

Beam
detection
others look
up to



THE WORLDS MOST TRUSTED BEAM

FFE Ltd. A global innovator in the design and
manufacture of world class fire detection solutions.

FFEUS.COM



FIRERAY®

BEAM DETECTION

OTHERS LOOK

UP TO

FIRERAY®

WE STRIVE FOR

EXCELLENCE IN

EVERYTHING

WE DO

FFE is a global innovator in the design and manufacture of world class fire detection solutions. Trusted by installers, distributors and organisations for over 40 years, our Talentum®, Fireray®, Aviation Fire Extinguishers and Vibration Switches help to protect high value buildings and assets. Our commitment to fire detection and prevention led to the development of the world's most trusted smoke detection beam, Fireray® the favoured choice of many of the world's leading smoke detection distributors and installers. Our Talentum® range was developed to provide early detection for industries where fast flame detection is critical.

Our solutions are designed and manufactured in the UK and our customers are fully supported by our team of fire protection experts. We provide consultancy, training and full technical support, so that you always have peace of mind in knowing that your assets are given the best possible protection from fire.

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of flame detectors

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WHY USE A BEAM SMOKE DETECTOR?

Beam Smoke Detectors are the wide area smoke detection technology of choice. With a coverage of up to 23,580 sq. ft. (2,191 m²). 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 are

selling 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 40 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

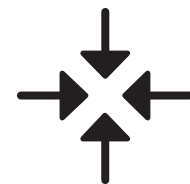
The Low level controller allows remote access for maintenance and testing when beams are situated high-up

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

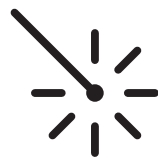
An additional condensation heater prevents condensation forming on optical surfaces for areas with changing temperature and humidity

Considerable savings in installation and cost



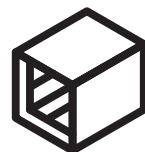
ONE MINUTE AUTO ALIGNMENT™

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



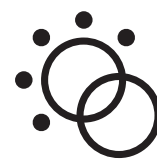
INTERGRATED VISABLE LASER

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

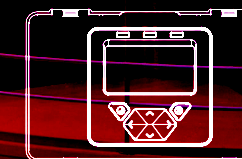
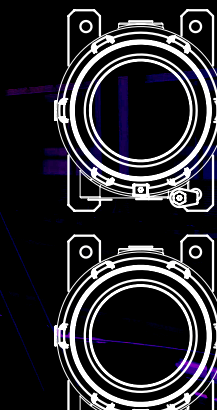
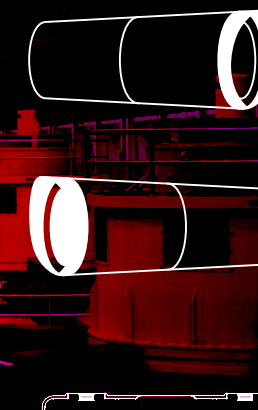
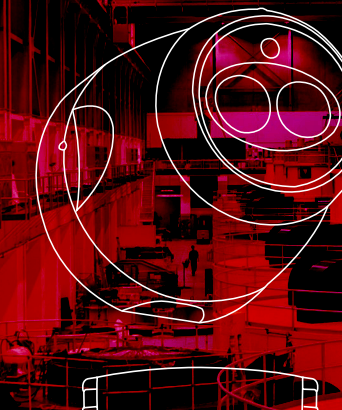
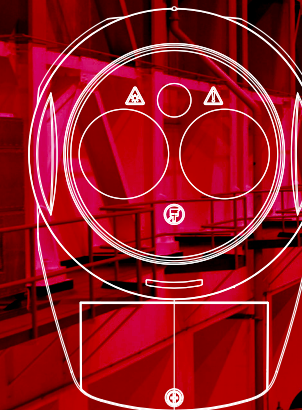
See page 12 for complete range of technical specification

Fireray® One

Fireray® 5000

Fireray® 3000

Fireray® 3000 Exd

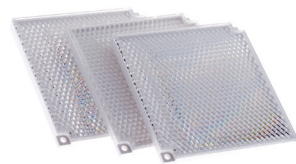


Fireray® One The Beam Smoke Detector that aligns itself

PN: 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:

- One Minute 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



A single prism is included for ranges up to 164ft (50m).

For operating ranges up to 164ft to 394ft (50m to 120m) add the Long Range Kit.

PN: 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 393ft (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

PN:5000-103

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.

A single prism is included for ranges up to 164ft (50m).

For operating ranges up to 164ft to 328ft (50m to 100m) add the Long Range Kit.

