



SEW
EURODRIVE

Operating Instructions



Decentralized Drive Control
MOVIFIT® FC



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1 General information

1.1 How to use this documentation

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

The documentation must be provided in a legible format. Ensure that persons responsible for the machinery and its operation as well as persons who work on the unit 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, please contact SEW-EURODRIVE.

1.2 Structure of the warning instructions

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for warning instructions.

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

1.2.2 Structure of section-specific warning instructions

Section-specific warning instructions do not apply to a specific action, but to several actions pertaining to the one area. The hazard symbols used either indicate a general hazard or a specific hazard.

Section-specific warning instructions are structured as follows:



SIGNAL WORD







Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent hazard.

Meaning of the hazard symbols

The hazard symbols in the warning instructions 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

1.2.3 Structure of embedded warning instructions

Embedded warning instructions are included in the instructions directly just before the description of the dangerous action.

Embedded warning instructions are structured as follows:

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

1.3 Rights to claim under limited warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the instructions in the documentation. Read the documentation before you start working with the product.

1.4 Exclusion of liability

You must comply with the information contained in this documentation to ensure safe operation and 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, any liability for defects is excluded.

1.5 Other applicable documentation

Note also the following documentation:

- "DR.71 – 315 AC Motors" operating instructions
- and fieldbus interface manual
 - e.g. "MOVIFIT® Function Level "Classic" .."
 - e.g. "MOVIFIT® Function Level "Technology" .."
- and functional safety manual
 - e.g. "MOVIFIT® MC/FC – Functional Safety"
 - e.g. "MOVIFIT® MC/FC – Functional Safety with S12 Safety Option" (only for MOVIFIT® with S12 safety option)

You can download or order these publications on the Internet (<http://www.sew-eurodrive.com> under the heading "Documentation").

1.6 Product names and trademarks

All product names included in this documentation are trademarks or registered trademarks of the respective titleholders.

1.7 Copyright notice

© 2015 SEW-EURODRIVE. All rights reserved.

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

2 Safety notes

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

2.1 Preliminary information

The following safety notes are principally concerned with the use of MOVIFIT® units. If you use other SEW components, also refer to the safety notes for these particular components in the corresponding documentation.

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

2.2 General information

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

During operation, the MOVIFIT® unit can have live or uninsulated parts, as well as hot surfaces according to the degree of protection.

Removing required covers without authorization, improper use or incorrect installation and operation may result in severe injury to persons, or damage to machinery. Refer to the documentation for more information.

2.3 Target group

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

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

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

2.4 Designated use

MOVIFIT® is a component intended for installation in electrical systems or machines.

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

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

MOVIFIT® meets the requirements stipulated in the low voltage directive 2006/95/EC. The standards contained in the declaration of conformity are used for MOVIFIT®.

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

2.4.1 Safety functions

MOVIFIT® may not perform any safety functions unless they are described and expressly approved.

For safety applications, ensure that the information in the following publications is observed.

- For MOVIFIT® with STO (with or without S11 PROFIsafe option):
"MOVIFIT® MC/FC – Functional Safety" manual
- For MOVIFIT® with S12 safety option:
"MOVIFIT® MC/FC – Functional Safety with S12 Safety Option" manual

Use only those components in safety applications that were explicitly designed and delivered for this purpose by SEW-EURODRIVE. Safety-related components are marked with the FS logo for functional safety.

2.4.2 Hoist applications

Hoist applications are only permitted with MOVIFIT® FC if a hoist startup has been performed.

Do not use MOVIFIT® FC as a safety device in hoist applications. Use monitoring systems or mechanical protection devices as safety equipment to avoid possible damage to property or injury to people.

2.5 Transportation, storage

Observe the notes on transportation, storage and proper handling. Observe the climatic conditions as stated in the "Technical Data" sections.

2.6 Installation

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

Protect MOVIFIT® from excessive strain.

The following applications are prohibited unless explicitly permitted:

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

2.7 Electrical connection

Observe applicable national accident prevention guidelines (e.g. BGV A3) when working on a live MOVIFIT®.

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

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

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204-1 or EN 61800-5-1).

2.8 Safe disconnection

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

2.9 Operation

Systems in which MOVIFIT® is installed must, if necessary, be equipped with additional monitoring and protection devices according to applicable safety regulations; e.g., the German law governing technical equipment (Gesetz über technische Arbeitsmittel), accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased hazard potential. Changes to MOVIFIT® using the operating software are permitted.

Do not touch live components or power connections immediately after disconnecting the MOVIFIT® from the supply voltage because there may still be some charged capacitors. Wait at least for 1 minute after having switched off the supply voltage.

As soon as supply voltage is present at the MOVIFIT®, the ABOX must be closed i.e., the MOVIFIT® EBOX and any hybrid cable connector must be connected and screwed on.

Do not disconnect the EBOX of the MOVIFIT® or any power plug connectors during operation. Doing so can lead to dangerous electric arcs forming, which can cause irreparable damage to the unit (fire risk, irreparable contacts).

Important: The MOVIFIT® maintenance switch disconnects only the integrated frequency inverter from the grid. The terminals of the MOVIFIT® unit are still connected to the line voltage after the maintenance switch is activated.

The unit may still be live and connected to the supply system, even if the operation LEDs and other display elements are no longer illuminated.

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

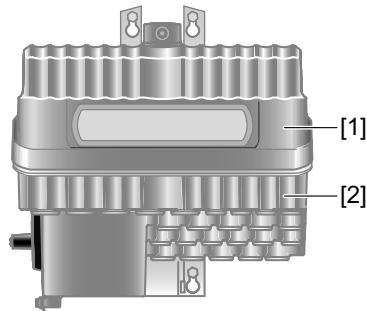
Caution: Risk of burns: The surface temperature of the MOVIFIT® and the external options, e.g. the braking resistor heat sink, can exceed 60 °C during operation.

3 Unit structure

3.1 MOVIFIT® FC

MOVIFIT® FC is a decentralized drive controller with integrated frequency inverter that controls a maximum of up to two gearmotors.

The following figure shows a MOVIFIT® FC unit in size 1 in standard design:



4285969931

- [1] EBOX (active electronics unit)
- [2] ABOX (passive connection unit)

3.1.1 MOVIFIT® FC unit characteristics

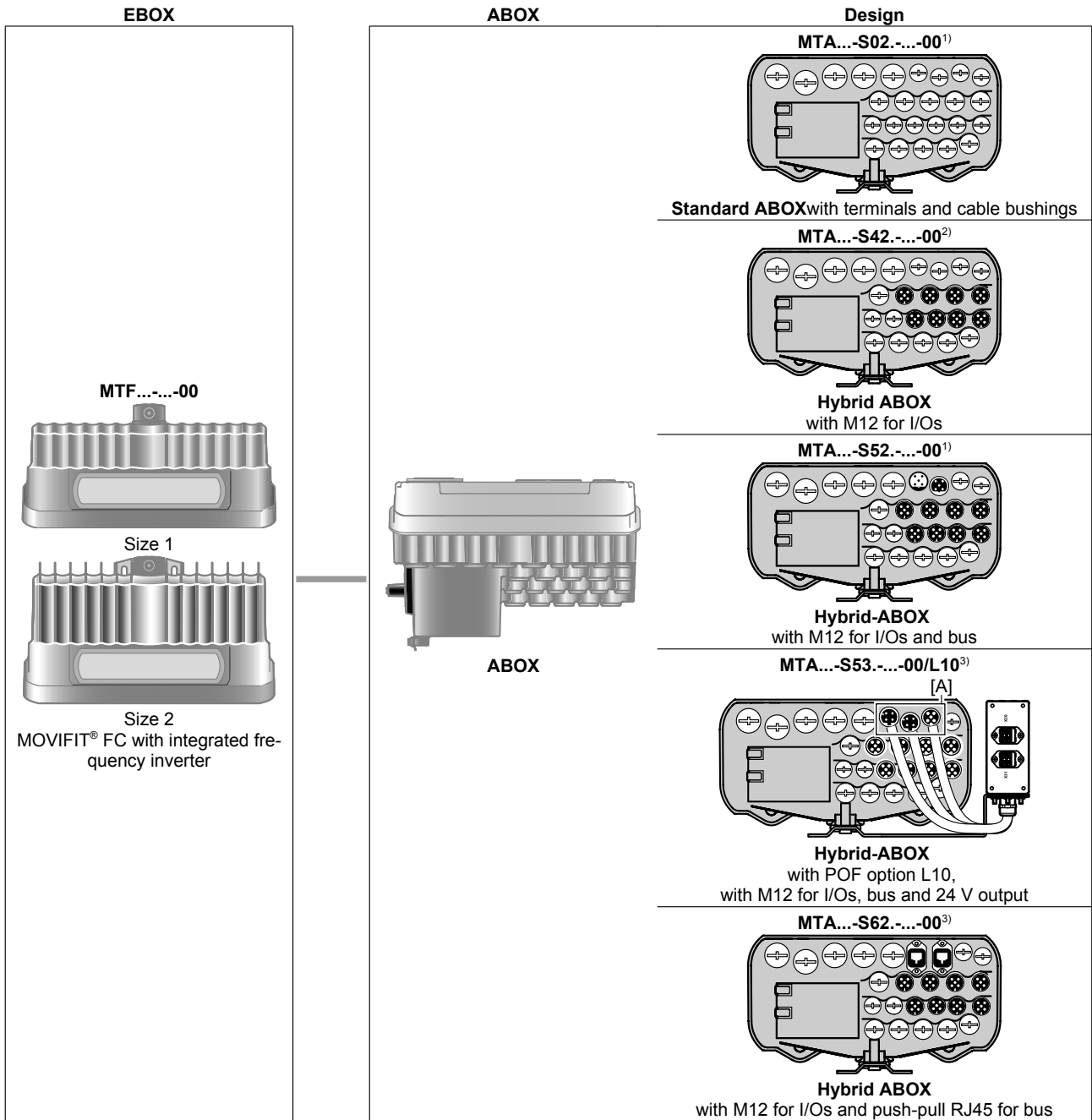
- Parameterizable open loop frequency inverter
- Power range from 0.37 to 4 kW (in 2 sizes)
- Integrated energy distribution
- Integrated brake management
- Optional braking resistor
- Optional maintenance switch
- Interface fieldbus interface

PROFIBUS	EtherNet/IP™
PROFINET IO	Modbus/TCP
PROFINET POF	DeviceNet™

- Optional design without fieldbus interface as SBus slave
- Digital inputs/outputs
- CAN/SBus interface
- "Safe torque off" STO function
- S11 PROFIsafe option or S11 safety option with safety-related inputs and outputs
- Simple and fast parameterization via DIP switches (Easy mode)
- Extended parameterization via fieldbus or diagnostic interface (Expert mode)

3.2 Overview – Connection configuration

The following figures show the MOVIFIT® FC designs that are described in these operating instructions:



[A] The 3 M12 plug connectors (bus + 24 V) for connecting the POF option L10 are assigned at the factory.

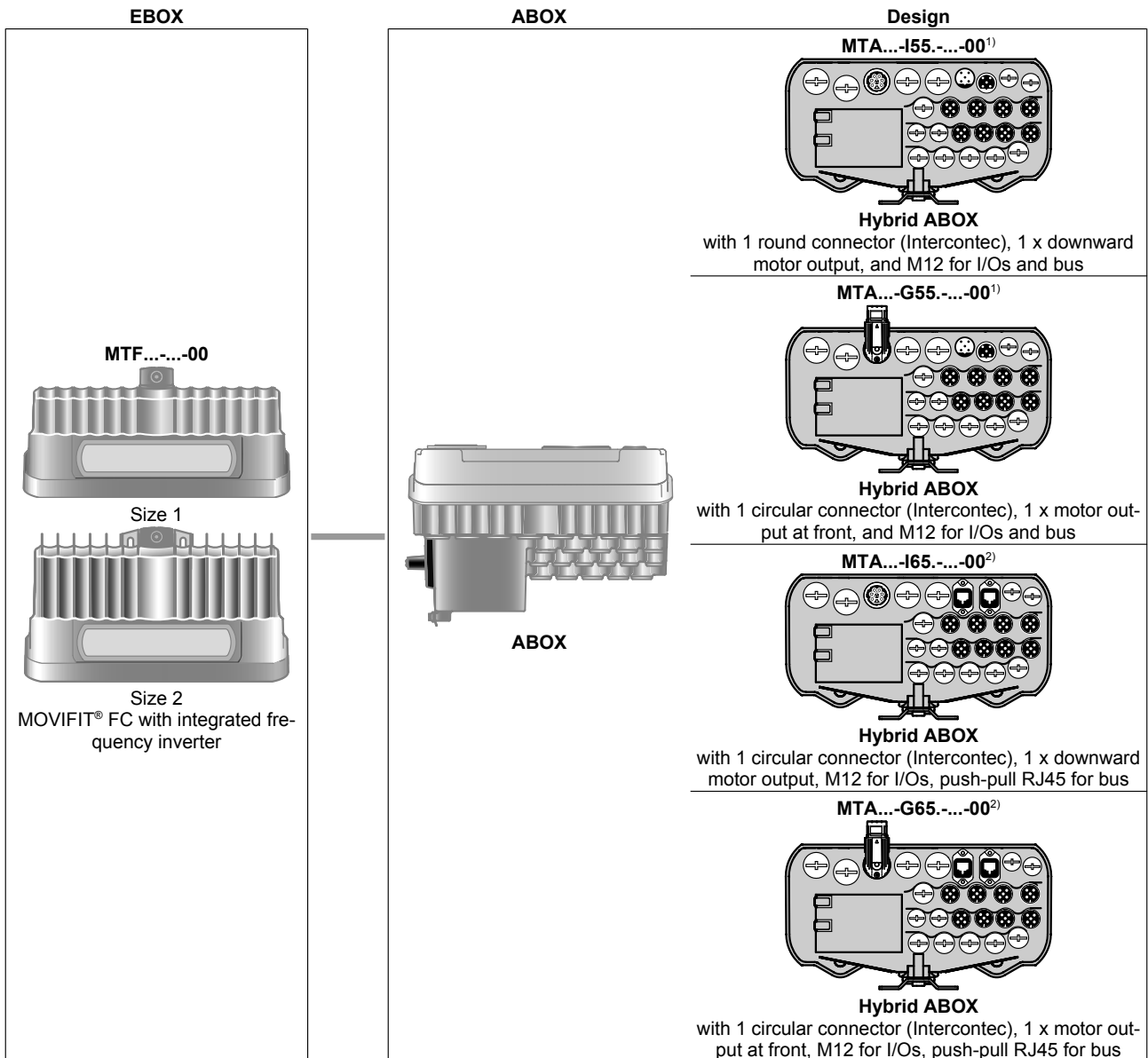
1) In connection with DeviceNet™: Micro-style connector for DeviceNet™ connection

2) Not available in connection with DeviceNet™

3) Not available in connection with DeviceNet™ and PROFIBUS

More designs are listed on the next page.

Designs with circular connector (Intercontec) for connecting the motor:



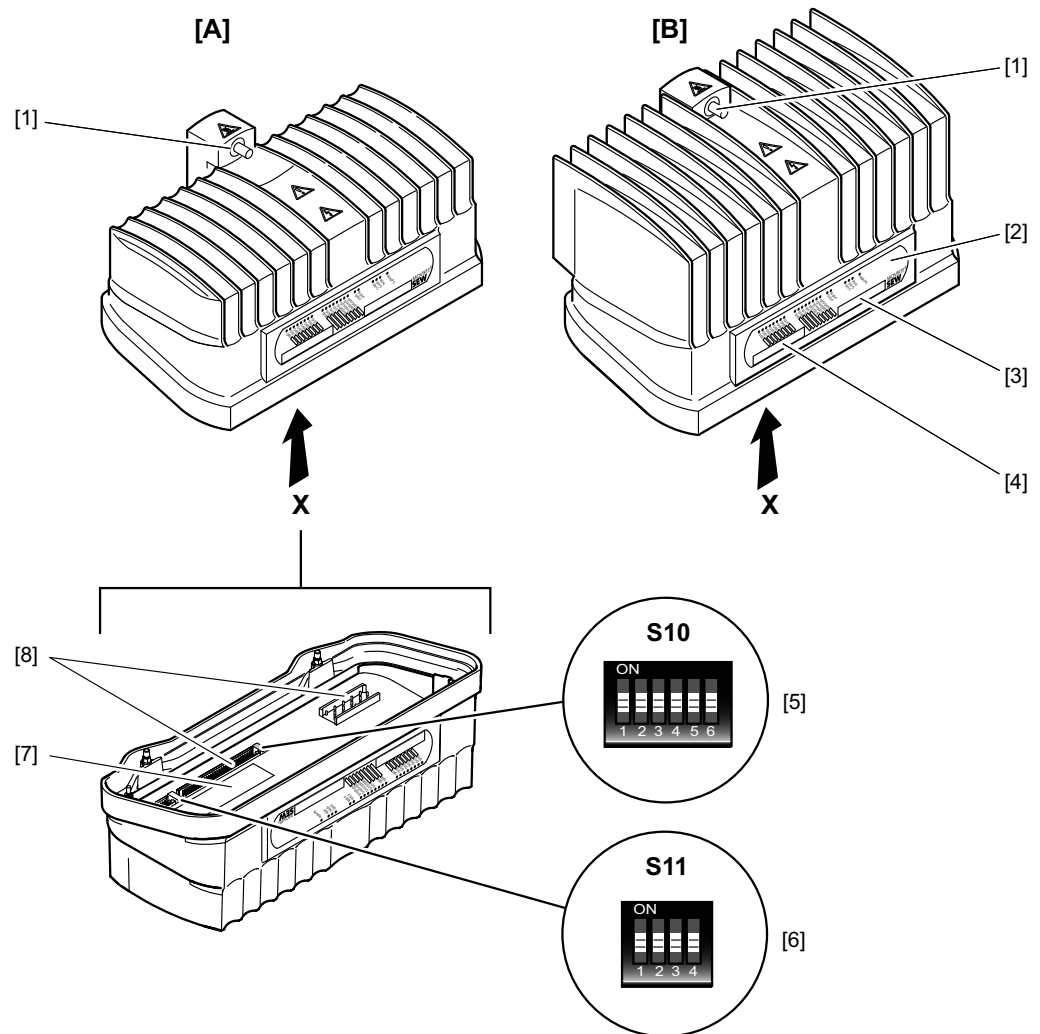
1) In connection with DeviceNet™: Micro-style connector for DeviceNet™ connection

2) Not available in connection with DeviceNet™ and PROFIBUS

3.3 EBOX (active electronics unit)

The MOVIFIT® FC EBOX is a closed electronics unit with a communication interface, digital inputs/outputs (I/Os) and a frequency inverter:

EBOX "MTF...-.....-00"



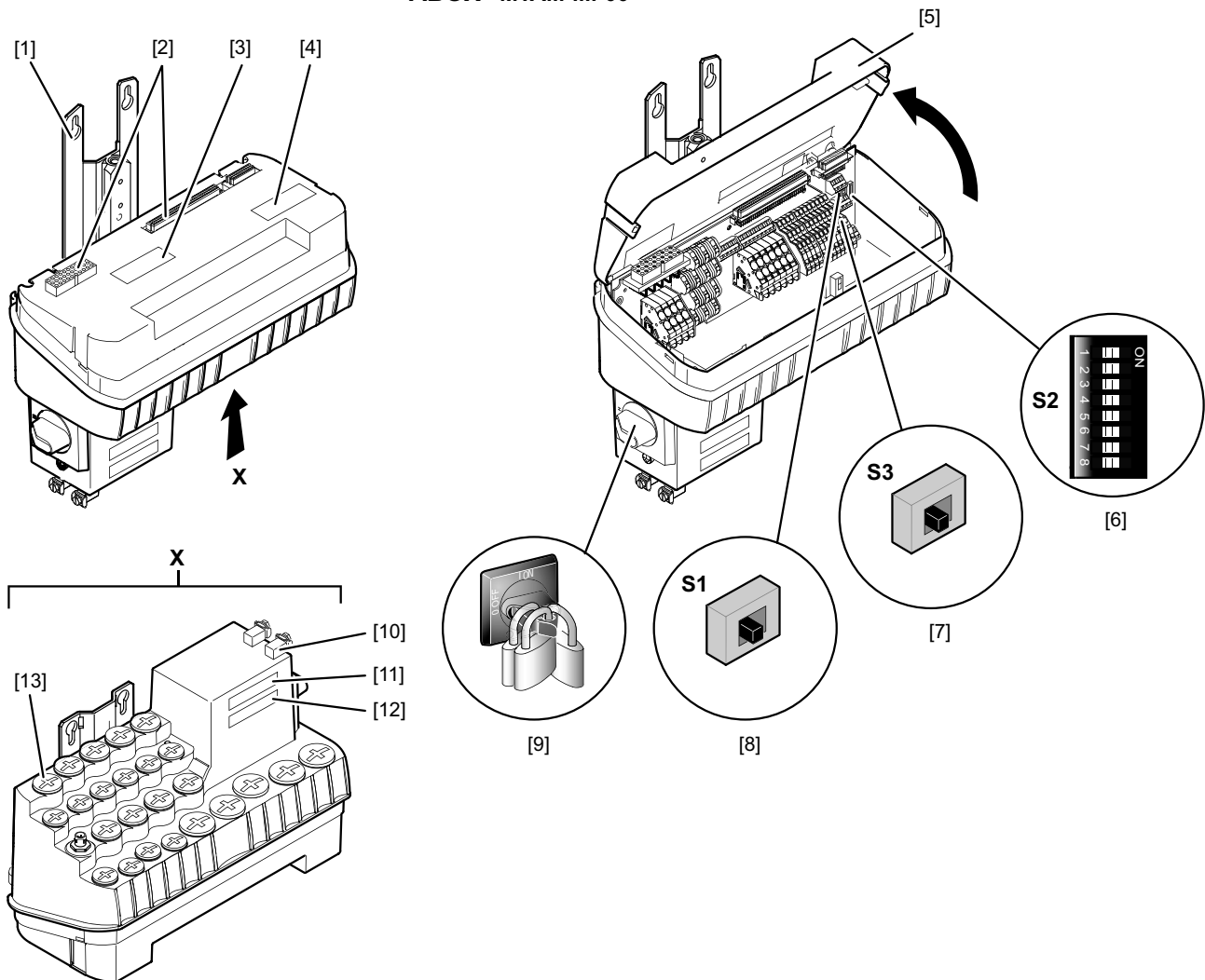
18014399322004747

- [A] Size 1
- [B] Size 2
- [1] Central opening/closing mechanism
- [2] Operation LEDs for I/Os (can be labeled), communication, and unit status
- [3] Outer nameplate of the EBOX
- [4] Unit identification of the EBOX
- [5] DIP switch S10 for unit functions
- [6] DIP switch S11 for IP parameters (only for PROFINET IO, EtherNet/IP™, Modbus/TCP)
- [7] Inner nameplate of the EBOX
- [8] Connection to ABOX (connection box)

3.4 ABOX (passive connection unit)

The following figure depicts examples of the MOVIFIT® ABOX:

ABOX "MTA...-...-00"



18014399322006411

- [1] Mounting rail
- [2] Connection to EBOX
- [3] Nameplate of complete unit
- [4] Inner nameplate of the ABOX
- [5] Protection cover
- [6] DIP switch S2 for bus address (PROFIBUS and DeviceNet™ design only)
- [7] DIP switches S3 for bus termination SBus
- [8] DIP switch S1 for bus termination
- [9] Maintenance switch (triple lock)
- [10] Grounding screws
- [11] Unit identification of the ABOX
- [12] Outer nameplate of the ABOX
- [13] Diagnostic interface underneath the screw plug

3.5 Hygienic^{plus} design (optional)

3.5.1 Properties

The Hygienic^{plus} design has the following characteristics:

- IP66 in accordance with EN 60529 and IP69K in accordance with DIN 40050-9 (MOVIFIT[®] housing closed and all cable bushings sealed according to the relevant degree of protection)
- Easy-to-clean housing (self-draining design)
- Surface with non-stick properties
- High impact resistance of the surface against mechanical damage
- Compatibility with cleansing agents having the following properties:
 - Alkaline
 - Acidic
 - Disinfectant

Do not mix cleaning and disinfecting agents under any circumstances!

Never mix acids and chloralkalis, as poisonous chlorine gas will result.

Strictly observe the safety instructions of the cleaning agent manufacturer.

- Resistant to temperature fluctuations
- Resistant to condensation due to coated connection boards

INFORMATION

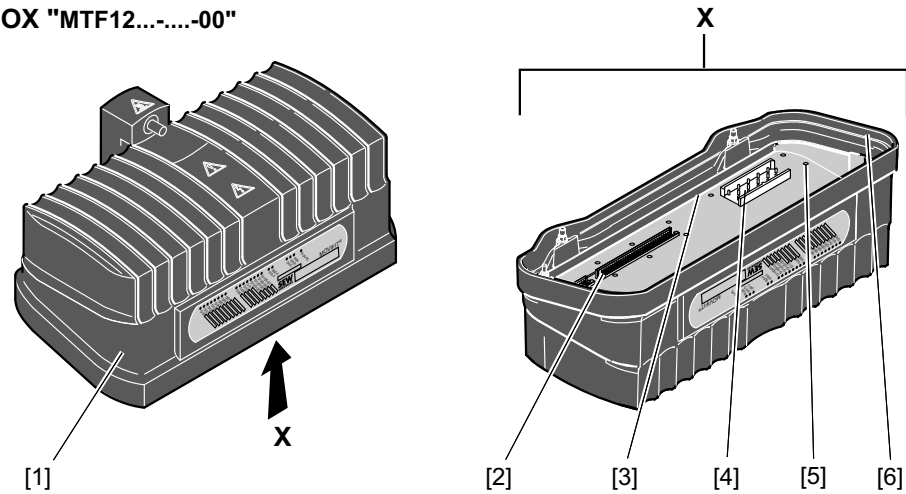


The Hygienic^{plus} design is only available in connection with the standard ABOX.

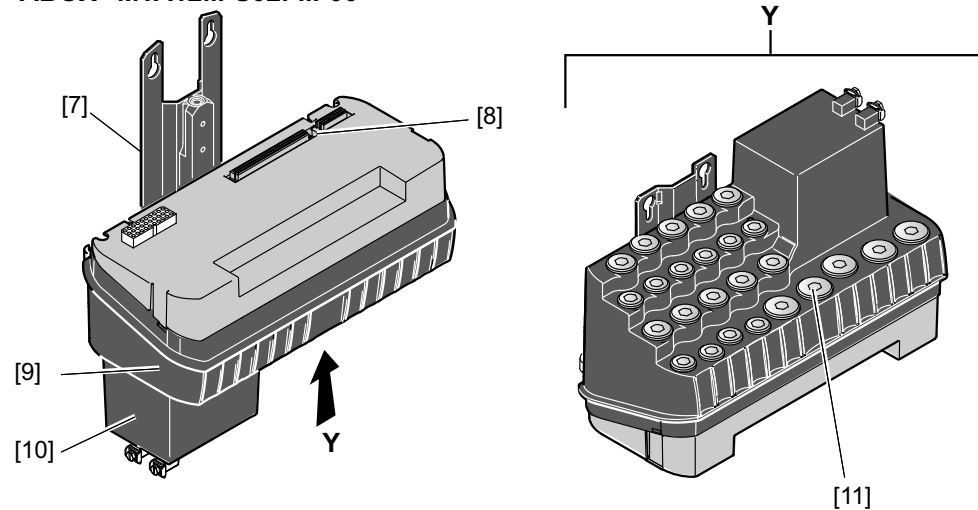
For other properties of the Hygienic^{plus} design, refer to the next page and to chapter "Technical Data".

The following figure depicts the additional features of MOVIFIT® units in the optional Hygienic^{plus} design:

EBOX "MTF12...-....-00"



ABOX "MTA12...-S02.-...-00"



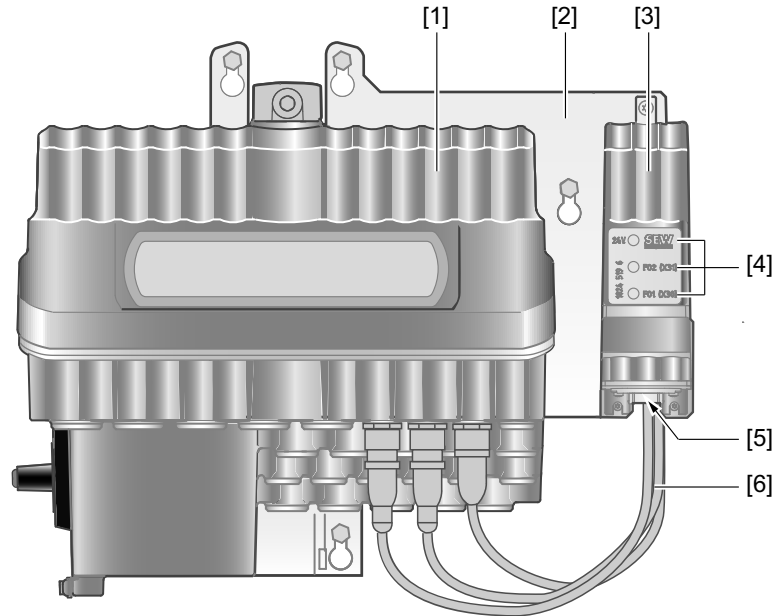
9007200067232139

- [1] EBOX with special surface treatment (available only in one color)
- [2] Signal plug connector with gasket
- [3] Gasket between ABOX and cover plate
- [4] Power plug connector with gasket
- [5] Screws with thread sealant
- [6] Replaceable profile seal
- [7] Mounting rail with surface coating (only available in one color)
- [8] Connection board with increased resistance to moisture condensation (coated)
- [9] ABOX with special surface treatment (available only in one color)
- [10] In connection with the Hygienic^{plus} design: Generally without maintenance switch
- [11] Stainless steel screw plug (available as an option)

3.6 MOVIFIT® with L10 PROFINET interface SCRJ/POF

3.6.1 Unit structure

The following figure shows MOVIFIT® with the L10 PROFINET interface SCRJ/POF (POF option L10):



9007202682186763

- [1] MOVIFIT®
- [2] Special mounting rail
- [3] POF option L10 (POF = **P**olymer **O**ptical **F**iber)
- [4] Status LEDs
- [5] X30/X31 connections for PROFINET POF
- [6] Electrical connections between the POF option L10 and the ABOX

These connections are installed at the factory.

3.6.2 Functional description

The POF option L10 converts the optical signals that are transmitted via polymer optical fiber cables (POF) into electrical signals with PROFINET IO protocol and vice versa.

The POF option L10 makes it possible to connect the ABOX to the optical PROFINET IO.

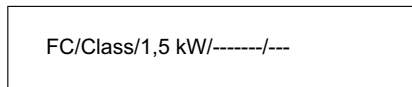
3.7 MOVIFIT® FC type designation

3.7.1 EBOX

EBOX nameplates

EBOX unit identification

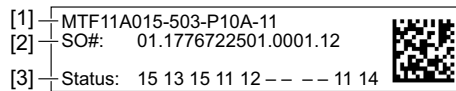
The following figure shows an example of the EBOX unit identification of MOVIFIT® FC:



13324613771

Outer nameplate EBOX

The following figure shows an example of an **outer** nameplate of the EBOX of MOVIFIT® FC:

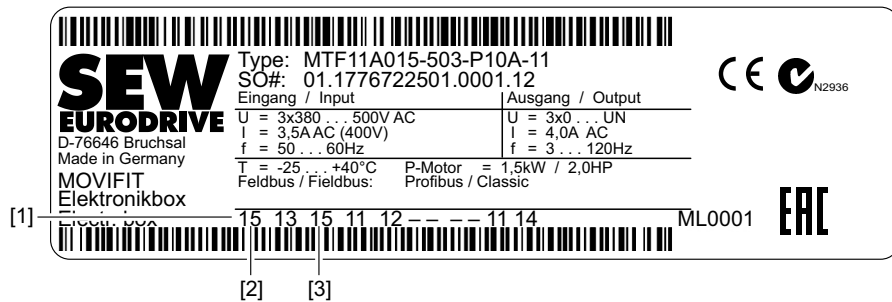


9007203920804107

- [1] EBOX type designation
- [2] Serial number
- [3] Status field

Inner nameplate EBOX

The following figure shows an example of an **inner** nameplate of the EBOX of MOVIFIT® FC:



27021598576802315

- [1] EBOX status field
- [2] Firmware status control unit
- [3] Firmware status power section

EBOX type designation

The following table shows an example of the type designation of the MOVIFIT® MTF11A015-503-P10A -00/S11 EBOX:

MT	Unit series	MT = MOVIFIT®
F	Unit type	F = MOVIFIT® FC (frequency inverters)
11	Series	11 = Standard (IP65) 12 = Hygienic ^{plus} (IP69K)
A	Version A	
015	Unit power	003 = 0.37 kW 005 = 0.55 kW 007 = 0.75 kW 011 = 1.1 kW 015 = 1.5 kW 022 = 2.2 kW 030 = 3.0 kW 040 = 4.0 kW
-		
50	Connection voltage	50 = AC 380 – 500 V
3	Connection type	3 = 3-phase
-		
P1	Fieldbus	P1 = PROFIBUS E2 = PROFINET IO D1 = DeviceNet™ E3 = EtherNet/IP™, Modbus/TCP ¹⁾ Z1 = SBus slave
0	Function level	0 = Classic 1 = Technology
A	Version A	
-		

00	EBOX design	<p>01 = DAS motor 400 V, 50 Hz</p> <p>10 = DRS.. motor 400 V, 50 Hz</p> <p>11 = DRE.. motor 400 V, 50 Hz</p> <p>12 = DRS.. motor 460 V, 60 Hz</p> <p>13 = DRE.. motor 460 V, 60 Hz</p> <p>14 = DRS.. DRE.. motor 380 V, 60 Hz</p> <p>15 = DRS.. DRE.. motor 50 – 60 Hz</p> <p>16 = DRP.. motor 400 V, 50 Hz</p> <p>17 = DRP.. motor 460 V, 60 Hz</p> <p>18 = DRN.. motor 400 V, 50 Hz</p> <p>19 = DRN.. motor 460 V, 60 Hz</p> <p>20 = DRN.. motor 50 – 60 Hz</p>
/		
S11	EBOX option	<p>S11 = PROFIsafe option S11²⁾</p> <p>S12A = S12A safety option</p> <p>S12B = S12B safety option</p>

1) Available only in connection with "Technology" function level

2) Only available in connection with PROFIBUS or PROFINET IO

3

Unit structure

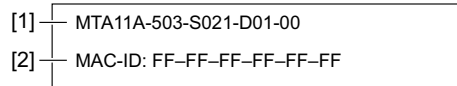
MOVIFIT® FC type designation

3.7.2 ABOX

ABOX nameplates

ABOX unit identification

The following figure shows an example of the ABOX unit identification of MOVIFIT® FC:

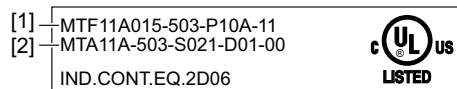


13458059019

- [1] ABOX type designation
- [2] MAC ID of the fieldbus interface

Outer nameplate ABOX

The following figure shows an example of an **outer** nameplate of the ABOX of MOVIFIT® FC:

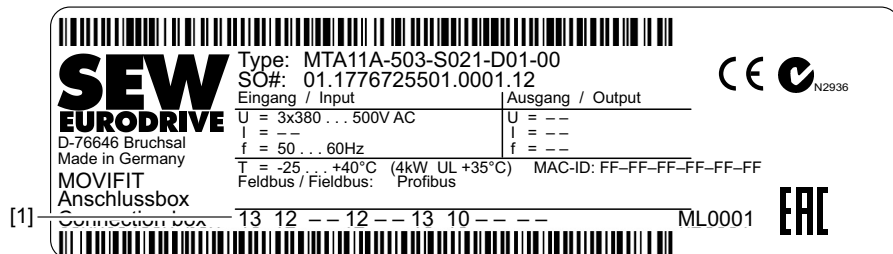


13458448395

- [1] EBOX type designation
- [2] ABOX type designation

Inner nameplate ABOX

The following figure shows an example of an **inner** nameplate of the ABOX of MOVIFIT® FC:

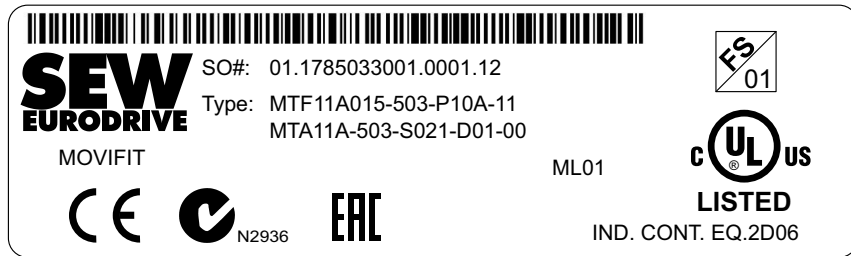


36028797831544971

- [1] ABOX status field

Nameplate of the complete unit

The following figure provides an example of a nameplate of the complete MOVIFIT® FC unit (EBOX and ABOX):



9007206145755019

This nameplate is only available if the EBOX and the ABOX have been ordered as one unit.

INFORMATION



Only components marked with the FS logo for functional safety may be installed in safety applications. For combinations of units without FS logo (consisting of individual EBOX and ABOX), the safety function must be described in the documentation.

FS logo description

The FS logo can be displayed on the complete unit nameplate of MOVIFIT® in the following designs:



MOVIFIT® with STO (with or without S11 PROFIsafe option)

For more information about MOVIFIT® with **FS01** logo, refer to the "MOVIFIT® MC / FC – Functional Safety" manual.

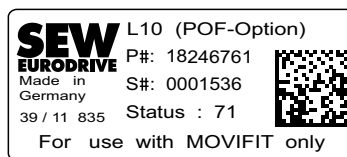


MOVIFIT® with S12 safety option

For more information about MOVIFIT® with **FS80** logo, refer to the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.

Nameplate of POF option L10

The following figure shows the nameplate of the POF option L10:



9007203097977995

3

Unit structure

MOVIFIT® FC type designation

ABOX type designation

The following table shows an example of the type designation of the MOVIFIT® MTA11A-503-S021-D01-00/BW1/M11 ABOX:

MT	Unit series	MT = MOVIFIT®
A	Unit type	A = ABOX (connection box)
11	Series	11 = Standard (IP65) 12 = Hygienic ^{plus} (IP69K)
A	Version A	
-		
50	Connection voltage	50 = AC 380 – 500 V
3	Connection type	3 = 3-phase
-		
S02	Connection configuration	S02 = Standard ABOX with terminals and cable bushings S42 = Hybrid ABOX with M12 for I/Os S52 = Hybrid ABOX with M12 for I/Os + bus S53 = Hybrid ABOX with M12 for I/Os + bus + 24 V output ¹⁾ S62 = Hybrid ABOX with M12 for I/Os and push-pull RJ45 for bus I55 = Hybrid ABOX with circular connector (Intercontec), 1x downward motor output, M12 for I/Os and bus G55 = Hybrid ABOX with circular connector (Intercontec), 1x downward motor output, M12 for I/Os and bus I65 = Hybrid ABOX with circular connector (Intercontec), 1x downward motor output, M12 for I/Os, push-pull RJ45 for bus G65 = Hybrid ABOX with circular connector (Intercontec), 1x motor output at the front, M12 for I/Os, push-pull RJ45 for bus
1	Fieldbus	1 = PROFIBUS 2 = DeviceNet™ 3 = EtherNet/IP™, PROFINET IO, Modbus/TCP
-		
D01	Maintenance switch	D01 = Load disconnecter M11 = Load disconnecter and line protection up to 4 A ²⁾ M12 = Load disconnecter and line protection up to 9 A ²⁾
-		
00	ABOX design	00 = Series
/		
BW1	ABOX option 1	BW1/BW2 = Integrated braking resistor
/		

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M11	ABOX option 2	<p>00S = Plug connector STO</p> <p>M11 = Stainless steel mounting rail</p> <p>M1S = Stainless steel mounting rail and plug connector STO</p> <p>M2A = Corrosion-resistant mounting rail</p> <p>M2S = Corrosion-resistant mounting rail and plug connector STO</p> <p>L10 = PROFINET interface SCRJ/POF (POF option L10)¹⁾</p>
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1) POF option L10 is only available in combination with S53 connection configuration and vice versa.

2) Only available in connection with UL.

4 Mechanical installation

4.1 General information



▲ CAUTION

Risk of injury due to protruding parts, especially the mounting rail.

Risk of cutting or crushing.

- Cover sharp and protruding parts, especially the mounting rail, to protect against injury and damage.
- MOVIFIT® may only be installed by qualified personnel.

Observe the following notes on mechanical installation:

- Observe the general safety notes.
- Only install MOVIFIT® on a level, low-vibration, and torsionally rigid support structure, see "Mounting position" chapter.
- Strictly observe all instructions referring to the technical data and the permissible conditions regarding the place of installation.
- Use only the provided attachment options when mounting the unit.
- When selecting and dimensioning the mounting and safety elements, observe the applicable standards, the technical data of the unit, and the local circumstances.
- Use suitable screw fittings for the cables (use reducing adapters if necessary). Use suitable mating connectors with plug connector variants.
- Close all unused cable entries with suitable closing plugs.
- Cover the unused plug connectors with blind caps.

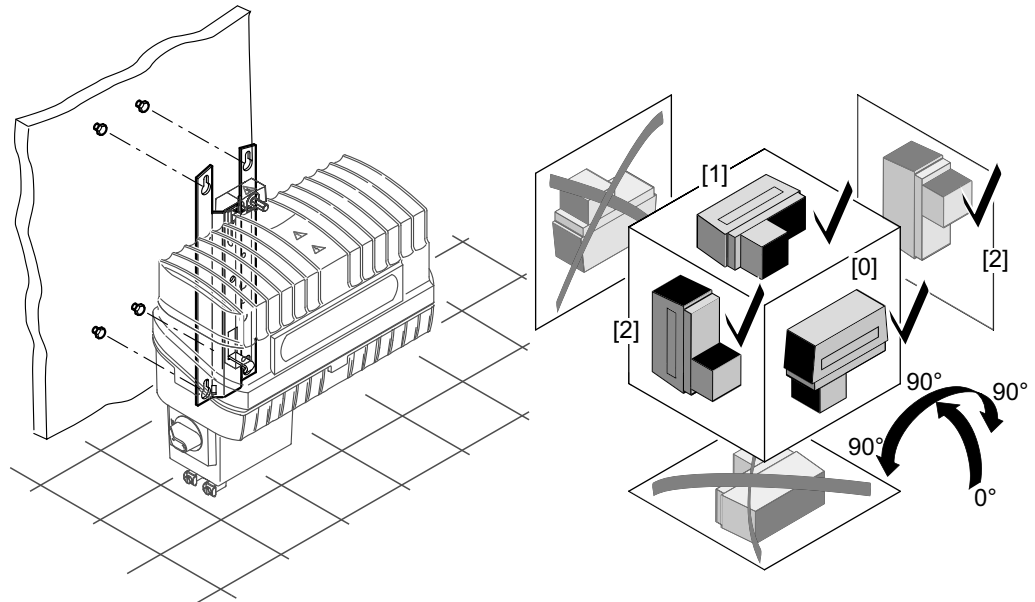
4.2 Tools required

- Set of wrenches
- Socket wrench, SW8 mm
- Torque wrench
- Screwdriver set

4.3 Permitted mounting position

MOVIFIT® is mounted by means of a mounting plate using the 4 screws already installed in the mounting surface. For detailed information, refer to chapter "Mounting" (→ 30).

The following figure depicts the approved mounting positions for MOVIFIT®.



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- [0] Mounting position 0 (standard)
- [1] Mounting position 1 (tilted)
- [2] Mounting position 2 (tilted)

INFORMATION



In this chapter, the standard design with terminals and cable glands is used as an example. However, the installation notes apply to all designs.

All tilted mounting positions between mounting positions 0, 1, and 2 are permitted.

For MOVIFIT® with MTF11A-040-503.. EBOX in tilted mounting position, the nominal output current I_N is reduced, see chapter "Technical data".

4 Mechanical installation

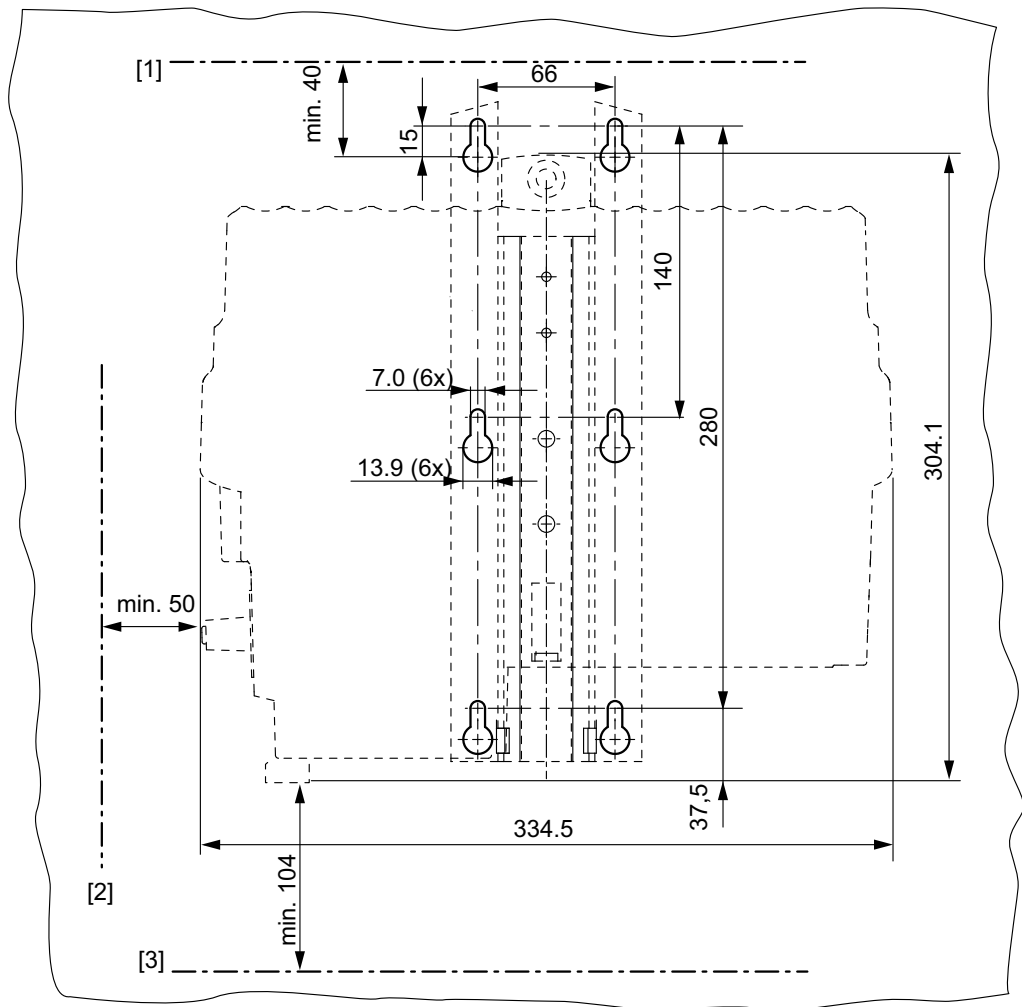
Installation

4.4 Installation

4.4.1 Mounting rail

MOVIFIT® is equipped with a mounting rail to attach the unit to a level, low-vibration mounting surface using M6 screws. For bore dimensions of the respective type of fixture, see the following figures.

Drilling template for standard mounting rail



27021598522763275

The hole pattern is also valid for the corrosion-resistant M2A mounting rail.

- [1] Observe the minimum installation clearance so that the EBOX can be removed from the ABOX.
- [2] Observe the minimum installation clearance required to operate the maintenance switch and to ensure heat dissipation for the unit.
- Make sure that the permitted bending radii of the cables used are not exceeded when connecting the cables.
- [3] Observe the minimum downward clearance of 104 mm for all ABOXes with circular connectors (Intercontec), downward motor output.
- Observe the minimum clearance of 191 mm to the front for all ABOXes with circular connectors (Intercontec), motor output at the front.

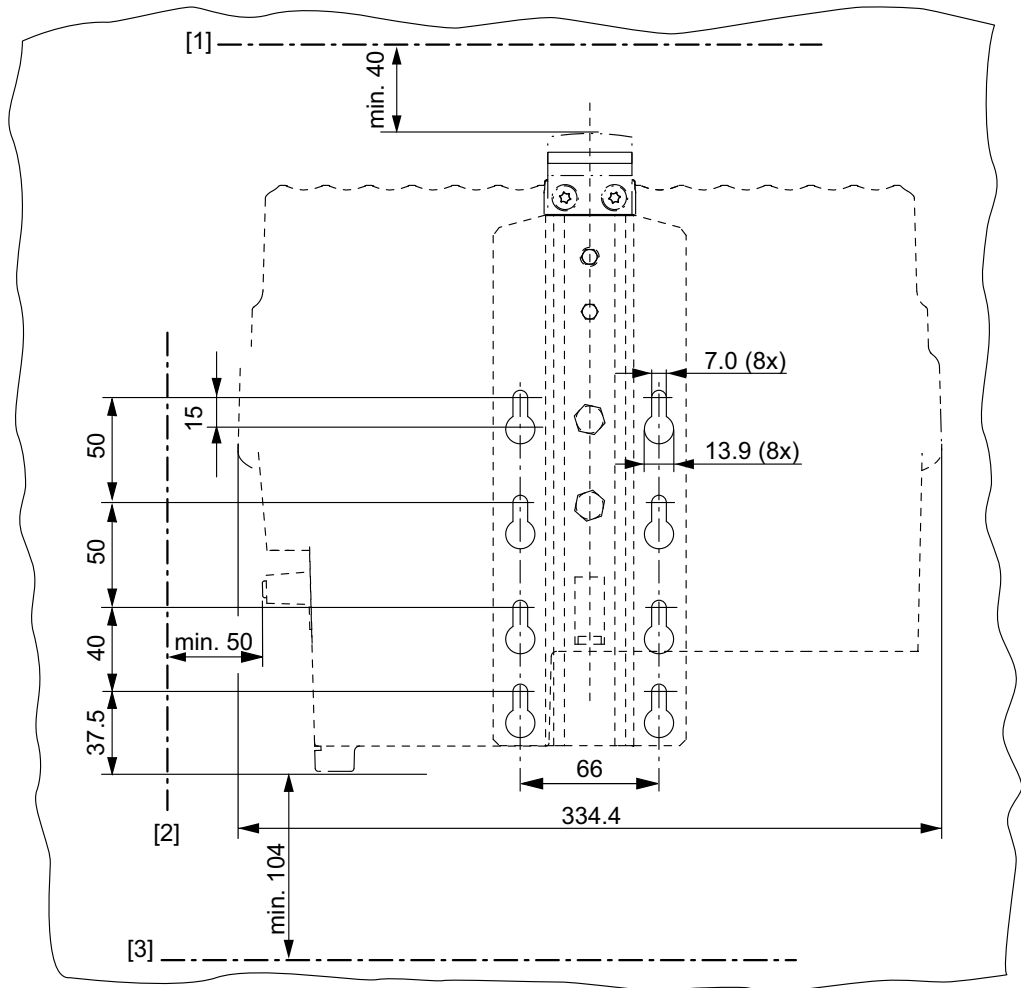
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For detailed dimension drawings, refer to chapter "Technical data" > "Dimension drawings".

