



SEW
EURODRIVE



MOVITRAC[®] LT E (Version B)

Edition 01/2008

11670215 / EN

Operating Instructions





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Important Notes

Structure of the safety notes

1 Important Notes

1.1 Structure of the safety notes

The safety notes in these operating instructions are structured as follows:

Symbol	 SIGNAL WORD
	Nature and source of hazard. Possible consequence(s) if disregarded. • Measure(s) to avoid the hazard.

Symbol	Signal Word	Meaning	Consequences if disregarded
Example:  General hazard	 HAZARD	Imminent hazard	Severe or fatal injuries
 Specific hazard, e.g. electric shock	 WARNING	Possible hazardous situation	Severe or fatal injuries
	 CAUTION	Possible hazardous situation	Minor injuries
	STOP	Possible damage to property	Damage to the drive system or its environment
	NOTE	Useful information or tip Simplifies drive system handling	

Unless the information in the operating instructions is adhered to, it will be impossible to ensure:

- Trouble-free operation
- Fulfillment of any rights to claim under guarantee

Consequently, read the operating instructions before you start working with the unit!

The operating instructions contain important information about servicing. Therefore, keep the operating instructions close to the unit.



1.2 Application environment

The following applications are forbidden unless measures are expressly taken to make them possible:

- Use in explosion-proof areas.
- Use in environments with harmful substances:
 - Oils
 - Acids
 - Gases
 - Vapors
 - Dust
 - Radiated interference
 - Other harmful environments
- Use subject to mechanical vibration and shock loads in excess of the requirements in EN 50178.
- If the inverter performs safety functions which have to guarantee the protection of machinery and people.

1.3 Waste disposal

Please follow the current instructions: dispose in accordance with the regulations in force:

- Electronics scrap (printed-circuit boards)
- Plastic (housing)
- Sheet metal
- Copper



2 Safety Notes

MOVITRAC® LT drive inverters may not perform safety functions without higher-level safety systems.

Do not use MOVITRAC® LT drive inverters for any safety functions in conjunction with hoist applications.

2.1 Installation and startup

- **Never install damaged products or take them into operation.** Please submit a complaint to the transport company immediately in the event of damage.
- **Installation, startup and service work** on the unit only by **trained personnel**. The personnel must be trained in the relevant aspects of accident prevention and must comply with the regulations in force (e.g. EN 60204, VBG 4, DIN-VDE 0100/0113/0160).
- Follow the **specific instructions** during **installation** and **startup** of the motor and the brake!
- Make sure that **preventive measures** and **protection devices** correspond to the **applicable regulations** (e.g. EN 60204 or EN 50178).
Grounding the unit is a necessary protective measure.
Overcurrent protection devices are a necessary protective measure.
- **The unit meets all requirements for reliable isolation** of power and electronics connections in accordance with UL508. **All connected circuits** must also **satisfy the requirements for reliable isolation** so as to guarantee reliable isolation.
- Take **suitable measures** to ensure that the connected **motor does not start up automatically when the inverter is switched on**. To do this, you can connect binary inputs DI01 through DI03 to GND.

2.2 Operation and servicing

	⚠ WARNING
	Danger of electrical shock. High voltages are present in the terminals and in within the drive for up to 10 minutes after the electrical supply has been disconnected. Severe or fatal injuries. • Disconnect and isolate the MOVITRAC® LT E from the electrical supply at least 10 minutes before commencing any work on it.

- **Dangerous voltages** are present in the **output terminals** and the **cables and motor terminals connected to them when the unit is switched on**. Dangerous voltages may also be present when the unit is inhibited and the motor at a standstill.
- The unit is **not** necessarily **deenergized** when the **LEDs and the 7-segment display are off**.
- **Safety functions inside the unit** or a **mechanical blockage** may cause the **motor to stop**. The **removal of the source of the malfunction** or a **reset** can result in an **automatic restart of the drive**. If, for safety reasons, this is **not permissible** for the driven machine, **disconnect the unit from the supply system** before correcting the fault.



3 General specifications

3.1 Input voltage ranges

Depending on model and power rating the drives are designed for direct connection to the following supplies:

MOVITRAC® LT E sizes 1, 2 (115 V input):

115 V ± 10 %, 1 ph, 50 ... 60 Hz ± 5 %

MOVITRAC® LT E sizes 1, 2 and 3s (220 ... 240 V):

220 V ... 240 V ± 10 %, 1* ph / 3 ph, 50 ... 60 Hz ± 5 %



NOTE

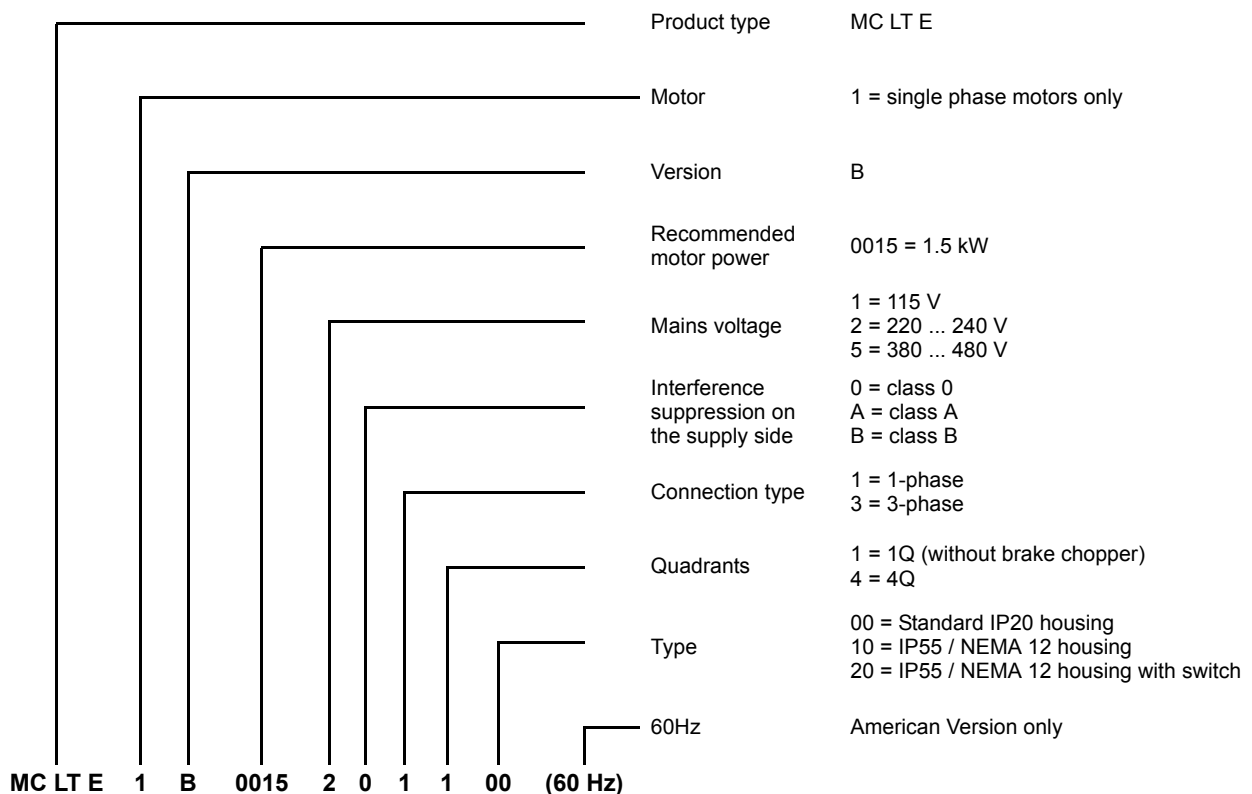
*It is also possible to connect 1-phase MOVITRAC® LT to 2-phases of a 220 ... 240 V 3-phase mains.

MOVITRAC® LT E sizes 1, 2 and 3s (380 ... 480 V):

380 V ... 480 V ± 10 %, 3 ph, 50 ... 60 Hz ± 5 %

Products used with a 3-phase supply are designed for a maximum supply imbalance of 3 % between phases. For input supplies which have a supply imbalance greater than 3 % (typically the Indian subcontinent and parts of Asia Pacific including China) we recommend that input chokes are used.

3.2 Product designation





3.3 Overload capability

All MOVITRAC® LT E units have a possible overload of:

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

The overload is reduced to 150 % for 7.5 seconds if the output frequency is below 10 Hz.

3.4 Protection features

- Output short-circuit, phase-to-phase, phase-to-ground
- Output over-current
 - Trip set at 175 % of rated drive current.
- Overload protection
 - Drive delivers 150 % of rated motor current for 60 seconds.
- Over-voltage trip
 - Set at 123 % of drive maximum rated supply voltage.
- Under-voltage trip
- Over temperature trip
- Under temperature trip
 - Drive will trip if enabled below 0 °C
- Supply phase imbalance
 - A running drive will trip if there is a supply imbalance of > 3 % persisting for more than 30 seconds.
- Supply phase loss
 - A running drive will trip if one phase of a 3-phase supply is lost for more than 15 seconds.



4 Mechanical Installation

- Carefully inspect the MOVITRAC® LT E prior to installation to ensure it is undamaged.
- Store the MOVITRAC® LT E in its box until required. Storage should be clean and dry and within the ambient temperature range $-40\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$.
- Install the MOVITRAC® LT E on a flat, vertical, flame-resistant, vibration-free surface, within suitable housing. This should be according to EN 60529 if specific Ingress Protection ratings are required.
- Do not place flammable material close to the drive.
- The entry of conductive or flammable foreign bodies should be prevented.
- The maximum operational ambient temperature is $50\text{ }^{\circ}\text{C}$ and the minimum is $0\text{ }^{\circ}\text{C}$.
- Relative humidity must be less than 95 % (non-condensing).
- MOVITRAC® LT E units can be installed side-by-side with their heatsink flanges touching. This gives adequate ventilation space between them. If the MOVITRAC® LT E is to be installed above another drive or any other heat-producing device, the minimum vertical spacing is 150 mm. The enclosure should either be force-ventilated or large enough to allow natural cooling (see chapter 4.2).



