



**SEW**  
**EURODRIVE**

# Operating Instructions



**MOVITRAC<sup>®</sup> LTE-B**





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# 1 General information

## 1.1 How to use this documentation

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

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

## 1.2 Structure of the safety notes

### 1.2.1 Meaning of signal words

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

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

### 1.2.2 Structure of the section safety notes

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

This is the formal structure of a section safety note:



#### **▲ SIGNAL WORD**

Type and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the danger.

### 1.2.3 Structure of the embedded safety notes

Embedded safety notes are directly integrated in 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 danger.  
Possible consequence(s) if disregarded.  
– Measure(s) to prevent the danger.



### **1.3    *Rights to claim under warranty***

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

### **1.4    *Exclusion of liability***

You must comply with the information contained in this documentation to ensure safe operation and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

### **1.5    *Copyright***

© 2012 – SEW-EURODRIVE. All rights reserved.

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

### **1.6    *Product names and trademarks***

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



## 2 Safety Notes

### 2.1 Preliminary information

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

The following safety notes are primarily concerned with the use of MOVIPRO® units. If you use other SEW components, also refer to the safety notes for the respective components in the corresponding documentation.

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

### 2.2 General information



#### **⚠ WARNING**

Depending on its enclosure, the unit may have live, uninsulated as well as moving or rotating parts and hot surfaces during operation.

Severe or fatal injuries.

- All work related to transport, putting into storage, setting up/mounting, connection, startup, maintenance and repair may only be performed by trained personnel observing
  - The relevant detailed documentation
  - The warning and safety signs on the unit
  - All other relevant project planning documents, operating instructions and wiring diagrams
  - The specific regulations and requirements for the system, and
  - The national/regional regulations governing safety and the prevention of accidents
- Never install damaged products.
- Submit a complaint to the shipping company immediately in the event of damage.

Removing covers without authorization, improper use or incorrect installation and operation may result in severe injuries to persons or damage to machinery.

Refer to the following chapters for more information.

### 2.3 Target group

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

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with this documentation.



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

- Training in electrical engineering, e.g. as an electrician or mechatronics technician (final examinations must have been passed).
- They are familiar with this documentation.

In addition to that, they must be familiar with the relevant safety regulations and laws, especially with the requirements of the performance levels according to DIN EN ISO 13849-1 and all other standards, directives and laws specified in this documentation. The above mentioned persons must have the authorization expressly issued by the company to operate, program, configure, label and ground units, systems and circuits in accordance with the standards of safety technology.

All work in further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

## 2.4 Designated use

Frequency inverters are components for controlling asynchronous AC motors. Frequency inverters are intended for installation in electrical systems or machines. Never connect capacitive loads. Operation with capacitive loads results in over voltages and may destroy the unit.

The following standards apply, if the frequency inverters are marketed in the EU/EFTA:

- In case of installation in machines, startup of the drive inverters (meaning the start of proper use) is prohibited until it is determined that the machine meets the requirements stipulated in Directive 2006/42/EC (machine directive); observe EN 60204.
- Startup (i.e. the start of designated use) is only permitted under observance of the EMC (2004/108/EC) directive.
- The frequency inverters comply with the requirements of the Low Voltage Directive 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these frequency inverters.

Observe the technical data and the connection requirements specified on the nameplate and the operating instructions.

## 2.5 Transport

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. You may need to preclude startup.

Note the following points regarding transport:

- Before transportation, cover the connections with the supplied protection caps.
- Place the unit only on the cooling fins or on a side without connectors during transportation.
- Ensure that the unit is not subject to mechanical impact during transportation.

If necessary, use suitable, sufficiently rated handling equipment. Prior to startup, remove the securing devices used for transportation.

Observe the notes on climatic conditions as stated in the "Technical Data" chapter.





## 2.6 Installation and assembly

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

Protect the unit from excessive strain. Especially during transportation and handling, do not allow the components to be deformed or insulation spaces altered. Prevent mechanical damage or destruction of electrical components.

Unless expressly intended for such use, the following applications are prohibited:

- Use in potentially explosive atmospheres,
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.,
- Use in stationary applications with mechanical vibration and impact loads exceeding the values stipulated in EN 61800-5-1

Observe the notes in the "Mechanical Installation" section.

## 2.7 Electrical connection

Observe the applicable national accident prevention regulations when working on a live drive controller.

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

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

Required preventive measures:

Type of power transmission	Protective measure
Direct power supply	<ul style="list-style-type: none"> <li>• Protective grounding</li> </ul>

## 2.8 Safe disconnection

**The unit meets all requirements for reliable isolation of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also comply with the requirements for reliable isolation so as to guarantee reliable isolation.**



## 2.9 Startup/operation



### **CAUTION**

The surfaces of the unit and any connected components, e.g. braking resistors, can reach high temperatures during operation.

Danger of burns.

- Let the unit and external options cool down before you start working on them.

Do not deactivate monitoring and protection devices even for a test run.

When in doubt, switch off the unit whenever changes occur in relation to normal mode (e.g. increased temperatures, noise, oscillation). Determine the cause of the fault and consult SEW-EURODRIVE, if necessary.

Where required, systems in which such units are installed must be equipped with additional monitoring and protection devices in accordance with the respective applicable safety regulations, e.g. the law governing technical equipment, accident prevention regulations, etc.

Additional protective measures may be necessary for applications with increased potential risk. You have to check the effectiveness of protection devices each time you change the configuration.

Connections which are not being used must be covered with the supplied protection caps during operation.

Do not touch live components or power connections immediately after disconnecting the unit from the voltage supply because some capacitors may still be charged. Adhere to a minimum switch-off time of 10 minutes. Observe the corresponding labels on the unit.

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

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

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

## 2.10 Inspection and maintenance



### **WARNING**

Danger of electric shock due to exposed, live parts in the unit.

Severe or fatal injuries.

- Never open the unit.
- Only SEW-EURODRIVE is authorized to carry out repairs.



## 3 General Specifications

### 3.1 Input voltage ranges

Depending on the model, the inverters are designed for direct connection to the following voltage sources:

- MOVITRAC® LTE-B, sizes 1, 2 (input voltage 115 V):
  - 115 V  $\pm$  10%, 1-phase, 50 – 60 Hz  $\pm$  5%
- MOVITRAC® LTE-B, sizes 1, 2 and 3s (200 – 240 V):
  - 200 V – 240 V  $\pm$  10%, 1-phase\* / 3-phase, 50 – 60 Hz  $\pm$  5%
- MOVITRAC® LTE-B, sizes 1, 2 and 3s (380 – 480 V):
  - 380 V – 480 V  $\pm$  10%, 3-phase, 50 – 60 Hz  $\pm$  5%

\* **NOTE:** Single-phase MOVITRAC® LTE-B inverters can also be connected to two phases of a three-phase power supply system of 200 – 240 V.

Products used with a three-phase voltage source are designed for a maximum phase imbalance of 3%. In the case of voltage sources with a phase imbalance of more than 3% (as it is common on the Indian subcontinent, in some parts of South-East Asia and China), SEW-EURODRIVE recommends to use input chokes.



### 3.2 Type designation

MC	LTE	1	B	0015	2	0	1	1	00	(60 Hz)		
											60 Hz	American variant only
											Type	00 = Standard IP20 housing 10 = IP55 / NEMA-12 housing without switch 20 = IP55 / NEMA-12 housing with switch 30 = IP66 / NEMA-4X housing without switch 40 = IP66 / NEMA-4X housing with switch
											Quadrants	1 = 1Q (without brake chopper) 4 = 4Q
											Connection type	1 = 1-phase 3 = 3-phase
											Interference suppression on the line side	0 = Class 0 A = Class A B = Class B
											Line voltage	1 = 115 V 2 = 200 – 240 V 5 = 380 – 480 V
											Recommended motor power	0015 = 1.5 kW
											Version	B
											Motor	1 = Only single-phase motors
											Product type	MC LTE



### 3.3 Overload capacity

All MOVITRAC® LTE-B products have the following overload capacity:

- 150% for 60 seconds
- 175% for 2 seconds

With an output frequency of  $< 10$  Hz, the overload capacity is reduced to 150% for 7.5 seconds.

For adjusting the motor overload, see parameter *P-08* in section "Standard parameters" (page 43).

### 3.4 Protection functions

- Short circuit output, phase-phase, phase-ground
- Output overcurrent
- Overload protection
  - Inverter delivers 150% of the nominal motor current for 60 seconds
- Overvoltage shutdown
  - Setting at 123% of the maximum nominal supply voltage of the inverter
- Undervoltage shutdown
- Shutdown caused by overtemperature
- Shutdown caused by undertemperature
  - The inverter is shut down when activated below  $-10$  °C
- Line phase failure
  - The running inverter is shut down when one phase of the three-phase power supply fails for longer than 15 seconds.



## 4 Installation

### 4.1 General information

- Before installation, check the inverter carefully to make sure it is not damaged.
- Store the inverter in a box until it is used. The inverter must be stored at temperatures between  $-40\text{ }^{\circ}\text{C}$  and  $+60\text{ }^{\circ}\text{C}$  and in such a way that it is clean and dry.
- Install the inverter on a level, horizontal, flameproof and vibration-proof surface in a suitable control cabinet. If a special degree of protection (IP) is required, the control cabinet must comply with EN 60529.
- Do not store or use flammable substances in the vicinity of the inverter.
- Make sure no conductive or flammable objects enter the inverter.
- The maximum ambient temperature during operation is  $50\text{ }^{\circ}\text{C}$  for IP20 inverters, and  $40\text{ }^{\circ}\text{C}$  for IP55 and IP66 inverters. The minimum ambient temperature during operation is  $-10\text{ }^{\circ}\text{C}$ .

Note the special degrees of protection in section "Information on ambient conditions" (page 52).

- The relative humidity must be below 95% (non-condensing).
- MOVITRAC<sup>®</sup> LTE-B units can be installed directly next to one another. There is still sufficient clearance for ventilation between the units.

If you install the inverter above another inverter or device that generates heat, adhere to a minimum clearance of 150 mm. The control cabinet must either be cooled through forced ventilation, or has to be big enough to dissipate the heat itself, see section "IP20 housing: Installation and control cabinet dimensions" (page 19).

- A DIN assembly kit for mounting rails is supported only for inverter sizes 1 and 2 (IP20).

### 4.2 Mechanical installation

#### 4.2.1 Housing variants and dimensions

##### *Housing variants*

MOVITRAC<sup>®</sup> LTE-B is available with three housing variants:

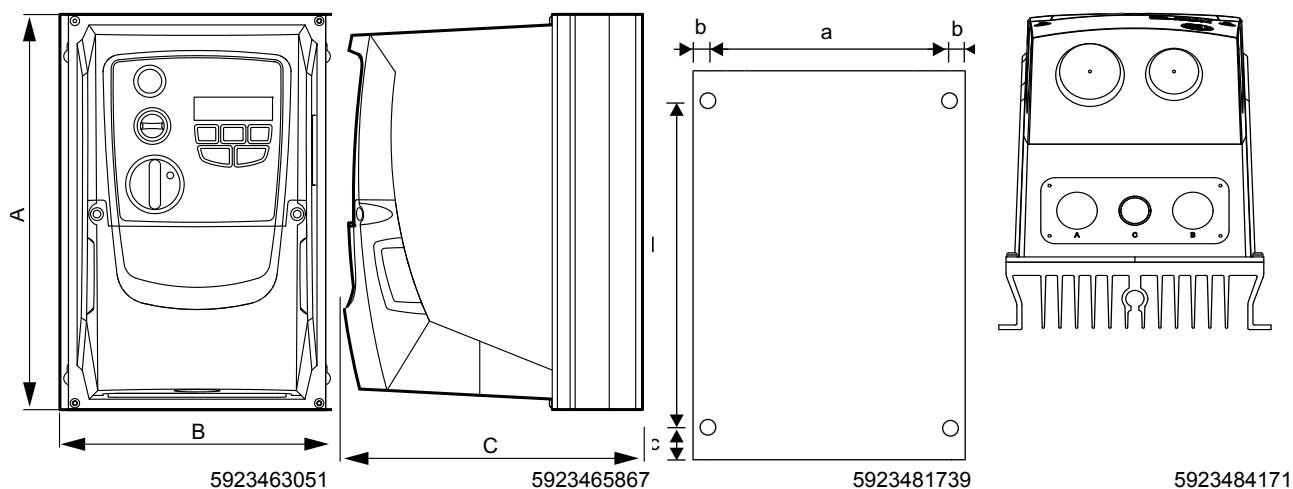
- IP66 / NEMA 4X
- IP55 / NEMA 12K
- IP20 housing for installation in control cabinets

IP55 / NEMA-12K and IP66 / NEMA-4X housings are protected against humidity and dust. This is why these inverters can be operated indoors in a dusty or damp environment. The electronics of the inverters does not differ. The only difference is in the housing dimensions and the weight.

In degrees of protection IP55 and IP66, the inverters are also available with switch options, such as main switch, direction of rotation switch, and potentiometer.



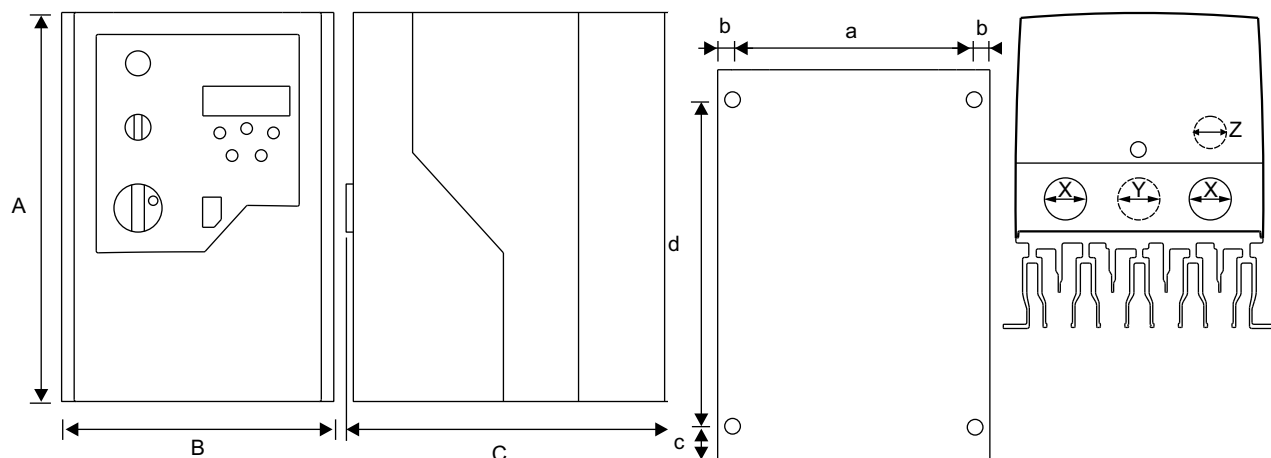
Dimensions of IP66/NEMA-4X housings (LTE xxx -30 and -40)



Dimensions		Size 1	Size 2	Size 3
Height (A)	mm	232	257	310
	in	9.13	10.12	12.20
Width (B)	mm	161	188	210.5
	in	6.34	7.4	8.29
Depth (C)	mm	179	186.5	228.7
	in	7.05	7.34	9
Weight	kg	2.8	4.6	7.4
	lb	6.2	10.1	16.3
a	mm	148.5	176	197.5
	in	5.85	6.93	7.78
b	mm	6.25	6	6.5
	in	0.25	0.24	0.26
c	mm	25	28.5	33.4
	in	0.98	1.12	1.31
d	mm	189	200	251.5
	in	7.44	7.87	9.9
Tightening torque for power terminals	Nm	1	1	1
	lb.in	8.85	8.85	8.85
Tightening torque for control terminals	Nm	0.5	0.5	0.5
	lb.in	4.43	4.43	4.43
Recommended screw size		4 × M4	4 × M4	4 × M4



