IR FLAME DETECTOR
RIV-601P/F

DESCRIPTION

The IR flame detector model RIV-601P/F is an electronic optical fire detecting device which responds immediately to the thermal infrared radiation emitted by fire and is tuned to the flickering frequency of the flame to ignore sun and lamp light.

It is enclosed in a cast aluminium **watertight case** with **IP66** grade protection, which allows to withstand dusty environment and rain.
An **IP66 explosion-proof enclosure** is provided for the RIV-601P/FA model.

IR flame detector model RIV-601P/F with watertight enclosure

Nominal 24Vdc input power is required, with wide span allowed, and two different outputs are provided: one heavy changeover relay contact, and one NPN transistor open collector. Both outputs go into alarm state after a pre-set time delay, but they come back to the stand-by state as soon as the fire stops. The delay time is normally set to 5 seconds, but can be set in the range from 1 to 10 seconds.
A protection against the 24Vdc power voltage inversion is provided.
Sensitivity is 2-3% of the distance, that means a 10cm flame at 5m distance, or a 20cm flame at 10m.
The field of view is a 90°cone, but beyond 90° the detector can see with reduced sensitivity, and can also see behind obstacles due to reflections.
A small dust build-up over the detector window does not decrease too much the detector ability, since thermal infrared radiation is little attenuated by dust, much less than light is. Therefore a frequent window cleaning is not required.
Also smoke does not blind the detector, which is operating well with fires in heavy smoke.

It is equipped with the **"teletest"** device for remote monitoring of detector.
This device simulates a flame inside the detector so as to stimulate a sensor response like to a real fire.
The teletest device includes an incandescent bulb and a modulator circuit that generates a pulsating thermal infrared radiation in front of the sensor.
The teletest can be manually controlled from a remote site, or it can be automatic and continuously running.
The detector response to the teletest is a short alarm pulse of half a second every 4 seconds during all the period the teletest is operated. These short pulses can be recognised by the control panel as a state of live stand-by, since the real fire alarm is continuous. If pulses stop, this means a detector failure or the power voltage is off.
A front red LED lamp will signal the detector stand-by or alarm state.

IR flame detector RIV-601P/FA with explosion-proof enclosure
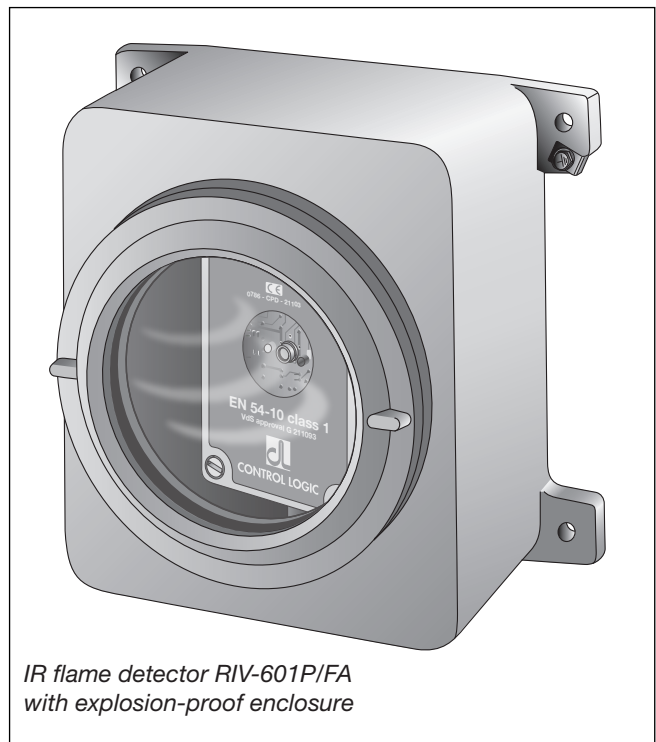
Normally the detector is installed vertically, centred on the area to be covered, so as the 90° cone field of view can be fully used. The ideal height is 0.7 the side of the square area.
For instance, if side is 10m, then height is 7m and maximum viewing distance is 10m.
If ceiling is lower, corners are the ideal alternative.
In this case the height can be one third of the side.
Direct viewing of sun and bright lamps must be avoided, since this can blind the detector.
In outdoor applications a small hood or roof will help.
Vibrating or oscillating mounting must be avoided, since this can be a cause of false alarms.

