



# Operating Instructions

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## 1. SAFETY REGULATIONS AND INFORMATION

Read these operating instructions carefully before starting work on the device. Observe the following warnings to prevent malfunctions or danger to persons.

These operating instructions are to be regarded as part of the device. The device is only to be sold or passed on together with the operating instructions.

These operating instructions may be duplicated and distributed to inform about potential dangers and their prevention.

### 1.1 Hazard levels for warnings

These operating instructions use the following hazard levels to indicate potentially hazardous situations and important safety regulations:



#### DANGER

Indicates an imminently hazardous situation which will result in death or serious injury if the specified actions are not taken. Compliance with the instructions is imperative.

#### WARNING

Indicates a potentially hazardous situation which can result in death or serious injury if the specified actions are not taken. Exercise extreme caution while working.

#### CAUTION

Indicates a potentially hazardous situation which can result in minor or moderate injury or damage to property if the specified actions are not taken.

#### NOTE

A potentially harmful situation can occur and, if not avoided, can lead to property damage.

### 1.2 Staff qualification

The device may only be transported, unpacked, installed, operated, maintained and otherwise used by suitably qualified, trained and authorised staff.

Only authorised specialists are permitted to install the device, to carry out a test run and to perform work on the electrical installation.

### 1.3 Basic safety rules

The safety hazards associated with the device must be assessed again following installation in the final product.

Note the following when working on the device:

- Do not perform any modifications, additions or conversions on the device without the approval of ebm-papst A&NZ.

### 1.4 Voltage

- Check the electrical equipment of the device at regular intervals, see chapter 6.2 Safety inspection.
- Replace loose connections and defective cables immediately.



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**DANGER****Electrically charged device**

Risk of electric shock

- Stand on a rubber mat if you are working on an electrically charged device.

**WARNING****Terminals and connections have voltage even with a unit that is shut off**

Electric shock

- Wait five minutes after disconnecting the voltage at all poles before opening the device.

**CAUTION****In the event of failure, the rotor and impeller will be energised**

The rotor and impeller have basic insulation.

- Do not touch the rotor and impeller once installed.

**CAUTION****If control voltage or a stored speed set value is applied, the motor restarts automatically, e.g. after a power failure.**

Risk of injury

- Keep out of the device danger zone.
- When working on the device, switch off the voltage and ensure it cannot be switched back on.
- Wait until the device stops.
- After working on the device, remove any used tool or other objects from the device.

## 1.5 Safety and protective features

**DANGER****Missing safety device and non-functioning safety device**

If there is no safety device, you could be seriously injured, for example if you reach into the running device or your hands are sucked into it.

- Operate the device only with a fixed and isolating safety protection and a fixed guard grille. The guard must withstand the kinetic energy of a fan blade detaching at maximum speed.
- The device is a built-in component. You, the owner/operator, are responsible for providing adequate protection for the device.
- Stop the device immediately if you notice a missing or ineffective protective feature.

## 1.6 Electromagnetic radiation

Interference from electromagnetic radiation is possible, e.g. in conjunction with open and closed-loop control devices.

If unacceptable emission intensities occur when the fan is installed, appropriate shielding measures have to be taken by the user.

**NOTE****Electrical or electromagnetic interferences after installing the device in customer equipment**

- Verify that the entire setup is EMC compliant.

## 1.7 Mechanical movement

**DANGER****Rotating device**

Risk of injury to body parts coming into contact with the rotor or the impeller.

- Secure the device against accidental contact.
- Before working on the system/machine, wait until all parts have come to a standstill.

**DANGER****Ejected parts**

Missing safety devices may cause balancing weights or broken fan blades to be ejected and cause injuries.

- Take appropriate safety measures.

**WARNING****Rotating device**

Long hair and dangling items of clothing, jewellery and the like can become entangled and be pulled into the device. This can result to injuries.

- Do not wear any loose clothing or jewellery while working on rotating parts.
- Protect long hair by wearing a cap.

