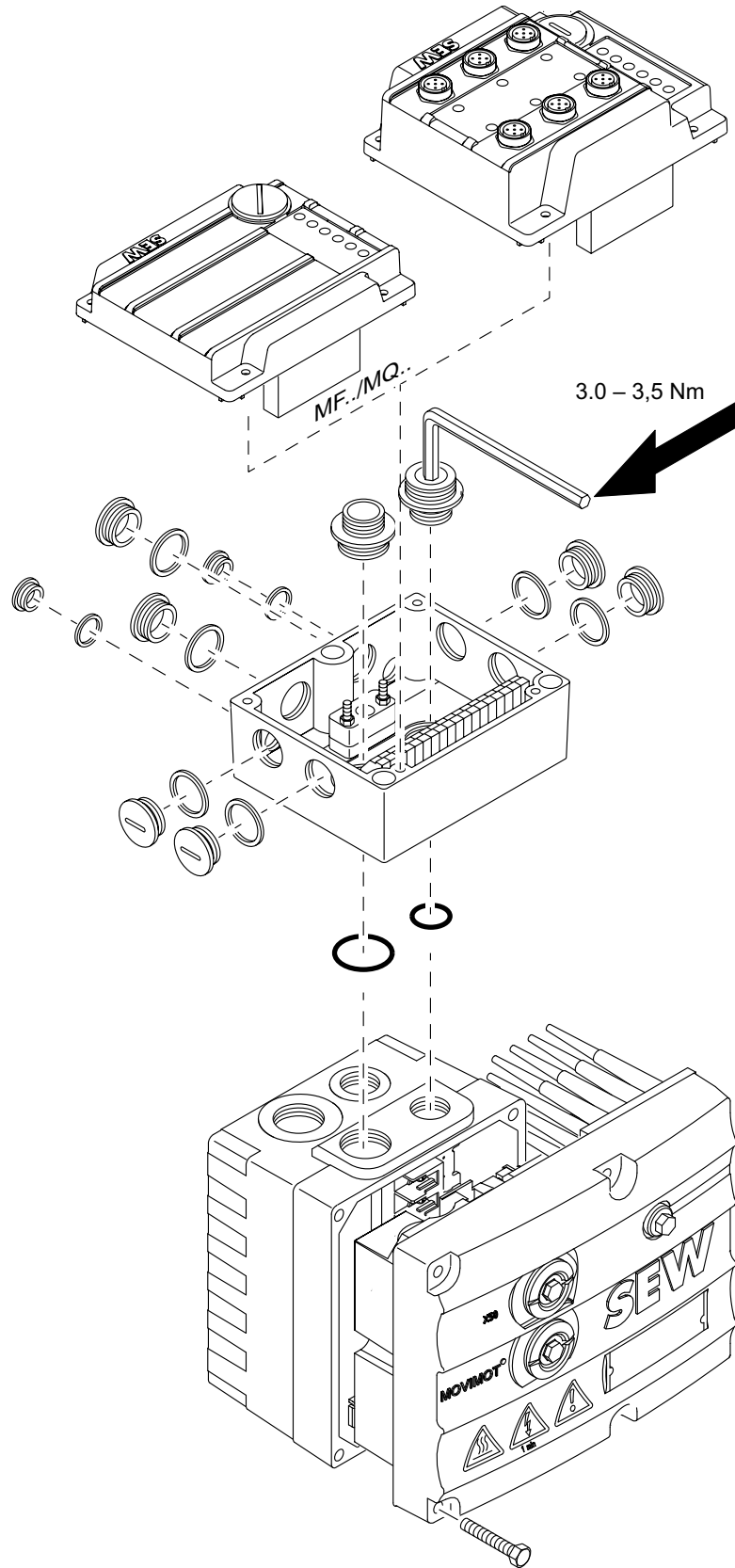
18014399648145931

5.3.2 Installation in the field

The following figure shows the installation of an MF../MQ.. fieldbus interface close to the motor:
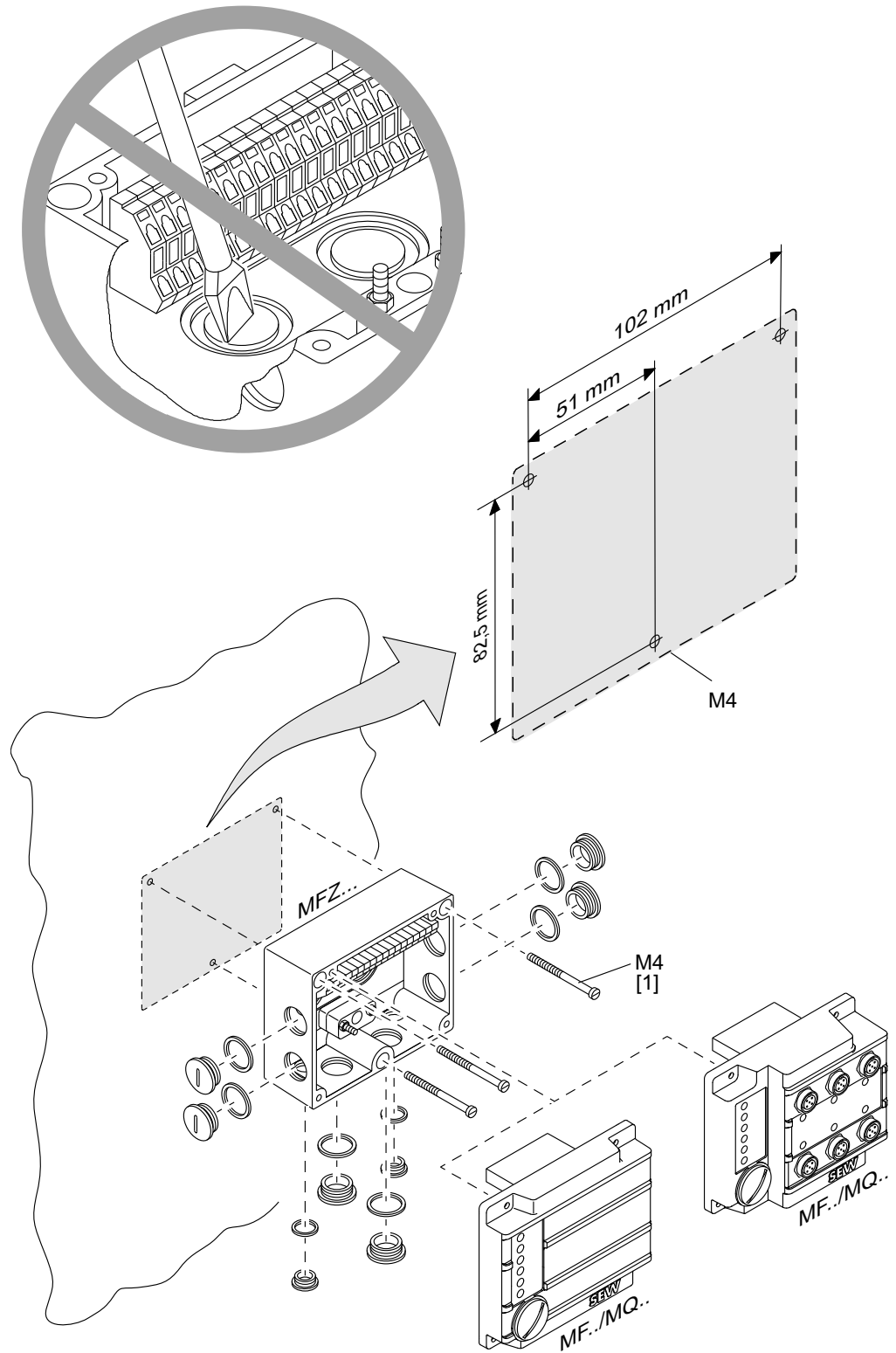
1138749323

[1] Length of screws min. 40 mm

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:
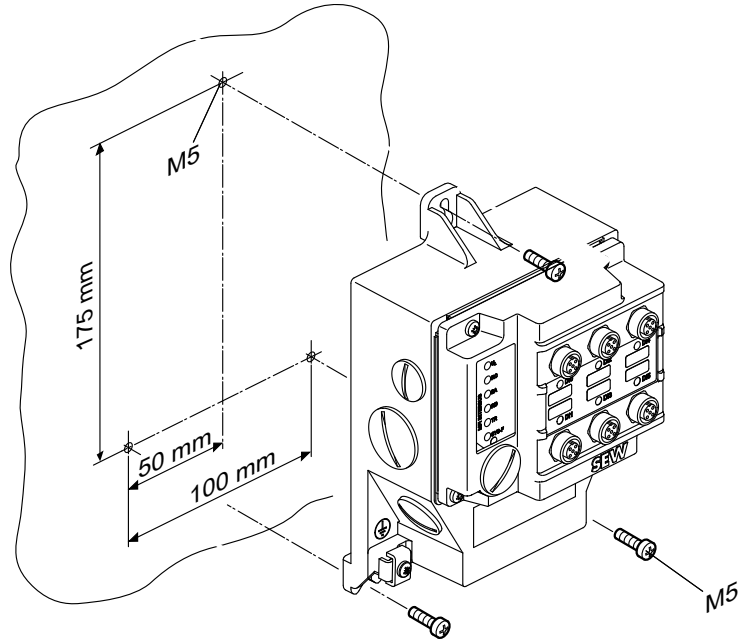
9007200393500299

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:
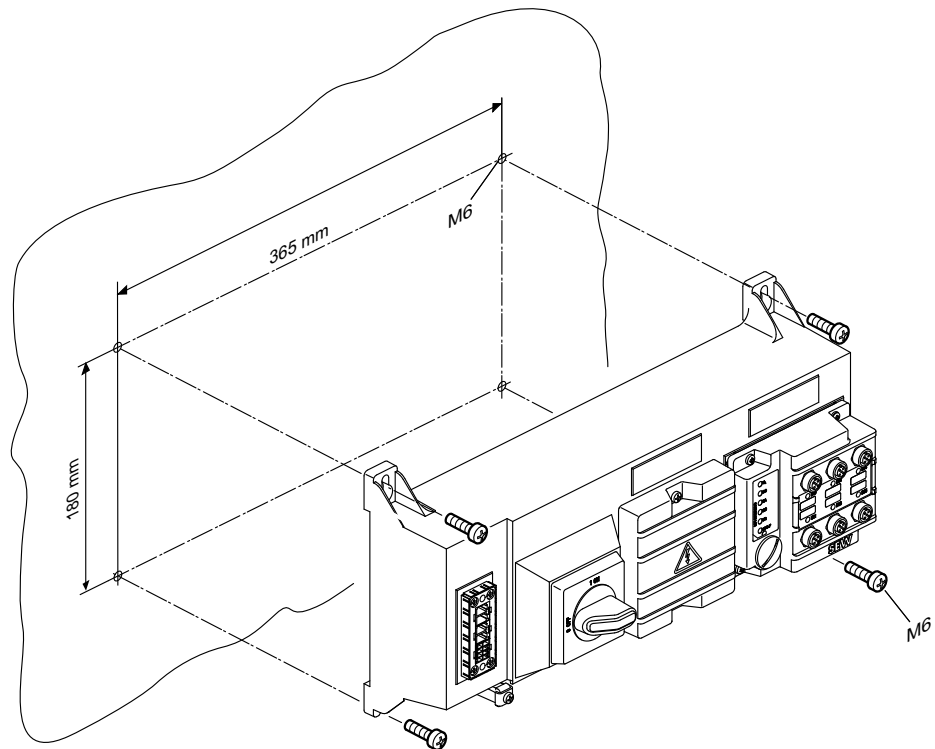
18014399648277003

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:
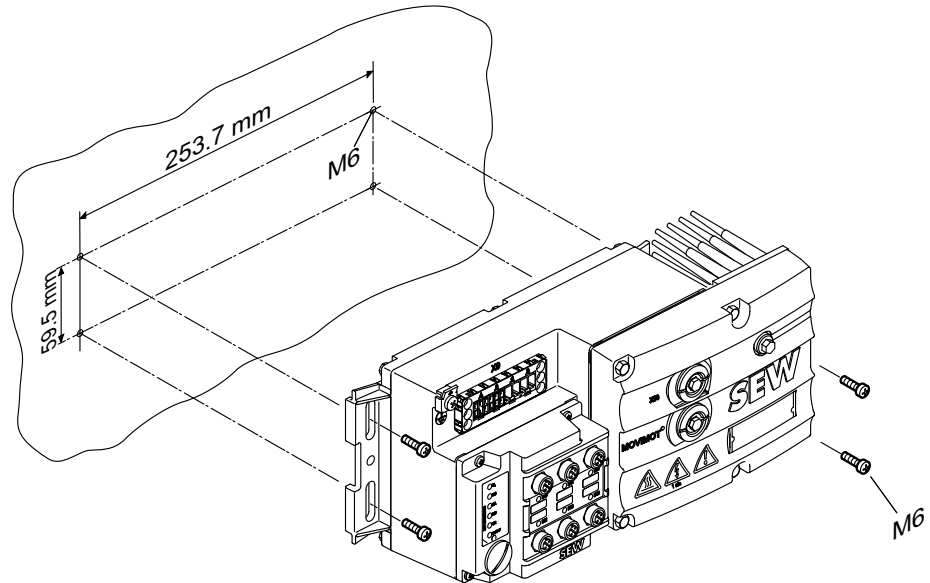
18014399648313483

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):
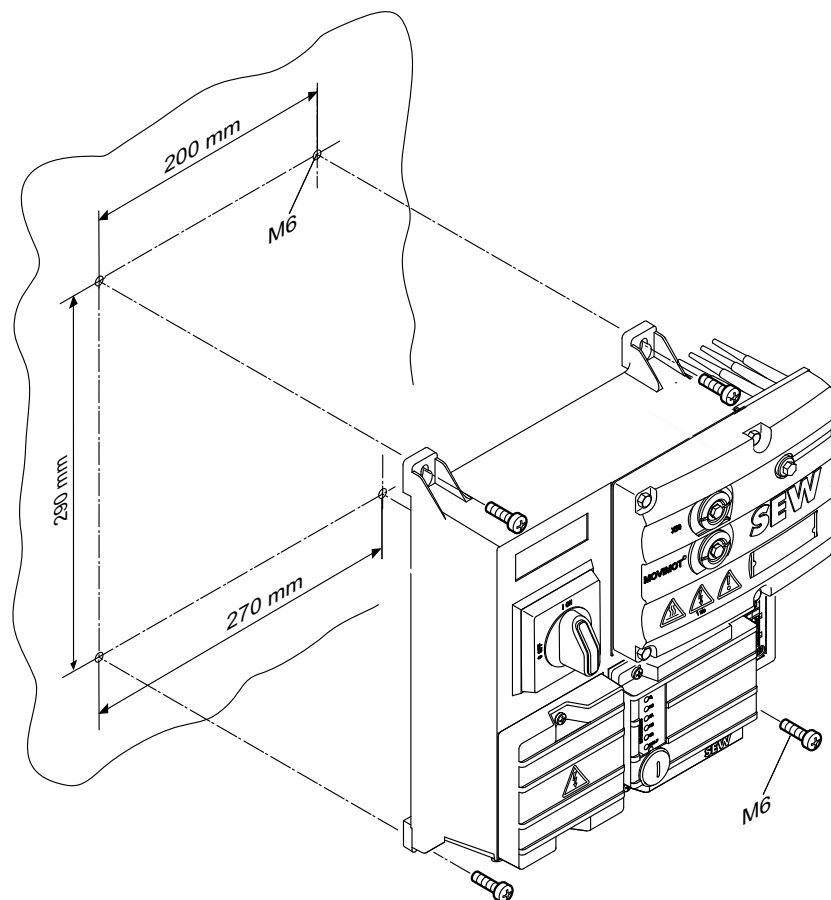
18014399648325131

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):
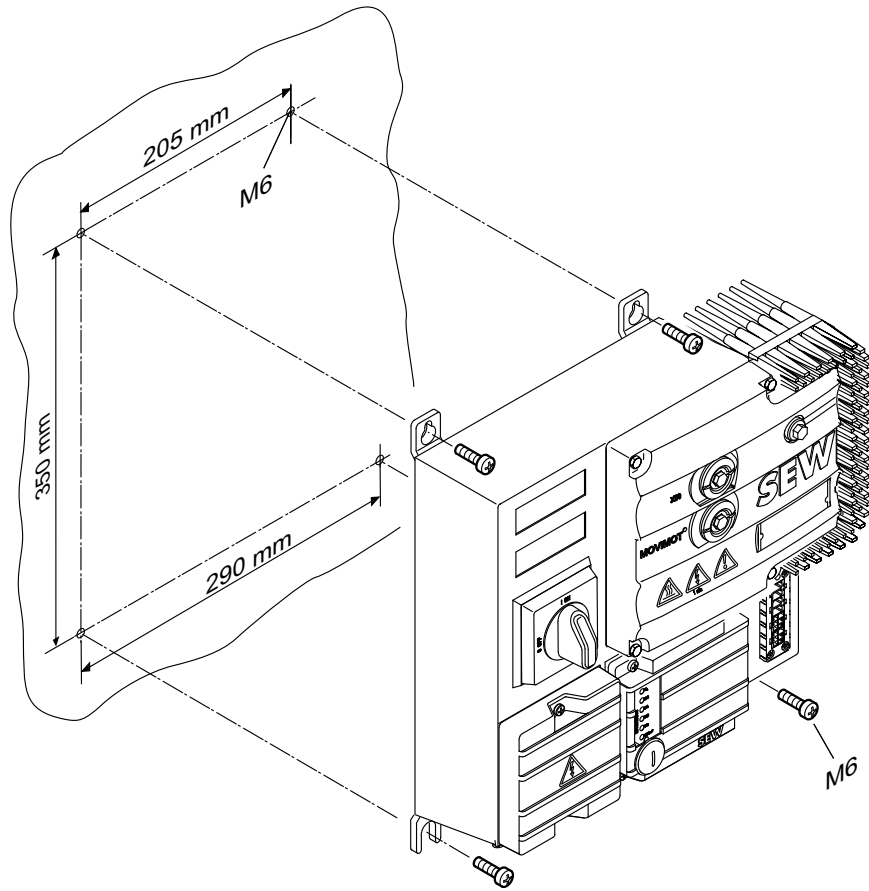
18014399648338187

5.4.6   Installation of MF../MM../Z.9. field distributors

The following figure shows the mounting dimensions for ..Z.9. field distributors:
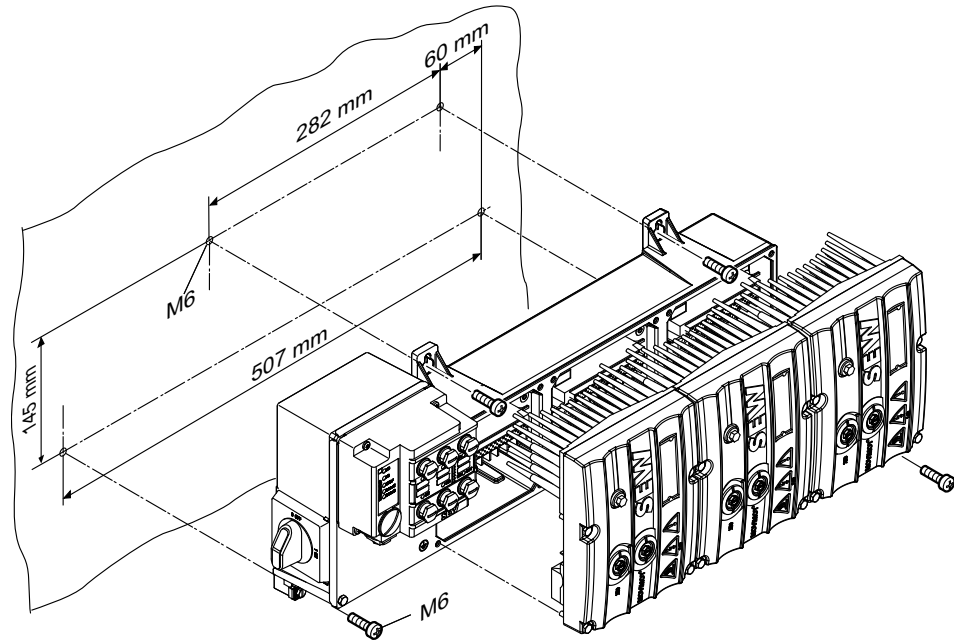
18223713419

Notes on installation of the MOVIMOT® inverters at the MFZ29 field distributor

> ## ⚠ WARNING
>
> Uncontrolled enabling of an unexpected drive by swapping the MOVIMOT® inverters.
>
> Severe or fatal injuries.
>
> - Install the MOVIMOT® inverters based on the set RS485 address according to the following figure:

18403922443

> ## ⚠ WARNING
>
> Electric shock due to missing cover.
>
> Severe or fatal injuries.
>
> - If you install only 1 or 2 MOVIMOT® inverters at the field distributor, you have to cover all free slots with the delivered covers.
>
> - Make sure that there are no open slots.

> ## NOTICE
>
> Loss of the ensured degree of protection due to impermissible installation. If you connect only 1 MOVIMOT® inverter or only the fieldbus interface to the field distributor and then fasten it with the full tightening torque, the cover plate may be deformed. The field distributor may leak.
>
> Damage to the field distributor.
>
> - Plug **all** MOVIMOT® inverters and the fieldbus interface in the field distributor and then tighten the retaining screws only slightly.
>
> - Afterwards, tighten the retaining screws of the MOVIMOT® inverters and the fieldbus interface with 3 Nm in diametrically opposite sequence.

6 Electrical installation

6.1 Installation planning taking EMC aspects into account

INFORMATION

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

MOVIMOT® can cause EMC interference within the permitted limit range according to EN 61800-3. In this case, it is recommended for the operator to take suitable measures.

For detailed information on EMC-compliant installation, refer to the SEW publication Drive Engineering – Practical Implementation, "Electromagnetic Compatibility in Drive Engineering".

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**.

Observe the notes in the following chapters in particular.

6.1.1 Equipotential bonding

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

- Establish a connection over a wide surface area between the field distributor and the system (untreated, unpainted, uncoated mounting surface).

[1] Conductive connection over a large area between field distributor and mounting plate

[2] PE conductor in the supply cable

[3] Connection second PE conductor

If you install a highly flexible PE conductor with a large cross section (e.g. 6 mm^2), this PE conductor also fulfills the function of an HF-capable equipotential bonding in terms of EMC.
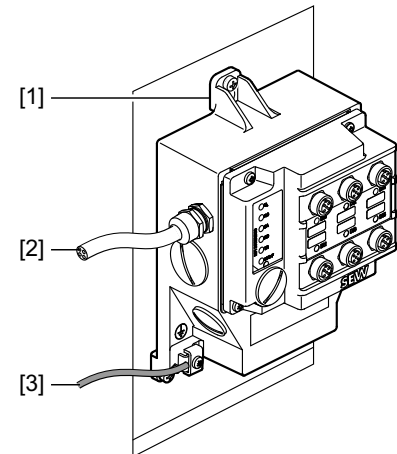
17948651787

- Do not use the cable shields of data lines for equipotential bonding.

6.1.2 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).

6.1.3 Field distributor

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

6.1.4 Cable glands

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

6.1.5 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 device'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 document **"Drive Engineering – Practical Implementation, EMC in Drive Engineering."**

6.1.6 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 devices using EMC cable glands.
  - Twist the conductors in pairs as shown in the following figure.
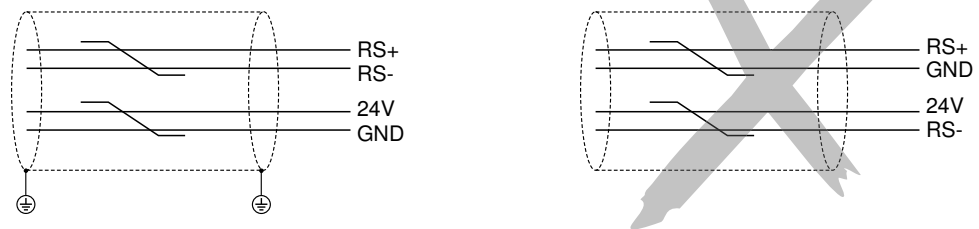
1138904075

- **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.
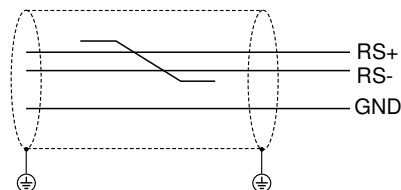
1138973579

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.

- 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 Permitted connection cross section of terminals

	Power terminals X1, X21 (screw terminals)	Control terminals X20 (cage clamp terminals)
Connection cross section	$0.2\ mm^2 - 4\ mm^2$	$0.08\ mm^2 - 2.5\ mm^2$

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

6.2.3 Permitted cable cross section of the MOVIMOT® terminals

Power terminals

Adhere to the permitted cable cross sections for installation:

Power terminal X4_.	
Cable cross section	$1.0\ mm^2 - 4.0\ mm^2$ $(2 \times 4.0\ mm^2)$
Conductor end sleeves	• **For single assignment:** Connect only single-wire conductors or flexible conductors with conductor end sleeves (DIN 46228, material E-CU) **with or without plastic collars**. • **For double assignment:** Connect only flexible conductors with conductor end sleeve (DIN 46228 - 1, material E-CU) **without plastic collar**. • Permitted length of the conductor end sleeve: at least 8 mm

Control terminals

Adhere to the permitted cable cross sections for installation:

Control terminals X6_.	
Cable cross section • Single-wire conductor (bare wire) • Flexible conductor (bare litz wire) • Conductor end sleeve **without** plastic collar	$0.5\ mm^2 - 1.0\ mm^2$
• Conductor end sleeve **with** plastic collar	$0.5\ mm^2 - 0.75\ mm^2$
Conductor end sleeves	• Connect only single-wire conductors or flexible wire conductors **with or without** conductor end sleeve (DIN 46228, material E-CU). • Permitted length of the conductor end sleeve: at least 8 mm

6.2.4 Residual current device

⚠ WARNING

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

Severe or fatal injuries.

- Use only universal current sensitive residual current devices of type B for inverters.

- 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 thus not permitted as protection device.
- 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.

6.2.5 Line contactor

NOTICE

Damage to the MOVIMOT® inverter when using the line contractor K11 for jog mode.

Damage to the MOVIMOT® inverter.

- Do not use the K11 line contactor (see wiring diagram) for jog mode, but only for switching the inverter on and off. For jog mode, use the commands "CW / Stop" or "CCW / Stop".
- Observe a minimum switch-off time of 2 s for the input contactor K11.

- Only use a contactor of utilization category AC3 (EN 60947-4-1) as a line contactor.

6.2.6 Installation above 1000 m amsl

MOVIMOT® drives with mains voltages of 200 – 240 V or 380 – 500 V can also be operated at an altitude of 1000 – 4000 m amsl. To do so, you must observe the following basic conditions.

- At heights above 1000 m amsl, the nominal continuous power is reduced due to reduced cooling: I_N reduction by 1% per 100 m.
- At altitudes of 2000 – 4000 m amsl you must take limiting measures which reduce the line side overvoltage from category III to category II for the entire system.

6.2.7 Notes on PE connection

⚠ WARNING

Electric shock due to faulty ground connection or faulty equipotential bonding.

Severe, fatal injuries

- The permitted tightening torque for the retaining screws is 2.0 – 2.4 Nm.
- Make sure to install the ground connection and equipotential bonding correctly.

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 mm²

[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 protective earth (PE) connection 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 via separate terminals that must not be smaller than the cable cross section of the supply system cable.

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6.2.8 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.
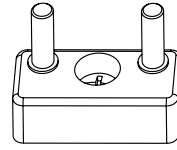
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- The terminal studs have a current carrying capacity of 16 A.

- The permitted tightening torque for the hex nuts of the terminal studs is 1.2 Nm ± 20%.

6.2.9 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.
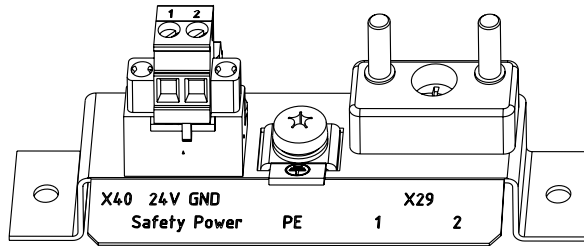
1141387787

- The X29 terminal block can be used as an alternative to the X20 terminal (see chapter "Device 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 mm^2 – 2.5 mm^2
  - Permitted tightening torque: 0.6 Nm

6.2.10 UL-compliant installation

INFORMATION

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

Field wiring power terminals

Observe the following notes for UL-compliant installation:

- Use 60/75 °C copper wire only.
- Tighten terminals to 1.5 Nm (13.3 lb.in)

Short circuit current rating

Suitable for use on a circuit capable of delivering not more than 200,000 rms symmetrical amperes when protected as follows

For 240 V systems:

250 V minimum, 25 A maximum, non-semiconductor fuses

or 250 V minimum, 25 A maximum, inverse time circuit breakers

For 500 V systems:

500 V minimum, 25 A maximum, non-semiconductor fuses

or 500 V minimum, 25 A maximum, inverse time circuit breakers

The max. voltage is limited to 500 V.

Branch circuit protection

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

For maximum branch circuit protection see table below.

Series	non-semiconductor fuses	inverse time 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 provided with load and speed-sensitive overload protection and thermal memory retention upon shutdown or power loss.

The trip current is adjusted to 140 % of the rated motor current.

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.

