

DOCUMENT CONTROL NUMBER /

S161 INFRA-RED FLAME DETECTOR

INSTALLATION

1. GENERAL

The S161 detector is supplied with the option of two adjustable mounting brackets for fixing to a convenient rigid surface. All electrical connections are made via the two 4-way terminal blocks and an end of line terminal block inside the detector housing. Two 20mm cable entries are provided. Guidance on mounting and wiring the detectors is given below. A cable gland plate, secured inside the housing by metal Ex d [flame-proof] cable glands, provides cable screen continuity.

2. MOUNTING A DETECTOR

The location of each detector should have been determined at the system design stage according to the principles detailed in publication 01A-04-D5 and marked on the site plan. The detector may be mounted on a horizontal or vertical surface. The actual mounting position must, however, be decided during installation, and in choosing the position the principles following together with the original system requirements should be followed.

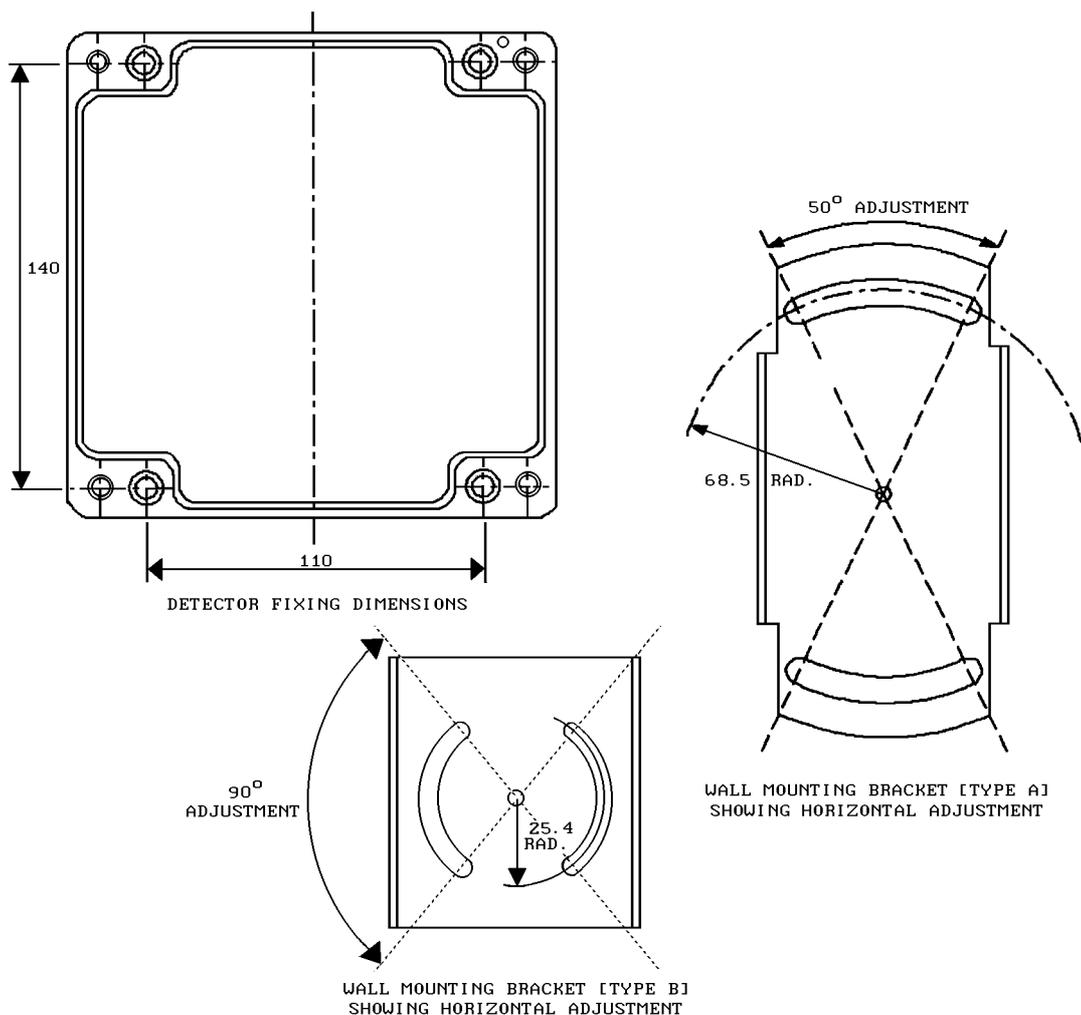


Fig. 1 Fixing Dimensions

2.1 CHOICE OF MOUNTING POSITION

The following points must be observed when choosing the mounting position.