## 1.8 Emission

**WARNING****Depending on the installation and operating conditions, the sound pressure level may exceed 70 dB(A).**

Risk of noise-induced hearing loss

- Take appropriate technical safety measures.
- Protect operating personnel with appropriate safety equipment, e.g. hearing protection.
- Also observe the requirements of local agencies.

## 1.9 Hot surface

**CAUTION****High temperature at the electronics housing**

Risk of burn

- Ensure that sufficient protection against accidental contact.

## 1.10 Transport

**WARNING****Transport of fan**

Injuries from tripping or slipping.

- Wear safety shoes and cut-resistant safety gloves.
- Only transport the fan in its original packaging. Transport the fan "lying flat", in other words with the axis vertical.
- Secure the fan(s) so that nothing can slip or fall, for example using a lashing trap.



# Operating Instructions

## 1.11 Storage

- Store the device, partially or fully assembled, in a dry and weatherproof manner in the original packing in a clean environment.
- Protect the device from environmental impacts and dirt until the final installation.
- We recommend storing the device for no longer than one year in order to guarantee trouble-free operation and longest possible service life.
- Even devices explicitly intended for outdoor use are to be stored as described prior to being commissioned.
- Maintain the storage temperature; see chapter 3.5 Transport and storage conditions .
- Make sure that all screwed cable glands are fitted with dummy plugs.

## 2. INTENDED USE

The device is exclusively designed as a built-in device for moving air according to its technical data.

Any other or secondary use is deemed improper and constitutes a misuse of the device.

Installations on the customer's side must meet the mechanical, thermal and service life-related stresses that can occur.

### Intended use also includes:

- Use the device in power systems with earthed neutral (TN/TT power systems only).
- Using the device only in stationary systems.
- Performing all maintenance work.
- Moving air with a density of 1.2 kg/m<sup>3</sup>.
- Using the device range within the permitted ambient temperature range, see chapter 3.5 Transport and storage conditions and chapter 3.2 Nominal data.
- Operate the device with all protective features.
- Following the operating instructions.

### Improper use

Using the device in the following ways is particularly prohibited and may cause hazards:

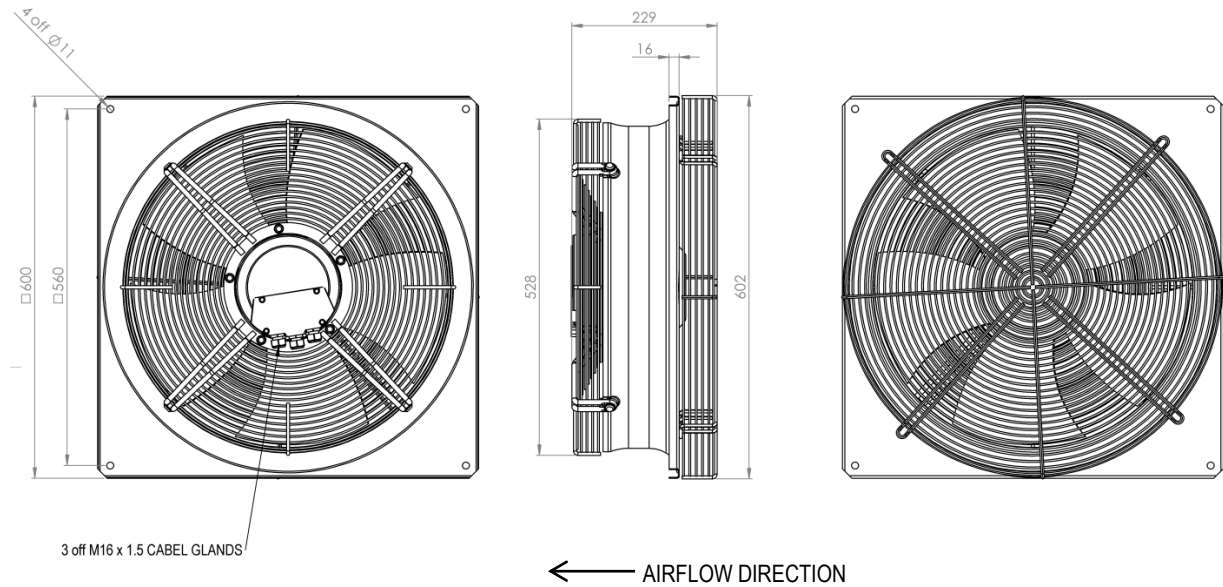
- Operating the device in an imbalance state, e.g. due to dirt deposits or ice formation.
- Operating in medical equipment with a life-sustaining or lifesaving function.
- Operating with external vibrations.
- Moving solids content in flow medium.
- Painting the device.
- Connections (e.g. screws) coming loose during operation.
- Opening the terminal box during operation.
- Moving air that contains abrasive particles.
- Moving highly corrosive air, e.g. salt spray. Exceptions are devices that are designed for salt spray and protected accordingly.
- Moving air with dust content, e.g. suctioning off saw dust.
- Operating the device close to flammable materials or components.
- Operating the device in an explosive atmosphere.
- Using the device as a safety component or for taking on safety-related functions.
- Operation with completely or partially disassembled or modified protective features.
- In addition, all applications not listed among the intended uses.



