

Installation instruction of flow sensor type MFS-SS

MFS-SS

Instruction : Mi-222gb_060424

Flow constant

The MFS-SS is to be installed in a circular or rectangular duct. Length specified when ordered.

The average value of the air flow over the whole length of the sensor results in a pressure difference, out of which the total air flow or air velocity may be calculated.

These formulas are valid for air at 20 °C and 1013 mbar.

$$v = K_m \times \sqrt{\Delta p} \text{ m/s}$$

$$Q = A \times K_m \times \sqrt{\Delta p} \text{ m}^3/\text{s}$$

Where the included variables represents:

- v = velocity in m/s
- K_m = the constant of the sensor
- Δp = the pressure difference in Pa
- A = the area of the duct in m²
- ρ = The density of the air in kg/m³
- B = actual barometric pressure in mbar
- t = the actual temperature in °C

With a different temperature or barometric pressure of the air, the values must be calculated for the change in the density of the air according to the formulas below:

$$\rho = 1,293 \times \frac{B}{1013} \times \frac{273}{273 + t} \text{ kg/m}^3$$

$$v = K_m \times \sqrt{\Delta p \times \frac{12}{\rho}} \text{ m/s}$$

$$Q = A \times K_m \times \sqrt{\Delta p \times \frac{12}{\rho}} \text{ m}^3/\text{s}$$

The constant of the sensor (K_m) is found on the small sign, which is attached to the sensor.

Error in measurement

The error in measurement depends partly on the sensor and partly on the flow profile in the duct.

With a proper flow profile, the maximum error in the measurement is normally ± 3 %.

Maintenance

Normally the sensor does not need any maintenance. If the air is very polluted, it is appropriate to dismount the sensor once a year and to clean it off with compressed air.

No part of the sensor will get damaged during normal cleaning. It is allowed to use compressed air both on the outer side of the sensor and through the pressure taps. Make sure that the sensor is not connected to the transmitter during cleaning.

Installation

To achieve a good result, the sensor should be installed at least 7 times its own length from a 90° bend or any other source of disturbance. For advice in other kinds of installation, contact Micatrone.

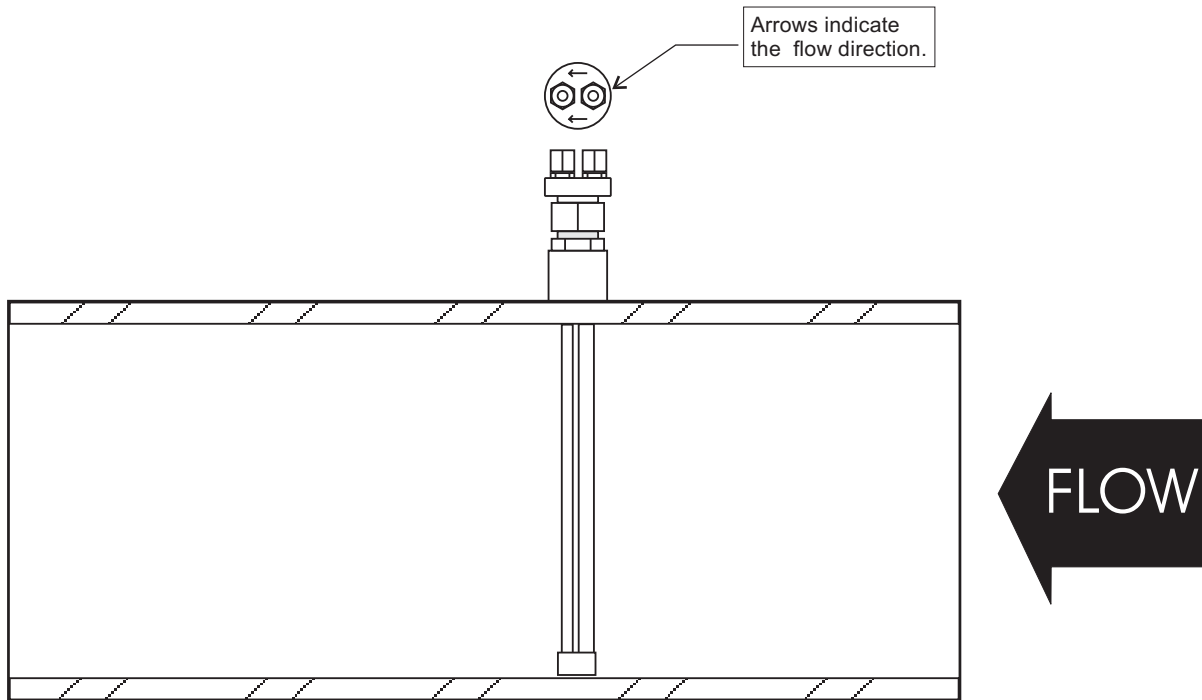
Adjust the position of the sensor to meet the flow direction.

Connect the sensor to a flow transmitter Micaflex MF-FD or MF-PFT with a rigid 8/6 mm HT plastic tube or Swglock connections, either ø6 mm or ø1/4 inch. The measured pressure will be converted to a flow linear output signal in the Micaflex.

Technical data

Temperature Max. 600 °C

Installation



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