

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 utilizing four separate IR sensors. The Rosemount 975MR detects fuel and gas fires at long distances. For example, this product will detect a 1 ft² (0.1 m²) gasoline pan fire at 300 ft. (90 m). The Rosemount 975MR also provides the highest immunity to false alarms and enhanced overall coverage range.

Features and benefits

- Multi spectrum design for long distance detection
- 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, or condensation)
- 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
- Designed to meet Safety Integrity Level SIL3 (TÜV)
- Five year warranty
- User programmable via HART® or RS-485

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Applications examples

- Oil and gas: offshore and onshore process facilities and pipelines
- Chemical plants
- Petrochemical plants
- Power generation facilities
- Pharmaceutical industry
- Explosives and ammunition manufacturing

Ordering information

You can order the Rosemount 975 as separate parts: detector (PN 975XXXXXXXXX), and accessories.



- Longest distance detection
- Ultra fast response to fire
- Widest operation temperature range
- Highest immunity to false alarms

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Model

Code	Description
975	Rosemount 975 Flame Detector

Measurement type

Code	Description
MR	Multi-Spectrum Infrared

Output

Code	Description
4U	Universal wiring

Housing style

Code	Description
6A	Aluminum - 3/4-in. NPT conduit entries
8A	Aluminum - M25 conduit entries
6S	Stainless steel - 3/4-in. NPT conduit entries
8S	Stainless steel - M25 conduit entries

Temperature rating

Code	Description
3	-60 to +85 °C (-76 to +185 °F)

Product certifications

Code	Description
A1	ATEX/IECEX flameproof
A2	FM and CSA flameproof
E2	INMETRO flameproof
EM	Technical Regulations Customs Union (EAC) flameproof
KZ	Technical Regulations Customs Union (EAC) Kazakhstan flameproof

Tilt mount

Code	Description
Y	Tilt mount
N	No tilt mount

Rain cover

Code	Description
0	No rain cover
7	Plastic rain cover
8	SST rain cover

Specifications

Table 1: General Specifications

Spectral response	Four infrared bands
Detection ranges (at highest sensitivity setting for 1 ft ² [0.1 m ²] pan fire)	See Table 3 .
Sensitivity ranges	6 sensitivity ranges for 1 ft ² (0.1 m ²) n-heptane pan fire
Field of view	Horizontal: 100°, vertical: 95°
Temperature range	Operating: -76 to +185 °F (-60 to +85 °C) Storage: -76 to +185 °F (-60 to +85 °C)
Humidity	Up to 95% non-condensing (withstands up to 100% relative humidity for short periods)

Table 2: Detection Response Time

Standard response time	Typically < 5 seconds
High speed response time (explosion)	50 msec for 1 ft. (0.30 m) diameter sphere LPG-air mixture explosion at 32.8 ft. (10 m) via analog voltage output

Table 3: Detection Range

Fuel	ft/m
Gasoline (Petrol) ⁽¹⁾	300/90
N-Heptane ⁽¹⁾	300/90
Diesel fuel ⁽¹⁾	210/63
Methane	210/63
Liquefied petroleum gas (LPG)	210/63
Kerosene ⁽¹⁾	210/63
Jet fuel JP5 ⁽¹⁾	210/63
Jet fuel A1 ⁽¹⁾	210/63
Ethanol 95% ⁽¹⁾	57/17
Isopropyl alcohol (IPA) ⁽¹⁾	185/55
Methanol ⁽¹⁾	185/55
Ethylene glycol ⁽¹⁾	164/50
Solvents ⁽¹⁾	246/75
Flammable adhesive (flash point 140 °F < 60 °C) ⁽¹⁾	210/63
Butyl acrylate ⁽¹⁾	246/75
Vinyl acetate ⁽¹⁾	246/75
Oil paint ⁽¹⁾	210/63
Gun powder ⁽²⁾	197/60
Fireworks ⁽³⁾	33/10

Table 3: Detection Range (continued)

Magnesium alloy ⁽⁴⁾	33/10
Polypropylene pellets ⁽¹⁾	163/49
Office paper ⁽¹⁾	115/34
Wood ⁽¹⁾	111/34
Mineral oil (20w50) ⁽¹⁾	210/63
Cooking oil ⁽¹⁾	210/63
Lithium ion battery ⁽⁵⁾	279/85

(1) 1 ft x 1 ft (0.3 m x 0.3 m) pan

(2) 1.5-in. sq.

