SEW EURODRIVE

Compact Operating Instructions



Decentralized Drive Systems

MOVIMOT® MM..D

Edition 07/2022

27792439/EN



Contents

1 General information 5
1.1 Scope of this documentation 5
1.2 Structure of the safety notes 5
1.3 Other applicable documentation 6

2 Safety notes 7
2.1 Preliminary information 7
2.2 Duties of the user 7
2.3 Target group 7
2.4 Designated use 8
2.5 Functional safety technology 9
2.6 Transportation 9
2.7 Installation/assembly 9
2.8 Electrical installation 10
2.9 Protective separation 10
2.10 Startup/operation 11

3 Type designations 12
3.1 MOVIMOT® drive type designation 12
3.2 MOVIMOT® inverter type designation 13
3.3 Type designation of the "mounted close to the motor" design 14
3.4 Year of manufacture 16

4 Mechanical installation 17
4.1 Installation notes 17
4.2 Tools required 17
4.3 Installation requirements 17
4.4 Installation of MOVIMOT® gearmotor 18
4.5 Mounting MOVIMOT® inverter close to the motor 20
4.6 Tightening torques 21

5 Electrical installation 23
5.1 Installation notes 23
5.2 Installation instructions 23
5.3 Connection of MOVIMOT® drive 29
5.4 Connection between MOVIMOT® and motor when mounted close to the motor 30
5.5 PC/laptop connection 33

6 Easy startup 34
6.1 General information concerning startup 34
6.2 Requirements 35
6.3 Description of the control elements 35
6.4 Description of the DIP switches S1 38
6.5 Description of the DIP switches S2 45
6.6 Startup with binary control 49
6.7 Supplementary notes for installation close to the motor 51

7 Easy startup with RS485 interface/fieldbus 54

27792439/EN – 07/2022

7.1 General information concerning startup 54
7.2 Requirements 55
7.3 Startup procedure 55

8 Service 58
8.1 Status and error display 58
8.2 Error list 61
8.3 Unit replacement 65
8.4 Waste disposal 67

27792439/EN – 07/2022

1 General information

1.1 Scope of this documentation

This documentation comprises the general safety notes and selected information regarding MOVIMOT® MM..D.

- Please note that this documentation does not replace the detailed operating instructions.
- Read the detailed operating instructions first before you start working with MOVIMOT® MM..D.
- Observe the information, instructions and notes in the detailed operating instructions and the "DR.71-225, 315 AC Motors" operating instructions. This is essential for fault-free operation of MOVIMOT® MM..D and fulfillment of any rights to claim under guarantee.
- The enclosed CD or DVD contains PDF files of the additional operating instructions as well as further MOVIMOT® MM..D documentation.
- All technical documentation from SEW-EURODRIVE is available for download in PDF format from the SEW-EURODRIVE website: www.sew-eurodrive.com.

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.

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

1.2.2 Structure of section-related safety notes

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

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



SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

27792439/EN – 07/2022

Meaning of the hazard symbols

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

Hazard symbol	Meaning
	General hazard
	Warning of dangerous electrical voltage
	Warning of hot surfaces

1.2.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

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

1.3 Other applicable documentation

Also observe the following publication:

- Operating instructions "AC motors DR..71 – 315, DRN63 – 315, DR2..56 – 80"

The corresponding documentation applies for all other components.

27792439/EN – 07/2022

2 Safety notes

2.1 Preliminary information

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

2.2 Duties of the user

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following is carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

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

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

2.3 Target group

Specialist for mechanical work

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

- Qualifications in the field of mechanics in accordance with the national regulations
- Familiarity with this documentation

27792439/EN – 07/2022

Specialist for electrotechnical work

Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product who possess the following qualifications:

- Qualifications in the field of electrical engineering in accordance with the national regulations
- Familiarity with this documentation

Additional qualifications

In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation.

The persons must have the express authorization of the company to operate, program, parameterize, label, and ground devices, systems, and circuits in accordance with the standards of safety technology.

Instructed persons

All work in the areas of transport, storage, installation, operation and waste disposal may only be carried out by persons who are trained and instructed appropriately. These instructions must enable the persons to carry out the required activities and work steps safely and in accordance with regulations.

2.4 Designated use

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

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

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

The systems can be mobile or stationary.

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

- AC asynchronous motors with squirrel-cage rotor

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

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

Do not use the product as a climbing aid.

2.4.1 Restrictions under the European WEEE Directive 2012/19/EU

Options and accessories from SEW-EURODRIVE may only be used in combination with products from SEW-EURODRIVE.

27792439/EN – 07/2022

2.4.2 Hoist applications

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

- The product is not designed for use as a safety device in lifting applications.
- Use additional monitoring systems or mechanical protection devices.

2.5 Functional safety technology

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

2.6 Transportation

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

Observe the following notes when transporting the device:

- Ensure that the product is not subject to mechanical impact.

If necessary, use suitable, sufficiently dimensioned handling equipment.

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

The lifting eyebolts are designed to carry only the weight of the motor without gear unit. Tighten installed lifting eyebolts. Mounted gear units have separate suspension attachments, which must be used according to the gear unit operating instructions when lifting the gearmotor. Do not mount any additional loads.

2.7 Installation/assembly

Ensure that the product is installed and cooled in accordance with the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that no components are deformed or no insulation spaces are modified, particularly during transportation. Electrical components must not be mechanically damaged or destroyed.

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

27792439/EN – 07/2022

2.7.1 Restrictions of use

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

- Use in potentially explosive atmospheres
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1
- Use at an elevation of more than 4000 m above sea level

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

- The reduction of the nominal output current and/or the line voltage is considered according to the data in chapter "Technical data" in the documentation.
- Above 2000 m above sea level, the air and creepage distances are only sufficient for overvoltage class II according to EN 60664. At altitudes above 2000 m above sea level, limiting measures must therefore be taken that reduce the line side overvoltage from category III to category II for the entire system.
- If a protective electrical separation (in accordance with EN 61800-5-1 and EN 60204-1) is required, then implement this outside the product at altitudes of more than 2000 m above sea level.

2.8 Electrical installation

Ensure that all of the required covers are correctly attached after the electrical installation.

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

2.8.1 Required preventive measure

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

2.8.2 Voltage test

To ensure the insulation is in order, perform voltage tests for the drives according to EN 61800-5-1:2007 prior to startup.

2.9 Protective separation

The product meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. The connected signal circuits must meet requirements according to SELV (**S**afety **E**xtra **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

In order to avoid exceeding the permitted contact voltages in SELV or PELV power circuits in the event of a fault, continuous equipotential bonding is required in the vicinity of these power circuits. If this is not possible, other preventive measures must be taken. These preventive measures are described in EN 61800-5-1.

27792439/EN – 07/2022

2.10 Startup/operation

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

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

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

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

Do not separate the connection to the product during operation. This may result in dangerous electric arcs damaging the product.

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

1 minute.

Observe the corresponding information signs on the product.

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

Mechanical blocking or internal protective functions of the product 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 drive-controlled machine, first disconnect the product from the supply system and then start troubleshooting.

Risk of burns: The surface temperature of the product can exceed 60 °C during operation. Do not touch the product during operation. Let the product cool down before touching it.

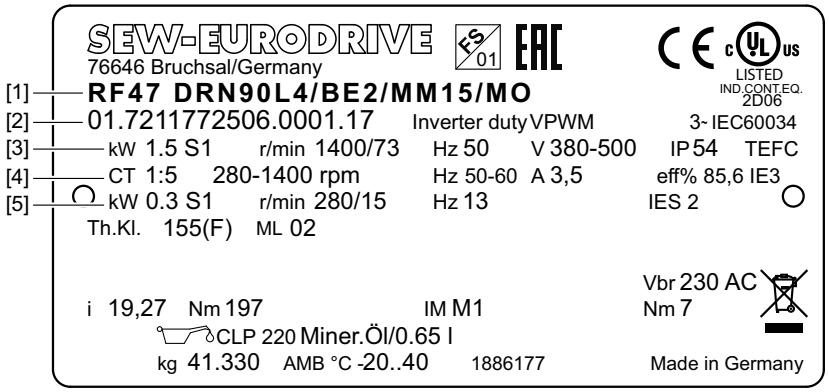
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3 Type designations

3.1 MOVIMOT® drive type designation

3.1.1 Nameplate

The following figure shows an example of a MOVIMOT® drive nameplate. The nameplate is located on the motor.



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	Value	Meaning
[1]	RF47 DRN90L4..	Type designation
[2]	01.412153807..	Serial number
	Inverter duty VPWM	Suitability for inverter operation
	3~IEC60034	Number of phases and applied rated and power standards
[3]	kW 1.5 S1	Rated power of the drive unit/operating mode according to EN 60034-1
	r/min 1400/73	Rated speed of the drive unit, motor/gear unit
	Hz 50	Rated motor frequency
	V 380-500	Nominal input voltage of the drive unit
	IP54	Degree of protection according to IEC 60034-5
	TEFC	Type of motor cooling according to EN 60034-6
[4]	CT 1:5	Speed setting range at constant torque
	280 – 1400 rpm	Speed range of the drive unit at constant torque
	Hz 50-60	Drive unit input frequency
	A 3.5	Nominal input current of the drive unit
	eff% 85.6	Rated efficiency for the motor at line operation included in the validity of the IEC 60034-30-1 standard
	IE3	IE class of the motor at line operation according to IEC 60034-30-1
[5]	kW 0.3 S1	Power rating of the drive unit at lower limit speed/operating mode according to EN 60034-1
	r/min 280/15	Lower limit speed of the drive unit
	Hz 13	Motor frequency at lower limit speed
	IES 2	System efficiency class according to EN 50598-2

27792439/EN – 07/2022



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	Product label with QR code. The QR code can be scanned. You will be redirected to the digital services of SEW-EURODRIVE. There, you have access to product-specific data, documents, and additional services.

3.1.2 Type designation

The following table shows an example of the type designation of the MOVIMOT® drive **RF47 DRN90L4BE2/MM15/MO**:

RF	**Gear unit series**
47	**Gear unit size**
DRN..	**Motor series** (DR2S, DRS.., DRN..)
90L	**Motor size**
4	**Number of motor poles**
BE2	**Additional motor feature (brake)**
/	
MM15	**MOVIMOT® inverter**
/	
MO	**Additional feature: inverter** [1]

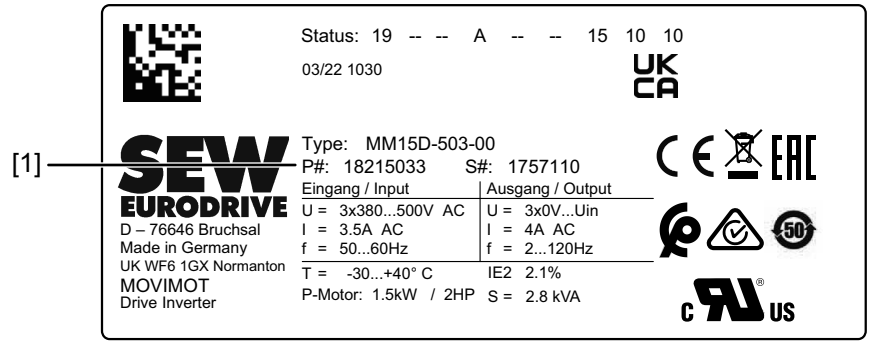
1) The nameplate only displays options installed at the factory.

The available designs can be found in the "MOVIMOT® gearmotors" catalog.

3.2 MOVIMOT® inverter type designation

3.2.1 Nameplate

The following figure provides an example of a MOVIMOT® inverter nameplate:



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[1] Part number

3.2.2 Type designation

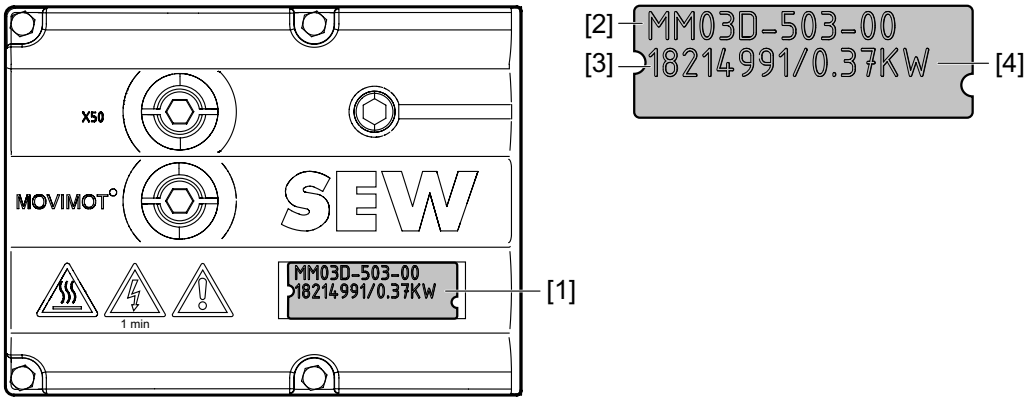
The following table shows an example of the type designation of the MOVIMOT® inverter **MM15D-503-00**:

MM	**Series**	MM = MOVIMOT®
15	**Motor power**	15 = 1.5 kW
D	**Version D**	
-		
50	**Connection voltage**	50 = AC 380 – 500 V 23 = AC 200 – 240 V
3	**Connection type**	3 = 3-phase
-		
00	**Design**	00 = Standard

The available designs can be found in the "MOVIMOT® gearmotors" catalog.

