IR² Flame Detector

Product overview

Product	**IR² Flame Detector**
Part No.	**55000-060**
Product	**Adjustable mounting bracket**
Part No.	**29600-203**
Product	**Weathershield**
Part No.	**29600-206**

Product information

The IR² Flame Detector is designed to protect areas where open flaming fires may be expected.

Features

The IR² Flame Detector is sensitive to low-frequency, flickering infra-red (IR) radiation emitted by flames during combustion. Since it responds to flickering radiation the IR² Flame Detector can operate even if the lens is contaminated by a layer of oil, dust, water-vapour or ice.

The IR² Flame Detector is set to respond to low-frequency radiation at 1 to 15 Hz (1 to 2.7 µm) in order to detect all flickering flames including those invisible to the naked eye, e.g. those emitted by hydrogen fires.

The IR² Flame Detector has two IR sensors that respond to different IR wavelengths in order to discriminate between flames and spurious sources of radiation. False alarms due to such factors as flickering lighting are avoided by a combination of filters and signal processing techniques.

Electrical considerations

The IR² Flame Detector signals an alarm state by switching an alarm latch on, increasing the current drawn from the supply from 8 mA to 28mA and closing the contacts of a fire relay RL1. These signals from the detector are recognised by the control panel as an alarm signal.

Technical Data

All data is supplied subject to change without notice. Specifications are typical at 24V, 23°C and 50% RH unless otherwise stated.

Supply voltage	*14 - 28 V dc*
Supply current	*See DIL Switch settings*
Power up time	*2 seconds max.*
Test signal voltage	*14 - 28V dc*
Relay contact ratings	
Current	*1.0 A max.*
Voltage	*50 V dc max.*
Power (resistive loads only)	*30 W max.*
Range of view	*Class 1 - 0.1 m^2 n-heptane at 25 m*
Sensitivity setting (see EN 54-10)	*Class 3 - 0.1 m^2 n-heptane at 12 m*
Sensitivity	*High = Class1* *Low = Class 3*
Field of view	*90^0 cone*
Spectral response	*IR 0.75 to 2.7 µm*
Operating temperature	*-10°C to 55°C*
Storage temperature	*-20°C to 65°C*
Humidity (no condensing or icing)	*0% to 95% RH*
Standards and approvals	*LCPB, CPD*
IP rating	*IP65*
Dimensions	*108 mm wide x 142 mm high x 82 mm depth*
Weight	*2 kg*
Materials	*Die-cast zinc alloy (ZA12)*
Colour	*Blue*
Cable gland entries	*2 x 20 mm*

The alarm current also illuminates the detector integral red LED. A fault relay RL2 closes its volt-free contacts if the detector has no faults and the supply voltage to the detector is the correct value.

To ensure correct operation of the detector the control panel must be arranged to supply a maximum of 30 Volts dc and a minimum of 14 Volts dc in normal operation.

To restore the detector to quiescent condition after indicating a fire it is necessary to extinguish any flames in view and interrupt the electrical supply to the detector for a minimum of one second.

Removing the detector front cover provides access to the detector terminals and configuration DIL switch.

The detector is normally configured to latch into an alarm state when a flame is in view. The configuration DIL switch within the detector can be set to place the detector into a non-latching mode. The detector can then also produce proportional analogue current alarm signals, i.e. 8 - 28 mA or 4 - 20 mA. In non-latching mode the detector only produces an alarm signal when a flame is in view, resetting itself to normal a few seconds after the flame has gone.

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Selectable options	DIL switch settings	
Relay RL2 function	1	1
RL2 off	0	0
RL2 off	1	1
IR fire or pre-alarm	0	1
Fault (Energised if OK)	1 ~ 1	
Alarm currents [RL1 Flame Relay]	3	4
3.9 mA RL1 Only, 4/8/14 mA RL2 and RL1	0	0
4 - 20 mA, 4/20 mA, No relays /or	1	0
8 - 20 mA, 8/20 mA and relays - Proportional	0	1
8/28 mA and relays	1~1	
Output mode	5	
Non-latching (-)	0	
Latching (/)	~1	
Response time	6	7
Slowest ≈ 8 s	0	0
Medium ≈ 4 s	1~ 0	
Fast ≈ 2 s	0	1
Very fast ≈ 1s	1	1
Sensitivity	8	
Low	0	
High	~1	

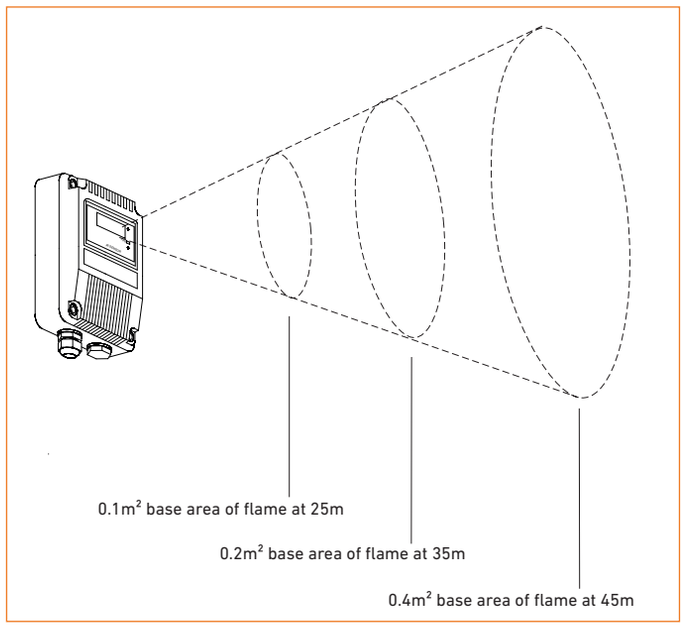

Figure 1: Flame detection as a function of flame size and distance from the detector

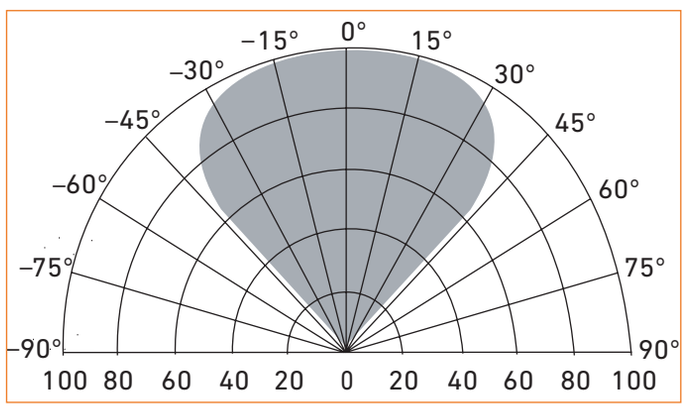

Figure 2: Angle of view of the flame detector