# Operating Instructions

## 3. TECHNICAL DATA

### 3.1 Product drawing



All dimensions are in mm

Direction of air flow "V"

#### Fan cable requirement

Power supply and control cable diameter: min. 4mm, max. 10mm, tightening torque for cable gland  $2.5 \pm 4$  Nm.

#### Fan junction box requirements

Tightening torque  $3.5 \pm 0.5$  Nm for 4x screws on lid.



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## 3.2 Nominal data

Motor	M3G112-GA
Phase	3~
Nominal Voltage / VAC	400
Nominal voltage range / VAC	380 .. 480
Frequency / Hz	50/60

Type of data definition	maximum load
Speed / rpm	1600
Power input / W	980
Current draw / A	1.6
Max. Back pressure / Pa	200
Min. ambient temperature / °C	-25
Max. ambient temperature / °C	+60

Subject to alterations

## 3.3 Technical features

Mass	TBC
Size	500 mm
Surface of rotor	Painted black
Material of electronics housing	Die-cast aluminium, painted black
Material of blades	Press-fitted sheet steel blank, sprayed with PP plastics
Material of wall ring	Sheet steel, pre-galvanised and coated in black plastic (RAL 9005)
Material of guard grille	Steel, coated in black plastic (RAL9005)
Number of blades	5
Direction of airflow	"V"
Direction of rotation	Counter clockwise, viewed towards rotor
Type of protection	IP 54
Insulation class	"B"
Moisture class	F4-1
Mounting position	Shaft horizontal or rotor on bottom; rotor on top on request
Condensate drainage holes	Rotor-side
Operation mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Output 20 VDC, max. 50 mA</li> <li>- Output for slave 0-10 V</li> <li>- Input for sensor 0-10 V or 4-20 mA</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Motor current limit</li> <li>- PFC, passive</li> <li>- RS485 ebmbus</li> <li>- Soft start</li> <li>- Control input 0-10 VDC/PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Over-temperature protected electronics / motor</li> </ul>

	- Line under voltage / phase failure detection
Touch current acc. IEC 60990 (measuring network Fig. 4, TN system)	<= 3.5 mA
Electrical leads	Via terminal box
Motor protection	Thermal overload protector (TOP) wired internally
Cable exit	Variable
Protection class	I (if protective earth is connected by customer)
Product conforming to standard	EN 61800-5-1 ; CE



For cyclic speed loads, note that the rotating parts of the device are designed for maximum one million load cycles. If you have specific questions, contact ebm-papst A&NZ for support.

## 3.4 Mounting data

→ Secure the mounting screws against accidentally coming loose (e.g. by using self-locking screws).

Strength class of screws	8.8
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You can obtain additional mounting data from the product drawing if necessary.

## 3.5 Transport and storage conditions

→ Use the device in accordance with its protection type.