3.2.3 Unit identification

The unit identification [1] on the top of the MOVIMOT® inverter provides information about the inverter type [2], inverter part number [3], unit power [4].



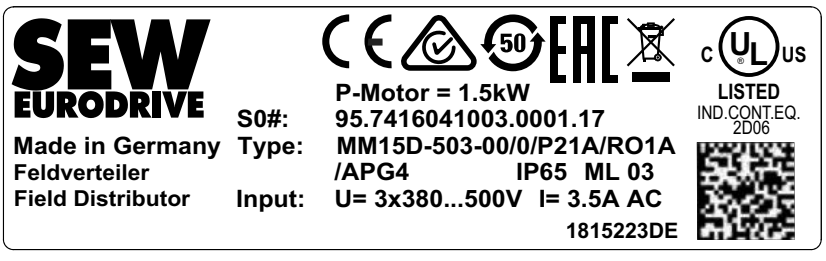
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3.3 Type designation of the "mounted close to the motor" design

3.3.1 Nameplate

Order-specific nameplate

The following figure provides an example of an order-specific nameplate of the MOVIMOT® inverter for mounting close to the motor:



27792439/EN – 07/2022

General nameplate

The following figure provides an example of a general nameplate of the MOVIMOT® inverter for mounting close to the motor:

Input:	Output to next Field Distributor:
U= 3x200...500V	U= –
Imax= –	Imax= –
Input:	**Output to drive:**
U= 3x200...500V	U= 3x0...Uinput
Imax= 1,3...3,5A AC	Imax= 1,6...4,0A AC
f= 50...60Hz	P-Motor= 0,25...1,5kW

27792439/EN – 07/2022

3.3.2 Type designation

The following table shows the type designation for the MOVIMOT® inverter **MM15D-503-00/0/P21/RO1A/APG4** with mounting close to the motor:

MM15D-503-00	**MOVIMOT® inverter**
/	
0	**Connection type** 0 = ⅄ 1 = △
/	
P21A	**Adapter for mounting close to the motor**
/	
RO1A	**Connection box design**
/	
APG4	**Plug connector** for connection to motor

3.4 Year of manufacture

The year of manufacture is part of the serial number which is indicated on the system nameplate.

01.	1234567890	0001.	21
Sales Organization	Order number (10-digit)	Sequence number of the quantity (4-digit)	Final digits of the year of manufacture (2-digit)

For the case shown, the year of manufacture is 2021.

27792439/EN – 07/2022

4 Mechanical installation

4.1 Installation notes

INFORMATION

Observe the general safety notes.

⚠ WARNING



Improper installation/disassembly of MOVIMOT® drives and mount-on components.

Risk of injury.

- Adhere to the notes about installation and disassembly.
- Before releasing shaft connections, make sure that there are no active torsional moments present (tensions within the system).

⚠ WARNING



Risk of injury if the drive starts up unintentionally and danger of electrical voltage.

Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.

- Disconnect the MOVIMOT® drive from the power supply before you start working on the unit and secure it against unintentional reconnection to the voltage supply.
- Secure the output shaft against rotation.
- Wait for at least 1 minute before removing the MOVIMOT® inverter.

- Comply with all instructions referring to the technical data and the permissible conditions where the unit is operated.
- Only use the provided attachment options when mounting the MOVIMOT® drive.
- Use only mounting and locking elements that fit into the existing bores, threads and countersinks.

4.2 Tools required

- Set of wrenches
- Socket wrench, SW8
- Torque wrench
- Screwdriver set
- Compensation elements (washers and spacing rings), if necessary

4.3 Installation requirements

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

- The data on the nameplate of the drive matches the voltage supply system.
- The drive is undamaged (no damage caused by transportation or storage)

27792439/EN – 07/2022

- The ambient temperature corresponds to the specifications in chapter "Technical data" of the operating instructions. Note that the temperature range of the gear unit may also be restricted, see gear unit operating instructions.
- The MOVIMOT® drive must **not** be installed under the following harmful ambient conditions:
  - In potentially explosive atmospheres
  - Oils
  - Acids
  - Gases
  - Vapors
  - Radiation
  - etc.
- When the drive is installed in abrasive ambient conditions, protect the output end oil seals against wear.

4.4 Installation of MOVIMOT® gearmotor

4.4.1 Installation tolerances

The following table shows the permitted tolerances of the shaft ends and flanges of the MOVIMOT® drive.

Shaft end	Flange
Diameter tolerance according to EN 50347 • ISO j6 with Ø ≤ 26 mm • ISO k6 with Ø ≥ 38 mm up to ≤ 48 mm • ISO m6 at Ø > 55 mm • Centering bore in accordance with DIN 332, shape DR..	Centering shoulder tolerance in accordance with EN 50347 • ISO j6 with Ø ≤ 250 mm • ISO h6 with Ø > 300 mm

4.4.2 Installing MOVIMOT®

NOTICE

Loss of guaranteed degree of protection if the MOVIMOT® inverter is installed incorrectly or not at all.

Damage to the MOVIMOT® inverter.

- When removing the MOVIMOT® inverter from the connection box, it must be protected from dust and moisture.

Observe the following information and regulations for mounting the MOVIMOT® drive:

- Only install the MOVIMOT® drive on a level, low-vibration, and torsionally rigid support structure.
- Observe the permitted mounting position on the drive nameplate.
- Thoroughly remove any anti-corrosion agent from the shaft end. Use a commercially available solvent. Do not allow the solvent to penetrate the bearings and sealing rings (damage to the material).

27792439/EN – 07/2022

- Align the motor carefully to avoid placing any unacceptable strain on the motor shafts. Observe the permitted overhung and axial loads specified in the "MOVIMOT® gearmotors" catalog!
- Do not jolt or hammer the shaft end.
- Use an appropriate cover to prevent objects or fluids from entering motors in vertical mounting positions.
- Ensure sufficient clearance around the unit to allow for adequate cooling air supply. Ensure that exhaust air warmed by other devices cannot be drawn in.
- Balance components that were subsequently mounted to the shaft with a half key (output shafts are balanced with a half key).
- The condensation drain holes are sealed with plastic plugs. Unplug them only if necessary.

  Open condensation drain holes are not permitted. If condensation drain holes are open, higher degrees of protection are no longer possible.

27792439/EN – 07/2022

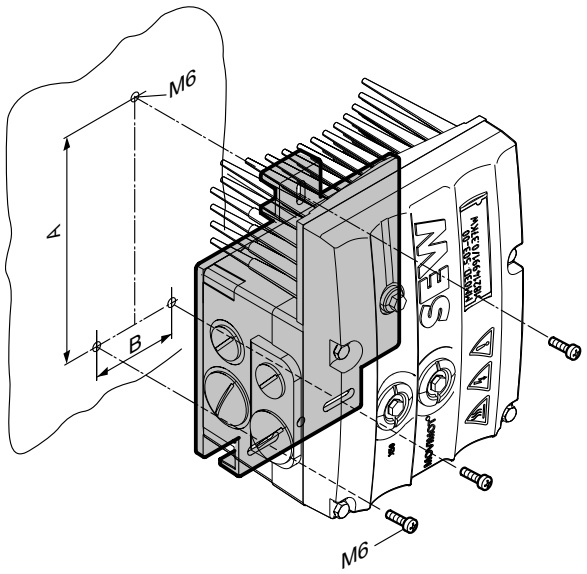
4.4.3 Installation in damp locations or in the open

Observe the following notes for mounting the MOVIMOT® drive in damp areas or in the open:

- Use suitable cable glands for the incoming cables. Use reducing adapters if necessary.
- Coat the threads of the cable glands and screw plugs with sealing compound and tighten them properly. Then coat the cable glands again.
- Seal the cable entry properly.
- Thoroughly clean the sealing surfaces of the MOVIMOT® inverter before re-assembly.
- If the corrosion protection coating is damaged, restore the coating.
- Check whether the degree of protection specified on the nameplate is permitted in the ambient conditions on site.

4.5 Mounting MOVIMOT® inverter close to the motor

The following figure shows the mounting dimensions for mounting the MOVIMOT® inverter close to the motor:



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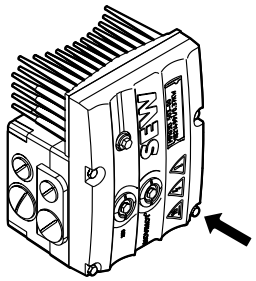
Size	Type	A	B
1	MM03D503-00 – MM15D-503-00 MM03D233-00 – MM07D-233-00	140 mm	65 mm
2/2L	MM22D503-00 – MM40D-503-00 MM11D233-00 – MM22D-233-00	170 mm	65 mm

27792439/EN – 07/2022

4.6 Tightening torques

4.6.1 MOVIMOT® inverter

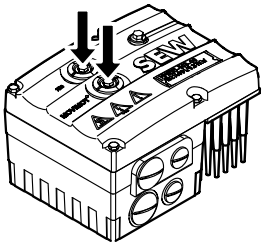
Tighten the retaining screws of the MOVIMOT® inverter to 3.0 Nm in diametrically opposite sequence.



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4.6.2 Screw plugs

Tighten the screw plugs of potentiometer f1 and connection X50 with 2.5 Nm.

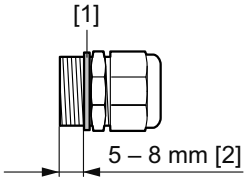


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4.6.3 Cable glands

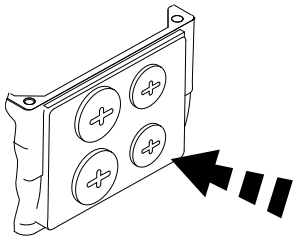
Observe the manufacturer's specifications and the following information for cable glands.

- Pay attention to the O-ring on the thread [1].
- The thread must be 5 – 8 mm long [2].



4.6.4 Screw plugs for cable entries

Tighten screw plugs with 2.5 Nm.

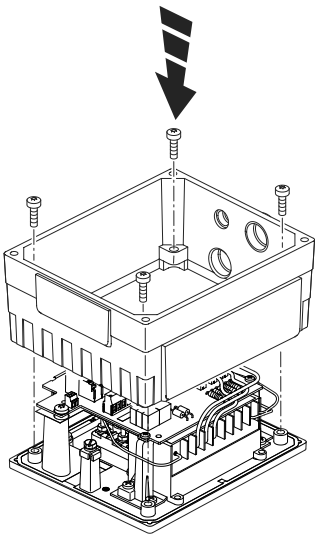


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4.6.5 Modular connection box

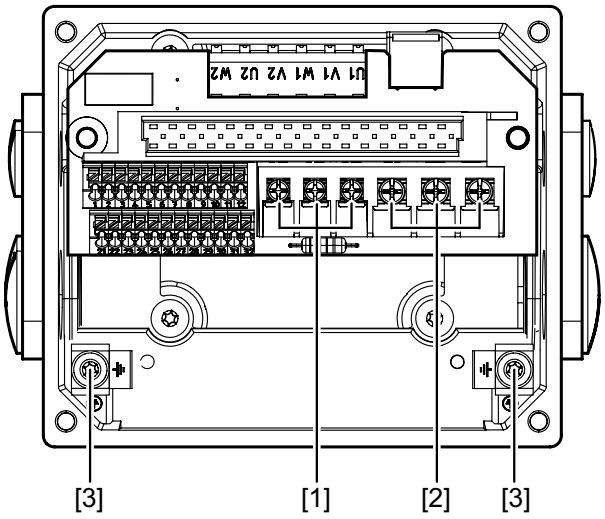
Tighten the retaining screws of the connection box on the mounting plate to 3.3 Nm.



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4.6.6 Tightening torques for terminals

Use the following tightening torques for terminals during installation:



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[1] 0.8 – 1.5 Nm
[2] 1.2 – 1.6 Nm
[3] 2.0 – 2.4 Nm

27792439/EN – 07/2022

5 Electrical installation

5.1 Installation notes

Observe the following information on electrical installation:

- Observe the general safety notes.
- Comply with all instructions referring to the technical data and the permissible conditions where the unit is operated.
- Use suitable screw fittings for the cables (use reducing adapters if necessary). With connector plug variants, you must use a suitable mating connector.
- Seal open cable entries with screw plugs.
- Use protective caps to seal plug connectors not in use.

5.2 Installation instructions

5.2.1 Connecting power supply cables

- Nominal voltage and frequency of the MOVIMOT® inverter must match the data of the supply system.
- Install safety features F11/F12/F13 for line fuses at the beginning of the power supply cable behind the supply bus junction, see chapter "Connecting MOVIMOT® drive".

