

Particulate Filter Dust Monitor

PROCESS & EMISSIONS MONITORING SYSTEMS



ELECTRODYNAMIC™
INSIDE

SPECIFIC FEATURES:

- Particulate monitoring for all types of industrial bagfilters and cyclones
- Compact robust industrial design combines sensor and user interface functionality in single enclosure
- Options available for effective system integration and simple upgrade path to meet additional Quality Assurance requirements
- Uses ENVEA's patented *Electrodynamic™* measurement principle

TECHNOLOGY / APPLICATION

SYSTEM DESCRIPTION AND PRODUCT RANGE

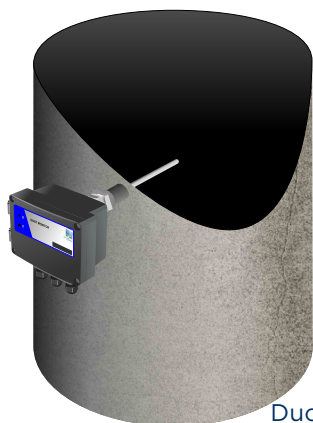
The DUST MONITOR 210 provides a compact transmitter design for reliable and robust particulate monitoring for all types of industrial bagfilters.

The DUST MONITOR 210 provides a cost-effective option for applications requiring dust leak detection operation with additional functionality available to allow the instrument to measure defined units (mg/m^3) with the addition of QA checks if required by the user or regulator.

The instrument benefits from ENVEA's unique ElectroDynamic™ Probe Electrification technology and advanced features enabling the instruments to be configured for all types of bagfilters irrespective of cleaning sequence.



APPLICATION AND CERTIFICATION CONDITIONS



Duct or Stack

The DUST MONITOR 210 combines advanced signal processing techniques with ENVEA's unique *ElectroDynamic*™ Probe Electrification technology. When the sensing probe is installed after the bagfilter, particles in the airstream interact with the sensing rod to induce a charge signature.

The resulting signal is filtered electronically to reject signals outside a defined frequency range (including the dc Triboelectric signal) which makes the instrument less susceptible to changes in particle velocity and virtually eliminates the effect of any particle contamination on the rod.

In bagfilter applications the instrument provides a robust signal proportional to dust emissions which is used to monitor and detect bag leaks. The instrument has the necessary features to discriminate between the variation in dust due the bag cleaning sequence and real leak conditions.

ADVANCED FEATURES

The DUST MONITOR 210 provides powerful bagleak capability based on the following standard features:

Dust emission and bag leak monitoring performance

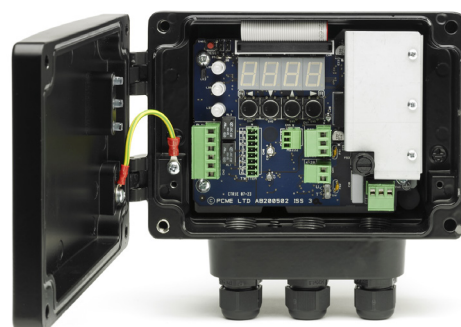
- High quality leak response with sufficient dynamic range and time response to track emissions from single and multi-compartment pulse cleaned bagfilters
- Instrument drift and minimum detection level below $0.1\text{mg}/\text{m}^3$ with leak monitoring to $>500\text{mg}/\text{m}^3$
- Convenient bag leak output 4-20mA range scaled in mg/m^3

Designed for practical bagfilter issues

- Inbuilt surge protection to counter effects of indirect lightning
- Marker pulse from bag cleaning cycle option
- Industrially hardened enclosure and sensor mechanics provide convenient connections to plant allowing armoured cable use
- Powered directly from mains power supply (100-240VAC 50/60Hz (32mA) or 24VDC (300mA)

Powerful user Interface

- Digital display and keypad within instrument
- Instrument set-up via internal keypad
- Intuitive multilevel user interface (user set-up, engineering set-up) with password protection
- Tri colour status LED: power, fault alarms
- Sensor LED for self-check status
- Remote set-up via optional PC software (Device Set)



Transmitter with lid open showing LED, display and internal set up keys

PRODUCT FEATURES

USER-SELECTABLE ADDED VALUE OPTIONS

A full choice of user selectable options are provided for flexible and cost-effective system integration including a built-in insert for customised labelling. In addition, ENVEA's approach to instrument design provides a simple upgrade path.

