SolidFlow

Monitoring of Solids

Product Information

Using

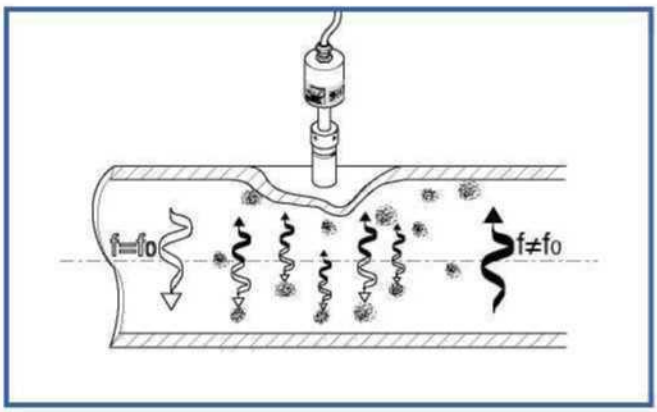
SolidFlow is a sensor especially developed for measuring the flow rate of solids conveyed in metallic ducts.
It has successfully been tested for online-measuring of:

- types of dust, types of powder, granulates
- grain size between 1 nm and 1 cm
- pneumatically conveyed materials
- in free fall after mechanical conveying systems

SolidFlow is wear-resistant and the commissioning is very easy.

Function

The sensor is working according to the latest microwave technology. It is exclusively used in metallic ducts.
A measuring field is produced by special linking of the microwave together with the duct.
The microwave energy is being back scattered by the solids particles and received by the sensor. These signals are evaluated in frequency and amplitude.
The sensor works like a particle counter, which counts the quantity of the moving particles per time unit.
Due to the selective frequency evaluation only moving particles are measured and deposits are suppressed.
The calibration of the sensor will be made in the inserted condition, simply by pushing a button and entering of the reference quantity.

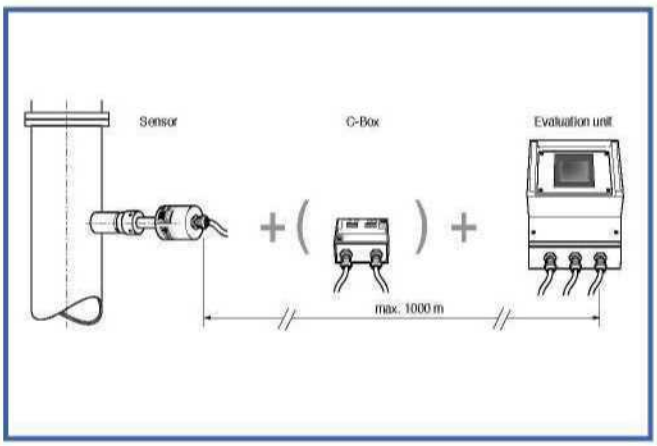


Measuring System

A complete measuring system consists of the following items:

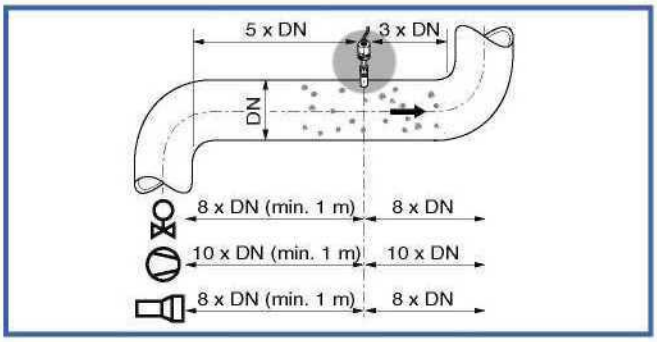
- Socket for mounting the sensor inclusive dummy plug
- Sensor FMS with a connecting cable of 2 meters
- Evaluation unit FME with totalizer
- C-Box for connecting sensor - evaluation unit