- a) The detector must be positioned such that a clear line of sight is provided to all parts of the risk area. Roof trusses, pipework, supporting columns etc. in front of the detector can cause significant shadowing and should be avoided.
- b) If supervision of an area immediately below the detector is required it is essential that the angle between the detector and the horizontal is not less than 40° .
- c) The detector should not be sited in a position where it will be continually subjected to water drenching.
- d) In outdoor installations in areas of high solar radiation, some form of sunshade is recommended to prevent excess heating of the detector.
- e) The detector should not be sited in a position in which it will be subject to severe icing.
- f) The detector must be mounted on a stable structure which is readily and safely accessible for maintenance staff.
- g) The detector may be secured directly to the fixing surface with two or more M6 bolts, studs or screws at the fixing centres shown in Fig. 1.

The surface chosen for the mounting should be flat over the area of the bracket or detector to ensure a stable fixing.

The S161 may be operated in any position but the actual mounting point must obviously be chosen to allow sufficient clearance for adjustment of the angle and must also allow space for the cable assembly. A clearance of 200mm, in all directions, from the fixing point will normally be sufficient to allow the full range of adjustment. Fig. 2 refers.

2.2 MOUNTING BRACKET TYPE A STOCKCODED

The detector mounting bracket is to be secured with two M8 bolts, studs or screws at the fixing centres shown in Fig. 1. A drilling template is provided to allow optimum selection of the fixing centres and the 2.5mm diameter, 3mm deep pivot hole.

2.3 MOUNTING BRACKET TYPE B NOT STOCKCODED

The detector mounting bracket is to be secured with two M6 bolts, studs or screws at the fixing centres shown in Fig. 1. The radius of the fixing slots is 25.4 [1inch] for easy fixing to existing brackets/mounting points.

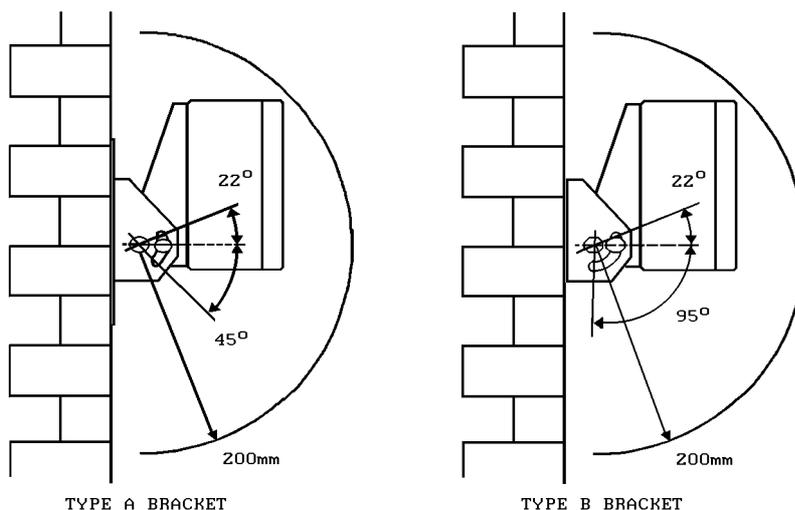
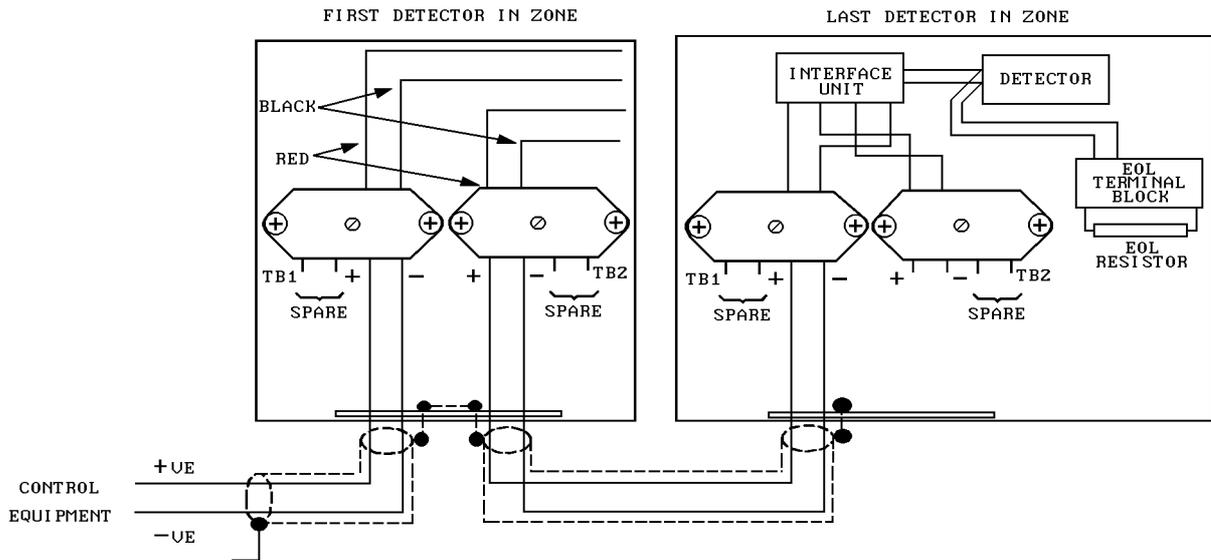