### Dimensions of IP55/NEMA-12 housings (LTE xxx -10 and -20)



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6328663819

6328679051

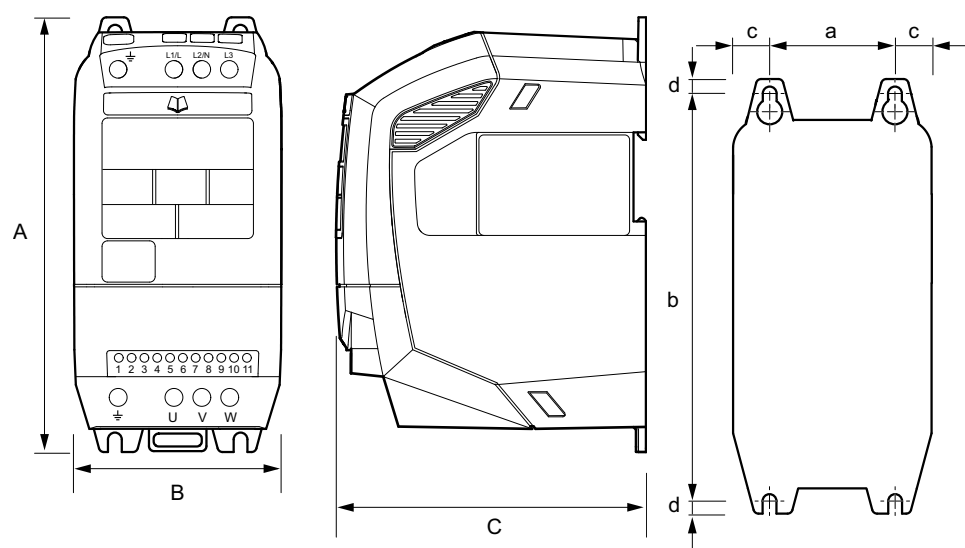
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Dimension		Size 1	Size 2	Size 3
Height (A)	mm	200	310	310
	in	7.9	12.2	12.2
Width (B)	mm	140	165	211
	in	5.5	6.5	8.31
Depth (C)	mm	165	176	240
	in	6.5	6.9	9.45
Weight	kg	2.3	4.5	7.4
	lb	5.1	9.9	12.4
a	mm	128	153	196
	in	5	6	7.72
b	mm	6	6	7
	in	0.23	0.23	0.28
c	mm	25	25	25
	in	0.98	0.98	0.98
d	mm	142	252	251
	in	5.6	9.9	9.88
Tightening torques of power terminals	Nm	1	1	1
	lb.in	8.85	8.85	8.85
Tightening torques for control terminals	Nm	0.5	0.5	0.5
	lb.in	4.43	4.43	4.43
Recommended screw size		2 × M4	4 × M4	4 × M4





# Dimensions of the IP20 housing



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5736916363

5736918027

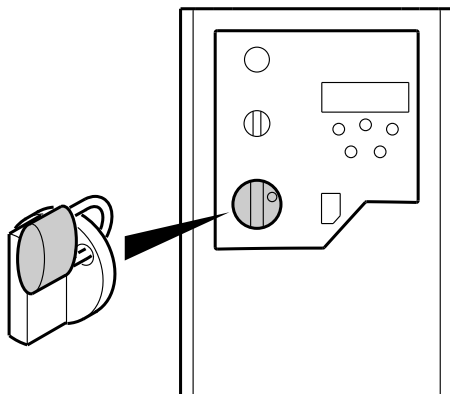
Dimensions	Unit	Size 1	Size 2	Size 3
Height (A)	mm	174	220	261
	in	6.85	8.66	10.28
Width (B)	mm	79	104	126
	in	3.11	4.10	4.96
Depth (C)	mm	122.6	150	178
	in	4.83	5.90	7.01
Weight	kg	1.1	2	4.5
	lb	2.43	4.40	10.0
a	mm	50	63	80
	in	1.97	2.48	3.15
b	mm	162	209.0	247
	in	6.38	8.23	9.72
c	mm	16	23	25.5
	in	0.63	0.91	1.02
d	mm	5	5.25	7.25
	in	0.2	0.21	0.29
Tightening torques for power terminals	Nm	1	1	1
	lb.in	8.85	8.85	8.85
Tightening torques for control terminals	Nm	0.5	0.5	0.5
	lb.in	4.43	4.43	4.43
Recommended screws		4 × M4	4 × M4	4 × M4



#### 4.2.2 Locking IP55/66 units with switching function

The main disconnect switch can be locked in "OFF" position using a standard padlock (20 mm). The padlock is not included in the delivery.

Press the middle of the switch to insert the padlock.



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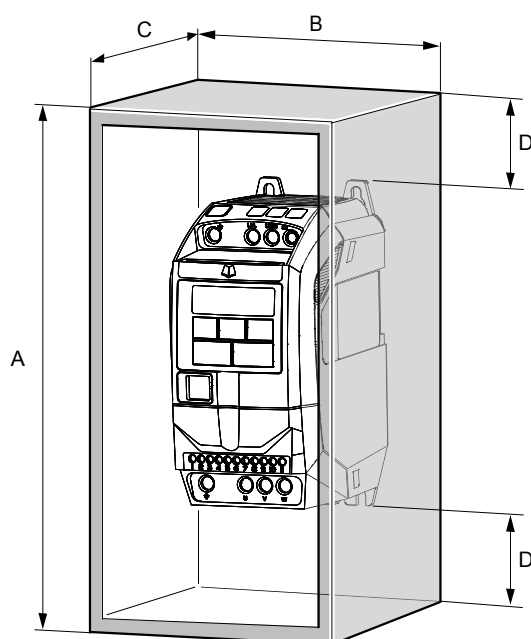
#### 4.2.3 IP20 housing: Installation and control cabinet dimensions

For applications that require a higher IP protection level than IP20, the inverter must be installed in a control cabinet. Observe the following requirements:

- The control cabinet must be made of a heat conductive material unless it has forced cooling.
- When using a control cabinet with ventilation openings, the openings must be provided above and underneath the inverter to allow for unobstructed circulation of air. The air must be supplied underneath the inverter and dissipated above it.
- If the inverter is operated in environments with particles of dirt (such as dust), ventilation openings either have to be equipped with a suitable particle filter or forced cooling has to be used. The filter has to be serviced and cleaned.
- In environments with a high level of humidity, salt or chemicals, a suitable enclosed control cabinet (without ventilation openings) must be used.

##### Dimensions of control cabinets without ventilation openings

Power rating		Sealed control cabinet							
		A		B		C		D	
		mm	to	mm	to	mm	to	mm	to
Size 1	<b>115 V:</b> 0.37 kW, 0.75 kW <b>230 V:</b> 0.37 kW, 0.75 kW	300	11.81	250	9.84	200	7.87	50	1.97
Size 1	<b>230 V:</b> 1.5 kW <b>400 V:</b> 0.75 kW, 1.5 kW	400	15.75	300	11.81	250	9.84	75	2.95
Size 2	<b>115 V:</b> 1.1 kW <b>230 V:</b> 1.5 kW <b>400 V:</b> 1.5 kW, 2.2 kW	400	15.75	300	11.81	300	11.81	60	2.36
Size 2	<b>230 V:</b> 2.2 kW <b>400 V:</b> 4.0 kW	600	23.62	450	17.72	300	11.81	100	3.94



5736945419



### Dimensions of control cabinet with ventilation openings

Power rating		Control cabinet with ventilation openings							
		A		B		C		D	
		mm	in	mm	in	mm	in	mm	in
Size 1	<b>115 V:</b> 0.37 kW, 0.75 kW <b>230 V:</b> 0.37 kW, 0.75 kW	300	11.81	250	9.84	200	7.87	50	1.97
Size 1	<b>230 V:</b> 1.5 kW <b>400 V:</b> 0.75 kW, 1.5 kW	400	15.75	300	11.81	250	9.84	75	2.95
Size 2	<b>115 V:</b> 1.1 kW <b>230 V:</b> 1.5 kW <b>400 V:</b> 1.5 kW, 2.2 kW	400	15.75	300	11.81	300	11.81	60	2.36
Size 2	<b>230 V:</b> 2.2 kW <b>400 V:</b> 4.0 kW	600	23.62	450	17.72	300	11.81	100	3.94
Size 3	All power ranges	800	31.50	600	23.62	300	11.81	150	5.91

### Dimensions of control cabinet with forced cooling

Power rating		Control cabinet with forced cooling								Air flow rate
		A		B		C		D		
		mm	in	mm	in	mm	in	mm	in	
Size 1	<b>115 V:</b> 0.37 kW, 0.75 kW <b>230 V:</b> 0.37 kW, 0.75 kW	300	11.81	200	7.87	150	5.91	50	1.97	> 15 m³/h
Size 1	<b>230 V:</b> 1.5 kW <b>400 V:</b> 0.75 kW, 1.5 kW	300	11.81	200	7.87	150	5.91	75	2.95	> 15 m³/h
Size 2	<b>115 V:</b> 1.1 kW <b>230 V:</b> 1.5 kW <b>400 V:</b> 1.5 kW, 2.2 kW	400	15.75	300	11.81	250	9.84	100	3.94	> 45 m³/h
Size 2	<b>230 V:</b> 2.2 kW <b>400 V:</b> 4.0 kW	400	15.75	300	11.81	250	9.84	100	3.94	> 45 m³/h
Size 3	All power ranges	600	23.62	400	15.75	250	9.84	150	5.91	> 80 m³/h

#### 4.2.4 Cable glands

Use suitable cable glands to achieve the corresponding IP/NEMA classification. The matching holes must be drilled for this purpose. Refer to the following table for recommended dimensions.

Dimensions		Size 1	Size 2	Size 3
X	mm	22.3	28.2	28.2
	in	0.88	1.11	1.11
	PG	PG13.5 / M20	PG16 / M22	PG16 / M22
Y <sup>1)</sup>	mm	22	22	22
	in	0.87	0.87	0.87
	PG	PG13.5 / M20	PG13.5 / M20	PG13.5 / M20
Z <sup>1)</sup>	mm	17	17	-
	in	0.67	0.67	-
	PG	PG9 / M16	PG9 / M16	-

1) Cable inlets Y and Z are pre-punched



### 4.3 Electrical installation

Adhere to the safety information in chapter 2 for installation.



#### **⚠ WARNING**

Danger of electric shock. Dangerous voltage levels can still be present inside the unit and at the terminals up to 10 minutes after disconnection from the power supply.

Severe or fatal injuries.

- Disconnect and isolate the unit from the power supply at least 10 minutes before starting work on MOVITRAC® LTE-B.

- MOVITRAC® LTE inverters must be installed by qualified electricians according to the local and national directives and regulations.
- MOVITRAC® LTE-B has IP20 degree of protection. If higher degrees of protection are required, use a suitable housing or the IP55/NEMA-12 or IP66/NEMA-4X version.
- If the inverter is supplied with power via plug and socket or coupling, then do not remove the plug until 10 minutes after having switched off power.
- Make sure the inverters are properly grounded. See wiring diagram in section "Connecting inverter and motor" (page 25).
- The grounding cable must be designed for the maximum fault current of the voltage source that is usually limited by fuses or motor protection switches.



#### **⚠ WARNING**

Danger of fatal injury caused by falling hoist.

Severe or fatal injuries.

- MOVITRAC® LTE-B inverters may not be used as a safety device in hoist applications. Use monitoring systems or mechanical protection devices to ensure safety.

#### 4.3.1 Before installation

- Make sure that supply voltage, frequency, and number of phases (single- or three-phase) correspond with the nominal values of the MOVITRAC® inverter on delivery.
- A disconnecting switch or similar disconnecting element must be installed between voltage supply and inverter.
- Never connect the power supply to the output terminals U, V or W of the MOVITRAC® LTE-B inverter.
- The cables are only protected by slow-blow high-power fuses or motor protection switch. You find more information in section "Permitted voltage supply systems" (page 23).
- Do not install automatic contactors between inverter and motor. Adhere to a minimum clearance of 100 mm at points where control cables and electric power lines are installed close to each other, and an angle of 90° for crossing cables.



## Installation

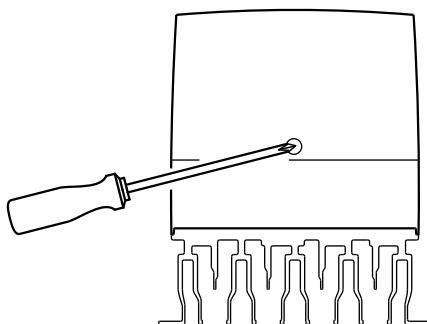
### Electrical installation

- Make sure that shieldings and sheaths of power cables are designed according to the wiring diagram in section "Connecting inverter and motor" (page 25).
- Make sure that all terminals have been tightened with the proper tightening torques.
  - Control terminals: 0.5 Nm
  - Power terminals: 1 Nm

#### Opening the front cover

##### IP55 sizes 1 and 2

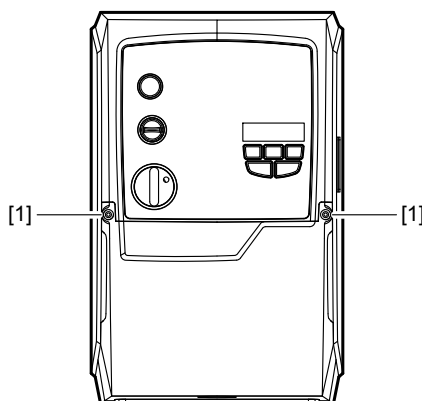
To loosen the front cover, position the screwdriver in the opening as shown in the following figure.



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##### IP55 size 3, and IP66 all sizes

Remove the two screws on the inverter's front to open the front cover.



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[1] Screws of the front cover

#### Quick reference guide

A quick reference guide is available in the IP20 housing in a separate tray above the display. In IP55/IP66 housings, the quick reference guide is attached inside the front cover.



#### 4.3.2 Installation

Connect the inverter as shown in the following wiring diagrams. Ensure proper wiring in the motor terminal box. Two basic connections are distinguished: Star connection and delta connection. It is essential that you make sure that the motor is connected with the voltage source in such a way that it is supplied with the proper operating voltage. You find more information in the figure in section "Connection in the motor terminal box" (page 24).

It is recommended that you use a 4-core PVC-insulated and shielded cable as the power cable. Route this cable according to the applicable national regulations of the industry sector as well as the rules and standards. Conductor end sleeves are required for connecting the power cables to the inverter.

The grounding terminal of each MOVITRAC® LTE-B inverter must be connected individually and **directly** to the ground busbar (mass) of the installation site (via filter, if available). Do not loop the ground connections of MOVITRAC® LTE-B inverters from one inverter to the other. Neither route the ground connections to the inverters from other inverters. The impedance of the ground circuit must comply with the local safety regulations of the industry sector. To comply with UL regulations, all ground connections must be designed with UL-listed crimping type ring cable lugs.

##### *Permitted voltage supply systems*

- **Voltage supply systems with grounded star point**

MOVITRAC® LTE-B inverters are designed for operation on TN and TT systems with directly grounded star point.

- **Voltage supply systems with non-grounded star point**

Operation on voltage supply systems with non-grounded star point (for example IT systems) is also permitted. For this purpose, SEW-EURODRIVE recommends to use an earth-leakage monitor according to the pulse-code measurement principle. Using these devices avoids the earth-leakage monitor from tripping by mistake due to the missing capacitance to ground of the inverter.

- **Outer conductor grounded voltage supply systems**

On voltage supply systems, the inverters may only be operated with a maximum phase-to-ground AC voltage of 300 V.

##### *Line contactors and line fuses*

###### *Line contactors*

Use only line contactors in utilization category AC-3 (EN 60947-4-1).

It is important that a minimum time interval of 120 seconds is adhered to between two voltage supply system activations.

###### *Line fuses*

Fuse types:

- Line protection types in operation classes gL./ gG:
  - Nominal fusing voltage  $\geq$  nominal line voltage
  - The nominal fusing current must be designed for at least 100% of the nominal inverter current depending on the inverter utilization.
- Power circuit breaker with characteristics B, C:
  - Nominal circuit breaker voltage  $\geq$  nominal line voltage
  - The nominal currents of the power circuit breakers must be 10% higher than the nominal inverter current.



