Safety instructions

for DC built-in motors

The device type, date of manufacture (calendar week/year) and the conformity sign are located on the nameplate on the motor.
For questions about the motor, please provide the entire content of the type plate.

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1. SAFETY REGULATIONS AND NOTES

Please read these operating instructions carefully before starting to work with the device. Observe the following warnings to prevent malfunctions or physical damage to both property and people.
These operating instructions are to be regarded as part of this device. If the device is sold or transferred, the operating instructions must accompany it. These operating instructions may be duplicated and forwarded for information about potential dangers and their prevention.

1.1 Hazard levels of 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, if not avoided, will result in death or serious injury. Compliance with such measures is mandatory.

WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Exercise extreme caution while working.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or property damage.

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

1.2 Staff qualification

Only specialized electrical personnel may install the device, perform the test run and work on the electrical system.
Only trained and authorised specialist personnel are permitted to transport, unpack, assemble, operate or maintain the device, or to use it in any other manner.

1.3 Basic safety rules

Any safety hazards stemming from the device must be re-evaluated once it is installed in the final application.
Observe the following when working on the unit:

➔ Do not make any modifications, additions or conversions to the device without the approval of ebm-papst.

1.4 Electrical voltage and current

Check the electrical equipment of the device at regular intervals.
Replace loose connections and defective cables immediately.



DANGER
Electrical charge on the device
Electric shock

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

WARNING
Terminals and connections have voltage even in a unit that is shut off
Electric shock

➔ Wait five minutes after disconnecting the voltage at all terminals before touching the unit.

CAUTION
In the event of failure, there is electric voltage at the rotor and housing
The rotor and housing are base insulated.
➔ Do not touch the rotor and housing when they are installed.

CAUTION
When the control voltage is applied or speed setpoint stored, the motor can restart automatically, e.g. after a power failure.
Risk of injury
➔ Keep out of the danger zone of the device.
➔ When working on the device, switch off the mains supply voltage and make sure it cannot be switched on again.
➔ Wait until the device stops.

1.5 Safety and protective functions



DANGER
Missing safety device and non-functioning protective features
If there is no safety device, you could be seriously injured, for example by reaching into the running device with your hands.
➔ Operate the device only with adequate protection means. The guard must withstand the kinetic energy.
➔ The device is a built-in component that has no function on its own. As the operator, you are responsible for ensuring that the device is adequately secured.
➔ Shut down the device immediately if you detect a missing or ineffective protective feature.

1.6 Electromagnetic radiation
Interference from electromagnetic radiation possible, e.g. in conjunction with open and closed-loop control devices.
If unacceptable emission intensities occur when the motor is installed, suitable shielding measures must be taken before the device is commissioned.

NOTE
Electrical or electromagnetic interference after integrating the device in installations on the customer's side.
→ Verify that the entire setup is EMC compliant.

1.7 Mechanical movement



DANGER
Rotating device
Body parts that come into contact with the rotor can be injured.
➔ Secure the unit to prevent contact. Before working on the installation/ machine, wait until all parts have come to a standstill.

WARNING
Rotating device
Long hair, loose items of clothing and jewellery could become entangled and pulled into the device. You could be injured.
➔ Do not wear any loose clothing or jewellery while working on moving parts.
➔ Protect long hair with a hood.

1.8 Emission

WARNING
Depending on the installation and operating conditions, a sound pressure level greater than 70 dB(A) may arise.
Risk of noise-induced hearing loss
➔ Take appropriate technical safety precautions.
➔ Safeguard the operating personnel with appropriate protectionmeasures, e.g. ear protectors.

1.9 Hot surface



CAUTION
High temperature at the motor or electronics enclosure
Risk of burn injuries
➔ Make sure that sufficient protection against accidental contact is provided.

1.10 Transport



CAUTION
Transport of motor
➔ Transport the motor in its original packaging only.
➔ Secure the motor so that it does not slip.
➔ Motor is heavy
➔ The motor can fall down and cause crushing injuries
➔ Wear safety shoes

1.11 Storage
Store the device in a dry and weatherproof manner in the original packing in a clean environment.
Protect the device from environmental impact and dirt until the final installation.
We recommend storing the device for a maximum of one year.
Maintain the storage temperature.