Max. permitted ambient motor temp. (transp./storage)	+ 80 °C
Min. permitted ambient motor temp. (transp./storage)	- 40 °C

## 3.6 Electromagnetic compatibility

EMC interference immunity	Acc. to EN 61000-6-2 (industrial environment)
EMC harmonics	Acc. to EN 61000-3-2/3
EMC interference emission	Acc. to EN 61000-6-4 (industrial environment)



If several devices are switched in parallel on the mains side so that the line current of the arrangement is in the range of 16- 75 A, then this arrangement conforms to IEC 61000-3-12 provided that the short circuit-power  $S_{sc}$  at the connection point of the customer system to the public power system is greater than or equal to 120 times the rated output of the arrangement. Is the responsibility of the installation engineer or operator/owner of the device to ensure, if necessary after consultation with the network operator, that this device is only connected to a connection point with a  $S_{sc}$  value that is greater than or equal to 120 times the rated output of the arrangement.





# Operating Instructions

## 4. CONNECTION AND START-UP

### 4.1 Mechanical system connection



**CAUTION**  
**Cutting and crushing hazard when removing the device from the packaging.**

- Carefully remove the device from its packaging by the fan housing. Strictly avoid shocks.
- Wear safety shoes and cut-resistant safety gloves.



**CAUTION**  
**Heavy load when unpacking the device**

Risk of physical injury such as back injuries.

- Two people should work together to remove the device from its packaging.

- Check the device for transport damage. Damaged devices must no longer be installed.
- Install the undamaged device according to your application.



**CAUTION**  
**Possible damage to the device**

If the device slips during installation, serious damage can result.

- Ensure that the device is securely positioned at its place of installation until all fastening screws have been tightened.

### 4.2 Electrical connection



**DANGER**  
**Voltage on the device**

Electric shock

- Always install a protective earth first.
- Check the protective earth.



**DANGER**  
**Incorrect insulation**

Risk of fatal injury from electric shock

- Use only cables that meet the specified installation requirements for voltage, current, insulation material, load etc.
- Route cables such that they cannot be touched by any rotating parts.



**DANGER**  
**Electrical load (>50 µC) between mains wire and protective earth connection after switching of the supply when switching multiple devices in parallel.**

Electric shock, risk of injury

- Ensure sufficient protection against accidental contact.
- Before working on the electrical connection, disconnect the mains supply and PE.

**CAUTION**  
**Voltage**

The fan is a built-in component and has no electrically isolating switch.

- Only connect the fan to circuits that can be switched off with an all-pole separating switch.

- When working on the fan, you must switch off the installation/machine in which the fan is installed and secure it from being switched on again.

#### NOTE

##### Device malfunctions possible

Route the control lines of the device separately from the supply line.

- Maintain the greatest possible clearance.  
Recommendation: clearance > 10 cm (separate cable routing)

#### NOTE

##### Water ingress into wires or cables

Water ingress at the end of the cable can damage the device.

- Make sure the end of the cable is connected in a dry environment.
- The IP protection is guaranteed only if the provided cable glands are installed.



Only connect the device to circuits that can be switched off with an all-pole disconnection switch.

### 4.2.1 Requirements

- Check whether the data on the name plate agree with the connection data.
- Before connecting the device, ensure that the power supply matches the device voltage.
- Only use cables designed for current indicated on the name plate. For determining the cross-section, follow the basic principles in accordance with EN 61800-5-1. The protective earth must have a cross-section equal to or greater than that of the phase conductor.

We recommend the use of 105°C cables. Ensure that the minimum cable cross-section is at least AWG26/0.13 mm<sup>2</sup>.

### Earth wire contact resistance in accordance with EN 61800-5-1

Compliance with the impedance specifications in accordance with EN 60335 for the protective earth circuit must be verified in the end application.

Depending on the installation situation, it may be necessary to install an additional protective earthing conductor via the additional protective earth connection point available on the device.

### 4.2.2 Supply connection and fuses protection

Assignment of supply cable cross-sections and their fuses (line protection only, no equipment protection).

Nominal voltage	Fuse		Automatic circuit breaker	Cable cross-section	Cable cross-section
	VDE	UL			
3/PE AC 380-480 VAC	16 A	15 A	C16A	1.5 2.5	16

\*AWG = American Wire Gauge



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## 4.2.3 Reactive currents



Because of the EMC filter integrated for compliance with EMC limits (interference emission and interference immunity), reactive currents can be measured in the supply line even when the motor is at a standstill and the mains voltage is switched on.

