



**FILTREX**

SYSTEM SENSOR

The only point smoke  
detector specially  
designed for  
use in dusty  
environments



SYSTEM  
SENSOR

# Filtrex, another innovation from

The biggest drawback with all smoke detectors is that if the air entering the detection chamber contains significant amounts of dust or water mist, the detector, because of the fundamental principle of its operation, is unable to differentiate between smoke and other particulate matter. It reacts to the dust particles or water droplets as though they were smoke, causing false alarms.

This long-understood problem has been largely overcome in most environments by today's generation of detectors. By optimising detector and chamber design, and by using powerful algorithms and other filtering mechanisms, false alarms are extremely rare - providing the detectors are installed in a benign environment such as an office. For instance, System Sensor have a minimum target for spurious alarms of less than one per million device operating hours.

In the more hostile conditions likely to be found in industrial environments such as textile factories and paper mills, point smoke detectors are not the best means of detection because of the high incidence of false alarms. It has always been possible to provide detection in such areas, but only by using slow responding point thermal detectors. IR or UV flame detectors and aspiration systems are other alternatives, but the installed costs are very high.

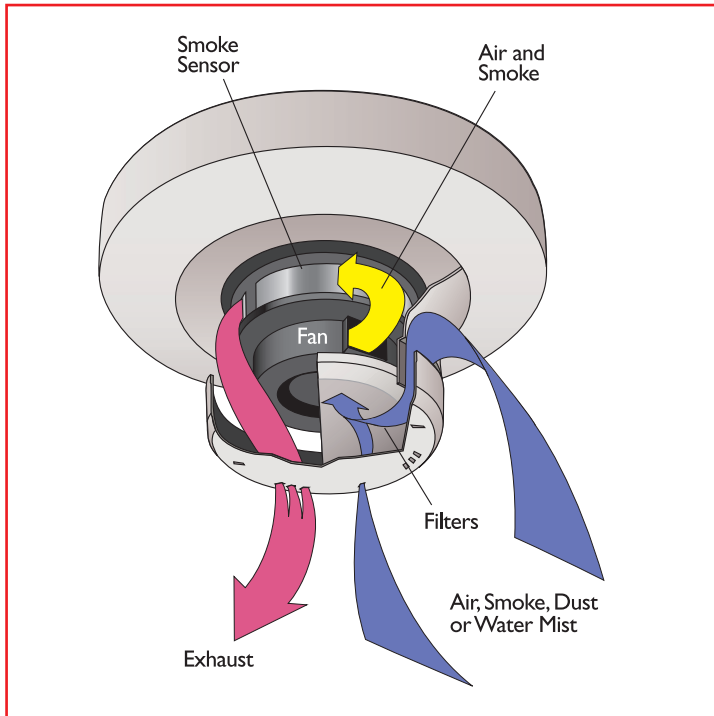


## Typical applications:

- Cement works
- Flour mills
- Coal processing plants
- Road tunnels
- Paper mills
- Textile plants
- Grain stores
- Any dusty atmosphere

Installing smoke detectors has not been a viable option - until now. The new Filtrex<sup>TM</sup> intelligent optical detector from System Sensor has been developed to address this particular specialised market. Extensive site testing in challenging environments showed that Filtrex solved the false alarm or high maintenance problems encountered if standard detectors are used. In all cases, Filtrex overcame the problems that had been experienced when standard detectors were installed. It enables the fast detection speed and low installed cost of the point smoke detector to be extended from the office to the factory. Filtrex uses the standard System Sensor communication protocol, so no special programming is required at the panel, enabling an existing system to be readily extended to include Filtrex detectors if required.

The Filtrex detector is a variant of the standard 2251 analogue addressable unit. The detector is fitted with two 25 micron filters to prevent the ingress of dust and water particles. The inner filter is permanently installed during the manufacturing process, the external one is removable for replacement by the user. The filters allow smoke particles through while excluding the much larger dust particles and water droplets. An independently-powered 24VDC air intake fan, mounted within the detector housing and supervised from the control panel, is provided to draw air into the unit.



The air delivery system runs on a 15% duty cycle, 5 seconds on and 30 seconds off. One very real hazard, particularly in very dusty atmospheres, is filter blockage. To ensure that the airflow is adequate, the fan undertakes an airflow test every four hours. If the airflow is inadequate, a 'maintenance-required' signal is transmitted to the panel. If the power to the fan fails then a fault condition is indicated at the panel.

Although the design of optical detectors renders them inherently less sensitive to high air velocities than ionisation units, there is, nevertheless, the risk of false alarms in high airflows. A significant side benefit of the Filtrex detector is that because the air velocity through the detection chamber is totally controlled by the fan, they can be used in environments with extremely high airflows without any danger of false alarms. In theory the Filtrex unit has no limits.