4 Mechanical installation

Installation

Drilling template for optional mounting rail /M11



18014399308791819

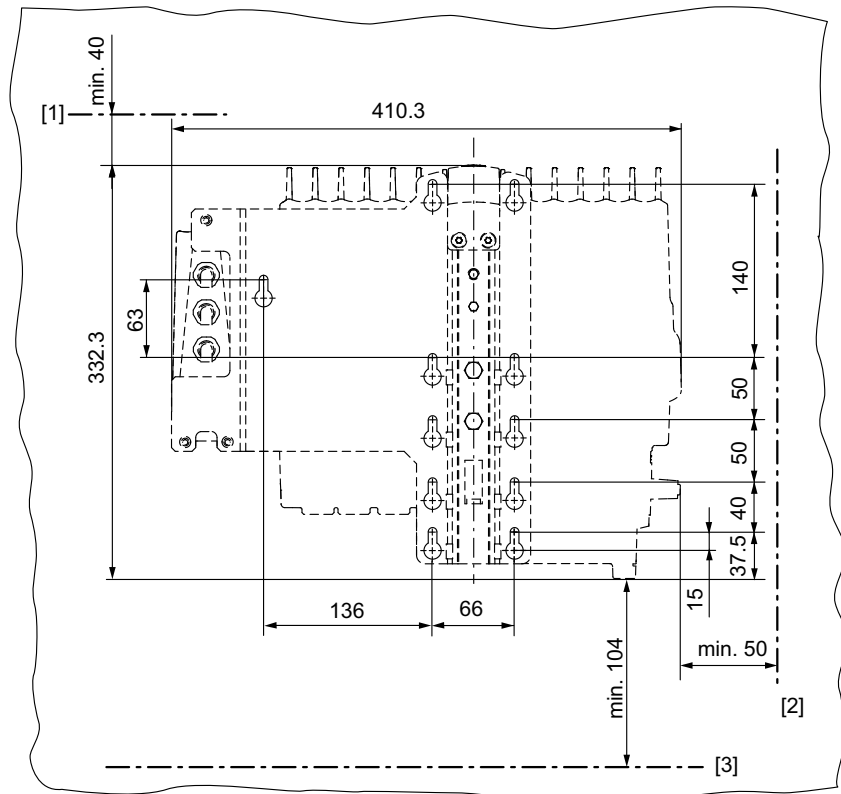
- [1] Observe the minimum installation clearance so that the EBOX can be removed from the ABOX.
- [2] Observe the minimum installation clearance required to operate the maintenance switch and to ensure heat dissipation for the unit.
- [3] Observe the minimum downward clearance of 104 mm for all ABOXes with circular connectors (Intercontec), downward motor output.
- Observe the minimum clearance of 191 mm to the front for all ABOXes with circular connectors (Intercontec), motor output at the front.

For detailed dimension drawings, refer to chapter "Technical data" > "Dimension drawings".

Drilling template for mounting rail (POF option L10)

The MOVIFIT® unit with the special mounting rail is mounted in the same way as a unit with /M11 mounting rail.

For the special mounting rail, an additional retaining screw is required behind the POF option, see the figure below.



9007204017858571

- [1] Observe the minimum installation clearance so that the EBOX can be removed from the ABOX.
- [2] Observe the minimum installation clearance required to operate the maintenance switch and to ensure heat dissipation for the unit.
- Make sure that the permitted bending radii of the cables used is not exceeded when connecting the cables.
- [3] For all ABOXes with round connector (Intercontec) and downward motor output, observe the minimum clearance of 104 mm to the bottom of the ABOX.
- For all ABOXes with round connector (Intercontec) and motor output at the front, observe the minimum clearance of 191 mm at the front of the ABOX.

For detailed dimension drawings, refer to chapter "Technical data" > "Dimension drawings".

4 Mechanical installation

Installation

4.4.2 Fastening



⚠ CAUTION

Risk of crushing if the load falls.

Severe or fatal injuries.

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



⚠ CAUTION

Risk of injury due to protruding parts.

Risk of cutting or crushing.

- Secure sharp and protruding parts by using cover plates.
- Have the installation carried out only by qualified personnel.

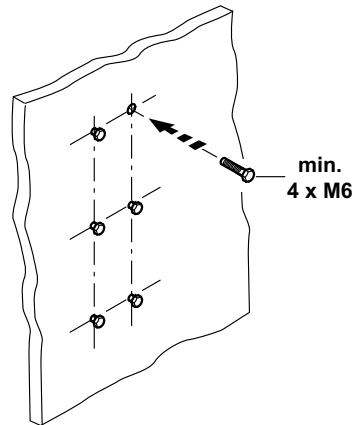
1. Bore the holes required for mounting at least 4 screws into the mounting surface according to the previous figures.

SEW-EURODRIVE recommends:

- Screws of size M6
- And suitable dowel pins depending if necessary.

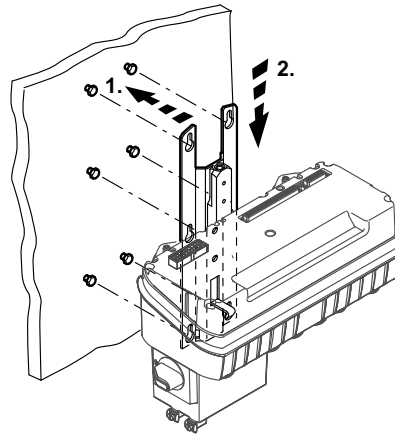
2. Mount at least 4 screws on the mounting surface.

Use adequate washers or screw and washer assemblies for the coated mounting plates of the Hygienic^{plus} design.



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3. Attach the ABOX with mounting plate to the screws.



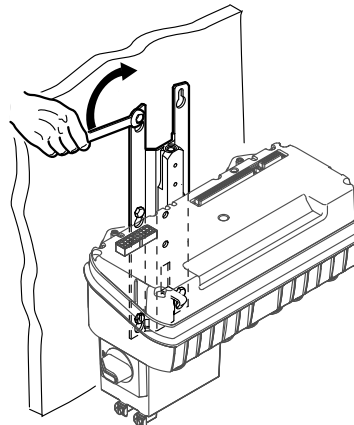
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4. Tighten the screws.

▲ CAUTION! Risk of injury if the load falls.

Minor injuries.

- Tighten at least 4 wall screws to ensure a secure fit after mounting.



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4 Mechanical installation

Central opening/closing mechanism

4.5 Central opening/closing mechanism



▲ WARNING

Risk of burns due to hot surfaces of the MOVIFIT® unit.

Serious injuries.

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



▲ CAUTION

Risk of injury if the EBOX falls.

Minor injuries.

- Make sure that the EBOX cannot fall when it is opened or closed.



NOTICE

The degree of protection specified in the technical data only applies when a unit is mounted correctly. When the EBOX is removed from the ABOX, moisture, dust, or foreign particles can damage the MOVIFIT® unit.

Damage to the MOVIFIT® unit.

- Protect the ABOX and the EBOX when the unit is open.



NOTICE

The central opening/closing mechanism may be damaged as a result.

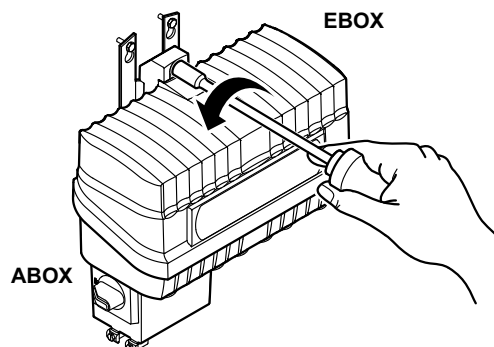
Destruction of central opening/closing mechanism.

- When opening or closing the EBOX in tilted mounting position, make sure the EBOX does not jam and use your hand to move the EBOX.

4.5.1 Opening

You need a socket wrench (SW8) for the central retaining screw.

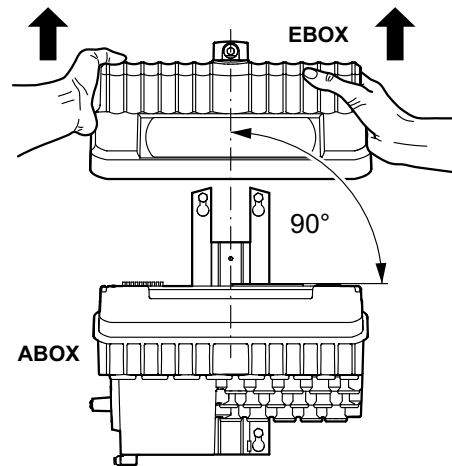
1. Loosen the central retaining screw and continue to turn in counterclockwise direction until the EBOX does not move further up.



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- Remove the EBOX from the ABOX by lifting it upwards. Do not jam the EBOX during this procedure.



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4.5.2 Closing

You need a socket wrench (SW8) for the central retaining screw.

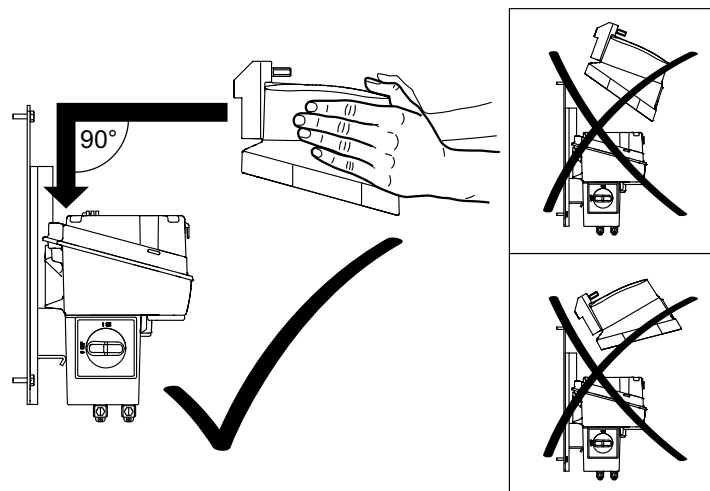
- NOTICE** An improperly seated gasket in the EBOX creates a strong counterforce when closing the MOVIFIT® unit.

The central opening/closing mechanism may be damaged as a result.

- Make sure that the gasket is properly seated in the groove of the EBOX.
This means that
 - the gasket is inserted into the groove over the entire circumference
 - and does not protrude from the groove.

- Position the EBOX on the ABOX.
 - Do not jam the EBOX during this procedure.
 - Hold the EBOX only on both sides during the procedure.

See following figure.



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4 Mechanical installation

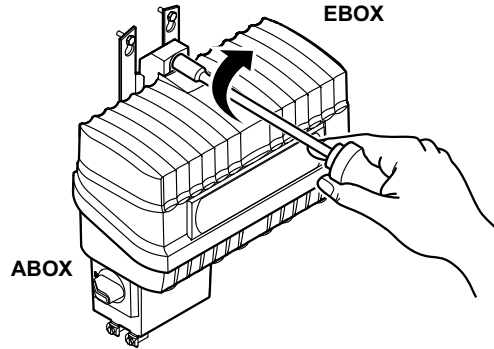
Central opening/closing mechanism

3. Check the EBOX for correct position.

NOTICE The central opening/closing mechanism may be damaged as a result.
Destruction of central opening/closing mechanism.

- Carefully close the EBOX manually if it is in a tilted mounting position.
- Make sure that the EBOX does not get jammed.

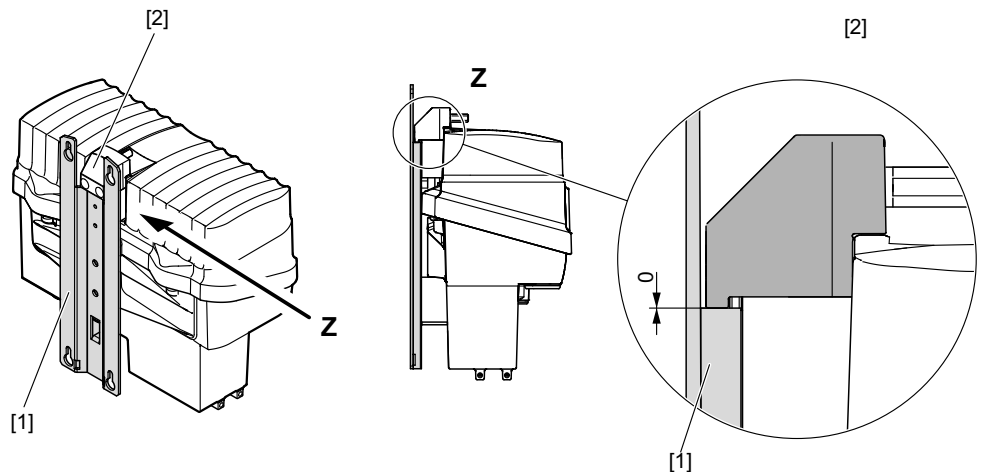
4. Tighten the retaining screw up to the stop using a tightening torque of 7 Nm.



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NOTICE If the torque is too high, the central opening/closing mechanism can be destroyed.

- Tighten the retaining screw with a maximum tightening torque of 7 Nm.
 - If there is a noticeable counter-torque, remove the EBOX again and check to see that the gasket is seated properly. If necessary, press the gasket firmly into the groove.
 - Never tighten the retaining screws with impermissibly high tightening torques.
5. MOVIFIT® is closed correctly when the redirector of the closing mechanism [2] is on the mounting panel [1].



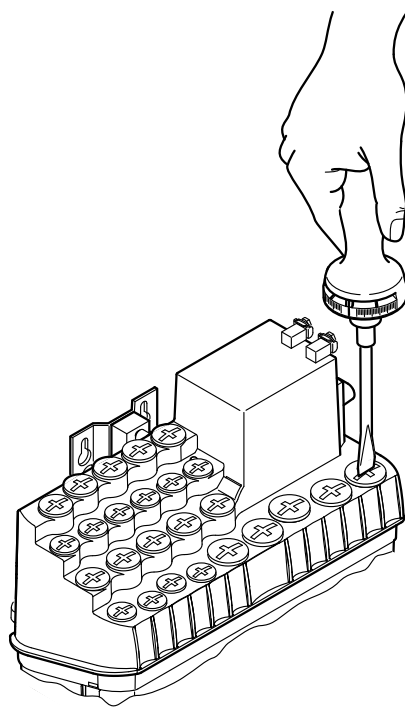
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4.6 Tightening torques

4.6.1 Blanking plugs

Tighten the blanking plugs **included in the delivery** with 2.5 Nm:



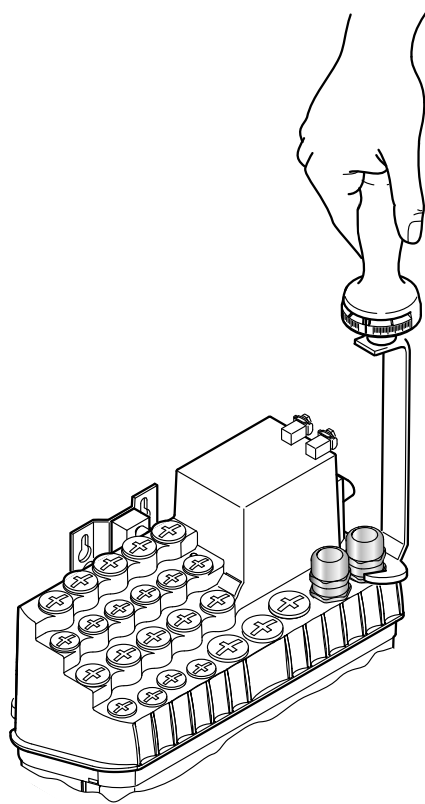
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4 Mechanical installation

Tightening torques

4.6.2 EMC cable glands

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



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Screw fitting	Part number	Size	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	M16 x 1.5	3.5 Nm to 4.5 Nm
	18204791	M20 x 1.5	5.0 Nm to 6.5 Nm
	18204805	M25 x 1.5	6.0 Nm to 7.5 Nm
EMC cable glands (stainless steel)	18216366	M16 x 1.5	3.5 Nm to 4.5 Nm
	18216374	M20 x 1.5	5.0 Nm to 6.5 Nm
	18216382	M25 x 1.5	6.0 Nm to 7.5 Nm

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

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

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4.7 MOVIFIT® Hygienic^{plus} design

INFORMATION



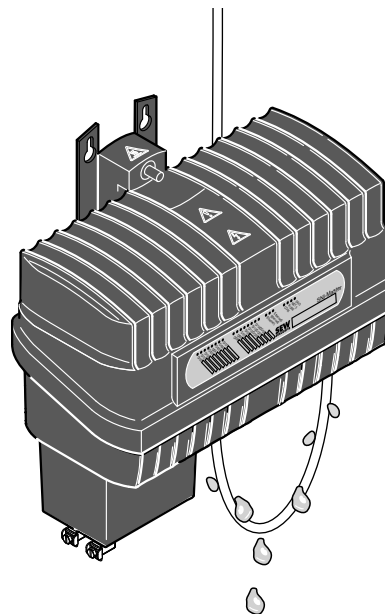
SEW-EURODRIVE guarantees that the Hygienic^{plus} special surface treatment is free from faults when delivered. Transport damages must be reported immediately upon receipt of the unit.

Although the housing surfaces have a high impact resistance, they are to be handled with care. The corrosion protection can be affected by coating damages as a result from improper handling during transport, installation, operation, cleaning, etc. SEW-EURODRIVE is not liable for such damage.

4.7.1 Installation notes

Observe the following additional notes when installing the MOVIFIT® Hygienic^{plus} design:

- Make sure to prevent moisture and dirt from entering the unit during installation.
- After electrical installation and during assembly, check for damaged seals and sealing surfaces.
- Check the state of the profile seal in the EBOX when performing maintenance. If damaged: Consult SEW-EURODRIVE.
- IP69K degree of protection is only possible for MOVIFIT® if
 - you replace the plastic screw plugs delivered as standard with suitable stainless steel IP69K screw plastic screw plugs
 - you observe the permitted mounting position according to the following figure.
- Make sure to install the cable with a drip loop; see the following figure:



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4.7.2 Tightening torques for Hygienic^{plus} design**NOTICE**

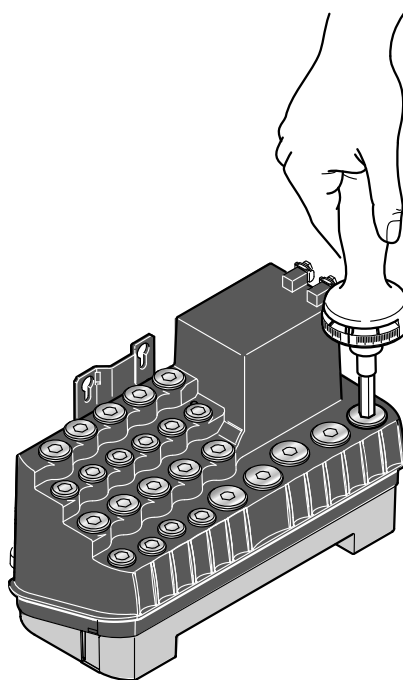
Loss of warranted IP69K degree of protection if the screw plugs are installed incorrectly or not at all.

Damage to the MOVIFIT® unit.

- IP69K degree of protection is only possible for MOVIFIT® if you replace the plastic screw plugs delivered as standard with suitable stainless steel IP69K screw plastic screw plugs.
- Refer to chapter "Optional metal screw fittings" (→ 194) for the required screw fittings. Only the listed **stainless steel** screw fittings are suitable for IP69K degree of protection.

Blanking plugs

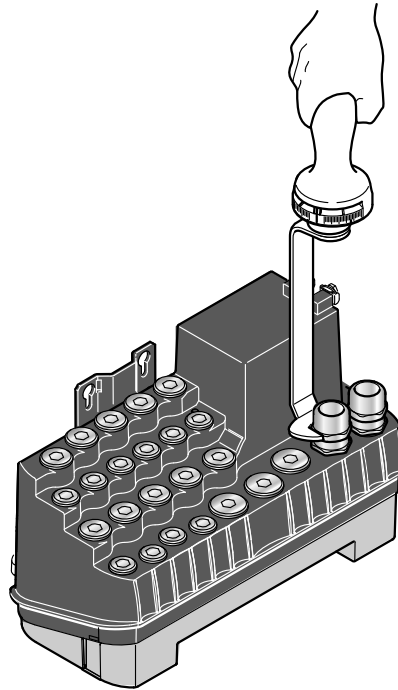
Tighten the blanking plugs **optionally** included in the delivery by SEW-EURODRIVE with 2.5 Nm.



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EMC cable glands

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



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Screw fitting	Part number	Size	Tightening torque
EMC cable glands (nickel-plated brass)	18204783	M16 x 1.5	3.0 Nm to 4.0 Nm
	18204791	M20 x 1.5	3.5 Nm to 5.0 Nm
	18204805	M25 x 1.5	4.0 Nm to 5.5 Nm
EMC cable glands (stainless steel)	18216366	M16 x 1.5	3.5 Nm to 4.5 Nm
	18216374	M20 x 1.5	5.0 Nm to 6.5 Nm
	18216382	M25 x 1.5	6.0 Nm to 7.5 Nm

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

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

5 Electrical installation

5.1 General information

Observe the following notes on electrical installation:

- Observe the general safety notes.
- Strictly observe all instructions referring to the technical data and the permissible conditions regarding the place of installation.
- Use suitable cable glands for the cables (use reducing adapters if necessary). With connector plug variants, you must use a suitable mating connector.
- Seal open cable entries with screw plugs.
- Use protective caps to seal plug connectors not in use.

5.2 Installation planning taking EMC aspects into account

INFORMATION



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

MOVIFIT® units 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 apply the **relevant standards**.

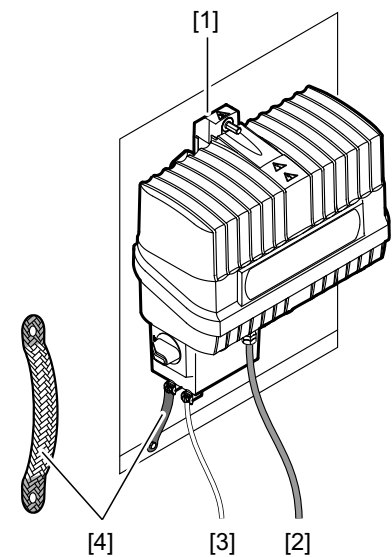
Observe the notes in the following chapters in particular.

5.2.1 Equipotential bonding

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

- Establish a connection over a wide surface area between the MOVIFIT® mounting rail and the system (untreated, unpainted, uncoated mounting surface).
- To do so, use a ground strap (HF litz wire) to connect MOVIFIT® and the system's grounding point.

- [1] Conductive connection over a large area between MOVIFIT® unit and the mounting plate
- [2] PE conductor in the supply cable
- [3] 2nd PE conductor via separate terminals
- [4] EMC-compliant equipotential bonding, for example using a ground strap (HF litz wire)



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

5.2.2 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).

5.2.3 Connection between MOVIFIT® and motor

Only use hybrid cables from SEW-EURODRIVE to connect MOVIFIT® with the motor.

5.2.4 Cable shields

- Must have good EMC properties (high screening attenuation)
- May not serve only as mechanical protection for the cable.
- Must be connected to a wide area of the unit's metal housing at the line ends (see chapter "Standard ABOX.." > "Additional installation instructions" > "PROFIBUS cable connection" (→ 63) und chapter "Connecting the hybrid cable" (→ 64)).

5.3 Installation instructions (all versions)

5.3.1 Connecting supply system leads

- The nominal voltage and frequency of the MOVIFIT® unit must correspond to the data of the supplying system.
- Size the cable cross section according to the input current I_{line} for rated power (see "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 protection switch

Size the fuses according to the cable cross section.

- Use contactor switch contacts from utilization category AC-3 according to EN 60947-4-1 to connect MOVIFIT® drives.
- Switch the MOVIFIT® unit output with inhibited output stage only.

5.3.2 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 3-phase frequency inverters.
- 3-phase frequency inverters generate a DC current component in the leakage current and can significantly reduce the sensitivity of a residual current device of type A. A type A residual current device is not permitted as protection device.
Only use type B residual current devices.
- If the use of a residual current device is not mandatory according to the standards, SEW-EURODRIVE recommends not to use a residual current device.

5.3.3 Line contactor

- Use contactor switch contacts of utilization category AC-3 according to EN 60947-4-1 to connect the supply system cable.

5.3.4 Notes on PE connection and/or equipotential bonding

⚠ WARNING



Electric shock due to incorrect connection of PE.
Severe, fatal injuries.

- The permitted tightening torque for the screw is 2.0 – 2.4 Nm (18 – 21 lb.in)
- Observe the following notes regarding the PE connection:

Prohibited assembly	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with solid connecting wire Permitted for cross section up to max. 2.5 mm ²
<p>9007199577783435</p>	<p>M5</p> <p>[1]</p> <p>900719957775243</p>	<p>M5</p> <p>≤ 2.5 mm²</p> <p>900719957779339</p>

[1] Forked cable lug suitable for M5 PE screws

Leakage currents ≥ 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 in parallel with the original PE connection.

5.3.5 Definition PE, FE



▲ WARNING

Electric shock due to incorrect connection of PE to the terminals marked with "FE" (functional earth). The FE connections are not designed for this purpose. This means electrical safety is not guaranteed.

Severe or fatal injuries.

- The permitted tightening torque for the retaining screw is 2.0 – 2.4 Nm.
 - Observe the following notes regarding the PE connection:
-
- **PE** refers to the mains-side protective earth connection. The PE conductor in the mains connection cable may only be connected with terminals marked with "PE". These are dimensioned for the max. permitted line connection cross section.
 - **FE** refers to connections for "functional earth". You can connect any existing grounding conductor in the 24 V connection lead.

5.3.6 Meaning of the 24 V voltage levels

MOVIFIT® has a total of 4 different 24 V potential levels, which are electrically isolated from each other:

- 1) 24V_C: C = Continuous
- 2) 24V_S: S = Switched
- 3) 24V_P: P = Power section
- 4) 24V_O: O = Option

Depending on the requirements of the application, these can either be isolated, supplied externally, or connected to each other via a X29 distributor terminal.

24V_C = Electronics and sensor supply

The 24V_C voltage level supplies:

- MOVIFIT® control electronics
- The sensors connected to the sensor supply outputs VO24_I, VO24_II and VO24_III.

Do not disconnect the 24V_C voltage level during operation. If you do this, you can no longer control the MOVIFIT® unit via fieldbus or network, and the sensor signals are no longer processed.

When restarted, the MOVIFIT® unit needs a certain amount of time to boot.

24V_S = Actuator supply

The 24V_S voltage level supplies:

- The digital outputs DO.. ,
- The connected actuators
- The VO24_IV sensor supply output.

The digital inputs DI12 – DI15 are connected to the reference potential 0V24_S as these can be connected to the same connections as an alternative to the outputs.

To centrally deactivate the actuators of the plant, you can disconnect the 24V_S voltage level during operation, if required.

24V_P = Inverter supply

The 24V_P voltage level supplies the integrated inverter with 24 V.

Depending on the application, the 24V_P voltage level can be supplied by 24V_C or 24V_S (via jumpers at X29) or externally. The required jumpers are included in the scope of delivery.

▲ WARNING



Danger with applications with safe disconnection due to incorrect connection of the safety relay or the safety controller.

Severe or fatal injuries.

- During safe disconnection, 24V_P must be connected over a suitable safety relay or a safety control.
- If you use MOVIFIT® with the PROFIsafe option S11, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.
- If you use MOVIFIT® with the safety option S12, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.

Note that the integrated inverter is no longer supplied with 24 V in case of safe disconnection. This causes an error message.

24V_O = Option supply

The 24V_O voltage level supplies:

- the integrated option card S11, S12A or S12B
- and the sensor/actuator interfaces on the S11 option card.

With PROFIsafe option S11 and safety option S12, the complete safety electronics and the safe inputs/outputs are supplied from 24V_O.

**▲ WARNING**

Danger with applications with safe disconnection due to incorrect safe disconnection.

Severe or fatal injuries.

- If you use MOVIFIT® with the PROFIsafe option S11, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.
- If you use MOVIFIT® with the safety option S12, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.

Depending on the application, the 24V_O voltage level is supplied by:

- The 24V_C voltage level
- The 24V_S voltage level (via jumpers at terminal X29)
- An external source.

Note that the entire S11/S12 option card with the connected sensors and actuators is no longer supplied when the voltage level is disconnected. This causes an error message.

Connection of voltages

Connect the 24V_C and 24V_S voltage levels to terminal X20 with a large cable cross section. Loop the 24V_C and 24V_S voltage levels through to the next MOVIFIT® unit as "24 V power bus" with a large cable cross section.

Connect the 24V_P and 24V_O voltage levels to terminal X29.

INFORMATION

- For connection examples, refer to chapter "Power bus connection examples" (→ 114).
- For the permitted connection cross sections, refer to chapter "Standard ABOX.." > "Additional installation instructions" > "Permitted connection cross section" (→ 61).

5.3.7 Dimensioning the 24 V voltage supply

This chapter describes the dimensioning of the DC 24 V supply.

The following table gives an overview of the current consumption and power demand of the DC 24 components of MOVIFIT®:

24 V voltage level	Component	Fieldbus function level	Current consumption	Power at $V_{IN} = 24 V$ ¹⁾
24V_C	MOVIFIT® control electronics	"Classic" PROFIBUS	100 mA	2.4 W
		"Classic" DeviceNet™	100 mA	2.4 W
		"Classic" PROFINET IO	250 mA	6.0 W
		"Technology" PROFIBUS	250 mA	6.0 W
		"Technology" DeviceNet™	200 mA	4.8 W
		"Technology" PROFINET IO	250 mA	6.0 W
		"Technology" ModbusTCP	250 mA	6.0 W
		"Technology" EtherNet/IP™	250 mA	6.0 W
	POF option L10		180 mA	4.0 W
	Sensors at DI.. (VO24_I – VO24_III)		2)	2)
24V_S	Sensors at DI.. (VO24_IV)		2)	2)
	Actuators at DO.. (VO24_IV)		2)	2)
24V_P	MOVIFIT® MC with n x MOVIMOT® MM..D		n x 120 mA	n x 2.9 W
	MOVIFIT® SC (motor starter)		100 mA	2.4 W
	MOVIFIT® FC (inverter)		180 mA	4.3 W
24V_O	PROFIsafe option S11		100 mA	2.4 W
	S12A safety option		100 mA	2.4 W
	S12B safety option		100 mA	2.4 W
	Sensors at F-DI..		2)	2)
	Actuators at F-DO..		2)	2)

1) The power demand is respectively reduced/increased with deviating voltage input.

2) Observe the specifications of the sensor/actuator manufacturer for this value. If several sensors/actuators are use with the MOVIFIT®, multiply the value by the number of sensors/actuators.

When the 24 V supply 24V_P of the inverter power section is connected or the STO safety function is deactivated, increased capacitive charging currents may briefly occur.

The duration and amount of the charging currents depend on:

- Cable length and cross section
- Number of stations that are connected simultaneously
- Characteristics such as internal resistance and current limiting as well as overload capacity of the 24 V power supply unit

The 24 V supply and the lines must be configured in a way that all units are always supplied with at least 18 V.

Example 1

MOVIFIT® FC with:

- "Classic" function level
- PROFIBUS interface

Type designation

EBOX: MTF11A015-503-P10A-15

ABOX: MTA11A-503-S023-D01-00/BW1

Connected components

The following components are connected to the MOVIFIT® unit:

- 6 sensors with 50 mA (1.2 W) respectively
- 2 actuators with 100 mA (2.4 W) respectively

Current consumption and power demand

The following table shows the current consumption and power demand of the components that must be considered during the dimensioning of the 24 V supply:

24 V voltage level	Component	Current consumption	Power at $V_{IN} = 24 V$
24V_C	MOVIFIT® control electronics "Classic" PROFIBUS	100 mA	2.4 W
	6 sensors at DI00, DI01, DI02, DI03, DI04, DI05 (VO24_I – VO24_III)	300 mA	7.2 W
24V_S	0 sensors at DI.. (VO24_IV)	–	–
	2 actuators at DO00, DO01 (VO24_IV)	200 mA	4.8 W
24V_P	MOVIFIT® FC (inverter)	180 mA	4.3 W
24V_O	0 Options	–	–
	0 sensors at F-DI..	–	–
	0 actuators at F-DO..	–	–

Total demand of the MOVIFIT® unit:

780 mA

18.7 W

INFORMATION

The current and power demand (400 V) of the connected motor has not been considered.

Example 2

MOVIFIT® FC with:

- "Technology" function level
- PROFINET IO interface
- POF option L10
- S12A safety option

Type designation

EBOX: MTF11A015-503-E21A-15/S12A

ABOX: MTA11A-503-S533-D01-00/BW1/L10

Connected components

The following components are connected to the MOVIFIT® unit:

- 4 sensors with 50 mA (1.2 W) respectively
- 0 actuators
- 2 sensors (safety-related) with 50 mA (1.2 W) respectively
- 2 actuators (safety-related) with 100 mA (2.4 W) respectively

The higher-level controller is connected to the PROFINET IO interface of the POF option L10.

Current consumption and power demand

The following table shows the current consumption and power demand of the components that must be considered during the dimensioning of the 24 V supply:

24 V voltage level	Component	Current consumption	Power at $V_{IN} = 24 V$
24V_C	MOVIFIT® control electronics "Technology" PROFINET IO	250 mA	6.0 W
	POF option L10	180 mA	4.0 W
	4 sensors at DI00, DI01, DI02, DI03 (VO24_I – VO24_III)	200 mA	4.8 W
24V_S	0 sensors at DI.. (VO24_IV)	–	–
	0 actuators at DO.. (VO24_IV)	–	–
24V_P	MOVIFIT® FC (inverter)	180 mA	4.3 W
24V_O	S12A safety option	100 mA	2.4 W
	2 sensors at F-DI00, F-DI03	100 mA	2.4 W
	2 actuators at F-DO00, FD01	200 mA	4.8 W

Total demand of the MOVIFIT® unit:

1210 mA

28.7 W

INFORMATION



The current and power demand (400 V) of the connected motor has not been considered.

5.3.8 Plug connectors

All MOVIFIT® plug connectors are illustrated in these operating instructions with view on the contact end.

5.3.9 Operating braking resistors

Braking resistors dissipate the energy generated during braking operations and get hot in the process.



▲ WARNING

Risk of burns due to hot surfaces of the braking resistors when loaded with P_N .

Severe burns.

- Choose a suitable installation location for the braking resistors.
- Do not touch the braking resistors until they have cooled down sufficiently.

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

5.3.10 Protection devices

MOVIFIT® drives have integrated protection devices against overloads. External overload devices are not necessary.

5.3.11 Installation altitude higher than 1000 m above sea level

MOVIFIT® units with supply voltages of 380 to 500 V can be used at altitudes above 1000 m asl up to 4000 m asl. 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.

5.3.12 EMC-compliant installation



INFORMATION

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

This is a product with restricted availability (categories C1 to C4 according to EN 61800-3). This product may cause EMC interference. In this case, it is recommended for the operator to take suitable measures.

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

5.3.13 UL-compliant installation

INFORMATION



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

Field wiring power terminals

Observe the following notes for UL-compliant installation:

- Use 75 °C copper wire only
- MOVIFIT® uses cage clamp terminals.

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:

- MOVIFIT® FC, 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 breakers
MOVIFIT® FC	500 V minimum / 25 A maximum	500 V minimum / 25 A maximum

Motor overload protection

The MOVIFIT® motor 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.

Device and line protection

MOVIFIT® FC: Units in connection with ABOXes MTA...-M11-.. or MTA....-M12-.. are provided with device protection and line protection.

Ambient temperature

MOVIFIT® FC (except model rated 4 kW) 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.

MOVIFIT® FC (model rated 4 kW) is suitable for an ambient temperature of 35 °C, max. 55 °C with derated output current. To determine the output current rating at higher than 35 °C, the output current should be derated 3.0% per °C between 35 °C and 55 °C.

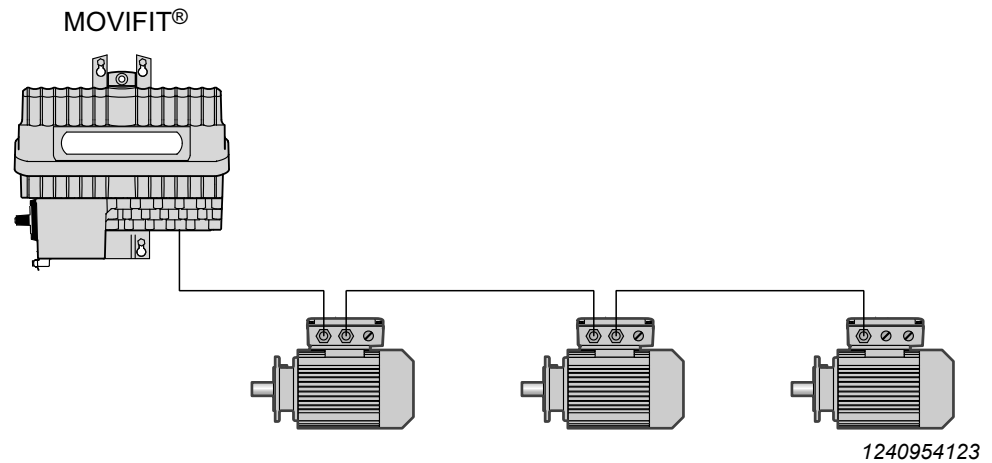
ABOX-EBOX combination

For UL-compliant installation, only the EBOX specified on the ABOX nameplate may be mounted to the ABOX. The UL certification refers only to the ABOX/EBOX combination stated on the nameplate.

The UL certification only applies for operation on voltage supply systems with voltages to ground of max. 300 V. UL approval does not apply for operation on voltage supply systems with a non-grounded star point (IT systems).

5.4 Additional installation instructions for group drives

The following figure shows the prescribed installation for group drives with MOVIFIT® FC:



When installing such group drives, also follow the installation instructions below:

- The total of the nominal motor currents must not exceed the nominal unit current of MOVIFIT® FC.
- Connect no more than 3 motors in parallel connection to the MOVIFIT® FC unit. The sum of the rated motor currents may not exceed the MOVIFIT® FC nominal unit current.
- The sum of all cable sections between MOVIFIT® FC and the motors may not exceed 15 m.
- Temperature monitoring of 2 motors is permitted with a TF temperature sensor for each motor.

If you are using more than 2 motors, each motor must be equipped with a TH temperature switch.

Connect the TFs/THs in series connection to the MOVIFIT® FC unit.

- The motor brakes may be controlled using constant voltage only (alternative brake control system at startup using MOVITOOLS® MotionStudio). The nominal voltage of all connected brakes must be equal.

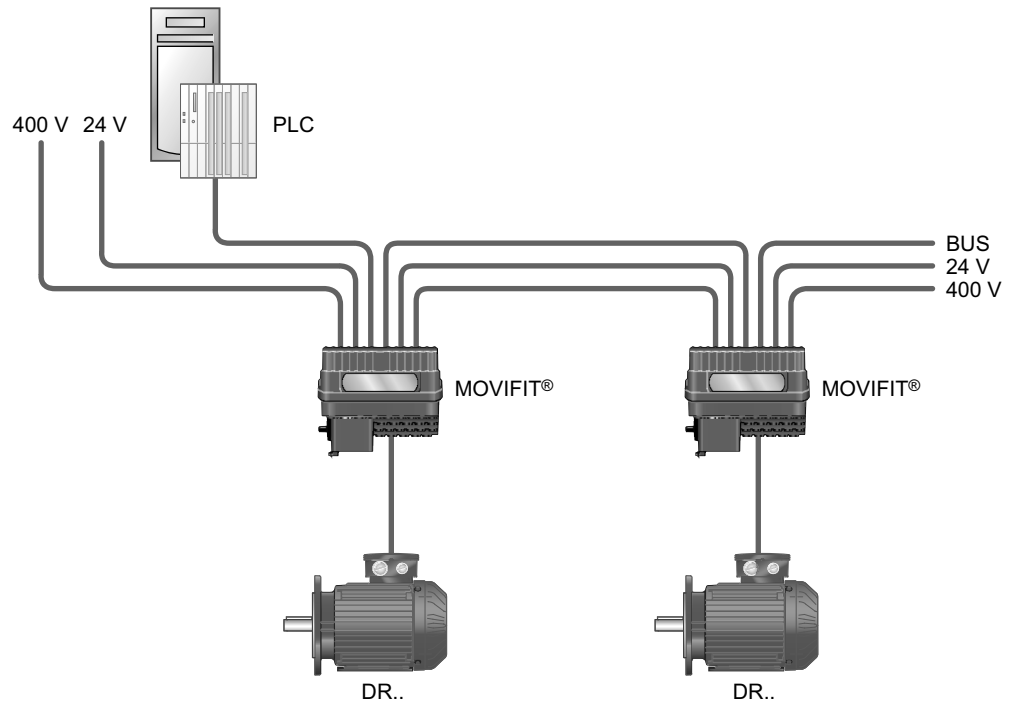
INFORMATION



- For more information on motor/brake startup, refer to the MOVIFIT® function level "Classic" or "Technology" manual.
- When several motors are controlled by a MOVIFIT® FC drive (group drive), the internal motor protection model does not protect the connected motors against overheating. This is why the drive must be equipped with an internal or external braking resistor. The braking resistor dissipates the regenerative energy during deceleration.

5.5 Installation topology (example)

The following figure shows the general installation topology of MOVIFIT® FC:

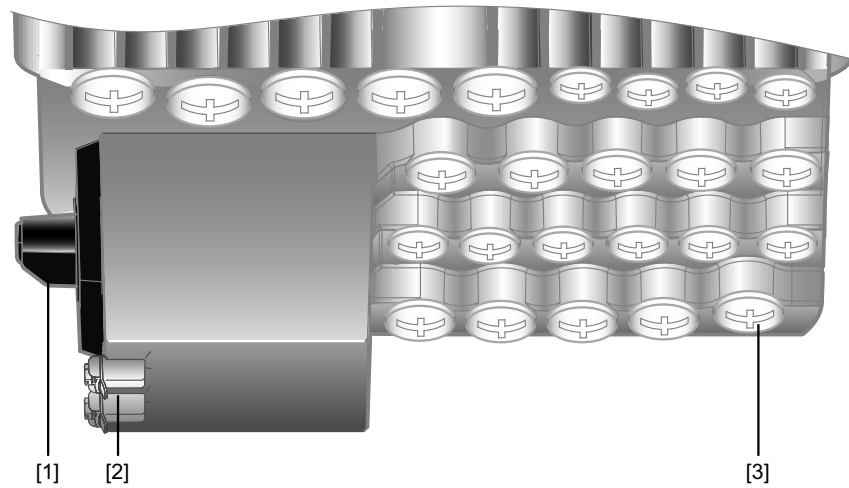


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5.6 Standard ABOX MTA...-S02.-...-00

5.6.1 Description

The following figure depicts the standard ABOX with terminals and cable bushings:



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- [1] Maintenance switch (optional)
- [2] PE connection
- [3] Diagnostics socket (RJ10) under the screw plug

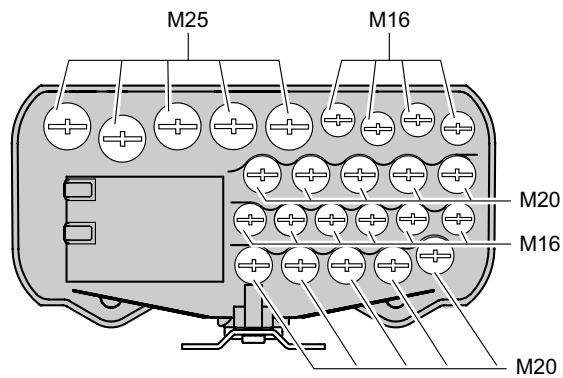
5.6.2 Variants

The following variants of the standard ABOX are available for MOVIFIT® FC (MTF):

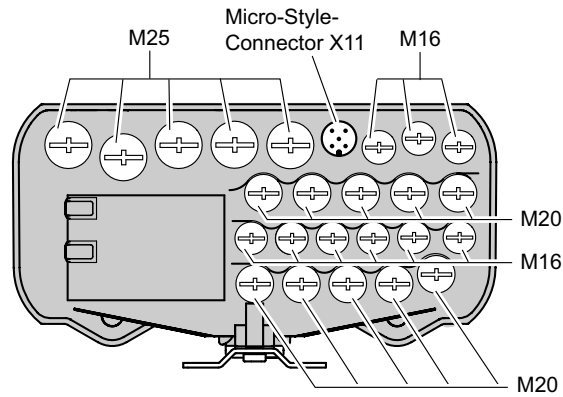
- MTA11A-503-**S02**-...-00:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the screw connections and plug connectors of the standard ABOX depending on the fieldbus interface:

PROFIBUS MTA11A-503-S021-...-00
PROFINET IO
Ethernet/IP™ } MTA11A-503-S023-...-00
Modbus/TCP



DeviceNet™ MTA11A-503-S022-...-00



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5.6.3 Additional installation instructions for MTA...-S02.-...-00

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

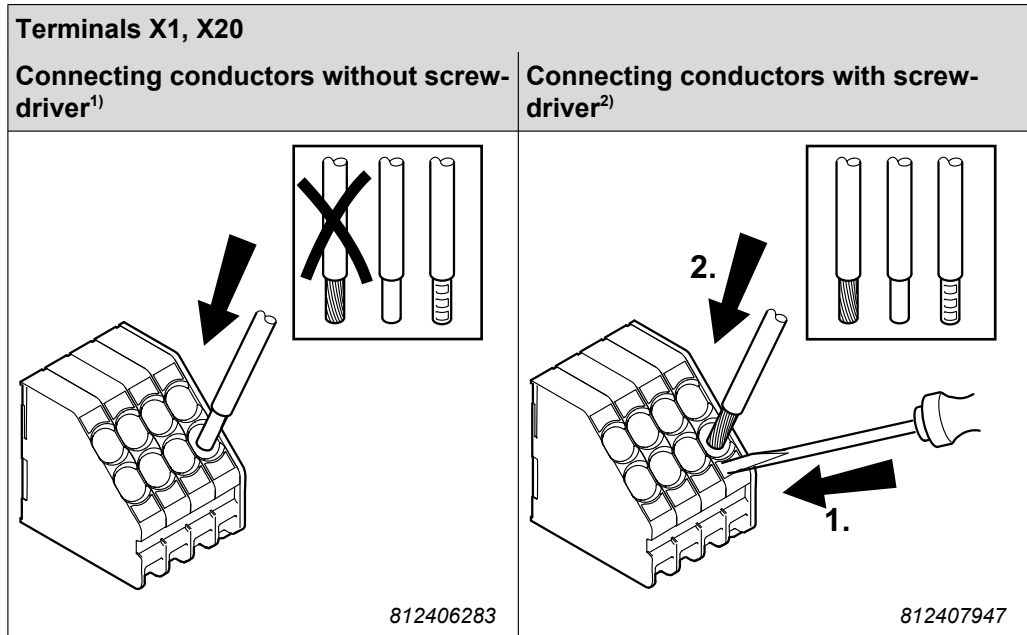
Terminal data	X1, X20	X8, X9	X25, X30, X31, X35, X45, X81, X91	X29
Connection cross section	0.2 – 6 mm ²	0.08 – 4 ¹⁾ mm ²	0.08 – 2.5 ¹⁾ mm ²	0.2 – 1.5 ¹⁾ mm ²
	AWG 24 – AWG10	AWG 28 – AWG12 ¹⁾	AWG 28 – AWG14 ¹⁾	AWG 24 – AWG16 ¹⁾
Current carrying capacity (max. continuous current)	X1: 32 A X20: 16 A	20 A	10 A	10 A
Conductor stripping length	13 – 15 mm	8 – 9 mm	5 – 6 mm	9 – 10 mm

1) The maximum permitted cross section is reduced by one unit when using conductor end sleeves (e.g. 2.5 → 1.5)

Conductor end sleeves

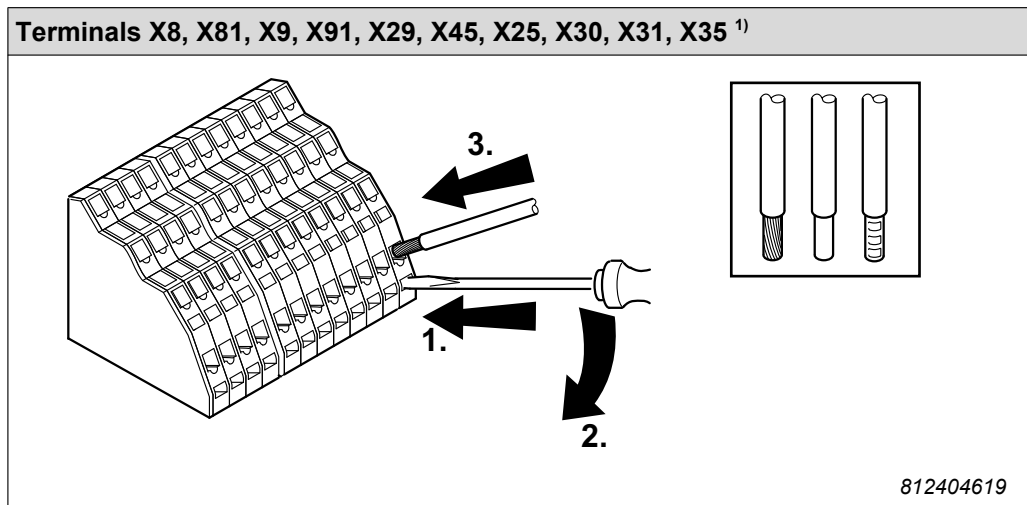
Use conductor end sleeves without plastic collar for terminals X1, X20, X8, and X9 (DIN 46228-1, material E-CU).