  The following safety features are permitted for F11/F12/F13:

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

  Dimension the fuses according to the cable cross section.
- SEW-EURODRIVE recommends using insulation monitors with pulse code measurement in voltage supply systems with a non-grounded star point (IT systems). Using such devices prevents false tripping of the insulation monitor due to the earth capacitance of the inverter.
- Size the cable cross section according to the input current I_{grid} for rated power (see operating instructions, "Technical data" chapter).
- For ensuring the isolation and the effectiveness of preventive measures, you have to perform the checks of the valid and applicable standards (e.g. EN 60204-1 or EN 61800-5) after any wiring work for installation, conversion, repair, etc.
- When using a regenerative power supply in the system, SEW-EURODRIVE recommends a line choke in the supply line of the MOVIMOT® drive unit.

27792439/EN – 07/2022

5.2.2 Permitted cable cross section of the MOVIMOT® terminals

Power terminals

Observe the permitted cable cross sections for installation:

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

Control terminals

Observe the permitted cable cross sections for installation:

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

27792439/EN – 07/2022

5.2.3 Residual current device



⚠ WARNING

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

Severe or fatal injuries.

- The product can cause direct current in the PE conductor. If a residual current device (RCD) or a residual current monitoring device (RCM) is used for protection in the event of a direct or indirect contact, only a type B RCD or RCM is permitted on the supply end of the product.

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

5.2.4 Line contactor

NOTICE

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

Damage to the MOVIMOT® inverter.

- Do not use the line contactor for jog mode, but only for switching the inverter on and off.
- Observe a minimum switch-off time of 2 s for the line contactor.

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

Recommendation when using an external 24 V supply: To avoid transient issues when switching on, there should be at least 2 seconds between activation of the 24 V supply and grid.

27792439/EN – 07/2022

5.2.5 Information on PE connection

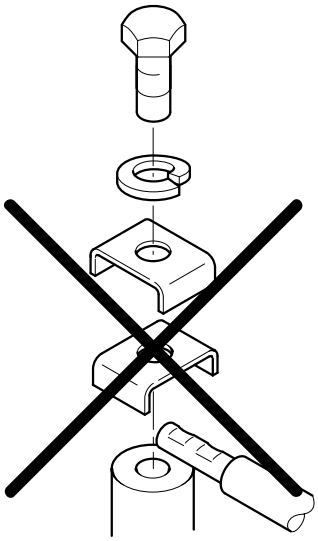
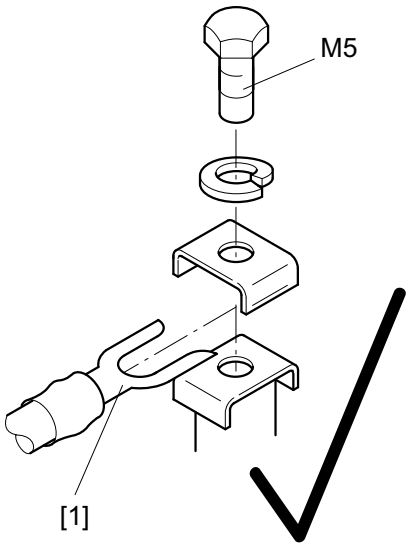
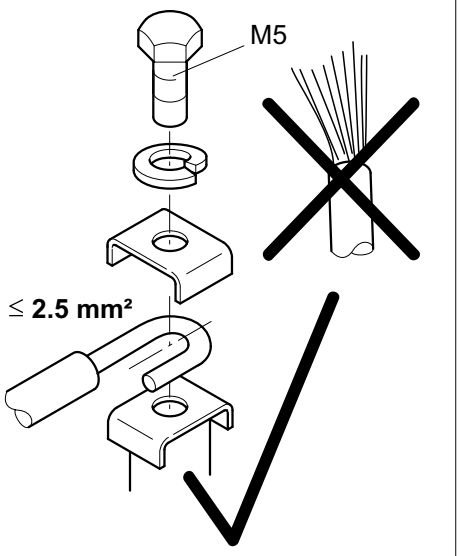


⚠ WARNING

Improperly connecting the PE can cause an electric shock.

Severe or fatal injuries.

- The permitted tightening torque for the screw is 2.0 to 2.4 Nm.
- Observe the following information regarding PE connection.

Impermissible assembly	Recommendation: Assembly with forked cable lug Permitted for all cross sections	Assembly with solid connecting wire Permitted for cross sections up to max. 2.5 mm²
		

[1] Forked cable lug suitable for M5 PE screws

Earth-leakage currents ≥ 3.5 mA can develop during normal operation. In order to fulfill EN 61800-5-1, observe the following information:

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

27792439/EN – 07/2022

5.2.6 EMC-compliant installation

INFORMATION

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

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

With respect to the EMC regulation, frequency inverters cannot be operated as standalone 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.

5.2.7 Installation above 1000 m amsl

MOVIMOT® drives with line voltages of 200 – 240 V or 380 – 500 V can also be operated at an altitude of 1000 – 3800 m above sea level. Therefore, observe the following basic conditions.

- At heights above 1000 m above sea level, the nominal continuous power is reduced due to reduced cooling: I_N reduction by 1% per 100 m.
- At altitudes of 2000 to 3800 m above sea level, you must take limiting measures which reduce the line side overvoltage from category III to category II for the entire system.

5.2.8 Connecting the 24 V supply

Power the MOVIMOT® inverter either via an external DC 24 V supply or the MLU..A or MLG..A options.

5.2.9 Binary control

Connect the required control cables

Always use shielded cables as control cables. Route the control cables separately from the power supply cables.

5.2.10 Protection devices

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

5.2.11 UL-compliant installation

Routing power terminals in the field

Note the following points for UL-compliant installation:

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

Short circuit current rating

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

27792439/EN – 07/2022

For 240 V systems:

250 V min., 25 A max., fuse

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

For 500 V systems:

500 V min., 25 A max., fuse

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

The maximum voltage is limited to 500 V.

Branch circuit protection

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

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

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

Motor overload protection

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

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

Ambient temperature

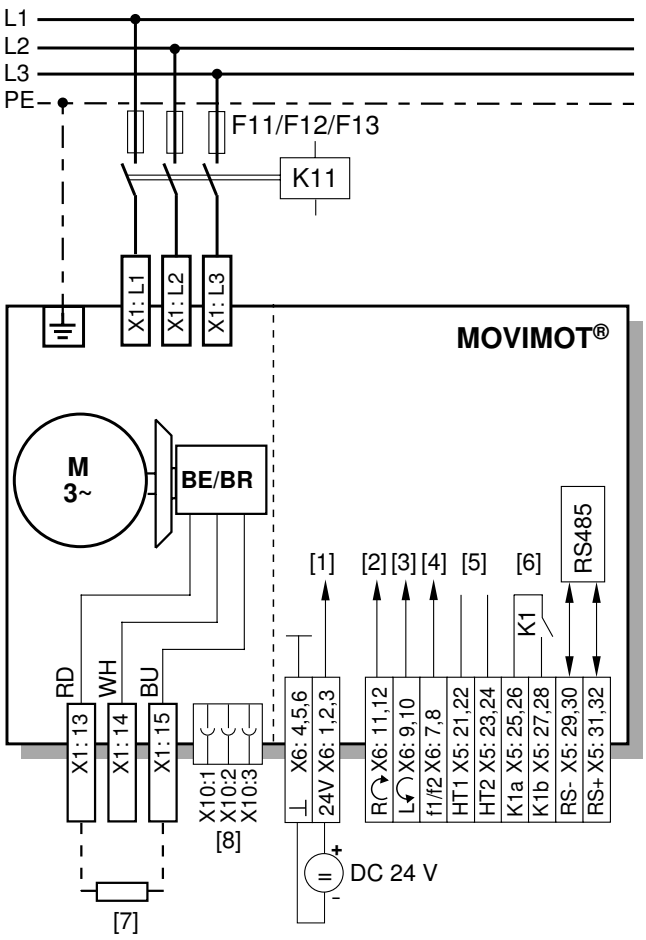
MOVIMOT® MM..D is suitable for an ambient temperature of 40°C, max. 60°C with derated output current. To determine the output current rating at higher than 40°C, the output current should be derated 3.0% per °C between 40°C and 60°C.

INFORMATION

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

27792439/EN – 07/2022

5.3 Connection of MOVIMOT® drive



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[1] DC 24 V supply
(external or MLU..A/MLG..A options)

[2] CW/stop (digital input)

[3] CCW/stop (digital input)

[4] Setpoint changeover f1 / f2 (digital input)

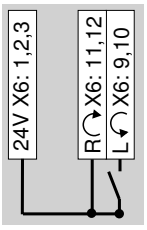
[5] HT1/HT2: Intermediate terminal for specific wiring diagrams

[6] Ready signal
(contact closed = ready for operation)

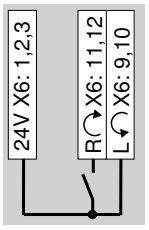
[7] BW.. braking resistor (only for MOVIMOT® drives without mechanical brake)

[8] Plug connector for connecting the BEM or BES option

Functions of the CW/stop and CCW/stop terminals in binary control mode:

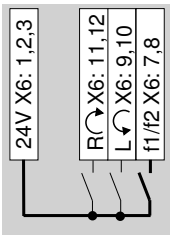


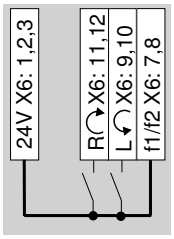
Direction of rotation **CW** active



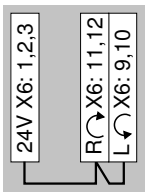
Direction of rotation **CCW** active

Functions of terminals f1/f2:

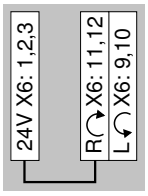




Functions of the CW/stop and CCW/stop terminals with control via RS485 interface/fieldbus:

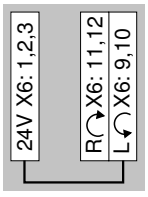


Both directions of rotation are enabled.



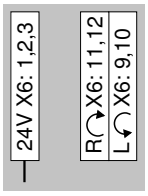
Only **CW** direction of rotation is enabled.

Setpoint specifications for CCW direction of rotation cause the drive to stop.



Only **CCW** direction of rotation is enabled.

Setpoint specifications for CW direction of rotation cause the drive to stop.



Drive is blocked or brought to a stop.

5.4 Connection between MOVIMOT® and motor when mounted close to the motor

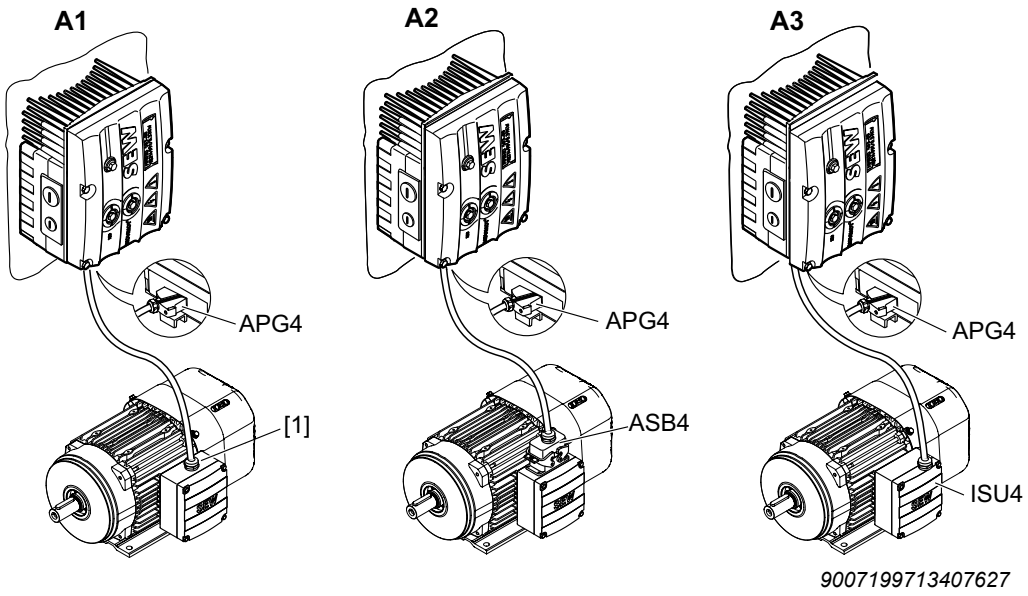
If the MOVIMOT® inverter is mounted close to the motor, the connection to the motor is realized with a pre-fabricated hybrid cable.

Only use hybrid cables from SEW-EURODRIVE for the connection between the MOVIMOT® inverter and the motor.