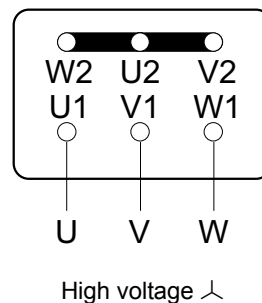
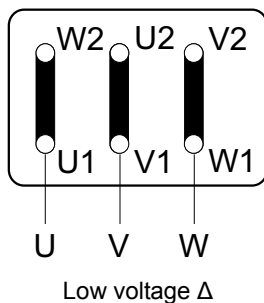
## Installation

### Electrical installation

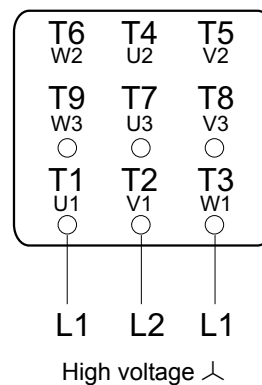
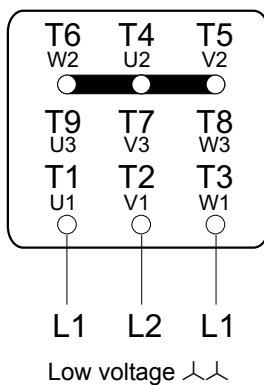
Connection in the motor terminal box

Connection types for motors: star, delta, double star, or star according to NEMA. The nameplate of the motor indicates the nominal voltage for the connection type that has to match the operating voltage of the MOVITRAC® LTE-B inverter.

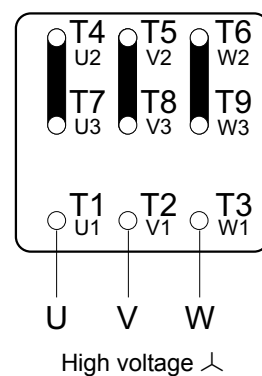
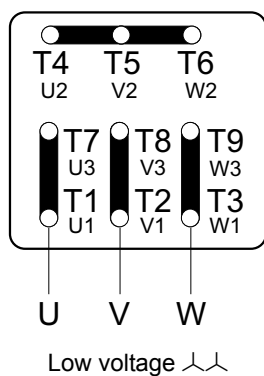
#### R13



#### R76



#### DR/DT/DV





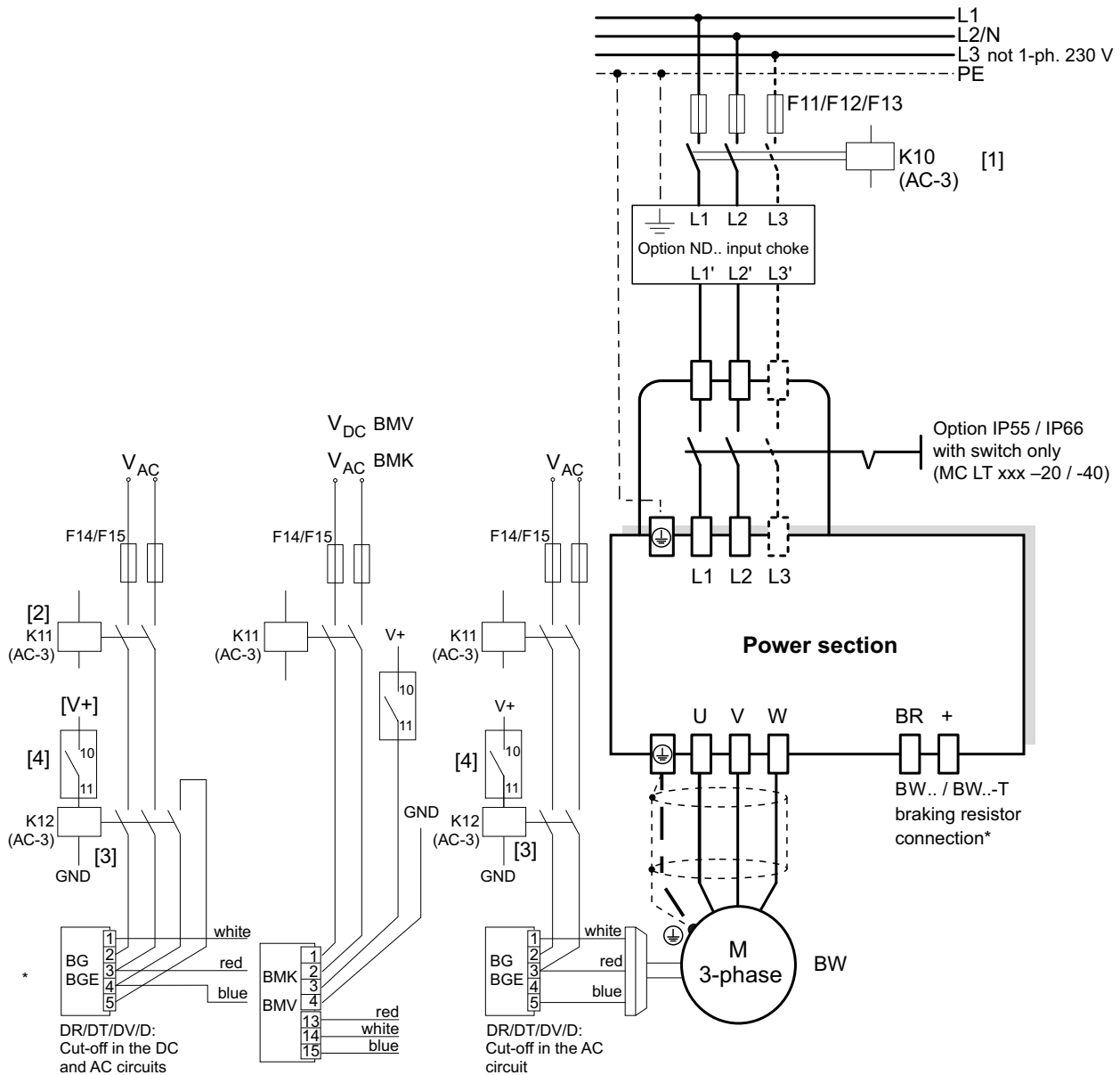


### Connecting inverter and motor

- ▲ **WARNING** Danger of electric shock. High voltages can be present when the inverter is not connected properly.

Severe or fatal injuries.

- It is essential that you adhere to the sequence of connections as depicted below.



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- [1] Power supply contactor on the inverter
- [2] Power supply on brake rectifier, switched through K10
- [3] Control contactor/relay for supplying the brake rectifier with current. Control via relay contact [4] in the inverter.
- [4] Potential free relay contacts in the inverter
- [V+] External current supply AC 250 V / DC 30 V at max. 5 A
- \* Only sizes 2 and 3

V<sub>DC</sub> BMV DC voltage supply BMV

V<sub>AC</sub> BMK AC voltage supply BMK



#### • INFORMATION

- Connect the brake rectifier using a separate supply cable.
- **Supply via the motor voltage is not permitted.**

In the following applications, always cut-off the brake in the AC and DC circuits:

- All lifting applications
- Applications that require a quick brake reaction time

#### *Motor temperature protection (TF/TH)*

Motors with internal overtemperature sensor (TF, TH or similar) can be directly connected to MOVITRAC® LTE-B inverters. An error might be displayed on the inverter.

The sensor is connected to terminal 1 (+24 V) and binary input 3, see section "Overview of signal terminals" (page 26). Parameter *P-15* must be set to external error input to receive overtemperature shutdown. The shutdown level is set to 2.5 kΩ.

#### *Multi-motor drive/group drive*

The overall nominal motor current must not exceed the nominal current of the inverter, see chapter "Technical Data" (page 52).

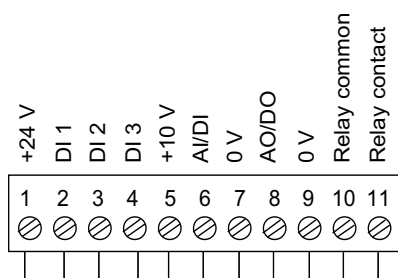
The motor group is limited to five motors. The motors of a group must not differ by more than 3 frame sizes.

The maximum permitted cable length for the group is limited to the values of single connection, see chapter "Technical Data" (page 52).

For groups with more than 3 motors, SEW-EURODRIVE recommends to use an output choke.

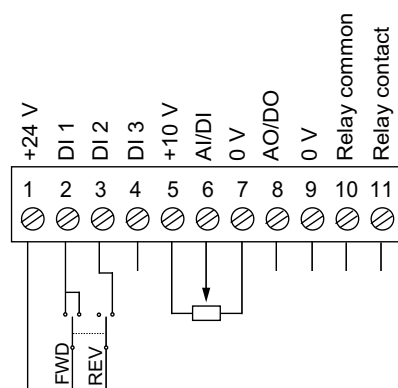
### 4.3.3 Overview of signal terminals

IP20 and IP55



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IP55 and IP66 with switch option



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The signal terminal block is equipped with the following signal terminals:

Terminal no.	Signal	Connection	Description
1	+24 V ref out	Output +24 V reference voltage	Reference voltage for activating DI1 – DI3 (max. 100 mA)
2	DI 1	Binary input 1	Positive logic "Logic 1" input voltage range: DC 8 – 30 V "Logic 0" input voltage range: DC 0 – 2 V Compatible with PLC requirement if 0 V is connected to terminal 7 or 9.
3	DI 2	Binary input 2	
4	DI 3	Binary input 3 / thermistor contact	
5	+10 V	Output +10 V reference voltage	10 V reference voltage for analog input (Pot. supply +, 10 mA max., 1 k $\Omega$ min.)
6	AI / DI	Analog input (12 bit) Binary input 4	0 – 10 V, 0 – 20 mA, 4 – 20 mA "Logic 1" input voltage range: DC 8 – 30 V
7	0 V	0 V reference potential	0 V reference potential for analog input (potential supply -)
8	AO / DO	Analog output (10 bits) Binary output	0 – 10 V, max. 20 mA analog 0/24 V, max. 20 mA digital
9	0 V	0 V reference potential	0 V reference potential for analog output
10	Relay reference potential	Relay reference potential	N.O. contact (AC 250 V / DC 30 V @ 5 A)
11	Relay contact	Relay contact	

All binary inputs are enabled with an input voltage in the range of +8 V to 30 V. This means they are +24 V compatible.

- **NOTICE Possible damage to property.**

Applying voltages of more than 30 V to the control terminals can damage the controller.

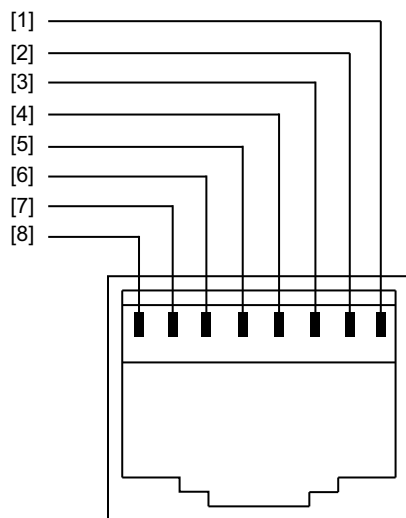
- The voltage present on the control terminals must not exceed 30 V.

- **INFORMATION**

Terminals 7 and 9, see section "Overview of signal terminals" (page 26) can be used as GND setpoint if MOVITRAC® LTE-B is controlled via PLC.



#### 4.3.4 Communication socket RJ45



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- [1] Not connected
- [2] Not connected
- [3] +24 V
- [4] Internal bus<sup>1)</sup>
- [5] Internal bus
- [6] 0 V
- [7] SBus+<sup>2)</sup>
- [8] SBus–

- 1) The bit format is defined as follows: 1 start bit, 8 data bits, 1 stop bit, no parity
- 2) P-12 must be set to 3 or 4 for SBus communication



#### 4.3.5 UL-compliant installation

Note the following points for UL-compliant installation:

- The inverters can be operated at the following ambient temperatures:

IP degree of protection	Ambient temperature
IP66 / NEMA 4X	–10 °C to 40 °C
IP55 / NEMA 12	–10 °C to 40 °C
IP20	–10 °C to 50 °C

- Use only copper connection cables suited for temperatures up to 75 °C.
- The following permitted tightening torques apply to MOVITRAC® LTE-B power terminals:

Size	Tightening torque
1, 2 and 3	1 Nm / 8.9 lb.in

MOVITRAC® LTE-B inverters are suitable for operation in voltage supply systems with earthed star point (TN and TT systems) that can supply a max. line current and a max. line voltage in accordance with the following table. The fuses listed in the following tables are the maximum permitted fuses for each inverter. Only use melting fuses.

Use only certified units with a limited output voltage ( $U_{\max} = \text{DC } 30 \text{ V}$ ) and limited output current ( $I \leq 8 \text{ A}$ ) as an external DC 24 V voltage source.

UL certification does not apply to operation in voltage supply systems with a non-earthed star point (IT systems).

#### 200 – 240 V units

MOVITRAC® LTE...	Nominal short circuit current	Max. line voltage	Fuses
0004	AC 5000 A	AC 240 V	AC 6 A / 250 V
0008	AC 5000 A	AC 240 V	AC 10 A / 250 V
0015	AC 5000 A	AC 240 V	AC 20 A / 250 V
0022, 0040	AC 5000 A	AC 240 V	AC 32 A / 250 V

#### 380 – 480 V units

MOVITRAC® LTE...	Nominal short circuit current	Max. line voltage	Fuses
0008, 0015	AC 5000 A	AC 480 V	AC 15 A / 600 V
0022, 0040	AC 5000 A	AC 480 V	AC 20 A / 600 V
0055, 0075	AC 5000 A	AC 480 V	AC 60 A / 600 V
0110	AC 5000 A	AC 480 V	AC 110 A / 600 V



#### 4.3.6 Electromagnetic compatibility

The MOVITRAC® LTE-B inverter series is designed for use in machines and drive systems. They meet the EMC product standard EN 61800-3 for drives with variable speed. Observe the specifications of Directive 2004/108/EC (EMC) of the Council for EMC compliant installation of the drive system.

##### *Interference immunity*

With regard to interference immunity, the MOVITRAC® LTE-B series meets the limit values of standard EN 61800-3 and can therefore be used both in the industry and for household applications (light industry).

##### *Interference emission*

With regard to interference emission, MOVITRAC® LTE-B meets the limit values of the standards EN 61800-3 and EN 55014 and can therefore be used in the industry and for household applications (light industry).

Install the inverters as described in section "Installation" (page 23) to ensure best possible electromagnetic compatibility. Ensure proper ground connection for the inverter. Use shielded motor cables to comply with interference emission regulations.

The below table specifies the conditions for using MOVITRAC® LTE-B in drive applications:

Inverter type	Cat. C1 (class B)	Cat. C2 (class A)	Cat. C3
230 V, 1-phase LTEB xxxx 2B1-x-xx	No additional filtering required Use a shielded motor cable		
230 V / 400 V, 3-phase LTEB xxxx 2A3-x-xx LTEB xxxx 5A3-x-xx	Use an external filter of the type NF LT 5B3 0xx Use a shielded motor cable	No additional filtering required	

An external filter and a shielded motor cable must be used to meet the requirements for inverters without internal filter:

Inverter type	Cat. C1 (class B)	Cat. C2 (class A)	Cat. C3
230 V, 1-phase LTEB xxxx 201-x-xx	Use an external filter of the type NF LT 2B1 0xx Use a shielded motor cable		
230 V, 3-phase LTEB xxxx 203-x-xx 400 V, 3-phase LTEB xxxx 503-x-xx	Use an external filter of the type NF LT 5B3 0xx Use a shielded motor cable		



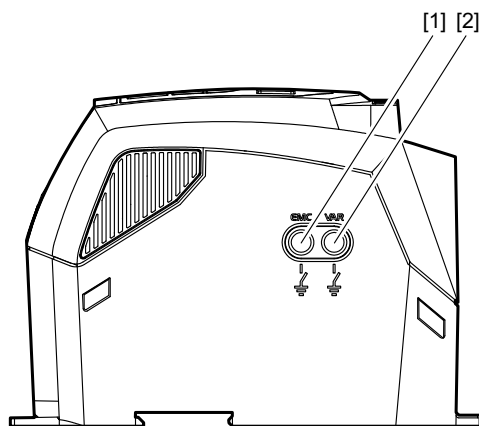
*Disabling the EMC filter varistor (IP20)*

IP20 inverters equipped with an EMC filter (such as MOVITRAC® LTE-B xxxx xAxx 00 and MOVITRAC® LTE-B xxxx xBxx 00) have a higher leakage current to ground than devices without EMC filter. Errors might be signaled on ground indicators when operating more than one MOVITRAC® LT inverter. In this case, you can remove the EMC filter by removing the EMC screw on the side of the device.

