SEW EURODRIVE

Operating Instructions

MOVIFIT® basic

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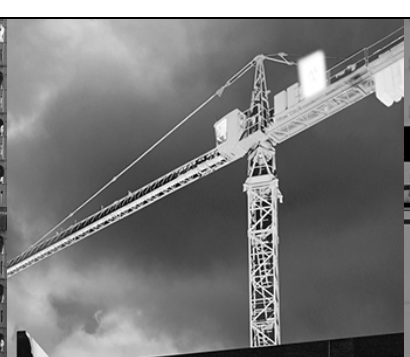


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1 General information

1.1 How to use this documentation

The documentation is an integral part of the product and contains important information on operation and service. The documentation is written for all employees who assemble, install, start up, and service this product.

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

1.2 Structure of the safety notes

1.2.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes, warnings regarding potential risks of damage to property, and other notes.

Signal word	Meaning	Consequences if disregarded
⚠ **DANGER!**	Imminent hazard	Severe or fatal injuries
⚠ **WARNING!**	Possible dangerous situation	Severe or fatal injuries
⚠ **CAUTION!**	Possible dangerous situation	Minor injuries
IMPORTANT!	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 the section-related safety notes

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

This is the formal structure of a section-related safety note:

⚠ SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

1.2.3 Structure of the embedded safety notes

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

This is the formal structure of an embedded safety note:

- ⚠ **SIGNAL WORD** Nature and source of hazard.

  Possible consequence(s) if disregarded.

  – Measure(s) to prevent the hazard.

1.3 Rights to claim under warranty

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

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 Copyright

1.6 Product names and trademarks

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

2 Safety notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the 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 primarily concerned with the use of MOVIFIT® basic drives. If you use other SEW components, also refer to the safety notes for the respective components in the corresponding documentation.

Please also observe the supplementary safety notes in the individual sections of this documentation.

2.2 General information

Never install or start up damaged products. Submit a complaint to the shipping company immediately in the event of damage.

During operation, MOVIFIT® basic drives can have live and bare parts as well as hot surfaces, depending on their enclosure.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property. Refer to the documentation for additional information.

2.3 Target group

Only qualified electricians are authorized to install, startup 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 guidelines).

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

Any activities regarding transportation, storage, operation, and disposal must be carried out by persons who have been instructed appropriately.

2.4 Designated use

MOVIFIT® basic drives are components intended for installation in electrical systems or machines.

In case of installation in machines, startup of MOVIFIT® basic 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 the EMC directive 2004/108/EC.

The MOVIFIT® basic units meet the requirements stipulated in the Low Voltage Directive 2006/95/EC. The standards given in the declaration of conformity apply to the MOVIFIT® basic units.

You must observe the technical data and information on the connection requirements as provided on the nameplate and in the documentation.

2.4.1 Safety functions

MOVIFIT® basic units may not perform safety functions.

2.4.2 Hoist applications

MOVIFIT® basic units are not designed for hoist applications.

2.5 Other applicable documentation

Note also the following documentation:

- "DR.71-225, 315 AC Motors" operating instructions

You can download or order this publication on the Internet (**http://www.sew-eurodrive.de**, under the heading "Documentation").

2.6 Transportation, storage

You must observe the notes on transportation, storage and proper handling. Comply with the requirements for climatic conditions stated in section "Technical Data".

2.7 Installation

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

Protect the MOVIFIT® basic units from improper strain.

The following applications are prohibited unless the unit is explicitly designed for such use:

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

2.8 Electrical connection

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 or EN 61800-5-1).

A voltage test according to EN 61800-5-1:2007 chapter 5.2.3.2 is required for the MOVIFIT® basic drives prior to startup in order to ensure the insulation.

2.9 Safe disconnection

The MOVIFIT® basic units meet 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.

2.10 Operation

Systems with integrated MOVIFIT® basic units must be equipped with additional monitoring and protection devices according to the applicable safety guidelines, such as the law governing technical equipment, accident prevention regulations, etc. Additional protective measures may be necessary for applications with increased potential risk.

Do not touch live components or power connections immediately after disconnecting MOVIFIT® basic from the supply voltage because some capacitors may still be charged. Wait at least 10 minutes after the supply voltage is switched off.

Once the supply voltages are applied to MOVIFIT® basic, the connection box must be closed, i.e. the cover must be screwed on and all the plugs must be connected.

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

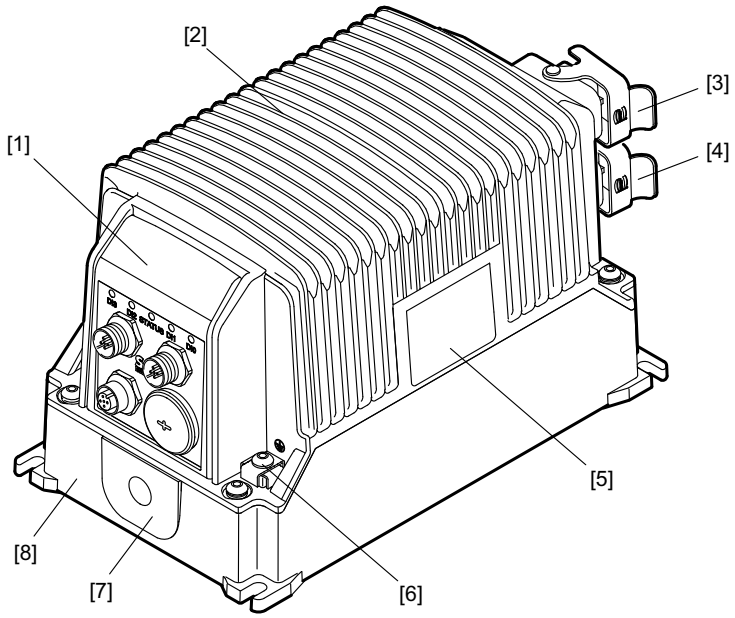
Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Eliminating the cause of the problem or performing a reset may result in the drive restarting automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the supply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

Caution: Danger of burns: The surface temperatures of the MOVIFIT® basic drives can exceed 60 °C during operation.

3 Unit structure

3.1 MOVIFIT® basic

MOVIFIT® basic is a decentralized drive unit for controlling AC motors.



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[1] Control unit
[2] EBOX with cooling fins and electronics (inverter or motor starter)
[3] X8 connection for motor (only with dual motor starter design)
[4] X9 connection for motor
[5] Nameplate
[6] PE connection ⏚ (outside)
[7] Cable seal for cable diameter 13 – 15 mm
[8] ABOX with FieldPower contact module (connection unit)

3.2 Variants

MOVIFIT® basic is available in the following variants:

- Inverter — For 1 motor with CW and CCW operation and 4 setpoint speeds
- Dual motor starter — For 2 motors with 1 direction of rotation each
  The direction of rotation depends on the phase sequence.
- Reversing starter — For 1 motor with CW and CCW operation

MOVIFIT® basic is available with the following control units:

- Drives with AS-Interface
- Control unit with binary signal inputs and outputs

3.3 Accessories

You can order the following accessories for MOVIFIT® basic from SEW-EURODRIVE:

Accessories	Part number (SEW-EURODRIVE)
Motor connection cable 4 x 2.5 mm^2, unshielded, length = 3 m with plug connector Q8/0 – open conductor ends	1 814 874 3
Motor connection cable 7 x 2.5 mm^2, unshielded, length = 3 m with plug connector Q8/0 – open conductor ends	1 814 992 8

You can order the following accessories for MOVIFIT® basic from the company Weidmüller Interface GmbH & Co. KG (see www.weidmueller.com):

Accessories	Part number (Weidmüller)
Cable seal, for cables with Ø = 7.5 – 9 mm	4329610000
Cable seal, for cables with Ø = 9 – 11 mm	4323210000
Cable seal, for cables with Ø = 11 – 13 mm	4323230000
Cable seal for cables with Ø = 13 – 15 mm [1]	**4323220000**
Cable seal, for cables with Ø = 15 – 17 mm	4324010000
Seal (without cable entry)	4323240000
Stripping tool AM 16 (for round cables)	9204190000
Stripping tool AMF 6/10 (for flat cables)	9204180000

1) The scope of delivery of MOVIFIT® basic units comprises 2 of those cable seals.

3.4 Type designations

3.4.1 Nameplate

The following figure gives an example of a nameplate of the MOVIFIT® basic inverter:

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3.4.2 Type designation

The following table shows the MOVIFIT® basic type designation:

MBF07A-K1-A1

Connection module

Version

Control
K = via AS-Interface
B = binary control

Version

Motor power/variant
07 = 0.75 kW inverter
15 = 1.5 kW inverter
4R = Reversing starter
4D = Dual motor starter

Variant
F = Inverter
S = Motor starter

Unit series
MB = MOVIFIT® basic

4 Mechanical installation

4.1 Installation instructions

4.1.1 General information

NOTICE

Loss of warranted degree of protection if the MOVIFIT® basic inverter is installed incorrectly or not at all.

Damage to the MOVIFIT® basic unit.

- If you remove the EBOX from the ABOX, you have to protect the EBOX and the ABOX from moisture and dust.

Note the following when installing the MOVIFIT® basic unit:

- Observe the general safety notes.
- Only install the MOVIFIT® basic unit on a level, low-vibration, and torsionally rigid support structure.
- Ensure sufficient clearance around the unit to allow for adequate cooling. Warm outlet air of other units must not be drawn in.
- Strictly observe all instructions as to the technical data and the permissible conditions regarding the place of installation.
- Do only use provided attachment options when mounting the drive.
- Cover the unused plug connectors with blind caps.

  The degree of protection specified in the technical data only applies for a correctly installed MOVIFIT® basic unit.

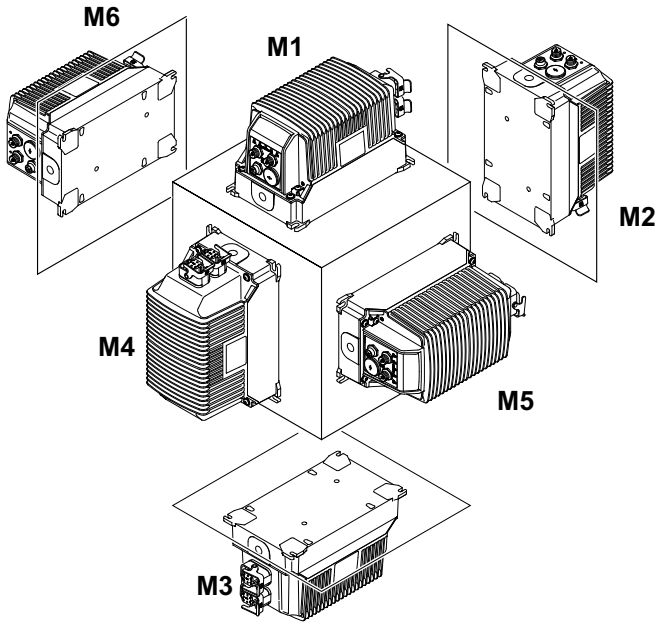
4.1.2 Installation requirements

Make sure that the following requirements are met before you start installing the unit:

- The nameplate data of the MOVIFIT® basic unit match the voltage supply system
- The MOVIFIT® basic unit is undamaged (no damage caused by transportation or storage).
- The ambient temperature corresponds to the specifications in chapter "Technical Data".
- The MOVIFIT® basic unit must not be installed under the following harmful ambient conditions:
  - Potentially explosive atmospheres
  - Oils
  - Acids
  - Gases
  - Vapors
  - Radiation
  - etc.

4.2 Mounting position

You can install the MOVIFIT® basic unit in any mounting position.



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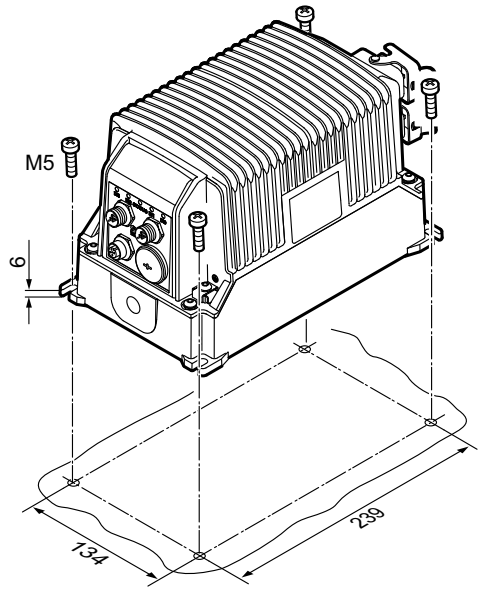
4.3 Installing MOVIFIT® basic

Mount the MOVIFIT® basic unit with 4 screws according to the following figure:
(Tightening torque 2.0 – 2.4 Nm (18 – 21 lb.in))



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5 Electrical installation

5.1 Installation instructions

5.1.1 Residual current device

⚠ WARNING

Electric shock due to incorrect RCD type.

Severe or fatal injuries.

- MOVIFIT® basic can cause direct current in the protective earth conductor. When a residual current device (RCD) is used for protection against direct or indirect contact, only install a type B residual current device on the supply system end of the MOVIFIT® basic unit.

- Do not use a conventional RCD as a protective device. Universal current-sensitive RCDs are permitted as a protective device. During normal operation of MOVIFIT® basic units, leakage currents > 3.5 mA can occur.
- SEW-EURODRIVE recommends that you do not use RCDs. However, if a residual current device is stipulated for direct or indirect protection against contact, observe the above note.

5.1.2 Line contactor

NOTICE

Damage due to jogging.

Damage to the MOVIFIT® basic unit.

- Do not use the line contactor for jogging, but only for switching the MOVIFIT® basic unit on and off. In jog mode, use the control signals (AS-Interface bits or binary inputs).
- Observe a minimum switch-off time of 10 s for the line contactor.

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

5.1.3 Notes on PE connection

⚠ WARNING

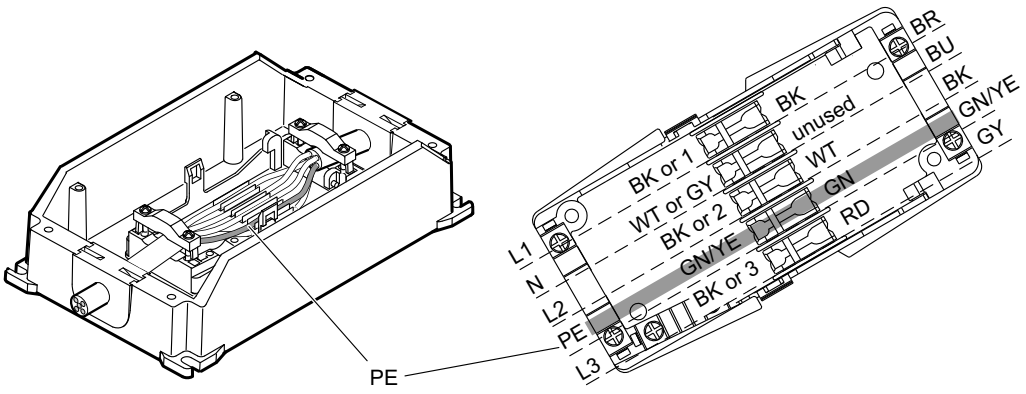
Electric shock due to incorrect connection of PE.

Severe or fatal injuries.

- Observe the following notes regarding PE connection.

PE connection in the unit

Establish a PE connection in the unit.



