

Passionate about Particulate



## Leak Alert 480

DYNAMIC CAPACITY™  
INSIDE

Dust

Leak

Monitors

Electro-Filter  
Failure Monitor



- Cost-effective approach for monitoring outlets from individual Electrostatic Precipitator (EP) compartments
- Identifies and monitors leaking Electrostatic Precipitator by reliably monitoring dust emissions
- Rugged operation with tolerance to misalignment and dust contamination
- Improved performance over previous models with increased measurement path length



Certificate No: 9389

# applications

## System Description and Product Range

The Leak Alert 480 is primarily used to monitor leaks from electrostatic precipitators, warning maintenance teams of reduced performance due to failing plates or chambers leading to increased emissions. Problems with plate charging voltage and collection efficiency can be detected rapidly and effectively by monitoring changes in particle emissions. In addition, the Leak Alert 480 can be used as a rugged and reliable dust monitor for small and medium sized boiler stacks where instrument approvals may not be necessary.



## Principles of Operation



The Leak Alert 480 continuous particulate monitor uses the *Dynamic Opacity™* radiometric optical measurement principle. This technique monitors the variation in the amount of received light from the light beam transmitted across the stack. The variation derives from the temporal distribution of particulate which attenuates the light beam. The Leak Alert 480 calculates the dynamic response (ratio of light variation to light intensity or obscuration). This method has the added benefit that the measurement is unaffected by lens contamination. The instrument response is proportional to dust concentration. The Leak Alert 480 provides an indication of increasing dust levels operating in a 0-100% mode, but can be upgraded to include advanced features and user options.

## Simple Instrument Installation and Maintenance

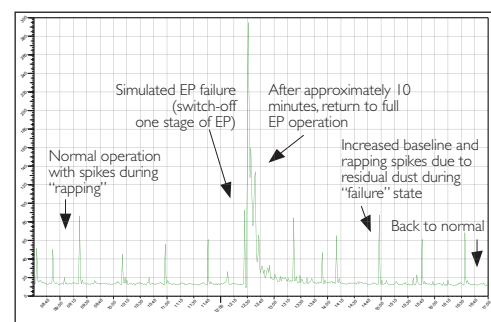
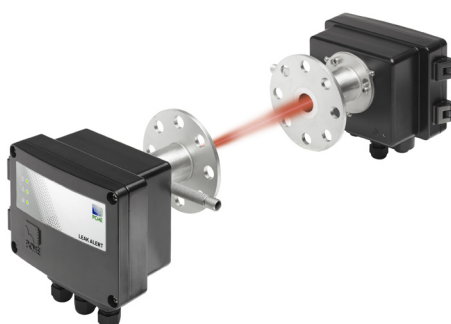
The radiometric dynamic opacity algorithm is highly resistant to dust contamination and the instruments automatic light check provides an alarm should light levels fall below 10% transmission, indicating the need to clean the optical surfaces.

Lens condition	Light intensity	Variation	Scintillation
100% transmission	1	x	x/1
90% transmission	0.91	0.9x	0.9x/0.91 = x/1
50% transmission	0.51	0.5x	0.5x/0.51 = x/1

The instrument has inherent low cost of ownership due to its measurement algorithm. However, should maintenance be necessary, easy access for cleaning is provided to all windows and mechanical parts which might come into contact with the flue gas through a simple disconnect of the optics. Blower motors are not necessary as low volume, low pressure purging is adequate (instrument air).

The transmitter and receiver do not require elaborate alignment. Simply mount on opposite sides of the stack in a way to give direct line of site between the two sensor heads.

The instrument is designed for use with a stand alone dust monitor. There is no need for a separate control unit as all user interface and external connections (mains power; relays, 4-20mA) are provided directly in the sensor. The instrument is set up by the display/keypad in the sensor. Should more features and capability be required, the PCMEView 580 offers advanced functionality.



Emissions from electrostatic precipitator (during rapping cycle)

# specifications

## User selectable added value options

Monitoring range and application limits	
Stack size (flange to flange)	1 to 10m
Stack gas temperature	Standard Up to 250°C Option Up to 400°C
Humidity	Up to 90% non condensing
Velocity	Normal plant load (3m/s minimum)
Dust measurement range	<10 to 10,000mg/m <sup>3</sup> (application dependent)
Response time	< 10 sec, 95% change (user defined)
Ambient light rejection	Modulated LED (non-visible spectrum)



The instrument is provided with internal electronic self-checks as standard. For added benefits, these may optionally be upgraded from manual to automatic control.

