



40/40 UV/IR Flame Detector Series



Features

- UV/IR Dual-Sensor
- High-speed Response - 150 msec Response to Saturated Signal
- Solar blind
- Automatic Built-In-Test (BIT)* and Manual - to assure continued reliable operation
- Heated window - for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
 - Relays (3) for Alarm, Fault, and Auxiliary
 - 0-20mA (stepped)
 - HART Protocol for maintenance and asset management
 - RS-485, Modbus Compatible
- High Reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 - TUV)
- 5-Year Warranty
- User Programmable via HART or RS-485
- Ex approved for Zone 1 hazardous area location
 - ATEX
 - IECEx
 - FM
 - CSA
- 3rd party Performance Tested
 - EN54-10 (LPCB)
 - FM3260 (FM)

Description

Protectowire offers two versions of the new 40/40 Series UV/IR Flame Detectors:

Model 40/40L (& LB) provides a combination of UV and IR sensors, where the IR sensor operates at a wavelength of 2.5-3.0 μm and can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.

Model 40/40L4 (& L4B) is identical to the 40/40L except that the IR sensor works at a wavelength of 4.5 μm and is only suitable for hydrocarbon-based fires.

The UV/IR flame detector senses radiant energy in the short wave section of both the ultraviolet and infrared portions of the electromagnetic spectrum. The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous detection of radiant energy in both the UV and IR sensors triggers an alarm signal.

The UV sensor incorporates a special logic circuit that helps prevent false alarms caused by solar radiation.

General Specifications

Spectral Response:

40/40L-LB: UV: 0.185 -0.260 μm
IR: 2.5-3.0 μm
40/40L4-L4B: UV: 0.185 -0.260 μm
IR: 4.4-4.6 μm

Detection Range: at highest Sensitivity Setting
for 1ft.² (0.1m²) pan fire

Fuel:

n-Heptane	50 ft (15m)
Gasoline	50 ft (15m)
Diesel Fuel	37 ft (11m)
JP5	37 ft (11m)
Kerosene	37 ft (11m)
Ethanol 95%	25 ft (7.5m)
Methanol	25 ft (7.5m)
IPA (Isopropyl Alcohol)	25 ft (7.5m)
Hydrogen**	16 ft (5m)
Methane*	16 ft (5m)
LPG*	16 ft (5m)
Polypropylene Pellets	13 ft (4m)
Office Paper	16 ft (5m)

*20" (0.5m) high, 8" (0.2m) width plume fire

Response Time: Typically 5 seconds. High speed 150 msec response to saturated signal

Adjustable Time Delay: Up to 30 seconds

Sensitivity Ranges:

1 ft² (0.1m²) n-heptane pan fire from
50 ft (15m)

Field of View: 100° horizontal, 95° vertical

Built-in-Test (BIT):

Automatic (and Manual)

Temperature Range:

Operating:
-67°F (-55°C) to +167°F (+75°C)
Option:
-67°F (-55°C) to +185°F (+85°C)
Storage:
-67°F (-55°C) to +185°F (+85°C)

Humidity:

Up to 95% non-condensing (withstands up to 100% RH for short periods)

Heated Optics:

To eliminate condensation and icing on the window

Electrical Specifications

Operating Voltage:

24 VDC nominal (18-32 VDC)

Power Consumption:

Standby: Max. 100mA (150mA with heated window)

Alarm: Max. 150mA (200mA with heated window)

Cable Entries:

2 x 3/4" - 14NPT conduits
or 2 x M25 x 1.5 mm ISO

Wiring:

12 - 22AWG (2.5mm² - 0.3mm²)

Electrical Input Protection:

According to MIL-STD-1275B

Electromagnetic Compatibility:

EMI/RFI protected to EN50130-4

Electrical Interface:

The detector includes twelve (12) terminals with five (5) wiring options (factory set)

Outputs

Relays:

Alarm, Fault and Auxiliary
SPST volt-free contacts rated 5A at 30 VDC or 250 VAC

0-20mA (stepped):

Sink (source option) configuration

Fault:	0 +1mA
BIT Fault:	2mA \pm 10%
Normal:	4mA \pm 10%
IR:	8mA \pm 5%
UV:	12mA \pm 5%
Warning:	16mA \pm 5%
Alarm:	20mA \pm 5%
Resistance Loop:	100-600 ohms

HART Protocol:

HART communication on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management

RS-485:

RS-485 Modbus compatible communication link that can be used in computer controlled installations

Mechanical Specifications

Materials:

Enclosure Options

- Stainless Steel 316L with electro polish finish
- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish

Mounting:

Stainless Steel 316L with electro polish finish

Dimensions:

Detector 3.5"x 4.5"x 6.1" (90 x114 x156mm)

Weight:

Detector (St.St.)	5.5 lb (2.5kg)
Detector, aluminum	2.5 lb (1.2kg)
Tilt Mount	2.2 lb (1.0kg)

Environmental Standards:

Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp

Water and Dust:

IP66 and IP67 per EN60529
NEMA 250 6P

Approvals

Hazardous Area:

ATEX and IECEx
Ex II 2 GD
Ex de IIB+H2 T5 (-55°C to +75°C)
Ex tD A21 IP66/X7 T 95°C
Ex de IIB+H2 T4 (-55°C to +85°C)
Ex tD A21 IP66/X7 T 105°C

FM / CSA

Class I Div. 1, Groups B, C & D
Class II/III Div. 1, Groups E, F & G

Performance:

EN54-10 (LPCB)
FM-3260 (FM)

Reliability:

IEC61508 - SIL2 (TUV)

Accessories

Fire Simulator: 20/20-311

Tilt Mount: 40/40-001

Weather Protector: 777163

Air Shield: 777161

Laser Pointer: 777166
(Detector area coverage)