Actuating the terminals



1) Single-wire conductors and flexible conductors with conductor end sleeves can be installed directly (without using a tool) up to 2 cross section sizes below the rated cross section.

2) Untreated, flexible conductors or conductors with small cross sections cannot be directly inserted into the terminal. To open the clamping spring when you want to connect such conductors, push a screwdriver firmly into the actuation opening.



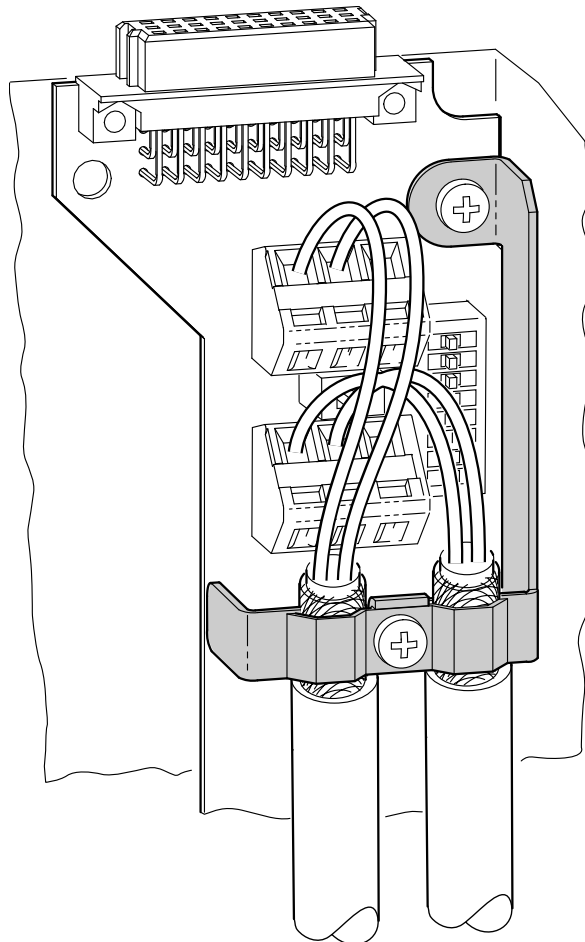
1) With these terminals, the conductor is always connected with a screwdriver irrespective of its type.

Connection of the PROFIBUS cable in MOVIFIT®

Observe the following guidelines of the PROFIBUS user organization (Internet: www.profibus.com) for your PROFIBUS installation:

- "Installation guidelines for PROFIBUS DP/FMS", order number 2.111 (German) or 2.112 (English)
- "Installation recommendations for PROFIBUS", order number 8.021 (German) or 8.022 (English)

Apply the cable shield of the PROFIBUS cable as follows:



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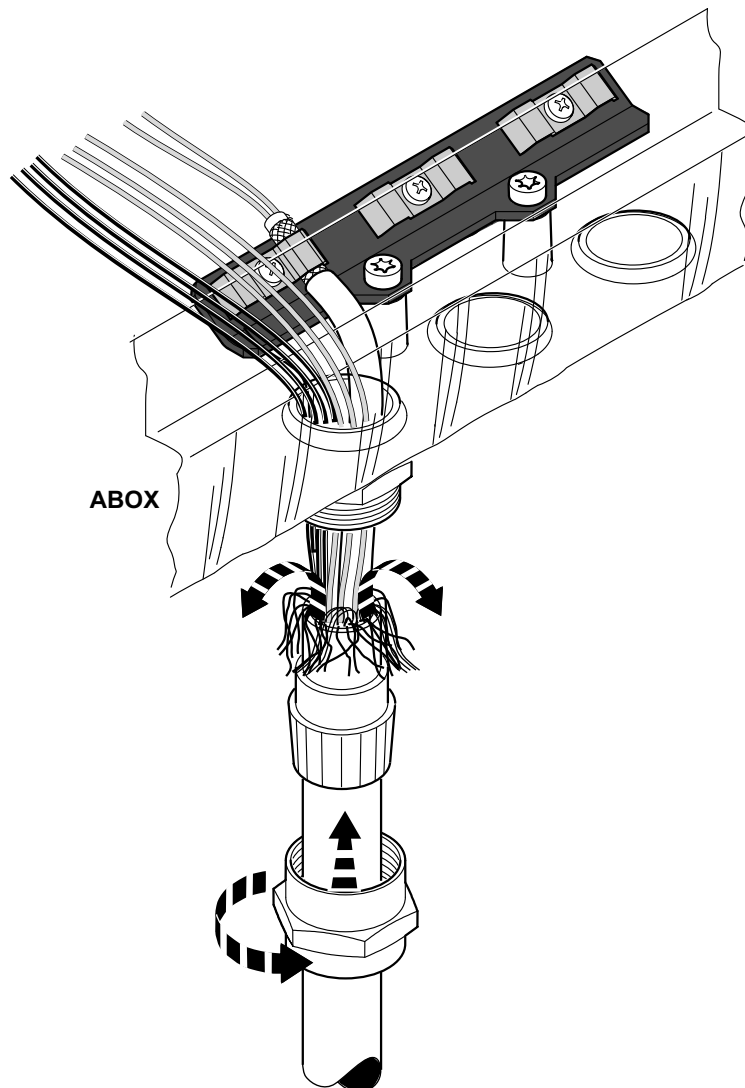
INFORMATION



- Note that the PROFIBUS connector cores inside the MOVIFIT® must be kept as short as possible and are always of equal length for the incoming and outgoing bus.
- The PROFIBUS is not interrupted when you remove the EBOX from the ABOX.

Connecting the hybrid cables

- SEW-EURODRIVE recommends using the shielded and prefabricated SEW hybrid cables specifically designed for connecting MOVIFIT® to the motor.
See chapter "Electrical Installation" > "Hybrid cables".
- The outer shield of the hybrid cable must be attached to the housing of the unit using a suitable EMC cable gland.
- The inner shield of the hybrid cable must be connected via a shield plate in the MOVIFIT® ABOX as follows:



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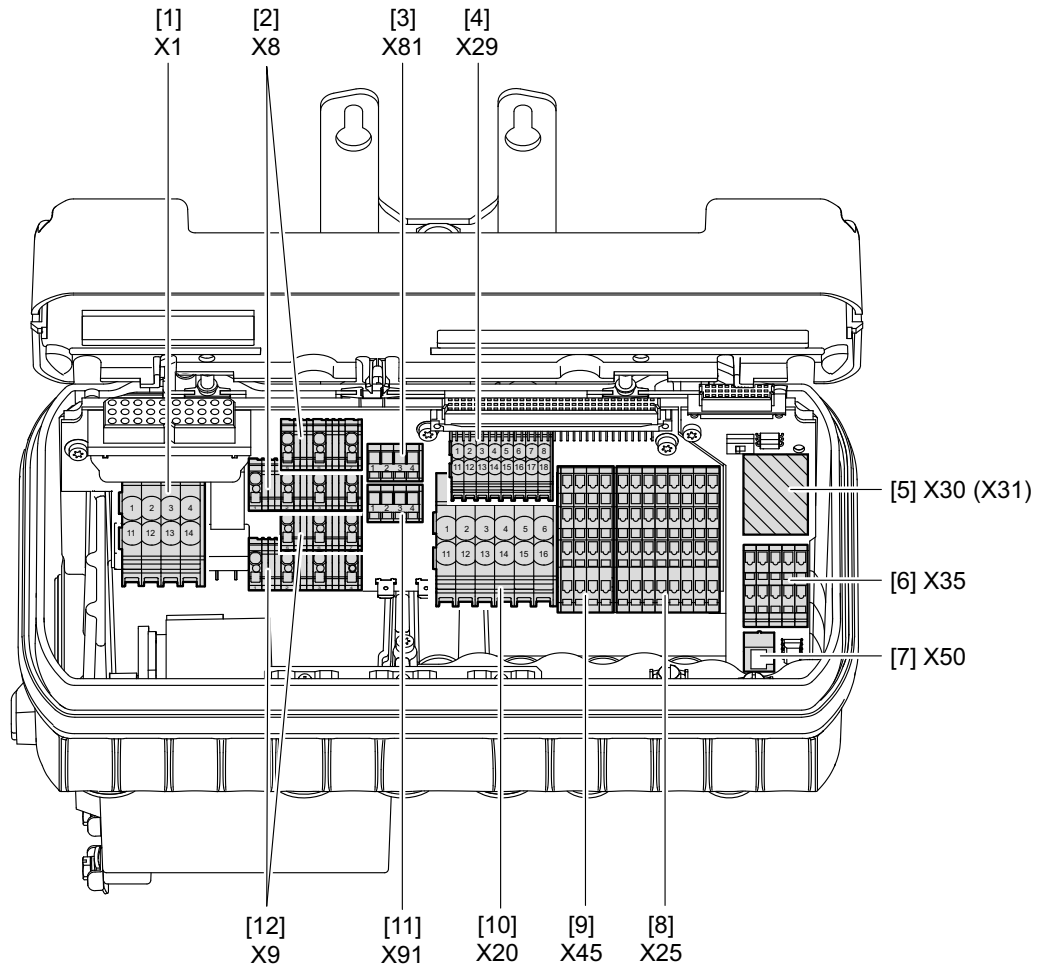
INFORMATION



- In contrast to the standard ABOX, the hybrid ABOXes MTA...-I...-...-00 and MTA...-G...-...-00 have no shield plates. Here, the cable shields must be connected via EMC cable glands.

5.6.4 Terminal positions

The following figure shows the position of the terminals in the ABOX:



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- | | | |
|------|------------|---|
| [1] | X1 | Supply system terminals |
| [2] | X8 | Terminals motor 1, motor phases and brake |
| [3] | X81 | Terminals motor 1, TH/TF and brake output |
| [4] | X29 | 24 V distributor terminals |
| [5] | X30, (X31) | Fieldbus terminals or plug connectors, depends on fieldbus
The area depending on the fieldbus is hatched. |
| [6] | X35 | SBus terminals (CAN) |
| [7] | X50 | Diagnostic interface (RJ10, female) |
| [8] | X25 | I/O terminals for digital inputs/outputs (connection of sensors/actuators) |
| [9] | X45 | I/O terminals for safety-related, digital inputs/outputs
(only in connection with PROFIsafe option S11 or safety option S12) |
| [10] | X20 | 24 V supply terminals (24 V power bus) |
| [11] | X91 | Reserved |
| [12] | X9 | Braking resistor connection terminals |

5.6.5 Terminal assignment

⚠ WARNING



Electric shock due to dangerous voltages in the ABOX.

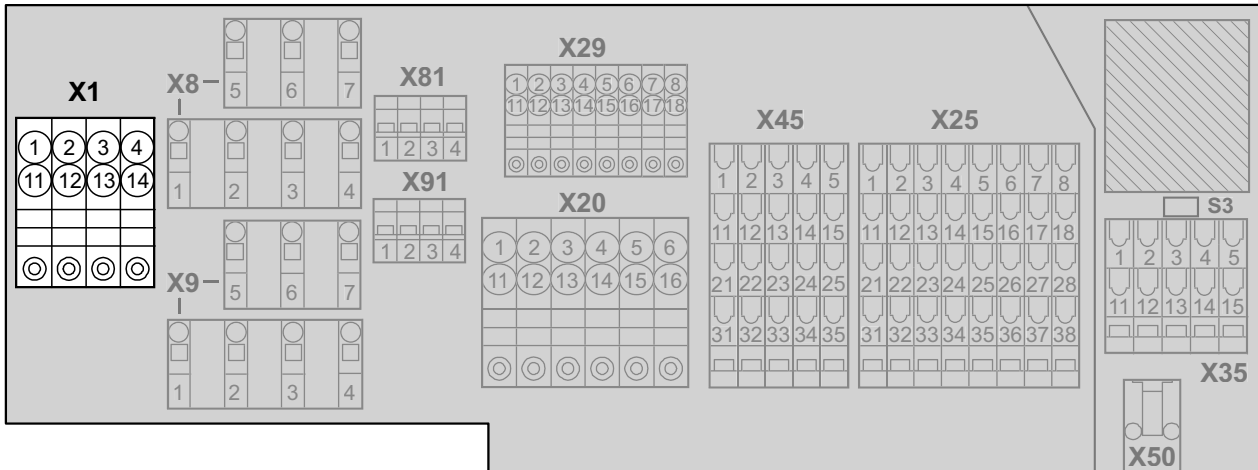
The maintenance switch disconnects only the integrated frequency inverter from the power supply. Voltage is still present on the terminals of the MOVIFIT® unit.

- Switch off the power to the MOVIFIT® unit using a suitable external disconnecting device, and wait at least 1 minute before opening the wiring space.



The terminal diagrams depicted in this chapter differ depending on the fieldbus system used. The area dependent on the fieldbus is therefore represented as hatched and is described in the following sections.

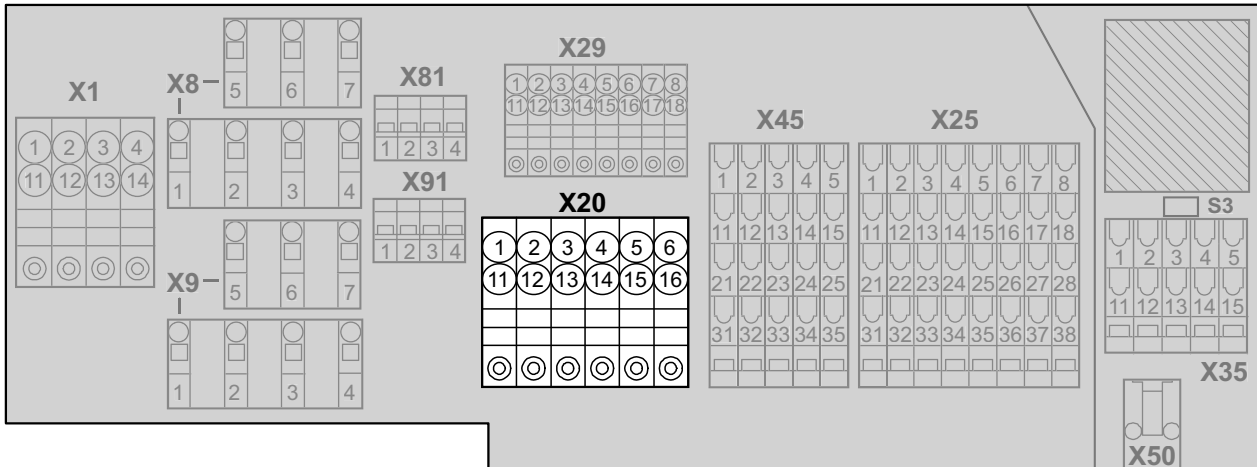
X1: Line terminals (power bus)



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Line terminal (power bus)			
No.		Name	Function
X1	1	PE	Line connection PE (IN)
	2	L1	Line connection phase L1 (IN)
	3	L2	Line connection phase L2 (IN)
	4	L3	Line connection phase L3 (IN)
	11	PE	Line connection PE (OUT)
	12	L1	Line connection phase L1 (OUT)
	13	L2	Line connection phase L2 (OUT)
	14	L3	Line connection phase L3 (OUT)

X20: 24 V supply terminal (24 V power bus)



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24 V supply terminal (24 V power bus)			
No.		Name	Function
X20	1	FE	Functional earth (IN)
	2	+24V_C	+24 V continuous voltage supply (IN)
	3	0V24_C	0V24 reference potential – continuous voltage (IN)
	4	FE	Functional earth (IN)
	5	+24V_S	+24 V supply – switched (IN)
	6	0V24_S	0V24 reference potential – switched (IN)
	11	FE	Functional earth (OUT)
	12	+24V_C	+24 V continuous voltage supply (OUT)
	13	0V24_C	0V24 reference potential – continuous voltage (OUT)
	14	FE	Functional earth (OUT)
	15	+24V_S	+24 V supply – switched (OUT)
	16	0V24_S	0V24 reference potential – switched (OUT)

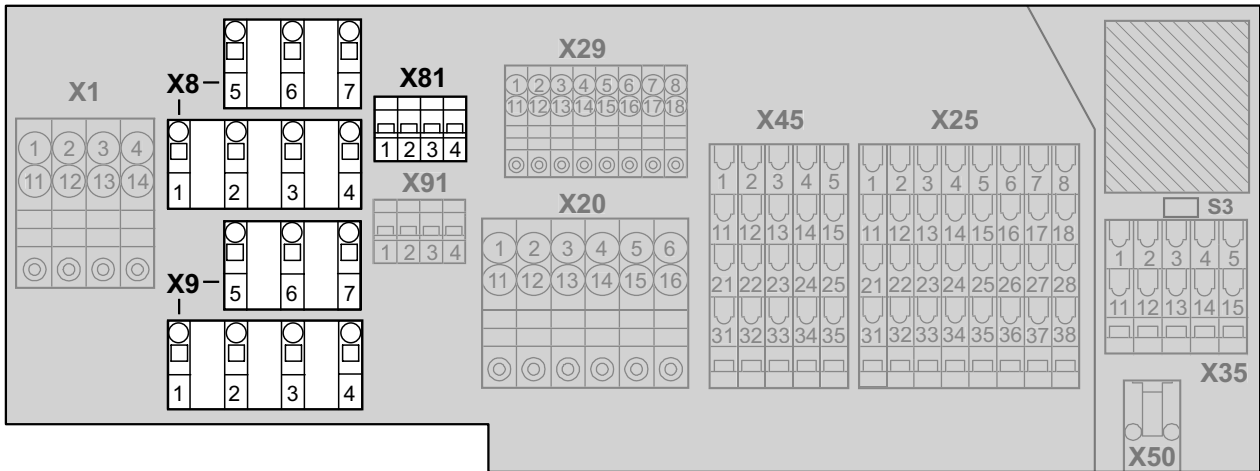
X8, X81, X9 and X91: Motor connection terminals

▲ WARNING



Risk of crushing due to incorrect parameterization of the digital output DB00.
Severe or fatal injuries.

- If digital output DB00 is used to control the brake, do not change the parameters that define the functions of the digital output.
- Check the parameter settings before using the digital output to control the brake.



812534411

Motor connection terminals (connection via hybrid cable)				
No.		Name	Function for motor with SEW stand-ard brake	Function for motor with 2-wire constant DC brake ¹⁾
X8	1	PE	Motor PE connection	
	2	U	Motor phase U output	
	3	V	Motor phase V output	
	4	W	Motor phase W output	
	5	15	SEW brake terminal 15 (blue)	DC brake connection (+)
	6	14	SEW brake terminal 14 (white)	No function
	7	13	SEW brake terminal 13 (red)	DC brake connection (-)
X81	1	TF+	Connection for TF temperature sensor / TH temperature switch (+) motor ²⁾	
	2	TF-	Connection temperature sensor TF/temperature switch TH (-) motor ²⁾	
	3	DB00	Digital output "Brake released" = Factory setting (switching signal 24 V)	
	4	0V24_C	0V24 reference potential for brake output	
X9	1	PE	PE connection	
	2	-	Reserved	
	3	-	Reserved	
	4	-	Reserved	
	5	-R	Braking resistor connection "-R"	
	6	-	Reserved	
	7	+R	Braking resistor connection "+R"	
X91	1 – 4	-	Reserved	

1) Before starting up the MOVIFIT® FC drive with constant DC brake, you must connect an additional external braking resistor to the MOVIFIT® inverter. The braking resistor is used to dissipate the regenerative energy.

2) With motor without TF/TH, jumper X81/1 terminal must with X81/2 terminal. Then activate the electronic motor protection by setting the parameter P340 and P342 to "ON".

X29: 24 V distributor terminals

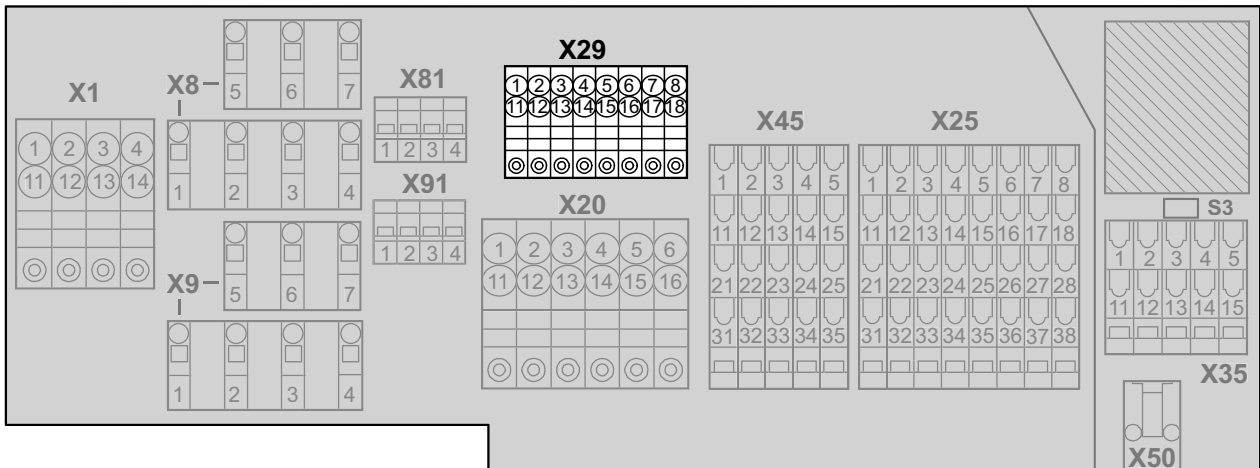
▲ WARNING



Danger through unexpected unit behavior. When you use terminals X29/5, X29/6, X29/15, and X29/16 for a safe disconnection, you must observe the SEW manual "MOVIFIT® MC/FC – Functional Safety".

Severe or fatal injuries.

- Note the wiring diagrams and the safety conditions of the "MOVIFIT® MC/FC – Functional Safety" manual.



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24 V distributor terminal (for distributing the supply voltage(s) to the integrated inverter and option card)			
No.	Name	Function	
X29	1	+24V_C	+24 V supply for digital inputs – continuous voltage (jumpered with X20/2)
	2	0V24_C	0V24 reference potential for digital inputs – continuous voltage (jumpered with X20/3)
	3	+24V_S	+24 V supply for digital outputs – switched (jumpered with X20/5)
	4	0V24_S	0V24 reference potential for digital outputs – switched (jumpered with X20/6)
	5	+24V_P	+24 V supply for integrated frequency inverter (IN)
	6	0V24_P	0V24 reference potential for integrated frequency inverter (IN)
	7	+24V_O	+24 V supply for option card, supply
	8	0V24_O	0V24 reference potential for the option card, supply
	11	+24V_C	+24 V supply for digital inputs – continuous voltage (jumpered with X20/2)
	12	0V24_C	0V24 reference potential for digital inputs – continuous voltage (jumpered with X20/3)
	13	+24V_S	+24 V supply for digital outputs – switched (jumpered with X20/5)
	14	0V24_S	0V24 reference potential for digital outputs – switched (jumpered with X20/6)
	15	+24V_P	+24 V supply for integrated frequency inverter (OUT)
	16	0V24_P	0V24 reference potential for integrated frequency inverter (OUT)
	17	+24V_O	+24 V supply for option card, supply
	18	0V24_O	0V24 reference potential for the option card, supply

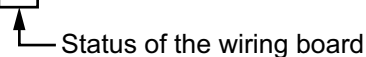
INFORMATION



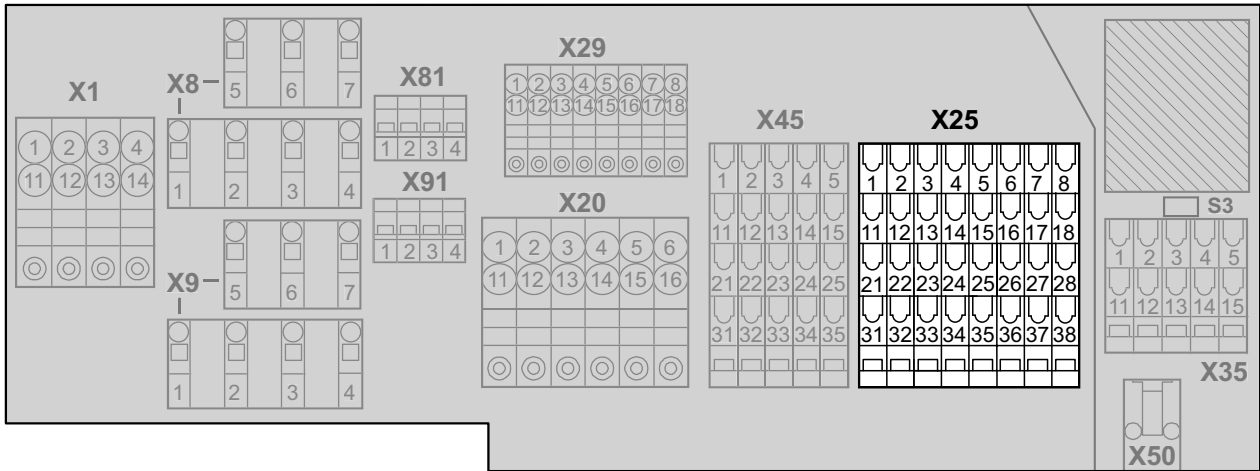
- The terminal assignment "X29" illustrated here applies as of status 11 of the wiring board. If you use a wiring board with another status, consult SEW-EURODRIVE. The status of the wiring board is indicated in the first status

Status: **11** 11 -- 10 -- 10 10 -- --

field of the ABOX nameplate:



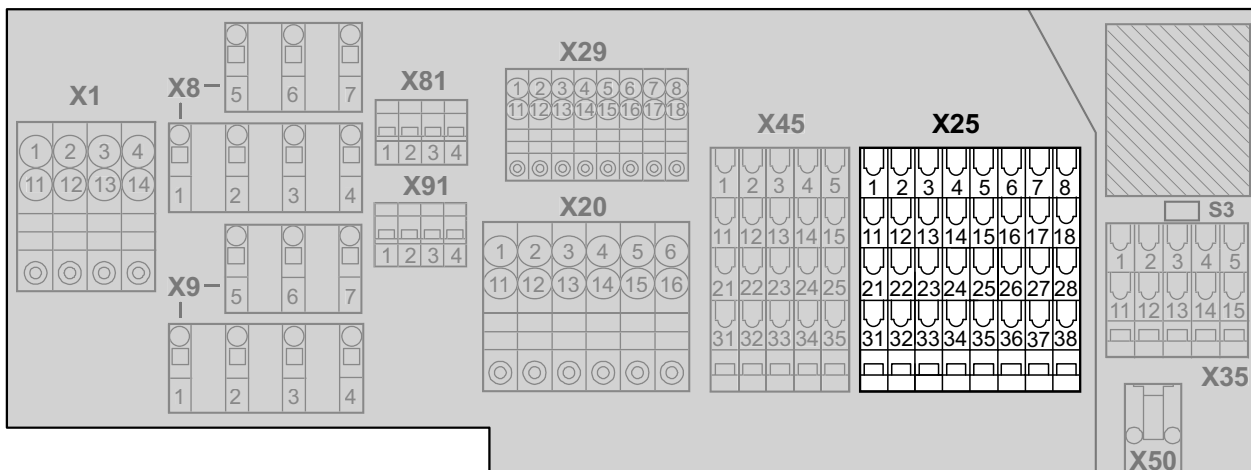
X25: I/O terminals



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I/O terminal for digital inputs/outputs (connection of sensors + actuators)					
No.	"Technology" function level with: PROFIBUS PROFINET IO, EtherNet/IP™ or Modbus/TCP			"Classic" function level with PROFIBUS DeviceNet™	
	Name	Function	Name	Function	
X25	1	DI00	Digital input DI00 (switching signal)	DI00	Digital input DI00 (switching signal)
	2	DI02	Digital input DI02 (switching signal)	DI01	Digital input DI01 (switching signal)
	3	DI04	Digital input DI04 (switching signal) Encoder 1 connection, track A	DI02	Digital input DI02 (switching signal)
	4	DI06	Digital input DI06 (switching signal) Encoder 2 connection, track A	DI03	Digital input DI03 (switching signal)
	5	DI08	Digital input DI08 (switching signal) Encoder 3 connection, track A	DI04	Digital input DI04 (switching signal)
	6	DI10	Digital input DI10 (switching signal)	DI05	Digital input DI05 (switching signal)
	7	DI12/DO00	Digital input DI12 / digital output DO00 (switching signal)	DI06/DO00	Digital input DI06 / digital output DO00 (switching signal)
	8	DI14/DO02	Digital input DI14 / digital output DO02 (switching signal)	DI07/DO01	Digital input DI07 / digital output DO01 (switching signal)
	11	DI01	Digital input DI01 (switching signal)	Terminals X25/11 to X25/18 are reserved with function level "Classic" (PROFIBUS or DeviceNet™).	
	12	DI03	Digital input DI03 (switching signal)		
	13	DI05	Digital input DI05 (switching signal) Encoder 1 connection, track B		
	14	DI07	Digital input DI07 (switching signal) Encoder 2 connection, track B		
	15	DI09	Digital input DI09 (switching signal) Encoder 3 connection, track B		
	16	DI11	Digital input DI11 (switching signal)		
	17	DI13/DO01	Digital input DI13 / digital output DO01 (switching signal)		
	18	DI15/DO03	Digital input DI15 / digital output DO03 (switching signal)		

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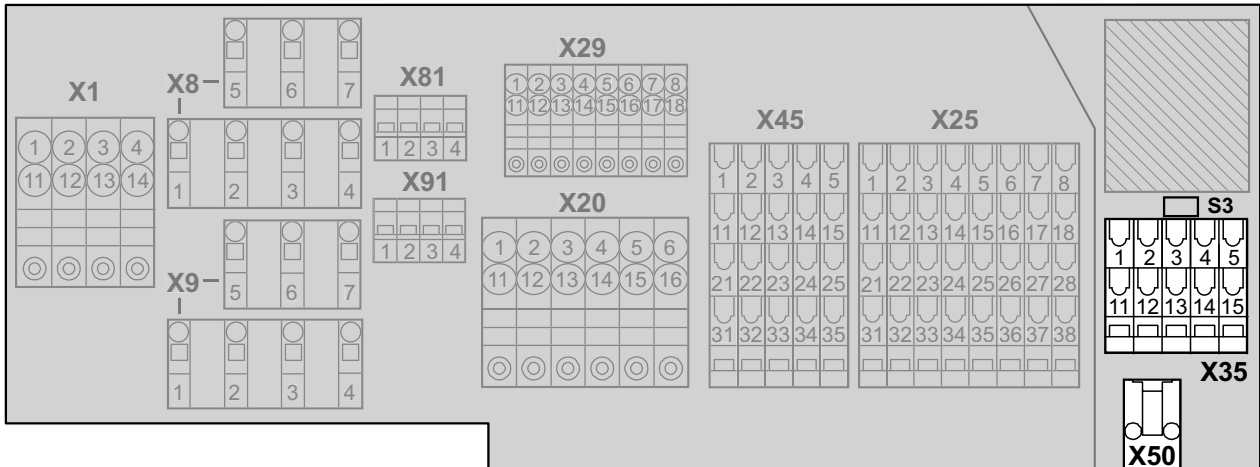


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I/O terminal for digital inputs/outputs (connection of sensors + actuators)

No.	"Technology" function level with: PROFIBUS PROFINET IO, EtherNet/IP™ or Modbus/TCP "Classic" function level with: PROFINET IO			"Classic" function level with: PROFIBUS DeviceNet™ Function		
	Name	Function				
X25	21	VO24-I	+24 V sensor supply group I (DI00 – DI03), from +24V_C	+24 V sensor supply group I (DI00 – DI01), from +24V_C		
	22	VO24-I	+24 V sensor supply group I (DI00 – DI03), from +24V_C	+24 V sensor supply group I (DI00 – DI01), from +24V_C		
	23	VO24-II	+24 V sensor supply group II (DI04 – DI07), from +24V_C	+24 V sensor supply group II (DI02 – DI03), from +24V_C		
	24	VO24-II	+24 V sensor supply group II (DI04 – DI07), from +24V_C	+24 V sensor supply group II (DI02 – DI03), from +24V_C		
	25	VO24-III	+24 V sensor supply group III (DI08 – DI11), from +24V_C	+24 V sensor supply group III (DI04 – DI05), from +24V_C		
	26	VO24-III	+24 V sensor supply group III (DI08 – DI11), from +24V_C	+24 V sensor supply group III (DI04 – DI05), from +24V_C		
	27	VO24-IV	+24 V sensor supply group IV (DI12 – DI15), from +24V_S	+24 V sensor supply group IV (DI06 – DI07), from +24V_S		
	28	VO24-IV	+24 V sensor supply group IV (DI12 – DI15), from +24V_S	+24 V sensor supply group IV (DI06 – DI07), from +24V_S		
	31	0V24_C	0V24 reference potential for sensors			
	32	0V24_C	0V24 reference potential for sensors			
	33	0V24_C	0V24 reference potential for sensors			
	34	0V24_C	0V24 reference potential for sensors			
	35	0V24_C	0V24 reference potential for sensors			
	36	0V24_C	0V24 reference potential for sensors			
	37	0V24_S	0V24 reference potential for actuators or sensors group IV			
	38	0V24_S	0V24 reference potential for actuators or sensors group IV			

X35: SBus terminals



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SBus terminals (CAN)			
No.		Name	Function
X35 ¹⁾	1	CAN_GND	0 V reference potential for SBus (CAN)
	2	CAN_H	SBus CAN_H – incoming
	3	CAN_L	SBus CAN_L – incoming
	4	+24V_C_PS	+24 V supply – continuous voltage for peripheral devices
	5	0V24_C	0V24 reference potential – continuous voltage for peripheral devices (jumpered with X20/3)
	11	CAN_GND	0 V reference potential for SBus (CAN)
	12	CAN_H	SBus CAN_H – outgoing
	13	CAN_L	SBus CAN_L – outgoing
	14	+24V_C_PS	+24 V supply – continuous voltage for peripheral devices
	15	0V24_C	0V24 reference potential – continuous voltage for peripheral devices (jumpered with X20/3)

1) The X35 terminals can only be used with function level "Technology".

X50: Diagnostic interface

Function			
Diagnostic interface			
Connection type			
RJ10, female			
Wiring diagram			
Assignment			
No.		Name	Function
X50	1	+5 V	5 V supply
	2	RS+	RS485 diagnostic interface
	3	RS-	RS485 diagnostic interface
	4	0V5	0 V reference potential for RS485

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X45: I/O terminals for PROFIsafe option S11

(only in connection with PROFIsafe option card S11)

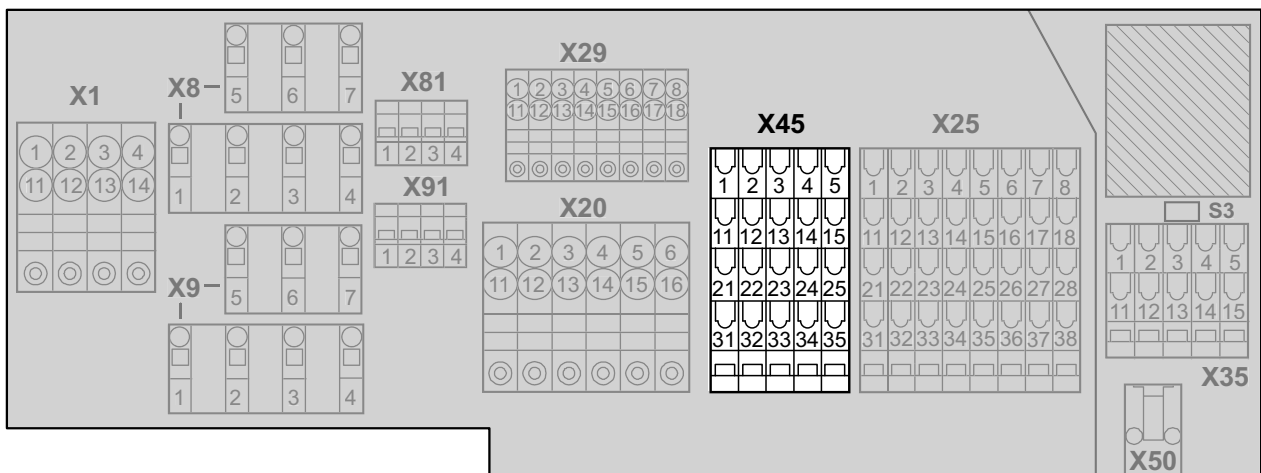
▲ WARNING



Danger through unexpected unit behavior. When you are using terminals X45 for safe disconnection, you must observe the "MOVIFIT® MC/FC – Functional Safety" manual.

Severe or fatal injuries.

- If you use MOVIFIT® with the PROFIsafe option S11, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.



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I/O terminals for safety-related inputs/outputs (only in connection with PROFIsafe option card S11)

No.	Name	Function	
X45	1	F-DI00	Safety-related digital input F-DI00 (switching signal)
	2	F-DI02	Safety-related digital input F-DI02 (switching signal)
	3	F-DO00_P	Safety-related digital output F-DO00 (sourcing signal)
	4	F-DO01_P	Safety-related digital output F-DO01 (sourcing signal)
	5	F-DO_STO_P	Safety-related digital output F-DO_STO (sourcing signal) for safe torque off in the drive (STO)
	11	F-DI01	Safety-related digital input F-DI01 (switching signal)
	12	F-DI03	Safety-related digital input F-DI03 (switching signal)
	13	F-DO00_M	Safety-related digital output F-DO00 (sinking signal)
	14	F-DO01_M	Safety-related digital output F-DO01 (sinking signal)
	15	F-DO_STO_M	Safety-related digital output F-DO_STO (sinking signal) for safe torque off in the drive (STO)
	21	F-SS0	+24 V sensor supply for failsafe inputs F-DI00 and F-DI02
	22		
	23	F-SS1	+24 V sensor supply for failsafe inputs F-DI01 and F-DI03
	24		
	25		
	31	0V24_O	0V24 reference potential for failsafe digital inputs/outputs
	32		
	33		
	34		
35			

X45: I/O terminals for safety option S12A

(only in connection with safety option card S12A)

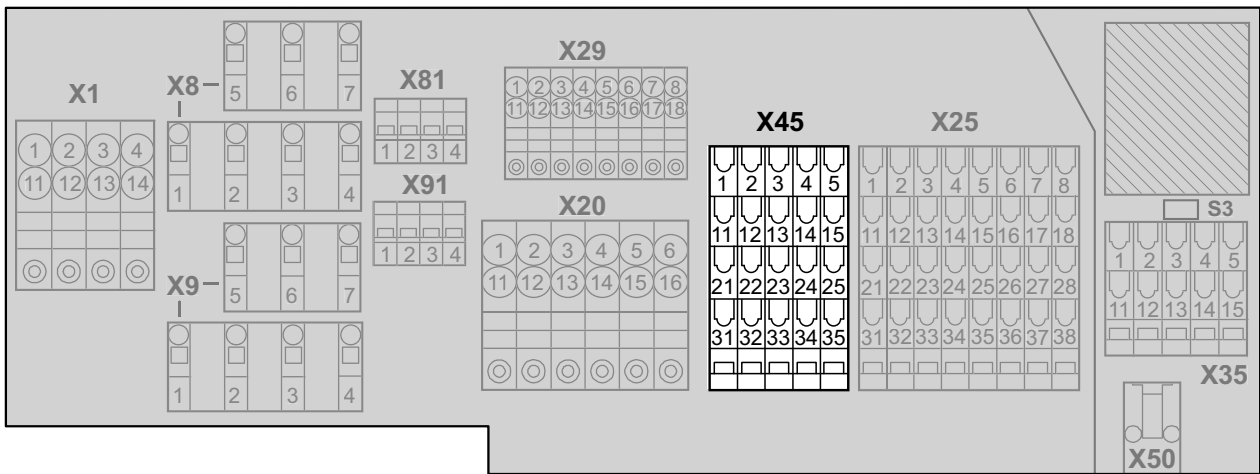
▲ WARNING



Danger through unexpected unit behavior. When you are using terminals X45 for safe disconnection, you must observe the "MOVIFIT® MC/FC – Functional Safety with S12 Safety Option" manual.

Severe or fatal injuries.

- If you use MOVIFIT® with the safety option S12, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.



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I/O terminals for safety-related inputs/outputs (only in connection with S12A safety option card)

No.	Name	Function	
X45	1	F-DI00	Safety-related digital input F-DI00 (switching signal)
	2	F-DI02	Safety-related digital input F-DI02 (switching signal)
	3	F-DO00_P	Safety-related digital output F-DO00 (sourcing signal)
	4	F-DO01_P	Safety-related digital output F-DO01 (sourcing signal)
	5	F-DO_STO_P	Safety-related digital output F-DO_STO (sourcing signal) for safe torque off in the drive (STO)
	11	F-DI01	Safety-related digital input F-DI01 (switching signal)
	12	F-DI03	Safety-related digital input F-DI03 (switching signal)
	13	F-DO00_M	Safety-related digital output F-DO00 (sinking signal)
	14	F-DO01_M	Safety-related digital output F-DO01 (sinking signal)
	15	F-DO_STO_M	Safety-related digital output F-DO_STO (sinking signal) for safe torque off in the drive (STO)
	21	F-SS0	+24 V sensor supply for failsafe inputs F-DI00 and F-DI02
	22		
	23	F-SS1	+24 V sensor supply for failsafe inputs F-DI01 and F-DI03
	24		
	25		
31	0V24_O	0V24 reference potential for failsafe digital inputs/outputs	
32			
33			
34			
35			

X45: I/O terminals for safety option S12B

(only in connection with safety option card S12B)

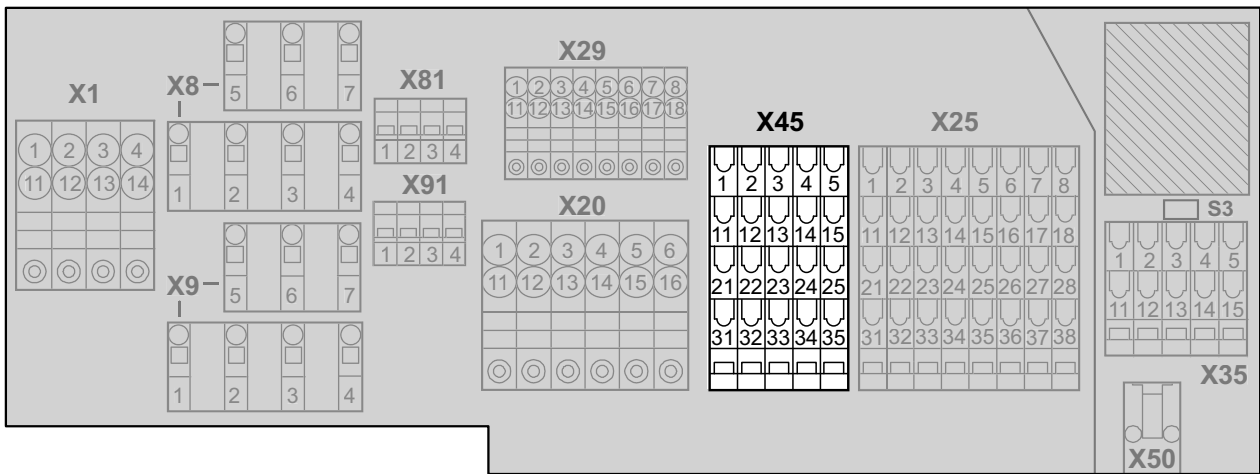
▲ WARNING



Danger through unexpected unit behavior. When you are using terminals X45 for safe disconnection, you must observe the "MOVIFIT® MC/FC – Functional Safety with S12 Safety Option" manual.

Severe or fatal injuries.

- If you use MOVIFIT® with the safety option S12, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.



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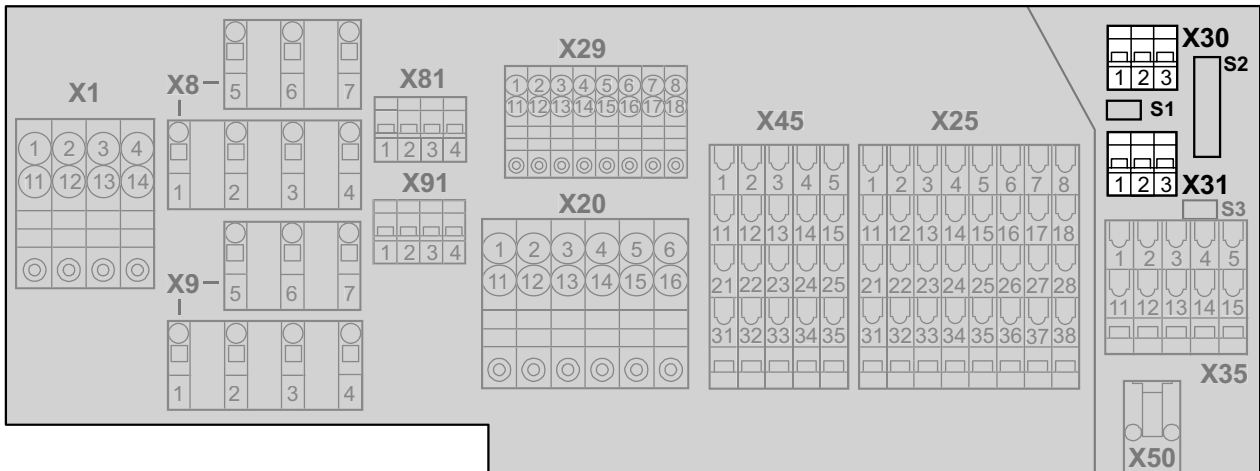
I/O terminals for safety-related inputs/outputs (only in connection with S12B safety option card)

No.	Name	Function	
X45	1	F-DI00	Safety-related digital input F-DI00 (switching signal)
	2	F-DI02	Safety-related digital input F-DI02 (switching signal)
	3	F-DI04	Safety-related digital input F-DI04 (switching signal)
	4	F-DI06	Safety-related digital input F-DI06 (switching signal)
	5	F-DO_STO_P	Safety-related digital output F-DO_STO (sourcing signal) for safe torque off in the drive (STO)
	11	F-DI01	Safety-related digital input F-DI01 (switching signal)
	12	F-DI03	Safety-related digital input F-DI03 (switching signal)
	13	F-DI05	Safety-related digital input F-DI05 (switching signal)
	14	F-DI07	Safety-related digital input F-DI07 (switching input)
	15	F-DO_STO_M	Safety-related digital output F-DO_STO (sinking signal) for safe torque off in the drive (STO)
	21	F-SS0	+24 V sensor supply for safe inputs F-DI00, F-DI02, F-DI04 and F-DI06
	22		
	23	F-SS1	+24 V sensor supply for safe inputs F-DI01, F-DI03, F-DI05 and F-DI07
	24		
	25		
	31	0V24_O	0V24 reference potential for failsafe digital inputs/outputs
	32		
33			
34			
35			

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X30 and X31: PROFIBUS terminals

(only with PROFIBUS designs)

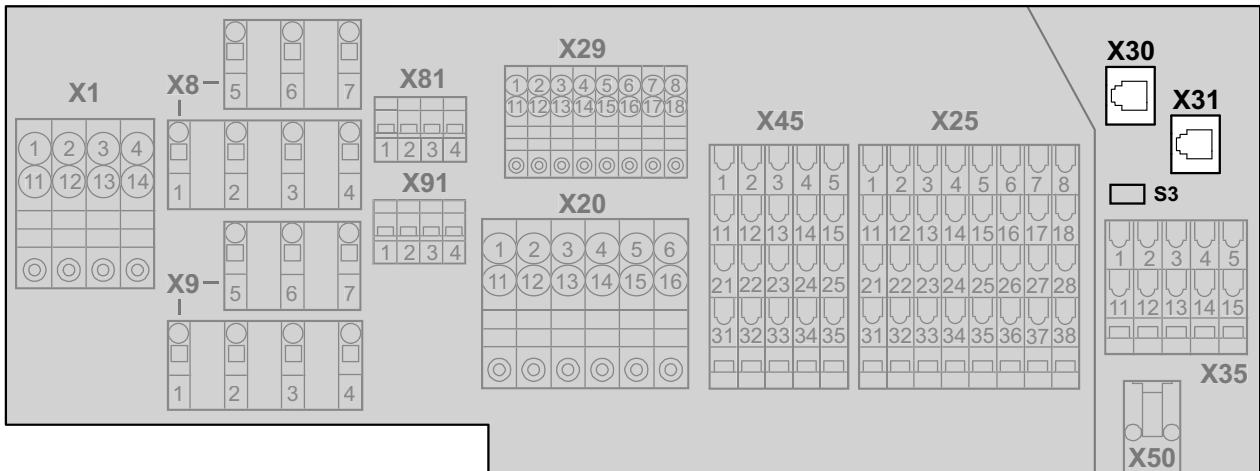


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PROFIBUS terminals			
No.		Name	Function
X30	1	A_IN	PROFIBUS cable A – incoming
	2	B_IN	PROFIBUS cable B – incoming
	3	0V5_PB	0V5 reference potential for PROFIBUS (for measuring purposes only)
X31	1	A_OUT	PROFIBUS cable A – outgoing
	2	B_OUT	PROFIBUS cable B – outgoing
	3	+5V_PB	+5 V output PROFIBUS (for measuring purposes only)

X30 and X31: Ethernet plug connector

(only with PROFINET IO, EtherNet/IP™ or Modbus/TCP designs)



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Function

Ethernet connection
 • PROFINET IO
 • EtherNet/IP™
 • Modbus/TCP

Connection type

RJ45

Wiring diagram



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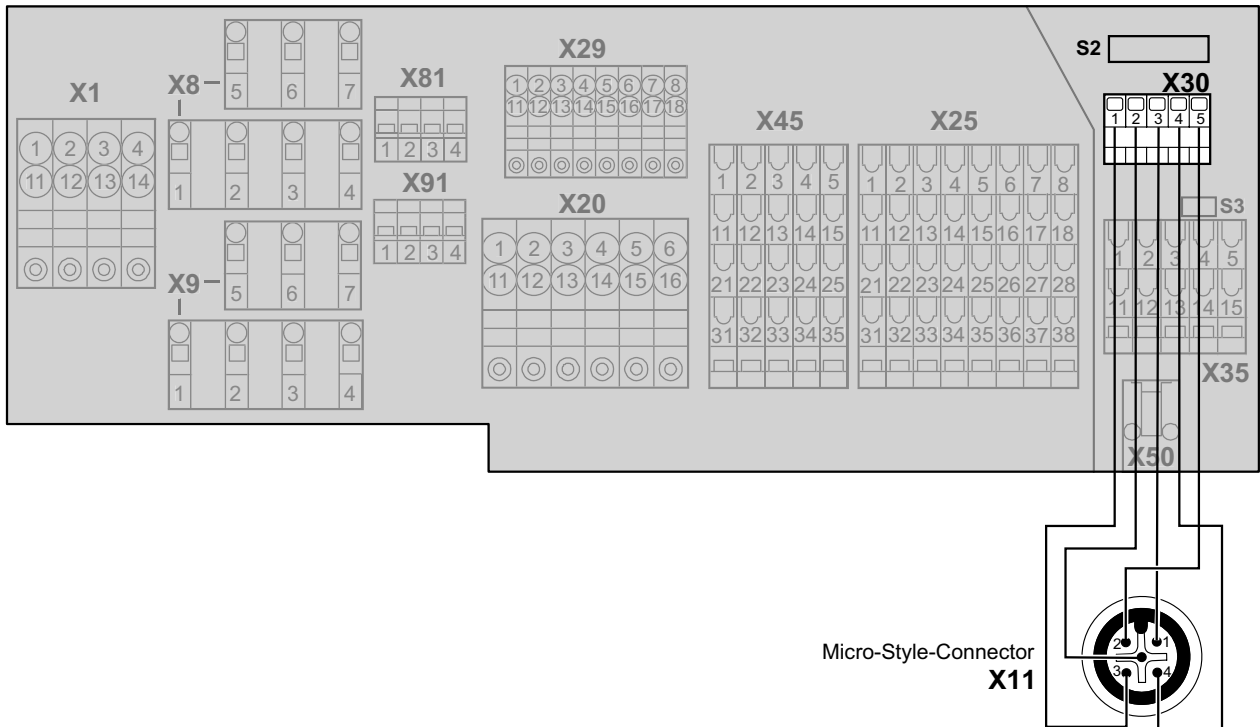
Assignment

No.	Name	Function		
X30	1	TX+	Ethernet port 1	
	2	TX-		
	3	RX+		
	4	res.		On 75 ohm discharge
	5	res.		On 75 ohm discharge
	6	RX-		Receive line (-)
	7	res.		On 75 ohm discharge
	8	res.		On 75 ohm discharge
X31	1	TX+	Ethernet port 2	
	2	TX-		
	3	RX+		
	4	res.		On 75 ohm discharge
	5	res.		On 75 ohm discharge
	6	RX-		Receive line (-)
	7	res.		On 75 ohm discharge
	8	res.		On 75 ohm discharge

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X11, X30: DeviceNet™ plug connectors / terminals

(only with DeviceNet™ designs)



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Function						
DeviceNet™ connection						
Connection type						
X30 terminals or X11 micro-style connector (A-coding)						
Assignment						
No.			Name	Function		Color coding
X11	1	X30	3	DRAIN	Equipotential bonding	Brown
	2		5	V+	DeviceNet™ voltage supply +24 V	White
	3		1	V-	DeviceNet™ reference potential 0V24	Blue
	4		4	CAND_H	CAN_H data cable	Black
	5		2	CAND_L	CAN_L data cable	Green/yellow

5.7 Hybrid ABOX MTA...-S42.-...-00

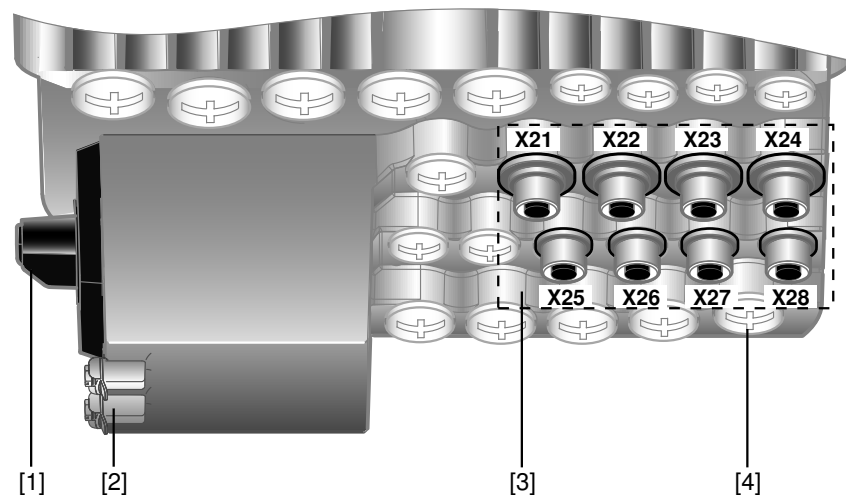
INFORMATION



- The hybrid ABOX is based on the standard ABOX MTA...-S02.-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02.-...-00. (→ 59)
- Customers cannot use terminal strip X25 in the ABOX because the described plug connectors are assigned to it.