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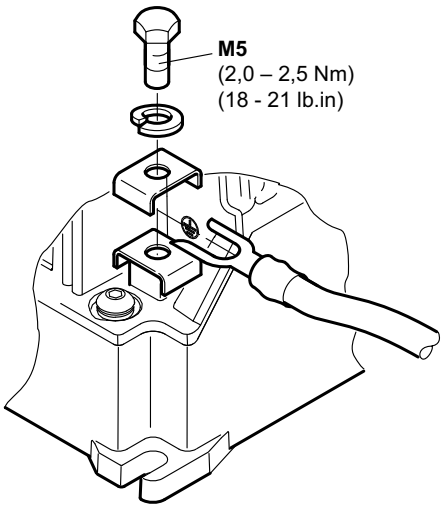
PE connection on the outside of the housing

During normal operation of the MOVIFIT® basic inverter, earth-leakage currents ≥ 3.5 mA can occur. To meet the requirements of EN 61800-5-1, you must establish 2 PE connections.

Install a second PE conductor with a cross section of at least the cross section of the supply system cable:



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5.1.4 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 in accordance with IEC 61800-3. It may cause EMC interference. In this case, it is recommended for the operator to take suitable measures.

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

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.

5.1.5 Installation above 1000 m asl

MOVIFIT® basic units can also be operated at an altitude of 1000 – 4000 m amsl. 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% per100 m.
- For heights from 2000 m to max. 4000 m amsl, observe the following notes:
  - The safe disconnection of power and electronics connections can no longer be assured above 2000 m. For safe disconnection, you have to take measures according to IEC 60664-1 / EN 61800-5-1.
  - Connect an overvoltage protection device upstream of MOVIFIT® basic to reduce overvoltages from category III to category II.

5.1.6 Protection devices

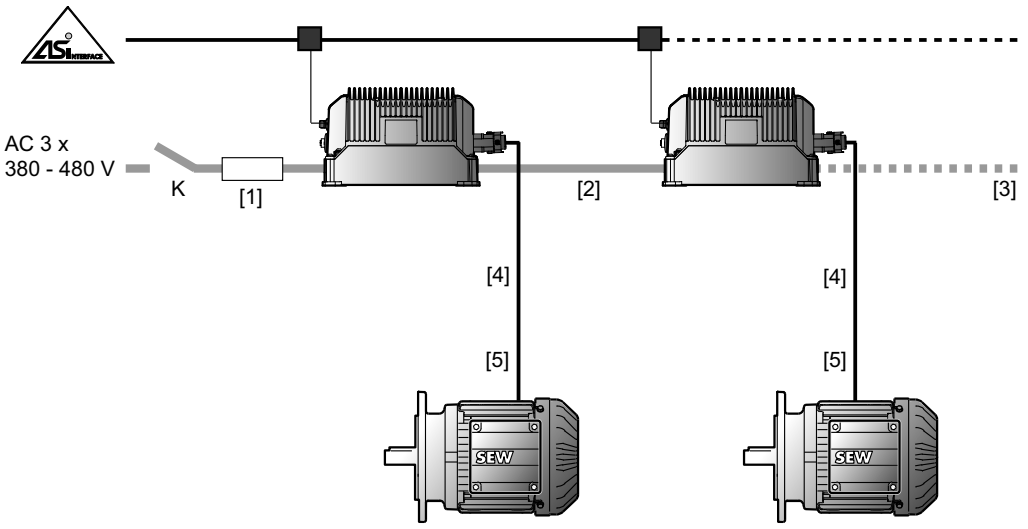
- MOVIFIT® basic drives are equipped with integrated protection devices against overload of the drive. External motor protection devices are not necessary.

5.1.7 UL compliant installation (in preparation)

UL and cUL approval for the MOVIFIT® basic unit series is in preparation.

5.2 Topology

The following figure shows a typical MOVIFIT® basic drive system with AS-Interface control:



K: Line contactor

Circuit breaker for line protection	Power bus (line cable)		Motor cable	
Type	Minimum conductor cross section	Maximum total length	Minimum conductor cross section	Maximum length
[1]	[2]	[3]	[4]	[5]
B16	2.5 mm² AWG14	130 m	1.5 mm² AWG16	3 m
B16	2.5 mm² AWG14	130 m	2.5 mm² AWG14	10 m
B20	4.0 mm² AWG12	170 m	2.5 mm² AWG14	3 m
B25	6.0 mm² AWG10	190 m	2.5 mm² AWG14	3 m

The table shows typical characteristics at an ambient temperature of 40 °C with routing type B2 according to EN 60204-1.

The applicable country-specific standards and regulations must also be observed for individual project planning and installation.

5.3 Power bus connection (line cable)

⚠ WARNING

Electric shock due to charged capacitors.

Severe or fatal injuries.

- De-energize the MOVIFIT® basic drive using a suitable external cut-off device before removing the EBOX from the ABOX.
- Secure the drive against unintended re-connection to the voltage supply.
- Then wait at least for 10 minutes.

⚠ WARNING

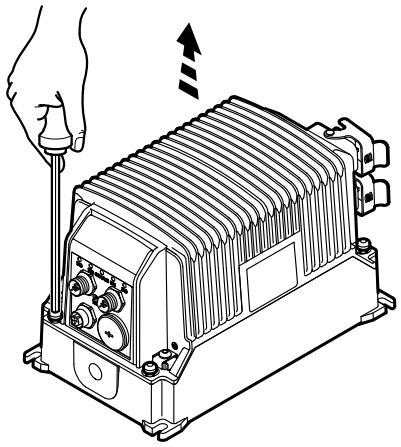
Danger of burns due to hot surfaces of the MOVIFIT® basic unit.

Severe injuries.

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

Connect the MOVIFIT® basic unit to the power bus (line cable) as follows.

1. Loosen the 4 screws and remove the EBOX from the ABOX.



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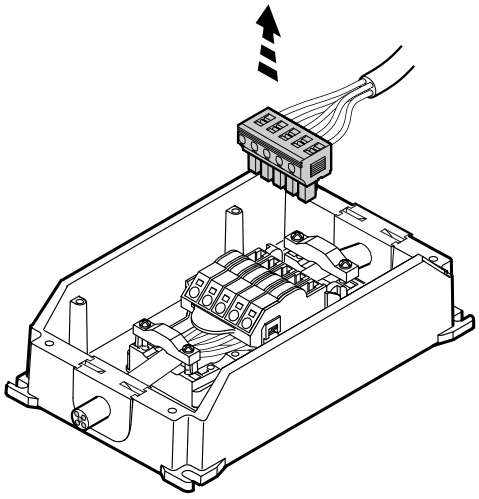
2. Remove the supply system plug connector from the FieldPower® contact module.



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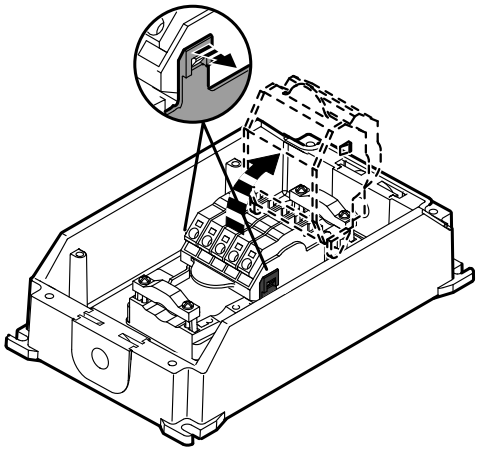
3. Pull both locking tabs to the outside and tilt up the upper part of the FieldPower® contact module.



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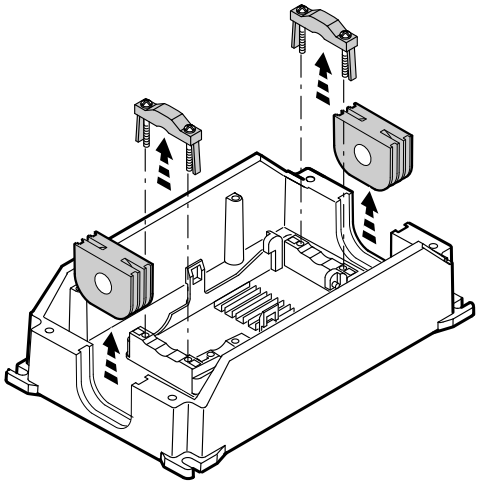
4. Loosen the 4 screws and remove the strain relief brackets.

   Remove the two cable seals.



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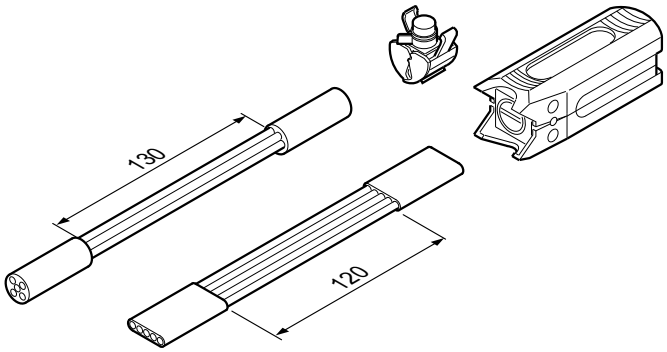
5. Remove the sheath of the line cable with a suitable stripping tool.



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Line cable	Stripping tool	Strip length
Round cable	AM 16	130 mm
Flat cable	AMF 6/10	120 mm

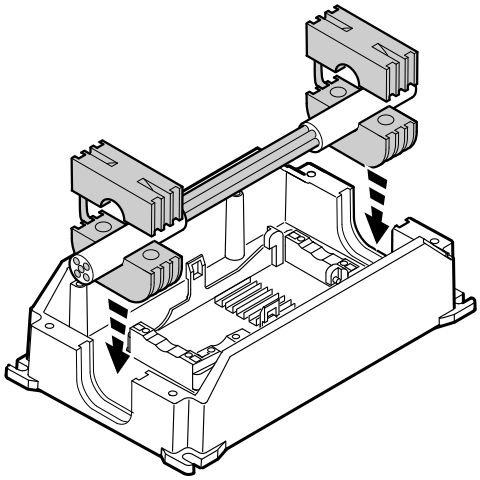
6. Fix the cable seals around the line cable.

   NOTICE Ingression of moisture or dust due to incorrect cable seal.

   Damage to the MOVIFIT® basic unit.

   - Only use cable seals approved for the line cable diameter.

   Insert the cable seals with the line cable in the recesses in the ABOX.



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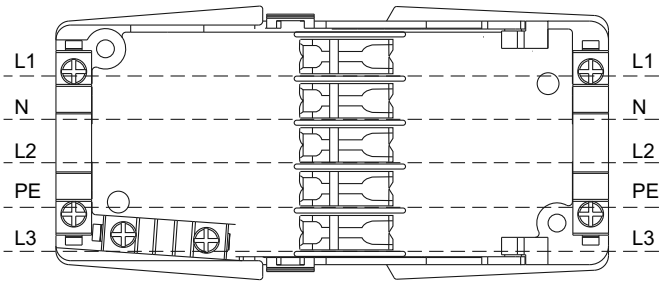
7. ⚠ **WARNING** Risk of crushing due to wrong sense of rotation or damage due to reverse connection of phases.

   Severe or fatal injuries, irreparable damage to the unit.

   - Observe the following connection diagram.
   - Prevent short circuits.

   Insert the conductors of the line cable in the cable guides according to the following wiring diagram:



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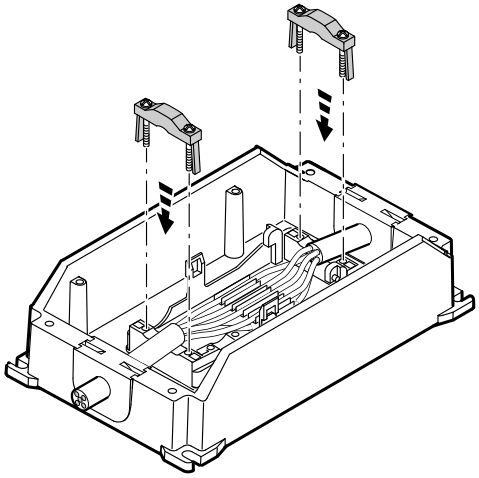
Conductor	Conductor coloring / conductor marking According to:		
	IEC 60757	UL 1277 TC-ER	UL 62 STOOW
L1	Brown	Black or 1	Black
N	Blue	White or gray	–
L2	Black	Black or 2	White
PE	Green/yellow	Green/yellow	Green
L3	Gray	Black or 3	Red

8. Screw the strain relief brackets to the ABOX and fix the line cable with the brackets (tightening torque: 0.6 Nm, 5.3 lb.in).



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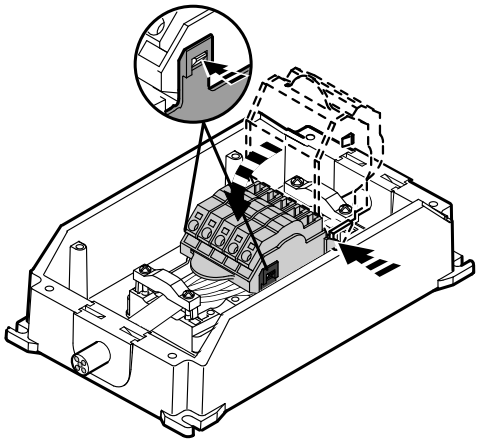
9. Place the upper part of the contact module on the hinge hooks.

   Tilt down the upper part of the contact module until it latches on both sides.



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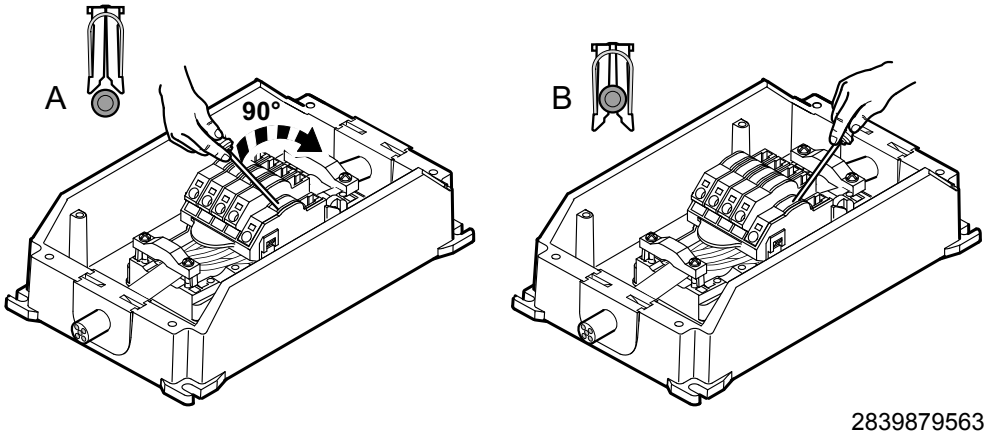
10. Use the screwdriver (blade width 3 – 3.5 mm) to lever all contacts of the insulation displacement connector downwards.



