Infra Red Flame Detection

S161Series

Solar Blind Flame Detector

Ex e to replace UV

Your replacement for existing UV Detectors

General

The S161 Infra-Red Flame Detector is specifically designed to replace installed UV units using existing Ex d wiring, making replacement highly cost effective.

The S161 Infra-Red Flame Detector uses the same optical and electronic module as the S111, S121 and S131 detectors which have been installed worldwide with universal success. It therefore, has identical performance characteristics making it completely blind to solar radiation whether direct, reflected or modulated.

In order to meet the demands of arduous environments, such as chemical plants and off-shore oil and gas platforms, the S161 detector has been packaged in a tough G.R.P. antistatic housing with abrasion resistant sapphire windows and a protection rating of IP67, to give a high level of protection against water ingress under sustained high wind driven conditions.

Operation in the Infra-Red spectrum around 4.4 microns, ensures that the detector will not be blinded by thick smoke and will be tolerant to very dirty environments.

Two 20mm cable entries and two 4-way terminal blocks are provided, which eliminate the need for a local junction box, reducing installation costs.

When using the existing Ex d wiring associated with UV detectors, the use of BASEEFA certified glands rated Ex e is mandatory.

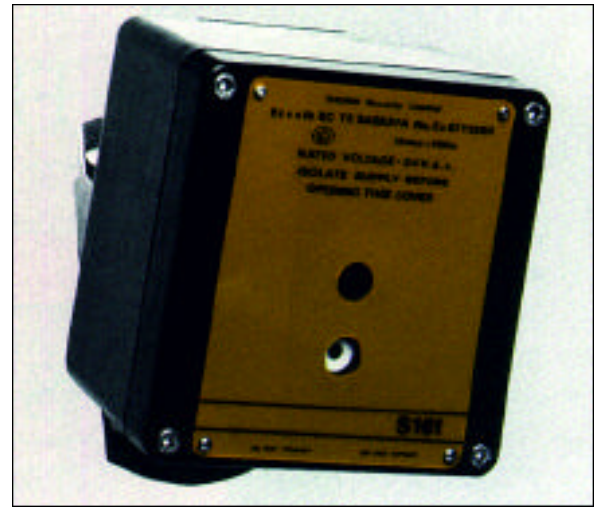
Use in Hazardous Areas

The S161 is designed for use with circuits meeting the requirements of BS5345 for Ex e or Ex d apparatus. The power available in such circuits is not limited to a safe (non-incendiary) level and the S161 incorporates an interface module which limits the power available to the detector's module.

The detector module itself is intrinsically safe permitting a classification of Ex e s ib IIC T5 for the complete assembly. No. Ex 87Y3550 for use in hazardous zones 1 & 2 where group IIC gases or lesser hazards are present.

Benefits

- No false alarms from welding, sunlight or high intensity lights
- Low maintenance costs
- Quick response to hydrocarbon fires
- Long range performance



S161 Detector

Features

- Completely solar blind for use outdoors
- Tough G.R.P. anti static housing to IP67.
- Rugged stainless steel 316 mounting bracket
- High sensitivity to hydrocarbon fires in dirty environments
- Not affected by smoke, dust and grime
- Single sensor and unique optical filtering system
- Two 20mm cable entries for internal connections
- High immunity to RFI/EMI fields
- The use of micropower electronics allows the detectors to operate in conventional 2 wire detection circuits
- Built in response indicator
- BASEEFA approved
- Four spare terminals to facilitate safe termination of unused conductors

Bracket

The bracket is manufactured from stainless steel 316 and provides a degree of axial and azimuth adjustment.

Axial rotation 50°
Azimuth elevation 70°

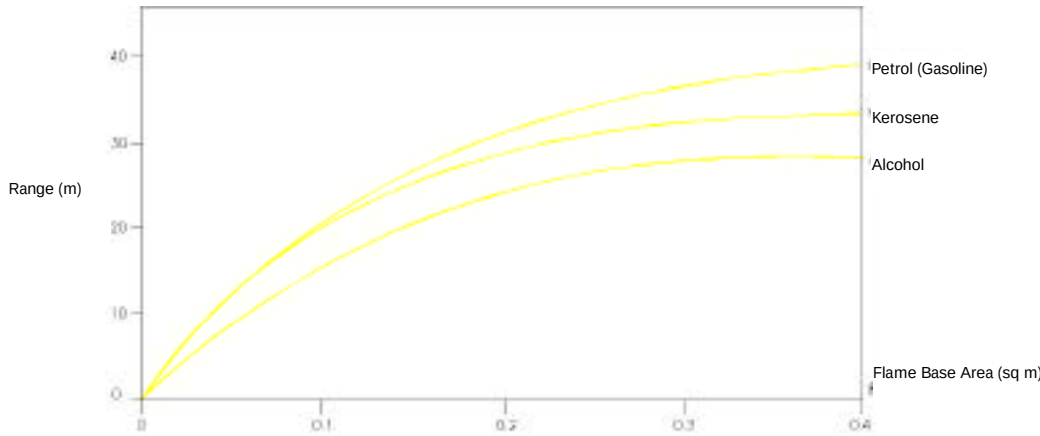
A location template is provided to ensure correct installation of mounting bolts and the mounting surface must be flat and free from vibration.

