

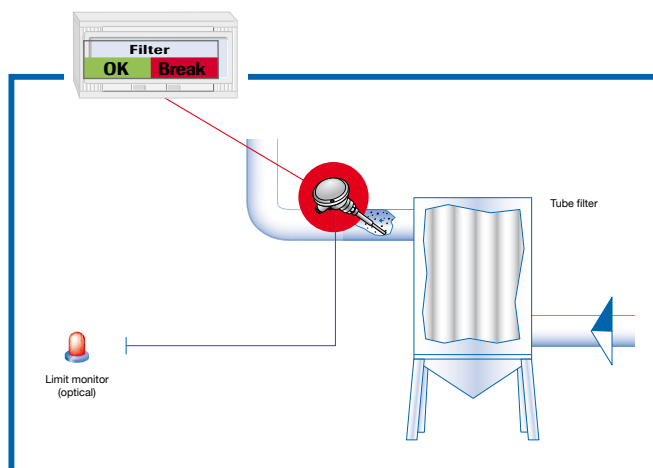
Dusty

Low-Cost
Broken Bag Detection



Use / Function

The Dusty was specially developed to reliably monitor clean sides after filters for filter breaks without delay. The Dusty can be used in metal channels in which dust particles are to be detected in flowing gas. Its operational range starts at dust concentrations of 0.1 mg/m^3 . The Dusty can be used in areas subject to explosion hazards (dust zone 22 / gas zone 2). Due to its speed and reliability, the Dusty can also be used optimally as an alternative and/or expansion to the "police filter" as well as an alternative to the differential pressure measurement. The Dusty uses the triboelectric effect. As soon as particles either flow past or impact the measuring probe, a charge transfer takes place. This generates a measuring signal that triggers a switch contact once a certain threshold value is reached.



System

The Dusty is a compact device that operates on 24 V DC supply voltage.

The device is delivered pre-calibrated. The switching point is set to approx. 25 mg/m^3 dust* and can be individually adjusted to the respective application by the operator.

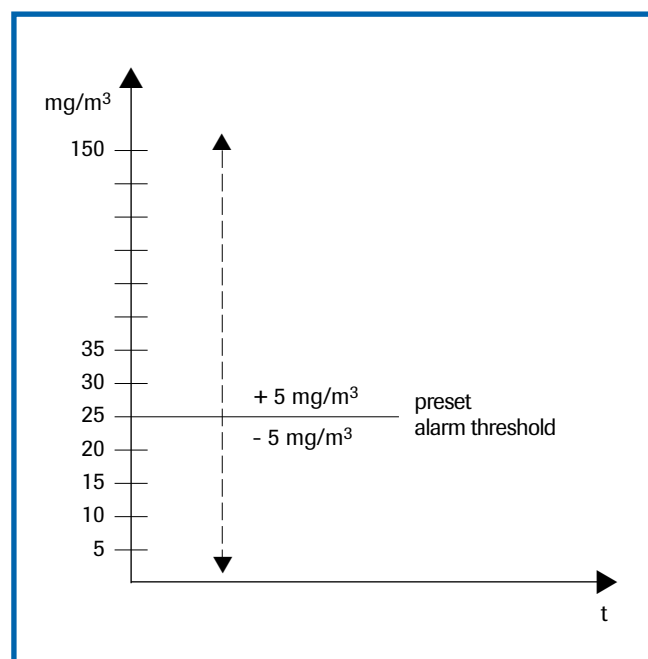
The sensor allows the user to set the alarm threshold himself. This could be done in a range between about 5 mg/m^3 and 150 mg/m^3 . The respective switching level can be easily changed by pressing a button in 5 mg increments.

* The pre-calibration takes place at SWR's own test facility with organic dust under the following conditions:

