PCME STACK 980

Particulate Measurement System

PROCESS & EMISSIONS MONITORING SYSTEMS

ELECTRODYNAMIC™ INSIDE

SPECIFIC FEATURES:

- Extensively used for measurement (mg/m³) and leak location in bagfilter stack applications
- Upgradeable to include control for up to 32 sensors, plus 16 additional calculated channels (e.g. for Mass or normalised concentration)
- Advanced sensor design includes zero, span and unique contamination checks
- Meets and exceeds MCERTS Class 2 and EN 15859 requirements for Filter Dust Monitors

THE QUEEN'S AWARDS FOR ENTERPRISE: 2017

MCERTS Sira MC110187

EN 15859 certified

MCERTS

CLASS 2 Approved Particulate Dust Monitor

EN 15859 compliant

www.envea.global

TECHNOLOGY / APPLICATION

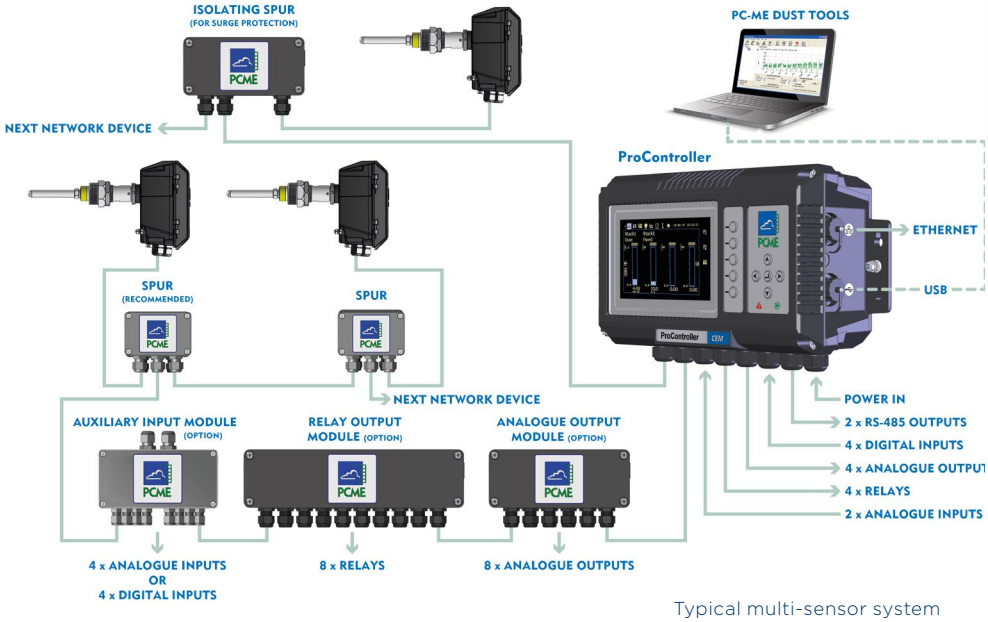
SYSTEM DESCRIPTION

The PCME STACK 980 is an approved particulate measurement system for continuously monitoring emissions from industrial sources. It is predominantly used to monitor particulate emissions in stacks after bagfilters, cartridge filters, cyclones and process driers. The instrument combines regulatory approvals for both dust measurement and leak monitoring with reliable automatic quality assurance features, rugged operation and advanced diagnostics capability for managing and improving the operation of bagfilter arrestment plant.

The PCME STACK 980 can be supplied with either the Standard or PRO control unit. The PCME STACK 980 Standard system is a single-sensor system, the PCME STACK 980 PRO is a multi-sensor networked system (for up to 32 sensors) for multi-stack and plant-wide monitoring.

In addition, both the standard and PRO versions of the instrument also support the following capabilities:

- Normalisation for T and O_2 (with inputs from other analysers).
- Mass calculation (kg/year) capability for both fixed and varying velocity applications (varying velocity requires velocity input).
- Emission reporting and data analysis via optional PC software.
- Internal data logging for emission recording and data archiving.
- Ex-sensors are rated for ATEX Gas zone 2 and Dust zone 22 (up to 800°C), as well as Dust zone 20/21 (up to 250/400°C), depending on sensor type.



