



Particulate Monitoring Systems

Continuous Particulate Emission
and Bagfilter Performance Monitors

DT370 Series

Dust Emission

Monitoring Systems



- Enhanced performance through unique Electrodynamic® technology
- High quality assurance with inbuilt self-diagnostics and range of automatic self-check options
- Upgradeable from 1 up to 4 channels
- In-built data recording facilities and bag failure diagnostic
- Real-time bagfilter cleaning pulses viewed on display or PC (optional)

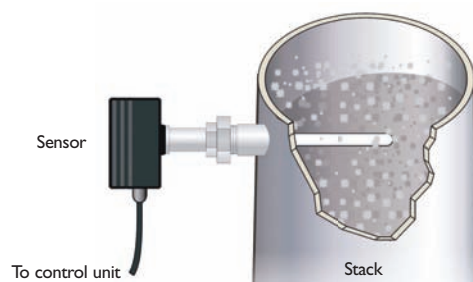
Principles of Operation

The DT370 series instruments utilise PCME's unique Electrodynamic® measurement principle. When the sensing probe is installed in the duct or stack, particles in the air stream interact with the sensing rod and a charge induction effect is analysed from the probe. Distributions in the particle stream result in a frequency charge induction response which is proportional to the concentration of particles (application dependent*).

Unlike Triboelectric systems, Electrodynamic® systems electronically filter out the dc signal caused by particle collision, which makes the quality of the measurement unaffected by build-up on the probe rod which would otherwise cause zero or calibration drift. Very low concentrations of particulate found after even the most efficient bag filter can be measured due to this unique Electrodynamic® technique. (>0.1 mg/m³)

Electrodynamic® technology also enables the use of patented fully insulated probes, essential for reliable measurement in high humidity applications (after process and spray driers).

* Various independent laboratories have validated this relationship (TÜV).



Modes of Operation

The DT370 series instruments are particularly suited for monitoring particulate emissions from industrial applications controlled with bagfilter-type arrestment plant having rugged performance and sufficient resolution for these applications. The instrument's output is directly proportional to particulate and may be used to monitor emission trends or calibrated in mg/m³ by comparison to the results of an Iso-kinetic (gravimetric) sample. The instrument has in-built data recording and graphics display capability enabling emission trends to be easily viewed and plant data can be averaged and recorded in the instrument for alarm purposes and external emissions reporting (via optional PC software, DustReporter 2).

All DT370 type instruments have an in-built alarm log which ensures all alarm conditions (emission events, self-check results, instrument failure) are properly stored for reporting purposes and have a separate user defined data log which may be set-up to record data for one of the following purposes:

Broken bag mode (pulse log)

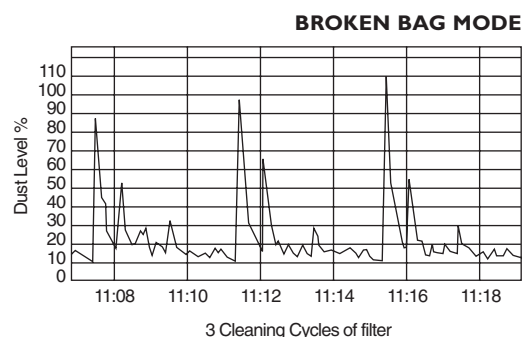
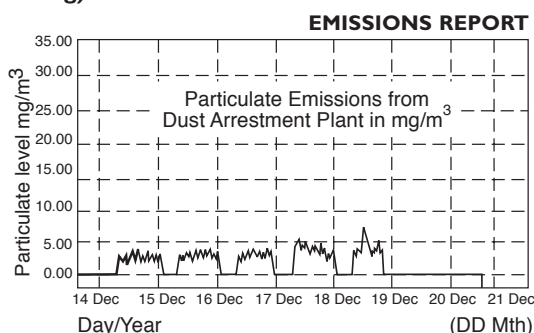
- Instantaneous emission pulses arising from bag cleaning can be recorded and analysed (Upto 4 hours of pulse data to cover multiple cleaning cycle)
- Permits anticipation of bagfilter failure
- Assists location of broken bags (e.g. which row or chamber)

Emissions reporting mode (long term log)

- Calculates and stores emission averages for up to 520 days (@ 15 min average)
- DustReporter 2 PC software used for data archiving and external reporting

Process control mode (short term log)

- Stores short term average data for past 10 days (subject to log rate)
- Emissions can be reviewed on instrument for effective trend analysis



Automatic self-checks

The DT370 series of instruments are available as a choice of three variants with different self-checks and self-diagnostics to meet specific maintenance and regulatory requirements. Please specify variant on order code.

	DT371	DT372	DT373
Sensor Comms	✓	✓	✓
Insulator Short Circuit Test (probe)	✓		✓
Zero Test (Electronics drift)		✓	✓
Span Test (Electronics drift)		✓	✓

All sensors are provided with an internal communications check to ensure that there is proper digital communication between the control unit and sensor, ensuring good cable connection and that the sensor's microprocessor is fully operational.