- Only use certified units with a limited output voltage (V_{max} = DC 30 V) and limited output current (I ≤ 8 A) as an external DC 24 V voltage source.
- The UL certification only applies for the 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 MFE52 to MOVIMOT®

6.3.1 MFZ21 connection module with PROFINET IO interface MFE52 connected to MOVIMOT®

(for a configuration with 6 inputs or with 4 inputs/2 outputs)
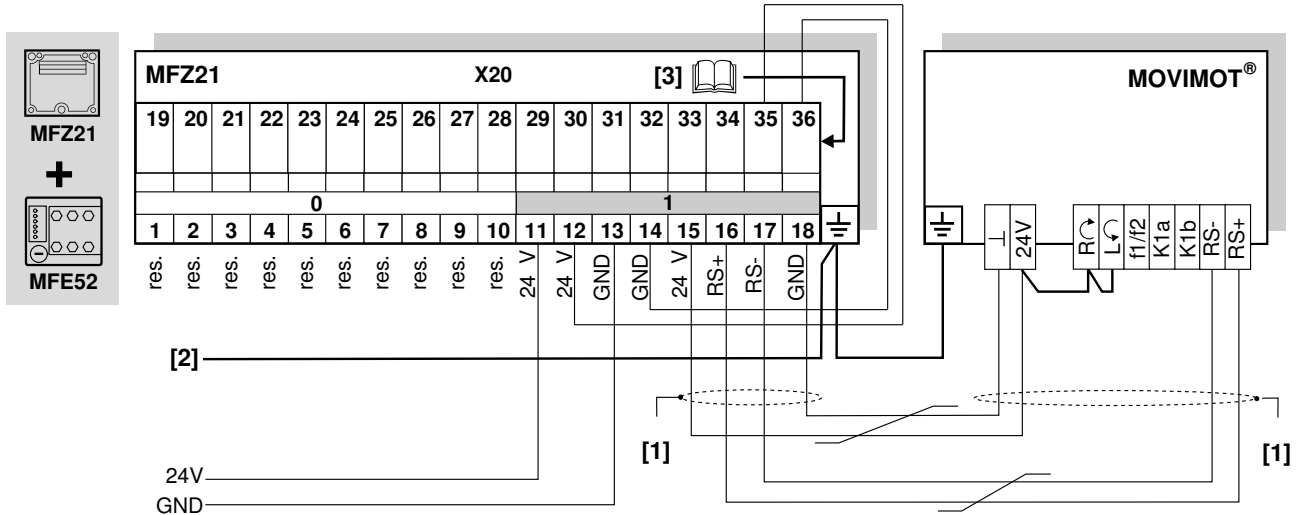
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| **0** | = Potential level 0 | **1** | = Potential level 1 |

[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 MFE52 fieldbus interface" (→ 📖 62)

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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6.4 Connection of MFZ23 field distributor with MFE52

6.4.1 MFZ33 connection module with MFE52 PROFINET IO interface and 2 separate DC 24 V circuits

(only for a configuration with 4 inputs/2 outputs)
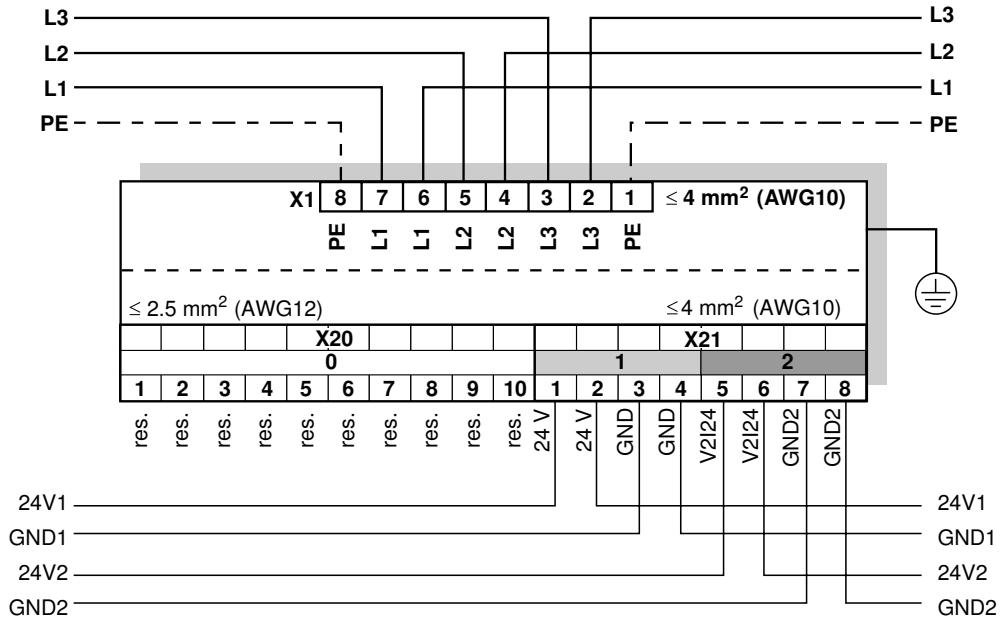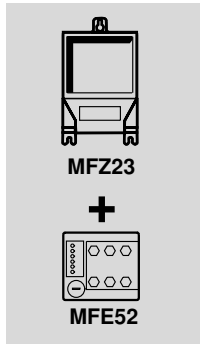
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| **0** | = Potential level 0 | **1** | = Potential level 1 | **2** | = Potential level 2 |

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

6.4.2 MFZ33 connection module with MFE52 PROFINET IO interface and 1 shared DC 24 V circuit

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

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| **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 (binary 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

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6.5 Connection of MFZ26, MFZ27, MFZ28 field distributors with MFE52

6.5.1 MFZ26, MFZ27, MFZ28 connection modules with PROFINET IO interface MFE52 and 2 separate DC 24 V voltage circuits

(only for a configuration with 4 inputs/2 outputs)
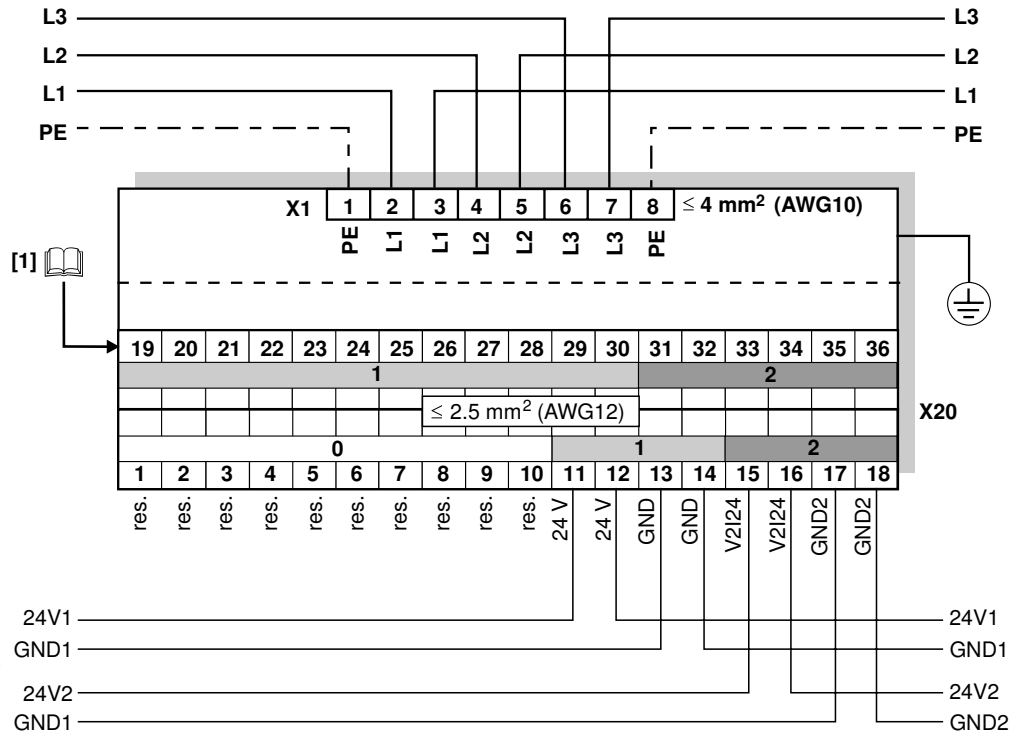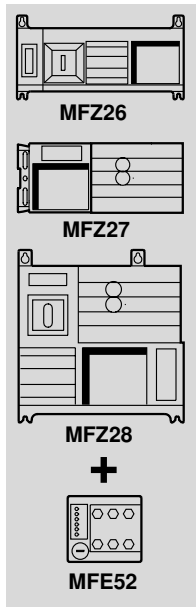
9007202581330955

| **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 MFE52 fieldbus interface" (→ 📖 62)

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

6.5.2 MFZ26, MFZ27, MFZ28 connection modules with PROFINET IO interface MFE52 and 1 shared DC 24 V voltage circuit

(for a configuration with 6 inputs or with 4 inputs/2 outputs)
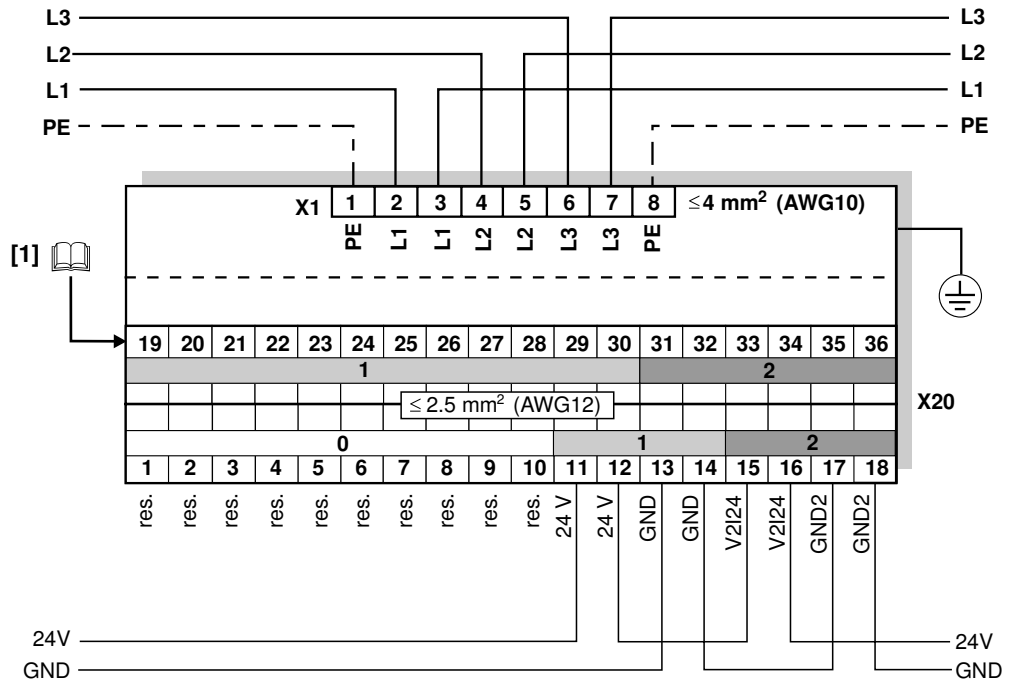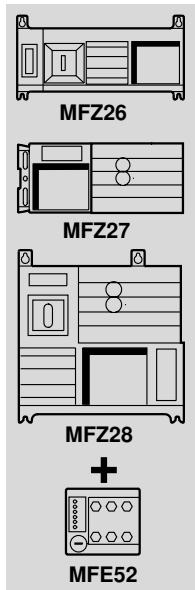
9007202581354763

| **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 MFE52 fieldbus interface" (→ 🖺 62)

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 (binary 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)

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6.6 Connection of MFZ29 field distributor with MFE52

6.6.1 Terminal positions

The following figure shows the position of the terminals and PE connections of the field distributor as an example:
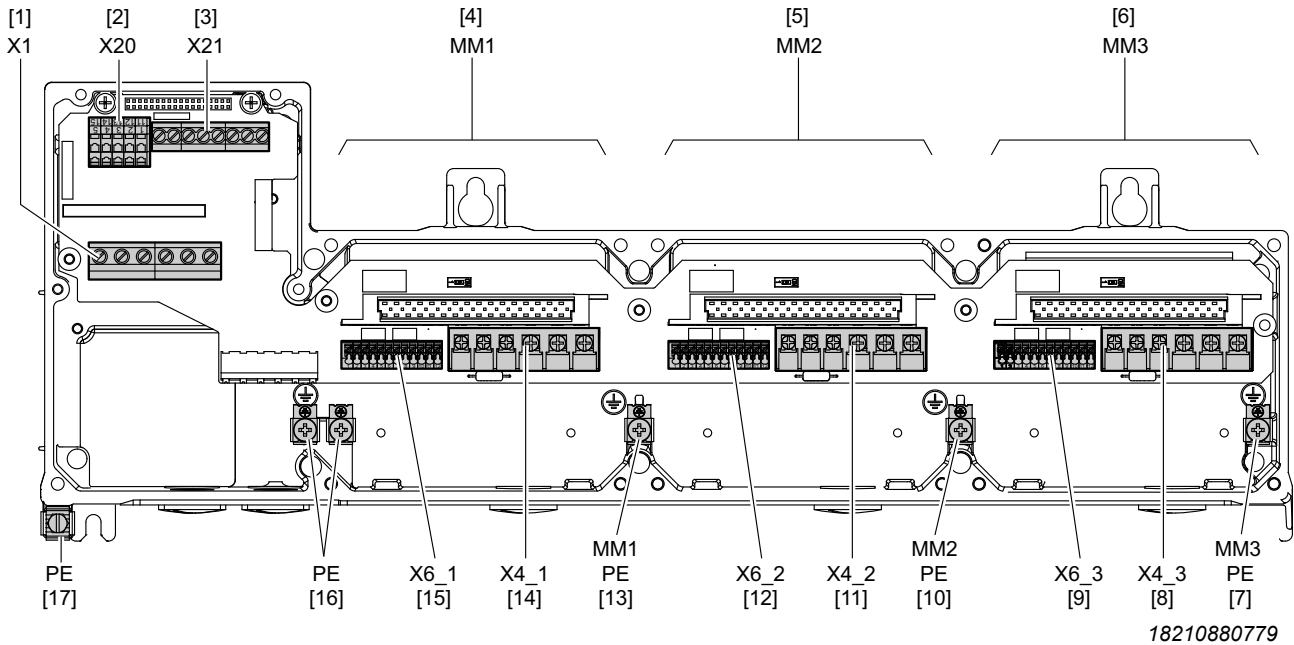
18210880779

[1]	X1	Supply system terminals
[2]	X20	24 V distributor terminals
[3]	X21	24 V supply terminals (24 V power bus)
[4]	MM1	Slot for MOVIMOT® inverter 1 with RS485 address = 1
[5]	MM2	Slot for MOVIMOT® inverter 2 with RS485 address = 2
[6]	MM3	Slot for MOVIMOT® inverter 3 with RS485 address = 3
[7]	PE MM3	Motor 3 PE connection
[8]	X4_3	Motor 3 power terminals (U, V, W, brake)
[9]	X6_3	Motor 3 control terminals
[10]	PE MM2	Motor 2 PE connection
[11]	X4_2	Motor 2 power terminals (U, V, W, brake)
[12]	X6_2	Motor 2 control terminals
[13]	PE MM1	Motor 1 PE connection
[14]	X4_1	Motor 1 power terminals (U, V, W, brake)
[15]	X6_1	Motor 1 control terminals
[16]	PE	PE connection
[17]	PE	External PE connection/equipotential bonding

6.6.2 X1, X20, X21 line terminals, 24 V supply

MFZ29 connection module with MFE52 PROFINET IO interface and 2 separate DC 24 V circuits

(only for a configuration with 4 inputs/2 outputs)
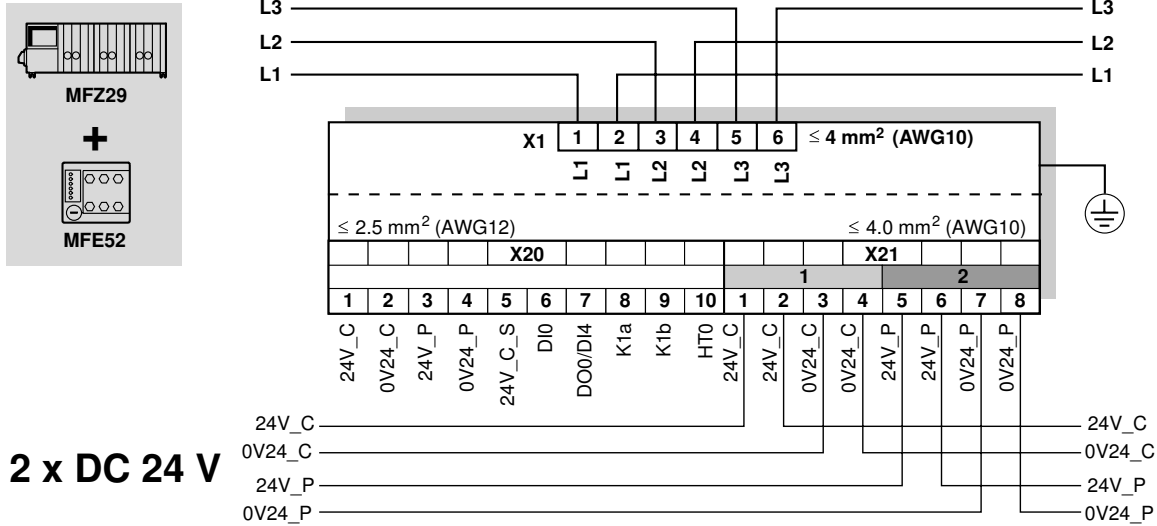
18196616203

| | 1 | = Potential level 1 | | 2 | = Potential level 2 |

Terminal assignment 24 V supply terminals				
No.		**Name**	**Direction**	**Function**
X21	**1**	24V_C	Input	24 V voltage supply for module electronics, sensors and actuators
	2	24V_C	Output	24 V voltage supply for module electronics, sensors and actuators jumpered with terminal X21/1
	3	0V24_C	Input	0V24 reference potential for module electronics, sensors and actuators
	4	0V24_C	Output	0V24 reference potential for module electronics, sensors and actuators jumpered with terminal X21/3
	5	24V_P	Input	24 V voltage supply for 3 MOVIMOT® inverters (safety power)
	6	24V_P	Output	24 V voltage supply for 3 MOVIMOT® inverters jumpered with terminal X21/5
	7	0V24_P	Input	0V24 reference potential for 3 MOVIMOT® inverters (safety power)
	8	0V24_P	Output	0V24 reference potential for 3 MOVIMOT® inverters jumpered with terminal X21/7

Terminal assignment 24 V distributor terminals

No.		Name	Direction	Function
X20	**1**	24V_C	Output	24 V voltage supply for module electronics and sensors jumpered with terminal X21/1
	2	0V24_C	-	0V24 reference potential for module electronics and sensors jumpered with terminal X21/3
	3	24V_P	Output	24 V voltage supply for MOVIMOT® inverters jumpered with terminal X21/5
	4	0V24_P	-	0V24 reference potential for MOVIMOT® inverters jumpered with terminal X21/7
	5	24V_C_S	Output	Feedback signal of the maintenance switch 24V_C_S = 24 V => maintenance switch is switched on.
	6	DI0	Input	Switching input DI0, e.g. for feedback of the maintenance switch DI0 = 1 => maintenance switch is switched on (→ 🖹 59).
	7	DO0/DI4	Input/out-put	Digital input/output for manual enable signal connection variant rapid start/rapid stop (→ 🖹 60)
	8	K1a	Input	Floating input of the ready signal relay of the MOVIMOT® inverters[1]
	9	K1b	Output	Output of the ready signal relays of the MOVIMOT® inverters[1]
	10	HT0	Output	Auxiliary terminal for signal distribution jumpered with terminals X6_1/4 (HT0), X6_2/4 (HT0), X6_3/4 (HT0)

1) The ready signal relays are connected in parallel.

MFZ29 connection module with MFE52 PROFINET IO interface and 1 shared DC 24 V circuit

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

18402226443

| **1** = Potential level 1 | **2** = Potential level 2 |

Terminal assignment 24 V supply terminals				
No.		**Name**	**Direction**	**Function**
X21	**1**	24V_C	Input	24 V voltage supply for module electronics, sensors and actuators
	2	24V_C	Output	24 V voltage supply for module electronics, sensors and actuators jumpered with terminal X21/1
	3	0V24_C	Input	0V24 reference potential for module electronics, sensors and actuators
	4	0V24_C	Output	0V24 reference potential for module electronics, sensors and actuators jumpered with terminal X21/3
	5	24V_P	Input	24 V voltage supply for 3 MOVIMOT® inverters (safety power)
	6	24V_P	Output	24 V voltage supply for 3 MOVIMOT® inverters jumpered with terminal X21/5
	7	0V24_P	Input	0V24 reference potential for 3 MOVIMOT® inverters (safety power)
	8	0V24_P	Output	0V24 reference potential for 3 MOVIMOT® inverters jumpered with terminal X21/7

Terminal assignment 24 V distributor terminals

No.		Name	Direction	Function
X20	**1**	24V_C	Output	24 V voltage supply for module electronics and sensors jumpered with terminal X21/1
	2	0V24_C	-	0V24 reference potential for module electronics and sensors jumpered with terminal X21/3
	3	24V_P	Output	24 V voltage supply for MOVIMOT® inverters jumpered with terminal X21/5
	4	0V24_P	-	0V24 reference potential for MOVIMOT® inverters jumpered with terminal X21/7
	5	24V_C_S	Output	Feedback signal of the maintenance switch 24V_C_S = 24 V => maintenance switch is switched on.
	6	DI0	Input	Switching input DI0, e.g. for feedback of the maintenance switch DI0 = 1 => maintenance switch is switched on ($\rightarrow$ 🕮 59).
	7	DO0/DI4	Input/out-put	Digital input/output for manual enable signal connection variant rapid start/rapid stop ($\rightarrow$ 🕮 60)
	8	K1a	Input	Floating input of the ready signal relay of the MOVIMOT® inverters[1]
	9	K1b	Output	Output of the ready signal relays of the MOVIMOT® inverters[1]
	10	HT0	Output	Auxiliary terminal for signal distribution jumpered with terminals X6_1/4 (HT0), X6_2/4 (HT0), X6_3/4 (HT0)

1) The ready signal relays are connected in parallel.

Connection variants

The MFZ29 field distributor has additional functions for special connections. The following chapters describe the additional connections and the resulting functions.

Connection variant parallel connection and ready signal via digital input DI4 (option)

The following figure shows the parallel connection of the ready signal of the MOVIMOT® inverters:
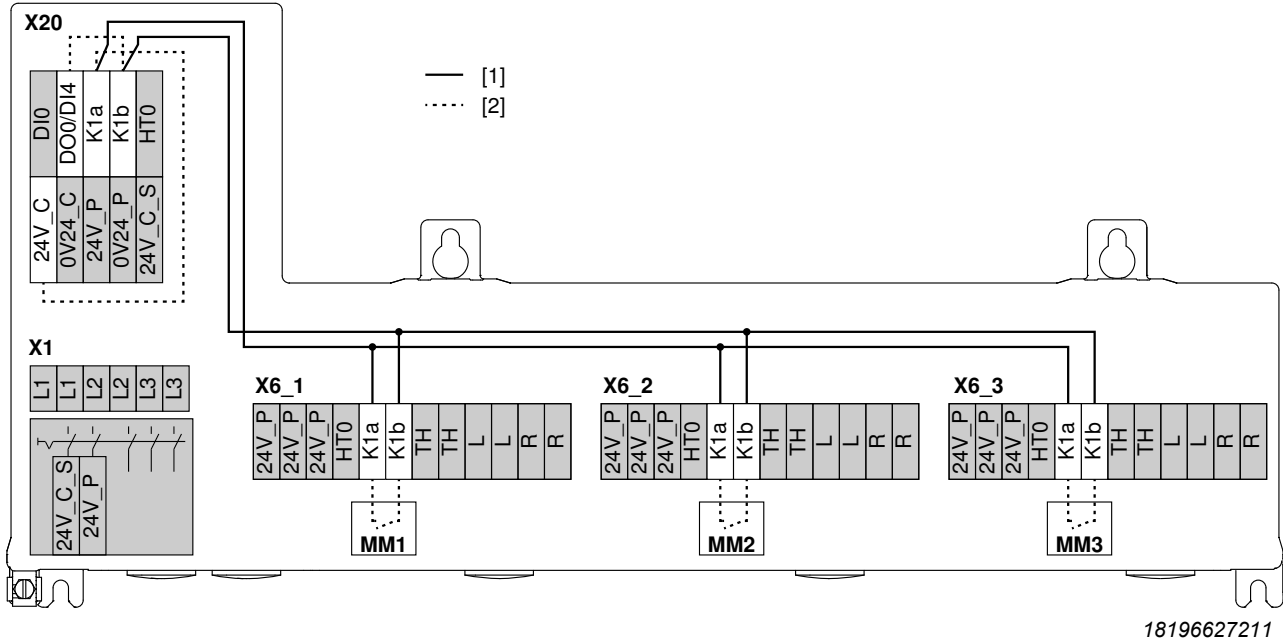
18196627211

[1]   The cables labeled with "——" are already wired at the factory.
[2]   The cables labeled with "····" still have to be wired for this connection variant.

Function   With this additional connection, the digital input DI4 shows if any of the MOVIMOT® inverters is ready for operation.

- DI4 = 0 => No MOVIMOT® inverter is ready for operation (e.g. 24V_P is missing).

- DI4 = 1 => At least 1 MOVIMOT® inverter is ready for operation.

The feedback of the maintenance switch and the STO (Safe Torque Off) safety function of the MOVIMOT® drives are possible.

5 digital inputs (DI0 – DI3 and DI5) are available.
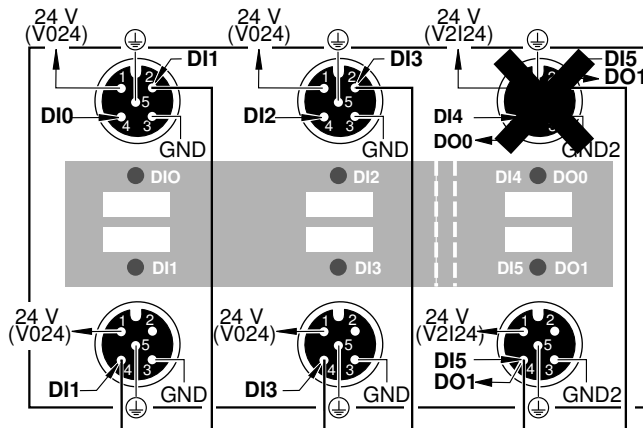
19328543499

Connection variant feedback maintenance switch (MFZ29J design)

The following figure shows the additional connection of the MF29**J** field distributor for the feedback of the maintenance switch.
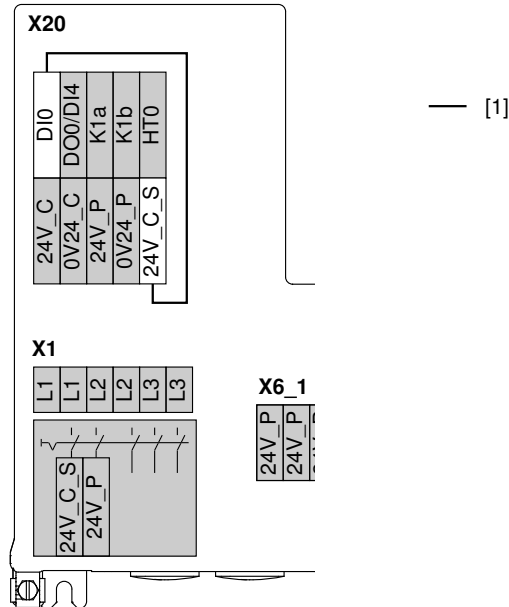
18200674699

[1] The cables labeled with "**—**" are already wired at the factory.

Function

With this additional connection, the field distributor delivers the status of the maintenance switch to the higher-level controller.

- Maintenance switch on => digital input DI0 = 1.
- Maintenance switch off => digital input DI0 = 0.

The STO (Safe Torque Off) safety function of the MOVIMOT® drives is possible.

Depending on the configuration, the following is available:

- 3 digital inputs (DI1 – DI3) and 2 digital outputs (DO0 – DO1)

  or

- 5 digital inputs (DI1 – DI5).
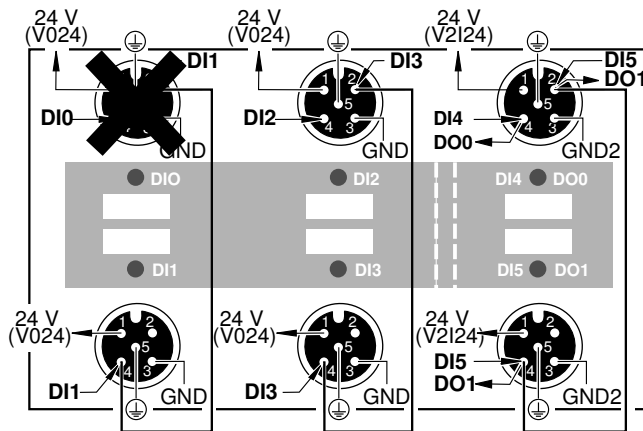
19328547211

Connection variant rapid start/rapid stop via digital output DO0 (option)

The following figure shows an example of the additional connection for the simultaneous rapid start and rapid stop of all MOVIMOT® drives:
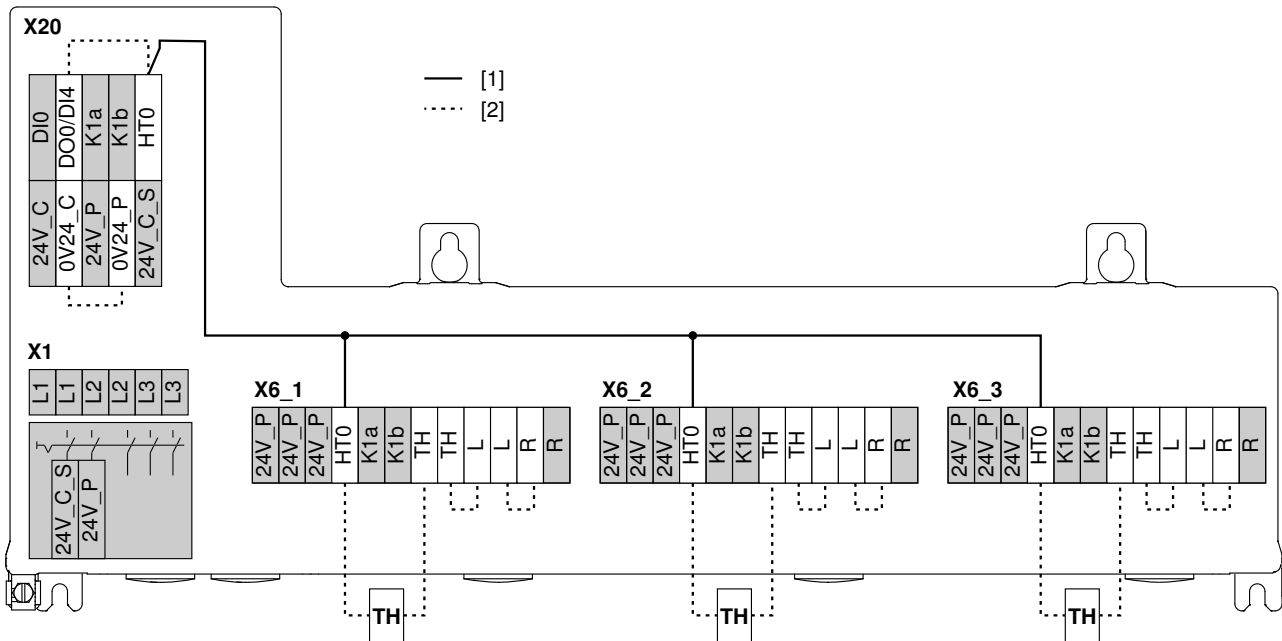
18200677387

[1] The cables labeled with "━━" are already wired at the factory.
[2] The cables labeled with "⋯" still have to be wired for this connection variant.

Requirement   All MOVIMOT® inverters of the field distributor have to be enabled in the process data (→ 🗋 146).

Function   With this additional connection, you can simultaneously start or stop all connected MOVIMOT® drives.

* If you set the digital output DO0 = 1, the drives start.

* If you set the digital output DO0 = 0, the drives stop.

The STO (Safe Torque Off) safety function of the MOVIMOT® drives is **not** possible.

4 digital inputs (DI0 – DI3) and 1 digital output (DO1) are available.
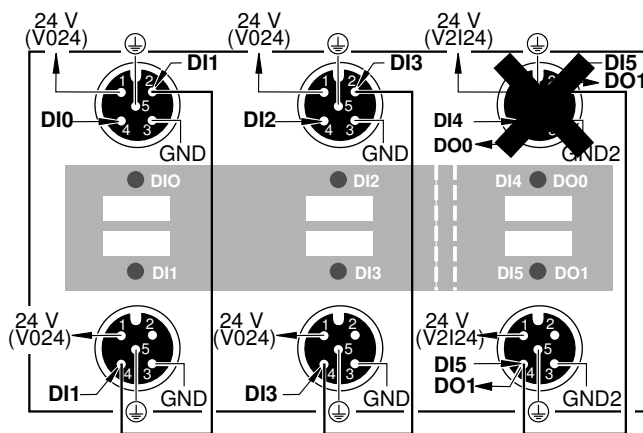
19328543499

6.6.3   X6_1, X6_2, X6_3 motor 1 – 3 control terminals

No.		Name	Direction	Function
Motor 1 – 3 control terminals				
No.		Name	Direction	Function
X6_1[1]	**1**	24V P	Output	24 V voltage supply for TH, L and R of the MOVIMOT® inverter
X6_2[2]	**2**	24V P	Output	24 V voltage supply for TH, L and R of the MOVIMOT® inverter
X6_3[3]	**3**	24V P	Output	24 V voltage supply for TH, L and R of the MOVIMOT® inverter
	4	HT0	Output	Auxiliary terminal for signal distribution
	5	K1a	Output	Ready signal (contact K1a – K1b closed => ready for operation)
	6	K1b	Output	Ready signal (contact K1a – K1b closed => ready for operation)
	7	TH	Input	TH connection (bimetallic thermostat) in the motor
	8	TH	Input	TH connection (bimetallic thermostat) in the motor
	9	L	Input	Direction enable CCW
	10	L	Input	Direction enable CCW
	11	R	Input	Direction enable CW
	12	R	Input	Direction enable CW

1) X6_1 = connections for motor 1,

2) X6_2 = connections for motor 2,

3) X6_3 = connections for motor 3

6.6.4   X4_1, X4_2, X4_3 motor 1 – 3 power terminals

No.		Name	Direction	Function
Motor 1 – 3 power terminals				
No.		Name	Direction	Function
X4_1[1]	**1**	13	Output	Brake or braking resistor connection, red
X4_2[2]	**2**	14	Input	Brake connection, white
X4_3[3]	**3**	15	Output	Brake or braking resistor connection, blue
	4	U	Output	Motor phase connection U
	5	V	Output	Motor phase connection V
	6	W	Output	Motor phase connection W

1) X4_1 = connections for motor 1,

2) X4_2 = connections for motor 2,

3) X4_3 = connections for motor 3

6.7 Connection of the inputs/outputs of the MFE52 fieldbus interface

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

6.7.1 Connection of inputs/outputs via terminals

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

MFZ.1		
MFZ.6		
MFZ.7	in combination with	**MFE52**
MFZ.8		

X20	DI0	GND	VO24	DI1	GND	VO24	DI2	GND	VO24	DI3	GND	VO24	DIO4	GND2	DIO5	GND2	V2I24	GND2
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
						1									2			
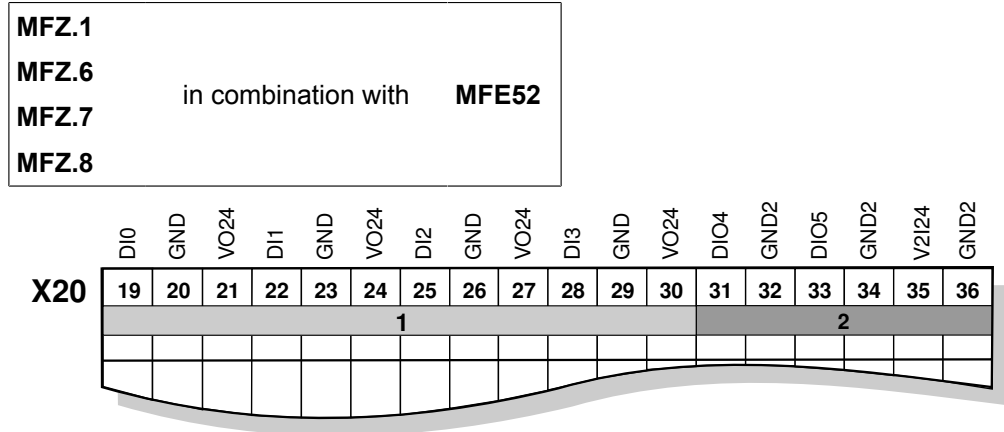
9007202583107851

1	= Potential level 1	2	= Potential level 2

Terminal assignment				
No.		**Name**	**Direction**	**Function**
X20	**19**	DI0	Input	Sensor DI0 switching signal[1]
	20	GND	–	0V24 reference potential for sensor DI0
	21	V024	Output	24 V voltage supply for sensor DI0[1]
	22	DI1	Input	Sensor DI1 switching signal
	23	GND	–	0V24 reference potential for sensor DI1
	24	V024	Output	24 V voltage supply for sensor DI1
	25	DI2	Input	Sensor DI2 switching signal
	26	GND	–	0V24 reference potential for sensor DI2
	27	V024	Output	24 V voltage supply for sensor DI2
	28	DI3	Input	Sensor DI3 switching signal
	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	Sensor DI4 switching signal
			Output	Actuator DO0 switching signal
	32	GND2	–	0V24 reference potential for sensor DI4
			–	0V24 reference potential for actuator DO0
	33	DIO5	Input	Sensor DI5 switching signal
			Output	Actuator DO1 switching signal
	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) Used in conjunction with field distributors MFZ26J and MFZ28J for maintenance switch feedback signal (NO contact). Evaluation via control is possible.