5.4.1 MOVIMOT® with APG4 plug connector

The APG4 design results in the following connection options to the motor, depending upon the hybrid cable used:

Design	A1	A2	A3
MOVIMOT®	APG4	APG4	APG4
Motor	Cable gland/ terminals	ASB4	ISU4
Hybrid cable	01867423	05930766	08163251 △ for DR.63 0816326X △ for DR.71 – DR.132 05932785 ⅄ for DR.63 05937558 ⅄ for DR.71 – DR.132



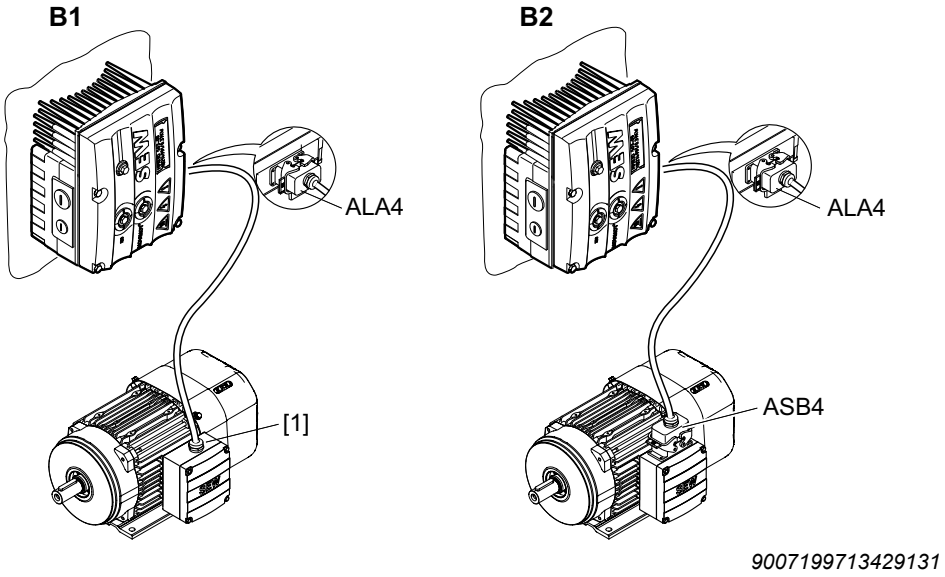
[1] Connection via terminals

27792439/EN – 07/2022

5.4.2 MOVIMOT® with ALA4 plug connector

The ALA4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

Design	B1	B2
MOVIMOT®	ALA4	ALA4
Motor	Cable gland/terminals	ASB4
Hybrid cable	08179484	08162085



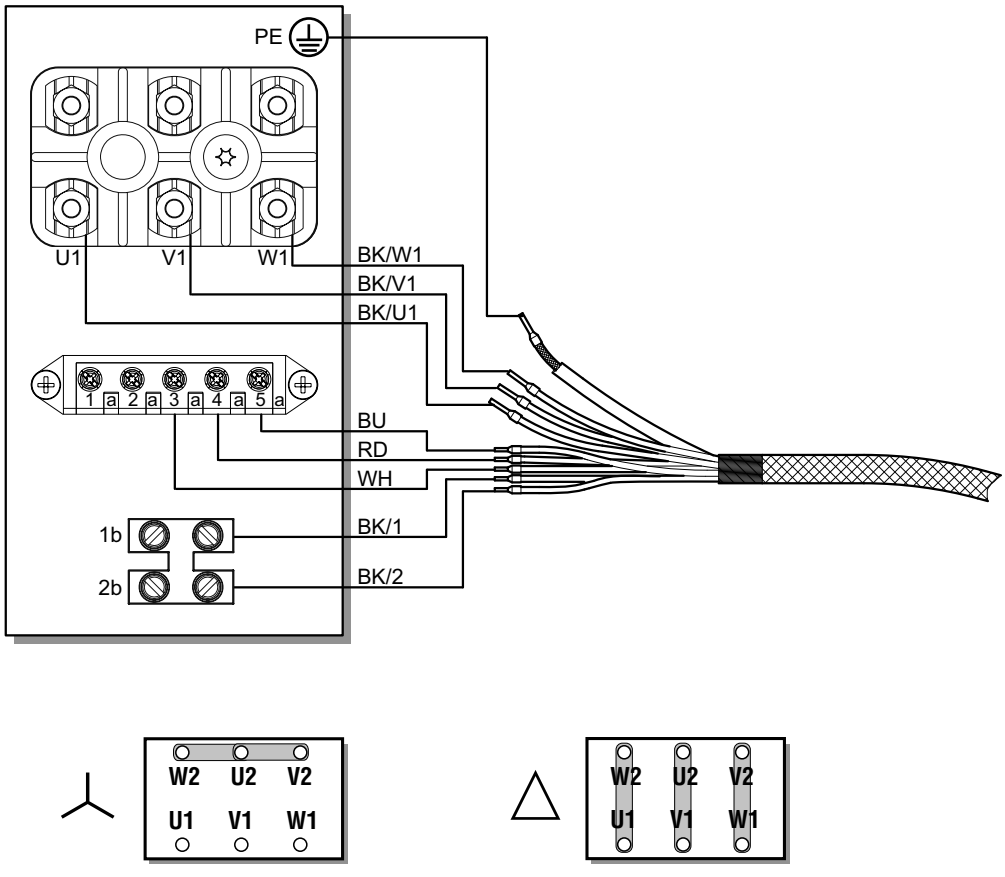
[1] Connection via terminals

5.4.3 Hybrid cable connection

The following table shows the conductor assignment of the hybrid cables with part numbers 01867423 and 08179484 and the corresponding motor terminals of the DR.. motor:

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

The following figure shows how to connect the hybrid cable to the terminal box of the DR.. motor.



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INFORMATION

Do not install an external brake rectifier with brakemotors

With brakemotors, the MOVIMOT® inverter controls the brake directly

27792439/EN – 07/2022

5.5 PC/laptop connection

MOVIMOT® drives are equipped with an X50 diagnostic interface (RJ10 plug connector) for startup, parameterization and service.

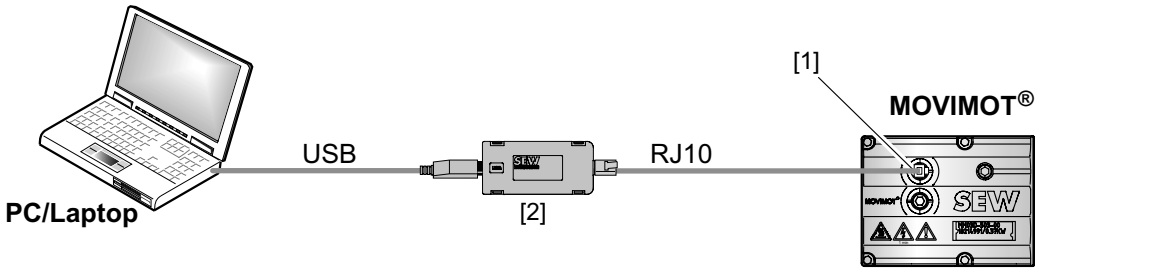
The diagnostic interface [1] is located underneath the screw plug on top of the MOVIMOT® inverter.

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

⚠ **CAUTION!** The ensured degree of protection will be lost if the screw plug of the diagnostic interface X50 is not installed. Damage to the MOVIMOT® drive.
If a screw plug is not screwed into the diagnostic interface, you must ensure that no moisture or dust can penetrate the MOVIMOT® drive.

⚠ **WARNING!** Risk of burns due to hot surfaces of the MOVIMOT® drive (especially the heat sink). Severe injuries.
Wait for the MOVIMOT® drive to cool down sufficiently before touching it.

The diagnostic interface is connected to a commercially available PC/laptop with one of the following interface adapters [2] with a USB interface



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[1] Diagnostic interface
[2] Interface adapter

Scope of delivery:

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

The following interface adapters are available:

Designation	Part number
USM21A	28231449
USB11A	08248311

6 Easy startup

6.1 General information concerning startup

INFORMATION

You must comply with the general safety notes in chapter "Safety notes" during start-up.

⚠ WARNING



Risk of crushing due to missing or defective protective covers.

Severe or fatal injuries.

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

⚠ WARNING



Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

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

⚠ WARNING



Device malfunction due to incorrect device setting.

Severe or fatal injuries.

- Comply with the startup instructions.
- The installation must be carried out by qualified personnel only.
- Always use the appropriate functional settings.

⚠ WARNING



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

Serious injuries.

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

INFORMATION

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

INFORMATION

- Remove status LED paint protection cap before startup. Remove paint protection film from the nameplates before startup.
- Observe a minimum switch-off time of 2 seconds for the K11 line contactor.

27792439/EN – 07/2022

6.2 Requirements

The following conditions apply to the startup:

- The MOVIMOT® drive 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.

6.3 Description of the control elements

6.3.1 Setpoint potentiometer f1

NOTICE

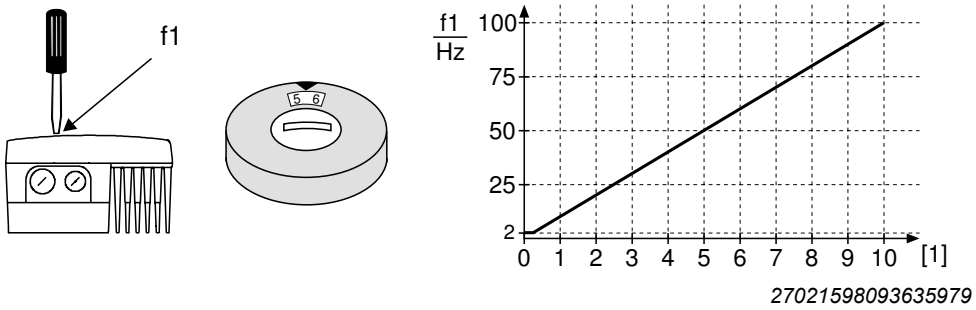
Loss of guaranteed degree of protection if the screw plugs on the f1 setpoint potentiometer and diagnostic interface are not installed or not installed correctly.

Damage to the MOVIMOT® inverter can occur.

- After setting the setpoint, make sure the screw plug of the setpoint potentiometer has a seal and screw it in.

The potentiometer f1 has different functions depending on the operating mode:

- Binary control: Setting setpoint f1
  (f1 selected via terminal f1/f2 X6:7,8 = "0")
- Control via RS485: Setting maximum frequency f_{max}



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[1] Potentiometer setting

6.3.2 Switch f2

The switch f2 has different functions depending on the operating mode:

- Binary control: Setting setpoint f2
  (f2 is selected via terminal f1/f2 X6:7,8 = "1")
- Control via RS485: Minimum frequency setting f_{min}



Switch f2											
Detent setting	**0**	1	2	3	4	5	6	7	8	9	10
Setpoint f2 Hz	**5**	7	10	15	20	25	35	50	60	70	100

27792439/EN – 07/2022

Switch f2											
Minimum frequency Hz	**2**	5	7	10	12	15	20	25	30	35	40

6.3.3 Switch t1

Use switch t1 to set the acceleration of the MOVIMOT® drive. The ramp time is based on a setpoint step change of 1500 min^{-1} (50 Hz).



Switch t1											
Detent setting	0	1	2	3	4	**5**	6	7	8	9	10
Ramp time t1 s	0.1	0.2	0.3	0.5	0.7	**1**	2	3	5	7	10

27792439/EN – 07/2022

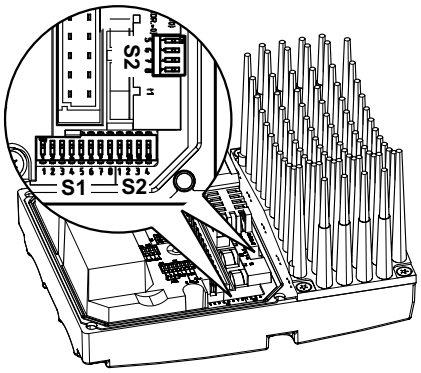
6.3.4 DIP switches S1 and S2

NOTICE

Damage to the DIP switches caused by unsuitable tools.

Damage to the DIP switches.

- To set the DIP switches, use only suitable tools, such as a slotted screwdriver with a blade width of no more than 3 mm.
- The force used for setting the DIP switches must not exceed 5 N.



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DIP switch S1:

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

DIP switch S2:

S2	1	2	3	4	5	6	7	8
Meaning	**Brake type**	**Brake released without enable**	**Operating mode**	**Speed monitoring**	**Binary encoding additional functions**			
					2^0	2^1	2^2	2^3
ON	Optional brake	On	V/f	On	1	1	1	1
OFF	**Standard brake**	**Off**	**VFC**	**Off**	**0**	**0**	**0**	**0**

27792439/EN – 07/2022

6.4 Description of the DIP switches S1

6.4.1 DIP switches S1/1 – S1/4

Selecting the RS485 address of the MOVIMOT® drive via binary coding

Decimal address	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
S1/1	–	X	–	X	–	X	–	X	–	X	–	X	–	X	–	X
S1/2	–	–	X	X	–	–	X	X	–	–	X	X	–	–	X	X
S1/3	–	–	–	–	X	X	X	X	–	–	–	–	X	X	X	X
S1/4	–	–	–	–	–	–	–	–	X	X	X	X	X	X	X	X

X = ON – = OFF

Set the following addresses depending on how the MOVIMOT® inverter is controlled:

Control	RS485 address
Binary control	0
Via keypad (MLG..A, MBG..A)	1
Via fieldbus interface (MF..)	1
Via MOVIFIT® MC (MTM..)	1
Via fieldbus interface with integrated minicontroller (MQ..)	1 – 15
Via RS485 master	1 – 15
Via MWF11A setpoint converter	1 – 15

6.4.2 DIP switch S1/5

Motor protection switched on / switched off

When the MOVIMOT® inverter is installed (close to) the motor, the motor protection must be deactivated.