DT371: provided with a unique Insulator Short Circuit Test, an internal diagnostics check which hourly monitors for a change in resistance in the insulator at the base of the sensor rod. While the sensing rod is tolerant to dust contamination (due to Electrodynamic® performance) it is important that the insulator remains fully operational. While this check rarely fails, since the insulator is not directly in the particle flow, it provides a fail-safe method of ensuring good Electrodynamic® measurement.

DT372: provided with automatic Zero and Span drift checks which apply simulated Electrodynamic® signals directly at the sensor's electronic input. This feature is of particular value to US Process Operators satisfying MACT requirements for bag leak detection. This check automatically does what otherwise would need to be carried out manually (according to US EPA fabric filter leak detection guidance) and records all self-check data for full compliance. These checks are also a requirement of MCERTS and TUV Certification Schemes.

DT373: provided with both the insulator integrity check and Zero and Span checks for users wishing to have the benefits of checks provided with the DT371 and DT372. This provides both maintenance diagnostics and regulatory self-checks and ensures the highest quality results.

Features

- Expandable up to four dust sensors digitally linked to central user interface module
- Quality Assurance features and screens for analysis of self-check results
- Alarms (with configurable delay) based on both rolling average data and instantaneous data for reliable plant failure detection and diagnostics
- Unique graphics display and data logger (for trend analysis)
- In-built datalogger for Environmental, Process control or Broken bag mode
- Automatic zero, span, probe contamination and system check options
- Auto-ranging and Dynatrack feature (instrument adjusts its dynamic range to track fast moving dust pulses, typically found after reverse jet baghouses) to ensure good measurement
- Simple calibration mode after iso-kinetic sample
- Accepts inputs from analysers for on board normalisation (T, Oxygen, P)*
- Secure data and password protection
- Interlinks to DustReporter 2 reporting and analysis software for on-line control and historical reporting using PC

* Requires optional Analogue Input Module (AIM) unit

Memory Capacity (user selectable pulse, short term or long term logger)

Event Log	Log for emission events (instantaneous or average emission alarms), self-checks and instrument alarms
Pulse Data	From 4 hours (1 channel) to 1 hour (4 channels)
Short-term Data	From 10 days (1 channel, 1 min average) to 30 hours (4 channels, 30 sec average)
Long-term Data	From 520 days (1 channel, 15 min average) to 32.5 hours (4 channel, 1 min average)

Functions

Calibration Mode (mg/m ³)	Computes calibration factors associated with isokinetic test and associated instrument average
Review of Memory	Graphics trend or listing display of stored data
Access Security	Password level to protect unauthorised entry
Data Security	Data stored in non-volatile memory.
Emissions Display	Multibar and overview screen of emissions on up to 4 channels
Configuration and Set-up	On board screens or PC configuration (config wizard)

Control unit/Analogue Output Module (AOM) unit

	Control Unit	AOM (for additional 4-20mA)
Enclosure Rating	IP-65	IP-65
Enclosure Size	220w x 123h x 80d	176w x 81h x 58d
Power Supply	90-250VAC (50/60Hz) 250mA	Supplied via control unit (24V DC)
Temperature range	-25°C to +55°C	-25°C to +55°C
Dust Outputs	1 x 4-20mA (isolated)	8 x 4-20mA (isolated)
Digital Output	Modbus RS-232/485 for PC connection	Optional Upgrades 8 x relays via optional Relay Output Module (ROM) 4 x additional inputs via Analogue Input Module (AIM) PSU/Repeater to extend cable runs
Alarm Outputs	2 x SPSC relays (5A) Assignable	
Digital Inputs	2 (for plant run/stop)	

Instrument Specifications

Resolution	<0.01 mg/m ³
Response time	<10 seconds for 95% change (user selectable)
Self checks	Automatic zero, span and probe short-circuit checks (Optional)

Sensors and Cables

Sensor Type	Temperature Range	Insulator Material
Standard	Up to 250°C	PTFE
Option	Up to 400°C	Ceramic
Option	Up to 800°C	Ceramic
Passive/Active Standard	Up to 250°C	Peek
Option	Up to 400°C	Ceramic
Option	Up to 800°C	Ceramic
Sensor rod lengths	100, 200, 300, 400, 500, 600, 800 & 1000**	
Connection required on duct	1 1/2" BSP (female)***	
Enclosure weight	1.8 kg	
Enclosure rating	IP65	