- The values are typically < 250 mA.
- At the same time, the effective power in this operating state (operational readiness) is typically < 5 W.

## 4.2.4 Residual current circuit breaks (RCCB)



Only universal (type B or B+) residual current devices (RCD) are permitted. Like frequency inverters, RCD protective devices cannot provide personal safety while operating the device. When switching on the power supply of the device, pulsed charge currents from the capacitors in the integrated EMC filter can lead to the RCD protective devices tripping without delay. We recommend residual current devices with a trigger threshold of 300 mA and delayed tripping (super-resistant, characteristic K).

## 4.2.5 Leakage current



For asymmetrical power systems or of a phase fails, the leakage current can increase to a multiple of the nominal value.

## 4.2.6 Locked rotor protection



Due to the locked-rotor protection, the start-up current (LRA) is equal to or less than the nominal current (FLA).

## 4.3 Connection in terminal box

### 4.3.1 Preparing cables for the connection

Only strip the cable as far as necessary, ensuring that the screwed cable gland is sealed and there is no strain on the connections. For tightening torque, see chapter 3.1 Product drawing.



#### NOTE

Tightness and strain relief are dependent on the cable used.

→ This must be checked by the user.

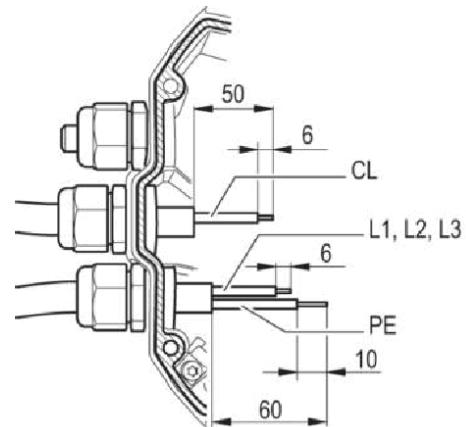


Fig. 1: Recommended stripping lengths in mm (inside the terminal box).

Legend: CL = control lines



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## 4.3.2 Connecting wires with terminals

### WARNING

Live terminals and connections even with the device switched off.

Electric shock

→ Wait five minutes after disconnecting the voltage at all poles before opening the device.

- Remove the cap from the cable gland. Remove the cap only in those places where cables are inserted.
- Mount the screwed cable glands with the seal inserts provided in the terminal box.
- Route the wire(s) (not included in the scope of delivery) into the terminal box.
- First connect the "PE" (protective earth).
- Connect the lines to the corresponding terminals. Use a screwdriver to do so.
- When connecting, ensure no wire ends fan out.
- Seal the terminal box.



Fig. 2: Connecting the wires to the terminals.

## 4.3.3 Cable routing

Water must be prevented from reaching the cable gland along the cable.

### Fans installed lying flat

Make sure the cable is routed in a U-shaped loop (water trap).

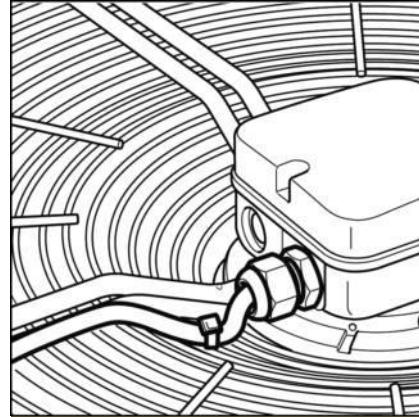


Fig. 3: Fan installed lying flat, cable routed as a water trap.

### Fans installed upright

When routing the cable, ensure that the screwed cable glands are arranged at the bottom. The cables must always be routed downwards.