IR FLAME DETECTOR MODEL RIV-601P/F
watertight enclosure
ELECTRICAL AND GENERAL SPECIFICATIONS

- Cast aluminium watertight case, **IP66** grade protection (dust and water spray). Explosion-proof available with the model RIV-601P/FA.
- Power voltage 24Vdc +/-15% (20 to 28V).
- Current consumption 13mA in stand-by (0.25W), 50mA in alarm state (max 1.5W including 20mA for test).
- Anti-inversion diode on +24V and + Test (**T+**).
- Spectral response infrared 1 to 3 micron.
- Tuned to flame pulsing frequency (flickering).
- Field of view 90° cone. The detector can see outside the field of view or indirectly by reflection, or even through smoke, with a reduced sensitivity.
- Sensitivity 2-3% of the distance, which means that the smallest detectable flame size is 2-3% of the distance. For example, at 10m the smallest flame size is 20cm. Typical covering figure is 400 square meters at 20m distance.
- Alarm delay time set to 5 sec. Adjustable from 1 to 10 sec. Reset is automatic. The detector turns on 5 seconds after the flame is started. As soon as the flame stops, the detector returns off.
- Front LED lamp lights in alarm. It blinks shortly during the teletest.
- Output on changeover SPDT relay contact rated 1A 30Vdc. Other output on NPN transistor open collector rated 50mA 24Vdc, which goes low in alarm.
- Built-in "Teletest" device for the remote monitoring of the detector ability. Needs a 24Vdc +/-15% 20mA. Built-in modulator. When the teletest circuit is powered, a small incandescent bulb placed near the sensor starts pulsing so as to simulate a flame. During the test the detector turns on for half a second every 4 seconds. The teletest can be remotely controlled from the control panel, or can be wired for a continuous and automatic operation. Control panel must recognise the short test pulses from the alarm state, which is steady on.
- Electrical wiring on 7 way terminal block, plug-in type, 10 pitch, wire size 2,5mm^2 max (a max 1,5mm^2 wire gauge is suggested to avoid a difficult wire entry into the screw terminal).
- Cable entry fitting M25 internal diameter 13-18mm.
- Operating temperature   -20 +60°C.
- Storage temperature   -40 +85°C.
- Dimensions 180x85x65(H) mm (mounting holes 125x70mm).
- Weight 700 grams.
- Manufactured in compliance with the essential requirements of the CPR Regulation.
- EN 54-10 class 1 approved, EC-certificate of conformity no. 0786-CPD-21103, VdS Approval no. G 211093.

Note:

1. It is highly recommended to connect the enclosure base to a good ground line using the **ground** terminal provided inside up on the left. Then, connect base and cover using the ground terminal provided inside the base lower on the right and the ground terminal provided inside the cover lower on the left.

   All the ground terminals are signaled by ground label. ⏚
   The ground connection must be done using a yellow-green conductor and a M4 double crimp eyelet.
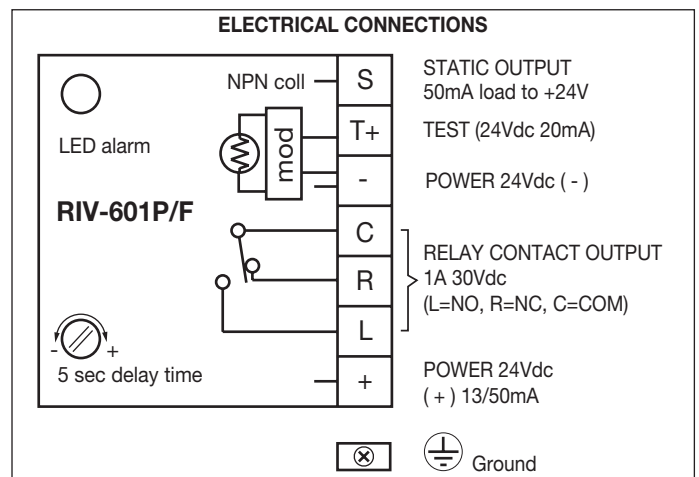
   The yellow-green ground conductor must be longer than the other conductors.

