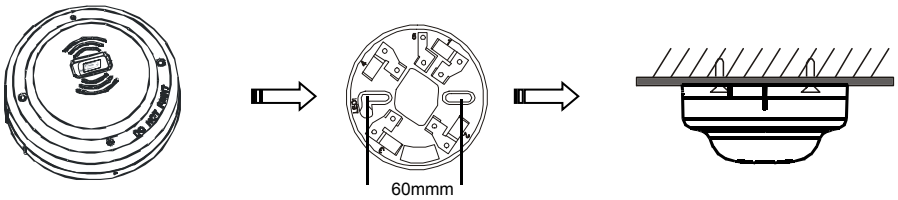
**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

# Flame Detector with Relay Output

## SPECIFICATIONS

| | |
|---|---|
| Operating Voltage Range: | 12 to 28 VDC Volts |
| Standby Current: | ≤10 mA @ 24 VDC |
| Alarm Current | ≤30 mA @ 24 VDC |
| Spectrum: | 180~290nm |
| Detection Angle: | 120 degree |
| Detection Sensitivity: | Grade I, 25m@flame (Container 33cmX33cm,Height 5cm with 2Kg ethanol ) |
| Relay Contact Load: | 1A@DC24V |
| Normal Status: | LED blinking in 5 seconds interval |
| Alarm Status: | LED lit steady |
| Protection rating: | IP 21 |
| Operating Humidity Range: | 10% to 93% Relative Humidity, Non-condensing |
| Operating Temperature Range: | -20°C to 55°C |
| Height: | 45 mm installed in Base |
| Diameter: | 103 mm |
| Weight: | 153g |

## INSTALLATION




## BEFORE INSTALLING

**NOTICE:** This manual should be left with the owner/user of this equipment.

## GENERAL DESCRIPTION

The device is an Ultraviolet-only flame detector designed to detect fires and provide alarm outputs directly from the detector while maintaining false alarm immunity. It detects in the ultraviolet (UV) spectral range for optimized speed of response.

It is fast and capable to detecting the ultraviolet (UV) rays emitted by a burning substance.

The flame sensor adopts an ultraviolet photosensitive tube, with qualities of highly sensitive, reliable, dust-resistant, corrosion proof and moisture-resistant, therefore is not sensitive in sunlight, dust, oil, tolerance of fume, and humidity. Set in a standard calibration to detect a flames at a distance of 25 meters, which flame created by 2Kg ethanol in a Container of Base 33cmX33cm, Height 5cm.

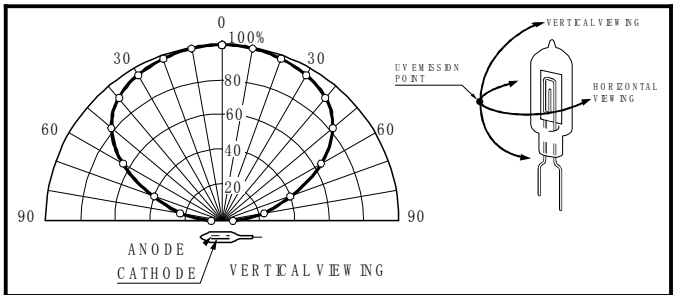



FIGURE1 Vertical Detection Angular Sensitivity(Directivity)

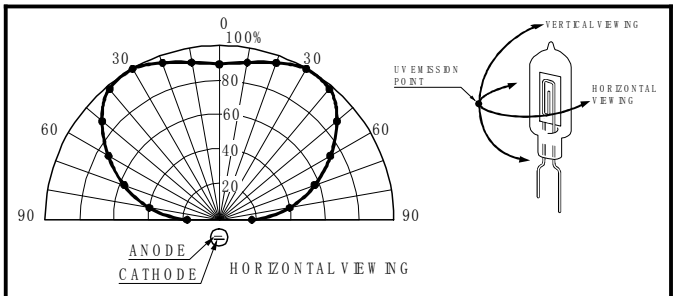



FIGURE2 Horizontal Detection Angular Sensitivity(Directivity)

### Loop Design and Wiring

The system designer must make sure that the total current drawn by the devices on the loop does not exceed the current capability of the panel supply, and that the last device on the circuit is operated within its rated voltage.

When calculating the voltage available to the last device, it is necessary to consider the voltage drop due to the resistance of the wire. The thicker the wire, the smaller

the voltage drops. Wire resistance tables can be obtained from electrical handbooks.

