

## BREAK ALARM Series

**ELECTRODYNAMIC™**  
INSIDE

Dust Gross

Filter Failure

Detectors



\*BREAK ALARM 30a shown

- Dual alarms (early warning and filter failure)
- Separate control unit with tri-state LED for status indication
- Digital averaging avoids false alarms from baghouse cleaning pulses
- BREAK ALARM 30a with scalable 4-20mA output and digital display reading percentage dust level

# technology/applications

## System Description and Product Range

The **BREAK ALARM 10a** and **BREAK ALARM 30a** are reliable, cost-effective instruments for the continuous monitoring of fabric filter baghouses for broken bags. The instruments combine the benefits of PCME's *ElectroDynamic™* Probe Electrification technology and dual local alarms with dual alarm relays, and scaled 4-20mA output from a control unit with a digital numerical display (30a only) to deliver pragmatic and dependable broken bag monitoring. The **BREAK ALARM Series** instruments exclude short term signal increases associated with pulse cleaning of bagfilters by appropriate setting of the alarm delay period. As 'Dust Gross Filter Failure Detectors', the instruments detect significant increases in particulate loading which indicates a failure in the arrestment plant.

Using PCME's patented *ElectroDynamic™* Probe Electrification technology, the instruments extract a specific frequency band from the induced AC current signature and filter out the DC current caused by direct particle collisions. This technology outperforms conventional DC triboelectric systems and alternative AC systems by extending the velocity range over which the instrument has no cross sensitivity to changing velocity, and is unaffected by build-up of particulate on the sensing rod thereby eliminating concerns of signal drift.

## Process and Application Conditions



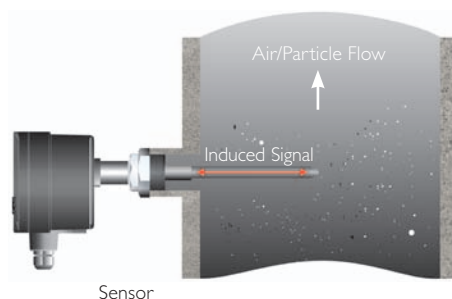
- Stack temperatures to 250°C
- Duct diameters to 4m
- Dry and humid non-condensing applications
- For use after bagfilters also cartridge filters, cyclones and others
- Base dust level response < 1mg/m<sup>3</sup> to 500mg/m<sup>3</sup>
- Ideal minimum gas velocity > 6m/s

## Principles of Operation

The instruments use PCME's unique and patented *ElectroDynamic™* Probe Electrification technology. The sensor electronics measures the current signature created by particles interacting with the grounded sensing rod which protrudes into the stack. The electronics extract a specific frequency band of this signal and filters out the DC current caused by particle collisions (unlike DC Triboelectric systems and "induction sensing and protected probe" systems).

Advantages from this technology are that the signal generated is:

- Unaffected by contamination of the sensor rod (which causes signal drift issues for other systems),
- Not affected by velocity variations within typical bagfilter velocity ranges (unlike other systems),
- Stable, reliable and does not drift due to electrostatic charging which may occur with protected probe systems in dry flue gas applications.



*ElectroDynamic™* Probe Electrification systems have the following added benefits:

- An optimised frequency spectrum to extend the velocity range over which the system has no cross sensitivity to changing velocity (see TUV approvals).
- Unique digital signal processing algorithms in the sensor give the wide dynamic range required for measurement accuracy during arrestment plant cleaning and high reproducibility of signal tracking.
- Uses the same technology as in PCME's Continuous Emission Monitors (CEMs) approved by MCERTS and TUV.

# product features

## Added Value Features

### Dual Alarming for Early Warning

Dual alarming allows operators to configure a Limit Alarm level from 2 to 10,000 units for flexible sensitivity to suit a wide range of process conditions, with the Early Warning Alarm level set to 50% of the Limit Alarm. Operators can set these alarms to instantaneous or average levels above the normal level of emissions to indicate early warning of filter failure or gross failure detection. Alarm delay and data averaging are user selectable.

### Digital Averaging Avoids False Alarms

Dust levels are averaged using a 'walking window' filter, which when combined with alarm delay ensures minimised false alarms due to short term spikes in dust levels, such as during bagfilter pulse cleaning cycles.

The **BREAK ALARM 30a** additionally features 4-20mA output scaled to 0-200% of the Limit Alarm level, which is of benefit to plant operators when integrating the instrument with external equipment for trending and external indication of the dust level relative to the instrument's Limit Alarm. The control unit also features a digital display for convenient remote numerical indication of the dust level relative to the Limit Alarm level (0-200%).



**BREAK ALARM 30a** control unit features LCD numerical display and 4-20mA output in addition to the basic features of the **BREAK ALARM 10a**