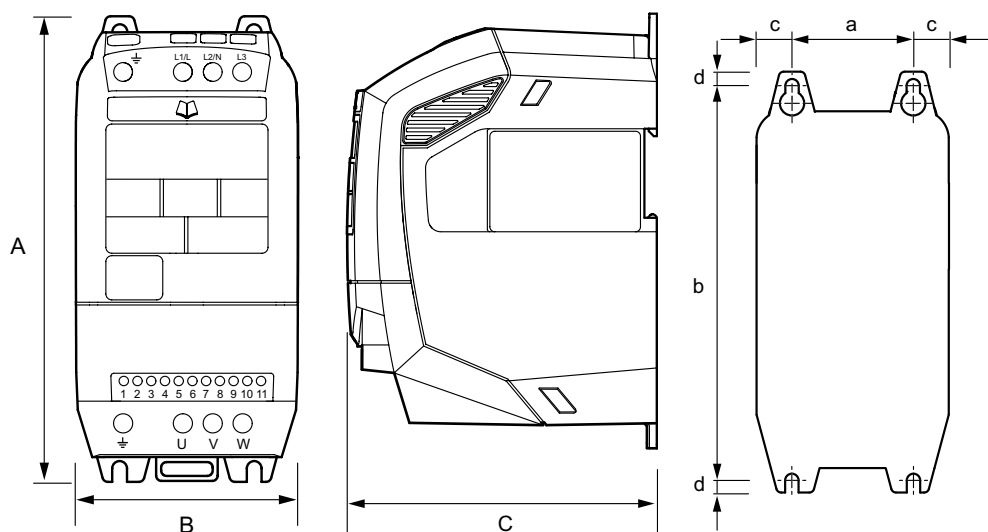
4.1 Dimensions

MOVITRAC® LT E is available in 2 housing versions:

- Standard IP20 housing for use in switch cabinets
- IP55 / NEMA 12 K version for size 1 and size 2 drives

The IP55 / NEMA 12 K housing is protected against moisture and dust. Therefore, the drives can be operated indoors under harsh conditions. Electronically, the drives are identical and the only differences are the dimensions of the housing and the weight.

4.1.1 Dimensions of the IP20 housing



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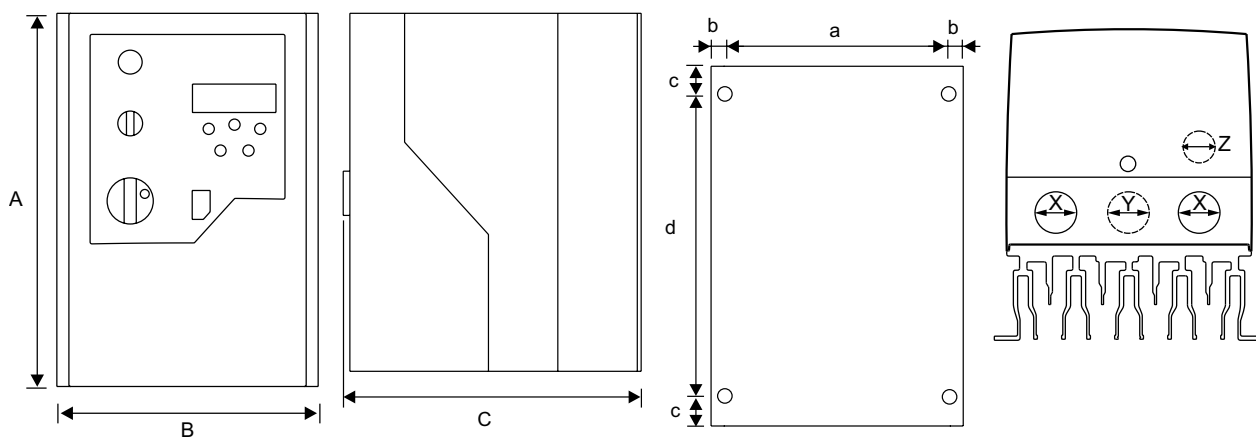
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Dimension		Size 1	Size 2	Size 3
A (Height)	[mm]	154.3	201.0	248.1
	[in]	6.10	7.91	9.77
B (Width)	[mm]	82.2	104.0	140.0
	[in]	3.24	4.10	5.51
C (Depth)	[mm]	122.6	150	160
	[in]	4.83	5.90	6.30
Weight	[kg]	1.1	2.0	4.5
	[lb]	2.43	4.40	10.0
a	[mm]	50.0	63.0	80.0
	[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]	5.0	5.25	7.25
	[in]	0.2	0.21	0.29
Power terminal torque settings	[Nm]	1.0	1.0	1.0
	[lb.in]	8.85	8.85	8.85
Recommended screw size		4 × M4	4 × M4	4 × M4



4.1.2 Dimensions of the IP55 / NEMA 12 housing (LT E xxx –10 and –20)



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Dimension		Size 1	Size 2	Size 3
Height (A)	[mm]	200	310	390
	[in]	7.9	12.2	12.2
Width (B)	[mm]	140	165	220
	[in]	5.5	6.5	8.66
Depth (C)	[mm]	162	176	220
	[in]	6.4	6.9	8.66
Weight	[kg]	2.3	4.5	5.6
	[lb]	5.1	9.9	12.4
a	[mm]	128	153	208
	[in]	5	6	8.2
b	[mm]	6	6	6
	[in]	0.23	0.23	0.23
c	[mm]	25	25	25
	[in]	0.98	0.98	0.98
d	[mm]	142	252	252
	[in]	5.6	9.9	9.9
X	[mm]	22	25	25
	[in]	0.87	0.98	0.98
Y ¹⁾	[mm]	22	22	22
	[in]	0.87	0.87	0.87
Z ¹⁾	[mm]	17	17	17
	[in]	0.67	0.67	0.67
Power terminal torque settings	[Nm]	1	1	1
	[lb.in]	8.85	8.85	8.85
Control terminal torque settings	[Nm]	0.5	0.5	0.5
	[lb.in]	4.43	4.43	4.43
Recommended screw size		2 × M4	4 × M4	4 × M4

1) Glands Y and Z are flip out glands.



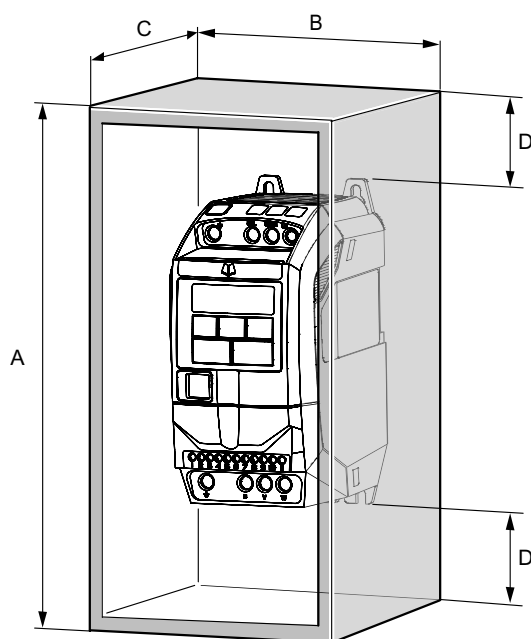
4.2 IP20 housing: mounting and dimensions

For applications that require a higher IP rating than the IP20 offered by the standard drive, the drive must be mounted in housing. The following guidelines should be observed for these applications:

- Housing should be made from a thermally conductive material, unless forced ventilation is used.
- When vented housing is used, there should be venting above and below the drive to ensure good air circulation. Air should be drawn in below the drive and expelled above the drive.
- If the external environment contains contamination particles (e.g. dust), a suitable particle filter should be fitted to the vents and forced ventilation implemented. The filter must be serviced and cleaned as and when necessary.
- Environments with a high moisture, salt or chemical content should use a suitably sealed (non-vented) housing.

4.2.1 Dimensions of non-vented metal housing

Drive power rating		Sealed housing							
		A		B		C		D	
		[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]
Size 1	0.37 kW 230 V	300	11.81	250	9.84	200	7.87	50	1.97
Size 1	0.75 kW 230 V	300	11.81	250	9.84	200	7.87	50	1.97
Size 1	1.5 kW 230 V	400	15.75	300	11.81	250	9.84	75	2.95
Size 2	1.5 kW 230 V 0.75 kW, 1.5 kW, 2.2 kW 400 V 2.2 kW 400 V	400	15.75	300	11.81	300	11.81	60	2.36
Size 2	2.2 kW 230 V 4.0 kW 400 V	600	23.62	450	17.72	300	11.81	100	3.94



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Figure 1: Housing



4.2.2 Dimensions of vented housing

Drive power rating		Vented housing							
		A		B		C		D	
		[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]
Size 1	All ratings	400	15.75	300	11.81	150	5.91	75	2.95
Size 2	All ratings	600	23.62	400	15.75	250	9.84	100	3.94

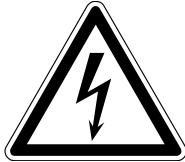
4.2.3 Dimensions of force vented housing

Drive power rating		Force vented housing (with fan)								Air Flow
		A		B		C		D		
		[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	
Size 1	All ratings	300	11.81	200	7.87	150	5.91	75	2.95	> 15 m³/h
Size 2	All ratings	400	15.75	300	11.81	250	9.84	100	3.94	> 45 m³/h



5 Electrical Installation

It is essential to comply with the safety instructions in chapter 2 during installation.



⚠ WARNING

Danger of electrical shock. High voltages are present in the terminals and in within the drive for up to 10 minutes after the electrical supply has been disconnected.

Severe or fatal injuries.

- Disconnect and isolate the MOVITRAC® LT E from the electrical supply at least 10 minutes before commencing any work on it.

- MOVITRAC® LT E units should only be installed by qualified electricians and in accordance with local and national regulations and codes of practice.
- The MOVITRAC® LT E has an Ingress Protection rating of IP20. For higher IP ratings, use a suitable enclosure or the IP55 version.
- Where the electrical supply to the drive is through a plug and socket connector, do not disconnect until 10 minutes have elapsed after turning off the supply.
- Ensure correct earthing connections. See diagram in chapter 5.2.2.
- The earth cable must be sufficient to carry the maximum supply fault current which normally will be limited by the fuses or MCB.



⚠ HAZARD

Risk of fatal injury if the hoist falls.

Severe or fatal injuries.

- MOVITRAC® LT E is not designed for use as a safety device in hoist applications. Use monitoring systems or mechanical protection devices to ensure safety.