6.7.2 Connection of inputs/outputs via M12 plug connectors

For MFE52A/MFE52B fieldbus interfaces with 4 digital inputs and 2 digital inputs/outputs:

> **NOTICE**
>
> Loss of the guaranteed degree of protection if the screw plugs in the unused M12 connections are not installed or not installed correctly.
>
> Damage to the fieldbus interface.
>
> • Seal all unused M12 connections 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.
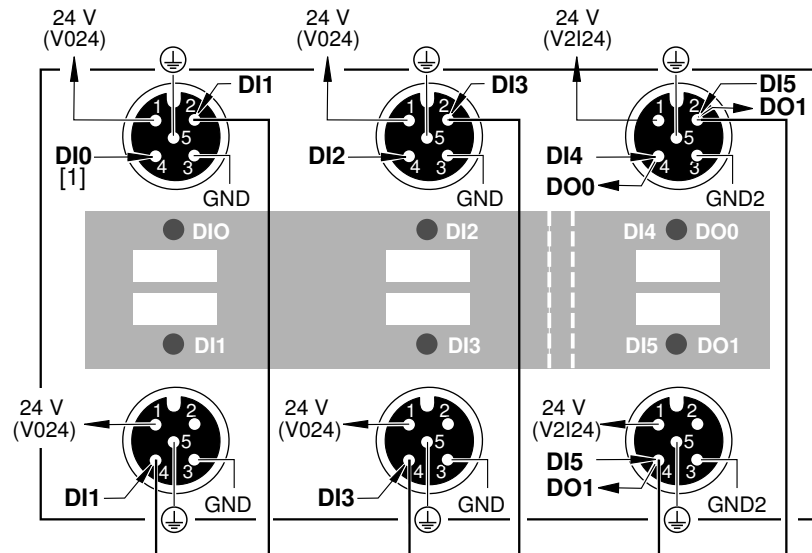
27021601109432075

[1] Do not use DI0 in combination with field distributors MFZ26**J**, MFZ28**J** and MFZ29**J**.

For MFE52G/MFE52H fieldbus interfaces

NOTICE

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

Damage to the fieldbus interface.

- Seal all unused M12 connections with screw plugs.

- Connect sensors/actuators using either M12 sockets or terminals.
- When using outputs: Connect 24 V to V2I24/GND2 terminals.
- The following sensors/actuators can be connected:
  - 4 single-channel sensors and 2 single-channel actuators
  - or 6 single-channel sensors

The second channel is not connected when dual-channel sensors/actuators are used.
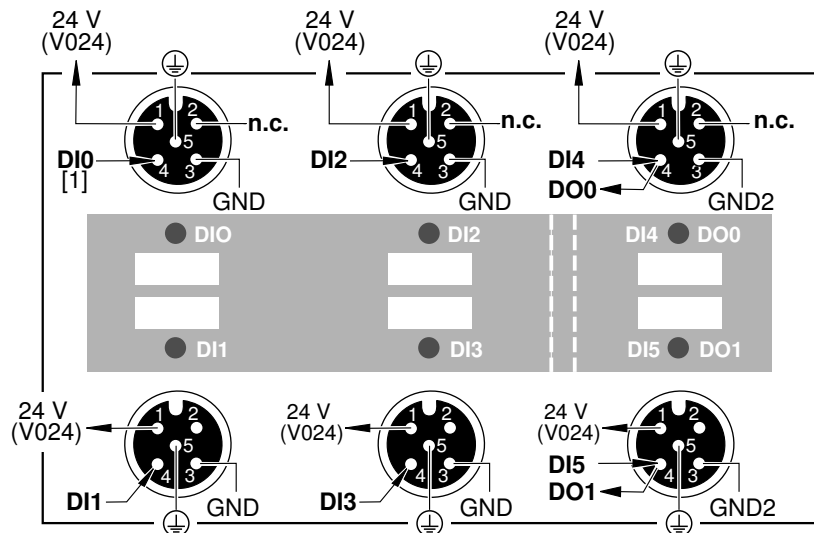
3345381643

[1] Do not use DI0 in combination with field distributors MFZ26**J**, MFZ28**J** and MFZ29**J**.

6.8 Connection of PROFINET IO

The following figure shows the connections of the PROFINET IO bus:
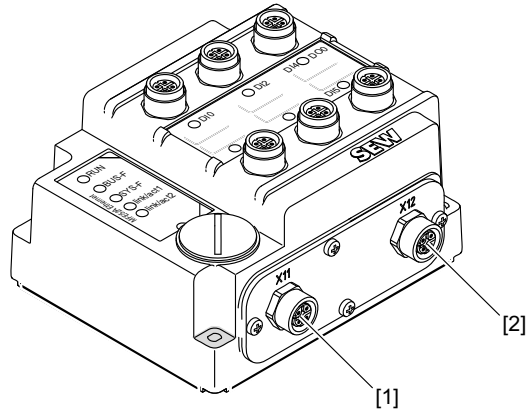
9007202600365067

[1]   X11, PROFINET IO connection, port 1
[2]   X12, PROFINET IO connection, port 2

The following table shows the pin assignment of the PROFINET IO ports X11 and X12:

Function
PROFINET IO 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 (-)

6.8.1 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.

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

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

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

6.8.2 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.

SEW EURODRIVE

6.9 Hybrid cable connection

6.9.1 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)**.
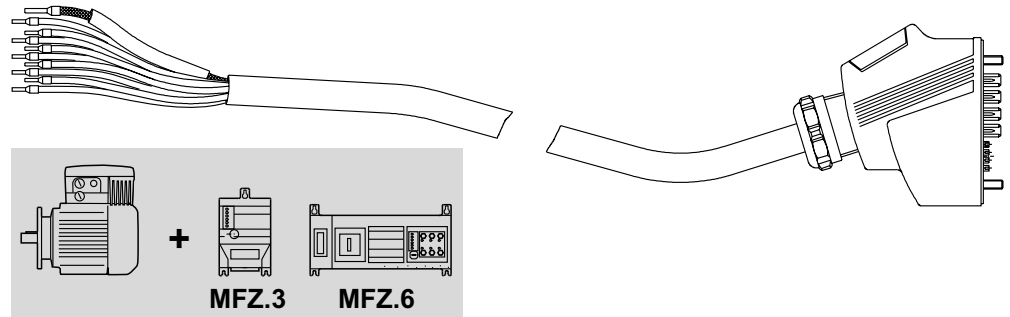
9007200401506827

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.

6.9.2 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**.

MFZ.8   MFZ.7
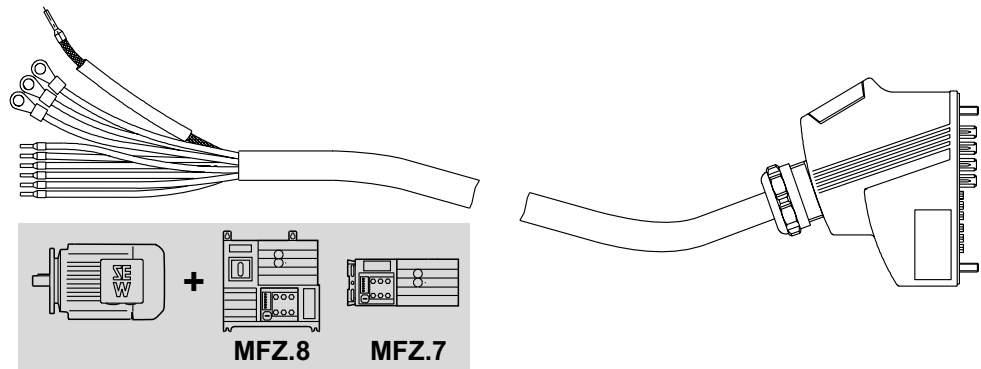
9007200402006667

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)

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

SEW EURODRIVE

6.9.3 Hybrid cable between MFZ.9. field distributor and AC motors

The following figure shows the hybrid cable for connecting the AC motor **part number 08184380**.

MFZ.9
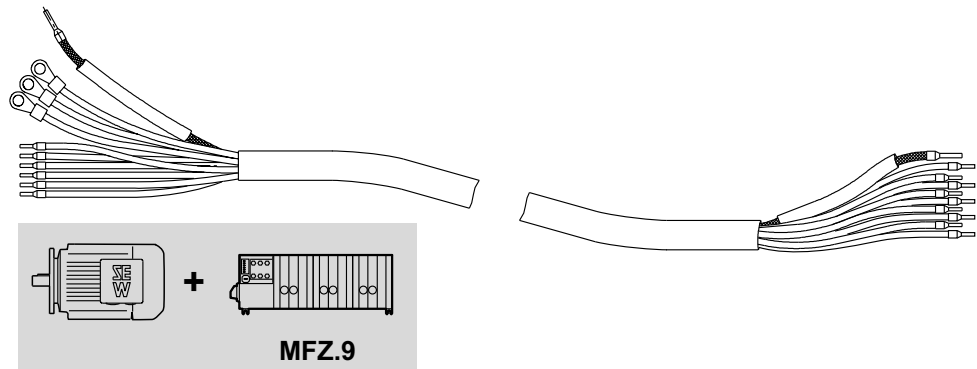
18205192331

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

Terminal assignment				
Motor terminal	**Wire color/ hybrid cable designation**	**Field distributor terminal**		
		Motor 1 connection	**Motor 2 connection**	**Motor 3 connection**
U1	Black/U1	X4_1/4	X4_2/4	X4_3/4
V1	Black/V1	X4_1/5	X4_2/5	X4_3/5
W1	Black/W1	X4_1/6	X4_2/6	X4_3/6
4a	Red/13	X4_1/1	X4_2/1	X4_3/1
3a	White/14	X4_1/2	X4_2/2	X4_3/2
5a	Blue/15	X4_1/3	X4_2/3	X4_3/3
1a	Black/1	X6_1/3	X6_2/3	X6_3/3
2a	Black/2	X6_1/7	X6_2/7	X6_3/7
PE terminal	Green/yellow + shield end (inner shield)	⏚[1]	⏚[1]	⏚[1]

[1] PE connection in the housing

INFORMATION

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

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:

18014399704594315

Scope of delivery:

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

6.11   Wiring check

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INFORMATION

For ensuring the isolation and the effectiveness of preventive measures, you have to perform the checks of the valid and applicable standards (e.g. EN 60204-1 or EN 61800-5) after any wiring work for installation, conversion, repair, etc.

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, MFZ.9).

• 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, MFZ.9).

• 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 plant according to the instructions, see the operating instructions of the gear unit.
- Never start the device 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 device (e.g. the heat sink).

Serious injuries.

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

⚠ WARNING

Device malfunction due to incorrect device setting.

Severe or fatal injuries.

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

NOTICE

Danger due to arcing.

Damage to electrical components.

- Do not unplug the power connectors (e.g. hybrid cables) during operation. Do not plug in the power connectors during operation.
- Never remove the MOVIMOT® inverter during operation.

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.

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- Switch off the DC 24 V voltage supply before removing/installing the fieldbus interface.
- The incoming and outgoing PROFINET IO bus cables are connected to the module electronics. If the module electronics are removed, the PROFINET IO line is interrupted.
- In addition, observe the notes in chapter "Supplementary Field Distributor Startup Information" of the manual.

7.1.1   Additional startup notes for MFZ29 field distributors

⚠ WARNING

Electric shock due to missing cover.

Severe or fatal injuries.

- If you install only 1 or 2 MOVIMOT® inverters at the MFZ29 field distributor, you have to cover all free slots with the delivered covers.
- Make sure that there are no uncovered slots prior to switching on the voltage supply.

⚠ WARNING

Uncontrolled enable of an unexpected drive by connecting several MOVIMOT® drives to the MFZ.1 connection module. If more than 1 MOVIMOT® drive is connected to the MFZ.1 connection module, a drive that is not enabled may start up during operation.

Severe or fatal injuries.

- Make sure that **only 1 MOVIMOT®** drive is connected to the **MFZ.1** connection module.
- Use the **MFZ29** field distributor for controlling several drives.

⚠ WARNING

Uncontrolled enable of an unexpected drive due to incorrect fieldbus interface. If an invalid fieldbus interface is installed at the MFZ29 field distributor, a drive that is not enabled may start up during operation.

Severe or fatal injuries.

- Only start up the MFZ29 field distributor if the **MFE52B** or **MFE52G** fieldbus interface is installed on the field distributor.

⚠ WARNING

Uncontrolled enable of an unexpected drive due to installation of an impermissible GSDML file. If you install an invalid GSDML file during configuration, a drive that is not enabled may start up during operation.

Severe or fatal injuries.

- Install the current GSDML file `GSDML-V2.25-SEW-MFE52A-jjjjmmtt-hhmmss.xml` for configuring the **MFZ29** field distributor.

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

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With Ethernet devices, 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 accesses via the Ethernet fieldbus connection or the service interface.

You can change the IP address parameters via Ethernet as follows:

• With the MOVITOOLS® MotionStudio software

• With the SEW Address Editor

The change of the IP address parameters only becomes effective if you switch the supply voltage (including DC 24 V) off and on again.

7.3.3 SEW Address Editor

The SEW Address Editor allows you to access the IP settings of the fieldbus interface without the Ethernet settings of the PC and the fieldbus interface having to match.

The IP settings of all SEW-EURODRIVE devices can be defined and displayed in the local subnetwork using the Address Editor in MOVITOOLS® MotionStudio. For more information, refer to chapter "Operation with the MOVITOOLS® MotionStudio engineering software" (→ 🖹 152) 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 device, the IP settings for the MFE fieldbus interface can be assigned without changing the network connections or PC settings.

For safe assignment of the devices displayed in the Address Editor, a label with the MAC ID of the device 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. Remove the MOVIMOT® inverter and the MFE.. fieldbus interface from the field distributor.

2. Check if the MOVIMOT® inverter and the fieldbus interface are installed correctly.

3. ⚠ **WARNING!** Uncontrolled enable of an unexpected drive due to incorrect fieldbus interface at the MFZ29 field distributor. Severe or fatal injuries.
   Make sure the **MFE52B** or **MFE52G** fieldbus interface is installed on the MFZ29 field distributor.

4. ⚠ **WARNING!** Uncontrolled enable of an unexpected drive due to incorrect address setting. Severe or fatal injuries.
   Set the RS485 addresses at the S1 DIP switches of all MOVIMOT® inverters (see MOVIMOT® operating instructions) according to the following figures:
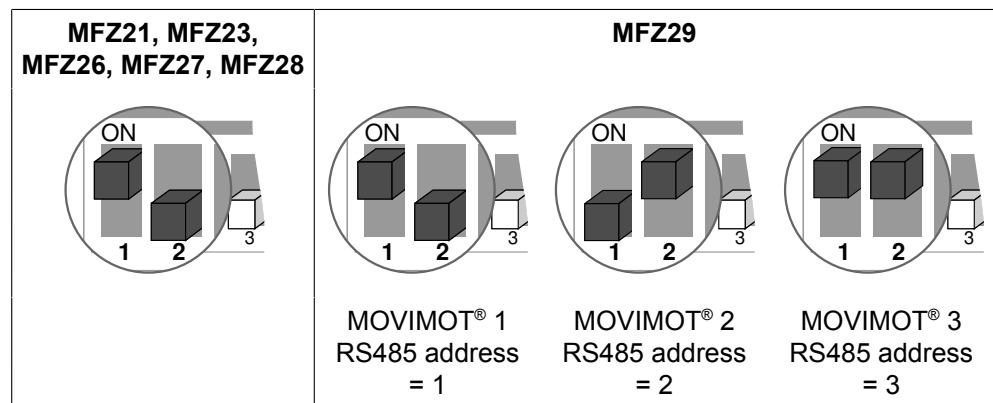
5. Unscrew the screw plug above the setpoint potentiometer f1 of all MOVIMOT® inverters.

6. Set the maximum speed using setpoint potentiometers f1 of all MOVIMOT® inverters.
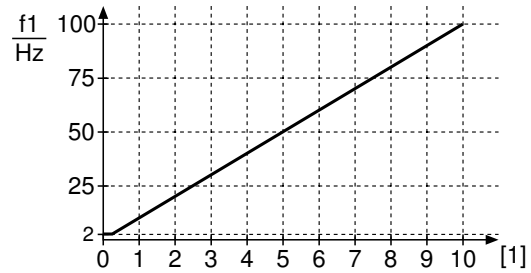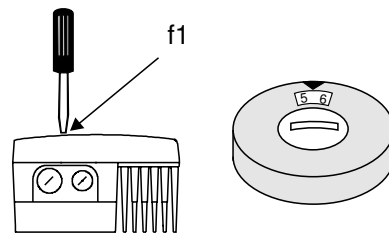
27021598093635979

[1]   Potentiometer setting

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

8. Set the minimum frequency f_{min} using the switches f2 on all MOVIMOT® inverters.

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

9. If the ramp time is not specified via fieldbus (2 PD), set the ramp time at the t1 switches of all MOVIMOT® inverters.
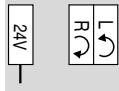
    ⇨   The ramp time is based on a setpoint step change of 1500 min^{-1} (50 Hz).

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

10. Check to see if the requested direction of rotation has been enabled on all MOVIMOT® inverters.

CW/stop	CCW/stop	Meaning
Activated	Activated	• Both directions of rotation are enabled.
Activated	Not activated	• Only CW rotation is enabled. • Setpoint selection for CCW rotation will stop the drive.
Not activated	Activated	• Only CCW rotation is enabled • Setpoint selection for CW rotation will stop the drive.

CW/stop	CCW/stop	Meaning
Not activated	Not activated	• The device is inhibited or the drive is brought to a stop.

11. ⚠ **WARNING!** Uncontrolled enable of an unexpected drive due to incorrect address setting. Severe or fatal injuries.
Make sure that the S1/1 and S1/2 DIP switches on the MFE.. PROFINET IO interface are set depending on the field distributor according to the following figures:

MFZ21, MFZ23, MFZ26, MFZ27, MFZ28
S1

1 — MFZ29 (OFF)
2 — DEF-IP (OFF)
3 — res. (OFF)
4 — res. (OFF)

MFZ29
S1

1 — MFZ29 (ON)
2 — DEF-IP (OFF)
3 — res. (OFF)
4 — res. (OFF)
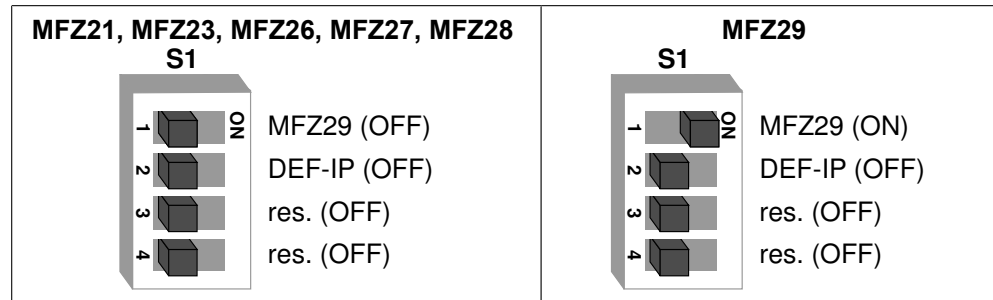
12. Place all MOVIMOT® inverters, the MFE.. fieldbus interface and the cover plate (only for MFZ29) on the field distributor and tighten with screws.
Observe the notes on installation of the MOVIMOT® inverters at the MFZ29 field distributor (→ 🖺 37).

13. ⚠ **WARNING!** Uncontrolled enable of an unexpected drive by swapping the MOVIMOT® inverters (only for MFZ29). Severe or fatal injuries.
Install the MOVIMOT® inverters of the MFZ29 field distributor based on the set RS485 address according to the following figure:
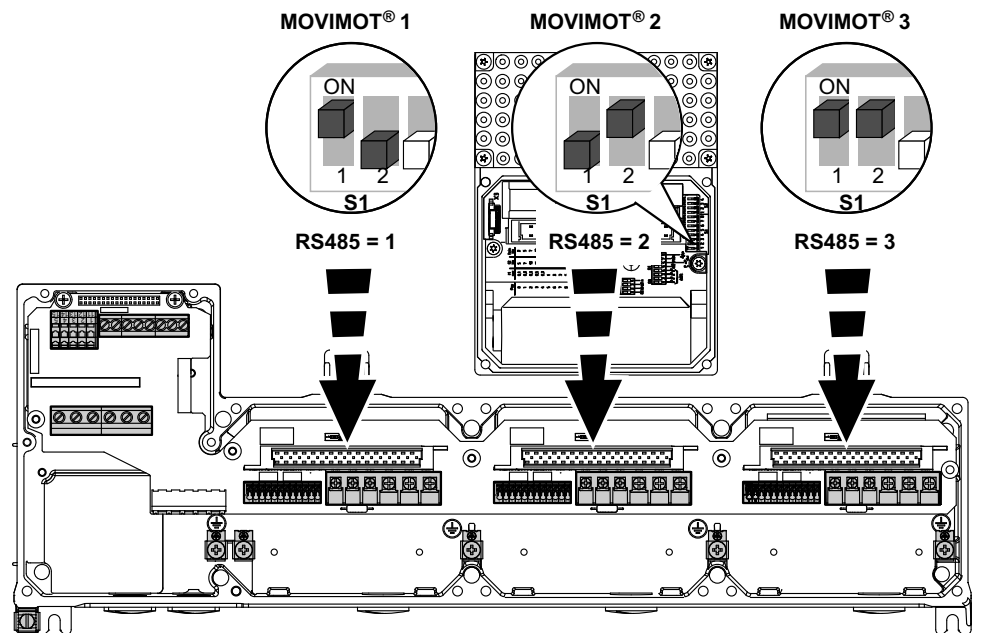
18403922443

14. ⚠ **WARNING!** Electric shock due to missing cover. Severe or fatal injuries.
If you install only 1 or 2 MOVIMOT® inverters at the field distributor, you have to cover all free slots with the delivered covers. Make sure that there are no open slots.

15. Switch on the DC 24 V supply voltage for the MFE.. fieldbus interface and the MOVIMOT® inverter.

   ⇨ Startup has been completed successfully when the "MS" LED at the MFE.. fieldbus interface lights up green.

   ⇨ The red "SYS-F" LED is not lit.

16. Configure the MFE.. fieldbus interface at the PROFINET IO controller.

In conjunction with PROFINET IO, no further settings are required on the drives. The PROFINET IO is configured entirely using software tools. For more information about configuration, refer to chapter "PROFINET IO 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".

S1

- MFZ29 (OFF)
- DEF-IP (ON)
- res. (OFF)
- res. (OFF)
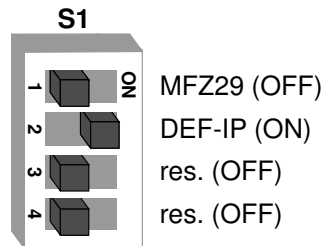
18867508875

⇨ 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".

S1

- MFZ29 (OFF)
- DEF-IP (OFF)
- res. (OFF)
- res. (OFF)
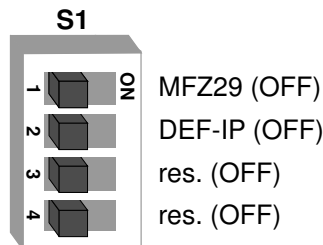
18867478027

⇨ 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.

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8 PROFINET IO configuration

8.1 Introduction

Classic fieldbus communication is enhanced by fast Ethernet technology as a physical transmission medium using PROFINET IO. PROFINET supports real-time capable process communication as well as open communication via Ethernet TCP/IP or UDP/IP.

The MFE PROFINET IO interface meets the requirements of "PROFINET Conformance Class B".

8.1.1 3 device types

PROFINET IO distinguishes between 3 device types:

*   **IO controller**

    The IO controller undertakes the master function for the cyclic IO data exchange with the decentralized field units and is usually implemented as a communication interface of a controller. It is comparable with a PROFIBUS DP master class 1. There can be several IO controllers in one PROFINET IO system.

*   **IO device**

    All field units on PROFINET IO that are controlled by an IO controller are called IO devices, e.g. I/Os, drives, valve terminals, etc. IO devices are comparable with PROFIBUS DP slave nodes. The MFE PROFINET IO interface is a PROFINET IO device.

*   **IO supervisor**

    Programming devices/PC with corresponding engineering/diagnostic tools are called IO supervisors. IO supervisors have access to process and parameter data as well as alarm and diagnostic information.

8.1.2 Communication model

The communication model of PROFINET IO is based on the many years of experience with PROFIBUS DP-V1. The master slave access procedure was mapped on a provider-consumer model.

Several communication channels are used for the data exchange between IO controller and IO devices. The cyclic IO data and the event-driven alarms are transferred via real-time channels. The standard channel based on UDP/IP is used for parameterization, configuration and diagnostic information.

8.1.3 Device model

The existing decentralized periphery of PROFIBUS DP has been enhanced for the device model. The device model is based on slot and subslot mechanisms where modular devices with slots can be implemented for modules and submodules. In this way, the slot and submodules are represented by subslots for the modules. These mechanisms also enable logical modularization, e.g. for a drive system (see following figure).

.
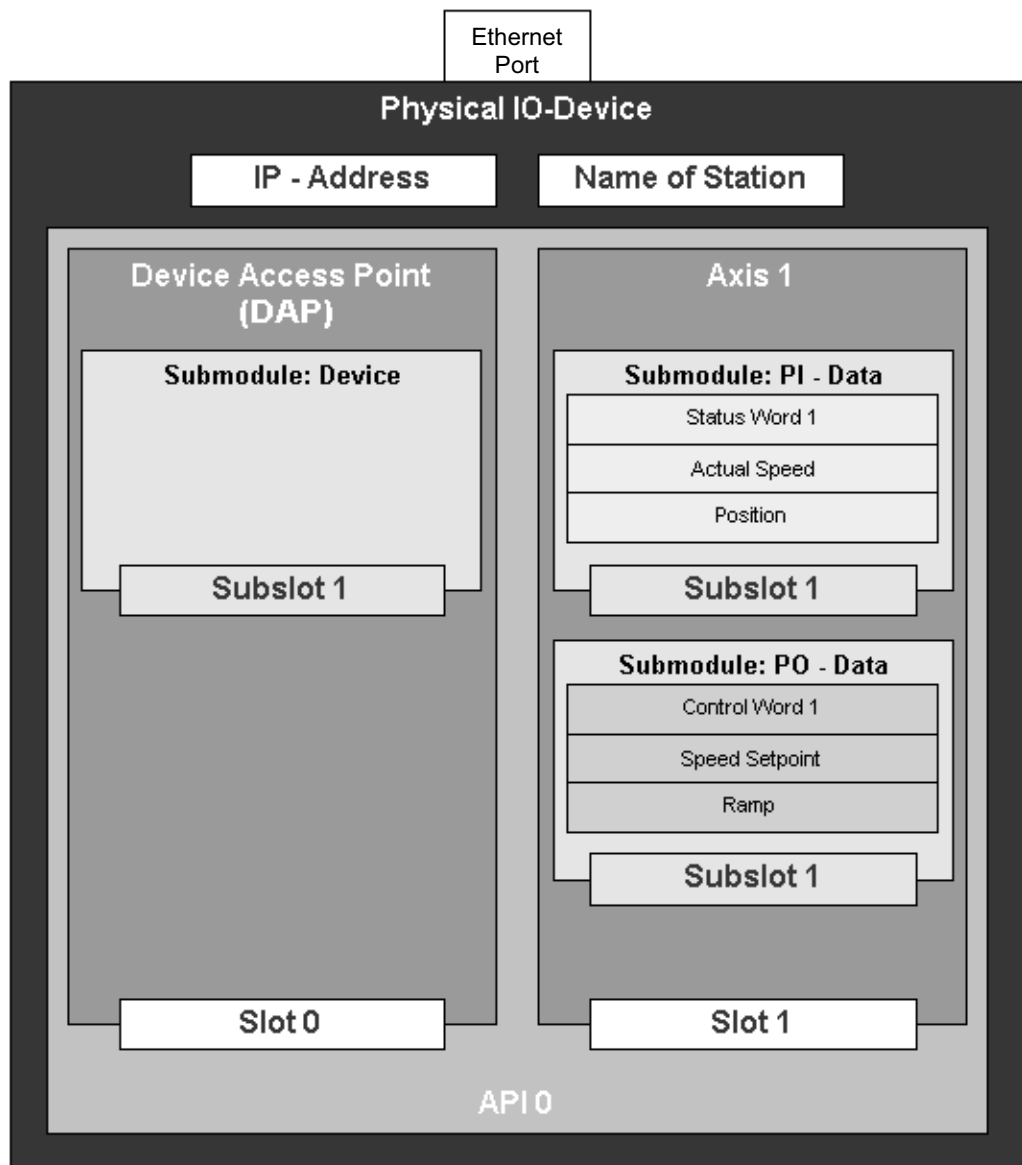
3548829835

A single drive axis is represented as a module under PROFINET IO. Several submodules can be plugged into this module. The submodules define the process data interface for the IO controller or data traffic partner. They have provider or consumer quality. The model provides the option to plug several modules into an IO device for multi-axis systems that have a common PROFINET IO interface. In this way, each module again represents a single axis. Slot 0 is used as a Device Access Point (DAP) and usually represents the IO device.

8.2 PROFINET IO controller – configuration

The following sections describe the configuration of drives with MFE PROFINET IO interface. The configuration will be demonstrated using the example of the TIA-Portal V13 configuration software and a SIMATIC CPU S7-1516F 3PN/DP.

8.2.1 Shared GSD(ML) file

There is a shared GSD(ML) file available for the configuration of the PROFINET IO controller for the MFE PROFINET IO interface. This file is read in with the configuration software of the PROFINET IO controller and is then available for the configuration of the drives with PROFINET IO interface in the PROFINET IO controller. Refer to the relevant configuration software manuals for details on the procedure.