5.7.1 Description

The following figure shows the hybrid ABOX with M12 plug connectors for connecting digital inputs/outputs:



- [1] Maintenance switch (optional)
- [2] PE connection
- [3] M12 plug connector for digital inputs/outputs
- [4] Diagnostics socket (RJ10) under the screw plug

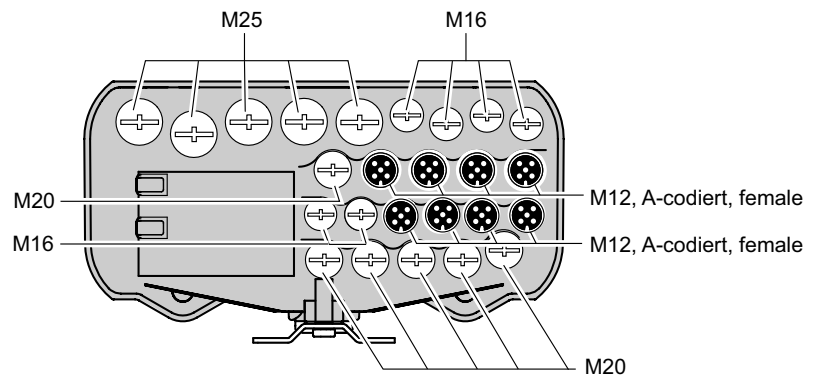
5.7.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-**S42**-...-00:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the cable glands and plug connectors of the hybrid ABOX:

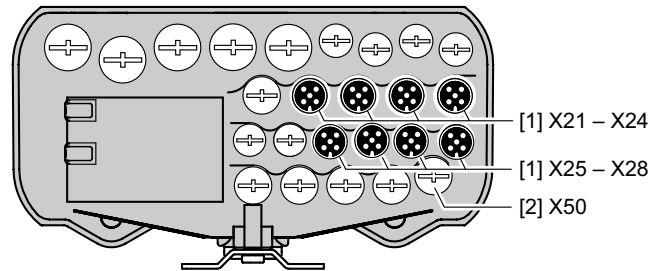
PROFIBUS	MTA11A-503-S421-...-00
PROFINET IO	} MTA11A-503-S423-...-00
EtherNet/IP™	
Modbus/TCP	



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5.7.3 Plug connector positions

The following figure shows the plug connectors of the hybrid ABOX:



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- | | | |
|---------------|------------------------|--------------------------------------|
| [1] X21 – X28 | Digital inputs/outputs | (M12, 5-pole, female, A-coded) |
| [2] X50 | Diagnostic interface | (RJ10, female, under the screw plug) |

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable, see chapter "Y adapter" (→ 102).

5.8 Hybrid ABOX MTA...-S52.-...-00

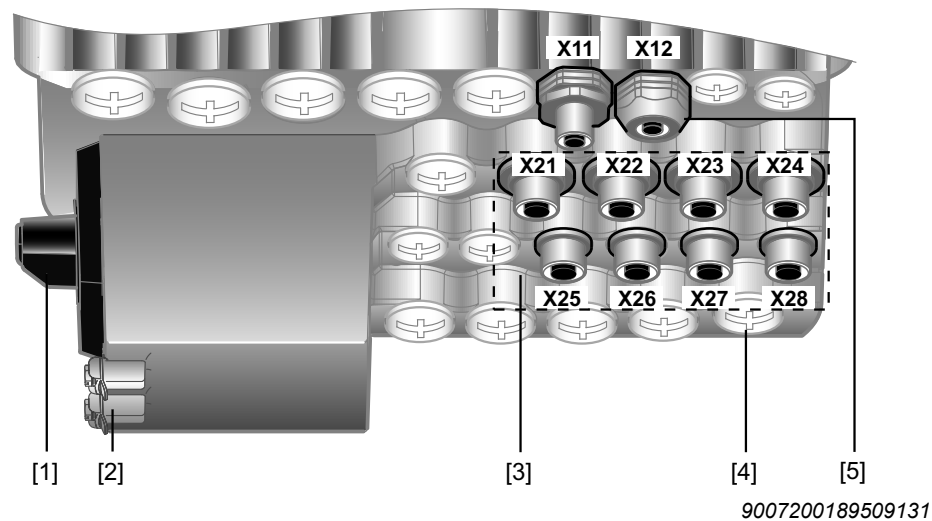
INFORMATION



- The hybrid ABOX is based on the standard ABOX MTA...-S02.-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02.-...-00 (→ 59).
- Customers cannot use terminal strips X25, X30 and X31 in the ABOX because the described plug connectors are assigned to them.

5.8.1 Description

The following figure shows the hybrid ABOX with M12 plug connectors for connecting digital inputs/outputs and the fieldbus:



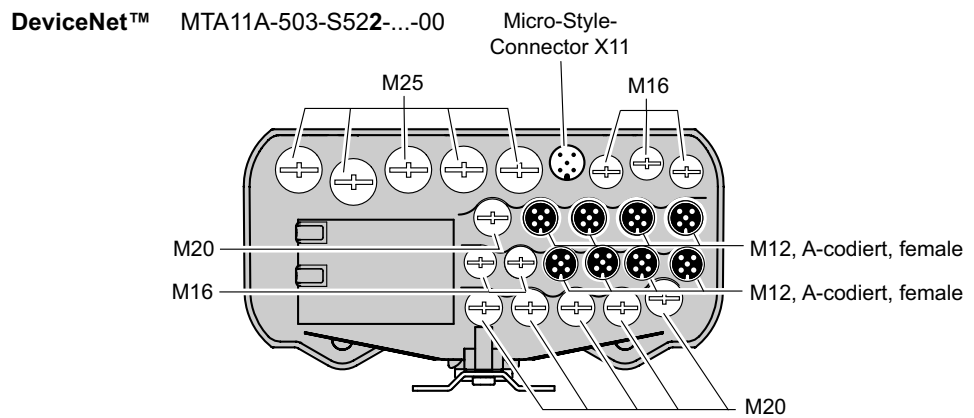
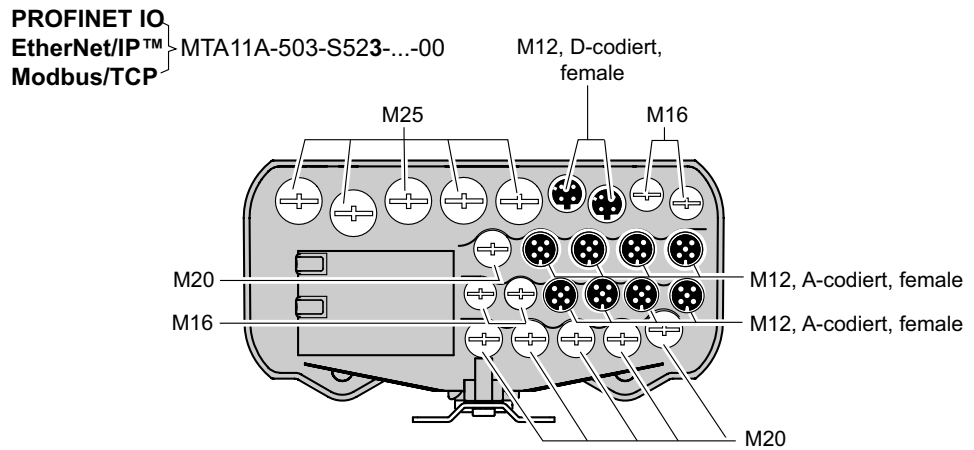
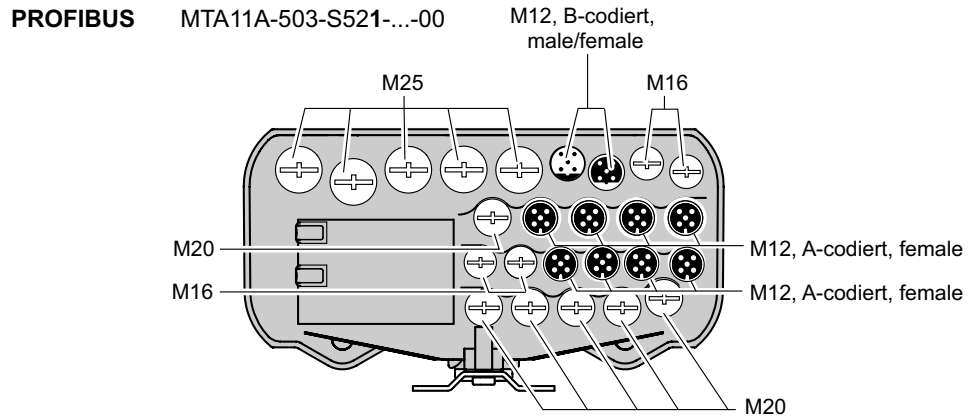
- [1] Maintenance switch (optional)
- [2] PE connection
- [3] M12 plug connector for digital inputs/outputs
- [4] Diagnostics socket (RJ10) under the screw plug
- [5] M12 plug connectors for the fieldbus connection

5.8.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-S52-...-00:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

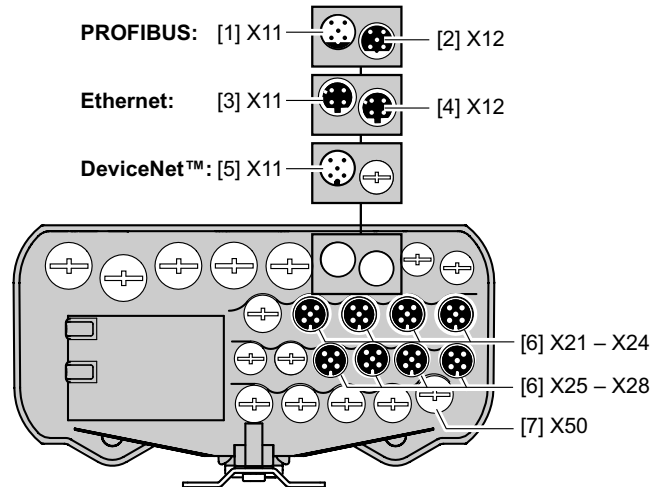
The following figure shows the cable glands and plug connectors of the Hybrid ABOX depending on the fieldbus interface:



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5.8.3 Plug connector positions

The following figure shows the plug connectors of the hybrid ABOX:



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[1]	X11	PROFIBUS input	(M12, 5-pole, male, B-coded)
[2]	X12	PROFIBUS output	(M12, 5-pole, female, B-coded)
[3]	X11	Ethernet interface, port 1 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(M12, 4-pole, female, D-coded)
[4]	X12	Ethernet interface, port 2 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(M12, 4-pole, female, D-coded)
[5]	X11	DeviceNet™ interface	(Micro-style connector, male, A-coded)
[6]	X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[7]	X50	Diagnostic interface	(RJ10, female, under the screw plug)

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable, see chapter "Y adapter" (→ 102).

5.9 Hybrid ABOX MTA...-S533-...-00/L10

INFORMATION

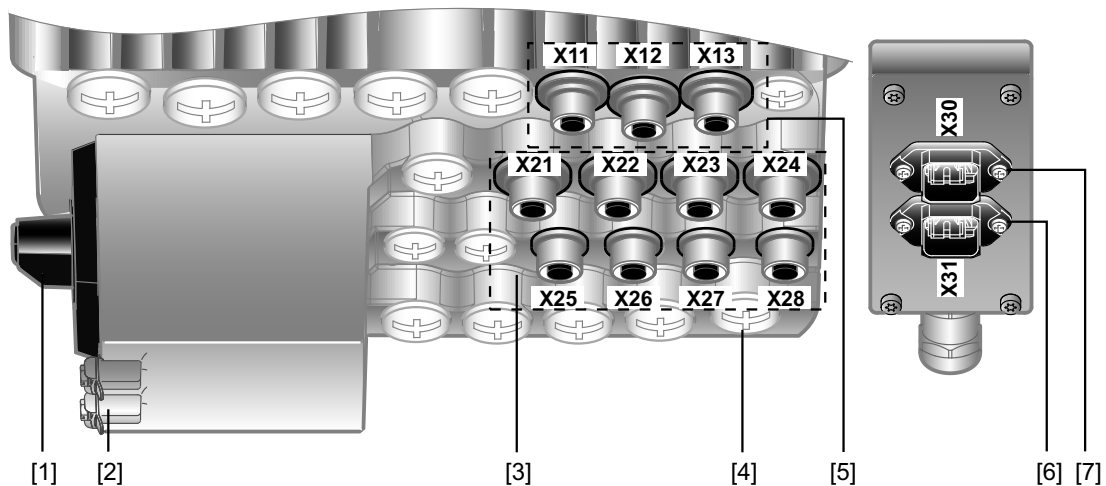


- The hybrid ABOX is based on the standard ABOX MTA...-S02-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02-...-00 (→ 59).
- Customers cannot use terminal strips X25, X30, X31 and terminals X35/4, X35/5 in the ABOX because the described plug connectors are assigned to them.
- All electrical connections of the POF option L10 are installed at the factory.

5.9.1 Description

The following figure shows

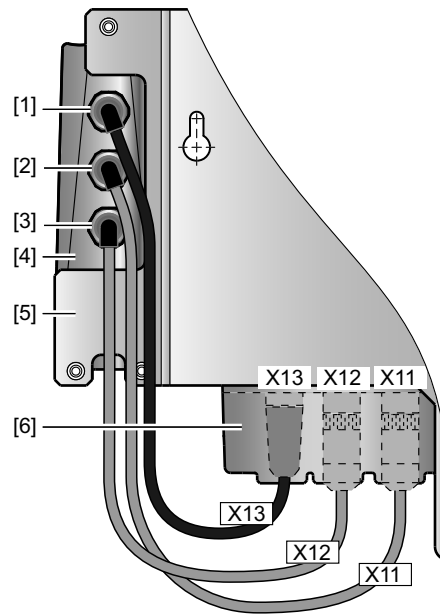
- the hybrid ABOX with
 - M12 plug connectors for connecting PROFINET IO (plugged at the factory)
 - M12 plug connectors for DC 24 V supply of the POF option L10 (plugged at the factory)
 - M12 plug connectors for connecting digital inputs/outputs
- and the POF option L10 with
 - push-pull plug connectors for connecting the PROFINET POF:



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- [1] Maintenance switch (optional)
- [2] PE connection
- [3] M12 plug connector for digital inputs/outputs
- [4] Diagnostics socket (RJ10) under the screw plug
- [5] M12 plug connectors for the PROFINET IO interface and the DC 24 V supply (plugged at the factory)
- [6] Push-pull SCRJ plug connector for PROFINET POF interface, port 2
- [7] Push-pull SCRJ plug connector for PROFINET POF interface, port 1

The following figure shows the mounting rail and POF option L10 **from the back**:



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- [1] DC 24 V supply
- [2] PROFINET IO, port 1
- [3] PROFINET IO, port 2
- [4] POF option L10
- [5] Mounting rail
- [6] ABOX

- Cable gland (connected at the factory)
- Cable gland (connected at the factory)
- Cable gland (connected at the factory)

INFORMATION



The plug connectors of the POF option L10 must be plugged in to connectors X11, X12 and X13 of the ABOX as shown in the figure above.

If plug connectors X11 and X12 are swapped, the network topology is not properly recognized by the higher-level controller.

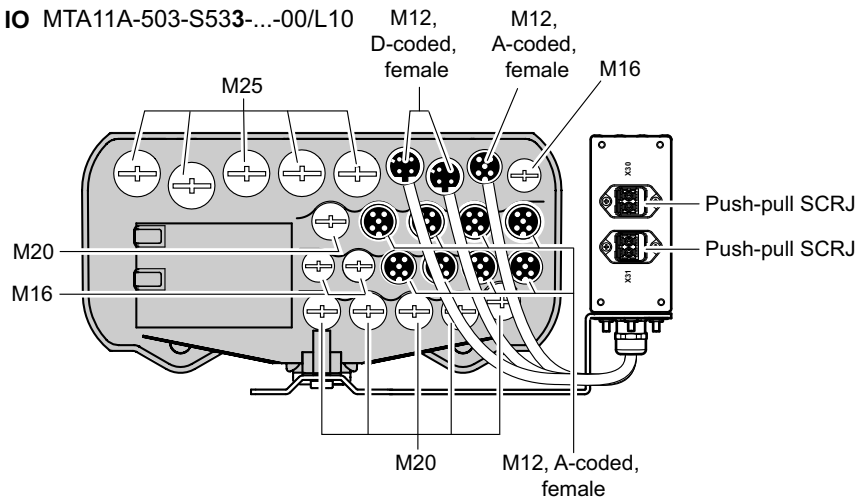
5.9.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-**S53**-...-00/L10:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the cable glands and plug connectors of the hybrid ABOX with POF option L10:

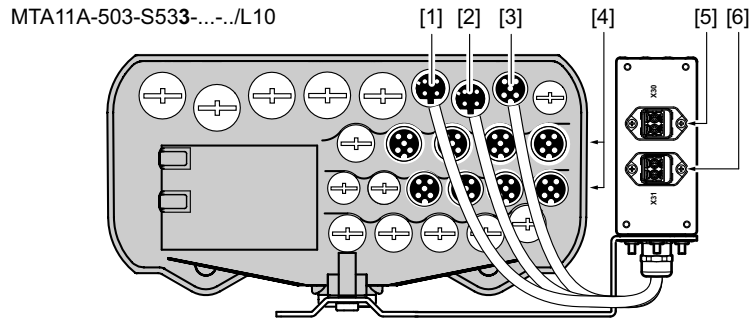
PROFINET IO MTA11A-503-S533-...-00/L10



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5.9.3 Plug connector positions

The following figure shows the plug connectors of MOVIFIT® with POF option L10:



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[1]	X11	PROFINET IO interface, port 1 (plugged at the factory)	M12, D coding, female
[2]	X12	PROFINET IO interface, port 2 (plugged at the factory)	M12, D coding, female
[3]	X13	DC 24 V supply of POF option L10 (plugged at the factory)	M12, A-coded, female
[4]	X21 – X28	Digital inputs/outputs	M12, A-coded, female
[5]	X30	PROFINET POF interface, port 1	Push-pull SCRJ
[6]	X31	PROFINET POF interface, port 2	Push-pull SCRJ

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable, see chapter "Y adapter" (→ 102).

5.10 Hybrid ABOX MTA...-S62.-...-00

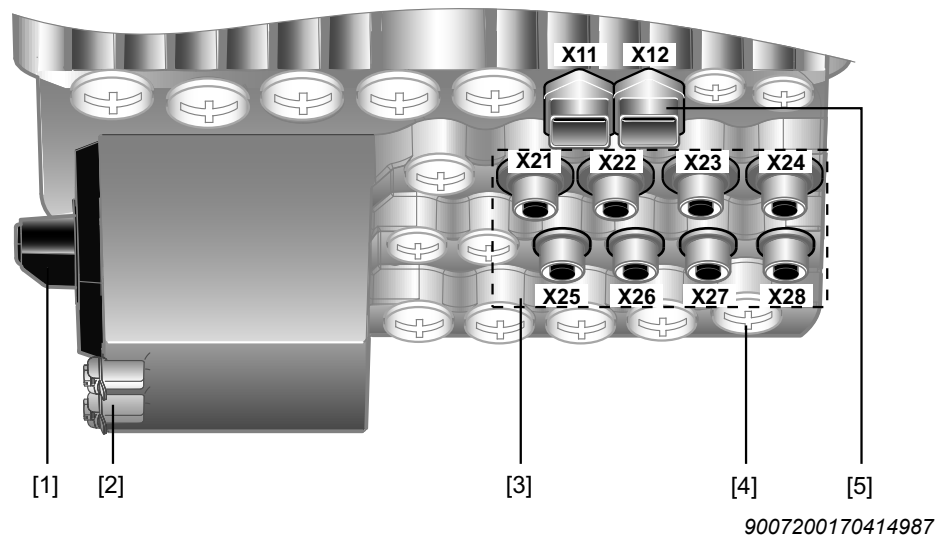
INFORMATION



- The hybrid ABOX is based on the standard ABOX MTA...-S02.-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02.-...-00 (→ 59).
- Customers cannot use terminal strips X25, X30 and X31 in the ABOX because the described plug connectors are assigned to them.

5.10.1 Description

The following figure shows the hybrid ABOX with M12 plug connectors for connecting digital inputs/outputs and push-pull RJ45 plug connectors for the Ethernet connection:



- [1] Maintenance switch (optional)
- [2] PE connection
- [3] M12 plug connector for digital inputs/outputs
- [4] Diagnostics socket (RJ10) under the screw plug
- [5] Push-pull RJ45 plug connector for Ethernet interfaces

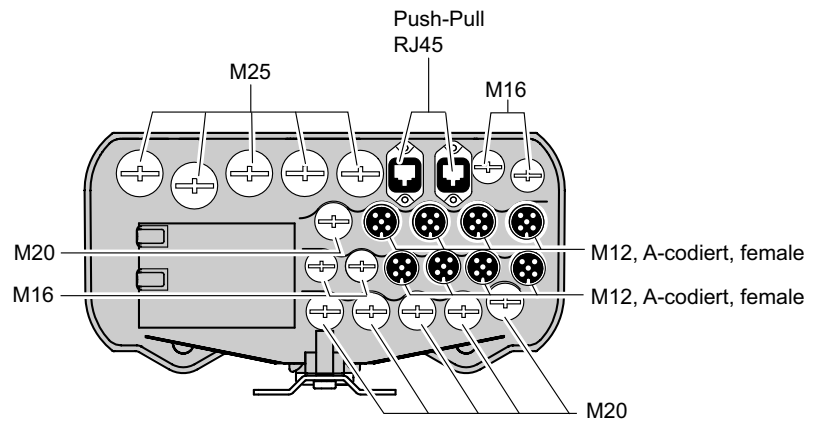
5.10.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-**S62**-...-00:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the cable glands and plug connectors of the hybrid ABOX:

PROFINET IO
EtherNet/IP™ } MTA11A-503-S623-...-00
Modbus/TCP



27021598698999051

5.10.3 Plug connector positions

NOTICE

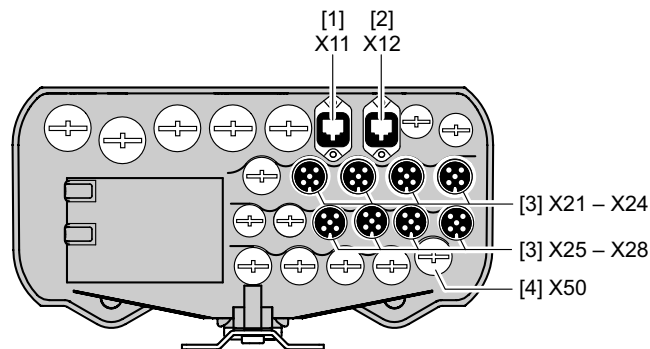


The RJ45 socket can be damaged by inserting commercially available RJ45 patch cables without push-pull connector housing.

Damage to the RJ45 socket.

- Only plug suitable push-pull RJ45 mating connectors according to IEC PAS 61076-3-117 into push-pull RJ45 sockets.
- Never use commercially available RJ45 patch cables without push-pull connector housing. These plug connectors do not snap in place when they are plugged. They may damage the socket and are therefore not suited.

The following figure shows the plug connectors of the hybrid ABOX:



9007202824956043

[1]	X11	Ethernet interface, port 1 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(Push-pull RJ45, female)
[2]	X12	Ethernet interface, port 2 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(Push-pull RJ45, female)
[3]	X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[4]	X50	Diagnostic interface	(RJ10, female, under the screw plug)

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable, see chapter "Y adapter" (→ 102).

5.11 Hybrid ABOX MTA...-I55.-...-00, MTA...-G55.-...-00

INFORMATION

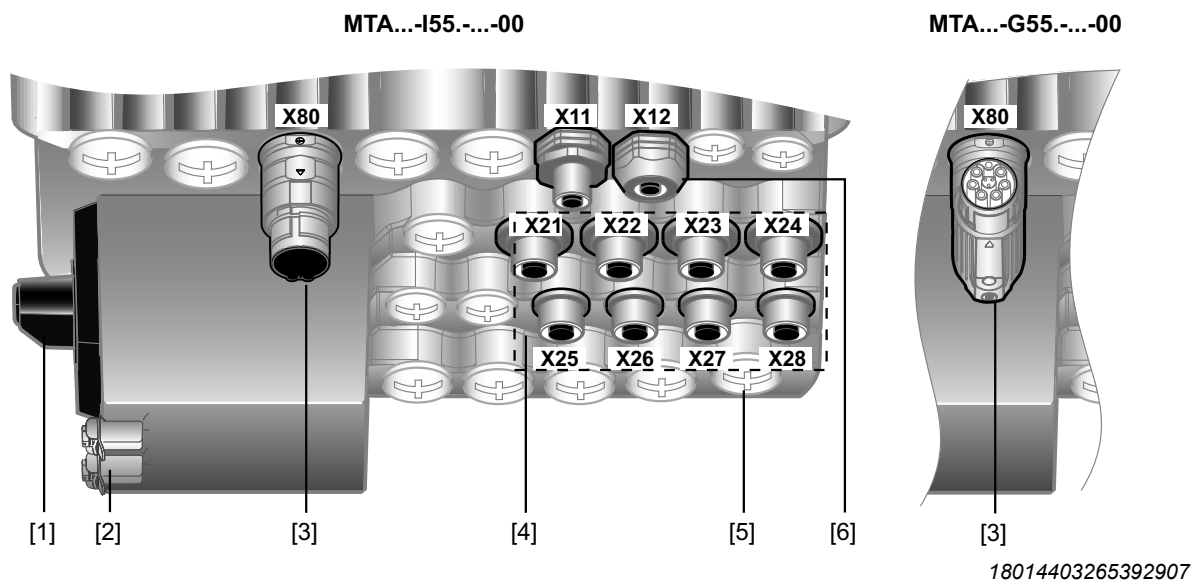


- The hybrid ABOX is based on the standard ABOX MTA...-S02.-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02.-...-00 (→ 59).
- In contrast to the standard ABOX, the hybrid ABOXes MTA...-I55.-...-00 and MTA...-G55.-...-00 have no shield plates. Here, the cable shields must be connected via EMC cable glands.
- Customers cannot use terminal strips X8, X81, X25, X30 and X31 in the ABOX because the described plug connectors are assigned to them.

5.11.1 Description

The following figure shows the hybrid ABOX with:

- 1 circular connector (Intercontec):
 - Motor output pointing downward (only for MTA...-I55.-...-00)
 - Motor output pointing forward (only for MTA...-G55.-...-00)
- M12 plug connectors for digital inputs/outputs
- M12 plug connectors for the fieldbus



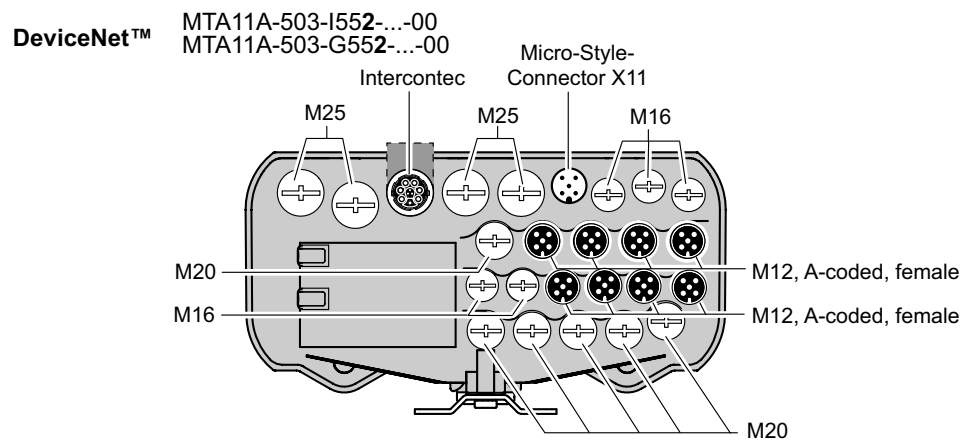
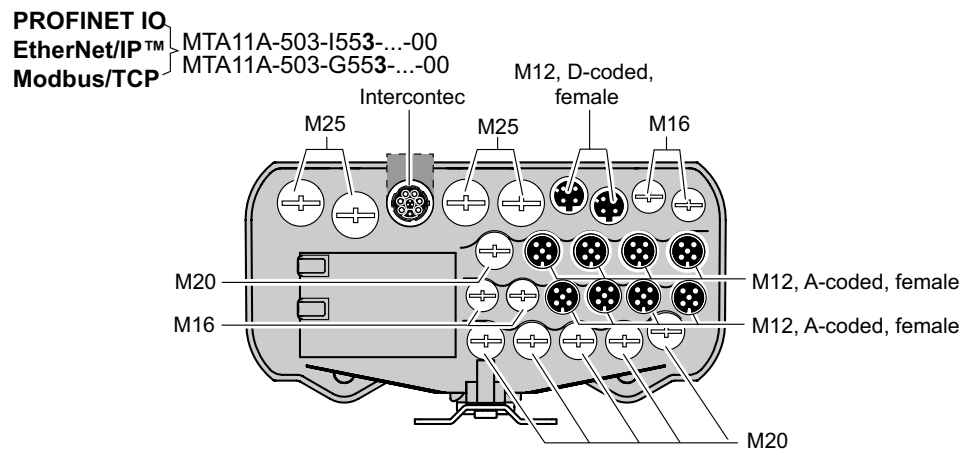
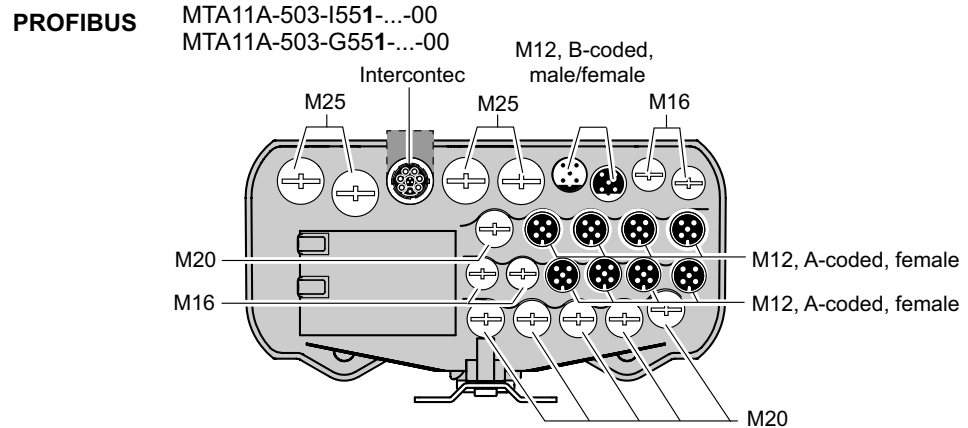
- [1] Maintenance switch (optional)
- [2] PE connection
- [3] Plug connector for motor
- [4] M12 plug connector for digital inputs/outputs
- [5] Diagnostics socket (RJ10) under the screw plug
- [6] M12 plug connectors for the fieldbus connection

5.11.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-I55-...-00/MTA11A-503-G55-...-00
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the cable glands and plug connectors of the Hybrid ABOX depending on the fieldbus interface:

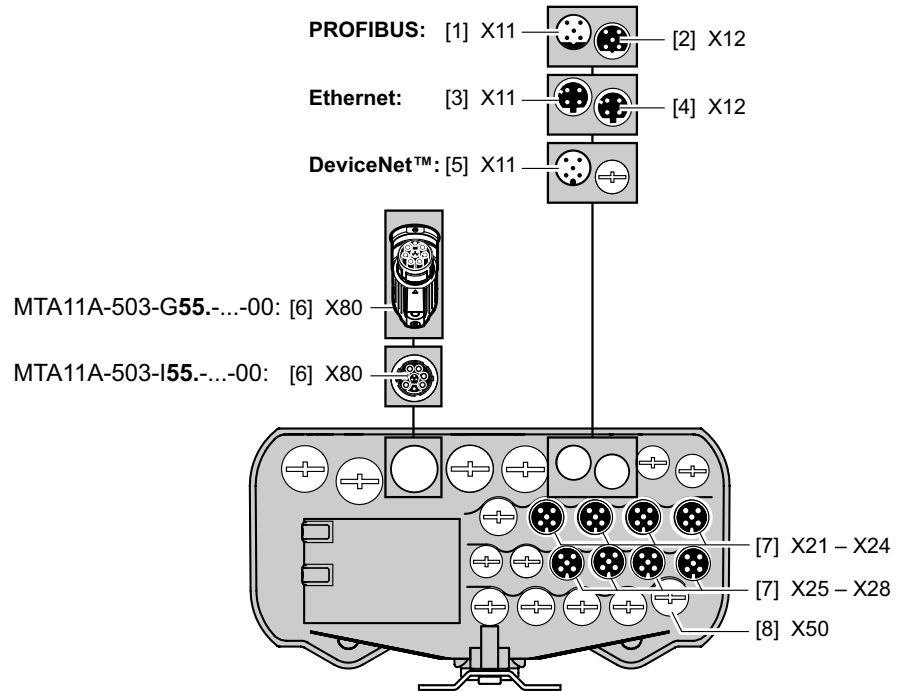


9007204010656267

21316996/EN – 12/2014

5.11.3 Plug connector positions

The following figure shows the plug connectors of the hybrid ABOX:



9007204012971787

[1] X11	PROFIBUS input	(M12, 5-pole, male, B-coded)
[2] X12	PROFIBUS output	(M12, 5-pole, female, B-coded)
[3] X11	Ethernet interface, port 1 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(M12, 4-pole, female, D-coded)
[4] X12	Ethernet interface, port 2 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(M12, 4-pole, female, D-coded)
[5] X11	DeviceNet™ interface	(Micro-style connector, male, A-coded)
[6] X80	Motor connection	(Intercontec 723 H-Tec, 7 + 3-pole, female)
[7] X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[8] X50	Diagnostic interface	(RJ10, female, under the screw plug)

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable, see chapter "Y adapter" (→ 102).

5.12 Hybrid ABOX MTA...-I65.-...-00, MTA...-G65.-...-00

INFORMATION

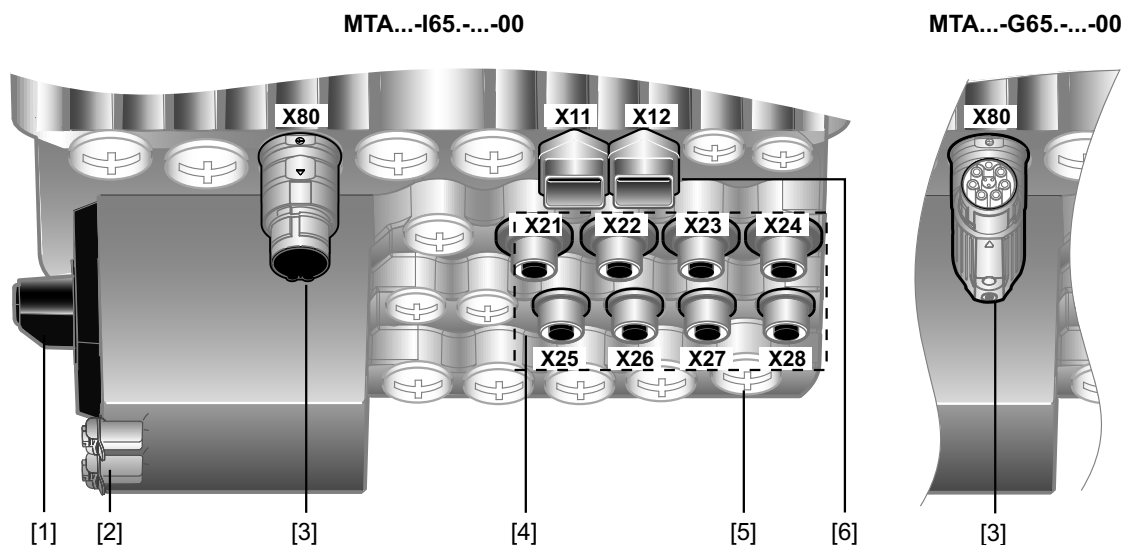


- The hybrid ABOX is based on the standard ABOX MTA...-S02.-...-00. The following therefore only describes the additional plug connectors in comparison with the standard ABOX.
- For a description of the terminals, refer to chapter "Standard ABOX MTA...-S02.-...-00 (→ 59).
- In contrast to the standard ABOX, the hybrid ABOXes MTA...-I65.-...-00 and MTA...-G65.-...-00 have no shield plates. Here, the cable shields must be connected via EMC cable glands.
- Customers cannot use terminal strips X8, X81, X25, X30 and X31 in the ABOX because the described plug connectors are assigned to them.

5.12.1 Description

The following figure shows the hybrid ABOX with:

- 1 circular connector (Intercontec):
 - Motor output pointing downward (only for MTA...-I65.-...-00)
 - Motor output pointing forward (only for MTA...-G65.-...-00)
- M12 plug connectors for digital inputs/outputs
- Push-pull RJ45 plug connector for Ethernet connection



18014403267716875

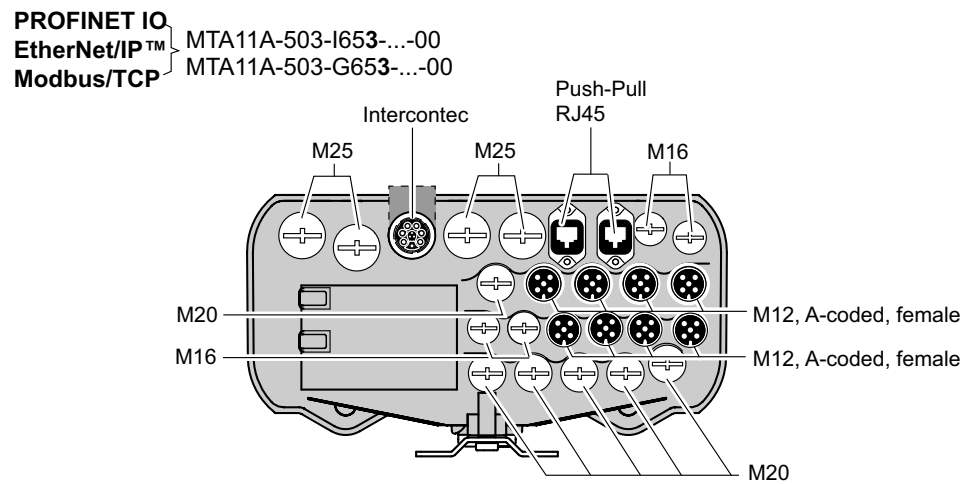
- [1] Maintenance switch (optional)
- [2] PE connection
- [3] Plug connector for motor
- [4] M12 plug connector for digital inputs/outputs
- [5] Diagnostics socket (RJ10) under the screw plug
- [6] Push-pull RJ45 plug connector for Ethernet connection

5.12.2 Variants

The following variants of the hybrid ABOX are available for MOVIFIT® FC (MTF):

- MTA11A-503-I65-...-00/MTA11A-503-G65-...-00:
 - Optional internal or external braking resistor
 - Optional load break switch
 - Optional load break switch and line protection

The following figure shows the cable glands and plug connectors of the hybrid ABOX:



9007204012979979

5.12.3 Plug connector positions

NOTICE

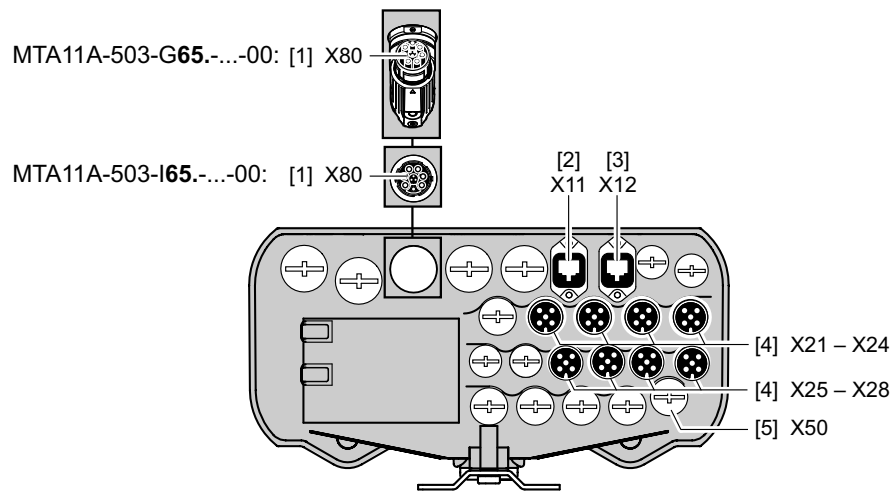


The RJ45 socket can be damaged by inserting commercially available RJ45 patch cables without push-pull connector housing.

Damage to the RJ45 socket.

- Only plug suitable push-pull RJ45 mating connectors according to IEC 61076-3-117 into push-pull RJ45 sockets.
- Never use commercially available RJ45 patch cables without push-pull connector housing. These plug connectors do not snap in place when they are plugged. They may damage the socket and are therefore not suited.

The following figure shows the plug connectors of the hybrid ABOX:



4758511883

[1] X80	Motor connection	(Intercontec 723 H-Tec, 7 + 3-pole, female)
[2] X11	Ethernet interface, port 1 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(Push-pull RJ45, female)
[3] X12	Ethernet interface, port 2 (PROFINET IO, EtherNet/IP™, Modbus/TCP)	(Push-pull RJ45, female)
[4] X21 – X28	Digital inputs/outputs	(M12, 5-pole, female, A-coded)
[5] X50	Diagnostic interface	(RJ10, female, under the screw plug)

INFORMATION



- The built-in M12 plug connectors have no specific alignment. This is why you should only use straight M12 mating connectors.
- You find the pin assignment of the plug connectors in the "Electrical Connections" chapter.
- To connect 2 sensors/actuators with an M12 plug connector, use the Y adapter with extension cable. See chapter "Y adapters" (→ 102).

5.13 Electrical connections


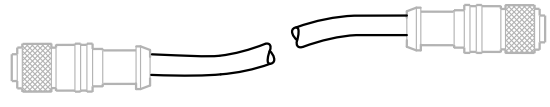
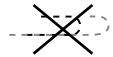
5.13.1 Connection cables

Connection cables are not included in the delivery.

Prefabricated cables for connection between SEW components can be ordered from SEW-EURODRIVE at any time. These cables are described in the following sections. Specify the part number and length of the required cable in your order.

The number and type of required connection cables depend on the design of the units and the components to be connected. This is why not all listed cables are required.

The following figure shows the various cable types:

Cable	Length	Installation type
	Fixed length	Suitable for cable carrier installation
	Variable length	Not suitable for cable carrier installation 

5.13.2 X80, X90: Motor connection

The following table shows information about this connection:

Function		
Motor connection		
Connection type		
Intercontec 723 H-Tec, 7 + 3-pole, female (downward or to the front)		
Wiring diagram		
4312557451		
Assignment		
No.	Name	Function
PE	PE	PE connection
A	U	Motor phase U output
B	V	Motor phase V output
C	W	Motor phase W output
D	13	SEW brake 13 (rot)
E	14	SEW brake 14 (white)
F	15	SEW brake 15 (blue)
1	+24 V	Connection for temperature sensor TF/TH (+)
2	n.c.	Not connected
3	TF -	Connection for temperature sensor TF/TH (+)

5.13.3 X21 – X28: Digital inputs/outputs

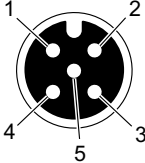
Variants

The number and assignments of the digital inputs/outputs depends on the function level and the fieldbus interface if the MOVIFIT® unit.

I/O variant	MOVIFIT® design	
	Function level	Fieldbus
4 DI	None	<ul style="list-style-type: none"> SBus slave
6 DI + 2 DI/O	Classic	<ul style="list-style-type: none"> PROFIBUS DeviceNet™
12 DI + 4 DI/O	Technology	<ul style="list-style-type: none"> PROFIBUS PROFINET IO EtherNet/IP™ Modbus/TCP
	Classic	<ul style="list-style-type: none"> PROFINET IO

Assignment

The following table shows information about these connections:

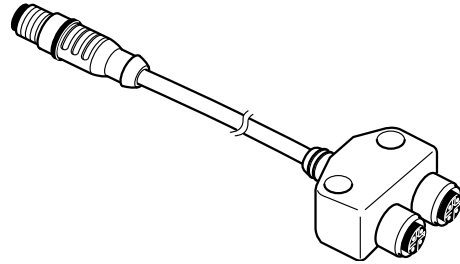
Function				
Digital inputs/outputs of the hybrid ABOX				
Connection type				
M12, 5-pole, female, A-coded				
Wiring diagram				
				
9007201519557259				
I/O variant	Assignment			
	No.	X21	X22	X23 – X28
4 DI	1	VO24	VO24	res.
	2	DI101	DI103	res.
	3	0V24_C	0V24_C	res.
	4	DI100	DI102	res.
	5	n.c.	n.c.	res.

6 DI + 2 DI/O	No.	X21	X22	X23	X24
	1	VO24-I	VO24-I	VO24-II	VO24-II
	2	res.	res.	res.	res.
	3	0V24_C	0V24_C	0V24_C	0V24_C
	4	DI00	DI01	DI02	DI03
	5	n.c.	n.c.	n.c.	n.c.
	No.	X25	X26	X27	X28
	1	VO24-III	VO24-III	VO24-IV	VO24-IV
	2	res.	res.	res.	res.
	3	0V24_C	0V24_C	0V24_S	0V24_S
	4	DI04	DI05	DI06/DO00	DI07/DO01
5	n.c.	n.c.	n.c.	n.c.	
12 DI + 4 DI/O	No.	X21	X22	X23 (Encoder 1 connection)	X24 (Encoder 2 connection)
	1	VO24-I	VO24-I	VO24-II	VO24-II
	2	DI01	DI03	DI05 Encoder track B	DI07 Encoder track B
	3	0V24_C	0V24_C	0V24_C	0V24_C
	4	DI00	DI02	DI04 Encoder track A	DI06 Encoder track A
	5	n.c.	n.c.	n.c.	n.c.
	No.	X25 (Encoder 3 connection)	X26	X27	X28
	1	VO24-III	VO24-III	VO24-IV	VO24-IV
	2	DI09 Encoder track B	DI11	DI13/DO01	DI15/DO03
	3	0V24_C	0V24_C	0V24_S	0V24_S
	4	DI08 Encoder track A	DI10	DI12/DO00	DI14/DO02
	5	n.c.	n.c.	n.c.	n.c.