5.1 Prior to installation

- Ensure that the supply voltage, frequency and number of phases (single or three phase) correspond to the rating of the MOVITRAC® LT E as delivered.
- An isolator or similar should be installed between the power supply and the drive.
- Never connect the mains power supply to the MOVITRAC® LT E output terminals U, V or W.
- Protect the drive by using slow-blow HRC fuses or an MCB located in the mains supply to the drive.
- Do not install any type of automatic switchgear between the drive and the motor. Wherever control cabling is close to power cabling, maintain a minimum separation of 100 mm and arrange crossings at 90 °.
- Ensure that screening or armoring of power cables is effected in accordance with the connections diagram in chapter 5.2.2.
- Ensure that all terminals are tightened to the appropriate torque.



5.2 Installation

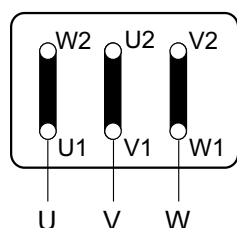
Connect the drive according to the following diagram. Ensure that the motor terminal box connections are correct. There are two standards in general: Star and Delta. It is essential to ensure that the motor is connected in accordance with the voltage at which it will be operated. For more information, refer to the diagram in chapter 5.2.1.

It is recommended that the power cabling should be 4-core PVC-insulated screened cable, laid in accordance with local industrial regulations and codes of practice.

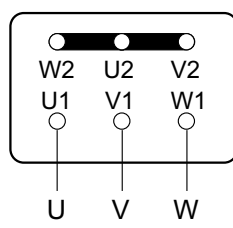
The ground terminal of each MOVITRAC® LT E should be individually connected **directly** to the site earth (ground) busbar (through the filter if installed) as shown. MOVITRAC® LT E ground connections should not loop from one drive to another. They should also not loop to or from any other equipment. Ground loop impedance must conform to local industrial safety regulations. To meet UL regulations, UL approved ring crimp terminals should be used for all earth wiring connections.

5.2.1 Motor terminal box connections

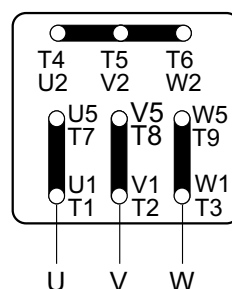
Motors are connected in either Star, Delta, Double Star or Star Nema motors. The motor rating plate will indicate the voltage rating for the method of connection, which must match the operating voltage of the MOVITRAC® LT E unit.



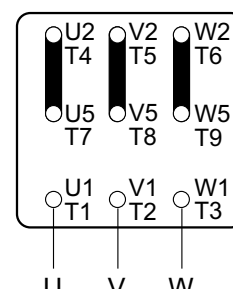
Low voltage Δ



High voltage W

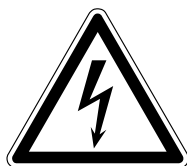


Low voltage WW



High voltage W

5.2.2 Drive and motor connection



⚠ WARNING

Danger of electrical shock. Risk of exposure to high voltage may occur if the unit is wired incorrectly.

Severe or fatal injuries.

- It is essential to observe the connection sequence illustrated below.

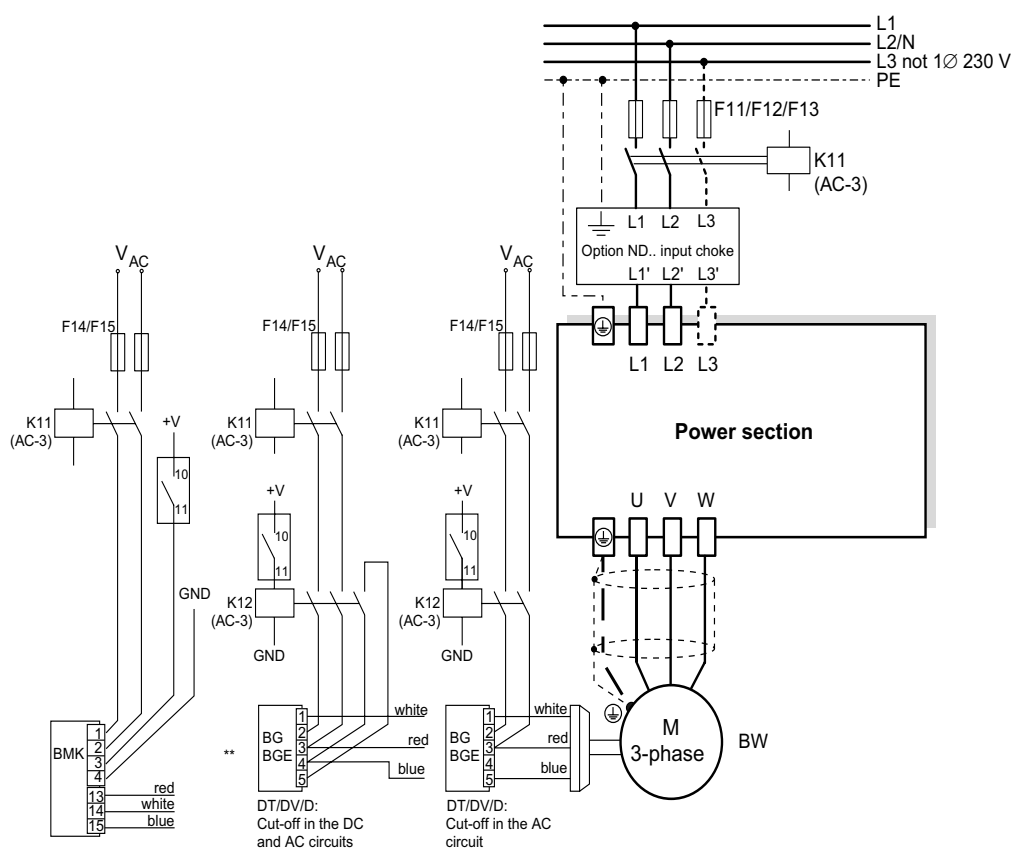


Figure 2: Wiring diagram for power section

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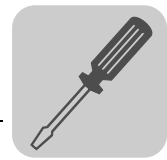


NOTE

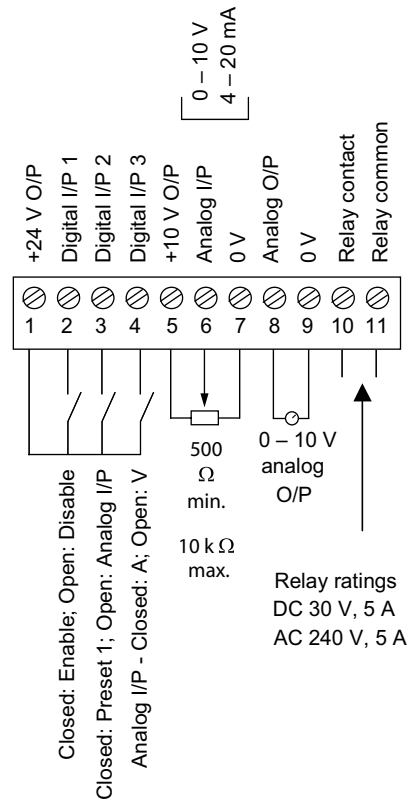
- Connect the brake rectifier using a separate supply system lead.
- **Supply via the motor voltage is not permitted!**

Always switch off the brake on the DC and AC sides with:

- All hoist applications
- Drives that require a rapid brake response time



5.3 Signal terminals overview



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The signal terminal block has the following signal connections:

Terminal no.	Description	Connection
1	+24 V ref out	Ref. to activate DI1 ... DI3
2	Digital input 1	Connect to +8 V ... 30 V DC to activate
3	Digital input 2	Connect to +8 V ... 30 V DC to activate
4	Digital input 3 / thermistor	Connect to +8 V ... 30 V DC to activate
5	+10 V ref out	10 V ref for analog input (pot supply +, 10 mA max)
6	Analog input (12 bit)	0 ... 10 V (4 ... 20 mA when Iref enabled)
7	0 V common	0 V ref for analog input (pot supply -)
8	Analog output (10 bit)	0 ... 10 V, 10 V / 20 mA digital programmed
9	0 V common	0 V ref for analog output
10	Relay N.O	N.O. relay contact (AC 250 V / DC 30 V @ 5 A)
11	Relay Common	N.O. relay contact (AC 250 V / DC 30 V @ 5 A)

All digital inputs activated by input voltage in range +8 V ... 30 V, i.e. +24 V compatible.



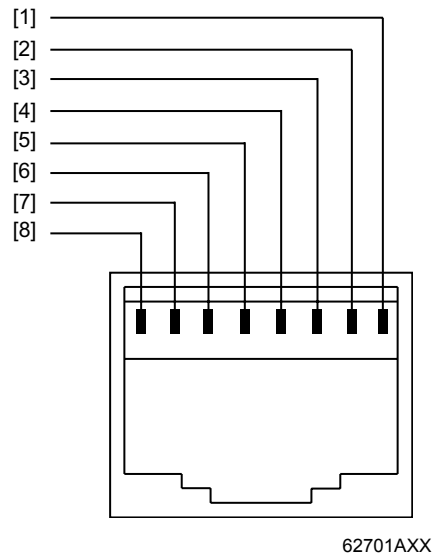
NOTE

Voltages greater than 30 V applied to the control terminals may result in damage to the controller.

Only apply voltages up to 30 V to the control terminals.



5.4 RJ45 Communication Socket



- | | |
|-----|--------------------------------------|
| [1] | No connection |
| [2] | No connection |
| [3] | +24 V |
| [4] | RS-485+ / internal bus ¹⁾ |
| [5] | RS-485- / internal bus ¹⁾ |
| [6] | 0 V |
| [7] | SBus+ ²⁾ |
| [8] | SBus- ²⁾ |

1) The bit format is fixed as: 1 start bit, 8 data bits, 1 stop bit, no parity

2) P-12 must be set to 3 or 4 for SBus communication

5.5 UL-compliant installation

Note the following for UL-compliant installation:

- The drives can be operated within an ambient temperature of 0 °C ... 50 °C.
- Only use copper connection cables which can withstand ambient temperatures of up to 75 °C.
- Permitted tightening torques for MOVITRAC® LT E power terminals are:
 - Sizes 1, 2 & 3s = 1 Nm / 8.9 lb.in

MOVITRAC® LT E drive inverters are suitable for operation in voltage power systems with an earthed star point (TN and TT systems), which can supply a maximum supply current and a maximum supply voltage in accordance with the following tables. The fuses listed in the following tables are the maximum permitted fuses for each inverter. Only use melting fuses.

