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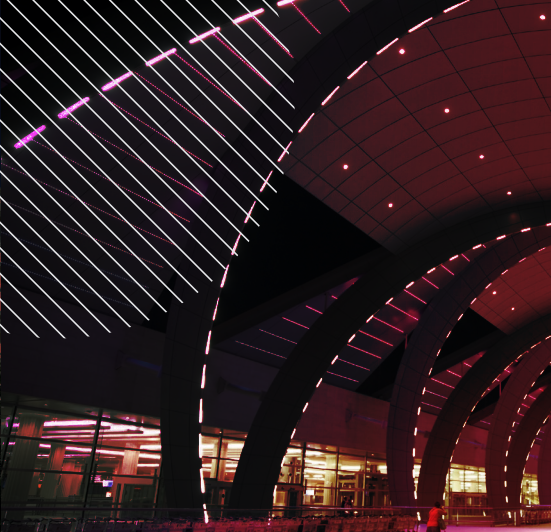


Beam detection  
others look up to

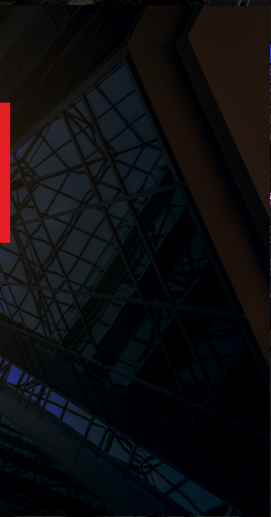
WWW.URL.COM

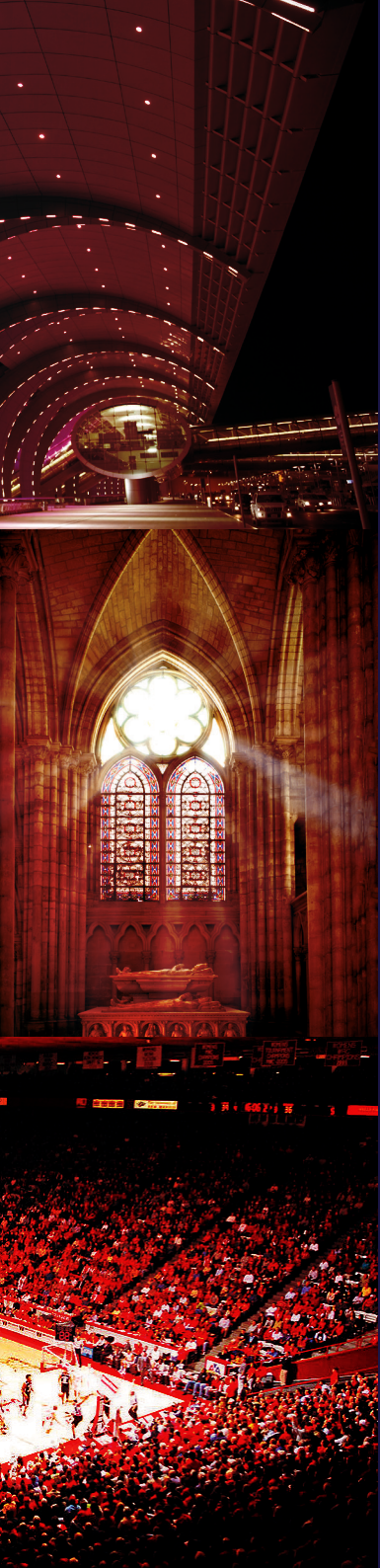


THE WORLD'S MOST TRUSTED BEAM



**FIRERAY®**  
**BEAM DETECTION**  
**OTHERS LOOK**  
**UP TO**





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## CONTENTS

04 Why use a Beam Smoke Detector?  
05 Fireray Beam Smoke Detector range

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14 Protecting lives worldwide

# WHY USE A BEAM SMOKE DETECTOR?

Beam Smoke Detectors are the wide area smoke detection technology of choice. With a coverage of up to 1800m<sup>2</sup>. Beam smoke detectors offer simplified wiring, installation and maintenance than other detection types and are therefore the best fire detection technology for wide area coverage.