- **▲ WARNING Danger of electric shock. Dangerous voltage levels can still be present inside the unit and at the terminals up to 10 minutes after disconnection from the power supply.**

Severe or fatal injuries.

- Disconnect and isolate the inverter from the power supply at least 10 minutes before you begin removing the EMC screw from MOVITRAC® LTE-B.



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- [1] EMC screw
- [2] VAR screw

MOVITRAC® LTE-B inverters are equipped with components that suppress fluctuations in the input line voltage. The purpose of these components is to protect the power inputs from voltage peaks caused by lightning or by other devices in the same supply system.

Components that suppress surges might cause a high-voltage test (flash test) carried out on a drive system to fail.

To being able to carry out a high-voltage test on a system, you therefore have to remove both screws on the side of the device to separate these components. After completion of the high-voltage test, replace the two screws and repeat the test. This test should fail as it indicates that the circuit is now protected from voltage surges again.



## 5 Startup

### 5.1 User interface

#### 5.1.1 Keypad

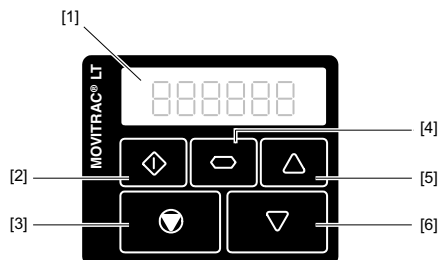
Each MOVITRAC® LTE-B has an integrated keypad as standard, allowing drive operation and setup without any additional equipment.

The keypad consists of 5 keys with the following functions:

Key	Function
Start / Run	<ul style="list-style-type: none"> <li>Enables running of motor</li> <li>Reverses direction of rotation if bi-directional keypad mode is enabled</li> </ul>
Stop / Reset	<ul style="list-style-type: none"> <li>Stops motor</li> <li>Resets a tripped drive</li> </ul>
Navigate	<ul style="list-style-type: none"> <li>Displays real time information</li> <li>Press and hold to enter / exit parameter mode</li> <li>Stores parameter changes</li> </ul>
Up	<ul style="list-style-type: none"> <li>Increases speed in real time mode</li> <li>Increases parameter values in parameter edit mode</li> </ul>
Down	<ul style="list-style-type: none"> <li>Decreases speed in real time mode</li> <li>Decreases parameter values in parameter edit mode</li> </ul>

The <start> / <stop> keys on the keypad are disabled when the parameters have their factory default settings. To enable the operation of the <start> / <stop> keys on the keypad, set *P-12* to 1 or 2 (see chapter "Standard parameters").

The Navigate key alone is used to gain access to the parameter edit menu. Pressing and holding this key (> 1 sec) allows you to toggle between the parameter edit menu and the real time display (where the drive operating status / running speed is displayed). By pressing this key (< 1 sec), you can toggle between the operating speed and operating current during drive operation.



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- |                  |              |
|------------------|--------------|
| [1] Display      | [4] Navigate |
| [2] Start        | [5] Up       |
| [3] Stop / Reset | [6] Down     |

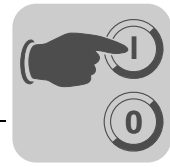
#### • INFORMATION

To reset to factory default settings, press the <up>, <down>, and <stop> keys simultaneously for > 2 s. The display then shows "P-deF". Press the <stop> key to acknowledge the change and to reset the drive.

#### 5.1.2 Display

A standard 6-digit, 7-segment display is integrated into each drive to allow drive operation to be monitored and parameters to be set.





## 5.2 Easy startup

1. Connect the motor to the drive, checking the connection for the motor voltage rating.
2. Enter rated values given on the nameplate of the motor:
  - With *P-01* and *P-02*, you set the limit values for minimum and maximum speed.
  - With *P-03* and *P-04*, you set the time for acceleration and deceleration.
  - With *P-08*, you set the rated motor current.
  - With *P-09*, you set the rated motor frequency.
3. Enable the drive by making a connection between terminals 1 and 2, see also chapter "Overview of signal terminals" (page 26).

### 5.2.1 Terminal mode (default setting)

For operation in terminal mode (default setting):

- Ensure that *P-12* is set to 0 (default setting).
- Connect a switch between terminals 1 and 2 on the user terminal block.
- Connect a potentiometer (1 k – 10 k) between terminals 5, 6 and 7 with the wiper connected to pin 6.
- Close the switch to enable the drive.
- Adjust the speed using the potentiometer.

- **INFORMATION**

The default settings (*P-12* = 0 and *P-15* = 0) for the optional switch in the IP55 / IP66 control cabinet is FWD/REV. The motor speed can be set via potentiometer.

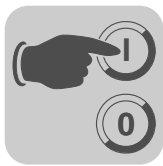
### 5.2.2 Keypad mode

For operation in keypad mode:

- Change *P-12* to "1" (uni-directional) or "2" (bi-directional).
- Place a wire link or switch between terminals 1 and 2 on the user terminal block to enable the drive.
- Now press the <start> key. The drive enables at 0.0 Hz.
- Press the <up> key to increase the speed.
- To stop the drive, press the <stop> key.
- If the <start> key is now pressed, the drive will return to its original speed. (If bi-directional mode is enabled (*P-12* = 2), pressing the <start> key reverses the direction.)

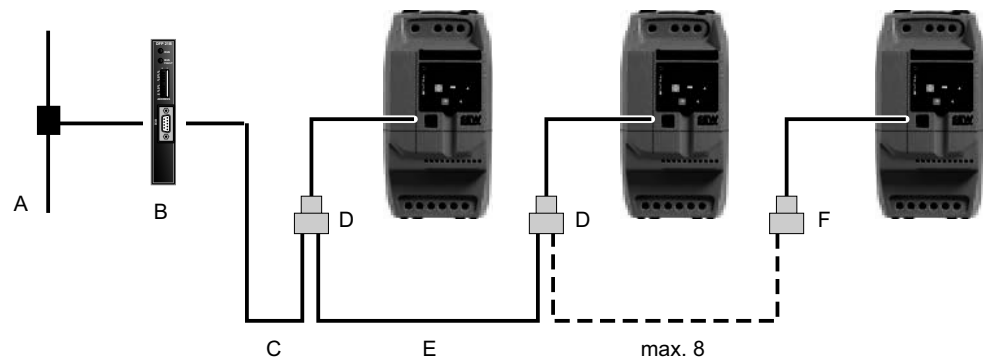
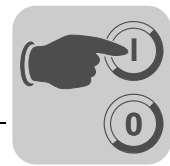
- **INFORMATION**

To preset the required target speed, set the required speed during operation using the keypad. Next, press the <Stop> key. If you then press the <Start> key again, the drive will move at the previously set speed.



### 5.3 **Startup for operation via fieldbus**

- Start the drive as described in section "Easy startup" (page 33).
- Set parameter *P-12* to "3" or "4" to control the drive via SBus.
  - 3 = control word and speed setpoint via SBus, ramp times as defined in *P-03* / *P-04*.
  - 4 = control word, speed setpoint and ramp time via SBus.
- Set *P-14* to "101" (default) to enable access to the advanced menu.
- Set the values in *P-36* as follows:
  - For a unique SBus address, make a setting between 1 and 63
  - For the SBus baud of the gateway, set to "500 kBaud" (default)
  - Define the timeout behavior of the drive when communication is interrupted:
    - 0: continue with last data (default)
    - t\_xxx: trip after a delay of xxx milliseconds, trip-reset required
    - r\_xxx: ramp to stop after a delay of xxx milliseconds, auto-restart with new data received
- Connect the drive via SBus to the DFx / UOH gateway according to chapter "RJ45 communication socket".
- Set the DIP switch "AS" on the DFx / UOH gateway from OFF to ON to perform auto setup for the fieldbus gateway. The LED "H1" on the gateway will flash repeatedly and then remain off. If the LED "H1" is lit, the gateway or one of the drives on the SBus is not connected or was not started properly.
- The configuration of the fieldbus communication between DFx / UOH gateway and bus master is described in the corresponding DFx manual.



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- [A] Bus connection
- [B] Gateway (e.g. DFx / UOH gateway)
- [C] Cable to wire
- [D] Splitter
- [E] Selection cable
- [F] Terminating resistor

### 5.3.1 Permitted cable lengths

The permitted total cable length depends on the baud rate set for the SBus:

- 125 kBaud: 500 m (1640 ft)
- 250 kBaud: 250 m (820 ft)
- 500 kBaud: 100 m (328 ft) (factory setting)
- 1000 kBaud: 25 m (82 ft)

Use only shielded cables.

### 5.3.2 Monitoring transmitted data

The data transmitted via gateway can be monitored by means of one of the following options:

- MOVITOOLS® MotionStudio via the gateway's X24 engineering interface or optional via Ethernet
- The gateway's web page (e.g. on DFE3x Ethernet gateways)



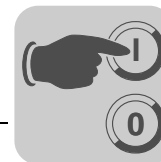
### 5.3.3 Description of the transferred process data (PD)

Process data words (16-bit) from the gateway to the drive (PO):

Description	Bit	Settings
PO1 Control word	0	Controller inhibit 0: Run 1: Stop
	1	Fast stop on 2nd deceleration ramp ( <i>P-24</i> ) 0: Fast stop 1: Run
	2	Stop on process ramp <i>P-03</i> / <i>P-04</i> or PO3 0: Stop 1: Run
	3 – 5	Reserved 0
	6	Trip reset Edge 0 to 1 = trip reset
	7 – 15	Reserved 0
PO2 Setpoint speed	Scaling: 0x4000 = 100% of maximum speed as set in <i>P-01</i> Values greater than 0x4000 or less than 0xC000 are limited to 0x4000 / 0xC000	
PO3 Ramp time (if <i>P-12</i> = 4) No function (if <i>P-12</i> = 3)	Scaling: acceleration and deceleration in ms for rated speed <i>n</i> = 50 Hz	
	Ramp times as set in <i>P-03</i> and <i>P-04</i>	

Process data words (16-bit) from the drive to the gateway (PI):

Description		Bit		Settings	Byte
PI1	Status word	0	Enable output stage	0: Disabled 1: Enabled	Low byte
		1	Inverter ready	0: Not ready 1: Ready	
		2	PO data enabled	1 if <i>P-12</i> = 3 or 4	
		3 – 4	Reserved		
		5	Fault / Warning	0: No fault 1: Fault	
		6 – 7	Reserved		
	8 – 15	Drive status if Bit 5 = 0 0x01 = Output stage disabled 0x02 = No enable / no run 0x04 = Enable / run 0x05 = Factory setting is active		High byte	
	8 – 15	Drive status if Bit 5 = 1 0x01 = Drive output over current 0x04 = No enable / no run 0x06 = Input phase imbalance trip / input phase loss 0x07 = DC bus over voltage 0x08 = Motor overload 0x09 = Parameter setting to factory default 0x0B = Overtemperature trip 0x1A = External trip 0x2F = Communication link (SBus) loss trip 0x71 = Analog input error, current is less than 2.5 mA 0x75 = Undertemperature trip 0xC6 = DC bus undervoltage 0xC8 = General error / power stage error			
PI2	Actual speed	Scaling: 0x4000 = 100% of maximum speed as set in <i>P-01</i>			
PI3	Actual current	Scaling: 0x4000 = 100% of maximum current as set in <i>P-08</i>			



#### Example:

The following information will be sent to the drive if:

- the binary inputs are configured and wired correctly to enable the drive
- parameter *P-12* is set to 3 to operate the drive via SBus

Description		Value	Description
PO1	Control word	0	Fast stop on 2nd deceleration ramp ( <i>P-24</i> )
		1	Coast to stop
		2	Ramp to stop on process ramp <i>P-04</i>
		3 – 5	Reserved
		6	Ramp up ( <i>P-03</i> ) and run with setpoint speed (PO2)
PO2	Setpoint speed	0x4000	= 16384 = maximum speed, e.g. 50 Hz ( <i>P-01</i> ) clockwise
		0x2000	= 8192 = 50% of maximum speed, e.g. 25 Hz clockwise
		0xC000	= -16384 = maximum speed, e.g. 50 Hz ( <i>P-01</i> ) counterclockwise
		0x0000	= 0 = minimum speed as set in <i>P-02</i>

The process data read back from the drive should be in run condition:

Description		Value	Description
PI1	Status word	0x0407	Status = run Output stage enabled Drive ready PO data enabled
PI2	Actual speed	Should be equal to PO2 (setpoint speed)	
PI3	Actual current	Depends on speed and load	

## 5.4 Startup with 87 Hz characteristic curve

The following parameters have to be set:

- P-01: 87 Hz
- P-07: 400 V
- P-08: Motor current for  $\Delta$  operation (see nameplate)
- P-09: 87 Hz



## 6 Operation

The following information is displayed to being able to check the operating state of the inverter at any time.

Status	Display
Inverter OK	With inverter not enabled
Inverter running	With enabled inverter
Error / shutdown	Error

### 6.1 Status of the inverter

#### 6.1.1 Display for non-enabled inverter

The following table shows the messages relating to the inverter status that are displayed when the motor is at standstill.

Message	Description:
StoP	Power section of inverter disabled. This message is displayed when the motor is at standstill and no error is present. The inverter is ready for normal operation.
P-deF	Factory set parameters are loaded. This message appears when the user issues the command for loading the parameter factory settings. To take the inverter into operation again, press the <Reset> key.
Standby	Inverter is in standby mode. This message appears when the motor has speed 0 for already 30 seconds and the speed setpoint is also 0.

#### 6.1.2 Display for enabled inverter

The following table shows the messages relating to the inverter status that are displayed when the motor is running.

You can toggle between output frequency, output current, and speed by briefly pressing the <Navigate> key on the keypad.

Message	Description:
H xxx	The output frequency of the inverter is displayed in Hz. This message is displayed when the motor is running.
A xxx	The output current of the inverter is displayed in amperes. This message is displayed when the motor is running.
xxxx	The output speed of the inverter is displayed in rpm. This message is displayed when the motor is running and the nominal motor speed was entered in parameter <i>P-10</i> .
C xxx	Scaled speed ( <i>P-40</i> ).
..... (flashing dots)	The output current of the inverter exceeds the current value entered in <i>P-08</i> . MOVITRAC® LTE-B monitors the extent and duration of the overload. MOVITRAC® LTE-B triggers error message "I.t-trP" depending on the overload.

#### 6.1.3 Error reset

You can reset an error in the event of an error response (see section "Error codes" (page 40) by pressing the <Stop> key or by enabling or disabling binary input 1.



## 7 Service and Error Codes

### 7.1 Troubleshooting

Symptom	Cause and solution
Overload or overcurrent error of the unloaded motor during acceleration	Check the star/delta terminal connection in the motor. The nominal operating voltage of motor and inverter must match. Delta connection always yields the lower voltage of a multi-voltage motor.
Overload or overcurrent – motor does not turn	Check for blocked rotor. Make sure that the mechanical brake is released (if installed).
No enable for the drive – continues to display "StoP"	Check whether the hardware enable signal is present on binary input 1. Ensure correct +10 V user output voltage (between terminals 5 and 7). If faulty, check the wiring of the user terminal strip. Check <i>P-12</i> for terminal mode / keypad mode. If keypad mode is selected, press the <Start> key. The line voltage must correspond with the specified values.
The inverter does not start at extremely cold ambient conditions	The inverter might not start at ambient temperatures below –10 °C. Under such conditions, provide a heat source that keeps the ambient temperature of the drive above 0 °C.
No access to advanced menus	<i>P-14</i> must be set to advanced access code. The advanced access code is "101" unless the user has changed the code in <i>P-37</i> .
Parameters cannot be changed "L" is displayed before the value	The parameters are locked. Make sure that parameter <i>P38</i> is set to 0 to being able to access the parameters. Some parameters cannot be changed while the motor is running. Make sure the inverter is not enabled (binary input 1).

### 7.2 Error memory

In parameter mode, parameter *P-13* contains a data set with the last four events that have occurred. The relevant messages are displayed in abbreviated form. The latest message is displayed at the first position (when calling *P-13*), previous events are listed under the latest ones.

Once a new message is issued, the oldest message is deleted from the error log.

#### • INFORMATION

If the last shutdown was caused, for example, by undervoltage, no further undervoltage errors will be entered in the error log. The purpose is to avoid that the error log is flooded with undervoltage errors, which occur every time the inverter is switched off.