Only use tested units with a limited output voltage ($V_{\max} = \text{DC } 30 \text{ V}$) and limited output current ($I = < 8 \text{ A}$) as an external DC 24 V source.

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



5.5.1 220 ... 240 V Units

MOVITRAC® LTE...	Short circuit rating	Max. supply voltage	Fuses
0004	AC 5000 A	AC 240 V	AC 6 A / 250 V
0008	AC 5000 A	AC 240 V	AC 10A / 250 V
0015	AC 5000 A	AC 240 V	AC 20A / 250 V
0022, 0040	AC 5000 A	AC 240 V	AC 32 A / 250 V

5.5.2 380 ... 480 V Units

MOVITRAC® LTE...	Short circuit rating	Max. supply voltage	Fuses
0008, 0015, 0022	AC 5000 A	AC 480 V	AC 10 A / 600 V
0040	AC 5000 A	AC 480 V	AC 20 A / 600 V
0055, 0075	AC 5000 A	AC 480 V	AC 32 A / 600 V



6 Startup

6.1 User interface

Keypad

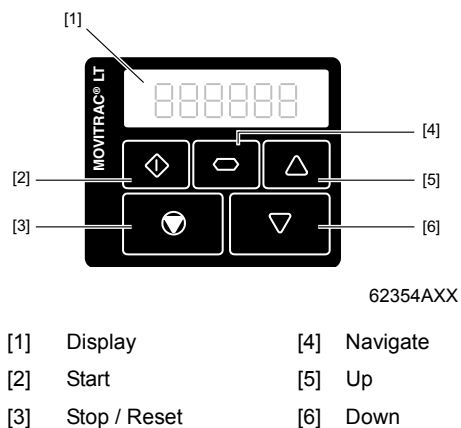
Each MOVITRAC® LT E has an integrated keypad as standard, allowing drive operation and setup without any additional equipment.

The keypad consists of 5 keys with the following functions:

Start / Run	Enable running of motor
Stop / Reset	Stop motor / reset trip
Navigate	Press and hold to enter / exit parameter edit mode
Up	Increase parameter / value
Down	Decrease parameter / value

The Start / Stop buttons on the keypad are disabled when the parameters have their factory default settings. To enable the operation of the Start / Stop buttons on the keypad, set *P-12* to 1 or 2 (see chapter 9.1, "Standard parameters").

The Navigate key alone is used to gain access to the parameter edit menu. Pressing and holding this key (> 1 sec) allows the user 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) the user is able to toggle between the operating speed and operating current during drive operation.



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.



6.2 Easy startup

1. Connect the motor to the drive, checking the connection for the motor voltage rating.
2. Enter motor data from motor nameplate:
 - *P-08* = motor rated current
 - *P-09* = motor rated frequency
3. Enable the drive by making a connection between terminal 1 and 2.

6.2.1 Terminal mode (default setting)

To operate 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 (2.2 k ... 10 k) between terminals 5, 6 and 7 with the wiper connected to pin 6.
- Close the switch to enable the drive.
- Adjust speed with the potentiometer.

6.2.2 Keypad mode

To operate 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 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.)



NOTE

The desired target speed can be preset by pressing the <stop> key whilst the drive is stopped. When the <start> key is subsequently pressed, the drive will then ramp to this speed.

6.2.3 Key parameters

- Adjust the maximum and minimum speed limit using *P-01* and *P-02*.
- Adjust the acceleration and deceleration times using *P-03* and *P-04*.
- Set up the motor nameplate data in parameters *P-07* to *P-10*.



6.2.4 Startup for operation via Fieldbus

- Start the drive as instructed at the start of chapter 6.2.
- 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 give access to the extended menu.
- Set the values in *P-36* as follows:
 - For a unique SBus address set to between 1 and 63
 - For an SBus baud fitted to 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 5.4 "RJ45 communication socket".
- Set the dipswitch AS on the DFX / UOH-Gateway from OFF to ON to perform the Autosetup for the fieldbus gateway. The LED "H1" on the gateway will flash repeatedly and then remain off. If the LED "H1" is lit then the gateway or one of the drives on the SBus isn't connected or wasn't started correctly.
- The configuration of the fieldbus communication between DFX / UOH-Gateway and bus master is described in the corresponding DFX manual.

Monitoring of the data transferred

The monitoring of the data transferred via the gateway can be achieved via one of the following options:

- The gateway's X24 engineering interface
- MOVITOOLS® MotionStudio
- The gateway's web page (only on DFE3x ethernet gateways)



Description of the transferred process data (PD)

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

Description		Range		Settings
PO1	Control word	0	Disable output stage	0: Enabled 1: Disabled
		1	Fast stop on 2nd deceleration ramp (<i>P-24</i>)	0: 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 ≥ 1 = trip reset
		7 ... 16	Reserved	0
PO2	Setpoint speed	Scaling: 0 x 4000 = 100 % of maximum speed as set in <i>P-01</i> Values greater than 0 x 4000 or less than 0 x C000 are limited to 0 x 4000 / 0 x C000		
PO3	Ramp-Time (if <i>P-12</i> = 4)	Scaling: acceleration and deceleration in ms for delta n = 50 Hz		
	No function (if <i>P-12</i> = 3)	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		Range		Settings
PI1	Status word	0	Enable output stage	0: Disabled 1: Enabled
		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 (high-byte)	Drive status if Bit 5 = 0 0x01 = output stage enabled 0x02 = no enable / no run 0x04 = enable / run 0x05 = factory setting is active	
		8 ... 15 (high-byte)	Error code if Bit 5 = 1 001 = drive output over current 004 = no enable / no run 006 = input phase imbalance trip / input phase loss 007 = DC bus over voltage 008 = Motor overload 009 = Parameter setting to factory default 011 = Over temperature trip 026 = External trip 047 = Communication link (SBus) loss trip 113 = Analog input error, current is less than 2.5 mA 117 = Under temperature trip 198 = DC bus under voltage 200 = General error / power stage error	
PI2	Actual speed	Scaling: 0 x 4000 = 100 % of maximum speed as set in <i>P-01</i>		
PI3	Actual current	Scaling: 0 x 4000 = 100 % of maximum speed 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		Range	
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		Range	
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	



7 Operation

To enable the operational status of the drive to be determined at any time, the following information is displayed:

Drive OK	Drive status mnemonics static
Drive running	Drive status mnemonics operational
Fault / trip	Fault mnemonic

7.1 Drive status

7.1.1 Status mnemonics static

The following list indicates which mnemonics will be displayed as drive status information when the motor is at a standstill.

Mnemonic	Description
StoP	Drive power stage disabled. This message will be displayed when the drive is stopped and no faults are present. The drive is ready for normal operation.
P-deF	Default parameters loaded. This message will be displayed when the user invokes the command to load the factory default parameters. The reset button has to be pressed before the drive can be operated again.
Stndby	Drive is in standby. This message will be displayed 30 seconds after the drive is on 0 speed and the setpoint is 0 as well.

7.1.2 Status mnemonics operational

The following list indicates which mnemonics will be displayed as drive status information when the motor is in operation.

Use the <Navigate> button on the keypad to toggle between output frequency, output current and speed.

Mnemonic	Description
H xxx	The drive output frequency is displayed in Hz. This message will be displayed when the drive is running.
A xxx	The drive output current is displayed in Amp. This message will be displayed when the drive is running.
xxxx	The drive output speed is displayed in rpm. This message will be displayed when the drive is running and the motor rated speed is entered in parameter <i>P-10</i> .
. (flashing dots)	Output current of the drive exceeds the current which is set in <i>P-08</i> . MOVITRAC® LT E will monitor the level and duration of the overload. Depending on the overload level, the MOVITRAC® LT E will trip with "I.t-trP".



8 Service and fault codes

8.1 Troubleshooting

Symptom	Cause and Solution
Overload or over-current trip on unloaded motor during acceleration	Check Star / Delta terminal connection in motor. Rated operating voltage of drive and motor should match. The Delta connection always gives the lower voltage rating of a dual voltage motor.
Overload or over-current – motor does not spin	Check for locked rotor. Check that the mechanical brake is released (if fitted).
Drive will not enable – display remains on "StoP"	Check that the hardware enable signal is applied to digital input 1. Ensure that the User +10 V output voltage (between terminals 5 and 7) is correct. If not, check wiring to user terminal strip. Check <i>P-12</i> for terminal / keypad mode. If keypad mode selected, press the <start> button. Check that supply voltage is within specification.
Drive will not power up in very cold ambient temperatures	If the ambient temperature is less than $-10\text{ }^{\circ}\text{C}$, the drive may not power up. Ensure that a local heating source keeps the ambient above $0\text{ }^{\circ}\text{C}$ in these conditions.
Extended menus cannot be accessed	Ensure that <i>P-14</i> is set to the extended access code. This is "101" unless the code in <i>P-37</i> has been changed by the user.

8.2 Fault history

The parameter *P-13* in the parameter mode holds a record of the most recent 4 trips and / or events that have occurred. Each trip will be displayed in abbreviated text, with the most recent trip being displayed first (on entering into the value of *P-13*).

Whenever a new trip occurs, this is entered at the top of the list and the other trips move down. The oldest trip will then be removed from the trip log.

	NOTE
	If the most recent trip in the trip log is an "under-voltage" trip, further under-voltage trips will not be entered into the trip log. This is to ensure that the trip log does not fill up with under-voltage trips which occur naturally every time the MOVITRAC® LT E is turned off.



