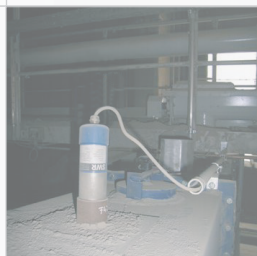




Manufactured by  
Superior  
with  
Solids  
**SWR**

# FlowJam S

Solids Flow/ No Flow  
Detection and Trending



## Use / 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 no flow (jam or empty pipe)
- trend material flow via 4-20 mA output

The system works by using microwave technology to detect material movement using the Doppler's principle.

The FlowJam S is a very reliable device because it uses microwaves to penetrate material build-up and sense flow/ no flow conditions. It is also possible to detect through non-metallic walls, casings or conduits.

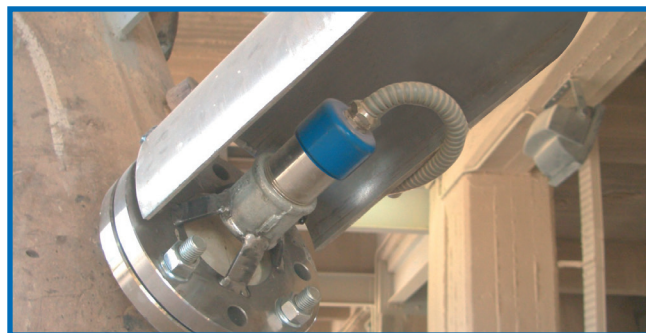
Optional process adapters can be used for high process temperatures or pressures. Ex-version sensors are available for hazardous areas (see page 4).

## Applications – practical examples

### ▪ Monitoring of raw meal cyclones in cement plants

The FlowJam S monitors the cyclone through special High Temperature ceramic fittings in order to detect jams.

- Temperature inside the cyclone: 1,616 °F
- Mass flow rate: ca. 50 t/h



### ▪ Monitoring of screw-conveyors in gypsum plants

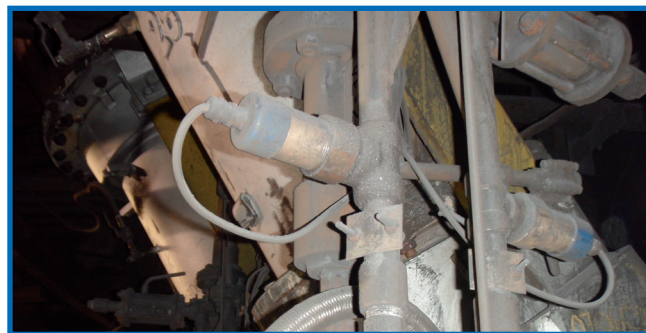
The FlowJam S is installed in the discharge part of the screw to monitor the continuity of the material flow. As soon as the material flow gets interrupted, the FlowJam S signals it by switching the relays, so that the operator can react appropriately.



### ▪ 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.

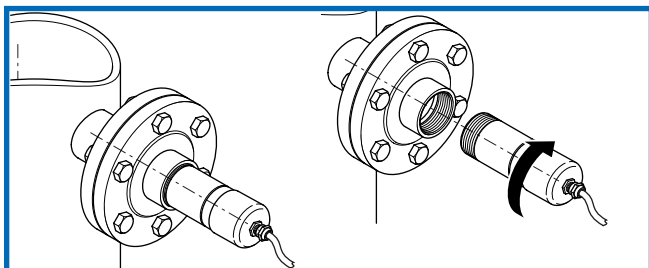
It is for this reason that every lance is monitored by the FlowJam S, so that every jam can be detected instantly. The process can then be stopped automatically and the plugged lances freed by injecting of nitrogen purge.



## Installation

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

- screwing it into a 1 1/2 inch G thread (BSP)
- by means of a flange
- by means of a pipe clamp



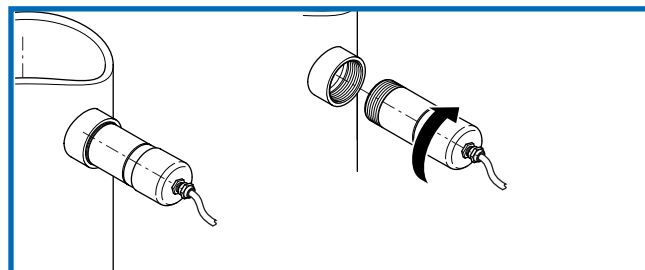
Mounting with separating flange

## Commissioning

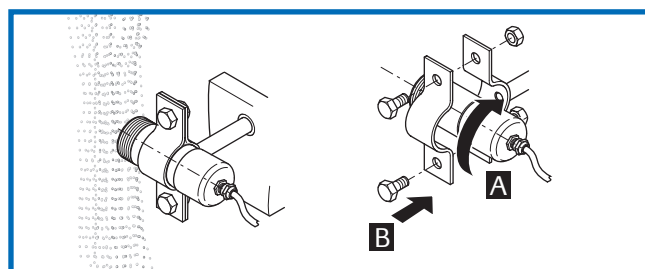
Operating elements for the commissioning are located in the accessible transmitter. It's possible to adjust both the switch sensitivity and the response delay.