Y adapter

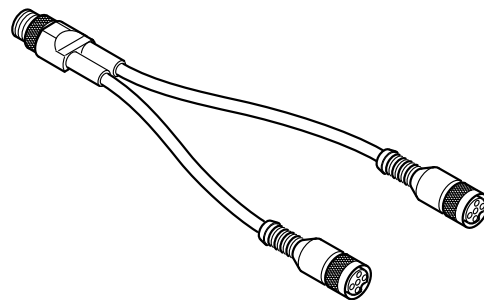
For connecting 2 sensors/actuators to an M12 plug connector, use a Y adapter with extension.

The Y adapter is available from different manufacturers:



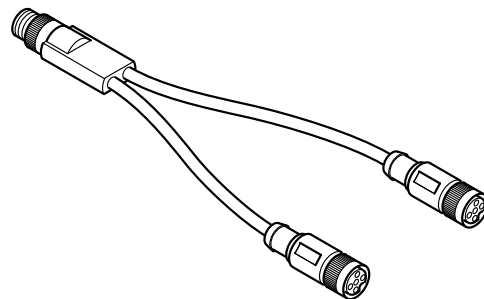
915294347

Manufacturer: Escha
Type: WAS4-0,3-2FKM3/..



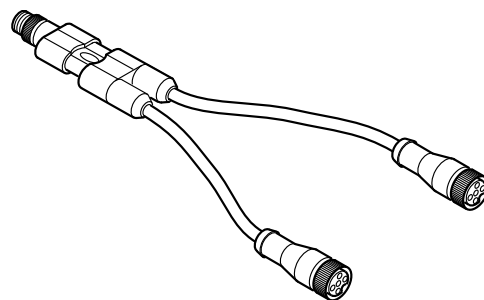
1180380683

Manufacturer: Binder
Type: 79 5200 ..



1180375179

Manufacturer: Phoenix Contact
Type: SAC-3P-Y-2XFS SCO/.../...
The sheath of the cables is made of PVC. Provide suitable UV protection.



1180386571

Manufacturer: Murrelektronik
Type: 7000-40721-..

5.13.4 X70F: STO (optional)



▲ WARNING

No safety-related disconnection of the MOVIFIT® drive.
Severe or fatal injuries.

- Do not use the 24 V output (pins 1 and 2) for safety-related applications with MOVIFIT® drives.
- You may only jumper the STO connection with 24 V when the MOVIFIT® drive is not used to fulfill any safety functions.

The STO plug connector is only available as an option.

The STO plug connector is left to the X50 diagnostic interface.

The following table shows information about this connection:

Function		
Safety-related digital output F-DO_STO for safe torque off in the drive (STO)		
Connection type		
M12, 5-pole, female, A-coded		
Wiring diagram		
9007201519557259		
Assignment		
No.	Name	Function
1	+24V_C	+24 V supply for digital inputs – continuous voltage
2	0V24_C	0V24 reference potential for digital inputs – continuous voltage
3	F-DO_STO_M	Safety-related digital output F-DO_STO (sinking signal) for safe torque off in the drive (STO)
4	F-DO_STO_P	Safety-related digital output F-DO_STO (sourcing signal) for safe torque off in the drive (STO)
5	n.c.	Not connected

STO jumper plug



▲ WARNING

Safety-related disconnection of the MOVIFIT® drive is not possible when the STO jumper plug is used.

Severe or fatal injuries.

- You may only use the STO jumper plug when the MOVIFIT® drive does not fulfill any safety function.



▲ WARNING

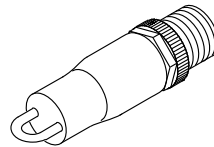
Disabling of safety-related disconnection of other drive units due to parasitic voltages when using an STO jumper.

Severe or fatal injuries.

- You may only use the STO jumper when all incoming and outgoing STO connections have been removed from the drive unit.

The STO jumper plug can be connected to the X70F STO plug connector of the MOVIFIT® unit. The STO jumper plug deactivates the safety functions of the MOVIFIT® unit.

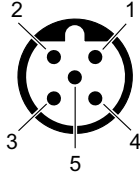
The following figure shows the STO jumper plug, part number 11747099:



63050395932099851

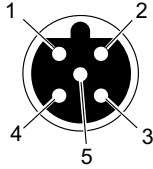
5.13.5 X11: PROFIBUS input

The following table shows information about this connection:

Function		
PROFIBUS input		
Connection type		
(M12, 5-pole, male, B-coded)		
Wiring diagram		
		
Assignment		
No.	Name	Function
1	res.	Reserved
2	A_IN	PROFIBUS data line A
3	res.	Reserved
4	B_IN	PROFIBUS data line B
5	res.	Reserved

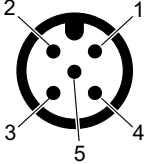
5.13.6 X12: PROFIBUS output

The following table shows information about this connection:

Function		
PROFIBUS output		
Connection type		
(M12, 5-pole, female, B-coded)		
Wiring diagram		
		
9007201609172107		
Assignment		
No.	Name	Function
1	+5 V	DC 5 V output
2	A_OUT	PROFIBUS data line A
3	0V5	0V5 reference potential
4	B_OUT	PROFIBUS data line B
5	res.	Reserved

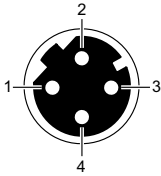
5.13.7 X11: DeviceNet™ interface

The following table shows information about this connection:

Function		
DeviceNet™ interface		
Connection type		
(Micro-style connector, male, A-coded)		
Wiring diagram		
		
9007201519559179		
Assignment		
No.	Name	Function
1	Drain	Shield/equipotential bonding
2	V+	DC 24 V input
3	V-	Reference potential
4	CAN_H	CAN data line (high)
5	CAN_L	CAN data line (low)


5.13.8 X11, X12: Ethernet interface

The following table shows information about this connection:

Function		
<ul style="list-style-type: none"> • PROFINET IO interface • EtherNet/IP™ interface • Modbus/TCP interface 		
Connection type		
M12, 4-pole, female, D-coded		
Wiring diagram		
		
9007201719341963		
Assignment		
No.	Name	Function
1	TX+	Transmit line (+)
2	RX+	Receive line (+)
3	TX-	Transmit line (-)
4	RX-	Receive line (-)

5.13.9 X11, X12: Ethernet interface

The following table shows information about this connection:

Function		
<ul style="list-style-type: none"> • PROFINET IO interface • EtherNet/IP™ interface • Modbus/TCP interface 		
Connection type		
Push-pull RJ45		
Wiring diagram		
		
9007201609174667		
Assignment		
No.	Name	Function
1	TX+	Transmit line (+)
2	TX-	Transmit line (-)
3	RX+	Receive line (+)
4	res.	Reserved
5	res.	Reserved
6	RX-	Receive line (-)
7	res.	Reserved
8	res.	Reserved

Connection cable



NOTICE

The RJ45 socket can be damaged by inserting commercially available RJ45 patch cables without push-pull connector housing.

Damage to the RJ45 socket.

- Only plug suitable push-pull RJ45 mating connectors according to IEC 61076-3-117 into push-pull RJ45 sockets.
- Never use commercially available RJ45 patch cables without push-pull connector housing. These plug connectors do not snap in place when they are plugged. They may damage the socket and are therefore not suited.

Use only shielded cables for this connection.

Closing plug, optional

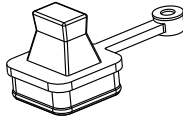


NOTICE

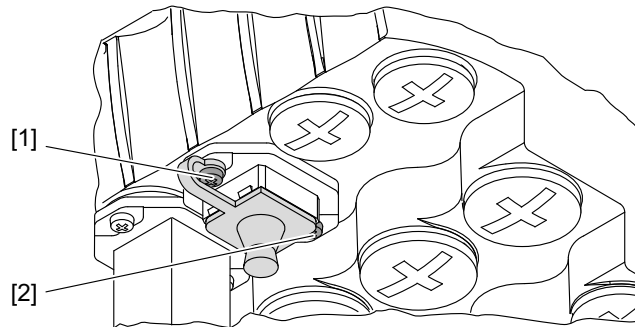
Loss of warranted degree of protection if the closing plugs are installed incorrectly or not at all.

Damage to the MOVIFIT® unit.

- If an RJ45 socket is not occupied by a connector, you must seal it with the following closing plug.

Type	Image	Contents	Part number
Ethernet closing plug for Push pull RJ45 socket		10 pieces	18223702
		30 pieces	18223710

To avoid losing the closing plug, you can secure it with the front retaining screw [1] of the socket, see following figure.




9007202932076683

Do **not** use the back screw [2] to secure the closing plug.

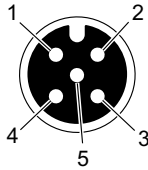
5.13.10 X30, X31: PROFINET POF interface

The following table shows information about this connection:

Function		
PROFINET interface SCRJ / POF (at POF option L10)		
Connection type		
Push-pull SCRJ		
Wiring diagram		
		
Assignment		
No.	Name	Function
1	TX	Transmit line (POF)
2	RX	Receive line (POF)

5.13.11 X13: DC 24 V supply

The following table shows information about this connection:

Function		
DC 24 V supply of POF option L10 (at the ABOX, plugged at the factory)		
Connection type		
M12, 5-pole, female, A-coded		
Wiring diagram		
		
9007201519557259		
Assignment		
No.	Name	Function
1	+24V_C	24 V supply
2	res.	Reserved
3	0V24_C	Reference potential
4	res.	Reserved
5	res.	Reserved

5.14 Encoder connection

5.14.1 EI7. incremental encoder

Properties

The EI7. incremental encoder offers the following features:

- HTL or sin/cos interface (MOVIFIT® does **not** evaluate sin/cos signals)

EI71: 1 pulse/revolution => 4 increments/revolution ¹⁾

EI72: 2 pulses/revolution => 8 increments/revolution ¹⁾

EI76: 6 pulses/revolution => 24 increments/revolution ¹⁾

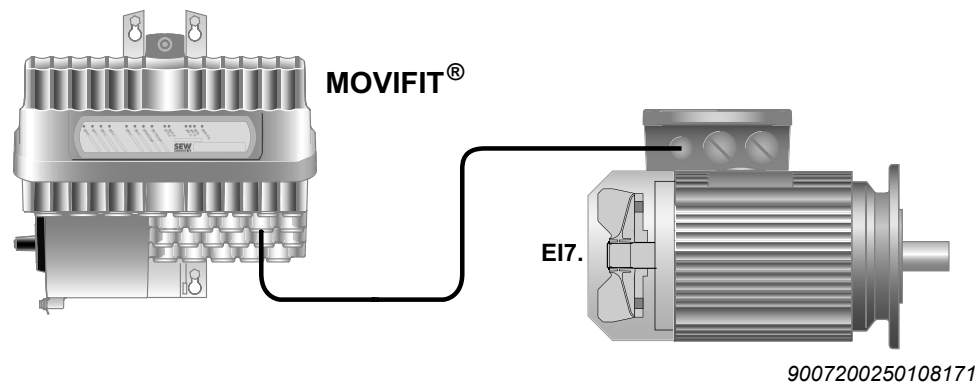
EI7C: 24 pulses/revolution => 96 increments/revolution ¹⁾

1) with 4-fold evaluation

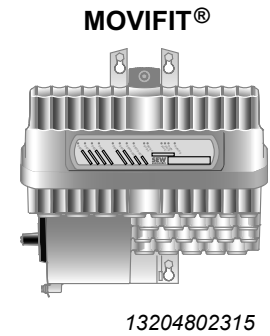
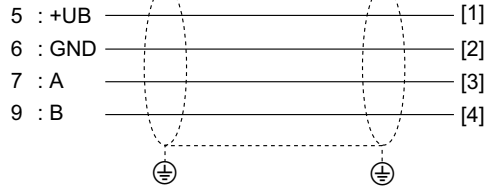
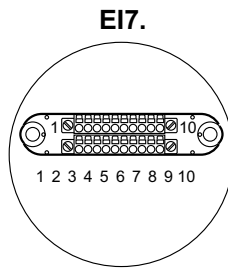
- Encoder monitoring and evaluation is possible with MOVIFIT® function level "Technology".

Installation

- Use a shielded cable to connect the EI7. incremental encoder to the matching encoder inputs of MOVIFIT®:
 - For standard ABOX, see chapter "Terminal assignment" > "X25: I/O terminals".
 - For hybrid ABOX, see chapter "Electrical Connections" > "X21 – X28: Digital inputs/outputs".

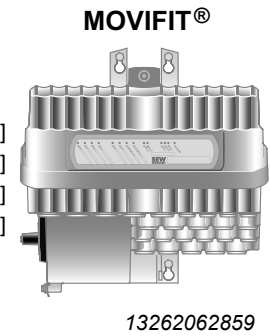
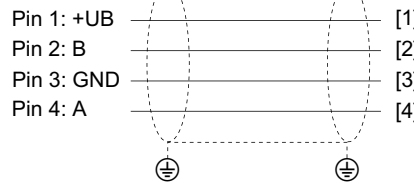
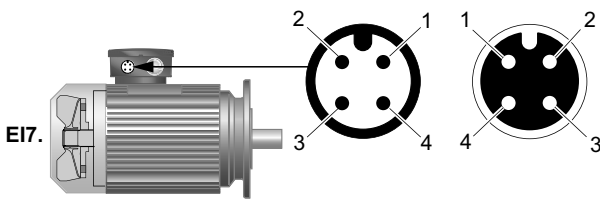


Connection via terminals



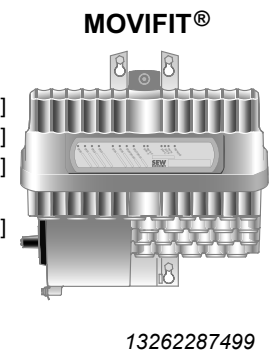
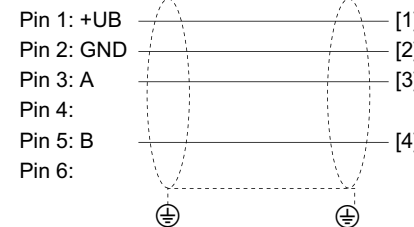
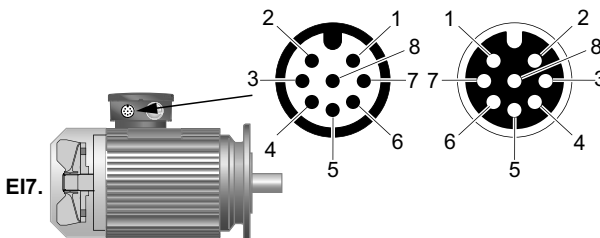
- [1] +24 V supply voltage
- [2] 0V24 reference potential
- [3] Encoder input MOVIFIT® track A
- [4] Encoder input MOVIFIT® track B

Connection with AVSE plug connector



- [1] +24 V supply voltage VO24
- [2] Encoder input MOVIFIT® track B
- [3] 0V24 reference potential 0V24
- [4] Encoder input MOVIFIT® track A

Connection with AVRE plug connector



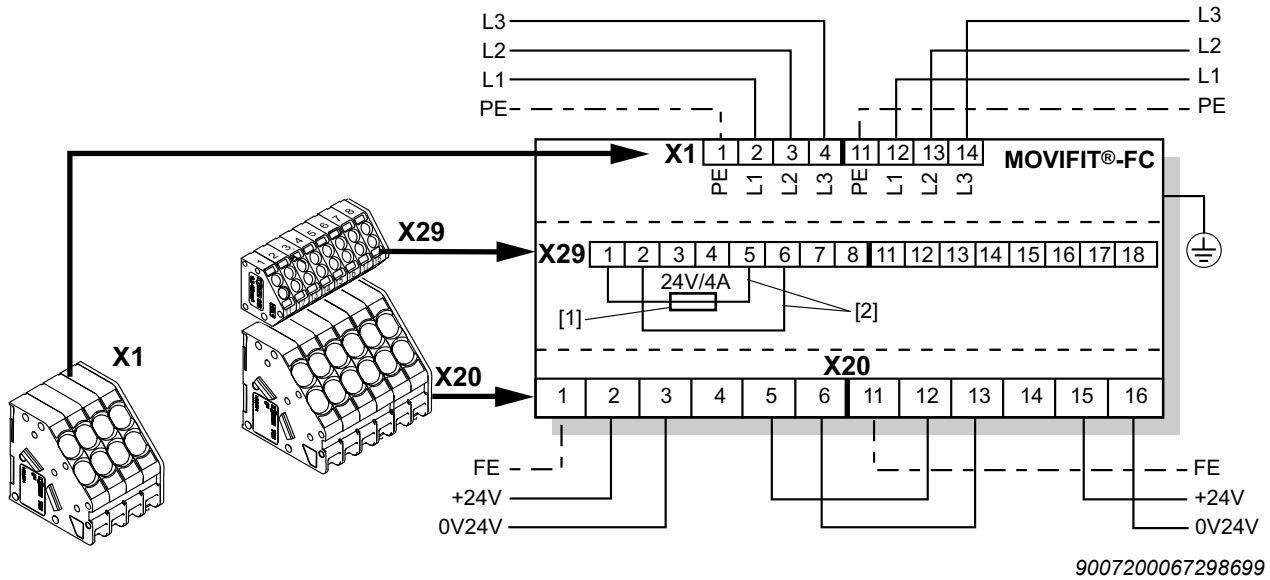
- [1] +24 V supply voltage VO24
- [2] 0V24 reference potential 0V24_C
- [3] Encoder input MOVIFIT® track A
- [4] Encoder input MOVIFIT® track B

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5.15 Power bus connection examples

5.15.1 Connection example with a common 24 V voltage circuit

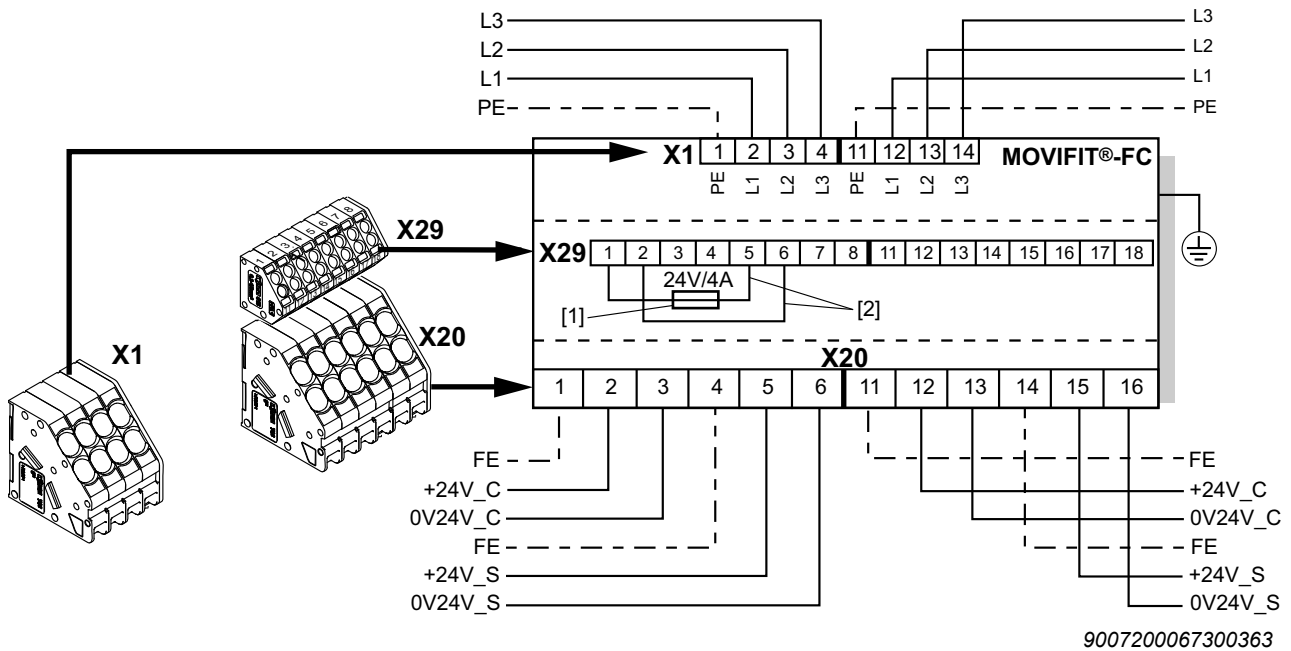
The following figure depicts a basic connection example for the power bus with a common 24 V voltage circuit for sensor/actuator supply. In the example, the integrated frequency inverter is supplied by the voltage 24V_C:



- [1] Example (fuse 24 V/4 A) for UL-compliant installation
- [2] Example for integrated frequency inverter supply via 24V_C

5.15.2 Connection example with two separate 24 V voltage circuits

The following figure shows an example of a power bus connection with 2 separate 24 V voltage circuits for the sensor/actuator supply. In the example, the integrated frequency inverter is supplied by the voltage 24V_C:



- [1] Example (fuse 24 V/4 A) for UL-compliant installation
- [2] Example for integrated frequency inverter supply via 24V_C

5.16 Fieldbus systems connection examples

5.16.1 PROFIBUS via terminals

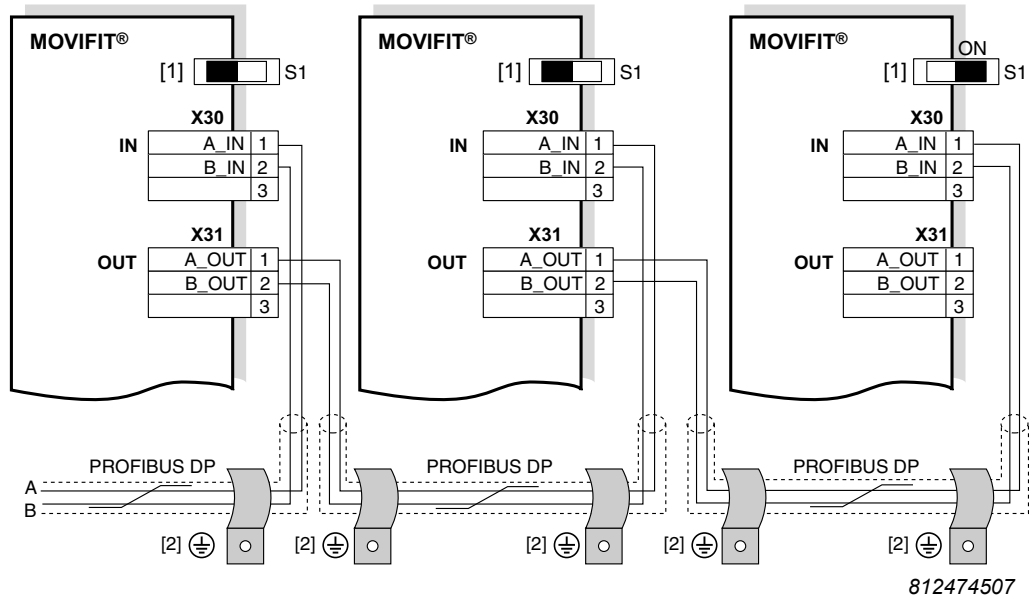
INFORMATION



This example is valid for ABOXes with PROFIBUS terminals.

The following illustration shows the PROFIBUS connection via terminals:

- If the MOVIFIT® unit is located at the end of a PROFIBUS segment, the unit can only be connected to the PROFIBUS network via the incoming PROFIBUS line.
- To prevent malfunctions in the bus system due to reflections, etc., the PROFIBUS segment must be terminated using bus terminating resistors at the first and last stations.
- The bus terminating resistors are already installed in the MOVIFIT® ABOX and they can be activated using the S1 switch.



[1] S1 DIP switch = "ON" for bus termination

[2] Shield plate, see chapter "Connecting the PROFIBUS line" (→ 63)

5.16.2 PROFIBUS via M12 plug connectors

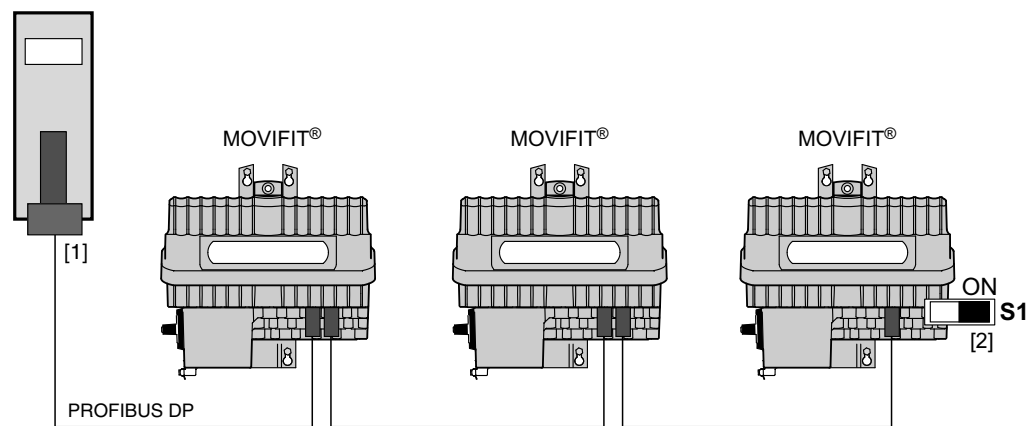
INFORMATION



This example is valid for ABOXes with PROFIBUS plug connectors.

The following figure shows the basic connection topology for PROFIBUS via M12 plug connectors:

- For the PROFIBUS connection, the ABOXes have M12 plug connectors. They comply with the recommendations of PROFIBUS directive no. 2.141 "Connection technology for PROFIBUS".
- To prevent malfunctions in the bus system due to reflections, etc., the PROFIBUS segment must be terminated using bus terminating resistors at the first and last stations.
- The bus terminating resistors are already installed in the MOVIFIT® ABOX and they can be activated using the S1 switch.



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[1] Bus terminating resistor on the controller

[2] S1 DIP switch = "ON" for bus termination

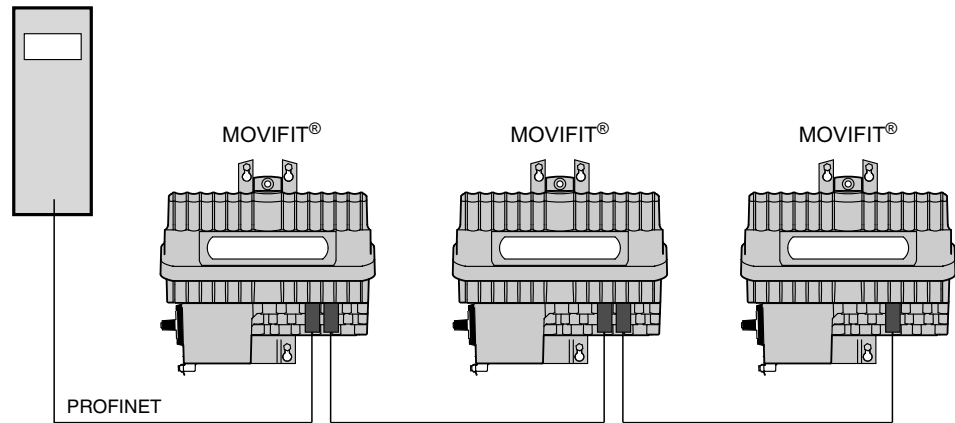
5.16.3 Ethernet (PROFINET IO, EtherNet/IP™, Modbus/TCP)

INFORMATION



This example is valid for ABOXes with PROFINET IO, EtherNet/IP™ or Modbus/TCP interface.

The following figure shows the basic connection topology for Ethernet (PROFINET IO, EtherNet/IP™, Modbus/TCP) via RJ45 plug connectors:



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5.16.4 DeviceNet™

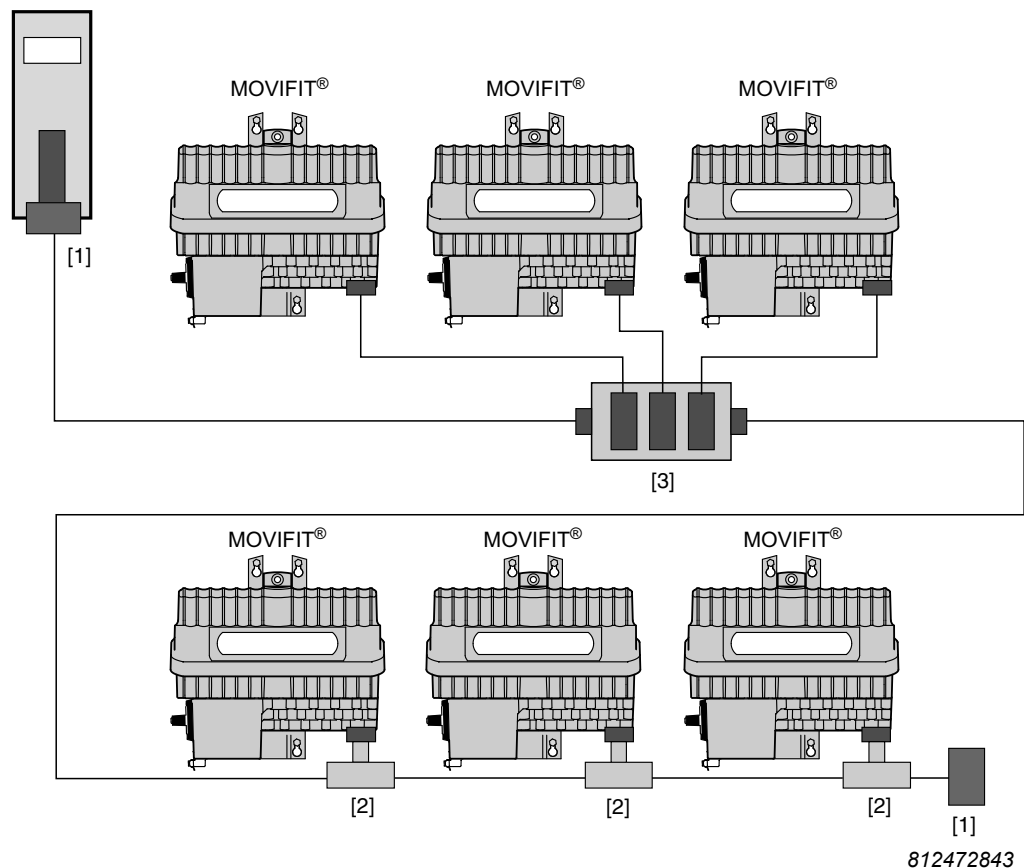
INFORMATION



This example is valid for ABOXes with DeviceNet™ interface.

The following figure shows the basic connection topology for DeviceNet™ using a micro-style connector (the example shows a standard ABOX):

- The connection can be made via a multiport or T connector. Observe wiring instructions compliant with DeviceNet™ specification 2.0.
- To prevent malfunctions in the bus system due to reflections, etc., the DeviceNet™ segment must be terminated using bus terminating resistors at the first and last stations.
- Use external bus terminating resistors.



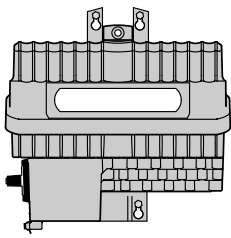
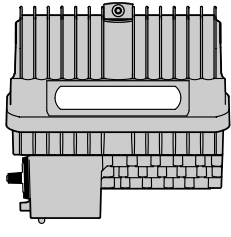
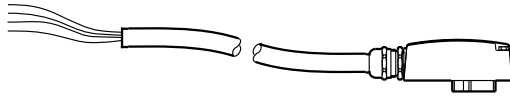
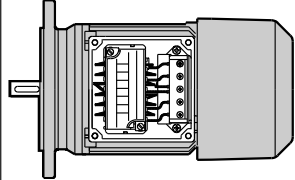
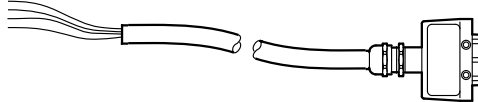
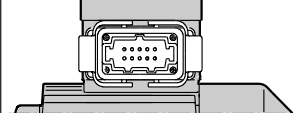
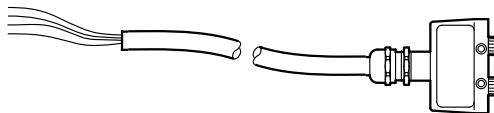
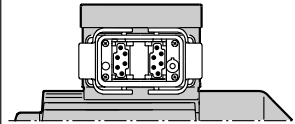
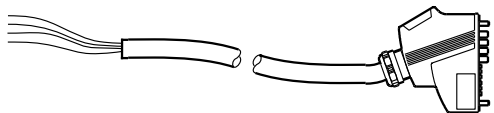
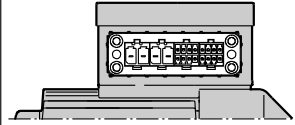
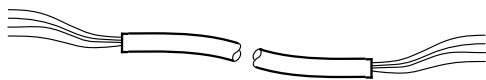
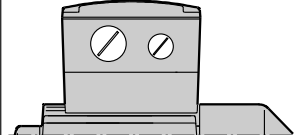
- [1] Bus terminating resistor 120 Ω
 [2] T Connector
 [3] Multiport

812472843

5.17 Hybrid cable

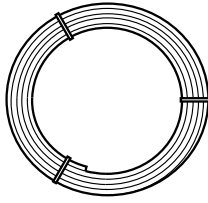
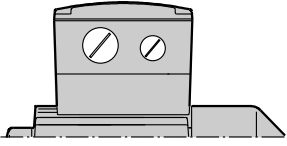
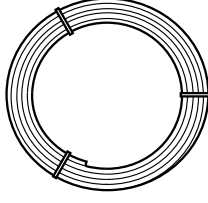
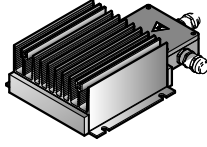
5.17.1 Overview

Hybrid cables are available for connecting MOVIFIT® FC and motor:

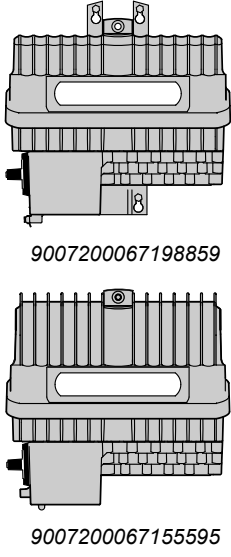
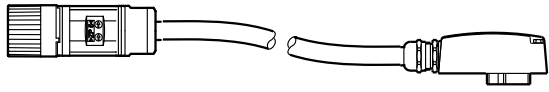
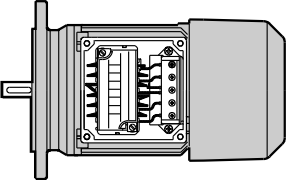

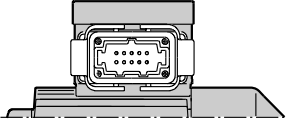

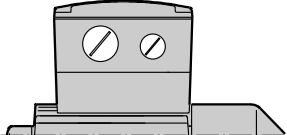
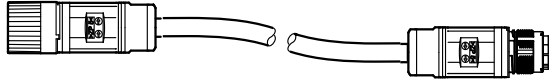
MOVIFIT® FC	Connection cables	Length Type	Drive
<p>Standard ABOX: MTA...-S02.-...-00</p> <p>Hybrid ABOX: MTA...-S42.-...-00 MTA...-S52.-...-00 MTA...-S62.-...-00</p>  <p>9007200067198859</p>  <p>9007200067155595</p>	<p>Part number DR63/DT71 – DR90 (∧): 08199671 Part number DR63/DT71 – DR90 (△): 08199698</p> <p>Part number DV100, DV112 DR.71-132 (∧): 08199701 Part number DV100, DV112 DR.71-132 (△): 08198748</p> 	<p>variable</p> <p>Type A</p>	<p>Motor with ISU4 (02CI) plug connector</p> 
	<p>Part number: 08199728</p> 	<p>variable</p> <p>Type A</p>	<p>Motor with ASB4 (BA01AB04DA) plug connector</p> 
	<p>Part number: 08198756</p> 	<p>variable</p> <p>Type A</p>	<p>Motor with AMB4 (MA01AB04DA) plug connector</p> 
	<p>Part number: 08199736</p> 	<p>variable</p> <p>Type A</p>	<p>Motor with APG4 plug connector</p> 
	<p>Part no.: DR.71 – 100 (M4 ring cable lug): 08199752 Part no.: DR.112 – 132 (M5 ring cable lug): 18143199</p> 	<p>variable</p> <p>Type A</p>	<p>Motor with cable glands</p> 

5 Electrical installation

Hybrid cable

MOVIFIT® FC	Connection cables	Length Type	Drive
	Part number: 08179530/30 m Part number: 08179530/100 m  (Hybrid cable roll)	30 m 100 m Type A	Motor with cable glands 
	Part number: 13230409  (cable roll)	30 m Type A	External braking resistor 

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MOVIFIT® FC	Connection cables	Length Type	Drive
<p>Hybrid ABOX: MTA...-I55.-...-00 MTA...-G55.-...-00 MTA...-I65.-...-00 MTA...-G65.-...-00</p>  <p>9007200067198859</p> <p>9007200067155595</p>	<p>Part number DR63 (λ): 18138411 Part number DR63 (Δ): 18138438 Part number DR.71 – 132 (λ): 18138330 Part number DR.71 – 132 (Δ): 18138365</p> 	<p>variable Type A</p>	<p>Motor with ISU4 (02CI) plug connector</p> 
	<p>Part number: 18142257</p> 	<p>variable Type A</p>	<p>Motor with ASB4 (BA01AB04DA) plug connector</p> 
	<p>Part no.: DR.71 – 100 (M4 ring cable lug): 18141870 Part no.: DR.112 – 132 (M5 ring cable lug): 18142230</p> 	<p>variable Type A</p>	<p>Motor with cable glands</p> 
	<p>Part number: 18141056 (= extension cable)</p> 	<p>variable Type A</p>	<p>Hybrid cable</p>

5.17.2 Hybrid cable connection

With open cable end (MOVIFIT® side) and plug connector (motor side)

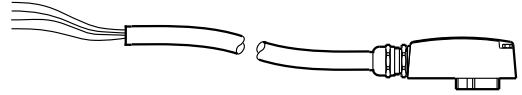
The table shows the assignment of the following hybrid cables:

Part number: 08199671

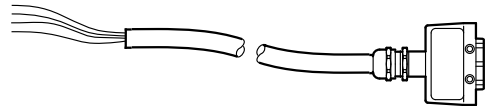
08199698

08199701

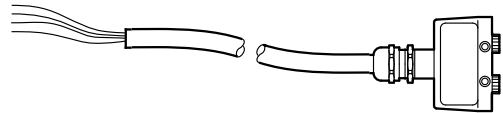
08198748



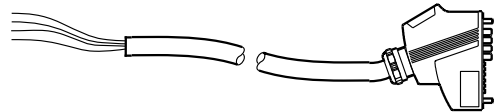
Part number: 08199728



Part number: 08198756



Part number: 08199736

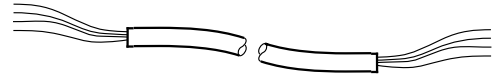


MOVIFIT® FC terminal	Hybrid cable
	Core color/markings
X8/1	Green/yellow
X8/2	Black/U1
X8/3	Black/V1
X8/4	Black/W1
X8/5	Blue/15
X8/6	White/14
X8/7	Red/13
X81/1	Black/1
X81/2	Black/2
The inner shield is connect via a shield plate. The overall shield is connected via an EMC cable gland to the housing of the MOVIFIT® ABOX, see chapter "Connecting the hybrid cables" (→ 64).	
	Shield end

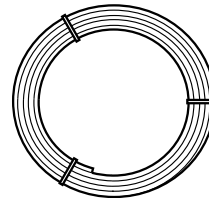
With open cable end (MOVIFIT® and motor side)

The table shows the assignment of the following hybrid cables:

Part number: 08199752
(M4 ring cable lug)
18143199
(M5 ring cable lug)



Part number: 08179530/30 m
(cable roll)
08179530/100 m
(cable roll)



Connecting terminal	Hybrid cable	Connecting terminal
MOVIFIT® FC	Core color/ marking	Motor
X8/1	Green/yellow	PE terminal
X8/2	Black/U1	U1
X8/3	Black/V1	V1
X8/4	Black/W1	W1
X8/5	Blue/15	5a
X8/6	White/14	3a
X8/7	Red/13	4a
X81/1	Black/1	1a
X81/2	Black/2	2a
The inner shield is connect via a shield plate. The overall shield is connected via an EMC cable gland to the housing of the MOVIFIT® ABOX, see chapter "Connecting the hybrid cables" (→ 64).	Shield end	The inner shield is connected via the PE terminal. The overall shield is connected via an EMC cable gland to the housing of the motor.

5 Electrical installation

Hybrid cable

Plug connector (MOVIFIT® end) and open cable end (motor end)

The table shows the assignment of the following hybrid cables:

Part number: 18141870
(M4 ring cable lug)
18142230
(M5 ring cable lug)



Hybrid cable	Connecting terminal
Core color/markings	Motor
Green/yellow	PE terminal
Black/U1	U1
Black/V1	V1
Black/W1	W1
Blue/15	5a
White/14	3a
Red/13	4a
Black/1	1a
Black/2	2a
Shield end	The inner shield is connected via the PE terminal. The overall shield is connected via an EMC cable gland to the housing of the motor.

5.18 Wiring notes

5.18.1 Wiring notes for connecting the motor

- The motor phases U, V, W must be connected correctly to the terminals X8 / X81 of the ABOX so that the motor runs in the desired direction. The motor and temperature sensor must be connected to terminals X8 and X81 of the ABOX.

▲ WARNING Risk of crushing due to reversed motor phases. Incorrect connection of the motor phases will result in a wrong direction of rotation of the motor and/or uncontrolled motor startup.

Severe or fatal injuries.

- Check the wiring before starting the motor.

5.18.2 Wiring notes for brakes

- Brakes with voltages less than 40 V cannot be used in connection with MOVIFIT® FC.
- With SEW motors, the brake must be connected to the brake connection terminals of the ABOX without any other measures (no brake rectifier). This requires connecting an SEW brake for a voltage of 110 V, 120 V, 230 V, or 400 V.
- Non-SEW motors with a brake can be controlled with digital output DB00 and appropriate additional measures (e.g. brake rectifier).

▲ WARNING! Risk of crushing due to incorrect parameterization of the digital output DB00.

Severe or fatal injuries.

- If digital output DB00 is used to control the brake, do not change the parameters that define the functions of the digital output.
- Check the parameter settings before using the digital output to control the brake.

5.19 Wiring check

Before connecting the system to the power source for the first time, you must perform a wiring check to prevent damage to persons, systems, and equipment caused by incorrect wiring:

- Remove the EBOX from the ABOX.
- 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 the supply system cable and the communication cable
- Check the polarity of the DC 24 V cable
- Check the polarity of the communication line
- Ensure equipotential bonding between the MOVIFIT® units.

5.19.1 After the wiring check

- Push the EBOX onto the ABOX and screw it on.
- Seal all cable openings and plug connections that are not in use.

6 Startup

6.1 General information

INFORMATION



You must comply with the general safety notes in the chapter "Safety notes" during startup.



▲ WARNING

Electric shock due to dangerous voltages in the ABOX.

Severe or fatal injuries.

- De-energize the new MOVIFIT® unit. Observe the minimum switch-off time after disconnection from the supply system:
 - **1 minute**



▲ WARNING

Uncontrolled unit behavior due to ineffective emergency switching off circuit.

Severe or fatal injuries.

- Comply with the installation notes.
- Installation may only be carried out by qualified personnel.



▲ WARNING

Unit malfunction due to incorrect unit setting.

Severe or fatal injuries.

- Observe the startup notes.
- Installation may only be carried out by qualified personnel.
- Check the parameters and data sets.
- Use only settings that are appropriate for the function.



▲ WARNING

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

Serious injuries.

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



NOTICE

Danger due to arcing.

Damage to electrical components.

- Do not unplug the power connectors during operation. Do not plug in the power connectors during operation.
- Never remove the EBOX during operation.

INFORMATION



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

6.2 Requirements

The following conditions apply to startup:

- MOVIFIT® and the drive units must be installed correctly both mechanically and electrically.
- Appropriate safety measures prevent the drives from starting up unintentionally.
- Appropriate safety measures must be taken to prevent risk of injury or damage to the machine.

The following hardware is required for startup:

- PC or laptop
- Interface adapter
- Connection cable between PC and MOVIFIT®

The following software is required on the PC or laptop for startup:

- MOVITOOLS® MotionStudio, version 5.60 or later

6.3 Description of the DIP switches

6.3.1 Notes



NOTICE

Hazard caused by unsuitable tools.

Damage to the DIP switches.

- To set the DIP switches use only suitable tools, such as a slotted screwdriver with a blade width smaller than 3 mm.
 - The force used for setting the DIP switches must not exceed 5 N.
-

INFORMATION



For information about the position of DIP switches S10 and S11, refer to the "EBOX" chapter.

For information about the position of DIP switches S1, S2 and S3, refer to the "ABOX" chapter.

6.3.2 DIP switch S1

Bus terminating resistor for PROFIBUS

- DIP switch S1 = OFF: Bus terminating resistor is **not** active.
- DIP switch S1 = ON: Bus terminating resistor is active.

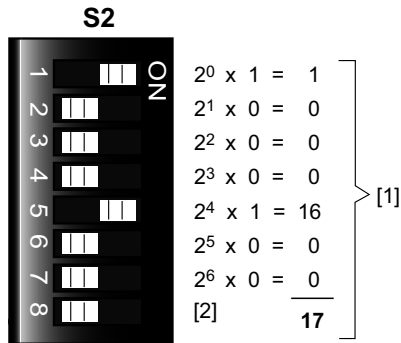
6.3.3 DIP switch S2

The function of DIP switch S2 depends on the type of fieldbus.

Function of DIP switch S2 for PROFIBUS

PROFIBUS address

You can set the PROFIBUS address at the DIP switches S2/1 – S2/7.



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- [1] Example: Address 17
- [2] Switch 8 = Reserved

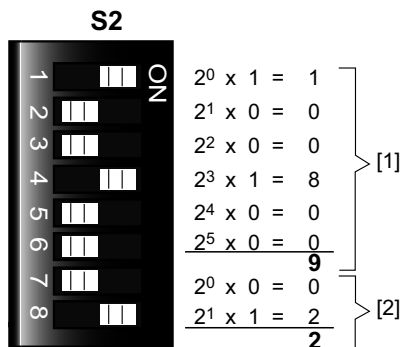
Addresses 1 to 125: valid addresses
Addresses 0, 126, 127: are not supported

Function of S2 DIP switch for DeviceNet™

DeviceNet™ address (MAC ID) and baud rate

You can set the DeviceNet™ address (MAC ID) at the DIP switches S2/1 – S2/6.

You can set the DeviceNet™ baud rate at the DIP switches S2/7 – S2/8.



9007200092311435

- [1] Setting the DeviceNet™ address
- [2] Setting the baud rate

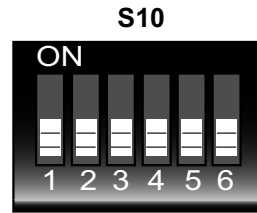
6.3.4 DIP switch S3

Bus terminating resistor for SBus

- DIP switch S3 = OFF: Bus terminating resistor is **not** active.
- DIP switch S3 = ON: Bus terminating resistor is active.

6.3.5 DIP switch S10

You can set the device parameters at the DIP switches S10/2 – S10/6.



9007203904936587

S10	1	2	3	4	5	6
Meaning	Startup mode	Operating mode	Motor/brake type	Motor connection type	Motor power	Hoist
ON	Expert mode	V/f	Motor type 2/Option brake	Delta	One power rating lower	VFC/Hoist
OFF	Easy mode	VFC operation ¹⁾	Motor type 1/Standard brake	Star	Adjusted	S10/2 active

1) Only for 4-pole SEW motors

DIP switch S10/1

Startup mode

- DIP switch S10/2 = ON: Expert mode

In "Expert" startup mode, an extended scope of parameters is available. You can use the MOVITOOLS® MotionStudio software to adjust the parameters to the application.

- DIP switch S10/2 = OFF: Easy mode

When selecting the "Easy" startup mode, you can start up MOVIFIT® quickly and easily using DIP switches S10/2 – S10/6.

DIP switch S10/2

Operating mode

- DIP switch S10/2 = ON: V/f operation for other motors
- DIP switch S10/2 = OFF: VFC operation for 4-pole motors

DIP switch S10/3

Motor/brake type

- When you are using IEC or NEMA motors (DT/DV), DIP switch S10/3 must always be set to OFF.
- For DX/DZ motors with rated voltages of 220/380 V, 60 Hz (only available in Brazil), and for aseptic motors (DAS), DIP switch S10/3 must be set to ON.
- When you are using DR.. motors with MOVIFIT® standard brakes, DIP switch S10/3 must always be set to OFF.
- When you are using DR.. motors with option brakes, DIP switch S10/3 must always be set to ON.

DIP switch S10/4

Motor connection type

- DIP switch S10/4 = ON: You must select this setting if the motor is operated in delta connection (refer to the tables on the following pages).
- DIP switch S10/4 = OFF: You must select this setting if the motor is operated in star connection (refer to the tables on the following pages).

DIP switch S10/5

Lower motor power rating

- When activated, this DIP switch enables MOVIFIT® to be assigned to a motor with a lower power rating. The nominal unit power is not affected.
- When using a motor with a lower power rating, the MOVIFIT® unit is one performance level above the motor. The overload capacity of the drive may be increased as a result. A higher current can be provided briefly, leading to higher torque ratings.
- The aim of switch S10/5 is to achieve short-term utilization of the motor's peak torque. The unit's current level remains the same regardless of the switch setting. Blocking protection for the motor is adjusted depending on the switch position.
- When DIP switch S10/5 is activated, the motor cannot be operated with stall protection.