2. In order to ensure an **IP66 protection grade** the cover must be tightly closed turning the four screws provided. The suggested closing torque value is 1 ÷ 1,5 Nm.

IR FLAME DETECTOR MODEL RIV-601P/FA
explosionproof enclosure
### DESCRIPTION AND SPECIFICATIONS

All same as for RIV-601P/F model except:

- Cast aluminium explosion-proof enclosure **ADF-600AP** model. External grey epoxy paint RAL7000 and internal anti-condensing orange paint RAL2004.
- Type of protection II 2 GD Ex d IIC T6 Ex tb IIIC T85°C IP66 (85°C max case temperature, referred to 40°C ambient).
- Conforms to ATEX Directive, BVI 14 ATEX 0007 certificate.
- Dimensions: mm. 225x255x170h main body only (mounting holes 260x220 – overall dimensions 290x255).
- Weight: kg. 10,5 case only - kg. 11,5 with detector inside.
- Sensitivity reduced to 4% of the distance.
- 1" Gas cable entry.

ELECTRICAL CONNECTIONS

Terminal	Description
S	STATIC OUTPUT 50mA load to +24V
T+	TEST (24Vdc 20mA)
-	POWER 24Vdc (-)
C	RELAY CONTACT OUTPUT 1A 30Vdc (L=NO, R=NC, C=COM)
R	
L	
+	POWER 24Vdc (+) 13/50mA