Once adjusted, it is locked in position using two locking bolts ensuring a high degree of positional stability.

The S161 mounting bracket is supplied as a separate component as detectors are sometimes installed directly onto bulkheads.

Performance

The detector is designed to respond in a minimum time of three seconds, this being the optimum signal processing time constant of the circuitry. Varying sizes of fire will be detected at given distances in the same time and the graph shows the typical ranges for the detection of the flames, for given areas of liquid fuels.



Note: These results are based upon the fire reaching equilibrium rates of combustion in still atmosphere.

Typical Response

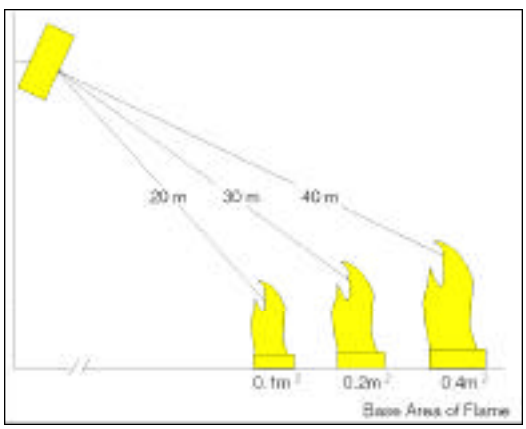
The S161 detector, by virtue of its construction and rejection of spurious radiation, is suitable for use both indoors and outdoors in a wide range of applications. It will detect a 0.1m² petrol fire at 20m on the centre line, with approximately 10 seconds. A 0.4m² fire is detected at 40m. Installation arrangements are specified for the environment and risk situation.

Directional Sensitivity and Range

The polar diagram shows that the maximum detector sensitivities lie on the detector central axes. The variation of relative ranges with angle of incidence up to the maximum is shown.

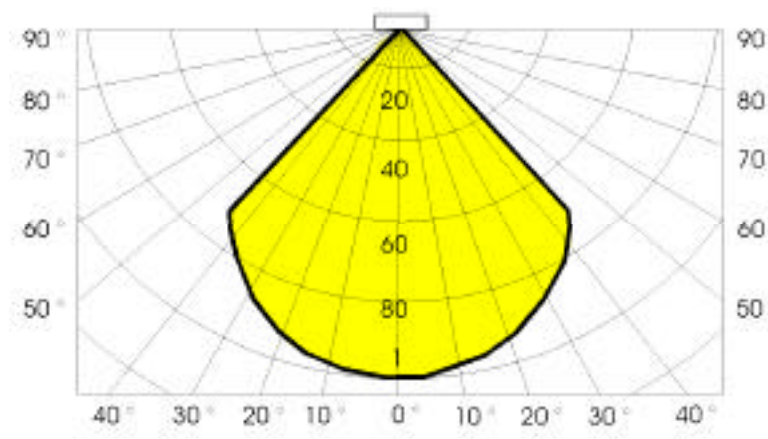
The range of the detectors will vary with the type of fuel as indicated above.

Centre line range against petrol flames.



Relative range as function of angle of incidence.

DETECTOR



Technical Data

Mechanical

Material:	G.R.P. Anti static, black
Dimensions mm:	160mmW x 160mmL x 90mmD
Weight (including bracket):	2.85Kg
Gland Entry:	2 x 20mm
Metal Parts: (external & internal)	Bright Stainless Steel 316 to BS 1449 Pt 2 316 S 161

Electrical

Supply Voltage:	18.0V to 24.0 V dc (polarity conscious)
Quiescent Current:	100µ A max. at 20V dc
Alarm Current:	2-wire, latching. 720 ohm in series with typically 4V switched across supply
Alarm Indication:	Red LED
Connections:	Two 4 way 2.5mm heavy duty terminal blocks

Environmental

Operational Temp Range:	-30°C (-40°C with reduced range) to + 70°C
Storage Temperature:	-40°C to + 80°C
Relative Humidity:	95% (100% intermittent)
Enclosure to:	IP67
Hazardous Area:	BASEEFA Ex e s ib IIC T5. Suitable for use in zones 1 and 2 where group IIC gases or lesser hazards are sometimes present in explosive concentrations.
Certificate:	UK approved by BASEEFA Certificate No. EX87Y 3550

Performance

Range:	0.1m² petrol at 20m 0.4m² petrol at 40m etc.
Field of View:	85° min. inclusive
Response Time:	3 secs min, 5-10 secs typical

Mounting Bracket

Weight (Kg):	1.1
Construction:	Bright Stainless Seel 316 to BS 1449 Pt2 316 S161
Axial Rotation:	50°
Evaluation:	70°
Fixing Details:	M8 bolts (location template provided)