### Why choose Fireray?

Lifetime, cost, accuracy and reliability are considerations that are crucial to making the right product choice. Our commitment to these factors drives customer decisions to choose Fireray. All of our products are manufactured in the UK. As a result, we have full control of the products we deliver

and the insight to help you choose the best Fireray product to suit your needs. Customers across numerous industries rely on Fireray for their accuracy and ease of use and end users trust the Fireray name when choosing a beam smoke detector. Choose Fireray to take advantage of an accurate and reliable product, backed by 50 years of experience.

### Installations

Fireray protects many different buildings and establishments around the world which include:

- Derby Velodrome
- Windsor Castle
- Doha Airport

# HOW DOES A BEAM SMOKE DETECTOR WORK?

A beam smoke detector works by sending an invisible infra-red (IR) beam of light across the area being protected that the receiver then measures. If smoke is present in the air, this obscures, or blocks, the light received by the receiver. When enough smoke is in the air, the IR light level will drop below a set level, which then triggers an alarm condition.

# BENEFITS

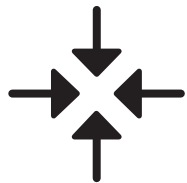
The Low level controller allows remote access for maintenance and testing when beams are situated high-up

Compensates for building movement or lens contamination by readjusting the beam to achieve the correct received signal during its installed lifetime

Prevents nuisance alarms from sunlight by actively cancelling the ambient light and only indicating a fault condition when the cancellation capacity is exceeded

An additional condensation heater prevents condensation forming on optical surfaces for areas with changing temperature and humidity

Considerable savings in installation and cost



AUTO - ALIGNMENT

Ensures precise alignment of the detector and the reflector in the optical path



INTERGRATED VISIBLE LASER

Ease of installation when aligning beams from a distance



PROTECTS LARGE SPACES

Excels at detecting smoke over large areas in wide indoor spaces



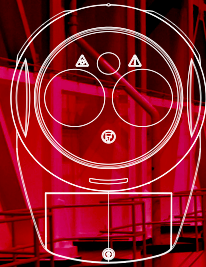
LIGHT CANCELLATION TECHNOLOGY™

Minimises false alarms in applications where reflective surfaces or direct sunlight are present

**FIRERAY  
BEAM SMOKE  
DETECTORS**

See page 12 for complete  
range of technical specification

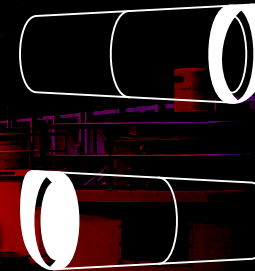
Fireray One



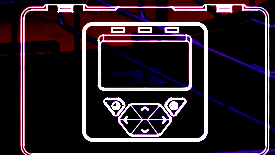
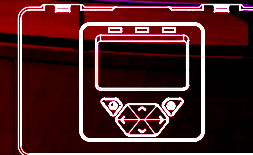
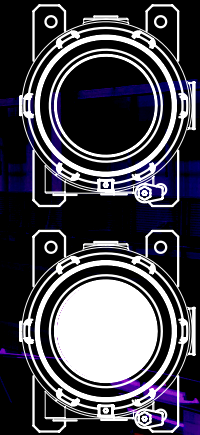
Fireray 5000



Fireray 3000



Fireray 3000 Ex d



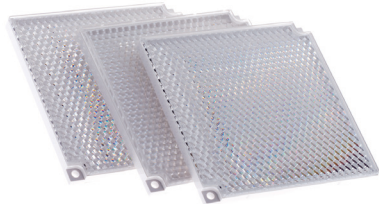
## Fireray One

# The motorised beam detector that aligns itself

Fireray One [EN]: 6010-100  
 Fireray One [UL]: 6010-300

With no specialist tools or knowledge needed for installation and operation, the Fireray One is a standalone beam detector that prioritises ease of installation. Using the Fireray One, it couldn't be easier to bring the benefits of beam detection to your application:

- Auto-alignment – using the integrated user interface – just steer the laser onto the reflector, then at the flick of a switch, it aligns itself. 8 times faster than previous detectors
- One person installation – everything can be done by one person
- One standalone product – no specialist tools required; minimal prior knowledge and training needed.