To ensure motor protection, a TH (bimetallic thermostat) must be installed. The TH opens the sensor circuit when the nominal response temperature is reached (see field distributor manual).

27792439/EN – 07/2022

6.4.3 DIP switch S1/6

Lower motor power rating

- When activated, the DIP switch S1/6 allows the MOVIMOT® inverter to be assigned to a motor with a lower motor power rating. The rated unit power is not affected.
- When using a motor with a lower power rating, the MOVIMOT® inverter is a power level higher from the motor's perspective. The overload capacity of the drive may be increased as a result. A higher current can be provided briefly, leading to higher torque ratings.
- The aim of the DIP switch S1/6 is to achieve short-term utilization of the motor's peak torque. The unit's current limit remains the same regardless of the switch setting. The motor protection function is adjusted depending on the switch setting.
- Stall protection for the motor is not possible in this operating mode (S1/6 = "ON").
- The necessary setting for the DIP switch S1/6 depends on the motor type and therefore also on the drive ID module in the MOVIMOT® inverter.

  First, check the drive ID module type in the MOVIMOT® inverter. Set the DIP switch S1/6 according to the following table.

Motor with operating point 400 V/50 Hz

Applies to MOVIMOT® with the following drive ID modules:

Drive ID module			Motor	
Identification	Identification color	Part number	Line voltage V	Line frequency Hz
DR2S/400/50	Light gray/white striped	28249720	230/400	50
DRS/400/50	White	18214371	230/400	50
DRE/400/50	Orange	18214398	230/400	50
DRP/230/400	Brown	18217907	230/400	50
DRN/400/50	Light blue	28222040	230/400	50

Setting of DIP switch S1/6:

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
0.25	DR**2S**63M4/.. DR63L4/.. DR**E**80S4/.. DR**N**71MS4	–	MM**03**D..	MM**03**D..	MM**05**D..
0.37	DR**2S**71MS4/.. DR**S**71S4/.. DR**E**80S4/.. DR**N**71M4	MM**03**D..	MM**05**D..	MM**05**D..	MM**07**D..
0.55	DR**2S**71M4/.. DR**S**71M4/.. DR**E**80M4/.. DR**N**80MK4	MM**05**D..	MM**07**D..	MM**07**D..	MM**11**D..
0.75	DR**2S**80MK4/.. DR**S**80S4/.. DR**E**80M4/.. DR**P**90M4/.. DR**N**80M4/..	MM**07**D..	MM**11**D..	MM**11**D..	MM**15**D..
1.1	DR**2S**80M4/.. DR**S**80M4/.. DR**E**90M4/.. DR**P**90L4/.. DR**N**90S4/..	MM**11**D..	MM**15**D..	MM**15**D..	MM**22**D..

27792439/EN – 07/2022

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
1.5	DR**2S**90S4/.. DR**S**90M4/.. DR**E**90L4/.. DR**P**100M4/.. DR**N**90L4/..	MM**15**D..	MM**22**D..	MM**22**D..	MM**30**D..
2.2	DR**2S**90L4/.. DR**S**90L4/.. DR**E**100M4/.. DR**P**100L4/.. DR**N**100LS4/..	MM**22**D..	MM**30**D..	MM**30**D..	MM**40**D..
3.0	DR**2S**100LS4/.. DR**S**100M4/.. DR**E**100LC4/.. DR**P**112M4/.. DR**N**100L4/..	MM**30**D..	MM**40**D..	MM**40**D..	–
4.0	DR**2S**100L4/.. DR**S**100LC4/.. DR**E**132S4/.. DR**N**112M4/..	MM**40**D..	–	–	–

Motor with operating point 460 V/60 Hz

Applies to MOVIMOT® with the following drive ID modules:

Drive ID module			Motor	
Identification	Identification color	Part number	Line voltage V	Line frequency Hz
DR2S/460/60	Yellow/white striped	28249739	266/460	60
DRS/460/60	Yellow	18214401	266/460	60
DRE/460/60	Green	18214428	266/460	60
DRP/266/460	Beige	18217915	266/460	60
DRN/460/60	Blue/white striped	28241819	266/460	60

Setting of DIP switch S1/6:

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
0.25	DR**2S**63M4/.. DR**N**71MS4/..	–	MM**03**D..	MM**03**D..	MM**05**D..
0.37	DR**2S**71MS4/.. DR**S**71S4/.. DR**N**71M4/..	MM**03**D..	MM**05**D..	MM**05**D..	MM**07**D..
0.55	DR**2S**71M4/.. DR**S**71M4/.. DR**N**80MK4/..	MM**05**D..	MM**07**D..	MM**07**D..	MM**11**D..
0.75	DR**2S**80MK4/.. DR**S**80S4/.. DR**E**80M4/.. DR**P**90M4/.. DRN80M4/..	MM**07**D..	MM**11**D..	MM**11**D..	MM**15**D..
1.1	DR**2S**80M4/.. DR**S**80M4/.. DR**E**90M4/.. DR**P**90L4/.. DR**N**90S4/..	MM**11**D..	MM**15**D..	MM**15**D..	MM**22**D..
1.5	DR**2S**90S4/.. DR**S**90M4/.. DR**E**90L4/.. DR**P**90L4/.. DR**N**90L4/..	MM**15**D..	MM**22**D..	MM**22**D..	MM**30**D..

27792439/EN – 07/2022

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
2.2	DR**2S**90L4/.. DR**S**90L4/.. DR**E**100L4/.. DR**P**112M4/.. DR**N**100L4/..	MM**22**D..	MM**30**D..	MM**30**D..	MM**40**D..
3.7	DR**2S**100LS4/.. DR**S**100M4/.. DR**E**100LC4/.. DR**P**132S4/.. DR**N**100L4/..	MM**30**D..	MM**40**D..	–	–
4.0	DR**2S**100L4/.. DR**S**100LC4/.. DR**E**132S4/.. DR**N**112M4/..	MM**40**D..	–	–	–

27792439/EN – 07/2022

Motor with 50/60 Hz voltage range

Applies to MOVIMOT® with the following drive ID modules:

Drive ID module			Motor	
Identification	Identification color	Part number	Line voltage V	Line frequency Hz
DRS/DRE/50/60	Violet	18214444	220 – 240/ 380 – 415	50
			254 – 277/ 440 – 480	60
DRS/DRN/50/60	Pastel green	28241827	220 – 230/ 380 – 400	50
			266/460	60
DRN/50/60	Purple/white striped	28249747	220 – 230/ 380 – 400	50
			266/460	60

Setting of DIP switch S1/6:

Power rating kW	Motor type	MOVIMOT® MM..D-503-00 inverter			
		Motor in ⅄ connection		Motor in △ connection	
		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
0.25	DR63L4/.. DR**N**71MS4/..	–	MM**03**D..	MM**03**D..	MM**05**D..
0.37	DR**S**71S4/.. DR**N**71M4/..	MM**03**D..	MM**05**D..	MM**05**D..	MM**07**D..
0.55	DR**S**71M4/.. DR**N**80MK4/..	MM**05**D..	MM**07**D..	MM**07**D..	MM**11**D..
0.75	DR**E**80M4/.. DR**N**80M4/..	MM**07**D..	MM**11**D..	MM**11**D..	MM**15**D..
1.1	DR**E**90M4/.. DR**N**90S4/..	MM**11**D..	MM**15**D..	MM**15**D..	MM**22**D..
1.5	DR**E**90L4/.. DR**N**90L4/..	MM**15**D..	MM**22**D..	MM**22**D..	MM**30**D..
2.2	DR**E**100L4/.. DR**N**100LM4/..	MM**22**D..	MM**30**D..	MM**30**D..	MM**40**D..
3.0	DR**E**100LC4/.. DR**N**100L4/..	MM**30**D..	MM**40**D..	MM**40**D..	–
4.0	DR**E**132S4/.. DR**N**112M4/..	MM**40**D..	–	–	–

27792439/EN – 07/2022

Motor with operating point 380 V/60 Hz (ABNT regulation for Brazil)

Applies to MOVIMOT® with the following drive ID modules:

Drive ID module			Motor	
Identification	Identification color	Part number	Line voltage V	Line frequency Hz
DRS/DRE/380/60	Red	18234933	220/380	60
DRN/380/60	Red/white striped	28240227	220/380	60

Setting of DIP switch S1/6:

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
0.25	DR**N**71MS4/..	–	MM**03**D..	MM**03**D..	MM**05**D..
0.37	DR**S**71S4/.. DR**N**71M4/..	MM**03**D..	MM**05**D..	MM**05**D..	MM**07**D..
0.55	DR**S**71M4/.. DR**N**80MK4/..	MM**05**D..	MM**07**D..	MM**07**D..	MM**11**D..
0.75	DR**E**80S4/.. DR**N**80M4/..	MM**07**D..	MM**11**D..	MM**11**D..	MM**15**D..
1.1	DR**E**80M4/.. DR**N**90S4/..	MM**11**D..	MM**15**D..	MM**15**D..	MM**22**D..
1.5	DR**E**90M4/.. DR**N**90L4/..	MM**15**D..	MM**22**D..	MM**22**D..	MM**30**D..
2.2	DR**E**90L4/.. DR**N**100LM4/..	MM**22**D..	MM**30**D..	MM**30**D..	MM**40**D..
3.0	DR**E**100M4/.. DR**N**100L4/..	MM**30**D..	MM**40**D..	MM**40**D..	–
4.0	DR**E**100L4/.. DR**N**100L4/..	MM**40**D..	–	–	–

Motor with operating point 400 V/50 Hz and LSPM technology

Applies to MOVIMOT® with the following drive ID module:

Drive ID module			Motor	
Identification	Identification color	Part number	Line voltage V	Line frequency Hz
DRU...J/400/50	Gray	28203194	230/400	50

Setting of DIP switch S1/6:

Power rating	Motor type	MOVIMOT® inverter MM..D-503-00			
		Motor in ⅄ connection		Motor in △ connection	
kW		S1/6 = OFF	S1/6 = ON	S1/6 = OFF	S1/6 = ON
0.25	DR**U**71SJ/..	–	MM**03**D..	MM**03**D..	MM**05**D..
0.37	DR**U**71MJ4/..	MM**03**D..	MM**05**D..	MM**05**D..	MM**07**D..
0.55	DR**U**80SJ4/..	MM**05**D..	MM**07**D..	MM**07**D..	MM**11**D..
0.75	DR**U**80MJ4/..	MM**07**D..	MM**11**D..	MM**11**D..	MM**15**D..
1.1	DR**U**90MJ4/..	MM**11**D..	MM**15**D..	MM**15**D..	MM**22**D..
1.5	DR**U**90LJ4/..	MM**15**D..	MM**22**D..	MM**22**D..	MM**30**D..
2.2	DR**U**100MJ4/..	MM**22**D..	MM**30**D..	MM**30**D..	MM**40**D..
3.0	DR**U**100LJ4/..	MM**30**D..	MM**40**D..	MM**40**D..	–

27792439/EN – 07/2022

6.4.4 DIP switch S1/7

Setting the maximum PWM frequency

- When DIP switch S1/7 is set to "OFF", the MOVIMOT® works with the PWM frequency of 4 kHz.
- When DIP switch S1/7 is set to "ON", the MOVIMOT® works with the PWM frequency of 16 kHz (low-noise). MOVIMOT® incrementally switches back to lower clock frequencies depending on the heat sink temperature and the load on the inverter.

6.4.5 DIP switch S1/8

No-load vibration damping

When setting DIP switch S1/8 to "ON", this function reduces resonance vibrations when in no-load operation.

27792439/EN – 07/2022

6.5 Description of the DIP switches S2

6.5.1 DIP switch S2/1

Brake type

- When using the standard brake, the DIP switch S2/1 must be set to "OFF".
- When using the optional brake, the DIP switch S2/1 must be set to "ON".

Motor				Standard brake [type]	Optional brake [type]
400 V/50 Hz 460 V/60 Hz 50/60 Hz voltage range		380 V/60 Hz ABNT Brazil	400 V/50 Hz LSPM Technology	S2/1 = OFF	S2/1 = ON
DR63L4				BR03	–
DR2S63M4				BE03	BE03
	DRN71MS4	DRN71MS4		BE03	BE05
DRS71S4 DRE80S4	DR2S71MS4 DRN71M4 DRN71MK4	DRS71S4 DRN71M4	DRE71SJ4 DRU71SJ4 DRU71MJ4	BE05	BE1
DRS71M4 DRS80S4 DRE80M4	DR2S71M4 DR2S80MK4 DRN80MK4 DRN80M4	DRS71M4 DRE80S4 DRN80MK4 DRN80M4	DRE71MJ4 DRU80SJ4	BE1	BE05
DRP90M4			DRU80MJ4	BE1	BE2
DRS80M4 DRE90M4 DRP90L4	DR2S80M4 DRN90S4	DRE80M4 DRN90S4	DRE80SJ4 DRU90MJ4	BE2	BE1
DRS90M4 DRE90L4	DR2S90S4 DRN90L4	DRE90M4 DRN90L4	DRE80MJ4	BE2	BE1
DRP100M4			DRU90LJ4	BE2	BE5
DRS90L4 DRE100M4 DRE100L4 DRP100L4	DR2S90L4 DRN100LS4	DRE90L4	DRE90MJ4 DRE90LJ4 DRU100MJ4	BE5	BE2
DRS100M4 DRS100L4 DRS100LC4 DRE100LC4	DR2S100LS4 DR2S100L4 DRN100L4 DRN100LM4	DRE100M4 DRE100L4 DRN100L4 DRN100LM4	DRE100MJ4 DRU100LJ4	BE5	BE2
DRP112M4 DRE132S4 DRP112S4	DRN112M4			BE5	BE11

Preferred brake voltage

MOVIMOT® type (inverter)		Preferred brake voltage
MOVIMOT® MM..D-503, size 1	(MM03.. – MM15..)	230 V
MOVIMOT® MM..D-503, size 2	(MM22.. – MM40..)	120 V
MOVIMOT® MM..D-233, sizes 1 and 2	(MM03.. – MM22..)	