(3) 10 pcs per test

(4) Only for UV detector

(5) One cell of battery per test

Table 4: Electrical Specifications

Operating voltage	24 Vdc nominal (18-32 Vdc)
Power consumption	Standby: Max. 3 W (8 W with heated window) Alarm: Max. 4.2 W (9.6 W with heated window)
Cable entries	2 x ¾-in.-14 NPT conduits or 2 x M25 x 1.5 mm ISO
Electrical input protection	According to EN50130
Electromagnetic compatibility	EMI/RFI protected to EN61000-6-3 and EN50130
Electrical interface	The detector includes 17 terminals with one wiring option

Table 5: Outputs

Relays	Alarm, fault, and auxiliary SPST volt-free contacts rated 2 A at 30 Vdc
Analog voltage output	Analog port malfunction: 0 V (< 0.5 V) Normal: 2 V ± 0.3 V Alarm/Explosion: 5 V ± 0.3 V
0-20 mA (stepped)	Sink (source option) configuration: Fault: 0 ± 1 mA BIT fault: 2 mA ± 10 % Normal: 4 mA ± 10 % Warning: 16 mA ± 5 % Alarm: 20 mA ± 5 % Resistance loop: 100 to 600 Ω
HART® protocol	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

Table 6: Mechanical Specifications

Enclosure options	Stainless steel 316 with electro polish finish Heavy duty copper free aluminum (less than 1%), polyurethane paint
Mounting	Tilt mount material-stainless steel 316 with electro polish finish
Dimensions	Detector 4 x 4.6 x 6.18-in. (100.6 x 117 x 155 mm)
Weight	Detector stainless steel: 6.3 lb. (2.9 kg) Detector aluminum: 2.8 lb. (1.3 kg) Tilt mount: 2.5 lb. (1.1 kg)
Environmental standards	DNV 2-4
Water and dust	IP66 and IP68 per EN60529, NEMA 250 6P