Operating range up to 50m or 120m with the Long Range Kit. 1010-000



### KEY FEATURES

- Integrated visible laser and auto-alignment for ultimate ease of alignment
- Integrated user interface
- Prevent nuisance alarms with Light Cancellation Technology™ which compensates for sunlight and artificial light sources
- Building Movement Tracking™ continuously maintains alignment when buildings settle or flex due to temperature variations
- Contamination compensation to correct for gradual build-up of dust on optics
- Clean detectors quickly and easily without affecting alignment
- Low power consumption; can be powered from the loop
- Prevent interference between beams with dynamic beam phasing; install beams facing each other or in irregular configurations
- Detection range of up to 120m

### IDEAL APPLICATIONS

- Education and Heritage Establishments
- Industrial Units and Warehousing
- Aviation Hangers
- Glass Atria in Hotels and Retail Complexes
- Chemical Processing and Storage Facilities

## Fireray 5000

### Motorised reflective auto-aligning beam smoke detector

Fireray 5000 [EN] (50m): 5000-101, (100m): 5000-102  
 Fireray 5000 [NF] (50m): 5000-112, (100m): 5000-113  
 Fireray 5000 [UL] (50m): 5000-103, (100m): 5000-104

The Fireray 5000 is one of the most advanced fire detection products in the world, combining a transmitter/receiver in the same detector head with an automatic alignment motor. This combination allows for quick, simple installation and requires wiring and power at only one side (the opposite side is covered by a reflector).

The Fireray 5000 beam automatically compensates for environmental effects on the beam signal, keeping the unit in the best possible working order. This is achieved through the combination of software (contamination compensation) and motorised realignment of the beam.

Other installation aids include the detector and controller first-fix systems, as well as a visible laser to aid the user in alignment. The laser also allows the reflective prism to be positioned quickly and with confidence. This device can be installed by a single engineer, thus offering further saving on installation and commissioning costs.

The system is fully customisable with both the alarm thresholds (sensitivity) and delay to alarm/fault being controlled from the ground level system controller. The low level controller incorporates a LCD display, which offers a full icon-based, easy-to-use interface unit.



#### KEY FEATURES

- Allows for 2 detectors per system controller
- Each detector configurable from 8m to 100m
- Separate fire and fault relays per detector
- Integral laser alignment
- Auto-align fast automatic beam alignment
- Contamination compensation
- Low level system controller
- Logs the 50 most recent events per detector
- Programmable sensitivity and fire thresholds
- 20mm cable gland knockouts on system controller
- 2-wire interface from system controller to detector

#### IDEAL APPLICATIONS

- Education and Heritage Establishments
- Industrial Units and Warehousing
- Aviation Hangers
- Glass Atria in Hotels and Retail Complexes
- Chemical Processing and Storage Facilities

Efficient  
and effective  
wide-area fire  
detection



## Fireray 3000

### End-to-end beam smoke detector

Fireray 3000 [EN]: 3000-101

Fireray 3000 [UL]: 3000-103

The Fireray 3000 is our solution to the most technically challenged installation environments. The system uses a paired set of transmitter/receiver heads to cover the protected area. The transmitter emits a narrow beam of infra-red (IR) light in order to monitor for smoke and is controlled using a compact low level controller. Both detector heads (transmitter and receiver) have integral thumbwheels for ease of alignment. Using these thumbwheels provides a smooth and repeatable alignment process.

The Fireray 3000 model has been designed to be installed by a single engineer. It incorporates a visible laser as an alignment aid, with alignment LEDs offering visual feedback.

The Fireray 3000 is fully customisable, with both the alarm thresholds (sensitivity) and delay to alarm/fault being controlled from the low level controller. This controller incorporates a LCD display, which offers a full icon-based, easy-to-use interface unit.

This controller enables ease of commissioning, testing and maintenance of the beam detection system.



#### KEY FEATURES

- Range 5 to 120 metres, configurable per set of detectors
- Light Cancellation Technology™
- Integral laser alignment in receiver
- 2-wire interface between controller and receiver
- Single and twin detector options
- Separate fire and fault relays per detector
- Low level controller with LCD display
- Programmable sensitivity and fire threshold
- Contamination compensation
- First-fix design for transmitter, receiver and controller
- Multiple cable gland knockouts for ease of wiring
- Optional transmitter powering from controller

#### IDEAL APPLICATIONS

- Education and Heritage Establishments
- Industrial Units and Warehousing
- Aviation Hangers
- Glass Atria in Hotels and Retail Complexes
- Chemical Processing and Storage Facilities





## Fireray 3000 Ex d

End-to-end

explosion proof

beam smoke detector

Fireray 3000 (Ex d): 3000-115

The Fireray 3000 Ex d is ideally suited for the protection of large areas, with potentially explosive atmospheres, against smoking fires. The Fireray 3000 Ex d comprises an infra-red transmitter and receiver, both of which are ATEX-certified for use in group 2 hazardous areas. There is a separate, safe area, wall-mounted remote/low level control unit to allow adjustment and testing from a convenient non-hazardous location.

