# IR - FLAME DETECTOR

# FL 10



**FL10 flame detector**



**ZC-01 optional base**

**TECHNICAL INSTRUCTIONS FOR INSTALLATION, SETUP AND MAINTENANCE**

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The **FL10** Flame Detector is able to detect a flame produced inside its viewing range in a few seconds. Its installation is very simple and can be done in a few minutes. To obtain the best results we suggest to read the instructions below completely and to follow the procedures described carefully.

**1** - The FL10 reacts with great sensitivity to infrared radiations emitted by an adequately powerful source located in its viewing range. The one infrared radiation emission in not sufficient to cause an alarm. In fact it is necessary that the emission is perturbated like the flame's one. If on the contrary the infrared source is constant, for example like the emission of an radiator, the detector ignores it.
The device must be installed on a wall or on the ceiling. Normally, to surveil goods located on the floor, the ceiling installation is suggested.

**3** - The installation height is relative to the area to be protected considering that the detector's viewing range is about 120° and that the maximum distance for flame detection (for a 20 cm hight gasoline flame with a target of 20 x 20 cm) it's 20 m. The fig. 1 e 2 diagrams indicate the diameter and the covered area related to the installation height.
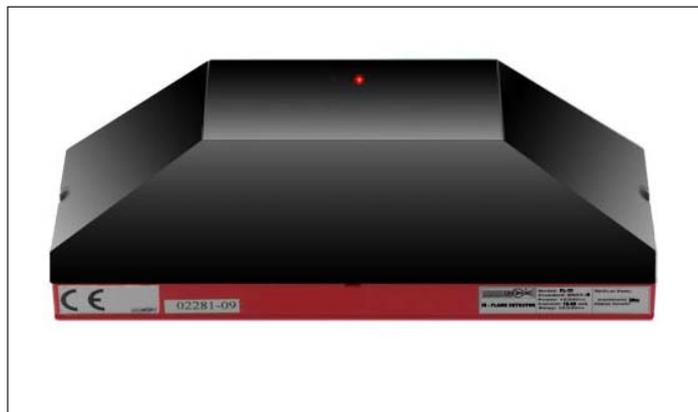Keep in mind that the maximum detection distance depends on the type of flame.
With the flame from Methane or Paper the distance is reduced by 60%. With flame from Ethanol and Methanol the flame is reduced by 50%.

**4** - To install the cables it is suggested to use the marked breakable zones on the back surface of the device. If needed a ZC-01 optional base permit to use lateral entry 16 mm (or more) cables.

**5** - Connect the terminal blocks with a shielded cable as follows:
- 1 - negative pole of the power supply (-)
- 2 - positive pole of the power supply(+)
- 3 - connect to the cable for remote test button
- 4-5-6 - alarm relay mode switch. 4=COM 5=NA 6=NC
The connection is valid for a not powered relay.
The terminals are voltage free.

**6** - The JP1 jumper (fig. 3) permits, depending on the position, the functioning with normally powered or normally not powered relay. So:
    1-2 position = powered relay
    2-3 position = not powered relay
Once the working mode is selected, the connection of the output relay contact has to be done correctly.

**7** - The FL10 detector has two adjustable parameters (see fig. 3):
- sensitivity regulation
- alarm delay regulation
Normally the detector is set in our factory to the maximum sensitivity and with an alarm delay of 8-10 seconds. If the area to be protected is larger than the maximum coverable area of the detector, it would be also be good to reduce the sensitivity. In this way a better false alarm immunity is obtained. The optimum alarm delay is about 8-10 seconds.

**8** - Once that the installing and the adjusting operations are done you can go on with the working test (if permitted by the environmental conditions).
In this case, after power supplying the device, it is necessary to produce a 20 cm high gasoline flame on a 20 x 20 cm base and positioned at the maximum distance indicated for the detector. After a 8-10 sec. delay an alarm should be generated.
This test must be conducted under high surveillance.
It's also possible to perform an easier test moving a lighter's flame slowly some meters away from the detector for a time longer than the one set before (see par. 7). The high sensitivity of FL10 permits to do this empirical simple test.