### 7.3 Error codes

Error message	Explanation	Solution
"P-dEF"	The factory-set parameters were loaded.	Press the <Stop> key. The inverter can now be configured for the required application.
"O-I"	Overcurrent at inverter output to the motor. Motor overload. Overtemperature at the heat sink of the inverter.	<p>Error during constant speed:</p> <ul style="list-style-type: none"> <li>Check for overload or error.</li> </ul> <p>Error when enabling the drive:</p> <ul style="list-style-type: none"> <li>Check the motor for stalling or blocking.</li> <li>Check for star-delta motor connection error.</li> <li>Check whether the length of the cable meets the requirements.</li> </ul> <p>Error during operation:</p> <ul style="list-style-type: none"> <li>Check for sudden overload or malfunction.</li> <li>Check cable connection between inverter and motor.</li> <li>The acceleration/deceleration time might be too short and requires too much power. If you cannot increase <i>P-03</i> or <i>P-04</i>, use a larger inverter.</li> </ul>
"I.t-trP"	Inverter overload error. This error occurs when the inverter has delivered more than 100% of the nominal current for a certain time (defined in <i>P-08</i> ). The display is flashing to indicate overload.	<ul style="list-style-type: none"> <li>Increase the acceleration ramp (<i>P-03</i>) or reduce the motor load.</li> <li>Check whether the length of the cable meets the requirements.</li> <li>Mechanically check the load to make sure it can be moved freely and no blockage or other mechanical problems are present.</li> </ul>
"OI-b"	Brake channel overcurrent. Overcurrent in the braking resistor circuit.	<ul style="list-style-type: none"> <li>Check supply cable to the braking resistor.</li> <li>Check the braking resistance value.</li> <li>Observe the minimum resistance values given in the respective tables.</li> </ul>
"OL-br"	Braking resistor overload	<ul style="list-style-type: none"> <li>Increase deceleration time, reduce load moment of inertia or switch further braking resistors in parallel.</li> <li>Observe the minimum resistance values given in the respective tables.</li> </ul>
"PS-trP"	Internal output stage error	<p>Error when enabling the drive:</p> <ul style="list-style-type: none"> <li>Check for incorrect wiring or short circuit.</li> <li>Check for phase short circuits or ground faults.</li> </ul> <p>Error during operation:</p> <ul style="list-style-type: none"> <li>Check for sudden overload or overtemperature.</li> <li>Provide an additional room or cooling, if necessary.</li> </ul>
"O.Uolt"	DC link overvoltage	<ul style="list-style-type: none"> <li>Check whether the supply voltage is too high or too low.</li> <li>If the error occurs during deceleration, increase the deceleration time in <i>P-04</i>.</li> <li>Connect a braking resistor, if required.</li> <li>If a braking resistor is already installed, make sure that <i>P-34</i> is set to 1 or 2.</li> </ul>
"U.Uolt"	DC link undervoltage	Occurs routinely when switching off the inverter. Check line voltage if this occurs while the motor is running.
"O-t"	Overtemperature at heat sink	<ul style="list-style-type: none"> <li>Check inverter cooling and housing dimensions.</li> <li>Provide an additional room or cooling, if necessary.</li> </ul>
"U-t"	Undertemperature	<ul style="list-style-type: none"> <li>Occurs at an ambient temperature below -10 °C.</li> <li>Increase the temperature to above -10 °C to start the inverter.</li> </ul>
"th-Flt"	Faulty thermistor at heat sink.	Please consult SEW-EURODRIVE Service.





Error message	Explanation	Solution
"E-triP"	External error (in conjunction with binary input 3).	<ul style="list-style-type: none"> <li>External error at binary input 3. NC contact was opened.</li> <li>Check motor thermistor (if connected).</li> </ul>
"SC-trP"	Communication failure error	<ul style="list-style-type: none"> <li>Check communication connection between inverter and external devices.</li> <li>Make sure each inverter in the network is assigned a unique address.</li> </ul>
"P-LOSS"	Input phase failure error	An input phase failed in an inverter designed for operation on a three-phase system.
"SPIn-F"	Spin start failed	Spin start function unable to detect motor speed.
"dAtA-F"	Internal memory error	<ul style="list-style-type: none"> <li>Parameter not saved, factor settings restored.</li> <li>Try again. If this problem occurs again, contact SEW-EURODRIVE Service.</li> </ul>
"EE-F"	EEPROM error parameter not saved, factor settings restored.	EEPROM error parameter not saved, factor settings restored. If this error occurs again, contact SEW-EURODRIVE Service.
"4-20 F"	Current at analog input not within defined range.	<ul style="list-style-type: none"> <li>Make sure the input current is within the range defined in P-16.</li> <li>Check connection cables.</li> </ul>
"SC-FLt"	Internal inverter error	Please consult SEW-EURODRIVE Service.
"FAULtY"		
"Prog_ _"		



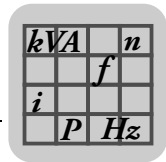
#### **7.4 SEW Electronics Service**

##### **7.4.1 Sending in product for repair**

Please contact **SEW-EURODRIVE Electronics Service** if a malfunction cannot be rectified.

**Provide the following information when sending the unit in for repair:**

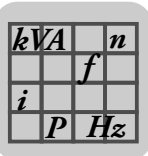
- Serial number (→ nameplate)
- Type designation
- Short description of the application (application, control via terminals or serial)
- Connected components (motor, etc.)
- Nature of the fault
- Accompanying circumstances
- Your own assumptions
- Any unusual events preceding the problem, etc.



## 8 Parameters

### 8.1 Standard parameters

Parameter	Description	Value range	Factory setting	Explanation
P-01	Max. speed	$P-02$ to $5 \times P-09$ (max. 500 Hz)	500 Hz <sup>1)</sup>	Upper speed limit in Hz or rpm (see $P-10$ )
P-02	Minimum speed	0 – $P-01$ (max. 500 Hz)	0 Hz	Lower speed limit in Hz or rpm (see $P-10$ )
P-03	Acceleration ramp(s)	0 – 600 s	5 s	Acceleration ramp time from 0 to 50 Hz (fixed) in seconds.
P-04	Deceleration ramp(s)	0 – 600 s	5 s	Deceleration ramp time of 50 Hz (fixed) until standstill in seconds. When set to 0, the fastest possible ramp time without error is activated.
P-05	Stop mode selection	<b>In the event of power failure:</b> 0: Maintaining operation 1: Motor coasts to a halt 2: Rapid stop along $P-24$ <b>Normal stop:</b> 0: Stop along ramp $P-04$ 1: Motor coasts to a halt 2: Stop along ramp $P-04$	0	In the event of a power failure, the inverter attempts to move along the set ramps and then switches off the output stages. With $P-05$ , the inverter attempts to maintain operation by reducing the motor speed and using the load as a generator.
P-06	Energy saving function	0 Off 1 On	0	Automatically reduces the motor voltage with light loads, if activated. In this case, the smallest possible motor voltage is 50% of the nominal voltage.
P-07	Nominal motor voltage	0.20 – 250 V 0.20 – 500 V	230 V 400 V <sup>2)</sup>	Rated voltage (nameplate) of the motor in volts. For low-voltage drives, this value is limited to 250 V. When set to 0, voltage compensation is disabled.
P-08	Nominal motor current	25 – 100% of the inverter output current	DR motor rating	Rated current (nameplate) of the motor in amperes.
P-09	Nominal motor frequency	25 – 500 Hz	50 Hz	Nominal frequency (nameplate) of the motor.
P-10	Nominal motor speed	0 – 30000 rpm	0	When set to a value unequal 0, all speed-related parameters are displayed in rpm. Activates slip compensation when the motor speed (nameplate) is set.
P-11	Additional voltage/boost	0 – 20% of the max. output voltage. Resolution 0.1%  • Size 1 max. 20% • Size 2 max. 15% • Size 3 max. 10%	Depends on motor power	Increases the output voltage of MOVITRAC® at low speeds by a value that can be set in order to facilitate the breaking away of "jammed" loads. A motor with forced cooling fan must be used for continuous duty at low speeds.  



## Parameters

### Advanced parameters

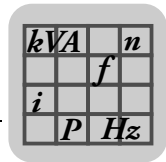
Parameter	Description	Value range	Factory setting	Explanation
P-12	Control via terminals/keypad /SBus	0	0 (terminal control)	See section "Easy startup" (page 33).
		1		
		2		
		3		
		4		
P-13	Error log	The 4 most recent errors are logged	No error	The last 4 errors are saved in chronological order. The most recent error is displayed first. You can view the saved errors by pressing the <Up/Down> key. See section "Error codes" (page 40).
P-14	Advanced menu access code	0 – 9999	0	"101" (standard) for advanced menu access. Change the code in P-37 to prevent unauthorized access to the advanced parameter set.

1) 60 Hz (American variant only)

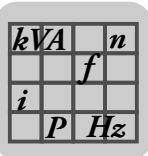
2) 460 V (American variant only)

## 8.2 Advanced parameters

Parameter	Description	Range	Default	Explanation
P-15	Binary input function setting	0 – 12	0	Specifies the functions of the binary inputs. See section "P-15 Functions of the binary inputs" (page 48).
P-16	Analog input V / mA	0 – 10 V, b 0 – 10 V, 0 – 20 mA t 4 – 20 mA, r 4 – 20 mA t 20 – 4 mA, r 20 – 4 mA	0 – 10 V	Configures the format of the analog input. 0 – 10 V: Unipolar mode (voltage input) b 0 – 10 V: Bipolar mode (voltage input) <ul style="list-style-type: none"> <li>For bipolar input signals</li> <li>50% offset with P-39</li> <li>200% scaling in P-35 results in <math>\pm P-01</math></li> </ul> 0 – 20 mA: Unipolar mode (current input) 4 – 20 mA: Unipolar mode (current input) 20 – 4 mA: Unipolar return current mode "t" = Inverter switches off if signal is revoked when inverter is enabled. "r" indicates that the inverter moves along the ramp to the speed set in P-20.
P-17	PWM	2 – 16 kHz	4 / 8 kHz	PWM setting. A higher switching frequency means less motor noise, but also higher losses in the output stage.
P-18	User relay output selection	0	1 (inverter ok)	User relay settings. The threshold level is defined in P-19.  Deactivated: Contacts open Activated: Contact closed
		1		
		2		
		3		
		4		
		5		
		6		
P-19	Relay threshold level	7	100%	Specifies the limit value for P-18 and P-25.
		Motor current < limit value		



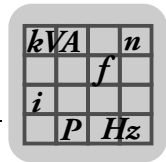
Parameter	Description	Range	Default	Explanation
P-20	Fixed setpoint speed 1	$P-01$ (min.) – $P-01$ (max.)	0 Hz	Internal setpoint for speed 1
P-21	Fixed setpoint speed 2	$P-01$ (min.) – $P-01$ (max.)	0 Hz	Internal setpoint for speed 2
P-22	Fixed setpoint speed 3	$P-01$ (min.) – $P-01$ (max.)	0 Hz	Internal setpoint for speed 3
P-23	Fixed setpoint speed 4	$P-01$ (min.) – $P-01$ (max.)	0 Hz	Internal setpoint for speed 4
P-24	Deceleration ramp 2	0 – 25 s	0 s	Via binary input or in the event of power failure according to $P-05$ .
P-25	Function selection analog output	<div>0 Inverter enabled (digital)</div> <div>1 Inverter ok (digital)</div> <div>2 Motor at setpoint speed (digital)</div> <div>3 Inverter switched off (digital)</div> <div>4 Motor speed <math>\geq</math> limit value (digital)</div> <div>5 Motor current <math>\geq</math> limit value (digital)</div> <div>6 Motor speed <math>\geq</math> limit value (digital)</div> <div>7 Motor current <math>\geq</math> limit value (digital)</div> <div>8 Motor speed (analog)</div> <div>9 Motor current (analog)</div>	8	<b>Binary output mode</b> <ul style="list-style-type: none"> <li>Options 0 – 7: Selection of a digital voltage output signal <ul style="list-style-type: none"> <li>Deactivated: 0 V</li> <li>Activated: +24 V (20 mA limit value)</li> </ul> </li> </ul> <b>Analog output mode</b> <ul style="list-style-type: none"> <li>Option 8: Motor speed signal range 0 – 10 V = 0 – 100% of <math>P-01</math></li> <li>Option 9: Motor current signal range 0 – 10 V = 0 – 200% of <math>P-08</math></li> </ul>
P-26	Speed skip function	0 – $P-01$	0 Hz	Speed skip function: The speed runs through hysteresis according to a velocity set in $P-03$ and $P-04$ . <div> </div>
P-27	Skip window center	$P-02$ (min.) – $P-01$ (max.)	0 Hz	Middle of skip range
P-28	V/f characteristic curve adjustment current	0 – $P-07$	0 V	Adjusts the present motor voltage to this value using the frequency set in $P-29$ . <div> </div>
P-29	V/f characteristic curve adjustment frequency	0 – $P-09$	0 Hz	Sets the frequency used to apply the V/f adjustment set in $P-28$ .



## Parameters

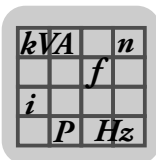
### Advanced parameters

Parameter	Description	Range	Default	Explanation
P-30	Terminal mode restart function	<ul style="list-style-type: none"> <li>Edge-r</li> <li>Auto-0</li> <li>Auto-1 to Auto-5</li> </ul>	Auto-0	<p>Defines the inverter behavior with reference to the enable digital input and configures the automatic restart function.</p> <ul style="list-style-type: none"> <li><b>Edge-r:</b> The inverter does not start after switching-on or reset if binary input 1 remains closed. The input must be closed <b>after</b> switching on or resetting the inverter to start it.</li> <li><b>Auto-0:</b> The inverter starts automatically after switching-on or reset if binary input 1 is closed.</li> <li><b>Auto-1 – Auto-5:</b> After switch-off with error (trip), the inverter makes up to 5 attempts to restart at intervals of 20 seconds. To reset the counter, the inverter must be de-energized. The number of attempted restarts is counted. If the inverter does not start at the last attempt, the inverter goes to error state and prompts the user to manually reset the error.</li> </ul>
P-31	Keypad mode new start function	0	1	<p>If set to 0 or 1, you have to use the &lt;Start&gt; key. If set to 2 or 3, the inverter is enabled once the enable signal is present for the inverter hardware. You can then change the speed using the keypad.</p>
		1		
		2		
		3		
P-32	DC current holding function	0 – 25 s	0 s	<p>This function is used in fan applications. Its purpose is to prevent the rotor from restarting subsequently caused by the air flow. At stop, the DC current holding function is activated for the duration defined in P-32 after speed "0" has been reached. The holding torque depends on the settings made in P-11.</p>
P-33	Flying start function <sup>1)</sup>	0	0	<p><b>Size 1:</b> P-33=1 activates the DC current holding function when the inverter is enabled. With this setting, the rotor is stopped completely before it is started again. Duration and holding torque are defined with P-32 and P-11.</p> <p><b>Size &gt; 1:</b> Parameter setting P-33=1 starts the inverter from the detected rotor speed. In this case, the inverter starts with a brief delay.</p>
		1		
P-34	Brake chopper activation	0	0	<p>All braking resistors must be protected using external protection devices.</p>
		1		
		2		



Parameter	Description	Range	Default	Explanation
P-35	Scaling factor analog input	0% – 500%	100%	<p>Analog input scaling resolution 0.1%.</p>
P-36	Comm. address	Address: 0 disabled, 1 – 63	1	Address: Unique inverter address for communication network.
	SBus enable / Baud rate selection	125 – 1000 kBaud	500 kBaud	Setting a baud rate activates the SBus with this baud rate. The time prior to shutdown in the event of a communication failure can be set in milliseconds. A setting of "0" disables communication shutdown.
	Resolution activated / delayed	0 (no error), t 30, 100, 1000, 3000 (ms) r 30, 100, 1000, 3000 (ms)	100 ms	"t" indicates that the motor shuts down (SC-trP) when the time is exceeded. "r" indicates that the motor comes to a stop along a ramp when the time is exceeded.
P-37	Access code definition	0 – 9999	101	Defines the access code <i>Advanced parameter set P-14</i> .
P-38	Parameter access lock	0	0 (write access and auto backup enabled)	Controls user access to the parameters. With a setting of $P-38 = 0$ , all parameters can be changed. These changes are also saved automatically.
		1		With a setting of $P-38 = 1$ , all parameters are locked and cannot be changed.
P-39	Analog input offset	–500 – 500%	0%	<p>Analog input offset, resolution 0.1%.</p>
P-40	Actual speed value scaling factor	0 – 6	0.000	<p>Actual speed = setpoint speed <math>\times</math> P-40.</p> <p>When <math>P-10 = 0</math>: Speed in Hz scaled by this factor.</p> <p>When <math>P-10 &gt; 0</math>: Speed is scaled in rpm.</p> <p>Appears on the operating state display in real time (cXXX).</p>

1) Sizes 2 and 3 only. Size 1 operates with DC voltage.