The Fireray 3000 Ex d is designed for large enclosures within oil rigs, refineries, ordnance stores and similar premises. It provides an early warning of smouldering or strongly smoke-generative fires, which may not be picked up by flame detectors.



### KEY FEATURES

- Separate transmitter and receiver unit certified to Ex d
- Allows for 2 detectors per system controller
- Separate fire and fault relays per detector
- Range 10 to 80 metres, configurable per set of detectors
- Integral laser alignment in receiver
- 2-wire interface between controller and receiver
- Remote/low level controller with LCD display (Safe Area)
- Programmable sensitivity and fire/fault delay
- Contamination compensation for dust and building movement
- Multiple cable gland knockouts for ease of wiring
- Transmitter can be powered from controller
- Complies with ATEX and EN54:12
- Light Cancellation Technology™

### IDEAL APPLICATIONS

- Petrochemical Installations
- Ordnance Stores
- Flour mills
- Dusty Environments
- Aviation Hangers
- Chemical Processing and Storage Facilities



# FIRERAY ACCESSORIES

To complement your Fireray installation, we also offer a comprehensive range of accessories and tools for your specialist application.

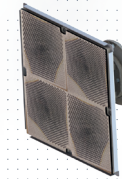
Our standard range of accessories include:

## All Fireray detectors

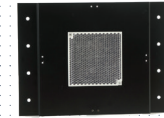


Reflective Detector  
Adjustment Bracket:  
1170-000

## Reflector accessories

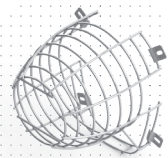


4 Reflector  
Adjustment Bracket:  
1050-000



Reflector Wall Bracket:  
1031-000

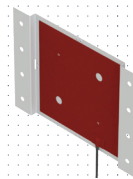
## Fireray One



Protective Cage:  
1100-000



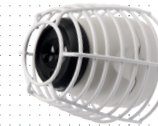
Back Box: 1260-000



Prism Heater:  
1090-000



Anti-Condensation  
Heater: 1060-000



Protective Wire Cage:  
1000-018

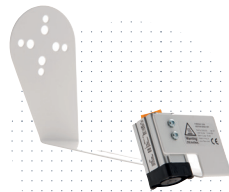


Anti-Condensation  
Heater: 5000-204

## Fireray 3000



Flush Mount Plate:  
3000-202



Heater Bracket:  
3000-204

## Fireray 3000 Ex d



Protective Wire Cage:  
1000-019



Detector Pack:  
3000-026

To protect,  
clean and  
secure

## Fireray Product Range

Our Fireray range is the perfect solution for protecting open areas with high ceilings such as auditoriums, warehouses, airports and historic buildings.

### **Fireray One:**

The motorised beam detector that aligns itself

### **Fireray 5000:**

Motorised reflective auto-aligning beam smoke detector

### **Fireray 3000:**

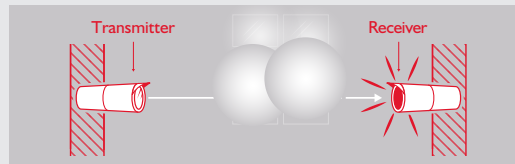
End-to-end beam smoke detector

### **Fireray 3000 Ex d:**

End-to-end explosion proof beam smoke detector

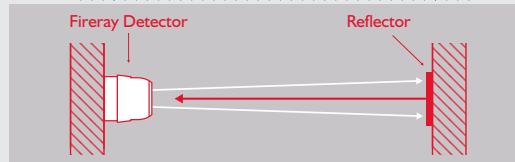
#### **End-to-End:**

Should typically be considered where there are reflective surfaces close to the beam's path, or where the beam path would be restricted due to fixed obstructions.



