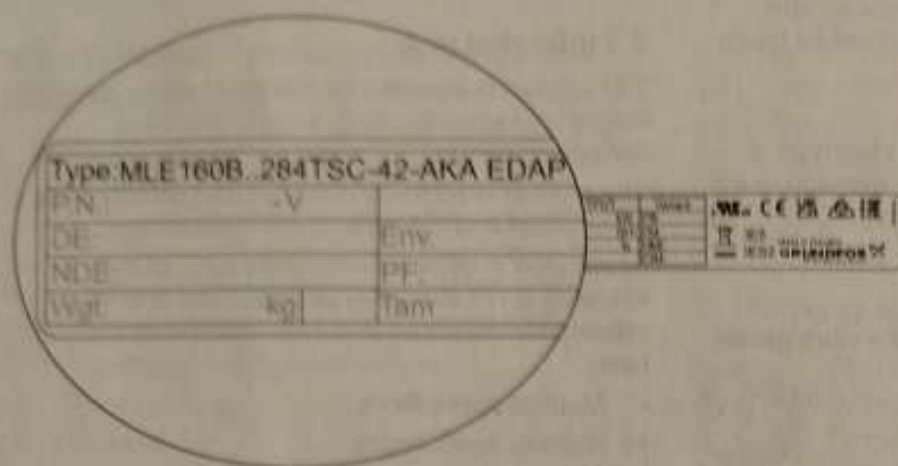


MLE Model K



Motor [hp]	3 x 440-480 V		3 x 200-240 V
	1750-2200 rpm	3500-4000 rpm	3400-4000 rpm
10	-	-	-
15	•	-	•
20	•	•	-
25	•	•	-
30	•	•	-

2.3 Radio module

CAUTION Radiation



Minor or moderate personal injury

- Locate the product at a minimum distance of 20 cm from any body parts. Human tissue may be heated by RF energy.



Installers and end users must be provided with these installation and operating instructions and operating conditions for satisfying RF exposure compliance.

The product incorporates a class 1 radio module for remote control. You can use the module anywhere in the EU without restrictions.

For installation in the USA and Canada, see the appendix.

Via the built-in radio module, the product can communicate with other MGE motors.



The product contains a class 1 radio. Grundfos will support the product with security updates for at least 2 years from production of the unit.

2.4 Bluetooth

The product incorporates a Bluetooth (BLE) module for remote control. You can use the module anywhere in the EU without restrictions.

For installation in the USA and Canada, see the appendix.

Via the built-in Bluetooth module, the product can communicate with Grundfos GO.



The product contains a Bluetooth (BLE) module. Grundfos will support the product with security updates for at least 2 years from production of the unit.

Bluetooth information

Frequency of operation	2400 - 2483.5 MHz
Modulation type	GFSK
Data rate	2 Mbps
Transmit power	5 dBm EIRP with internal antenna

GLoWpan information

Frequency of operation	2405-2480 MHz
Modulation type	GP O-QPSK
Data rate	1 Mbps
Transmit power	5 dBm EIRP with internal antenna

2.5 Battery

WARNING

Electric shock

Death or serious personal injury



- Do not attempt to access and replace the battery.
- All service and maintenance related work on the product must be carried out by qualified service persons.

WARNING

Intoxication or risk of chemical burn

Death or serious personal injury



- The battery can cause severe or fatal injuries in 2 hours or less if it is swallowed or placed inside any part of the body. In such an event, seek medical attention immediately.
- The replacement or servicing of batteries must be carried out by a qualified person.
- The battery contained within this product, whether new or used, is hazardous and is to be kept away from children.



A Li-ion battery is fitted in the FM310 and FM311 functional modules.

The Li-ion battery complies with the Battery Directive (2006/66/EC). The battery does not contain mercury, lead or cadmium.

2.6 Safe Torque Off (STO) function

Safe Torque Off (STO) is a safety function with the purpose to stop the motor from turning, without actively braking it. It follows the definition by EN61800-5-2.

For instructions on how to activate and operate the Safe Torque Off (STO) function, read these installation and operating instructions.



QR92916582

Safe Torque Off

Installation and operating instructions

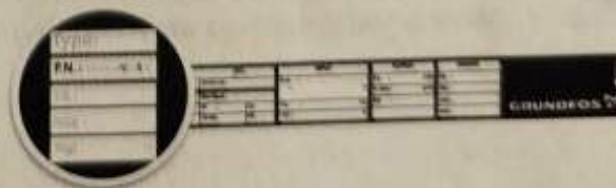
<http://net.grundfos.com/qr/i/92916582>

2.6.1 Identification of the Safe Torque Off (STO) function

The version of the Safe Torque Off (STO) function is marked on the nameplate, after the product version number.