PN: 1010-000



Efficient
and effective
wide-area fire
detection

KEY FEATURES

- Allows for 2 detectors per system controller
- Each detector configurable from 26.5 ft to 328ft (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



Fireray® 3000 End-to-End Beam Smoke Detector

PN: 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 16.5ft to 393ft (5m to 120m) configurable per set of detectors
- Light Cancellation Technology™
- Integral laser alignment in receiver
- 2-wire interface between controller and receiver
- Allows for 2 sets of detectors per system controller
- 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

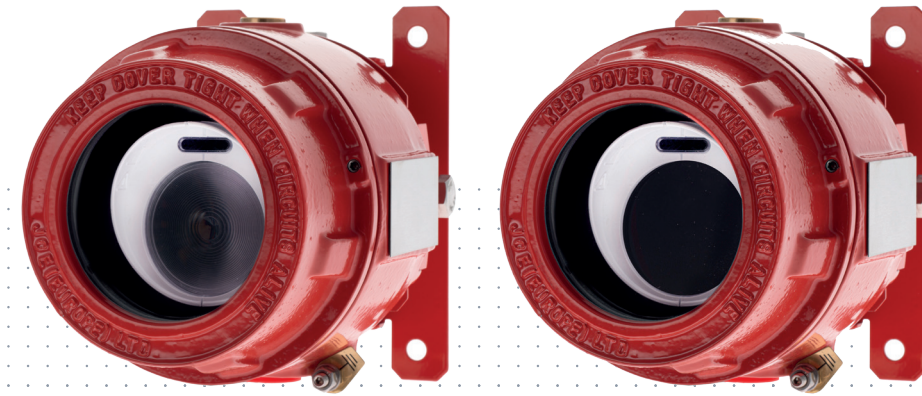
- Education and Heritage Establishments
- Industrial Units and Warehousing
- Aviation Hangers
- Glass Atria in Hotels and Retail Complexes
- Chemical Processing and Storage Facilities
- Tight/Narrow spaces

Fireray® 3000 Exd End-To-End Explosive Proof Beam Smoke Detector

PN: 3000-115

The Fireray® 3000 Exd is ideally suited for the protection of large areas, with potentially explosive atmospheres, against smoking fires. The Fireray® 3000 Exd 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 Exd 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 Exd
- Allows for 2 sets of detectors per system controller
- Separate fire and fault relays per detector
- Range 16ft to 262ft (10m to 80m) 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
- Ordinance Stores
- Flour mills
- Dusty Environments
- Aviation Hangers
- Chemical Processing and Storage Facilities



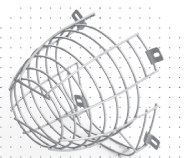
FIRERAY® ACCESSORIES

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:

To protect,
clean and
secure

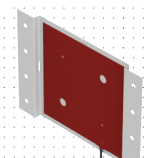
Fireray® One



Protective Wire Cage
PN: 1100-000



Fireray One Back Box
PN: 1260-000



Prism Heater
PN: 1090-000



Anti-Condensation Heater
PN: 1060-000

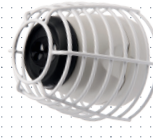


Reflective Detector Adjustment Bracket
PN: 1170-000

Fireray® 5000



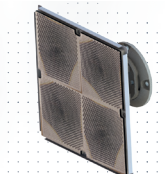
Adjustment Bracket
PN: 5000-201



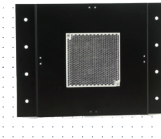
Protective Wire Cage
PN: 1000-018



Anti-Condensation Heater
PN: 5000-204



4 Reflector Adjustment Bracket
1 prism PN: 1040-000
4 prisms PN: 1050-000

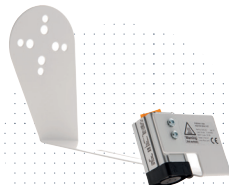


Reflector Wall Bracket
White PN: 1030-000
Black PN: 1031-000

Fireray® 3000



Detector Pack
PN: 3000-016



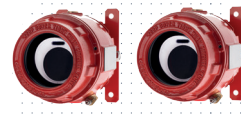
Heater Bracket
PN: 3000-204



Adjustment Bracket
PN: 3000-201



Protective Wire Cage
PN: 1000-019



Detector Pack
PN: 3000-026

Fireray® 3000 Exd

Fireray® Product Range

Our Fireray® range is the perfect solution for protecting open areas with high ceilings such as auditoriums, warehouses, airports and historical buildings. With its easy first-fix system, and knockout features, it allows for both ease of wiring and quick alignment.