27792439/EN – 07/2022

6.5.2 DIP switch S2/2

Brake release without enable

When setting DIP switch S2/2 to "ON", it is possible to release the brake even if there is no drive enabled.

Binary control functions

In binary control, you are able to release the brake by setting the signal at terminal f1/f2 X6:7,8 subject to the following preconditions:

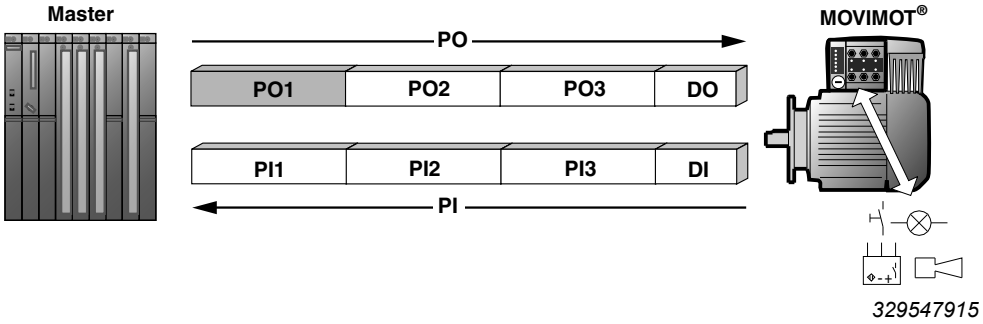
Terminal status			Enable status	Error status	Brake function
R ↷ X6:11,12	L ↶ X6:9,10	f1/f2 X6:7,8			
"1" "0"	"0" "1"	"0"	Unit enabled	No unit error	The MOVIMOT® inverter controls the brake. Setpoint f1
"1" "0"	"0" "1"	"1"	Unit enabled	No unit error	The MOVIMOT® inverter controls the brake. Setpoint f2
"1" "0"	"1" "0"	"0"	Unit not enabled	No unit error	Brake is applied.
"1"	"1"	"1"	Unit not enabled	No unit error	Brake is applied.
"0"	"0"	**"1"**	**Unit not enabled**	**No unit error**	**Brake is released for manual movement.**[1)]
All states possible			Unit not enabled	Unit errors	Brake is applied.

1) In Expert mode the parameter P600 (terminal configuration) must be set to "0" (default) => "setpoint changeover, CCW/stop, CW/stop".

27792439/EN – 07/2022

Functions with control via RS485

With control via RS485, the brake is released via the control word:



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

By setting bit 8 in the control word, the brake can be released if the following conditions are met:

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

Control word

Not assigned[1)]	**Bit "9"**	**Bit "8"**	Not assigned [1)]	"1" = Reset	Not assigned [1)]	"1 1 0" = Enable, otherwise stop

Virtual terminals for releasing the brake without drive enable

Virtual terminal for applying brake and inhibiting output stage "Stop" control command

1) Recommendation for all bits that are not assigned = "0"

Enable status	Error status	Status of bit 8 in control word	Brake function
Unit enabled	No unit error/ no communication timeout	"0"	The MOVIMOT® inverter controls the brake.
Unit enabled	No unit error/ no communication timeout	"1"	The MOVIMOT® inverter controls the brake.
Unit not enabled	No unit error/ no communication timeout	"0"	Brake is applied.
Unit not enabled	**No unit error/ no communication timeout**	**"1"**	**Brake is released for manual movement.**
Unit not enabled	Unit error/ communication timeout	"1" or "0"	Brake is applied.

27792439/EN – 07/2022

Setpoint selection for binary control

Setpoint selection for binary control depending on the status of terminal f1/f2 X6: 7,8:

Enable status	Terminal f1/f2 X6:7,8	Active setpoint
Unit enabled	Terminal f1/f2 X6:7,8 = "0"	Setpoint potentiometer f1 active
Unit enabled	Terminal f1/f2 X6:7,8 = "1"	Setpoint potentiometer f2 active

Behavior if unit not ready

If the unit is not ready, the brake is always applied irrespective of the status of terminal f1/f2 X6:7,8 or bit 8 in the control word.

LED display

The status LED flashes periodically at a fast rate (t_{on} : t_{off} = 100 ms : 300 ms) if the brake has been released for manual movement. This applies both for binary control and for control via RS485.

6.5.3 DIP switch S2/3

Operating mode

- DIP switch S2/3 = "OFF": VFC operation for 4-pole motors
- DIP switch S2/3 = "ON": V/f operation reserved for special cases

6.5.4 DIP switch S2/4

Speed monitoring

Speed monitoring (S2/4 = "ON") protects the drive when it is blocked.

If the drive is operated at the current limit for longer than 1 second when speed monitoring is active (S2/4 = "ON"), the MOVIMOT® inverter trips the speed monitoring fault. The status LED of the MOVIMOT® inverter signals the error by slowly flashing red (error code 08). This error only occurs when the current limit has been reached for the duration of the deceleration time.

6.5.5 DIP switches S2/5 – S2/8

Additional functions

The binary coding of the DIP switches S2/5 – S2/8 allows for the activation of additional functions. For a description of the additional functions, refer to the operating instructions. Proceed as follows to activate possible additional functions:

Decimal value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
S2/5	–	X	–	X	–	X	–	X	–	X	–	X	–	X	–	X
S2/6	–	–	X	X	–	–	X	X	–	–	X	X	–	–	X	X
S2/7	–	–	–	–	X	X	X	X	–	–	–	–	X	X	X	X
S2/8	–	–	–	–	–	–	–	–	X	X	X	X	X	X	X	X

X = ON – = OFF

27792439/EN – 07/2022

6.6 Startup with binary control

⚠ WARNING



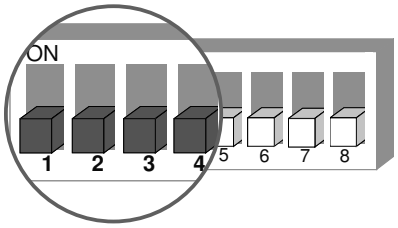
Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

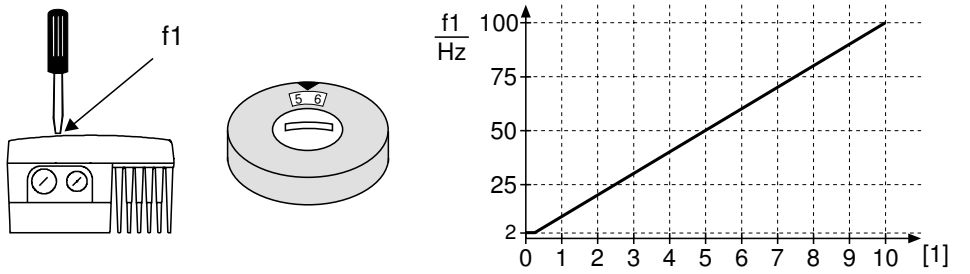
- Disconnect the inverter from the power. Observe the minimum switch-off time after disconnection from the supply system:
  - **1 minute**

1. Remove the MOVIMOT® inverter from the connection box.
2. Check whether the MOVIMOT® drive is installed correctly both mechanically and electrically.

   Refer to chapters "Mechanical installation" and "Electrical installation".
3. Make sure that the DIP switches S1/1 – S1/4 are set to "OFF" (address = 0). This means MOVIMOT® is controlled binary via terminals.



4. Set the first speed at the setpoint potentiometer f1 (active when terminals f1/f2 X6:7,8 = "0") factory setting: about 50 Hz (1500 rpm).



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[1] Potentiometer setting

5. **NOTICE!**
   Loss of warranted degree of protection if the screw plugs of the f1 setpoint potentiometer or the X50 diagnostic interface are installed incorrectly or not at all.

   Damage to the MOVIMOT® inverter.
   - Make sure the screw plug of the setpoint potentiometer has a seal and screw it in.
6. Set the second speed at switch f2 (active when terminals f1/f2 X6,7,8 = "1").



Switch f2											
Detent position	0	1	2	3	4	5	6	7	8	9	10
Setpoint f2 [Hz]	5	7	10	15	20	25	35	50	60	70	100

27792439/EN – 07/2022

INFORMATION

The first speed is infinitely variable during operation using the setpoint potentiometer f1, which is accessible from the outside.

Speeds f1 and f2 can be set independently of each other.

7. Set the ramp time at the switch t1.

   The ramp time is based on a setpoint step change of 1500 rpm (50 Hz).



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

8. Place the MOVIMOT® inverter onto the connection box and screw it on tightly.
9. Switch on the DC 24 V control voltage and the line voltage.

6.6.1 Inverter behavior depending on terminal signal level

The following table shows the behavior of the MOVIMOT® inverter depending on the level at the control terminals:

Inverter behavior	Terminal signal level					Status LED
	Supply system	24 V	f1/f2	CW/Stop	CCW/ Stop	
	X1:L1 – L3	X6:1,2,3	X6:7,8	X6:11,12	X6:9,10	
Inverter off	0	0	X	X	X	Off
Inverter off	1	0	X	X	X	Off
Stop, no supply system	0	1	X	X	X	Flashing yellow
Stop	1	1	X	0	0	Yellow
CW rotation with f1	1	1	0	1	0	Green
CCW rotation with f1	1	1	0	0	1	Green
CW rotation with f2	1	1	1	1	0	Green
CCW rotation with f2	1	1	1	0	1	Green
Stop	1	1	x	1	1	Yellow

Key:

0 = No voltage

1 = Voltage

X = Any

27792439/EN – 07/2022

6.7 Supplementary notes for installation close to the motor

When the MOVIMOT® inverter is installed close to the motor, observe the following notes:

6.7.1 Checking the connection type for the connected motor

Make sure that the selected connection type of MOVIMOT® inverter corresponds to that of the connected motor according to the figure below.



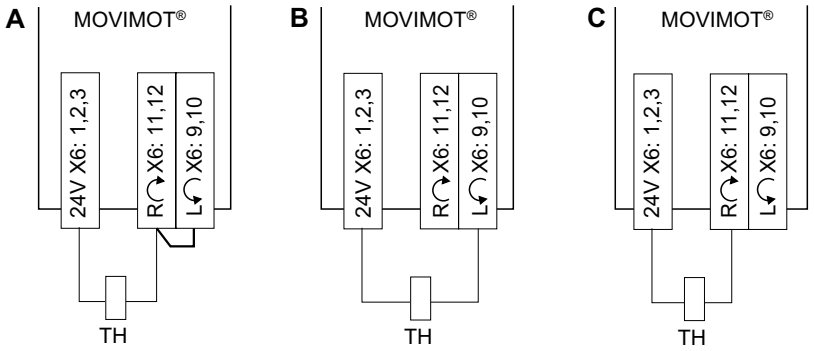
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For brakemotors: Do not install brake rectifiers inside the terminal box of the motor!

6.7.2 Motor protection and direction of rotation enable

The connected motor must be equipped with a TH.

- For control via RS485, the TH must be wired as follows:



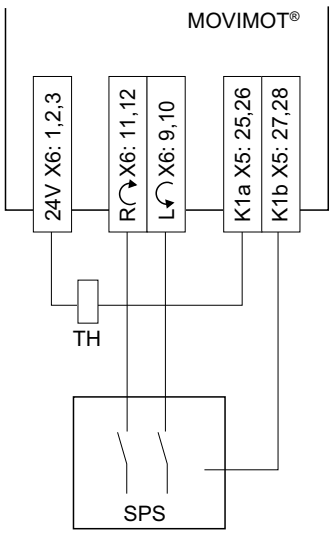
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[A] Both directions of rotation are enabled.
[B] Only **CCW** direction of rotation is enabled.
[C] Only **CW** direction of rotation is enabled.

- For control via binary signals, SEW-EURODRIVE recommends that you connect the TH in series with the "Ready signal" relay (see the following figure).
  - The ready signal must be monitored by an external controller.

27792439/EN – 07/2022

– As soon as the ready signal is no longer present, the drive must be switched off (terminals R ↷ X6:11,12 and L ↶ X6:9,10 = "0").



