Installation, safety and maintenance instructions for gas-air systems

The device type and date of manufacture (calendar week and year) are located on the device's nameplate. If you have questions about the device, please provide us with all of the information on the device's nameplate.

For more information, go to:
www.ebmpapst.com

ebm-papst Landshut GmbH
Hofmark-Aich-Str. 25
84030 Landshut, Germany
Phone +49 871 707-0
Fax +49 871 707-465
info3@de.ebmpapst.com
www.ebmpapst.com

Date: 6/13/2018
Version: 3/haem

CONTENTS

1. SAFETY REGULATIONS AND INSTRUCTIONS

These instructions must be provided before any work on or with the product, before installation and commissioning, before maintenance and repair work, and before any other use. Keep these instructions available for any future use and for any future owners.

These operating instructions must be read carefully before any work on or with the product. Observe and act in accordance with the following information and warnings to prevent hazards to persons or property or to avoid malfunctions.

The product documentation is to be regarded as part of the device and must be included with the device if the device is sold or transferred.
This product documentation may and should be copied and distributed in order to provide information about risks and hazard avoidance.

1.1. Hazard levels for warnings

This product documentation uses the following hazard levels to indicate potentially hazardous situations and important safety regulations:

DANGER

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

WARNING

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

CAUTION

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

NOTE

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

1.2. Warranty and liability

No warranty or liability claims will be accepted for personal injury or property damage that is due to one or more of the following causes:

- Improper use of the device
- Improper installation, start-up, operation and maintenance of the device
- Operation of the device with defective safety equipment or with safety and protective equipment which is not properly attached or not fully functional
- Failure to comply with the safety and installation instructions
- Unauthorized structural modifications to the device
- Inexpert repair work
- Force majeure
- Damage resulting from continued use in spite of defects
- Unsuitable flow media
- Defective supply lines
- Failure to use original ebm-papst parts

1.3. Personnel qualifications

The product is only to be transported, unpacked, operated, maintained and otherwise used by suitably qualified, trained and instructed technical staff (or by a qualified electrician).

1.4. Basic safety rules

The safety hazards associated with the device must be carefully reassessed. Commissioning of the end product may only take place following full verification of compliance with all relevant legal requirements, guidelines and application-related safety regulations (such as country-specific accident prevention regulations and technical rules). Note the following when working on the device:

- The system is not to be modified or converted and no attachments are to be fitted without the approval of ebm-papst Landshut.
- Observe the information in the operating instructions provided by the device manufacturer.

1.5. Voltage and current

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

DANGER

Electrically charged device

Electric shock possible.

→ Stand on a rubber mat when working on an electrically charged device.

DANGER

Live terminals and connections even with the device switched off

Electric shock

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

DANGER

In the event of a fault, there may be voltage at the rotor and the impeller.

→ Once they have been installed, do not touch the rotor and the impeller.

DANGER

If control voltage is applied or there is a stored speed set value, the motor will restart automatically, e.g. after a power failure. The gas valve's safety valves open automatically.

Risk of injury

→ Keep out of the device's danger zone.
→ When working on the device, switch off the line voltage and ensure that it cannot be switched on again.
→ Wait until the device comes to a stop.

1.6. Safety and protective features

DANGER

Protective equipment missing and protective equipment not functioning

Without protective equipment, hands may become caught up in the device during operation for example, resulting in serious injury.

→ Operate the device only with fixed protective equipment and guard grill. The fixed protective equipment must be able to withstand the kinetic energy of a fan blade.
→ Protective equipment is not designed to be stepped on.
→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 secured adequately.
→ Stop the device immediately if protective equipment is found to be missing or ineffective.

1.7. Electromagnetic radiation

Possible interference from electromagnetic radiation, e.g. in conjunction with open-loop and closed-loop control devices.
If impermissible radiation levels occur following installation, appropriate shielding measures have to be taken before market introduction.

NOTE

Electrical or electromagnetic interference after installing the device in customer equipment.

→ Verify that the entire setup is EMC-compliant.