Typical multi-sensor system

PROCESS AND APPLICATION CONDITIONS

- Stack temperature range: up to 800°C
- Long-term zero drift: < 0.1 mg/m³
- Certification range: 0 –15 mg/m³
- Measurement capability: 0–1000 mg/m³
- Velocity range: > 6 m/s
- For dry and humid applications with up to 95% RH, non-condensing.
- Not suitable for electrostatic precipitators (ESPs) or in applications with water droplets.
- Stack diameter: Ø100 mm to 6 m

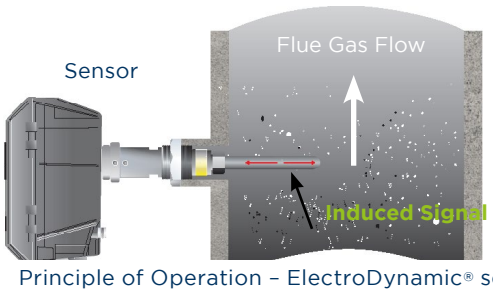
PRINCIPLE OF OPERATION

The sensor uses ENVEA's unique and patented *ElectroDynamic*® Probe Electrification technology. The instrument measures the current signature created by particles interacting with the sensing rod in the stack. The sensor extracts a specific frequency band of this signal and electronically filters out the DC current caused by particle collisions.

The signal may be correlated to dust concentration by comparison to the results of an isokinetic sample for those types of industrial applications for which the instrument is designed (see process limits above).

Core features of the *ElectroDynamic*® Probe Electrification are that the signal generated is:

- Unaffected by contamination on the sensor rod (which can cause signal drift issues for other systems).
- Not affected by velocity variations within typical bagfilter velocity ranges (of betwee 8 m/s and 20 m/s).
- Reliable and stable – this technology is also used in PCME's QAL 991 system which is certified to QAL1 under EN 15267-3.



Principle of Operation – ElectroDynamic® sensors

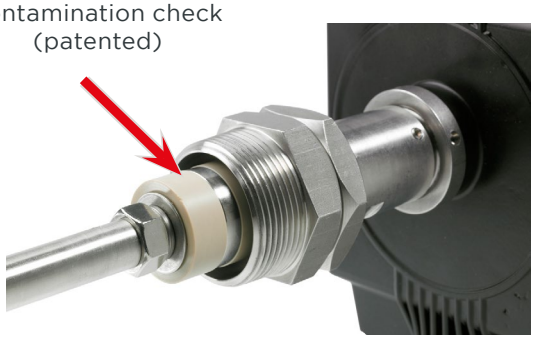
PRODUCT FEATURES

QUALITY ASSURANCE FEATURES

The PCME STACK 980 sensor includes advanced automatic functionality checks to provide high quality assurance:

- A probe rod **short-circuit check** enables the operator to know when the sensing rod may be electrically shorted to the stack.
- A patented probe rod **contamination check** provides the operator with an advance warning check of a possible probe short-circuit, enabling predictive sensor maintenance scheduling, thus reducing down times and providing confidence in signal quality.
- Automatic electronic **drift checks** improve measurement reliability and ensure that the instrument is in compliance with regulatory standards. The sensor self-checks ensure the major part of the instrument is challenged during these tests unlike Triboelectric dust monitors.

Advanced probe contamination check (patented)



PCME CONTROL UNITS

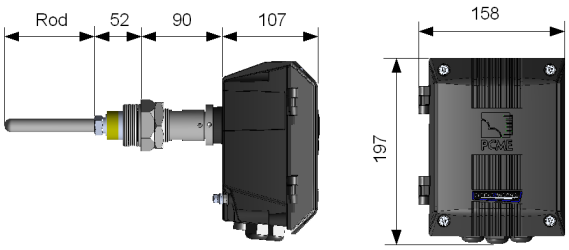
The PCME STACK 980 PRO system is powered by PCME's ProController, which provides central communications for analysing emissions data and trends and compliance reporting, as well as data recording for plant networks with multiple sensors (up to 32) and links the sensors into data acquisition systems (DAHS/DCS). The PCME STACK 980 Standard system is for simple, single-sensor systems and is powered by the PCME Standard Controller.

ProController

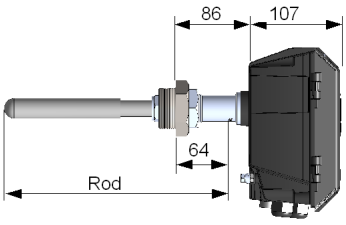
Standard Controller

SENSOR SPECIFICATION AND DIMENSIONS

Ambient Temperature Range	-20°C to 50°C
Enclosure Protection Rating	IP65
Enclosure Material	Die-cast aluminium (polyester powder coated)
Sensor Rod Material	316 Stainless Steel, insulator: PEEK/Sialon (400/800°C)
Power Supply Voltage	18–24V DC (from the control unit or PSR)
Cable Entries	3x M20 cable glands
Air Purge Requirements	Required for passive/active sensors. May also be required on other applications. Optional air purge fitting and external supply of 5–10 litres/minute of dry, clean (oil-free) instrument air.



