

LEAK ALERT Series

ELECTRODYNAMIC™
INSIDE

Filter

Dust & Leak

Monitors

TUV approved
EN15859

MCERTS Version 3
Class 2 & 3

US ASTM D7392-07



*LEAK ALERT 80 shown

- Range of leak and dust monitors for control and monitoring of arrestment plant especially Bagfilters
- Versions with European (TUV & MCERTS) approvals as 'filter dust monitors' and 'filter leak monitors' and meeting US Standards for Bagfilters (MACT)
- Selection of advanced features and options for improved performance including automatic internal zero and reference self-checks for regulatory compliance
- Increased quality assurance over previous models



Certificate No: 9389

System Description and Product Range

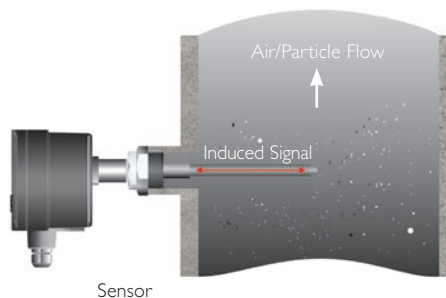
The **LEAK ALERT Series** of instruments are particularly suited for use on fabric filter type dust collectors (baghouses) and provide reliable and robust monitoring of particulate dust levels and leaks from faulty bag media. With compact, cost effective transmitter design, reliable monitoring can now be provided for all types of industrial filters. The instruments benefit from PCME's unique *ElectroDynamic™* Probe Electrification technology, and advanced features enabling the **LEAK ALERT Series** to be configured for all types of bagfilters irrespective of cleaning sequence and an external display, keypad and probe rod self check option which provides added quality control. The **LEAK ALERT Series** are approved to meet the requirements for Filter Dust Monitors and Filter Leak Detectors under EU regulation EN15859 and meets the new US ASTM D7392-07 requirement for bag leak monitors falling under MACT.

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 on 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.



In addition, *ElectroDynamic™* Probe Electrification technology provides sufficient dynamic range to follow "on-line" and "off-line" bag cleaning cycles for predictive filter failure and faulty bag leak location detection.

Added Value Features

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.

Instrument Performance Approvals

The **LEAK ALERT 80** meets all European performance approvals as a "Filter Dust Monitor". Having TUV approval to EN15859, (equivalent to MCERTS Version 3 Class 2), the **LEAK ALERT 80** can be scaled to read in mg/m^3 to offer both dust concentration measurement as well as filter leak features. The **LEAK ALERT 75** meets all European performance approvals as a "Filter Leak Monitor" under EN15859 (equivalent to MCERTS Version 3 Class 3) and is a 0-100% scaled instrument which provides bag leak capability and relevant product approvals for dust filter leak location according to US ASTM standards D7392-07 as a bag leak monitor. Both instruments are provided with internal zero and reference Quality Assurance features required to meet these standards, saving considerable time in performing alternative manual self-test procedures **without removing the sensors from the stack**.

Advanced Features

The **LEAK ALERT 80** and **75** provide powerful bag leak capability based on the following standard features:

Bag leak monitoring performance

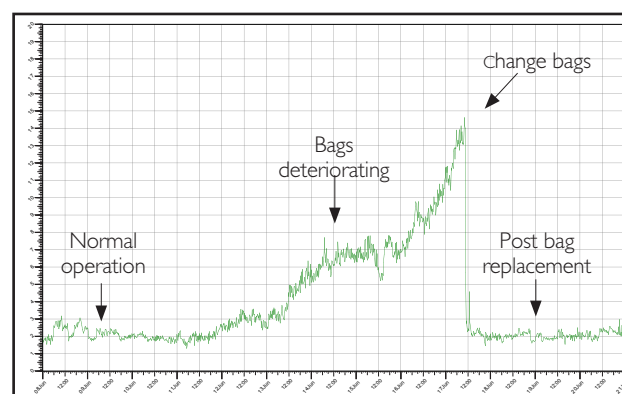
- High quality leak response with sufficient dynamic range and time response to track emissions from single and multi-compartment pulse cleaned bagfilters
- Instrument drift and minimum detection level below $0.1 \text{ mg}/\text{m}^3$ with leak monitoring to $500 \text{ mg}/\text{m}^3$
- Fully configurable warning alarm and limit alarm levels with independent alarm delay
- Convenient bag leak output range in defined units (user selectable)
- Bag leak location capability by use of optional Bag Pulse Display module (BPD). Faulty bag media can be determined by row assisting bag replacement and cost reduction of operating bagfilters (application dependant, please consult PCME Ltd or reseller)