1.8. Mechanical motion

DANGER

Rotating device

Risk of injury to body parts coming into contact with the rotor and, if present, the impeller.
→ Secure the device against accidental contact.
→ Do not under any circumstances use foreign objects to slow down rotating parts during operation or while slowing down after deactivation.
→ Before working on the system/machine, wait until all parts have come to a standstill.
→ Ejected particles possible. Avoid looking into or positioning body parts in the outlet.
→ Wear close-fitting protective clothing, safety glasses and a hairnet.
→ Remove neckties, jewelry and any other objects which could be drawn in by the rotor or, if present, the impeller.

1.9. Deflagration

DANGER

Gas escaping through leaky housing after deflagration

Risk of fatal injury

→ After a deflagration, verify that the system components are gastight.
→Replace any leaking system components immediately.

DANGER

Fire and deflagration hazard

The system is not approved according to the ATEX directives. Rotating parts can scrape against stationary parts. This can lead to sparking and chipping. The surface temperature can rise, resulting in a fire.

→ Look into the hazards that arise from installing, operating, servicing or disposing of the installed device.

Carry out all necessary measures.

1.10. Noise

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 such as hearing protection.
→ If hearing protection is required, it may not be possible to hear acoustic warning signals. Provide for adapted personal protective equipment or other means of ensuring workplace safety.
→ Also observe the requirements of local authorities.

1.11. Hot surface

CAUTION

Hot housing

Risk of burns

→ Ensure sufficient protection against accidental contact.

1.12. Transportation

NOTE

Transporting the device

→ Transport the device in its original packaging only.
→ To avoid damage (such as due to shifting loads), packaged devices must be adequately secured during transport.

1.13. Storage

- Store the device, whether partially or fully assembled, in its original packaging in a clean, dry place protected from the weather.
- Protect the device against environmental influences and dirt until final installation.
- We recommend storing the device for no longer than one year in order to guarantee trouble-free operation and the longest possible service life.
- Maintain the specified temperature for storage.

1.14. Disposal

Comply with all relevant local requirements and regulations when disposing of the device.

2. INTENDED USE

The device is designed exclusively as a built-in device according to the technical specification. It is neither intended to function independently nor is it intended for transfer to end users.
Any other usage above and beyond this does not conform to the intended purpose and constitutes misuse of the device.
The final manufacturer is responsible for the end product and must ensure that adequate safety measures are taken. Customer equipment must be suited to the mechanical, thermal and service life demands involved. The final manufacturer must verify the safety of all intended applications.

2.1. Intended use also includes

- Using the device at the permitted ambient temperature
- Observance of the specification
- Only conveying gases from gas families 2 and 3 (according to the DVGW – German Technical and Scientific Association for Gas and Water – worksheet G260)
- Installing the device in an integrated system for conveying air-gas mixtures
- Starting up the built-in component only after installation in the customer equipment
- Operating the gas valve in LPG equipment only at temperatures above 0 °C Only suitable for gaseous LPG; liquid hydrocarbons destroy the seal materials

2.2. Improper use

In particular, use of the device in the following ways is prohibited and could be hazardous:

- Conveying a medium that contains abrasive particles
- Conveying a medium that contains aggressive substances (halogens, chlorides, fluorides, etc.) and/or is highly corrosive
- Conveying a medium with high dust content, e.g. building materials
- Operating the device in an environment that contains flammable gases or dust or combustible solids or fluids
- Conveying air-gas mixtures outside of an integrated system satisfying the requirements described above
- Operation in medical equipment with a life-sustaining or life-support function
- Contact with materials that could damage device components, e.g. liquids used during cleaning
- Operation with protective equipment that has been completely or partially disassembled or tampered with
- Exposure to radiation which could damage device components, e.g. intense UV radiation
- Operation with external vibrations
- Operating the device in an explosive atmosphere
- All other applications not listed as Intended uses

3. CONNECTION AND STARTUP

3.1. Mechanical connection

CAUTION

Cutting and crushing hazard when removing device from packaging

→ Lift the device carefully out of its packaging, taking care to avoid jarring.
→ Wear safety shoes and cut-resistant safety gloves.

CAUTION

Heavy load when removing device

Risk of physical injury, such as back injuries.

→ Two people are required to lift the device out of the packaging if it weighs more than 10 kg.