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6.7.3 DIP switch

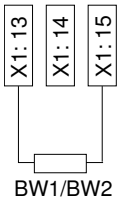
When the MOVIMOT® inverter is installed close to the motor, the DIP switch S1/5 must be changed from the factory setting to "ON":

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

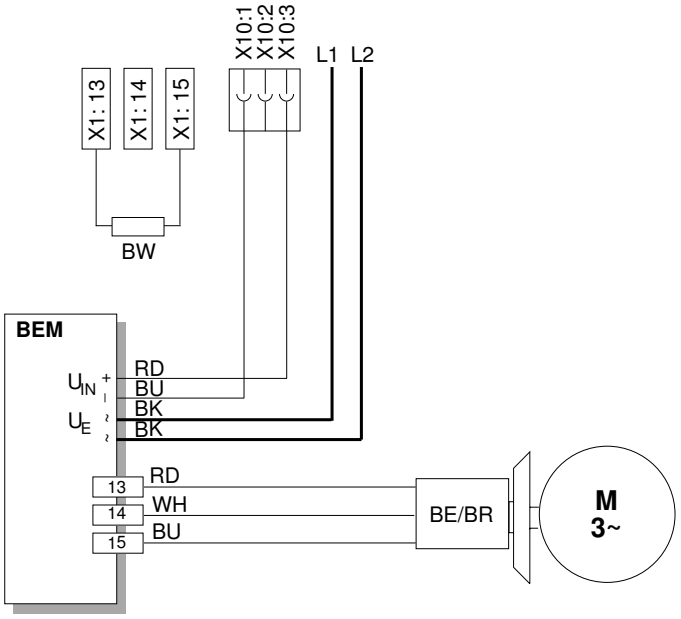
27792439/EN – 07/2022

6.7.4 Braking resistor

- For **motors without brake**, a braking resistor must be connected in the MOVIMOT® connection box.



- For **brakemotors without BEM option**, no braking resistor may be connected to the MOVIMOT®.
- For **brakemotors with BEM option** and external braking resistor, the external braking resistor and the brake must be connected as follows:



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6.7.5 Mounting the MOVIMOT® inverter in the field distributor

Follow the instructions in the corresponding fieldbus manuals when mounting the MOVIMOT® inverter close to the motor in the field distributor.

27792439/EN – 07/2022

7 Easy startup with RS485 interface/fieldbus

7.1 General information concerning startup

INFORMATION

You must comply with the general safety notes in chapter "Safety notes" during start-up.

⚠ WARNING



Risk of crushing due to missing or defective protective covers.

Severe or fatal injuries.

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

⚠ WARNING



Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

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

⚠ WARNING



Device malfunction due to incorrect device setting.

Severe or fatal injuries.

- Comply with the startup instructions.
- The installation must be carried out by qualified personnel only.
- Always use the appropriate functional settings.

⚠ WARNING



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

Serious injuries.

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

INFORMATION

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

INFORMATION

- Remove status LED paint protection cap before startup. Remove paint protection film from the nameplates before startup.
- Observe a minimum switch-off time of 2 seconds for the K11 line contactor.

27792439/EN – 07/2022

7.2 Requirements

The following conditions apply to the startup:

- The MOVIMOT® drive 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.

7.3 Startup procedure

⚠ WARNING



Electric shock caused by dangerous voltages in the connection box. Dangerous voltages may still be present for up to 1 minute after disconnection from the power supply.

Severe or fatal injuries.

- De-energize the unit using a suitable disconnection device.
- Protect it against unintentional reconnection to the voltage supply.
- Wait for at least 1 minute before disassembling the device.

1. Remove the MOVIMOT® inverter from the connection box.
2. Check whether the MOVIMOT® drive is installed correctly both mechanically and electrically. See chapters "Mechanical installation" and "Electrical installation".
3. Set the correct RS485 address on DIP switches S1/1 – S1/4.

   In conjunction with SEW fieldbus interfaces (MF../MQ..) or with MOVIFIT®, always set address "1".

Decimal address	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
S1/1	–	X	–	X	–	X	–	X	–	X	–	X	–	X	–	X
S1/2	–	–	X	X	–	–	X	X	–	–	X	X	–	–	X	X
S1/3	–	–	–	–	X	X	X	X	–	–	–	–	X	X	X	X
S1/4	–	–	–	–	–	–	–	–	X	X	X	X	X	X	X	X

X = ON – = OFF

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



Switch f2											
Detent setting	0	1	2	3	4	5	6	7	8	9	10
Minimum frequency f_{min} Hz	2	5	7	10	12	15	20	25	30	35	40

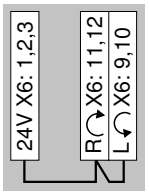
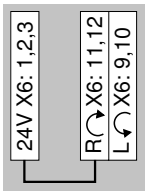
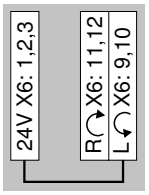
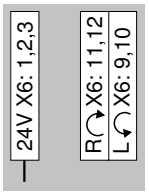
27792439/EN – 07/2022

5. If the ramp time is not specified via the fieldbus, set the ramp time at switch t1.
   The ramp time is based on a setpoint step change of 1500 min^{-1} (50 Hz).



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

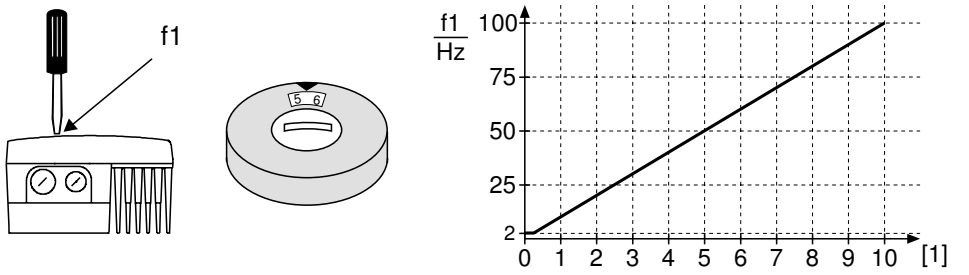
6. Check to see if the requested direction of rotation has been enabled.

CW/stop	CCW/stop	Meaning
Activated	Activated	• Both directions of rotation are enabled.
		
Activated	Not activated	• Only CW rotation is enabled. • Setpoint inputs for CCW rotation will stop the drive.
		
Not activated	Activated	• Only CCW rotation is enabled. • Setpoint inputs for CW rotation will stop the drive.
		
Not activated	Not activated	• The device is inhibited or the drive is stopped.
		

7. Place the MOVIMOT® inverter on the connecton box and screw it tight.

27792439/EN – 07/2022

8. Set the required maximum speed using setpoint potentiometer f1.



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[1] Potentiometer setting

9. **NOTICE!**
   Loss of warranted degree of protection if the screw plugs of the f1 setpoint potentiometer or the X50 diagnostic interface are installed incorrectly or not at all.

   Damage to the MOVIMOT® inverter can occur.

   - Make sure the screw plug of the setpoint potentiometer has a seal and screw it in again.

10. Switch on the DC 24 V control voltage and the line voltage.

For information on the function in conjunction with RS485 master, refer to chapter "Function with RS-485 master" in the operating instructions.

For further information on the function in connection with fieldbus interfaces, refer to the relevant fieldbus manuals.

27792439/EN – 07/2022

8 Service

8.1 Status and error display

8.1.1 Meaning of the status LED

The status LED is located on the top of the MOVIMOT® inverter.

The 3-color status LED indicates the operating and error states of the MOVIMOT® inverter.

LED Color Status	Meaning Operating state Error code	Possible cause
Off	Not ready	No 24 V power supply.
Yellow Flashing steadily	Not ready	Self-test phase active or 24 V power supply present but line voltage is not OK.
Yellow Flashing steadily fast	Ready for operation	Releasing the brake without drive enable active (only with S2/2 = "ON").
Yellow steady light	Ready but unit inhibited	24 V power supply and line voltage is OK, but no enable signal. If the drive does not run when enable signal is present, check startup!
Yellow 2x flashing, pause	Ready for operation, but manual mode without unit enable	24 V power supply and line voltage OK. Stop manual mode to activate automatic mode.
	Ready for operation, Prioritized fixed setpoint control	Terminals R ↷ and L ↶ are supplied with 24 V. To activate RS485 operation, remove the bridges installed in the factory. See chapter "Electrical installation".
Yellow/green Flashing with alternating colors	Ready, but timeout	Communication is interrupted during cyclical data exchange.
Green steady light	Device enabled	Motor is in operation.
Green Flashing steadily fast	Current limit active	Drive operating at current limit.
Green Flashing steadily	Ready for operation	Standstill current function active.
Green 2x flashing, pause	Device enabled	MOVIMOT® drive is operating. Prioritized fixed setpoint control is active. See chapter "Parameter description" > "Parameter 600".

27792439/EN – 07/2022

LED Color Status	Meaning Operating state Error code	Possible cause
Green/Red/Green Flashing with alternating colors, pause	Localization function active	Localization function was activated. See parameter 590.
Red 2x flashing, pause	Fault 07	DC link voltage too high.
Red Flashing slowly	Fault 08	Speed monitoring error (only when S2/4 = "ON") or additional function 13 is active.
	Fault 09	Startup fault Additional functions 4, 5, 12 (DIP switches S2/5 – S2/8) are not permitted.
		Firmware does not support MLK..A option (only for MOVIMOT® with AS-Interface).
	Fault 15	24 V supply error
	Faults 17 – 24, 37	CPU error
	Faults 25, 94	EEPROM error
	Faults 38, 45	Unit/motor data error
	Fault 44	The current limit was exceeded for more than 500 ms. (only with additional function 2)
	Fault 90	Incorrect motor/inverter assignment.
	Fault 97	Error while transmitting a parameter set
Red 3x flashing, pause	Fault 01	Overcurrent in output stage
	Fault 11	Overtemperature in output stage
Red 4x flashing, pause	Fault 84	Motor overload
Red 5x flashing, pause	Fault 4	Brake chopper fault
	Fault 89	Brake overtemperature Incorrect motor – frequency inverter assignment. At terminals X1:13– X1:15, both brake and braking resistor are connected. This is not permitted.
Red 6x flashing, pause	Fault 06	Line phase failure
	Fault 81	Start condition
	Fault 82	Output phases are interrupted.
Red steady light	Not ready	Check 24 V supply. A smoothed DC voltage with a maximum residual ripple of 13% must be present.

Status LED flash codes

Flashing steadily:	LED 600 ms on, 600 ms off
Flashing steadily, fast:	LED 100 ms on, 300 ms off

27792439/EN – 07/2022

Flashing with alternating colors:	LED 600 ms green, 600 ms yellow
Flashing with alternating colors, pause:	LED 100 ms green, 100 ms red, 100 ms green, 300 ms pause
N x flashing, pause:	LED N x (600 ms red, 300 ms off), then LED off for 1 s

27792439/EN – 07/2022

8.2 Error list

The following table helps you with troubleshooting:

Code	Error	Possible cause	Measure
–	**Communication timeout** (motor stops, without error code)	Missing connection ⊥, RS +, RS- between MOVIMOT® and RS485 master	Check and establish the connection, especially ground.
		EMC influence	Check the shielding of signal cables and improve, if necessary.
		Incorrect type (cyclical) for acyclical data traffic, the protocol period between the individual messages is longer than the set timeout interval.	Check the number of MOVIMOT® drives connected to the master. If the timeout interval is 1 s, for example, you can connect a maximum of 8 MOVIMOT® drives as slaves for cyclical communication. Reduce message cycle, increase timeout interval, or select message type "acyclic".
–	**Supply voltage not present** (motor stops, without error code)	DC link voltage too low, Power off has been detected.	Check supply system cables and line voltage for interruption.
–	**24 V supply not present** (motor stops, without error code)	24 V supply voltage not present.	Check 24 V supply voltage for interruption. Check 24 V supply voltage. Permitted voltage: DC 24 V ± 25%, EN 61131-2, residual ripple max. 13% Motor restarts automatically as soon as the voltage reaches normal values.
		AUX power supply voltage not available. (only for MOVIMOT® with AS-Interface)	Check AUX power supply voltage for interruption. Check AUX power supply voltage. Permitted voltage: DC 24 V ± 25%, EN 61131-2, residual ripple max. 13% Motor restarts automatically as soon as the voltage reaches normal values.
01	**Overcurrent in output stage**	Short circuit on inverter output	Check the connection between the inverter output and the motor as well as the motor winding for short circuits. Reset the error.[1)]
04	**Brake chopper**	Overcurrent in brake output, resistor damaged, resistance too low	Check the connection of the resistor/replace it.
		Short circuit in brake coil	Replace brake.
06	**Phase failure** (The error can only be detected when the drive is under load)	Phase failure	Check the supply system cable for phase failure. Reset the fault[1)].