Sensor Types

- Stainless steel or insulated (PTFE) for reliable monitoring in humid, aggressive environments. Temperature options available for up to 400°C

Air Purge

- For monitoring in conductive dust and high dust applications, optional air purge fittings and air filter/regulator assemblies can also be specified.

RS232/RS485

- For PC communication to allow remote configuration and view on-line data.

User Scaling of Display

- Of assistance to plant personnel wishing to manually scale the display & 4-20mA to approximate known dust levels in mg/m³ rather than a relative % level.

Short Circuit Check

- Automatic short circuit check option provides a reliable method for detecting insulator contamination (option)

Self-checks - Zero & Span/Upscale

- This Quality Assurance feature checks the sensor electronics are operating to specification by injecting simulated dust signals into the front end of the sensor electronics to ensure any electronic and signal measurement malfunction is automatically detected. Manual checks as standard, auto-checks as option.

SPECIFICATIONS

Feature	Specification
Ambient Air Temperature (stack limit is 250°C or 400°C)	-25°C to +55°C 250°C standard, 400°C option
Stack Connection (at sensor connection)	1 ½" BSP
Enclosure Rating	IP-65 (with hinged lid closed)
Power Requirements	100-240VAC 50/60Hz (32mA) or 24VDC (300mA)
Outputs (Standard)	Isolated 4-20mA (500 ohm) Fault alarm relay (SPST 1A@24VDC) Fail safe - option Dust alarm relay (SPST)
Outputs (Optional)	RS232 - option RS485 (Modbus RTU) - option } Enables use of PC-ME Dust Tools PC software suite
Inputs	Plant stop signal (output to zero when plant is off), marker for start of bag cleaning sequence
External LED x2	· Power/sensor OK · Fault alarm
User Set Up	4 digit display and set up buttons with menu selectable items
Cable Entries	3 x M20 gland/conduit entries
Air Purge Connection	Optional air purge fittings are available and they have a 1/4" BSP connection to the instrument air line*

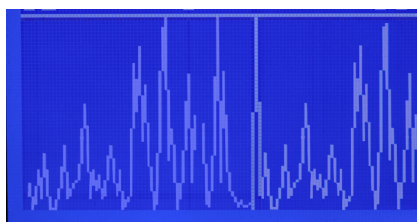
*option: requires external supply of 5-10 litres/min of dry, clean, oil-free instrument air depending on dust loading

Ex & IECEx CERTIFICATION LEVEL

Cert. No.	Zone/Category	Stack position	Protection method	Additional information
SIRA 09ATEX9306X	II 2/1 D	Outside	Ex tb	IIIC T80 °C Db IP66 Ta=-20°C to +55°C
SIRA 09ATEX9306X	II 2/1 D	Inside	Ex ta	IIIC Da IP66 Ta = -20°C to +250/400°C
SIRA10ATEX4144X	II 3D	Outside	Ex tc	IIIC T80 °C Db IP66 Ta=-20°C to +55°C
SIRA10ATEX4144X	II 3 GD	Inside	Ex tc	IIIC Dc IP66 Ta=-20°C to +250/400°C

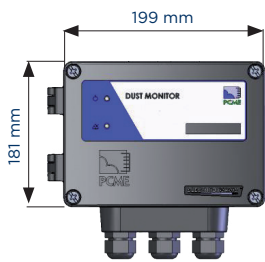
REMOTE FILTER DISPLAY MODULE

The optional Filter Display module enables plant operators to locate the position of failing bag rows in the dust collector, hence reducing bag replacement costs and minimising time diagnosing dust collector faults.