#### **Reflective:**

Most widely used and requires less wiring, which offers reduced installation cost and time.





# TECHNICAL SPECIFICATIONS

## Fireray One

## Fireray 5000

[EN]: 6010-100 [UL]: 6010-300

[EN] 50m (164 ft): 5000-101, 100m (328ft): 5000-102; [NF] 50m (164 ft): 5000-112, 100m (328 ft): 5000-113; [UL] 50m (164 ft): 5000-103, 100m (328 ft): 5000-104

### MECHANICAL SPECIFICATION

Dimensions	Detector: 181(h) x 130(w) x 134(d)mm; Single reflector: 100(h) x 100(w) x 9(d)mm; Four reflectors: 200(h) x 200(w) x 9(d)mm (Detector: 7"(h) x 5"(w) x 5¼"(d); Single reflector: 4"(h) x 4"(w) x ½"(d); Four reflectors: 8"(h) x 8"(w) x ½"(d))	Detector: 131(h) x 134(w) x 134(d)mm; System Controller: 230(h) x 202(w) x 87(d)mm; Reflector: 100(h) x 100(w) x 10(d)mm (Detector: 5¼"(h) x 5¼"(w) x 5.2¼"(d); System Controller: 9"(h) x 8"(w) x 3½"(d); Reflector: 4"(h) x 4"(w) x ½"(d))
Weight	Detector: 0.7 kg (1½ lb); Reflector: 0.1 kg (¼ lb)	System controller: 1.0 kg (2¼ lbs); Detector: 0.5 kg (1lbs); Reflector: 0.1 kg (¼ lbs)
Operation range	5 m to 50 m (16½ ft to 164 ft) from Detector to Reflector (Prism); 50 m to 120 m (164 ft to 394 ft) with Reflective Long Range Kit	<b>5000-101</b> 8 m to 50 m (26¼ ft to 160 ft) from Detector to Reflector; <b>5000-102</b> 50 m to 100 m (160 ft to 328 ft) from the Detector to Reflector
Beam path clearance	1 m (3¼ ft) in diameter from centre line between Detector and Reflector (Prism)	1 m (3¼ ft) in diameter from centre line between Detector and Reflector (Prism)
Optical wavelength – smoke detection	850nm	850nm
Signal output	Individual alarm and fault relays (VFCO) 2 A @ 30 Vdc	Individual alarm and fault relays (VFCO) 2 A @ 30 Vdc
Cable gauge and type	2 core, dedicated, 0.5 to 1.6 mm ( 1/100" to 5/100") (24 to 14 AWG) System compatible with fireproof and non-fireproof cable meeting local installation standards	2 core, dedicated, 0.5 to 1.6 mm ( 1/100" to 5/100") (24 to 14 AWG) 100 m in length from System Controller to Detector
Cable entry	3 knock-out locations capable of accepting M20, ½" or ¾" glands 4 drill-out locations capable of accepting glands up to 21 mm (¾") diameter	7 x 20 mm (¾") cable gland knock-outs on system controller

### ELECTRICAL SPECIFICATION

Operating voltage	14 to 36 Vdc	14 to 36 Vdc
Operating current all operational modes	5mA to 33mA (constant)	5 mA to 6 mA for 1 Detector; 7.5 mA to 8.5 mA for 2 Detectors; 35 mA to 37 mA for alignment modes with 1 or 2 Detectors
Contact voltage – fire & fault relays (VFCO)	VFCO, 2 A at 30 Vdc resistive	VFCO, 2 A at 30 Vdc resistive
Contact current –fire & fault relays (VFCO)	10 mA at 20 mV (min) 1 A at 30 Vdc (max)	VFCO, 2 A at 30 Vdc resistive

### PROGRAMMABLE USER SETTINGS

Alarm response threshold levels	25% / 1.25 dB – Fastest response to smoke. 35% / 1.87 dB – Default value 55% / 3.46 dB – High immunity to false alarms, slow response to smoke 85% / 8.23 dB – Highest immunity to false alarms, slowest response to smoke. Configured via the integrated user interface	35% (default) 10% / 0.45 dB (min) – Fastest response to smoke 60% / 3.98 dB (max) – Highest immunity to false alarms, slowest response to smoke
Delay to alarm/fault	10 seconds for momentary partial obstruction of the beam path	10 seconds (default); 2 seconds (min); 30 seconds (max)