**9** - The FL10 is provided with a **remote test circuit**.
To use this feature it is necessary to connect a cable to terminal 3. Then connect a button (normally open contact) between this cable and the negative pole of the power supply.
By pressing the button the internal test circuit that simulates a flame is activated and after the alarm delay, the detector gives out an alarm.

**10** - If some false alarms takes place, verify if there is any perturbating element in the environment (see point 1) and eventually adjust the sensitivity and the alarm relay levels.

**11** - Important installation rules:

■ Avoid the detector's direct view of the sun light (for example from a window). The sun is a powerful infrared radiation source and if this sorce is somehow "modulated" by some element, like for example a curtain moved by the wind in front of a window, it can cause false alarms.

■ Avoid the detector's direct view of incandescent lamps mounted on the ceiling that can oscillate (the oscillation produces a modulation of the infrared radiations emitted by the lamps)

■ Avoid the detector's view of any other infrared source that can be somehow modulated by any environmental condition. However consider that, for the detector to give out an alarm, it is necessary that the infrared source remains active for a time equal to the alarm delay time(8 - 10 sec. depending on the regulation). So short time modulated infrared radiation will not cause an alarm.
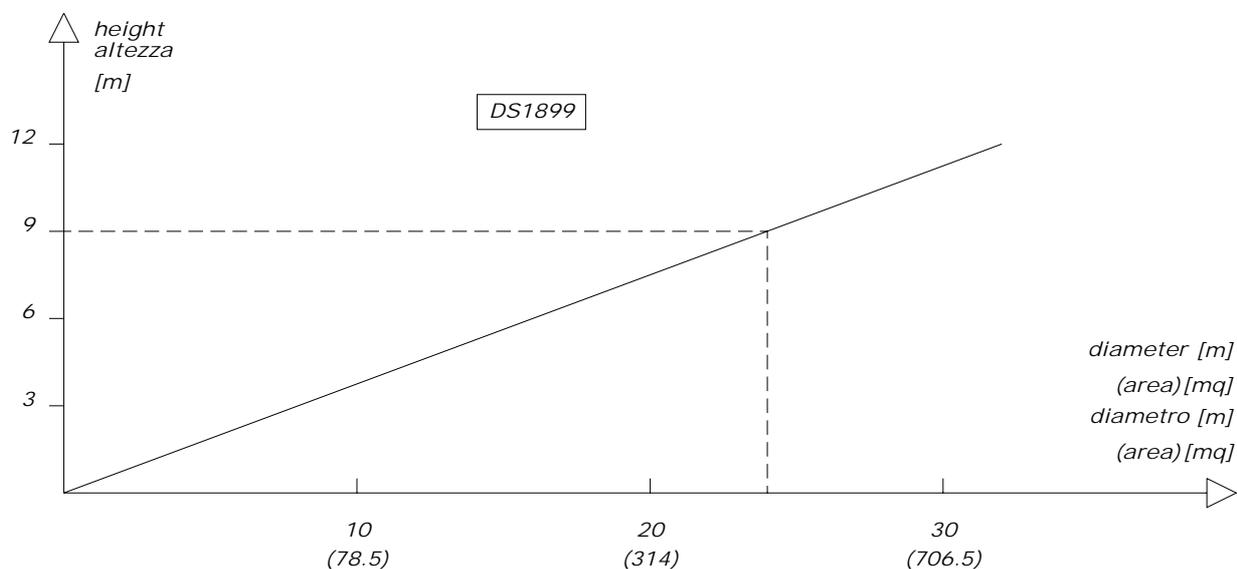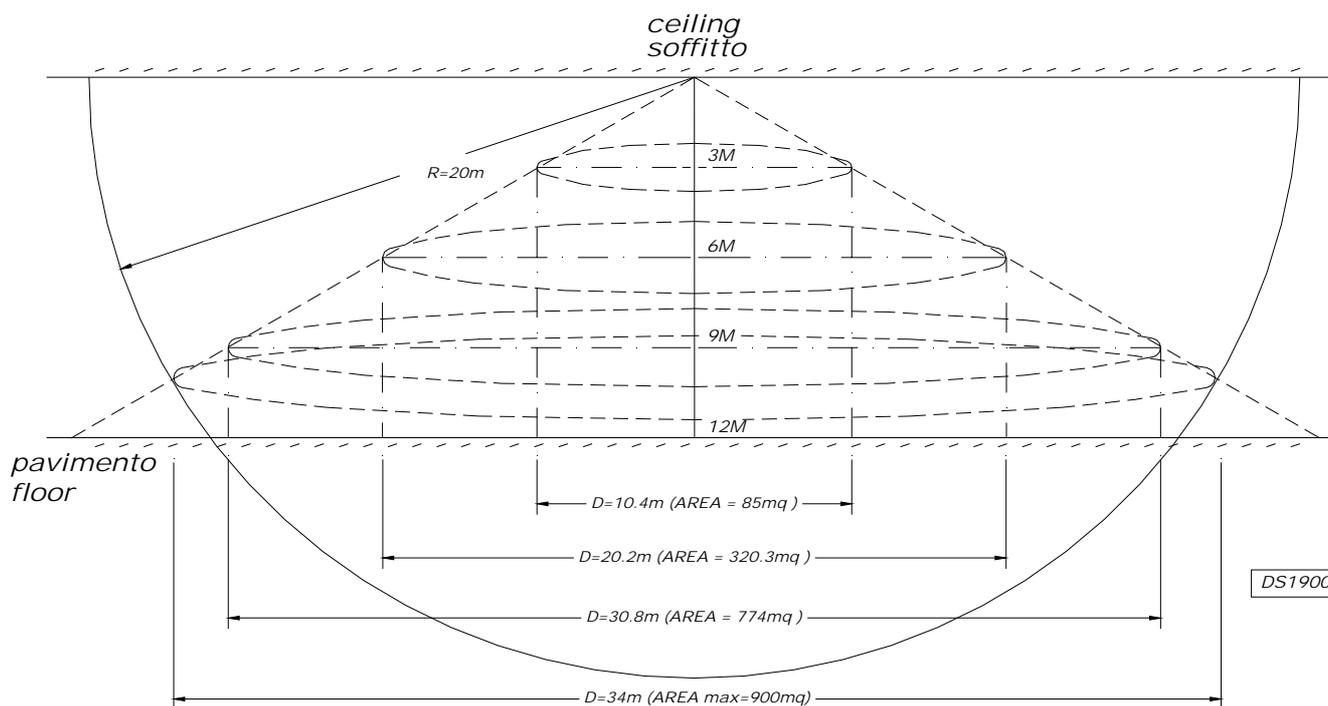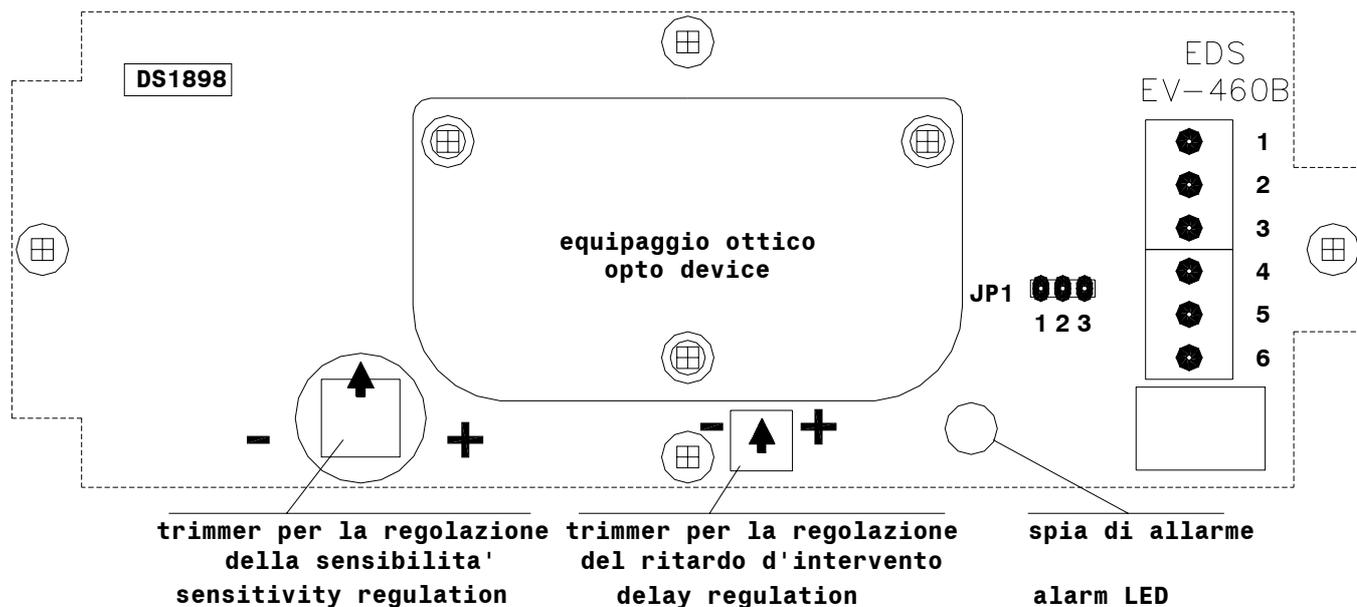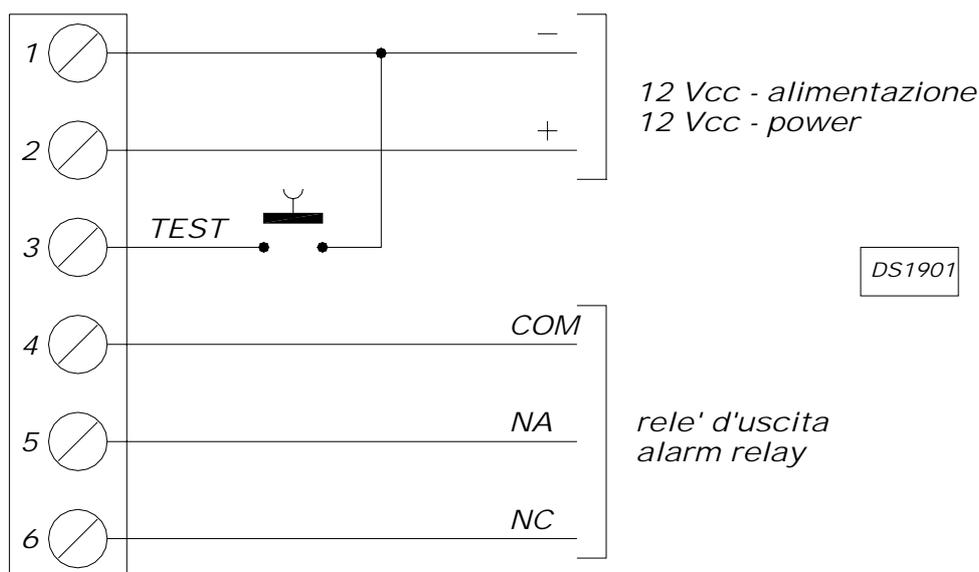


