

# 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 975MR detects fuel and gas fires at long distances. For example, this product will detect a 1 ft<sup>2</sup> (0.1 m<sup>2</sup>) gasoline pan fire at 215 ft (65 m) in less than 5 seconds. The 975MR also provides the highest immunity to false alarms at such industry leading detection range.

### Features & 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)
- 5-Year Warranty
- User Programmable via HART® or RS-485



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### Applications

- Oil & Gas - Offshore & Onshore process facilities
- Refineries
- Petrochemical process facilities
- Crude oil tank terminals
- Automotive manufacturing facilities
- Aircraft Hangars
- Power Generation facilities
- Chemical & Pharmaceutical plants
- Production, loading & unloading facilities

## Specifications

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

General Specifications						
<b>Spectral Response</b>	Three IR Bands					
<b>Detection Range</b> (at highest Sensitivity Setting for 1 ft <sup>2</sup> (0.1 m <sup>2</sup> ) pan fire)	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>
	n-Heptane	215 / 65	Kerosene	150 / 45	Methane*	150 / 45
	Gasoline	215 / 65	Ethanol	135 / 40	LPG*	150 / 45
	Diesel Fuel	150 / 45	Methanol	115 / 35	Polypropylene Pellets	115 / 35
	JP5	150 / 45	IPA (Isopropyl Alcohol)	135 / 40	Office Paper	83 / 25
	*30" (0.75 m) high, 10" (0.25 m) width plume fire					
<b>Response Time</b>	Typically 5 s					
<b>Adjustable Time Delay</b>	Up to 30 s					
<b>Sensitivity Ranges</b>	4 Sensitivity ranges for 1 ft <sup>2</sup> (0.1 m <sup>2</sup> ) n-heptane pan fire from 50 ft (15 m) to 215 ft (65 m)					
<b>Field of View</b>	Horizontal 100°; Vertical 95°					
<b>Built-in-Test (BIT)</b>	Automatic (and Manual)					
<b>Temperature Range</b>	Operating: -67 °F to +167 °F (-55 °C to +75 °C) Option: -67 °F to +185 °F (-55 °C to +85 °C) Storage: -67 °F to +185 °F (-55 °C to +85 °C)					
<b>Humidity</b>	Up to 95 % non-condensing (withstands up to 100 % RH for short periods)					
<b>Heated Optics</b>	To eliminate condensation and icing on the window					
Electrical Specifications						
<b>Operating Voltage</b>	24 VDC nominal (18–32 VDC)					
<b>Power Consumption</b>	Standby: Max. 90 mA (110 mA with heated window) Alarm: Max. 130 mA (160 mA with heated window)					
<b>Cable Entries</b>	2 x ¾" - 14 NPT conduits or 2 x M25 x 1.5 mm ISO					
<b>Wiring</b>	12–22 AWG (2.5 mm <sup>2</sup> –0.3 mm <sup>2</sup> )					
<b>Electrical Input Protection</b>	According to MIL-STD-1275B					
<b>Electromagnetic Compatibility</b>	EMI/RFI protected to EN 61326-3 and EN 61000-6-3					
<b>Electrical Interface</b>	The detector includes twelve (12) terminals with five (5) wiring options (factory set)					
Outputs						
<b>Relays</b>	Alarm, Fault, and Auxiliary SPST volt-free contacts rated 2 A at 30 VDC					
<b>0–20 mA (stepped)</b>	Sink (source option) configuration Fault: 0 +1 mA                      Normal: 4 mA ±10%                      Alarm: 20 mA ±5% BIT Fault: 2 mA ±10%                      Warning: 16 mA ±5%                      Resistance Loop: 100–600 Ω					
<b>HART® Protocol</b>	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					
<b>RS-485</b>	RS-485 Modbus compatible communication link that can be used in computer controlled installations					
Mechanical Specifications						
<b>Materials</b>	- Stainless Steel 316L with electro polish finish - Heavy duty copper free aluminum (less than 1 %), red epoxy enamel finish (not available in FM version)					
<b>Mounting</b>	Stainless Steel 316L with electro polish finish					
<b>Dimensions</b>	Detector 4" x 4.6" x 6.18" (101.6 x 117 x 157 mm)					
<b>Weight</b>	Detector (stainless steel 316L)                      6.1 lb                      (2.8 kg) Detector (aluminum)                      2.8 lb                      (1.3 kg) Tilt mount                      2.2 lb                      (1.0 kg)					
<b>Environmental Standards</b>	Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp					
<b>Water and Dust</b>	IP66 and IP67 per EN 60529, NEMA 250 6P					

Approvals	
<b>Hazardous Area</b>	<p><b>ATEX and IECEx</b> Ex II 2 G D Ex de e IIC T5 Gb Ex tb IIIC T96° C Db (-55° C ≤ Ta ≤ +75° C)</p> <p><b>FM/FMC/CSA</b> Class I Div.1, Groups B, C &amp; D Class II/III Div.1, Groups E, F &amp; G</p> <p>Ex de IIC T4 Gb Ex tb IIIC T106° C Db (-55° C ≤ Ta ≤ +85° C)</p>
<b>Performance</b>	EN 54-10 (VdS) FM 3260
<b>Reliability</b>	IEC 61508 - SIL 2 (TÜV)

Accessories	
<b>Flame Simulator Kit</b>	00975-9000-0009
<b>Tilt Mount</b>	00975-9000-0001
<b>Duct Mount</b>	00975-9000-0002
<b>U-Bolt/Pole Mount</b>	00975-9000-0007 (2" pole) 00975-9000-0008 (3" pole)
<b>USB RS-485 Harness Kit</b>	00975-9000-0011
<b>Weather Protector</b>	Plastic: 00975-9000-0003 Stainless Steel: 00975-9000-0004
<b>Air Shield</b>	00975-9000-0005
<b>Cone Viewer Kit</b>	00975-9000-0006

**[www.Emerson.com/RosemountFlameGasDetection](http://www.Emerson.com/RosemountFlameGasDetection)**



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**Americas**

**Emerson Automation Solutions**

6021 Innovation Blvd.  
Shakopee, MN 55379  
USA

T + 1 866 347 3427

F + 1 952 949 7001

**[Safety.CSC@Emerson.com](mailto:Safety.CSC@Emerson.com)**

**Europe**

**Emerson Automation Solutions AG**

Neuhofstrasse 19a P.O. Box 1046  
CH-6340 Baar  
Switzerland

T + 41 (0) 41 768 6111

F + 41 (0) 41 768 6300

**[Safety.CSC@Emerson.com](mailto:Safety.CSC@Emerson.com)**

**Middle East & Asia**

**Emerson Automation Solutions**

Emerson FZE  
Jebel Ali Free Zone  
Dubai, UAE

P.O. Box 17033

T + 971 4 811 8100

F + 971 4 886 5465

**[Safety.CSC@Emerson.com](mailto:Safety.CSC@Emerson.com)**

**Asia Pacific**

**Emerson Automation Solutions**

1 Pandan Crescent  
Singapore 128461  
Singapore

T + 65 777 8211

F + 65 777 0947

**[Safety.CSC@Emerson.com](mailto:Safety.CSC@Emerson.com)**

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