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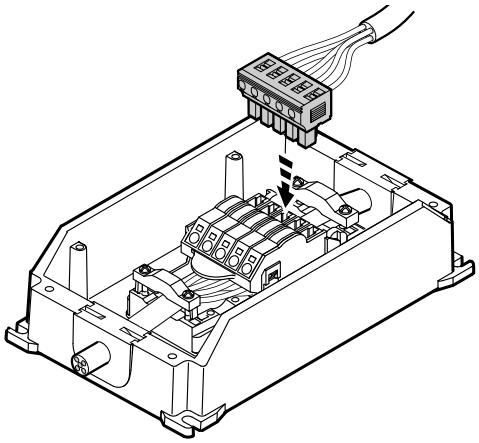
11. Plug in the line connector of the EBOX to the FieldPower® contact module.



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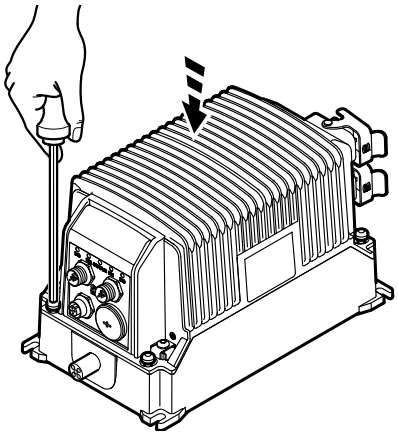
12. Position the EBOX on the ABOX.

    Screw on the EBOX with 4 screws (tightening torque: 2 Nm, 18 lb.in).



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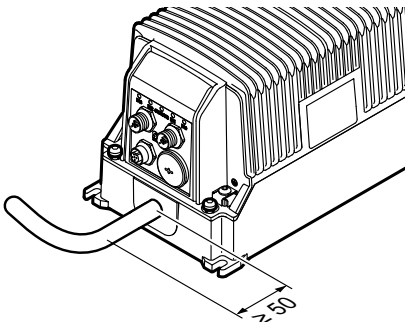
NOTICE Ingression of moisture or dust when bending the line cable.

Damage to the MOVIFIT® basic unit.

- Do not bend the line cable for the first 50 mm from the unit.

  The MOVIFIT® basic unit only meets the IP54 requirements if the line cable is not bend within 50 mm of the unit.



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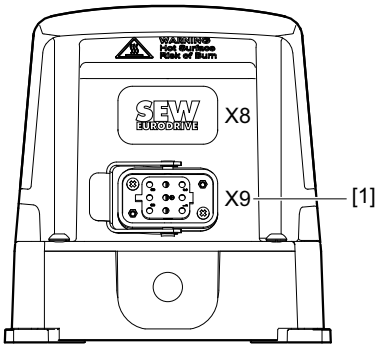
5.4 Motor connection

5.4.1 Motor connection variants

The following figure shows the motor plug connector variants for MOVIFIT® basic:

MOVIFIT® basic inverter

MOVIFIT® basic reversing starter



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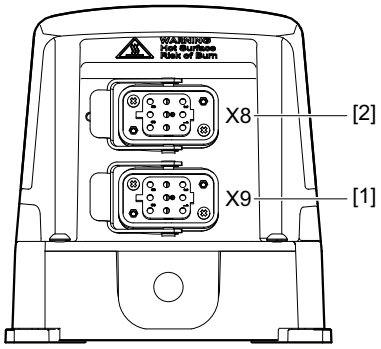
MOVIFIT® basic dual motor starter



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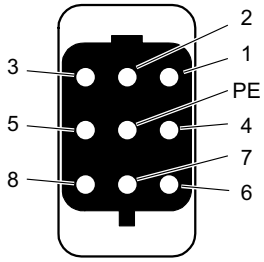
[1] X9 Motor connection
[2] X8 Motor connection

5.4.2 X9, (X8): Motor connection

The X8 plug connector is only available in conjunction with MOVIFIT® basic with dual-motor starter

Connection

The following table provides information about this connection:

Function		
Power connection for motor with brake		
Connection type		
Q 8/0, female		
Wiring diagram		
 2441429259		
Assignment		
No.	**Name**	**Function**
1	U	Motor phase U output
2	n. c.	Not connected
3	W	Motor phase W output
4	L1	Supply of mechanical brake (only with MOVIFIT® basic inverter)
5	n. c.	Not connected
6	L2_S	Supply of mechanical brake switched (only with MOVIFIT® basic inverter)
7	V	Motor phase V output
8	n. c.	Not connected
PE	PE	Protective earth

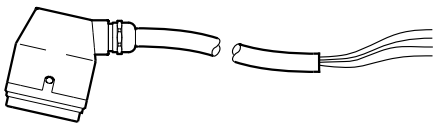
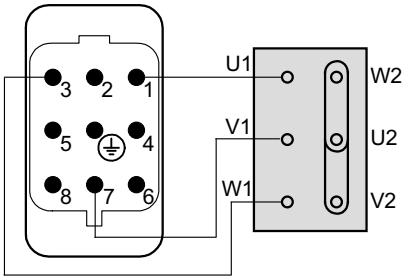
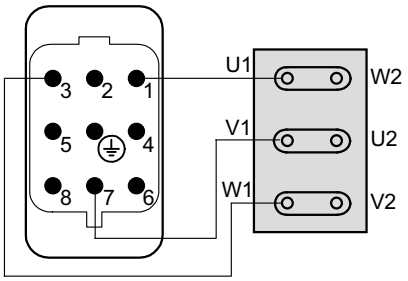
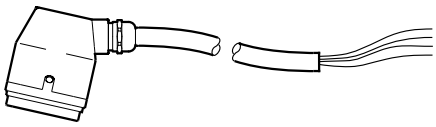
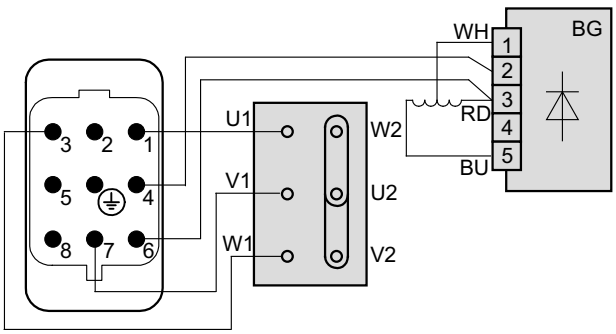
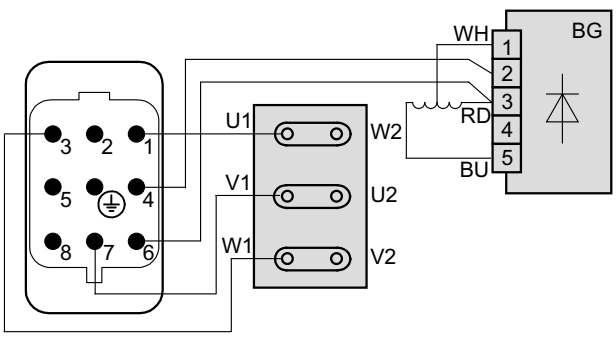
Connection cable The following table shows possible motor cables:

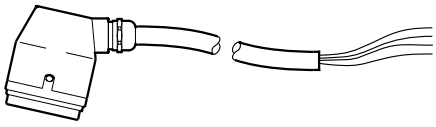
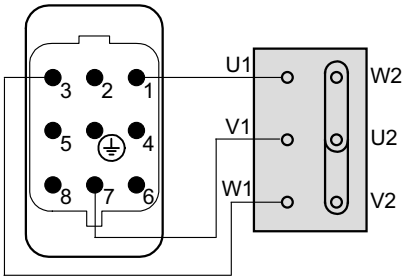
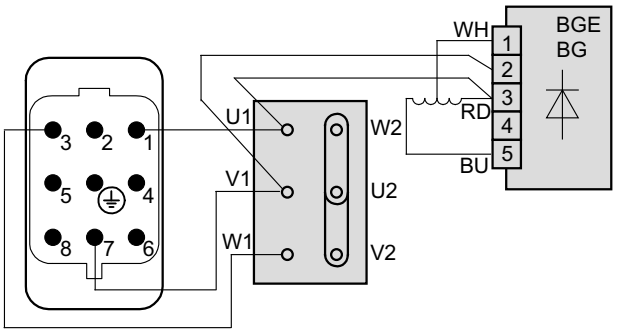
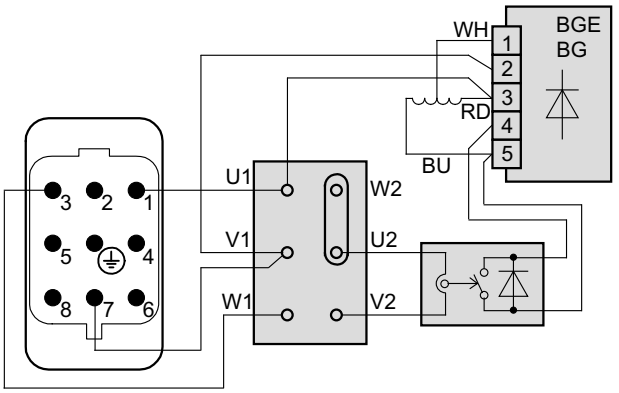
NOTICE

Danger in case of incorrect wiring of U1, V1, and W1 or short circuit. The motor outputs of MOVIFIT® basic are not protected against short circuits.

Irreparable damage to the MOVIFIT® basic unit.

- Observe the following wiring diagrams.
- Prevent any short circuits between the conductors.

Connection cable and component			
MOVIFIT® basic	**Motor cable**	**Length/ Installation type**	**Motor connection**
	Cable design: 4G2.5, shielded Cable design: 4G2.5, unshielded Part number: 1 814 874 3  Q 8/0 Open	Max. 10 m Max. 3 m	**Motor without brake, ⅄ connection**  **Motor without brake, △ connection** 
MOVIFIT® basic inverter	Cable design: 7G2.5, shielded Cable design: 7G2.5, unshielded Part number: 1 814 992 8  Q 8/0 Open	Max. 10 m Max. 3 m	**Motor with brake, ⅄ connection**  **Motor with brake, △ connection** 

Connection cable and component			
MOVIFIT® basic	**Motor cable**	**Length/ Installation type**	**Motor connection**
MOVIFIT® basic motor starter	Cable design: 4G2.5, unshielded Part number: 1 814 874 3  Q 8/0 Open	Max. 10 m 3 m	**Motor without brake**  **Motor with brake**  **Motor with brake and BSR brake controller**  For applications with regenerative mode, SEW-EURODRIVE recommends the BSR brake controller.

Mating connector Use a type Q8/0 plug connector for pre-fabricating these motor cables:

INFORMATION

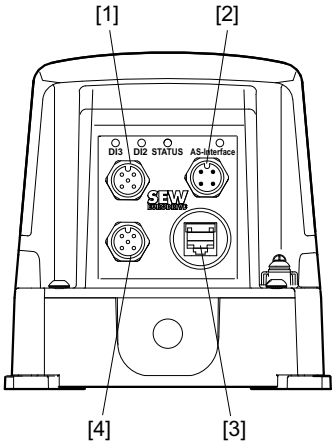
Note the following when using a mating connector with metallic housing:

- Ensure a suitable shield connection.
- Connect the housing of the mating connector with PE.

5.5 Control unit connection

The following figure shows the control unit variants for MOVIFIT® basic:

MOVIFIT® basic with AS-Interface



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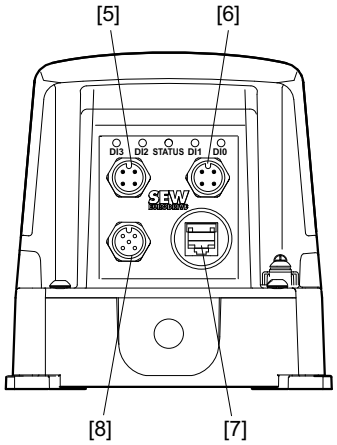
[1] X22 Binary input sensor 2
[2] X21 AS-Interface connection
[3] X50 Diagnostic interface
[4] X23 Binary input sensor 3

MOVIFIT® basic with binary control



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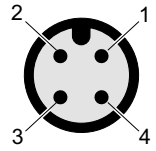
[5] X12 Signal inputs DI2 + DI3
[6] X11 Signal inputs DI0 + DI1
[7] X50 Diagnostic interface
[8] X13 Signal outputs DO0 + DO1

5.6 Connections of MOVIFIT® basic with AS-Interface

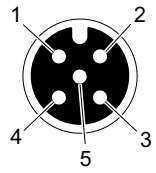
5.6.1 X21: AS-Interface connection

The following table provides information about this connection:

Function		
AS-Interface – input		
Connection type		
M12, 4-pole, male, A-coded		
Wiring diagram		
 2384154763		
Assignment		
No.	**Name**	**Function**
1	AS-Interface +	AS-Interface +
2	n. c.	Not connected
3	AS-Interface −	AS-Interface −
4	n. c.	Not connected

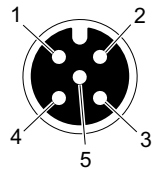
5.6.2 X22: Binary input sensor 2

The following table provides information about this connection:

Function		
Binary input sensor 2		
Connection type		
M12, 5-pole, female, A-coded		
Wiring diagram		
 2264816267		
Assignment		
No.	**Name**	**Function**
1	+24 V	DC 24 V output (sensor supply)
2	n. c.	Not connected
3	0V24	0V24 reference potential
4	DI2	Binary input sensor 2
5	PE	Equipotential bonding/protective earth conductor

5.6.3 X23: Binary input sensor 3

The following table provides information about this connection:

Function		
Binary input sensor 3		
Connection type		
M12, 5-pole, female, A-coded		
Wiring diagram		
 2264816267		
Assignment		
No.	**Name**	**Function**
1	+24 V	DC 24 V output (sensor supply)
2	n. c.	Not connected
3	0V24	0V24 reference potential
4	DI3	Binary input sensor 3
5	PE	Equipotential bonding/protective earth conductor

5.6.4 X50: Diagnostic interface

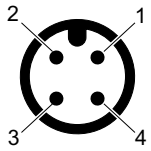
The following table provides information about this connection:

Function		
Diagnostics and programming interface		
Connection type		
RJ11 (6P6C)		
Wiring diagram		
 3163123211		
Assignment		
No.	**Name**	**Function**
1	n. c.	Not connected
2	RS+	RS-485 data cable (+)
3	RS −	RS-485 data cable (–)
4	+24 V	DC 24 V output for keypad
5	0V24	0V24 reference potential for keypad
6	n. c.	Not connected

5.7 Connections of MOVIFIT® basic with binary control

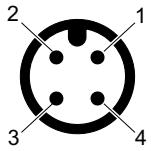
5.7.1 X11: Signal inputs 0 and 1 of MOVIFIT® basic

The following table provides information about this connection:

Function		
Binary inputs 0 and 1		
Connection type		
M12, 4-pole, male, A-coded		
Wiring diagram		
 2718233355		
Assignment		
No.	**Name**	**Function**
1	n. c.	Not connected
2	DI1	Binary input 1
3	0V24	0V24 reference potential
4	DI0	Binary input 0

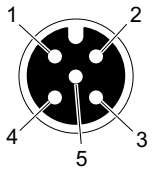
5.7.2 X12: Signal inputs 2 and 3 of MOVIFIT® basic

The following table provides information about this connection:

Function		
Binary inputs 2 and 3		
Connection type		
M12, 4-pole, male, A-coded		
Wiring diagram		
 2718233355		
Assignment		
No.	**Name**	**Function**
1	n. c.	Not connected
2	DI3	Binary input 3
3	0V24	0V24 reference potential
4	DI2	Binary input 2

5.7.3 X13: Signal outputs 0 and 1 of MOVIFIT® basic

The following table informs about this connection:

Function		
Binary outputs 0 and 1		
Connection type		
M12, 5-pole, female, A-coded		
Wiring diagram		
 2264816267		
Assignment		
No.	**Name**	**Function**
1	+24 V	DC 24 V output
2	DO1	Binary output 1 (manual mode) 0: MOVIFIT® basic control via control signals 1: Manual control of MOVIFIT® basic
3	0V24	0V24 reference potential
4	DO0	Binary output 0 (ready signal) 0: MOVIFIT® basic is not ready 1: MOVIFIT® basic is ready
5	PE	Equipotential bonding/protective earth conductor

5.7.4 X50: Diagnostic interface

The following table informs about this connection:

Function		
Diagnostics and programming interface		
Connection type		
RJ11 (6P6C)		
Wiring diagram		
 3163123211		
Assignment		
No.	**Name**	**Function**
1	n. c.	Not connected
2	RS+	RS-485 data line (+)
3	RS −	RS-485 data cable (–)
4	+24 V	DC 24 V output for keypad
5	0V24	0V24 reference potential for keypad
6	n. c.	Not connected

5.8 Connection of operator terminals LT-BG and MB-LC

MOVIFIT® basic units are equipped with an X50 diagnostic interface (RJ11 socket).

