

SMART⁴ Multi-Criteria Fire Sensor

Data Sheet



Fires take many forms, from a slow smouldering fire that produces large amounts of smoke and Carbon Monoxide but little heat through to alcohol fires that produce high temperatures very quickly without any evidence of smoke. The SMART⁴ has a sophisticated 'brain' capable of intelligently combining the data from the four sensing elements to provide a fast response to real fires while remaining extremely resilient to false alarm incidents.

Using a combination of Carbon Monoxide, Heat, Optical smoke sensing and Infrared flame sensing elements enables SMART⁴ to detect the broadest range of fire conditions providing the earliest warning.

Features

- Unique, true four sensor Multi-criteria detector
- Fully integrated Infra Red sensor to support the fire alarm decision
- CO gas sensing for fastest response to slow developing and smouldering fires
- Highest possible immunity to unwanted alarms
- Automatic drift compensation of smoke sensor and CO cell
- Twin LED indicators providing 360° visibility
- Wide temperature range
- Built in test switch
- Stable communication with high noise immunity

How the SMART⁴ works

The SMART⁴ is configured so that it normally operates at a high immunity level, changing to become very sensitive to fires when fire characteristics are sensed. In this way transient nuisances are monitored and ignored, reducing the false alarm rate.

SMART⁴ dynamically adjusts the detection profile of the device in response to the input from the sensors, enabling it to be re-characterised on the fly as the ambient conditions change. Based upon the sensor signals, sensor thresholds, sensor gain, time delays, combination, sampling rates, averaging rates are dynamically adjusted. And, if any sensor fails the sensitivity of the remaining sensors are adjusted to compensate and a fault condition is indicated.

The IR light sensor helps the detector recognise specific situations such as welding and makes adjustments rapidly in order to further reduce the potential for false alarms. The thermal detection function fuses thermistor technology with a software corrected linear temperature response. In areas where the normal daytime activities are likely to create unwanted alarms, the detector can be programmed to operate on a "Heat only" mode, automatically reverting to multi sensor operation during the unoccupied period. The SMART⁴ is thus able to offer exceptional false alarm immunity and excellent fire detection.

This document is not intended to be used for installation purposes. Every care has been taken in the preparation of this document but no liability can be accepted for the use of the information therein. Design features may be changed or amended without prior notice.

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Design, Manufacture and
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ment Systems Certified to
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SMART⁴ Multi-Criteria Fire Sensor - IRX-751CTEM

The SMART⁴ combines 4 separate sensing elements to act as a single unit. CO sensing (using EC technology) for monitoring CO products from a smouldering fire, IR sensing for measuring ambient light levels and flame signatures, optical smoke detection and heat detection.

SMART⁴ dynamically adjusts the detection profile of the device in response to the input from the sensors. It normally operates at a high immunity level, changing to become very sensitive to fires when fire characteristics are sensed. In this way transient nuisances are monitored and ignored, delivering exceptional false alarm immunity and excellent fire detection.

Where specific threats of false alarm have been identified, one of 6 sensitivity levels can be chosen directly from the fire alarm control panel in order to further tailor the detectors performance to its environment.

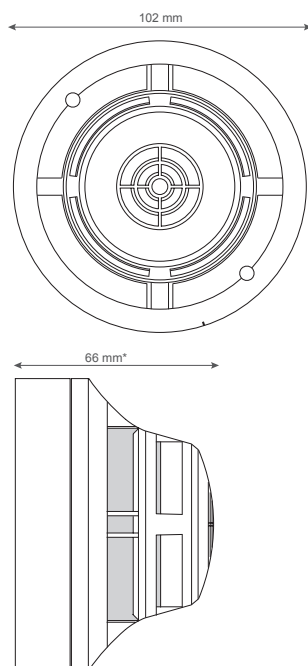


Specifications

IRX-751CTEM

Mechanical Specification

- Height: 66mm installed in B501 base
- Diameter: 102mm installed in B501 base
- Weight: 176g (inc base)
- Max Wire Gauge for Terminals: 2.5mm²
- Colour: White
- Material: Bayblend FR110



Electrical Specification

- Operating Voltage Range: 15 to 32Vdc
- Max. Standby Current: 220µA @ 24Vdc (no communications)
- Max. Alarm Current: 7mA @ 24 Vdc
- Remote Output Voltage: 22.5Vdc @ 24Vdc
- Remote Output Current: 10.8mA @ 24Vdc
- Additional loop resistance using the B501AP: typ 20mohm (max 30 mohm)

Environmental Specifications

- Temperature Range: -20°C to +55°C†
- Humidity: 15 to 90% relative humidity (non-condensing)










Sensitivity Settings

- | | |
|---------------|--|
| Alarm level 1 | Low false alarm resistance, high photoelectric only sensitivity. No delays from processed photo output 1%/ft smoke |
| Alarm level 2 | Medium false alarm resistance, medium photoelectric only sensitivity. No delays from processed photo output 2%/ft smoke |
| Alarm level 3 | Standard false alarm resistance, low photoelectric only sensitivity. Time elapsed from smoke detection is within 1'30". 3%/ft smoke |
| Alarm level 4 | High false alarm resistance, low photoelectric only sensitivity. Time elapsed from smoke detection is between 1'30" and 3'00". 3%/ft smoke |
| Alarm level 5 | Very high false alarm resistance, low photoelectric only sensitivity. Time elapsed from smoke detection is greater than 3'00". 3%/ft smoke |
| Alarm level 6 | Class A1R heat only alarm. If the heat level on thermistor exceeds 60°C or rate of rise limits. |

* When installed in a B501AP base

† Do not install detectors in locations where normal ambient temperature exceeds 50°C

Product Range at a Glance

		Isolator	Colour	Part Number
	OPAL Optical smoke detector	✗	Ivory	NFX-OPT-IV
		✓	White	NFXI-OPT
	OPAL Heat detector, fixed 58°C	✗	Ivory	NFX-TFIX58-IV
		✓	White	NFXI-TFIX58
	OPAL Heat detector (A1R), rate of rise + fixed 58°C	✗	Ivory	NFX-TDIFF-IV
		✓	White	NFXI-TDIFF
	OPAL Heat detector, fixed 78°C	✗	Ivory	NFX-TFIX78-IV
		✓	White	NFXI-TFIX78
	OPAL SMART² Optical smoke & heat detector	✗	Ivory	NFX-SMT2-IV
		✓	White	NFXI-SMT2
	OPAL SMART³ Optical smoke & heat detector with infra-red flame sensing	✗	Ivory	NFX-SMT3-IV
		✓	White	NFXI-SMT3
	SMART⁴ Infrared, Carbon Monoxide, Optical, Thermal Multi sensor	✗	Ivory	IRX-751CTEM-IV
		✗	White	IRX-751CTEM-W
	Analogue sensor base with SEMS screw connections for isolated and non-isolated detectors and address identification label	n/a	White	B501AP
		n/a	Ivory	B501AP-IV
	Wet Base shroud for use with standard bases to allow condensation run off and rear seal. Conduit entry only.	n/a	White	WB-1AP
		n/a	Ivory	WB-1AP-IV



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