

Beam
detection
others look
up to



fireray[®]



THE WORLD'S MOST TRUSTED BEAM

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

FFEUK.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 50 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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WHY USE A BEAM SMOKE DETECTOR?

Beam Smoke Detectors are the wide area smoke detection technology of choice. With a coverage of up to 1800m². 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?

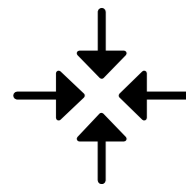
Lifetime, cost, accuracy and reliability are considerations that are crucial to making the right product choice. Our commitment to these factors drives customer decisions to choose Fireray. All of our products are manufactured in the UK. As a result, we have full control of the products we deliver

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

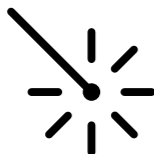
Fireray protects many different buildings and establishments around the world which include:

- Derby Velodrome
- Windsor Castle
- Doha Airport



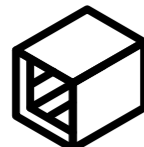
AUTO - ALIGNMENT

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

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

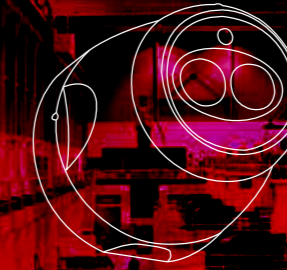
FIRERAY BEAM SMOKE DETECTORS

See page 12 for complete range of technical specification

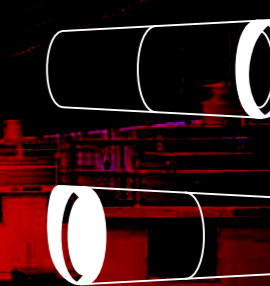
Fireray One



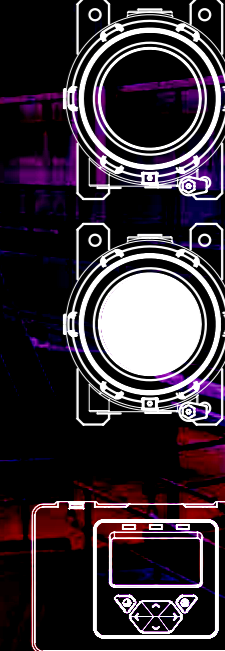
Fireray 5000



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. IO10-000



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.



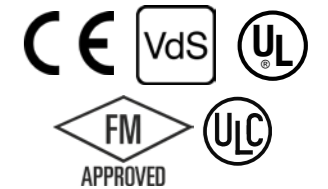
KEY FEATURES

- 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

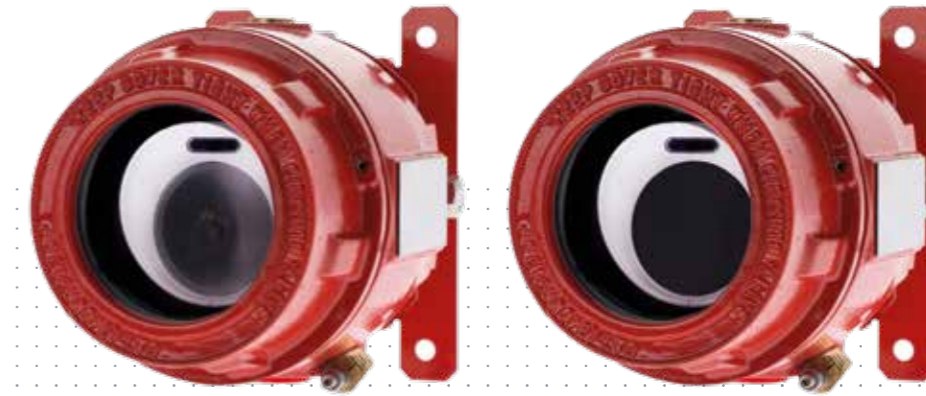
Fireray 3000 Ex d

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: I2
- Light Cancellation Technology™

IDEAL APPLICATIONS

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

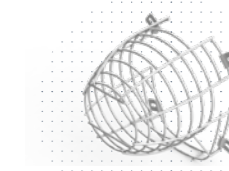


**FIRERAY
ACCESSORIES**

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:

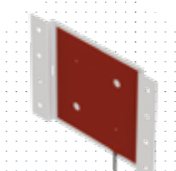
Fireray One



Protective Cage:
1100-000



Back Box: 1260-000



Prism Heater:
1090-000



Anti-Condensation Heater: 1060-000

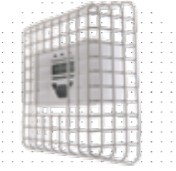
Fireray 3000



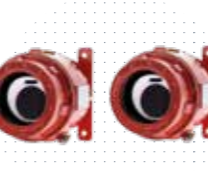
Flush Mount Plate:
3000-202



Heater Bracket:
3000-204



Protective Wire Cage:
1000-019



Detector Pack:
3000-026

All Fireray detectors

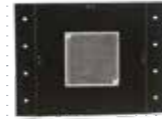


Reflective Detector Adjustment Bracket:
1170-000

Reflector accessories



4 Reflector Adjustment Bracket:
1050-000



Reflector Wall Bracket:
1031-000

Fireray 5000



Protective Wire Cage:
1000-018



Anti-Condensation Heater: 5000-204

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

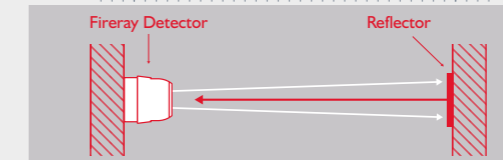
End-to-End:

