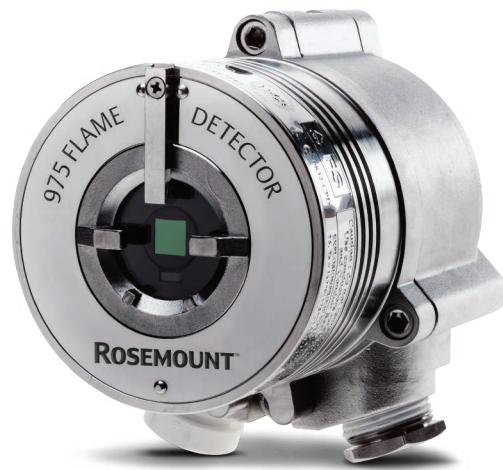# Rosemount™ 975MR

Multi-spectrum Infrared Flame Detector

The Rosemount™ 975MR multi-spectrum infrared flame detector is based on accurately analyzing the multi-spectral signals by three separate IR sensors. The Rosemount 975MR detects fuel and gas fires at long distances. For example, this product will detect a 0.1 m² (1 ft²) gasoline pan fire at 65 m (215 ft) in less than five seconds. The Rosemount 975MR also provides the highest immunity to false alarms at such industry leading detection range.

Rosemount 975MR Multi-spectrum Infrared Flame Detector

Features and benefits

- Multi spectrum design - for long distance detection and high false alarm immunity
- Sensitivity selection - to ensure no zone crossover detection
- Automatic and manual 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
  - 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)
- Five year warranty
- User programmable via HART or RS-485

Applications

- Oil and gas - Offshore and onshore process facilities
- Refineries
- Petrochemical process facilities
- Crude oil tank terminals
- Automotive manufacturing facilities
- Aircraft hangars
- Power generation facilities
- Chemical and pharmaceutical plants
- Production, loading, and unloading facilities

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Specifications

Table 1 - Rosemount 975MR Multi-spectrum Infrared Flame Detector

General specifications	
Spectral response	Three IR bands
Detection range (at highest sensitivity setting for 0.1m² (1 ft²) pan fire)	<table><tr><td>**Fuel**</td><td>**m / ft**</td><td>**Fuel**</td><td>**ft / m**</td><td>**Fuel**</td><td>**m / ft**</td></tr><tr><td>n-Heptane</td><td>65 / 215</td><td>Kerosene</td><td>45 / 150</td><td>Methane*</td><td>45 / 150</td></tr><tr><td>Gasoline</td><td>65 / 215</td><td>Ethanol</td><td>40 / 135</td><td>LPG*</td><td>45 / 150</td></tr><tr><td>Diesel fuel</td><td>45 / 150</td><td>Methanol</td><td>35 / 115</td><td>Polypropylene pellets</td><td>35 / 115</td></tr><tr><td>JP5</td><td>45 / 150</td><td>IPA (isopropyl alcohol)</td><td>40 / 135</td><td>Office paper</td><td>25 / 83</td></tr></table> *0.75 m (30 in.) high, 0.25 m (10 in.) width plume fire
Response time	Typically 5 s
Adjustable time delay	Up to 30 s
Sensitivity ranges	4 sensitivity ranges for 0.1 m² (1 ft²) n-heptane pan fire from 15 m (50 ft) to 65 m (215 ft)
Field of view	Horizontal 100˚; Vertical 95˚
Built-in-test (BIT)	Automatic (and manual)
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 (2.5 mm²–0.3 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
0–20 mA (stepped)	Sink (source option) configuration <table><tr><td>Fault: 0 +1 mA</td><td>Normal: 4 mA ±10 %</td><td>Alarm: 20 mA ±5 %</td></tr><tr><td>BIT fault: 2 mA ±10 %</td><td>Warning: 16 mA ±5 %</td><td>Resistance Loop: 100–600 Ω</td></tr></table>
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 316L) 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 temp
Water and dust	IP66 and IP67 per EN 60529, NEMA 250 6P

Approvals		
Hazardous area	**ATEX and IECEx** II 2 G D or Ex db eb op is IIC T4 Gb Ex tb op is IIIC T96 °C Db (Ta -55 °C to +85 °C)	Ex db eb op is IIC T4 Gb Ex tb op is IIIC T106 °C (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)	
Marine	MED "Wheelmark" approval (DNV) "Type" approval (DNV)	
Accessories		
Flame simulator kit	00975-9000-0009	
Tilt mount	00975-9000-0001	
Duct mount	00975-9000-0002	
U-bolt/pole mount	00975-9000-0007 (2 in. pole) 00975-9000-0008 (3 in. 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	

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