SEW EURODRIVE

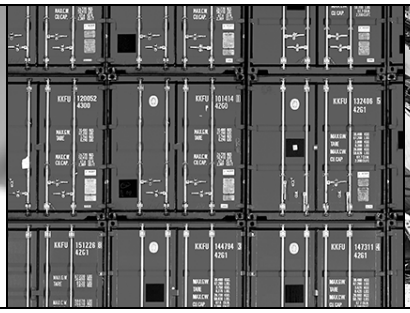
Addendum to the Operating Instructions

MOVIFIT® Basic MBS2RA Reversing Starter

Edition 11/2013

20187742 / EN






1 General information

1.1 Structure of the safety notes

1.1.1 Meaning of signal words

The following table shows the graduation 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
NOTICE	Possible damage to property	Damage to the drive system or its environment
INFORMATION	Useful information or tip: Simplifies handling of the drive system.	

1.1.2 Design 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 either indicate a general hazard or a specific hazard.

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

⚠ SIGNAL WORD!

Type and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the danger.

1.1.3 Design 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!** Type and source of hazard.

  Possible consequence(s) if disregarded.

  – Measure(s) to prevent the hazard.

1.2 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.

1.3 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.

1.4 Product names and trademarks

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

1.5 Copyright

1.6 Other applicable documentation

- This supplementary information does not replace the detailed operating instructions.
- Startup only by trained personnel observing the relevant accident prevention regulations and the following document:
  - "MOVIFIT® basic" operating instructions

2 Unit structure

2.1 MBS2RA reversing starter

INFORMATION

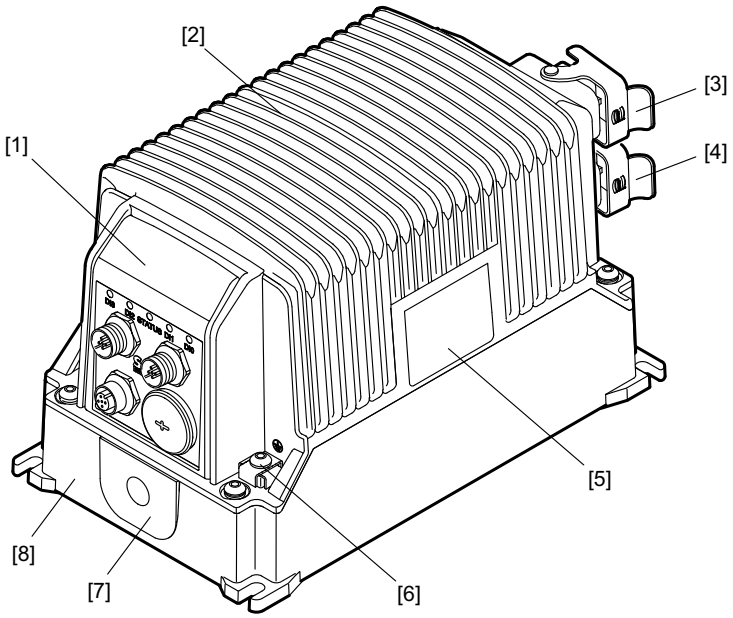
In terms of functions, the MBS2RA reversing starter is based on the MBS4RA reversing starter. Both versions only differ regarding their nominal power.

Connected load of MOVIFIT® basic reversing starter:

MOVIFIT® basic Type	Possible motor power	Rectifier	
		Type	Voltage
MBS2RA	0.18 – **1.1 kW**	BG, BGE, BSR	400 V
MBS4RA	1.5 – **4.0 kW**	BG, BGE, BSR	400 V

2.2 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)

2.3 Type designations

2.3.1 Nameplate

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

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2.3.2 Type designation

The following table shows the MOVIFIT® basic type designation:

MBS2RA-K1-A1

Connection module

Version

Control
- K = via AS-Interface
- B = binary control

Version

Motor power / design
- 07 = 0.75 kW inverter
- 15 = 1.5 kW inverter
- 2R = reversing starter 1.1 kW
- 4R = reversing starter 4.0 kW
- 4D = Dual-motor starter

Design
- F = Inverter
- S = Motor starter

Unit series
- MB = MOVIFIT® basic

3 Startup

3.1 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 start up 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

