

Model 125 Explosion-Proof Smoke Monitor

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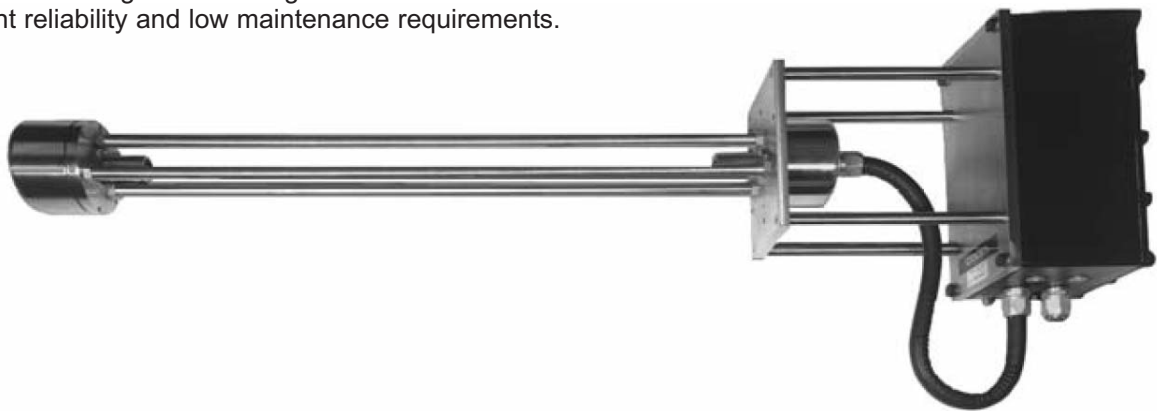
In the event of a fire in a building or other structure, such as an oil rig, Health and Safety regulations require that immediate action be taken to prevent the ingress of smoke and fume into air-conditioning and ventilation ducts. The Model 125 explosion-proof smoke monitor is specifically designed to be mounted in ventilation ducts and to comply with strict regulations that require rapid activation of smoke-damping equipment to minimise risk to human life. The equipment is constructed and tested to EExd IIB T5 standards enabling it to operate in hazardous areas.

CODEL is renowned world-wide as a supplier of optical continuous smoke and dust monitoring equipment, predominantly for the environmental protection market. Accredited to ISO 9001-2000, CODEL is one of the UK's leading suppliers of emissions monitoring systems.

The Model 125 was developed in conjunction with B.P. Exploration from a conventional transmissometer design to enable it to detect the presence of smoke drawn into ventilation ducting in North sea oil/gas rig accommodation quarters. On accommodation platforms the Model 125 monitors smoke ingress into crew 'temporary refuges' which are kept in an over-pressure condition to prevent smoke ingress. The Model 125 is calibrated to allow in low levels of smoke commensurate with breathable limits but will activate fire dampers should smoke levels become unacceptable.

As the protection of personnel is a critical priority, the Model 125 is designed to the highest standards with excellent reliability and low maintenance requirements.

- high accuracy & stability maintained over long periods
- designed to withstand the harshest environments
- modular construction ensures simple installation & low cable requirements
- rugged units, fully sealed to IP65, designed for very high availability with minimal maintenance requirements



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Operating Principle

The Model 125 uses established principles of transmissometry. A beam of light is projected across a void to a sensor that measures the light attenuated as a function of the amount of smoke or fume present.

Light is generated within the explosion-proof enclosure by an LED and carried by fibre-optic cable to the transmitter where it is projected into the void. The instrument uses a red LED emitting at a wavelength of 637nm being the optimum point to detect smoke and fume particles less than 1mm in diameter.

Mounted on support tubes the receiver head contains another fibre-optic cable that captures the incoming light and carries it to the silicon photo-diode also mounted within the explosion-proof enclosure. The opacity value is computed from the measured light and is used to trigger the alarm system at a pre-determined set-point and can be transmitted to an external data capture system via a 4-20mA analogue output.

The Model 125 is unaffected by extraneous light sources and contamination of the optical surfaces.

It is often mandatory (and always advisable) to verify the performance of vital safety equipment after commissioning or as part of a regular safety systems check. This is simple on the Model 125. CODEL can supply certified standard check filters that simulate fixed opacity levels. These are easily and quickly fitted to the receiver so that checks can be performed.

As an option, a serial output on the Model 125 may be provided that communicates with a discrete communications unit that resides outside the hazardous area. This unit provides an RS232c serial link to a PC running a special program that provides real-time diagnostics on the performance of the monitor.

All elements of the Model 125 are sealed to IP65. The transmitter and receiver heads are totally passive using fibre optic cables terminating in the explosion-proof housing that also contains the power supply and signal processing units. The fibre optic cables are each protected by a flame-proof conduit outside the zone being monitored and by a rigid stainless steel conduit within the zone.

Specification

Operating Principle : single-pass transmissometer

Operating Wavelength : 637nm

Light Source : modulated, high intensity LED

Range : 0 - 100% Opacity

Accuracy : +/-1% Opacity

Repeatability : +/- 0.5% Opacity

Response Time : 1 second for 90% response to step change

Alarm : 3300Ω - normal
: open circuit - fault
: 660-820Ω - alarm

Alarm Supply : 18-35V DC (24V nominal)
Voltage

Construction : IP 65

Explosion Proof : EExd IIB T5

Operating Temperature : -5°C to +40°C

Weight : 51kg

Overall Dimensions : 1574 x 400 x 200mm

SmartCem

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