# Fireray One Reflective Beam Smoke Detector

## EC1-50, EC1-120

S853

## Description

The Fireray One is a reflective beam smoke detector comprised of a transmitter and receiver in a single housing. The unit uses an infrared light source pointed at a reflector mounted on the opposing surface to measure light at the receiver. Smoke will impact the amount of reflected light allowing the beam detector to analyze this obscuration according to preprogrammed limits. The single supplied reflector will monitor up to 164 ft (50M) and a separately supplied long range reflector kit will allow for distances up to 394 ft (120m).

## Standard Features

- Coverage: 0-164 ft with single reflector, 0-394 ft with long range kit
- Integrated microprocessor algorithms discriminate solid objects from smoke
- Laser assisted one minute auto alignment
- False alarm mitigation features:

  Self-corrects for building movement using motorized detector heads

  Light cancellation technology makes it unaffected against sunlight and artificial light

  Dynamic mean phasing reduces cross-talk between beams

## Application

Beam smoke detectors are ideal for large open areas such as warehouses, hotel atrium, industrial plants and school gymnasiums. There are two types: reflective and end-to-end. Reflective beam detector is commonly applicable for most use-cases. End-to-end beam smoke detectors are particularly useful where line of sight for the infrared detection path is narrow and where the building structure employs reflective surfaces.

The Fireray One is a reflective type beam detector designed to be simple to install, and false alarm resistant.

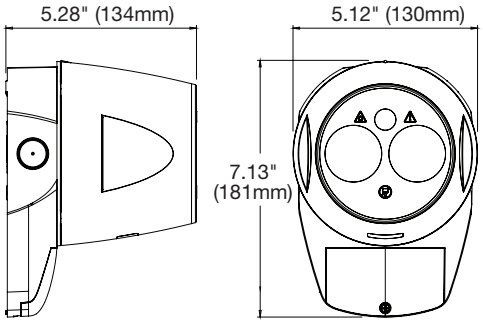
Smoke stratification may be overcome by mounting Fireray One at different heights, one of which will project an infrared beam below the heat layer and into the smoke layer.

Detection time will be longer in a building with a peaked roof if a fire occurs at the fringes of the protected area. If in doubt conduct appropriate smoke tests.

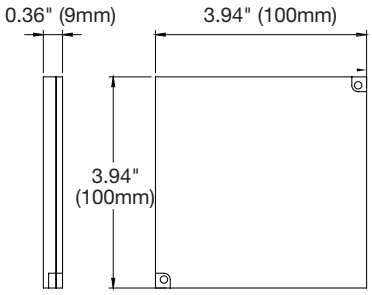
The ideal location and spacing of the detector is critical in a properly installed and operating fire alarm system. It is recommended that the detectors be located and spaced in accordance with NFPA 72, which allows for lateral spacing of up to 60 ft (18.3 m). Refer NFPA 92 for guidance where smoke stratification may occur.

## Dimensions

### Fireray One




### Reflector




## Technical Specifications

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|---|---|
| **Detection performance** | |
| Detection range | 0 to 164ft (0 to 50m)<br>0 to 394ft (0 to 120m) with Reflective Long Range Kit (PN:1010-000) |
| Alignment method | Laser assisted, Auto-Alignment™. Manual alignment – optional setting |
| Auto-Alignment™ protocol | Background check, Box search, Adjust and Center |
| Building Movement Tracking™ | Compensates for natural shifts in alignment from building movement* |
| Contamination Compensation | Compensates for gradual build-up of contamination on the optical surfaces |
| Light Cancellation Technology™ | Compensates for high levels of sunlight and artificial lighting |
| Optical wavelength – smoke detection | 850nm near infrared (invisible) |
| Integrated laser – laser alignment | 650nm visible. Class IIIa <5mW |
| Dynamic Beam Phasing | Allows beam detectors to be mounted facing each other with the reflectors in the middle. Eliminates false alarms caused by crosstalk between beams |
| Signal output | Individual Alarm and Fault relays (VFCO) 0.5A @ 30 VDC |
| **Programmable user settings** | |
| Alarm response threshold levels | 25% (1.25dB) – Fastest response to smoke<br>35% (1.87dB) – Default value<br>55% (3.46dB) – High immunity to false alarms, slow response to smoke<br>85% (8.23dB) – Highest immunity to false alarms, slowest response to smoke<br>Configured via the integrated user interface |
| Delay to Alarm | 10 seconds, for momentary partial obstruction of the beam path |
| Delay to Fault | 10 seconds, for momentary obstruction of the beam path |
| **User features** | |
| Integrated user interface | Alignment mode switch, alignment directional buttons and configuration switches for alarm response threshold |
| Alignment status indication | 2 Green LEDs and 1 Yellow LED |

