

FlowJam S

EUROTEC
TECNOLOGIE IMPIANTISTICHE - AUTOMAZIONE - TELECONTROLLO

envea

Bulk Flow Detection

PROCESS MONITORING SYSTEMS FOR SOLIDS

Product Information



FEATURES:

- absolutely insensitive against material deposits
- for any line diameter
- with adapter, usable up to 220 °C and 20 bar
- with ceramic mounting, usable up to 1.000 °C
- usable in dust Ex-zones
- Detection through all non-conductive walls
- optional with trend monitoring (4 ... 20mA)
- Detection of material clogging and material standstill

certificated
according to ATEX

TECHNOLOGY

USING / FUNCTION

The FlowJam S detects all kinds of bulk solid flows with regard to material movement. The FlowJam S distinguishes between the following switching conditions:

- material flow
- material jam/standstill resp. empty pipe

The system works contactless by using microwaves, whereby the material movement is detected by means of the Doppler's principle.

The FlowJam S is definitely a very reliable device, because the use of its microwaves guarantees a penetration of material build-up on the sensor, and therewith a proof detection of material flow behind it. Hence it's also possible to detect through non-metallic box walls, casings or conduits.

Even at difficult conditions like high process temperatures or pressures as well as Ex-version for dust hazardous areas the FlowJam S can be used by means of a process-adapter (see page 4).

APPLICATION EXAMPLES

- **Monitoring of raw meal cyclones in cement plants**

  The FlowJam S monitors the cyclone through special ceramic fittings, used for high temperature isolation, in order to prevent jams inside the cyclone.

  - Temperature inside the cyclone: 880 °C
  - Mass flow rate: approx. 50 t/h



- **Monitoring of screw-conveyors in gypsum plants**

  The FlowJam S is installed in the discharge part of the screw to monitor the continuity of the material flow. As soon as the material flow gets interrupted, the FlowJam S signals it by switching the relays, so that the operator can react appropriately.



- **Monitoring of coal injection in steel plants**

  Coal as fuel is injected via several lances in the blast furnace. It's very important for a constant quality of the burning process that the even fuel distribution around the blast furnace is guaranteed. It is for this reason that every lance is monitored by the FlowJam S, so that every jam can be detected instantly, by which the process can be stopped automatically and the concerned lances freed by injecting of nitrogen.



TECHNOLOGY

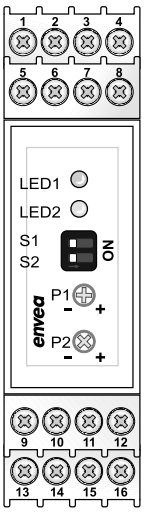
INSTALLATION

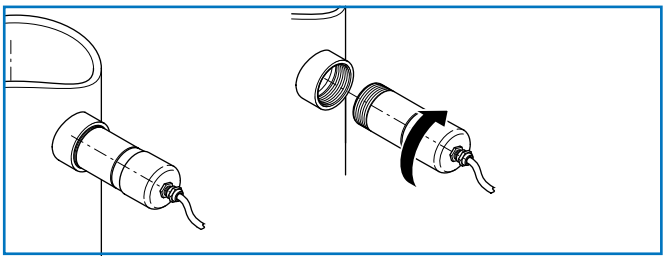
The installation of the FlowJam S sensor is easily made by the following ways:

- screwing it into a G 1½-inch-srew neck
- by means of a DN 40 flange
- by means of a pipe clip or an other mounting

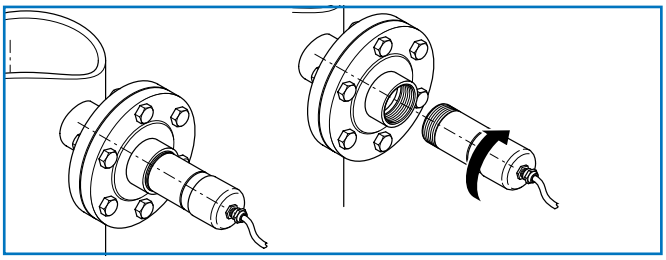
Commissioning

Operating elements for the commissioning are located in the accessible transmitter. It's possible to adjust both the switch sensibility and the response delay. An analogue output for trend display is available as an option.