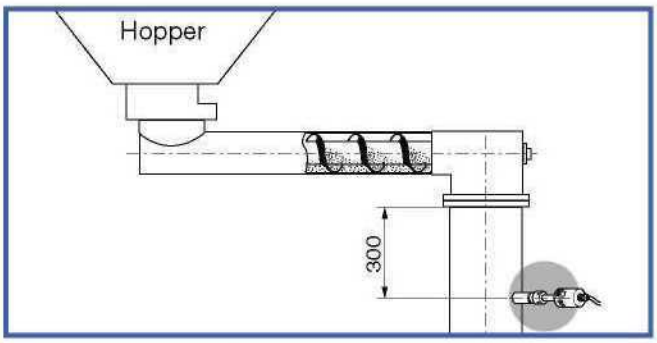
The C-Box is not conclusively necessary, of course an adequate tool can be used by the customer.
However the C-Box ensures the protection of the sensor, if wrong connected.

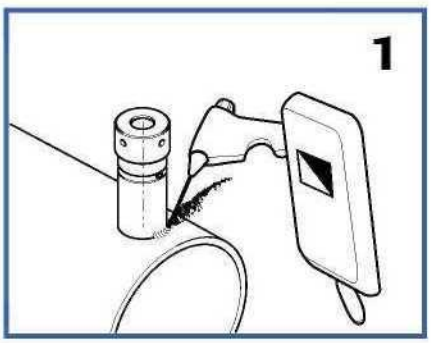


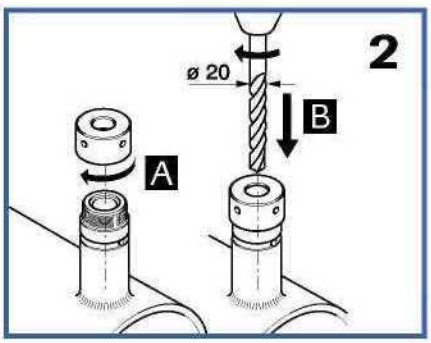
Mounting and Installation

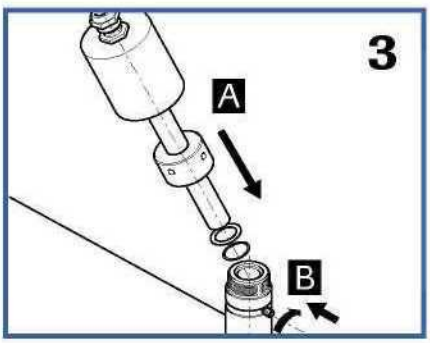
For the mounting of the sensor the fitting position will be determined according the inlet and outlet section.
In case of duct diameters greater than Ø 200 mm one has to install 2 or 3 sensors per measuring unit, which are located 150 mm apart from each other and moved by 90° resp. 120° towards each other. With free fall applications (e. g. after screw feeders or rotary valves) a free fall height of at least 300 mm would be perfect.
The sensor accommodation (socket) will be welded on at the fixed position. Subsequently drill a Ø 20 mm hole into the duct.
Then you have to adapt the sensor to the wall thickness and with the help of the union nut fixed.
Ready to measure!











Commissioning

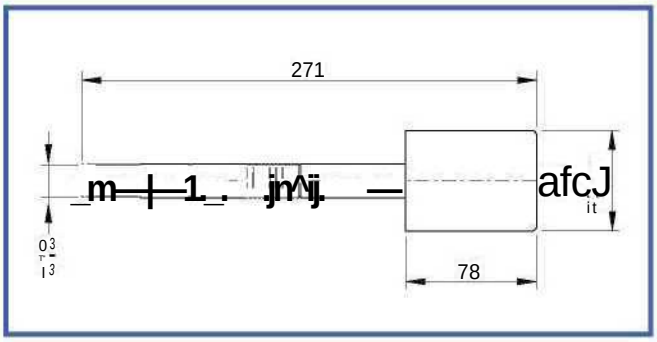
The commissioning of the measurement is made by the evaluation unit FME. This unit offers a comfortable, menu-guided input of the parameters, e.g. the measuring range, the requested physical unit or measuring signal absorption.
A current or voltage output, 4..20 mA or 2..10 V, are available as exits and also an impulse output (Open-Collector).