- Check the device for transport damage. Damaged devices are not to be installed.
- Install the device in accordance with your application.
- Use suitable fasteners for installation.
- Protect flange surfaces, tighten screws crosswise and ensure that installation is strain-free.

DANGER

Gas leaking from poorly sealed housing

Risk of fatal injury

→ Before starting up the device, and after any work on it, verify that it is gastight.
When doing so, seal off the intake and outlet openings as well as the shaft opening.
→ In addition, verify that no rotating parts scrape against stationary parts.
→ The gas supply must be shut off during work on the unit.
→ Avoid open flame.

DANGER

Leaks may occur.

Due to its design, the device is not tightly sealed, e.g. at the shaft opening. This may result in leaks during improper operation.
Deflagration is also a possible cause of long-term damage or housing deformation which may result in leaks. An air-gas mixture may accumulate outside of the gas appliance.
The device can explode. Severe injuries can result.
→ Determine which hazards arise from installing, operating, servicing or disposing of the gas appliance in conjunction with your device.

Avoid any such hazards.
Carry out all necessary measures.

Safety measures if you smell gas

→ Avoid open flame and sparking (such as from switching lights and electrical devices on and off, including cell phones).
→ Open windows and doors.
→ Shut off the gas valve.
→ Warn residents and leave building.
→ From outside the building, inform the gas utility.

DANGER

Toxic gases may be released.

Adjustments to the offset and the main throttle of the gas valve affect the air-fuel ratio and thus the combustion quality. When starting up the unit and after maintenance work, check the settings and correct them if necessary. All settings are only to be made in accordance with the device manufacturer's operating instructions.

CAUTION

The use of leak detector spray can lead to malfunctions. Leak detector spray may not come into contact with electrical contacts or get into the membrane opening on the gas valve.

3.2. Electrical hookup

DANGER

Voltage on the device

Electric shock

→ Always fit a protective earth to housings or metal parts also, if they are not connected to the motor with a protective earth (yellow-green wire).
→ Check the protective earth.

DANGER

Faulty insulation

Risk of fatal injury from electric shock

→ Check the insulation for damage before connecting and starting up the device.
→ Only use cables that satisfy the required insulation regulations with regard to voltage, current, insulation material, load rating, etc.
→ Route cables so that they cannot come into contact with rotating parts.

WARNING

Voltage, electric shock

The device is a built-in component and has no isolating switch. Metallic parts may be live.

→ Use the device only with the cable guard intended for it.
→ Only connect the device to circuits that can be switched off with an all-pole disconnection switch.
→ When working on the device, you must disconnect from the power supply the system/machine in which the device is installed and ensure that it cannot be switched on again.

WARNING

Water ingress into wires or cables

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

→ Make sure the end of the cable is connected in a dry place.

NOTE

Possible device malfunction

→ Do not route the device's control lines immediately parallel with the supply line and, if present, the ignition line. Maintain the greatest possible clearance.
Recommendation: clearance > 10 cm (separate cable routing)

Requirements

- Check whether the information on the nameplate matches the connection data.
- Before connecting the device, make sure the power supply matches the device voltage.
- Only use cables designed for the current level indicated on the nameplate.

Connect cables to terminals (applies only to devices with terminal connection)

WARNING

Live terminals and connections even with the device switched off

Electric shock

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

WARNING

Voltage on cable glands

Electric shock

→ Do not use metal cable glands with plastic terminal boxes.

Residual current circuit breakers (RCCB)

We strongly recommend that you use only AC/DC-sensitive residual current devices (type B or B+). As with variable frequency drives, residual current devices (type A) cannot provide personal safety while operating the device.
When the device's power supply is switched on, pulsed charging currents from the capacitors in the integrated EMC filter can cause the residual current devices to trip instantly. We recommend the use of residual current circuit breakers (RCCB) with a trip threshold of 300 mA and delayed tripping (super-resistant, characteristic K).

Reactive currents

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

3.3. Plug connection

3.3.1. Preparing power cable for connection

The cables, including the customer interface, are subject to the specifications for internal wiring.
Ensure conformity with applicable standards and check the degree of protection in the final product after installing the ebm-papst device.