The diagnostics interface is located in the connection block of the control unit.

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

⚠ **WARNING** Danger of burns due to hot surfaces of the MOVIFIT® basic unit.

Severe injuries.

- Wait for the MOVIFIT® basic unit to cool down sufficiently before touching it.

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

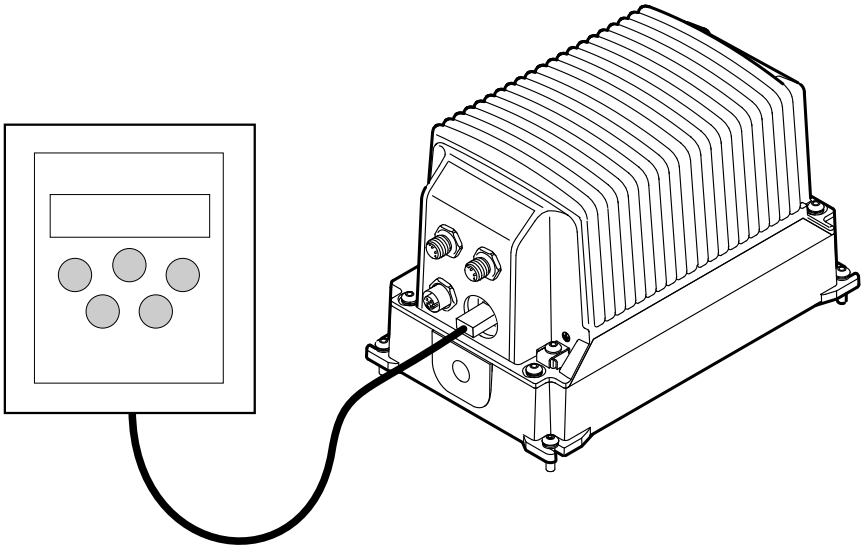
Damage to the MOVIFIT® basic unit.

- If there is no screw plug covering the diagnostic interface, you have to make sure that no moisture can ingress into the MOVIFIT® basic unit.

Use the cable enclosed with the operator terminal to connect the operator terminal to the MOVIFIT® basic unit.

Scope of delivery:

Type	Part number	Scope of delivery
LT-BG	1 820 864 9	– LT-BG operator terminal – Cable with RJ11 – RJ11 plug connectors
MB-LC	2 820 126 4	– MB-LC operator terminal – Cable with RJ45 – RJ11 plug connectors



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5.9 PC connection

The MOVIFIT® basic inverter is equipped with an X50 diagnostics interface (RJ-11 socket) for startup, parameterization and service.

The diagnostics interface is located in the connection block of the control unit.

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

⚠ **WARNING** Danger of burns due to hot surfaces of the MOVIFIT® basic unit.

Severe injuries.

- Wait for the MOVIFIT® basic unit to cool down sufficiently before touching it.

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

Damage to the MOVIFIT® basic unit.

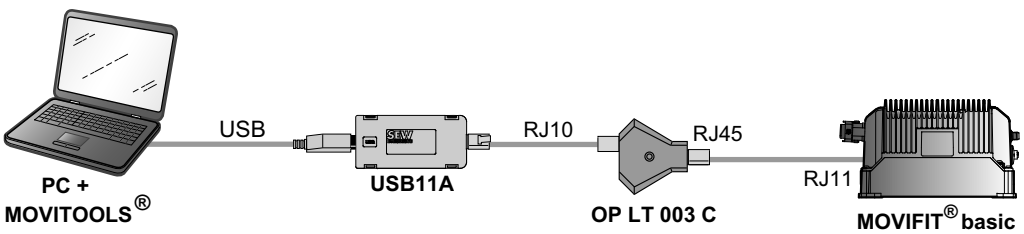
- If no screw plug is covering the diagnostic interface, you have to make sure that no moisture can ingress into the MOVIFIT® basic unit.

The diagnostic interface can be connected to a conventional PC/laptop with the following accessories:

- USB11A interface adapter
- and OP LT 003 C adapter

Scope of delivery:

Type	Part number	Scope of delivery
USB11A	0 824 831 1	– USB11A interface adapter – USB cable – Cable with RJ10 – RJ10 plug connectors
OP LT 003 C	1 824 368 1	– OP LT 003 C adapter with DC 24 V -> DC 5 V voltage converter – Cable with RJ45 – RJ11 plug connectors



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6 Startup

6.1 Important notes on startup

INFORMATION

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

⚠ WARNING

Risk of crushing due to missing or defective protective covers.

Severe or fatal injuries.

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

⚠ WARNING

Electric shock due to dangerous voltages in the ABOX.

Severe or fatal injuries.

- De-energize the MOVIFIT® basic unit using a suitable external cut-off device before removing the EBOX.
- Secure the MOVIFIT® basic unit against unintended re-connection to the voltage supply.
- Wait for at least 10 minutes before removing the EBOX.

⚠ WARNING

Danger of burns due to hot surfaces of the MOVIFIT® basic unit.

Severe injuries.

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

⚠ WARNING

Unit malfunction due to incorrect unit setting.

Severe or fatal injuries.

- Observe the startup notes.
- The installation must only be carried out by qualified personnel.
- Use only settings that are consistent with the function.

INFORMATION

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

6.2 Requirements

The following conditions apply to startup:

- The MOVIFIT® basic unit 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 must be available for startup and parameterization of the MOVIFIT® basic inverter:

- Operator terminal LT-BG, see chapter "Connecting the operator terminals LT-BG and MB-LC"
- or PC/laptop, see chapter "PC connection"

The following software must be available on the PC or laptop for startup and parameterization of the MOVIFIT® basic inverter:

- `LT Shell`", version 3.20 or later

INFORMATION

For startup of the MOVIFIT® basic motor starter, you do not require a PC/laptop and software.

6.3 Startup procedure for the MOVIFIT® basic inverter

Proceed as follows to startup the MOVIFIT® basic inverter:

1. Check the connection of the MOVIFIT® basic unit.

   See chapter "Electrical Installation".

2. Make sure that the motor cannot start

   e.g. by unplugging the motor connector from the MOVIFIT® basic unit.

3. Switch on the line voltage.

   The "Status" LED is now illuminated.

4. Connect the LT-BG operator terminal or the PC to the MOVIFIT® basic unit.

   See chapter "Connecting the operator terminals LT-BG and MB-LC" (page 33)

   or chapter "PC connection" (page 34).

   ⚠ **WARNING** During the auto-tune phase in vector control, the motor axis briefly rotates.

   If you set the parameter *P4-02 Auto-tune* = "1", the inverter performs a calibration process (Auto-tune). The inverter releases the brake and the motor **briefly** rotates.

   Severe injuries.

   - During the auto-tune phase, observe a sufficient safety distance to all parts driven by the motor.

5. Set the following parameters:

   Motor parameters:

   For V/f control
   - *P1-07* = Nominal motor voltage
   - *P1-08* = Nominal motor current
   - *P1-09* = Nominal motor frequency

   For vector control
   - *P1-07* = Nominal motor voltage
   - *P1-08* = Nominal motor current
   - *P1-09* = Nominal motor frequency
   - *P4-01* = Control mode
   - *P4-02* = Auto-tune
   - *P4-05* = motor power factor

   System parameters:
   - *P1-03* = Acceleration ramp
   - *P1-04* = Deceleration ramp
   - *P1-11* = Speed n1
   - *P2-02* = Speed n2
   - *P2-03* = Speed n3
   - *P2-04* = Speed n4

   See chapter "Parameterization with LT-BG operator terminal" (page 43).

   or chapter "Parameterization with PC" (page 45).

6. Make sure the screw plug of the diagnostics interface has a seal and screw it in.

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

   Damage to the MOVIFIT® basic unit

   - Make sure the screw plug of the diagnostics interface has a seal and screw it in.

7. Switch off the line voltage.

8. Set the AS-Interface slave address of the MOVIFIT® basic unit (only for MOVIFIT® basic with AS-Interface).

   See chapter "Assigning the AS-Interface address" (page 40).

9. Start up the higher-level controller.
10. Plug in the motor connector at the MOVIFIT® basic.
11. Switch on the line voltage.

You can now control the MOVIFIT® basic drive with the higher-level controller (via binary signals or AS-Interface).

6.4 MOVIFIT® basic motor starter – startup procedure

⚠ WARNING

Electric shock due to dangerous voltages in the ABOX.

Severe or fatal injuries.

- De-energize the MOVIFIT® basic unit using a suitable external cut-off device before removing the EBOX.
- Secure the MOVIFIT® basic unit against unintended re-connection to the voltage supply.

Proceed as follows to startup the MOVIFIT® basic motor starter:

1. Check the connection of the MOVIFIT® basic unit.

   See chapter "Electrical Installation".

2. Set the I_{Mot} / I_N ratio at the I_{Motor} potentiometer (factory setting: about 100%).

   I_{Mot} = nominal motor current as listed on the motor nameplate

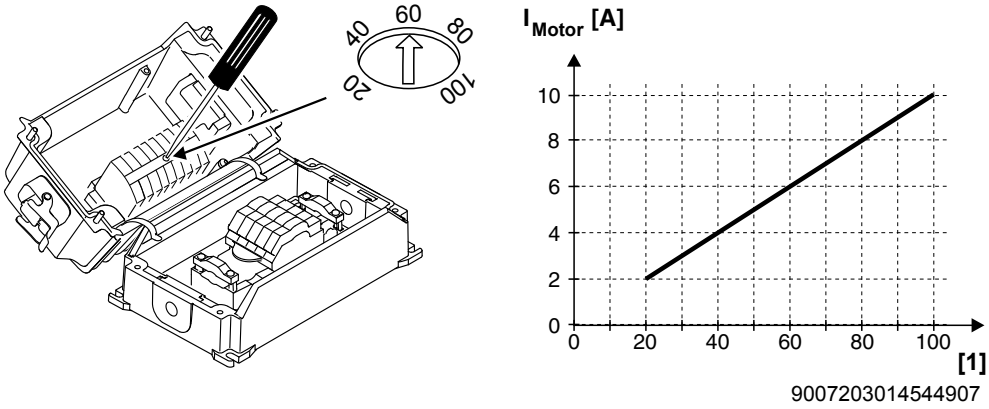
   I_N = nominal output current as listed on the MOVIFIT® basic nameplate

   NOTICE Damage due to incorrect setting of I_{Motor} potentiometer. The potentiometer setting protects the motor against overload.

   Damage to the motor.

   - When setting the potentiometer, observe the current rating on the nameplates of the motor and the MOVIFIT® basic unit.

Reversing starter:



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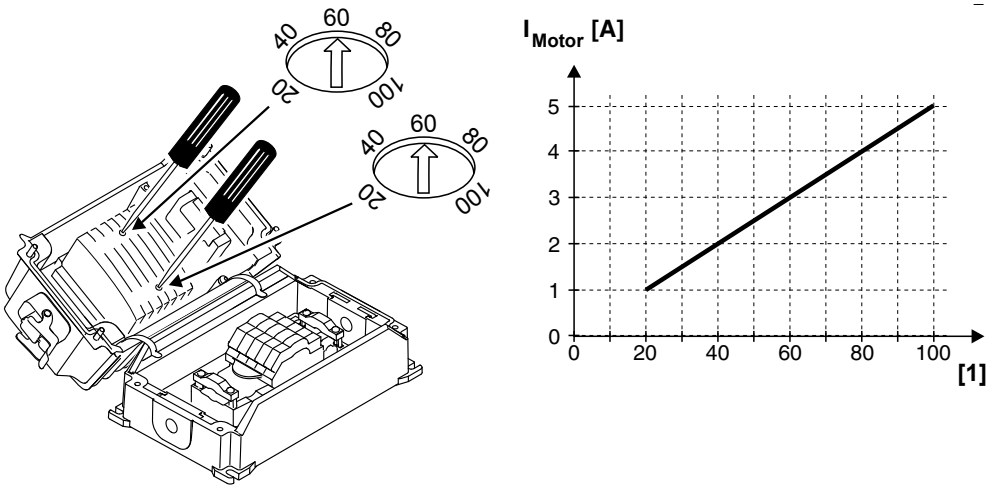
Dual motor starter:



[1] Potentiometer setting I_{Mot} / I_N in %

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3. Make sure that the motor cannot start

   e.g. by unplugging the motor connector(s) from the MOVIFIT® basic unit.
4. Set the AS-Interface slave address of the MOVIFIT® basic unit (only for MOVIFIT® basic with AS-Interface).

   See chapter "Assigning the AS-Interface address" (page 40).
5. Start up the higher-level controller.
6. Plug in the motor connector(s) at MOVIFIT® basic.
7. Switch on the line voltage.

You can now control the MOVIFIT® basic drive with the higher-level controller (via binary signals or AS-Interface).

6.5 Assigning the AS-Interface slave address

SEW-EURODRIVE supplies MOVIFIT® basic with AS-Interface with address 0.

You have the following options for assigning the AS-Interface address of MOVIFIT® basic (address 1 - 31):

- **Addresses are assigned automatically** within a configured AS-Interface system when replacing a MOVIFIT® basic drive.

  The following prerequisites must be fulfilled:
  - The new MOVIFIT® basic drive must have address 0.
  - If you need to replace multiple MOVIFIT® basic drives, you must exchange them individually (one after another).

- **Manual address assignment via the plant master**

  Connect the drives to the AS-Interface cable one after another. Doing so prevents several MOVIFIT® basic drives being assigned the same AS-Interface address.

- **Manual address assignment using a hand-held AS-Interface programming device.**

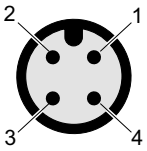
  Observe the notes in the following section when connecting the MOVIFIT® basic drive to the AS-Interface cable.

6.5.1 Assigning the slave address using a hand-held programming device

Hand-held AS-Interface programming devices offer the following functions:

- Reading out and changing an AS-Interface slave address
- Reading out the AS-Interface profile
- Reading out and changing the data and parameter bits
- Function check and test run.

When using a hand-held programming device, you need a connection cable that fits onto the AS-Interface plug connector X21 of MOVIFIT® basic (see the following figure).