Designed for practical bagfilter issues

- Category 3 option is suitable for ATEX dust zone 22 (see Category 1 option for zones 20 and 21)
- Inbuilt surge protection to counter effects of indirect lightning
- Industrially hardened enclosure and sensor mechanics provides convenient connections to plant allowing armoured cable use
- Powered directly from mains power supply 100-240VAC (or 24VDC option)

Powerful user Interface

- 4 digit display (external on **LEAK ALERT 80**)
- Instrument set-up via internal keypad or PC/laptop (optional "Device Set" software required)
- Option for external keypad (standard on **LEAK ALERT 80**)
- Intuitive multilevel user interface (user set-up, engineering set-up) with password protection
- Three separate tri colour LEDs, for Power, Emission alarms and instrument self-checks



Leak Alert Monitors Bag Leak Conditions

product features

User Selectable Added Value Options

The **LEAK ALERT Series** provides a full choice of user selectable added value features. These include:



- **Automatic insulator short-circuit check for contamination detection (option)**
ElectroDynamic™ sensors are tolerant to dust contamination of the sensor rod (unlike Triboelectric systems) due to the non-contact measurement principle, however, build-up of conductive material across the insulator at the base of the rod can lead to error (as with all Triboelectric systems). For standard dry dust collector applications, contamination is unlikely, but a possibility. The short circuit check option provides a reliable method for detecting insulator contamination and hence improved Quality Assurance. For applications where water condensation is likely, PCME's patented insulated sensor is a preferred option.

- **Electronic zero and reference drift detection**
Signals are injected into the front end of the sensor electronics to ensure any electronic and signal measurement malfunction is automatically detected. This Quality Assurance feature is required by European and ASTM (US) performance standards for Dust monitors. This feature is controlled manually or automatically (model specific).

- **User scaling of display**

The **LEAK ALERT Series** can be specified with a choice of two forms of user scaling providing assistance to plant personnel wishing to scale the display to an approximate known dust level (**LEAK ALERT 80**) or those wishing to display emissions relative to a 100% full scale (**LEAK ALERT 75**).

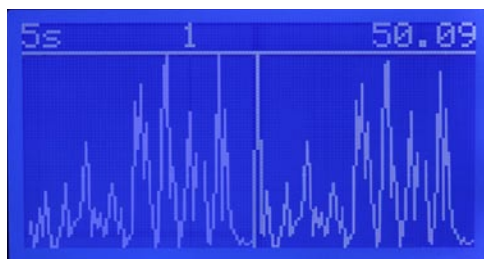
Specifications

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) Warning alarm relay (SPST 1A@24VDC) Fail safe Emission alarm relay (SPST 1A@24VDC) Fail safe
Outputs (Optional)	RS232 (Modbus RTU) - option } Enables use of PC-ME Dust Tools PC software suite RS485 (Modbus RTU) - option }
Inputs	Plant stop signal (output to zero when plant is off), marker for start of bag cleaning sequence
External LED x3	<ul style="list-style-type: none"> · Power/sensor OK · Warning and limit alarm · Self check status (options)
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 fitting is required *1/4" BSP connection to instrument air line

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

Bag Pulse Display Module

The **LEAK ALERT Series** may be upgraded to provide Leak Locate capability by adding the optional Bag Pulse Display module. This 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.