8.3 Fault codes

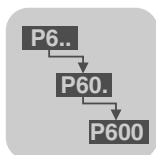
Trip message	Explanation
"O-I"	Over-current on drive output to motor. • Trip on drive enable: check for wiring error or short circuit. • Trip on motor starting: check for stalled or jammed motor. • Trip during operation: check for sudden overload or malfunction.
"I.t-trP"	Drive overload trip, occurring when the drive has been delivering > 100 % rated current (set in P1-08) for a period of time. The display flashes to indicate an overload condition.
"O-Uolt"	Over-voltage on DC bus. Check supply voltage is within limits. If trip occurs on deceleration, reduce deceleration time.
"U-Uolt"	Under-voltage trip. Happens routinely when drive powered down. If it occurs whilst running, check supply voltage.
"O-t"	Over-temperature trip. Check drive cooling and possible enclosure dimensions.
"PS-trP"	Trip on drive enable: check for wiring error or short circuit. Trip during operation: check for sudden overload or over-temperature.
"E-triP"	External trip (connected to digital input 3). Check motor thermistor (if connected).
"th-Flt"	Faulty thermistor on heatsink. Contact SEW-EURODRIVE Service.
"EE-F"	EEPROM fault. Parameters not saved, defaults reloaded. If fault reoccurs contact SEW-EURODRIVE Service.
"4 ... 20 F"	Current analog input out of range. Check input current is within range defined in P-16.

8.4 SEW electronics service

Send in for repair Please contact the **SEW-EURODRIVE electronics service** if a fault cannot be rectified.

Please provide the following information when sending the unit in for repair:

- Serial number (→ nameplate)
- Unit designation
- Brief description of the application (application, control via terminals or serial)
- Connected components (inverter, etc.)
- Nature of the error
- Accompanying circumstances
- Your own presumption of what has happened
- Any unusual events preceding the problem, etc.

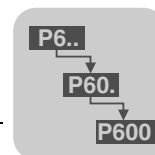


9 Parameters

9.1 Standard parameters

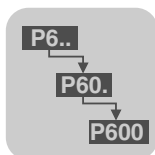
Parameter	Description	Range	Default	Explanation
P-01	Max. speed limit (Hz or rpm)	P-02 ... 5 × P-09 (max. 500 Hz)	50 Hz ¹⁾	Maximum speed limit - Hz or rpm (see <i>P-10</i>)
P-02	Min. speed limit (Hz or rpm)	0 ... P-01 (max. 500 Hz)	0 Hz	Maximum speed limit - Hz or rpm (see <i>P-10</i>)
P-03	Acceleration ramp time (s)	0.0 ... 600 s	5 s	Acceleration ramp time from 0 to 50 Hz (fixed) in seconds
P-04	Deceleration ramp time (s)	0.0 ... 600 s	5 s	Deceleration ramp time from 50 Hz (fixed) to standstill in seconds. If set to 0, then the fastest possible ramp time without trip is activated.
P-05	Stop mode select	0 Ramp to stop 1 Coast to stop 2 Ramp to stop (fast stop)	0	If the supply is lost and <i>P-05</i> = 0, then the drive will try to continue running by reducing the speed of the load using the load as a generator. If <i>P-05</i> = 2, then the drive will ramp to stop using the <i>P-04</i> deceleration ramp when mains supply is lost. Also activates constant power braking mode for normal braking.
P-06	Energy optimizer	0 Disabled 1 Enabled	0	When enabled, automatically reduces applied motor voltage on light load. Minimum value is 50 % of nominal.
P-07	Motor rated voltage	0, 20 ... 250 V 0, 20 ... 500 V	230 V 400 V	Rated (nameplate) voltage of the motor in volts. The value is limited to 250 V for low voltage drives. Setting to 0 disables voltage compensation.
P-08	Motor rated current	25 ... 100 % of drive current rating	Drive rating	Rated (nameplate) current of the motor in amps.
P-09	Motor rated frequency	25 ... 500 Hz	50 Hz ¹⁾	Rated (nameplate) frequency of the motor.
P-10	Motor rated speed	0 ... 30000 rpm	0	When not set to 0 all speed-related parameters are displayed in rpm.
P-11	Voltage boost	0 ... 25 % of max output voltage. Resolution 0.1 %	Motor power dependent	Applies an adjustable boost to the MOVITRAC [®] voltage output at low speed to assist with starting 'sticky' loads. For continuous applications at low speed use a force ventilated motor.
P-12	Terminal / Keypad control	0 Terminal control 1 Keypad control (fwd only) 2 Keypad control (fwd / rev to toggle between fwd and rev using start button) 3 SBus network control with internal acceleration / deceleration ramps 4 Not used	0 (Terminal control)	When <i>P-12</i> = 2, the keypad button <START> toggles between forward and reverse. When stopped, target speed can be accessed and changed using the STOP, Δ, buttons.
P-13	Trip log	Last four trips stored	No fault	Most recent 4 trips stored in order of occurrence, i.e. on entry, displays shows most recent first. Press the up and down buttons to view stored trips.
P-14	Extended menu access code	0 ... 9999	0	Set to "101" (default) for extended menu access. Change code in <i>P-37</i> to prevent unauthorized access to the extended parameter set.

1) 60 Hz (USA & Canada only)



9.2 Extended parameters

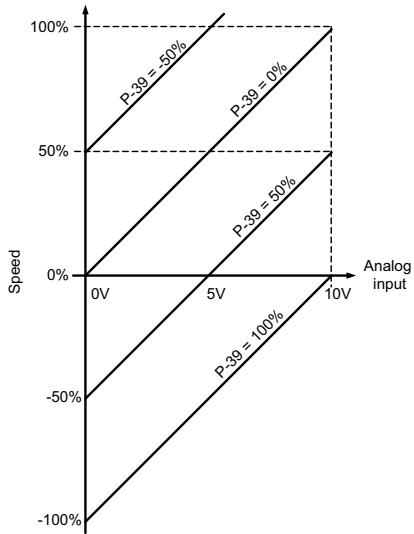
Parameter	Description	Range		Default	Explanation
P-15	Digital input function set	0 ... 12		0	Defines the function of the digital inputs.
P-16	Analog input V / mA	0 ... 10 V, b 0 ... 10 V, 0 ... 20 mA t 4 ... 20 mA, r 4 ... 20 mA t 20 ... 4 mA, r 20 ... 4 mA		0 ... 10 V	Configures the analog input format. 0 ... 10 V: unipolar mode (voltage input) b 0 ... 10 V: bipolar mode (voltage input) 0 ... 20 mA: unipolar mode (current input) 4 ... 20 mA: unipolar mode (current input) 20 ... 4 mA: reverse unipolar current mode "t" indicates the drive will trip if the signal is removed whilst the drive is enabled. "r" indicates the drive will ramp to preset speed 1 if the signal is removed whilst the drive is enabled.
P-17	Output switching frequency	2 ... 16 kHz		4 / 8 kHz	Sets maximum output switching frequency.
P-18	User relay output select	0	Drive enabled	1 (Drive healthy)	User relay settings. Digital output limit defined by value in <i>P-19</i> .
		1	Drive healthy (not tripped)		
		2	Motor at target speed		
		3	Drive tripped		
		4	Motor speed ≥ limit		
		5	Motor current ≥ limit		
		6	Motor speed < limit		
		7	Motor current < limit		
P-19	User relay output limit	0 ... 100 %		100 %	Sets the limit for <i>P-18</i> .
P-20	Preset speed 1	−P-01 (min) ... P-01 (max)		0 Hz	Defines preset / jog speed 1
P-21	Preset speed 2	−P-01 (min) ... P-01 (max)		0 Hz	Defines preset / jog speed 2
P-22	Preset speed 3	−P-01 (min) ... P-01 (max)		0 Hz	Defines preset / jog speed 3
P-23	Preset speed 4	−P-01 (min) ... P-01 (max)		0 Hz	Defines preset / jog speed 4
P-24	Deceleration ramp time 2	0 ... 25 s		0	Selected via digital inputs or on mains loss as set in <i>P-05</i> .
P-25	Analog output function select	0	Drive enabled (digital)	8	Options 0 ... 7 select a digital output (0 / 24 V). Digital output limit defined by value in <i>P-19</i> . Options 8 and 9 select an analog output.
		1	Drive healthy (digital)		
		2	Motor at target speed (digital)		
		3	Drive tripped (digital)		
		4	Motor speed ≥ limit (digital)		
		5	Motor current ≥ limit (digital)		
		6	Motor speed < limit (digital)		
		7	Motor current < limit (digital)		
		8	Motor speed (analog)		
		9	Motor current (analog)		
P-26	Skip frequency hysteresis band	0 ... P-01		0 Hz	Speed reference held at upper or lower skip frequency limit until input reaches opposite skip frequency limit. Speed ramps through the skip frequency band at a rate set in <i>P-03</i> and <i>P-04</i> .
P-27	Skip frequency	P-02 (min) ... P-01 (max)		0 Hz	Skip frequency centre point.
P-28	V/F characteristic adjustment voltage	0 ... P-07		0 V	Adjusts the applied motor voltage to this value at the frequency set in <i>P-29</i> .
P-29	V/F characteristic adjustment frequency	0 ... P-09		0 Hz	Sets the frequency at which the V/F adjustment voltage set in <i>P-28</i> is applied.

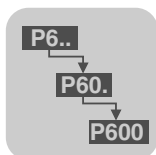


Parameters

Extended parameters

Parameter	Description	Range	Default	Explanation
P-30	Terminal mode restart function	Edge-r, Auto-0 ... Auto-5	Auto-0	Number of automatic resets.
P-31	Keypad mode restart function	0 Minimum speed	1	When set to 2 or 3, the drive enables when the drive hardware enable signal is present. The speed can then be varied on the keypad.
		1 Previous speed		
		2 Minimum speed (Auto-run)		
		3 Previous speed (Auto-run)		
P-32	DC injection enable / duration	0 ... 25 s	0 s	When > 0, DC injection braking is activated when speed reaches zero with stop signal applied. Only applied on disable (Stop), not on enable. Uses the level set in P-11.
P-33	Spin start	0 Disabled	0	When enabled, the drive starts from the detected rotor speed. Short stay delay is possible if the rotor is stationary. For size 1 drives, P-33 = 1 enables DC injection braking on enable. The duration and levels are set by P-32 and P-11 respectively.
		1 Enabled		
P-34	Brake chopper enable	0 Disabled	0	Software protection is only available for BWLT 050 002. All other braking resistors must be protected by external protection devices.
		1 Enabled with s/w protection for BWLT 050 002 only		
		2 Enabled for other BWxxxx with external protection		
P-35	Analog input scaling factor	0 % ... 500 %	100 %	Analog input scaling, resolution 0.1 %.
P-36	Comms address	Adr: 0 disable, 1 ... 63	1	Adr: Unique drive address for comms networks. When set to OP-buS, SBus disabled. Setting a baudrate enables SBus at that baudrate. The time before a trip in the event of a communication loss can be set in milliseconds. Setting "0" disables the comms trip.
	SBus enable / baudrate select	OP-buS (fixed at 115.2 kbps) 9.6 k ... 115.2 kbps (SBus)	OP-buS	
	Trip enable / delay	0, 30, 100, 1000, 3000 (ms)	100 ms	
P-37	Access code definition	0 ... 9999	101	Defines <i>Extended Parameter Set</i> access code P-14.
P-38	Parameter access lock	0 All parameters can be changed and are auto-saved on power down.	0 (Write access and auto-save enabled)	Controls user access to parameters. If P-38 = 0, all parameters can be changed. These changes will be stored automatically. If P-38 = 1, parameters are locked and cannot be changed.
		1 Read-only. No changes allowed.		