8.2.2 Installing the GSDML file

> ⚠ **WARNING**
>
> Uncontrolled enable of an unexpected drive due to installation of an invalid GSDML file. If you install an invalid GSDML file during configuration, a drive that is not enabled may start up during operation.
>
> Severe or fatal injuries.
>
> - For configuring the **MFZ29** field distributor, install the current GSDML file `GSDML-V2.25-SEW-MFE52A-jjjjmmtt-hhmmss.xml` and select the "MFE V1.2 3MM" entry.

The latest GSDML file version is also available for download online (**http://www.sew-eurodrive.com**, "Software" section).

Proceed as follows to install the GSDML file:

1. Start the SIMATIC Manager.

2. Switch to the "Network view" tab of the TIA Portal.

3. From the "Options" menu, select the "Manage general station description files" menu item.

   ⇨ A window is displayed.

4. Click the [...] button and select the current GSDML file: `GSDML-V2.25-SEW-MFE52A-jjjjmmtt-hhmmss.xml`.

   ⇨ "jjjjmmtt" represents the date. "hhmmss" represents the time.

5. Confirm your selection by clicking [Install].

6. You will find the PROFINET IO connection for drives with MFE PROFINET IO interface in the hardware catalog under "Other field units" > "PROFINET IO" > "Drives" > "SEW" > "MFE".

The offered entries have the following features:

Entry	Features				
	For **MFZ.1 – MFZ8**	**For** **MFZ29**	**Topology detection**	**MRP** **(Media Redund-ancy Protocol)**	**Function** **"overwrite device name"**
MFE V1.0	Yes	No	Yes	No	No
MFE V1.0 **OLD**[1]	Yes	No	No	No	No
MFE V1.1	Yes	No	Yes	Yes	No
MFE V1.2 3MM	Yes	Yes	Yes	Yes	Yes

1) To guarantee compatibility with older controllers

8.2.3 Creating a new project

Proceed as follows to create a new project:

1. Start the SIMATIC Manager and create a new project. Select your control type and add the required modules. The following modules make sense:

   ⇨ **OB82 module:** This module makes sure that the controller does not trigger "STOP" in the event of so-called diagnostic alarms.

   ⇨ **OB86 module:** This module indicates the failure of decentralized peripherals.

   ⇨ **OB122 module:** This module is called if the controller cannot access the data of a node of the decentralized periphery. This can occur when, for example, the drive with MFE PROFINET IO interface is ready for operation later than the control system.

2. Switch to the "Network view" tab of the TIA Portal.

3. Right-click on the PROFINET IO slot and insert a "PROFINET IO system" in the context menu.

4. Go to the "Device view" tab of the CPU.

5. Edit the Ethernet addresses via the "Ethernet addresses" menu item.

8.2.4 PROFINET IO controller – configuration

Configure the PROFINET IO controller as follows:

✓ Make sure that the "Device view" tab is open.

1. Use the mouse to drag the "MFE V1.2 3MM" entry on the PROFINET IO system.

2. Right-click on the system and select the menu item "Assign device names" from the context menu. Enter the PROFINET IO station name.

⇨ This name must later correspond to the PROFINET IO device name set in the MFE PROFINET IO interface.
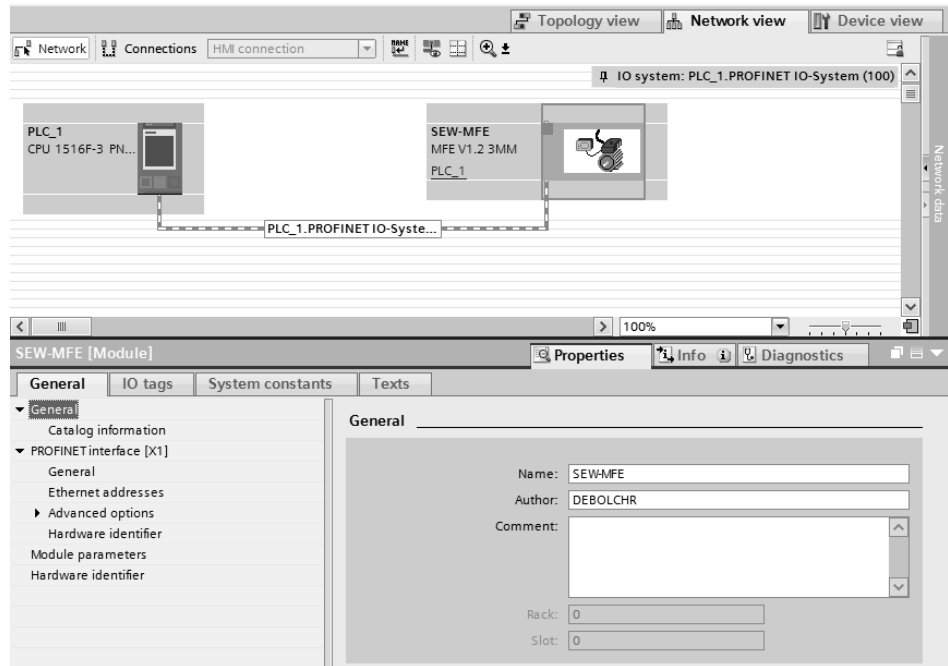
19209922955

3. Mark the symbol of the MFE PROFINET IO interface.

4. Switch to the "Device view" tab.

5. Delete the slot entries that are no longer required.
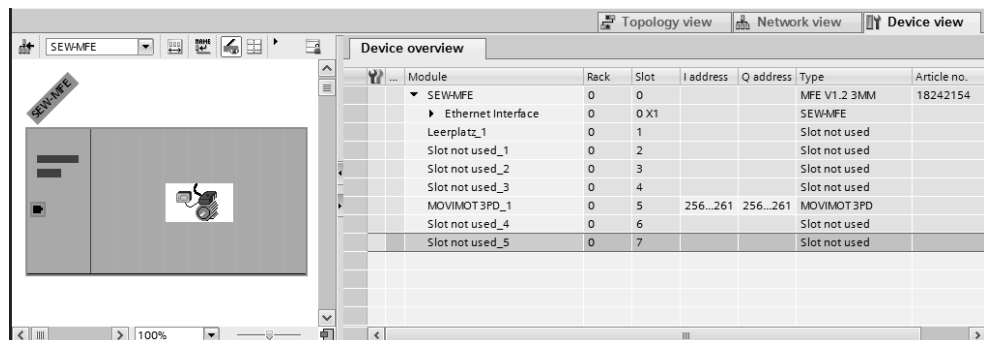
19209925899

6. Click on a slot.

⇨ The hardware catalog opens.

7. Select the process data configuration required for your application from the hardware catalog (see the following application example).
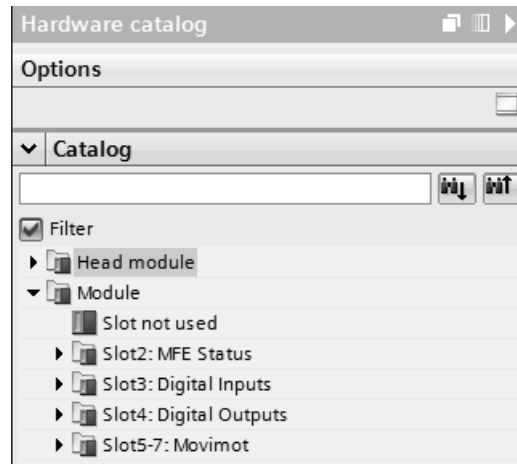
19209928843

⇨ An empty module must be assigned to unused slots.

8. Save the configuration.

9. Expand your application program by the data exchange with the MFE PROFINET IO interfaces.

10. Save the project and load it into the PROFINET IO controller.

Now, the "BUS-F" LED of the MFE PROFINET IO interface should go out. If not, check

• the PROFINET wiring,

• the LED "link/act.",

• and the configuration (especially the set device name)

8.3   Assigning the PROFINET IO device name

For PROFINET IO, the IP address parameters are assigned via DCPI (Discovery and Configuration Protocol). DCP uses the so-called device name for this purpose.

The device name uniquely identifies a PROFINET IO node in the network. It is given to the PROFINET IO controller when the node is configured and also set using the configuration software on the PROFINET IO device.

During startup, the IO controller identifies the device based on the device name and transfers the corresponding IP address parameters. The settings directly at the slave are thus no longer necessary.

The following example with the TIA Portal configuration software describes the general procedure:

✓ Make sure that the "Device view" tab of the TIA Portal is open.

1. Right-click the I/O system and select the menu item "Assign device names" in the context menu.

    ⇨ The following window is displayed:
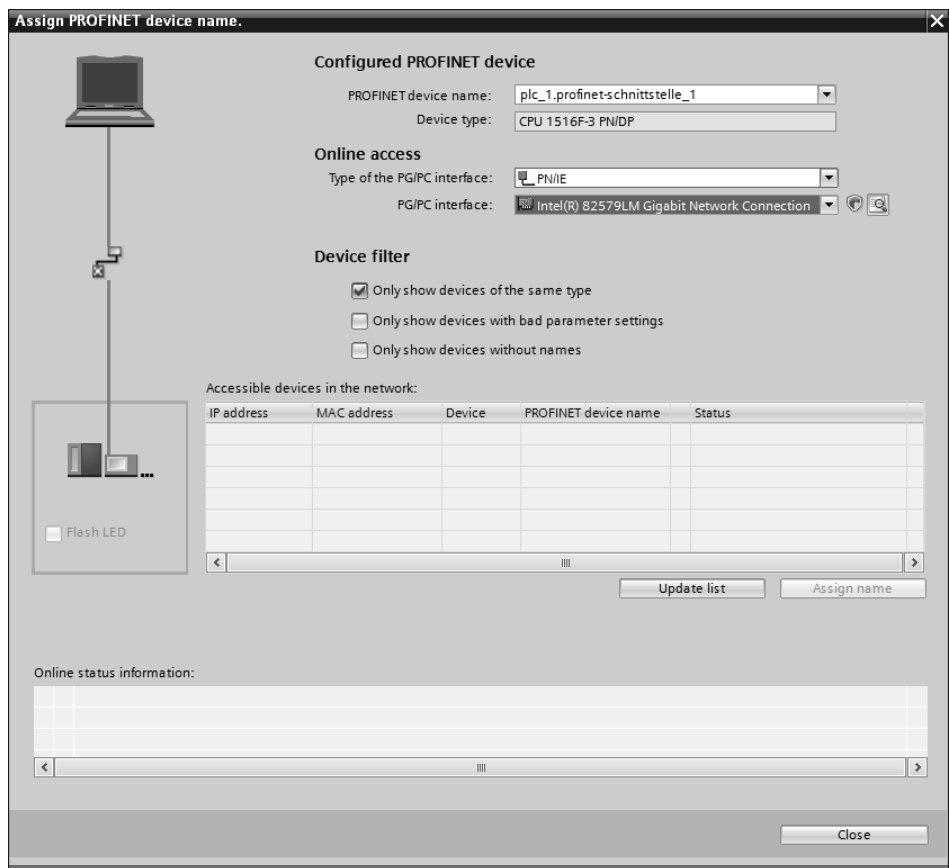
19210163723

2. Set the PG/PC interface used for the online access and click the [Update list] button.

   ⇨ In the "PROFINET device name" box, you can select the device you want to assign the device name to in the project:
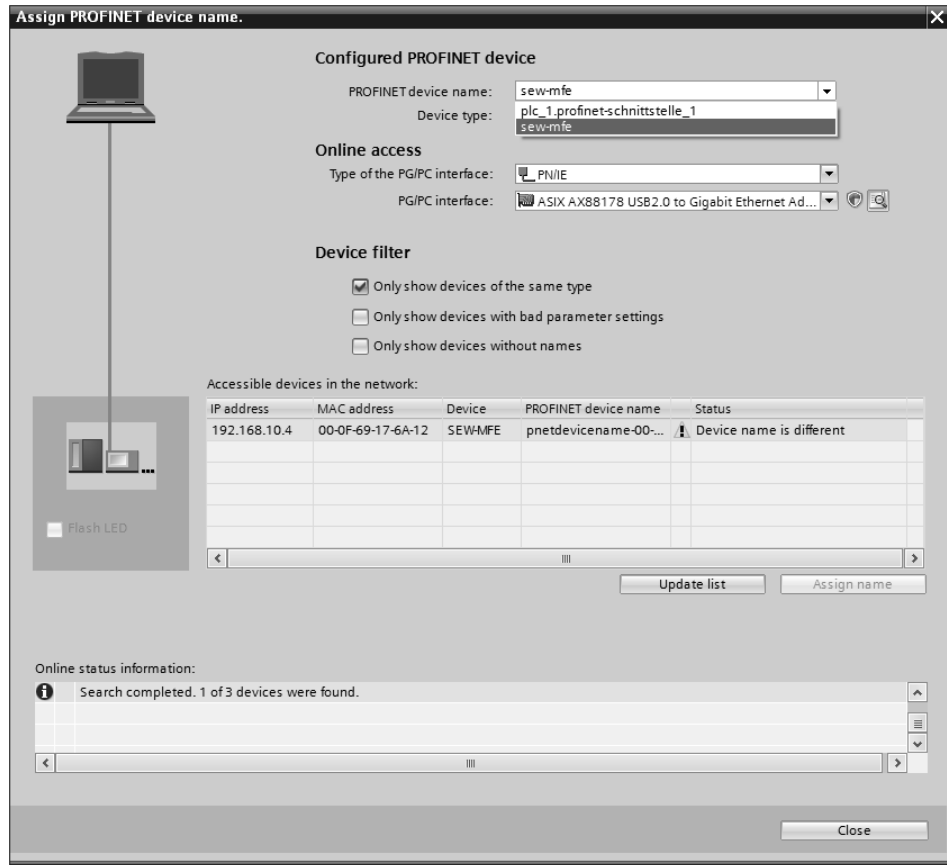
19210191755

3. Choose the required node.

   ⇨ The node name is set at the factory to a default name including the MAC ID, for example, "PnetDeviceName-00-0F-69-XX-XX-XX".

   ⇨ Several "SEW" nodes can be differentiated by the displayed MAC addresses. The MAC address is affixed to the MFE PROFINET IO interface. You can locate the selected MFE PROFINET IO interface using the "Flash" button, which lets the "BUS-F" LED of the selected MFE PROFINET IO interface flash in green or green/red. This means you can check your selection in the configuration software with the actually installed PROFINET interface in the plant.

4. Click the [Assign name] button.

    ⇨   The following window is displayed:

Accessible devices in the network:				
IP address	MAC address	Device	PROFINET device name	Status
192.168.10.4	00-0F-69-17-6A-12	SEW-MFE	pnetdevicename-00-... !	Device name is different

Update list   Assign name
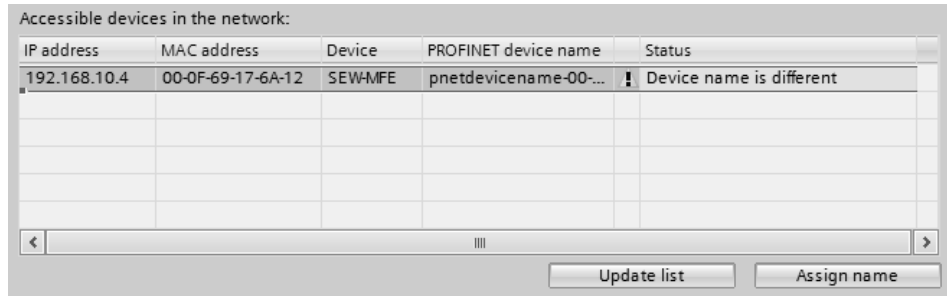
19210194187

⇨   If the device name has been assigned correctly, a check mark appears next to the PROFINET device name, see the following figure:

Accessible devices in the network:				
IP address	MAC address	Device	PROFINET device name	Status
192.168.10.4	00-0F-69-17-6A-12	SEW-MFE	sew-mfe	✓ OK

Update list   Assign name
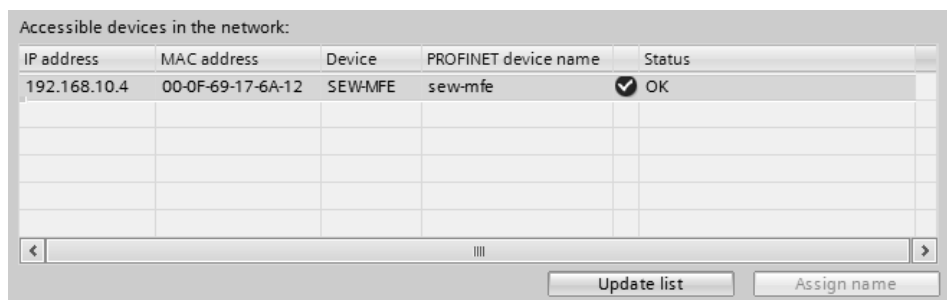
19210199051

5. Close the "Assign PROFINET device name" window.

8.4 Configuration of the MFE PROFINET IO interface

The slot model is used for configuration with PROFINET IO. Each slot is assigned to a MFE communication interface. The configuration process is the same for all MFE PROFINET IO interfaces.

The following figure shows the configuration of the MFE PROFINET IO interface:

Slot	Assignment (DP-ID)	Plug-in modules
1	Reserved	"Slot not used"
2	"MFE status"	"Slot not used"
		"MFE status"
3	"Digital inputs"	"Slot not used"
		"4/6 DI"
4	"Digital outputs"	"Slot not used"
		"2 DO"
5	"MOVIMOT® 1"	"Slot not used"
		"MOVIMOT® 2PD"
		"MOVIMOT® 3PD"
6	"MOVIMOT® 2" (only for MFZ29 field distributor)	"Slot not used"
		"MOVIMOT® 2PD"
		"MOVIMOT® 3PD"
7	"MOVIMOT® 3" (only for MFZ29 field distributor)	"Slot not used"
		"MOVIMOT® 2PD"
		"MOVIMOT® 3PD"

INFORMATION

The response time of the MFZ29 field distributor with 3 MOVIMOT® drives is considerably longer than the response time of a field distributor with 1 MOVIMOT® drive only.

SEW
EURODRIVE

8.4.1 Application example

The following application requirements should be realized with the MFE PROFINET IO interface and the MFZ29 field distributor:

- Three MOVIMOT® drives are controlled with 3 process data words. In other words, the control word, the speed and the times for acceleration and deceleration ramps are specified cyclically by the higher-level controller.

- The 4 digital inputs and 2 digital inputs/outputs of the MFE PROFINET IO interface are used to address external sensors and actuators.

- The control program monitors the sensor/actuator channels.

4 DI and 2 DO

The following table shows a configuration with **4 inputs and 2 outputs**:

Slot	Assignment	Plug-in module
1	Reserved	"Slot not used"
2	"MFE status"	"MFE status_1"
3	"Digital inputs"	"4/6 DI_1"
4	"Digital outputs"	"2 DO_1"
5	"MOVIMOT® 1"	"MOVIMOT® 3PD_1"
6	"MOVIMOT® 2"	"MOVIMOT® 3PD_2"
7	"MOVIMOT® 3"	"MOVIMOT® 3PD_3"

6 DI

The following table shows a configuration with **6 inputs**:

Slot	Assignment	Plug-in module
1	Reserved	"Slot not used"
2	"MFE status"	"MFE status_1"
3	"Digital inputs"	"4/6 DI_1"
4	"Digital outputs"	"Slot not used"
5	"MOVIMOT® 1"	"MOVIMOT® 3PD 1"
6	"MOVIMOT® 2"	"MOVIMOT® 3PD 2"
7	"MOVIMOT® 3"	"MOVIMOT® 3PD_3"

The following figure shows the process data that are transferred via PROFINET IO. 19 bytes are sent as output data from the PROFINET IO controller to the MFE PROFINET IO interface, and 22 bytes are sent as input data to the PROFINET IO controller.

19210629131
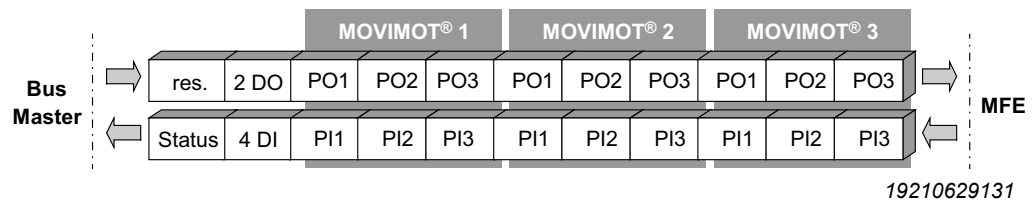
INFORMATION

For information on the coding of process data for MOVIMOT® drives, digital I/Os and status information, see chapter "MOVILINK® device profile".

The following figure shows the configuration example in the TIA portal:
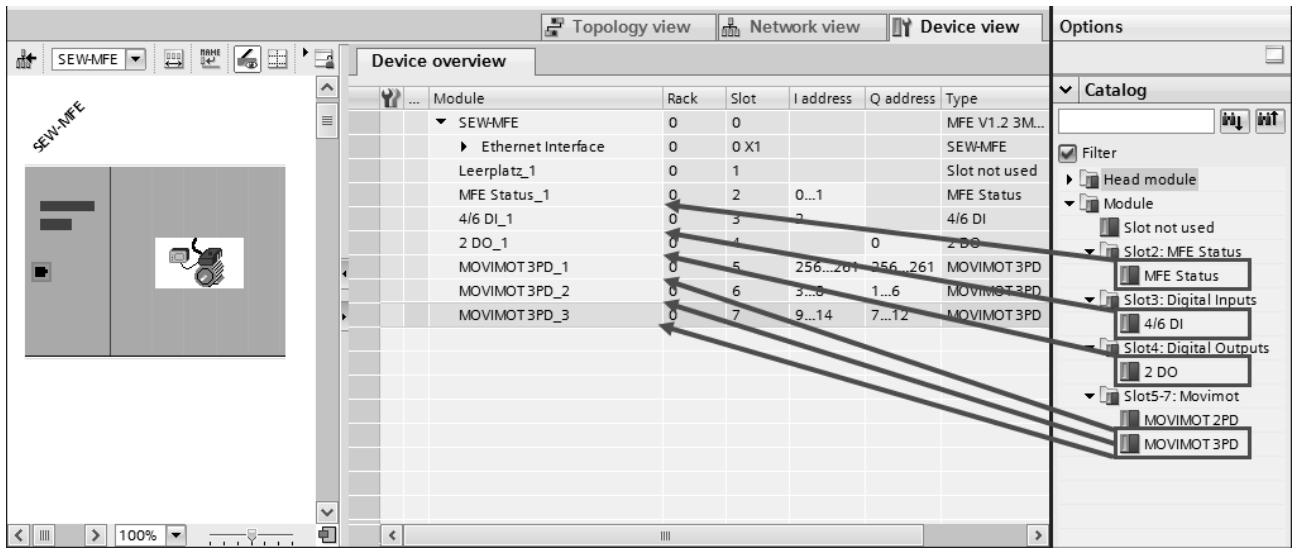
19210935691

8.5 PROFINET IO diagnostic alarms

8.5.1 Switching on the diagnostic alarms

The MFE PROFINET IO interface supports diagnostic alarms in the event of a device fault. These diagnostic alarms are deactivated by default.

Proceed as follows to switch on the alarms in the TIA Portal:

✓ Make sure that the "Device view" tab is open.

1. Select a slot.

2. Switch to the "Properties" > "General" tab.

3. Select the menu item "Module parameters".

4. In "Enable diagnosis alarms" set the alarms to "On".
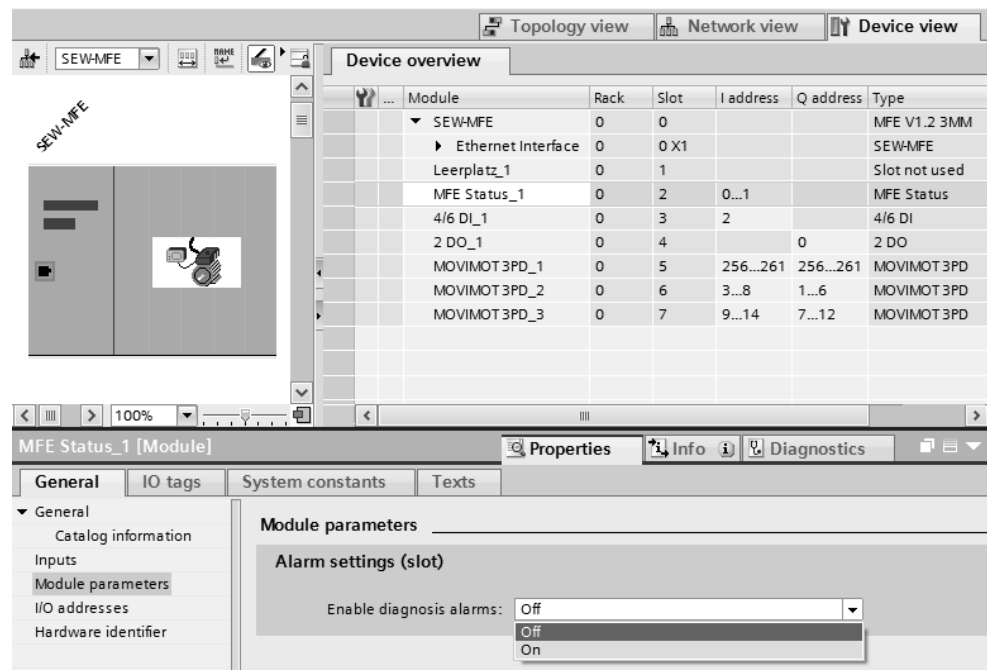
19210941067

8.5.2 Determining the cause of a fault

A fault in the function unit belonging to the plug-in module causes a diagnostic alarm to be sent to the controller as an "incoming event".

Proceed as follows to determine a fault in the TIA Portal:

✓ Make sure that the "Device view" tab is open.

1. Click the "Go online"icon, to switch to the "Online" communication mode.

2. Right-click the icon of the SEW PROFINET connection and select the menu item "Online and diagnostics" in the context menu.

⇨ The following window is displayed:
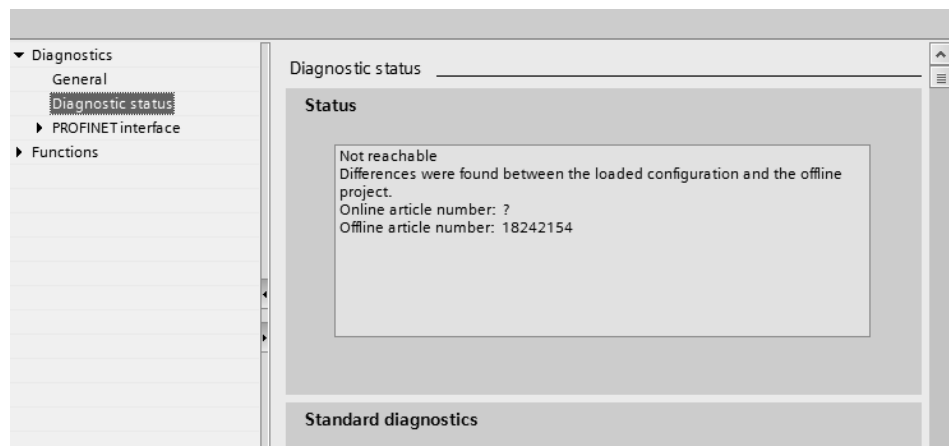
19211141003

3. Select the menu item "Diagnostic status".

⇨ The window on the right shows the current diagnostic status.

INFORMATION

This procedure lets you determine both the diagnostic status of the overall assembly and of the individual communication slots.

8.6   Error diagnostics on PROFINET

8.6.1   Diagnostic procedure for operation on PROFINET

The following diagnostic procedure shows how to analyze errors if the MFE fieldbus interface is not working on PROFINET IO.

Proceed as follows:

Initial status:
• The MFE fieldbus interface is physically connected to PROFINET IO.
• The MFE fieldbus interface has been configured in the IO controller and bus communication is active.

↓

PROFINET bus connector plugged in to X11 and X12?	No →	**[A]**

Yes

↓

Response of the "BUS-F" LED	Off →	**[B]**

Yellow   Red

↓   ↓

[C]   **[D]**

↓   ↓

Compare the set PROFINET name to the configured one.

↓

PROFINET names identical?	No →	**[E]**

Yes

↓

You may have configured an incorrect device type or defined the configuration incorrectly. Perform the following steps:
1. Delete the configuration of the MFE fieldbus interface from PROFINET.
2. Configure the MFE fieldbus interface again, this time choosing the correct device designation "MFE V1.0" (with topology detection) or "MFE V1.0 alt" (without topology detection) (→ 🗎 87).
3. Assign the address ranges for your control system.
4. Load the project planning data into the PROFIBUS IO controller master and restart the bus communication.

[A]	Check the bus cabling.

[B]	The MFE fieldbus interface is connected to PROFINET IO.

[C]	The MFE fieldbus interface was not yet configured or configured incorrectly. Check the configuration, particularly the device name and the IP address.

↓

[D]	The MFE fieldbus interface indicates that the PROFINET IO controller has not yet established communication.
	The PROFINET IO controller is switched off or has not yet been started up.

[E]	Adapt PROFINET names

8.6.2 Fieldbus timeout

> **⚠ WARNING**
>
> Risk of crushing if the drive starts up automatically.
>
> Severe or fatal injuries.
>
> - The error "fieldbus timeout" resets itself. The drives get the current process output data from the control straight away after fieldbus communication restarts.
> - If, for safety reasons, this is not permitted for the driven machine, disconnect the device from the supply system before you start troubleshooting.

Switching off the fieldbus master or an open circuit in the fieldbus cabling results in a fieldbus timeout in the MFE fieldbus interface. The "BUS-F" LED lights up to signal that no new user data is being received. The MOVIMOT® drives perform a rapid stop. All drives connected to the MFE fieldbus interface are stopped. In addition, the digital outputs are set to "0".

8.7 PROFINET IO configuration with topology detection

8.7.1 Introduction

The PROFINET IO technology detection makes it possible to configure and monitor the structure of the network with the PROFINET IO controller in addition to the PROFINET IO devices.

The so-called "Physical device (PHDEV)" is the starting point for configuration. PDEV is a model for the Ethernet interface and can be found in slot 0 in the configuration with an "Ethernet interface" subslot and one subslot for each Ethernet port.

The Ethernet ports made visible in this way can be connected to the configuration tool. The result is an image of the desired Ethernet routing for the plant. This image is stored in the PROFINET IO controller.

To determine the real plant topology, the PROFINET IO devices must support the so-called LLDP (Link Layer Discovery Protocol). The PROFINET IO devices exchange information with the neighboring PROFINET IO devices via LLDP. Via LLDP, each PROFINET IO device cyclically sends information using its own PROFINET IO device name and port number. The neighboring device receives and stores this information. Now, a PROFINET IO controller can read the stored information from the PROFINET IO devices and determine the real plant topology.

By comparing the configured topology with the real topology, you can detect any missing or incorrectly wired PROFINET IO devices and localize them in the plant.

Apart from cabling you can still determine the transmission characteristics for the ports. For example, you can set an "Auto-negotiation" port to "100 Mbit full duplex". The settings will be monitored.

SNMP as a protocol for network diagnostics extends the topology detection by standard diagnostics mechanisms from the IT area.

8.7.2 Creating a PROFINET IO project and starting the topology editor

You can configure a PROFINET IO topology with the TIA Portal topology editor. Several configuration options are available in the TIA Portal.

The following example will focus on one approach.

✓ Make sure that the "Device view" tab is open.

1. Add the PROFINET IO devices to the PROFINET IO network from the hardware catalog as usual.

   ⇨ All new SIEMENS CPUs support topology detection. However, you may have to activate topology detection in the "Device view" > "Properties" > "General" tab.
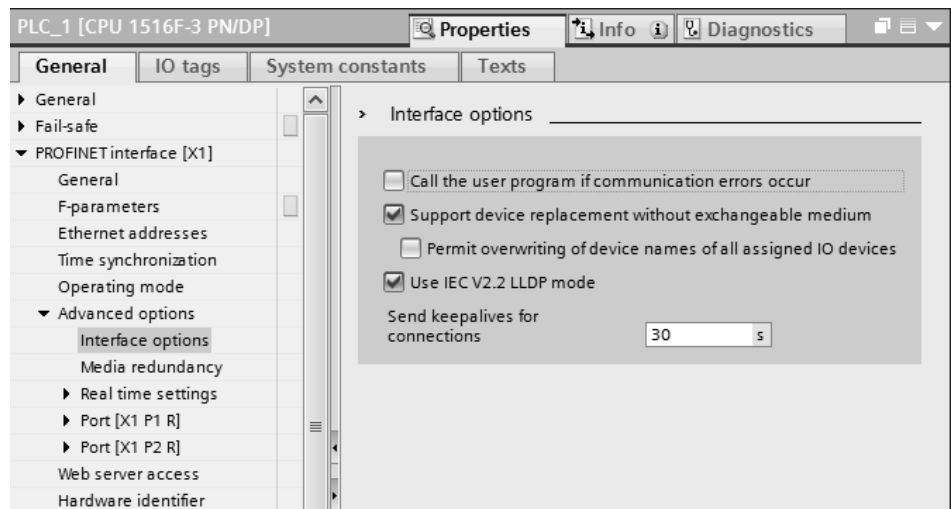
19211500939

   ⇨ The hardware catalog contains several entries for each SEW interface marked as different versions. An entry marked with "ALT" does not support the topology detection. Additional information is available in the description texts of the individual entries.