### USER FEATURES

Alignment aid/tool	Laser	Laser
System status indication	Green LED = normal operation; Red LED = alarm condition; Yellow LED = fault condition	Green LED = normal operation; Red LED = alarm condition; Yellow LED = fault condition

### ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-20°C to +55°C (-4°F to +131°F)	IP rating	IP55	-10°C to +55°C (+14°F to +131°F)	IP rating	IP54
Storage temperature	-40°C to +85°C (-40°F to +185°F)	Housing flammability rating	UL94 V0	-40°C to +85°C (-40°F to +185°F)	Housing flammability rating	UL94 V0
Relative humidity (non-condensing)	0 to 93%			0 to 93%		

### OPTICAL SPECIFICATIONS

Fault level / rapid obscuration ( $\Delta \leq 2$ seconds)	$\geq 85\%$	$\geq 87\%$
Maximum angular alignment range	$\pm 4.5^\circ$ – Detector ( $\pm 70^\circ$ with adjustment bracket accessory)	$\pm 3.5^\circ$ – Detector
Maximum angular misalignment	$\pm 0.5^\circ$ – Detector	$\pm 0.41^\circ$ – Detector
Maximum angular misalignment of Reflector (Prism)	$\pm 5^\circ$	$\pm 5^\circ$



### Firearay 3000

[EN]: 3000-101 [UL]: 3000-103

### Firearay 3000 Ex d

3000-115

MECHANICAL SPECIFICATION						
Dimensions	System Controller: 124(h) x 203(w) x 71.5(d)mm; Transmitter & Receiver: 77(h) x 78(w) x 161(d)mm (System Controller: 5"(h) x 8"(w) x 2¾"(d); Transmitter & Receiver: 3"(h) x 3"(w) x 6¼"(d))			System Controller: 124(h) x 203(w) x 71.50(d)mm; Transmitter & Receiver: 172(h) x 149(w) x 190(d)mm (System Controller: 5"(h) x 8"(w) x 2¾"(d); Transmitter & Receiver: 6¾"(h) x 6"(w) x 7½"(d))		
Weight	System controller: 606 g (1¼ lbs); Transmitter & Receiver: 207 g (½ lbs)			System controller: 606 g (21½ oz); Transmitter & Receiver including brackets: 3.7 kg (8¼ lb 2½ oz)		
Operation range	5 m to 120 m (16½ ft to 393 ft) from Transmitter and Receiver			10 m to 80 m (33 ft to 262 ft) from Transmitter and Receiver		
Beam path clearance	60 cm (2 ft) in diameter from centre line between Transmitter and Receiver			60 cm (2 ft) in diameter from centre line between Transmitter and Receiver		
Optical wavelength – smoke detection	850nm			850nm		
Signal output	Individual alarm and fault relays (VFCO) 2 A @ 30 Vdc			Individual alarm and fault relays (VFCO) 2 A @ 30 Vdc		
Cable gauge and type	2 core, dedicated, 0.5 to 1.6 mm (1/100" to 5/100") (24 to 14 AWG) 100 m (328 ft) in length from System Controller to Detector			2 core, dedicated, 0.5 to 1.6 mm (1/100" to 5/100") (24 to 14 AWG) 100m/328 ft in length from System Controller to Detector		
Cable entry	10 x 20 mm (¾") cable gland knock-outs on system controller			10 x 20mm (¾") cable gland knock-outs on system controller		
ELECTRICAL SPECIFICATION						
Operating voltage	12 to 36 Vdc +/- 10%			12 to 36 Vdc +/- 10%		
Operating current all operational modes	14 mA (constant) with 1 or 2 Receivers 8 mA per Transmitter			14 mA (constant) with 1 or 2 Receivers 8 mA per Transmitter		
Contact voltage – fire & fault relays (VFCO)	VFCO 2 A at 30 Vdc resistive			VFCO, 2 A at 30 Vdc resistive		
Contact current –fire & fault relays (VFCO)	10 mA at 20 mV (min) 1 A at 30 Vdc (max)			10 mA at 20 mV (min) 1 A at 30 Vdc (max)		
PROGRAMMABLE USER SETTINGS						
Alarm response threshold levels	1 min (min) 5 min (typical) 59 min (max) – Laser time-out 5% (min) 60% (typical) – Response sensitivity/threshold			1 min (min) 5 min (typical) 59 min (max) – Laser time-out 25% (min) 35% (typical) 60% (max) – Response sensitivity/threshold		
Delay to alarm/fault	10 seconds (default); 2 seconds (min); 30 seconds (max)			10 seconds (default); 2 seconds (min); 30 seconds (max)		
USER FEATURES						
Alignment aid/tool	Laser			Laser		
System status indication	Red LED = fire (control unit); Amber LED = fault (control unit) Green LED = system OK (control unit)			Red LED = fire (control unit); Amber LED = fault (control unit) Green LED = system OK (control unit)		
ENVIRONMENTAL SPECIFICATIONS						
Operating temperature	UL -20°C to +55°C (-4°F to +131°F) EN54 -10°C to +55°C (+14°F to +131°F)		IP rating	IP54 (Controller)	-10°C to +55°C (+14°F to +131°F) IP rating	
Storage temperature	-40°C to +85°C (-40°F to +185°F)		Housing flammability rating	UL94 V2 PC	-40°C to +85°C (-40°F to +185°F)	
Relative humidity (non-condensing)	0 to 93%				0 to 93% Housing flammability rating	
					UL94 V2 PC	
OPTICAL SPECIFICATIONS						
Fault level / rapid obscuration ( $\Delta \leq 2$ seconds)	≥85%			≥85%		
Maximum angular alignment range	±10° – Receiver and Transmitter			±10° – Receiver and Transmitter		
Maximum angular misalignment	±0.7° – Transmitter. ±2.5° – Receiver			±0.7° – Transmitter. ±2.5° – Receiver		
Maximum angular misalignment of Reflector (Prism)	N/A			N/A		