### 8.3 P-15 Binary input function selection

The functions of the binary inputs of MOVITRAC® LTE-B can be programmed. This means you can select the functions required for your application.

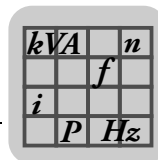
The following tables show the functions of the binary inputs depending on the value of parameter *P-12* (control via terminals/keypad/SBus) and *P-15* (binary input function selection).

#### 8.3.1 Terminal mode

When *P-12* = 0 (terminal mode), the following table applies:

P-15	Binary input 1	Binary input 2	Binary input 3	Analog input	Comments
0	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Forward move- ment Closed: Backward move- ment	Open: Analog speed value reference Closed: Preset speed 1	Speed reference	–
1	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Analog speed value reference Closed: Preset speed 1/2	Open: Preset speed 1 Closed: Preset speed 2	Speed reference	–
2	Open: Stop/ Controller inhibit Closed: Enable/Start	Open	Open	Open: Preset speed 1 – 4 Closed: Max. speed (P-01)	Preset speed 1
		Closed	Open		Preset speed 2
		Open	Closed		Preset speed 3
		Closed	Closed		Preset speed 4
3	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Analog speed value reference Closed: Preset speed 1	External trip input: Open: Shutdown Closed: Motor is running	Speed reference	Connect external PTC temperature sensor or similar to binary input 3.
4	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Forward move- ment Closed: Backward move- ment	Open: Analog speed value reference Closed: Preset speed 1	Speed reference	–
5	Open: Forward stop Closed: Forward movement	Open: Backward stop Closed: Backward move- ment	Open: Analog speed value reference Closed: Preset speed 1	Speed reference	Disabling binary inputs 1 and 2 simultane- ously results in rapid stop.
6	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Forward move- ment Closed: Backward move- ment	External trip input: Open: Shutdown Closed: Motor is running	Speed reference	Connect external PTC temperature sensor or similar to binary input 3.
7	Open: Forward stop Closed: Forward movement	Open: Backward stop Closed: Backward move- ment	External trip input: Open: Shutdown Closed: Motor is running	Speed reference	Close binary inputs 1 and 2 at the same time to stop the motor with deceleration ramp 2 (P-24).
8	Open: Stop/ Controller inhibit Closed: Enable/Start	Open: Forward move- ment Closed: Backward move- ment	Open	Open	Preset speed 1
			Closed	Open	Preset speed 2
			Open	Closed	Preset speed 3
			Closed	Closed	Preset speed 4
9	Open: Forward stop Closed: Forward movement	Open: Backward stop Closed: Backward move- ment	Open	Open	Preset speed 1
			Closed	Open	Preset speed 2
			Open	Closed	Preset speed 3
			Closed	Closed	Preset speed 4
10	N.O. contact Briefly closed for start	N.C. contact Briefly opened for stop	Open: Analog speed value reference Closed: Preset speed 1	Speed reference	–





P-15	Binary input 1	Binary input 2	Binary input 3	Analog input	Comments
11	N.O. contact Briefly closed for forward movement	N.C. contact Briefly opened for stop	N.O. contact Briefly closed for backward movement	Speed reference	Close binary inputs 1 and 3 at the same time to stop the motor with deceleration ramp 2 (P-24).
12	Open: Stop/ Controller inhibit Closed: Enable/Start	Closed for start Closed for activation and deceleration ramp 2	Open: Analog speed value reference Closed: Preset speed 1	Speed reference	–

### 8.3.2 Keypad mode

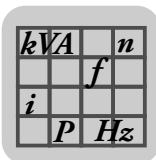
When P-12 = 1 or 2 (keypad mode), the following table applies.

P-15	Binary input 1	Binary input 2	Binary input 3	Analog input	Comments	Key 5 	Key 6 
0, 1, 5, 8-12	Open: Stop/Controller inhibit Closed: Enable/Start	Open: No function Closed: Speed up	Open: No function Closed: Speed down	Open (0 V): Clockwise rotation Closed: (10-24 V): Counterclockwise rotation	–	Increase speed	Reduce speed
2	Open: Stop/Controller inhibit Closed: Enable/Start	Open: No function Closed: Speed up	Open: No function Closed: Speed down	Open (0 V): Speed reference keypad Closed: (10-24 V): Fixed setpoint speed 1	–	Increase speed	Reduce speed
3	Open: Stop/Controller inhibit Closed: Enable/Start	Open: No function Closed: Speed up	Ext. error input: Open: Controller inhibit Closed: Enable	Open (0 V): Speed reference keypad Closed: (10-24 V): Motor stops	Connect external PTC temperature sensor or similar to binary input 3.	Increase speed	Reduce speed
4	Open: Stop/Controller inhibit Closed: Enable/Start	Open: No function Closed: Speed up	Open: Speed reference keypad Closed: Speed reference analog input	Speed reference	–	Increase speed	Reduce speed
6	Open: Stop/Controller inhibit Closed: Enable/Start	Open: Clockwise rotation Closed: Counterclockwise rotation	External error input: Open: Controller inhibit Closed: Enable	Open (0 V): Speed reference keypad Closed: (10-24 V): Fixed setpoint speed 1	Connect external PTC temperature sensor or similar to binary input 3.	Increase speed	Reduce speed
7	Open: Stop/Controller inhibit Closed: Enable/Start	Open: Stop Closed: Clockwise rotation	DI3: External error input: Open: Controller inhibit Closed: Enable	Open (0 V): Speed reference keypad Closed: (10-24 V): Fixed setpoint speed 1	DI1 and DI2 closed: Motor stops with rapid stop ramp P-24.	Increase speed	Reduce speed

### 8.3.3 SBus control mode

When P-12 = 3 or 4 (SBus control mode), the following table applies.

P-15	Binary input 1	Binary input 2	Binary input 3	Analog input	Comments
0, 1, 2, 4, 5, 8 – 12	Open: Controller inhibit Closed: Enable	No effect	No effect	No effect	Binary input 1 must be closed in order to have the motor running. Start and stop command are issued via the gateway.



## Parameters

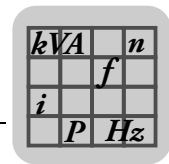
### Parameters for monitoring operating data in real time (read only)

P-15	Binary input 1	Binary input 2	Binary input 3	Analog input	Comments
3	Open: Controller inhibit Closed: Enable	Open: Master speed reference Closed: Preset speed 1	External trip input: Open: Shutdown Closed: Motor is running	No effect	Connect external PTC temperature sensor or similar to binary input 3.
6	Open: Controller inhibit Closed: Enable	Open: Master speed reference Closed: Analog input speed reference	External trip input: Open: Shutdown Closed: Motor is running	Speed reference	When binary input 2 is closed, start and stop is controlled via gateway. When binary input 2 is closed, the motor runs automatically if binary input 1 is closed.
7	Open: Controller inhibit Closed: Enable	Open: Master speed reference Closed: Speed reference keypad	External trip input: Open: Shutdown Closed: Motor is running	No effect	When binary input 2 is closed, start and stop is controlled via gateway. When binary input 2 is closed, the motor runs automatically if binary input 1 is closed depending on the setting made in P-31.

#### 8.4 Parameters for monitoring operating data in real time (read only)

You can monitor the internal operating data of the inverter using parameter group P00. These parameters cannot be changed.

Parameter	Description	Display range	Explanation
P00 (1)	Value of analog input 1	0 – 100%	100% = max. input voltage
P00 (2)	Reserved	–	Reserved
P00 (3)	Speed setpoint input	P1-01 (min.) – P1-01 (max.)	Speed display in Hz when P-10 = 0, else in rpm.
P00 (4)	Binary input state	Binary value	Binary input state of the inverter
P00 (5)	Reserved	0	Reserved
P00 (6)	Reserved	0	Reserved
P00 (7)	Present motor voltage	AC 0 – 600 V	R.m.s. value of the voltage present on the motor
P00 (8)	DC bus voltage log	DC 0 – 1000 V	Internal DC bus voltage
P00 (9)	Heat sink temperature	–20 – 100 °C	Heat sink temperature in °C
P00 (10)	Operating hour counter	0 – 99999 hours	Not affected by resetting the parameter factory setting
P00 (11)	Operating time since the last error (1)	99999 hours	The operating hour counter is stopped by disabling the inverter or when an inverter error occurs. Make reset with the next enable only when shutdown occurs. Also in the event of a power failure, make reset after next enable.
P00 (12)	Operating time since the last error (2)	99999 hours	The operating hour counter is stopped by disabling the inverter or when an inverter error occurs. Make reset with next enable only in the event of shutdown (undervoltage is not regarded as an error). No reset after power failure/restart if an error occurred before the power failure. Also applies to next enable after a power failure.
P00 (13)	Operating time since last deactivation	99999 hours	The operating hour counter is stopped by disabling the inverter. Reset of value with next enable.
P00 (14)	Effective switching frequency of the inverter	2 – 16 kHz	Effective actual output switching frequency of the inverter. This value can be smaller than the frequency selected in P-17 if the inverter is too hot. The inverter reduces the switching frequency automatically to prevent shutdown due to overtemperature, and to maintain operation.
P00 (15)	DC bus voltage log	0 – 1000 V	The last 8 errors before shutdown
P00 (16)	Temperature sensor log	–20 – +120 °C	The last 8 errors before shutdown
P00 (17)	Motor current	0 to 2 × nominal current	The last 8 errors before shutdown



Parameter	Description	Display range	Explanation
P00 (18)	Software ID, I/O and motor control	e.g. "1.00", "47AE"	Version number and checksum. "1" on the left side indicates the I/O processor. "2" on the left side indicates the motor control.
P00 (19)	Serial number of the inverter	000000 – 999999 00-000 – 99-999	Unique serial number of the inverter e.g. 540102 / 32 / 005
P00 (20)	Inverter ID	Nominal value of the inverter / software version	Nominal value, inverter type and code of the software version e.g. 0,37, 1 230, 3 P-off

### Access via parameter group 0

When  $P-14 = P-37$  (factory set to 101), all parameters are visible.

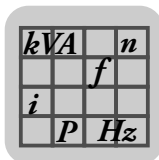
You can switch to  $P-00$  by pressing the <Navigate> key. "P00-z" is displayed. "z" stands for the second number in  $P-00$  (that is 1 – 14). You can then go the required parameter  $P-00$ .

Pressing the <Navigate> key again then displays the value of this specific parameter group zero.

The various values of parameters with several values (such as software ID), can be displayed by pressing the <Up>/<Down> keys.

To go to the next higher level, quickly press the <Navigate> key. By pressing the <Navigate> key quickly again (without pressing the <Up>/<Down> keys), the display shows the next higher level (main level of the parameters, that is  $P-00$ ).

If you are currently navigating in a lower level (e.g.  $P00-05$ ) and press the <Up>/<Down> keys to change the directory  $P-00$ , this parameter value is displayed quickly by pressing the <Navigate> key.



## 9 Technical Data

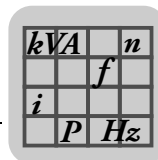
### 9.1 Conformity

All products meet the following international standards:

- CE marking according to the low voltage directive
- IEC 664-1 Insulation coordination for electrical equipment within low-voltage systems
- UL 508C Power conversion equipment
- EN 61800-3 Variable-speed electrical drives – part 3
- EN 61000-6 / -2, -3, -4 Interference immunity / Interference emission (EMC)
- Housing protection classes according to NEMA 250, EN 60529
- Classification of flammability according to UL 94
- C-Tick
- cUL

### 9.2 Information on ambient conditions

	Permitted conditions
Ambient temperature during operation	-10 to 50 °C for PWM frequency in factory setting (IP20) -10 to 40 °C for PWM frequency in factory setting (IP66 NEMA 4X / IP55 NEMA 12k)
Maximum derating depending on the ambient temperature	4 % / 1 °C to 55 °C for IP20 inverters 4% / 1 °C to 45 °C for IP66/IP55 inverters
Ambient temperature during storage	-40 °C to +60 °C
Maximum installation altitude for nominal operation	1000 m
Derating above 1000 m	1% / 100 m to max. 2000 m
Relative humidity	< 95 % (condensation not permitted)
Degree of protection of control cabinet inverter	IP20 NEMA 1
Inverter with high degree of protection	IP66 NEMA 4X / IP55 NEMA 12k



### 9.3 Output power and current carrying capacity without filter

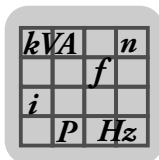
Whether MOVITRAC® LTE-B inverters are used with or without filter depends on the regulations applicable in the various countries where the product is used.

- **Without filter: permitted in America, Asia, and Africa**
- With filter: suited for use worldwide

#### 9.3.1 1-phase system AC 115 V for 3-phase AC 230 V motors (voltage doubler)

MOVITRAC® LTE-B – EMC filter class 0					
IP20	Type	MC LTE B...	0004-101-1-00	0008-101-1-00	0011-101-4-00
	Part number		08296839	08296847	08296855
IP55 /NEMA-12 housing without switch	Type	MC LTE B...	0004-101-1-10	0008-101-1-10	0011-101-4-10
	Part number		08297754	08297762	08297770
IP55 /NEMA-12 housing with switch	Type	MC LTE B...	0004-101-1-20	0008-101-1-20	0011-101-4-20
	Part number		08297290	08297304	08297312
IP66/NEMA-4X housing without switch	Type	MC LTE B...	0004-101-1-30	0008-101-1-30	0011-101-4-30
	Part number		18254640	18254659	18254667
IP66/NEMA-4X housing with switch	Type	MC LTE B...	0004-101-1-40	0008-101-1-40	0011-101-4-40
	Part number		18252540	18252559	18252567
INPUT					
Line voltage V <sub>line</sub>		V	1 × AC 115 V ± 10%		
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%		
Line fuse		A	10	16 (15) <sup>1)</sup>	20
Nominal input current		A	6.7	12.5	16.8
OUTPUT					
Recommended motor power		kW	0.37	0.75	1.1
		PS	0.5	1.0	1.5
Output voltage V <sub>motor</sub>		V	3 × 20 – 250 V (voltage doubler)		
Output current		A	2.3	4.3	5.8
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5		
		AWG	16		
Max. motor cable length	Shielded	m	25		100
	Unshielded		40		150
GENERAL INFORMATION					
Size		Size	1		2
Heat loss at nominal output power		W	11	22	33
Minimum braking resistance value		Ω	-		47

1) Recommended values for UL compliance



## Technical Data

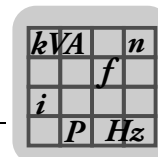
Output power and current carrying capacity without filter

### 9.3.2 1-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LTE-B – EMC filter class 0								
IP20 <sup>1)</sup>	Type	MC LTE B...	0004-201-1-00	0008-201-1-00	0015-201-1-00	0015-201-4-00	0022-201-4-00	0040-201-4-00
	Part number		08296863	08296871	08296898	08296901	08296928	18250394
IP55/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0004-201-1-10	0008-201-1-10	0015-201-1-10	0015-201-4-10	0022-201-4-10	0040-201-4-10
	Part number		08297789	08297797	08297800	08297819	08297827	18250408
IP55/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0004-201-1-20	0008-201-1-20	0015-201-1-20	0015-201-4-20	0022-201-4-20	0040-201-4-20
	Part number		08297320	08297339	08297347	08297355	08297363	18250416
INPUT								
Line voltage V <sub>line</sub>		V	1 × AC 200 – 240 V ± 10%					
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%					
Line fuse		A	10	16	20		32 (35) <sup>2)</sup>	40
Nominal input current		A	6.7	12.5	14.8	14.8	22.2	31.7
OUTPUT								
Recommended motor power		kW	0.37	0.75	1.5	1.5	2.2	4
		PS	0.5	1	2	2	3	5
Output voltage V <sub>motor</sub>		V	3 × 20 – 250 V					
Output current		A	2.3	4.3	7	7	10.5	16
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5					2.5
		AWG	16					18
Max. motor cable length	Shielded	m	25			100		
	Unshielded		40			150		
GENERAL INFORMATION								
Size		Size	1			2		3
Heat loss at nominal output power		W	11	22	45	45	66	120
Minimum braking resistance value		Ω	-			47		