1.12 Disposal
When disposing of the device, please comply with all relevant requirements and regulations applicable in your country.

2. PROPER USE

The device is exclusively designed as a built-in device according to its technical data.
Any other or secondary use is deemed improper and constitutes a misuse of the device.
Installations made by the customer must meet the mechanical, thermal and service life-related stresses that can occur.

Proper use also includes:

– Using the device in accordance with the permitted ambient temperature,

– Operating the device with all protective features,

– Observing the operating instructions.

Improper use
In particular, the following uses of the motor are prohibited and can lead to dangerous situations:

– Operating the motor in the vicinity of flammable materials or components.

– Operating the motor in an explosive atmosphere.

– Using the motor as a safety component or for taking on safety-related functions.

– In addition, all application options that are not listed under proper use.

If you have specific questions, contact ebm-papst for support.

Electromagnetic compatibility



To comply with special requirements regarding emissions and interference immunity, external filters may be necessary. The effort, circuit and composition must be clarified in the respective application.

3. CONNECTION AND START-UP

3.1 Connecting the mechanical system



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



➔ Carefully lift the device out of the packaging; be sure to avoid any shock.

➔ Wear safety shoes and cut-resistant safety gloves.

➔ Install the device according to your application.

➔ Use suitable fastenings for the installation.

3.2 Connecting the electrical system



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.

CAUTION
Electrical voltage
The motor is a built-in component and features no electrically isolating switch.

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

➔ When working on the motor, you must switch off the system/machine in which the motor is installed and secure it from being switched on again.

Prerequisites

➔ Check whether the data on the type plate agree with the connection data.

➔ Before connecting the device, ensure that the mains supply voltage matches the motor voltage.

➔ Only use cables that are configured for the amperage stated on the type plate.

Connecting cables with terminals (applicable only to devices with terminal connection)

WARNING
Terminals and connections have voltage even when the unit is switched off
Electric shock

➔ Wait five minutes after disconnecting the voltage at all terminals before touching the unit.

3.3 Checking the connections

➔ Make sure that the power is off.

➔ Make sure it cannot be switched on again.

➔ Check the correct fit of the connecting cables.

3.4 Switching on the device

WARNING
Hot motor housing
Fire hazard

➔ Ensure that no combustible or flammable materials are located in the vicinity of the motor.

➔ Inspect the device for signs of external damage and for the proper function of the protective features before switching it on.

➔ Apply nominal voltage to the voltage supply.

3.5 Switching off the device

– To switch the device off during operation:

➔ Switch the device off using the control input or disconnect the power supply.

➔ Do not switch the motor (e.g. in cyclic operation) on and off via power supply.

– Switching off the device for maintenance work:

➔ Separate the device from the supply voltage.

4. MAINTENANCE, MALFUNCTIONS, POSSIBLE CAUSES AND REMEDIES

Do not perform any repairs on your device. Return the motor to ebm-papst for repair or exchange.

WARNING

Terminals and connections have voltage even when the unit is switched off

Electric shock

➔ Wait five minutes after disconnecting the voltage at all terminal before touching the unit.

CAUTION

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

Risk of injury

Keep out of the danger zone of the device.

➔ When working on the device, switch off the mains supply voltage and make sure it cannot be switched on again.

➔ Wait until the device stops.

If the device remains out of use for some time, e.g. when in storage, we recommend switching the device on for at least 2 hours to allow any condensate to evaporate and to move the bearings.

Malfunction/error	Possible cause	Possible remedy
Motor does not turn	– Mechanical blockage – Mains supply voltage faulty	– Switch it off and remove mechanical blockage – Check mains supply voltage, restore power supply – Apply control signal
Excess temperature of electronics Excess temperature of motor	– Ambient temperature too high – Insufficient cooling – Unacceptable operating point	– Lower ambient temperature if possible.

If you have any other problems, contact ebm-papst.