Rosemount™ 975UF

Ultra Fast Ultraviolet Infrared Flame Detector

The Rosemount™ 975 ultra fast ultraviolet infrared flame detector is designed to meet two major requirements:

- High-Speed Response (20 msec)
- High Reliability (immunity to false alarm)

The Rosemount 975UF ultra fast ultraviolet infrared flame detector can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic 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 caused by solar radiation.

Rosemount 975UF Ultra Fast Ultraviolet Infrared Flame Detector.

Features & Benefits

- UV/IR dual-sensor
- High-speed response - 20 msec to flash fire
- Solar blind
- Automatic 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
  - Analog output for fast detection
  - 0–20 mA (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 (SIL 2 - TÜV)
- 5 year warranty
- User programmable via HART or RS-485

Applications (model dependent)

- Explosives and ammunition
- Offshore oil and gas
- Onshore oil and gas
- Petrochemical plants
- Storage tank farms
- Aircraft hangars
- Chemical plants
- Power generation facilities
- Pharmaceutical industry
- Printing industry
- Warehouses
- Automotive industry
- Waste disposal facilities
- Aerospace industry
- Hydrogen fuel cell industry
- Hydrogen vehicle parking and refueling
- Battery charging areas
- Refinery hydrogenation
- Space industry hydroxyl propellant
- Static fuel cell systems

Specifications

Table 1 - Rosemount 975UF Ultra Fast Ultraviolet Infrared Flame Detector

General specifications	
Spectral response	UV: 0.185–0.260 µm; IR: 2.5–3.0 µm
Detection range (at highest sensitivity setting for 0.1m² (1 ft²) pan fire)	**Fuel** **m / ft** **Fuel** **ft / m** **Fuel** **m / ft** n-Heptane 20 / 66 Ethanol 25 / 7.5 LPG* 13 / 43 Gasoline 20 / 66 Methanol 26 / 8 Polypropylene Pellets 13 / 43 Diesel Fuel 15 / 49 IPA (Isopropyl Alcohol) 43 / 13 Ammonia** 6 / 20 JP5 15 / 49 Hydrogen* 37 / 11 Silane** 1.8 / 6 Kerosene 15 / 49 Methane* 26 / 8 Office Paper 5 / 16 **0.75 m (30 in.) high, 0.25 m (10 in.) width plume fire* ***0.5 m (20 in.) high, 0.2 m (8 in.) width plume fire*
Response time	Typically 3 s. High speed 20 msec to flash fire
Adjustable time delay	Up to 30 s
Field of view	Horizontal 100˚; Vertical 95˚
Built-in-test (BIT)	Automatic
Temperature range	Operating: -55 ˚C to +75 ˚C (-67 ˚F to +167 ˚F) Option: -55 ˚C to +85 ˚C (-67 ˚F to +185 ˚F) Storage: -55 ˚C to +85 ˚C (-67 ˚F to +185 ˚F)
Humidity	Up to 95 % non-condensing (withstands up to 100 % relative humidity for short periods)
Heated optics	To eliminate condensation and icing on the window
Electrical specifications	
Operating voltage	24 Vdc nominal (18–32 Vdc)
Power consumption	Standby: Max. 90 mA (110 mA with heated window) Alarm: Max. 130 mA (160 mA with heated window)
Cable entries	2 x ¾ in.- 14 NPT conduits or 2 x M25 x 1.5 mm ISO
Wiring	12–22 AWG (0.3 mm²–2.5 mm²)
Electrical input protection	According to MIL-STD-1275B
Electromagnetic compatibility	EMI/RFI protected to EN 61326-3 and EN 61000-6-3
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 2 A at 30 Vdc
Analog output	4–4.7 V at detection
0–20 mA (stepped)	Sink (source option) configuration Fault: 0 + 1 mA IR: 8 mA ± 5 % Alarm: 20 mA ± 5 % BIT Fault: 2 mA ± 10 % UV: 12 mA ± 5 % Resistance Loop: 100–600 Ω Normal: 4 mA ± 10 % Warning: 16 mA ± 5 %
HART protocol	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
RS-485	RS-485 Modbus compatible communication link that can be used in computer controlled installations
Mechanical specifications	
Materials Enclosure options	- Stainless steel 316L with electro polish finish - Heavy duty copper free aluminum (less than 1 %), red epoxy enamel finish (not available in FM version)
Mounting	Stainless steel 316L with electro polish finish
Dimensions	Detector 101.6 x 117 x 157 mm (4 x 4.6 x 6.18 in.)
Weight	Detector (stainless steel) 2.8 kg (6.1 lb) Detector (aluminum) 1.3 kg (2.8 lb) Tilt mount 1.0 kg (2.2 lb)
Environmental standards	Meets MIL-STD-810C for humidity, salt and fog, vibration, mechanical shock, high temp, low tempp
Water and dust	IP66 and IP67 per EN 60529, NEMA 250 6P

Approvals				
Hazardous Area	**ATEX and IECEx**	II 2 G D Ex db eb op is IIC T4 Gb Ex tb op is IIIC T96°C Db (Ta -55°C to +85°C)	or	Ex db eb op is IIC T4 Gb Ex tb op is IIIC T106°C Db (Ta -55°C to +75°C)
	FM/FMC/CSA	Class I Div. 1, Groups B, C, & D Class II/III Div.1, Groups E, F & G		
Performance	EN 54-10 (VdS) FM 3260			
Reliability	IEC 61508 - SIL 2 (TÜV)			

Accessories	
Flame simulator kit	00975-9000-0010
Tilt mount	00975-9000-0001
Duct mount	00975-9000-0002
U-bolt/pole mount	00975-9000-0007 (2" pole) 00975-9000-0008 (3" pole)
USB RS-485 harness kit	00975-9000-0011
Weather protector	Plastic: 00975-9000-0003 Stainless Steel: 00975-9000-0004
Air shield	00975-9000-0005
Cone viewer kit	00975-9000-0006

Global Headquarters
Emerson Automation Solutions
6021 Innovation Blvd.
Shakopee, MN 55379, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
Safety.CSC@Emerson.com

North America Regional Office
Emerson Automation Solutions
8200 Market Blvd.
Chanhassen, MN 55317, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RFQ-NA.RCCRFQ@Emerson.com

Latin America Regional Office
Emerson Automation Solutions
1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA
+1 954 846 5030
+1 952846 5121
RFQ.RMD-RCC@Emerson.com

Europe Regional Office
Emerson Automation Solutions Europe GmbH
Neuhofstrasse 19a P.O. Box 1046
CH 6340 Baar
Switzerland
+1 954 846 5030
+1 952846 5121
RFQ.RMD-RCC@Emerson.com

Asia Pacific Regional Office
Emerson Automation Solutions Asia Pacific Pte LTD
1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.Emerson.com

Middle East and Africa Regional Office
Emerson Automation Solutions
Emerson FZE P.O. Box 17033
Jebel Ali Free Zone - South 2
+971 4 8118100
+971 4 88665465
RFQ.RMTMEA@Emerson.com

AnalyticExpert.com

Linkedin.com/company/Emerson-Automation-Solutions

Twitter.com/Rosemount_News

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Youtube.com/user/RosemountMeasurement

Google.com/+RosemountMeasurement