GOYEN

FILTER FAILURE DETECTOR

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PENTAIR CLEAN AIR SYSTEMS

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WHAT IT DOES

- Continuous monitoring of fabric filter baghouses for broken bags
- Detects significant changes in particulate emissions
- Provides dual alarm relays (early warning and set maximum limit)
- Minimize false alarms thanks to digital averaging of readings and user selectable delay
- Has a 4-20mA output scaled to 0-200% of the limit alarm level to feed a PLC or other devices
- It's ATEX Zone 2 (Gas) and 22 (Dust) certified



PRODUCT DESCRIPTION

The main purpose of Goyen FFD is to detect significant increases in particulate concentration likely to be related with a broken bag in the filter or other major failures. Thanks to the 4-20 mA output it also acts as an integrated unit to deliver dependable and pragmatic filter monitoring.

The FFD utilizes a unique probe electrification technology which provides much better performances than conventional DC triboelectric systems as well as alternative AC systems. This allows extending the velocity range over which the system has no cross sensitivity to changing velocity. Thanks to that technology, the FFD is also unaffected by build-up of particulate on the sensing rod, thus eliminating signal drift concerns.

A charge signature is induced by particulates in the airstream interacting with the sensing rod. The FFD extracts a specific frequency band from the induced AC current signature and filter out the DC current generated by direct particle collisions. In order to reject signals falling outside a pre-defined frequency range, the so resulting signal is electronically filtered. Thanks to that, Goyen filter failure detectors are less susceptible to changes in particle velocity and are not affected by any particulate contamination on the sensing rod.

Also this technology, not relying on particles colliding with the probe, is able to measure a more representative area of the stack and eliminate the need of long sensor probe rods.
Thanks to the digital averaging of readings in combination with the alarm delay feature, by properly setting the delay period, the system will exclude short term signal increases associated with pulse cleaning of filters. This translates into a much lower likelihood of having false alarms.

OPERATIONAL RANGE

- Suitable for a wide range of dust collectors designs and configurations
- Dust level response: <1mg/m^3 to 500mg/ m^3 (<0.028 mg/ft^3 to 14 mg/ft^3)
- Flue gas velocity from 4m/sec
- Flue gas temperature up to 200°C (390°F)
- Ambient temperature from -20°C to +50°C (-4°F to +120°F)
- Duct sizes from 0.5m
- Hazardous area ATEX II 3GD

CERTIFICATION (FFD)



CONFORMANCE AND RELATED STANDARDS

Goyen | Mecair hereby declares that this instrument—within the limits specified in this manual—complies with the essential requirements and other provisions of the pursuant European Union Directives : Low Voltage Directive, EMC Directive , and ATEX Directive.

For details refer to the Declaration of Conformance for this instrument or system (available on request from Goyen | Mecair or our local representative).

ATEX Standards
In addition , the instrument has been designed to be compliant with the below standards.

EN 60079-0:2012 + A11:2013	
Explosive atmospheres. Part 0 : Equipment – General requirements	Specifies the general requirements for the construction, testing and marking of electrical equipment used in explosive atmospheres.
EN 60079-15:2010	
Explosive atmospheres. Part 15 : Equipment protection by type of protection “n”	Specifies requirements for the construction , testing and marking for Group II electrical equipment with type of protection , “n” intended for use in explosive gas atmospheres. This standard should be read in conjunction with EN 60079-0.
EN 60079-31:2009 AND EN 60079-31:2014	
Explosive atmospheres – Part 31 : Equipment dust ignition protection by enclosure “t”	Specifies requirements for design , construction and testing of electrical equipment and Ex components.

BENEFITS

- Reduce plant downtime thank to real-time emission monitoring for preventive maintenance
- Detects and anticipates filter failures due to (i.e.) broken bags
- Suitable for all particles regardless of composition
- Extremely wide range of concentration and mass flow
- Seamless interface into industrial controls systems, such as PLC
- Unaffected by build-up of particulate on sensing rod
- Data averaging and alarm delay user selectable to avoid false alarms
- Measurement does not drift due to electrostatic charging