INFORMATION



The type of connected brake can be found on the nameplate of the motor. The braking torque of the brake is listed in chapter "Braking torques".

MTF...-01

DAS		V = AC 3 x 400 V, 50 Hz							
MOVIFIT®	Assigned motor and brake ¹⁾								
	S10/5 = OFF				S10/5 = ON				
	∩ connection		△ connection		∩ connection		△ connection		
Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake		
MTF...003...-01	DAS80N4	BR1	DAS80K4	BR1	DAS80K4	BR1	-	-	
MTF...005...-01	DAS90S4	BR2	DAS80N4	BR1	DAS80N4	BR1	DAS80K4	BR1	
MTF...007...-01	DAS90L4	BR2	DAS90S4	BR2	DAS90S4	BR2	DAS80N4	BR1	
MTF...011...-01	DAS100M4	BR2	DAS90L4	BR2	DAS90L4	BR2	DAS90S4	BR2	
MTF...015...-01	DAS100L4	BR2	DAS100M4	BR2	DAS100M4	BR2	DAS90L4	BR2	
MTF...022...-01	-	-	DAS100L4	BR2	DAS100L4	BR2	DAS100M4	BR2	
MTF...030...-01	-	-	-	-	-	-	DAS100L4	BR2	
MTF...040...-01	-	-	-	-	-	-	-	-	

1) Possible brake voltages: BR1: 230 V, BR2: 230 V and 400 V

MTF...-10 and MTF...-12

DRS		V = AC 3 x 400 V, 50 Hz or AC 3 x 460 V, 60 Hz										
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection		△ connection		∩ connection		△ connection					
Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	
	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion
MTF...003...-10 MTF...003...-12	DRS71S4	BE05	BE1	DR63L4	BR03	-	DR63L4	BR03	-	-	-	-
MTF...005...-10 MTF...005...-12	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1	DRS71S4	BE05	BE1	DR63L4	BR03	-
MTF...007...-10 MTF...007...-12	DRS80S4	BE1	BE05	DRS71M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1
MTF...011...-10 MTF...011...-12	DRS80M4	BE2	BE1	DRS80S4	BE1	BE05	DRS80S4	BE1	BE05	DRS71M4	BE1	BE05
MTF...015...-10 MTF...015...-12	DRS90M4	BE2	BE1	DRS80M4	BE2	BE1	DRS80M4	BE2	BE1	DRS80S4	BE1	BE05
MTF...022...-10 MTF...022...-12	DRS90L4	BE5	BE2	DRS90M4	BE2	BE1	DRS90M4	BE2	BE1	DRS80M4	BE2	BE1
MTF...030...-10 MTF...030...-12	DRS100M4	BE5	BE2	DRS90L4	BE5	BE2	DRS90L4	BE5	BE2	DRS90M4	BE2	BE1
MTF...040...-10 MTF...040...-12	DRS100LC4	BE5	BE2	DRS100M4	BE5	BE2	DRS100M4	BE5	BE2	DRS90L4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-11 and MTF...-13

DRE												
Assigned motor and brake ¹⁾												
MOVIFIT®	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion
MTF...003...-11 MTF...003...-13	DRE80S4 0.37 kW	BE05	BE1	DRE80S4 0.25 kW	BE05	BE1	DRE80S4 0.25 kW	BE05	BE1	-	-	-
MTF...005...-11 MTF...005...-13	DRE80M4 0.55 kW	BE1	BE05	DRE80S4 0.37 kW	BE05	BE1	DRE80S4 0.37 kW	BE05	BE1	DRE80S4 0.25 kW	BE05	BE1
MTF...007...-11 MTF...007...-13	DRE80M4 0.75 kW	BE1	BE05	DRE80M4 0.55 kW	BE1	BE05	DRE80M4 0.55 kW	BE1	BE05	DRE80S4 0.37 kW	BE5	BE1
MTF...011...-11 MTF...011...-13	DRE90M4	BE2	BE1	DRE80M4 0.75 kW	BE1	BE05	DRE80M4 0.75 kW	BE1	BE05	DRE80M4 0.55 kW	BE1	BE05
MTF...015...-11 MTF...015...-13	DRE90L4	BE2	BE1	DRE90M4	BE2	BE1	DRE90M4	BE2	BE1	DRE80M4 0.75 kW	BE1	BE05
MTF...022...-11 MTF...022...-13	DRE100M4	BE5	BE2	DRE90L4	BE2	BE1	DRE90L4	BE2	BE1	DRE90M4	BE2	BE1
MTF...030...-11 MTF...030...-13	DRE100LC4	BE5	BE2	DRE100M4	BE5	BE2	DRE100M4	BE5	BE2	DRE90L4	BE2	BE1
MTF...040...-11 MTF...040...-13	DRE132S4	BE5	BE11	DRE100LC4	BE5	BE2	DRE100LC4	BE5	BE2	DRE10M4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-14

DRS – DRE												
Assigned motor and brake ¹⁾												
MOVIFIT®	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion	Stand-ard	Op-tion
MTF...003...-14	DRS71S4	BE05	BE1	-	-	-	-	-	-	-	-	-
MTF...005...-14	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1	DRS71S4	BE05	BE1	-	-	-
MTF...007...-14	DRE80S4	BE1	BE05	DRS71M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1
MTF...011...-14	DRE80M4	BE2	BE1	DRE80S4	BE1	BE05	DRE80S4	BE1	BE05	DRS71M4	BE1	BE05
MTF...015...-14	DRE90M4	BE2	BE1	DRE80M4	BE2	BE1	DRE80M4	BE2	BE1	DRE80S4	BE1	BE05
MTF...022...-14	DRE90L4	BE5	BE2	DRE90M4	BE2	BE1	DRE90M4	BE2	BE1	DRE80M4	BE2	BE1
MTF...030...-14	DRE100M4	BE5	BE2	DRE90L4	BE5	BE2	DRE90L4	BE5	BE2	DRE90M4	BE2	BE1
MTF...040...-14	DRE100L4	BE5	BE2	DRE100M4	BE5	BE2	DRE100M4	BE5	BE2	DRE90L4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-15

DRS – DRE												
V = AC 3 x 400 V, 50 Hz or AC 3 x 460 V, 60 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF...003...-15	DRS71S4	BE05	BE1	DR63L4 ²⁾	BR03	BR03	DR63L4 ²⁾	BR03	BR03	-	-	-
MTF...005...-15	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1	DRS71S4	BE05	BE1	DR63L4 ²⁾	BR03	BR03
MTF...007...-15	DRE80M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1
MTF...011...-15	DRE90M4	BE2	BE1	DRE80M4	BE1	BE05	DRE80M4	BE1	BE05	DRS71M4	BE1	BE05
MTF...015...-15	DRE90L4	BE2	BE1	DRE90M4	BE2	BE1	DRE90M4	BE2	BE1	DRE80M4	BE1	BE05
MTF...022...-15	DRE100L4	BE5	BE2	DRE90L4	BE2	BE1	DRE90L4	BE2	BE1	DRE90M4	BE2	BE1
MTF...030...-15	DRE100LC4	BE5	BE2	DRE100 L4	BE5	BE2	DRE100 L4	BE5	BE2	DRE90 L4	BE2	BE1
MTF...040...-15	DRE132S4	BE5	BE11	DRE100LC4	BE5	BE2	DRE100LC4	BE5	BE2	DRE100L4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

2) This motor is included in the data set. The motor is only available as IEC motor with V = 3 x 400 V, 50 Hz (no motor with 50/60 Hz voltage range).

MTF...-16

DRP												
V = AC 3 x 400 V, 50 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF...003...-16	-	-	-	-	-	-	-	-	-	-	-	-
MTF...005...-16	-	-	-	-	-	-	-	-	-	-	-	-
MTF...007...-16	DRP90M4	BE1	BE2	-	-	-	-	-	-	-	-	-
MTF...011...-16	DRP90L4	BE2	BE1	DRP90M4	BE1	BE2	DRP90M4	BE1	BE2	-	-	-
MTF...015...-16	DRP100M4	BE2	BE5	DRP90L4	BE2	BE1	DRP90L4	BE2	BE1	DRP90M4	BE1	BE2
MTF...022...-16	DRP100L4	BE5	BE2	DRP100M4	BE2	BE5	DRP100M4	BE2	BE5	DRP90L4	BE2	BE1
MTF...030...-16	DRP112M4	BE5	BE11	DRP100L4	BE5	BE2	DRP100L4	BE5	BE2	DRP100M4	BE2	BE5
MTF...040...-16	DRP132M4	BE5	BE11	DRP112M4	BE5	BE11	DRP112M4	BE5	BE11	DRP100L4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-17

DRP V = AC 3 x 460 V, 60 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF..003...-17	-	-	-	-	-	-	-	-	-	-	-	-
MTF..005...-17	-	-	-	-	-	-	-	-	-	-	-	-
MTF..007...-17	DRP90M4	BE1	BE2	-	-	-	-	-	-	-	-	-
MTF..011...-17	DRP90L4 1.1 kW	BE2	BE1	DRP90M4	BE1	BE2	DRP90M4	BE1	BE2	-	-	-
MTF..015...-17	DRP90L4 1.5 kW	BE2	BE1	DRP90L4 1.1 kW	BE2	BE1	DRP90L4 1.1 kW	BE2	BE1	DRP90M4	BE1	BE2
MTF..022...-17	DRP112M4	BE5	BE11	DRP90L4 1.5 kW	BE2	BE1	DRP90L4 1.5 kW	BE2	BE1	DRP90L4 1.1 kW	BE2	BE1
MTF..030...-17	DRP132S4	BE5	BE11	DRP112M4	BE5	BE11	DRP112M4	BE5	BE11	DRP90L4 1.5 kW	BE2	BE1
MTF..040...-17	-	-	-	-	-	-	DRP132S4	BE5	BE11	DRP112M4	BE5	BE11

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-18

DRN V = AC 3 x 400 V, 50 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
	Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake	
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF..003...-18	-	-	-	-	-	-	-	-	-	-	-	-
MTF..005...-18	-	-	-	-	-	-	-	-	-	-	-	-
MTF..007...-18	DRN80M4	BE1	BE05	-	-	-	-	-	-	-	-	-
MTF..011...-18	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05	DRN80M4	BE1	BE05	-	-	-
MTF..015...-18	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05
MTF..022...-18	DRN100LS4	BE5	BE2	DRN90L4	BE2	BE1	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1
MTF..030...-18	DRN100L4	BE5	BE2	DRN100LS4	BE5	BE2	DRN100LS4	BE5	BE2	DRN90L4	BE2	BE1
MTF..040...-18	DRN112M4	BE5	BE11	DRN100L4	BE5	BE2	DRN100L4	BE5	BE2	DRN100LS4	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-19

DRN												
V = AC 3 x 460 V, 60 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake		
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF..003...-19	-	-	-	-	-	-	-	-	-	-	-	-
MTF..005...-19	-	-	-	-	-	-	-	-	-	-	-	-
MTF..007...-19	DRN80M4	BE1	BE05	-	-	-	-	-	-	-	-	-
MTF..011...-19	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05	DRN80M4	BE1	BE05	-	-	-
MTF..015...-19	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05
MTF..022...-19	DRN100L4 2.2 kW	BE5	BE2	DRN90L4	BE2	BE1	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1
MTF..030...-19	DRN100L4 3.7 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2	DRN90 L4	BE2	BE1
MTF..040...-19	DRN112M4	BE5	BE11	DRN100L4 3.7 kW	BE5	BE2	DRN100L4 3.7 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

MTF...-20

DRN												
V = AC 3 x 400 V, 50 Hz or AC 3 x 460 V, 60 Hz												
MOVIFIT®	Assigned motor and brake ¹⁾											
	S10/5 = OFF						S10/5 = ON					
	∩ connection			△ connection			∩ connection			△ connection		
Motor	Brake		Motor	Brake		Motor	Brake		Motor	Brake		
	Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion		Stand-ard	Op-tion	
MTF..003...-20	DRS71S4	BE05	BE1	DR63L4 ²⁾	BR03	BR03	DR63L4 ²⁾	BR03	BR03	-	-	-
MTF..005...-20	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1	DRS71S4	BE05	BE1	DR63L4 ²⁾	BR03	BR03
MTF..007...-20	DRN80M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71M4	BE1	BE05	DRS71S4	BE05	BE1
MTF..011...-20	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05	DRN80M4	BE1	BE05	DRS71M4	BE1	BE05
MTF..015...-20	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1	DRN90S4	BE2	BE1	DRN80M4	BE1	BE05
MTF..022...-20	DRN100L4 2.2 kW	BE5	BE2	DRN90L4	BE2	BE1	DRN90L4	BE2	BE1	DRN90S4	BE2	BE1
MTF..030...-20	DRN100L4 3.0 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2	DRN90L4	BE2	BE1
MTF..040...-20	DRN112M4	BE5	BE11	DRN100L4 3.0 kW	BE5	BE2	DRN100L4 3.0 kW	BE5	BE2	DRN100L4 2.2 kW	BE5	BE2

1) Possible brake voltages: 120 V, 230 V, 400 V

2) This motor is included in the data set. The motor is only available as IEC motor with V = 3 x 400 V, 50 Hz (no motor with 50/60 Hz voltage range).

DIP switch S10/6

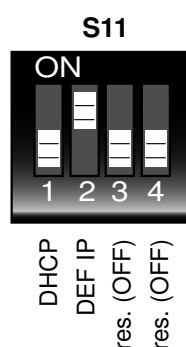
Lifting application

- DIP switch S10/6 = ON: You must make this setting when MOVIFIT® is to be used in a lifting application. The control mode is VFC mode for the hoist and 4-pole SEW motors.
- DIP switch S10/6 = OFF: The operating mode is selected according to DIP switch S10/2.

6.3.6 DIP switch S11

IP parameters for PROFINET IO, EtherNet/IP™ and Modbus/TCP

You can set the IP parameters for PROFINET IO, EtherNet/IP™ and Modbus/TCP at DIP switches S11/1 – S11/2.



9007200422438795

S11/1 "DHCP"	S11/2 "DEF IP"	Status
ON	ON	This combination of settings is not permitted.
ON	OFF	The MOVIFIT® unit awaits the IP parameter being assigned by a DHCP server.
OFF	ON	The IP parameters are set to the following default values when the DC 24 V voltage is switched on: IP address: 192.168.10.4 Subnet mask: 255.255.255.0 Default gateway: 1.0.0.0 with EtherNet/IP™ DHCP / Startup Configuration: Saved IP parameters (DHCP is deactivated)
OFF	OFF	The IP parameters set in the parameter tree are used. On delivery, the above-mentioned default values are set.

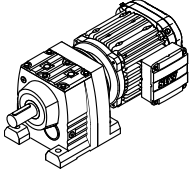
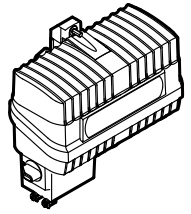

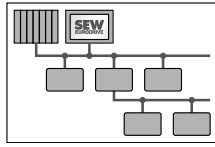
6.4 Startup procedure

▲ WARNING

Danger due to improper safety shutdown in applications with safe disconnection.
Severe or fatal injuries.

- If you use MOVIFIT® with the PROFIsafe option S11, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.
- If you use MOVIFIT® with the safety option S12, observe the permissible wiring diagrams as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety with Safety Option S12" manual.

The following illustration gives an overview of the MOVIFIT® FC startup procedure and lists other applicable documentation:

- | | | | |
|-----|---|--|---|
| [1] |  | Motor startup | <p>→ For information, refer to:</p> <ul style="list-style-type: none"> • the "DR.71 – 315 AC Motors" operating instructions • or "DR/DV/DT/DTE/DVE AC Motors, CT/CV Asynchronous Servomotors" operating instructions |
| [2] |  | MOVIFIT® startup | <p>→ For information, refer to:</p> <ul style="list-style-type: none"> • Chapter "Startup" > "General information" • Chapter "MOVIFIT® on the fieldbus" • Chapter "Startup MOVIFIT® frequency inverter" |
| [3] |  | Parameterization ¹⁾
Programming with MOVITOOLS® MotionStudio | <p>→ For information, refer to:</p> <ul style="list-style-type: none"> • chapter "First steps with MOVITOOLS® MotionStudio" • "MOVIFIT® Function Level Classic..." manual ²⁾ • "MOVIFIT® Function Level Technology..." manual ²⁾ • "MOVI-PLC® Programming in the PLC Editor" manual |
| [4] |  | Fieldbus configuration | <p>→ For information, refer to:</p> <ul style="list-style-type: none"> • Chapter "MOVIFIT® on the fieldbus" • "MOVIFIT® Function Level Classic..." manual ²⁾ • "MOVIFIT® Function Level Technology..." manual ²⁾ |

1) Parameters can only be set in "Expert mode".

2) The "MOVIFIT® Function Level Classic" and "MOVIFIT® Function Level Technology" manuals are available in several fieldbus-specific variants.

6.5 Startup of MOVIFIT® on the fieldbus

INFORMATION



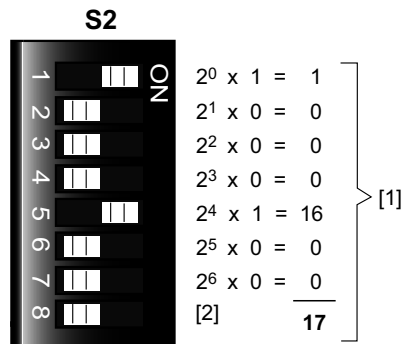
The entire fieldbus startup is carried out via software tools and is described in the respective manuals:

The "MOVIFIT® Function Level Classic" and "MOVIFIT® Function Level Technology" manuals are available in several fieldbus-specific designs.

- "MOVIFIT® Function Level Classic..." manual
- "MOVIFIT® Function Level "Technology..." manual

6.5.1 Startup in conjunction with PROFIBUS

1. Check the MOVIFIT® connection.
2. Set the PROFIBUS address at DIP switch S2 of the MOVIFIT® ABOX.



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[1] Example: Address 17

[2] Switch 8 = Reserved

Addresses 1 to 125: valid addresses

Addresses 0, 126, 127: are not supported

The following table uses address 17 as an example to show how to set the DIP switches for any bus address:

DIP switch position	Significance
DIP 1 = ON	1
DIP 2 = OFF	2
DIP 3 = OFF	4
DIP 4 = OFF	8
DIP 5 = ON	16
DIP 6 = OFF	32
DIP 7 = OFF	64

3. Connect the bus termination on MOVIFIT® at the last bus station.
 - If the MOVIFIT® unit is located at the end of a PROFIBUS segment, the unit can only be connected to the PROFIBUS network via the incoming PROFIBUS line.
 - To prevent malfunctions in the bus system due to reflections, etc., the PROFIBUS segment must be terminated at the first and last stations.

INFORMATION



The PROFIBUS is not interrupted when you remove the EBOX (electronics unit) from the ABOX (connection unit).

4. Start up the MOVIFIT® frequency inverter, see chapter "Startup of the MOVIFIT® inverter" (→ 143).
5. Place the EBOX onto the ABOX and close it.
6. Switch on the 24V_C and 24V_S supply voltage(s). The associated control LEDs should now light up green.

Bus termination

The bus terminating resistors are already installed in the ABOX and can be activated using switch S1:

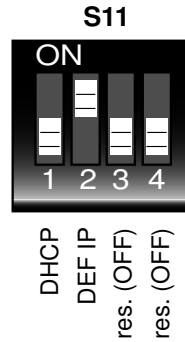
Bus termination ON = on	Bus termination OFF = off (factory setting)
<p>S1</p>	<p>S1</p>

The following table shows the functional principle of the bus termination switch:

Bus termination switch S1	
Bus termination ON = on	Bus termination OFF = off

6.5.2 Startup with PROFINET IO, EtherNet/IP™, or Modbus/TCP

1. Check the MOVIFIT® connection.
2. Start up the MOVIFIT® inverter, see chapter "Startup of the MOVIFIT® frequency inverter" (→ 143).
3. Set DIP switch S11/2 "DEF IP" to "ON".



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This sets the address parameters to the following default values:

IP address: 192.168.10.4
 Subnet mask: 255.255.255.0
 Gateway: 1.0.0.0

4. Place the EBOX onto the ABOX and close it.
5. Switch on the 24V_C and 24V_S supply voltage(s). The corresponding control LEDs should now light up green.

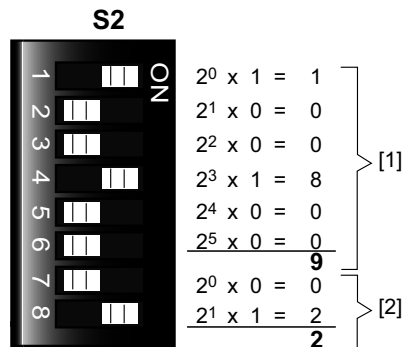
6.5.3 Startup with DeviceNet™

1. Check the MOVIFIT® connection.
2. Set the DeviceNet™ address at DIP switch S2 of the ABOX.
3. Set the baud rate at DIP switch S2 of the ABOX.
4. Start up the MOVIFIT® inverter, see chapter "Startup of the MOVIFIT® frequency inverter" (→ 143).
5. Place the EBOX onto the ABOX and close it.
6. Switch on the 24V_C and 24V_S supply voltage(s). The corresponding control LEDs should now light up green.

Setting DeviceNet™ address (MAC ID) and baud rate

The DeviceNet™ address is set with DIP switches S2/1 – S2/6.

The Baud rate is set with DIP switches S2/7 – S2/8:



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[1] Setting the DeviceNet™ address

[2] Setting the baud rate

In the following table, address 9 is used as an example to show how to set any bus address at the DIP switches:

DIP switch	Switch position	Significance
S2/1	ON	1
S2/2	OFF	2
S2/3	OFF	4
S2/4	ON	8
S2/5	OFF	16
S2/6	OFF	32

The following table shows how to set the baud rate at the DIP switches:

Baud rate	Value	S2/7	S2/8
125 kBd	0	OFF	OFF
250 kBd	1	ON	OFF
500 kBd	2	OFF	ON
(reserved)	3	ON	ON

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6.6 Starting up MOVIFIT® frequency inverter

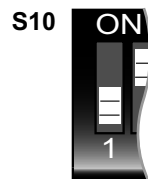
6.6.1 Startup mode

You can use one of the following startup modes to start up the MOVIFIT® frequency inverter:

- MOVIFIT® FC can be started up quickly and easily in **Easy mode** using DIP switch S10.
- Activate the **Expert mode** by setting DIP switch S10/1 to "ON". In "Expert" mode additional parameters are available. You can use the MOVITOOLS® MotionStudio software to adjust the parameters to the application (Function level "Technology" and "Classic").
- After activating Expert mode, the MOVIFIT® unit and its parameters are initialized once according to the setting of DIP switches S10/2 to S10/6.
- While Expert mode is active, DIP switches S10/2 to S10/6 are only re-effected when you set the *P802 Factory setting* parameter to "Delivery state". Otherwise, the system will ignore the changing of the DIP switch setting.

6.6.2 Startup in Easy mode

1. Set DIP switch S10/1 to "OFF".



2. Set the device parameters using DIP switches S10/2 to S10/6, see chapter "Description of DIP switches" > "DIP switch S10" (→ 130).
3. Place the EBOX onto the ABOX and close it.
4. Switch on the 24 V supply voltage. The "24V_C" LED should now light up green. Easy motor startup is now enabled; no further measures are required.

6.6.3 Starting up MOVIFIT® drive with constant voltage brake

INFORMATION



- When you connect a MOVIFIT® drive with a constant voltage brake, note the specific terminal assignment for connecting the brake as specified in chapter "Standard ABOX..." > "Terminal assignment" > "Motor terminals" (→ 68).
- For tips on starting up the MOVIFIT® drive with a constant voltage brake, refer to the "MOVIFIT® Function Level Technology..." manual.

6.6.4 Advanced startup and parameter setting in Expert mode

Connecting a PC/laptop

The following figure shows the connection of a PC/laptop to the diagnostic interface X50 of MOVIFIT®:

The diagnostic interface is located under the screw plug shown in the following figure.

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

▲ WARNING! Risk of burns due to hot surfaces of the MOVIFIT® or external options, e.g. braking resistor.

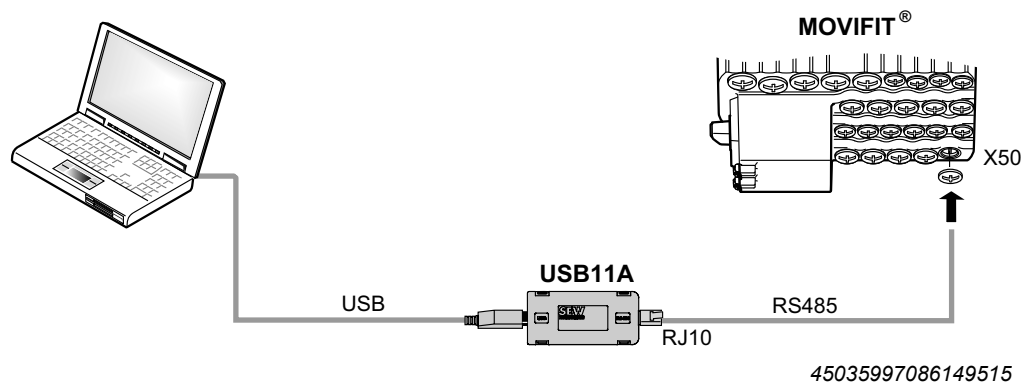
Serious injuries.

- Do not touch the MOVIFIT® unit and external options until they have cooled down sufficiently.

The diagnostic interface can be connected to a commercially available PC/laptop via the USB11A interface adapter (part number: 08.248.311).

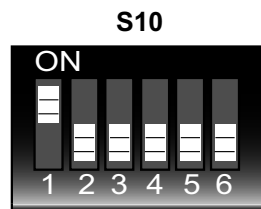
Scope of delivery:

- USB11A interface adapter
- Cable with RJ10 plug connector
- USB interface cable



Activating Expert mode

1. Check the MOVIFIT® connection.
2. Set DIP switch S10/1 to "ON".



3. Place the EBOX onto the ABOX and close it.
4. Switch on the 24 V supply voltage. The "24V_C" LED should now light up green.

First steps with MOVITOOLS® MotionStudio

Starting the software and creating a project

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

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

Establishing a communication and scanning the network

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

1. Set up a communication channel to communicate with your units.
For additional information, refer to the manual "MOVIFIT® Function Level Classic.." or "MOVIFIT® Function Level Technology ..".
2. Scan your network (unit scan). To do so, click the [Start network scan] button [1] in the tool bar.



[1]

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Startup with MOVITOOLS® MotionStudio

The next steps for startup/parameterization in Expert mode differs according to the MOVIFIT® function level selected. See the following manuals for more information:

- "MOVIFIT® Function Level "Classic" .." ¹⁾
- "MOVIFIT® Function Level "Technology" .." ¹⁾

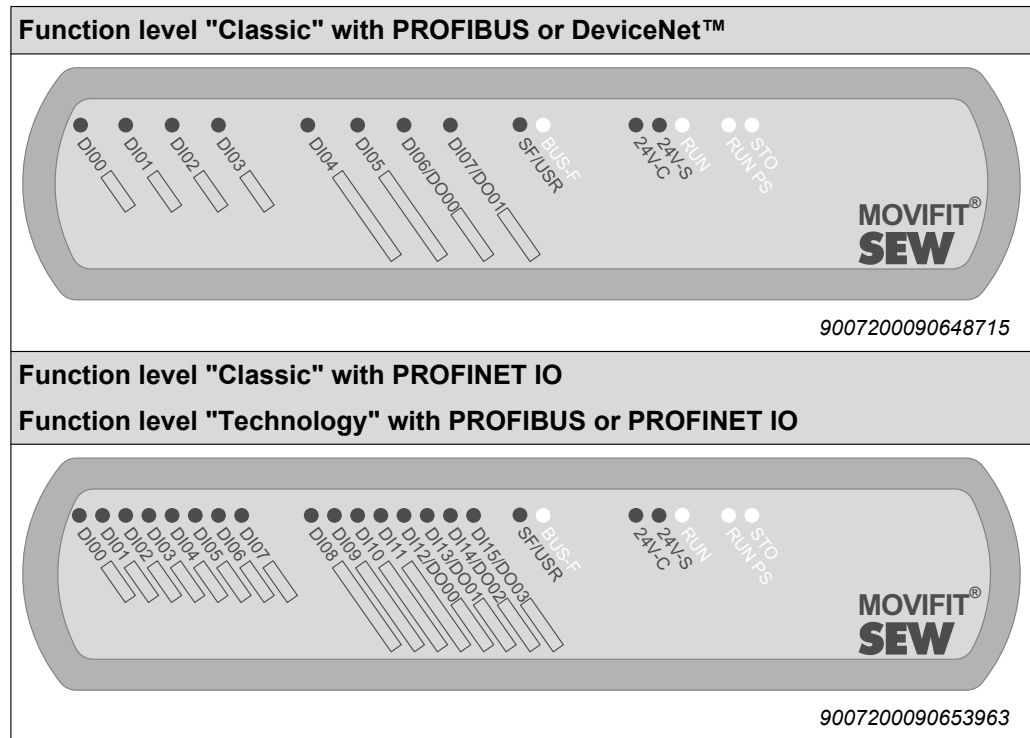
1) The "MOVIFIT® Function Level Classic" and "MOVIFIT® Function Level Technology" manuals are available in several fieldbus-specific variants.

7 Operation

7.1 Status LEDs for MOVIFIT® FC

7.1.1 General LEDs

This chapter describes the fieldbus-independent and option-independent LEDs. These LEDs are shown as dark in the figures. The LEDs that are shown in white differ depending on which fieldbus version is used. They are described in the following sections. The following figures show examples of the PROFIBUS versions:



"DI.." LEDs

The following table shows the statuses of the "DI00 – DI15" LEDs:

LED	Meaning
Yellow Illuminated	Input signal present at digital input DI..
Off	Input signal at digital input DI.. open or "0".

"DO.." LEDs

The following table shows the statuses of the "DO00 – DO03" LEDs.

LED	Meaning
Yellow Illuminated	DO.. output switched.
Off	DO.. output logical "0".

LED "SF/USR"

The "SF/USR" LED indicates various statuses depending on the function level.

Classic function level

The following tables show the states of the "SF/USR" LED:

LED	Meaning	Measure
Off	Standard operating state. MOVIFIT® is exchanging data with the connected drive system (integrated inverter).	-
Red Illuminated	MOVIFIT® cannot exchange data with an integrated inverter.	Check the DC 24 V supply of the integrated inverter.
Red Flashing (2 s cycle)	MOVIFIT® initialization error or serious unit fault	Incorrect card ID. Switch on MOVIFIT® again. If the fault is still present, replace the EBOX or contact SEW Service.
Red Flashing	Other unit fault	Use MOVITOOLS® MotionStudio to read out the fault status. Eliminate the cause of the fault and acknowledge this fault.

Technology function level

The following tables show the states of the "SF/USR" LED:

LED	Meaning	Measure
Off	IEC program is running.	-
Green Illuminated	IEC program is running. The green lit LED is controlled by the IEC program.	Refer to the IEC program documentation for more information
Red Illuminated	Boot project has not been started or has been cancelled due to an error.	Use MOVITOOLS® > PLC Editor > Remote Tool to log on; start the boot project.
	MOVIFIT® initialization fault Incorrect EBOX-ABOX combination	Incorrect card ID. Check the MOVIFIT® EBOX type. Use the correct EBOX on the ABOX and perform a complete startup procedure.
Red Flashing	No IEC application program loaded.	Load an IEC application program and, if necessary, restart the integrated PLC.
Yellow Flashing	The IEC application program has been loaded but is not executed (PLC = stop).	Check the IEC application program using MOVITOOLS® MotionStudio and restart the integrated PLC.

LED	Meaning	Measure
1 x red + n x green Flashing	Fault status reported by the IEC program.	Refer to the IEC program documentation for more information on the statuses and the corresponding remedy

"24V-C" LED

The following table shows the states of the "24V-C" LED:

LED	Meaning	Measure
Green Illuminated	24V_C continuous voltage is present.	-
Off	24V_C continuous voltage is not present.	Check the 24V-C voltage supply.

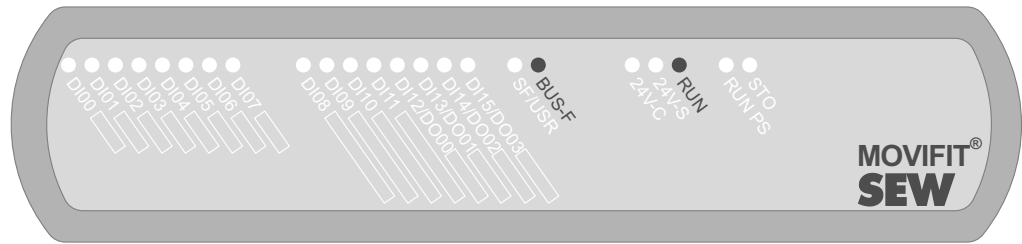
LED "24V-S"

The following table shows the states of the "24V-S" LED:

LED	Meaning	Measure
Green Illuminated	24V_S actuator voltage is present.	-
Off	24V_S actuator voltage is not present.	Check the 24V-S voltage supply.

7.1.2 Bus-specific LEDs for PROFIBUS

This chapter describes the bus-specific LEDs for PROFIBUS. In the following figure, the LEDs are shown as dark:



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"BUS-F" LED

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

LED	Meaning	Measure
Off	MOVIFIT® is exchanging data with the DP master (data exchange).	-
Red Flashing	The baud rate is detected. However, MOVIFIT® is not being addressed by the DP master. MOVIFIT® was configured incorrectly or not configured in DP master.	<ul style="list-style-type: none"> • Check the project planning of the DP master. • Check whether all the modules configured during project planning are permitted for the MOVIFIT® variant used (MC, FC, SC).
Red Illuminated	Connection to the DP master has failed. MOVIFIT® does not detect baud rate. Bus interruption DP master not in operation.	<ul style="list-style-type: none"> • Check the PROFIBUS DP connection of MOVIFIT®. • Check the DP master. • Check all cables in your PROFIBUS DP network.

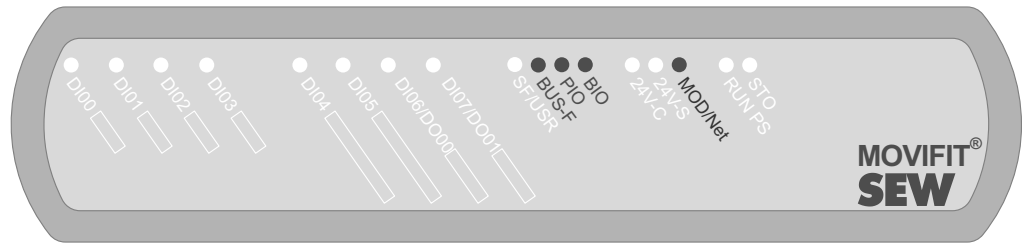
"RUN" LED

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

LED	Meaning	Measure
Off	MOVIFIT® not ready for operation. No 24 V power supply.	<ul style="list-style-type: none"> • Check DC 24 V supply. • Switch on MOVIFIT® again. Replace EBOX if problem occurs several times.
Green Illuminated	MOVIFIT® component hardware OK.	-
Green Illuminated	If "BUS-F" LED is off: MOVIFIT® operating correctly. MOVIFIT® is currently exchanging data with the DP master and all subordinate drive systems.	-
Green Flashing	PROFIBUS address is set equal to 0 or higher than 125.	Check the PROFIBUS address that is set in the MOVIFIT® ABOX.
Yellow Illuminated	MOVIFIT® is in initialization phase.	-
Red Illuminated	Internal unit error	Switch on MOVIFIT® again. Replace EBOX if problem occurs several times.

7.1.3 Bus-specific LEDs for DeviceNet™

This chapter describes the bus-specific LEDs for DeviceNet™. In the following figure, the LEDs are shown as dark:



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"BUS-F" LED

The "BUS-F" LED indicates the physical state of the bus node. The functionality is described in the following table:

LED	Possible cause	Meaning	Measure
Off	No error	The number of bus errors is within the normal range (error active state).	-
Red Flashing (1 s cycle)	Bus warning	The unit is performing a DUP-MAC check and cannot send any messages because no other stations are connected to the bus (error passive state).	<ul style="list-style-type: none"> Integrate another DeviceNet™ station into the network. Check the wiring and terminating resistors.
Red Illuminated	Bus error	Bus off status. The number of physical bus errors has increased despite switchover to error-passive state. Access to the bus is switched off.	<ul style="list-style-type: none"> Check the setting for the address baud rate, wiring, and terminating resistors.
Yellow Illuminated	Power off	External voltage supply has been turned off or is not connected.	<ul style="list-style-type: none"> Check the external voltage supply and wiring of the unit.

"MOD/NET" LED

The function of the "Mod/Net" LED described in the following table is defined in the DeviceNet™ specification.

LED	Possible cause	Meaning	Measure
Off	Not switched on / Off-line	Unit is offline. Unit is performing a DUP-MAC check. Unit is switched off.	<ul style="list-style-type: none"> Apply supply voltage via DeviceNet™ connector.
Green Flashing (1 s cycle)	Online and in operational mode	The unit is online and no connection has been established. DUP-MAC check performed successfully. A connection has not yet been established with a master. Missing (incorrect) or incomplete configuration.	<ul style="list-style-type: none"> Include the station in the master's scan list and start communication in the master.
Green Illuminated	Online, operational mode and connected	Unit is online. Connection is active (established state).	-
Red Flashing (1 s cycle)	Minor fault or connection timeout	A correctable fault has occurred. 24V_S actuator voltage missing. Polled I/O and/or bit-strobe I/O connections are in the timeout status. A correctable error has occurred in the unit.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check the 24V_S voltage supply. Check timeout response (P836). If a response with error is set, reset the unit once the error has been corrected.
Red Illuminated	Critical error or critical link failure	An error that cannot be corrected has occurred. BusOff status. DUP-MAC check has detected an error.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check the address (MAC ID). Is another unit already using the same address?

"PIO" LED

The "PIO" LED checks the polled I/O connection (process data channel). The functionality is described in the following table.

LED	Possible cause	Meaning	Measure
Green Flashing (500 ms cycle)	DUP-MAC check	Unit is performing DUP-MAC check. If the station does not leave this state after approx. 2 s, no other station has been found.	<ul style="list-style-type: none"> Integrate at least on additional DeviceNet™ station into the network.
Off	Not switched on/ offline but not DUP-MAC check	Unit is switched off. Unit is in offline status.	<ul style="list-style-type: none"> Switch on the unit. Check whether the PIO connection type was activated in the master.
Green Flashing (1 s cycle)	Online and in operational mode	Unit is online. DUP-MAC check performed successfully. A PIO connection is being established with a master (configuring state). Missing, incorrect or incomplete configuration.	<ul style="list-style-type: none"> Check the unit configuration in the master.
Green Illuminated	Online, operational mode and connected	Unit is online. A PIO connection has been established (established state).	-
Red Flashing (1 s cycle)	Minor fault or connection timeout	A correctable fault has occurred. Invalid baud rate set at the DIP switches. Polled I/O connection is in timeout status.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check the positions of the DIP switches for the baud rate. Check timeout response (P836). If a response with error is set, reset the unit once the error has been corrected.
Red Illuminated	Critical error or Critical link failure	An error that cannot be corrected has occurred. BusOff status. DUP-MAC check has detected an error.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check the address (MAC ID). Is another unit already using the same address?

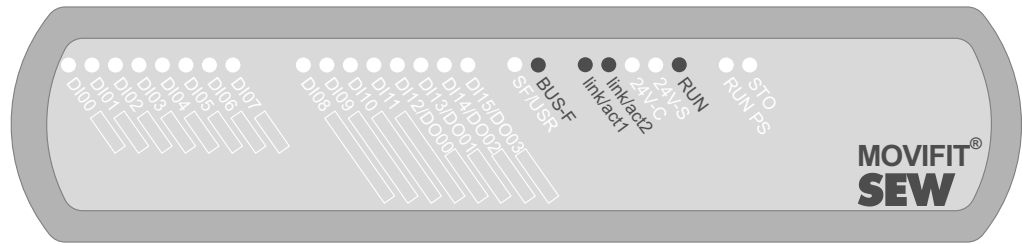
"BIO" LED

The "BIO" LED checks the bit-strobe I/O connection. The functionality is described in the following table.

LED	Possible cause	Meaning	Measure
Green Flashing (500 ms cycle)	DUP-MAC check	Unit is performing DUP-MAC check. If the station does not leave this state after approx. 2 s, no other stations have been found.	<ul style="list-style-type: none"> Integrate at least on additional DeviceNet™ station into the network.
Off	Not switched on/ Offline, but no DUP-MAC check	Unit is switched off. Unit is in offline status.	<ul style="list-style-type: none"> Switch on the unit. Check whether the BIO connection type was activated in the master.
Green Flashing (1 s cycle)	Online and in operational mode	Unit is online. DUP-MAC check performed successfully. A BIO connection is being established with a master (configuring state). Missing, incorrect or incomplete configuration.	<ul style="list-style-type: none"> Check the unit configuration in the master.
Green Illuminated	Online, operational mode and connected	Unit is online. A BIO connection has been established (established state).	-
Red Flashing (1 s cycle)	Minor error or connection timeout	A correctable fault has occurred. Bit-strobe I/O connection is in timeout status.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check timeout response (<i>P836</i>). If a response with error is set, reset the unit once the error has been corrected.
Red Illuminated	Critical error or Critical link failure	An error that cannot be corrected has occurred. BusOff status. DUP-MAC check has detected an error.	<ul style="list-style-type: none"> Check DeviceNet™ cable. Check the address (MAC ID). Is another unit already using the same address?

7.1.4 Bus-specific LEDs for PROFINET IO

This chapter describes the bus-specific LEDs for PROFINET IO. In the following figure, the LEDs are shown as dark:



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"BUS-F" LED

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

LED	Meaning	Measure
Off	MOVIFIT® is exchanging data with the PROFINET master (data exchange).	-
Yellow Illuminated, flashing	The STEP 7 hardware configuration contains a module that is not permitted.	Switch the STEP 7 hardware configuration to ONLINE and analyze the component status of the slots in the MOVIFIT® unit.
Green, Green/Red Flashing	The flashing function in the PROFINET master configuration is activated to visually localize the station.	-
Red Illuminated	Connection to the PROFINET master has failed. MOVIFIT® does not detect a link. Bus interruption. PROFINET master not in operation.	<ul style="list-style-type: none"> • Check the PROFINET connection of MOVIFIT®. • Check the PROFINET master. • Check all cables in your PROFINET network.

"RUN" LED

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

LED	Meaning	Measure
Off	MOVIFIT® not ready for operation. No 24 V power supply.	Check DC 24 V supply. Switch on MOVIFIT® again. Replace EBOX if problem occurs several times.
Green Illuminated	MOVIFIT® component hardware OK.	-
	If "BUS-F" LED is off: MOVIFIT® operating correctly. MOVIFIT® is currently exchanging data with the PROFINET master (data exchange) and all lower-level drive systems.	-
Red Illuminated	Fault in MOVIFIT® components hardware.	Switch on MOVIFIT® again. Replace EBOX if problem occurs several times.
Green Flashing Yellow Illuminated, flashing	MOVIFIT® components hardware does not start.	Switch on MOVIFIT® again. Replace EBOX if problem occurs several times.

"link/act 1" LED

The "link/act 1" LED indicates the states of the Ethernet port 1 according to the following table:

LED	Meaning
Green Illuminated	link = Ethernet cable connects device with other Ethernet stations.
Yellow Illuminated	act = active, Ethernet communication active.

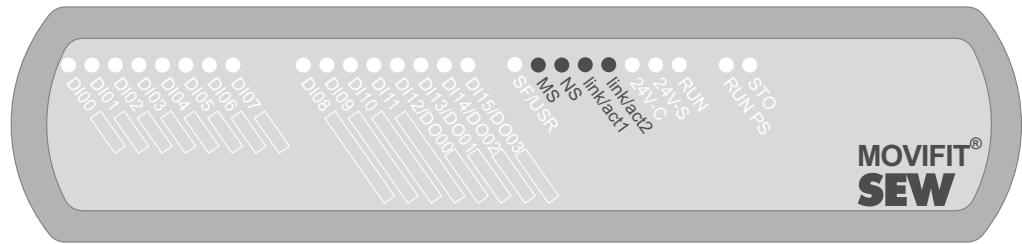
"link/act 2" LED

The "link/act 1" LED indicates the states of the Ethernet port 2 according to the following table:

LED	Meaning
Green Illuminated	link = Ethernet cable connects device with other Ethernet stations.
Yellow Illuminated	act = active, Ethernet communication active.

7.1.5 Bus-specific LEDs for Modbus/TCP and EtherNet/IP™

This chapter describes the bus-specific LEDs for Modbus/TCP and EtherNet/IP™. In the following figure, the LEDs are shown as dark:



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LEDs "MS" and "NS"

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

LED MS	LED NS	Meaning	Measure
Off	Off	MOVIFIT® not ready for operation. No DC 24 V supply.	<ul style="list-style-type: none"> • Check DC 24 V supply. • Switch on MOVIFIT® again. • Replace EBOX if problem occurs several times.
Red/green Flashing	Red/green Flashing	MOVIFIT® performs an LED test. This status should only be activated briefly during startup.	-
Red Flashing	Red Illuminated	Conflict detected while assigning the IP address. Another station in the network uses the same IP address.	<ul style="list-style-type: none"> • Check whether there is a unit in the network with the same IP address. • Change the MOVIFIT® IP address. • Check DHCP settings for IP address assignment of the DHCP server (only if a DHCP server is used).
Red Illuminated	X	Fault in MOVIFIT® components hardware.	<ul style="list-style-type: none"> • Switch on MOVIFIT® again. • Reset MOVIFIT® to the factory settings. • Replace EBOX if problem occurs several times.
Green Flashing	Green Flashing	Application has been started.	-

LED MS	LED NS	Meaning	Measure
Green Flashing	Off	MOVIFIT® does not yet have any IP parameters. Starting TCP IP stack. If the status continues and the DHCP DIP switch is activated, MOVIFIT® is waiting for data from the DHCP server.	<ul style="list-style-type: none"> Set DIP switch S11/1 of the DHCP server to "OFF". Check the DHCP server connection (only if DHCP is activated and the status continues).
Green Illuminated	X	MOVIFIT® component hardware OK.	-
X	Red Flashing	Timeout delay of the controlling connection has expired. The state is reset by restarting communication.	<ul style="list-style-type: none"> Check the bus connection of MOVIFIT®. Check the master/scanner. Check all the cables in the Ethernet.
X	Green Flashing	No controlling connection.	-
X	Green Illuminated	There is no controlling connection to a master/scanner.	-

X Any state

"link/act 1" LED

The "link/act 1" LED indicates the states of the Ethernet port 1 according to the following table:

LED	Meaning
Green Illuminated	link = Ethernet cable connects device with other Ethernet stations.
Yellow Illuminated	act = active, Ethernet communication active.

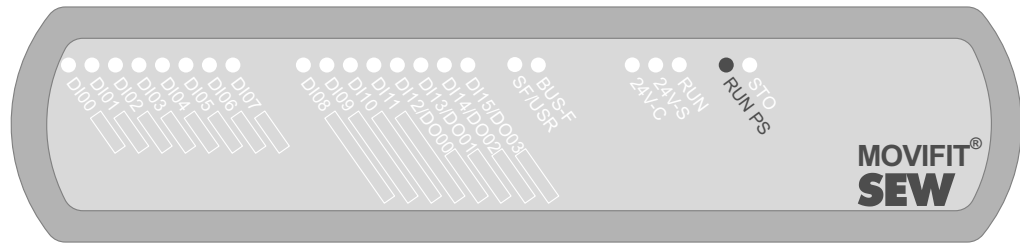
"link/act 2" LED

The "link/act 1" LED indicates the states of the Ethernet port 2 according to the following table:

LED	Meaning
Green Illuminated	link = Ethernet cable connects device with other Ethernet stations.
Yellow Illuminated	act = active, Ethernet communication active.

7.1.6 "RUN PS" LED (frequency inverter status LED)

The following figure shows the "RUN PS" LED (shown unlit). In the sample figure, the PROFIBUS version is shown with "Technology" function level:



9007200090875531

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

LED	Meaning Operating state error code	Possible cause
Off	Not ready.	No 24 V power supply.
Yellow Flashing	Not ready.	Self-test phase active or 24 V power supply present but line voltage not OK.
Yellow Flashing quickly	Ready.	Brake release without drive enable active.
Yellow Illuminated	Ready but unit inhibited.	24 V supply and line voltage OK, but no enable signal.
Yellow Flashing twice, pause	Ready, but in manual mode without unit enable.	24 V power supply and line voltage OK. Stop manual mode to activate automatic mode.
Green/ yellow Flashing	Ready, but timeout.	Communication interrupted during cyclical data exchange.
Green Illuminated	Unit enabled.	Motor in operation.
Green Flashing quickly	Current limit active.	Drive operating at current limit.
Green Flashing	Ready.	Standstill current function active.
Red Illuminated	Not ready.	Check 24 V supply. Make sure that there is a smoothed DC voltage with low ripple (residual ripple max. 13%) present. MOVIFIT® detected a non-plausible combination of DIP switch settings. Check 24V_C supply.

LED	Meaning Operating state error code	Possible cause
Red Flashing twice, pause	Fault 07	DC link voltage too high.
Red Flashing slowly	Fault 08	Speed monitoring error
	Fault 09	Incorrect startup/parameterization.
	Fault 15	24 V supply voltage too low.
	Faults 17 – 24, 37	CPU error
	Fault 25	EEPROM error
	Fault 26	Fault at external terminal (only at slave unit)
	Error 38, 45	Unit/motor data error
	Fault 90	Incorrect motor/inverter assignment. Invalid DIP switch setting.
	Fault 94	Checksum error
Red Flashing 3 times, pause	Fault 01	Overcurrent in output stage
	Fault 11	Overtemperature in output stage
Red Flashing 4 times, pause	Fault 31	Temperature sensor tripped.
	Fault 84	Motor overload
Red Flashing 5 times, pause	Fault 4	Overcurrent in brake chopper
	Fault 89	Brake overtemperature Incorrect motor/frequency inverter assignment.
Red Flashing 6 times, pause	Fault 06	Line phase failure
	Fault 81	Start condition (only in hoist operation mode)
	Fault 82	Open output.

7.1.7 Option-specific LEDs

PROFIsafe option S11



▲ WARNING

Observe the "MOVIFIT® MC / FC – Functional Safety" manual when using the PROFIsafe option S11.