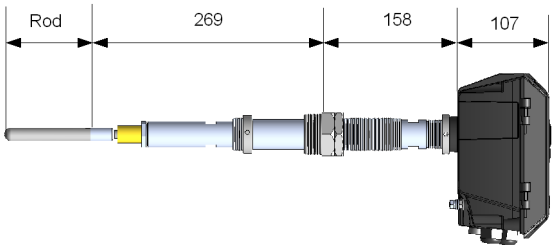
Standard Sensor 250°C



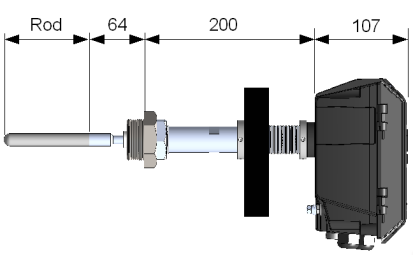
Insulated Sensor 250°C

** For more details and order information consult the ProController Specification Guide (available from ENVEA or from the ENVEA UK website, see page 4).*

***Local 4-20mA and Alarm relay outputs are available from all sensor types (non-Ex versions only).*



Passive/active Sensor 250/400/800°C



High-temperature Std Sensor 400/800°C

SPECIFICATIONS

PCME STACK 980

PCME Network Controllers		Standard Controller	ProController
Overview	Number of sensors/channels	1	1–32
	Display	Two-tone grey, backlit graphical LCD	High-contrast, anti-glare 7" (viewable) TFT LCD
	Multiple Data Viewing	PC or RS-485	PC/RS-485/Ethernet simultaneously
	Dimensions	W220 x H124 x D80 mm	W390 x H221 x D118 mm
	Power supply voltage	100–240V AC (50/60 Hz)	85–265V AC (50/60 Hz)
	Protection Rating	IP65	IP66
	Ambient Temperature Range	-20°C to 50°C	-20°C to 50°C
Features and Functions	Navigation keys	Up/Down/Left/Right/Enter	Up/Down/Left/Right/Enter plus 5 function keys: 3x short-cut keys and 2 user-programmable keys
	Icon-driven, multilingual menus	n/a	✓
	Secure password protection	✓	✓
	Sensor system setup and configuration options	✓	✓
	Configurable emission alarm levels	✓	✓
	Sensor calibration screens	✓	✓
	Seamless integration with existing PCME control units and sensors	n/a	✓
Data Logging*	Long-term Log	12 months @ 15 minutes	48 months @ 15 minutes
	Short-term Log	7 days @1 minute	28 days @ 1 minute
	Pulse Log	8 hours @ 1 seconds	32 hours @ 1 second
	Alarm Log	500 entries	500 entries
System Outputs	Ethernet (RJ45)	n/a	✓ Connection type: 100Base-T/Tx 100 Mb/s
	USB 2.0	n/a	✓ Suitable for connecting to a local PC or laptop
	Relays	2 off (programmable)	4 off (programmable)
	4–20mA	1 off (programmable)	4 off (programmable)
	RS-485	1	1
System Inputs	Digital User selectable for: PLANT OFF indication, Bag-filter cleaning sequences, multiple calibrations	1	4
	4–20mA	0	2

*Data logging capacity for one sensor. Data stored varies per sensor type. Please consult ENVEA for specific data.

PCME Network Accessories		Standard Controller	ProController
Network Modules *(can be connected to Controller Network systems to provide additional Inputs and Outputs)*	**Analogue Output Module (AOM)** **provides 8 additional 4–20 mA outputs definable to sensors/channels**	**1**	**1–8**
	Auxiliary Input Module (AIM) **provides 4 additional digital inputs, plus 4 additional relay outputs**	**1**	**1–8**
	Relay Output Module (ROM) **provides 8 additional relay outputs**	**1**	**1–8**
	SPUR **provides sensor network connection and local isolation during maintenance**	**1**	**1–32**
	Power Supply Repeater (PSR) **provides voltage and signal boost for extended cable runs and large sensor networks**	**1**	**1–8**

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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