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 [EN]: 6010-100 [UL]: 6010-300	Fireray 5000 [EN] (50m): 5000-101, (100m): 5000-102; [NF] (50m): 5000-112, (100m): 5000-113; [UL](50m): 5000-103, (100m): 5000-104
MECHANICAL SPECIFICATION		
Dimensions	Detector: 130(w) x 181(h) x 134(d)mm; Single reflector: 100(w) x 100(h) x 9(d)mm Four reflectors: 200(w) x 200(h) x 9(d)mm	Detector: 134(w) x 131(h) x 134(d)mm – System Controller: 202(w) x 230(h) x 87(d)mm Reflector: 100(w) x 100(h) x 10(d)mm
Weight	Detector: 0.7kg; Reflector: 0.1kg	System controller: 1.0kg – Detector: 0.5kg – Reflector: 0.1kg
Operation range	5m to 50m from Detector to Reflector (Prism) 50m to 120m with Reflective Long Range Kit	8m to 50m from Detector to Reflector with the 5000-101 50m to 100m from the Detector to Reflector with the 5000-102
Beam path clearance	1m in diameter from centre line between Detector and Reflector (Prism)	1m in diameter from centre line between Detector and Reflector (Prism)
Optical wavelength – smoke detection	850nm	850nm
Signal output	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) 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 21mm diameter	7 x 20mm 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)	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
Contact voltage – fire & fault relays (VFCO)	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)
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
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	-10°C to +55°C
Storage temperature	-40°C to +85°C	-40°C to +85°C
Relative humidity (non-condensing)	0 to 93%	0 to 93%
IP rating	IP55	IP54
Housing flammability rating	UL94 V0	UL94 V0
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)	$\pm 5^\circ$	$\pm 5^\circ$

	Fireray 3000 [EN]: 3000-101 [UL]: 3000-103	Fireray 3000 Ex d (Ex d): 3000-115
MECHANICAL SPECIFICATION		
System Controller: 203(w) x 124(h) x 71.5(d)mm Transmitter & Receiver: 78(w) x 77(h) x 161(d)mm		System Controller: 203(w) x 124(h) x 73.50(d)mm Transmitter & Receiver: 149(w) x 172(h) x 190(d)mm
System controller: 606g; Transmitter & Receiver: 207g 5m to 120m from Transmitter and Receiver		System controller: 606g; Transmitter & Receiver Including brackets: 3.7kg 10m to 80m from Transmitter and Receiver
60cm in diameter from centre line between Transmitter and Receiver 850nm		60cm in diameter from centre line between Transmitter and Receiver 850nm
Individual alarm and fault relays (VFCO) 2A @ 30 VDC 2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) 100m in length from System Controller to Detector		Individual alarm and fault relays (VFCO) 2A @ 30 VDC 2 core, dedicated, 0.5 to 1.6mm (24 to 14 AWG) 100m in Length from System Controller to Detector
10 x 20mm cable gland knock-outs on system controller		10 x 20mm cable gland knock-outs on system controller
ELECTRICAL SPECIFICATION		
12 to 36 VDC +/- 10%		12 to 36 VDC +/- 10%
14mA (constant) with 1 or 2 Receivers 8mA per Transmitter		14mA (constant) with 1 or 2 Receivers 8mA per Transmitter
VFCO 2A at 30 VDC resistive 10mA at 20mV (min) 1A at 30 VDC (max)		VFCO, 2A at 30 VDC resistive 10mA at 20mV (min) 1A at 30 VDC (max)
PROGRAMMABLE USER SETTINGS		
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
10 seconds (default); 2 seconds (min); 30 seconds (max)		10 seconds (default); 2 seconds (min); 30 seconds (max)
USER FEATURES		
Laser		Laser
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		
-20°C to +55°C (UL). -10°C to +55°C (EN54) -40°C to +85°C		-10°C to +55°C -40°C to +85°C
0 to 93%		0 to 93%
IP54 (Controller)		IP54 (Controller). IP66 (Transmitter/Receiver)
UL94 V2 PC		UL94 V2 PC
OPTICAL SPECIFICATIONS		
$\geq 85\%$		$\geq 85\%$
$\pm 10^\circ$ – Receiver and Transmitter		$\pm 10^\circ$ – Receiver and Transmitter
$\pm 0.7^\circ$ – Transmitter. $\pm 2.5^\circ$ – Receiver		$\pm 0.7^\circ$ – Transmitter. $\pm 2.5^\circ$ – Receiver
N/A		N/A

SPECIALIST APPLICATIONS

As manufacturers of beam smoke detector technology, our experts can provide you with fire protection technology for any type of application.

