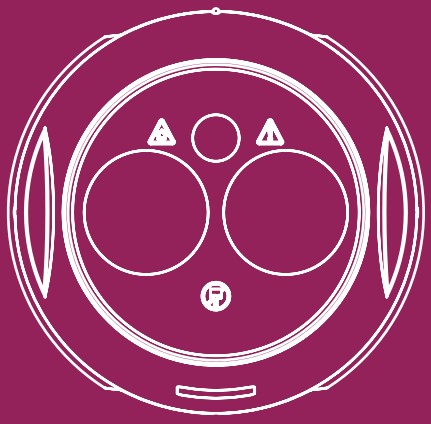
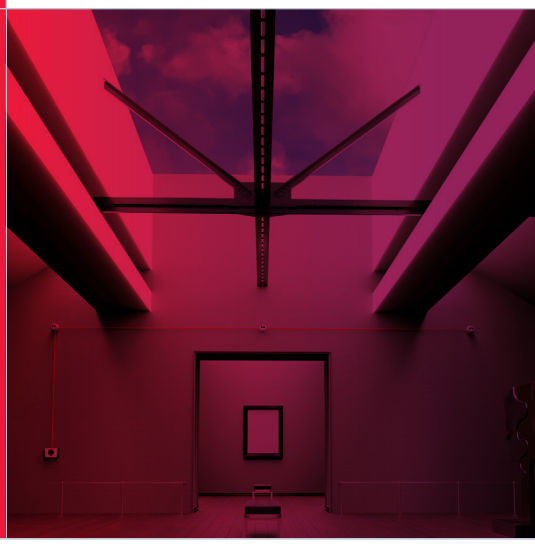
fireray®



Fireray Hub Reflective

Specialist beam smoke detection



Protecting lives. Protecting assets. Protecting property.

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Welcome to FFE

FFE is a global innovator in the design and manufacture of **specialist fire detection solutions**. We exist to ensure that all lives and livelihoods are protected from fire, even in the most challenging environments.

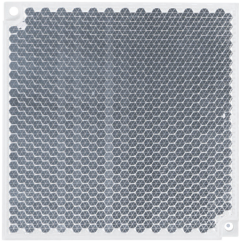
Established in 1974, FFE has been a trusted provider of specialist fire detection solutions for over 50 years, protecting lives, assets and property around the world. Our products, designed and manufactured in the UK, and our solutions are synonymous with quality, reliability and innovation, reflecting decades of experience and a deep commitment to excellence.

Building on this foundation, our product range consists of the Fireray series, which offers quick, accurate, and dependable beam smoke detection for large indoor spaces. The Talentum range provides fast flame detection in industries where early intervention is critical. Additionally, the Proreact range delivers reliable Linear Heat Detection, ensuring continuous fire protection in various environments. We are continually expanding our product portfolio to meet evolving fire safety needs.

We believe that fire safety is not just about products; it's about expertise, dedication and continuous innovation. With our entire team operating under one roof, we take pride in being experts in fire detection, giving you the highest level of support and technical expertise. Whether your application is common or highly specialised, we are committed to providing you with the most advanced and effective fire safety solutions and complete peace of mind.

Protecting lives.
Protecting assets.
Protecting property.

Fireray Hub Reflective Detector



Modular beam detection system for demanding applications.

Why use Fireray Hub Reflective?

The new Fireray Hub Reflective is the latest Optical Beam Smoke Detector from FFE. With built-in laser and motorised auto-alignment function, the Fireray Hub Reflective is easy to install and maintain. It automatically compensates for environmental effects such as dust, sunlight and building movement to keep false alarms and faults to a minimum.

The system is fully customisable with both the alarm thresholds (sensitivity) and delay to alarm/fault being controlled from the ground level system controller, with an easy-to-use interface unit and backlit LCD display.

How does Fireray Hub Reflective work?

An Optical Beam Smoke Detector uses an infra-red Transmitter and Receiver to monitor a signal in an open area. When smoke passes through the invisible infrared Beam, the solid particles and liquid droplets in the smoke reflect and scatter the photons of light.

The result is that the intensity of the light is reduced. This reduction is known as obscuration and can be detected to signal a fire.

The important thing to note is that this effect occurs equally at all points along the beams path. This ensures that the detector behaves effectively as though it was made up of an infinite number of Point Detectors arranged along a line.

This makes optical beam smoke detectors ideal for protecting long distances (up to 120m (394 ft) for a single beam), providing that the beam is completely unobstructe and correctly aligned with the detector.

The Fireray Hub Reflective low-level controller allows control of up to three reflective detector heads from ground level. The enclosure has been manufactured with an IP65 rating to enable the broadest positions for installation. The event logo captures up to 128 time and date stamped events per Reflective Detector Head and 600 per Controller, enabling fast and efficient maintenance.

Key features

Light Cancellation Technology™
Actively cancels ambient light from the sun or artificial sources, enabling installation in skylights and glass atria without causing nuisance alarms.