Parameter	Description	Range	Default	Explanation
P-39	Analog input offset	-500 ... 500 %	0 %	Analog input offset, resolution 0.1 %. 
P-40	Display speed scaling factor	0 ... 6	0	Scales speed by this factor. If $P-10 = 0$, speed in Hz scaled by this factor. If $P-10 > 0$, speed in rpm scaled. Displayed as real-time variable on the drive display.



9.3 P-15 Digital inputs function select

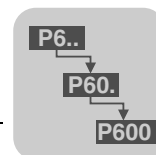
The functionality of the digital inputs within the MOVITRAC® LT E is user programmable, allowing the user to select the functions required for the application.

The following tables define the functions of the digital inputs depending on the value of parameter *P12* (Terminal / keypad control) and *P-15* (Digital input function select).

9.3.1 Terminal mode

If *P12* = 0 (terminal mode) then use the following table.

P-15	Digital input 1	Digital input 2	Digital input 3	Analog input	Comments
0	Open : Stop (Disable) Closed : Run (Enable)	Open : Forward run Closed : Reverse run	Open : Analog speed ref Closed : Preset speed 1	Analog input reference	–
1	Open : Stop (Disable) Closed : Run (Enable)	Open : Analog speed ref Closed : Preset speed 1 / 2	Open : Preset speed 1 Closed : Preset speed 2	Analog input reference	–
2	Open : Stop (Disable) Closed : Run (Enable)	Digital input 2 : open \ Digital input 3 : open /	→ Selects Preset speed 1	Open : Preset speed 1 ... 4 Closed : Max. speed (P-01)	–
	Open : Stop (Disable) Closed : Run (Enable)	Digital input 3 : open \ Digital input 2 : closed /	→ Selects Preset speed 2		
	Open : Stop (Disable) Closed : Run (Enable)	Digital input 3 : closed \ Digital input 2 : open /	→ Selects Preset speed 3		
	Open : Stop (Disable) Closed : Run (Enable)	Digital input 3 : closed \ Digital input 2 : closed /	→ Selects Preset speed 4		
3	Open : Stop (Disable) Closed : Run (Enable)	Open : Analog speed ref Closed : Preset speed 1	External trip input: Open : Trip Closed : Run	Analog input reference	Connect external thermistor type PT100 or similar to digital input 3.
4	Open : Stop (Disable) Closed : Run (Enable)	Open : Analog input 1 Closed : Analog input 2	Analog input 2	Analog input reference	Switches between analog inputs 1 and 2. Analog input 2 fixed at 0 ... 10 V.
5	Open : Forward stop Closed : Forward run	Open : Reverse Stop Closed : Reverse Run	Open : Analog speed ref Closed : Preset speed 1	Analog input reference	Closing digital inputs 1 and 2 together carries out a fast stop.
6	Open : Stop (Disable) Closed : Run (Enable)	Open : Forward run Closed : Reverse run	External trip input: Open : Trip Closed : Run	Analog input reference	Connect external thermistor type PT100 or similar to digital input 3.
7	Open : Forward stop Closed : Forward run	Open : Reverse Stop Closed : Reverse Run	External trip input: Open : Trip Closed : Run	Analog input reference	Closing digital inputs 1 and 2 together carries out a fast stop.
8	Open : Stop (Disable) Closed : Run (Enable)	Open : Forward run Closed : Reverse run	Open : Preset speed 1 Closed : Preset speed 2	Open : Preset speed 1 / 2 Closed : Preset speed 3 / 4	–
9	Open : Forward stop Closed : Forward run	Open : Reverse Stop Closed : Reverse Run	Open : Preset speed 1 Closed : Preset speed 2	Open : Preset speed 1 / 2 Closed : Preset speed 3 / 4	Closing digital inputs 1 and 2 together carries out a fast stop.
10	Normally Open (N.O.) Momentarily close to run	Normally Closed (N.C.) Momentarily open to stop	Open : Analog speed ref Closed : Preset speed 1	Analog input reference	–
11	Normally Open (N.O.) Momentarily close to run	Normally Closed (N.C.) Momentarily open to stop	Normally Open (N.O.) Momentarily close to run reverse	Analog input reference	Closing digital inputs 1 and 2 together carries out a fast stop.
12	Open : Stop (Disable) Closed : Run (Enable)	Closed to run Open to activate fast stop	Open : Analog speed ref Closed : Preset speed 1	Analog input reference	–



9.3.2 Keypad mode

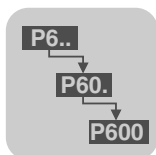
If $P12 = 1$ or 2 (keypad mode) then use the following table.

P-15	Digital input 1	Digital input 2	Digital input 3	Analog input	Comments
0, 1, 4, 5, 8 ... 12	Open : Stop (Disable) Closed : Run (Enable)	Closed : Remote UP pushbutton	Closed : Remote DOWN pushbutton	Open : Forward +24 V: Reverse	–
2	Open : Stop (Disable) Closed : Run (Enable)	Closed : Remote UP pushbutton	Closed : Remote DOWN pushbutton	Open : Keypad speed ref +24 V: Preset speed 1	–
3	Open : Stop (Disable) Closed : Run (Enable)	Closed : Remote UP pushbutton	External trip input: Open : Trip Closed : Run	Closed : Remote DOWN pushbutton	Connect external ther- mistor type PT100 or simi- lar to digital input 3.
6	Open : Stop (Disable) Closed : Run (Enable)	Open : Forward run Closed : Reverse run	External trip input: Open : Trip Closed : Run	Open : Keypad speed ref +24 V: Preset speed 1	Connect external ther- mistor type PT100 or simi- lar to digital input 3.
7	Open : Forward stop Closed : Forward run	Open : Reverse stop Closed : Reverse run	External trip input: Open : Trip Closed : Run	Open : Keypad speed ref +24 V: Preset speed 1	Closing digital inputs 1 and 2 together carries out a fast stop.

9.3.3 SBus control mode

If $P12 = 3$ or 4 (SBus control mode) then use the following table.

P-15	Digital input 1	Digital input 2	Digital input 3	Analog input	Comments
0, 1, 2, 4, 5, 8 ... 12	Open : Stop (Disable) Closed : Run (Enable)	No effect	No effect	No effect	Digital input 1 must be closed for the drive to run. Start and stop commands are given via the RS-485 link.
3	Open : Stop (Disable) Closed : Run (Enable)	Open : Master speed ref Closed : Preset speed 1	External trip input: Open : Trip Closed : Run	No effect	Connect external ther- mistor type PT100 or simi- lar to digital input 3.
6	Open : Stop (Disable) Closed : Run (Enable)	Open : Master speed ref Closed : Analog input	External trip input: Open : Trip Closed : Run	Analog input reference	When digital input 2 is open, start and stop are controlled via RS-485. When digital input 2 is closed, drive auto runs if digital input 1 is closed.
7	Open : Forward stop Closed : Forward run	Open : Master speed ref Closed : Keypad speed ref	External trip input: Open : Trip Closed : Run	No effect	When digital input 2 is open, start and stop are controlled via RS-485. When digital input 2 is closed, drive auto runs if digital input 1 is closed, depending on $P-31$.



Parameters

Real-time monitoring parameters (read-only)

9.4 Real-time monitoring parameters (read-only)

Parameter group zero provides access to internal drive parameters for monitoring purposes. These parameters cannot be adjusted.

Parameter	Description	Display range	Explanation
P00 (1)	Analog input 1 value	0 ... 100 %	100 % = max input voltage
P00 (2)	Analog input 2 value	0 ... 100 %	100 % = max input voltage
P00 (3)	Speed reference input	–P1-01 ... P1-01	Speed displayed in Hz if $P-10 = 0$, otherwise in rpm.
P00 (4)	Digital input status	Binary value	Digital drive input status
P00 (5)	Reserved	0	Reserved
P00 (6)	Reserved	0	Reserved
P00 (7)	Applied motor voltage	AC 0 ... 600 V	Value of RMS voltage applied to motor
P00 (8)	DC bus voltage log	DC 0 ... 1000 V	Internal DC bus voltage
P00 (9)	Heatsink temperature	–20 ... 100 °C	Temperature of heatsink in °C
P00 (10)	Hours run meter	0 ... 99999 hours	Not affected by resetting factory default parameters
P00 (11)	Run time since last trip (1)	99999 hours	Run-time clock stopped by drive disable (or trip), reset on next enable only if a trip occurred. Reset also on next enable after a power down.
P00 (12)	Run time since last trip (2)	99999 hours	Run-time clock stopped by drive disable (or trip), reset on next enable only if a trip occurred (undervoltage not considered a trip). Not reset by power down / power up cycling unless a trip occurred prior to power down. Also on next enable after a power down.
P00 (13)	Run time since last disable	99999 hours	Run-time clock stopped on drive disable, value reset on next enable.
P00 (14)	Reserved	0	Reserved
P00 (15)	DC bus voltage log	0 ... 1000 V	8 most recent values prior to trip
P00 (16)	Thermistor temperature log	–20 ... 120 °C	8 most recent values prior to trip
P00 (17)	Motor current	0 to 2 × rated current	8 most recent values prior to trip
P00 (18)	Software ID, IO and motor control	e.g. "1.00", "47AE"	Version number and checksum. "1" on LH side indicates I/O processor "2" on LH side indicates motor control
P00 (19)	Drive serial number	000000 ... 999999 00-000 ... 99-999	Unique drive serial number e.g. 540102 / 32 / 005
P00 (20)	Drive identifier	Drive rating / Software version	Drive rating, drive type and software version codes.

