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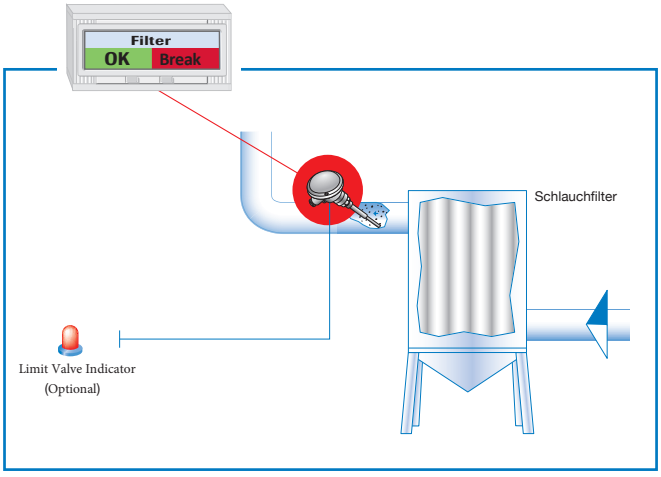
Broken Bag Detection Sensor

TECHNOLOGY

This broken bag detector was specially developed to reliably monitor clean sides after filters for filter breaks without delay. It 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/m³.
It can be used in areas subject to explosion hazards (dust zone 22 / gas zone 2). Due to its speed and reliability, it 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 broken bag detector uses the electrodynamic technology. 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.

Equipped with 1 switch for setup, 1 relay output and 3 LED, viewable when the cover is open.



FEATURES:

- Detects all dust types
- Electronic alarm output
- Usable in clean gas and dust channels
- Very simple and fast retrofitting
- Immediate detection of filter damages
- Uncomplicated commissioning (Plug & Play)
- Excellent price / performance ratio
- Easily expandable to 4 ... 20 mA output (trend signal)

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How does it work?

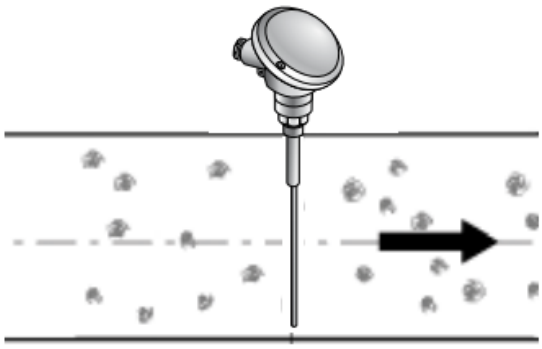
It works with its proven and reliable electrodynamic technology whereby the interaction of dust particles with the sensor rod causes a small electric charge, when the particles pass or strike by the sensor rod.

This small electric charge generates a signal proportional to the dust level even if there is an accumulation of particles on the sensor rod. Experience has shown that this method of sensing dust level in gases offers accurate results with a minimum of maintenance.

After start-up the sensor blinks on the LEDs for information purpose: the red LED blinks two times during system check, the orange LED blinks to inform about the actual factor of alert level (threshold).

Then the device starts to monitor the dust level and the green LED will blink with a frequency that shows the relation of actual measure against actual alert level: the lower the frequency the lower the measure.
If the measure goes higher the frequency goes faster, if the measure is equal or higher than the alert level the green LED stops blinking and the orange LED switches on. If the orange LED is switched on, the relay output is switched to indicate the alarm situation.
If the relay is used as “normally closed” (NC), the sensor is also monitored on power cut. Also any other fail will be alarmed via the relay.

The best location for installation is in a duct section where the flow has it's most even distribution and the flow is as laminar as possible. The installation can be located in a horizontal or vertical duct and must be attached to metal ductwork, so that they will be electrically shielded from interference and be provided with a good grounding. For non-metal ducts, a section of the duct, approx. five diameters in length, should be covered with a metal foil or fine-mesh on the periphery of the duct. The sensor rod must not be contact the opposite duct wall or any other obstacles inside the duct. In cases of need the sensor rod can be shorten to a minimum length of 70 mm. Be careful not to damage the plastic cap by doing this.

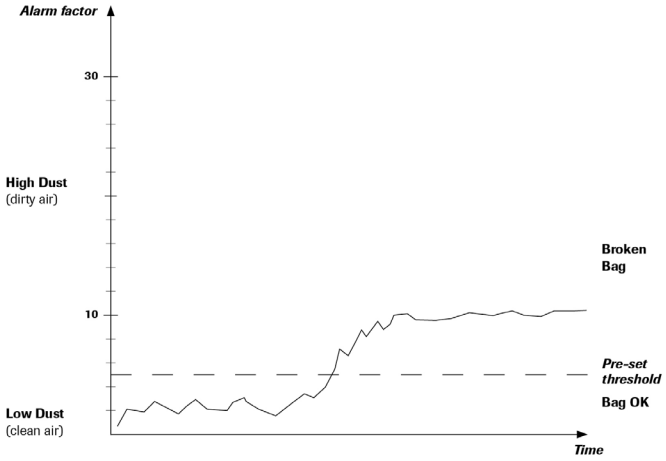


SYSTEM

The broken bag detector is a compact device that operates on 24 V DC power supply.

The device is delivered with a pre-set alarm level. This pre-set allow to detect filter failure in most case. It can be individually adjusted to the respective application by the operator.

The sensor allows the user to set the alarm threshold themselves. This could be done using the on-button method.



ADVANTAGES

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

TECHNICAL

Sensor	
Measurement objects	Solid particles in a gas flow
Measurement range	From 0.1 mg/m³
Process temperature	Max. 140 °C (higher temperature on request)
Ambient temperature	- 20 ... + 60 °
Pressure	Max. 2 bar
Gas velocity	Min. 4 m/s
Humidity	95 % RH (non-condensing)
Principle	Electrodynamic
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	IP65
Power supply	24 V DC ± 10 %
Power consumption	1 W
Electrical connection	• screw-type / terminal box • M12 connector (optional)
Assembly	Via ½“ thread or Tri-Clamp connection
Weight	Approx. 0.7 kg