



GENERAL MONITORS
Protection for life.

MODELS FL3100/FL3101

UV/IR and UV Unitized Flame Detectors



Features

- Wide Field of View
- 4-20mA Stepped Output
- RS-485 MODBUS RTU Serial Communications
- Wide Operating Temperature Range
- Continuous Optical Path Monitoring (COPM)
- Three SPDT High Current Relay Outputs
- Hydrogen specific configuration available

Benefits

- Greater fire detection coverage
- Industry standard for remote alarm and fault indication
- Provides addressable communication link with redundancy for design specifics
- Permits operation at higher ambient temperature
- Checks optical path integrity and detector's electronic circuitry once every minute
- Immediate and time delayed relay outputs for warn and alarm conditions
- Detects hydrogen flame providing greater application flexibility

Description

General Monitors' Models FL3100 and FL3101 are Ultraviolet/Infrared and Ultraviolet-only flame detectors designed to detect unwanted fires and provide alarm outputs directly from the detector while maintaining false alarm immunity.

The Model FL3100 detects fires by monitoring in both the ultraviolet and infrared (UV & IR) spectral ranges making it highly immune to false alarms caused by lightning, arc welding, hot objects and other sources of radiation. The Model FL3101 detects in only the ultraviolet (UV) spectral range for optimized speed of response.

There is also a FL3100 detector that specifically detects hydrogen fires. All the existing features of the FL3100 remain, but the detector now has a shorter wavelength of 2.7 - 3.2 micrometers in order to sense hydrogen fires, issuing alarm outputs directly, without compromising false alarm immunity, but providing reliable protection of people, equipment and hydrogen facilities.

Other features of the FL3100 and FL3101 include three alarm/fault relays, and an RS-485 serial output with

MODBUS RTU protocol for linking up to 128 detectors in series or 247 with repeaters. The RS-485 output provides status, alarm, fault and other information for operation, troubleshooting or programming of the units.

The COPM (Continuous Optical Path Monitoring) self test feature checks the optical path integrity (window cleanliness) and the detector's electronic circuitry once every minute.

Applications

- Refineries
- Drilling and Production Platforms
- Fuel Loading Facilities
- Compressor Stations
- Electrostatic Paint Spray Booths
- LNG/LPG Processing and Storage Facilities
- Gas Turbines
- Chemical Plants
- Aircraft Hangars



MODELS FL3100/FL3101

System Specifications

| | |
|--------------------------------------|---|
| Wave Lengths: | 185 to 260 nm (UV) 4.35 microns (IR) <i>Hydrogen FL3100:</i> 2.7 to 3.2 microns (IR) |
| Field of View: | 120° horizontal, 115° vertical (FL3100) 140° horizontal, 135° vertical (FL3101) |
| Sensitivity: | Approved performance specifications - 50 feet (15.2m) distance for a 1 sq. ft (0.092m ²) gasoline fire. For H ₂ , contact factory. |
| Typical Response Time: | < 3 sec @ 50 ft. (FL3100) < 1 sec @ 50 ft. (FL3101) |
| Minimum Sensor Response Time: | UV/IR- FL3100 <500 ms UV- FL3101 <100 ms |
| Accessories: | Swivel elbow union, mounting bracket, air shield, test lamp |
| Classification: | Class I, Division 1 & 2 Groups B, C & D Class II, Groups E, F & G; Class III, Type 4X, EEx d IIC, T5, IP66 |
| Warranty: | Two years |
| Approvals: | CSA, FM, ATEX, GOST, CE Marking and SIL-3 rated |
| Patent Number: | 5,914,489 |

Environmental Specifications

| | |
|-------------------------------------|-------------------------------------|
| Operating Temperature Range: | -40°F to +185°F (-40°C to +85°C) |
| Storage Temperature Range: | -40°F to +185°F (-40°C to +85°C) |
| Operating Humidity Range: | 0% to 100% RH, non-condensing |

Electrical Specifications

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|-----------------------|---|
| Input Power: | 20-36 VDC 24 VDC @ 150mA max. (3.6w max.) |
| Analog Signal: | 4-20 mA (600 Ohms Max.) |
| Fault Signal: | 0mA |
| COPM Fault: | 2mA, ± 0.2mA |
| Ready Signal: | 4mA, ± 0.2mA |
| IR Signal: | 8mA, ± 0.2mA (FL3100 only) |
| UV Signal: | 12mA, ± 0.2mA (FL3100 only) |
| WARN Signal: | 16mA, ± 0.2mA |
| ALARM Signal: | 20mA, ± 0.2mA |
| Baud Rate: | 2400, 4800, 9600 or 19200 BPS |

Relay Contact Rating: 8A 250 VAC, 8A @ 24 VDC resistive (North America)
8A @ 30 VDC resistive (Europe)

Dip Switch Selectable Options: Sensitivity: 100%, 75%, 50%
Alarm Time Delay: 2, 4, 8, or 10 seconds
Warn & Alarm Relays: Latching/Non-Latching Energized/De-Energized

RS-485 Output: MODBUS RTU, suitable for linking up to 128 units in series and up to 247 units with repeaters.
Optional – Dual MODBUS

RF/EMI Protection: Complies with EN50081-2, EN50082-2

Cable Requirements: Max. distance between detector and power source @ 24 VDC nominal (20 ohm loop), 14 AWG - 3000 ft (930 m) Terminal Blocks - 12-22 AWG

Status Indicator: LED with status, fault and alarm indication

Faults Monitored: EPROM and EEPROM checksum errors, optics failure/blockage, low supply voltage

Mechanical Specifications

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|--------------------------------|---|
| Housing: | Aluminum (Stainless steel optional) |
| Diameter: | 6 inches (152 mm) |
| Length: | 5.5 inches (140 mm) |
| Weight: | 5 lbs (2.27kg) - Aluminum 16 lbs (7.26kg) - Stainless Steel |
| Mounting: | 3/4" NPT (2 ports) or surface mounting (ATEX) |
| Cable Entry: | 2 x 3/4" NPT or 2 x m25 or 2 x m20 |
| Standard Configuration: | FL3100-1-5-1-3-1-1-1 FL3100-1-5-1-3-3-1-1 (hydrogen) FL3101-1-5-1-3-1-1-1 |

Specifications subject to change without notice.

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