Channel diameter = 250 mm

Air flow speed = 14 m/s

Temperature = 25°C

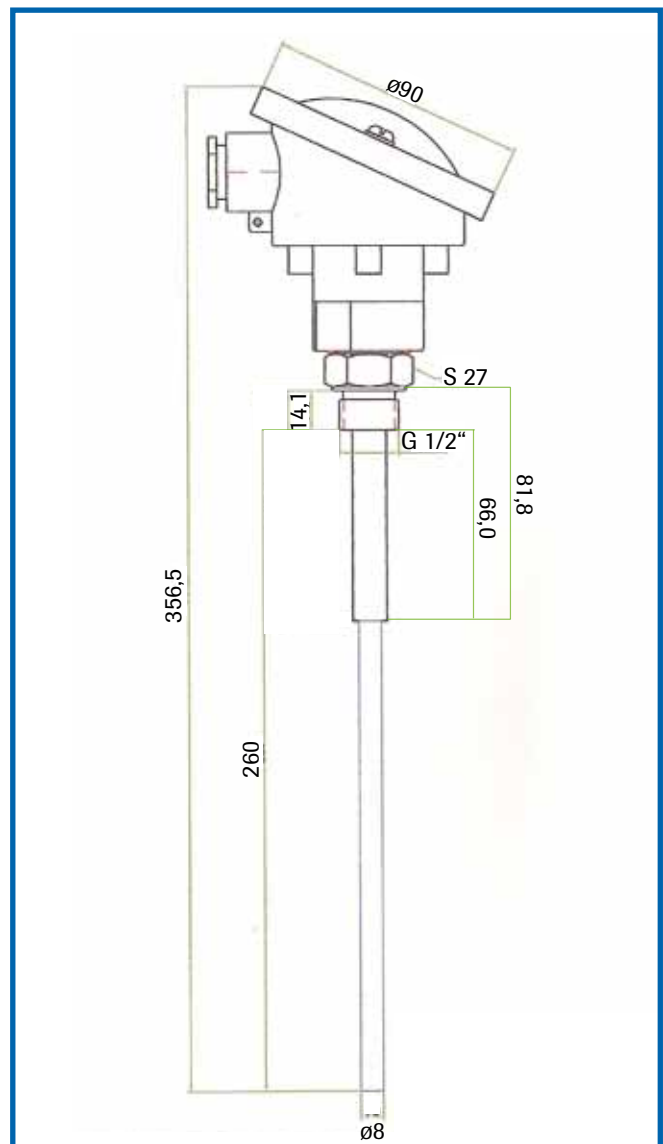


Advantages

- Usable in all clean gas and dust channels
- All dust types can be detected
- Uncomplicated commissioning (plug & play)
- Immediate detection of filter breaks
- Avoidance of process-induced dust zones subject to explosion hazards
- Individual choice of the alarm threshold
- Fast and simple refitting
- Easily expandable to 4 ... 20 mA output

Technical Data

Sensor	
Measurement objects	Solid particles in a gas flow
Particle size	0.3 µm or larger
Measurement range	From 0.1 mg/m³
Process temperature	Max. 140 °C (higher temperature on request)
Ambient temperature	- 20 ... + 60 °C
Pressure	Max. 2 bar
Gas velocity	Min. 4 m/s
Humidity	95 % RH (non-condensing)
Principle	Triboelectric effect
Damping time	1 s
Output signals	1 Alarm output, potential-free, NO/NC
Sensor rod	Total length: 260 mm, length of stainless steel rod: approx. 194 mm
Enclosure	Aluminium
Using in Ex-zones	Cat. 3 G/D (zone 2 gas / zone 22 dust)
Protection category	IP 65
Power supply	24 ± 10 % V DC
Power consumption	1 W
Electrical connection	<ul style="list-style-type: none"> ▪ screw-type / terminal box ▪ M12 connector (optional)
Assembly	Via ½" thread
Weight	Approx. 0.7 kg



Converter			
Terminal desc.	Connection		
Connection of the supply voltage			
1	Input supply voltage +24 V DC		
2	Input supply voltage 0 V DC		
Connections			
I/U-out	4	Current output + (4 ... 20 mA)	
	5	Current output - (4 ... 20 mA)	
Relay	3	Potential-free NO/NC	
	6	Potential-free NO/NC	
ModBus	10	RS 485 data interface B	
	11	RS 485 data interface A	
Sensor	9	Supply voltage + 24 V	Cable No. 1
	8	Supply voltage 0 V	Cable No. 2
	7	RS 485 data A	Cable No. 3
	12	RS 485 data B	Cable No. 4



If desired, the Dusty can be combined with a converter. This converter converts the measuring signal into a continuous 4 ... 20 mA signal and outputs this. This provides the operator with a trend signal from which any limit value can be derived.

For very large channel diameters you can connect up to 3 Dustys with one converter to improve the trend signal.

