

UV SENSOR TYPE FD1/S - FD2/S

FLAME DETECTION DEVICES FOR FUEL OIL AND GAS BURNERS WITH BRAHMA SAFETY DEVICE



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/S 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/S 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.

An adequate electronic boundary placed inside the device renders it compatible with all BRAHMA devices with a gas application.

In particular is suited with DS11, DS11P, DSM11, DSM11P and SM592N/S. It's strongly recommended for single electrode applications DSM11 and DSM11P

In order to meet the widest range of market requirements, this device is available in the FD1/S version (with front view) and in the FD2/S 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 FDx 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 that is perfectly shielded from visible light.

FEATURES

- Supply voltage	220-240V @ 50/60Hz
on request:	110-120V @ 50/60Hz
- Power consumption	1VA
- Visible band	290-350nm
- Reception angle	8°
- Max. output current	50µA
- Operating temperature range	-20 to +70°C
- Max. humidity	95%

FD1/S mechanical features (mm)

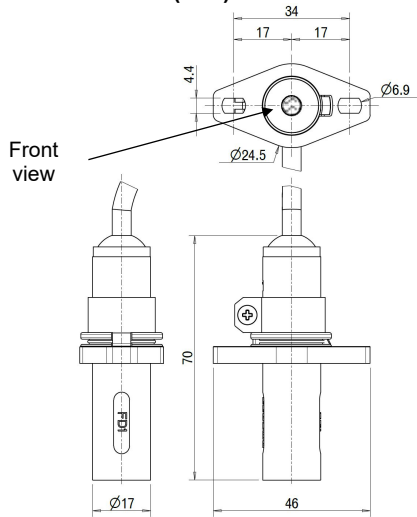


Figure 1

FD2/S mechanical features

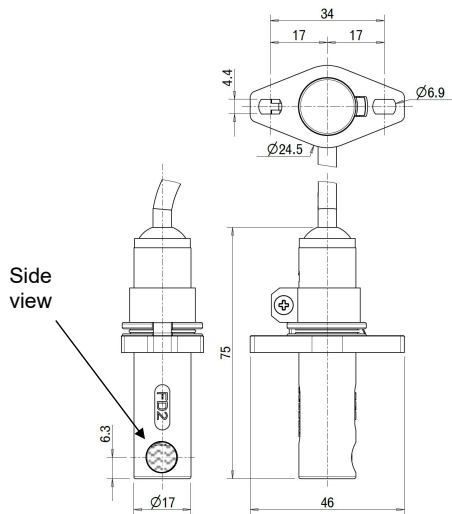


Figure 2

Drilling plane

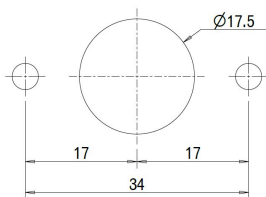


Figure 3

WARNINGS

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

- Place the device so that the light from the flame hits 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/S device in conjunction with BRAHMA-produced ignition and flame control equipment with gas applications.

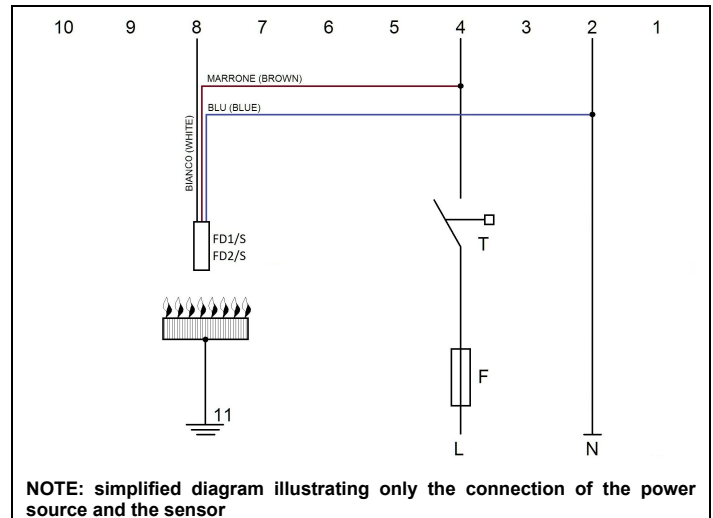
WIRING DESCRIPTION

- Brown wire	Live
- Blue wire	Neutral
- White wire	Output

APPLICATION EXAMPLE

The following diagram shows an application example of the FDx/S sensor with ignition and control flame devices type DS11, DS11P, DSM11, DSM11P and SM592N/S.

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) /S (d)CM (e)

- ➔(e) 11/12: Supply voltage 110/120Vac
22/24: Supply voltage 220/240Vac
- ➔(d) Length of the cable
- ➔(a) 1: Front view (figure 1)
2: Side view (figure 2)

Examples:

- FD1/S 60CM 22/24:** sensor with front view, used with BRAHMA control boxes. The length of the cable is 60cm. Supply voltage is 220/240Vac.
- FD2/S 60CM 22/24:** sensor with lateral view, used with BRAHMA control boxes. The length of the cable is 60cm. Supply voltage is 220/240Vac.



NOTES ABOUT PRODUCT DISPOSAL The device contains electronic components and cannot therefore be disposed of as normal household waste. For the disposal procedure, please refer to the local rules in force for special waste.

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

10/01/2022 Subject to amendments without notice

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