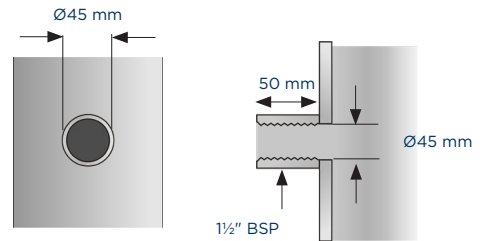


DIMENSIONS

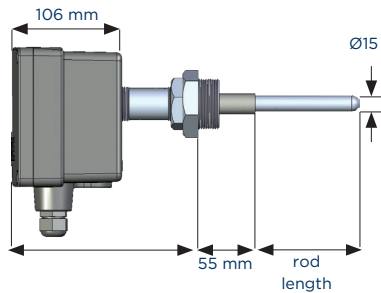
Dust Monitor 210



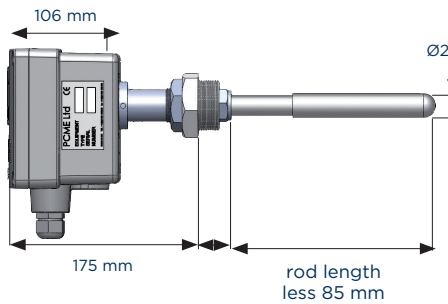
Duct Connection



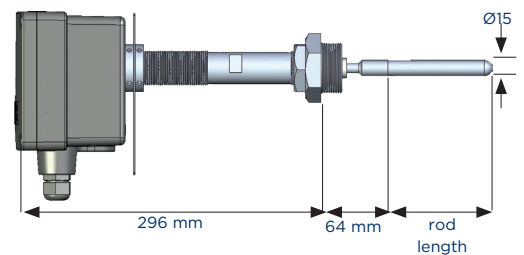
250°C Stainless steel



250°C Insulated



400°C Stainless steel



ORDER CODES

Mechanical Options (12345)

1	Stack Temperature	Up to 250°C Up to 400°C	std option	250C 400C
2	Rod Length	0100mm to 1000mm	specify	RODxxxx
3	Rod Material	Stainless Insulated (PTFE)	std option	S I
4	Air Purge Fitting	None Air Purge Fitting	std option	0 AP
5	Air Filter/Regulator	None Filter + regulator assembly	std option	0 REG

PC Software Options (12345)

Configuration Options	Device Set
Real-time Data Options	Online Predict

Sensor Features (A B C D E F G H I J P)

A	Short Circuit Check ¹	None Short circuit check	std option	0 SC
B	Electronic Self-checks	Manual initiated Automatic	std option	MAN AUTO
C	Scaling Method	Scaling Factor for mg/m ³	std	SF
D	ATEX Category ¹	None Category 3 dust (zone 22) Category 1 dust (zone 20)	std option option	0 X22 X20
E	Power Option	100-240VAC 24VDC (No cost option)	std option	AC 24DC
F	RS485 Data Output	Not included RS485 included	std option	0 485
G	RS232 Data Output	Not included RS232 included	std option	0 232
H	External Connector for RS232	Internal connector External connector	option	0 FLY
I	Keypad	Internal keypad	std	IK
J	Display	Internal display	std	ID
P	Leak Locate or Remote Display Capabilities	Not Included Filter Display Module	std option	0 FDM

Example: SEN210 - 250C ROD0900 S AP REG MAN SF X22 AC 485 O IK ID FDM

ABOUT ENVEA

As a progressive environmental Company, ENVEA specialises in particulate measurement for industrial processes. With a worldwide reputation for reliability, innovation and technological excellence, the Company produces under the trademark envea™ equipment for concentration and mass monitoring for regulatory, environmental and process control requirements. A dedicated team of qualified application and sales engineers is always on hand and should be consulted in the selection and usage of the most suitable equipment for any particulate application.



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