

4 Installation and connection

Remove any transport locks on the fan blade and check the equipment for damage prior to installation. This could be a damaged housing, supply cables, etc., among other things. Never use equipment with obvious damage.

4.1 Requirements to the installation site

CAUTION



Damage to the device

Protect the equipment against dust, falling objects and external impacts.

Stroke of lightning

Outdoor installation is **forbidden**. As a matter of principle, the operator must regard all applicable standards according prevention of damage due to lightning, which may otherwise damage the device.

The sample gas pumps are built-in units which may only be safely operated inside a housing providing adequate protection for persons against touching live or moving parts (fans). Water and contaminants must also be prevented from entering. The P1.1E sample gas pumps offers protection from direct contact with an IP20 rating. Depending on the operating and ambient conditions, the required protection may vary and must be taken into account during installation.

Never block the vent, and the exhaust air – including from adjacent units – must not be immediately suctioned in.

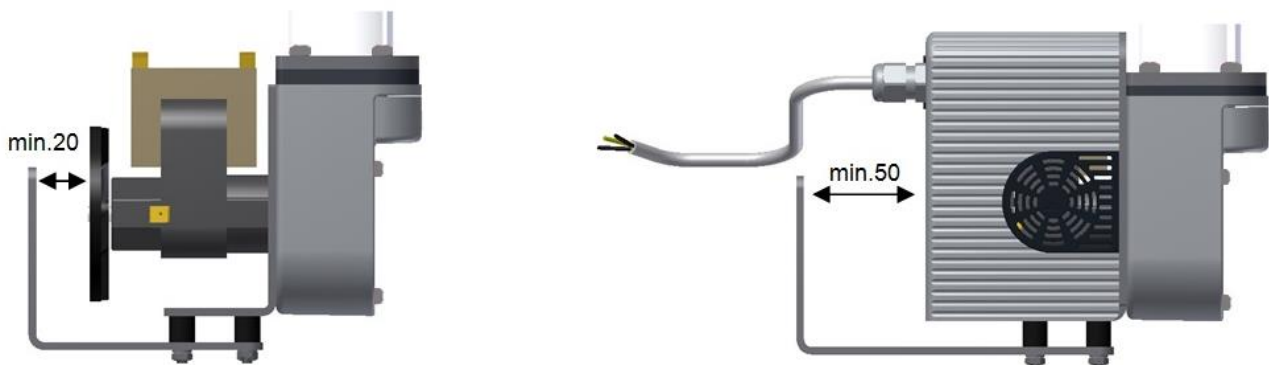
The motor is rated for ambient temperatures of 0 °C to +50 °C as well as installation altitudes ≤ 1000 m above sea level.

Please refer to chapter "Appendix" at the end of the operating and installation instructions for additional installation site ambient parameters.

4.2 Installation

Use suitable rubber-metal buffers when installing to mounting plates. We recommend buffers with a diameter or 10 mm, a height of 10 mm and a shore hardness of 70. These are also available from us.

The base angle of the sample gas pump features 4x M4 tapped holes for mounting the buffers. Suitable buffers and assembly brackets are accessories which may be ordered separately from us.



While installing the sample gas pump, there must be sufficient spacing between the motor and the rear wall (20mm).

If you are using a sample gas pump with housing (type P1.1E), the required distance between the housing and the rear wall is 50mm. This is due to the minimum permitted bending radius of the power supply line.

The specific mounting bracket for the various product variants can be obtained as an accessory. Using the appropriate mounting bracket guarantees the correct distance between the device and the rear wall.

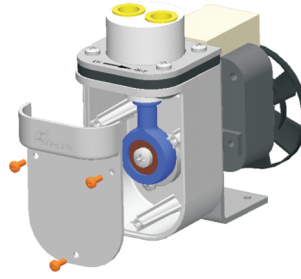
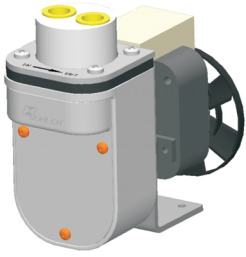
4.3 Special condition moist sample gas

Applications where the sample gas is still moist may result in condensate forming in line and the pump body. In these events the pump head must be suspended (pump body facing down).