1) Device for America, Asia, and Africa

2) Recommended values for UL compliance

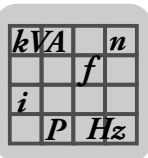


### 9.3.3 3-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LTE-B – EMC filter class 0								
IP20 1)	Type	MC LTE B...	0004-203-1-00	0008-203-1-00	0015-203-1-00	0015-203-4-00	0022-203-4-00	0040-203-4-00
	Part number		08296936	08296944	08296952	08296960	08296979	08296987
IP55/NEMA-12 housing without switch1)	Type	MC LTE B...	0004-203-1-10	0008-203-1-10	0015-203-1-10	0015-203-4-10	0022-203-4-10	0040-203-4-10
	Part number		08297835	08297843	08297851	08297878	08297886	08297894
IP55/NEMA-12 housing with switch1)	Type	MC LTE B...	0004-203-1-20	0008-203-1-20	0015-203-1-20	0015-203-4-20	0022-203-4-20	0040-203-4-20
	Part number		08297371	08297398	08297401	08297428	08297436	08297444
INPUT								
Line voltage Vline		V	3 × AC 200 – 240 V ± 10%					
Line frequency fline		Hz	50/60 Hz ± 5%					
Line fuse		A	6	10	16 (15)2)		20	32 (35)2)
Nominal input current		A	3	5.8	9.2		13.7	20.7
OUTPUT								
Recommended motor power		kW	0.37	0.75	1.5	1.5	2.2	4.0
		PS	0.5	1	2	2	3	5
Output voltage Vmotor		V	3 × 20 – 250 V					
Output current		A	2.3	4.3	7	7	10.5	18
Cross section of motor cable Cu 75C		mm²	1.5					2.5
		AWG	16					12
Max. motor cable length	Shielded	m	25			100		
	Unshielded		40			150		
GENERAL INFORMATION								
Size		Size	1			2		3s
Heat loss at nominal output power		W	11	22	45		66	120
Minimum braking resistance value		Ω	-			47		

1) Device for America, Asia, and Africa

2) Recommended values for UL compliance



## Technical Data

Output power and current carrying capacity without filter

### 9.3.4 3-phase system AC 400 V for 3-phase AC 400 V motors

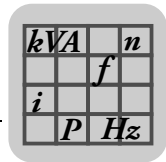
Sizes 1 and 2

MOVITRAC® LTE-B – EMC filter class 0							
IP20 <sup>1)</sup>	Type	MC LTE B...	0008-503-1-00	0015-503-1-00	0015-503-4-00	0022-503-4-00	0040-503-4-00
	Part number		08296995	08297002	08297010	08297029	08297037
IP55/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0008-503-1-10	0015-503-1-10	0015-503-4-10	0022-503-4-10	0040-503-4-10
	Part number		08297908	08297916	08297924	08297932	08297940
IP55/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0008-503-1-20	0015-503-1-20	0015-503-4-20	0022-503-4-20	0040-503-4-20
	Part number		08297452	08297460	08297479	08297487	08297495
INPUT							
Line voltage V <sub>line</sub>		V	3 × AC 380 – 480 V ± 10%				
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%				
Line fuse		A	5	10			16 (15) <sup>2)</sup>
Nominal input current		A	2.9	5.4		7.6	12.4
OUTPUT							
Recommended motor power		kW	0.75	1.5	1.5	2.2	4
		PS	1	2	2	3	5
Output voltage V <sub>motor</sub>		V	3 × 20 – 480 V				
Output current		A	2.2	4.1	4.1	5.8	9.5
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5				
		AWG	16				
Max. motor cable length	Shielded	m	25		50		
	Unshielded		40		75		
GENERAL INFORMATION							
Size		Size	1		2		
Heat loss at nominal output power		W	22	45		66	120
Minimum braking resistance value		Ω	-		100		

1) Device for America, Asia, and Africa

2) Recommended values for UL compliance



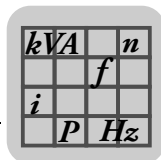


Size 3

MOVITRAC® LTE-B – EMC filter class 0					
IP20 <sup>1)</sup>	Type	MC LTE B...	0055-503-4-00	0075-503-4-00	0110-503-4-00
	Part number		08297045	08297053	08299218
IP55/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0055-503-4-10	0075-503-4-10	-
	Part number		08297959	08297967	-
IP55/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0055-503-4-20	0075-503-4-20	-
	Part number		08297509	08297517	-
INPUT					
Line voltage V <sub>line</sub>		V	3 × AC 380 – 480 V ± 10%		
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%		
Line fuse		A	20	25	32 (35) <sup>2)</sup>
Nominal input current		A	16.1	20.7	27.1
OUTPUT					
Recommended motor power		kW	5.5	7.5	11
		PS	7.5	10	15
Output voltage V <sub>motor</sub>		V	3 × 20 – 480 V		
Output current		A	14	18	24
Cross section of motor cable Cu 75C		mm <sup>2</sup>	2.5		4
		AWG	12		10
Max. motor cable length	Shielded	m	100		
	Unshielded		150		
GENERAL INFORMATION					
Size		Size	3s		
Heat loss at nominal output power		W	165	225	330
Minimum braking resistance value		Ω	47		

1) Device for America, Asia, and Africa

2) Recommended values for UL compliance



## 9.4 Output power and current carrying capacity with filter

Whether MOVITRAC® LTE-B inverters are used with or without filter depends on the regulations applicable in the various countries where the product is used.

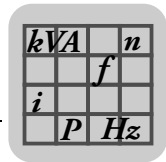
- **With filter: suited for use worldwide**
- Without filter: permitted in America, Asia, and Africa

### 9.4.1 1-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LTE-B – EMC filter class B								
IP20 <sup>1)</sup>	Type	MC LTE B...	0004-2B1-1-00	0008-2B1-1-00	0015-2B1-1-00	0015-2B1-4-00	0022-2B1-4-00	0040-2B1-4-00
	Part number		08297061	08297088	08297096	08297118	08297126	18250424
IP55-/NEMA-12 housing without switches <sup>1)</sup>	Type	MC LTE B...	0004-2B1-1-10	0008-2B1-1-10	0015-2B1-1-10	0015-2B1-4-10	0022-2B1-4-10	0040-2B1-4-10
	Part number		08297975	08297983	08297991	08298009	08298017	18250432
IP55-/NEMA-12 housing with switches <sup>1)</sup>	Type	MC LTE B...	0004-2B1-1-40	0008-2B1-1-40	0015-2B1-1-40	0015-2B1-4-40	0022-2B1-4-40	0040-2B1-4-40
	Part number		08297525	08297533	08297541	08297568	08297576	18250440
IP66/NEMA-4X housing without switches <sup>1)</sup>	Type	MC LTE B...	0004-2B1-1-30	0008-2B1-1-30	0015-2B1-1-30	0015-2B1-4-30	0022-2B1-4-30	0040-2B1-4-30
	Part number		18254675	18254683	18254691	18254705	18254713	18254721
IP66-/NEMA-4X housing with switches <sup>1)</sup>	Type	MC LTE B...	0004-2B1-1-40	0008-2B1-1-40	0015-2B1-1-40	0015-2B1-4-40	0022-2B1-4-40	0040-2B1-4-40
	Part number		18251013	18251021	18251048	18251056	18251064	18251072
INPUT								
Line voltage V <sub>line</sub>		V	1 × AC 200 – 240 V ± 10%					
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%					
Line fuse		A	10	16	20		32 (35) <sup>2)</sup>	40
Nominal input current		A	6.7	12.5	14.8	14.8	22.2	31.7
OUTPUT								
Recommended motor power		kW	0.37	0.75	1.5	1.5	2.2	4
		PS	0.5	1	2	2	3	5
Output voltage V <sub>motor</sub>		V	3 × 20 – 250 V					
Output current		A	2.3	4.3	7	7	10.5	16
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5					2.5
		AWG	16					18
Max. motor cable length	Shielded	m	25			100		
	Unshielded		40			150		
GENERAL INFORMATION								
Size		Size	1			2		3
Heat loss at nominal output power		W	11	22	45	45	66	120
Minimum braking resistance value		Ω	-			47		

1) Device for Europe, Australia, and New Zealand

2) Recommended values for UL compliance

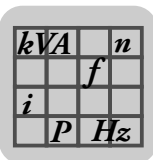


### 9.4.2 3-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LTE-B – EMC filter class A					
IP20 <sup>1)</sup>	Type	MC LTE B...	0015-2A3-4-00	0022-2A3-4-00	0040-2A3-4-00
	Part number		08297134	08297142	08297150
IP55-/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0015-2A3-4-10	0022-2A3-4-10	0040-2A3-4-10
	Part number		08298025	08298033	08298041
IP55-/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0015-2A3-4-20	0022-2A3-4-20	0040-2A3-4-20
	Part number		08297584	08297592	08297606
IP66/NEMA-4X housing without switch <sup>1)</sup>	Type	MC LTE B...	0015-2A3-4-30	0022-2A3-4-30	0040-2A3-4-30
	Part number		18254748	18254756	18254764
IP66/NEMA-4X housing with switch <sup>1)</sup>	Type	MC LTE B...	0015-2A3-4-40	0022-2A3-4-40	0040-2A3-4-40
	Part number		18251110	18251129	18251137
INPUT					
Line voltage V <sub>line</sub>		V	3 × AC 200 – 240 V ± 10%		
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%		
Line fuse		A	16 (15) <sup>2)</sup>	20	32 (35) <sup>2)</sup>
Nominal input current		A	9.2	13.7	20.7
OUTPUT					
Recommended motor power		kW	1.5	2.2	4.0
		PS	2	3	5
Output voltage V <sub>motor</sub>		V	3 × 20 – 250 V		
Output current		A	7	10.5	18
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5		2.5
		AWG	16		12
Max. motor cable length	Shielded	m	100		
	Unshielded		150		
GENERAL INFORMATION					
Size		Size	2		3s
Heat loss at nominal output power		W	66		120
Minimum braking resistance value		Ω	47		

1) Device for Europe, Australia, and New Zealand

2) Recommended values for UL compliance



## Technical Data

### Output power and current carrying capacity with filter

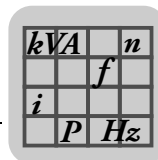
#### 9.4.3 3-phase system AC 400 V for 3-phase AC 400 V motors

Sizes 1 and 2

MOVITRAC® LTE-B – EMC filter class A							
IP20 <sup>1)</sup>	Type	MC LTE B...	0008-5A3-1-00	0015-5A3-1-00	0015-5A3-4-00	0022-5A3-4-00	0040-5A3-4-00
	Part number		08297169	08297177	08297185	08297193	08297207
IP55/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0008-5A3-1-10	0015-5A3-1-10	0015-5A3-4-10	0022-5A3-4-10	0040-5A3-4-10
	Part number		08298068	08298076	08298084	08298092	08298106
IP55/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0008-5A3-1-20	0015-5A3-1-20	0015-5A3-4-20	0022-5A3-4-20	0040-5A3-4-20
	Part number		08297614	08297622	08297630	08297649	08297657
IP66/NEMA-4X housing without switch <sup>1)</sup>	Type	MC LTE B...	0008-5A3-1-30	0015-5A3-1-30	0015-5A3-4-30	0022-5A3-4-30	0040-5A3-4-30
	Part number		18254772	18254780	18254799	18254802	18254810
IP66/NEMA-4X housing with switch <sup>1)</sup>	Type	MC LTE B...	0008-5A3-1-40	0015-5A3-1-40	0015-5A3-4-40	0022-5A3-4-40	0040-5A3-4-40
	Part number		18251145	18251153	18251161	18251188	18251196
INPUT							
Line voltage V <sub>line</sub>		V	3 × AC 380 – 480 V ± 10%				
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%				
Line fuse		A	5	10			16 (15) <sup>2)</sup>
Nominal input current		A	2.9	5.4		7.6	12.4
OUTPUT							
Recommended motor power		kW	0.75	1.5	1.5	2.2	4
		PS	1	2	2	3	5
Output voltage V <sub>motor</sub>		V	3 × 20 – 480 V				
Output current		A	2.2	4.1	4.1	5.8	9.5
Cross section of motor cable Cu 75C		mm <sup>2</sup>	1.5				
		AWG	16				
Max. motor cable length	Shielded	m	25		50		
	Unshielded		40		75		
GENERAL INFORMATION							
Size		Size	1		2		
Heat loss at nominal output power		W	22	45		66	120
Minimum braking resistance value		Ω	-		100		

1) Device for Europe, Australia, and New Zealand

2) Recommended values for UL compliance



Size 3

MOVITRAC® LTE-B – EMC filter class A					
IP20 <sup>1)</sup>	Type	MC LTE B...	0055-5A3-4-00	0075-5A3-4-00	0110-5A3-4-00
	Part number		08297215	08297223	08299196
IP55/NEMA-12 housing without switch <sup>1)</sup>	Type	MC LTE B...	0055-5A3-4-10	0075-5A3-4-10	-
	Part number		08298114	08298122	-
IP55/NEMA-12 housing with switch <sup>1)</sup>	Type	MC LTE B...	0055-5A3-4-20	0075-5A3-4-20	-
	Part number		08297665	08297673	-
IP66-/NEMA-12 hous- ing without switch <sup>1)</sup>	Type	MC LTE B...	0055-5A3-4-30	0075-5A3-4-30	-
	Part number		18254829	18254837	-
IP66-/NEMA-12 hous- ing with switch <sup>1)</sup>	Type	MC LTE B...	0055-5A3-4-40	0075-5A3-4-40	-
	Part number		18251218	18251226	-
INPUT					
Line voltage V <sub>line</sub>		V	3 × AC 380 – 480 V ± 10%		
Line frequency f <sub>line</sub>		Hz	50/60 Hz ± 5%		
Line fuse		A	20	25	32 (35) <sup>2)</sup>
Nominal input current		A	16.1	20.1	27.1
OUTPUT					
Recommended motor power		kW	5.5	7.5	11
		PS	7.5	10	15
Output voltage V <sub>motor</sub>		V	3 × 20 – 480 V		
Output current		A	14	18	24
Cross section of motor cable Cu 75C		mm <sup>2</sup>	2.5		4
		AWG	12		10
Max. motor cable length	Shielded	m	100		
	Unshielded		150		
GENERAL INFORMATION					
Size		Size	3s		
Heat loss at nominal output power		W	165	225	330
Minimum braking resistance value		Ω	47		

1) Device for Europe, Australia, and New Zealand

2) Recommended values for UL compliance



## 10 Address List

Germany			
<b>Headquarters</b>	<b>Bruchsal</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 7251 75-0
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		P.O. Box	<a href="mailto:sew@sew-eurodrive.de">sew@sew-eurodrive.de</a>
		Postfach 3023 • D-76642 Bruchsal	
<b>Production / Industrial Gears</b>	<b>Bruchsal</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 7251 75-0
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		D-76646 Bruchsal	
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	<b>North</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 5137 8798-30
		Alte Ricklinger Straße 40-42	Fax +49 5137 8798-55
		D-30823 Garbsen (near Hannover)	<a href="mailto:sc-nord@sew-eurodrive.de">sc-nord@sew-eurodrive.de</a>
	<b>East</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 3764 7606-0
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		D-08393 Meerane (near Zwickau)	<a href="mailto:sc-ost@sew-eurodrive.de">sc-ost@sew-eurodrive.de</a>
	<b>South</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 89 909552-10
		Domagkstraße 5	Fax +49 89 909552-50
		D-85551 Kirchheim (near München)	<a href="mailto:sc-sued@sew-eurodrive.de">sc-sued@sew-eurodrive.de</a>
	<b>West</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 2173 8507-30
		Siemensstraße 1	Fax +49 2173 8507-55
		D-40764 Langenfeld (near Düsseldorf)	<a href="mailto:sc-west@sew-eurodrive.de">sc-west@sew-eurodrive.de</a>
	<b>Electronics</b>	SEW-EURODRIVE GmbH & Co KG	Tel. +49 7251 75-1780
		Ernst-Blickle-Straße 42	Fax +49 7251 75-1769
		D-76646 Bruchsal	<a href="mailto:sc-elektronik@sew-eurodrive.de">sc-elektronik@sew-eurodrive.de</a>
	<b>Drive Service Hotline / 24 Hour Service</b>		+49 180 5 SEWHELP +49 180 5 7394357 14 euro cents/min on the German land-line network. Max 42 euro cents/min from a German mobile network. Prices for mobile and international calls may differ.
Additional addresses for service in Germany provided on request!			