27792439/EN – 07/2022

Code	Error	Possible cause	Measure
07	**DC link voltage too high**	Ramp time too short.	Extend the ramp time. Reset the fault[1)].
		Faulty connection between brake coil/braking resistor	Check the braking resistor/brake coil connection. Correct, if necessary. Reset the fault[1)].
		Incorrect internal resistance of brake coil/braking resistor	Check internal resistance of brake coil/braking resistor (see operating instructions, chapter "Technical data"). Reset the fault[1)].
		Thermal overload in braking resistor, wrong size of braking resistor selected	Dimension the braking resistor correctly. Reset the fault[1)].
		Invalid voltage range of supply input voltage	Check supply input voltage for permitted voltage range. Reset the fault[1)].
08	**Speed monitoring**	Speed deviation due to operation at the current limit	Reduce the load on the drive. Reset the fault[1)].
09	**Startup**	Improper drive ID module for MOVIMOT® with 230 V supply	For MOVIMOT® with 230 V supply, not all drive ID modules are permitted (see operating instructions, chapter "Assignment of the drive ID module"). Check/correct the drive ID module.
		The additional functions 4, 5, 12 are not permitted for MOVIMOT® MM..D with AS-Interface.	Correct the settings of DIP switches S2/5 – S2/8.
		Firmware does not support MLK..A option (only for MOVIMOT® with AS-Interface).	Contact SEW-EURODRIVE Service.
11	**Thermal overload of the output stage or internal unit error**	Heat sink is dirty.	Clean the heat sink. Reset the fault[1)].
		Ambient temperature too high.	Lower the ambient temperature. Reset the fault[1)].
		Heat build-up at MOVIMOT® drive.	Prevent heat build-up. Reset the fault[1)].
		Drive load too high.	Reduce the load on the drive. Reset the fault[1)].
15	**24 V monitoring**	Voltage dip in the 24 V supply	Check the 24 V supply. Reset the fault[1)].

27792439/EN – 07/2022

Code	Error	Possible cause	Measure
17 - 24 37	**CPU error**	CPU error	Reset the fault[1)]. Contact SEW-EURODRIVE Service if the error re-occurs.
25	**EEPROM error**	Error while accessing EEPROM	Set parameter *P802* to "Delivery state". Reset the fault[1)]. Re-parameterize MOVIMOT® inverter. Contact SEW-EURODRIVE Service if the error re-occurs.
26	**External terminal**	External signal at terminal X6: 9,10 **not** present.	Correct/reset external error.
38	**System software error**	Internal fault	Contact SEW-EURODRIVE Service.
43	**Communication timeout**	Communication timeout during cyclical communication via RS485. If this error occurs, the drive is decelerated and stopped along the set ramp.	Check/re-establish the communication link between the RS485 master and the MOVIMOT® inverter. **NOTICE!** The drive is enabled again after communication has been re-established.
			Check the number of slaves connected to the RS485 master. If the timeout interval of the MOVIMOT® inverter is set to 1 s, you can connect a maximum of 8 MOVIMOT® inverters (slaves) to the RS485 master for cyclical communication.
		Internal communication error (at MOVIMOT® MM..D with AS-Interface)	Contact SEW-EURODRIVE Service.
44	**Current limit exceeded**	The set current limit was exceeded for more than 500 ms. This error is only active with additional function 2. The status LED flashes red.	Reduce load or increase current limit at switch f2 (only with additional function 2).
81	**Start condition error**	The motor could not be supplied with the correct amount of current during the premagnetization time. Rated motor power too small in relation to rated inverter power.	Check connection between MOVIMOT® inverter and motor.
82	**Output open error**	2 or all output phases interrupted.	Check connection between MOVIMOT® inverter and motor.
		Rated motor power too small in relation to rated inverter power.	Check the combination of motor and MOVIMOT® inverter.

27792439/EN – 07/2022

Code	Error	Possible cause	Measure
84	**Thermal overload of motor**	When the MOVIMOT® inverter is installed close to the motor, motor protection active.	Set DIP switch S1/5 to "ON". Reset the fault[1].
		The performance level is set incorrectly for the combination of MOVIMOT® inverter and motor.	Check the setting of DIP switch S1/6. Reset the fault[1].
		Ambient temperature too high.	Lower the ambient temperature. Reset the fault[1].
		Heat build-up at MOVIMOT® drive.	Prevent heat build-up. Reset the fault[1].
		Motor load too high.	Reduce the load on the motor. Reset the fault[1].
		Speed too low.	Increase speed. Reset the fault[1].
		If the error is signaled just after the first enable signal.	Check the combination of motor and MOVIMOT® inverter. Reset the fault[1].
		The temperature monitoring in the motor (TH winding thermostat) has tripped when using a MOVIMOT® inverter with the selected additional function 5.	Reduce the load on the motor. Reset the fault[1].
89	**Brake overtemperature**	Thermal overload of brake coil	Extend the ramp time. Reset the fault[1].
		Brake coil is defective.	Contact SEW-EURODRIVE Service.
		Brake coil and braking resistor connected.	Connect either brake or braking resistor to drive.
		Brake coil incorrectly connected	See chapters "Connection of MOVIMOT® drive" (→ 🗎 29) and "Connecting without plug connector"
		Inverter does not match the motor. (only if error occurs after first enable)	Check the combination of motor (brake coil) and MOVIMOT® inverter. Check/correct the settings of DIP switches S1/6 and S2/1. Reset the fault[1].

27792439/EN – 07/2022

Code	Error	Possible cause	Measure
90	**Output stage detection**	The inverter/motor combination is not permitted.	Check/correct the settings of DIP switches S1/6 and S2/1.
			Check/correct the connection type of the motor.
			Check whether the drive ID module fits the motor and is plugged in correctly.
			Use a MOVIMOT® inverter or motor with another power rating.
91	**Communication timeout bus module – MOVIMOT®**	Timeout between the fieldbus interface and the MOVIMOT® inverter.	Check/re-establish the communication link between the fieldbus interface and the MOVIMOT® inverter. The fieldbus interface reports the error only to the higher-level controller.
94	**EEPROM checksum error**	Defective EEPROM.	Contact SEW-EURODRIVE Service.
97	**Copy error**	DBG keypad or PC/laptop disconnected during the copy process.	Before acknowledging the error, load the factory setting or the complete data set from the DBG keypad or the MOVITOOLS® MotionStudio software.
		Switching the 24 V voltage supply off and on during the copying process.	Before acknowledging the error, load the factory setting or the complete data set from the DBG keypad or the MOVITOOLS® MotionStudio software.

1) In the case of standard MOVIMOT® units, reset the fault by switching off the 24 V supply voltage or by performing a fault reset. In the case of MOVIMOT® units with AS-Interface, reset the fault via the AS-Interface signals or by performing a fault reset via the diagnostics socket.

8.3 Unit replacement

⚠ WARNING



Electric shock from capacitors that have not been fully discharged.

Severe or fatal injuries.

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

1. Remove the screws and take off the MOVIMOT® inverter from the connection box.
2. Compare the data on the nameplate of the previous MOVIMOT® inverter with the data on the nameplate of the new MOVIMOT® inverter.

INFORMATION



The MOVIMOT® inverter must only be replaced with a MOVIMOT® inverter with the same part number.

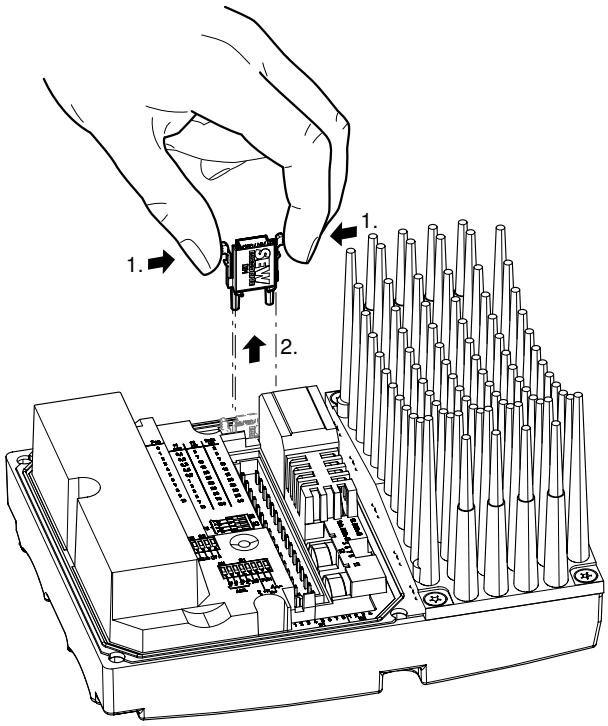
3. Set all control elements
   - DIP switch S1

27792439/EN – 07/2022

- DIP switch S2
- Setpoint potentiometer f1
- Switch f2
- Switch t1

on the new MOVIMOT® inverter analogously to the control elements of the previous MOVIMOT® inverter.

4. Unlock the drive ID module of the new MOVIMOT® inverter and pull it out carefully.



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5. Unlock the drive ID module of the previous MOVIMOT® inverter as well and pull it out carefully.

   Insert this drive ID module into the new MOVIMOT® inverter.

   Make sure that the drive ID module locks in place.

6. Place the new MOVIMOT® inverter onto the connection box and screw it on.
7. Supply voltage to the MOVIMOT® inverter.

INFORMATION

When switching on the new inverter the first time after a unit replacement, the 24 V supply must be connected for at least 10 seconds without interruptions.

After the unit replacement, it can take up to 6 s before the MOVIMOT® inverter signals the ready signal.

8. Check whether the new MOVIMOT® inverter is functioning properly.

27792439/EN – 07/2022

8.4 Waste disposal

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately.

- Oil and grease

  Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.
- Screens
- Capacitors

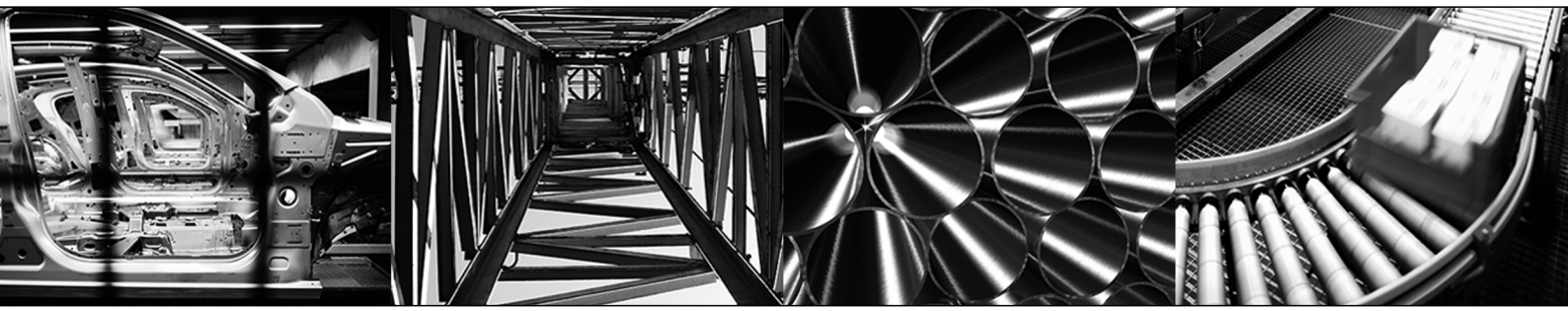
Waste disposal according to WEEE Directive 2012/19/EU

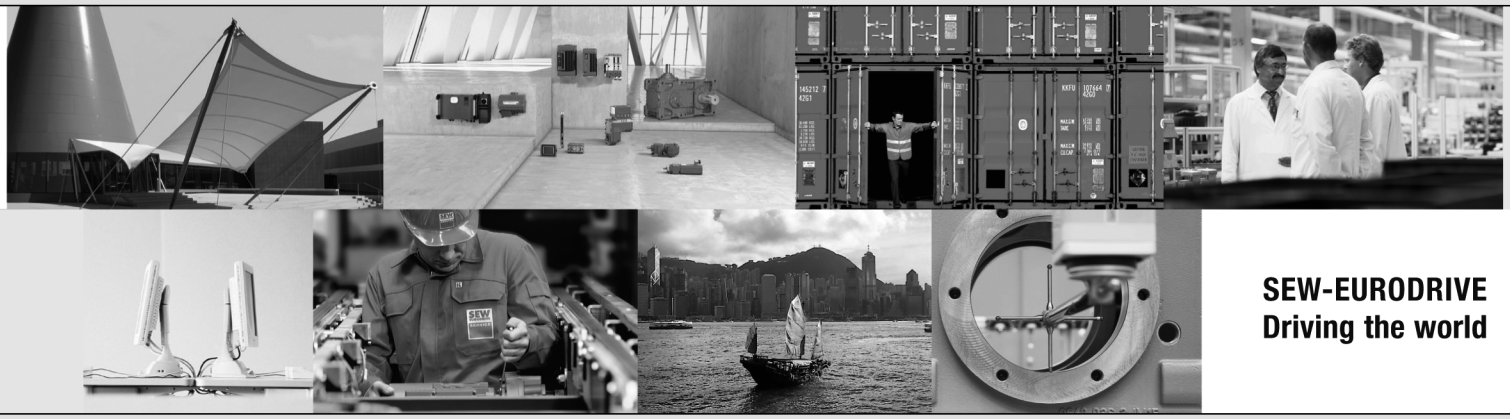


This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.

27792439/EN – 07/2022





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Driving the world

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