Specifications	Receiver	Transmitter
Ambient temperature (for stack temperature see above)	-25°C to 55°C	-25°C to 55°C
Stack connection	DN40 PN6	DN40 PN6
External dimensions (mm)	200W x 190H x 200D (from flange)	200W x 190H x 200D (from flange)
Weight (kg)	3.9	3.5
Enclosure rating	IP-65 (with hinged lid closed)	IP-65
Power requirements	110/230VAC 50/60Hz (32mA) or 24VDC (300mA)	Supplied by receiver
Outputs	Isolated 4-20mA (500 ohm) Alarm 1: Fault SPST 1A@24VDC Alarm 2: Emission alarm SPST 1A@24VDC (fail safe connected) RS-485 (Modbus) - option	N/A
External LED x3	Indicates power, fault and emission alarm	
User set up	4 digit display and set-up keys accessible on opening hinged lid (option for external keys)	N/A
Cable entries	1 x M20 gland/conduit entries	1 x M20 gland/conduit entries
Connecting cable between receiver and transmitter	Supplied with 10m of cable (8 core, 7 x .22mm screened, PVC insulated, over all diameter 6.3mm)	
Air purge connection	1/4" BSP	1/4" BSP
Anti fouling connection (for high humidity/high dust applications)	Optional extra	Optional extra

## Optional PC Software

PC connects to the receiver via RS485 input connector



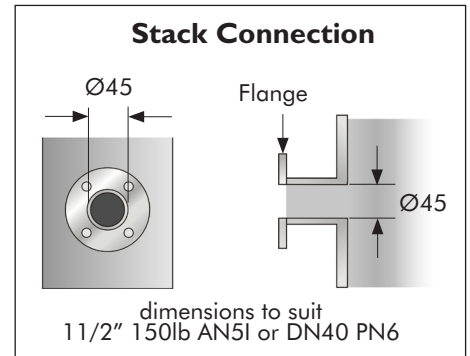
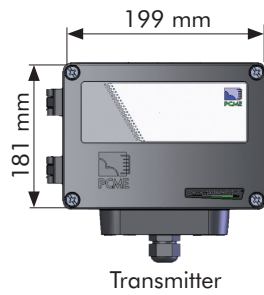
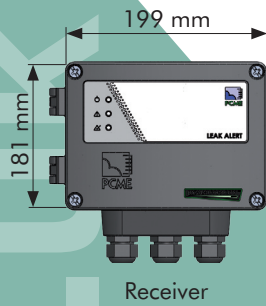
PC software	Purpose
Configuration	For instrument configuration by PC
PCView	For viewing emissions on PC



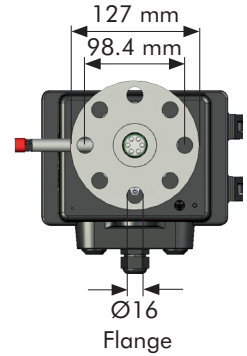
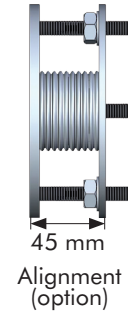
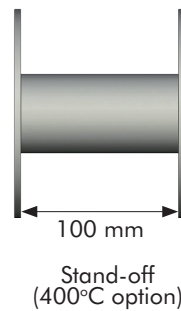
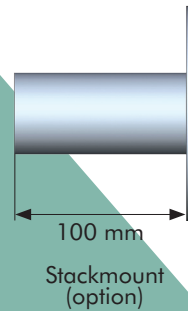
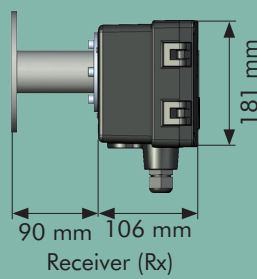
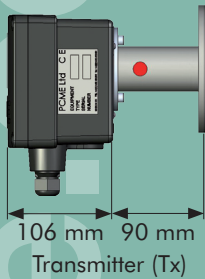
# specifications

## Physical Dimensions & Order Codes

### Leak Alert 480 (back views)



### Sensor Options (side views)



## Order Code

### Leak Alert 480 - 1 2 3 4 5 - B E F I J

Example Leak Alert 480 -

1	2	3	4	5	A	B	C	D	E	F	G	H	I	J
250C	0	ALIGN	0	REG	CC	AUTO	%	0	AC	485	0	0	IK	ID

### Mechanical Features

Option	Feature	Options	Standard	Option
1	Stack Temperature	250°C 400°C (provide stand-off)	Standard	250C 400C
2	Anti-fouling fittings	None Pair	Standard	0 AF
3	Alignment fitting	None 1 set (Tx)	Standard	0 ALIGN
4	Stack Mounting flanges	None Pair	Standard	0 SM
5	Air Filter/Regulator	None Filter + regulator assembly	Standard	0 REG

### Sensor Options

Option	Feature	Options	Standard	Option
A	Contamination Check optics	Included	Standard	CC
B	Electronic Self-checks	Not included Manual initiated Automatic	Standard	0 MAN AUTO
C	Scaling Method	0-100%	Standard	%
D	ATEX category	None	Standard	0
E	Power option	115/230V AC 24V DC	Standard	AC 24DC
F	RS485 Data output	Not included RS485 included	Standard	0 485
G	RS232 Data output	Not included	Standard	0
H	External Connector for RS232	Not included	Standard	0
I	Keypad	Internal keypad External keypad	Standard	IK EK
J	Display	Internal display Externally viewable	Standard	ID ED

## 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