Overview

The new 3600-M Multi IR Flame Detector is specifically designed for detection of hydrocarbon and hydrogen flames. It detects hydrocarbon-based fuel and gas fires at long distances with the highest immunity to false alarms. The 3600-M can detect a gasoline pan fire at 215 ft (65 m) or a hydrogen flame at 100 ft (30 m) in less than 5 seconds.

The 3600-M is the most durable and weather resistant range of flame detectors currently on the market. Its features include a heated window, to eliminate condensation and icing; optional HART capabilities, for digital communications; lower power requirements, and a compact, lighter design.

Due to increased reliability, the 3600-M Series is approved to IEC 61508 Safety Integrity requirements of SIL2 (TUV).

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

Features & Benefits

- Multi Spectrum Design for long distance detection of hydrocarbons and hydrogen flames
- Heated window- for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility

  -Relays for Alarm, Fault and Auxiliary

  -0-20 mA (stepped)

  -Optional HART protocol for maintenance and asset management

  -RS-485, Modbus Compatible
- Automatic Built-In-Test (BIT) and Manual

- 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

Specifications

Spectral Response
Multi IR bands

Detection Range

n-Heptane: 215 ft (65 m)	**Kerosene:** 150 ft (45 m)
Methane*: 150 ft (45 m)	**Gasoline:** 215 ft (65 m)
Ethanol 95%: 135 ft (40 m)	**LPG*:** 150 ft (45 m)
Diesel Fuel: 150ft (45 m)	**Methanol:** 115 ft (35 m)
Polypropylene Pellets: 115 ft (35 m)	
JP5: 150 ft (45 m)	**IPA:** 135 ft (40 m)
Office paper: 82 ft (25 m)	**Hydrogen*:** 125 ft (38 m)
Silane**: 7 ft (2 m)	**Ammonia**:** 60 ft (18 m)

*30" (.75 m) high,10" (.25 m) w/plume fire
**20" (.5 m) high, 8" (.2 m) w/plume fire

Response Time
Typically 5 seconds

Adjustable Time Delay
Up to 30 seconds

Sensitivity Range
4 ranges for 1ft² n-heptane pan fire from 50 ft-215 ft

Field of View
67° H, 70° V Gasoline   80° H,80° V Hydrogen

Built-in-Test (BIT)
Manual and Automatic

Heated Options
To eliminate condensation and icing on window

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

Electrical Specifications
Operating Voltage: 24VDC nominal (18-32 VDC)
Power Consumption :

Standby Max 90mA (110mA w/ heated window)

Alarm: Max 130 mA (160mA w/ heated window)

Cable Entries: 2 x ¾" – 14 NPT conduits
Or 2 x M25 x 1.5 mm ISO

Wiring: 12-22 AWG (2.5 mm²- 0.3 mm²)
Electrical Input Protection: MIL-STD-1275B
Electromagnetic Compatibility: EMI/RFI protected to EN61326-3 and EN61000-6-3

Electrical Interface: The detector includes 12 terminals w with 5 wiring options (factory set)

Mechanical Specifications
Materials: heavy duty copper free aluminum (<1%), red epoxy enamel finish (ATEX approval only)
Enclosure Options: Stainless steel 316L with electro polish finish (FM* or ATEX approval)
Mounting: Stainless Steel 316 L 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) SS 316 L:6.1lb (2.8 Kg)
Tilt mount: 2.2 lb (1 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

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

Output
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	Warning: 16mA ±5%
BIT Fault: 2mA ±10%	Alarm 20mA ±5%
Normal: 4 mA ± 10%	Resistance Loop: 100-600 ohms

HART Protocol: Optional Hart Communication on the 0-20 mA analog current 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

Approvals
ATEX & IECEx*: Ex II 2 GD
Ex de IIB + H2 T5 (-55 to 75°C) Ex tD A21 IP66/X7 T 95°C
Ex de IIB + H2 T4 (-55 to 85°C) Ex tD A21 IP66/X7 T 105°C
FM/CSA*: Class I Div1 Groups B, C & D
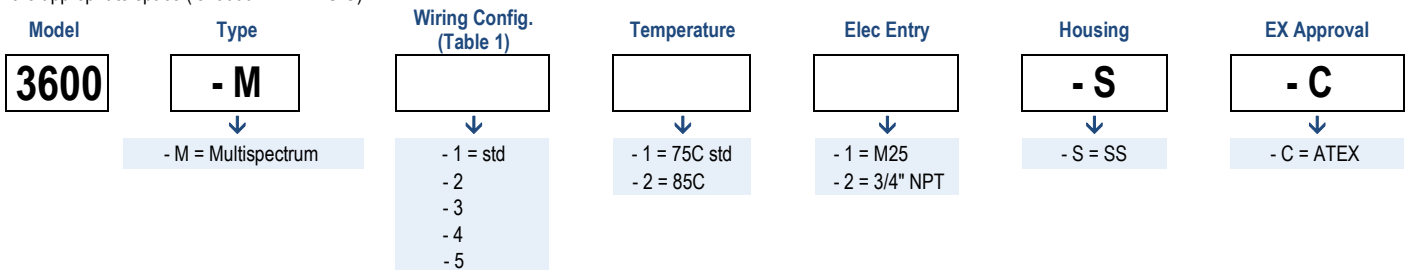Class II/III Div. 1 Groups E, F, & G
Performance: EN54-10 (LPCB)*
FM-3250 (FM)
Reliability: IEC61508-SIL-2 (TUV)

*Specifications subject to change without notice

Ordering Information: The following part number is essential in selection of the correct product. Please build up the desired part by inserting the code for each element into the appropriate space (ie. 3600-M-1-1-2-S-C).

Model	Type	Wiring Config. (Table 1)	Temperature	Elec Entry	Housing	EX Approval
3600	**- M**				**- S**	**- C**
	- M = Multispectrum	- 1 = std - 2 - 3 - 4 - 5	- 1 = 75C std - 2 = 85C	- 1 = M25 - 2 = 3/4" NPT	- S = SS	- C = ATEX

Accessories:

FS-1400	Fire simulator		3600-01	Tilt Mount
777163	SS. Sunshade		777650	Air Shield
777820	Mini Laptop Kit		794079-5	USB RS485 Harness Kit
777166	Laser Pointer (Detector area coverage)			

Table 1: Wiring Options

Option	4-20mA	HART	Fault Relay	AUX Relay	Alarm Relay**
1 Default	Sink	X	NC	-	NO
2	Source	✓	NC	-	NO/NC
3	Source	✓	NO	-	NO/NC
4	X	X	NC	NO	NO
5	X	X	NO	NO	NO

RS-485 available on all options   ** Relays shown in non-alarm state