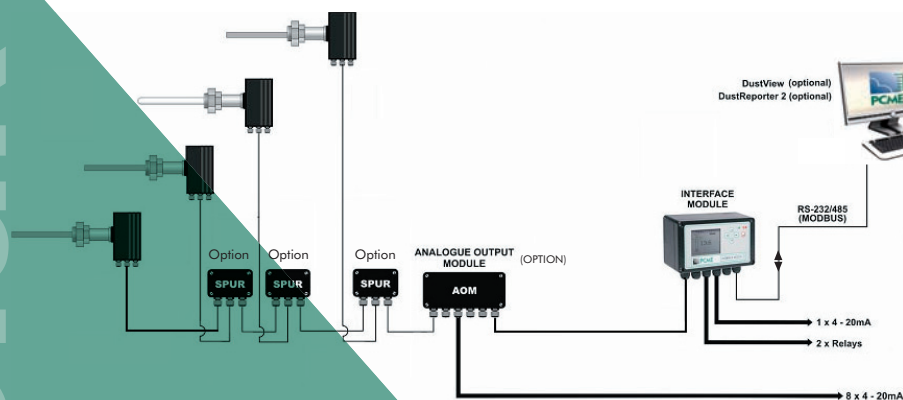
Enclosure temperature rating	-25°C to +55°C
Sensor rod material	
Standard	316 stainless steel
Passive/active	316 stainless steel
Fully insulated (patented)	PTFE Coated Stainless Steel
Special Materials	Consult PCME Ltd
Air purge option	
Airline connection	1/4" BSP
Air pressure	4 barg min, 10 barg max
Air Flow	30-50 l/min (@200 mbarg – 330 mbarg)
Sensor enclosure material	Die-cast aluminium (Polyester powder coated)
Cable from sensor	4-core screened
Cable length	10m standard : 500m max (extendable with optional PSU)

** 250°C only

***ensure opening/hole in stack wall is 1 1/2" BSP socket – a hole size of at least 45mm is recommended (see Installation Notes for further details)

specifications

System Layout

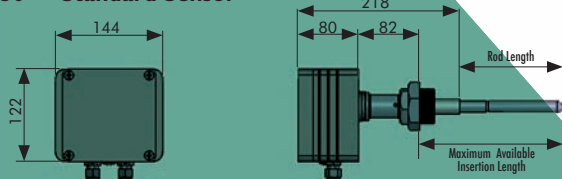


Recommended Stack Connections

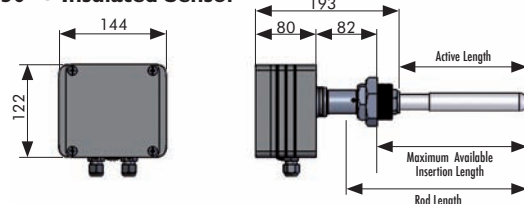


Physical Dimensions

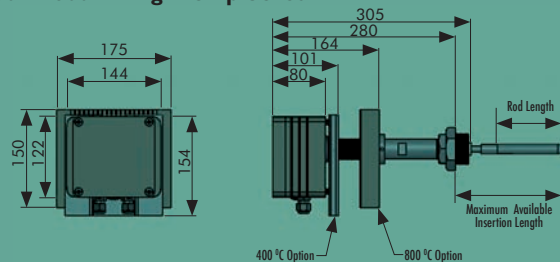
250°C Standard Sensor



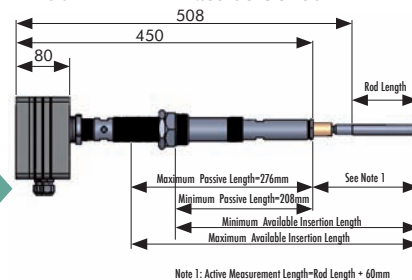
250°C Insulated Sensor



400°C/800°C High Temp Sensor

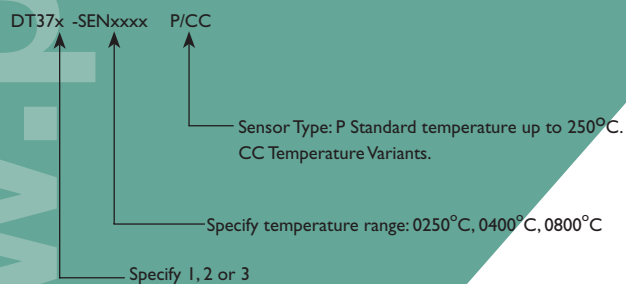


250°C/400°C Passive Sensor

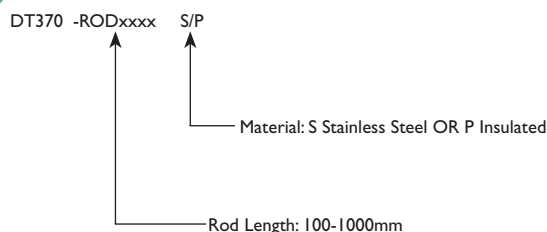


Product Ordering Codes

SENSOR



ROD



About PCME Ltd

As a progressive environmental Company, PCME specialises in particulate measurement for industrial processes. With a worldwide reputation for reliability, innovation and technological excellence, the Company produces 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.



PCME Ltd

Clearview Building, 60 Edison Road
St. Ives, Cambs PE27 3GH UK

Tel: Int +44 (0)1480 468200

Fax: Int +44 (0)1480 463400

E-mail: sales@pcme.co.uk

Contact your national or area sales and service office

PCME products are the subject of worldwide patents. Due to the continuing product development programme, PCME reserves the right to change any specifications without prior notice.