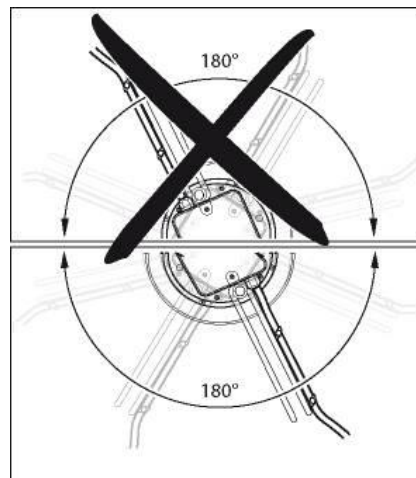


Fig. 4: Cable routing for fans installed upright.

## 4.4 Factory settings

Factory settings with which the device is pre-set by ebm-papst.

Operation mode	PWM control
Group address	1
Fan / device address	1
Max. PWM / %	100
Min. PWM / %	0
Save set value to EEPROM	Yes
Set value control	Analogue
Control function	Positive (heating)



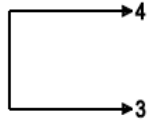


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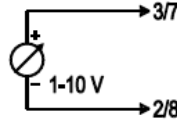
## 4.5 Connection Screen

Customer circuit

Full speed

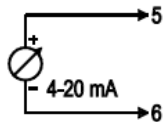


Adjustable speed

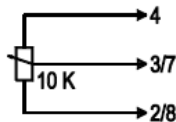


10 V → n=max  
1 V → n=min  
<1 V → n=0

Set value input, e.g. via pressure

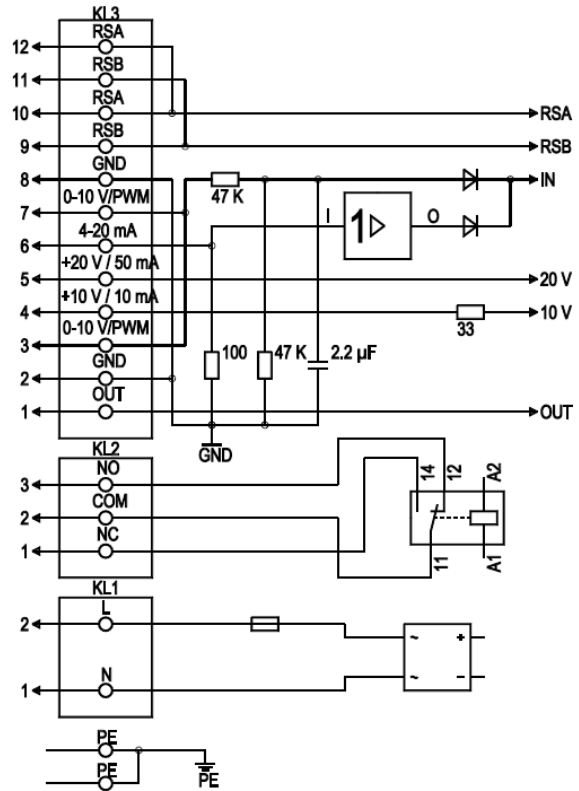


Adjustable speed via potentiometer



Connection

Fan



Connection	No.	Label	Function / assignment
PE		PE	Protective earth connection
KL1	1, 2, 3	L1, L2, L3	Power supply, 50/60 Hz
KL2	1	NC	Floating status contact; break for failure
KL2	2	COM	Floating status contact, changeover contact, common connection (2 A, max. 250 VAC, min. 10 mA, AC1)
KL2	3	NO	Floating status contact; make for failure
KL3	1	OUT	Analogue output, 0-10 VDC, max. 3 mA, SELV, Output of the current motor level: 1 V corresponds to 10% level, 10 V correspond to 100% level
KL3	2, 8	GND	Reference mass for control interface, SELV
KL3	3, 7	0-10 V	Use control / actual value input 0-10 VDC, impedance 100 kΩ only as alternative to 4-20 mA input, SELV
KL3	4	+10 V	Voltage output 10 VDC (±3%), max. 10 mA, supply voltage for external devices (e.g. potentiometer), SELV
KL3	5	+20 V	Voltage output 20 VDC (+25% / -10%), max. 50 mA, supply voltage for external devices (e.g. sensors), SELV
KL3	6	4-20 mA	Use control / actual value input 4-20 mA, impedance 100 Ω, only as alternative to 0-10 V input, SELV
KL3	9, 11	RSB	RS485 interface for ebmBUS, RSB, SELV
KL3	10, 12	RSA	RS485 interface for ebmBUS, RSA, SELV