Parameter group zero access

When $P-14 = P-37$ (101 in default setting) all parameters are visible.

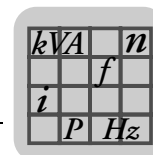
When the user scrolls to $P-00$, pressing the navigate button will display "P-00 z", where z represents the secondary number within $P-00$ (i.e. 1 ... 14). The user can then scroll to the required $P-00$ parameter.

Pressing the navigate button once more will then display the value of that particular group zero parameter.

For those parameters which have multiple values (e.g. software ID), pressing the up and down buttons will display the different values within that parameter.

Pressing the navigate button quickly returns to the next level up. If the navigate button is pressed again quickly (without pressing the up or down buttons), the display changes to the next level up (main parameter level, i.e. $P-00$).

If the up or down buttons are pressed whilst on the lower level (e.g. $P-00$ 5) to change the $P-00$ index, pressing the navigate button quickly displays that parameter value.



10 Technical Data

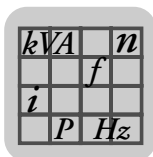
10.1 Conformance

All products conform to the following international standards:

- CE marked for low voltage directive
- IEC 664-1 Insulation coordination within low voltage systems
- UL 508C Power conversion equipment
- EN 61800-3 Adjustable speed electrical power drive systems - Part 3
- EN 61000-6 / -2, -3, -4 Generic immunity/ Emission standards (EMC)
- Enclosure protection level according to NEMA 250, EN 60529
- Flammability rating according to UL 94
- C-Tick
- cUL

10.2 Environmental

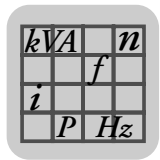
Operational ambient temperature range	0 ... 50 °C at 8 kHz PWM frequency
Storage ambient temperature range	−40 ... 60 °C
Maximum altitude for rated operation	1000 m
Derating above 1000 m	1 % / 100 m to max. 2000 m
Maximum relative humidity	95 % (non-condensing)
Protection rating cabinet drive	IP20
Protection rating high enclosure drive	IP55, NEMA 12 k



10.3 Output power and current ratings

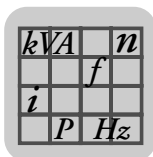
10.3.1 1-phase system AC 115 V for 3-phase AC 230 V motors (voltage doubler)

MOVITRAC® LT – EMC filter class 0					
IP20 Standard	Type	MC LT E B...	0004-101-1-00	0008-101-1-00	0011-101-4-00
	Part number		08296839	08296847	08296855
IP55 / NEMA 12 housing	Type	MC LT E 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 LT E B...	0004-101-1-20	0008-101-1-20	0011-101-4-20
	Part number		08297290	08297304	08297312
INPUT					
Supply voltage		V _{mains}	1 × AC 115 V ± 10 %		
Supply frequency		f _{mains}	50 / 60 Hz ± 10 %		
Supply fuse rating		[A]	20		30
OUTPUT					
Recommended motor power		[kW]	0.37	0.75	1.1
		[hp]	0.5	1.0	1.5
Output voltage		V _{motor}	3 × 20 ... 250 V (voltage doubler)		
Output current		[A]	2.3	4.3	5.8
Motor cable size Cu 75C		[mm ²]	1.0		1.5
		[AWG]	16		
Max motor cable length	Shielded	[m]	25		100
	Unshielded		40		150
GENERAL					
Max. ambient temperature at 8 kHz		[°C]	50		
Size			1		2



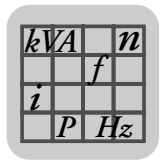
10.3.2 1-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LT – EMC filter class 0							
IP20 Standard	Type	MC LT E B...	0004-201-1-00	0008-201-1-00	0015-201-1-00	0015-201-4-00	0022-201-4-00
	Part number		08296863	08296871	08296898	08296901	08296928
IP20 Standard with filter	Type	MC LT E B...	0004-2B1-1-00	0008-2B1-1-00	0015-2B1-1-00	0015-2B1-4-00	0022-2B1-4-00
	Part number		08297061	08297088	08297096	08297118	08297126
IP55 / NEMA 12 housing	Type	MC LT E B...	0004-201-1-10	0008-201-1-10	0015-201-1-10	0015-201-4-10	0022-201-4-10
	Part number		08297789	08297797	08297800	08297819	08297827
IP55 / NEMA 12 housing with filter	Type	MC LT E B...	0004-2B1-1-10	0008-2B1-1-10	0015-2B1-1-10	0015-2B1-4-10	0022-2B1-4-10
	Part number		08297975	08297983	08297991	08298009	08298017
IP55 / NEMA 12 with switch	Type	MC LT E B...	0004-201-1-20	0008-201-1-20	0015-201-1-20	0015-201-4-20	0022-201-4-20
	Part number		08297320	08297339	08297347	08297355	08297363
IP55 / NEMA 12 with switch and filter	Type	MC LT E B...	0004-2B1-1-20	0008-2B1-1-20	0015-2B1-1-20	0015-2B1-4-20	0022-2B1-4-20
	Part number		08297525	08297533	08297541	08297568	08297576
INPUT							
Supply voltage		V _{mains}	1 × AC 220 ... 240 V ± 10 %				
Supply frequency		f _{mains}	50 / 60 Hz ± 10 %				
Supply fuse rating		[A]	10	20	30		
OUTPUT							
Recommended motor power		[kW]	0.37	0.75	1.5	1.5	2.2
		[hp]	0.5	1	2	2	3
Output voltage		V _{motor}	3 × 20 ... 250 V				
Output current		[A]	2.3	4.3	7	7	10.5
Motor cable size Cu 75C		[mm ²]	1.0		1.5		
		[AWG]	16				
Max motor cable length	Shielded	[m]	25			100	
	Unshielded		40			150	
GENERAL							
Max. ambient temperature at 8 kHz		[°C]	50				
Size			1			2	



10.3.3 3-phase system AC 230 V for 3-phase AC 230 V motors

MOVITRAC® LT – EMC filter class 0								
IP20 Standard	Type	MC LT E 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
IP20 Standard with filter	Type	MC LT E B...	–	–	–	0015-2A3-4- 00	0022-2A3-4- 00	0040-2A3-4- 00
	Part number		–	–	–	08297134	08297142	08297150
IP55 / NEMA 12 housing	Type	MC LT E 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 filter	Type	MC LT E B...	–	–	–	0015-2A3-4- 10	0022-2A3-4- 10	0040-2A3-4- 10
	Part number		–	–	–	08298025	08298033	08298041
IP55 / NEMA 12 with switch	Type	MC LT E 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
IP55 / NEMA 12 with switch and filter	Type	MC LT E B...	–	–	–	0015-2A3-4- 20	0022-2A3-4- 20	0040-2A3-4- 20
	Part number		–	–	–	08297584	08297592	008297606
INPUT								
Supply voltage		V _{mains}	3 × AC 220 ... 240 V ± 10 %					
Supply frequency		f _{mains}	50 / 60 Hz ± 10 %					
Supply fuse rating		[A]	6	10	16		20	
OUTPUT								
Recommended motor power		[kW]	0.37	0.75	1.5	1.5	2.2	4.0
		[hp]	0.5	1	2	2	3	5
Output voltage		[V _{motor}]	3 × 20 ... 250 V					
Output current		[A]	2.3	4.3	7	7	10.5	18
Motor cable size Cu 75C		[mm²]	1.0		1.5			2.5
		[AWG]	16					
Max motor cable length	Shielded	[m]	25			100		
	Unshielded		40			150		
GENERAL								
Max. ambient temperature at 8 kHz		[°C]	50					
Size			1			2		3s



10.3.4 3-phase system AC 400 V for 3-phase AC 400 V motors

MOVITRAC® LT – EMC filter class 0									
IP20 Standard	Type	MC LT E B...	0008-503-1- 00	0015-503-1- 00	0015-503-4- 00	0022-503-4- 00	0040-503- 4-00	0055-503- 4-00	0075-503- 4-00
	Part number		08296995	08297002	08297010	08297029	08297037	08297045	08297053
IP20 Standard with filter	Type	MC LT E B...	0008-5A3- 1-00	0015-5A3- 1-00	0015-5A3- 4-00	0022-5A3- 4-00	0040-5A3- 4-00	0055-5A3- 4-00	0075-5A3- 4-00
	Part number		08297169	08297177	08297185	08297193	08297207	08297215	08297223
IP55 / NEMA 12 housing	Type	MC LT E B...	0008-503-1- 10	0015-503-1- 10	0015-503-4- 10	0022-503-4- 10	0040-503- 4-10	0055-503- 4-10	0075-503- 4-10
	Part number		08297908	08297916	08297924	08297932	08297940	08297959	08297967
IP55 / NEMA 12 housing with filter	Type	MC LT E B...	0008-5A3- 1-10	0015-5A3- 1-10	0015-5A3- 4-10	0022-5A3- 4-10	0040-5A3- 4-10	0055-5A3- 4-10	0075-5A3- 4-10
	Part number		08298068	08298076	08298084	08298092	08298106	08298114	08298122
IP55 / NEMA 12 with switch	Type	MC LT E B...	0008-503-1- 20	0015-503-1- 20	0015-503-4- 20	0022-503-4- 20	0040-503- 4-20	0055-503- 4-20	0075-503- 4-20
	Part number		08297452	08297460	08297479	08297487	08297495	08297509	08297517
IP55 / NEMA 12 with switch and filter	Type	MC LT E B...	0008-5A3- 1-20	0015-5A3- 1-20	0015-5A3- 4-20	0022-5A3- 4-20	0040-5A3- 4-20	0055-5A3- 4-20	0075-5A3- 4-20
	Part number		08297614	08297622	08297630	08297649	08297657	08297665	08297673
INPUT									
Supply voltage		V _{mains}	3 × AC 380 ... 480 V ± 10 %						
Supply frequency		f _{mains}	50 / 60 Hz ± 10 %						
Supply fuse rating		[A]	6	10			16		20
OUTPUT									
Recommended motor power		[kW]	0.75	1.5	1.5	2.2	4	5.5	7.5
		[hp]	1	2	2	3	5	7.5	10
Output voltage		[V _{motor}]	3 × 20 ... 250 V						
Output current		[A]	2.2	4.1	4.1	5.8	9.5	14	18
Motor cable size Cu 75C		[mm²]	1.0			1.5		2.5	
		[AWG]	16					12	
Max motor cable length	Shielded	[m]	25		100				
	Unshielded		40		150				
GENERAL									
Max. ambient temperature at 8 kHz		[°C]	50						
Size			1		2			3s	