Fireray® One:

The beam detector that aligns itself

Fireray® 5000:

Motorised reflective auto-aligning beam smoke detector

Fireray® 3000:

End-to-End beam smoke detector

Fireray® 3000 Exd:

End-to-End explosive proof beam smoke detector

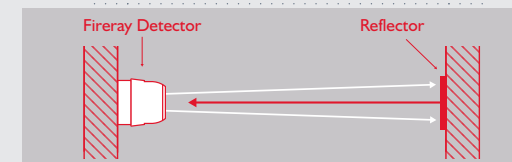
End-to-End:

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.





Fireray Range Specifications	Fireray® One 6010-300	Fireray® 5000 5000-103 (50m)	Fireray® 3000 3000-103	Fireray® 3000 Exd 3000-115
MECHANICAL SPECIFICATION				
Dimensions	5.12"(W) x 7.12"(H) x 5.27"(D) / 130(W) x 181(H) x 134(D)mm - Detector 3.93"(W) x 3.93"(H) x 0.35"(D) / 100(W) x 100(H) x 9(D)mm - Single reflector 7.87"(W) x 7.87(H) x 0.35"(D) / 200(W) x 200(H) x 9(D)mm- Four reflectors	5.27"(W) x 5.15"(H) x 5.27"(D) / 134(W) x 131(H) x 134(D)mm - Detector 7.95"(W) x 9"(H) x 3.42"(D) / 202(W) x 230(H) x 87(D)mm - System Controller 7.87"(W) x 7.87"(H) x 0.35"(D) / 100(W) x 100(H) x 10(D)mm - Reflector	8"(W) x 4.88"(H) x 2.81"(D) / 203(W) x 124(H) x 71.5(D)mm - System Controller 3.07"(W) x 3.03"(H) x 6.33"(D) / 78(W) x 77(H) x 161(D)mm - Transmitter & Receiver	8"(W) x 4.88"(H) x 2.81"(D) / 203(W) x 124(H) x 73.50(D)mm - System Controller 5.86"(W) x 6.77"(H) x 7.48"(D) / 149(W) x 172(H) x 190(D)mm - Transmitter & Receiver
Weight	1.54lbs (0.7kg) - Detector. 0.22lbs (0.1kg) - Reflector	2.20lbs (1.0kg) - System controller. 1.10lbs (0.5kg) - Detector. 0.22lbs (0.1kg) - Reflector	1.33lbs (606g) - System controller. 0.45lbs (207g) - Transmitter & Receiver	1.33lbs (606g) - System controller. 8.1lbs (3.7kg) - Transmitter & Receiver Including brackets
Operation Range	16ft to 164ft (5m to 50m) from Detector to Reflector (Prism) 16ft to 393ft (50m to 120m) with Reflective Long Range Kit	26ft to 164ft (8m to 50m) from Detector to Reflector with the 5000-103 164ft to 328ft (50m to 100m) from the Detector to Reflector with the Long Range Kit PN: 1010-000	16ft to 393ft (5m to 120m) from Transmitter and Receiver	32ft to 262ft (10m to 80m) from Transmitter and Receiver
Beam path clearance	3.2ft (1m) in diameter from centre line between Detector and Reflector (Prism)	3.2ft (1m) in diameter from centre line between Detector and Reflector (Prism)	1.96ft (60cm) in diameter from centre line between Transmitter and Receiver	1.96ft (60cm) in diameter from centre line between Transmitter and Receiver
Optical wavelength – smoke detection	850nm	850nm	850nm	850nm
Signal output	Individual Alarm and Fault relays (VFCO) 2A @ 30 VDC	Individual Alarm and Fault relays (VFCO) 2A @ 30 VDC	Individual Alarm and Fault relays (VFCO) 2A @ 30 VDC	Individual Alarm and Fault relays (VFCO) 2A @ 30 VDC
Cable gauge and type	2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) System compatible with fireproof and non-fireproof cable meeting local installation standards	2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) 328ft (100m) in Length from System Controller to Detector	2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) 328ft (100m) in Length from System Controller to Detector	2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) 328ft (100m) 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 0.83" (21mm) diameter	4 x ½" (20mm) cable gland knock-outs on system controller	4 x ½" (20mm) cable gland knock-outs on system controller	3 x ½" (20mm) cable gland knock-outs on system controller
ELECTRICAL SPECIFICATION				
Operating voltage	14 to 36 VDC	14 to 36 VDC	12 to 36 VDC +/- 10%	12 to 36 VDC +/- 10%
Operating current all operational modes	5mA to 33mA (constant)	5mA to 6mA for 1 Detector. 7.5mA to 8.5mA for 2 Detectors 35mA to 37mA for alignment modes with 1 or 2 Detectors	14mA (constant) with 1 or 2 Receivers 8mA per Transmitter	14mA (constant) with 1 or 2 Receivers 8mA per Transmitter
Contact Voltage - Fire & Fault relays (VFCO)	VFCO, 2A at 30 VDC resistive	VFCO, 2A at 30 VDC resistive	VFCO 2A at 30 VDC resistive	VFCO, 2A at 30 VDC resistive
Contact Current - Fire & Fault relays (VFCO)	10mA at 20mV (min) 1A at 30 VDC (max)	10mA at 20mV (min) 1A at 30 VDC (max)	10mA at 20mV (min) 1A at 30 VDC (max)	10mA at 20mV (min) 1A at 30 VDC (max)
PROGRAMMABLE USER SETTINGS				
Alarm response threshold levels	25% / 1.25dB – Fastest response to smoke. 35% / 1.87dB – Default value 55% / 3.46dB – High immunity to false alarms, slow response to smoke 85% / 8.23dB – Highest immunity to false alarms, slowest response to smoke Configured via the integrated user interface	35% (default) 10% / 0.45dB (min) - Fastest response to smoke 60% / 3.98dB (max) - Highest immunity to false alarms, slowest response to smoke	1 min (min) 5 min (typical) 59 min (max) - Laser Time-out 35% (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 for momentary partial obstruction of the beam path	10 seconds (default). 2 seconds (min). 30 seconds (max)	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	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	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	-4°F to 131°F (-20°C to +55°C)	14°F to 185°F (-10°C to +55°C)	-4°F to 131°F (UL) (-20°C to +55°C) 14°F to 185°F (EN54) (-10°C to +55°C)	14°F to 185°F (-10°C to +55°C)
Storage temperature	-40°F to 185°F (-40°C to +85°C)	-40°F to 185°F (-40°C to +85°C)	-40°F to 185°F (-40°C to +85°C)	-40°F to 185°F (-40°C to +85°C)
Relative humidity (non-condensing)	0 to 93%	0 to 93%	0 to 93%	0 to 93%
IP rating	IP55	IP54	IP54 (Controller)	IP54 (Controller). IP66 (Transmitter/Receiver)
Housing flammability rating:	UL94 V0	UL94 V0	UL94 V2 PC	UL94 V2 PC
OPTICAL SPECIFICATIONS				
Fault level / Rapid obscuration (Δ ≤ 2 seconds)	≥85%	≥87%	≥85%	≥85%
Maximum angular alignment Range	±4.5° - Detector (±70° with adjustment bracket accessory)	±3.5° - Detector	±10° - Receiver and Transmitter	±10° - Receiver and Transmitter
Maximum angular misalignment	±0.5° - Detector	±0.41° - Detector	±0.7° - Transmitter. ±2.5° - Receiver	±0.7° - Transmitter. ±2.5° - Receiver
Maximum angular misalignment of Reflector (Prism)	±5°	±5°	N/A	N/A

