

# Rosemount™ 935

## Open Path Combustible Gas Detectors



## Features and benefits

- One person installation and low maintenance
- Factory calibrated
- Built-in self test continuously monitoring device health
- Accurate and reliable high-speed response in under two seconds
- RTC event recorder; record of the last 375 events
- Automatic gain control ensures accurate detection in challenging conditions with up to 95% signal obscuration
- Three-year warranty
- High false alarm immunity
- Heated optics for operation in challenging conditions
- Easy to use, field configurable via HART® or RS-485 Modbus®
- High reliability-MTBF-minimum 100,000 hours

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## Applications

- Petrochemical, pharmaceutical, and other chemical storage and production areas
- Flammable chemical storage sites, and hazardous waste disposal areas
- Refineries, oil platforms, pipelines, refueling stations, and fuel storage facilities
- Hazardous loading docks, transportation depots, and shipping warehouses
- Engine rooms
- Compressor and pumping stations
- Test cells
- LNG-LPG Systems
- Offshore Floating Production Storage and Offloading (FPSO), and fixed oil rigs

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## Ordering information



- Accurate and reliable high-speed response in under three seconds
- High immunity to false alarms
- Easy installation and maintenance

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### Online product configurator

Many products are configurable online using our Product Configurator. See [Emerson.com](https://www.emerson.com) to start. With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

### Model codes

Model codes contain the details related to each product.

Exact model codes will vary; examples of typical model codes are shown in [Source \(Transmitter\)](#) and [Detector \(Receiver\)](#).

#### Source (Transmitter)

935T1F002SA1

#### Detector (Receiver)

935R1F012SA1

### Specifications and options

See Specification for more details on each configuration.

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.

### Source (Transmitter)

#### Required model components

##### Model

Code	Description
935	Rosemount 935 Combustible Open Path Gas Detector Source (Transmitter)

**Transmitter range**

Code	Description
T1	Transmitter - Range of 23 ft. (7 m) to 66 ft. (20 m)
T2	Transmitter - Range of 50 ft. (15 m) to 132 ft. (40 m)
T3	Transmitter - Range of 115 ft. (35 m) to 330 ft. (100 m)
T4	Transmitter - Range of 265 ft. (80 m) to 660 ft. (200 m)

**Gas calibration**

Code	Description
F00	Transmitter

**Housing style / conduit**

Code	Material	Measurement
2S	Stainless steel	¾-in. NPT
4S	Stainless steel	M25

**Product certifications**

Code	Description
A1	ATEX, IECEX, UKCA
A2	FM/FMC
E2	INMETRO

**Detector (Receiver)****Required model components****Model**

Code	Description
935	Combustible Open Path Gas Detector (Receiver)

**Receiver selection**

Code	Description
R1	Receiver

**Gas calibration**

Code	Description
F01	Receiver for combustible gases Methane full scale 5 LEL.m (default)

**Housing style / conduit**

Code	Material	Measurement
2S	Stainless steel	¾-in. NPT
4S	Stainless steel	M25

**Product certifications**

Code	Description
A1	ATEX, IECEx, UKCA
A2	FM/FMC
E2	INMETRO

# Specifications

**General specifications****Table 1: Model Numbers and Installation Distances**

Model number	Detector	Source	Minimum installation distance	Maximum installation distance
935	R1F00XXXX	T1FXXXXXX	23 ft. (7 m)	66 ft. (20 m)
935	R1F00XXXX	T2FXXXXXX	50 ft. (15 m)	132 ft. (40 m)
935	R1F00XXXX	T3FXXXXXX	115 ft. (35 m)	330 ft. (100 m)
935	R1F00XXXX	T4FXXXXXX	265 ft. (80 m)	660 ft. (200 m)

<b>Detected gas</b>	C1-C8 selective gases
<b>Response time</b>	< 2 seconds
<b>Immunity to false alarm</b>	Not influenced by solar radiation, hydrocarbon flames, and other external infrared radiation sources
<b>Sensitivity range</b>	0-5 LEL.m methane and propane 0-8 LEL.m ethylene
<b>Displacement/misalignment tolerance</b>	±0.5 degrees
<b>Drift</b>	±7.5 percent of the reading or ±4 percent of the full scale (whichever is greater)
<b>Minimum detectable level</b>	0.15 LEL.m
<b>Temperature range</b>	-67 to +149 °F (-55 to +65 °C)
<b>Humidity</b>	Up to 95 percent non-condensing (withstands up to 100 percent relative humidity for short periods)
<b>Heated optics</b>	To eliminate condensation and icing on the window
<b>Warranty</b>	3 years for detector and source
<b>Electrical specifications</b>	
<b>Power supply</b>	24 VDC nominal (18-32 VDC)
<b>Typical power consumption</b>	Detector: 220 mA Source: 240 mA

