













40/40M

# Multi IR Flame Detector

Superior performance, reliability and immunity to false alarms



## **SharpEye**

The new 40/40M Multi IR Flame Detector is specifically designed for detection of hydrocarbon and hydrogen flames. It detects bydrocarbon-based fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40M can detect a gasoline pan fire at 215 ft (65m) or a hydrogen flame at 125 ft (38m) in less than 5 seconds.

The 40/40M is the most durable and weather resistant flame detector currently on the market. Its new features include a beated 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 of hydrocarbons and hydrogen flames
- · 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
- · 3rd party performance tested
  - EN54-10 (VdS)
  - FM3260

### 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 Hydrogen Fuel Cell Industry Hydrogen Vehicle Parking & Refueling Battery Charging areas Refinery Hydrogenation Space Industry hydroxyl propellant Static fuel Cell systems



# keep a SharpEye" on your safety

CtI D	PECIFICATIONS  Maki ID Bondo
Spectral Response	Multi IR Bands
Detection Range	Fuel ft / m Fuel ft / m Fuel ft / m
at highest Sensitivity	
or 1ft <sup>2</sup> (0.1m <sup>2</sup> ) pan fir	
	Diesel Fuel 150 / 45 IPA (Isopropyl Alcohol) 135 / 40 Ammonia** 60 / 1
	JP5 150 / 45 Hydrogen* 125 / 38 Silane** 7 / 2
	Kerosene 150 / 45 Methane* 150 / 45 Office Paper 82 / 2
	*30" (0.75m) high, 10" (0.25m) width plume fire
D	**20" (0.5m) high, 8" (0.2m) width plume fire
Response Time	Typically 5 seconds
Adjustable Time Dela	
Sensitivity Ranges Field of View	4 Sensitive ranges for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire from 50 ft (15m) to 215 ft (65m) Horizontal 67°. Vertical 70° for Gasoline
Field of View	
Duild in Total (DIT)	Horizontal 80°, Vertical 80° for Hydrogen
Built-in-Test (BIT)	Automatic (and Manual)
Temperature Range	Operating: -67°F to +167°F (-55°C to +75°C)
	Option: -67°F to +185°F (-55°C to +85°C)
	Storage: -67°F to +185°F (-55°C to +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
ELECTRICA	L 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 Prote	
Electrical input Prote Electromagnetic Com	
Electromagnetic Com Electrical Interface	The detector includes twelve (12) terminals with five (5) wiring options (factory set)
Electrical interface	The detector includes twelve (12) terminals with live (3) willing options (factory set)
OUTPUTS	
Relays	Alarm, Fault and Auxiliary
,0	SPST volt-free contacts rated 2A at 30V DC
0-20mA (stepped)	Sink (source option) configuration
0-20mA (stepped)	Sink (source option) configuration  Fault: 0 +1mA Normal: 4mA + 10% Alarm: 20mA + 5%
0-20mA (stepped)	Fault: 0 +1mA Normal: $4mA \pm 10\%$ Alarm: $20mA \pm 5\%$
,	Fault: 0 +1mA Normal: 4mA $\pm$ 10% Alarm: 20mA $\pm$ 5% BIT Fault: 2mA $\pm$ 10% Warning: 16mA $\pm$ 5% Resistance Loop: 100-600 $\Omega$
,	Fault: 0 +1mA Normal: 4mA $\pm$ 10% Alarm: 20mA $\pm$ 5% BIT Fault: 2mA $\pm$ 10% Warning: 16mA $\pm$ 5% Resistance Loop: 100-600 $\Omega$ Optional HART communications on the 0-20mA analog current (FSK) - used for maintenance,
HART Protocol	Fault: $0+1$ mA Normal: $4$ mA $\pm$ $10$ % Alarm: $20$ mA $\pm$ $5$ % BIT Fault: $2$ mA $\pm$ $10$ % Warning: $16$ mA $\pm$ $5$ % Resistance Loop: $100-600$ $\Omega$ Optional HART communications on the $0-20$ mA analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options
0-20mA (stepped) HART Protocol RS-485	Fault: $0+1$ mA Normal: $4$ mA $\pm$ 10% Alarm: $20$ mA $\pm$ 5% BIT Fault: $2$ mA $\pm$ 10% Warning: $16$ mA $\pm$ 5% Resistance Loop: $100-600~\Omega$ 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 Modbus compatible communication link that can be used in computer controlled
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HART Protocol RS-485 MECHANIC	Fault: 0 +1mA Normal: 4mA ± 10% Alarm: 20mA ± 5% BIT Fault: 2mA ± 10% Warning: 16mA ± 5% Resistance Loop: 100-600 Ω  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 Modbus compatible communication link that can be used in computer controlled installations
HART Protocol RS-485 MECHANIC Materials	Fault: 0 +1mA Normal: 4mA ± 10% Alarm: 20mA ± 5% BIT Fault: 2mA ± 10% Warning: 16mA ± 5% Resistance Loop: 100-600 Ω  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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish
