

keep a **SharpEye™** on your safety



# 40/40U-UB

## UV Flame Detector

*A low cost solution in a durable, high spec package*



**SharpEye™**

*The new 40/40 UV Flame Detector detects hydrocarbon-based fuel and gas fires, invisible hydrogen flames, and fires from hydrides, ammonia, silane and other organics. The 40/40U-UB is the most durable and weather resistant UV 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.*

*The model 40/40UB includes a Built-in-Test (BIT) feature, whereas the 40/40U model does not.*

*Note: This type of detector should not be exposed to UV radiation sources such as welding, sparks, and electric arcs as it will cause false alarms.*

### FEATURES & BENEFITS

- UV spectrum design
- Automatic and Manual Built-In-Test (BIT) - to assure continued reliable operation (in 40/40UB only)
- 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) model 40/40UB only
- 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
- 3<sup>rd</sup> party Performance Tested
  - EN54-10 (VdS)
  - FM3260

### APPLICATIONS

Chemical plants  
Petrochemicals plants  
Power Generation facilities  
Pharmaceutical Industry  
Printing Industry  
Warehouses

Automotive Industry  
Aerospace  
Explosives & Munitions  
Waste Disposal facilities  
Paint and solvent processes



**THORNE &  
DERRICK  
INTERNATIONAL**

Thorne & Derrick  
+44 (0) 191 490 1547  
www.heatingandprocess.com



keep a **SharpEye™** on your safety

## GENERAL SPECIFICATIONS

<b>Spectral Response</b>	UV 0.185-0.260 $\mu$ m					
<b>Detection Range</b> (at highest Sensitivity Setting for 1ft <sup>2</sup> (0.1m <sup>2</sup> ) pan fire)	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>
	n-Heptane	50 / 15	Ethanol 95%	37 / 11	LPG*	43 / 13
	Gasoline	50 / 15	Methanol	25 / 7.5	Polypropylene Pellets	33 / 10
	Diesel Fuel	37 / 11	IPA (Isopropyl Alcohol)	37 / 11	Silane**	22 / 7
	JP5	37 / 11	Hydrogen*	39 / 12	Office Paper	20 / 6
	Kerosene	37 / 11	Methane*	43 / 13		
	* 30" (0.75m) high, 10" (0.25m) width plume fire					
	**20" (0.5m) high, 8" (0.2m) width plume fire					
<b>Response Time</b>	Typically 3 seconds					
<b>Adjustable Time Delay</b>	Up to 30 seconds					
<b>Sensitivity Ranges</b>	1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire from 50 ft (15m)					
<b>Field of View</b>	Horizontal 100°; Vertical 95°					
<b>Built-in-Test (BIT)</b>	Automatic (and Manual)					
<b>Temperature Range</b>	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)					
<b>Humidity</b>	Up to 95% non-condensing (withstands up to 100% RH for short periods)					
<b>Heated Optics</b>	To eliminate condensation and icing on the window					

## ELECTRICAL SPECIFICATIONS

<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)
<b>Power Consumption</b>	Standby: Max. 90mA (110mA with heated window) Alarm: Max. 130mA (160mA with heated window)
<b>Cable Entries</b>	2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO
<b>Wiring</b>	12 - 22AWG (0.3mm <sup>2</sup> -2.5mm <sup>2</sup> )
<b>Electrical Input Protection</b>	According to MIL-STD-1275B
<b>Electromagnetic Compatibility</b>	EMI/RFI protected to EN61326-3 and EN61000-6-3
<b>Electrical Interface</b>	The detector includes twelve (12) terminals with five (5) wiring options (factory set)

## OUTPUTS

<b>Relays</b>	Alarm, Fault and Auxiliary SPST volt-free contacts rated 2A at 30V DC
<b>0-20mA (stepped)</b>	Sink (source option) configuration Fault: 0 +1mA      Warning: 16mA $\pm$ 5% BIT Fault: 2mA $\pm$ 10%      Alarm: 20mA $\pm$ 5% Normal: 4mA $\pm$ 10%      Resistance Loop: 100-600 $\Omega$
<b>HART Protocol</b>	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
<b>RS-485</b>	RS-485 Modbus compatible communication link that can be used in computer controlled installations

## MECHANICAL SPECIFICATIONS

<b>Materials</b>	- Stainless Steel 316L with electro polish finish
<b>Enclosure options</b>	- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish (not available in FM version)
<b>Mounting</b>	Stainless Steel 316L with electro polish finish
<b>Dimensions</b>	Detector 4" x 4.6" x 6.18" (101.6 x 117 x 157 mm)
<b>Weight</b>	Detector (St.St.) 6.1 lb (2.8 kg)      Tilt mount 2.2 lb (1.0 kg) Detector, aluminum 2.8 lb (1.3 kg)
<b>Environmental Standards</b>	Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp
<b>Water and Dust</b>	IP66 and IP67 per EN60529, NEMA 250 6P

## APPROVALS

<b>Hazardous Area</b>	ATEX and IECEx	Ex II 2 G D Ex d e IIC T5 Gb Ex tb IIIC T96°C Db (-55°C $\leq$ Ta $\leq$ +75°C)	Ex d e IIC T4 Gb Ex tb IIIC T106°C Db (-55°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	
<b>Performance</b>	EN54-10 (Vds) FM3260		
<b>Reliability</b>	IEC61508 - SIL2 (TUV) - model 40/40UB only		

## ACCESSORIES

<b>Flame Simulator</b> 20/20-311	<b>U-Bolt/Pole Mount</b> 789260-2 (2" pole)	<b>Mini Laptop Kit</b> 777820	<b>Weather Cover</b> 777163 (St.St)
<b>Tilt Mount</b> 40/40-001	789260-1 (3" pole)	<b>Air Shield</b> 777650	*777263 (Plastic)
<b>Duct Mount</b> 777670	<b>USB RS485 Harness Kit</b> 794079-5	<b>Cone Viewer</b> 777166	
	<b>E.O.L Encapsulated Resistor</b> 777915-X		

\*Supplied free of charge with the detector