## PROTECTING LIVES WORLDWIDE

### ■ ZOO NEGARA, MALAYSIA

Zoo Negara's panda enclosure in Kuala Lumpur has installed FFE's Fireray beam smoke detectors in the panda enclosure and viewing area. The detectors are designed to trigger a smoke spill fan in the event of a fire. Because of the atrium's high ceiling, conventional smoke detectors were not suitable for this installation, a sprinkler system was also not an option due to their slower response times. Beam detectors were therefore best for this installation due to their extremely fast response times.

### ■ VELODROME, UK

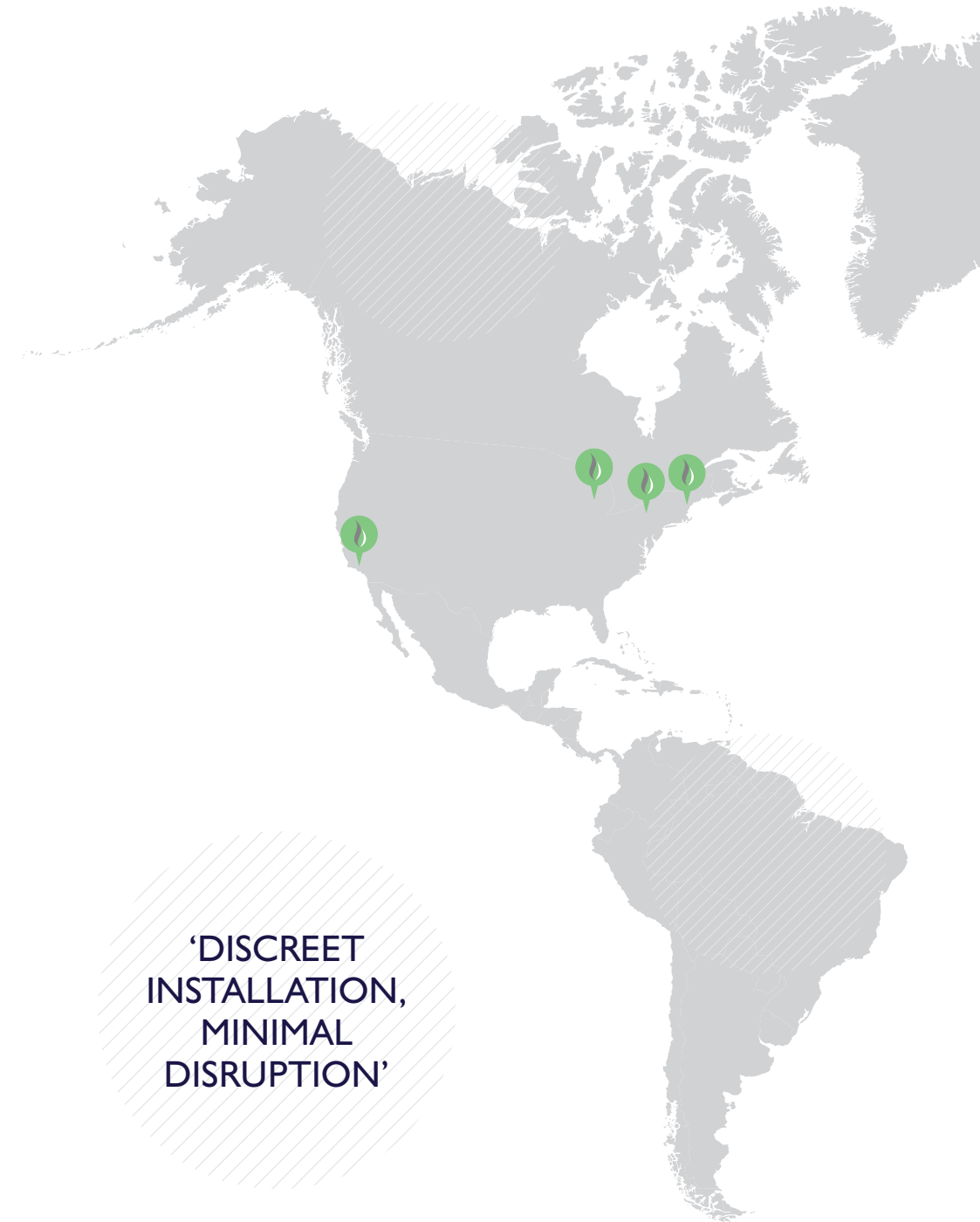
Derby Velodrome has been fitted with nine Fireray 5000 advanced infra-red beam smoke detectors as part of its fire protection system. They provide wide area detection and are used when it is impractical, inappropriate or not cost effective to use traditional point-type detectors. They are ideally suited to large arenas with high ceilings, such as the Derby Velodrome, as they enable coverage of a large area at minimal cost.

### ■ COPENHAGEN HOSPITAL, DENMARK

One of Copenhagen's leading hospitals has been fitted with four Fireray 5000 advanced infra-red beam smoke detectors as part of its fire protection system. Serving nearly half a million patients, the hospital has grown in size over the last few years. The detectors were selected as the ideal choice to protect the building in the most efficient way.