HART Protocol  RS-485  MECHANIC  Materials  Mounting	Fault: 0 +1mA Normal: 4mA ± 10% Alarm: 20mA ± 5% BIT Fault: 2mA ± 10% Warning: 16mA ± 5% Resistance Loop: 100-600 Ω  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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish
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MECHANIC Materials Mounting Dimensions Weight	Fault: 0 +1mA Normal: 4mA ± 10% Alarm: 20mA ± 5% BIT Fault: 2mA ± 10% Warning: 16mA ± 5% Resistance Loop: 100-600 Ω  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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector 4" x 4.6" x 6.18" (101.6 x 117 x 157 mm)  Detector (St.St.) 6.1 lb (2.8 kg) Tilt mount 2.2 lb (1.0 kg)
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MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust  APPROVALS	Fault: $0+1\text{mA}$ Normal: $4\text{mA}\pm10\%$ Alarm: $20\text{mA}\pm5\%$ BIT Fault: $2\text{mA}\pm10\%$ Warning: $16\text{mA}\pm5\%$ Resistance Loop: $100\text{-}600\ \Omega$ Optional HART communications on the $0\text{-}20\text{mA}$ analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options RS-485 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) 6.1 lb (2.8 kg) Tilt mount 2.2 lb (1.0 kg) Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Te IP66 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II 2 G D Ex d e IIC T4 Gb Ex tb IIIC T96°C Db (-55°C $\leq$ Ta $\leq$ +85°C)
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MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust  APPROVALS Hazardous Area	Fault: $0+1\text{mA}$ Normal: $4\text{mA}\pm10\%$ Alarm: $20\text{mA}\pm5\%$ BIT Fault: $2\text{mA}\pm10\%$ Warning: $16\text{mA}\pm5\%$ Resistance Loop: $100\text{-}600\ \Omega$ 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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4" \times 4.6" \times 6.18" (101.6 \times 117 \times 157 \text{ mm})$ Detector $5.5 \times 6.18 \times 6.18" (101.6 \times 117 \times 157 \text{ mm})$ Detector (St.St.) $6.1 \times 6.18 \times 6.18" (101.6 \times 117 \times 157 \text{ mm})$ Detector (St.St.) $6.1 \times 6.18 \times 6.18" (101.6 \times 117 \times 157 \text{ mm})$ Detector (St.St.) $6.1 \times 6.18 \times 6.18 \times 6.18 \times 6.18$ Tilt mount $6.1 \times 6.18 \times 6.18$
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust  APPROVALS	Fault: $0+1mA$ Normal: $4mA\pm10\%$ Alarm: $20mA\pm5\%$ BIT Fault: $2mA\pm10\%$ Warning: $16mA\pm5\%$ Resistance Loop: $100-600\ \Omega$ 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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) 6.1 lb ( $2.8 \text{ kg}$ ) Tilt mount $2.2 \text{ lb } (1.0 \text{ kg})$ and Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Tell P66 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II 2 G D  Ex d e IIC T5 Gb Ex d e IIC T4 Gb Ex tb IIIC T96°C Db Ex tb IIIC T106°C Db ( $-55^{\circ}\text{C} \le \text{Ta} \le +75^{\circ}\text{C}$ ) ( $-55^{\circ}\text{C} \le \text{Ta} \le +85^{\circ}\text{C}$ )  FM/FMC/CSA Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust  APPROVALS Hazardous Area	Fault: $0+1mA$ Normal: $4mA\pm10\%$ Alarm: $20mA\pm5\%$ BIT Fault: $2mA\pm10\%$ Warning: $16mA\pm5\%$ Resistance Loop: $100-600\ \Omega$ 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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4^m \times 4.6^m \times 6.18^m$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^m \times 4.6^m \times 6.18^m$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) $6.1 \text{ lb}$ ( $2.8 \text{ kg}$ ) Tilt mount $2.2 \text{ lb}$ ( $1.0 \text{ kg}$ ) India Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Tellof6 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II 2 G D Ex d e IIC T5 Gb Ex tb IIIC T106°C Db ( $-55^{\circ}\text{C} \le \text{Ta} \le +75^{\circ}\text{C}$ ) ( $-55^{\circ}\text{C} \le \text{Ta} \le +85^{\circ}\text{C}$ ) FM/FMC/CSA Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G EN54-10 (VdS) FM3260