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Address List

Germany			
Headquarters Production Sales	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 • D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Service Competence Center	Central	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte@sew-eurodrive.de
	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dankritzer Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-elektronik@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		+49 180 5 SEWHELP +49 180 5 7394357
	Additional addresses for service in Germany provided on request!		
France			
Production Sales Service	Hagenau	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Hagenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocomme.com sew@usocomme.com
Production	Forbach	SEW-EUROCOME Zone Industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex	Tel. +33 3 87 29 38 00
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	Lyon	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
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Sales	Alger	Réducom 16, rue des Frères Zagnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84 reducom_sew@yahoo.fr
Argentina			
Assembly Sales Service	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar
Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
	Townsville	SEW-EURODRIVE PTY. LTD. 12 Leyland Street Garbutt, QLD 4814	Tel. +61 7 4779 4333 Fax +61 7 4779 5333 enquires@sew-eurodrive.com.au
Austria			
Assembly Sales Service	Wien	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://sew-eurodrive.at sew@sew-eurodrive.at
Belarus			
Sales	Minsk	SEW-EURODRIVE BY RybalkoStr. 26 BY-220033 Minsk	Tel. +375 (17) 298 38 50 Fax +375 (17) 29838 50 sales@sew.by
Belgium			
Assembly Sales Service	Brüssel	SEW Caron-Vector S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.be info@caron-vector.be
Service Competence Center	Industrial Gears	SEW Caron-Vector S.A. 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
Brazil			
Production Sales Service	Sao Paulo	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 50 Caixa Postal: 201-07111-970 Guarulhos/SP - Cep.: 07251-250	Tel. +55 11 6489-9133 Fax +55 11 6480-3328 http://www.sew.com.br sew@sew.com.br
Additional addresses for service in Brazil provided on request!			
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str. 1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net



Address List

Cameroon			
Sales	Douala	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 33 431137 Fax +237 33 431137
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca marketing@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 marketing@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 marketing@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMP RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 info@sew-eurodrive.cn http://www.sew-eurodrive.cn
	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
Assembly Sales Service	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267891 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
Additional addresses for service in China provided on request!			
Colombia			
Assembly Sales Service	Bogotá	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sewcol@sew-eurodrive.com.co
Croatia			
Sales Service	Zagreb	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@net.hr



Czech Republic			
Sales	Praha	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Lužná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121234 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Egypt			
Sales Service	Cairo	Copam Egypt for Engineering & Agencies 33 El Hegaz ST, Heliopolis, Cairo	Tel. +20 2 22566-299 + 1 23143088 Fax +20 2 22594-757 http://www.copam-egypt.com/ copam@datum.com.eg
Estonia			
Sales	Tallin	ALAS-KUUL AS Reti tee 4 EE-75301 Peetri küla, Rae vald, Harjumaa	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Production Assembly Service	Karkkila	SEW Industrial Gears OY Valurinkatu 6 FIN-03600 Karkkila	Tel. +358 201 589-300 Fax +358 201 589-310 sew@sew.fi http://www.sew-eurodrive.fi
Gabon			
Sales	Libreville	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr
Hong Kong			
Assembly Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 2 7960477 + 79604654 Fax +852 2 7959129 contact@sew-eurodrive.hk



Address List

Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
Assembly Sales Service	Vadodara	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, GIDC POR Ramangamdi • Vadodara - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com sales@seweurodriveindia.com
Ireland			
Sales Service	Dublin	Alpertown Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 info@alpertown.ie
Israel			
Sales	Tel-Aviv	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
Italy			
Assembly Sales Service	Milano	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp
Korea			
Assembly Sales Service	Ansan-City	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr
	Busan	SEW-EURODRIVE KOREA Co., Ltd. No. 1720 - 11, Songjeong - dong Gangseo-ku Busan 618-270	Tel. +82 51 832-0204 Fax +82 51 832-0230 master@sew-korea.co.kr
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com



Lebanon			
Sales	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com
Lithuania			
Sales	Alytus	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.sew-eurodrive.lu info@caron-vector.be
Malaysia			
Assembly Sales Service	Johore	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Queretaro	SEW-EURODRIVE MEXIKO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Queretaro C.P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Morocco			
Sales	Casablanca	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 ali.alami@premium.net.ma
Netherlands			
Assembly Sales Service	Rotterdam	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferryroad Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no



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Peru			
Assembly Sales Service	Lima	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe
Poland			
Assembly Sales Service	Lodz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Łódź	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
		24 Hour Service	Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	București	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 senemeca@sentoo.sn
Serbia			
Sales	Beograd	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SCG-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 dipar@yubc.net
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybničná 40 SK-83554 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 sew@sew-eurodrive.sk http://www.sew-eurodrive.sk
	Žilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Žilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk

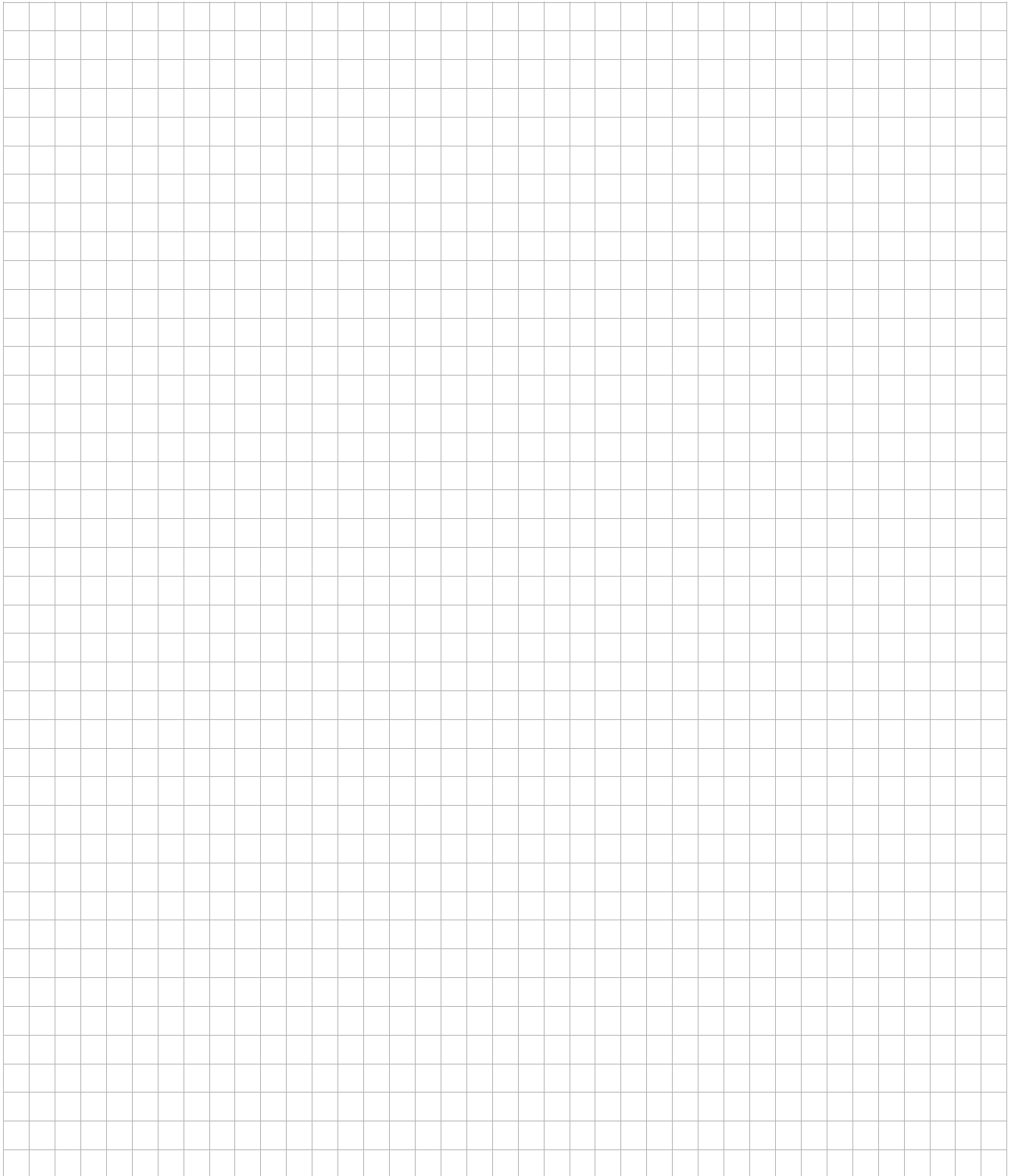


Slovakia			
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net
South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za dross@sew.co.za
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 Fax +34 94 43184-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service 5, Rue El Houdaibiah 1000 Tunis	Tel. +216 71 4340-64 + 71 4320-29 Fax +216 71 4329-76 tms@tms.com.tn



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Turkey			
Assembly Sales Service	Istanbul	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419164, 3838014, 3738015 Fax +90 216 3055867 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr
Ukraine			
Sales Service	Dnepropetrovsk	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua
USA			
Production Assembly Sales Service	Greenville	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	San Francisco	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		
Venezuela			
Assembly Sales Service	Valencia	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve ventas@sew-eurodrive.com.ve sewfinanzas@cantv.net



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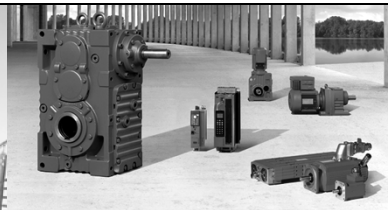
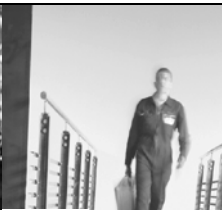
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sew@sew-eurodrive.com

→ www.sew-eurodrive.com