sierra monitor corporation

3600-L (LB) UV/IR Flame Detector Series

Maximum choice of features in a high performance package

Sierra Monitor offers two versions of the new 3600 Series UV/IR Flame Detectors:

Model 3600-L (& LB) provides a combination of UV and IR sensors, where the IR sensor operates at a wavelegnth of 2.5-3.0µm, and can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.

Model 3600-L4 (& L4B) is identical to the 3600-L except that the IR sensor works at a wavelength of 4.5µm 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 causes by solar radiation. Due to increased reliability, the 3600-L Series is approved to IEC 61508 Safety Integrity requirements of SIL2 (TUV).

Features & Benefits

- UV/IR Dual-Sensor
- High-Speed Response - 150 sec Response to Saturated Signal
- 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)
- 2-Year Warranty
- User Programmable via HART or RS-485
- Ex approved for Zone 1 hazardous area location
  - ATEX   - FM *
  - IECEx   - CSA *
- 3rd party Performance Tested
  - EN54-10 (LPCB)   - FM3260 (FM)
- Solar blind
- Automatic Built-In-Test (BIT)* and Manual - to assure continued reliable operation

* Option

Applications

- Offshore Oil & Gas installations
- Onshore Oil & Gas installations and pipelines
- Chemical plants
- Petrochemical plants
- Storage Tank farms

- Aircraft hangers
- Power Generation facilities
- Pharmaceutical industry
- Printing industry
- Warehouses
- Automotive industry

- Explosives & Munitions
- Waste Disposal facilities
- Aerospace industry
- Paint, Polymer and Glue processes

Ordering Information

Model Number	Type	Wiring Config (Table1)	Temperature	Elec Entry	Housing	EX Approval
3600	- L = UV/IR	- 1	- 1 = 75C std	- 1 = -M25	- S = SS	- F = FM
	- LB = UV/IR with BIT	- 2	- 2 = 85C	- 2 = 3/4" NPT	- A = AL	- C = ATEX/IIECEx
	- L4 = UV/IR (IR at 4.5mm)	- 3				
	- L4B = UV/IR (4.5mm) w/ BIT	- 4				
		- 5				

Table 1: Wiring Options

All units are provided with RS-485 and HART enabled if mA output is used

Option	4-20mA	Fault Relay	Aux Relay	Alarm Relay
1 default	Sink	NC	--	NO
2	Source	NC	--	NO & NC
3	Source	NO	--	NO & NC
4	X	NC	NO	NO
5	X	NO	NO	NO

Model 3600-L   IR Flame Detector

Specifications:

Spectral Response	3600-L-LB:	UV: 0.185 - 0.260 micron	IR: 2.5-3.0 micron
	3600-L4-L4B:	UV: 0.185 - 0.260 micron	IR: 4.4-4.6 micron

Detection Range
(at highest Sensitivity Setting for 1 ft^2
(0.1m^2) pan fire)

n-Heptane: 50 ft (15m)	Kerosene: 37 ft (11m)	Methane*: 16 ft (5m)
Gasoline: 50 ft (15m)	Ethanol 95%: 25 ft (7.5m)	LPG*: 16 ft (5m)
Diesel Fuel: 37 ft (11m)	Methanol: 25 ft (7.5m)	Polypropylene Pellets: 13 ft (4m)
JP5: 37 ft (11m)	IPA (Isopropyl Alcohol): 25 ft (7.5m)	Office Paper: 16 ft (5m)
Hydrogen **: 16 ft (5m)	*20" (0.5m) high, 8" (0.2m) w/ plume fire	**3600-L/LB only

Response Time	Typically 5 seconds. High speed 150 msec response to saturated signal
Adjustable Time Delay	Up to 30 seconds
Sensitive Range	1 ft^2 (0.1m^2) n-heptane pan fire from 50 ft (15m)
Field of View	Horizontal 100°, Vertical 95°
Built-in-Test (BIT)	Automatic (and Manual)
Temperature Range	Operating: -67°F to +167°F (-55°C to +75°C)
	Operating 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 Options	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 (2.5mm^2 - 0.3mm^2)
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 5A at 30 VDC or 250 VAC
4-20mA (stepped)	Sink (source option) configuration

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

HART Protocol	Optional HART communication 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 control 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
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	Aluminum: 2.8 Lb (1.3 Kg)
	Stainless Steel 316L: 6.1 Lb (2.8 Kg)
	Tilt mount: 2.2 Lb (1.0 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 & IECEx	Ex II 2 GD,	
	Ex de IIB + H2 T5 (-55°C to + 75°C)	Ex de IIB + H2 T4 (-55°C to + 85°C)
	Ex tD A21 IP66/X7 T 95°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 - SIL-2 (TUV)
Accessories	
Fire Simulator	20/20-311
Tilt Mount	3600-01
Weather Protector	777163
Air Shield	777161
Mini Laptop Kit	777820
USB RS485 Harness Kit	794079-5
Laser Pointer (Detector area coverage)	777166

* Contact Sierra Monitor
Specifications subject to changes without notice