

# XP95 DUAL IR FLAME DETECTOR

## FUNCTION

The XP95 Dual Infra-red (IR) Flame Detector is designed to protect areas where open flaming fires may be expected.

## FEATURES

The XP95 Dual IR Flame Detector is sensitive to low-frequency, flickering infra-red radiation emitted by flames during combustion. Since it responds to *flickering* radiation the XP95 Dual IR Flame Detector can operate even if the lens is contaminated by a layer of oil, dust, water-vapour or ice.

The XP95 Dual Flame Detector is set to respond to low-frequency radiation at 1 or 15kHz (1 to 2.7 $\mu$ m) in order to detect all flickering flames, including those invisible to the naked eye, eg, those emitted by hydrogen fires.

The XP95 Dual IR 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 sunlight are avoided by a combination of filters and signal processing techniques.

## PROTOCOL COMPATIBILITY

The XP95 Flame Detector operates only with control equipment using the Apollo XP95 or Discovery digital protocol (or any development of it).



**Part no:** 55000-280

## ELECTRICAL CONSIDERATIONS

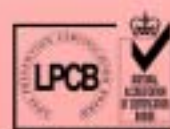
The XP95 Dual IR Flame Detector is loop powered and needs no external supply. A remote LED alarm indicator may be connected to the flame detector.

## PROTOCOL USAGE

The analogue value of the flame detector in quiescent state is 25.



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The analogue value returned by the XP95 Dual IR Flame Detector increases proportionally with flame flicker and duration. A count of 55—the alarm threshold—corresponds to a flame with an average flicker frequency of 10Hz for 1.5 seconds. The analogue value is limited to 64.

### PROTOCOL BIT USAGE

*The control equipment transmits a 10-bit message to the XP95 Flame Detector.*

The **output (or forward command) bits** from the control panel have the following function:

When **output bit 2** is set to logic 1 on two or more consecutive cycles, the integral LED is illuminated.

When **output bit 1** is set to logic 1 on two or more consecutive cycles, a self-test is activated, resulting in an analogue value of 64 being transmitted to the control panel.

When **output bit 0** is set to logic 1 on two or more consecutive cycles, the remote LED is illuminated.

The **seven bits** which are then transmitted by the control equipment correspond to the **address (as set on the DIL switch)** of the device to be polled.

*A response message is then sent by the XP95 Flame Detector to the control equipment:*

The **interrupt bit** is always set to logic '0'.

The **analogue value bits** are set to correspond with the status of the XP95 Flame Detector. An analogue value of 25 represents a normal condition.

The **input bits** are used to confirm the operation of the corresponding output bits.

The **type bits** are used to identify the type of unit responding. The type code of the XP95 Flame Detector is set to 101 10 (bits 2, 1, 0, 4, 3). **Bits 2, 1 and 0** of the type code are sent immediately after the input bits. **Bits 4 and 3** are sent in the XP95 protocol extension.

The XP95 Flame Detector sends **seven bits** of data to confirm its **address** before placing **one bit** of data to indicate that the device is using the XP95 digital protocol (**XP95 flag**).

The **alarm flag** is set by the XP95 Flame Detector when the analogue value exceeds 55.

The next two bits returned by the device are **bits 4 and 3** of the **type code**.

The next **five bits** are the **second block of analogue value data bits** and are not used by the XP95 Flame Detector.

The **parity bit** is set to '1' or '0' such that the device will always respond with an even number of data bits.

The final **seven bits** are used to transmit the **alarm address** if the alarm flag has been set.

The XP95 Dual IR Flame Detector is non-latching, so that the analogue value will decrease to 25, once the flame is no longer detected.

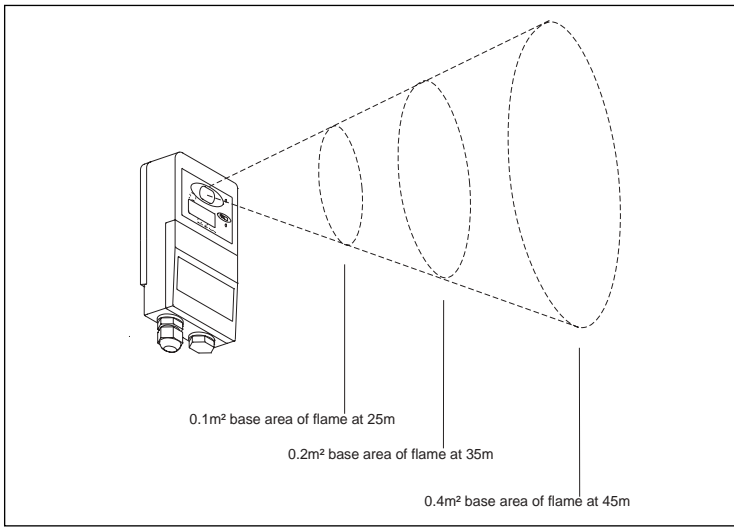
The XP95 Dual IR Flame Detector is able to place an alarm flag on the line in the same circumstances and in the same way as the smoke detectors.