France			
<b>Production</b>	<b>Haguenau</b>	SEW-USOCOME	Tel. +33 3 88 73 67 00
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<b>Service</b>		B. P. 20185	<a href="http://www.usocom.com">http://www.usocom.com</a>
		F-67506 Haguenau Cedex	<a href="mailto:sew@usocom.com">sew@usocom.com</a>
<b>Production</b>	<b>Forbach</b>	SEW-USOCOME	Tel. +33 3 87 29 38 00
		Zone industrielle	
		Technopôle Forbach Sud	
		B. P. 30269	
		F-57604 Forbach Cedex	
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<b>Sales</b>		Parc d'activités de Magellan	Fax +33 5 57 26 39 09
<b>Service</b>		62 avenue de Magellan - B. P. 182	
		F-33607 Pessac Cedex	
	<b>Lyon</b>	SEW-USOCOME	Tel. +33 4 72 15 37 00
		Parc d'affaires Roosevelt	Fax +33 4 72 15 37 15
		Rue Jacques Tati	
		F-69120 Vaulx en Velin	



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	<b>Paris</b>	SEW-USOCOME Zone industrielle 2 rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
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<b>Belarus</b>			
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<b>Assembly Sales Service</b>	<b>Brussels</b>	<b>SEW-EURODRIVE n.v./s.a.</b> Researchpark Haasrode 1060 Evenementenlaan 7 BE-3001 Leuven	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
<b>Service Competence Center</b>	<b>Industrial Gears</b>	<b>SEW-EURODRIVE n.v./s.a.</b> Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be service-wallonie@sew-eurodrive.be
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	Joinville	SEW-EURODRIVE Brasil Ltda. Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br
	Indaiatuba	SEW-EURODRIVE Brasil Ltda. Estrada Municipal Jose Rubim, 205 Rodovia Santos Dumont Km 49 13347-510 - Indaiatuba / SP	Tel. +55 19 3835-8000 sew@sew.com.br
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Cameroon			
Sales	Douala	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137 electrojemba@yahoo.fr
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	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Lasalle, PQ H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
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		SEW-EURODRIVE CZ s.r.o. Lužná 591 16000 Praha 6 - Vokovice	
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Egypt			
<b>Sales Service</b>	<b>Cairo</b>	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 +1 23143088 Fax +20 2 22594-757 <a href="http://www.copam-egypt.com/">http://www.copam-egypt.com/</a> copam@datum.com.eg



<b>Estonia</b>			
<b>Sales</b>	<b>Tallin</b>	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
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<b>Assembly Sales Service</b>	<b>Lahti</b>	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a> sew@sew.fi
<b>Production Assembly</b>	<b>Karkkila</b>	SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a>
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<b>Sales</b>	<b>Libreville</b>	ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun	Tel. +241 741059 Fax +241 741059 esg_services@yahoo.fr
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<b>Assembly Sales Service</b>	<b>Normanton</b>	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate Normanton West Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 <a href="http://www.sew-eurodrive.co.uk">http://www.sew-eurodrive.co.uk</a> info@sew-eurodrive.co.uk
<b>Drive Service Hotline / 24 Hour Service</b>			Tel. 01924 896911
<b>Greece</b>			
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<b>Hong Kong</b>			
<b>Assembly Sales Service</b>	<b>Hong Kong</b>	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk
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<b>Sales Service</b>	<b>Budapest</b>	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 <a href="http://www.sew-eurodrive.hu">http://www.sew-eurodrive.hu</a> office@sew-eurodrive.hu
<b>India</b>			
<b>Registered Office Assembly Sales Service</b>	<b>Vadodara</b>	SEW-EURODRIVE India Private Limited Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 3045200, +91 265 2831086 Fax +91 265 3045300, +91 265 2831087 <a href="http://www.seweurodriveindia.com">http://www.seweurodriveindia.com</a> salesvadodara@seweurodriveindia.com



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<b>Israel</b>			
<b>Sales</b>	<b>Tel-Aviv</b>	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il
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<b>Assembly Sales Service</b>	<b>Solaro</b>	SEW-EURODRIVE di R. Blicke & Co.s.a.s. Via Bernini, 14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
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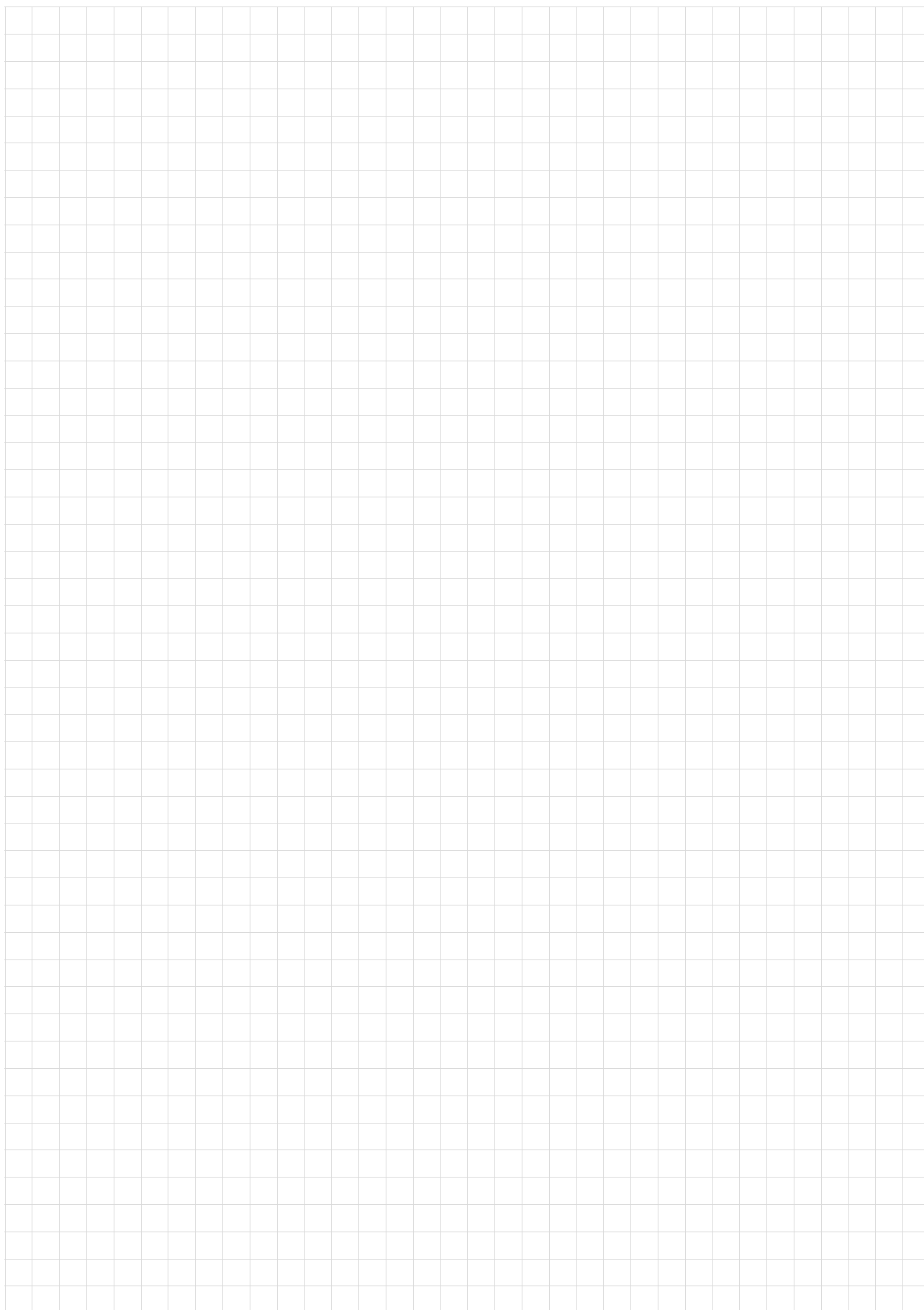
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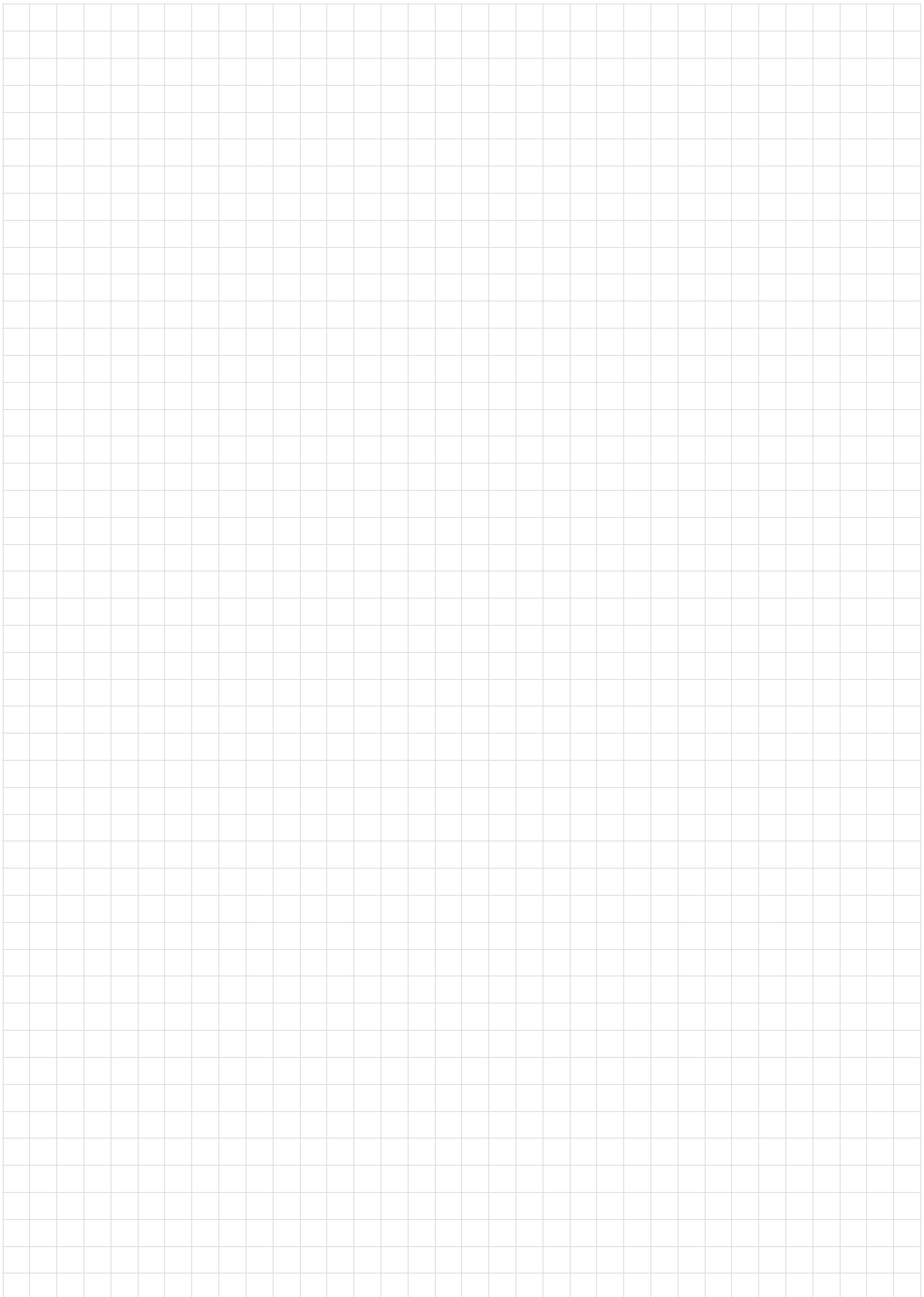
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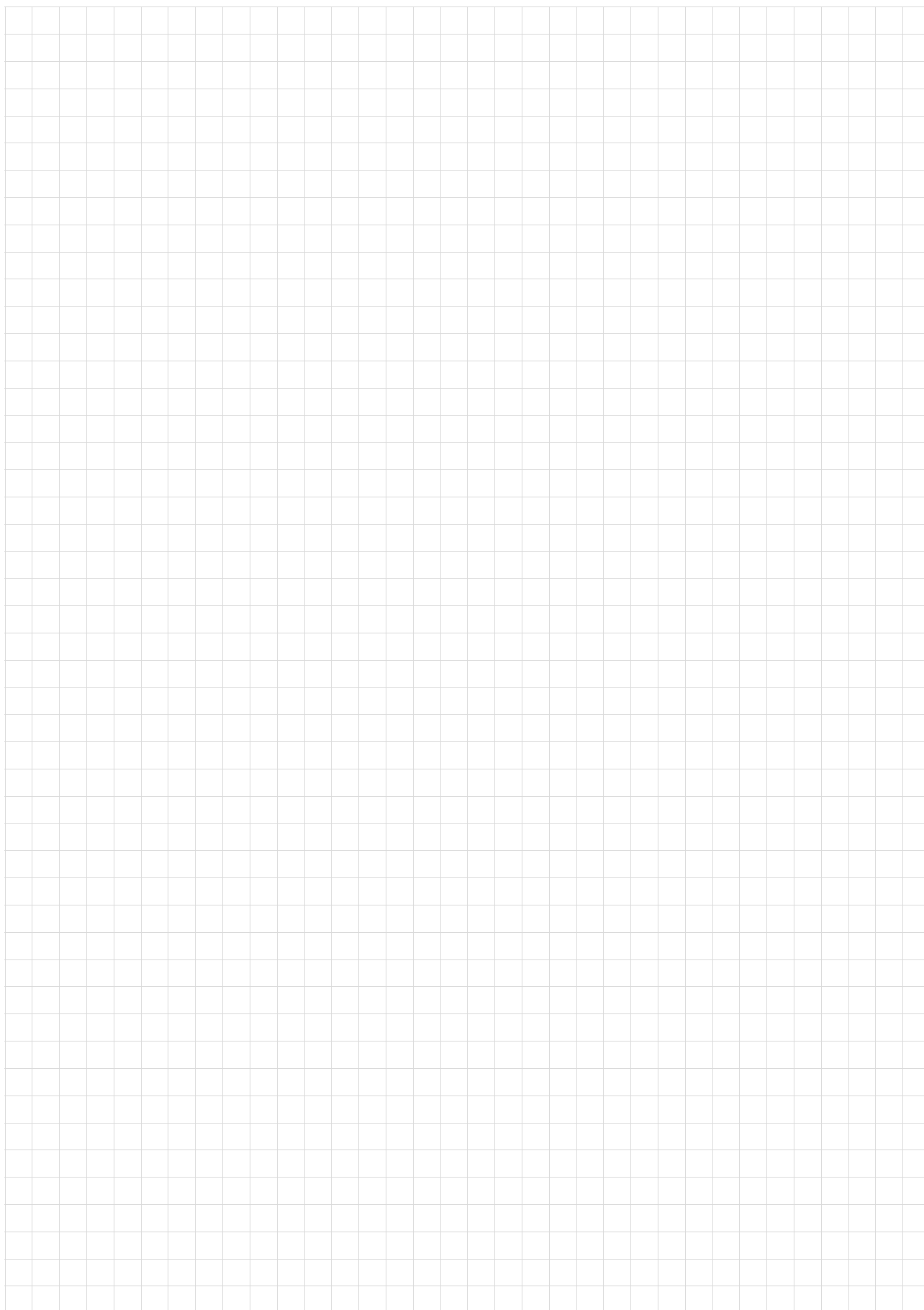
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