19211939083

2. Switch to the "Topology view" tab.

   ⇨ The port interconnection is displayed.

3. Proceed according to chapter "Specifying the topology".

8.7.3 Specifying the topology and detecting faulty connections

Topology detection with topology editor

The purpose of topology detection is to compare the current topology (online topology) with the configured topology (offline topology). Any deviations suggest faulty connections in PROFINET.

The following section provides an introduction as to how to use the topology editor to specify PROFINET IO nodes and detect faulty connections to ports.

Refer to the online help for a detailed description and important additional information (e.g. the color code of the comparison results). Click [Help] to open the online help in the open topology editor.

Specifying the topology

Proceed as follows to specify the topology of nodes in a PROFINET IO network:

1. Switch to the "Topology view" tab.
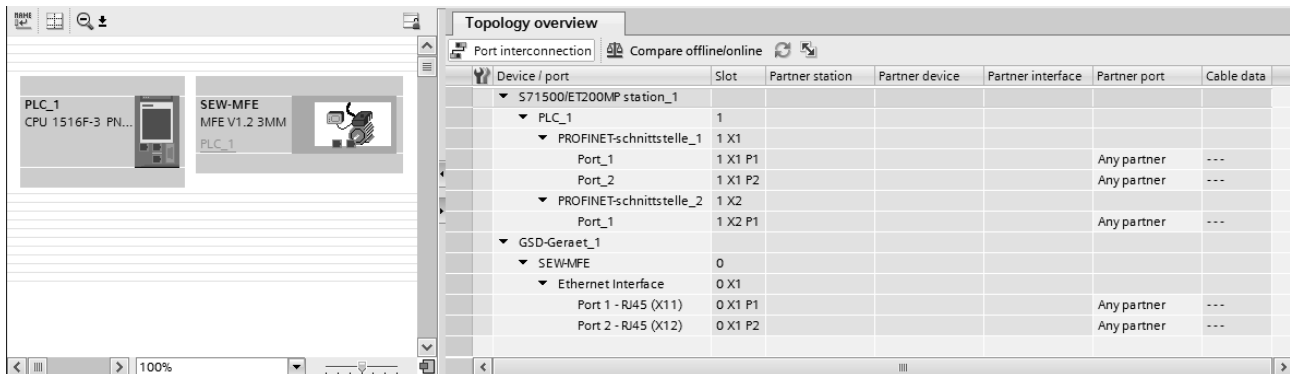
19212012683

2. Click the [Compare offline/online] button.

    ⇨ The current topology is read.

    ⇨ The list on the right lists the devices that are available in the network. The "Partner device" column lists the devices connected to the respective port.

3. To apply the assignment, select the "Apply" setting in the "Action" column.
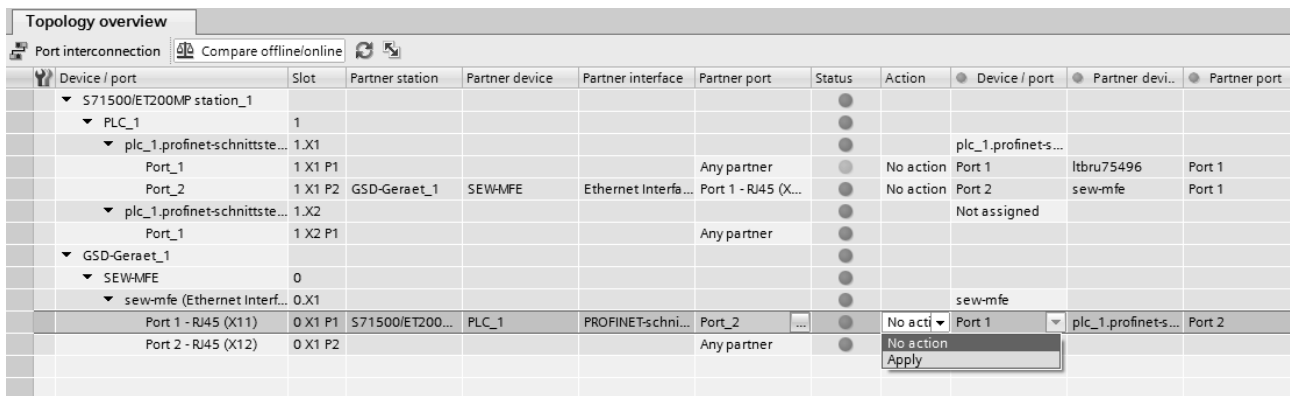
19212017291

4. Click the [⬈] button.

Repeat the procedure until all ports in the "Status" list are marked green.

	Device / port	Slot	Partner station	Partner device	Partner interface	Partner port	Status	Action
	▶ S71500/ET200MP station_1						⬤	
	▼ GSD-Geraet_1						⬤	
	▼ SEW-MFE	0					⬤	
	▼ sew-mfe (Ethernet Interf...	0.X1					⬤	
	Port 1 - RJ45 (X11)	0 X1 P1	S71500/ET200...	PLC_1	PROFINET-schni...	Port_2	⬤	No action ▼
	Port 2 - RJ45 (X12)	0 X1 P2				Any partner	⬤	

Topology overview

🖳 Port interconnection   ⚖ Compare offline/online   🔄 ⬒

19212101003

Detecting faulty connections

You can detect faulty connections in the "Topology view" tab.

Proceed as follows:

1. Switch to the "Topology view" tab.

2. Click the [Compare offline/online] button.
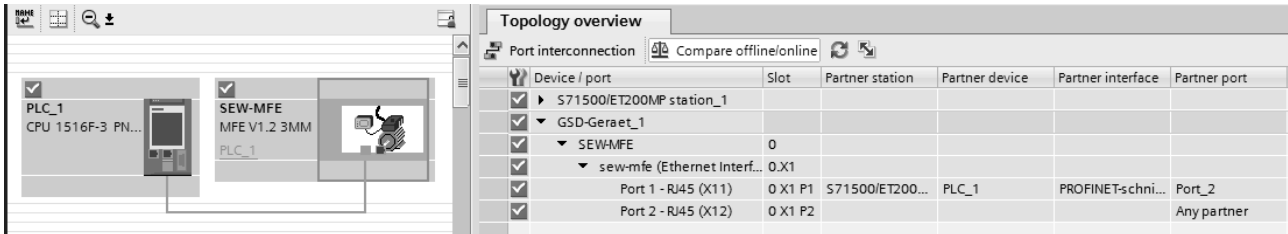
19212110347

⇨ If the topology is already configured, a note appears that there is a difference between online and offline mode.

19212114315

⇨ If you switch to online mode, failures are displayed as "red" lines.
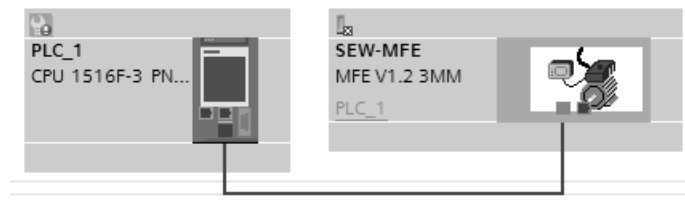
19212117259

INFORMATION

If you use a switch, you have to integrate the switch into the network as a PROFINET device.

8.7.4   Changing the port properties

The two Ethernet ports of the PROFINET IO interface are set to "Automatic setup" by default. Observe the following for this default setup:

• Auto-negotiation and auto-crossover are activated in this setup.

• Baud rate and duplex mode are configured automatically.

• The neighboring port must also be set to "Automatic setup".

• You can use patch or cross cables.

You can set a port to "100 Mbit/s full duplex". Observe the following for this setup:

• This setting must also be made for the port of the neighboring device, otherwise this neighboring port would work with 100 Mbit/s half duplex.

• If auto-crossover is deactivated, you have to use cross cables.

Proceed as follows to set a port to "100 Mbit/s full duplex":

1. Go to the "Device view" tab of the desired device.

2. Select the Ethernet interface.

3. Switch to the "Properties" > "General" tab.
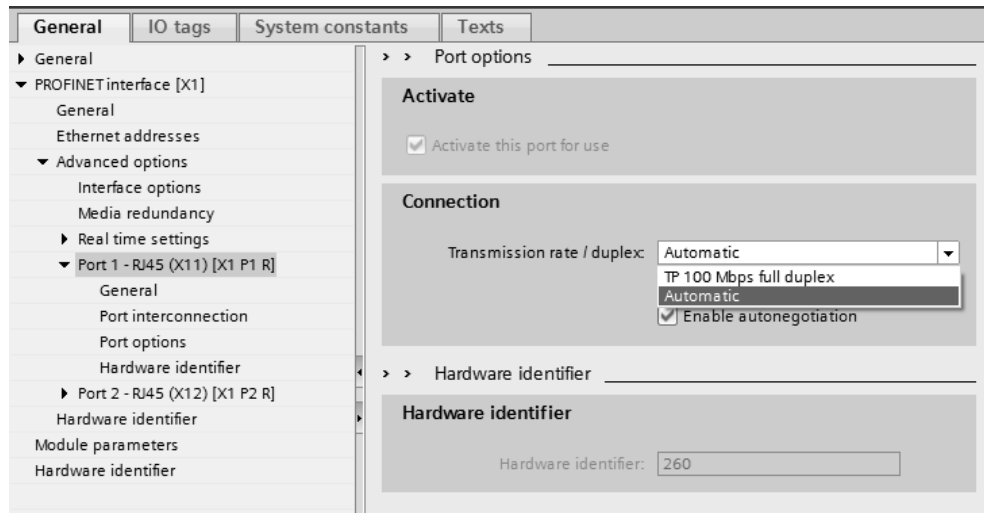
19271916811

4. Make sure that the "Transmission rate/duplex" choice box is set to "Automatic".

   ⇨ You can set this choice box for each port individually.

8.7.5 PROFINET topology – diagnostics

Topology errors are reported to the PROFINET IO controller as diagnostics alarms.

The "Network view" shows the connection errors in form of a red cross [1].

19272451595

Possible causes:

- Ethernet ports swapped
- Incorrectly set port properties
- Devices cannot be addressed

Proceed as follows to display information about an error:

1. Select the device or the respective slot.
2. Right-click and select "Module status" from the context menu.
   ⇨ A window is displayed.
3. Select the "Communication diagnostics" tab.

9 Parameterization via PROFIdrive dataset 47

9.1 Introduction PROFINET data sets

With "Read record" and "Write record", PROFINET offers acyclic services that can be used to transfer parameter data between the PROFINET controller (master) and a PROFINET device (slave). Via UDP (User Datagram Protocol), the priority of this data exchange is lower than the priority of the process data exchange.
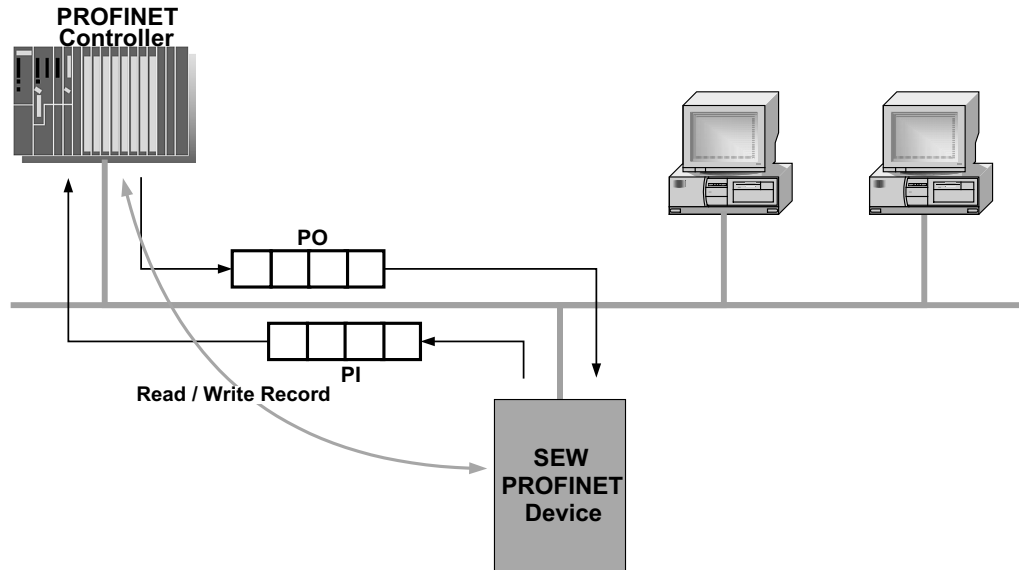
9007200916805643

The user data transported via an acyclic PROFINET service is grouped in a data set. Each dataset is clearly addressed by the following characteristics:

- API
- Slot number
- Subslot number
- Index

The structure of data set 47 is used for the parameter exchange with SEW-EURODRIVE PROFINET devices. The structure of data set 47 is specified in the PROFIdrive profile drive technology of the PROFIBUS user organization; as of V4.0 as PROFINET parameter channel. Different procedures for accessing parameter data of the SEW-EURODRIVE PROFINET device are provided via this parameter channel.

9.2 Properties of the SEW-EURODRIVE PROFINET devices

The SEW-EURODRIVE PROFINET devices that support acyclic Read Record and Write Record services all have the same communication characteristics. The devices are basically controlled via a PROFINET controller with cyclic process data. Additionally, this controller (usually a PLC) can set the parameters for the SEW-EURODRIVE PROFINET device via Read Record and Write Record.
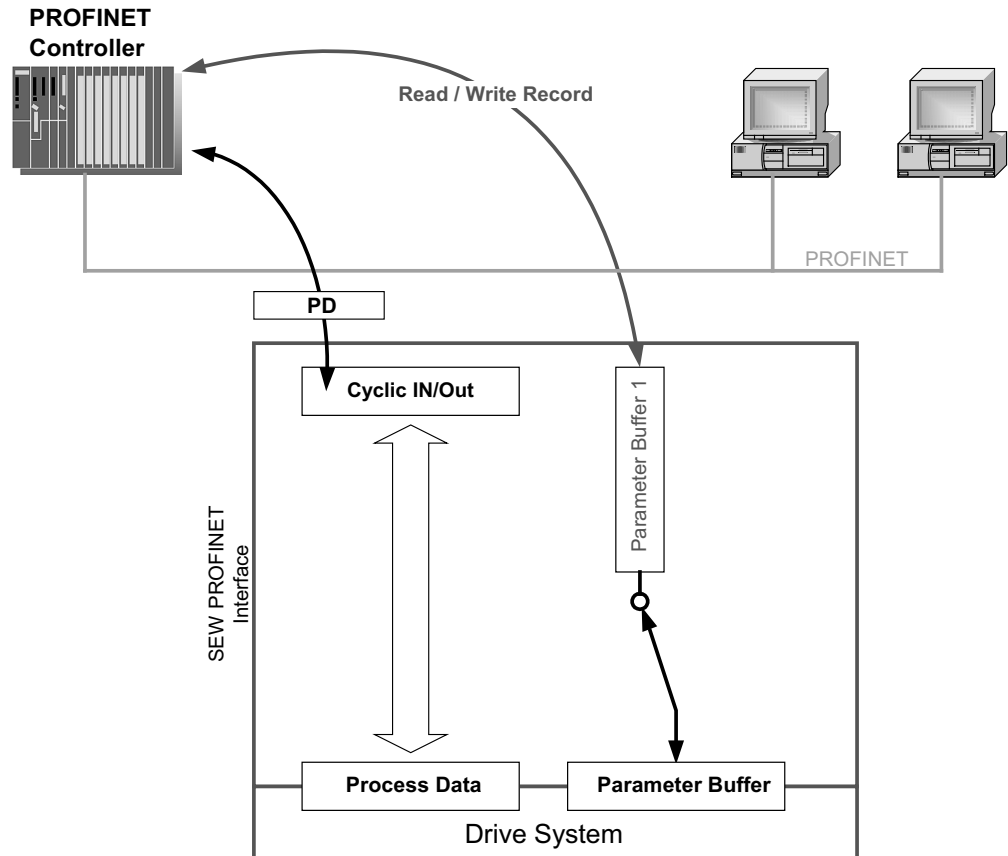
1701495179

9.3   Structure of the PROFINET parameter channel

Generally, the parameterization for the drives based on the PROFIdrive Base Mode Parameter Access of profile version 4.0 is implemented via data set 47. The *Request ID* entry is used to distinguish between parameter access based on PROFIdrive profile and the SEW-EURODRIVE MOVILINK® services. The following table shows the possible coding of the individual elements. The data set structure is the same for PROFIdrive and MOVILINK® access.

READ / WRITE Record	PROFIdrive Parameter Channel DS47	SEW MOVILINK®
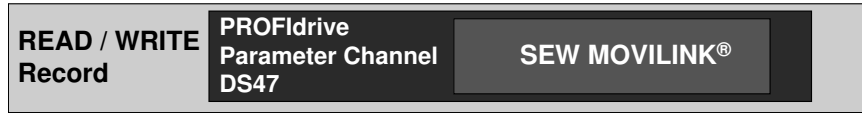
9007200917532939

The following MOVILINK® services are supported:

- 8 byte MOVILINK® parameter channel with all the services supported by the SEW device such as
  - READ parameter
  - WRITE parameter
  - WRITE parameter volatile
  - etc.

The following PROFIdrive services are supported:

- Reading (request parameter) individual parameters of type *double word*
- Writing (change parameter) individual parameters of type *double word*

Field	Data type	Values
Request Reference	Unsigned8	0x00 reserved 0x01 – 0xFF
Request ID	Unsigned8	0x40 SEW-MOVILINK® Service 0x41 SEW Data Transport
Response ID	Unsigned8	**Response (+):** 0x00 reserved **0x40 SEW-MOVILINK® Service (+)** 0x41 SEW Data Transport **Response (–):** **0xC0 SEW-MOVILINK® Service (–)** 0x41 SEW Data Transport
Axis	Unsigned8	0x00 – 0xFF Number of axes 0 – 255
No. of parameters	Unsigned8	0x01 - 0x13 1 – 19 DWORDs (240 data bytes)

Field	Data type	Values
Attributes	Unsigned8	**For SEW MOVILINK® (Request ID = 0x40):** **0x00 No service** **0x01 READ parameter** **0x20 WRITE parameter** **0x40 Read minimum** **0x50 Read maximum** **0x60 Read default** **0x80 Read attribute** **0x90 Read EEPROM** **0xA0 – 0xF0 reserved** SEW data transport: 0x10 value
No. of elements	Unsigned8	0x00 for parameters that are not indexed 0x01 – 0x75 Quantity 1 – 117
Parameter Number	Unsigned16	0x0000 – 0xFFFF MOVILINK® parameter index
Subindex	Unsigned16	0x0000 SEW: always 0
Format	Unsigned8	0x43 double word 0x44 error
No. of Values	Unsigned8	0x00 – 0xEA Quantity 0 – 234
Error Value	Unsigned16	0x0080 + MOVILINK® additional code low **For SEW MOVILINK®16 bit error value**

SEW
EURODRIVE

9.3.1 Parameterization procedure via dataset 47

Parameter access takes place with the combination of the PROFINET services WRITE RECORD and READ RECORD. The parameterization request is transferred to the IO device using the WRITE.request. Then it is processed internally.

The master now sends a READ.request to pick up the parameterization response. The SEW device sends a positive response READ.response The user data now contains the parameter setting response of the parameter setting request that was previously sent with Write.request (see following figure). This mechanism applies to a PROFINET controller.

The following figure shows the telegram sequence for the parameter access via READ / WRITE RECORD:
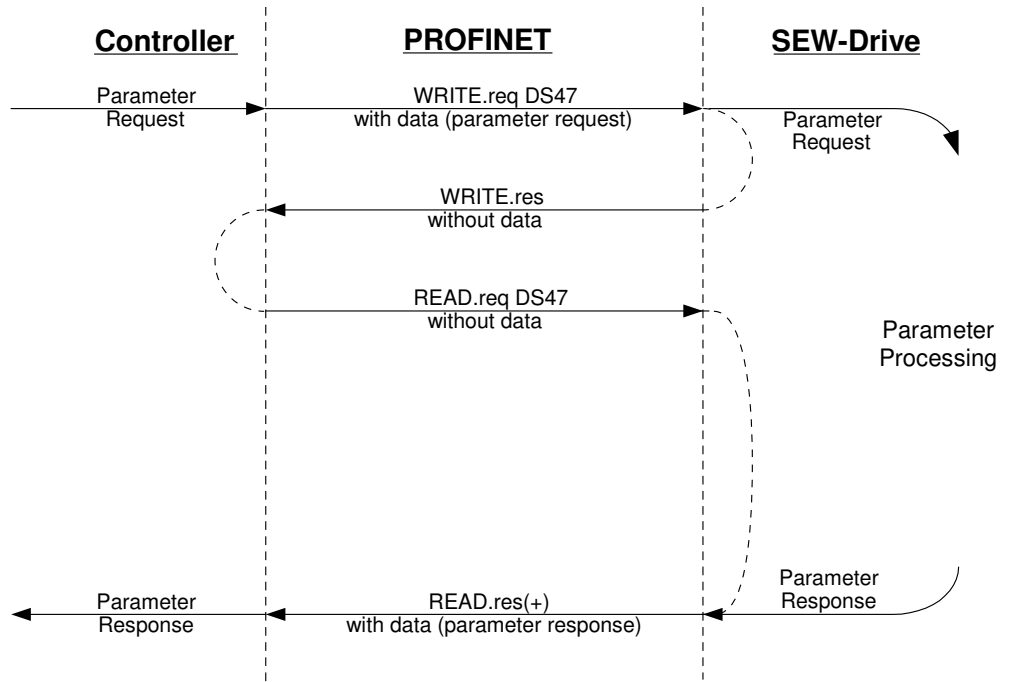
1662812427

9.3.2 Processing sequence for the controller

If the bus cycles are very short, the request for the parameterization response arrives before the SEW device has concluded the parameter access in the device. This means that the response data from the SEW device is not yet available. In this state, the SEW device delays the response to the Read Record Request.
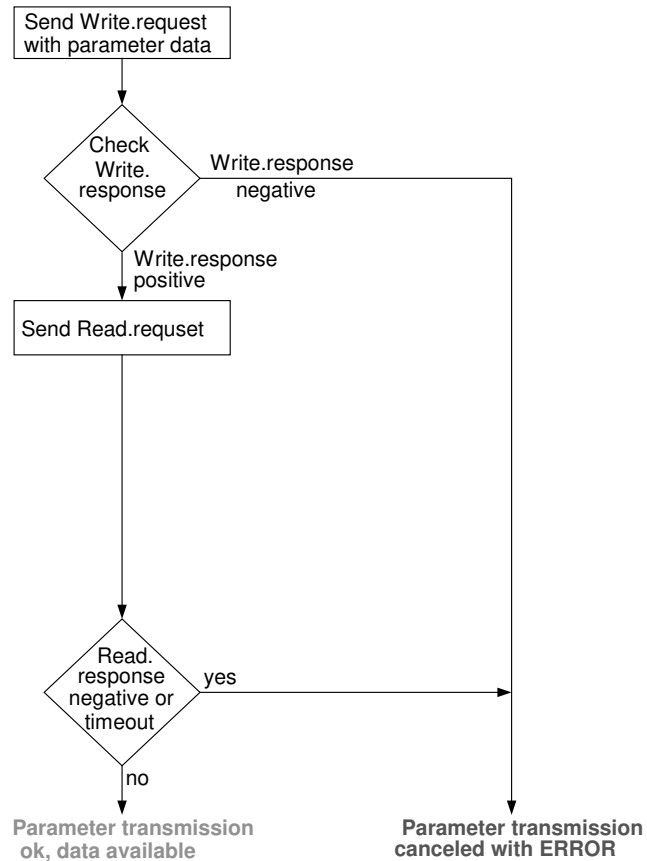
1662819851

9.3.3 Addressing the MFE fieldbus interface

The structure of the DS47 data set defines an axis element. This element is used to reach drives that are operated via one shared PROFINET interface.

9.3.4 Addressing an MFE fieldbus interface on PROFINET

With the setting *Axis = 0*, the parameters of the MFE fieldbus interface can be accessed directly.
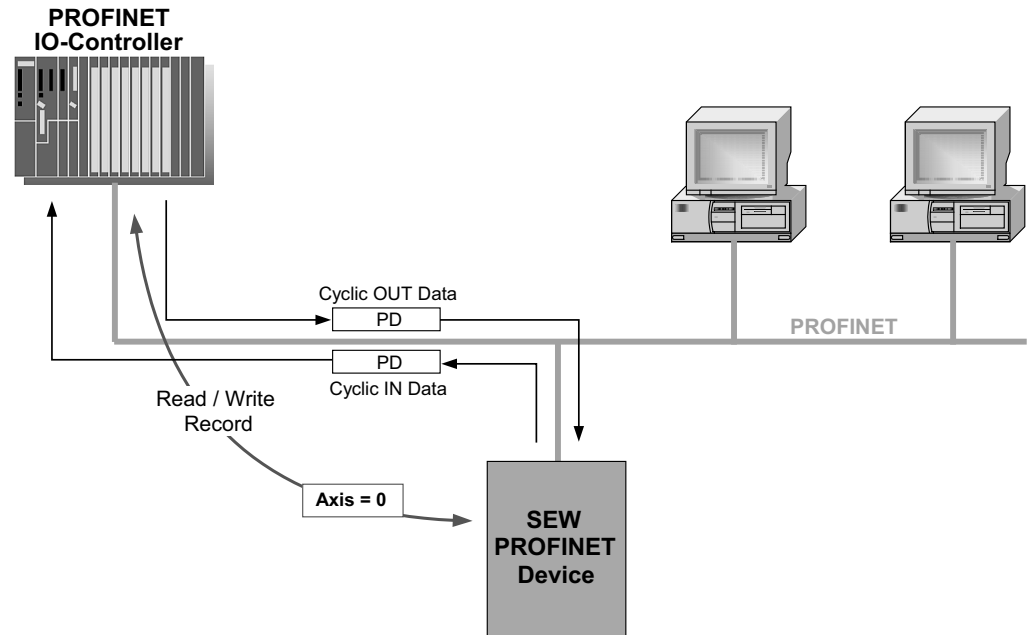
3549138059

Axis = 0 → MFE fieldbus interface

9.3.5 MOVILINK® parameter requests

The MOVILINK® parameter channel of the SEW inverter is directly mapped in the structure of data set 47. The Request ID 0x40 (SEW MOVILINK® service) is used to exchange MOVILINK® parameter setting requests. Parameter access with MOVILINK® services usually takes place according to the structure described below. The typical message sequence for dataset 47 is used.

 Request ID: 0x40   SEW MOVILINK® service

The actual service is defined by the dataset element *Attribute* in the MOVILINK® parameter channel. The high nibble of the element corresponds to the MOVILINK® service code.

Example for reading a parameter via MOVILINK®

The following tables give an example of the structure of the WRITE.request and READ.response user data for reading an individual parameter via the MOVILINK® parameter channel. In this example, the firmware of the MFE fieldbus interface is read.

Positive MOVILINK® parameterization response

The table shows the READ.response user data with the positive response data of the parameter setting request. The parameter value for index 8300 (firmware version) is returned as an example.

Service	READ.request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	10	Maximum length of response buffer in the master

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number from the parameter setting request
1	Response ID	0x40	Positive MOVILINK® response
2	Axis	0x00	Mirrored axis number of the MFE fieldbus interface
3	No. of parameters	0x01	1 parameter
4	Format	0x43	Parameter format: Double word
5	No. of values	0x01	1 value
6, 7	Value High	0x311C	Higher-order part of the parameter
8, 9	Value Low	0x7289	Lower-order part of the parameter
			Decoding:
			0x 311C 7289 = 823947913 dec
			>> firmware version 823 947 9.13

SEW EURODRIVE

Sending a parameter request

The table shows the coding of the user data for the READ.request service. The READ.request reads the firmware version of the MFE fieldbus interface.

Service	WRITE.request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	10	10 bytes user data for parameter request

Byte	Field	Value	Description
0	Request reference	0x01	Individual reference number for the parameter setting request is mirrored in the parameter response.
1	Request ID	0x40	SEW MOVILINK® service
2	Axis	0x00	Axis number of the MFE fieldbus interface
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	MOVILINK® service "READ parameter"
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x206C	MOVILINK® index 8300 = "Firmware version"
8, 9	Subindex	0x0000	Subindex 0

Query parameter response

The following table shows the coding of the READ.request user data including the PROFINET header.

Service	READ.request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	240	Maximum length of response buffer in the master

Example for writing a parameter via MOVILINK®

The following tables show the structure of the WRITE and READ services for volatile writing of the value 100 to parameter *P170 fixed setpoint n0* of the connected MOVIMOT® MM..D drive. The MOVILINK® service "WRITE parameter volatile" is used for this purpose.

Send "WRITE parameter volatile" request

Service	WRITE.re-quest	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Num-ber	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	16	16 byte user data for order buffer

Byte	Field	Value	Description
0	Request reference	0x01	Individual reference number for the parameter setting order is reflected in the parameter response
1	Request ID	0x40	SEW MOVILINK® service
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive • Downward-compatible routing via DS47 If DIP switch S1/1 = "OFF", the system transfers the DS47 request with the axis address 2 to the RS485 address 254 of the MOVIMOT®. • Routing to 3 MOVIMOT® via DS47 If DIP switch S1/1 = "ON", the system transfers the DS47 request with the axis addresses 1 – 3 to the RS485 addresses 1 – 3 of the MOVIMOT®.
3	No. of parameters	0x01	1 parameter
4	Attributes	0x30	MOVILINK® service "WRITE parameter volatile"
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x2129	Parameter *P170 fixed setpoint n0*
8, 9	Subindex	0x0000	Subindex 0
10	Format	0x43	Double word
11	No. of values	0x01	Change 1 parameter value
12, 13	Value High word	0x0000	Higher-order part of the parameter value

Byte	Field	Value	Description
14, 15	Value Low word	0x0064	Lower-order part of the parameter word

After sending this WRITE.request, the WRITE.response is received. If there was no status conflict in processing of the parameter channel, a positive WRITE.response results. Otherwise, the status fault is located in Error_code_1.

Query parameter response

The table shows the coding of the WRITE.request user data including the PROFINET header.

Service	READ.request	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	240	Maximum length of response buffer in the master

Positive response to "WRITE parameter volatile"

Service	READ.response	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	4	4 byte user data in response buffer

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number of the parameterization order
1	Response ID	0x40	Positive MOVILINK® response
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive (1, 2, 3)
3	No. of parameters	0x01	1 parameter

Negative parameter response

The following table shows the coding of a negative response of a MOVILINK® service.
Bit 7 is entered in the response ID if the response is negative.

Service	WRITE.response	Description
API	0	Fixed setting = 0
Slot_Number	0	Random (is not evaluated)
Subslot_Number	1	Fixed setting = 1
Index	47	Index of the dataset for the parameter request; constant index 47
Length	8	8 byte user data in response buffer

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number of the parameterization order
1	Response ID	0xC0	Negative MOVILINK® response
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive
3	No. of parameters	0x01	1 parameter
4	Format	0x44	Error
5	No. of values	0x01	1 error code
6, 7	Error value	0x0811	MOVILINK® return code e.g. Error class 0x08, Add. code 0x11

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MOVILINK® parameterization return codes for PROFINET

The following table shows the return codes that are returned by the SEW PROFINET interface if an error occurs during PROFINET parameter access.