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## 4.6 Checking connections

- Ensure isolation from supply (all phases).
- Make sure a restart is impossible
- Check the cables for proper fit.
- Screw the terminal box cover closed again. Terminal box tightening torque, see chapter 3.1 Product drawing.
- Route the cables in the terminal box so that the terminal box cover closes without resistance.
- Use all plug screws. Insert the screws by hand to avoid damage to the thread.
- Make sure that the terminal box is completely closed and that all screws and cable glands are properly tightened.

## 4.7 Switch on the device

The device may only be switched on if it has been installed properly and in accordance with its intended use, including the required safety mechanisms and professional electrical connection. This also applies for devices that have already been equipped with plugs and terminals or similar connections by the customer.



**WARNING**  
**Hot motor housing**  
 Risk of fire hazard

- Ensure that no combustible or flammable materials are located close to the fan.
- Before switching on, check the device for visible external damage and make sure the devices are functional.
- Check the air flow paths of the fan for foreign objects and remove any that are found.
- Apply the nominal supply voltage.
- Start the device by changing the input signal.

## 4.8 Switching off the device

Switching off the device during operation:

- Switch on the device via the control input.
- Do not switch the motor (e.g. in cyclic operation) on and off via power supply.

Switching off the device for maintenance work:

- Switch on the device via the control input.
- Do not switch the motor (e.g. in cyclic operation) on and off via power supply.
- Disconnect the device from the power supply.
- When disconnecting, be sure to disconnect the earth wire connection last.

## 5. INTEGRATED PROTECTIVE FUNCTIONS

The integrated protective functions cause the motor to switch off automatically in the event of the faults described in the table. The status relay drops out and the fault is reported via BUS.

Fault	Safety feature description / function
Rotor position detection error	An automatic restart follows.
Blocked rotor	→After the blockage is removed, the motor restarts automatically.
Line-under voltage (line voltage outside of permitted nominal voltage range)	→If the line voltage returns to permitted values, the motor restarts automatically.
Phase failure	A phase of the supply voltage fails for at least 5 s. →When all phases are correctly supplied again, the motor automatically restarts after 10-40 s.



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## 6. MAINTENANCE, MALFUNCTIONS, POSSIBLE CAUSES AND REMEDIES

Do not perform any repairs on your device. Return the device to ebm-papst A&NZ for repair or replacement.

### WARNING

**Live terminals and connections have voltage even with a device that is switched off**

Electric shock

- Wait five minutes after disconnecting the voltage at all poles before opening the device.

### CAUTION

**If control voltage or a speed set value is applied, the motor will restart automatically, e.g. after a power failure.**

Risk of injury

- Keep out of the device danger zone.
- When working on the device, switch off the line voltage and ensure that it cannot be switched back on.
- Wait until the device stops.
- After working on the device, remove any used tools or other objects from the device.



If the device remains out of use for some time, e.g. when in storage, we recommend switching the device on for at least two hours to allow any condensate to evaporate and to move the bearings.

Malfunction/fault	Possible cause	Possible remedy
Impeller not running smoothly	Imbalance in rotating parts	Clean the device; replace it if imbalance persists after cleaning, replace the device. Make sure no weight clips are removed during cleaning.
Motor not turning	Mechanical blockage	Switch off, isolate from supply, and remove mechanical blockage.
	Voltage faulty	Check mains supply voltage, restore power supply. Important! The error message resets automatically. Device restarts automatically without warning.
	Faulty connection	Isolate from supply, correct connection, see connection diagram.
	Broken motor winding	Replace device
	Thermal over-load protector activated	Allow motor to cool off, locate and rectify cause of error, if necessary cancel restart lock-out.
	Insufficient cooling	Improve cooling. Let the device cool down. To reset the error message, switch off the