The Safe Torque Off (STO) functionality is only available for MGE, MLE motors having an STO version number.

The Safe Torque Off (STO) version number is shown below as **Szz**, where **zz** marks the version. For product without STO the **zz** segment will be blank.



TM064339

The Safe Torque Off (STO) safety function cannot be retrofitted to older motors.

5.6.1.1 Cable cross-section data for MGE motors

3 × 380-480 V, 50/60 Hz, Model K

Speed [rpm]	Power P2 [kW]	Supply voltage [V]	Nominal current [A]	Cable cross- section [mm ²]	Cable cross- section [AWG]
1450-2200	11	3 × 380-480	20.2 - 16.4	6	10
	15	3 × 380-480	26.7 - 21.8	6	8
	18.5	3 × 380-480	33.2 - 26.9	10	8
	22	3 × 380-480	39.2 - 31.5	10	8
2900-4000	15	3 × 380-480	26.7 - 22	6	8
	18.5	3 × 380-480	33 - 27.8	10	8
	22	3 × 380-480	39.2 - 31.5	10	8

3 × 200-240 V, 50/60 Hz, Model K

Speed [rpm]	Power P2 [kW]	Supply voltage [V]	Nominal current [A]	Cable cross- section [mm ²]	Cable cross- section [AWG]
3400-4000	7.5	3 x 200-240	25.6 - 21.4	10	8
	11	3 x 200-240	37.4 - 31.4	10	8

3 × 400-480 V, 50/60 Hz, Model K

Speed [rpm]	Power P2 [kW]	Supply voltage [V]	Nominal current [A]	Cable cross- section [mm ²]	Cable cross- section [AWG]
3500-4000	26	3 x 400-480	43.8 - 37.6	16	6

5.6.1.2 Cable cross-section data for MLE motors

3 × 440-480 V, 50/60 Hz, Model K

Speed [rpm]	Power P2 [hp]	Supply voltage [V]	Nominal current [A]	Service factor current [A]	Cable cross- section [AWG]
1750-2200	15	3 × 440-480	17.3 - 16.2	20.6 - 19.0	8
	20	3 × 440-480	23.1 - 22.2	26.5 - 24.7	8
	25	3 × 440-480	28.6 - 26.3	32.8 - 30.2	8
	30	3 × 440-480	34.5 - 31.5	39.3 - 36.2	8
3500-4000	20	3 × 440-480	23.1 - 21.8	27.3 - 24.8	8
	25	3 × 440-480	28.5 - 26.4	32.9 - 30.2	8
	30	3 × 440-480	34.3 - 31.6	39.4 - 36.2	8

3 × 200-240 V, 50/60 Hz, Model K

Speed [rpm]	Power P2 [hp]	Supply voltage [V]	Nominal current [A]	Service factor current [A]	Cable cross- section [AWG]
3400-4000	10	3 × 200-240	25.6 - 21.4	29.0 - 24.2	8
	15	3 × 200-240	37.8 - 31.9	41.0 - 34.5	6

5.6.1.3 Conductors

Conductor types

Model K: Use stranded copper conductors only.

Conductor temperature ratings

Model K: Use minimum 75 °C copper conductors. The wire sizes for the mains supply must be sized for a wire size which is suitable for at least 125% of the rated input current of the motor drive units.

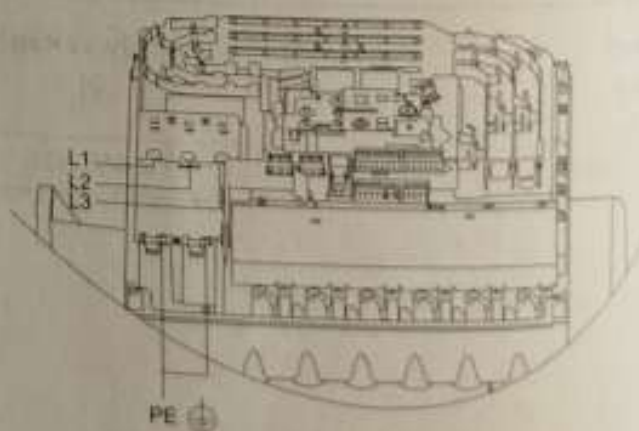
5.6.2 Three-phase connections

The cables in the terminal box must be as short as possible. However, the separated protective-earth conductor must be so long that it is the last one to be disconnected in case the cable is inadvertently pulled out of the cable entry.



