

UV SENSOR TYPE FD1 BT - FD2 BT

FLAME DETECTION DEVICES FOR FUEL OIL AND GAS BURNERS WITH BRAHMA SAFETY DEVICE WORKING AT 12/24Vac/dc



INTRODUCTION

The combustion process, depending on the type of fuel used, emits more or less light radiation belonging to the ultraviolet, visible or infrared spectrum.

Of course, gas oil combustion generates a very bright flame, which is easily detectable by means of sensors using common photocells; nevertheless, at the same time gas oil combustion generates a quantity of substances not completely burnt (unburnt substances), which pollute and dirty the combustion chamber step by step.

By suitably adjusting the combustion, it is possible to solve this problem and improve the flame quality, making it similar to the flame produced by gas, natural gas or propane combustion (blue flame).

Since photocells are not sensitive to blue flame light, in most gas burners the presence of flame is detected by exploiting the ionization principle; to this purpose, you simply need an electrode (electrically isolated metal rod) suitably "immersed" in the flame. This principle is not easily applicable in oil burners, as the electrode immersed in the flame gets dirty quickly (consequently losing its efficiency) and modifies the turbulence in the combustion chamber, thus creating serious problems.

For all these reasons, it is necessary to detect the presence of flame by means of ultraviolet sensitive detectors.

The FDx BT sensor has also proved suitable for gas applications where the use of an electrode, for example for high temperatures, is not possible.

DESCRIPTION

The FDx BT sensor uses a silicon preamplified active element, specifically designed for blue flame burner applications; the UV light peak detection of this sensor is around 310 nm.

The BT abbreviation FD indicates that the device is suitable for devices in the "Low Voltage", that is, the power range is between 12V and 24V to both DC and AC voltage. AC voltage is 50 / 60Hz.

In particular is suited with Brahma Eurogas type BTxxxG (option FDx /S BT) and with Brahma Eurooil type BTxxxO (option FDx D BT).

To meet the widest range of market requirements, this device is available in the FD1 BT version (with front view) and in the FD2 BT version (with lateral view). In application where the flame is far from the point of detection a high sensitivity sensor can be required.

Please note that the FD detector is sensitive to the ultraviolet component of visible light; therefore, its use is recommended in burners fitted with closed combustion chambers and in an application environment perfectly shielded from visible light.

FEATURES

- Supply voltage	12/24Vac/dc	
- Power consumption	12Vac: 0.1VA	24Vac: 0.4VA
	12Vdc: 0.1W	24Vdc: 0.4W
- Visible band	290-350nm	
- Reception angle	8°	
- Max output current	50µA (opt. FDx /S BT)	
	500µA (opt. FDx D BT)	
- Operative temperature range	-20 to +70°C	
- Max humidity	95%	

FD1 BT mechanical features

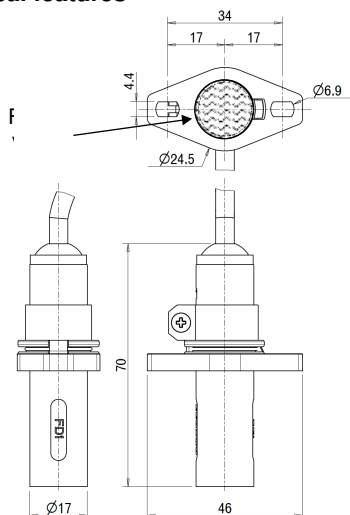


Figure 1

FD2 BT mechanical features

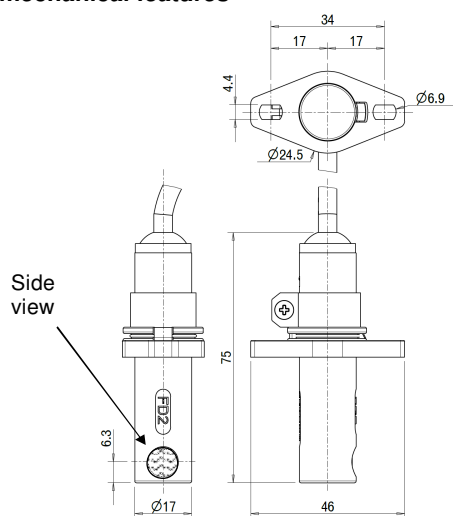


Figure 2

Drilling plane

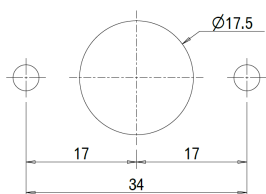


Figure 3

Note: all measurements are expressed in mm

WARNINGS

For a correct and safe use of FDx BT sensors, please follow the directions below:

- place the device so as for the flame light to strike the field of view (8°);
- avoid placing unsuitable transparent materials between the sensor and the flame light; for example, glass has filter characteristics (shield) against the ultraviolet component of light;
- avoid installing the device close to heat sources, which may cause inner temperature increase and consequently damage the sensor;

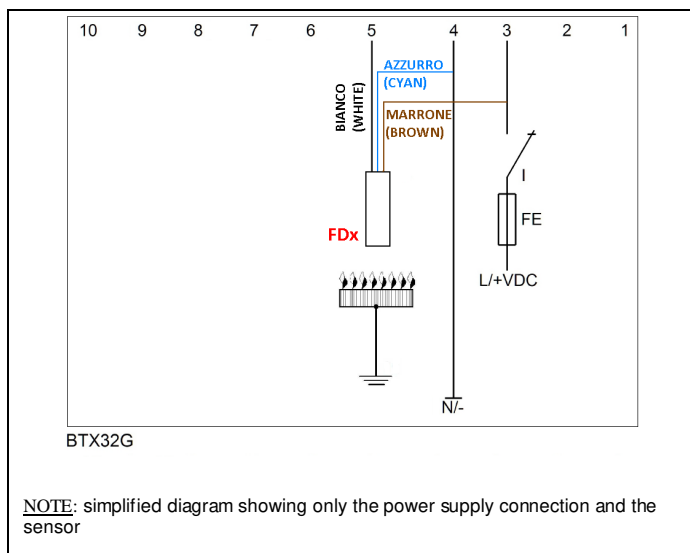
- avoid wiring the FDx cable with ignition or high voltage cables;
- only use the FDx BT device in conjunction with BRAHMA produced ignition and flame control equipment.

WIRING DESCRIPTION

- Brown wire Live (L /+Vdc)
- Blue wire Neutral (N /-)
- White wire Output

APPLICATION EXAMPLE

The following diagram shows an application example of the FDx BT sensor with ignition and control flame devices type BTX32G. In order to connect the sensor to other gas devices produced by BRAHMA, please refer to relevant product's technical notes



PART REFERENCE

FD (a) (b) (d)CM BT

- **BT** Power supply: 12/24V
- **(d)** Length of the cable
- **(b)** **D:** for oil burner device
/S: for gas burner device
- **(a)** 1: Front view (figure 1)
2: Side view (figure 2)

Example:

- **FD2/S 60CM BT:** sensor with side view, used with gas BRAHMA control boxes. The length of the cable is 60cm. Supply voltage is 12/24Vac/dc



NOTES ABOUT PRODUCT DISPOSAL The device contains electronic components and cannot therefore be disposed of as normal household waste. For the disposal procedure, please

ATTENTION -> Company Brahma S.p.A. takes no responsibility for any damage resulting from Customer tampering with the product.

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