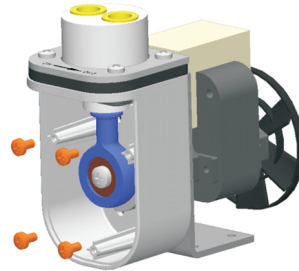
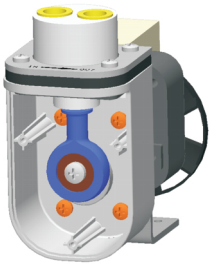
If the pump was not ordered this way, it can easily be converted on site.

Install the line between the gas output and condensate drain with a grade so the condensate can drain and does not collect inside the pump or the lines.

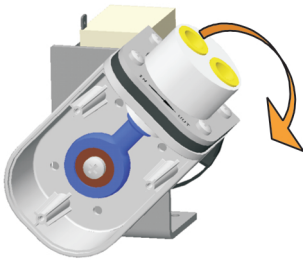
4.3.1 Conversion to pump body pointing down



Loosen the 3 Torx screws (M3x8) on the front cover (Torx T10).
Remove the cover.



Loosen and remove the 4 Torx screws (M4x6) on the console (Torx T20).



Carefully turn the pump unit 180°.
Then reinstall the 4 Torx screws and tighten to 3 Nm.
Before tightening the screws be sure the pump unit is centered in the base angle.



Now reinstall the front cover and secure using the 3 M3x8 Torx screws.

4.4 Connecting gas lines

The G1/4 female threads for the respective screw-in connections are factory closed with plastic plugs to protect from dirt. Screw-in connections are generally not included in delivery, but are sold separately for metric or for imperial installation.

Avoid mixed-material installation, i.e. metal piping to plastic bodies. If this cannot be avoided in isolated applications, screw the metal connections into the pump body with care, never use force.

Lay the lines so the line at the inlet and outlet remains flexible for an adequate distance.

The pumps are marked **IN** for inlet and **OUT** for outlet at the mounting ring. Be sure the gas line connections are tight.

4.5 Electrical connections

WARNING



Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION



Wrong mains voltage

Wrong mains voltage may damage the device.
Regard the correct mains voltage as given on the type plate.

A switch or circuit breaker (in accordance with IEC 60947-1 and IEC 60947-3) is to be provided. This must be organized to be easily accessible for the operator. The switch must be labelled as an isolating device for the unit. It must not be inserted into a mains power line or interrupt the protective conductor. Furthermore, the switch must separate the sample gas pump from the live parts for all the poles.

The sample gas pump must be secured against unacceptable excessive warming by using a suitable overload protection (motor protection circuit breaker). Sample gas pumps with a BLDC motor have already integrated protection against excessive warming in the motor electronics.

Observe the rated current for the protective switch (230 V = 0,48 A, 115 V = 0,84 A, 12 V DC = 1,55 A, 24 V DC = 0,8 A).

Make sure that mains voltage **and** frequency meet the specifications of the motor (voltage tolerance $\pm 5\%$ and frequency tolerance $\pm 2\%$.)

The electrical connection of type P1.1 is made with the help of flat connectors size 6,3 mm.

Sample gas pumps of type P1.1 (12 V DC/24 V DC) and P1.1E (all voltages) are delivered as standard with a 3 m connecting cable.

If your sample gas pump has a factory-installed on/off switch on the housing (only P1.1E), verify it is set to the zero position before connecting to power.

WARNING



Hazardous electrical voltage

The On/Off switch does not ensure switching off all poles.



It is essential to connect the protective earth conductor to the marked protection earth terminal. At model P1.1E (115 V/230 V) the protective earth has to be connected to the green/yellow wire of the connection cable (see Fig. Electrical connection P1.1 pumps).

Select mains and protection earth cross section according to the rated current.

For the electrical connections especially for the protective conductor use a cable cross-section from minimum 0,75 mm².

Obey differing specifications on the type plate. The conditions at the installation site must meet all specifications on the type plate.

All parts under voltage must be protected through appropriate measures against contact by persons or foreign body procedures.