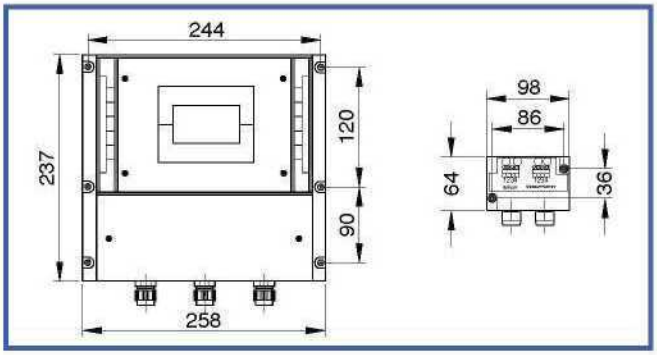
A totalizer enables an easy calibration. Furthermore this gives the possibility to check totally conveyed quantity.

The menu language is free-selectable between German, English or French.

Technical Data

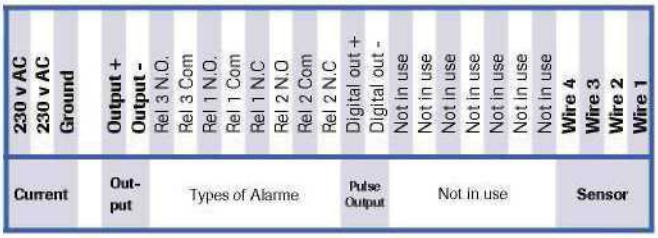
Sensor/Sensor accomodation	
Housing	stainless steel 1.4541 or galvanised Steel St 52
Protection category	IP65
Operating temperature • front end of sensor • optional • sensor electronic	 -20 … +80 °C [-4 … +176 °F] -20 … +200 °C [-4 … +392 °F] +0 … +60 °C [+32 … +140 °F]
Max. working pressure	1 bar, optional 10 bar
Working frequency	K-Band 24,125 GHz, ±100 MHz
Transmitting power	max. 5 mW
Weight	Approx. 1.3 kg
Dimension	Ø 60, Ø 20, L 271 mm
Accuracy	± 2 … 5% in calibrated range
Evaluation-Unit	
Supply voltage	110/230 V, 50 Hz, 24 V DC
Power consumption	20W/24 VA
Current consumption	Max. 1 A @ 24 V
Protection category	IP65 according to EN 60 529/10.91
Operating temperature	-10 … +45 °C [+14 … +113 °F]
Enclosure dimensions	258 x 237 x 174 (W x H x D)
Weight	approx. 2,5 kg
Interface	RS 485
Cable glands	3 x M16 (4.5-10 mm Ø)
Screw terminals	0,2-2,5 mm² [AWG 24-14]
Current output signal Voltage output signal	4 … 20 mA (0 … 20 mA), Load < 700 Ω 2 … 10 V (0 … 10 V), Load > 2 kΩ
Measurement value alarm relay output 3x	Relay with switching contact Max. 250 V AC, 1A
Totalizer	Reset function
Data storage	Flash
Pulse output	Open Collector
C-Box	
Size	98 x 64 x 35 mm (W x H x D)

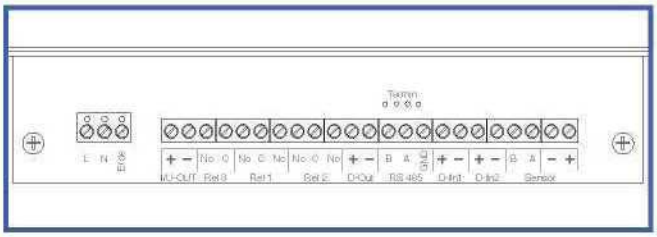




certificated
according to ATEX

Electrical Connection





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