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@ffeuk.com](mailto:technical@ffeuk.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.

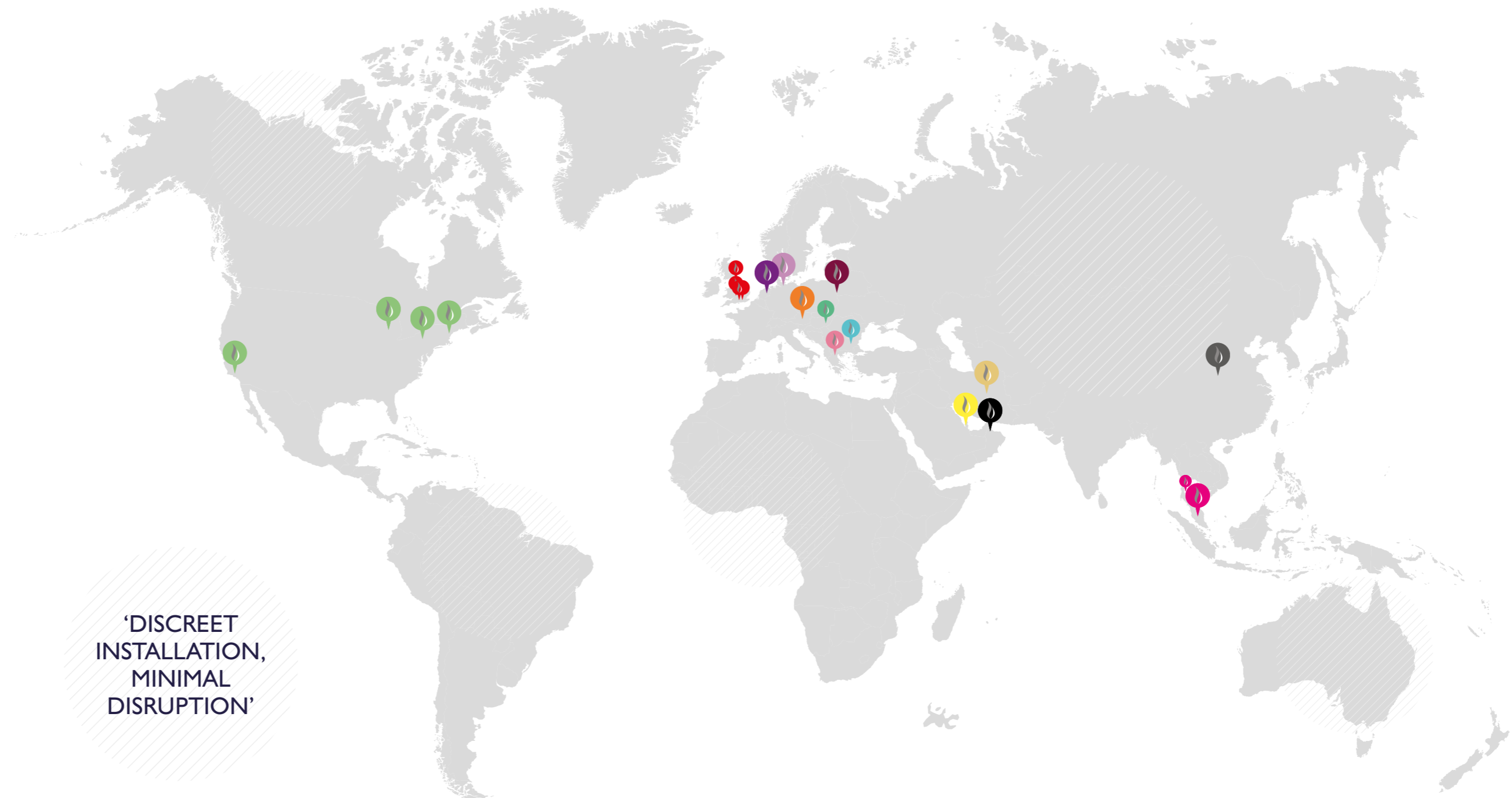
■ COPENHAGEN HOSPITAL, DENMARK

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

- 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
- Wrocław 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

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.

Certificates



OHSAS 18001:2017 OHS 580021

RMA Request

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



A Halma company

Worldwide Technical Support
e technical@ffeuk.com

US Sales and Distribution
FFE Limited
1455 Jamike Ave Ste 200
Erlanger
KY 41018-3147
USA

t +1 859 957 1570
e america@ffeus.com
www.ffeus.com

Head Office HQ
FFE Limited
9 Hunting Gate
Hitchin, Hertfordshire
SG4 0TJ
England

t +44 (0) 1462 444 740
e sales@ffeuk.com
www.ffeuk.com

WORLDWIDE OFFICES



India Sales Office
Bangalore
India