<b>Warm-up time</b>	30 seconds for transmitter and receiver
<b>Electrical connection (specify)</b>	Two ¾-in. - 14 national pipe thread (NPT) conduits or 2 x M25 x 1.5 mm ISO
<b>Electrical input protection</b>	Per MIL-STD-1275B
<b>Electromagnetic compatibility</b>	Electromagnetic interference/radio frequency interference (EMI/RFI) protected per EN50270
<b>Outputs-interfaces</b>	
<b>0-20 mA current output</b>	Sink (source option) configuration: maximum load of 500 ohm at 18-32 VDC Gas reading: 4-20 mA Normal, zero reading: 4 mA Maintenance call: 3 mA Obscuration/beam block: 2 mA Zero calibration mode: 1 mA Fault: 0 mA
<b>RS-485 interface-Modbus® compatible</b>	The RS-485 input/output provides complete data information to a personal computer (PC) and receives control commands from the PC or hand-held unit.
<b>HART® protocol</b>	HART communication on 0-20 mA analog (FSK) - used for maintenance and asset management
<b>Visual status indicator</b>	Front and back visual status indicator <sup>(1)</sup> Three color light-emitting diodes (LED) <ul style="list-style-type: none"> <li>■ Green: power on</li> <li>■ Amber: fault</li> <li>■ Red: alarm</li> </ul>
<b>Mechanical specifications</b>	
<b>Enclosure</b>	The source and detector housings are stainless steel 316 with electro polish finish. The circuit boards are conformal coated and protected from mechanical vibrations. The tilt mount is also stainless steel 316.
<b>Dimensions</b>	Detector/source: 10.5 x 5.1 x 5.1 in. (267 x 130 x 130 mm) Tilt mount: 4.7 x 4.7 x 5.5 in. (120 x 120 x 158 mm)
<b>Weight</b>	Detector/source: 11 lb. (5 kg) Tilt mount: 4.2 lb. (1.9 kg)
<b>Water and dust tight</b>	IP66 and IP68 NEMA® 250 6P
<b>Environmental</b>	Meets MIL-STD-810C for humidity, salt and fog, vibration, mechanical shock, and high and low temperature
<b>Approvals</b>	
<b>Performance</b>	FM 6325, EN60079-29-4 and DNV CG-0339, EN 50270, IEC 60079-29-4
<b>Reliability</b>	SIL2 per IEC61508 (TÜV)

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(1) Receiver unit only.

# Approvals

## ATEX, IECEx

The Rosemount 935 is ATEX approved per SIRA 16ATEX1224X and IECEx per IECEx SIR 16.0075X per:

Ex II 2(2)G D

Ex db eb ib [ib Gb] IIB+H<sub>2</sub> T4 Gb

Ex tb [ib Db] IIIC T135 °C Db

T<sub>Ambient</sub> -55 °C to +65 °C

This product is suitable for use in hazardous zones 1 and 2 with IIB+H<sub>2</sub> group vapors present, and zones 21 and 22 with IIIC combustible dust types.

## UKCA

The Rosemount 935 is UK CA approved per CSAE 21UKEX1175X per:

Ex II 2(2)G D

Ex db eb ib [ib Gb] IIB+H<sub>2</sub> T4 Gb

Ex tb [ib Db] IIIC T135 °C Db

T<sub>Ambient</sub> -55 °C to +65 °C

## FM/FMC

The Rosemount 935 is approved to FM/FMC Explosion Proof per:

Class I, Div. 1 Group B, C and D, T<sub>6</sub>-58 °F/-50°C ≤ T<sub>a</sub> ≤ 149 °F/65 °C

Dust ignition proof - Class II/III Div. 1, Group E, F, and G

Ingress protection - IP66 & IP68, NEMA<sup>®</sup> 250 Type 6P

IP68 is rated for two meter depth for 45 minutes.

## TR CU (EAC) - pending

1Ex d e ib [ib Gb] IIB + H<sub>2</sub> T4 Gb X

Ex tb [ib Db] IIIC T135 °C Db X

## Inmetro (UL)

The product complies with Inmetro approval per the following standards:

ABNT NBR IEC 60079-0

ABNT NBR IEC 60079-1

ABNT NBR IEC 60079-7

ABNT NBR IEC 60079-11

ABNT NBR IEC 60079-28

Ex db eb ib [ib Gb] IIB+H2 T4 Gb

Ex tb [ib Db] IIIC T135 °C Db

(-55 °C ≤ T<sub>a</sub> ≤ +65 °C)

Certificate number UL-BR 19.0276X (Rosemount) and UL-BR 22.4059X (Spectronix).

## **SIL-2**

The Rosemount 935 is TUV approved for SIL-2 requirements per IEC 61508.

According to SIL-2 requirements, the alert condition can be implemented by an alert signal via the 0–20 mA current loop.

For more details and guidelines on configuring, installing, operating, and servicing, see [SIL-2 Features](#), and TUV report no. 968/FSP 1276.XX/XX.

## **Performance approvals**

Functional performance certified per FM 6325, EN60079-29-4 and DNV.

The Quasar 900 was functional tested by FM per EN60079-29-4 and Ansi/FM 60079-29-4.









For more information: [Emerson.com](https://www.emerson.com)

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