Product Information & News

INTELLIGENT REFLECTIVE BEAM DETECTOR

FUNCTION

The intelligent reflective beam detector is a compact detector for detecting smoke in large open areas such as atria, warehouses, theatres and churches. It also has a built-in 20D negative bi-directional short circuit isolator.

The transmitter and receiver form a single unit mounted to a wall of the building. A reflector which returns the IR beam from the transmitter to the receiver is mounted on the opposite wall. In the event of smoke partially obscuring the light an imbalance between the transmitted and received light will occur. On interrogation by the control panel the detector will then transmit an alarm value.

The intelligent reflective beam detector is an addition to the Apollo range and not a replacement for the XP95 loop-powered beam detector.

Part nos *55000-268 (5–50m)*
55000-273 (50–100m)

FEATURES

The intelligent reflective beam detector is supplied in two versions: one for use at distances of 5–50m from detector to reflector and the other for distances of 50–100m.

The detector is factory set to a beam obscuration of 35% which is the best setting for most factories and warehouses. The setting can be changed to 25% for offices and clean areas such as theatres or to 50% for hostile areas such as mills or foundries.

The detector compensates automatically for gradual contamination of the lenses in order to avoid false alarms.

The detector is non-latching and resets 30 seconds after an alarm event ceases and in 3 seconds after the removal of a fault.

A termination backbox, part no 29600-241, is available. This allows easy first fixing of the cabling and terminations to the intelligent reflective beam detector. The termination backbox can be surface or flush mounted.

apollo FIRE DETECTORS LIMITED

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ELECTRICAL CONSIDERATIONS

The intelligent reflective beam detector is loop-powered and requires no external power supply.

Each beam detector draws approximatley 5mA in quiescent and 9mA in alarm from the analogue addressable loop and, unless proven by calculation*, it is recommended that no more than ten beam detectors be powered from each loop.

**A loop voltage drop calculation program, known as 'Loop Calculator', has been developed by Apollo for use by system designers and is available as a free download from the Apollo website (www.apollo-fire.co.uk)*

PROTOCOL USAGE

Input/Output bits

The reflective beam detector responds to output bits from the protocol as follows:

When **output bit 2** is set to logic 1 on two or more consecutive pollings the red alarm LED is illuminated.

When **output bit 1** is set to logic 1 on two or more consecutive pollings the beam detector carries out a self-test. If the test is successful, an analogue value of 64 is transmitted to the control panel. If a value less than 54 is transmitted, the self test has failed and the beam detector should be inspected.

Output bit 0 is not used.

Analogue value	Significance
0	Microprocessor fault
1	Sensor fault
2	Prism (reflector) targeting mode
3	Alignment mode
4	General fault warning
5	'Signal High' fault
6	Contamination compensation limit reached
20	Alignment drift negative
25	Detector normal
30	Alignment drift positive
32	Contamination compensation level low (40%)
33	Contamination compensation level medium (60%)
34	Contamination compensation level high (80%)
45–54	Pre–Alarm values (see ***Table 2*** above)
64	Alarm

Table 1

Analogue values

The beam detector returns a pre-set analogue value corresponding to its status. These values are defined in ***Table 1*** below.

The beam detector may return a pre-alarm value before a full alarm condition occurs. The analogue value depends on the smoke density and the set obscuration level (described '**FEATURES**' overleaf) as shown in ***Table 2***.

Analogue value returned	Actual obscuration at set obscuration level of		
	25%	35%	50%
45	16	23	33
46	16	26	34
47	17	27	35
48	18	28	36
49	19	29	38
50	20	30	40
51	21	31	42
52	22	32	44
53	23	33	46
54	24	34	48

Table 2 *Percentage of obscuration indicated by pre-alarm*

Input bits

Input bits 2, 1 and 0 reflect the status of the corresponding output bit.

Type Code

The type code of the reflective beam detector is 101 01 (bits 210 43).

LED fault indication

A fault is indicated by the amber LED flashing once a second.

If the drift compensation function has reached its limit the amber LED flashes once every 2 seconds. The detector will continue to function but maintenance procedures should be carried out at the earliest opportunity.

PANEL COMPATIBILITY

Please note, not all control panels support this beam detector. Please contact Apollo's Technical Sales department for further information.

FURTHER INFORMATION

The intelligent reflective beam detector must be installed in accordance with the installation guide, PP2146. This guide contains more information on the following topics:

- **system design**
- **installing beam detectors**
- **targeting, aligning and commissioning the reflective beam detector**
- **troubleshooting**

This guide is available on request or can be downloaded from the Apollo website, www. apollo-fire.co.uk. If further assistance is required, please contact the Technical Sales department.

Technical Data

Part no 55000-268	5–50 metres (detector to reflector)
Part no 55000-273	50–100 metres (detector to reflector)
Part no 29600-241	Termination backbox
Supply Voltage	17–28V DC (plus protocol)
Supply Current	
Prism targeting mode	17mA
Alignment mode	17mA
Run mode (quiescent)	5mA
Alarm (LED illuminated)	9mA
Fault (LED illuminated)	5mA
Power down reset time	>5 seconds
Alarm thresholds	
25%	2.50dB
35%	3.74dB
50%	6.02dB
Operating temperature	–20°C to 55°C
Dimensions (beam detector)	
Width	130mm
Height	210mm
Depth	120mm
Weight	670g
IP rating	50
Dimensions (termination backbox)	
Width	130mm
Height	190mm
Depth	50mm