40/40I
Triple IR (IR3) Flame Detector
Superior performance, reliability and immunity to false alarms

The new 40/40I, a multi spectrum based on three IR bands (IR3), detects fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40I IR3 can detect a 1 ft² (0.1m²) gasoline pan fire at 215 ft (65m) in less than 5 seconds.

The 40/40I is the most durable and weather resistant flame detector currently on the market. Its new features include a heated window, to eliminate condensation and icing; HART capabilities for digital communications; lower power requirements; and a compact, lighter design.

Due to increased reliability, the 40/40 Series warranty period has been extended to 5 years and is SIL2 (TUV) approved to IEC 61508.

**FEATURES & BENEFITS**

- Multi spectrum design - for long distance detection and high false alarm immunity
- Sensitivity selection - to ensure no zone crossover detection
- Automatic and Manual Built-In-Test (BIT) - 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
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
  - TR CU (EAC)
- 3rd party performance tested
  - EN54-10 (VdS)
  - FM3260
- Marine Approval
  - MED ‘Wheelmark’ approval (DNV)

**APPLICATIONS**

- Offshore Oil & Gas installations
- Onshore Oil & Gas installations and pipelines
- Chemical plants
- Petrochemicals plants
- Storage Tank farms
- Aircraft hangars
- Power Generation facilities
- Pharmaceutical Industry
- Printing Industry
- Warehouses
- Automotive
- Explosives & Munitions
- Waste Disposal facilities
GENERAL SPECIFICATIONS

Spectral Response

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Detect Range Fuel</th>
<th>Methane*</th>
<th>LPG*</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Heptane</td>
<td>215 / 65</td>
<td>150 / 45</td>
<td>150 / 45</td>
</tr>
<tr>
<td>Gasoline</td>
<td>215 / 65</td>
<td>135 / 40</td>
<td>150 / 45</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>150 / 45</td>
<td>115 / 35</td>
<td>Polypropylene Pellets</td>
</tr>
<tr>
<td>JPS*</td>
<td>150 / 45</td>
<td>115 / 35</td>
<td></td>
</tr>
<tr>
<td>IPA (Isopropyl Alcohol)</td>
<td>135 / 40</td>
<td>83 / 25</td>
<td></td>
</tr>
</tbody>
</table>

Response Time

Typically 5 seconds

Adjustable Time Delay

Up to 30 seconds

Sensitivity Ranges

4 Sensitive ranges for 1 ft² (0.1m²)

Field of View

Horizontal 100º; Vertical 95º

Response Time

Typically 5 seconds

Built-in-Test (BIT)

Automatic (and Manual)

Temperature Range

Operating: -67ºF to +167ºF (-55ºC to +75ºC)

Option: -67ºF to +185ºF (-55ºC to +85ºC)

Storage: -67ºF to +185ºF (-55ºC to +85ºC)

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. 90mA (110mA with heated window)

Alarm: Max. 130mA (160mA with heated window)

Cable Entries

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

Wiring

12 - 22AWG (0.3mm² - 2.5mm²)

Electrical Input Protection

According to MIL-STD-1275B

Electromagnetic Compatibility

EMI/RFI protected to EN61326-3 and EN61000-6-3

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 2A at 30V DC

0-20mA (stepped)

Sink (source option) configuration

Fault: 0 +1mA Warning: 16mA ± 5%

BIT Fault: 2mA ± 10% Alarm: 20mA ± 5%

Normal: 4mA ± 10% Resistance Loop: 100-600 Ω

HART Protocol

Optional HART communications on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options

RS-485

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

MECHANICAL SPECIFICATIONS

Materials

- Stainless Steel 316L with electro polish finish

Enclosure options

- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish (not available in FM version)

Mounting

Stainless Steel 316L with electro polish finish

Dimensions

Detector 4” x 4.6” x 6.18” (101.6 x 117 x 157 mm)

Weight

Detector (St.St.) 6.1 lb (2.8 kg)

Detector, aluminum 2.8 lb (1.3 kg)

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 G D

Ex db eb op is IIC T4 Gb

Ex tb op is IIC T96ºC Db

(-55ºC ≤ Ta ≤ +75ºC)

FM/FMC/CSA

Class I Div. 1, Groups B, C & D

Class II/III Div. 1, Groups E, F & G

TR CU (EAC)

1 Ex db eb op is IIC T4 Gb X 1 Ex db eb op is IIC T96ºC Db X

(-55ºC ≤ Ta ≤ +75ºC)

1 Ex db eb op is IIC T4 Gb X 1 Ex db eb op is IIC T96ºC Db X

(-55ºC ≤ Ta ≤ +85ºC)

Performance

EN54-10 (Vds)

FM3260

Reliability

IEC61508 - SIL2 (TUV)

Marine

MED 'Wheelmark' approval (DNV)

ACCESSORIES

Flame Simulator FS-1100

U-Bolt/Pole Mount 789260-2 (2” pole)

Air Shield 777650

Weather Cover 777163 (St.St)

Tilt Mount 40/40-001

Duct Mount 777670

USB RS485 Harness Kit 794079

E.O.L Encapsulated Resistor 777915-X

*Supplied free of charge with the detector

For more information view manual or website www.spectrex.net

DS-F-40/40I, March 2018