LED alarm — NPN coll — mod — **RIV-601P/F** — 5 sec delay time — ⊗ — ⏚ Ground

MECHANICAL DIMENSIONS

RIV-601P/F watertight enclosure

Cable fitting M25

RIV-601P/FA with explosionproof enclosure ADF-600AP

4 mounting holes 260x220mm

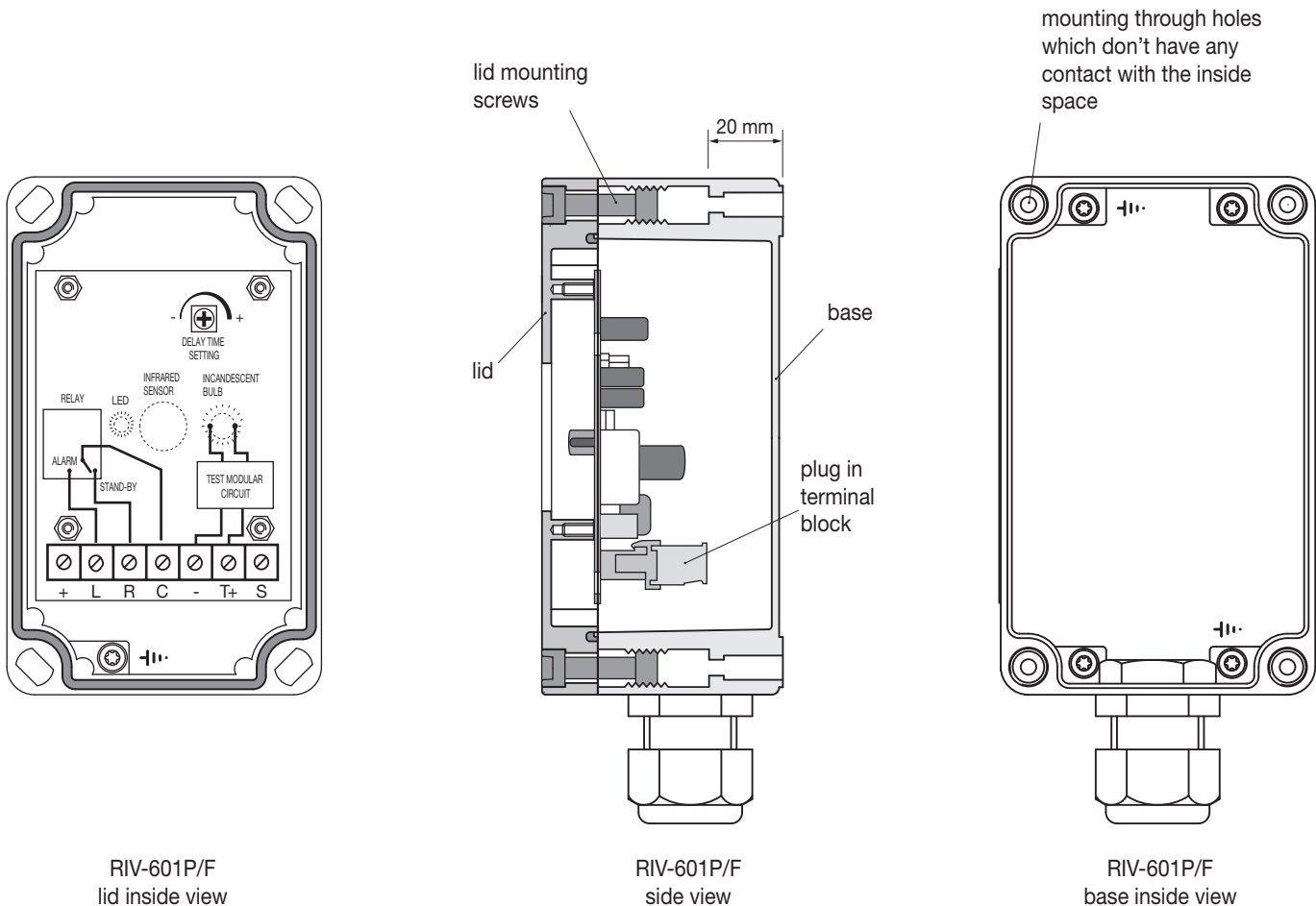n 1 hole 1 " GAS UNI 6125

FIELD OF VIEW 90°
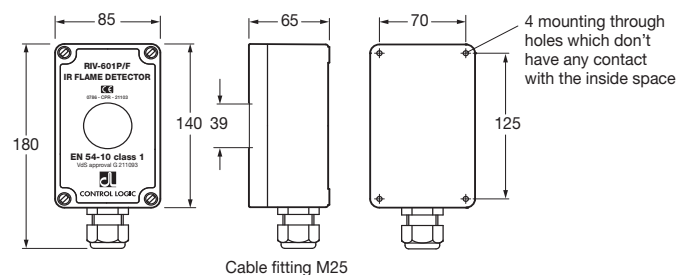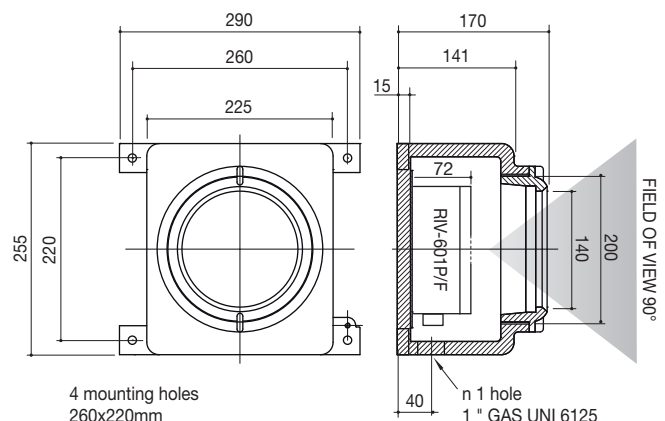
Note: In the model RIV-601P/FA the detector RIV-601P/F is to be mounted inside the explosionproof case by the customer during the installation phase, through the front window, over the steel plate provided on the bottom.

RIV-601P/F IR FLAME DETECTOR
Inside view

After the enclosure is opened, the inside view looks as follows:

lid mounting screws

mounting through holes which don't have any contact with the inside space

20 mm

base

lid

plug in terminal block

| RIV-601P/F lid inside view | RIV-601P/F side view | RIV-601P/F base inside view |

The enclosure base part has four mounting holes.
On the enclosure base you can find both two ground screws and the cable entry fitting M25.
On the circuit board, which is placed inside the enclosure lid, the following parts are present: the alarm delay time setting potentiometer, which can be set by turning the centre screw, and the alarm relay.
The delay time setting increases by turning clockwise, and decreases anticlockwise. The standard value is 5 sec. The full range is from 1 to 10 sec.