To maintain the cURus mark, additional requirements apply to the equipment. See the appendix concerning installation in the USA and Canada.

Power supply connection on a three-phase product



Model K

Pos.	Description
L1	Phase 1
L2	

9. Technical data

9.1 Operating conditions

9.1.1 Ambient temperature

9.1.1.1 Ambient temperature during storage and transportation

Description	Temperature
Minimum	-30 °C
Maximum	60 °C

9.1.1.2 Ambient temperature during operation

MGE Model K

Description	3 x 200-240 V	3 x 380-480 V
Minimum	-20 °C	-20 °C
Maximum	40 °C	50 °C ³⁾

³⁾ 25 kW MGE motors are rated for a maximum value of 40 °C.

MLE Model K

Description	3 x 200-240 V	3 x 440-480 V
Minimum	-4 °F	-4 °F
Maximum	104 °F	122 °F

9.1.2 Installation altitude

The installation altitude is the height above sea level of the installation site.

Products installed up to 1000 m above sea level can be loaded 100 %.



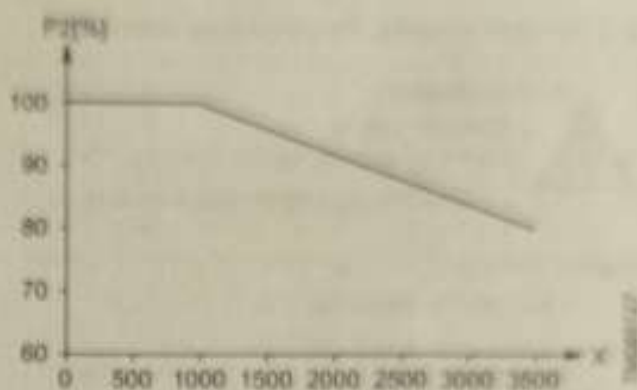
• **Model K:** The product is not suitable for use on corner earthed grids.

The motors can be installed up to 3500 m above sea level.



Products installed more than 1000 m above sea level must not be fully loaded due to the low density and consequent low cooling effect of the air.

The motor output power (P2) in relation to the altitude above sea level is shown in the graph.



Pos.	Description
P2	Motor output power [%]
X	Altitude [m]

9.1.3 Humidity

Description	Percentage
Maximum humidity (non-condensing)	95 %

If the humidity is constantly high and above 85 %, open the drain holes in the drive-end flange to vent the motor.

If you install the motor in moist surroundings or areas with high humidity, ensure that the bottom drain hole is open. As a result, the motor becomes self-venting, allowing water and humid air to escape. When you open the drain hole, the enclosure class of the motor will be lower than standard.

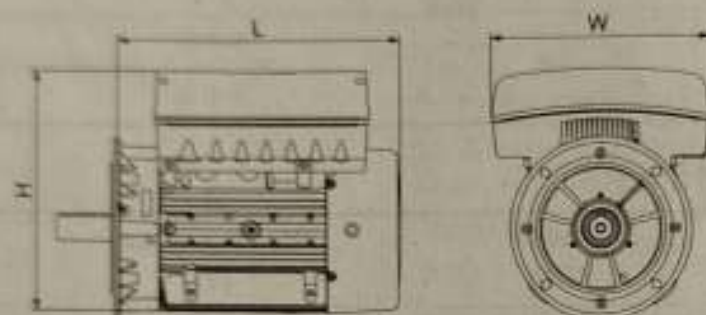


9.1.4 Pollution degree

The product is approved for Pollution degree 3 rating.

9.3 Dimensions and weights

Motor with free-hole flange (FF), B5



Model K

1450-2200 rpm, MGE Model K

Supply voltage	Power [kW]	L [mm]	W [mm]	H [mm]	Weight [kg]
3 × 380-480 V	11	482	420	465	100
	15	482	420	465	115
	18.5	552	420	465	138
	22	552	420	465	147

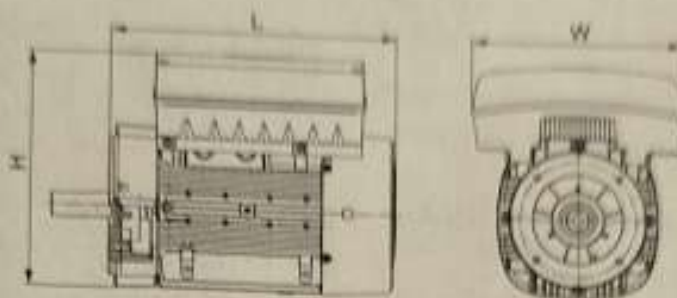
2900-4000 and 3400-4000 rpm, MGE Model K