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust APPROVALS Hazardous Area	Fault: $0+1mA$ Normal: $4mA\pm10\%$ Alarm: $20mA\pm5\%$ BIT Fault: $2mA\pm10\%$ Warning: $16mA\pm5\%$ Resistance Loop: $100-600\ \Omega$ 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 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel $316L$ with electro polish finish Stainless Steel $316L$ with electro polish finish Detector $4"\times4.6"\times6.18"$ ( $101.6\times117\times157$ mm) Detector $4"\times4.6"\times6.18"$ ( $101.6\times117\times157$ mm) Detector (St.St.) $6.1$ lb ( $2.8$ kg) Tilt mount $2.2$ lb ( $1.0$ kg) wirds Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Te IP66 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II $2$ G D Ex d e IIC T5 Gb Ex tb IIIC T106°C Db ( $-55^{\circ}$ C $\leq$ Ta $\leq$ +75°C) ( $-55^{\circ}$ C $\leq$ Ta $\leq$ +85°C) FM/FMC/CSA Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G EN54-10 (VdS) FM3260 IEC61508 - SIL2 (TUV)
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust APPROVALS Hazardous Area  Performance Reliability  ACCESSORI	Fault: $0+1\text{mA}$ Normal: $4\text{mA}\pm10\%$ Alarm: $20\text{mA}\pm5\%$ BIT Fault: $2\text{mA}\pm10\%$ Warning: $16\text{mA}\pm5\%$ Resistance Loop: $100\text{-}600\Omega$ Optional HART communications on the $0-2\text{omA}$ analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options RS-485 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4''$ x $4.6''$ x $6.18''$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) $6.1 \text{ lb}$ ( $2.8 \text{ kg}$ ) Tilt mount $2.2 \text{ lb}$ ( $1.0 \text{ kg}$ ) and Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Te IP66 and IP67 per EN60529, NEMA 250 6P   ATEX and IECEX Ex II 2 G D  Ex d e IIC T5 Gb Ex tb IIIC T106°C Db ( $-55^{\circ}\text{C} \le \text{Ta} \le +75^{\circ}\text{C}$ ) ( $-55^{\circ}\text{C} \le \text{Ta} \le +85^{\circ}\text{C}$ ) FM/FMC/CSA Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G EN54-10 (VdS) FM3260  IEC61508 - SIL2 (TUV)
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust APPROVALS Hazardous Area  Performance Reliability  ACCESSORI Flame Simulator 20/20-	Fault: $0+1\text{mA}$ Normal: $4\text{mA}\pm10\%$ Alarm: $20\text{mA}\pm5\%$ BIT Fault: $2\text{mA}\pm10\%$ Warning: $16\text{mA}\pm5\%$ Resistance Loop: $100-600~\Omega$ Optional HART communications on the $0-20\text{mA}$ analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options RS-485 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) $6.1$ lb ( $2.8$ kg) Tilt mount $2.2$ lb ( $1.0$ kg) wirds Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Te IP66 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II 2 G D  Ex d e IIC T5 Gb Ex tb IIIC T106°C Db ( $.55^{\circ}\text{C} \le \text{Ta} \le +75^{\circ}\text{C}$ ) ( $.55^{\circ}\text{C} \le \text{Ta} \le +85^{\circ}\text{C}$ )  FM/FMC/CSA Class I Div. 1, Groups B, C & D  Class II/III Div. 1, Groups E, F & G  EN54-10 (VdS)  FM3260  IEC61508 - SIL2 (TUV)  ES  313 U-Bolt/Pole Mount 789260-2 (2" pole) Mini Laptop Kit 777820 Weather Cover 777163 (St.
MECHANIC Materials Mounting Dimensions Weight Environmental Standa Water and Dust APPROVALS Hazardous Area  Performance Reliability  ACCESSORI	Fault: $0+1\text{mA}$ Normal: $4\text{mA}\pm10\%$ Alarm: $20\text{mA}\pm5\%$ BIT Fault: $2\text{mA}\pm10\%$ Warning: $16\text{mA}\pm5\%$ Resistance Loop: $100-600\ \Omega$ Optional HART communications on the $0-20\text{mA}$ analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options RS-485 Modbus compatible communication link that can be used in computer controlled installations  AL SPECIFICATIONS  Stainless Steel 316L with electro polish finish Stainless Steel 316L with electro polish finish Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector $4^n \times 4.6^n \times 6.18^n$ ( $101.6 \times 117 \times 157 \text{ mm}$ ) Detector (St.St.) $6.1$ lb ( $2.8$ kg) Tilt mount $2.2$ lb ( $1.0$ kg) India Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Tell P66 and IP67 per EN60529, NEMA 250 6P  ATEX and IECEX Ex II 2 G D  Ex d e IIC T5 Gb Ex d e IIC T4 Gb Ex tb IIIC T106°C Db ( $-55^\circ\text{C} \le \text{Ta} \le +75^\circ\text{C}$ ) ( $-55^\circ\text{C} \le \text{Ta} \le +85^\circ\text{C}$ )  FM/FMC/CSA Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G EN54-10 (VdS) FM3260 IEC61508 - SIL2 (TUV)  ES  313 U-Bolt/Pole Mount 789260-2 (2" pole) Mini Laptop Kit 777820 Weather Cover 777163 (St. 789260-1 (3" pole) Air Shield 777650 *777563 (Plas)

<sup>\*</sup>Supplied free of charge with the detector