Under the circuit board you find the infrared sensor, the red LED alarm lamp and a small incandescent bulb which simulates a flame when the test circuit is powered, all placed just behind the optical window.
The 7 way terminal block, plug-in type, has each function printed on the top of every terminal and on the circuit board just before the connector.

Note:

1. It is highly recommended to connect the enclosure base to a good ground line using the **ground** terminal provided inside up on the left. Then, connect base and cover using the ground terminal provided inside the base lower on the right and the ground terminal provided inside the cover lower on the left.
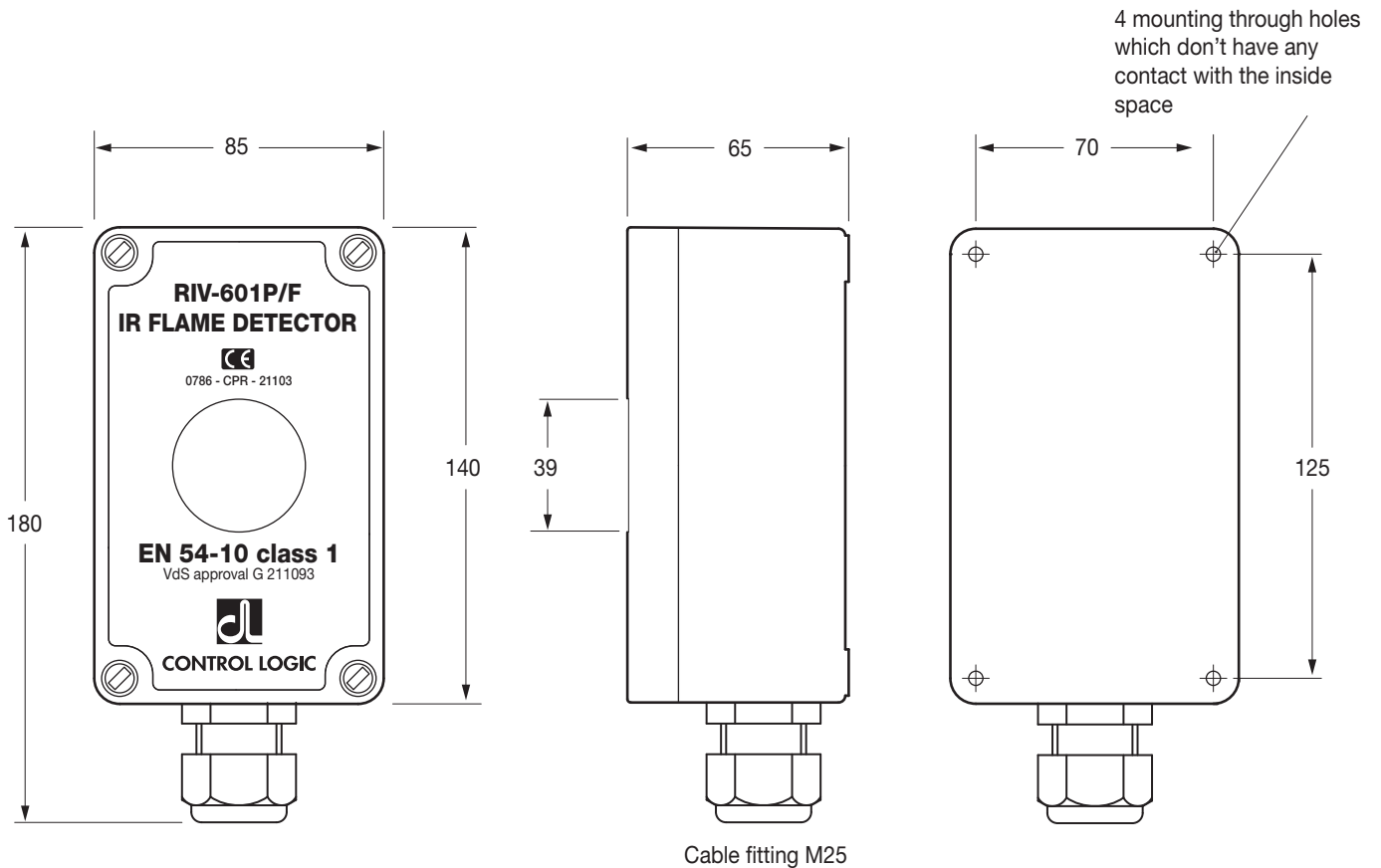   All the ground terminals are signaled by ground label. ⏚
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   The yellow-green ground conductor must be longer than the other conductors.