Supply voltage	Power [kW]	L [mm]	W [mm]	H [mm]	Weight [kg]
3 × 380-480 V	15	482	420	465	87
	18.5	482	420	465	91
	22	508	420	465	106
3 × 200-240 V	7.5	482	420	465	87
	11	482	420	465	87

3500-4000 rpm, MGE Model K

Supply voltage	Power [kW]	L [mm]	W [mm]	H [mm]	Weight [kg]
3 × 400-480 V	26	508	420	465	106

Motor with NEMA flange



Model K

1750-2200 rpm, MLE Model K

Supply voltage	Power [hp]	L [mm]	W [mm]	H [mm]	Weight [kg]
3 x 440-480 V	15	488	420	462	100
	20	488	420	462	115
	25	558	420	462	138
	30	558	420	462	147

3500-4000 and 3400-4000 rpm, MLE Model K

Supply voltage	Power [hp]	L [mm]	W [mm]	H [mm]	Weight [kg]
3 x 440-480 V	20	488	420	462	87
	25	514	420	462	91
	30	514	420	462	106
3 x 200-240 V	10	488	420	462	87
	15	488	420	462	87

Related information

4.4 Cable glands

Recommended ring terminals



Ensure that the used ring terminals are UL certified.

The supply terminals are suitable for field wiring when used with stranded wires and specific listed crimp terminals manufactured by Tyco Electronics (E13288).

Cable cross-section		Part number/Designation number	Manufacturer
[mm ²]	[AWG]		
16	6	130552	Tyco Electronics
10	8	160013	Tyco Electronics
6	10	130191	Tyco Electronics

Ethernet cable connection

The connection of Ethernet cables must be done by connecting the Ethernet cable screen to an earth clamp on the terminal box, to be in compliance with FCC and ISED requirements.

The recommended Ethernet cable types for earth clamp applications are SF/UTP, S/FTP or SF/FTP, where the cable screen consists of both a braided and a foil screen.

Torques

See the section on torques.

Line reactors

The maximum line reactor size in front of the drive must not exceed the following values:

Model K

P2		Maximum line reactor size		
[kW]	[hp]	[mH]		
		1750-2200 rpm	3400-4000 rpm	3500-4000 rpm
7.5	10	-	0.2	-
11	15	0.3	0.2	-
15	20	0.2	-	0.2
18.5	25	0.2	-	0.2
22	30	0.2	-	0.2
26	35	0.2	-	0.2



Line reactors are often required for six-pulse variable speed drives. Please observe that the MGE, MLE utilize a small DC capacitor concept for lower harmonics and exceeding the maximum inductance may cause resonance between reactor and the MGE, MLE that will reduce the lifetime of the product.

Short-circuit current

Model K: Suitable for use on a circuit capable of delivering not more than 5000 rms symmetrical amperes, when protected by RK1, J or T Class fuses, rated 600 V.

Fuses

Model K: Fuses used for motor protection must be rated for minimum 600 V.



For fuse sizes, see the section on recommended size of fuses.

3 x 380-480 V, MGE Model K

Motor size [kW]	Recommended [A]	Maximum [A]	Fuse type
11	35	60	RK1, Class J or T UL listed fuse
15	50	80	RK1, Class J or T UL listed fuse
18.5	60	80	RK1, Class J or T UL listed fuse
22	70	80	RK1, Class J or T UL listed fuse

3 x 400-480 V, MGE Model K

Motor size [kW]	Recommended [A]	Maximum [A]	Fuse type
26	80	80	RK1, Class J or T UL listed fuse

3 x 200-240 V, MGE Model K

Motor size [kW]	Recommended [A]	Maximum [A]	Fuse type
7.5	70	80	RK1, Class J or T UL listed fuse
11	80	80	RK1, Class J or T UL listed fuse

3 x 440-480 V, MLE Model K

Motor size [hp]	Recommended [A]	Maximum [A]	Fuse type
15	35	60	RK1, Class J or T UL listed fuse
20	50	80	RK1, Class J or T UL listed fuse
25	60	80	RK1, Class J or T UL listed fuse
30	70	80	RK1, Class J or T UL listed fuse