## Technical Data

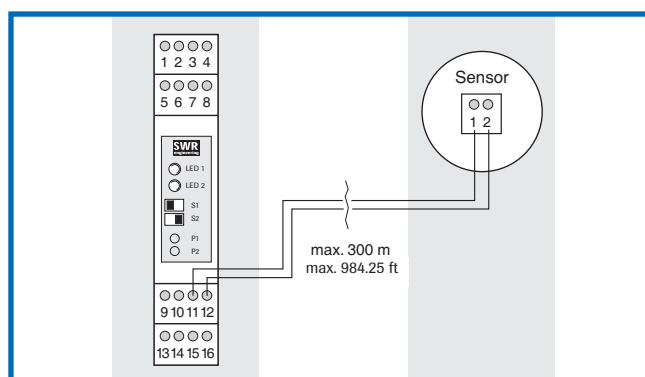
Sensor	
Voltage	12 V DC powered by transmitter
Power consumption	Approx. 1.5 W
Housing	Stainless steel 1.4571
Protection system	NEMA 4X (IP 65)
Using in Ex-zones	Ex-version with process-adaptor for DustEx-zone 20/22, GasEx-zone 0/2
Process temperature	-4... +176 °F (standard) -4... +428 °F (with process-adaptor) -4... +1,832 °F (with ceramic-flange)
Ambient temperature	-4... +176 °F
Working pressure	Max. 1 bar (standard) Max. 20 bar (with process-adaptor)
Detection range	0 - 6.5 ft (dependent on application)
Required material speed for detection	Min. 0.33 ft/s
Measuring frequency	K-Band 24.125 GHz; ± 100 MHz
Transmitting power	Max. 5 mW
Dimensions	Housing: L 4.05 in / Ø 2.04 in Thread: L 1.18 in / Ø G 1 1/2"
Weight	Approx. 19.75 oz



Thread mounting



Mounting with pipe clamp



Transmitter (DIN Rail)	
Power supply	24 V DC ± 10 %
Power consumption	Approx. 3.5 W
<b>DIN-rail Transmitter P/N 20-0202</b>	
Relay output (quantity 1)	max. 110 V AC
▪ Voltage	max. 1 A
▪ Current	max. 60 W
▪ Capacity	
<b>DIN-rail Transmitter P/N 20-0203</b>	
Relay output (quantity 1)	max. 110 V AC
▪ Voltage	max. 1 A
▪ Current	max. 60 W
▪ Capacity	
Current output (quantity 1)	Factory Calibrated Fixed scale
▪ output (nonadjustable)	0-100% 4-20 mA (0-20 mA), load < 500 ohms
Fall-delay time	1... 15 s (continuously adjustable)
Weight	Approx. 6.06 oz



certificated  
according to **ATEX**

## Use as Pressure / Temperature Adapter

The FlowJam S sensor itself can be used at pressures of up to 1 bar and temperatures up to 176 °F.

The Pressure Adapter is made from POM and good to 20 bar. The Temperature Adapter is made from Tecapeek and is good to 428F and 20 bar.

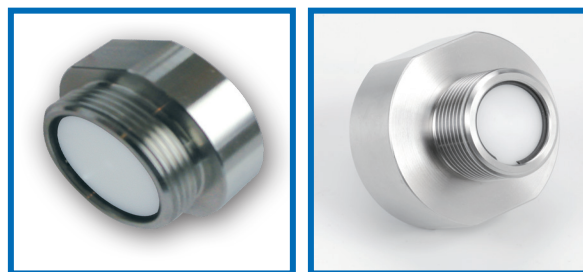
## Mounting of Pressure / Temperature Adapter

The mounting of the Pressure or Temperature adapter is identical. Either is screwed into a welded 1 1/2 inch G thread fitting as provided by the customer.

The FlowJam S housing (1 1/2 inch G Male thread) is screwed into the 1 1/2 inch G Female thread.

## Technical Data

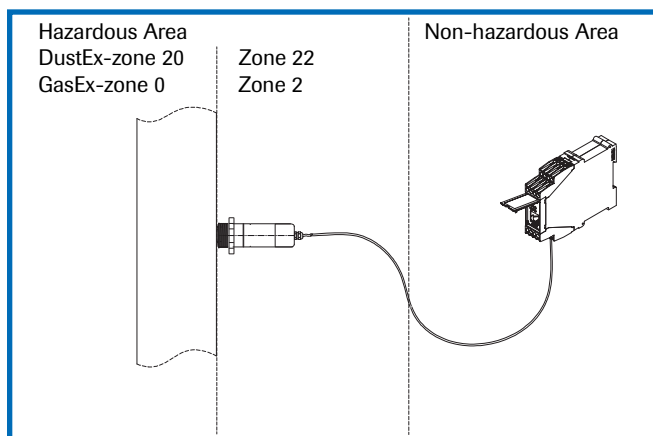
	P/N 21-0001	P/N 21-0002
Material	Stainless steel 1.4571, POM diaphragm	Stainless steel 1.4571, Tecapeek diaphragm
Temperature	-4...+176 °F	Max. +428 °F
Pressure	Max. 20 bar	Max. 20 bar
Thread	1 1/2 inch G Male and Female threads	1 1/2 inch G Male and Female threads
Wrench Width	2.16 in	2.16 in



## 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 (38.75 in<sup>2</sup>)
- Cat. 2: dust Ex-zone 21 (77.5 in<sup>2</sup>)
- Cat. 3: dust Ex-zone 22 (no limit)

With a non-conductive surface of the process-adapter of 1.66 in<sup>2</sup> 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 explosion areas, if there is at most a dustEx-zone 22 or gasEx-zone 2 outside of the conveying pipe or hopper.