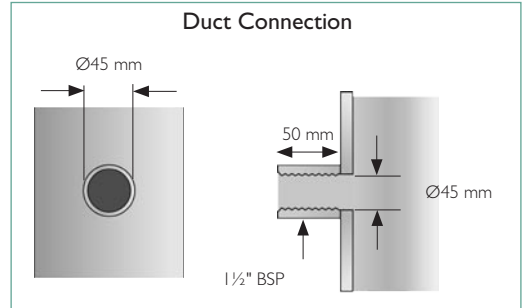
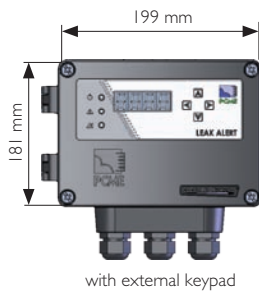
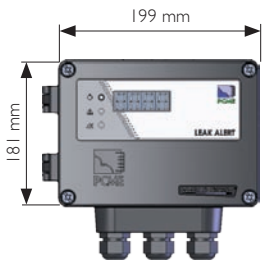
Pulse Display permits failing bag rows to be identified during bag cleaning



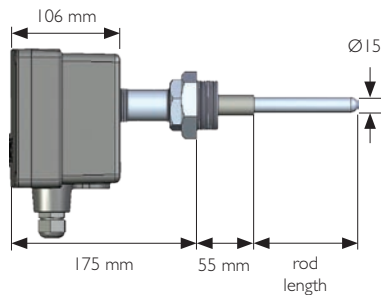
specifications

Dimensions

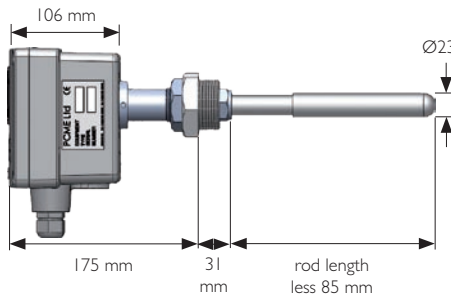
LEAK ALERT (shown with optional display and external keypad)



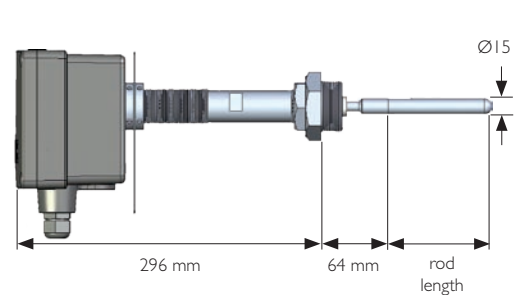
250°C Stainless steel



250°C Insulated



400°C Stainless steel



Order Codes

LEAK ALERT XX - 1 2 3 4 5 / A B C D E F G H I J P

Instrument type (XX) 80 Filter Dust Monitor
75 Filter Leak Monitor

Mechanical Options (12345)

Option	Description	Range/Options	Specify	Code
1	Stack Temperature	Up to 250°C Up to 400°C	options	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 (PC-ME Dust Tools)

Configuration Options	Device Set
Real-time Data Options	Online Predict

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

Feature	Description	Options	Code
A	Short Circuit Check ¹	None Short circuit check	option 0 SC
B	Electronic Self-checks	Manual initiated Automatic	std 75 & 80 option MAN AUTO
C	Scaling Method	Scaling Factor 0-100%	std 80 std 75 SF %
D	ATEX Category ¹	None Category 3 dust (zone 22) Category 1 dust (zone 20)	option 0 X22 X20
E	Power Option	100-240VAC 24VDC (No cost option)	option AC 24DC
F	RS485 Data Output	Not included RS485 included	option 0 485
G	RS232 Data Output	Not included RS232 included	option 0 232
H	External Connector for RS232	Internal connector External connector	option 0 FLY
I	Keypad	Internal keypad External keypad	std 75 std 80 IK EK
J	Display	Internal Externally viewable	option std 75 & 80 ID ED
P	Leak Locate Capabilities	Not included Bag Pulse Display Module	option 0 BPD

1: Not available with insulated rod option

Example: Sen 75 - 1 250C 2 ROD0900 3 S 4 AP 5 REG - A SC B MAN C SF D X22 E AC F 485 G 0 H 0 I IK J ED - P BPD

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.

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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
www.pcme.com