Motorised auto-alignment™
Ability to self-align in two minutes or less.

Building movement tracking™
Automatically track building movement to maintain optimum alignment. Nuisance alarms are minimised.

Benefits

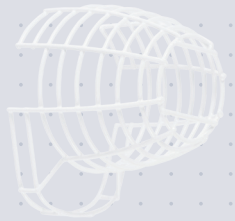
- Connect to and monitor up to three detector heads with independent fire and fault signals for each detector.
- Install the system in 25% less time using network mode.
- Quickly check system operation by initiating alarm tests.
- Easily diagnose system faults using the event log with date and time stamp.
- View the backlit LCD screen easily, even in unlit areas.
- Operate in dusty or wet environments due to high enclosure integrity (IP65).

Applications

- Aviation hangers
- Education and heritage establishments
- Glass atria in hotels and retail complexes
- Industrial units and warehousing
- Sports facilities
- Storage facilities

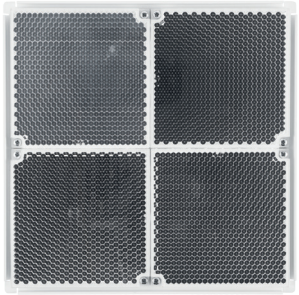
Fireray Hub
Reflective accessories

To complement your Fireray Hub Reflective installation, we offer a comprehensive range of accessories and tools to protect, maintain and secure your specialist application.



Reflective Detector Protective Wire Cage
PN: 1100-000

Single Reflector Adaptor Plate
PN: 1040-000



4 Reflector Adjustment Bracket
PN: 1050-000

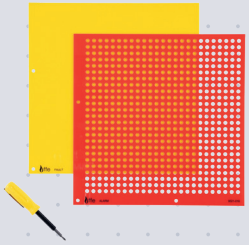
Reflective Detector Adjustment Bracket
PN: 1170-000

Reflector Wall Bracket
PN: 1030-000

Anti-Condensation Heater (Detector)
PN: 1060-000

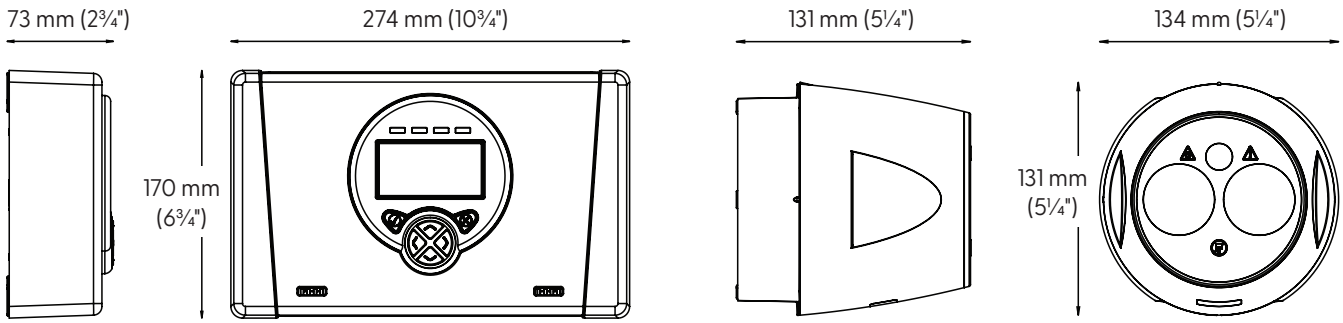
Anti-Condensation Heater (Reflector)
PN: 1090-000