Table 7: Approvals

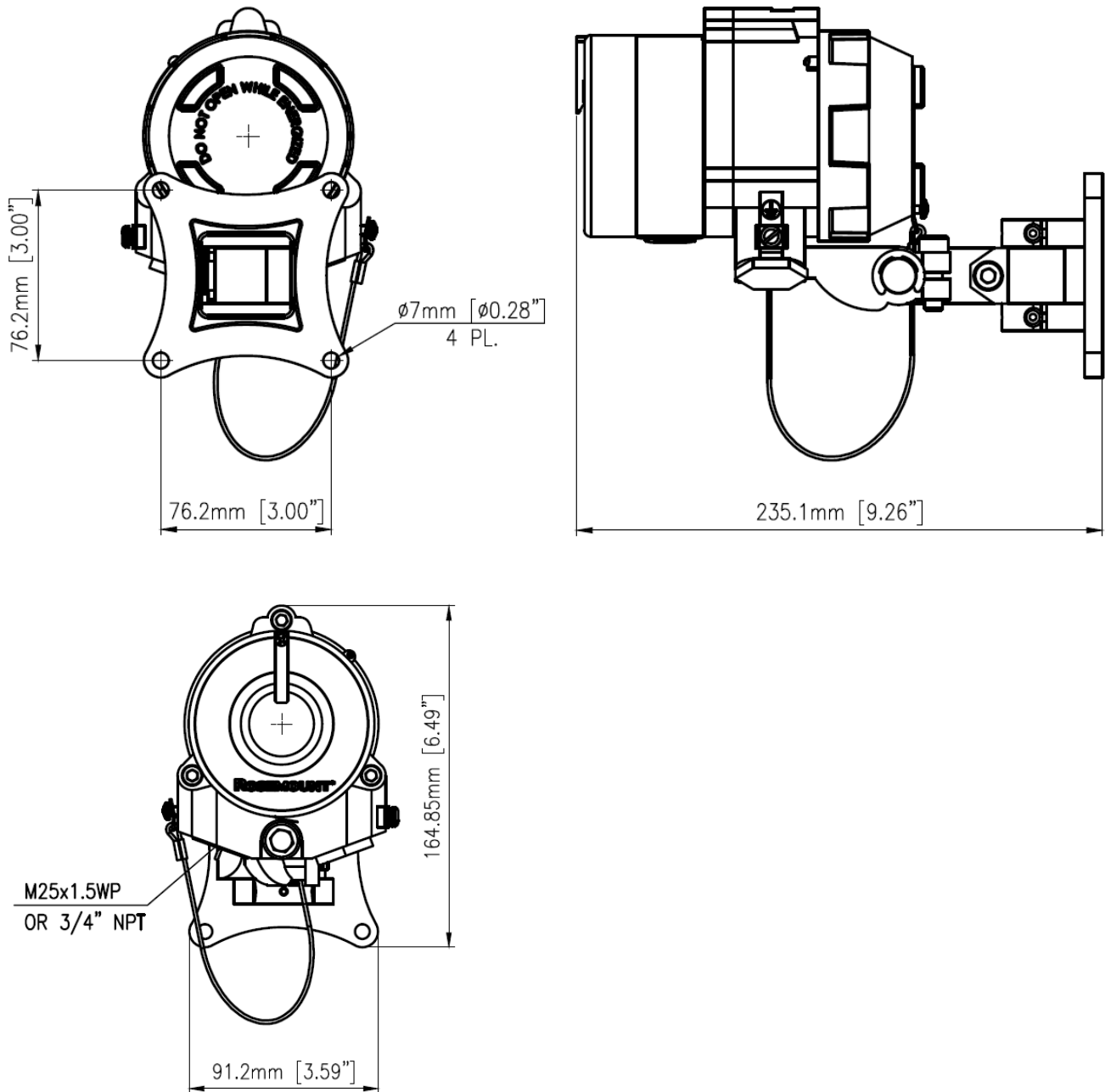
Hazardous area	ATEX and IECEx	Ex II 2 G D Ex db eb IIC T4 Gb Ex tb IIIC T110 °C Db (-50 °C ≤ T _a ≤ +85 °C)
	FM/FMC/CSA	Class I Division 1, Groups B, C, and D, T4 Class II/III Division 1, Groups E, F, and G, T4 Class I Division 2, Groups B, C, and D, T4 T _a = -50 °C to +85 °C
	TR CU (EAC)	Ex db eb IIC T4 Gb X Ex tb IIIC T110 °C Db X (-55 °C ≤ T _a ≤ +85 °C)
Marine	MED "Wheelmark" (DNV)	
Performance	EN54-10 (VdS) FM3260	
Reliability	IEC61508 - SIL3 compatible	

Table 8: Accessories

Accessory	Part number
Flame simulator (Ex proof)	FS-IR-975
Tilt mount	00975-9000-0022
Duct mount (Ex proof)	00975-9000-0018
U-bolt/pole mount	00975-9000-0007 (2-in. [50.8 mm] pole)
	00975-9000-0008 (3-in. [76.2 mm] pole)
USB RS-485 harness kit	00975-9000-0011
Air shield	00975-9000-0019
Protective cover	ABS plastic: 00975-9000-0020
	Stainless steel: 00975-9000-0021

Dimensional drawings

Figure 1: IR3 Flame Detector + Tilt



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