Fig. 2 Clearance Required for Full Adjustment


Fig. 3 Detector Wiring

3. DETECTOR WIRING

Detectors will normally be connected in zones which may contain up to ten detectors. All detectors on a zone are connected in parallel and some form of end-of-line device should be used to monitor line continuity.

The wiring between the detectors and control equipment must provide the required degree of mechanical protection but allow the detector alignment to be adjusted to suit the area to be protected.

The detector is fitted with two 4-way terminal blocks giving separate terminal blocks for incoming and outgoing lines. The two 20mm cable entries provided permit convenient connection of the incoming and outgoing lines using metal flameproof cable glands with continuity of cable screens provided by the cable gland plate.

To ensure no moisture ingress to the detector during the time between Installation and Commissioning tighten the four hexagonal socket cover retaining screws to torque of 3.5 - 4.5N.m [2.6 - 3.3lb.ft].

The End of Line Resistor [0.6Watt minimum, 2k4 minimum, metal film 5% not smaller than 2.5mm diameter and 10mm long, actual resistor value dependent on controller] should be fitted at the EOL Terminal Block of the last detector situated in the right hand side of the cover as shown in Fig. 3.

3.1 RECOMMENDED CABLE TYPES

The cable selected for interconnection to the control equipment should meet the requirements of BS5345: Parts 1 & 6 or relevant approval bodies. Cables should not normally have a cross sectional area of less than 1mm² for solid conductors or 0.5mm² for stranded conductors. The terminal block accepts cables of up to 4mm² cross sectional area.

4. INITIAL WIRING CHECK

After installing the wiring as detailed above, and before connecting any detectors or end-of-line devices, the following tests should be carried out.

4.1 TESTS ON WIRING IN HAZARDOUS AREAS

When carrying out tests on wiring in hazardous areas it is essential that an INTRINSICALLY SAFE INSULATION TESTER is used. Further guidance on testing systems in hazardous areas can be found in BS5345 Part 1.

4.2 CONTINUITY TESTS

To check continuity proceed as follows:

- Short together the bare tails of the + to + and - to - at each detector.
- Short together the pair at the end furthest from the control equipment.
- Using an ohmmeter set to its lowest range, check the loop resistance at the control equipment end.
- If the reading obtained is less than 50 ohms record the reading obtained and proceed to Para 4.3.
- If the reading obtained is greater than 50 ohms locate and rectify continuity faults by quartering the system.

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4.3 INSULATION TESTS

To check the insulation proceed as follows:

- a) Using an ohmeter set to its highest range, check the resistance between the circuit and earth.
- b) If the reading obtained is greater than 1 meg-ohm record the reading and proceed to c), otherwise locate and rectify the earth fault.
- c) Remove the short-circuit at the end furthest from the control equipment.
- d) Measure the resistance between the zone conductors.
- e) If the reading obtained is greater than 1 meg-ohm record the reading, otherwise locate and rectify the insulation fault.
- f) Replace the cover.

PY/ljc

11th January 1994