Analogue values in the range 26 to 54 hold for only 3 seconds from the last flame sighting.

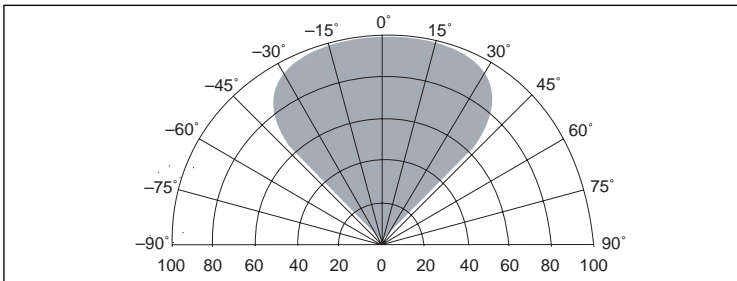
### Technical Data

Supply voltage	17–28V DC
Quiescent current	2.2mA
Maximum power-up time	4 seconds
Remote LED current	Limited to 2m
Remote LED voltage	0V DC to supply
Range of view (EN54-10)	0.1m <sup>2</sup> n-heptane at 25m 0.2m <sup>2</sup> n-heptane at 35m 0.4m <sup>2</sup> n-heptane at 45m
Field of view	90° cone
Spectral response	1.0 to 2.7µm
Sensitivity	High—Class 1 Low—Class 3
Operating temperature	–10° C to +55° C
Storage temperature	–20° C to +65° C
Relative humidity	95%, non-condensing
IP rating	65
Housing material	die-cast zinc alloy
Housing colour	blue
Dimensions	See Fig 4
Weight	1kg
Cable gland entries	2x20mm

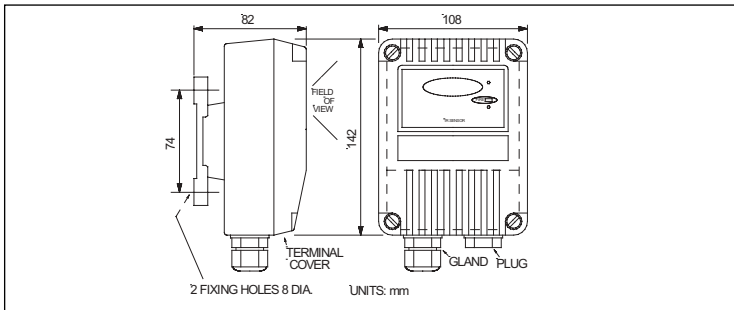




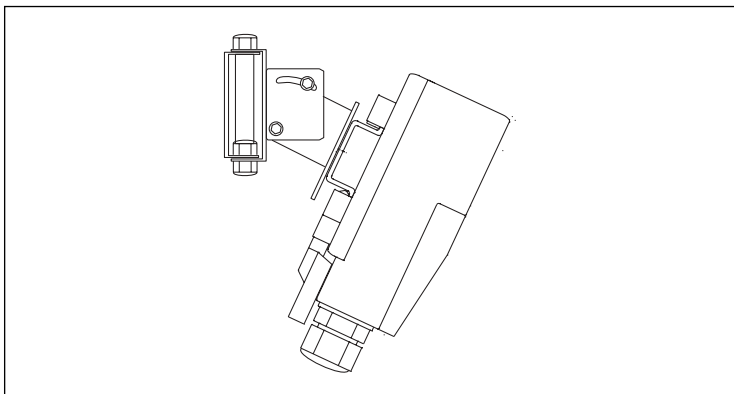
**Fig 1** Flame detection as a function of flame size and distance from detector



**Fig 2** Range of view of XP95 Flame Detector



**Fig 3** Front and side view to show dimensions of flame detector



**Fig 4** XP95 Dual IR Flame Detector on stainless steel 2 axis adjustable mounting bracket (Part no 29600-203)