2. In order to ensure an **IP66 protection grade** the cover must be tightly closed turning the four screws provided. The suggested closing torque value is 1 ÷ 1,5 Nm.

RIV-601P/F IR flame detector
mechanical dimensions

- **IP66** grade protection (dust and water spray).
- Dimensions 180x85x65(H)mm (mounting holes 125x70mm).
- Weight 700grams.

4 mounting through holes which don't have any contact with the inside space

Cable fitting M25

The RIV-601P/F shipping package includes:
- 1 RIV-601P/F infrared flame detector unit
- technical information

CONTROL LOGIC S.r.l.

RIV-601P/FA IR Flame detector explosion-proof model
RIV-601P/F model plus ADF-600AP explosion-proof enclosure

The explosion proof model RIV-601P/FA is made by mounting the watertight model RIV-601P/F inside the explosion-proof case.
The RIV-601P/FA shipping package includes:
• 1 IR flame detector model RIV-601P/F
• 1 explosion-proof enclosure model ADF-600AP
• 1 set technical information
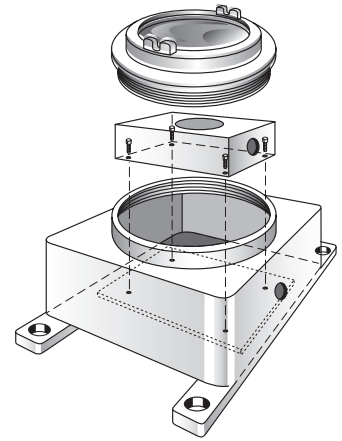
ADF-600AP explosion-proof enclosure
• Cast aluminium external grey epoxy paint (RAL 7000), internal anti-condensing orange paint (RAL 2004).
• Type of protection II 2 GD Ex d IIC T6 Ex tb IIIC T85°C IP66 (85°C max case temperature, referred to 40°C ambient).
• Conforms to ATEX Directive, BVI 14 ATEX 0007 certificate.
• Dimensions: mm. 225x255x170h main body only (mounting holes 260x220 - overall dimensions 290x255).
• Weight: kg 10,5 case only - kg 11,5 with detector inside.
• Sensitivity reduced to 4% of the distance.
• 1" Gas cable entry.
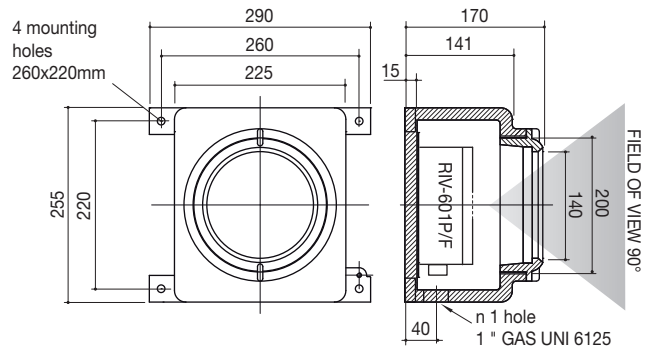
SOA-875
Variable direction stand for IR explosion-proof Flame Detector RIV-601P/FA

Description
The Variable Direction Stand SOA-875 is a useful accessory for installing IR Explosion-Proof Flame Detector RIV-601P/FA when an easy change of direction of the optical field of view towards the area of interest is needed.
It is composed of a steering arm with both horizontal and vertical steering, and of a base plate designed for IR Explosion-Proof Flame Detector RIV-601P/FA mounting.
The Variable Direction Stand and the screw parts are made of stainless steel, and can be used in outdoor applications.

Specifications
• Steering range: horizontal 360° vertical ± 90°
• Dimensions: 270x129x72mm
• Material: AISI 316L polished stainless steel
• Total weight: kg 2,500 net - 2,800 gross

Mechanical dimensions (mm)

Wall mounting

Celing mounting