The fire system will not have to be turned off during cleaning, ensuring that protection is maintained. Maintenance intervals in dusty atmospheres should be much extended because, with no dust entering the chamber, false alarms due to settling dust are eliminated. The external filter is removed for cleaning with a simple tool and the system stays on line during the cleaning process, again ensuring that protection is maintained.

The Filtrex intelligent optical detector is the first model in the family to be released, and early indications are of a great deal of interest from the industrial community. The benefits of providing early detection in harsh environments at low cost are an attractive alternative to the more established products already serving this specialised, but widespread marketplace.

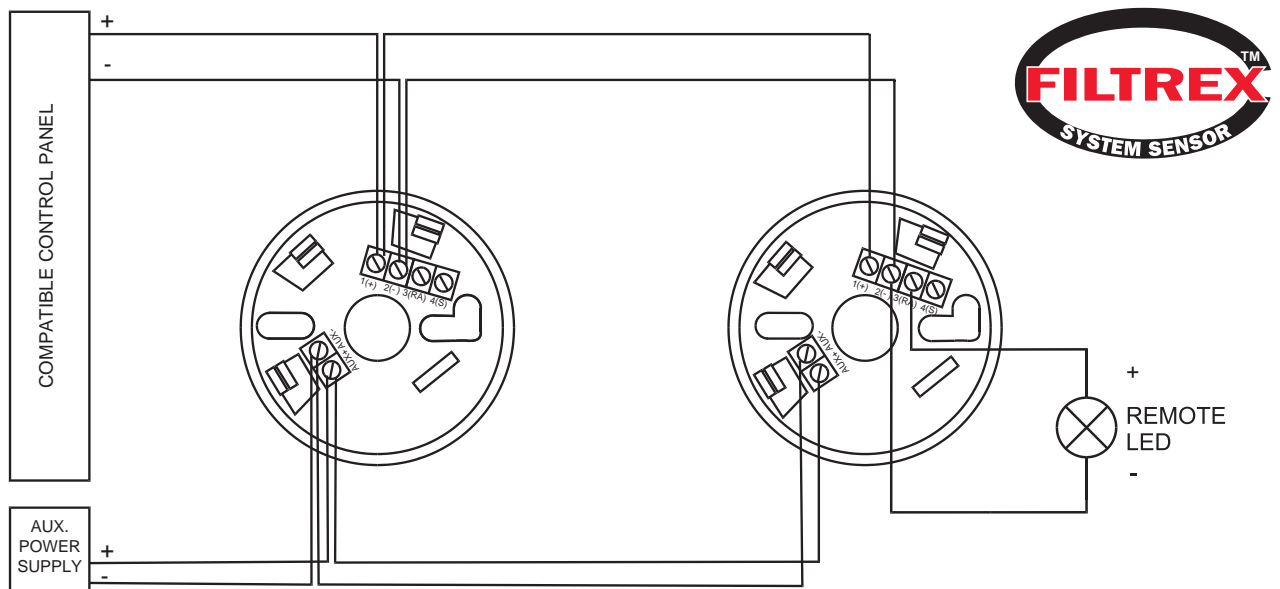
## Key features:

- 25 micron filters let smoke particles in, keep dust particles out
- Optical point detector gives far faster response than heat sensors or sprinklers
- Overcomes false alarm problems in dusty atmospheres
- Extends the intelligent fire protection system into a dusty production environment
- Monitored fan on low duty cycle



## Specification

Size:	89mm high, 102mm diameter
Weight:	207g
Current Draw:	
Detector:	230µA @ 24VDC (without communication) 285µA @ 24VDC (one communication every 5 seconds, LED enabled)
Air Delivery System:	6mA standby; 60mA when checking for smoke (5 seconds on, 30 seconds off) 80mA when checking for proper airflow (15 seconds on every 4 hours)
Operating Voltage:	15 — 32 volts
Operating Temperature:	-10 <sup>0</sup> C to +60 <sup>0</sup> C
Relative Humidity:	10% — 93%



## Features

- High density filter removes particulate matter down to 25 microns
- Air delivery system is separately powered and fully supervised
- The filter is easily field replaceable
- Approved for use in high airflow, up to 20m/s
- Optional remote LED
- Rotary decade address switches
- No modification required to panels compatible with 200 Series intelligent optical detectors
- The fan in the Filtrex detector is powered from a separate 24V supply. In order to minimise current consumption, the fan is pulsed: 5 seconds on and 30 seconds off. The correct operation of the fan and filter is constantly supervised, and a fault signal is generated if the fan fails, or if the filter becomes blocked

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