3.3.2. Making power supply connections

WARNING

Voltage

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

→ Connect the device to a suitable tripping unit.
→ Only connect the device to circuits that can be switched off with an all-pole disconnection switch.
→ When working on the device, you must ensure that the system/machine in which the device is installed cannot be switched on again.
→ Do not reach into the opening – risk of injury! Protective earth must be connected.
→ Caution, metallic parts may be live. Disconnect the power supply.
→ In the device, the system must be protected by a fuse, safety temperature limiter, overcurrent release or the like.
→ For equipment protection according to DIN EN 60335-1, a fuse rated for no more than 16 A must be installed upstream in the power supply line.

- Check your connector's pin assignment.
- Connect the built-in connector with the mating connector.
- Ensure that the connector is properly engaged.

3.4. Checking connections

- Ensure safe isolation from supply (all phases). Secure against restarting.
- Verify that the mating connector is properly engaged with the built-in connector.
- Verify that the mating connector is correctly attached to the cable.

3.5. General – switching on the device

WARNING

Hot housing

Risk of fire

→ Ensure that no combustible or flammable substances are located in the vicinity of the device.

- Before switching it on, check the device for outwardly visible damage and verify that the protective equipment is functional.
- Apply the nominal supply voltage.
- Start the device by changing the input signal.
- Check the device's air flow paths for foreign matter and remove any foreign matter found.
- Apply 0 VDC to the 0-10 V control input, if you are using it.
- Apply 0% PWM to the PWM control input, if you are using it.
- When connecting, be sure to connect the ground connection first.

3.6. General – switching off the device

Switching off the device during operation:

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

Switching off the device for maintenance:

- Switch off the device via the control input.
- Disconnect the device from the power supply.
- When disconnecting, be sure to disconnect the ground connection last.

4. MAINTENANCE

- Do not perform any repairs on the device. Send the device to ebm-papst for repair or replacement.
- Always use new seals after removal/replacement of parts.
- The gas supply must be shut off during work on the system.

WARNING

Live terminals and connections even with the device switched off.

Electric shock

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

WARNING

If control voltage is applied or there is a stored speed set value, the motor will restart automatically, e.g. after a power failure. The gas valve's safety valves open automatically.

Risk of injury

→ Keep out of the device's danger zone.
→ When working on the device, switch off the line voltage and ensure that it cannot be switched on again.
→ Wait until the device comes to a stop.
→ After working on the device, remove any tools or other objects from the device.

WARNING

If the control signal of a device that is connected to the supply network is removed, the motor can restart automatically.

Risk of injury

→ When working on the device, switch off the line voltage and ensure that it cannot be switched on again.
→ Wait until the device comes to a stop.

WARNING

Device still electrically charged after being switched off

Electric shock, risk of injury

Capacitors store electric charge and must therefore always be handled with care. Even after being turned off for a relatively long period of time, they can still carry a potentially lethal high voltage. The same applies for all system components and devices that are electrically connected to the capacitor. The general electrical engineering rules applying to work with live components in electrical systems must always be complied with.

5. MANUFACTURER DESIGNATIONS

DE(L):

ebm-papst Landshut GmbH
Hofmark-Aich-Str. 25
84030 Landshut
Germany

DE(M):

ebm-papst Mulfingen GmbH & Co. KG
Bachmühle 2
74673 Mulfingen
Germany

Slovenia(Y):

ebm-papst Slovenija d.o.o
Podskrajnik 16
1380 Cerknica
Slovenia

Czech Republic(N):

ATAS elektromotory Náchod a.s.
Bratří Čapků 722
547 30 Náchod
Czech Republic

China(S):

ebm-papst Ventilator (Shanghai) Co., Ltd.
No. 418, Hua Jing Road, Wai Gao Qiao Free Trade Zone, Pudong
200131 Shanghai
People's Republic of China

China(N):

ebm-papst Motor (Shanghai) Co., Ltd.
No. 289 Xuanzhong Road, Nanhui Industrial Zone
201300 Shanghai
People's Republic of China

Serbia(S):

ebm-papst d.o.o Sombor
Konjovićeva 78
25000 Sombor
Serbia