# Technical Specifications (cont.)

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| **Design parameters** | |
| Separation distance between Detector and Reflector | 16 to 164ft (5 to 50m)<br>164 to 394ft (50 to 120m) with Reflective Long Range Kit |
| Beam path clearance | 3.3ft (1m) in diameter from center line between Detector and Reflector |
| Lateral spacing between detectors | 60ft (18.3m) maximum as per NFPA 72 |
| Detector location | Within the ceiling jet flow (top 10% of the floor to ceiling height) unless otherwise stipulated |
| Detector dimensions | Width 5.12" x Height 7.13" x Depth 5.28" (W 130mm x H 181mm x D 134mm) (see diagram) |
| Reflector dimensions | Up to 164.0ft (50m) separation distance – 3.94" x 3.94" x 0.36" (100mm x 100mm x 9mm)<br>Up to 393.6ft (120m) separation distance - Four reflectors 7.88" x 7.88" x 0.36"<br>(200mm x 200mm x 9mm) in square pattern |
| Product weight | Detector – 1.55lbs (0.7 kg); Reflector – 0.22lbs (0.1 kg) |
| Multi-detector arrangement | Dynamic Beam Phasing allows for Detectors to face each other with the reflectors in the middle |
| Housing color | White RAL9016, UV stable |
| **Electrical specifications** | |
| Operating voltage | 14 to 36 VDC |
| Operating current (constant) all operational modes | All operational modes – 5mA; Fast alignment mode – 33mA |
| **Field wiring** | |
| Cable gauge and type | 2 core, dedicated, 24 to 14 AWG (0.5 to 1.6mm)<br>System compatible with fireproof and non-fireproof cable meeting local installation standards |
| Cable entry | 3 knock-out locations capable of accepting M20, ½" or ¾" glands<br>4 drill-out locations capable of accepting glands up to 0.82" (21mm) diameter |
| **Test and maintenance** | |
| Alarm test | Optical alarm test using Commissioning and Maintenance Kit accessory |
| **Environmental specifications** | |
| Operating temperature | -4 to 131°F (-20 to +55°C) |
| Storage temperature | -40 to 185°F (-40 to +85°C) |
| Relative humidity (non-condensing or icing) | 0 to 93% |
| IP rating | IP55 |
| Housing flammability rating | UL94 V0 polycarbonate |
| **Optical specifications** | |
| Fault level / Rapid obscuration ($\Delta \leq 2$ seconds) | ≥85% |
| Maximum angular alignment of Reflective Detector | ±4.5° (±70° with adjustment bracket accessory) |
| Maximum angular misalignment of Reflective Detector | ±0.5° |
| Maximum angular misalignment of Reflector | ±5° |

# Ordering Information

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|---|---|
| EC1-50 | Fireray One – 164ft (50m) detection range |
| EC1-120 | Fireray One long range package, includes EC1-50 and 1010-000. |
| 1010-000 | Reflective Long Range Kit – 394ft (120m) detection range |
| 1170-000 | Reflective Detector adjustment bracket |
| 1100-000 | The Fireray One Protective cage |
| 1060-000 | Fireray One Anti-condensation heater |
| 1260-000 | Fireray One Back Box |
| 5000-012 | Double Gang Electrical Box Cover Plate |
| 1140-000 | Reflective detector ceiling mount - white |
| 1142-000 | Reflective detector ceiling mount - beige |

**Contact us**

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