MOVILINK® return code (hex)	Description
0x0810	Invalid index, parameter list does not exist in the device
0x0811	Function / parameter not implemented
0x0812	Read access only
0x0813	Parameter lock activated
0x0814	Factory setting is active
0x0815	Value for parameter too large
0x0816	Value for parameter too small
0x0817	Required option card not installed
0x0818	Error in system software
0x0819	Parameter access via RS-485 process interface only
0x081A	Parameter access via RS-485 diagnostic interface only
0x081B	Parameter is access-protected
0x081C	Controller inhibit is required
0x081D	Invalid value for parameter
0x081E	Factory setting was activated
0x081F	Parameter was not saved in EEPROM
0x0820	Parameter cannot be changed with output stage enabled / reserved
0x0821	Reserved
0x0822	Reserved
0x0823	Parameter may only be changed at IPOS program stop
0x0824	Parameter may only be changed when auto setup is deactivated
0x0505	Incorrect coding of management and reserved byte
0x0602	Communication error between inverter system and fieldbus interface
0x0502	Timeout of secondary connection (e.g. during reset or with Sys-Fault)
0x0608	Incorrect coding of the format field

9.3.6 PROFIdrive parameter request

The PROFIdrive parameter channel of SEW inverters is directly mapped in the structure of data set 47. Parameter access with PROFIdrive services usually takes place according to the structure described below. The typical telegram sequence is used for data set 47. As PROFIdrive only defines the following two request Ids, only limited data access can be used compared to the MOVILINK® services.

Request ID:	0x01	Request parameter	(PROFIdrive)
Request ID:	0x02	Change parameter	(PROFIdrive)

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The request ID = 0x02 = Change parameter (PROFIdrive) results in remanent write access to the selected parameter. Consequently, the internal flash/EEPROM of the inverter is written with each write access. Use the MOVILINK® service "WRITE Parameter volatile" if parameters must be written cyclically at short intervals. With this service, you only alter the parameter values in the RAM of the inverter.

Reading a parameter via PROFIdrive – example

The following tables give an example of the structure of the WRITE.request and READ.response user data for reading an individual parameter via the MOVILINK® parameter channel.

Sending a parameter request

The following table shows the coding of the READ.request user data including the PROFINET header. The READ.request reads the firmware of the fieldbus interface.

Service:	WRITE.request	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	10	10 bytes user data for parameter request

Byte	Field	Value	Description
0	Request reference	0x01	Individual reference number for the parameter setting request is mirrored in the parameter response.
1	Request ID	0x01	Request parameter (PROFIdrive)
2	Axis	0x00	Mirrored axis number of the MFE fieldbus interface
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	Access to parameter value
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x206C	MOVILINK® index 8300 = "Firmware version"
8, 9	Subindex	0x0000	Subindex 0

Query parameter response

Service:	READ.request	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	240	Maximum length of response buffer in the PROFINET controller

Positive PROFIdrive parameterization response

The table shows the READ.response user data with the positive response data of the parameter setting request. The parameter value for index 8300 (firmware version) is returned as an example.

Service:	READ.request	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	10	10 byte user data in response buffer

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number from the parameter setting request
1	Response ID	0x01	Positive response for "Request Parameter"
2	Axis	0x00	Mirrored axis number of the MFE fieldbus interface
3	No. of parameters	0x01	1 parameter
4	Format	0x43	Parameter format: Double word
5	No. of values	0x01	1 value
6, 7	Value High	0x311C	Higher-order part of the parameter
8, 9	Value Low	0x7289	Lower-order part of the parameter
			Decoding: 0x 311C 7289 = 823947913 dec >> firmware version 823 947 9.13

Example for writing a parameter via PROFIdrive

The following tables show the structure of the *WRITE* and *READ* services for **remanent** writing of the fixed setpoint n0 (*P170*). The PROFIdrive service *Change parameter* is used for this purpose.

Send "WRITE parameter" request

Service:	WRITE.request	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	16	16 byte user data for order buffer

Byte	Field	Value	Description
0	Request reference	0x01	Individual reference number for the parameter setting request is mirrored in the parameter response.
1	Request ID	0x02	Change parameter (PROFIdrive)
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive • Downward-compatible routing via DS47 If DIP switch S1/1 = "OFF", the system transfers the DS47 request with the axis address 2 to the RS485 address 254 of the MOVIMOT®. • Routing to 3 MOVIMOT® via DS47 If DIP switch S1/1 = "ON", the system transfers the DS47 request with the axis addresses 1 – 3 to the RS485 addresses 1 – 3 of the MOVIMOT®.
3	No. of parameters	0x01	1 parameter
4	Attributes	0x10	Access to parameter value
5	No. of elements	0x00	0 = access to direct value, no subelement
6, 7	Parameter Number	0x2129	Index of parameter *P170 fixed setpoint n0*
8, 9	Subindex	0x0000	Subindex 0
10	Format	0x43	Double word
11	No. of values	0x01	Change 1 parameter value
12, 13	Value High word	0x0000	Higher-order part of the parameter value
14, 15	Value Low word	0x0064	Low-order part of the parameter value, here. 100_{dec}

After sending this WRITE.request, the WRITE.response is received. If there was no status conflict in processing of the parameter channel, a positive WRITE.response results. Otherwise, the status fault is located in Error_code_1.

Query parameter response

The following table shows the coding of the WRITE.request user data including the PROFINET header.

Service	Write.request	Description
Slot_Number	X	Random (is not evaluated)
Index	47	Index of the data set
Length	240	Maximum length of response buffer in the PROFINET controller

Positive response to "WRITE parameter"

Service:	READ.response	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	4	4 byte user data in response buffer

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number from the parameter setting request
1	Response ID	0x02	Positive PROFIdrive response
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive (1, 2, 3)
3	No. of parameters	0x01	1 parameter

Negative parameter response

The following table shows the coding of a negative response of a PROFIdrive service. Bit 7 is entered in the response ID if the response is negative.

Service:	READ.response	Description
Slot_Number	0	Random (is not evaluated)
Index	47	Index of the data set; constant index 47
Length	8	8 byte user data in response buffer

Byte	Field	Value	Description
0	Response reference	0x01	Mirrored reference number from the parameter setting request
1	Response ID	0x810x82	Negative response for "Request Parameter" negative response for "Change Parameter"
2	Axis	0x02	Mirrored axis number of the MOVIMOT® drive
3	No. of parameters	0x01	1 parameter
4	Format	0x44	Error
5	No. of values	0x01	1 error code
6, 7	Error value	0x0811	MOVILINK® return code

e.g. Error class 0x08, Add. code 0x11

see section "MOVILINK® return codes for PROFINET" |

PROFIdrive return codes for PROFINET

This table shows the coding of the error number in the PROFIdrive parameter response according to PROFIdrive profile V3.1. This table applies if you use the PROFIdrive services "Request parameter" and/or "Change parameter".

Error no.	Meaning	Used for
0x00	Invalid parameter number.	Access to non-existent parameters
0x01	Parameter value cannot be changed	An attempt was made to change a parameter value that cannot be changed
0x02	Minimum or maximum value exceeded	An attempt was made to change a value to one that is outside of the limit values
0x03	Incorrect subindex	Access to non-existent subindex
0x04	No assignment	Access with subindex to parameter that is not indexed
0x05	Incorrect data type	An attempt was made to replace a value with one that does not correspond to the data type of the parameter
0x06	Setting not permitted (can only be reset)	An attempt was made to set a value to one larger than 0 where this is not permitted
0x07	Description element cannot be changed	Access to description element that cannot be changed
0x08	Reserved	(PROFIdrive Profile V2: PPO write query for IR not available)
0x09	Description does not exist	Access to description that is not accessible (parameter value exists)
0x0A	Reserved	(PROFIdrive Profile V2: incorrect access group)
0x0B	No operation priority	An attempt was made to change a parameter without change rights
0x0C	Reserved	(PROFIdrive Profile V2: Incorrect password)
0x0D	Reserved	(PROFIdrive Profile V2: text cannot be read in cyclic data transfer)
0x0E	Reserved	(PROFIdrive Profile V2: name cannot be read in cyclic data transfer)
0x0F	No text assignment available	Access to text assignment that is not accessible (parameter value exists)
0x10	Reserved	(PROFIdrive Profile V2: no PPO write)
0x11	Request cannot be executed due to the operating mode	Access is currently not possible and the reason is not explained
0x12	Reserved	(PROFIdrive Profile V2: other error)
0x13	Reserved	(PROFIdrive Profile V2: data cannot be read in cyclic exchange)

Error no.	Meaning	Used for
0x14	Incorrect value	An attempt was made to change a value to one that is in the permitted range but is not permitted due to other long-term reasons (parameter with specified individual values)
0x15	Response is too long	The length of the current response exceeds the maximum transmittable length
0x16	Invalid parameter address	Invalid value or value that is not valid for this attribute, number of elements, parameter number, subindex or a combination of these factors.
0x17	Incorrect format	Write request: Invalid format or parameter data format that is not supported
0x18	Number of values is not consistent	Write request: Number of values of parameter data does not correspond to the number of elements in the parameter address
0x19	Axis does not exist	Access to an axis that does not exist
up to 0x64	Reserved	–
0x65–0xFF	Depends on the manufacturer	–

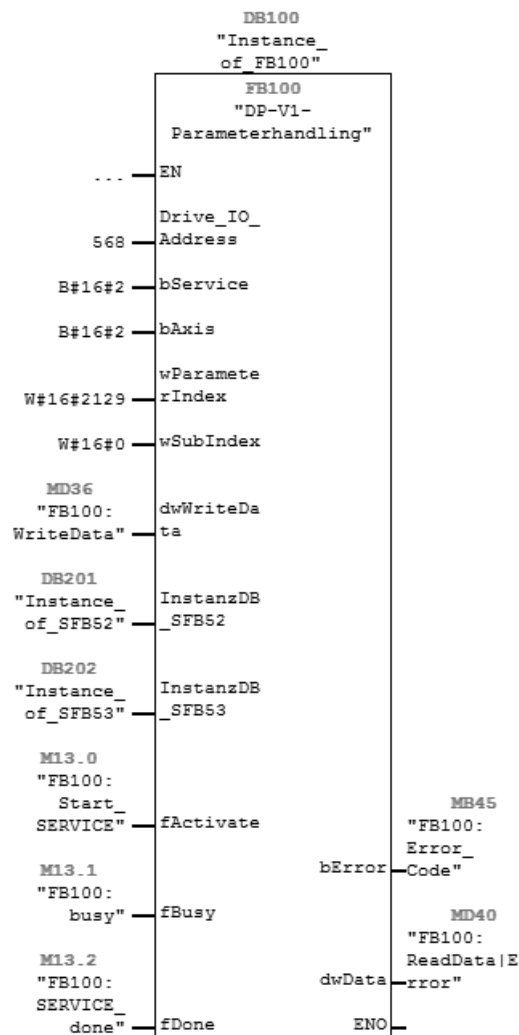## 9.4 Reading or writing the parameterization via dataset 47

9.4.1 Example program for SIMATIC S7

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- You will find the example program "function block MOVILINK® parameter channel" on the SEW website (www.sew-eurodrive.de) in the "Software" section.

- This example is a special and free service that demonstrates only the basic approach to generating a PLC program as a non-binding sample. SEW-EURODRIVE is not liable for the contents of the sample program.

Calling the function block

1747628683

Comment regarding the function module:

```
Write service: x2h, fixed setpoint: P160, index 8489d = 2129h

Wiring of FB:
"Drive_IO_Address": (INT)  Input address of the process data =>Hardware config.
"bService":        (BYTE) Read: 01h;  Write 02h,  volatile writing 03h
"bAxis":           (BYTE) Sub address/SBUS address of lower-level MC07
"wParameterindex": (WORD) Parameter index => "MC07 Communication" manual
"wSubIndex":       (WORD) MOVILINK subindex = 0
"dwWriteData":     (DWORD) Parameter data for WRITE service
"InstanzDB_SFB52(BLOCK_DB) Instance DB for the SFB52
"InstanzDB_SFB53(BLOCK_DB) Instance DB for the SFB53
"fActivate"        (BOOL) Activation bit
"fBusy":           (BOOL) Parameter service is active
"fDone":           (BOOL) Parameter service was executed
"bError"           (BYTE) No error = 0; S7 error = 1; TimeOut = 2;
                          MOVILINK error = 3
"dwData":          (DWORD)bError = 0 => Parameter value after READ service
                          bError = 1 => S7 error code
```

1748164107

9.4.2 MFE fieldbus interface – technical data

GSD file for PROFINET	**GSDML-V2.25-SEW-MFE52A-jjjjmmtt-hhmmss.xml**[1]
Module name for configuration	SEW-MFE
Supported data record	Index 47
Supported slot number	Recommended: 0
Manufacturer code	10 A$_{hex}$ (SEW-EURODRIVE)
Profiles ID	0
Max. length	240 bytes

1) "jjjjmmtt" represents the date. "hhmmss" represents the time.

9.4.3 Error codes of the PROFINET services

The following table shows possible error codes of PROFINET services that may occur in the event of an error in the communication on PROFINET telegram level. This table is relevant if you want to write your own parameter assignment block based on the PROFINET services because the error codes are reported directly back on the telegram level.

Bit:	7	6	5	4	3	3	2	0

Error_Class   Error_Code
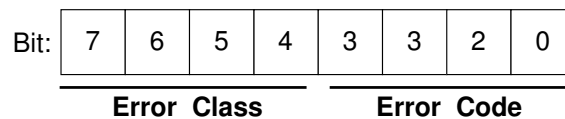
1663318411

Error_Class (from PROFINET specification)	Error_Code (from PROFINET specification)	PROFINET parameter channel
0x0 – 0x9 hex = reserved		

| Error_Class (from PROFINET specification)	Error_Code (from PROFINET specification)	PROFINET parameter channel
0xA = application	0x0 = read error	
	0x1 = write error	
	0x2 = module failure	
	0x3 – 0x7 = reserved	
	0x8 = version conflict	
	0x9 = feature not supported	
	0xA to 0xF = user specific	
0xB = access	0x0 = invalid index	0xB0 = No data block Index 47 (DB47); parameter requests are not supported
	0x1 = write length error	
	0x2 = invalid slot	
	0x3 = type conflict	
	0x4 = invalid area	
	0x5 = state conflict	0xB5 = Access to DB 47 temporarily not possible due to internal processing status
	0x6 = access denied	
	0x7 = invalid range	0xB7 = WRITE DB 47 with error in the DB 47 header
	0x8 = invalid parameter	
	0x9 = invalid type	
	0xA to 0xF = user specific	
0xC = resource	0x0 = read constraint conflict	
	0x1 = write constraint conflict	
	0x2 = resource busy	
	0x3 = resource unavailable	
	0x4 – 0x7 = reserved	
	0x8 – 0xF = user specific	
0xD – 0xF = user specific		

10 Function

10.1 Meaning of the LED display

The MFE PROFINET IO interface has 5 LEDs for diagnostic purposes.

- The "RUN" LED indicates the operating state of the MFE fieldbus interface.
- The "BUS-F" LED for displaying errors in the PROFINET IO.
- The "Link/act1" LED indicates the activity of the PROFINET port 1 (X11).
- The "Link/act2" LED indicates the activity of the PROFINET port 2 (X12).
- "SYS-F" LED for displaying system errors.
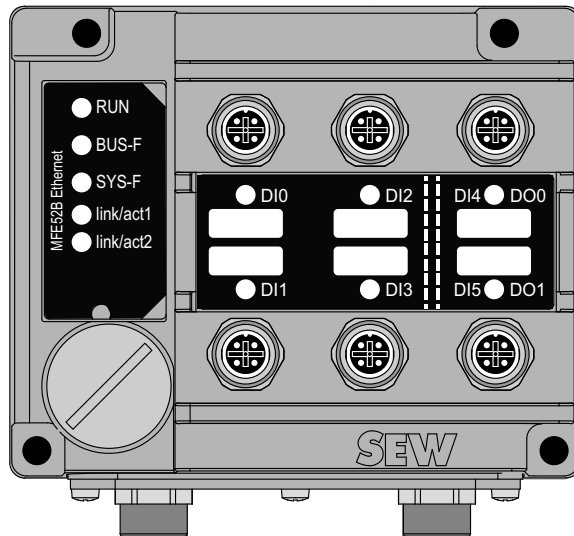
9007202610697355

10.1.1 "BUS-F" LED

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

LED RUN	LED BUS-F	Meaning	Measure
Green Lights up	**Off**	MFE is currently exchanging data with the PROFINET master (data exchange).	–
Green Lights up	**Green** Flashing **Green/red** Flashing	The flashing function in the PROFINET master configuration is activated to visually localize the station.	–
Green Lights up	**Red** Lights up	Connection to the PROFINET master has failed. MFE does not detect a link. Bus interruption. PROFINET master not in operation.	• Check the PROFINET connection of the MFE. • Check the PROFINET master. • Check all the cables in the PROFINET network.

10.1.2 "RUN" LED

The following table shows the statuses of the "RUN" LED:

LED RUN	LED BUS-F	Meaning	Measure
Green Lights up	X	MFE component hardware is OK.	-
Green Lights up	Off	Proper operation. MFE is currently exchanging data with the PROFINET master (data exchange).	-
Off Lights up	X	MFE is not ready for operation. No 24 V voltage supply.	Check the 24 V DC voltage supply. Switch on the MFE again. Replace MFE if problem occurs several times.
Red Lights up	X	Error in the MFE component hardware.	Switch on the MFE again. Replace MFE if problem occurs several times.
Green Flashing	X	MFE component hardware does not start.	Switch on the MFE again. Replace MFE if problem occurs several times.
Yellow Flashing	X		
Yellow Lights up	X		

X   Any state

10.1.3 "SYS-F" LED

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

LED SYS-F	Meaning	Measure
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 device error	Use MOVITOOLS® MotionStudio to read out the fault status. Determine cause and acknowledge error.

10.1.4 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	PROFINET cable connects device with 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.

10.2 Performance configuration MFZ29 field distributor with 3 MOVIMOT® drives

S1 continuous
duty

The total power of all connected MOVIMOT® drives may not exceed the limit of 3.3 kW in S1 continuous duty.

In continuous duty, the MFZ29 field distributor may supply **3 motors** with a maximum power of **1.1 kW** each.

S3 operation

However, in many applications not all drives have to run in continuous duty. By means of suitable control in S3 operation, you do not only save energy, but can also use motors with higher power ratings.

Example of a roller
conveyor

The following example shows the travel diagrams for MOVIMOT® drives of a roller conveyor with 3 segments:

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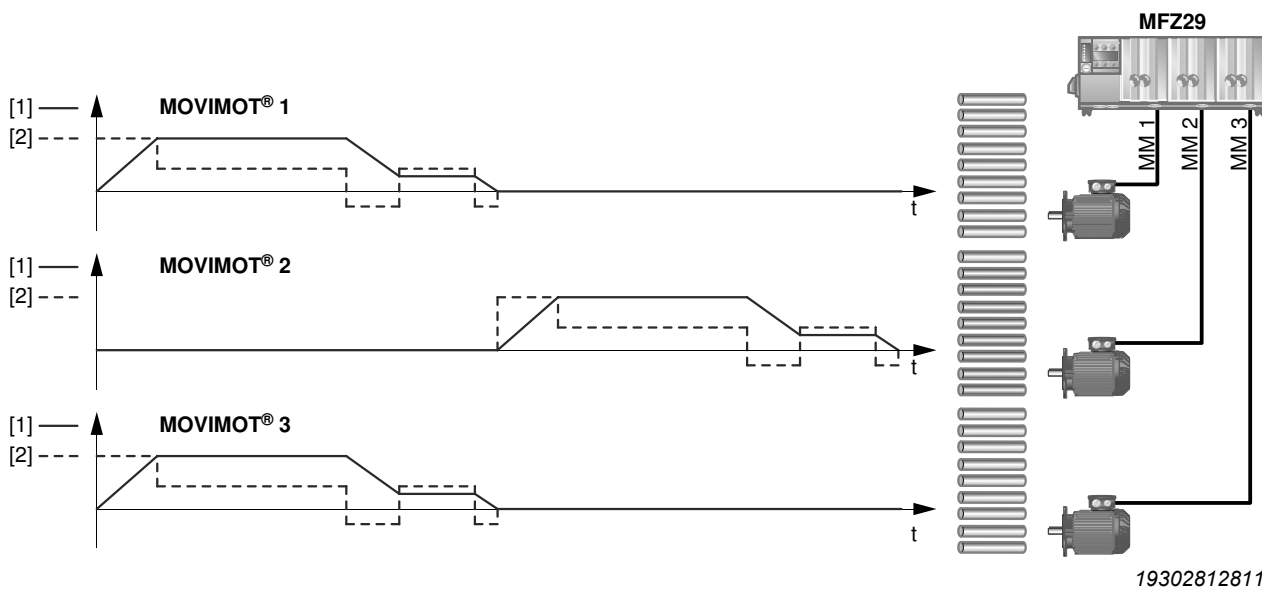
[1]   Speed
[2]   Torque

Only 2 motors are running simultaneously in this S3 operation.

The MFZ29 field distributor may supply **2 motors** with a maximum power of **1.5 kW** each.

11 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.

11.1 MF../Z.6. field distributor

11.1.1 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:
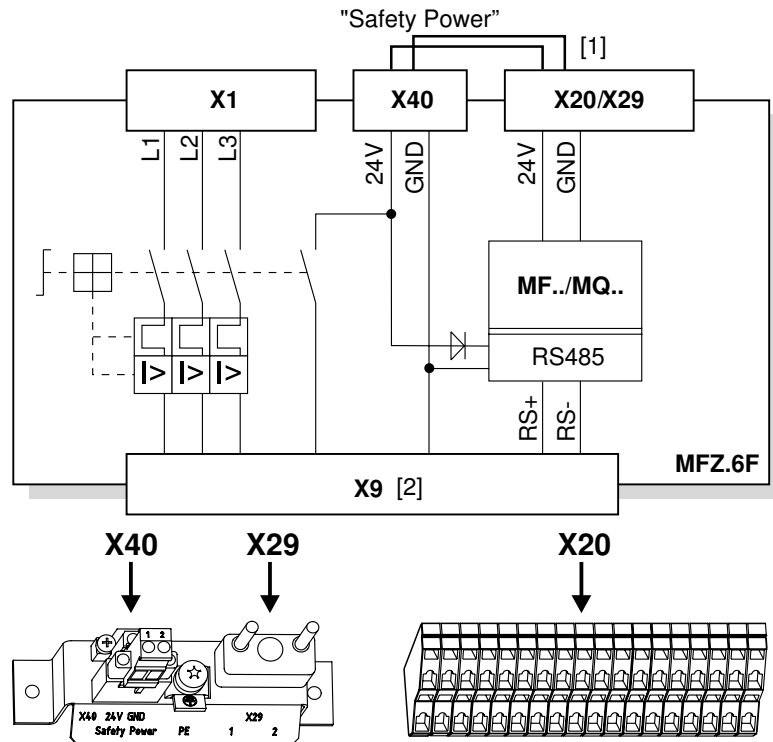
[1] Jumper to supply the MOVIMOT® drive with DC 24 V voltage for the fieldbus interface (installed at the factory)
[2] Hybrid cable connection

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

11.2.1 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.
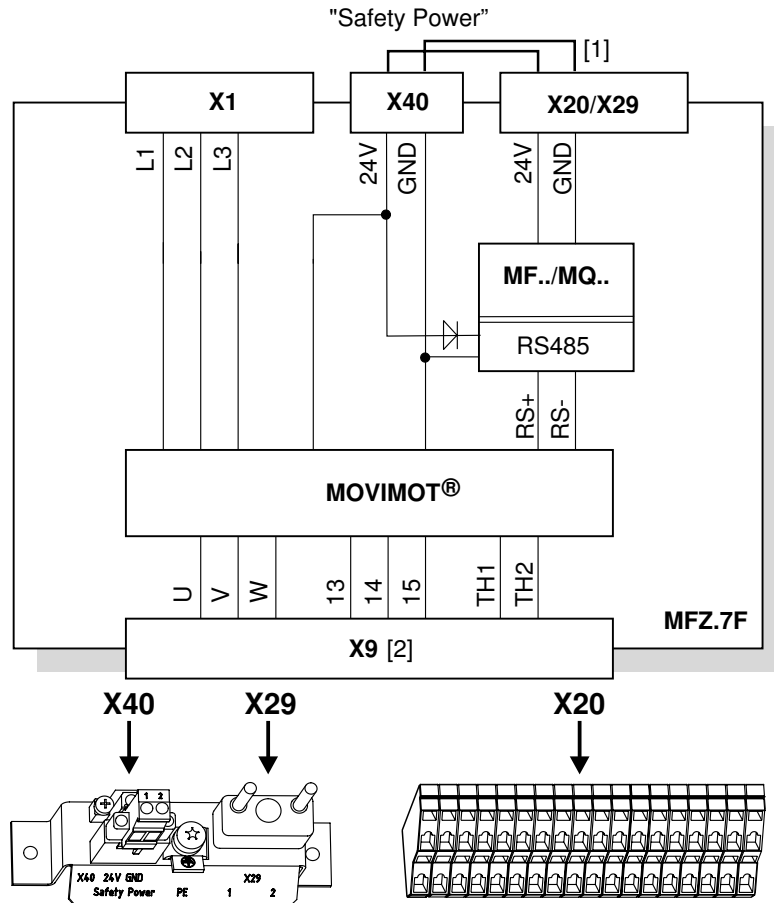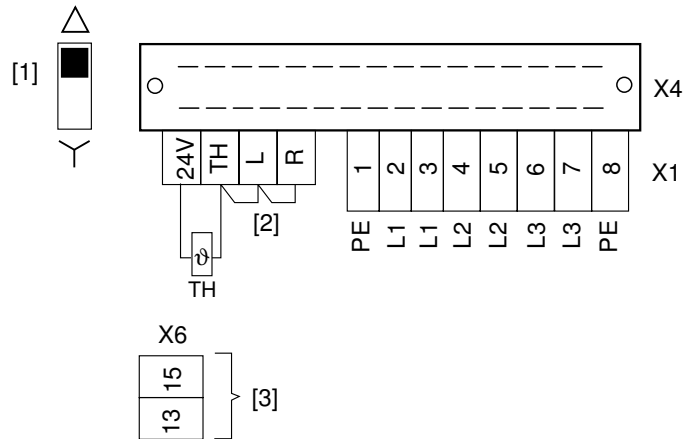

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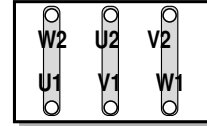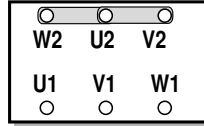
For brake motors: Do not install brake rectifiers inside the terminal box of the motor!

Block diagram:

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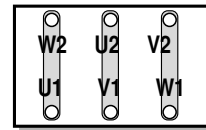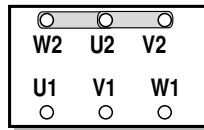
[2] Hybrid cable connection

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

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[1] DIP switches for setting the connection type ($\curlywedge$ or $\triangle$)
   **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)

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

11.3.1 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:
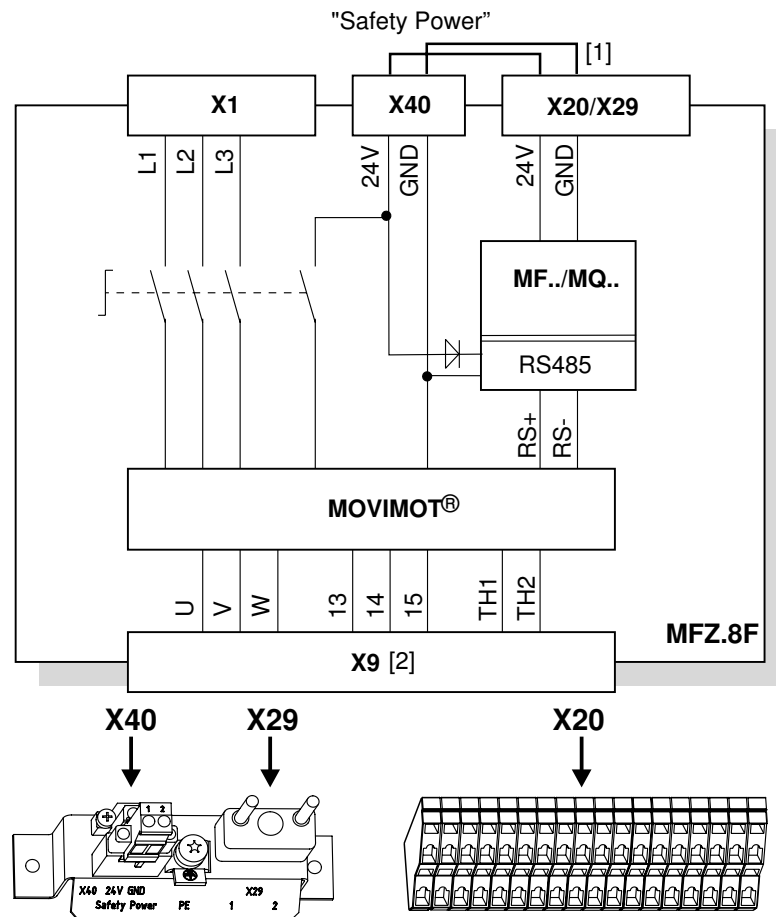
9007200441668363

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

11.3.2 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.
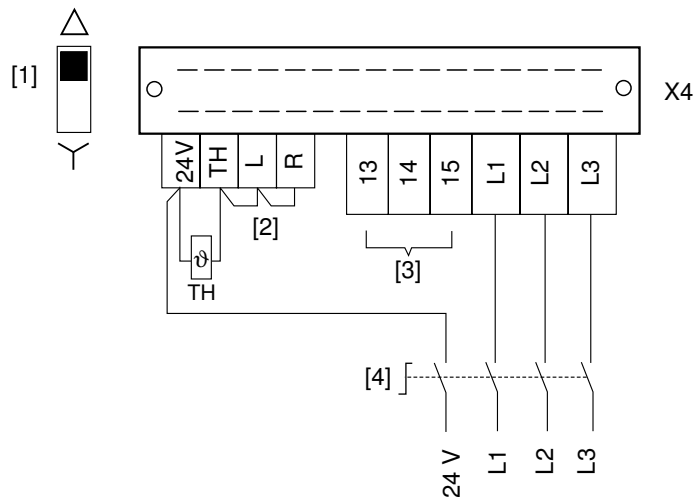

1162529803

INFORMATION

i

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

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

9007200441675147

[1] DIP switches for setting the connection type (⅄ or △)
Make sure that the connection type of the connected motor corresponds with the setting of the DIP switch.
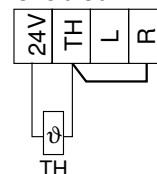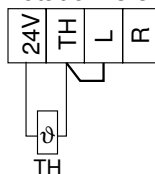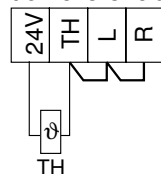
[2] **Note the enabled direction of rotation**
(Both directions of rotation are enabled as standard)

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

**SEW
EURODRIVE**

11.4 MF../MM../Z.9. field distributor

11.4.1 Maintenance switch

The maintenance switch of the Z.9. field distributor switches the following supplies:

- Power supply and
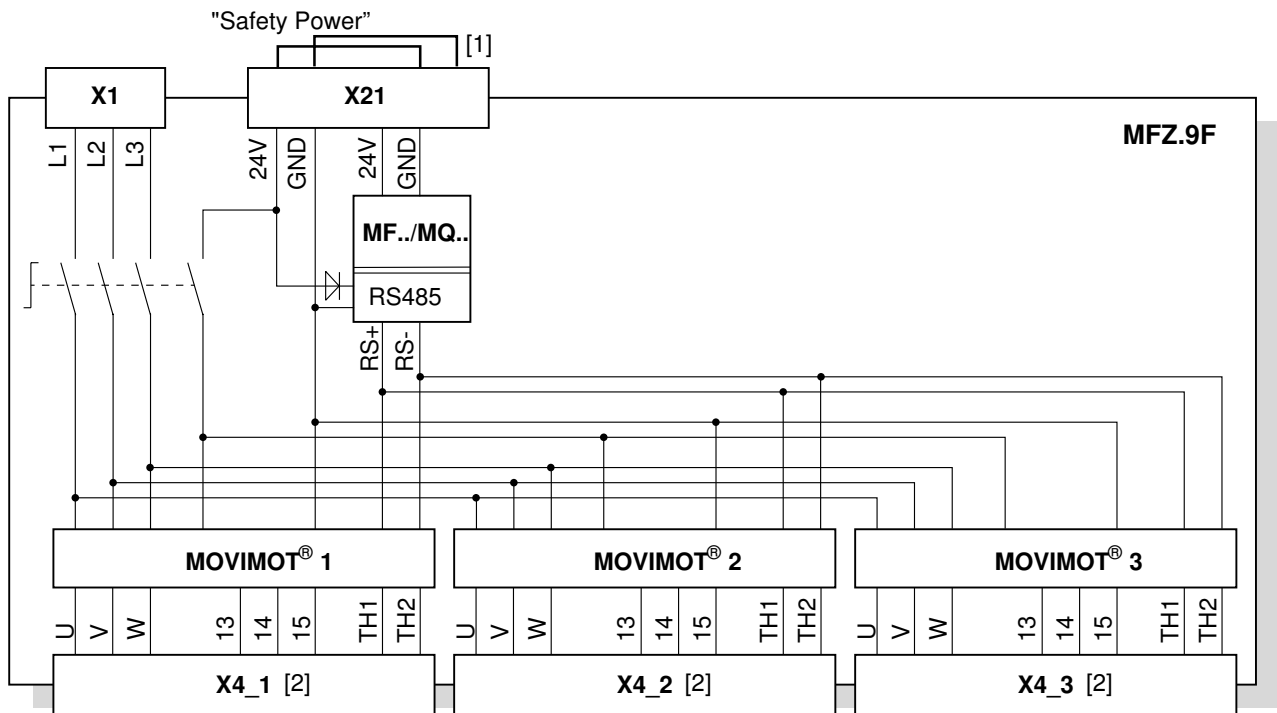- DC 24 V supply

⚠ 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:
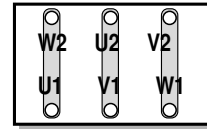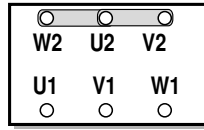 - **1 minute**

Block diagram:

18224333323

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

11.4.2 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.
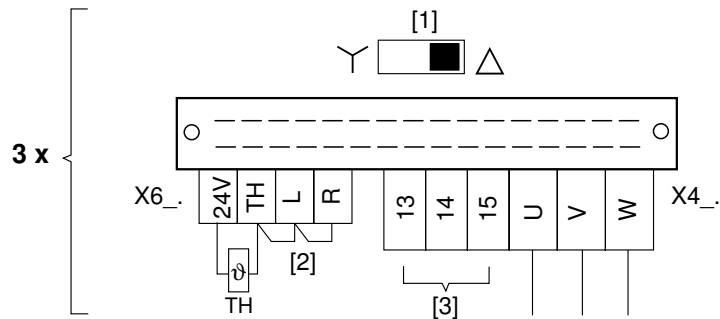

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INFORMATION

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

11.4.3 Internal wiring of the MOVIMOT® inverters in the field distributor
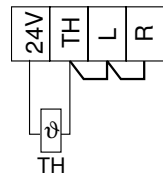

18226734731

[1]   DIP switches for setting the connection type ($\curlyvee$ or $\triangle$)
       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)
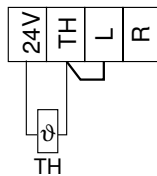
Both directions of rotation are enabled	Only **CCW** direction of rotation is enabled	Only **CW** direction of rotation is enabled

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

SEW
EURODRIVE

11.5 MOVIMOT® inverter integrated in field distributor

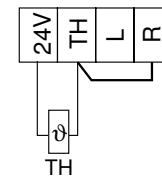The following chapter describes the differences in the use of the MOVIMOT® inverter integrated in the field distributor compared to use when it is integrated in the motor.