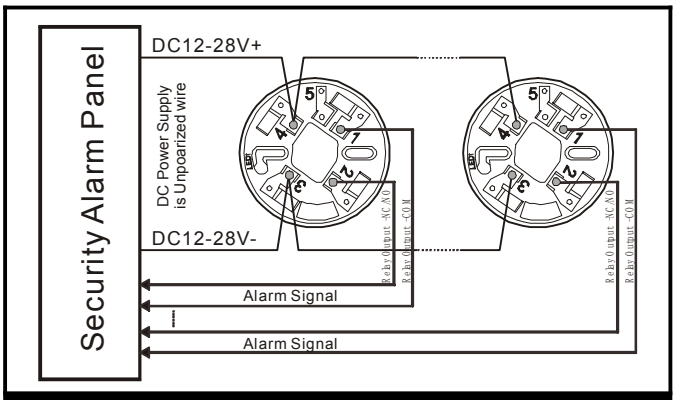
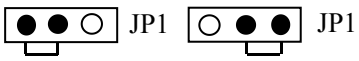



**FIGURE3 Terminal Wiring with Security Alarm Panel**

## SETTING FOR WORKING MODE

**1. Alarm Relay Output NO/NC setting:**




NO-
Normal Open

NC-
Normal Close

The jump setting JP1 is on the PCB board, the alarm relay output can be set to NO or NC by short the left two pin or right two pins.

**2. Alarm detect timer setting:**

When the detector found the fire, according to environment, the detector can be working in four modes as below DIP SW1 switch setting:

| DIP | Delay time | Apply and Installation |
|---|---|---|
|  | 1s | Quick detect flame |
|  | 3S | Stable setting( **Default setting**) |
|  | 6S | Detect flame in smoking area |
|  | 15S | Some special place such as sunshine interfere place |

The DIP SW1 switch is one the PCB board.

**3. Alarm Output mode setting**

| DIP | Setting | Apply and Installation |
|---|---|---|
|  | SW1-3 OFF | Alarm status latch off (Unlock) |
|  | SW1-3 ON | Alarm status latch on (Lock) |
|  | SW1-4 OFF | 470 ohm output, connected with conventional fire alarm panel |
|  | SW1-4 ON | Relay Contacts Output (**Default setting**) |

When the SW1-3 is set to ON (Lock) that mean the detector would keep alarm status until the power supply is cut off.

When the SW1-3 is set to OFF (Unlock) that mean the detector would restore from alarm status to normal status when the fire is disappear 30 seconds late.

When the SW1-4 is set to OFF that mean the detector connected with security alarm panel. When the detector alarms, the detector would output relay contacts. See Figure 3 for wiring.

When the SW1-4 is set to ON that mean the detector connected with conventional fire alarm panel. The internal 470 ohm resistor on the PCB board would serial connected into loop wire. See Figure 4 for wiring. The SW1-3 should set to OFF( Lock) status.

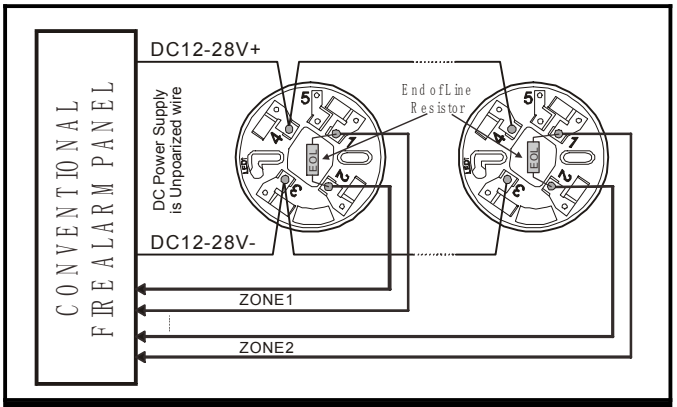



**FIGURE4 Terminal Wiring with Conventional Fire Alarm Panel**

## INSTALLATION

**NOTE**: All wiring must conform to applicable local codes, ordinances, and regulations.

Mounting Indoor Wall or Ceiling Products

1. Attach mounting base to ceiling or wall.
2. Connect field wiring to terminals:
   **Terminal 1: Relay Output –COM (ZONE+)**
   **Terminal 2: Relay Output – NO/NC (ZONE-)**
   **Terminal 3: DC Power –**
   **Terminal 4: DC Power +**
3. To attach product to mounting base.
4. Secure product by tightening the two mounting screws in the front of the product housing.
5. The detector can be connected with Security alarm panel as Figure3. Relay output signal can be changed from Normal Close (NC) to Normal Open (NO) by Jump JP1 on the PCB board.
6. The detector can be connected with conventional alarm panel as Figure 4. One 4.7K ohm resistor should be connected as End of Line (EOL) resistor at the last detector.
7. After the installation, power on the detector, use lighter or candle to test the detector within 3 meters.

**WARNIING:**

Not to install flame detector near the below subjects:

1. Halogen lamp, Electric discharge lamp, ultraviolet ray lamp.
2. Welding spark, Electric spark
3. Heavy current magnetic field, thunder discharge.
4. Direct sunlight.
5. Ultra violet radiation subjects

The UV flame detector can not detect the following:

1. The flame behind the glass or transparent resin.
2. Lighted cigarette.
3. Burning charcoal and coal cakes.

Burning material without flame.

**I-104-U-DL**