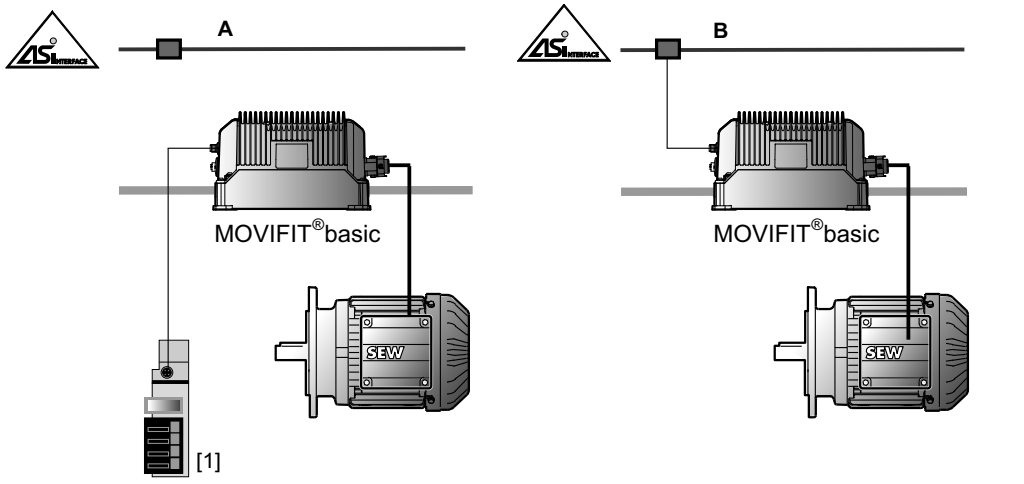
2384154763

1: AS-Interface +
2. n. c.
3: AS-Interface −
4: n. c.

Example:

1. Disconnect the AS-Interface nodes from the AS-Interface network **one at a time** and assign addresses via the hand-held programming device (A).

2. Then reconnect the respective AS-Interface node to the AS-Interface network (B).



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[1] AS-Interface hand-held programming device

6.6 Parameterization with LT-BG keypad

6.6.1 Description of LT-BG keypad

Function

You can use the LT-BG keypad for startup, parameterization and manual operation of MOVIFIT® basic inverters. In addition to that, the keypad displays important information about the state of the drive.

Features

- Illuminated display
- Keypad with 5 keys
- Connection cable

Key assignment

The following figure shows the key assignment of the LT-BG operator terminal:

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Key	Navigate	• Switch menu • Saving parameter values • Show real-time information
Key	Up	• Increase speed • Increase parameter values
Key	Down	• Decrease speed • Decrease parameter values
Key	Stop	• Stop the drive • Reset the drive
Key	Start	• Enabling the drive • Changing the direction of rotation

6.6.2 Parameterization

Proceed as follows to change the parameter values:

1. Check the connection of the MOVIFIT® basic unit.
   See chapter "Electrical Installation".
2. Connect the LT-BG operator terminal to the MOVIFIT® basic unit.
   See chapter "Connecting the operator terminals LT-BG and MB-LC" (page 33)
3. Make sure that the motor cannot start
   e.g. by unplugging the motor connector(s) from the MOVIFIT® basic unit.
4. Switch on the line voltage.
   After initialization, the operator terminal shows the rotational frequency "H", the output current "A", or the motor power "P".
   To change the display, briefly press the key. **H 50.0**
5. Use the key to activate the parameter mode.
   (Press the key for more than 1 s) **P 1 - 0 1**
6. Use the key and the key to select the desired parameter. **P 1 - 0 3**
7. Use the key to activate the setting mode. **5.0**
8. Use the key and the key to set the required parameter value. **2.0**
9. Use the key to quit the setting mode. **P 1 - 0 3**
10. Use the key to quit the parameter mode. **S t o P**
    (Press the key for more than 1 s)
    The operator terminal shows "StoP", "H ", "A ", or "P ".
11. Switch off the line voltage.
12. Plug in the motor connector(s) at the MOVIFIT® basic unit.
13. **NOTICE** Damage due to missing or incorrectly mounted screw plug of the diagnostics interface X50. The degree of protection of MOVIFIT® basic specified in chapter "Technical data" only applies if the screw plug of the diagnostic interface is mounted correctly.
    Damage to the MOVIFIT® basic unit.
    - Once you have finished working with the operator terminal, unplug the connector from the diagnostics interface.
    - Screw the screw plug of the diagnostics interface back in with the seal.

For a description of the parameters, refer to chapter "Parameter list – MOVIFIT® basic inverter"

6.6.3 Reset parameters to default settings

To reset the parameters to their default value, proceed as follows:

1. Check the connection of the MOVIFIT® basic unit.
   See chapter "Electrical Installation".
2. Connect the LT-BG operator terminal to the MOVIFIT® basic unit.
   See chapter "LT-BG operator terminal connection".
3. Press the 3 keys  , and simultaneously for at least 2 s.
   After 2 s, the display shows **"P-def"**.
4. Press the  key to confirm the factory settings.

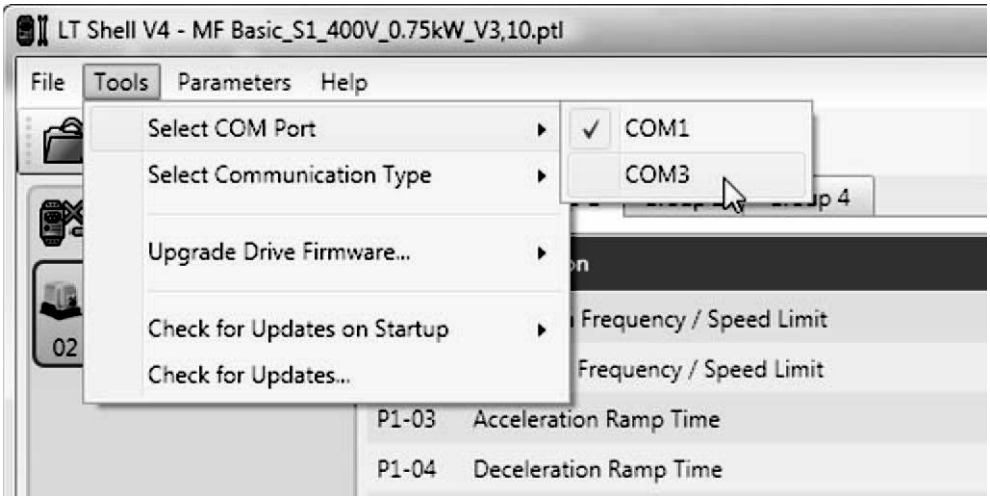
6.7 Parameterization with the PC

(Only for MOVIFIT® basic inverter)

6.7.1 Parameterization with LT Shell software

Proceed as follows to change the parameter values via the PC:

1. Check the connection of the MOVIFIT® basic unit.
   See chapter "Electrical Installation".
2. Connect the PC/laptop to the MOVIFIT® basic unit.
   See chapter "PC connection".
3. Start the `LT Shell V4.0.exe` software.
4. Select the COM port of the PC/laptop, the MOVIFIT® basic unit is connected to.



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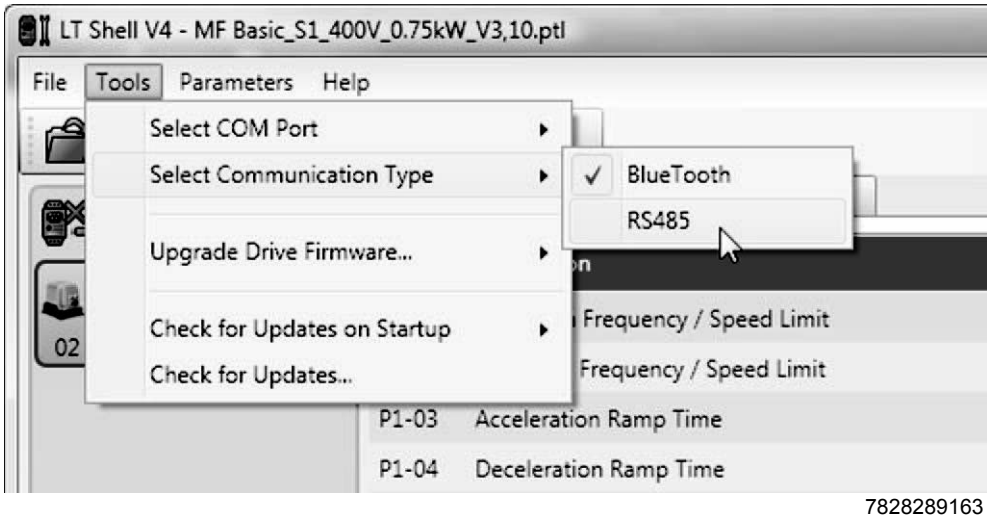
5. Choose the communication type RS485.



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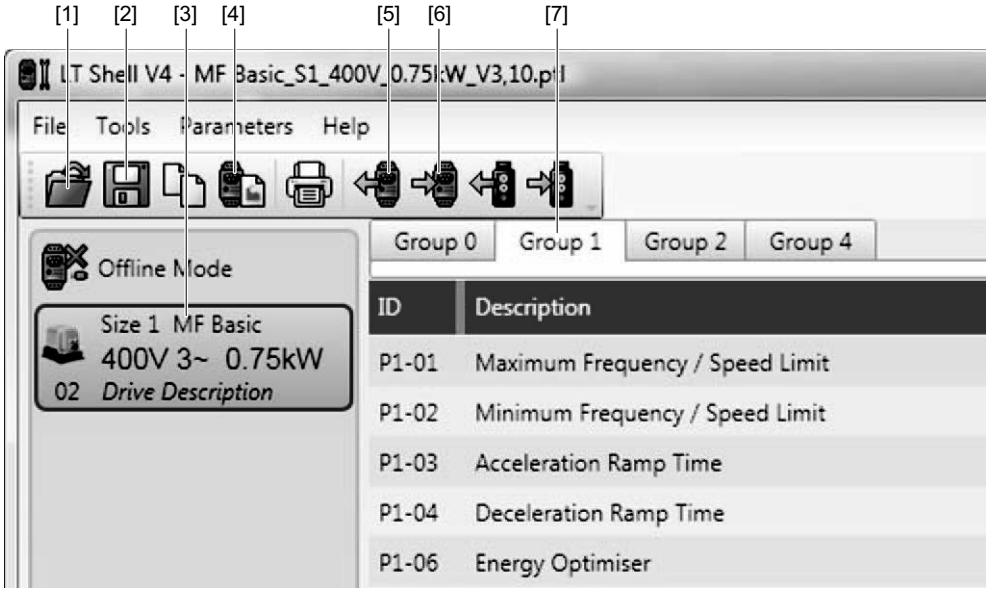
6. Read the parameter set with the button of the MOVIFIT® basic.

   The parameter menu is displayed:



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[1] Open parameter set
[2] Save parameter set on PC
[3] Shows the units in the network
[4] Restore factory settings of the unit
[5] Read parameter set from MOVIFIT® basic unit.
[6] Transmit parameter set to MOVIFIT® basic unit.
[7] Select parameter group

7. Select the required parameter group [7].
8. Double-click the required parameter.
9. Enter the new parameter value into the input field.
10. Transmit the parameter set from the PC to the MOVIFIT® basic using the button.

6.7.2 Real-time edit mode

In real-time edit mode, the parameter changes become active immediately in the MOVIFIT® basic inverter.

⚠ WARNING

Risk of crushing if the drive starts up unintentionally and risk of impact due to sudden changes in velocity. When the drive is enabled, a parameter change affects the drive system immediately.

Severe or fatal injuries.

- Make sure that the drive is inhibited before you activate the real-time edit mode.
- Take additional safety precautions depending on the application to avoid injury to people and damage to machinery.

Proceed as follows to change the parameter values in real-time edit mode:

1. If the MOVIFIT® basic unit has not been set up yet in the LT Shell software, carry out the steps 1 to 5 of chapter "Parameterization with LT Shell software".
2. Scan the network for existing drives.

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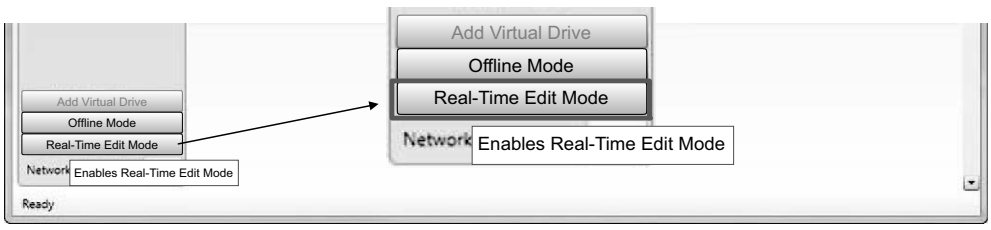
3. Activate the real-time edit mode by clicking the [Real-time edit mode] button.



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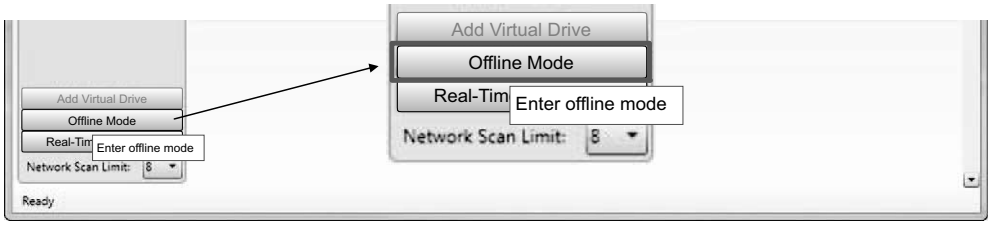
4. Select the required parameter group.
5. Double-click the required parameter.
6. Enter the new parameter value into the input field.
7. Exit the real-time edit mode by activating offline mode with the [Offline mode] button.



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6.8 Parameter directory of the MOVIFIT® basic inverter

The following tables show the unit-relevant parameters. The keypad shows additional parameters that are without function for MOVIFIT® basic.

6.8.1 Standard parameters

The following table shows the standard parameters:

No.	Name	Range	Standard	Description
P1-01	Upper speed limit [Hz] or [rpm]	*P1-02* – *P1-09* x 5 (up to 2000 Hz max.)	50.0 Hz	Setting the upper speed limit. The display in [Hz] or [rpm] depends on parameter *P1-10*.
P1-02	Lower speed limit [Hz] or [rpm]	0 – *P1-01*	0.0 Hz	Setting the lower speed limit. The display in [Hz] or [rpm] depends on parameter *P1-10*.
P1-03	Acceleration ramp	0.0 s – 3000 s	5.0 s	Time for acceleration along the ramp from 0 to the nominal frequency (*P1-09*).
P1-04	Deceleration ramp	0.0 s – 3000 s	5.0 s	Time for deceleration from the nominal frequency (*P1-09*) to 0. At *P1-04* = "0", the maximum deceleration is realized.
P1-06	Energy optimization (for V/f mode only)	0: Deactivated 1: Activated	0	With *P1-06* = "1", the unit reduces the supplied motor voltage in case of light loads.
P1-07	Nominal motor voltage	0.2 – 500 V	400 V	Set the nominal motor voltage according to the motor nameplate. With *P1-07* = "0", voltage compensation is deactivated.
P1-08	Nominal motor current	0.4 – 2.2 A (with MBF07A..) 0.8 – 4.1 A (with MBF15A..)	2.2 A 4.1 A	Set the nominal motor current according to the motor nameplate [A].
P1-09	Nominal motor frequency	25 – 500 Hz	50 Hz	Set the nominal motor frequency according to the motor nameplate [Hz].
P1-10	Nominal motor speed	0 – 30000 rpm	0	Set the nominal motor speed With *P1-10* ≠ 0, all speed-related parameters are displayed in rpm.
P1-11	Speed n1	*-P1-01* – *+P1-01*	50 Hz	The drive runs with this speed in jog mode, or when the speed n1 was selected by the higher-level controller.
P1-12	Control mode of the drive	0: Binary signals or AS-Interface 1: Manual mode (only clockwise) 2: Manual mode (CW and CCW operation)	0	Setting the control mode
P1-13	Error log	The 4 most recent errors are logged.	Display of the most recent error	The most recent error is displayed first. Exception: Undervoltage errors are only logged once.

