

Rosemount™ 975HR Multi-spectrum Infrared Hydrogen Flame Detector



The Rosemount 975HR Multi-spectrum Infrared Hydrogen Flame Detector is specifically designed for the detection of hydrocarbon and hydrogen flames. It detects hydrocarbon-based fuel and gas fires at long distances with the highest immunity to false alarms. The Rosemount 975HR is the most durable and weather resistant hydrogen flame detector on the market. Its features include a heated window to eliminate condensation and icing, HART®, lower power requirements and a compact lighter design.

Features and benefits

- Multi spectrum design for detection of hydrocarbons and hydrogen flames with high false alarm immunity
- Six sensitivity levels to ensure no zone crossover detection
- Adjustable infrared 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 7 or RS-485 Modbus

Contents

Features and benefits.....	2
Applications examples.....	3
Ordering information.....	4
Specifications.....	6
Dimensional drawings.....	9

Applications examples

- Oil and gas: offshore and onshore process facilities and pipelines
- Chemical plants
- Petrochemical plants
- Storage tank farms
- Power generation facilities
- Pharmaceutical industry
- Refinery hydrogenation
- Hydrogen fuel cell

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
HR	Multi-Spectrum Infrared Hydrogen

Output

Code	Description
4U	Universal wiring

Housing style

Code	Description
6A	Aluminum - ¾-in. NPT conduit entries
8A	Aluminum - M25 conduit entries
6S	Stainless steel - ¾-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	Gasoline: horizontal - 80°, vertical - 80° Hydrogen: horizontal 70°, vertical 80°
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)
Heated optics	To eliminate condensation and icing on window

Table 2: Detection Response Time

Standard response time	Typically < 2 sec. at 131 ft. (40m) 10 sec. at 300 ft. (90 m)
High speed response time (explosion)	50 msec for 1 ft. (0.30 m) diameter sphere LPG-air mixture explosion at 66 ft. (20 m)

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

Table 3: Detection Range (continued)

Gun powder ⁽²⁾	197/60
Fireworks ⁽³⁾	33/10
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
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

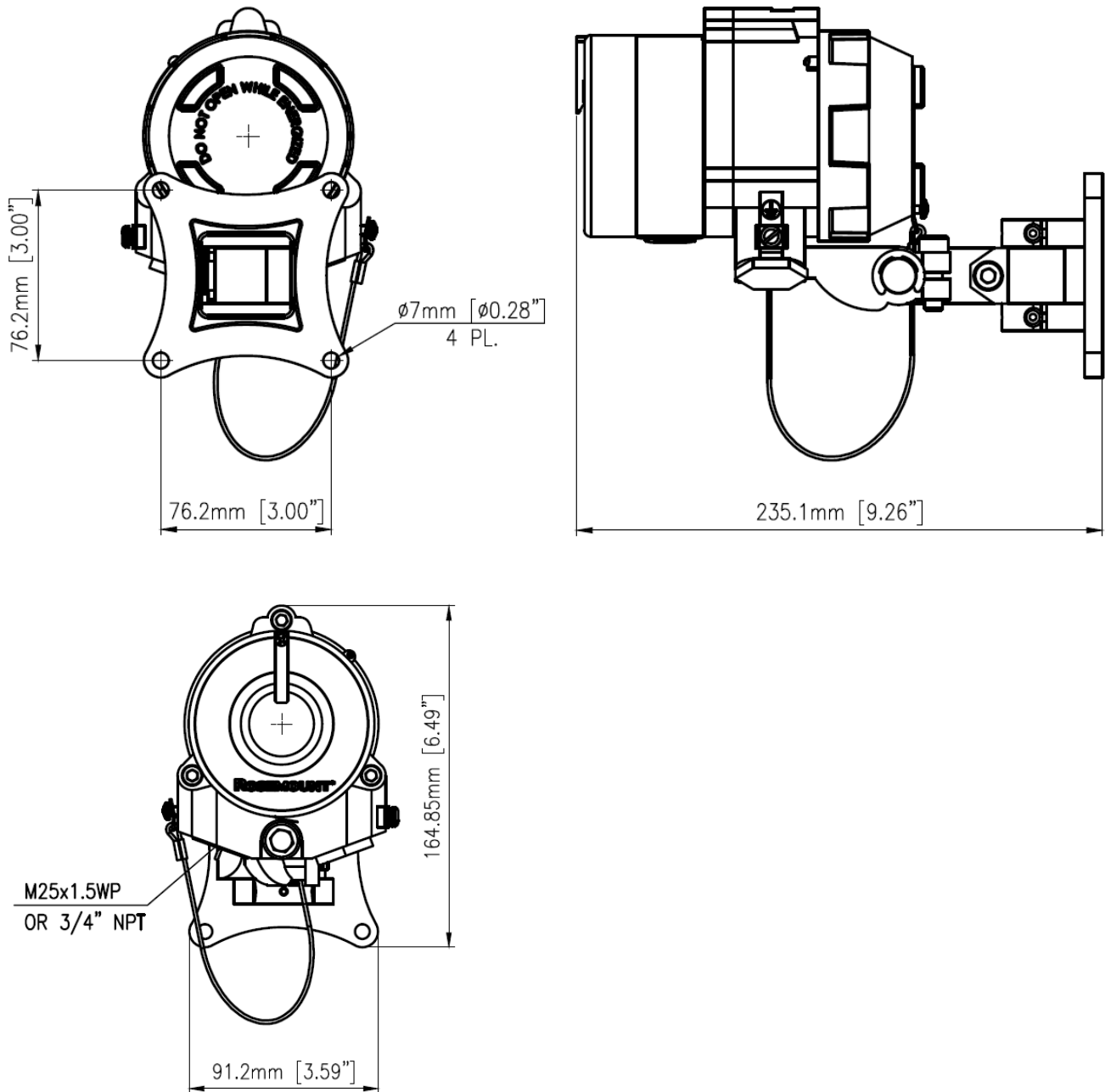
Hazardous area	ATEX and IECEx	Ex II 2 G D Ex db eb IIC T4 Gb Ex tb IIIC T110 °C Db (-50 °C ≤ T _a ≤ +85 °C)
	FM/FMC/CSA	Class I Division 1, Groups B, C, and D, T4 Class II/III Division 1, Groups E, F, and G, T4 Class I Division 2, Groups B, C, and D, T4 T _a = -50 °C to +85 °C
	TR CU (EAC)	Ex db eb IIC 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-HR-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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