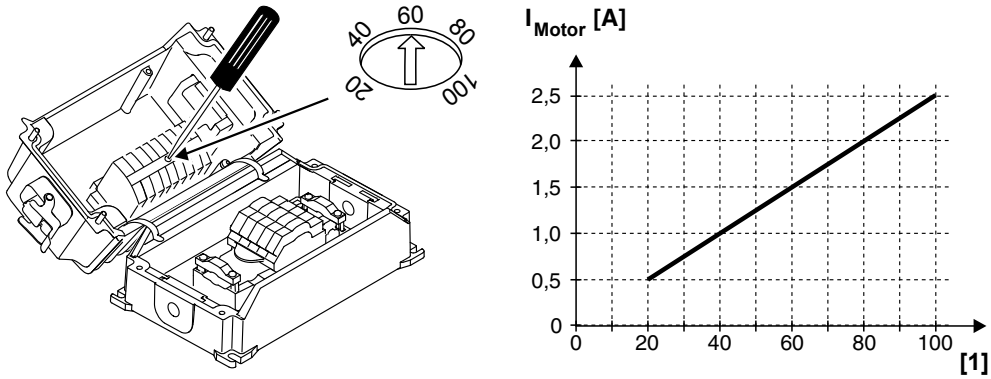
   I_N = nominal output current as listed on the MOVIFIT® basic nameplate

   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.

MBS2RA reversing 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 operating instructions / chapter "Assigning the AS-Interface slave address".

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).

4 Technical data

4.1 MOVIFIT® basic with AS-Interface

MOVIFIT® basic type Part number		MBS2RA-K1-A1 2 821 330 0 Reversing starter
Apparent output power at V_{line} = AC 380 – 480 V	S_N	1.7 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 2.5 A
Output voltage	V_O	V_{line} Output is not short-circuit-proof
Output frequency	f_O	f_{line}
Rated output current	I_N	AC 2.5 A
Motor power S1	P_{Mot}	**1.1 kW** 1.5 HP
Current limitation		none
Maximum motor cable length		10 m unshielded
Interference immunity		complies with 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 – +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).
Operating mode		S1 (EN 60149-1-1 and 1-3)
Type of cooling (DIN 41751)		Natural 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
Weight		2.7 kg
Dimensions	W x H x D	See chapter "Dimension drawings" in the operating instructions

MOVIFIT® basic type Part number	MBS2RA-K1-A1 2 821 330 0 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 operating instructions
Signaling functions	DI0 – DI3, see operating instructions
Sensor connections (X22, X23)	DI2 digital input sensor 2 DI3 digital input sensor 3
Sensor inputs	PLC-compatible according to EN 61131-2, sampling cycle ≤ 8 ms R_i about 3.0 kΩ I_E about 10 mA
Signal level	+15 – +30 V = "1", contact closed -3 – +5 V = "0", contact open
Maximum sensor cable length	15 m
AS-Interface	
Protocol variant	AS-Interface binary slave with S-7-A.E profile "4I/3O AB slave"
AS-Interface profile	S-7.A.E
I/O configuration	7_{hex}
ID code	A_{hex}
ext. ID code 2	E_{hex}
ext. ID code 1	7_{hex}
Address	1A – 31A, 1B – 31B (AB slave) Factory setting 0 can be changed as often as required
Electronics supply	$I_{E\ AS\text{-}Interface}$ ≤ 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 service life of the unit may be reduced.

4.2 MOVIFIT® basic with binary control

MOVIFIT® basic type Part number		MBS2RA-B1-A1 2 821 331 9 Reversing starter
Apparent output power at V_{line} = AC 380 – 480 V	S_N	1.7 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 2.5 A
Output voltage	V_O	V_{line} Output is not short-circuit-proof
Output frequency	f_O	f_{line}
Rated output current	I_N	AC 2.5 A
Motor power S1	P_{Mot}	**1.1 kW** 1.5 HP
Current limitation		none
Maximum motor cable length		10 m unshielded
Interference immunity		complies with 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 – +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).
Operating mode		S1 (EN 60149-1-1 and 1-3)
Type of cooling (DIN 41751)		Natural 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
Weight		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 Part number	MBS2RA-B1-A1 2 821 331 9 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
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 – DO3, see operating instructions
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 service life of the unit may be reduced.

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