Severe or fatal injuries.

- If you use the PROFIsafe option S11, observe the additional notes on diagnostics and operation as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.



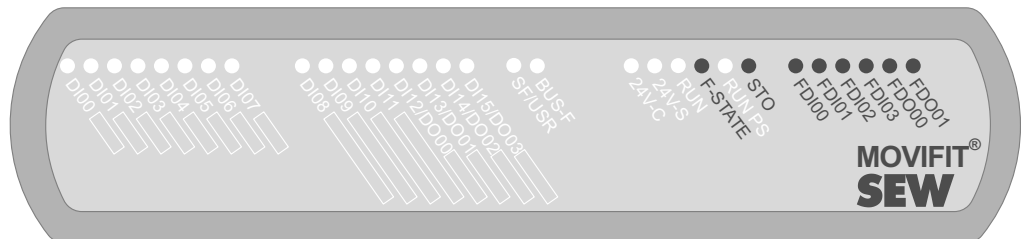
▲ WARNING

Danger due to incorrect interpretation of the "FDI.", "FDO.", "STO" and "F-STATE" LEDs.

Severe or fatal injuries.

- The LEDs are not safety-related and may not be used as a safety device.

This chapter describes the option-specific LEDs for PROFIsafe option S11. In the following figure, these LEDs are shown as dark. In the sample figure, the PROFIBUS version is shown with "Technology" function level:



"STO" LED

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

LED	Meaning
Yellow Illuminated	Drive is in Safe Torque Off ("STO active").
Off	Drive is not in Safe Torque Off ("STO inactive").

"F-STATE" LED

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

LED	Meaning	Measure
Green Illuminated	The S11 option is currently performing a cyclical data exchange with the F-Host (data exchange). Standard operating state.	-
Red Illuminated	Fault status in the safety part. 24V_O supply voltage not available.	<ul style="list-style-type: none"> • Read diagnostics in F-Host. • Eliminate the cause of the fault and acknowledge in the F-Host.
Off	S11 option is currently in the initialization phase. S11 option is not available or is not configured in the bus master (slot 1 is empty).	<ul style="list-style-type: none"> • Check voltage supply. • Check configuration of the bus master.
Red/green Flashing	A fault occurred in the safety part; cause of the fault already remedied – acknowledgement required.	<ul style="list-style-type: none"> • Acknowledge fault in the F-Host (reintegration).

S12 safety option



▲ WARNING

Observe the "MOVIFIT® MC / FC – Functional Safety" manual when using the S12A safety option.

Severe or fatal injuries.

- If you use the S12 safety option, observe the additional notes on diagnostics and operation as well as the safety conditions specified in the "MOVIFIT® MC / FC – Functional Safety" manual.



▲ WARNING

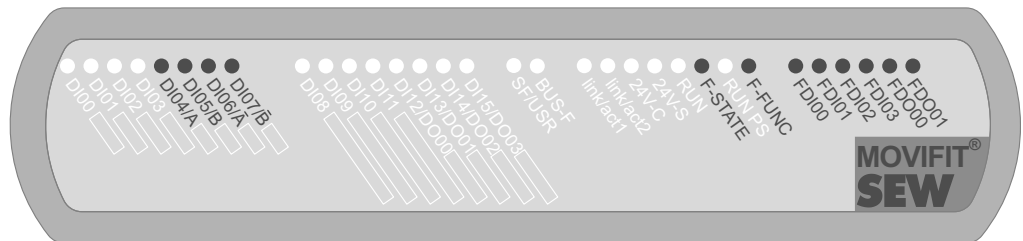
Danger due to incorrect interpretation of the "FDI.", "FDO.", "F-FUNC" and "F-STATE" LEDs.

Severe or fatal injuries.

- The LEDs are not safety-related and may not be used as a safety device.

This chapter describes the option-specific LEDs for the S12 safety option. In the following figure, these LEDs are shown as dark. In the sample figure, the PROFIBUS version is shown with "Technology" function level:

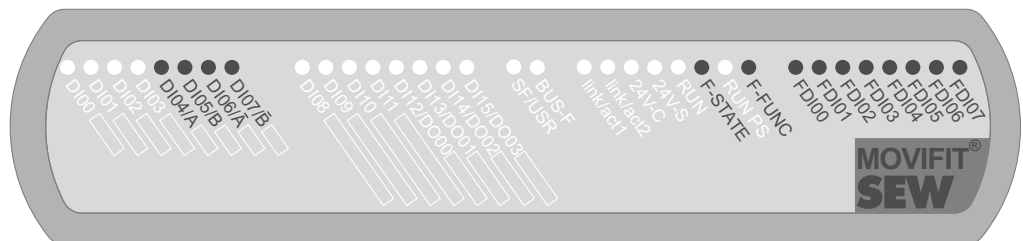
The figure shows an example of the LEDs for MOVIFIT® with S12A safety option:



9007207954077579

MOVIFIT® with **S12A**:
Logo is highlighted in **green**.

The figure shows an example of the LEDs for MOVIFIT® with S12B safety option:



9007207954081291

MOVIFIT® with **S12B**:
Logo is highlighted in **blue**.

"FDI.." LEDs

The following table shows the statuses of the "FDI.." LEDs:

LED	Meaning
Off	LOW level at input F-DI.. or open
	Parameterization is active.
Yellow Illuminated	HIGH level at input F-DI..
	Display test, 2 s after reset
Red Illuminated	Error at input F-DI.. (except discrepancy errors)

"FDO.." LEDs

The following table shows the statuses of the "FDO.." LEDs:

LED	Meaning
Off	F-DO.. output is inactive (switched off).
Yellow Illuminated	F-DO.. output is active.
	Display test, 2 s after reset
Red Illuminated	Error at output F-DO..

INFORMATION

The "FDO.." LEDs are only relevant for the S12A safety option.

"F-FUNC" LED

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

LED	Meaning
Off	Safety function is not active or error at output F-DO_STO.
Yellow Illuminated	Drive is in safe torque off mode, F-DO_STO without voltage.
	Brake ramp is active (SLS, SS1a).
Yellow Flashing 250 ms cycle	
Yellow Flashing 1 s cycle	Speed monitoring is active (SLS).

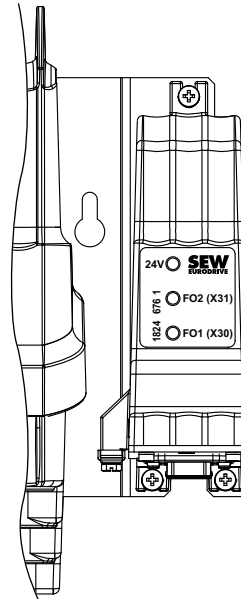
"F-STATE" LED

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

LED	Meaning	Measure
Off	The S12 safety option is currently in the initialization phase. S12 safety option is not available. Verification is not completed (by switch-off/on or by bus startup)	<ul style="list-style-type: none"> • Check configuration of bus master. • Switch the unit off/on.
Yellow Illuminated	S12 safety option is in RUN mode, but safety parameters not verified yet.	<ul style="list-style-type: none"> • Perform verification of safety parameters.
Yellow Flashing	Flash code for identification of the device during authentication (entering the serial number in "Assist S12")	
Green Illuminated	S12 safety option is in RUN mode, verification of safety parameters completed.	-
Yellow/ green Flashing	Test mode for drive safety functions is active.	-
Red Flashing	Error occurred (error can be acknowledged).	<ul style="list-style-type: none"> • Error diagnostics. • Correct the error and acknowledge via F host or programmed F-DI input.
Red Illuminated	An error has occurred. (Error cannot be acknowledged) No 24 V_0 supply voltage	<ul style="list-style-type: none"> • Error diagnostics • Check voltage supply.

LEDs of POF option L10

This chapter describes the status LEDs of the POF option L10:



9007204216501003

LED "24V"

The "24V" LED indicates the status of the 24 V supply.

LED	Meaning	Measure
Off	24 V supply for the POF option is not available.	<ul style="list-style-type: none"> Check whether the MOVIFIT® is switched on. Check the connections between MOVIFIT® and the POF option L10.
Green Illuminated	24 V supply for the POF option is available.	–

"FO2" LED

The "FO2" LED indicates the status of the FO diagnostics at port 2 (X31).

LED	Meaning	Measure
Off	POF port 2 is ok.	–
Red Illuminated	Maintenance for POF port 2 required.	Perform maintenance for POF port 2, e.g. replace the POF cable.

"FO1" LED

The "FO1" LED indicates the status of the FO diagnostics at port 1 (X30).

LED	Meaning	Measure
Off	POF port 1 is ok.	–

LED	Meaning	Measure
Red Illuminated	Maintenance for POF port 1 required.	Perform maintenance for POF port 1, e.g. replace the POF cable.

7.2 Manual operation using the DBG keypad

7.2.1 Connection

MOVIFIT® units have an X50 (diagnostic interface RJ10 plug connector) for parameterization and manual operation.

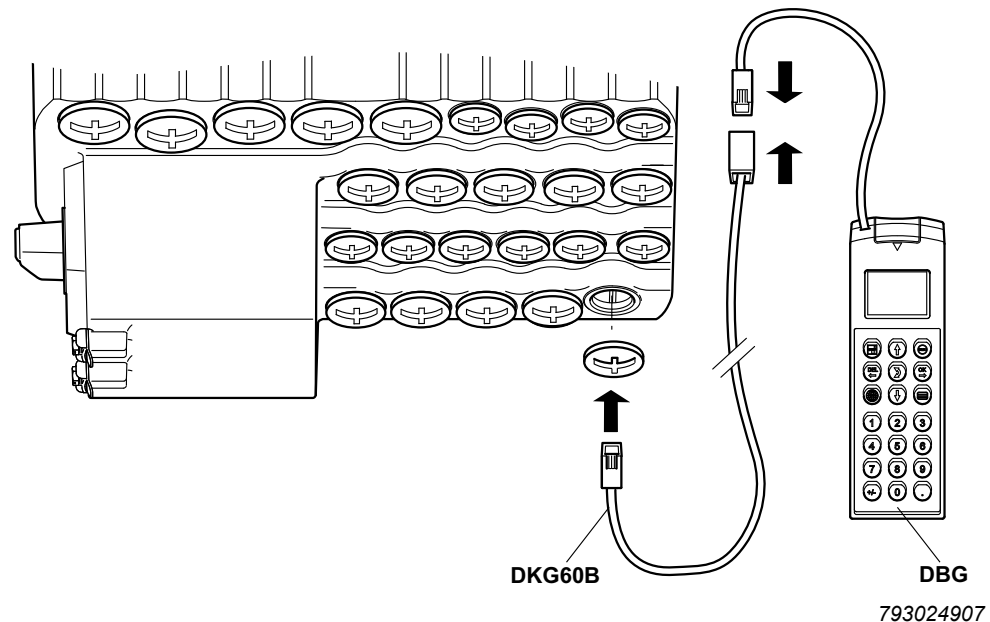
The X50 diagnostic interface is located under the screw plug shown in the following figure.

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

▲ DANGER! Risk of burns due to hot surfaces of the MOVIFIT® or external options, e.g. braking resistor.

Serious injuries.

- Do not touch the MOVIFIT® unit and external options until they have cooled down sufficiently.



You can also connect the DBG keypad to the MOVIFIT® unit using option DKG60B (5 m extension cable).

NOTICE! Loss of the ensured degree of protection if the screw plug of the diagnostic interface X50 is not installed or not installed correctly.

Damage to the MOVIFIT® unit.

- Make sure the screw plug of the diagnostic interface has a seal and screw it in after manual mode.

7.2.2 Operation

INFORMATION



For notes on operating the MOVIFIT® drive in manual operation, refer to the "MOVIFIT® Function Level 'Technology..'" or "MOVIFIT® Function Level 'Classic'.." manual.

8 Service

8.1 Unit diagnostics

INFORMATION



Depending on the function level in use, further diagnostic tools are available via MOVITOOLS® MotionStudio. These are described in the respective manuals:

These manuals are available in several, fieldbus-specific variants.

- "MOVIFIT® Function Level Classic..." manual
- "MOVIFIT® Function Level "Technology..." manual

8.2 Error list

Code	Error	Possible cause	Measure
–	Communication timeout (Motor stops)	Error during communication via internal SBus	Check internal system bus connection.
–	DC link voltage too low, power off was detected (motor stops, without error code)	Supply voltage not present.	Check supply system leads, line voltage and 24 V electronics supply for interruption.
		24 V electronics supply voltage not OK.	Check 24 V electronics supply voltage. Permitted voltage: DC 24 V ± 25%, EN 61131-2. Residual ripple max. 13%.
		Motor restarts automatically as soon as the voltage reaches normal values.	
01	Overcurrent output stage	Short circuit on inverter output	Check the connection between the inverter and the motor as well as the motor winding for short circuits. Reset error ¹⁾
04	Brake chopper	Overcurrent in brake output, resistor damaged, resistance too low.	Check the connection of the resistor/replace it.
06	Phase failure	Phase failure The error can only be detected when the drive is running under load.	Check the supply system cable for phase failure. Reset the fault by switching off the DC 24 V supply voltage or using communication.

Code	Error	Possible cause	Measure
07	DC link voltage too high	Ramp time too short.	Extend the ramp time. Reset error ¹⁾ .
		Faulty connection between brake coil/braking resistor	Check the braking resistor/brake coil connection. Correct, if necessary. Reset error ¹⁾ .
		Incorrect internal resistance of brake coil/braking resistor	Check internal resistance of brake coil/braking resistor (see chapter "Technical data"). Reset error ¹⁾ .
		Thermal overload in braking resistor; wrong size of braking resistor selected.	Dimension the braking resistor correctly. Reset error ¹⁾ .
		Invalid voltage range of supply input voltage	Check supply input voltage for permitted voltage range. Reset error ¹⁾ .
08	Speed monitoring	Speed deviation due to operation at the current limit	Reduce the load on the drive. Increase the n-monitoring delay time. Reset error ¹⁾ .
09	Startup	Incorrect startup/parameterization (e.g. with MOVITOOLS [®] MotionStudio).	Repeat startup with correct settings. If this does not work (e.g. in Expert mode): <ul style="list-style-type: none"> • Set parameter <i>P802 Factory setting</i> to "Delivery state" once. • Switch to Easy mode once (DIP switch S10/2 = OFF). Reset error ¹⁾ .
11	Thermal overload of the output stage or internal unit error	Ambient temperature too high.	Lower ambient temperature. Reset error ¹⁾ .
		Heat build-up at MOVIFIT [®]	Prevent heat build-up. Reset error ¹⁾ .
		Drive load too high.	Reduce the load on the drive. Reset error ¹⁾ .
15	24 V supply	Supply voltages 24V_C and/or 24V_P are too low.	Check 24 V supply voltages 24V_C and/or 24V_P. Reset error ¹⁾ .
17 - 24 37	CPU error	CPU error	Reset error ¹⁾ .
25	EEPROM error	Fault when accessing EEPROM	Set parameter <i>P802</i> to "Delivery state". Reset error ¹⁾ . Re-parameterize the unit. If the error reoccurs, contact SEW Service.

Code	Error	Possible cause	Measure
26	External terminal	Low signal on the terminal that was programmed with the "/External fault" function (only with SBus slave).	Remove/reset the external fault that is causing the signal at the "External fault" terminal.
38	System software	Unit data error	Contact SEW Service.
45	Initialization	Motor data error	Contact SEW Service.
47	SBus communication	Error during communication via internal SBus	Check voltage supply of control unit.
81	Start condition	The inverter could not be supplied with the correct amount of current during the pre-magnetization time.	Check connection between MOVIFIT® inverter and motor.
		2 or all output phases interrupted.	Check connection between MOVIFIT® inverter and motor.
82	Open output	The inverter could not be supplied with the correct amount of current during the pre-magnetization time.	Check connection between MOVIFIT® inverter and motor.
		Rated motor power too small in relation to rated inverter power.	Check connection between MOVIFIT® inverter and motor.
84	Thermal overload of motor	Motor ambient temperature too high.	Reduce motor ambient temperature. Reset error ¹⁾ .
		Heat build-up at the motor.	Prevent heat build-up at the motor. Reset error ¹⁾ .
		Motor load too high.	Reduce the load on the motor. Reset error ¹⁾ .
		Motor speed too low.	Increase speed. Reset error ¹⁾ .

Code	Error	Possible cause	Measure
89	Thermal overload of brake coil or brake coil defective or brake coil connected incorrectly	Set ramp time is too short.	Increase the set ramp time. Reset error ¹⁾ .
		Brake inspection of motor necessary.	Brake inspection (see motor operating instructions) Reset error ¹⁾ .
		Brake coil is connected incorrectly.	Check connection of brake coil. Reset error ¹⁾ .
		Combination of drive (brake coil) and MOVIFIT® FC frequency inverter not possible.	Check the combination of drive (brake coil) and MOVIFIT® FC inverter if the error is signaled shortly after the first enable. Reset error ¹⁾ .
		Incorrect setting of DIP switch S10/5 for combinations of "MOVIFIT®" and "Motor with a lower performance level".	Check/correct the setting of DIP switch S10/5 for combinations of "MOVIFIT® FC" and "motor with a lower performance level". Reset error ¹⁾ .
		Contact SEW Service	
90	Output stage detection	Incorrect assignment of motor/inverter; invalid DIP switch setting.	Correct the DIP switch settings. Reset error ¹⁾ .
94	EEPROM error	Defective EEPROM.	Contact SEW Service.
97	Copy error	Error during data transmission.	Repeat copying process. Restore the delivery state and re-parameterize the unit.

1) Reset the error by switching off the 24 V supply voltage or via communication.

8.3 Inspection/maintenance

8.3.1 MOVIFIT® unit

The MOVIFIT® unit is maintenance-free. SEW-EURODRIVE does not prescribe any inspection or maintenance work for the MOVIFIT® unit.

8.3.2 Motor

The controlled motor requires regular inspection and maintenance work. Observe the notes and instructions in chapter "Inspection/Maintenance" of the motor operating instructions.

8.3.3 Gear unit (only for gearmotors)


The gear unit of the controlled motor requires regular inspection and maintenance work. Observe the notes and instructions in chapter "Inspection/Maintenance" of the gear unit operating instructions.

8.4 SEW-EURODRIVE Service

If a fault cannot be solved, please consult SEW-EURODRIVE Service (see chapter "Address List").

Please have the following information at hand when you consult the SEW-EURODRIVE Service:

- EBOX type designation [1]
- Serial number [2]
- Digits in the status field [3]
- Brief description of the application
- Nature of the fault
- Accompanying circumstances (e.g. initial startup)
- Your own assumptions
- Any unusual events preceding the problem, etc.

[1]	MTF11A015-503-P10A-11	
[2]	SO#: 01.1776722501.0001.12	
[3]	Status: 15 13 15 11 12 -- -- 11 14	

9007203920804107

- [1] EBOX type designation
[2] Serial number
[3] Status field

8.5 Shutdown

To shut down the MOVIFIT® unit, de-energize the unit using appropriate measures.



⚠ WARNING

Electric shock due to charged capacitors.

Severe or fatal injuries.

- Observe a minimum switch-off time of 1 minute after disconnecting the power supply.

8.6 Storage

Observe the following instructions when shutting down or storing MOVIFIT® unit:

- If you shut down and store the MOVIFIT® unit for a longer period, you must close open cable bushings and cover ports with protective caps.
- Make sure that the unit is not subject to mechanical impact during storage.

Observe the notes on storage temperature in chapter "Technical Data".

8.7 Extended storage

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

8.7.1 Procedure in case maintenance has been neglected

The capacitors used in the inverters 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:

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

8.8 Disposal

This product consists of:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic components

Dispose of all components in accordance with applicable regulations!

9 Technical data

9.1 Conformity

9.1.1 CE marking

- Low voltage directive:

The MOVIFIT® drive system complies with the regulations of the low voltage directive 2006/95/EC.

- Electromagnetic compatibility (EMC):

MOVIFIT® FC units are designed for use as components for installation in machinery and systems. They comply with the EMC product standard EN 61800-3 "Variable-speed electrical drives". Provided that you comply with the installation instructions, the CE marking requirements for the entire machine/system in which they are installed are satisfied on the basis of EMC Directive 2004/108/EC. For detailed information on EMC compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.



The CE mark on the nameplate indicates conformity with the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

9.1.2 EAC marking



The MOVIFIT® unit series fulfills the requirements of the technical regulations of the Customs Union of Russia, Kazakhstan, and Belarus.

The EAC marking on the nameplate certifies the conformity with the safety requirement of the Custom Union.

9.1.3 UL approval



UL and cUL approval has been granted for the MOVIFIT® FC unit series.

9.1.4 C-Tick



C-Tick approval has been granted for the MOVIFIT® FC unit series. C-Tick certifies conformity with ACA (Australian Communications Authority) standards.

9.2 Design with operating point 400 V/50 Hz

MOVIFIT® type		MTF 11A 003-503	MTF 11A 005-503	MTF 11A 007-503	MTF 11A 011-503	MTF 11A 015-503	MTF 11A 022-503	MTF 11A 030-503	MTF 11A 040-503
		Size 1					Size 2		
Apparent output power at $V_{line} = AC$ 380 – 500 V	S_N	1.1 kVA	1.4 kVA	1.8 kVA	2.2 kVA	2.8 kVA	3.8 kVA	5.1 kVA	6.7 kVA
Connection voltages	V_{line}	AC 3 x 380 V/400 V/415 V/460 V/500 V							
Permitted range		$V_{line} = AC$ 380 V -10% – AC 500 V +10%							
Line frequency	f_{line}	50 – 60 Hz ± 10%							
Nominal line current at $V_{supply} = AC$ 400 V	I_{line}	AC 1.3 A	AC 1.6 A	AC 1.9 A	AC 2.4 A	AC 3.5 A	AC 5.0 A	AC 6.7 A	AC 7.3 A
Output voltage	V_O	0 – V_{line}							
Output frequency	f_O	2 – 120 Hz							
Resolution		0.01 Hz							
Operating point		400 V at 50 Hz/100 Hz							
Nominal output current	I_N	AC 1.6 A	AC 2.0 A	AC 2.5 A	AC 3.2 A	AC 4.0 A	AC 5.5 A	AC 7.3 A	AC 8.7 A
Motor power S1	P_{Mot}	0.37 kW 0.5 HP	0.55 kW 0.75 HP	0.75 kW 1.0 HP	1.1 kW 1.5 HP	1.5 kW 2.0 HP	2.2 kW 3.0 HP	3.0 kW 4.0 HP	4.0 kW 5.2 HP
PWM frequency		4/8/16 ¹⁾ kHz (factory setting 16 kHz)							
Current limiting	I_{max}	Motor and regenerative:					160% at \sphericalangle and \triangle		
External braking resistor	R_{min}	150 Ω					68 Ω		
Cable length between MOVIFIT® and motor		Max. 15 m (with SEW hybrid cable, type A)							
Hybrid cable shielding		Connect outer shield via EMC cable glands, connect inner shield via EMC shield clamps (not for ABOX with Intercontec circular connector), see chapter "Installation instructions"							
Interference immunity		complies with EN 61800-3							
Interference emission		Limit value class C3 to EN 61800-3							
Motor protection		Thermistor							
Operating mode		S1 (EN 60034-1), S3 max. cycle duration 10 minutes							
Type of cooling		Natural cooling (DIN 41751)							
Degree of protection		Standard: IP65 in accordance with EN 60529 (MOVIFIT® housing closed and all cable bushings and plug connections sealed)							
		Hygienic ^{plus} : IP66 in accordance with EN 60529 and IP69K in accordance with DIN 40050-9 (MOVIFIT® housing closed and all cable bushings sealed according to the relevant degree of protection)							

MOVIFIT® type	MTF 11A 003-503	MTF 11A 005-503	MTF 11A 007-503	MTF 11A 011-503	MTF 11A 015-503	MTF 11A 022-503	MTF 11A 030-503	MTF 11A 040-503
	Size 1					Size 2		
Ambient temperature	-25 – +40 °C (P _N derating: 3 % I _N per K to max. 60 °C)							
Climate class	EN 60721-3-3, class 3K3							
Storage temperature ²⁾	-25 – +85 °C (EN 60721-3-3, class 3K3)							
Maximum permitted vibration and shock load	According to EN 50178							
Overvoltage category	III according to IEC 60664-1 (DIN VDE 0110-1)							
Pollution class	2 according to IEC 60664-1 (DIN VDE 0110-1) within the housing							
Installation altitude (see chapter "Electrical Installation" > "Installation instructions")	h	h ≤ 1000 m: no derating h > 1000 m: I _N reduction by 1% per 100 m h > 2000 m: V _{line} derating by AC 6 V per 100 m h _{max} = 4000 m						
Derating for tilted mounting positions (see chapter "Mechanical Installation" > "Mounting position")		S1 operation: I _N = 100%						S1 operation: I _N = 90%
		S3 operation: I _N = 100%						
Weight	EBOX "MTF...-...-00" (MOVIFIT® FC) size 1: approx. 3.5 kg EBOX "MTF...-...-00" (MOVIFIT® FC) size 2: approx. 5.6 kg Standard ABOX: approx. 4.5 kg Hybrid ABOX: approx. 4.8 kg							

1) 16 kHz PWM frequency (low-noise): The unit switches to lower cycle frequencies depending on the heat sink temperature and load.

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

9.3 Design with operating point 460 V/60 Hz

MOVIFIT® type		MTF 11A 003-503	MTF 11A 005-503	MTF 11A 007-503	MTF 11A 011-503	MTF 11A 015-503	MTF 11A 022-503	MTF 11A 030-503	MTF 11A 040-503
		Size 1					Size 2		
Apparent output power at $V_{line} = AC$ 380 – 500 V	S_N	1.1 kVA	1.4 kVA	1.8 kVA	2.2 kVA	2.8 kVA	3.8 kVA	5.1 kVA	6.7 kVA
Connection voltages	V_{line}	AC 3 x 380 V/400 V/415 V/ 460 V /500 V							
Permitted range		$V_{line} = AC$ 380 V -10% – AC 500 V +10%							
Line frequency	f_{line}	50 – 60 Hz ± 10%							
Nominal line current at $V_{supply} = AC$ 400 V	I_{line}	AC 1.1 A	AC 1.4 A	AC 1.7 A	AC 2.1 A	AC 3.0 A	AC 4.3 A	AC 5.8 A	AC 6.9 A
Output voltage	V_O	0 – V_{line}							
Output frequency	f_O	2 – 120 Hz							
Resolution		0.01 Hz							
Operating point		400 V at 50 Hz/100 Hz							
Nominal output current	I_N	AC 1.6 A	AC 2.0 A	AC 2.5 A	AC 3.2 A	AC 4.0 A	AC 5.5 A	AC 7.3 A	AC 8.7 A
Motor power S1	P_{Mot}	0.37 kW 0.5 HP	0.55 kW 0.75 HP	0.75 kW 1.0 HP	1.1 kW 1.5 HP	1.5 kW 2.0 HP	2.2 kW 3.0 HP	3.7 kW 5.0 HP	4.0 kW 5.4 HP
PWM frequency		4/8/ 16 ¹⁾ kHz (factory setting 16 kHz)							
Current limiting	I_{max}	Motor and regenerative:				160% at \sphericalangle and \triangle			
External braking resistor	R_{min}	150 Ω					68 Ω		
Cable length between MOVIFIT® and motor		Max. 15 m (with SEW hybrid cable, type A)							
Hybrid cable shielding		Connect outer shield via EMC cable glands, connect inner shield via EMC shield clamps (not for ABOX with Intercontec circular connector), see chapter "Installation instructions"							
Interference immunity		complies with EN 61800-3							
Interference emission		Limit value class C3 to EN 61800-3							
Motor protection		Thermistor							
Operating mode		S1 (EN 60034-1), S3 max. cycle duration 10 minutes							
Type of cooling		Natural cooling (DIN 41751)							
Degree of protection		Standard: IP65 in accordance with EN 60529 (MOVIFIT® housing closed and all cable bushings and plug connections sealed)							
		Hygienic ^{plus} : IP66 in accordance with EN 60529/IP69K in accordance with DIN 40050-9 (MOVIFIT® housing closed and all cable bushings sealed according to the relevant degree of protection)							

MOVIFIT® type	MTF 11A 003-503	MTF 11A 005-503	MTF 11A 007-503	MTF 11A 011-503	MTF 11A 015-503	MTF 11A 022-503	MTF 11A 030-503	MTF 11A 040-503
	Size 1					Size 2		
Ambient temperature	-25 – +40 °C (P _N derating: 3% I _N per K to max. 60 °C)							
Climate class	EN 60721-3-3, class 3K3							
Storage temperature ²⁾	-25 – +85 °C (EN 60721-3-3, class 3K3)							
Maximum permitted vibration and shock load	According to EN 50178							
Overvoltage category	III according to IEC 60664-1 (DIN VDE 0110-1)							
Pollution class	2 according to IEC 60664-1 (DIN VDE 0110-1) within the housing							
Installation altitude (see chapter "Electrical Installation" > "Installation instructions")	h	h ≤ 1000 m: no derating h > 1000 m: I _N reduction by 1% per 100 m h > 2000 m: V _{line} derating by AC 6 V per 100 m h _{max} = 4000 m						
Derating for tilted mounting positions (see chapter "Mechanical Installation" > "Mounting position")		S1 operation: I _N = 100%						S1 operation: I _N = 90%
		S3 operation: I _N = 100%						
Weight	EBOX "MTF...-...-00" (MOVIFIT® FC) size 1: approx. 3.5 kg EBOX "MTF...-...-00" (MOVIFIT® FC) size 2: approx. 5.6 kg Standard ABOX: approx. 4.5 kg Hybrid ABOX: approx. 4.8 kg							

1) 16 kHz PWM frequency (low-noise): The unit switches to lower cycle frequencies depending on the heat sink temperature and load.

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

9.4 Electronics data

General electronics data	
Electronics and sensor supply 24V_C (continuous)	$V_{IN} = DC\ 24\ V\ -15\% / +20\%$ according to EN 61131-2 Current consumption: $I_E \leq 500\ mA$, typically 200 mA (for MOVIFIT® electronics) <ul style="list-style-type: none"> • Plus up to 1500 mA (for sensor supply depending on the number and type of sensors) • Plus up to 2000 mA (4 with 500 mA each or 1 sensor supply ¹⁾) • Plus up to 250 mA, (for inverter electronics)¹⁾
Actuator supply 24V_S (switched)	$V_{IN} = DC\ 24\ V\ -15\% / +20\%$ according to EN 61131-2 $I_E \leq 2000\ mA$ (4 outputs with 500 mA or 1 sensor supply – group 4 with 500 mA)
Inverter supply 24V_P	$V_{IN} = DC\ 24\ V\ -15\% / +20\%$ according to EN 61131-2 $I_E \leq 250\ mA$, typically 180 mA
Option supply 24V_O	$V_{IN} = DC\ 24\ V\ -15\% / +20\%$ according to EN 61131-2
Internal consumption	$I_E \leq 250\ mA$
Total current consumption	Internal consumption + output current FDO00 + FDO01 + STO + F sensor supply
Electrical isolation	Separate potentials for: <ul style="list-style-type: none"> • Fieldbus connection (X30, X31) isolated • SBUS connection (X35/1-3) isolated • 24V_C for MOVIFIT® electronics, diagnostic interface (X50) and digital inputs (DI..) - Group I to III • 24V_S for digital outputs (DO..) and digital inputs (DI..) - Group IV • 24V_P for integrated frequency inverters • Isolation between safety electronics (24V_O) and all other supply voltages
Shielding of bus cables	Shielding using EMC metal cable glands and fittings, and with EMC shield clamp (see chapter "Installation instructions")

1) If 24V_S and 24V_P are supplied via 24V_C, these currents must be added up!

9.5 Binary inputs

Digital inputs	Function level "Classic" with PROFIBUS or DeviceNet™	Function level "Technology" with PROFIBUS Function level "Classic" or "Technology" with PROFINET IO, Ether-Net/IP™, or Modbus/TCP
Number of inputs	6 – 8	12 – 16
Input type	PLC-compatible according to EN 61131-2 (digital inputs type 1) R_i about 4 k Ω , sampling cycle \leq 5 ms Signal level: +15 V – +30 V "1" = contact closed -3 V – +5 V "0" = contact open	
Number of simultaneously controllable inputs	8	16 at 24 V 8 at 28.8 V
Sensor supply (4 groups) Rated current Permitted total current Internal voltage drop	DC 24 V to EN 61131-2, interference voltage proof and short-circuit-proof 500 mA per group 2 A / 1 A at ambient temperatures above 30 °C max. 2 V	
Potential reference	Group III	→ 24V_C
	Group IV	→ 24V_S

9.6 Binary outputs DO00 – DO03

Digital outputs	Function level "Classic" with PROFIBUS or DeviceNet™	Function level "Technology" with PROFIBUS Function level "Classic" or "Technology" with PROFINET IO, Ether-Net/IP™, or Modbus/TCP
Number of outputs	0 – 2	0 – 4
Output type Rated current Permitted total current Leakage current Internal voltage drop	PLC-compatible to EN 61131-2, interference voltage proof and short-circuit-proof 500 mA 2 A / 1 A at ambient temperatures above 30 °C max. 0.2 mA max. 2 V	
Potential reference	24V_S	

9.7 Binary output DB00

Digital output	
Output type	PLC-compatible to EN 61131-2, interference voltage proof and short-circuit-proof
Rated current	150 mA
Leakage current	max. 0.2 mA
Internal voltage drop	max. 2 V
Potential reference	24V_C

9.8 Interfaces

9.8.1 SBus interface

SBus	
SBus interface (not with function level "Classic")	Interface to other SBUS-capable SEW units CAN bus to CAN specification 2.0, parts A and B
Connection technology	Terminals M12
Transmission technology	according to ISO 11898
Bus termination	120 Ω terminating resistor, can be activated using DIP switch S3

9.8.2 RS485 interface

RS485	
RS485 interface	Diagnostic interface, not electrically isolated from MOVIFIT® electronics
Connection technology	RJ10 socket

9.8.3 Fieldbus interfaces

One of the following protocols can be used for communication depending on the EBOX and ABOX designs:

PROFIBUS interface

PROFIBUS																
Function level	Classic	Technology														
PROFIBUS protocol variant	PROFIBUS DP/DPV1															
Supported baud rates	9.6 kBd – 1.5 MBd / 3 – 12 MBd (with automatic detection)															
Bus termination	Can be activated via DIP switch S1															
Maximum line length	<table> <tr> <td>9.6 kBd:</td> <td>1200 m</td> </tr> <tr> <td>19.2 kBd:</td> <td>1200 m</td> </tr> <tr> <td>93.75 kBd:</td> <td>1200 m</td> </tr> <tr> <td>187.5 kBd:</td> <td>1000 m</td> </tr> <tr> <td>500 kBd:</td> <td>400 m</td> </tr> <tr> <td>1.5 MBd:</td> <td>200 m</td> </tr> <tr> <td>12 MBd:</td> <td>100 m</td> </tr> </table> <p>To extend the length, several segments can be coupled using repeaters. The max. expansion/cascading depth can be found in the manuals for the DP Master or the repeater modules.</p>		9.6 kBd:	1200 m	19.2 kBd:	1200 m	93.75 kBd:	1200 m	187.5 kBd:	1000 m	500 kBd:	400 m	1.5 MBd:	200 m	12 MBd:	100 m
9.6 kBd:	1200 m															
19.2 kBd:	1200 m															
93.75 kBd:	1200 m															
187.5 kBd:	1000 m															
500 kBd:	400 m															
1.5 MBd:	200 m															
12 MBd:	100 m															
Address setting	Addresses 1 to 125 can be set using DIP switches in the connection box															
DP ident number	Classic 600 A _{hex} (24586 _{dec})	Technology 600B _{hex} (24587 _{dec})														
GSD file name	Classic SEW_600A.GSD	Technology SEW_600B.GSD														
Bitmap file name	Classic SEW600AN.BMP SEW600AS.BMP	Technology SEW600BN.BMP SEW600BS.BMP														

PROFINET IO interface

PROFINET IO		
Function level	Classic	Technology
PROFINET protocol variant	PROFINET IO RT	
Supported baud rates	100 Mbit/s (full duplex)	
SEW ident number	010A _{hex}	
Unit ident number	2	
Connection technology	M12, RJ45 (push-pull) and RJ45 plug connector (in ABOX)	
Integrated switch	Supports auto-crossing, auto-negotiation	
Permitted cable types	Category 5 and higher, class D according to IEC 11801	
Maximum line length (from switch to switch)	100 m according to IEEE 802.3	
GSD file name	GSDML-V2.2-SEW-MTX- jjjjmmtt.xml	GSDML-V2.1-SEW-MTX- jjjjmmtt.xml
Bitmap file name	SEW-MTX-Classic.bmp	SEW-MTX-Technology.bmp

POF option L10

Option	POF option L10
Function	Interface adapter
Input voltage	DC 24 V ±25% (supplied by the ABOX from 24_C)
Current consumption	Typically 150 mA max. 300 mA
Optical interfaces	X30 and X31 Transmission according to IEEE 802-3 Ethernet 100BASE-TX full duplex and Ethernet 100BASE-FX
Maximum segment length	50 m distance between MOVIFIT® units
Degree of protection	IP65
Ambient temperature	-25 – +50 °C
Storage temperature	-25 – +85 °C

EtherNet/IP™ interface

EtherNet/IP™	
Function level	Technology
Automatic baud rate detection	10 MBd/100 MBd
Connection technology	M12, RJ45 (push-pull) and RJ45 plug connector (in ABOX)
Integrated switch	Supports auto-crossing, auto-negotiation
Maximum line length	100 m according to IEEE 802.3
Addressing	4 byte IP address or MAC-ID (00-0F-69-xx-xx-xx) Can be configured using DHCP server or MOVITOOLS® MotionStudio with version 5.5 and higher, Default address 192.168.10.4 (depending on S11 DIP switch setting)
Vendor ID	013B _{hex}
Name of EDS files	SEW_MOVIFIT_TECH_ENIP.eds
Name of icon files	SEW_MOVIFIT_TECH_ENIP.ico

Modbus/TCP interface

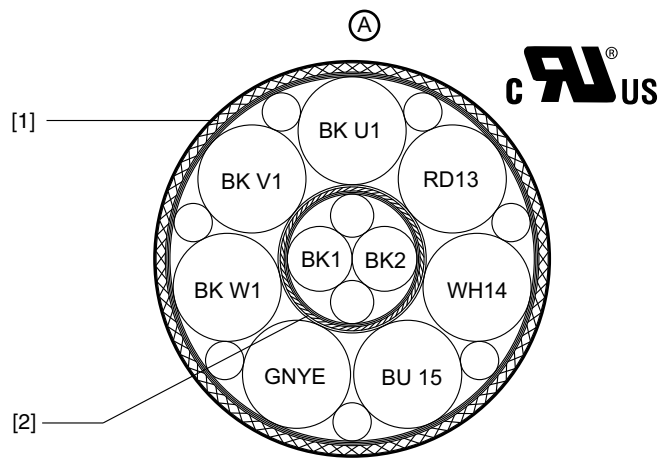
Modbus/TCP	
Function level	Technology
Automatic baud rate detection	10 MBd/100 MBd
Connection technology	M12, RJ45 (push-pull) and RJ45 plug connector (in ABOX)
Integrated switch	Supports auto-crossing, auto-negotiation
Maximum line length	100 m according to IEEE 802.3
Addressing	4 byte IP address or MAC-ID (00-0F-69-xx-xx-xx) Can be configured using DHCP server or MOVITOOLS® MotionStudio with version 5.5 and higher, Default address 192.168.10.4 (depending on S11 DIP switch setting)
Vendor ID	013B _{hex}
Supported services	FC3, FC16, FC23, FC43

DeviceNet™ interface

DeviceNet™		
Function level	Classic	Technology
Protocol variant	Master-slave connection set with polled I/O and bit-strobe I/O	
Supported baud rates	500 kBd 250 kBd 125 kBd	
Cable length DeviceNet™	See DeviceNet™ specification V 2.0	
	500 kBd	100 m
	250 kBd	250 m
	125 kBd	500 m
Bus termination	120 Ω (switch on externally)	
Process data configuration	See "MOVIFIT® Function Level Classic..." manual	See "MOVIFIT® Function Level Technology.." manual
Bit-strobe response	Checkback signal of the unit status via bit-strobe I/O data	
Address setting	DIP switch	
Name of EDS files	SEW_MOVIFIT_Classic.eds	SEW_MOVIFIT_TECH_DNET.eds
Name of icon files	SEW_MOVIFIT_Classic.ico	SEW_MOVIFIT_TECH_DNET.ico

9.9 Cable type "A" hybrid cable

9.9.1 Mechanical design





839041931

- [1] Overall shield
[2] Shield

Cable type	A
	8179530
• Supply cores:	7 x 1,5 mm ²
• Control core pair:	2 x 0,75 mm ²
• Conductor insulation:	TPE-E (Polyester)
• Conductor:	Bare E-Cu litz wire, extra fine wires with individual wire 0.1 mm
• Shield:	E-Cu wire, tinned
• Overall diameter:	Max. 15.9 mm
• Color of outer cable jacket:	Black
• Outer cable jacket insulation:	TPE-U (Polyurethan)

9.9.2 Electrical properties

- Conductor resistance for 1.5 mm² (at 20 °C): max. 13 Ω/km
- Conductor resistance for 0.75 mm² (at 20 °C): max. 26 Ω/km
- Operating voltage for 1.5 mm² conductor: Max. 600 V according to 
- Operating voltage for 0.75 mm² conductor: Max. 600 V according to 
- Insulation resistance at 20 °C: min. 20 MΩ x km

9.9.3 Mechanical properties



- Suitable for cable carriers
 - Bending cycles > 2.5 million
 - Travel speed \leq 3 m/s
- Bending radius in the cable carrier: 10 x diameter
for fixed routing: 5 x diameter
- Torsional strength (e.g. rotary table applications)
 - Torsion $\pm 180^\circ$ for a cable length of > 1 m
 - Torsional cycles > 100.000

INFORMATION



You will have to check the mechanical marginal conditions if you encounter reversed bending and high torsional load for a length of < 3 m. Please contact SEW-EURODRIVE in such cases.

9.9.4 Thermal properties

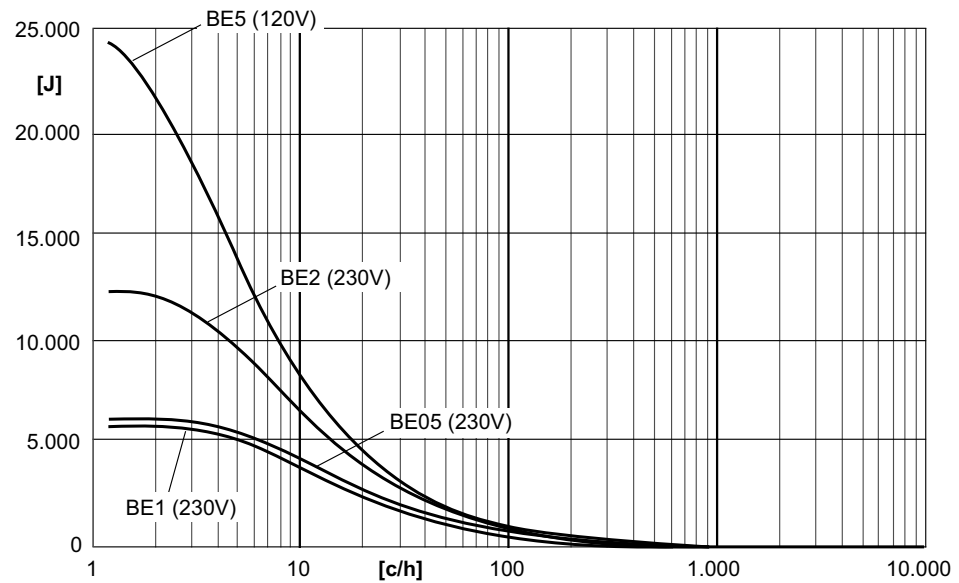
- Processing and operation: -30 °C – +90 °C (load capacity according to DIN VDE 0298-4)
-30 – +80 °C according to  US
- Transport and storage: -40 °C – +90 °C (load capacity according to DIN VDE 0298-4)
-30 – +80 °C according to  US
- Flame retardant according to UL1581 Vertical Wiring Flame Test (VW-1)
- Flame retardant according to CSA C22.2 Vertical Flame Test (FT-1)

9.9.5 Chemical properties

- Oil-resistant according to DIN VDE 0472 part 803 method B
- General fuel resistance (such as diesel, gasoline) according to DIN ISO 6722 parts 1 and 2
- General resistance to acids, alkalis, cleaning agents
- General resistance against dusts (e.g. bauxite, magnesite)
- Insulation and cable jacket material is halogen free according to DIN VDE 0472 part 815
- Within the specified temperature range, free from substances interfering with wetting agents (silicone-free)

9.10 4Q operation for motors with mechanical brake

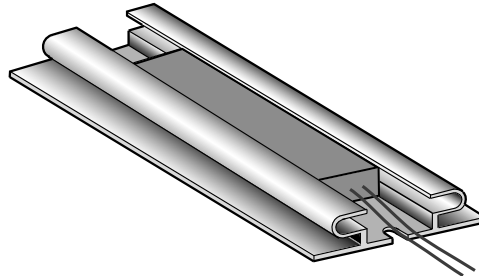
- The brake coil can be used as a braking resistor in 4Q operation.
- Brake voltage is generated internally within the unit, which means it is grid-independent.
- The following figures show the regenerative load capacities of the internal brake coils. If the regenerative load capacity is not sufficient for the application, connect an additional braking resistor, see the following chapter.
- The following figure shows the load capacity of the DR.. motor brake coils:



1583372939

9.11 Internal braking resistors

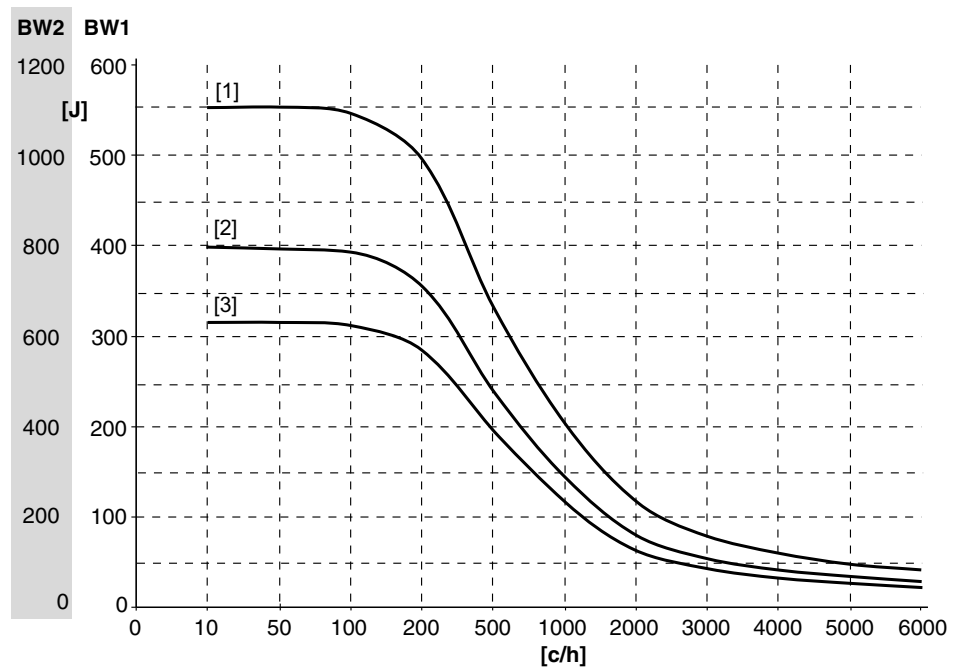
9.11.1 Assignment



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MOVIFIT® type	Braking resistor	Part number
MFT11A003... to MFT11A015...	BW1T	18207057
MFT11A022... to MFT11A040...	BW2T	18207545

9.11.2 Regenerative load capacity



839089035

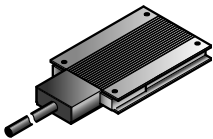
- [c/h] Cycles/hour
- [1] Brake ramp 10 s
- [2] Brake ramp 4 s
- [3] Brake ramp 0.2 s

9.12 External braking resistors

9.12.1 Assignment

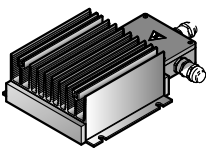
MOVIFIT® type	Braking resistor	Part number	Protective grid
MFT11A003...	BW200-003/K-1.5	08282919	0813152X
to	BW200-005/K-1.5	08282838	-
MFT11A015...	BW150-006-T	17969565	-
MFT11A022...	BW100-003/K-1.5	08282935	0813152X
to	BW100-005/K-1.5	08282862	-
MFT11A040...	BW068-006-T	17970008	-
	BW068-012-T	17970016	-

9.12.2 BW100..., BW200...



	BW100-003/ K-1.5	BW100-005/ K-1.5	BW200-003/ K-1.5	BW200-005/ K-1.5
Part number	08282935	08282862	08282919	08282838
Function	Dissipating the regenerative energy			
Degree of protection	IP65			
Resistance	100 Ω	100 Ω	200 Ω	200 Ω
Power rating in S1, 100% cdf	100 W	200 W	100 W	200 W
Dimensions W x H x D	146 x 15 x 80 mm	252 x 15 x 80 mm	146 x 15 x 80 mm	252 x 15 x 80 mm
Cable length	1.5 m			

9.12.3 BW150..., BW068...



	BW150-006-T	BW68-006-T	BW68-012-T
Part number	17969565	17970008	17970016
Function	Dissipating the regenerative energy		
Degree of protection	IP66		
Resistance	150 Ω	68 Ω	68 Ω
Power rating ac- cording to UL in S1, 100% cdf	600 W	600 W	1200 W
Dimensions W x H x D	285 x 75 x 174 mm	285 x 75 x 174 mm	635 x 75 x 174 mm

9.13 Hygienic^{plus} design

9.13.1 Properties of sealing materials and surfaces

Sealing material property

EPDM is the standard sealing material for the Hygienic^{plus} design. The following table shows a selection of EPDM properties. Take this information into account when planning your system.