6.8.2 Advanced parameters

The following table shows the advanced parameters:

No.	Name	Section	Standard	Description
P2-02	Speed n2	*-P1-01 – +P1-01*	10 Hz	The drive runs with the speed that was selected by the higher-level controller.
P2-03	Speed n3	*-P1-01 – +P1-01*	25 Hz	
P2-04	Speed n4	*-P1-01 – +P1-01*	50 Hz	
P2-16	Zero speed holding time	0 – 60 s	0.2 s	Time during which the speed "0" is held at the output before the drive is inhibited.
P2-19	Keypad restart mode	0: Minimum speed	0	Speed selection when drive is restarted.
		1: Most recently used speed		
P2-21	Scaling factor	0.000 – 30.000	0.000	Scaling factor of the display variable P2-22: With *P2-21* = "0", the display function is deactivated.
P2-22	Display variable	1: Motor speed	1	Selection of variables displayed by the unit. This variable is scaled with parameter *P2-21*.
		2: Motor torque		
		3: Motor current		
P2-24	Effective switching frequency	4 kHz	16 kHz	Effective switching frequency of the power section. A higher switching frequency means less motor noise, but also higher energy losses in the power section.
		8 kHz		
		16 kHz		
P2-38	Parameter lock	0: Enabled	0	Blocking/enabling parameter changes. When the lock is active, you cannot change any parameters.
		1: Disabled		
P2-39	Operating hours counter	0 – 99999 hours	Display	Total number of operating hours of the drive.
P2-40	Inverter power	–	Display	Display of the power of MOVIFIT® basic.

6.8.3 Motor control parameters

The following table lists the parameters for motor control:

No.	Name	Section	Standard	Description
P4-01	Control modes	0: Speed control (Vector)	2	Control mode selection To ensure optimum motor power, you must perform an auto-tune process (*P4-02*) each time you change the control mode.
		1: Setting can not be used for MOVIFIT® basic.		
		2: Speed control (V/f)		
P4-02	Auto-tune motor parameters	0: Deactivated	0	If you set parameter *P4-02* = "1", the inverter performs a static measurement of the motor parameters. You must set the parameters *P1-07*, *P1-08*, and *P1-09* according to the data on the motor nameplate before you can start the auto-tune process. Auto-tune is performed: • When receiving the first enable signal after operation with factory-set parameters • Or when *P1-08* has been changed No hardware enable is required for this.
		1: Enable		
P4-05	Motor power factor	0.50 – 0.99	Inverter power	Setting the power factor cos Φ of the motor according to the motor nameplate. This setting is mandatory for all vector control modes.

6.8.4 Monitoring parameters

The following table shows the monitoring parameters:

The parameter group 0 is used to display internal drive parameters for monitoring purposes. You cannot change these parameters.

No.	Name	Display range	Description
P0-03	Setpoint speed	-500% – +500%	Speed display (100% = nominal motor frequency)
P0-04	Setpoint speed	*-P1-01 – +P1-01* [Hz] or [rpm]	Speed display in Hz or rpm
P0-13	Output torque	0 - 200%	Output torque (100% = nominal motor torque)
P0-20	DC link voltage	[V DC]	Internal DC link voltage
P0-21	Inverter temperature	[°C]	Temperature inside the unit
P0-25	Calculated rotor speed	[Hz] or [rpm]	Calculated motor speed (only valid in a vector control mode)
P0-26	kWh counter	0.0 - 999.9 kWh	Energy consumption in [kWh]
P0-27	MWh counter	0.0 - 60000 MWh	Energy consumption in [MWh]
P0-28	Software ID, IO processor	e.g. "1.00", "493F"	Version number and check sum of the I/O processor in the unit
P0-29	Software ID, motor control	e.g. "1.00", "7A5C"	Version number and check sum of the motor controller in the unit
P0-30	Serial number of the inverter	000000 - 999999 00-000 - 99-999	Serial number of the unit e.g. 540102 / 24 / 003

INFORMATION

In addition to the parameters described above, the keypad or the parameter menu show other parameters. However, these are irrelevant for the drive, thus they are not described here.

6.9 Functions of MOVIFIT® basic with AS-Interface

6.9.1 Data transfer AS-Interface master → MOVIFIT® basic

MOVIFIT® basic inverter

The following table shows the 4 data bits that the AS-Interface master sends to the MOVIFIT® basic inverter and the functions of the drive:

AS-Interface bit				Function
DO3	DO2	DO1	DO0	MOVIFIT® basic inverter
X	X	0	0	Stop
X	X	0	1	Enable CW
X	X	1	0	Enable CCW
X	X	1	1	Stop/reset
0	0	X	X	Setpoint speed = n1
0	1	X	X	Setpoint speed = n2
1	0	X	X	Setpoint speed = n3
1	1	X	X	Setpoint speed = n4

MOVIFIT® basic motor starter

The following table shows the 4 data bits that the AS-Interface master sends to the MOVIFIT® basic motor starter and the functions of the drive:

AS-Interface bit			Function	
DO2	DO1	DO0	MOVIFIT® basic Reversing starter	MOVIFIT® basic dual motor starter
0	0	0	Stop	Stop
0	0	1	Enable CW	Enable signal for motor at terminal X9
0	1	0	Enable CCW	Enable signal for motor at terminal X8
0	1	1	Stop	Enable signal for both motors at X9 + X8
1	X	X	Reset	Reset

6.9.2 Data transfer MOVIFIT® basic → AS-Interface master

The following table shows the 4 data bits that MOVIFIT® basic sends back to the AS-Interface master:

AS-Interface bit				Meaning
DI3	DI2	DI1	DI0	
X	X	X	1 / 0	Ready signal 0: The MOVIFIT® basic drive is not ready 1: The MOVIFIT® basic drive is ready for operation
X	X	1 / 0	X	Manual mode 0: MOVIFIT® basic control via AS-Interface 1: Manual control of MOVIFIT® basic
X	1 / 0	X	X	Sensor input 2 0: The signal of sensor 2 = "0" 1: The signal of sensor 2 = "1"
1 / 0	X	X	X	Sensor input 3 0: Signal of sensor 3 = "0" 1: Signal of sensor 3 = "1"

X = any status

6.10 Functions of MOVIFIT® basic with binary control

6.10.1 Data transfer PLC → MOVIFIT® basic

MOVIFIT® basic inverter

The following table shows the control signal that the higher-level controller (e.g. PLC) sends to the MOVIFIT® basic inverter and the functions of the drive:

Control signals				Function
DI3	DI2	DI1	DI0	MOVIFIT® basic inverter
X	X	0	0	Stop
X	X	0	1	Enable CW
X	X	1	0	Enable CCW
X	X	1	1	Stop/reset
0	0	X	X	Setpoint speed = n1
0	1	X	X	Setpoint speed = n2
1	0	X	X	Setpoint speed = n3
1	1	X	X	Setpoint speed = n4

MOVIFIT® basic motor starter

The following table shows the control signal that the higher-level controller (e.g. PLC) sends to the MOVIFIT® basic motor starter and the functions of the drive:

Control signals			Function	
DI2	DI1	DI0	MOVIFIT® basic Reversing starter	MOVIFIT® basic Dual motor starter
0	0	0	Stop	Stop
0	0	1	Enable CW	Enable signal for motor at terminal X9
0	1	0	Enable CCW	Enable signal for motor at terminal X8
0	1	1	Stop	Enable signal for both motors at X9 + X8
1	X	X	Reset	Reset

6.10.2 Data transfer MOVIFIT® basic → PLC

The following table shows the binary signals that MOVIFIT® basic sends back to the higher-level controller (e.g. PLC):

Binary signals		Meaning
DO1	DO0	
X	1 / 0	Ready signal 0: The MOVIFIT® basic drive is not ready 1: The MOVIFIT® basic drive is ready for operation
1 / 0	X	Manual mode 0: MOVIFIT® basic control via control signals 1: Manual control of MOVIFIT® basic

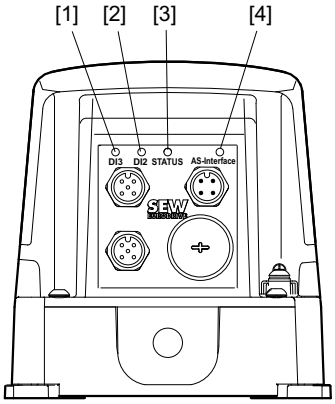
X = any status

7 Operation

7.1 Operating displays of MOVIFIT® basic (LEDs)

The following figure shows the LEDs of MOVIFIT® basic:

MOVIFIT® basic with AS-Interface



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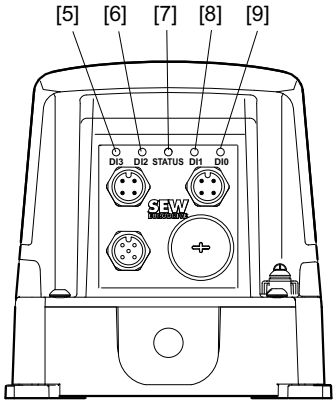
[1] LED "DI3"
[2] LED "DI2"
[3] LED "Status"
[4] LED "AS-Interface"

MOVIFIT® basic with binary control



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[5] LED "DI3"
[6] LED "DI2"
[7] LED "Status"
[8] LED "DI1"
[9] LED "DI0"

7.1.1 LEDs "DI0 – DI3"

LED color	LED status	Meaning
–	Off	Input signal at binary input DI. open or "0"
Yellow	Illuminated	Input signal present at binary input DI.

7.1.2 LED "Status"

LED color	LED status	Meaning
–	Off	No voltage supply
Green	On	MOVIFIT® basic drive is enabled
Yellow	On	MOVIFIT® basic drive is ready for operation
Red	On	An error has occurred
Red	Flashing	Internal unit error
Red/yellow		
Green/red		
Green/yellow		

7.1.3 LED "AS-Interface"

LED color	LED status	Meaning
–	Off	No 24 V supply at AS-Interface connection
Green	On	Normal operation 24 V supply at AS-Interface connection OK Communication established
Red	On	Communication interrupted or slave address set to 0
Green/red	Flashing	Communication interrupted

7.2 Description of the MB-LC keypad

7.2.1 Function

You can use the MB-LC keypad to operate MOVIFIT® basic units (inverter and motor starter) in manual mode. In addition to that, the keypad displays important information about the state of the drive.

7.2.2 Features

- Illuminated display
- Keypad with 5 keys
- Connection cables

7.2.3 Key assignment

The following figure shows the key assignment of the MB-LC keypad:

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Key  Activation/deactivation of **manual mode** with the MB-LC keypad

Key  Setting/resetting of **bit DO0** of the MOVIFIT® basic drive

Key  Setting/resetting of **bit DO1** of the MOVIFIT® basic drive

Key  Setting/resetting of **bit DO2** of the MOVIFIT® basic drive

Key  Setting/resetting of **bit DO3** of the MOVIFIT® basic drive

INFORMATION

For a description of the functions the drive performs based on the control bit settings, refer to chapter "MOVIFIT® basic – manual mode (page 59).

7.3 Operating displays of MB-LC keypad

The MB-LC keypad has the following operating displays:

SCAN The MB-LC performs an initialization.

StoP MOVIFIT® basic is ready for normal operation.

The power section of MOVIFIT® basic is switched off.

This message is displayed when the drive is at a standstill and no error is pending.

run The MOVIFIT® basic drive has been enabled by the higher-level controller (drive running)

Lt-C The MOVIFIT® basic drive is in LT control mode (parameter *P1-12* ≠ "0", only for MOVIFIT® basic inverters).

Controlling the drive is only possible via the LT-BG keypad or the LT Shell.

bUSY The MOVIFIT® basic drive is inhibited for control via the MB-LC keypad.

Reasons:

- The MOVIFIT® basic drive has been enabled by the higher-level controller (drive running)
- Parameter *P1-12* ≠ "0".

L-0000 Manual mode has been activated via the key.

The MB-LC keypad controls the MOVIFIT® basic drive via control bits DO3 – DO0.

The digits show the status ("0" or "1") of the current control bits (DO3 CCW, DO0 CW)

triP An error has occurred.

7.4 Manual operation with MB-LC keypad

7.4.1 Activating manual mode

The manual mode can only be activated if:

- the drive has not been enabled by the higher-level controller
- and parameter *P1-12* = "0".

To activate manual mode, press the  for at least 2.5 s. The display then shows "L-0000".

7.4.2 MOVIFIT® basic manual mode

In manual mode, you control the drive by setting/resetting control bits DO3 – DO0 via the  –  keys.

The display show the current status of control bits DO3 – DO0.

MOVIFIT® basic inverter

The following table shows control bits and the functions of the drive.

Control bit				Function
DO3	DO2	DO1	DO0	MOVIFIT® basic inverter
X	X	0	0	Stop
X	X	0	1	Enable CW
X	X	1	0	Enable CCW
X	X	1	1	Stop/reset
0	0	X	X	Setpoint speed = n1
0	1	X	X	Setpoint speed = n2
1	0	X	X	Setpoint speed = n3
1	1	X	X	Setpoint speed = n4

MOVIFIT® basic motor starter

The following table shows control bits and the functions of the drive.

Control bit			Function	
DO2	DO1	DO0	MOVIFIT® basic Reversing starter	MOVIFIT® basic dual motor starter
0	0	0	Stop	Stop
0	0	1	Enable CW	Enable signal for motor at terminal X9
0	1	0	Enable CCW	Enable signal for motor at terminal X8
0	1	1	Stop	Enable signal for both motors at X9 + X8
1	X	X	Reset	Reset

7.4.3 Deactivating manual operation

⚠ WARNING

Risk of crushing due to unexpected start of the drive. The signals of the higher-level controller become effective immediately after deactivating manual operation. The drive runs with the speed (status) that is specified by the higher-level controller.

Severe or fatal injuries.

- During deactivation, observe a sufficient safety distance to all parts driven by the motor.
- or, before deactivating manual operation, make sure that the drive is not enabled by the higher-level controller.

Press the  key to deactivate manual mode.

