FireSpy®

HARRINGTON SIGNAL INC
FIRE ALARM

IS803

I-Spy Multi-sensor Detector

Harrington Signal Inc.
2519 4th Avenue, Moline, Illinois 61265
P.O. Box 590, Moline, Illinois 61266-0590
Phone: (800) 577-5758 Local: (309) 762-0731 Fax: (309) 762-8215
Internet: www.harringtonfire.com

Description

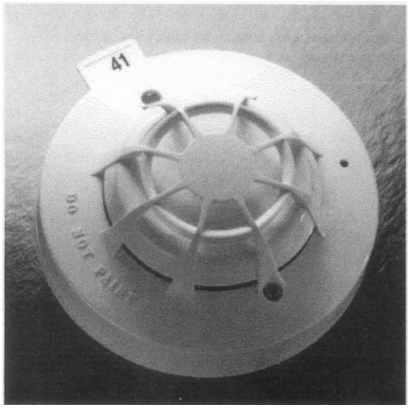
The IS803 multi-sensor detector contains a photo smoke sensor and a thermistor temperature sensor whose outputs are combined to give the final analogue value. The way in which the signals from the two sensor are combined depends on the response mode selected. The five modes provide response behavior which incorporated pure heat detection, pure smoke detection, and a combination of both. The multi-sensor is therefore useful over the widest range of applications. The outer smoke chamber has inlet apertures fitted with insect resistant mesh.

The multi-sensor construction is similar to that of the photo detector but uses a different lid and optical moldings to accommodate the thermistor temperature sensor. The sectional view shows the arrangement of the optical chamber and the thermistor.

Operation

The signals form the optical smoke sensing element and the temperature sensor are independent, and represent the smoke level and the air temperature respectively in the vicinity of the detector. The detector's micro-controller processes the two signals according to the mode selected. When the detectors is operating as a multi-sensor (i.e. Modes 1, 3, and 4) the temperature signal processing extracts only rate-of-rise information for combination with the optical signal.

In these modes the detectors will not respond to a slow temperature increase, even if the temperature reaches a high level. A large sudden change in temperature can, however, cause an alarm without the presence of smoke, if sustained for 20 seconds.
The process algorithms in modes 1 to 4 incorporate drift compensation.



Features

- Compatible with Harrington FireSpy® Tracker 1000, 2000, and 8000 Panels
- Combines photo smoke, and thermal sensor value for enhanced detection performance and false alarm reduction
- 5 operating modes
- Drift compensation
- Address is set by X-Pert card and is stored in the sensor base
- Rate of rise heat signals
- Fits 4" bases, or 6" EZ Fit Low Profile Bases

Ordering Information

Model Number	Part Number	Description
IS803	IS803	Multi-sensor detector
IS804	IS804	4" Mounting Base
IS807	IS807	6" Low Profile Relay Base
IS808	IS808	Isolator Base
IS809	IS809	6" EZ Fit Low Profile Base
IS821	IS821	6" Sounder Base
IS840	IS840	Pre-addressed X-Pert Cards
IS841	IS841	X-Pert Cards

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Modes

The characteristics of the five response modes are summarized below.

Mode 1 has a very high smoke sensitivity combined with high temperature sensitivity. This gives a high overall sensitivity to both smoldering and flaming fires.

Mode 2 has smoke sensitivity similar to that of a normal photoelectric detector, but has no response to temperature. This mode is therefore equivalent to a standard photo detector. This mode is suitable for applications in which wide temperature changes occur under normal conditions.

Mode 3 has moderate smoke sensitivity combined with moderate sensitivity to heat. This combination is considered the optimum for most general applications since it offers good response to both smoldering and flaming fires.

Mode 4 has lower than normal smoke sensitivity combined with high heat sensitivity. This makes it suitable for applications in which a certain amount of fumes or smoke is considered normal.

Mode 5 has no smoke sensitivity at all, but give a pure heat detector response. In this mode the detector will respond to slowly changing temperature and has a "fixed temperature" alarm threshold at 136°F. The analogue value in this mode will give the approximate air temperature over the range of 59°F to 131°F. In Mode 5, the smoke sensor is still active though it does not contribute to the analogue signal. As a consequence, if the detector is used in a dirty or smoky environment the optical sensor drift flag may be activated in the heat-only mode.

Engineering Specification

The photo / heat multi-sensor detector shall be Harrington Signal IS803, where indicated on the plans, with one of the several addressable mounting base options available. The combination sensor head and twist-lock mounting base shall be UL Listed and UL Listed as compatible with the FireSpy® Tracker 1000, 2000, and 8000 Addressable Fire Alarm Control Panels. The photo / heat mull-sensor detector shell have 5 programmable sensitivity modes. The base shall permit free interchange of sensor heads without requiring any additional wring or additional programming of the head or base. The smoke sensor shall contain an integral LED that shall latch in then the unit goes Into alarm.

Note: In testing of the multi-sensor detector should be carried out as for smoke detector in response modes 1-4, and for heat detection in response mode 5.
Design Note: If the multi-sensor is to be used in mode 5, heat detector spacing/coverage should be applied.

Specifications

Standby current 50OuA
Alarm current 3.5mA
Alarm current LED illuminated 3.5mA
3.93" diameter
1. 65" height (I. 95" in base)
Max. Continuous operating temp 140°F
Min. continuous operating temp 32°F
Min. operating -4°F (no condensation/icing)
Storage -22°F to 176°F
Detector weight 3.68oz (5.62oz with base)
Detector weight: 3.68 oz
Detector with base, weight: 5.62 oz.

Mode	Smoke Sensitivity		Temperature Sensitivity (Relative)	Reponse Type	Minimum Time to Alarm (Seconds)
	% per m	% per ft			
1	1.1	0.35	High	Multisensor	20
2	2.1	0.7	No Respnse to Heat	Optical	30
3	2.8	.9	Low	Multisensor	20
4	4.2	1.4	High	Multisensor	20
5	No Response to Smoke		See Text	Heat A1	30

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