Fig. 1



Fig. 2

## INTERNAL VIEW

DS1898

EDS
EV—460B

equipaggio ottico
opto device

JP1
1 2 3

1
2
3
4
5
6

- +
trimmer per la regolazione
della sensibilita'
**sensitivity regulation**

- +
trimmer per la regolazione
del ritardo d'intervento
**delay regulation**

spia di allarme
**alarm LED**

## ELECTRICAL CONNECTIONS DIAGRAM

1 −
2 +

*12 Vcc - alimentazione*
*12 Vcc - power*

*TEST*
3

DS1901

4 *COM*

5 *NA*

*rele' d'uscita*
*alarm relay*

6 *NC*

NOTE - To do the remote working test it is necessary to keep the button pushed for a time that equals the alarm delay.

## TECNICAL DATA

- power supply: 12 V dc  or 24 V dc
- power consumption: 11-40 mA
- protection against polarity inversion
- max flame detection distance: 20 m (target flame 20x20 cm - height 20 cm) - gasoline fire
- optical viewing angle: 120 degrees
- internal sensitivity regulation

- remote working test terminals
- output relay: 1 A/ 24 V dc
- autoextinguishing policarbonate box class V0 (UL 94 - IEC 695 norms)
- dimensions: 162x62x63 mm
- weight: 240 gr