Volume flow measurement

PROCESS MONITORING SYSTEMS FOR SOLIDS

Product Information

FEATURES:

- Reliable measured values even in dusty applications
- Easy to retrofit
- No calibration necessary
- Output in operating cubic metres
- Suitable for all diameters and geometries
- No venturi (constriction) needed

TECHNOLOGY

USAGE

The AirFlow P is used to measure volume flows. No venturi or similar conversions are required to use the measuring system. The AirFlow P can be easily installed on existing ducts.

Irrespective of whether the sensor is used in an environment with low dust loads or under harsh conditions, the AirFlow P always delivers reliable measured values even when it is used under difficult conditions, e. g. high dust loads.

This makes the AirFlow P the perfect measuring device for volumetric flow measurement at positions where differential pressure measurements cannot be used due to excessive dust loading or where duct conversions are not possible or desirable.
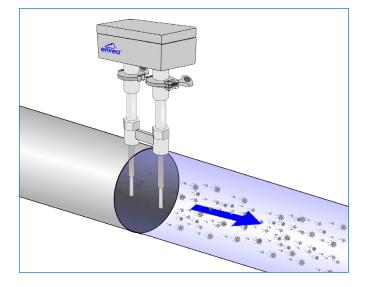
FUNCTION

Via two antennas that protrude into the air duct, the AirFlow P is able to perform a very accurate speed measurement.

If the area of the duct is stored on the Evaluation unit, the AirFlow P system supplies a signal at the analogue output cubic metres per hour (v x A).

By using the latest technologies, it is possible to measure a volume flow with the AirFlow P in clean gas ducts with a dust loading of only a few mg/m³.

It is also possible to use the AirFlow P as a pure speed measuring device, e. g. in order to keep the actual material velocity constant.

SYSTEM

The AirFlow P system consists of a special process adapter, the sensor and an Evaluation unit.

The sensor's antennas are easily interchangeable and available in different versions. Thus, the AirFlow P can be used under almost all process conditions. For larger channels, an averaging of up to three measuring points can take place at one Evaluation unit.
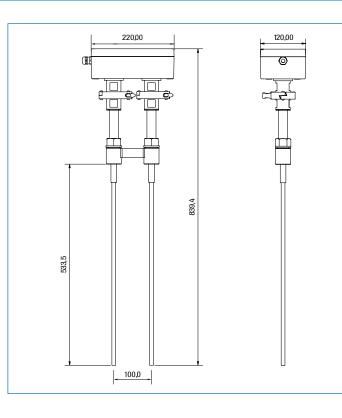
A measuring point consists of the following components:

• G1" – double socket

• AirFlow P including 2 interchangeable antennas

• Evaluation unit MSE 300

SPECIFICATIONS

TECHNICAL DATA

Sensor

Power supply	24 V DC, fed by evaluation unit
Measuring range	from 1 mg/m³
Speed range	1 m/s ... 100 m/s
Process temperature	-20 ... +250 °C
Ambient temperature	-20 ... +60 °C
Housing material	Aluminium
Sensor rod material	Stainless steel
Protection type	IP65
Dimensions	220 x 840 x 120 mm (W x H x D)
Weight	5.5 kg

Evaluation unit (DIN Rail)

Power supply	24 V DC ± 10 %
Power consumption	20 W / 24 VA
Protection type	IP40 to EN 60 529
Ambient operating temperature	-10 ... +45 °C
Dimensions	23 x 90 x 118 mm (W x H x D)
Weight	Approx. 172 g
DIN rail fastening	DIN 60715 TH35
Connection terminals cable cross-section	0.2 - 2.5 mm² [AWG 24-14]
Current output	1 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Interface	ModBus RTU (RS 485) / USB
Pulse output	Open Collector - max. 30 V, 20 mA
Relay contact	Max. rated load: 250 V AC Max. peak current: 6 A Max. rated load 230 V AC: 250 VA Max. breaking capacity DC1: 3/110/220 V: 3/0.35/0.2 A Min. switching load: 500 mW (10 V / 5 mA)
Data backup	Flash Memory

Evaluation unit (field housing)

Power supply	110 / 230 V AC 50 Hz (optional 24 V DC)
Power consumption	20 W / 24 VA
Protection type	IP65 to EN 60 52910.91
Ambient operating temperature	-10 ... +45 °C
Dimensions	258 x 237 x 174 mm (W x H x D)
Weight	Approx. 2.5 kg
Interface	RS 485 (ModBus RTU) / USB
Cable screw connectors	3 x M20 (4.5 - 13 mm Ø)
Connection terminals cable cross-section	0.2 - 2.5 mm² [AWG 24-14]
Current output	3 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Pulse output	Open Collector - max. 30 V, 20 mA
Relay contact	Max. rated load: 250 V AC Max. peak current: 6 A Max. rated load 230 V AC: 250 VA Max. breaking capacity DC1: 3/110/220 V: 3/0.35/0.2 A Min. switching load: 500 mW (10 V / 5 mA)
Data backup	Flash Memory