7.5 Operating displays of LT-BG keypad

The LT-BG keypad has the following operating displays:

SCAN..	The keypad is scanning the connection to MOVIFIT® basic.
Err-SC	Communication error between keypad and MOVIFIT® basic.
LOAD..	The keypad is loading the configuration data from MOVIFIT® basic.
P-deF	The default parameters (factory setting) are loaded.
StoP	The power section of MOVIFIT® basic is switched off. This message is displayed when the drive is at a standstill and no error is pending. MOVIFIT® basic is ready for normal operation.
P 1 - 0 3	Display of the selected parameter (parameter mode)
5.0	Display of the selected parameter value (setting mode)
H 50.0	Display of the current motor frequency in [Hz]
C 50.0	Display of the display variables *P2-22*
A 1.2	Display of the actual output current of MOVIFIT® basic in [A].
P 0.75	Display of the actual motor power in [kW].
. . . . . . Flashing dots	The actual output current of MOVIFIT® basic exceeds the nominal motor current (parameter *P1-08*).
Auto-t	Auto-tune is being performed. During this process, the motor parameters are measured and configured. Enable is not required for starting the auto-tune process.

7.6 Manual mode with LT-BG keypad

(only for MOVIFIT® basic inverter)

7.6.1 Manual mode activation (parameter *P1-12*)

Proceed as follows to activate manual mode:

1. Set parameter *P1-12*
   - to "1" => CW operation only
   - or to "2" => CW and CCW operation
2. Enable the drive via the higher-level controller.
   - For MOVIFIT® basic with binary control: DI0 and DI1 = "0"!
   - For MOVIFIT® basic with AS-Interface: DO0 and DO1 = "0"!

7.6.2 Manual operation of MOVIFIT® basic inverter

The following functions of the MOVIFIT® basic inverter can be executed in manual mode:

Enabling the drive	Use the key to enable the drive. With a setpoint speed ≠ "0", the drive will start.
Changing the setpoint speed	Use the key and the key to set the required setpoint speed. The drive follows the setpoint speed.
Changing the direction of rotation	Use the key to change the direction of rotation. Prerequisite: *P1-12* = "2" (enable CW and CCW operation)
Stop the drive	Use the key to stop the drive. The drive brakes with the deceleration ramp (*P1-04*) to a standstill.
Starting the drive (with setpoint speed)	At standstill, press the key and use the key and the key to select the required setpoint speed. Press the key to confirm your selection. Then use the key to start the drive. The drive accelerates with the acceleration ramp (*P1-03*) until it reaches the target speed.
Resetting an error	If an error occurs during manual operation, the display shows the corresponding error message. Eliminate the cause of the error. Use the key to reset the error. After the fault reset, manual operation remains active.

7.6.3 Deactivating manual operation

⚠ WARNING

Risk of crushing due to unexpected start of the drive. The signals of the higher-level controller become effective immediately after deactivating manual operation. The drive runs with the speed that is specified by the higher-level controller.

Severe or fatal injuries.

- During deactivation, observe a sufficient safety distance to all parts driven by the motor.
- or, before deactivating manual operation, make sure that the drive is not enabled by the higher-level controller.

Deactivate manual operation by setting parameter *P1-12* to "0".

INFORMATION

The inverter briefly releases the brake when you set parameter *P1-12* to "0".

8 Service

8.1 Diagnostics with LT-BG operator terminal

The following table helps you with troubleshooting:

Fault	Cause	Solution
Overload or overcurrent error of the unloaded motor during acceleration		• Check the star/delta terminal connection in the motor. The nominal operating voltages of motor and MOVIFIT® basic must match. Delta connection always yields the lower voltage of a multi-voltage motor.
Overload or overcurrent	Motor axis is blocked	• Check whether the rotor of the motor is blocked. • Make sure that the mechanical brake is released (if installed).
Display remains on "StoP" Drive not enabled		• Check whether the enable signal from the higher-level controller is present. • Make sure the M12 connectors are plugged in correctly. • Check the parameter *P1-12* for terminal control/manual operation. • Press the <Start> key while in manual mode. The line voltage must correspond with the specified values.
The drive does not start in very cold environments	Ambient temperature below −10 °C	• Provide for a heat source that keeps the ambient temperature of the drive above -10 °C.
Drive does not run properly in vector mode.		• You must set the parameters *P1-07*, *P1-08*, and *P1-09* according to the data on the motor nameplate before starting the auto-tune process. • Start auto-tune by setting *P4-02* = "1".

8.2 Status and error display

8.2.1 Meaning of the status LED

The following table shows the meaning of the status LED in case of a fault:

LED color	LED status	Meaning	Solution
Red	On	A fault has occurred	Read out fault code with LT-BG or LT Shell software. Remedy fault as described in chapter "Fault list for MOVIFIT® basic".
Red	Flashing	Internal unit error	Contact SEW Service.
Red/yellow			
Green/red			
Green/yellow			

8.2.2 Fault list for MOVIFIT® basic

The LT-BG operator terminal displays the faults that occurred at the MOVIFIT® basic drive. In addition, you can read out the 4 latest faults from parameter *P1-13 error log* on the PC.

Error code	Fault	Solution
O-I	Overcurrent at inverter output to the motor. Motor overload. Overtemperature at the heat sink of the inverter.	• Check motor and connection cables for phase short circuits or ground faults. • Check load for blocking, stalling, or shock loads. • Make sure that the parameters *P1-07*, *P1-08*, and *P1-09* are set correctly according to the motor nameplate. • For vector control (*P4-01* = "0" or "1"): Check the motor power factor in *P4-05*. • Make sure that the auto-tune process for the connected motor has been completed successfully. • Increase the ramp time in *P1-03*.
hO-I		
I_ t-trP	An inverter overload error occurs when the inverter has delivered > 100% of the nominal current for a certain time (defined in *P1-08*). The display is flashing to indicate the overload.	• Increase the acceleration ramp or reduce the motor load. • Make sure that the cable length meets the requirements. • Make sure that the parameters *P1-07*, *P1-08*, and *P1-09* are set correctly according to the motor nameplate. • In vector control mode (*P4-01* = "0" or "1"), check the motor power factor in *P4-05*. • Make sure that the auto-tune process for the connected motor has been completed successfully. • Check the load mechanically. Make sure that the load can move freely and that there are no blockages or other mechanical faults.
PS-trP	Internal output stage error	Error when enabling the drive: • Check for incorrect wiring or short circuit. • Check for phase short circuits or ground faults. Error during operation: • Check for sudden overload or overtemperature. • Provide additional space or cooling, if necessary.
O_Uo lt	DC link overvoltage	• Check whether the supply voltage is too high. • If the inverter switches off during deceleration, increase the deceleration ramp in *P1-04*.

Error code	Fault	Solution
U_Uo It	DC link undervoltage	Occurs routinely when switching off the inverter. • Check line voltage if this occurs while the drive is running.
O-t	Overtemperature at heat sink	• Check inverter cooling. • Provide additional space or cooling, if necessary.
U-t	Undertemperature	Occurs at an ambient temperature below –10 °C. • Increase the ambient temperature to above –10 °C before switching on the inverter.
th-Flt	Faulty thermistor at heat sink.	• Contact the SEW-EURODRIVE Service.
P-LOSS	Input phase failure error	One input phase failed in an inverter designed for operation on a three-phase system.
Ph-Ib	Phase asymmetry	Asymmetry of > 3% occurs for more than 30 s in the supply input voltage. • Check input voltage and fuses.
dAtA-F	Internal memory error	• Parameters not saved. • Factory settings loaded. • Try again. • If this problem occurs repeatedly, contact the SEW-EURODRIVE service.
At-FO1	Auto-tune error	The measured stator resistance of the motor fluctuates between the phases. • Make sure that the motor is connected correctly and without error. • Check the winding for correct resistance and symmetry.
At-F02		The measured stator resistance of the motor is too high. • Make sure that the motor is connected correctly. • Check whether the power rating of the motor corresponds with the power rating of the connected inverter.
At-F03		The measured motor inductivity is too low. • Make sure that the motor is connected correctly.
At-F04		The measured motor inductivity is too high. • Make sure that the motor is connected correctly. • Check whether the power rating of the motor corresponds with the power rating of the connected inverter.
At-F05		The measured motor parameters are contradictory. • Make sure that the motor is connected correctly. • Check whether the power rating of the motor corresponds with the power rating of the connected inverter.

8.3 Inspection/Maintenance

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

Exception: In case of long-term storage, observe the notes in chapter "Service" / Extended storage".

8.4 Shutdown

To shut down the drive, deenergize the MOVIFIT® basic unit using appropriate measures.

⚠ WARNING

Electric shock due to charged capacitors

Severe or fatal injuries.

- Observe a minimum switch-off time of 10 minutes after disconnecting the power supply.

8.5 Storage

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

- If you shut down and store the MOVIFIT® basic unit, you must close open cable entries and cover contacts with protective caps.
- Make sure that the unit is not subject to mechanical impact during storage.

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

8.6 Extended storage

MOVIFIT® basic is equipped with capacitors which are subject to aging effects when de-energized.

The capacity and impedance of the built-in capacitors of MOVIFIT® basic do not change significantly during extended storage. However, the leakage current of the capacitors slowly increases.

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

8.6.1 Procedure if maintenance has been neglected

When maintenance has been neglected, SEW-EURODRIVE recommends to operate the unit for 1 hour with the permitted nominal voltage at room temperature. Keep the connected motor running during the entire time. After you have completed the regeneration process, the unit can be used immediately or stored again for an extended period with maintenance.

8.7 Disposal

This product consists of:

- Aluminum
- Plastics
- Electronic components

Dispose of all components in accordance with applicable regulations!

9 Technical data

9.1 CE marking, UL approval and C-Tick

9.1.1 CE marking

- Low voltage directive:

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

- Electromagnetic compatibility (EMC):

  MOVIFIT® basic 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 the EMC directive 2004/108/EC. For detailed information on EMC compliant installation, refer to the publication "Electromagnetic Compatibility in Drive Engineering" from SEW-EURODRIVE.

CE

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 UL approval (in preparation)

c UL us LISTED

UL and cUL approval for the MOVIFIT® basic unit series is in preparation.

9.1.3 C-Tick (in preparation)

C-Tick approval for the MOVIFIT® basic unit series is in preparation.

C-Tick certifies conformity with ACA (Australian Communications Authority) standards.

9.2 MOVIFIT® basic with AS-Interface

MOVIFIT® basic type Part number		MBF07A-K1-A1 1 825 245 1	MBF15A-K1-A1 1 825 248 6	MBS4DA-K1-A1 1 825 252 4	MBS4RA-K1-A1 1 825 250 8
		Inverter		Dual motor starter	Reversing starter
Apparent output power at V_{line} = AC 380 – 480 V	S_N	1.8 kVA	2.8 kVA	6.9 kVA	6.9 kVA
Supply voltages Permitted range	V_{line}	AC 3 x 380 V –10 % – AC 480 V +10 %			
Line frequency	f_{line}	50 – 60 Hz ±10 %			
Nominal line current (with V_{line} = AC 400 V)	I_{line}	AC 2.9 A	AC 5.4 A	AC 10 A	AC 10 A
Output voltage	V_O	0 – V_{line} Output is not short-circuit proof		V_{line} Output is not short-circuit proof	
Output frequency Resolution Operating point	f_O	2 – 120 Hz 0.01 Hz 400 V at 50 Hz		f_{line} – –	
Rated output current	I_N	AC 2.2 A	AC 4.1 A	AC 2 x 5.0 A	AC 10.0 A
Motor power S1	P_{Mot}	**0.75 kW** 1.0 HP	**1.5 kW** 2.0 HP	**2 x 2.2 kW** 2 x 3.0 HP	**4.0 kW** 5.4 HP
PWM frequency		4 (factory setting)/8/16 kHz		–	
Current limitation (Output is not short-circuit proof)	I_{max}	Motor: 150%, 60 s Regenerative: 150%, 2 s		None	
Maximum motor cable length		3 m unshielded 10 m shielded		10 m unshielded	
Interference immunity		Meets EN 61800-3			
Interference emission		Meets category C3 according to EN 61800-3			
Ambient temperature	ϑ_A	-10 – +40 °C P_N reduction: 3 % I_N per K up to 60 °C			
Climate class		EN 60721-3-3, class 3K3			
Storage temperature[1)]		–30 to +85 °C (EN 60721-3-3, class 3K3)			
Maximum permitted vibration and shock load		According to EN 50178			
Degree of protection		IP54 (MOVIFIT® basic housing closed and all plug connections sealed).			
Duty type		S1 (EN 60149-1-1 and 1-3)			
Cooling type (DIN 41751)		Self-cooling			
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h > 2000 m: V_{line} reduction by AC 6 V per 100 m, Overvoltage class 2 according to DIN 0110-1 h_{max} = 4000 m Also see chapter "Installation altitudes above 1000 m amsl" in the operating instructions			
Required preventive measures		Grounding the unit			
Mass		3.3 kg		3.0 kg	2.7 kg
Dimensions	W x H x D	See chapter "Dimension drawings" in the operating instructions			

MOVIFIT® basic type	MBF07A-K1-A1	MBF15A-K1-A1	MBS4DA-K1-A1	MBS4RA-K1-A1
Part number	1 825 245 1	1 825 248 6	1 825 252 4	1 825 250 8
	Inverter		Dual motor starter	Reversing starter
Brake rectifier	BG brake rectifier for SEW brakemotors Brake voltage = supply voltage V_{line}			
Control input (X21)	Connection of the AS-Interface data line via M12 plug connector			
Control functions	DO0 – DO3, see chapter "Functions of MOVIFIT® basic with AS-Interface"			
Signaling functions	DI0 – DI3, see chapter "Functions of MOVIFIT® basic with AS-Interface"			
Sensor connections (X22, X23)	DI2 binary input sensor 2 DI3 binary input sensor 3			
Sensor inputs	PLC compatible according to EN 61131-2, sampling time ≤ 8 ms R_i about 3.0 kΩ I_E about 10 mA			
Signal level	+15 – +30 V "1" -3 – +5 V "0"			
Maximum sensor cable length	15 m			
AS-Interface				
Protocol variant	AS-Interface binary slave with a S-7.F profile "four bit I/O mode slave"		AS-Interface binary slave with S-7.A.E profile "4 I/3O AB slave"	
AS-Interface profile	S-7.F		S-7.A.E	
I/O configuration	7_{hex}		7_{hex}	
ID code	F_{hex}		A_{hex}	
ext. ID code 2	E_{hex}		E_{hex}	
ext. ID code 1	F_{hex}		7_{hex}	
Address	1 – 31 Factory setting 0 Can be changed as often as required		1A – 31A, 1B – 31B (AB slave) Factory setting 0 Can be changed as often as required	
Power supply to control electronics	$I_{E\ AS\text{-}Interface}$ ≤ 40 mA (typically 25 mA at 30 V)			