Universal Ceiling Mount
PN: 1140-000



Commissioning and Maintenance Kit
PN: 1150-000

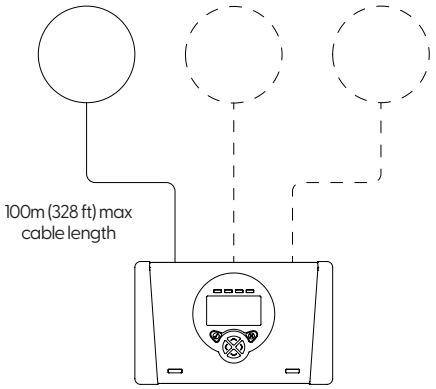
Technical specifications



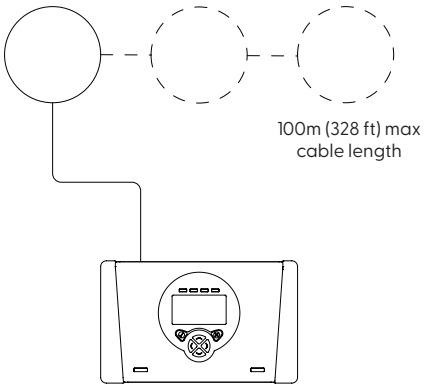
DETECTION PERFORMANCE	
Detection range	8 to 50 m (26 to 164 ft); 50 to 120 m (164 to 394 ft) with Reflective Longe Range Kit
Alignment method	Laser assisted, motorised Auto Alignment™ from the Fireray Hub Reflective. Manual alignment – optional setting
Alignment protocol	Background check, Box search, 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	850 nm near infrared (invisible)
Integrated laser – laser alignment	650 nm visible. Class 3R <5 mW
Dynamic beam phasing	Beam detectors can be mounted facing each other with the reflectors in the
Signal output	Individual Alarm and Fault relays (VFCO) 1 A @ 36 Vdc for each detector
PROGRAMMABLE USER SETTINGS	
Alarm response threshold levels	10 to 85% (0.46 to 8.24 dB) in 1% (0.05 dB) increments. Default 35% (1.87 dB)
Delay to Alarm	2 to 30 seconds in 1 second increments for momentary partial obstruction of the beam path. Default 10 seconds
Delay to Fault	2 to 30 seconds in 1 second increments for momentary obscuration of the beam path. Default 10 seconds
USER FEATURES	
System Controller user interface	70 x 35 mm (2¾" x 1½") LCD with yellow backlight; 6 navigation buttons
Status indication	Normal operation – Green LED flashing every 10 seconds. Programmable on/off Alarm condition – Individual Red LED per detector flashing every 5 seconds Fault condition – Individual Amber LED per detector flashing every 5 seconds
Reflective Detector status indication	Normal operation – Green LED flashing every 10 seconds Alarm condition – Red LED flashing every 5 seconds Fault condition – Amber LED flashing every 5 seconds
Cleaning	Flat front face with enclosed optics. Cleaning the optics does not affect alignment
DESIGN PARAMETERS	
Separation distance Detector to Reflector	8 to 50 m (26¼ to 164 ft); 50 to 120 m (164 to 394 ft) with Reflective Longe Range Kit
Beam path clearance	1 m (3¼ ft) diameter from centre line between Reflective Detector & Reflector
Maximum number of Detectors	3 Reflective Detectors
Dimensions	170(h) x 274(w) x 73(d) mm (6¾"(h) x 10¾"(w) x 2¾"(d))
Reflective Detector dimensions	131(h) x 134(w) x 131(d) mm (5¼"(h) x 5¼"(w) x 5¼"(d))
Reflector dimensions	Up to 50 m (26¼ ft) separation distance – Single Reflector 100(h) x 100(w) x 9(d) mm (4"(h) x 4"(w) x ½"(d)); Up to 120 m (394 ft) separation distance – Four Reflectors 200(h) x 200(w) x 9(d) mm (8"(h) x 8"(w) x ½"(d)) in square pattern
Product weight	System Controller: 1.05 kg (2¼ lbs); Detector: 0.57 kg (1¼ lb); Reflector: 0.06 kg (¼ lb)
Housing colours	White RAL9016, UV stable; Grey RAL7001, UV stable

Wiring configurations
The Fireray Reflective
Parallel & Network modes

Parallel mode



Network mode



ELECTRICAL SPECIFICATIONS	
Operating voltage	14 to 36 Vdc to the System Controller
Operating current (constant) all operational modes	12.5 – 17.5 mA (depending on number of Detectors connected)
Fast alignment mode current (constant)	33 mA (during alignment, or when LCD backlight is active)
FIELD WIRING	
Wiring configurations	Parallel mode – up to 3 Detectors individually connected to the System Controller Network mode – up to 3 Detectors connected to the System Controller on a single channel
Cable gauge and type	2-core, dedicated, 24 to 14 AWG (0.5 to 1.6 mm)(1/100" to 6/100"). System compatible with fireproof and non-fireproof cable meeting local installation standards
Maximum cable length between the Fireray Hub Reflective and Detector	100 m maximum to furthest detector when in Network mode
Cable entry	Detector: 2 knock-out locations of 21 mm (¾") diameter for cable glands, 2 drill-out locations of up to 21 mm (¾") diameter; System Controller: 10 knock-out locations of 21 mm (¾") diameter for cable glands, 10 drill-out locations of up to 21 mm (¾") diameter
TEST AND MAINTENANCE	
Alarm test	Remote detector fire test from the Fireray Hub Reflective Controller
The Fireray Reflective status indication	Green LED = Normal conditon (flashing every 10 seconds - Programmable on/off) Red LED = Alarm condition (flashes every 5 seconds) Amber LED = Fault condition (flashes every 5 seconds)
Event log with time and date stamps	128 per Detector, 600 per Controller
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-10°C to +55°C (+14°F to +131°F)
Storage temperature	-40°C to +85°C (-40°F to +185°F)
Relative humidity (non-condensing or icing)	0 to 93% non condensing or icing
IP rating	System controller – IP65; Detector – IP55
Housing flammability rating	UL94 V0 polycarbonate
OPTICAL SPECIFICATIONS	
Fault level / rapid obscuration (Δ ≤ 2 seconds)	Signal dropping by >85% in <2 seconds
Maximum angular alignment range	±4.5° (±70° with adjustment bracket accessory)
Maximum angular misalignment	±0.5°
Maximum angular misalignment of Reflector (Prism)	±5°

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