		mains supply voltage for at least 25 s and then switch it on again. Alternatively, reset the error message by applying a control signal of <0.5 V to DIN1 or by short Din1 to GND.
	Ambient temperature too high	Reduce the ambient temperature. Let the device cool down. To reset the error message, switch off the mains supply voltage for at least 25 s and then switch it on again. Alternatively, reset the error message by applying a control signal of <0.5 V to DIN1 or by short Din1 to GND.
	Unacceptable operating point (e.g. back pressure is too high)	Correct the operating point. Let the device cool down. To reset the error message, switch off the mains supply voltage for at least 25 s and then switch it on again. Alternatively, reset the error message by applying a control signal of <0.5 V to DIN1 or by short Din1 to GND.



If you have any other problems, contact ebm-papst A&NZ

### 6.1 Cleaning

#### NOTE

#### Damage to the device during cleaning

Malfunctions possible

- Do not clean the device using a water jet or high-pressure washer.
- Do not use any cleaners containing acids, bases or solvents.
- Do not use any pointed or sharp-edged objects to clean.



# Operating Instructions

## 6.2 Safety inspection

### NOTE

#### High-voltage test

The integrated EMC filter contains Y capacitors. Therefore, the trigger current is exceeded when AC testing voltage is applied.

→ Test the device with DC voltage when you carry out the high-voltage test required by law. The voltage to be used corresponds to the peak value of the AC voltage required by the standard.

What to check?	How to check?	Frequency	What action?
The protective casing against accidental contact for damage and to ensure that it is intact	Visual inspection	At least every 6 months	Repair or replacement of the device
Device for damage to blades and housing	Visual inspection	At least every 6 months	Replacement of the device
Fastening the cables	Visual inspection	At least every 6 months	Fasten
Fastening the protective earth connection	Visual inspection	At least every 6 months	Fasten
Insulation of the cables for damage	Visual inspection	At least every 6 months	Replace cables
Tightness of cable gland	Visual inspection	At least every 6 months	Retighten replace if damaged
Condensate drainage holes for clogging, as necessary	Visual inspection	At least every 6 months	Open holes
Weld seams for crack formation	Visual inspection	At least every 6 months	Replace device

## 6.3 Disposal

For ebm-papst, environmental protection and resource preservation are top priority corporate goals. Ebm-papst operates an environmental management system which is certified in accordance with ISO 14001 and rigorously implemented around the world on the basis of German standards.

Right from the development stage, ecological design, technical safety and health protection are fixed criteria.

The following section contains recommendations for ecological disposal of the product and its components.

## 6.3.1 Country-specific legal requirements



### NOTE

#### Country-specific legal requirements

Always observe the applicable country-specific legal regulations with regard to the disposal of products or waste occurring in the various phases of the life cycle. The corresponding disposal standards are also to be heeded.

## 6.3.2 Disassembly

Disassembly of the product must be performed or supervised by qualified personnel with the appropriate technical knowledge. The product is to be disassembled into suitable components for disposal employing standard procedures for motors.



### WARNING

**Heavy parts of the product may drop off. Some of the product components are heavy. These components could drop off during disassembly.**

This can result in fatal or serious injury and material damage.

→ Secure components before unfastening to stop them falling.

## 6.3.3 Component disposal

The products are mostly made of steel, copper, aluminium and plastic.

Metallic materials are generally considered to be fully recyclable. Separate the components for recycling into the following categories:

- Steel and iron
- Aluminium
- Non-ferrous metal, e.g. motor windings
- Plastics, particularly with brominated flame retardants, in accordance with marking
- Insulating materials
- Cables and wires
- Electronic scrap, e.g. circuit boards

Only ferrite magnets and not rare earth magnets are used in external rotor motors from ebm-papst

Ferrite magnets can be disposed of in the same way as normal iron and steel.

Electrical insulating materials on the product, in cables and wires are made of similar materials and are therefore to be treated in the same manner.

The materials concerned are as follows:

- Miscellaneous insulators used in the terminal box
- Power cables
- Cables for internal wiring
- Electrolytic capacitors

Dispose of electronic components employing the proper procedures for electronic scrap.



Please contact ebm-papst for any other questions on disposal.