### ■ WINDSOR CASTLE, UK

The longest-occupied palace in Europe and one of the most visited tourist attraction in England is being protected by 18 of FFE's Fireray beam smoke detectors. They are installed throughout the palace, from banqueting rooms, atria and kitchens to hallways, stairwells and staff accommodation areas.



'DISCREET  
INSTALLATION,  
MINIMAL  
DISRUPTION'

## INSTALLATIONS

- **Barclays Center Arena, USA**
- **Van Andel Arena, USA**
- **Hyundai Corporate Offices, USA**
- **Detroit Wastewater Treatment Plant, USA**
- **Worcester Cathedral, UK**
- **Portsmouth Historic Dockyard, UK**
- **National Portrait Gallery, UK**
- **Blenheim Place, Oxfordshire, UK**
- **Pathé Arena, The Netherlands**
- **Vienna City Hall, Austria**
- **Budapest Central Wastewater Treatment Plant, Hungary**
- **Parliament of Republic of Macedonia, Macedonia**
- **Wroclaw Airport, Poland**
- **Socotab Tobacco Warehouse, Bulgaria**
- **Doha International Airport, Qatar**
- **Dubai International Airport, Dubai, UAE**
- **WASSIT power station, Iran**
- **Shree Swaminarayan Temple, Malaysia**
- **Longtan Hydropower Station, China**

Company logo to go here

Supporting copy to go here

Company address line one  
Company address line two  
Company address line three  
Postcode

Telephone no: +44 (0) 0000 000 000  
Email: email@companyname.com

[www.webaddress.com](http://www.webaddress.com)