



# RUBY CE, U.V. FLAME DETECTORS self-checking type (patent FR 90/10795)



Fig.1 - Scanner (explosion-proof)

## 1 - SAFETY

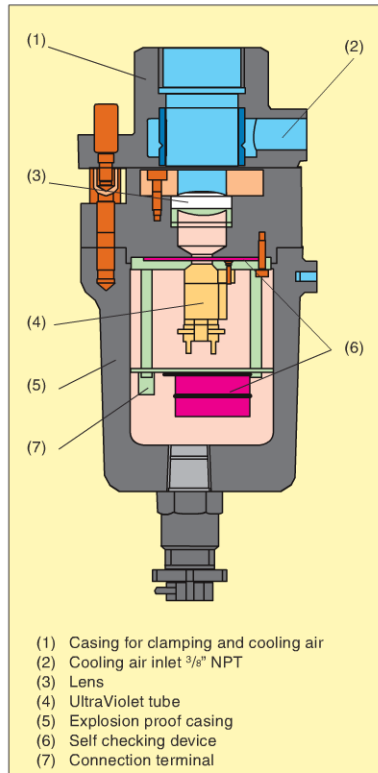
The safety of generators is based on burner checks, among which a permanent individual detection of flame is mandatory.

The Pillard RUBY CE detector, self-checking ultraviolet (U.V.) type, complying with the European standards, enables to detect and monitor light fuel oil, gas or dual fuel (light fuel oil and gas) flames. Only the flame of the burner on which the detector is installed is detected.

## 2 - PRINCIPLE

Inside the scanner (Fig.2), the sensitive element is a U.V. tube (4) sensitive to ultraviolet rays, the cathode of which emits electrons when impacted by ultraviolet rays in the 185 to 280 nm wavelength range. The tube is exposed to the U.V. rays for approx. 0.3 second and then isolated from the U.V. source for approx. 0.3 second, in an alternative sequence for self-checking purposes. This way, it is made sure that the U.V. tube and its associated electronic circuitry are not faulty. Isolating from the U.V. source is mechanical, via a shutter. The U.V. detection level is shown by LEDs which enable the sensitivity adjustment. The output signal is 4-20 mA.

The shutter system for self check is of the rotating type, driven by a stepper



- (1) Casing for clamping and cooling air
- (2) Cooling air inlet 3/8" NPT
- (3) Lens
- (4) UltraViolet tube
- (5) Explosion proof casing
- (6) Self checking device
- (7) Connection terminal

Fig.2 - Scanner principle

motor with alternate motion. The motor is controlled by microprocessors which adapt the closing and opening frequency to the level of U.V. rays received by the tube.

## 3 - DESCRIPTION

The RUBY CE detector includes :

- An explosion-proof scanner (Fig.1 and 2), incorporating :
  - tube sensitive to ultraviolet rays (4)
  - stepper motor and shutter for self-checking (6) (Pillard patent FR90/10795)
  - connecting terminal set
- A control box (Fig.3) (standard EN60-529 IP 66 protection) containing :
  - electronic card
  - connecting terminal
  - detection level indicating LEDs
  - manual sensitivity adjustment
  - LEDs indicating the flame presence or absence or a U.V. tube fault, stepper motor/shutter fault.

## 4 - ADVANTAGES

- Not sensitive to IR (infra red radiation).
- Extremely reliable self-checking device (patented) without spring or mechanical limit pin.
- Based on a total reliability concept, it is an essential complement for Pillard burners.

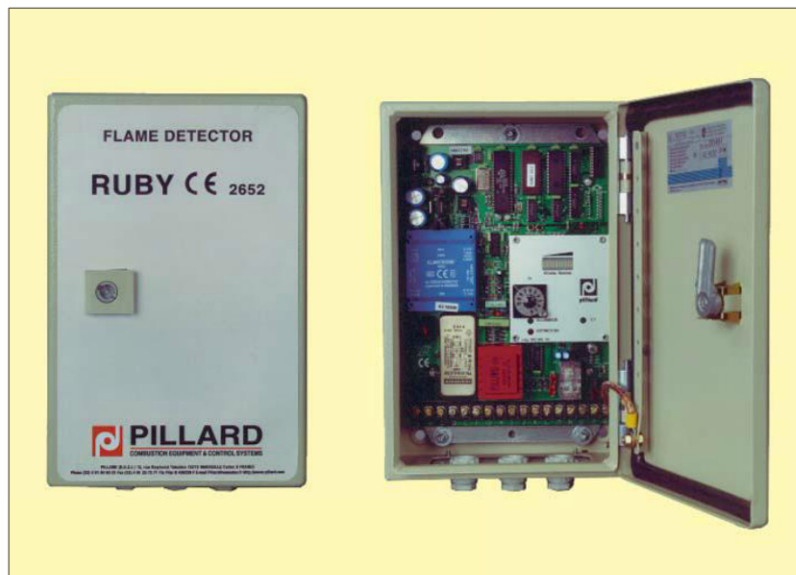


Fig.3 - Control box

## CHARACTERISTICS

- U.V. ray detection in the 185 to 280 nm wavelength range.
- Not sensitive to infrared rays.
- Intrinsic positive safety (certified by CETEN APAVE International) with immediate trip off in case of any failure.
- Simple site adjustment.
- Applications : high temperature or cooled furnaces fired on liquid and gas fuels.
- Detection level : local display (LED) and remote signal (4-20 mA)
- Trip-off time < 1 sec.
- Flame presence : available on two independent contacts.

### Scanner

Protection	EEx dIICT6
Sensible element	U.V. tube
Spectrum range	185 to 280 nm
Temperature	< 60 ° C (other temp. on request)
Cleaning/cooling air	< 3 (n)m <sup>3</sup> /hr
Length	290 mm
Weight	3.2 kg

### Control enclosure

Protection	IP 66 (EN 60-529)
Temperature	< 50 °C (other temp. on request)
Moisture	0 to 90 %
Electrical supply	115 or 230 V, 50/60 Hz
Electric consumption	50 VA
Dimensions	300 x 200 x 120 mm
Weight	5 kg

## APPROVALS AND STANDARDS

EC examination certificate N° 49AT2652 AFNOR (EC directive 90/396)

Favourable technical certificate CETEN APAVE International N° D15/95-35.0

Product quality certificate AFAQ-ASCERT International N° P-0429

Complying with the European Standard EN 298

Explosion-proof scanner head EEx dIICT6 LCIE N° 96.D6166 X



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The above data is given as indication and is susceptible to variation

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