SPECIALIST APPLICATIONS

As manufacturers of Beam Smoke Detectors technology, our experts can provide you with fire protection technology for any type of application. In addition to our design consultation service, we can also provide you with a complete technical design service, along with drawings to assist you with your installation.

HELP FROM FFE

As additional support, we provide comprehensive training programmes for the Fireray® range, tailored to suit your own specific requirements. We are happy to train individuals or your entire installation team.

Contact us at:
[e technical@ffeus.com](mailto:technical@ffeus.com)

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

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

TECHNICAL SUPPORT

FFE Ltd is proud to be able to offer a high level of Technical Support to all our customers, from distributors to end-users. We can advise with any aspect of our Fireray® Optical Beam Smoke Detectors and Talentum® Flame Detectors.

Our Technical Support includes:

Reviewing and advising on correct installation and alignment of FFE Beam Detectors and Flame Detectors.

Troubleshooting problems during the operation of Beam and Flame Detectors after correct installation and alignment. Advising the attributes of various types of Beam and Flame Detectors to suit different applications. Explaining good installation and operation practice for Beam and Flame Detectors. On a proactive level, Fireray® or Talentum® product training is available to any FFE customer including installers, distributors and end users and can be arranged with your FFE Sales Manager or by contacting FFE directly. Each training course is modular and the duration can be agreed according to the customer's requirements.

These personalised training courses can be targeted to all levels; Directors, Sales & Marketing or Technical, and are tailored for mixed audiences too. They include information on Technical Support as well as Troubleshooting for advanced users.

In the UK, courses are typically delivered at the FFE Headquarters in Hitchin, Herts. For other venues, including overseas, please discuss with your Sales Manager.

Technical Support

e technical@ffeuk.com

Certificates



OHSAS 18001:2017 OHS 580021

RMA Request

Should you need to return a product to us, please email warranty@ffeuk.com

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