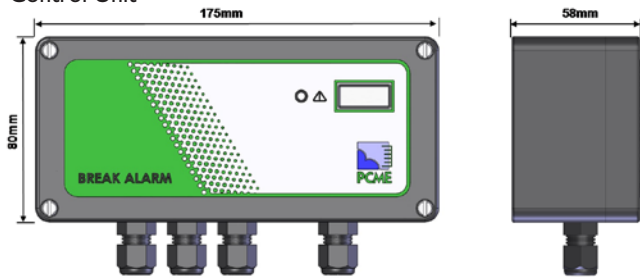
## Specifications

Feature	BREAK ALARM Sensor	BREAK ALARM 10a Control Unit	BREAK ALARM 30a Control Unit
Enclosure Temperature Rating	-20°C to + 50°C	-20°C to + 50°C	-20°C to + 50°C
Enclosure Rating	IP65	IP65	IP65
Enclosure Size (mm)	80 W x 75 H x 57 D	177 W x 81 H x 57 D	177 W x 81 H x 57 D
Enclosure Material	Die-cast Aluminium (polyester powder coated)	Die-cast Aluminium (polyester powder coated)	Die-cast Aluminium (polyester powder coated)
Weight (gms)	550 (not including rod)	700	800
Power supply	24VDC via control unit	115/230VAC, 50/60Hz	115/230VAC, 50/60Hz
Outputs	(To control unit)	2 x Relay (SPCO, 0.5A @ 24V)	2 x Relay (SPCO, 0.5A @ 24V) 1 x 4-20mA (isolated 500Ω)
Display	-	Tri-state LED Alarm 1, 2	Tri-state LED + LCD numerical display
Cable to control unit	-	8 core screened, 10-300m	8 core screened, 10-300m
Stack / Duct Connection	½" BSP or ½" NPT	-	-
Cable Entries	1 x PG9	3 x PG7	4 x PG7
Stack gas temperatures	-20°C to + 125°C option to + 250°C	-	-
Hazardous Zone classification	ATEX 3G / 3D (optional)	-	-

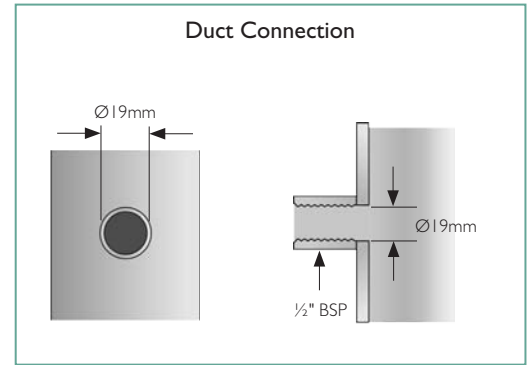
# specifications

## Dimensions

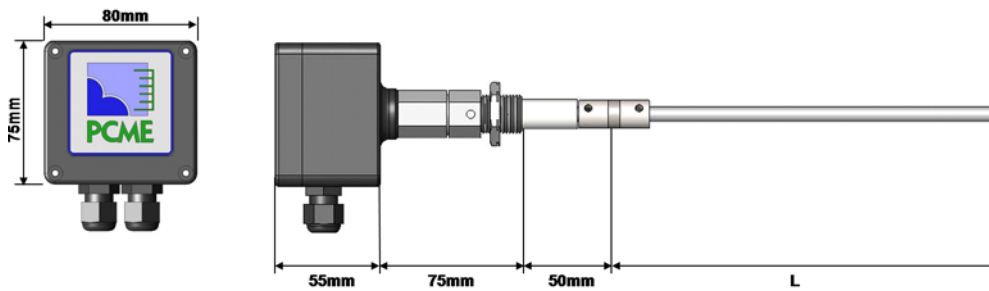
### Control Unit



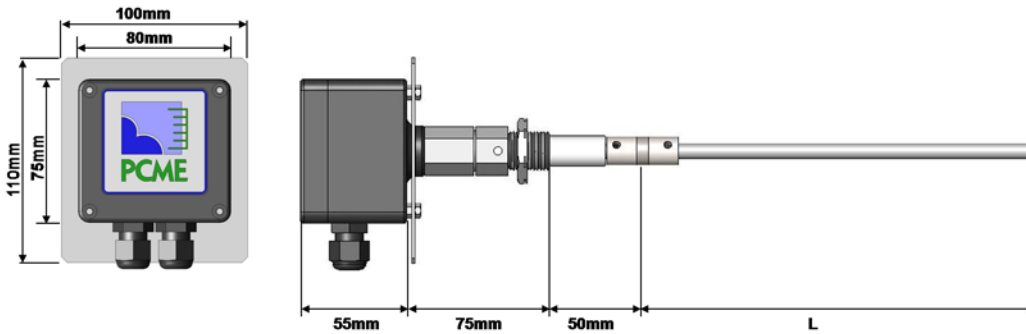
BREAK ALARM 30a shown



### 125°C Stainless steel



### 250°C Insulated



## Order Codes

### BREAK ALARM 10/30 a/ax - 1 2 3 4 / A

Instrument type (a/ax) a Standard  
ax ATEX Category 3G/3D

#### Mechanical Options (1 2 3 4)

1	Sensor Type	Standard sensor up to 125°C Standard sensor up to 250°C	std option	125C 250C
2	Rod Length	0100mm to 0800mm	specify	RODxxxx
3	Stack Connection	0.5" BSP 0.5" NPT	std option	0 N
4	4 Core Cable	10m included as standard, maximum 300m	specify	xxx

#### Sensor Options (A)

A	ATEX Category	None ATEX 3G (zone 2) ATEX 3D (zone 22)	none option option	0 X02 X22
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Example: DS 30 - 

1	2	3	4	A
250C	ROD0800	0	30	X22

## 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 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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Contact your national or area sales and service office

**PCME Ltd**  
Clearview Building  
60 Edison Road  
St Ives Cambs UK  
PE27 3GH



Tel: +44 (0)1480 468200  
Fax: +44 (0)1480 463400  
E-mail: [contact@pcme.com](mailto:contact@pcme.com)  
[www.pcme.com](http://www.pcme.com)