BOSCH

FRAY-ONE-EN Linear beam detector, standalone

VdS

▶ Standalone product with integrated control unit

▶ Auto-Alignment with motorized detector head

▶ Light Cancellation Technology

▶ Building Movement Tracking

▶ Detection range up to 120 m

The FRAY-ONE-EN is an easy to mount and cost-effective linear beam detector. It covers distances between 5 m and 120 m. A reflective prism allows for the accurate detection of smoke particles within the given distance range.
For ranges between 5 m and 50 m, one prism is sufficient. For ranges between 50 m and 120 m, four prisms are required. The additional prisms are included in the FRAY5000-LR-KIT.
Key application areas are large halls such as historical buildings, churches, museums, shopping centers, factory halls, warehouses, etc.
The FRAY-ONE-EN is suitable for use in areas where point-type detectors are not effective.

Functions

Detection performance

- Alignment method: Laser assisted, Auto-Alignment. Manual alignment - optional setting
- 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 IIIa <5 mW
- Dynamic Beam Phasing: Allows beam detectors to be mounted facing each other with the reflectors in the middle. Eliminates false alarms caused by crosstalk between beams

- Signal output: Individual Alarm and Fault relays (VFCO) 0.5 A @ 30 VDC

Programmable user settings

- Alarm response threshold levels:
    - 25% (1.25 dB) - Fastest response to smoke (EN 54-12 approved)
    - 35% (1.87 dB) - Default value (EN 54-12 approved)
    - 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
- Delay to alarm: 10 seconds, for momentary partial obstruction of the beam path
- Delay to fault: 10 seconds, for momentary obstruction of the beam path

User features

- Integrated user interface: Alignment mode switch, alignment directional buttons and configuration switches for alarm response threshold
- Alignment status indication: 2 Green LEDs and 1 Yellow LED
- System status indication:
    - Normal operation - Green LED flashing every 10 seconds
    - Alarm condition - Red LED flashing every 10 seconds
    - Fault condition - Yellow LED flashing every 10 seconds for obscuration or every 5 seconds for contamination

- Cleaning: Flat front face with enclosed optics. Cleaning the optics does not affect alignment.

Design parameters

- Beam path clearance: 1 m in diameter from center line between detector and reflector
- Detector location: Within the ceiling jet flow (top 10% of the floor to ceiling height) unless otherwise stipulated

Field wiring

- Cable gauge and type:
    - 2 core, dedicated, 0.5 to 1.6 mm
    - System compatible with fireproof and non-fireproof cable meeting local installation standards
- Cable entry:
    - 3 knock-out locations capable of accepting M20, 12.7 mm or 19 mm glands
    - 4 drill-out locations capable of accepting glands up to 21 mm diameter

Certifications and approvals

Region	Regulatory compliance/quality marks	
Europe	CPR	EU-CPR 2831-CPR-F2237
Germany	VdS	G 218070 FRAY-ONE-EN
Europe	CE	EU_CE FRAY-ONE-EN
Belgium	BOSEC	B-9223-FD-K1066

Parts included

Quantity	Component
1	FRAY-ONE-EN base
1	FRAY-ONE-EN detector head
1	Reflector
1	Short range mask

Technical specifications

Electrical

Auxiliary current (mA)	4.5 mA – 5.5 mA
Auxiliary current - Alignment modes (mA)	31 mA - 35 mA
Operating voltage (VDC)	14 VDC – 36 VDC

Environmental

Operating relative humidity, non-condensing (%)	0% – 93%

Operating temperature (℃)	-20 ℃ – 55 ℃
Storage temperature (℃)	-40 ℃ – 85 ℃
Weather rating (IEC 60529)	IP55

Mechanical

Weight (kg)	0.70 kg
Weight reflector (kg)	0.1 kg
Color in RAL	RAL 9016 Traffic white
Dimension (H x W x D) (mm)	181 mm x 130 mm x 134 mm
Dimension reflector (H x W x D) (mm)	Up to 50 m separation distance - 1 prism: 100 mm x 100 mm x 9 mm Up to 120 m separation distance - 4 prisms: Four reflectors 200 mm x 200 mm x 9 mm
LED color	Red; Yellow; Green
Material	Plastic

Optical

Fault level / Rapid obscuration (Δ ≤ 2 seconds)	≥85%
Maximum angular alignment of reflective detector	±4.5° (±70° with adjustment bracket accessory)
Maximum angular misalignment of reflective detector	±0.5°
Maximum angular misalignment of reflector	±5.0°

Ordering information

FRAY-ONE-EN Linear beam detector, standalone
Reflective linear beam detector with one prism, range 5 m - 120 m
Order number **FRAY-ONE-EN | F.01U.400.533**

Accessories

FRAY5000-BR Universal bracket
Universal bracket
Order number **FRAY5000-BR | F.01U.098.240**

FRAY5000-1PRISM Prism plate, 1 prism
prism plate for 1 prism, for use with universal bracket FRAY5000-BR
Order number **FRAY5000-1PRISM | F.01U.098.242**

FRAY5000-4PRISM Prism plate, 4 prisms
prism plate for 4 prisms, for use with universal bracket FRAY5000-BR
Order number **FRAY5000-4PRISM | F.01U.098.241**

FRAY5000-LR-KIT Extension kit, long-range
3 additional prisms
Order number **FRAY5000-LR-KIT | F.01U.083.264**