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

Note the changes to the factory settings (in bold) when using MOVIMOT® integrated in Z.7., Z.8. or Z.9 field distributors:
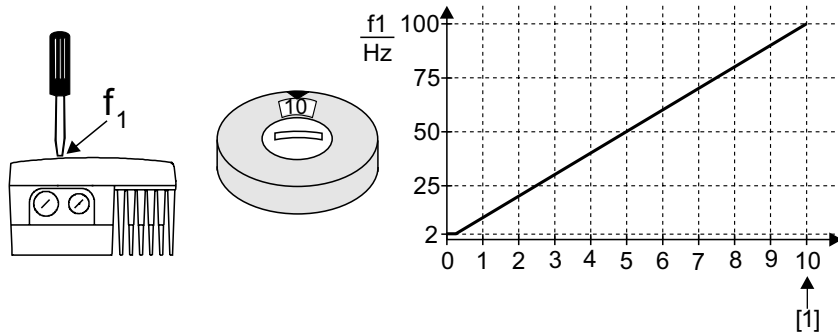
S1 DIP switch

S1		1	2	3	4
Meaning		**RS485 address**			
		2^0	2^1	2^2	2^3
MOVIMOT® 1	**ON**	**1**	1	1	1
	OFF	0	**0**	**0**	**0**
MOVIMOT® 2[1]	**ON**	1	**1**	1	1
	OFF	**0**	0	**0**	**0**
MOVIMOT® 3[1]	**ON**	**1**	**1**	1	1
	OFF	0	0	**0**	**0**

1) Only for Z.9. field distributor.

S1		5	6	7	8
Meaning		**Motor protec-tion**	**Motor performance level**	**PWM frequency**	**No-load damping**
	ON	**Off**	Motor one stage smaller	**Variable** (16, 8, 4 kHz)	On
	OFF	On	**Adjusted**	4 kHz	**Off**

Setpoint poten-tiometer f1

9007200441723659

[1] Factory setting

All other settings are identical to the settings for a MOVIMOT® drive with integrated inverter. See MOVIMOT® operating instructions.

11.5.2 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. or Z.9. field distributor (to a limited extent). A detailed description of the additional functions can be found in the 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. or Z.9. 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., Z.8. or Z.9. 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

i 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. and Z.9. field distributor.
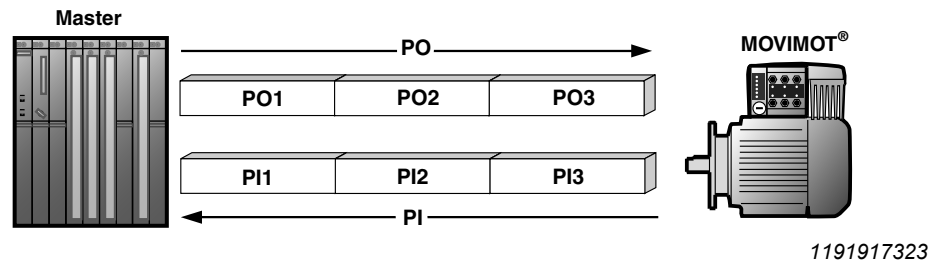
12 MOVILINK® device profile

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.

Two variants can generally be distinguished for MOVIMOT® drives operated on the ..Z.1, ..Z.3, ..Z.6, ..Z.8 or ..Z.9 field distributors:

• 2 process data words (2 PD)

• 3 process data words (3 PD)

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PO   = Process output data   PI   = Process input data
PO1 = Control word   PI1   = Status word 1
PO2 = Speed (%)   PI2   = Output current
PO3 = Ramp   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.
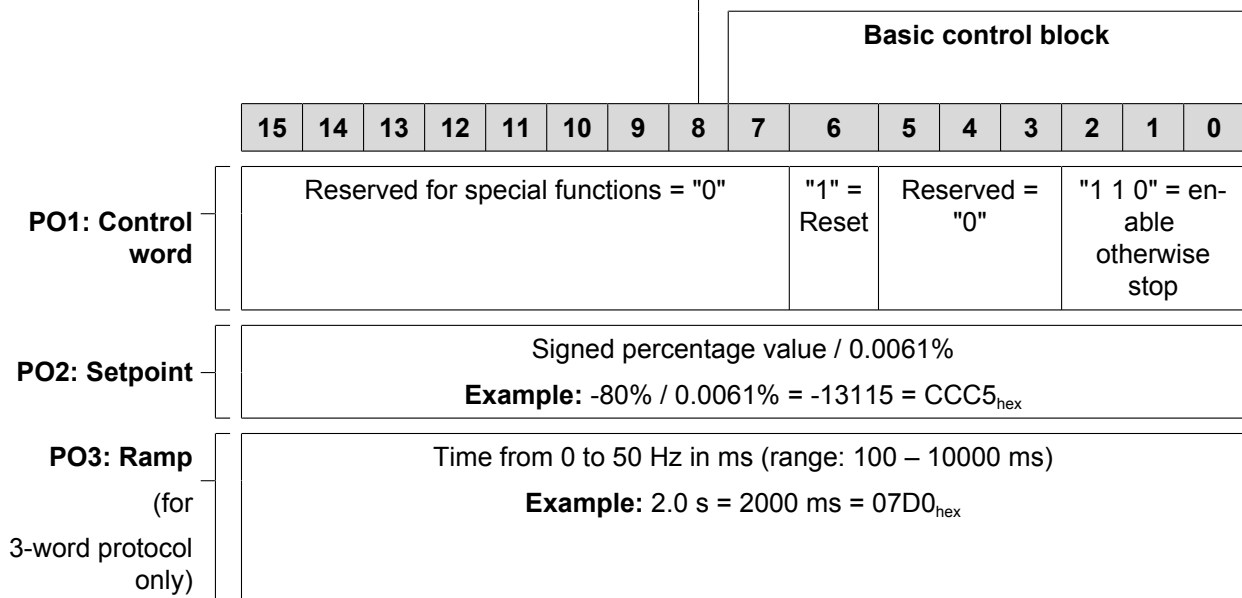
12.1.3 Process output data

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

Virtual terminals for releasing the brake without drive enable,

only when MOVIMOT® switch S2/2 = "ON"

(adhere to MOVIMOT® operating instructions)

								Basic control block							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

PO1: Control word

Reserved for special functions = "0"	"1" = Reset	Reserved = "0"	"1 1 0" = enable otherwise stop

PO2: Setpoint

Signed percentage value / 0.0061%

Example: -80% / 0.0061% = -13115 = $CCC5_{hex}$

PO3: Ramp

(for 3-word protocol only)

Time from 0 to 50 Hz in ms (range: 100 – 10000 ms)

Example: 2.0 s = 2000 ms = $07D0_{hex}$

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".

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Speed [%]

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

Coding:	$C000_{hex}$ = -100% (counterclockwise rotation)
	4000_{hex} = +100% (clockwise rotation)
	→ 1 digit = 0.0061%
Example:	80% f_{max}, CCW rotation:
Calculation:	-80% / 0.0061 = -13115_{dec} = $CCC5_{hex}$

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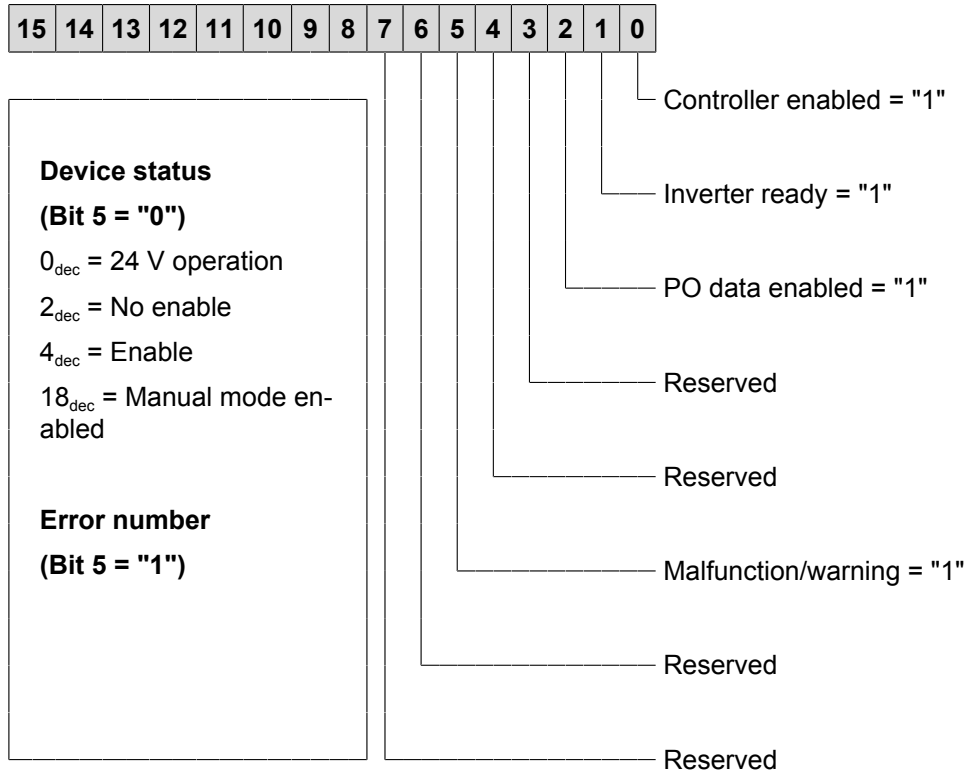
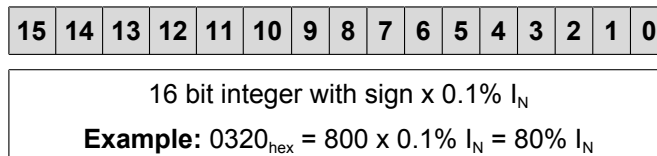|	
Coding:	1 digit = 1 ms
Range:	100 – 10000 ms
Example:	2.0 s = 2000 ms = 2000_{dec} = $07D0_{hex}$

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
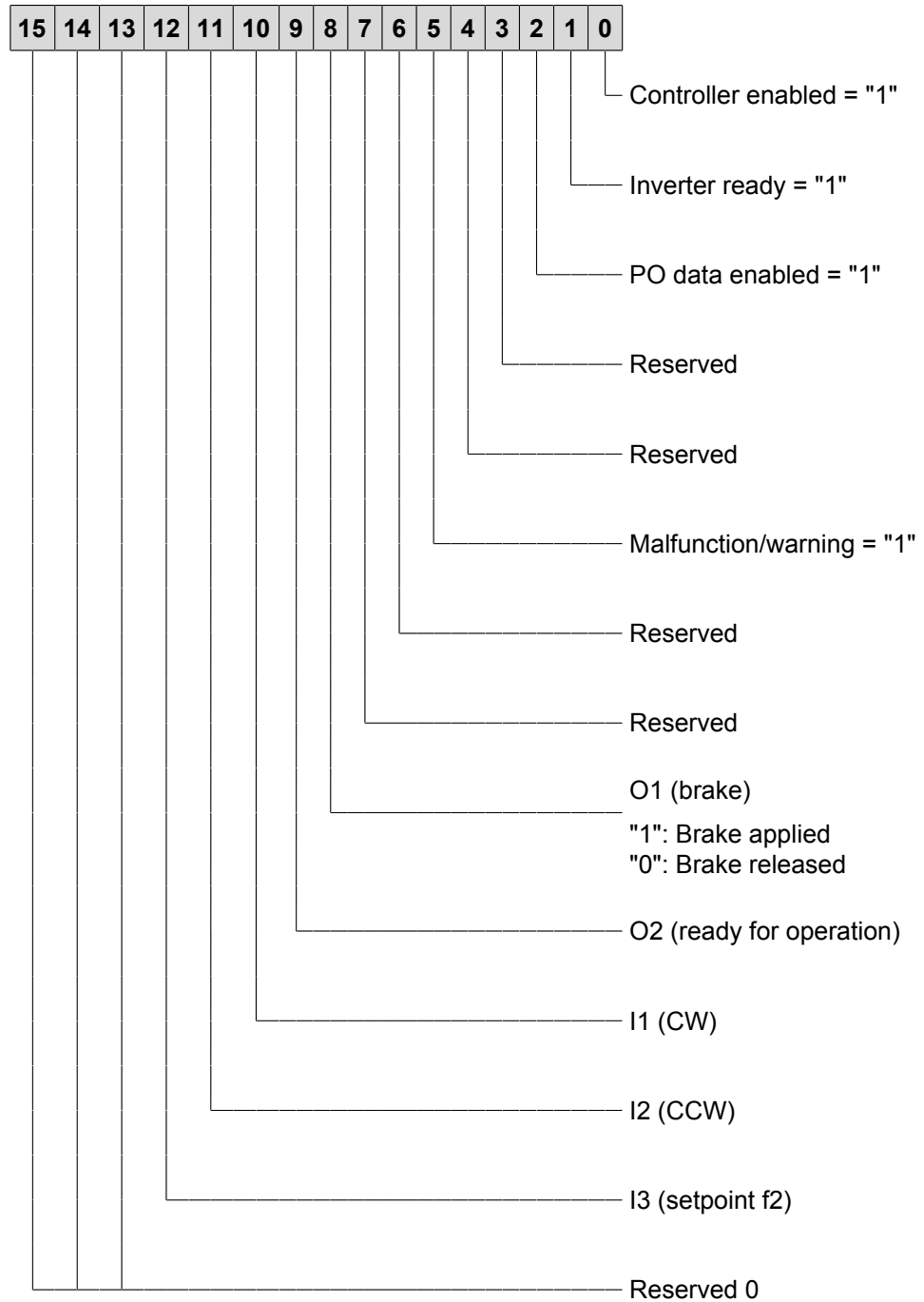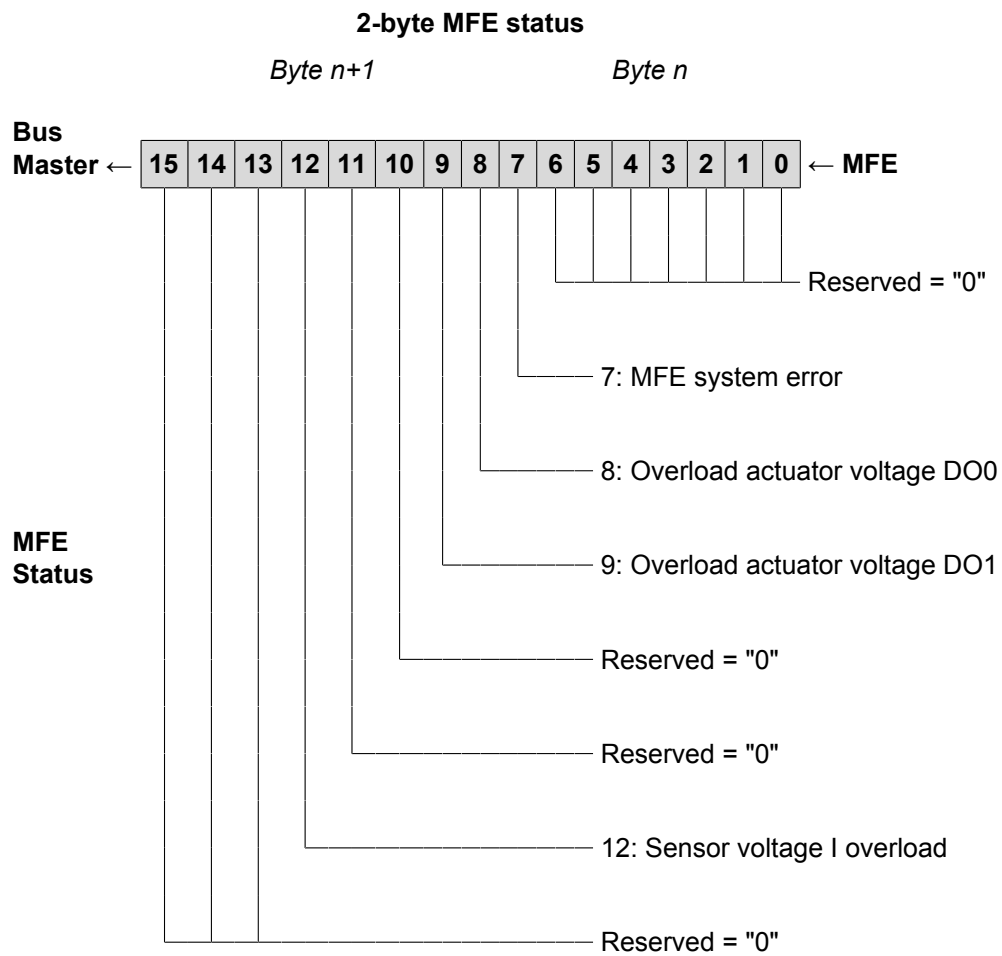- PI2: Output current
- PI3: Status word 2

PI1: Status word 1

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Controller enabled = "1"

Inverter ready = "1"

PO data enabled = "1"

Reserved

Reserved

Malfunction/warning = "1"

Reserved

Reserved

Device status

(Bit 5 = "0")

0_{dec} = 24 V operation

2_{dec} = No enable

4_{dec} = Enable

18_{dec} = Manual mode enabled

Error number

(Bit 5 = "1")

PI2: Actual current value

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

16 bit integer with sign x 0.1% I_N

Example: 0320_{hex} = 800 x 0.1% I_N = 80% I_N

PI3: Status word 2

(only for 3-word protocol)

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

— Controller enabled = "1"

— Inverter ready = "1"

— PO data enabled = "1"

— Reserved

— Reserved

— Malfunction/warning = "1"

— Reserved

— Reserved

— O1 (brake)
"1": Brake applied
"0": Brake released

— O2 (ready for operation)

— I1 (CW)

— I2 (CCW)

— I3 (setpoint f2)

— Reserved 0

12.2 MFE status word

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

2-byte MFE status

Byte n+1　　　　　　　*Byte n*

| Bus Master ← | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | ← MFE |

MFE Status

Reserved = "0"

7: MFE system error

8: Overload actuator voltage DO0

9: Overload actuator voltage DO1

Reserved = "0"

Reserved = "0"

12: Sensor voltage I overload

Reserved = "0"

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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	–

12.3 Sample program for Simatic S7 and fieldbus

A sample program for the Simatic S7 PLC illustrates the processing of process data as well as the digital inputs and outputs of the MF.. fieldbus interface.

INFORMATION

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This section simply demonstrates how to create a PLC program using a non-binding example. SEW-EURODRIVE is not liable for the content of the sample program.

12.3.1 Address assignment of process data in the programmable controller

In the example, the process data of the fieldbus interface is stored in the PLC memory range PW132 – PW136.

The additional output/input word is administered in AW 100 and EW 100.
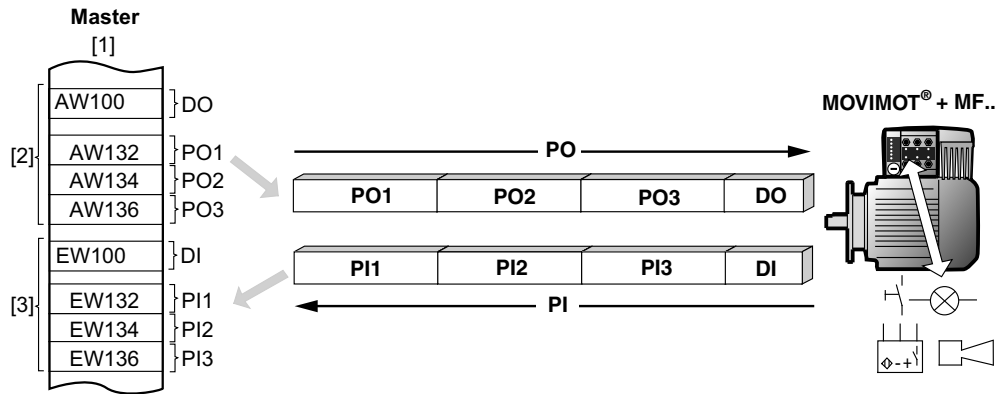
1192075019

[1]	Address range	PO	Process output data	PI	Process input data
[2]	Output addresses	PO1	Control word	PI1	Status word 1
[3]	Input addresses	PO2	Speed [%]	PI2	Output current
		PO3	Ramp	PI3	Status word 2
		DO	Digital outputs	DI	Digital inputs

12.3.2 Processing the digital inputs/outputs of the MF.. fieldbus interface

The AND operation of digital inputs DI0 – DI3 controls the digital outputs DO0 and DO1 on the MF.. interface:

```
U E 100.0 // Wenn DI0 = "1"

U E 100.1 // DI1 = "1"

U E 100.2 // DI2 = "1"

U E 100.3 // DI3 = "1"

= A 100.0 // dann DO0 = "1"

= A 100.1 // DO1 = "1"
```

12.3.3 Control of MOVIMOT® drive

You enable the MOVIMOT® drive with input DI0:

- E 100.0 = "0:" Control command "stop"

- E 100.0 = "1:" Control command "Enable"

Direction of rotation and speed are set via input DI1:

- E 100.1 = "0:" 50% f_{max} clockwise rotation

- E 100.1 = "1:" 50% f_{max} counterclockwise rotation

The drive is accelerated and decelerated with an integrator ramp of 1 s.

The process input data is saved until further processing in the flag word 20 – 24.

```
U E 100.0 // Mit Eing. 100.0 Steuerbefehl "Freigabe" geben

SPB FREI

L W#16#2 // Steuerbefehl "Halt"

T PAW 132 // auf PA1 (Steuerwort 1) schreiben

SPA SOLL

FREI: L W#16#6 // MOVIMOT-Steuerbefehl "Freigabe" (0006hex)

T PAW 132 // auf PA1 (Steuerwort 1) schreiben

SOLL: U E 100.1 // Mit Eingang 100.1 Drehrichtung festlegen

SPB LINK // Wenn Eingang 100.1 = "1", dann Linkslauf

L W#16#2000 // Solldrehzahl = 50% fmax Rechtslauf (=2000hex)

T PAW 134 // auf PA2 (Drehzahl [%] schreiben

SPA ISTW

LINK: L W#16#E000 // Solldrehzahl = 50% fmax Linkslauf
(=E000hex)

T PAW 134 // auf PA2 (Drehzahl [%]) schreiben

ISTW: L 1000 // Rampe = 1s (1000dez)

T PAW 136 // auf PA3 (Rampe) schreiben

L PEW 132 // PE1 (Statuswort 1) laden

T MW 20 // und zwischenspeichern

L PEW 134 // PE2 (Ausgangsstrom) laden

T MW 22 // und zwischenspeichern

L PEW 136 // PE3 (Statuswort 2) laden

T MW 24 // und zwischenspeichern


BE
```

13 Operation with the MOVITOOLS® MotionStudio engineering software

13.1 About MOVITOOLS® MotionStudio

13.1.1 Tasks

The MOVITOOLS® MotionStudio engineering software enables you to perform the following tasks with consistency:

- Establishing communication with devices
- Executing functions with the devices

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 devices.

   ⇨ 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 (device scan) via the icon [1] in the toolbar.

[1]

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13.2.3 Configuring devices

The following example uses a MOVIFIT® device to show how to display the tools for configuring the device.

The connection mode is "online". The device has been scanned in the network view.

Proceed as follows:

1. Select the device (in this example the power section [1]) in the network view.

2. Right-click to open the context menu.
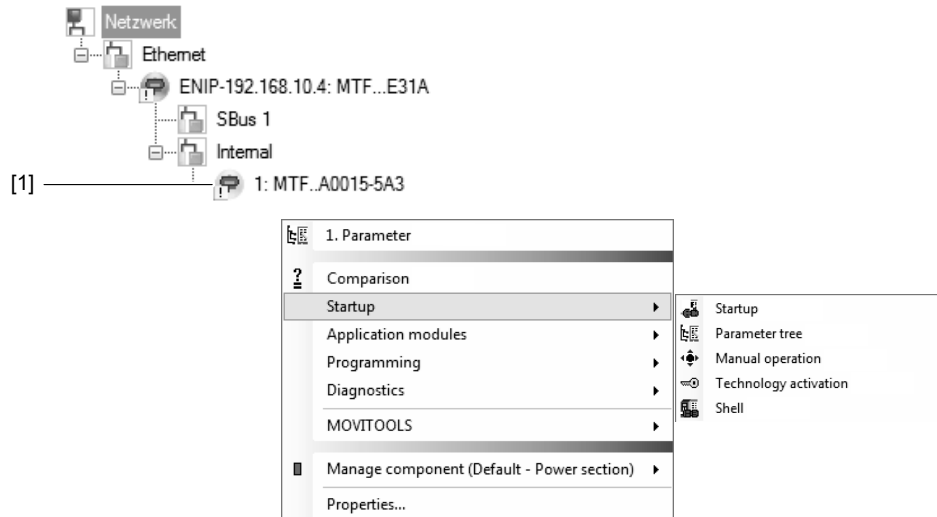
9007201701091851

3. Select the tool for configuring the device (in this example the command [Startup] > [Parameter tree]).
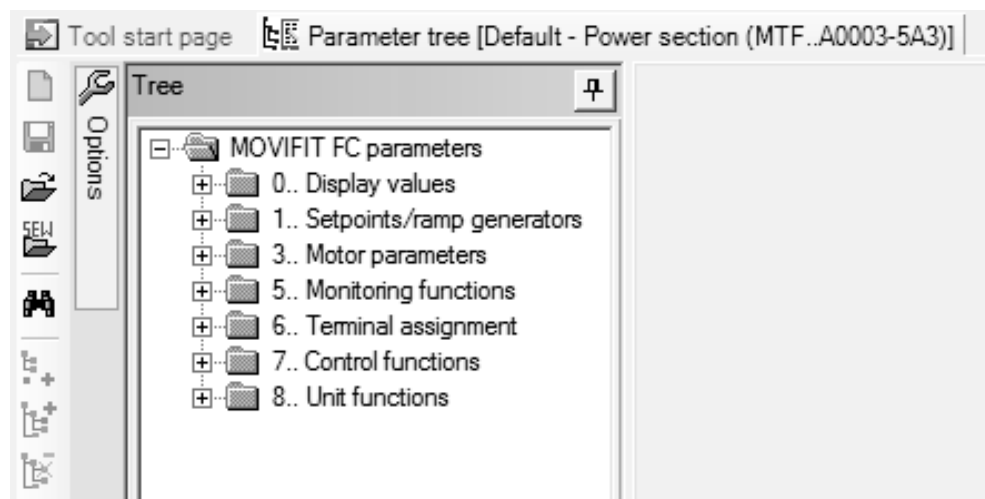
9007201701096203

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 device.

The following figure illustrates the two types of tools:
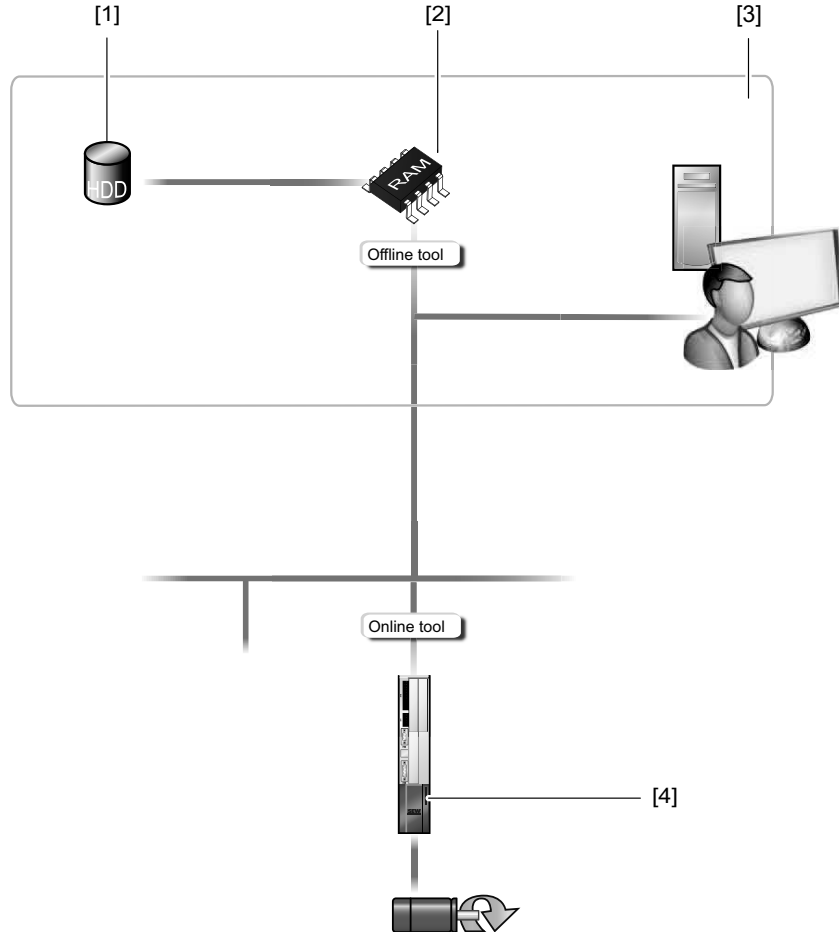
18014399752675211

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

Tools	Description
Offline tools	Changes made using offline tools affect **"ONLY"** the RAM [2] at first. • 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	Changes made using online tools affect **"ONLY"** the unit [4] at first.
	• 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

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• 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 device.

   ⇨ "Switch to offline mode" [2] for functions (offline tools) that should influence your project.

   [1]   [2]

   18014399643939211

[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 device.