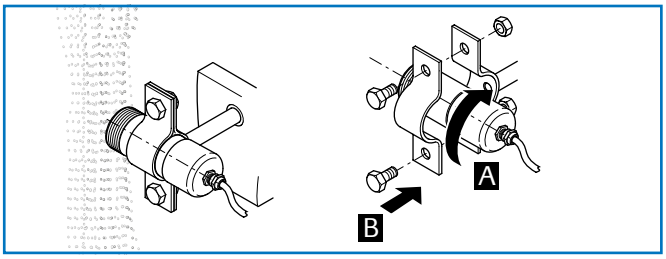




Thread mounting



Mounting with separating flange



Mounting with pipe clamp

TECHNICAL DATA

Sensor	
Voltage	12 V DC powered by transmitter
Power consumption	Approx. 1.5 W
Housing material	Stainless steel 1.4571
Protection type	IP65
Using in Ex-zones	Outside pipe: Cat. 3D Inside pipe: Cat. 1/3D (only with process adapter)
Process temperature	-20 ... +80 °C -20 ... +220 °C (with process adapter) Max. 1000 °C (with ceramic flange)
Ambient temperature	-20 ... +60 °C
Working pressure	Max. 20 bar (with process adapter)
Detection range	0 ... 2 m (dependent on application)
Required material speed for detection	Min. 0.1 m/s
Measuring frequency	K-Band 24.125 GHz; ±100 MHz
Transmitting power	Max. 5 mW
Dimension FlowJam S	Housing: L 107 mm / Ø 52 mm Thread: L 30 mm / Ø G 1½"
Dimension FlowJam S Ex	Housing: L 155 mm / Ø 60 mm Thread: L 30 mm / Ø G 1½"
Cable gland	M16 (Ø 5-10 mm)
Weight FlowJam S	Approx. 560 g
Weight FlowJam S Ex	Approx. 880 g

Transmitter (DIN Rail)	
Power supply	24 V DC ± 10 %
Power consumption	Approx. 3.5 W
Relay output	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)
Fall-delay time	250 ms ... 15 s (continuously adjustable)
Analog output (optional)	1 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω (Active)
Weight	Approx. 172 g

SPECIFICATIONS

USE AS PRESSURE ADAPTER / TEMPERATURE ADAPTER

The FlowJam S sensor can be used at a pressure of 1 bar and process temperatures up to 80 °C.

For higher pressures (up to 20 bar) a pressure adapter made of POM, for higher temperatures a Tecapeek adapter (max. 220 °C) and a ceramic adapter (max. +1000 °C) are available.

A process adapter for applications in the food industry is also available.

MOUNTING OF PRESSURE ADAPTER / TEMPERATURE ADAPTER

The mounting of the pressure adapter / temperature adapter is identical. It is screwed into a welded G 1½ inch thread neck, provided by the customer.

Only the ceramic adapter is supplied as a flange and must be mounted separately. The housing of the FlowJam S is screwed into the internal thread of the adapter.

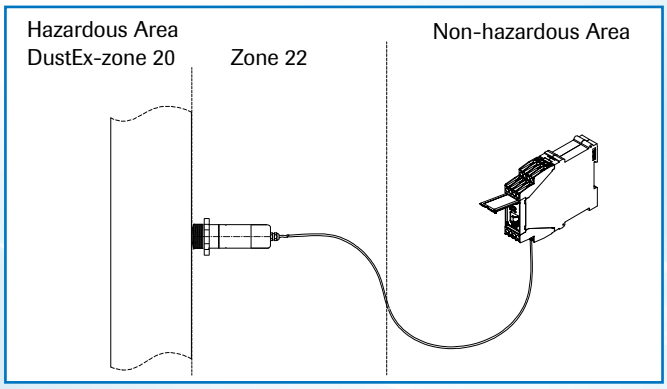
TECHNICAL DATA

	Pressure adapter	Temperature adapter	Food adapter	High temperature adapter
Material	Stainless steel 1.4571 POM diaphragm	Stainless steel 1.4571 Tecapeek diaphragm	Stainless steel 1.4571 Tecapeek GF30 diaphragm	Steel Ceramic diaphragm
Temperature	-20 ... +80 °C	Max. +220 °C	Max. +220 °C	Max. 1000 °C
Pressure	Max. 20 bar	Max. 20 bar	Max. 20 bar	Max. 40 bar
Thread	G 1½" on both sides	G 1½" on both sides	G 1½" on both sides	G 1½" on sensor side
Wrench width	55 mm	55 mm	55 mm	17 mm

USE FOR SEPARATION OF EXPLOSION AREAS

Both types of adapters can be used for the separation of explosion areas (dust).

According the European DIN EN 13463-1 devices of class II D have to be constructed that way, that under application conditions, it is impossible to create an ignition.



This can be achieved by a limited surface of the non-conductive part of the process adapter (diaphragm made out of POM or tecapeek).

The maximum allowed surface area of the non-conductive part according DIN EN 13463-1 is:

- Cat. 1: dust Ex-zone 20 (250 cm²)
- Cat. 2: dust Ex-zone 21 (500 cm²)
- Cat. 3: dust Ex-zone 22 (no limit)

With a non-conductive surface of the process adapter of 10.75 cm² the allowed limits are not being crossed.

Therefore with use of the process adapter in combination with FlowJam S Ex-sensor it can be measured from outside into all dust explosion areas, if there is at most a dust Ex-zone 22 outside of the conveying pipe or hopper.

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