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

9.3 MOVIFIT® basic with binary control

MOVIFIT® basic type Part number		MBF07A-B1-A1 1 825 247 8	MBF15A-B1-A1 1 825 249 4	MBS4DA-B1-A1 1 825 253 2	MBS4RA-B1-A1 1 825 251 6
		Inverter		Dual motor starter	Reversing starter
Apparent output power at V_{line} = AC 380 – 480 V	S_N	1.8 kVA	2.8 kVA	6.9 kVA	6.9 kVA
Supply voltages Permitted range	V_{line}	AC 3 x 380 V –10 % – AC 480 V +10 %			
Line frequency	f_{line}	50 – 60 Hz ±10 %			
Nominal line current (with V_{line} = AC 400 V)	I_{line}	AC 2.9 A	AC 5.4 A	AC 10 A	AC 10 A
Output voltage	V_O	0 – V_{line} Output is not short-circuit proof		V_{line} Output is not short-circuit proof	
Output frequency Resolution Operating point	f_O	2 – 120 Hz 0.01 Hz 400 V at 50 Hz		f_{line} – –	
Rated output current	I_N	AC 2.2 A	AC 4.1 A	AC 2 x 5.0 A	AC 10.0 A
Motor power S1	P_{Mot}	**0.75 kW** 1.0 HP	**1.5 kW** 2.0 HP	**2 x 2.2 kW** 2 x 3.0 HP	**4.0 kW** 5.4 HP
PWM frequency		4 (factory setting)/8/16 kHz		–	
Current limitation (Output is not short-circuit proof)	I_{max}	Motor: 150%, 60 s Regenerative: 150%, 2 s		None	
Maximum motor cable length		3 m unshielded 10 m shielded		10 m unshielded	
Interference immunity		Meets EN 61800-3			
Interference emission		Meets category C3 according to EN 61800-3			
Ambient temperature	ϑ_A	-10 – +40 °C P_N reduction: 3 % I_N per K up to 60 °C			
Climate class		EN 60721-3-3, class 3K3			
Storage temperature[1)]		–30 to +85 °C (EN 60721-3-3, class 3K3)			
Maximum permitted vibration and shock load		According to EN 50178			
Degree of protection		IP54 (MOVIFIT® basic housing closed and all plug connections sealed).			
Duty type		S1 (EN 60149-1-1 and 1-3)			
Cooling type (DIN 41751)		Self-cooling			
Installation altitude		h ≤ 1000 m: no reduction h > 1000 m: I_N reduction by 1% per 100 m h > 2000 m: V_{line} reduction by AC 6 V per 100 m, Overvoltage class 2 according to DIN 0110-1 h_{max} = 4000 m Also see chapter "Installation altitudes above 1000 m amsl" in the operating instructions			
Mass		3.3 kg		3.0 kg	2.7 kg
Dimensions	W x H x D	See chapter "Dimension drawings" in the operating instructions			
Required preventive measures		Grounding the unit			

MOVIFIT® basic type	MBF07A-B1-A1	MBF15A-B1-A1	MBS4DA-B1-A1	MBS4RA-B1-A1
Part number	**1 825 247 8**	**1 825 249 4**	**1 825 253 2**	**1 825 251 6**
	Inverter		**Dual motor starter**	**Reversing starter**
Brake rectifier	BG brake rectifier for SEW brakemotors Brake voltage = supply voltage V_{line}			
4 digital inputs (X11, X12)	Isolated via optocoupler; PLC compatible (EN 61131-2) $R_i \approx 3.0\ k\Omega$, $I_E \approx 10\ mA$, sampling cycle ≤ 8 ms			
Signal level	+13 – +30 V = "1", contact closed -3 – +5 V = "0", contact open			
Control functions	DI0 – DI3, see chapter "Functions of MOVIFIT® basic with binary control"			
2 digital outputs (X13)	PLC-compatible in accordance with EN 61131-2			
Signal level	+15 V – +30 V "1" -3 V – +5 V "0"			
Rated current	Max. 20 mA per output / **not sustained short circuit proof**			
Signaling functions	DO0 – DO1, see chapter "Functions of MOVIFIT® basic with binary control"			
DC 24 V output (X13)	Interference-voltage-proof and short-circuit-proof DC 24 V ± 25 % Max. 100 mA minus the current load at digital outputs DO0+DO1			

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

9.4 Accessories

9.4.1 Operator panel

LT-BG

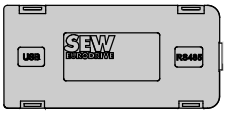
Type	LT-BG-00
Part number	1 820 864 9
Function	Operator terminal
Connection	with 3 m cable and RJ11 plug connector for connection to the X50 diagnostics interface
Degree of protection	IP54 (EN 60529) when installed in a control cabinet door IP20 (EN 60529) without mounting
Ambient temperature	0 – +50 °C
Storage temperature	0 – +60 °C

MB-LC

Type	MB-LC-00
Part number	2 820 126 4
Function	Keypad
Connection	with 1 m cable and RJ11 plug connector for connection to the X50 diagnostics interface
Degree of protection	IP54 (EN 60529) when installed in a control cabinet door IP20 (EN 60529) without mounting
Ambient temperature	0 – +50 °C
Storage temperature	0 – +60 °C

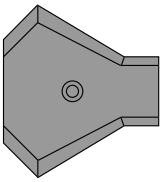
9.4.2 Accessories for PC connection

USB11A



Type	USB11A
Part number	0 824 831 1
Function	USB – RS485 interface adapter
Scope of delivery	– USB11A interface adapter – USB cable – Cable with RJ10 – RJ10 plug connectors

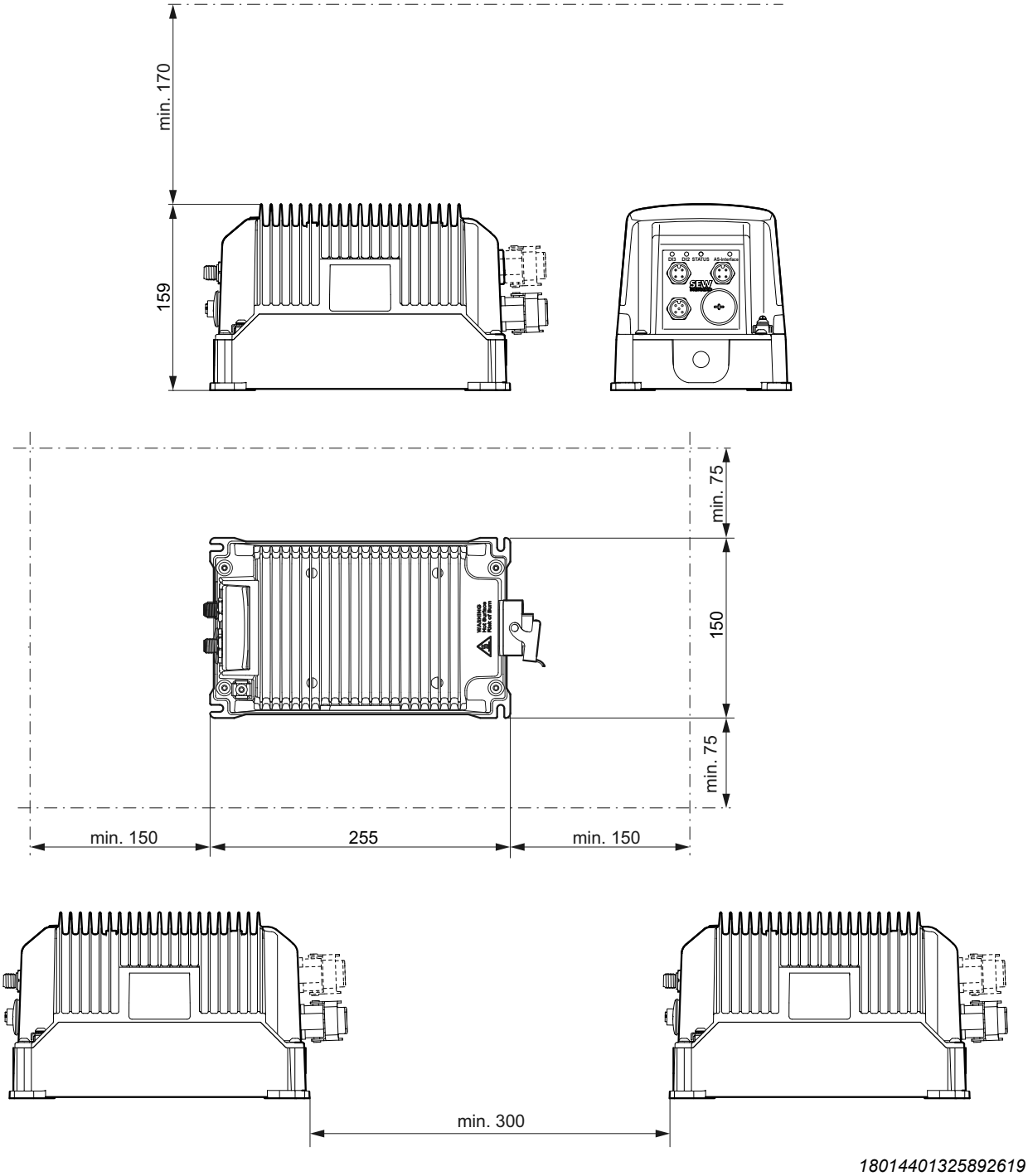
OP LT 003 C



Type	OP LT 003 C
Part number	1 824 368 1
Function	RJ10 – RJ45 adapter DC 24 V -> DC 5 V voltage converter
Scope of delivery	– OP LT 003 C adapter – Cable with RJ45 – RJ11 plug connectors

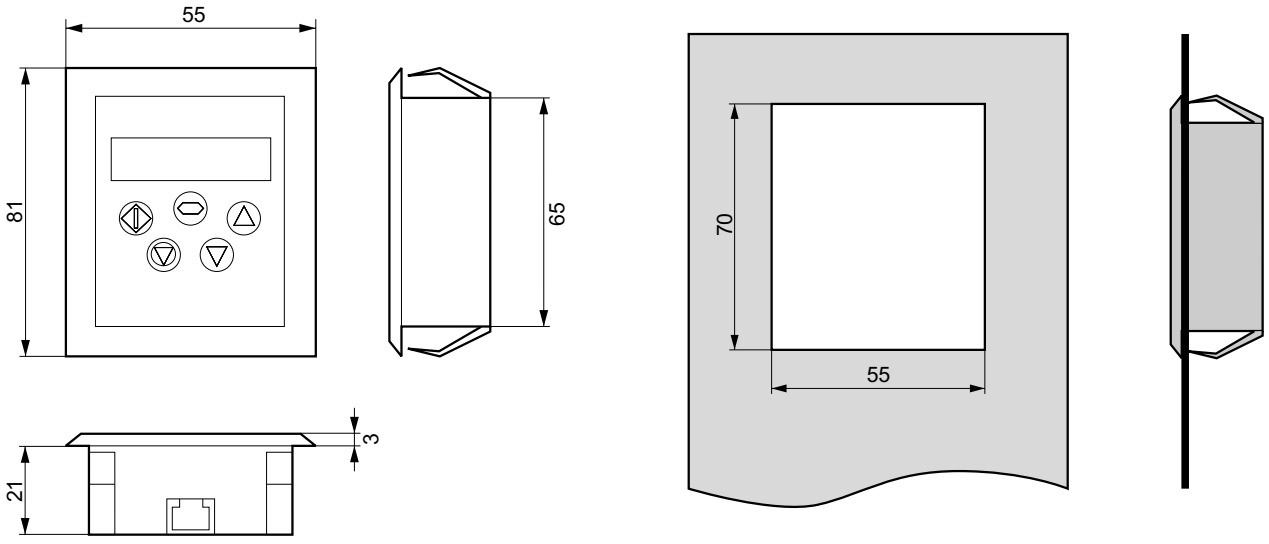
9.5 Dimension drawings

9.5.1 MOVIFIT® basic dimension drawing



18014401325892619

9.5.2 Dimension drawing of LT-BG / MB-LC operator terminal



Recess
for control cabinet installation

The operator terminal meets the requirements of IP54 when it is installed correctly.

10 Address list

Germany			
Headquarters **Production plant** **Sales**	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal, Germany P.O. box Postfach 3023 • 76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Production plant / industrial gear units	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Str.10 D-76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-2970
Service Competence Center	**Mechanical/Mechatronic Components**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
Drive Technology Center	**North**	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 30823 Garbsen (near Hanover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (near Munich)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Drive Service Hotline / 24 h hotline		+49 180 5 SEWHELP +49 180 5 7394357 0.14 €/min. from German landline phones, max. 0.42 €/min. from German mobile phones
	Additional addresses for service in Germany are provided on request.		

France			
Production plant **Sales** **Service**	**Haguenau**	SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Production plant	**Forbach**	SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
Assembly plant **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

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

Austria			
Assembly plant **Sales** **Service**	**Vienna**	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at

Belgium			
Assembly plant **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	**Industrial gear units**	**SEW-EURODRIVE n.v./s.a.** Rue de Parc Industriel, 31 6900 Marche-en-Famenne, Belgium	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be

Brazil			
Production plant **Sales** **Service**	**São Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 152 - Rodovia Presidente Dutra Km 208 Guarulhos - 07251-250 - SP, Brazil SAT - SEW ATENDE - 0800 7700496	Tel. +55 11 2489-9133 Fax +55 11 2480-3328 http://www.sew-eurodrive.com.br sew@sew.com.br
Assembly plants **Sales** **Service**	**Rio Claro**	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
	Indaiatuba	SEW-EURODRIVE Brasil Ltda. Estrada Municipal Jose Rubim, 205 Rodovia Santos Dumont Km 49 13347-510 - Indaiatuba / SP	Tel. +55 19 3835-8000 sew@sew.com.br

Czech Republic			
Sales **Assembly plant** **Service**	**Hostivice**	SEW-EURODRIVE CZ s.r.o. Floriánova 2459 253 01 Hostivice	Tel. +420 255 709 601 Fax: +420 235 350 613 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
	Drive Service Hotline / 24 h hotline	HOT-LINE +420 800 739 739 (800 SEW SEW)	**Servis:** Tel. +420 255 709 632 Fax: +420 235 358 218 servis@sew-eurodrive.cz

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

Finland			
Assembly plant **Sales** **Service**	**Lahti**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 http://www.sew-eurodrive.fi sew@sew.fi
Production plant **Assembly plant**	**Karkkila**	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi

Great Britain			
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	Drive Service Hotline / 24 h hotline		Tel. 01924 896911

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

Italy			
Assembly plant **Sales** **Service**	**Solaro**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax: +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it

Luxembourg			
Assembly plant **Sales** **Service**	**Brussels**	**SEW-EURODRIVE n.v./s.a.** Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.lu info@sew-eurodrive.be

New Zealand			
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	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Norway			
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Poland			
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	Service	Tel. +48 42 6765332 / 42 6765343 Fax +48 42 6765346	Linia serwisowa Hotline 24H Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl

Portugal			
Assembly plant **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax: +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Russia			
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Sweden			
Assembly plant **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442 00 Fax: +46 36 3442 80 http://www.sew-eurodrive.se jonkoping@sew.se

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

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybničná 40 831 06 Bratislava, Slovakia	Tel. +421 2 33595 202 Fax: +421 2 33595 200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. Industry Park - PChZ ulica M.R.Štefánika 71 010 01 Žilina, Slovakia	Tel. +421 41 700 2513 Fax: +421 41 700 2514 sew@sew-eurodrive.sk
	Banska Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 974 11 Banská Bystrica, Slovakia	Tel. +421 48 414 6564 Fax: +421 48 414 6566 sew@sew-eurodrive.sk
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South Africa			
Assembly plants **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013, South Africa	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town, South Africa P.O.Box 36556 Chempet 7442 Cape Town, South Africa	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 cfoster@sew.co.za
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	Nelspruit	SEW-EURODRIVE (PTY) LTD. 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

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

The Netherlands			
Assembly plant **Sales** **Service**	**Rotterdam**	SEW-EURODRIVE B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam, Netherlands	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800 SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

Turkey			
Assembly plant **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri Sanayi Ticaret Limited Şirketi Gebze Organize Sanayi Bölgesi 400.Sokak No:401 TR-41480 Gebze KOCAELİ	Tel. +90-262-9991000-04 Fax +90-262-9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
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