Characteristic	EPDM stability
Alkali resistance	Excellent
Resistance to aging	Excellent
Ammonia (no water)	Excellent
Ethanol	Excellent
Gasoline resistance	Low
Vapor	Up to 130 °C
Hot water	Excellent
Lye	Excellent
Carbonic acid	Excellent
Methanol	Excellent
Sodium chloride	Excellent
Oil (vegetable, ethereal)	Good to medium
Oil and grease resistance	Low
Ozone resistance	Excellent
Phosphoric acid (50%)	Excellent
Nitric acid (40%)	Good
Hydrochloric acid (38%)	Excellent
Acid resistance	Excellent
Sulfuric acid (30%)	Excellent
Silicone oils and greases	Excellent
Drinking water	Excellent
Suds (laundry detergent)	Excellent
Sugar (watery)	Excellent
Permitted temperature range	-25 – +150 °C

INFORMATION



The low rated stability of EPDM in case of contact with mineral oils, gasoline, grease etc. results from the fact that EPDM swells when it comes into contact with these materials. However, these chemicals do not destroy EPDM.

Surface coating properties

- Advanced antistick surface properties
- Surface roughness
 - $R_a < 1.6$ to 2
- Resistance to acidic and alkaline cleaning agents
 - Sulfuric acid (10%)
 - Caustic soda (10%)


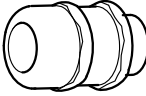
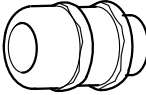
Do not mix cleaning and disinfecting agents under any circumstances!

Never mix acids and chloralkalis, as poisonous chlorine gas will result.

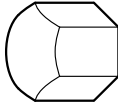
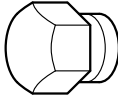
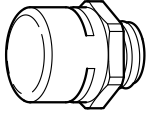
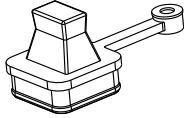
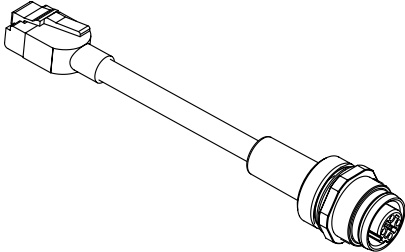
Strictly observe the safety instructions of the cleaning agent manufacturer.

- Resistance to materials at the place of installation
 - Grease
 - Mineral oils
 - Edible oils
 - Gasoline
 - Alcohol
 - Solvent
- Resilient against shock and impact load
- Impact-resistant
- Resistant to temperature change
 - $-25 - 60$ °C
 - Increased temperature for cleaning processes: 80 °C
- Water jet resistant
 - approx. 100 l/min
- Steam cleaning (according to DIN 40050 part 9)
 - Max. 80 – 100 bar (approx. 15 l/min)
 - Max. 80 °C (30 seconds)
- Light resistant
 - Direct sunlight

9.13.2 Optional metal cable glands and protective caps

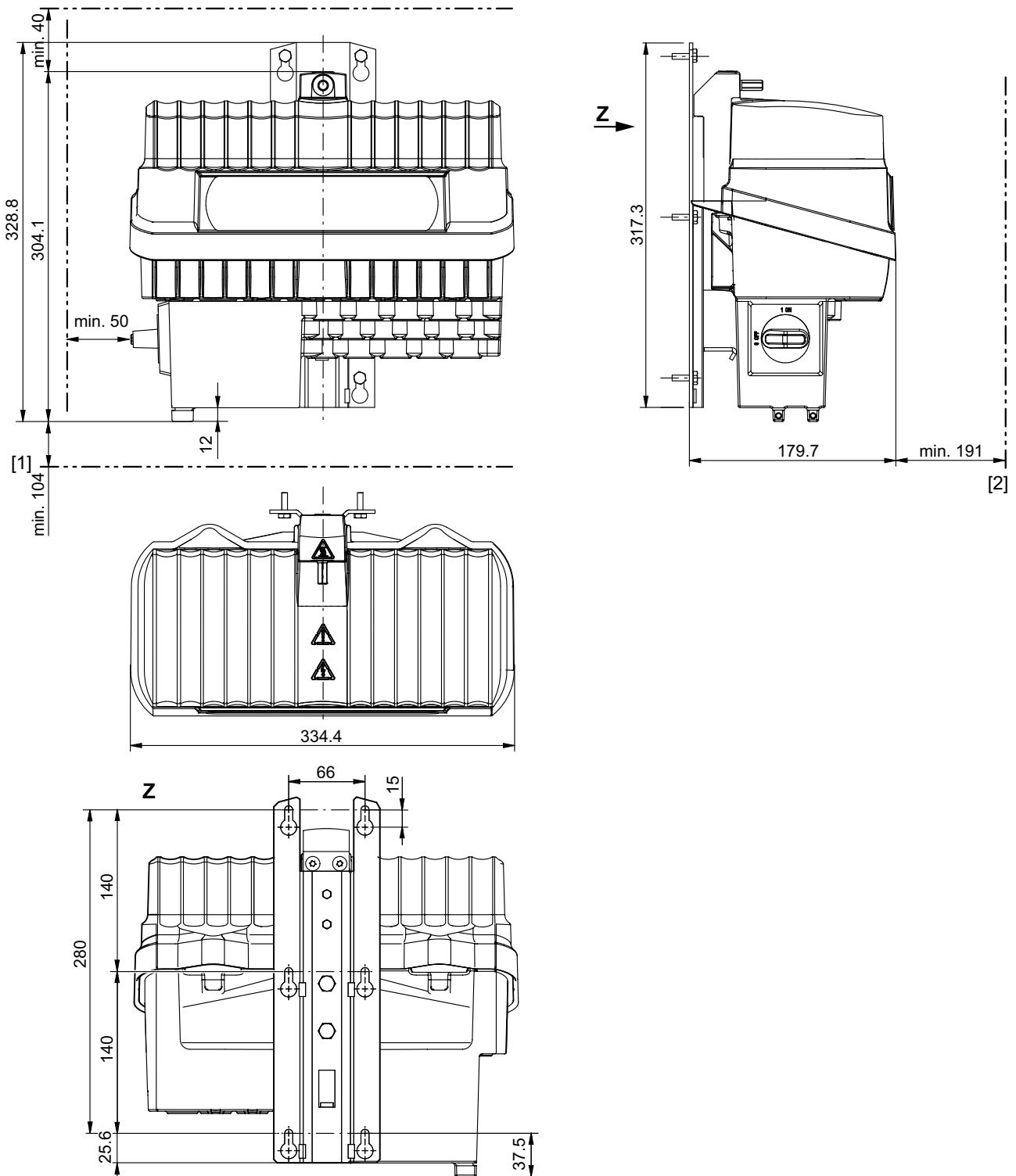
Type	Degree of protection	Image	Contents	Size	Part number
Stainless steel screw plugs	IP69K		10 pieces	M16 x 1.5	18202233
			10 pieces	M20 x 1.5	18202241
			10 pieces	M25 x 1.5	18202268
EMC cable gland (brass, nickel-plated)	IP66		10 pieces	M16 x 1.5	18204783
			10 pieces	M20 x 1.5	18204791
			10 pieces	M25 x 1.5	18204805
EMC cable gland (stainless steel)	IP69K		10 pieces	M16 x 1.5	18216366
			10 pieces	M20 x 1.5	18216374
			10 pieces	M25 x 1.5	18216382

9.14 Accessories

Type of screw fitting	Image	Contents	Size	Part number
M12 plug for plug connector with male thread (made of stainless steel)		10 pieces	M12 x 1.0	18202799
M12 plug for plug connector with female thread (made of stainless steel)		10 pieces	M12 x 1.0	18202276
Pressure compensation fitting (made of stainless steel)		1 pieces	M16 x 1.5	18204090
Ethernet closing plug for Push pull RJ45 socket		10 pieces		18223702
		30 pieces		18223710
Ethernet adapter RJ45_M12 RJ45 (internal) M12 (external) 2 required for each unit.	 9007200853487883	1 pieces		13281682

9.15 Dimension drawings

9.15.1 MOVIFIT® size 1 with standard mounting rail

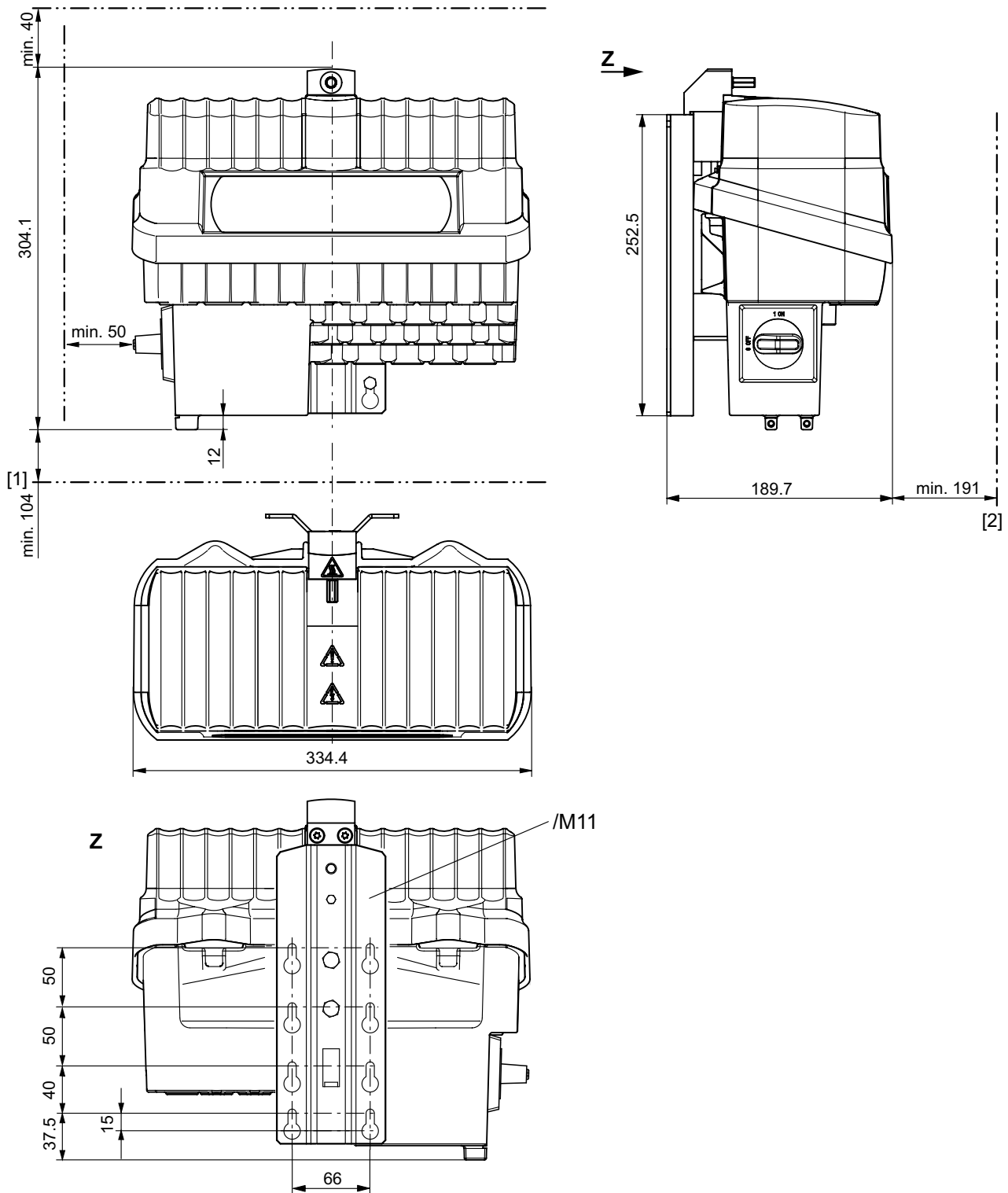


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[1] The clearance of 104 mm below is only necessary for ABOXes with circular connector (Intercontec) motor output pointing downward.

[2] The clearance of 191 mm at the front is only necessary for ABOXes with circular connector (Intercontec) motor output at the front.

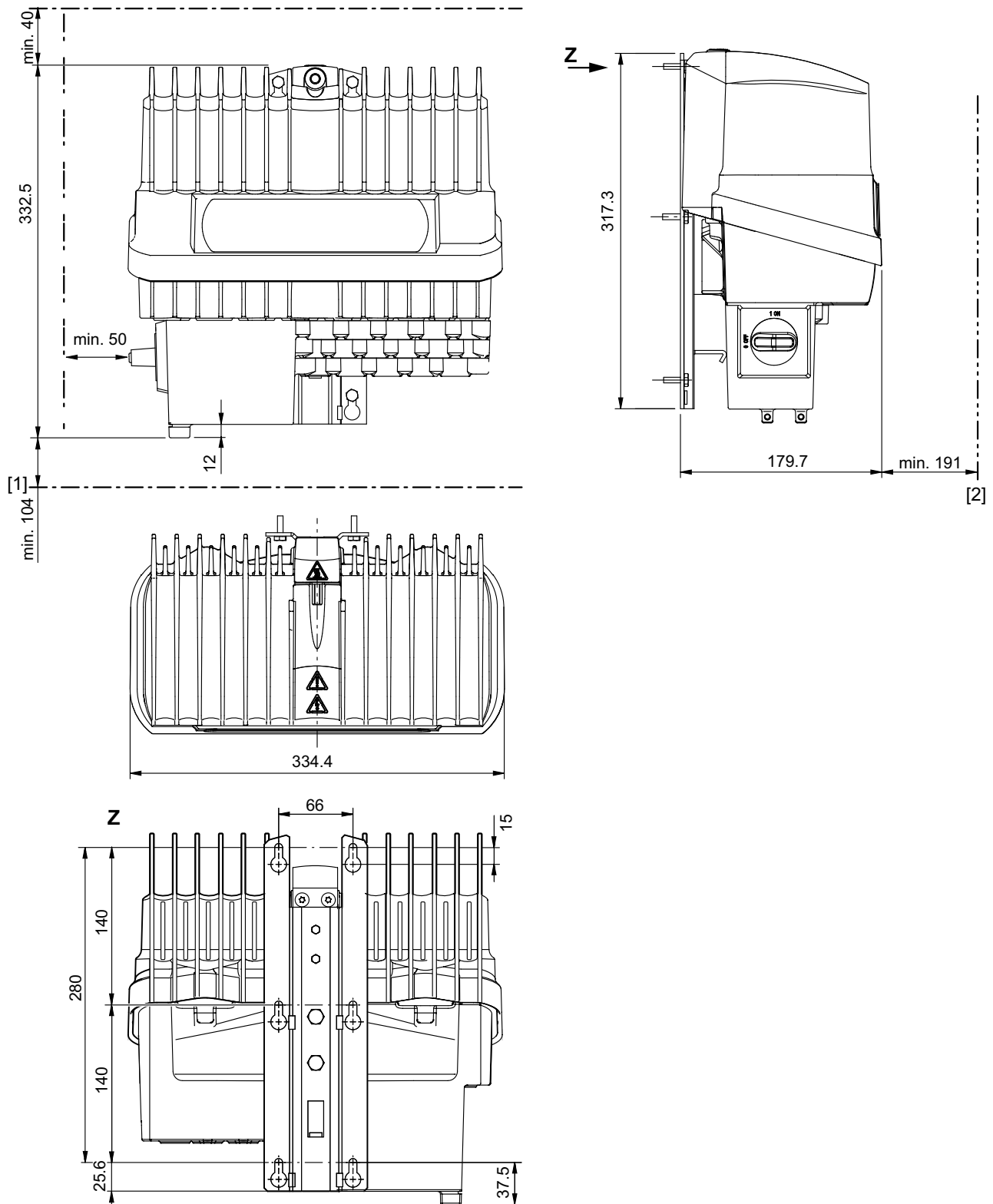
9.15.2 MOVIFIT® size 1 with optional stainless steel mounting rail /M11



9007202920497803

- [1] The clearance of 104 mm below is only necessary for ABOXes with circular connector (Intercontec) motor output pointing downward.
- [2] The clearance of 191 mm at the front is only necessary for ABOXes with circular connector (Intercontec) motor output at the front.

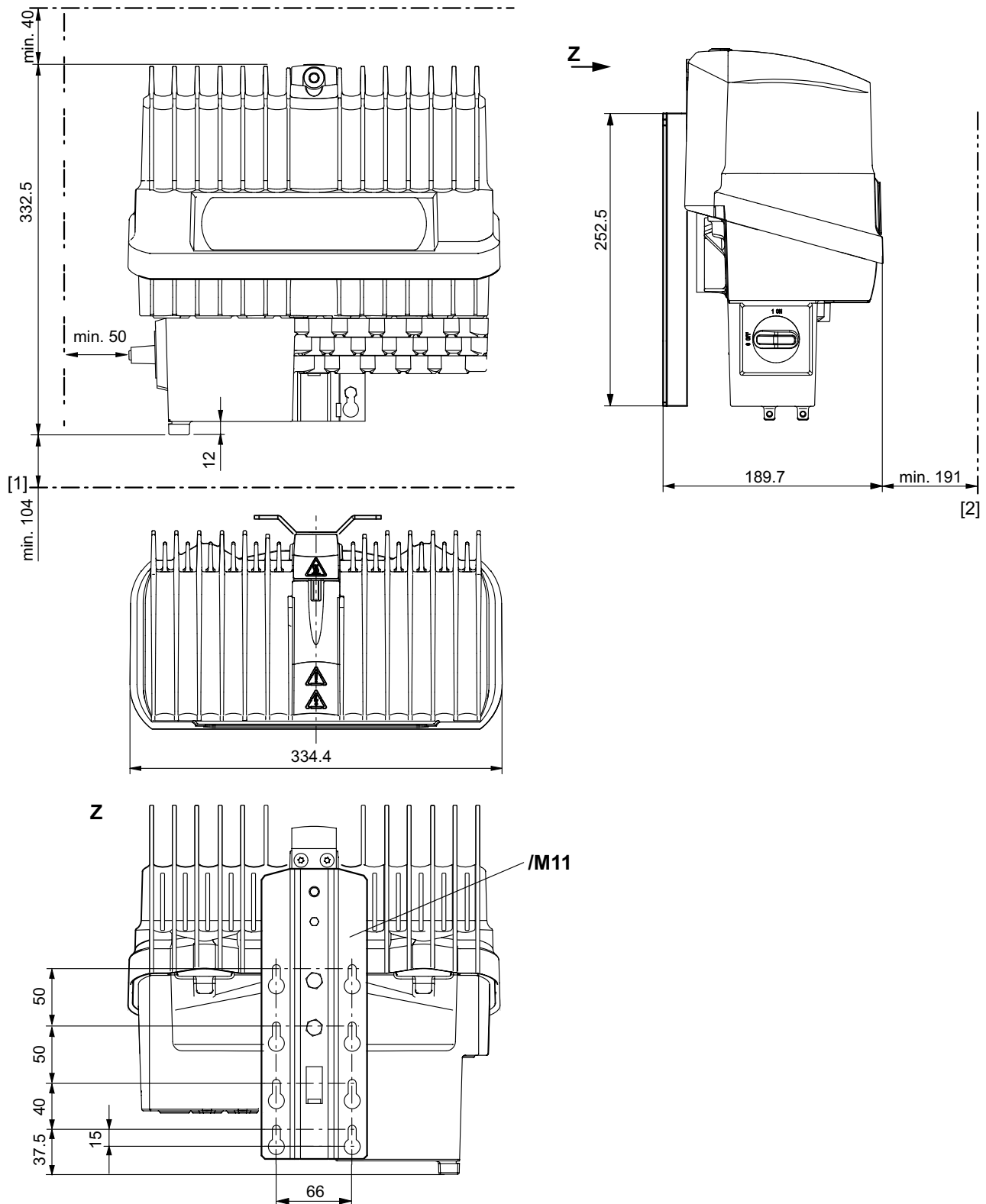
9.15.3 MOVIFIT® size 2 with standard mounting rail



27021598603390347

- [1] The clearance of 104 mm below is only necessary for ABOXes with circular connector (Intercontec) motor output pointing downward.
- [2] The clearance of 191 mm at the front is only necessary for ABOXes with circular connector (Intercontec) motor output at the front.

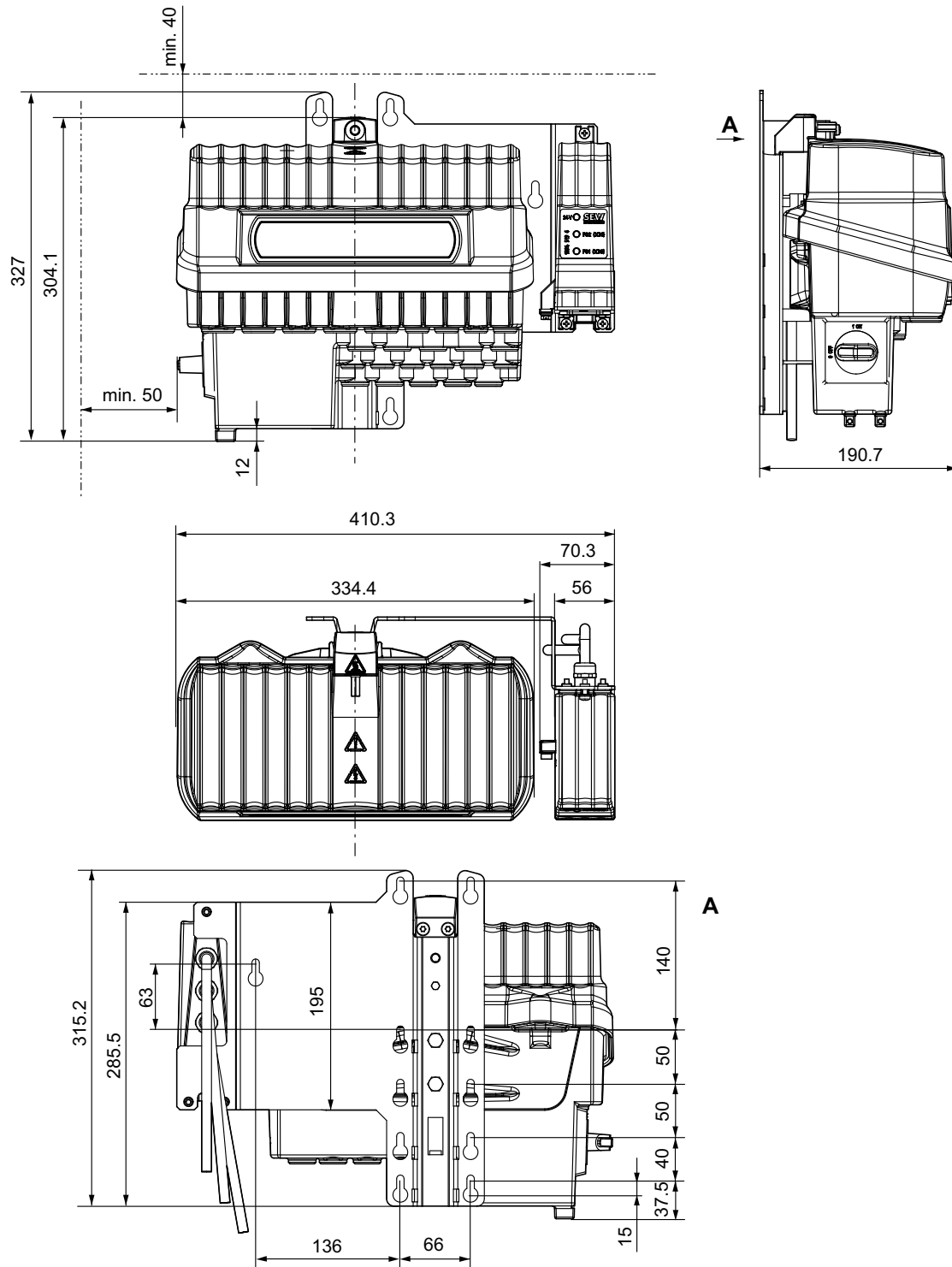
9.15.4 MOVIFIT® size 2 with optional stainless steel mounting rail /M11



9007202968012171

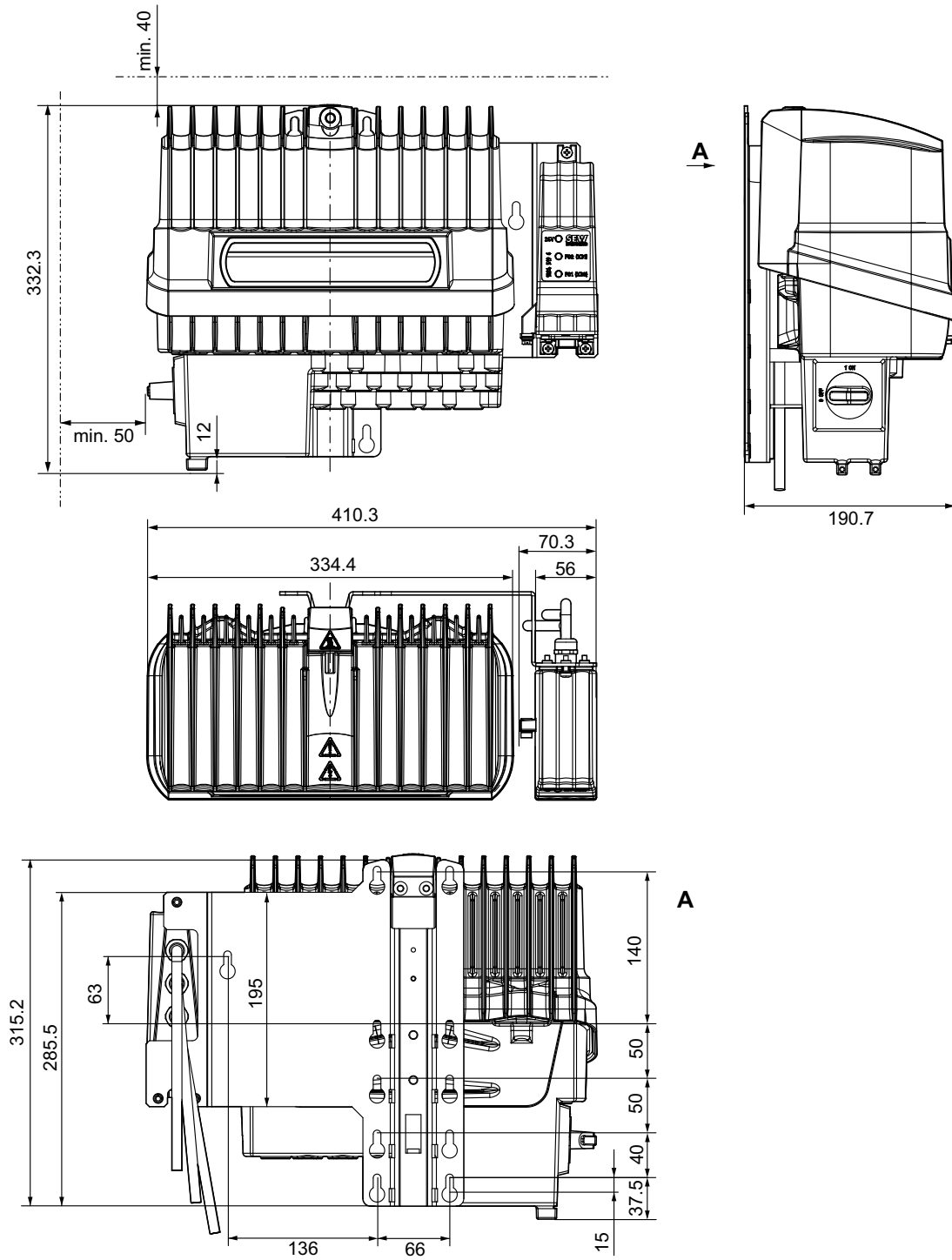
- [1] The clearance of 104 mm below is only necessary for ABOXes with circular connector (Intercontec) motor output pointing downward.
- [2] The clearance of 191 mm at the front is only necessary for ABOXes with circular connector (Intercontec) motor output at the front.

9.15.5 MOVIFIT® size 1 with POF option L10



18014402366515211

9.15.6 MOVIFIT® size 2 with POF option L10

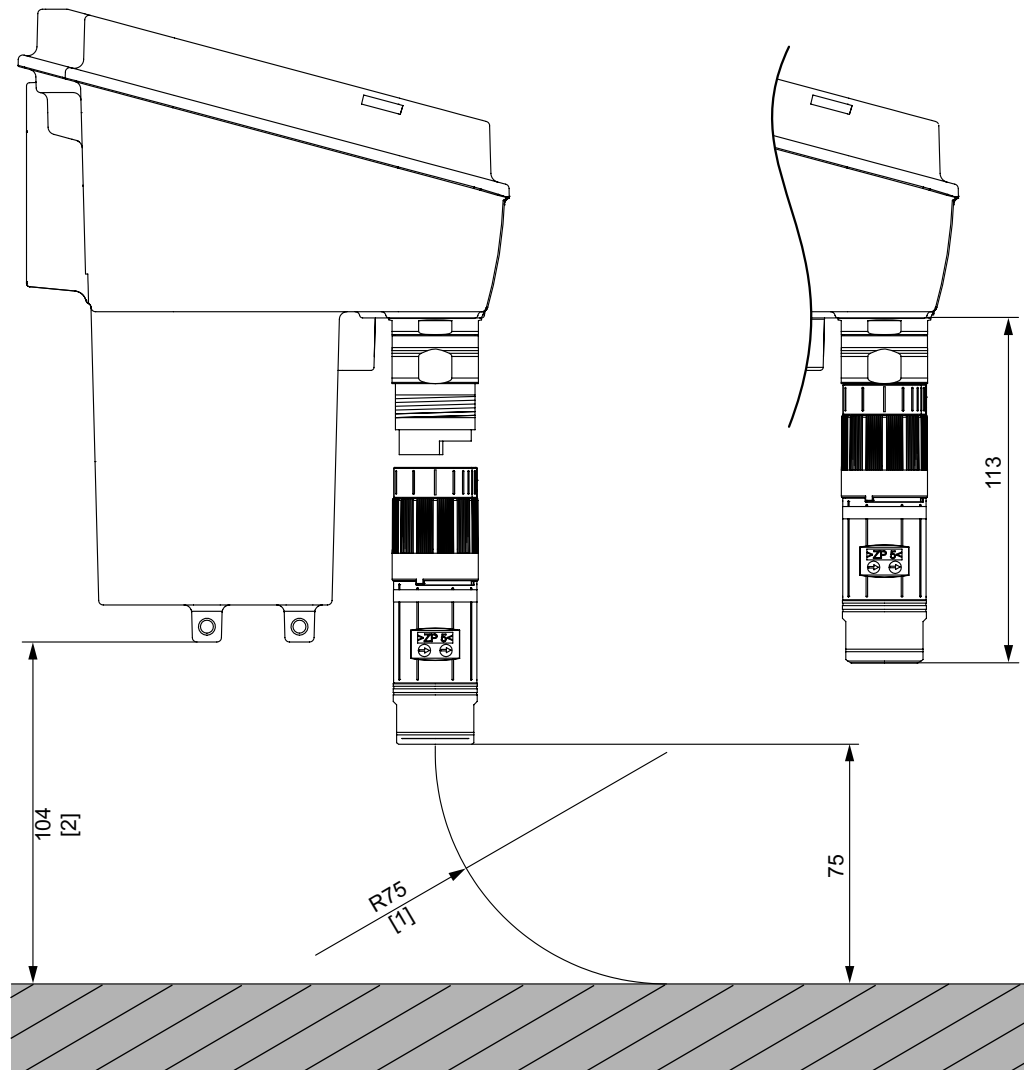


9007203640500875

21316996/EN – 12/2014

9.15.7 ABOX with round connector (Intercontec), motor output pointing downward

The following figure shows the minimum installation clearance of the hybrid ABOX with circular connector (Intercontec) and motor output pointing downward:

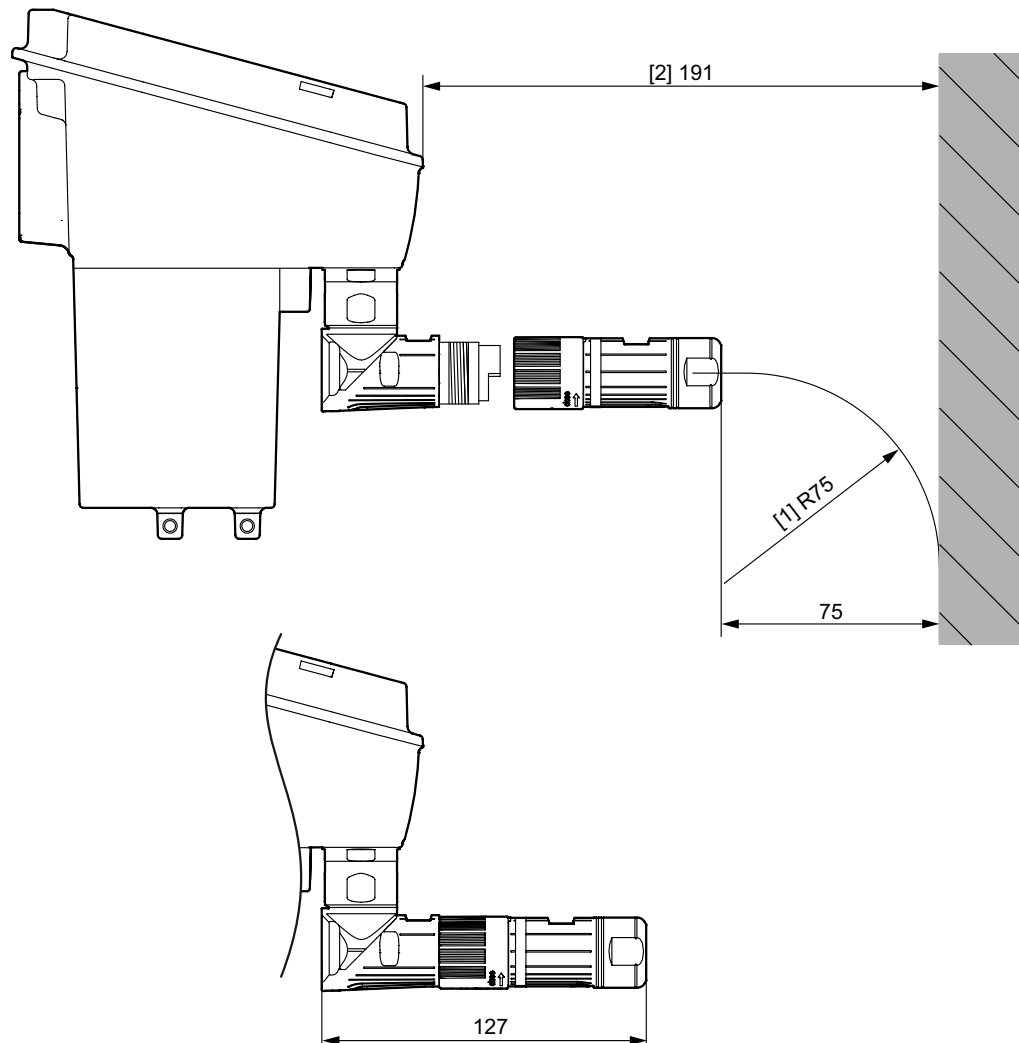


36028801787793163

- [1] Smallest permitted bending radius of bulk cable: 75 mm
- [2] Minimum distance to the bottom of the ABOX: 104 mm

9.15.8 ABOX with round connector (Intercontec), motor output pointing forward:

The following figure shows the minimum installation clearance of the hybrid ABOX with circular connector (Intercontec) and motor output pointing forward:



9007204023573387

- [1] Smallest permitted bending radius of bulk cable: 75 mm
- [2] Minimum distance to the front of the ABOX: 191 mm

10 Declaration of Conformity

EC Declaration of Conformity

Translation of the original text

SEW
EURODRIVE

900070110

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

declares under sole responsibility that the

units of the series **MOVIFIT® FC**
MOVIFIT® MC

are in conformity with

Machinery Directive **2006/42/EC**

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

EMC Directive **2004/108/EC** 4)**Applied harmonized standards:** **EN ISO 13849-1:2008**
EN 61800-5-1:2007
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 **12.01.2015**Place Date 
Managing Director Technology a) b)

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

EC Declaration of Conformity

Translation of the original text

SEW
EURODRIVE

900080110



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

declares under sole responsibility that the

units of the series

MOVIFIT® FC
MOVIFIT® MC

in combination with

S11

PROFIsafe®

are in conformity with

Machinery Directive

2006/42/EC

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

EMC Directive

2004/108/EC

4)

Applied harmonized standards:

EN ISO 13849-1:2008
EN 62061:2005
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 12.01.2015

Place

Date

Johann Soder
Managing Director Technology

a) b)

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

EC Declaration of Conformity

SEW
EURODRIVE

902070013

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

declares under sole responsibility that the



units of the series	MOVIFIT® FC MOVIFIT® MC	
in connection with	S12A / S12B	Drive Safety Option
are in conformity with		
Machinery Directive	2006/42/EC	1)
Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	4)
Applied harmonized standards:	EN ISO 13849-1:2008 EN 61800-5-2:2007 EN 61800-5-1:2007 EN 61800-3:2007 + A1:2012	5)

- 1) The products are intended for installation in machines. Startup is prohibited until it has been established that the machinery into which these products are to be incorporated complies with the provisions of the aforementioned Machinery Directive.
- 4) According to the EMC Directive, the listed products are not independently operable products. EMC assessment is only possible after these products have been integrated in an overall system. The assessment was verified for a typical system constellation, but not for the individual product.
- 5) All safety-relevant requirements of the product-specific documentation (operating instructions, manual, etc.) must be met over the entire product life cycle.

Bruchsal 11.07.13

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

11 Address list

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Assembly Sales Service	Bordeaux	SEW-USOCOME Parc d'activités de Magellan 62 avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
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	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
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	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
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Sales Service	Zagreb	KOMPEKS d. o. o. Zeleni dol 10 HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@inet.hr
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		Drive Service Hotline / 24 Hour Service	Tel. 01924 896911
Greece			
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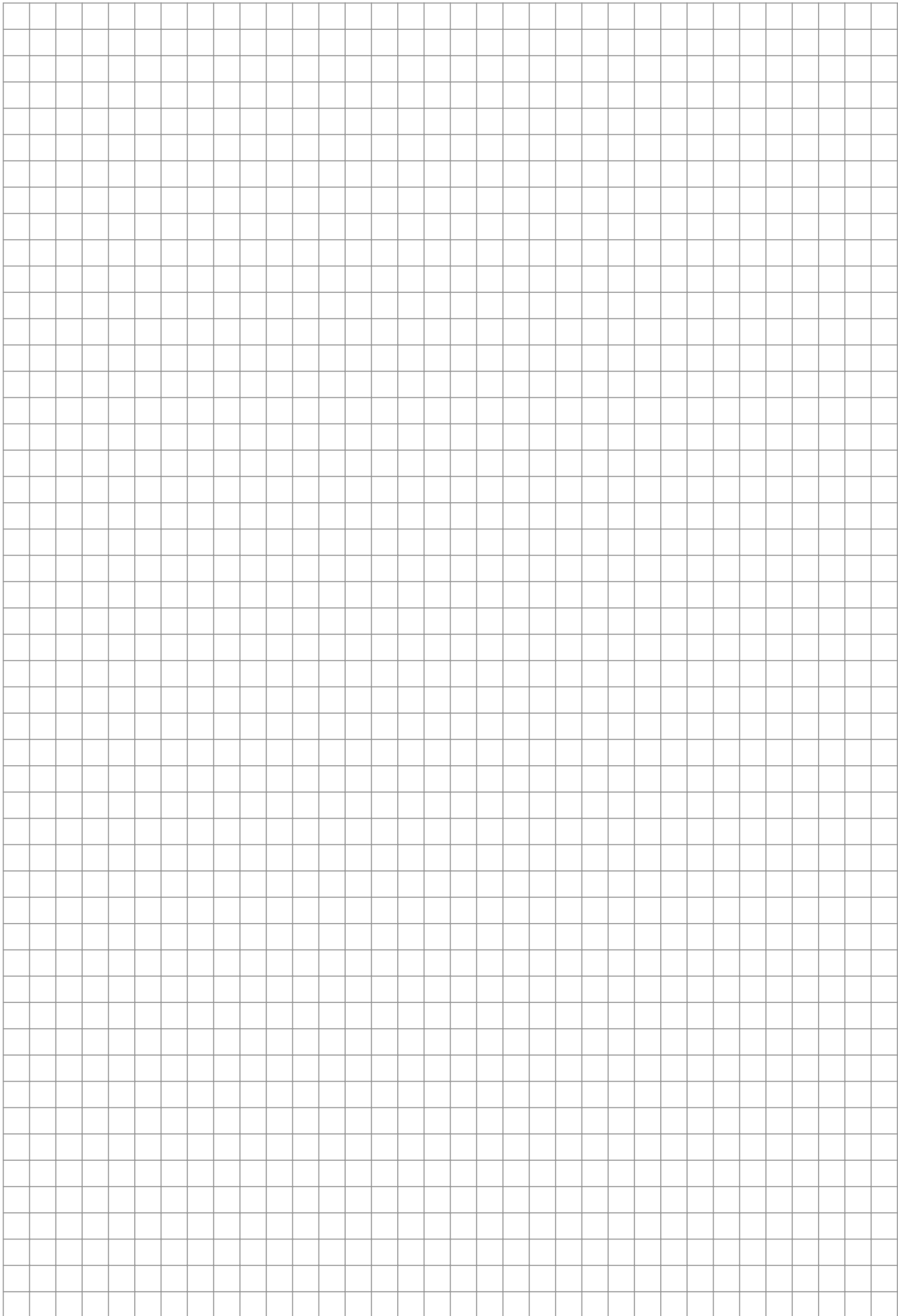
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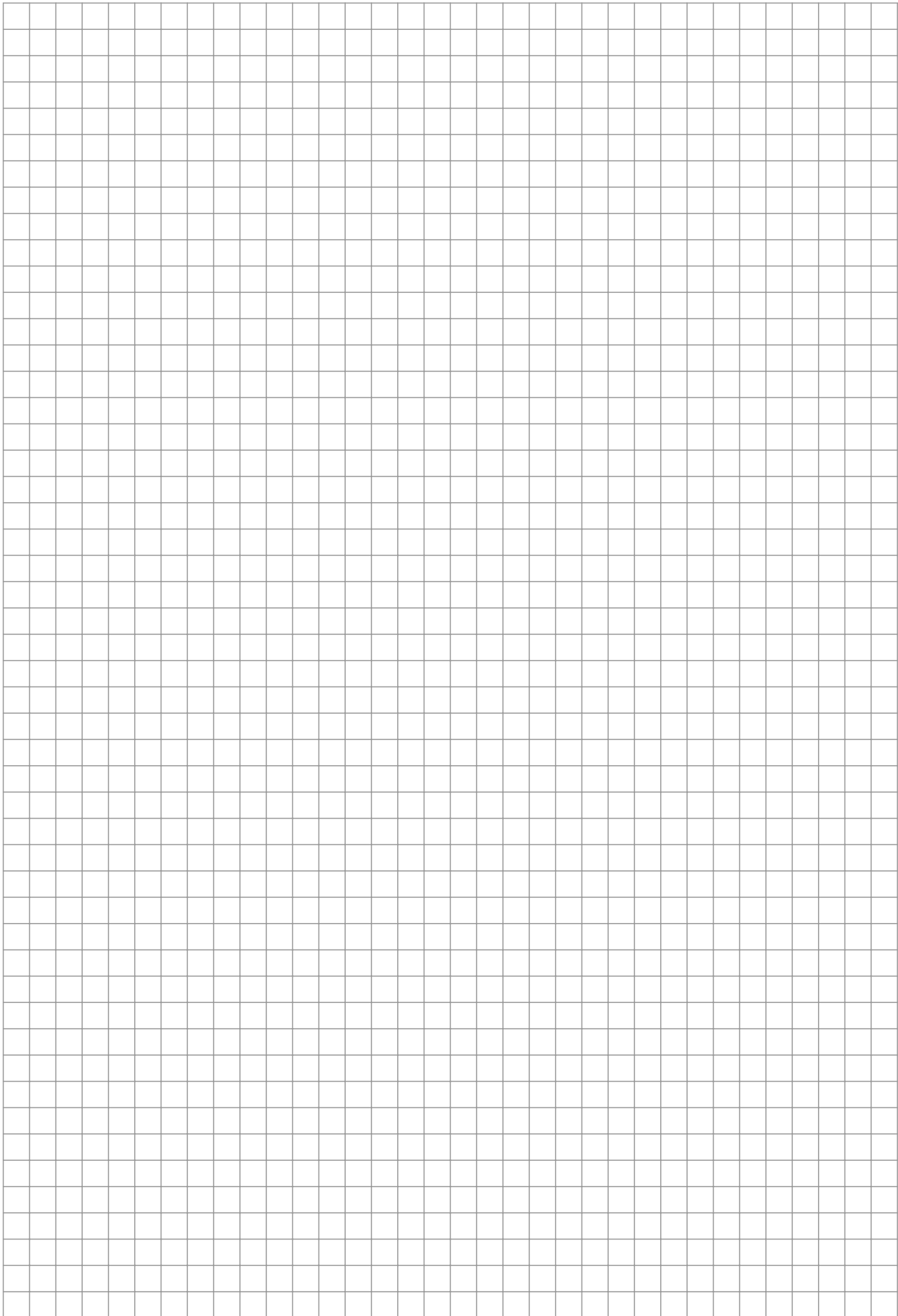
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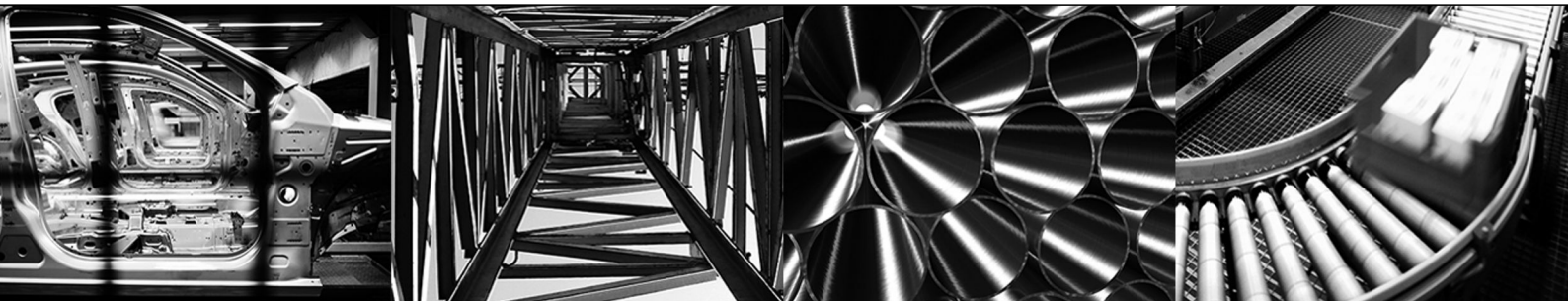
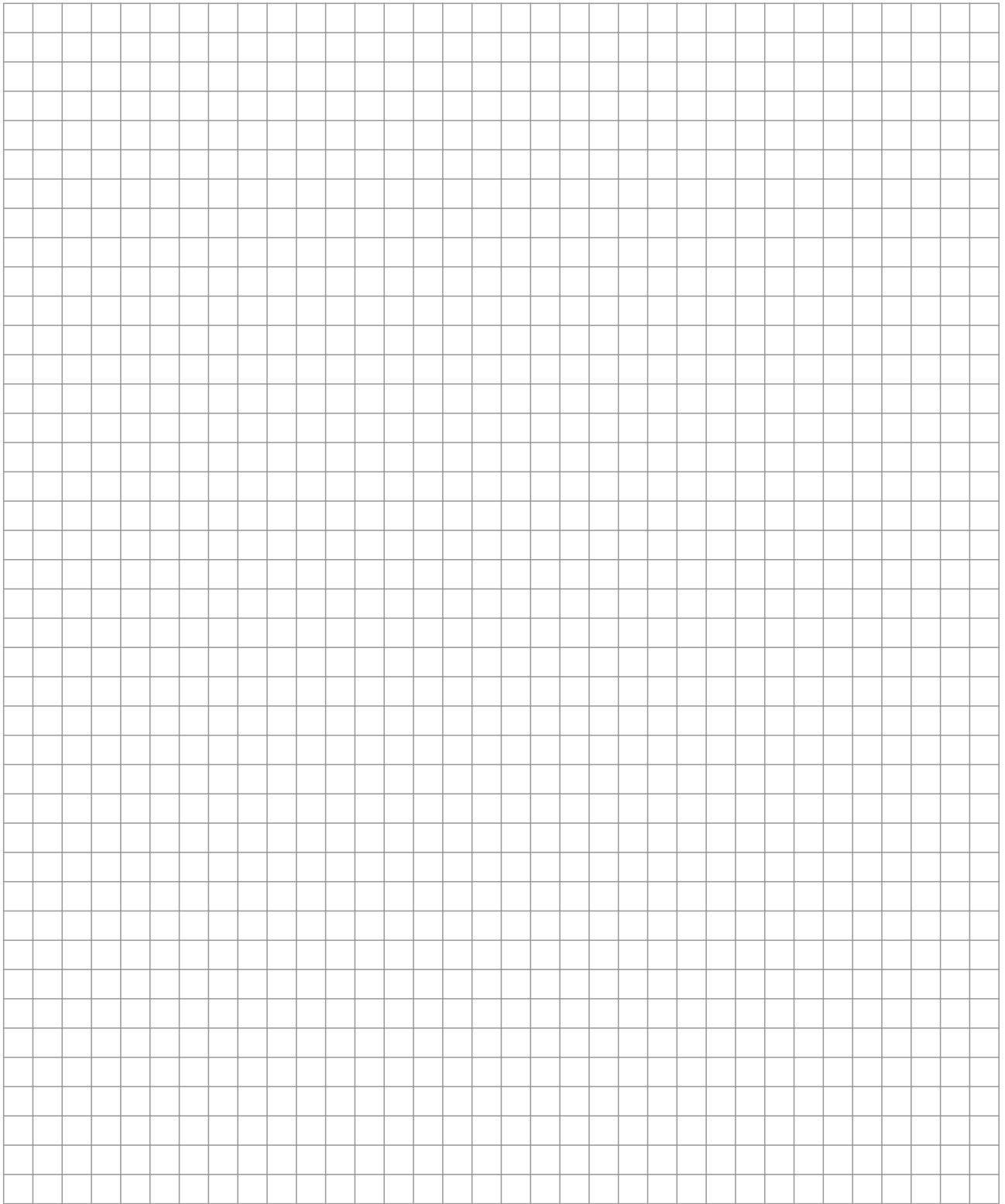
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