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.
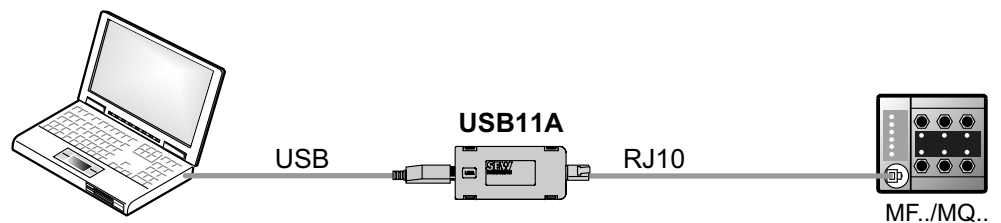
⚠ WARNING!

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:

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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 devices you want to configure via the USB11A interface adapter.

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

18014399642823819

⇨ The following window is displayed.
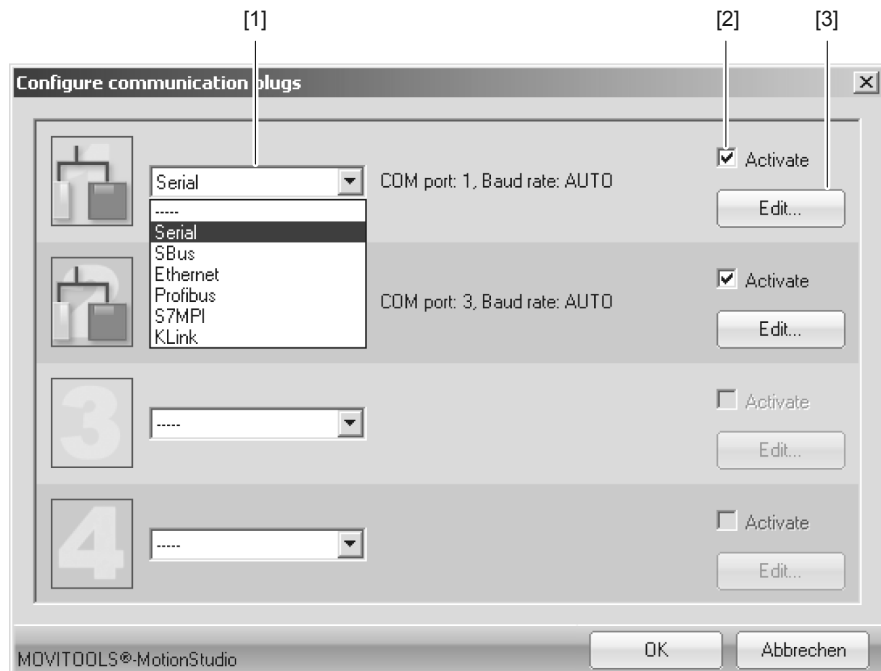
9007200201683979

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".

9007200201689739

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	• If there is no value entered here, the SEW Communication Server uses the first available port.

Communication parameter	Description	Information
Baud rate	Transmission speed with which the connected PC communicates with the device in the network via the communication channel.	• Possible values: – 9.6 kBit/s – 57.6 kBit/s – AUTO (default setting) • Find the correct value for the connected device in the documentation. • If you set "AUTO", the devices 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 device.
Multi-byte telegrams	Telegram with several parameters	Used to transfer the **complete** parameter set of a device.
Timeout	Waiting time in [ms] that the master waits for a response from the slave after it has made a request.	• Default setting: – 100 ms (parameter telegram) – 350 ms (multi-byte telegram) • If not all devices are detected during a network scan of communication problems occur, increase the values as follows: – 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:
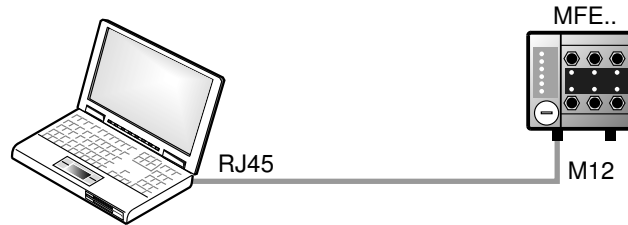
9007202803975307

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 Establishing communication with the Address Editor

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.

The Address Editor allows to find all SEW-EURODRIVE devices connected at the local network segment (subnetwork) and to parameterize the network settings.

INFORMATION

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The Address Editor only finds SEW-EURODRIVE devices. The devices have to be connected to the network via the Ethernet fieldbus interface.

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

Perform the following process steps to add additional Ethernet nodes to an existing network:

1. "Starting the Address Editor" (→ 📄 161)
2. "Searching Ethernet nodes" (→ 📄 162)
3. "Adjusting the IP address of the Ethernet nodes" (→ 📄 163)
4. Optional: "Setting the engineering PC appropriately for the network" (→ 📄 164)

Starting the Address Editor

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

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 detected Ethernet nodes.

Proceed as follows:

1. Start the Address Editor.

2. Select "Ethernet" as the interface for engineering PC and device. 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]).
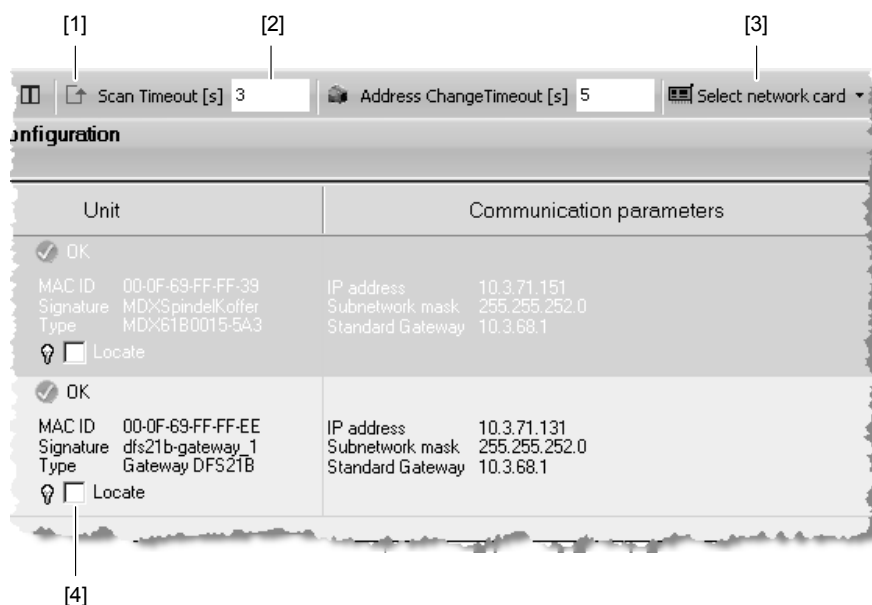
18014400023008779

⇨ The current addresses of all Ethernet nodes in the connected network will be displayed.

5. If no devices are detected during the network scan, check the wiring or if you have installed (activated) several network cards in your engineering PC.

6. Proceed as follows to search the devices 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.

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.

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Adjusting the IP address of the Ethernet nodes

Proceed as follows:

1. Start the Address Editor and scan the network.

2. Double-click in the area behind the setting [1] of the Ethernet node you want to change. You can change the following settings:

- IP address

- Subnet mask

- Standard gateway

- DHCP startup configuration (if supported by the device)
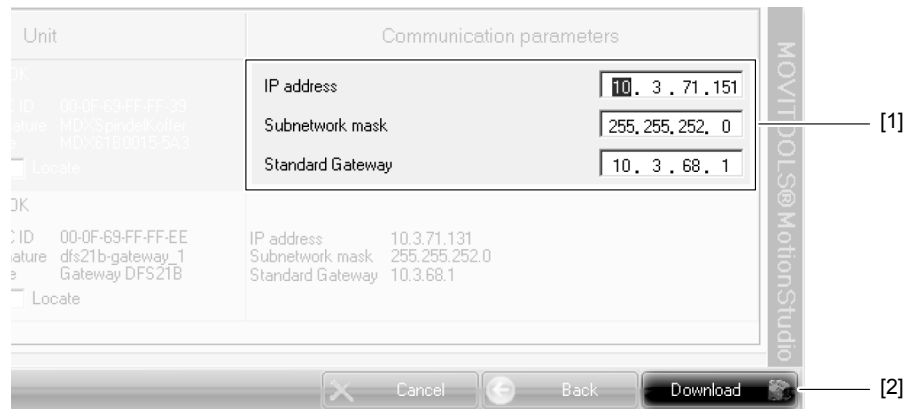
18014400041285899

3. Press the enter key to confirm your changes.

4. To transfer the address changes to the Ethernet node, click button [2].

5. For the changed settings to become effective, switch off the device and restart it afterwards.

Setting the engineering PC appropriately for the network

Proceed as follows:

1. Select the network settings in the Windows control panel.

2. Select the Internet protocol version 4 "TCP/IPv4" in the adapter properties.

3. Enter the IP address parameters of the engineering PC in the Internet protocol properties:

• For the subnet mask and standard gateway, enter the same IP address parameters that are used for the other network stations in this local network.

• Enter the IP address of the engineering PC depending on the subnet mask. Note that the IP address of the engineering PC is different from the IP address of all other network stations and thus is unique. The network address for all network stations must be identical and the station address must be different for all network stations.

Example: On delivery, all SEW-EURODRIVE devices have the following IP address parameters: Standard IP address "192.168.10.4", subnet mask "255.255.255.0". In this case, the engineering PC must not have the values "0", "4", "127" or "255" in the last address block of the IP address.

4. Confirm with [OK].

5. Click [OK] again to close the window.

13.5.3 Configuring the communication channel via Ethernet

The devices use the device protocol from SEW-EURODRIVE **SMLP** (**S**imple **M**OVI**L**INK® **P**rotocol) that is directly transferred via TCP/IP.

Proceed as follows:

1. Establish the communication channel via Ethernet .

2. Set the SMLP protocol parameters in the following window in the "SMLP settings" tab [1] (→ 🗎 166).
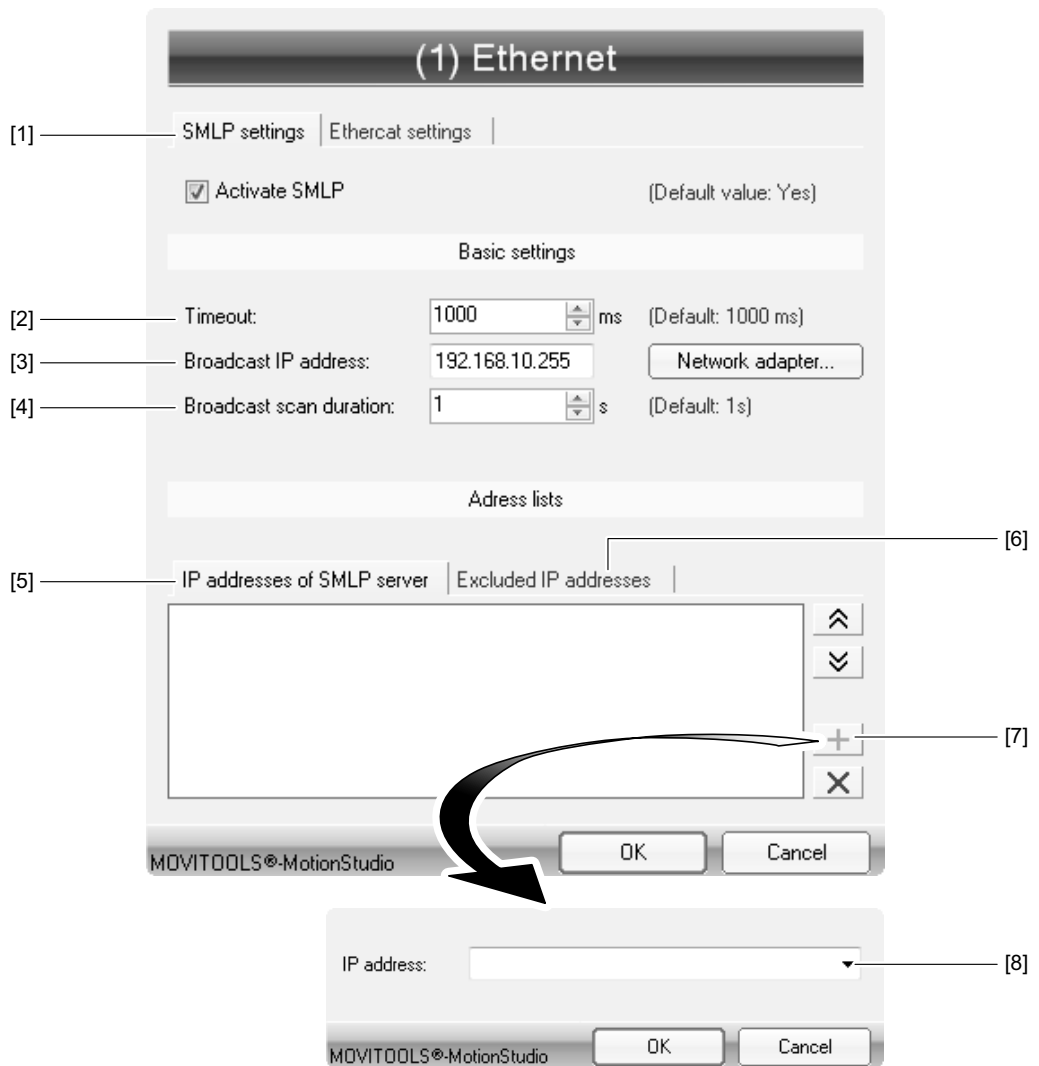
18328429835

[1] "SMLP settings" tab   [5] "IP addresses of SMLP server" tab
[2] Timeout   [6] "Excluded IP addresses" tab
[3] Broadcast IP address   [7] Add IP address
[4] Broadcast scan duration   [8] IP address edit box

13.5.4 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.	• 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 device scan is carried out.	In the default setting, the device scan only retrieves devices in the local network segment.
IP address SMLP server	IP address of the SMLP server or of other devices that are to be included in the device scan but are **outside** the local network segment.	• Enter the IP address of devices that are to be included in the device 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 devices that should **not** be included in the device scan.	Enter the IP address of devices that should **not** be included in the device scan. This can be devices that are not ready for communication (e.g. because they have not been started up yet).

13.5.5 Communication ports used

The following table shows the communication ports that are used by the MOVITOOLS® MotionStudio engineering software:

Application	Number 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 offline mode.
MOVIVISION® server	303 (TCP)	For communication with a PC with active MOVIVISION® server
Reserved	304	–
TCI server	305 (TCP)	For communication via TCI (**T**ool **C**alling **I**nterface 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

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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:

9007203240124683

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

Process data monitor

Switch to the "Process data monitor" tab.
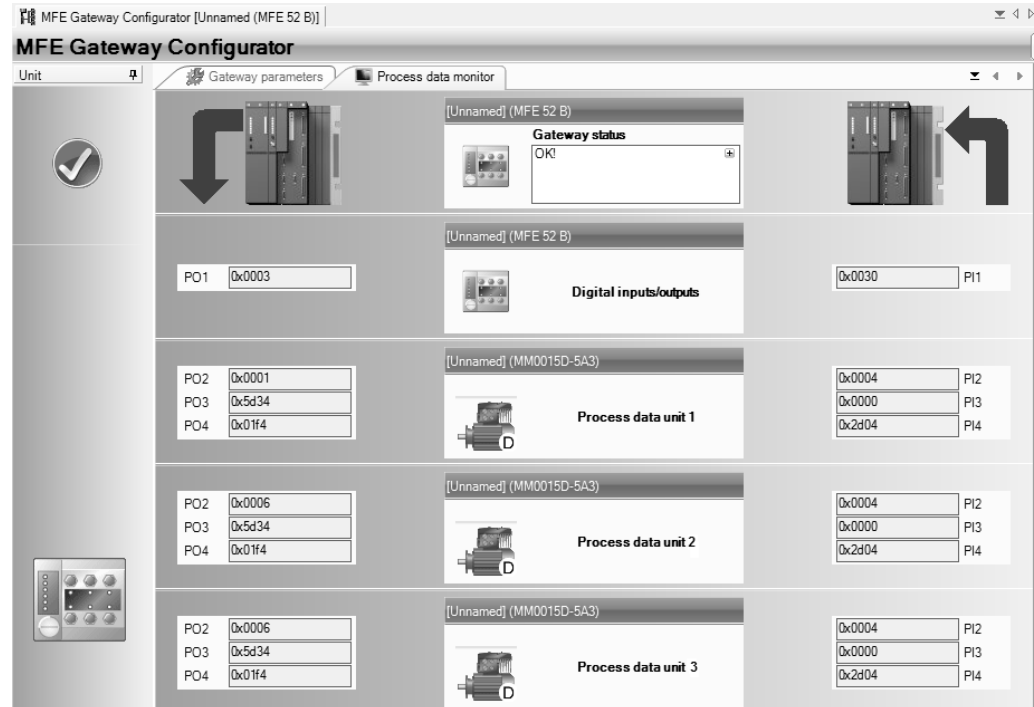
9007203240129419

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.

14.1.2 Error list for fieldbus interfaces

Code	Meaning	Response	Possible cause	Measure
25	**EEPROM**	Rapid stop of MOVIMOT® drives DO = 0	Error while accessing EEPROM	• Call up the factory setting "Delivery state", perform a reset and set parameters again (Caution: The IPOS program will be deleted). • 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 configured response monitoring.	• Check master communication routine.
37	**Watchdog error**	Communication to MOVIMOT® stopped DO = 0	Error while executing system software	• Contact SEW-EURODRIVE Service.
28	**Software error**			
45	**Initialization fault**		Error after self-test during reset	• Perform a reset. If the problem occurs again, contact SEW-EURODRIVE-Service.
97	**Copy data**		Error while copying data record. Data is not consistent.	• Try to copy the data again; reset the device to the factory setting "Delivery state" first.
111	**MOVIMOT® Timeout**	No response	One or several stations (MOVIMOT®) could not be addressed by the MQ.. within the timeout interval.	• Check voltage supply and RS485 wiring. • Check address of configured nodes.
112	**Periphery error**		e.g. overload of a digital output	• Analyze MFE status word and correct cause of error.

14.2 Device replacement

14.2.1 Notes on replacing devices

The MFE fieldbus interface allows for a quick device 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 Performing a device replacement of the MFE fieldbus 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 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.
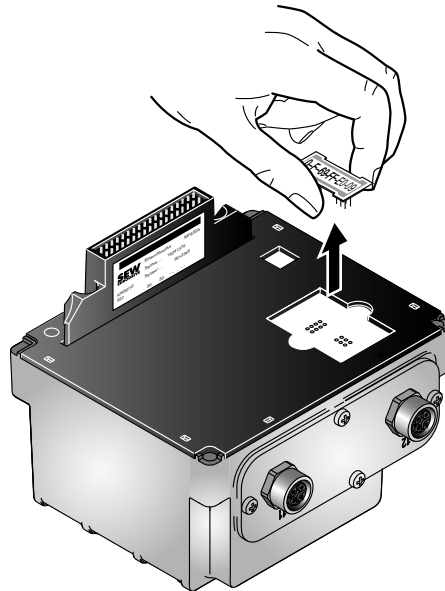
9007202804343051

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.

14.2.3 Notes on installation of the MOVIMOT® inverters at the MFZ29 field distributor

> **⚠ WARNING**
>
> Uncontrolled enabling of an unexpected drive by swapping the MOVIMOT® inverters.
>
> Severe or fatal injuries.
>
> - Install the MOVIMOT® inverters based on the set RS485 address according to the following figure:

18403922443

> **⚠ WARNING**
>
> Electric shock due to missing cover.
>
> Severe or fatal injuries.
>
> - If you install only 1 or 2 MOVIMOT® inverters at the field distributor, you have to cover all free slots with the delivered covers.
> - Make sure that there are no open slots.

> **NOTICE**
>
> Loss of the ensured degree of protection due to impermissible installation. If you connect only 1 MOVIMOT® inverter or only the fieldbus interface to the field distributor and then fasten it with the full tightening torque, the cover plate may be deformed. The field distributor may leak.
>
> Damage to the field distributor.
>
> - Plug **all** MOVIMOT® inverters and the fieldbus interface in the field distributor and then tighten the retaining screws only slightly.
> - Afterwards, tighten the retaining screws of the MOVIMOT® inverters and the fieldbus interface with 3 Nm in diametrically opposite sequence.

SEW EURODRIVE

14.3   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.

14.3.1   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

14.4   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 MFE52B PROFINET IO interface

15.1.1 Electrical specifications MFE52B PROFINET IO interface

MFE52B	
Part number	28238761
MFE electronics supply	$U = +24\ V\ +/-\ 25\%$, $I_E \leq 150\ mA$
Electrical isolation	• PROFINET IO connection isolated • Between logic and 24 V supply voltage • Between logic and periphery/drive via optocoupler
Bus connection technology	2 x M12 plug connector
Digital inputs (sensors)	PLC-compatible according to EN 61131-2 (digital inputs type 1), $Ri \approx 3.0\ k\Omega$, 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 according 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)

SEW EURODRIVE

15.1.2 PROFINET IO specification

PROFINET IO	
PROFINET IO protocol variant	PROFINET IO RT
Supported baud rates	100 Mbit/s (full duplex)
SEW-EURODRIVE ID	$010A_{hex}$
Device ID	6
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
GSD file name	`GSDML-V2.25-SEW-MFE52A-jjjjmmtt-hhmmss.xml`[1]
Bitmap file name	`SEW_MFE.bmp`
Module name for project planning	SEW-MFE
Supported data record	Index 47
Supported slot number	Recommended: 0
Profiles ID	0
Max. length	240 bytes

1) "jjjjmmtt" represents the date. "hhmmss" represents the time.

15.2 Technical data for field distributors

15.2.1 MF../Z.3 field distributor

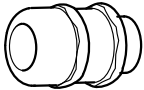| MF../Z.3.	
Max. permitted total current X1 (Terminals X1: line connection)	32 A
Max. permitted total current X21 (Terminals X21: 24 V power bus)	32 A
Max. permitted total current X20 (Terminals X20: 24 V distributor terminals)	12 A
Ambient temperature	-25 °C – 60 °C
Storage temperature	-25 °C – 85 °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®, DeviceNet™
Permitted motor cable length	max. 30 m (with SEW-EURODRIVE hybrid cable, type B) for cross section reduction compared to the supply system cable Note the line fusing.
Mass	Approx. 1.3 kg

15.2.2 MF../Z.6. field distributor

MF../Z.6.	
Max. permitted total current X1 (Terminals X1: line connection)	32 A
Max. permitted total current X21 (Terminals X21: 24 V power bus)	32 A
Max. permitted total current X20 (Terminals X20: 24 V distributor terminals)	12 A
Maintenance switch	Switch disconnector 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®, DeviceNet™
Permitted motor cable length	max. 30 m (with SEW-EURODRIVE hybrid cable, type B)

MF../Z.6.	
Mass	Approx. 3.6 kg

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

MF../MM..-503-00/Z.7.	
Max. permitted total current X1 (Terminals X1: line connection)	32 A
Max. permitted total current X21 (Terminals X21: 24 V power bus)	32 A
Max. permitted total current X20 (Terminals X20: 24 V distributor terminals)	12 A
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, MOVIMOT® inverter and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet/IP™, EtherCAT®, DeviceNet™
Permitted motor cable length	15 m (with SEW-EURODRIVE hybrid cable, type A)
Mass	Approx. 3.6 kg

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

MF../MM..-503-00/Z.8.	
Max. permitted total current X1 (Terminals X1: line connection)	32 A
Max. permitted total current X21 (Terminals X21: 24 V power bus)	32 A
Max. permitted total current X20 (Terminals X20: 24 V distributor terminals)	12 A
Maintenance switch	Switch disconnector 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, MOVIMOT® inverter and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFIBUS, PROFINET IO, EtherNet/IP™, EtherCAT®, DeviceNet™

MF../MM..-503-00/Z.8.	
Permitted motor cable length	15 m (with SEW-EURODRIVE hybrid cable, type A)
Mass	Size 1: approx. 5.2 kg
	Size 2: approx. 6.7 kg

15.2.5 MF../MM../Z.9. field distributor

MF../MM..-503-00/Z.9.	
Max. permitted total current X1 (Terminals X1: line connection)	25 A (with derating 1.3% per Kelvin to max. 55 °C)
Max. permitted total current X21 (Terminals X21: 24 V power bus)	8 A
Max. permitted terminal current X20 (Terminals X20: 24 V distributor terminals)	1.5 A
Maintenance switch (option)	Switch disconnector Type: ABB OT16ET3HS3ST1 Switching: black/red, triple lock
Max. permitted total power of all connected drives	3.3 kW with S1 operation 4.5 kW with S3 operation (cyclic duration factor max. 75%)
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, cover plate, MOVIMOT® inverter and motor connection cable attached and fastened, all plug connections sealed)
Interface	PROFINET IO
Permitted motor cable length	3 × 10 m (with SEW-EURODRIVE hybrid cable, type A)
Mass	Approx. 10 kg

Accessories

Screw fittings

Designation	Image	Content	Size	Part number
1 set **Accessories screw fitting EMV MFZ.9** (EMC screw fittings nickel-plated brass) For MF../MM../Z.9. field distributors		2 pieces	M20 x 1.5	28240472
		5 pieces	M25 x 1.5	

16   Declaration of conformity

EU Declaration of Conformity

Translation of the original text

SEW EURODRIVE

900030310/EN

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the following products

Frequency inverters of the product series	**MOVIMOT® MM..D-..3-..** **MOVIMOT® .../MM../...**

are in conformity with

Machinery Directive	**2006/42/EC** **(L 157, 09.06.2006, 24-86)**

This includes the fulfillment of the protection targets for "electrical power supply" in accordance with annex I No. 1.5.1 according to the Low Voltage Directive 73/23/EEC -- Note: 2006/95/EC (until 19 Apr 2016) and 2014/35/EU (as of 20 Apr 2016) are currently valid.

EMC Directive	**2004/108/EC (valid until April 19, 2016)**	**4)**
	2014/30/EU (valid as of April 20, 2016)	**4)**
	(L 96, 29.03.2014, 79-106)	
Applied harmonized standards:	**EN ISO 13849-1:2008/AC:2009** **EN 61800-5-2:2007** **EN 61800-5-1:2007** **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	**19.04.2016**	*Johann Soder*
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

EU Declaration of Conformity

SEW
EURODRIVE

Translation of the original text

900040310/EN

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the following products

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.** **MF../Z.9.**

are in conformity with

Low Voltage Directive	**2014/35/EU** **(L 96, 29.03.2014, 357-374)**	
EMC Directive	**2014/30/EU** **(L 96, 29.03.2014, 79-106)**	**4)**
Applied harmonized standards:	**EN 50178:1997** **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	**08.12.2016**		
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

17   Address list

Algeria			
Sales	Algiers	REDUCOM Sarl 16, rue des Frères Zaghnoune 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 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at

Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com

Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE RybalkoStr. 26 220033 Minsk	Tel. +375 17 298 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 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 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-IG@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 filial.sc@sew.com.br

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

Cameroon			
Sales	Douala	SEW-EURODRIVE S.A.R.L. Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 02 10 Fax +237 233 39 02 10 info@sew-eurodrive-cm

Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 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 Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

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

SEW-EURODRIVE

Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co

Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr

Czech Republic			
Assembly Sales Service	Hostivice	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	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 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 75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 http://www.alas-kuul.ee veiko.soots@alas-kuul.ee

Finland			
Assembly Sales Service	Hollola	SEW-EURODRIVE OY Vesimäentie 4 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Service	Hollola	SEW-EURODRIVE OY Keskikankaantie 21 15860 Hollola	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production Assembly	Karkkila	SEW Industrial Gears Oy Santasalonkatu 6, PL 8 03620 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 http://www.sew-eurodrive.fi sew@sew.fi

France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production	Forbach	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 57604 Forbach Cedex	Tel. +33 3 87 29 38 00
	Brumath	SEW-USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan – B. P. 182 33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09

France			
	Lyon	SEW-USOCOME 75 rue Antoine Condorcet 38090 Vaulx-Milieu	Tel. +33 4 74 99 60 00 Fax +33 4 74 99 60 15
	Nantes	SEW-USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 Fax +33 2 40 78 42 20
	Paris	SEW-USOCOME Zone industrielle 2 rue Denis Papin 77390 Verneuil l'Étang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88

Gabon			
Sales	Libreville	SEW-EURODRIVE SARL 183, Rue 5.033.C, Lalala à droite P.O. Box 15682 Libreville	Tel. +241 03 28 81 55 +241 06 54 81 33 http://www.sew-eurodrive.cm sew@sew-eurodrive.cm

Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 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 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf 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 76684 Östringen	Tel. +49 7253 9254-0 Fax +49 7253 9254-90 oestringen@sew-eurodrive.de
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
Drive Technology Center	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 dtc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 dtc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 dtc-west@sew-eurodrive.de
Drive Center	Berlin	SEW-EURODRIVE GmbH & Co KG Alexander-Meißner-Straße 44 12526 Berlin	Tel. +49 306331131-30 Fax +49 306331131-36 dc-berlin@sew-eurodrive.de
	Ludwigshafen	SEW-EURODRIVE GmbH & Co KG c/o BASF SE Gebäude W130 Raum 101 67056 Ludwigshafen	Tel. +49 7251 75 3759 Fax +49 7251 75 503759 dc-ludwigshafen@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de

Germany			
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357

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

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

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

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

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

Indonesia			
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com

Indonesia			
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

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

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

Italy			
Assembly Sales Service	Milan	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 20020 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it

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

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

Kazakhstan			
Sales	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.kz sew@sew-eurodrive.kz
	Tashkent	SEW-EURODRIVE LLP Representative office in Uzbekistan 96A, Sharaf Rashidov street, Tashkent, 100084	Tel. +998 71 2359411 Fax +998 71 2359412 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Narny zam street 62 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn

Kenya			
Sales	Nairobi	SEW-EURODRIVE Pty Ltd Transnational Plaza, 5th Floor Mama Ngina Street P.O. Box 8998-00100 Nairobi	Tel. +254 791 398840 http://www.sew-eurodrive.co.tz info@sew.co.tz

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

Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com
Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt
Luxembourg			
representation: Belgium			
Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk
Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexiko			
Assembly Sales Service	Querétaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Querétaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Narny zam street 62 Union building, Suite A-403-1 Sukhbaatar district, Ulaanbaatar 14230	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn
Morocco			
Sales Service	Bouskoura	SEW-EURODRIVE Morocco Parc Industriel CFCIM, Lot 55 and 59 Bouskoura	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma
Namibia			
Sales	Swakopmund	DB Mining & Industrial Services Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com
Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd Plot 296A, Adeyemo Akapo Str. Omole GRA Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com bolaji.adekunle@greenpegltd.com
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk
Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L De la Victoria 112, Esquina nueva Asunción Departamento Central Fernando de la Mora, Barrio Bernardino	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py
Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com
Poland			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ЗАО «СЕВ-ЕВРОДРАЙФ» а. я. 36 195220 Санкт-Петербург	Tel. +7 812 3332522 / +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Sambia			
representation: South Africa			

Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn

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

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

Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava	Tel.+421 2 33595 202, 217, 201 Fax +421 2 33595 200 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk
	Košice	SEW-Eurodrive SK s.r.o. Slovenská ulica 26 040 01 Košice	Tel. +421 55 671 2245 Fax +421 55 671 2254 Mobile +421 907 671 976 sew@sew-eurodrive.sk

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

South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE KOREA CO., LTD. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com

South Korea			
	Busan	SEW-EURODRIVE KOREA CO., LTD. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230

Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

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

Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd PO Box 2960 Manzini M200	Tel. +268 2 518 6343 Fax +268 2 518 5033 engineering@cgtrading.co.sz

Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se

Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch

Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw

Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz

Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com

Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRİVE Hareket Sistemleri San. Ve TIC. Ltd. Sti Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
Assembly Sales Service	Dnipropetrovsk	OOO «СЕВ-Евродрайв» ул. Рабочая, 23-В, офис 409 49008 Днепропетровск	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy

USA			
Production Assembly Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	IGLogistics@seweurodrive.com
	Additional addresses for service provided on request!		

Uzbekistan			
Technical Office	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

Vietnam			
Sales	Ho Chi Minh City	Nam Trung Co., Ltd Huế - South Vietnam / Construction Materials 250 Binh Duong Avenue, Thu Dau Mot Town, Binh Duong Province HCM office: 91 Tran Minh Quyen Street District 10, Ho Chi Minh City	Tel. +84 8 8301026 Fax +84 8 8392223 khanh-nguyen@namtrung.com.vn http://www.namtrung.com.vn
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

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