FEATURES

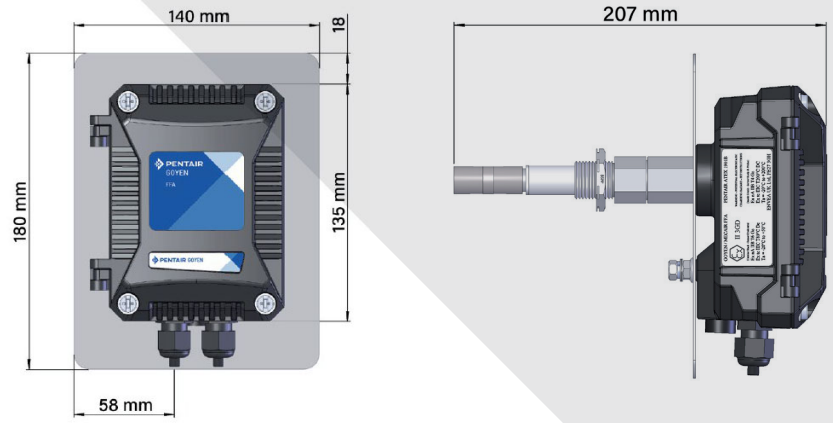
- Dependable 4-20 mA, scaled from 0-200% for higher readings accuracy
- Dual relay outputs
- Alarm level adjustment
- Alarm delay time adjustment
- Sensor sensitivity adjustment
- Unique probe electrification technology
- ATEX II 3GD compliant

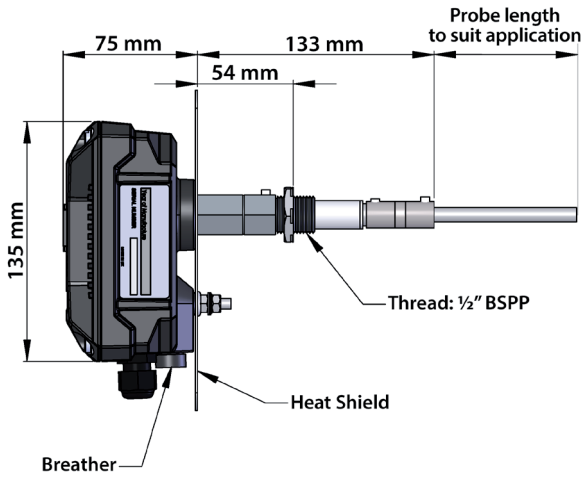
PROCESS AND APPLICATION CONDITIONS

Stack temperature rang e	–20 to 200°C (–4 to 390°F)
SENSOR – KEY DATA	
Flue gas velocity	>4 m/s
Dust level response	<1 to 500 mg/m³ (dependent upon application)
Application conditions	Suitable for measurement in non-condensing flue gases. **Note:** not recommended for deployment downstream of ESPs or in applications with water droplets or mist at monitoring point.
ENVIRONMENTAL INFORMATION	
Location	This equipment is for outdoor or sheltered use.
Altitude category	2,000m (6,500 ft.), max.

SENSOR SPECIFICATION

FFD SENSOR	
Sensor variants	Standard sensor: 0–200°C (up to 390°F)
Weight	approx. 1930 g (4.3 lb)
Probe rod material	316 Stainless Steel, PTFE (insulator)
Cable entries	2× M16 cable glands
ENCLOSURE	
Ambient temperature range [c]	–20 to +50°C (–4 to 120°F)
Dimensions	W 111 × H 135 x D 74 mm (4.4 × 5.3 × 3 in.), excl. cable glands
Protection rating	IP65
Material	Die-cast aluminium LM6M (epoxy coated)
POWER REQUIREMENTS	
Power supply voltage	16–24 V DC
Current consumption	max. 100 mA
I/O	
Local outputs	2× Alarm relays: • volt-free SPCO • current rating 1 A DC (@ 30 V) per contact • non-fail-safe operation only. 1 × 4–20 mA output: 250Ω, non-isolated.





PROBE ROD LENGTH 300mm | 600mm | 1000mm

ORDERING CODES Please note that along with the FFD code you must always order either the F300, F600 or F1000 (respectively for the 300 mm long rod, the 600 mm long rod and the 1000 mm long rod)

NOTES Imperial temperatures given are nominal values

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Note: We are engineering partner as a total system solution provider, GOYEN manufactures a range of components to ensure cost effective and reliable cleaning system design, installation and operation within a reverse pulse filter.Within a reverse pulse filter the overall cleaning efficiency and long term performance of the bags or cartridges are critically dependent upon to control of the cleaning air into the individual filter bag or cartride. GOYEN products are produced to exacting tolerances and quality standards to ensure their effectiveness within any reverse pulse filter.As a comprehensive solution provider, We have great quality control procedures. The calculate various system designs and can work together perfectly. Finally we are fully committed to maintaining environment quality together.

GOYEN CONTROLS PTY LIMITED, AUSTRALIA

Note: The information and data contained in this document are based on our general experience and are believed to be correct. They are given in good faith and are intended to provide a guideline for the selection and use of our products. Since the conditions under which our products may be used are beyond our control, this information does not imply any guarantee of final product performance and we cannot accept any liability with respect to the use of our products. The quality of our products is guaranteed under our conditions of sale. Existing industial property rights must be observed.