

Rosemount™ 936

Open Path Toxic Gas Detectors



The Rosemount 936 Open Path Gas Detector providing continuous monitoring for toxic hydrogen sulfide (H₂S) or ammonia (NH₃) gases utilizing UV flash technology in harsh environments where dust, fog, rain, snow, or vibration can cause a high reduction of signal.

Typical applications

Note

Typically used in perimeter monitoring and fence control

- Offshore platforms and floating production storage and offloading (FPSOs)
- Petrochemical plants
- Chemical processing plants
- Gas filling and distribution terminals
- Gas transport and pipelines
- Agriculture
- Food and beverage
- Waste management
- Water treatment
- Pharmaceutical

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Features and benefits

- Accurate and reliable high-speed response in under 10 seconds
- Utilizes ultraviolet flash technology
- High immunity to false alarms
- Solar blind and immune to industrial environments
- Built-in event recorder – real time record of the last 256 events
- Strengthened reliability and durability with a massive three-year warranty
- Easy installation and maintenance
- Heated window for superb performance in harsh weather conditions (snow, ice, or condensation)
- Detection of a cloud of gas at very low concentrations, up to 95 percent obscuration
- User programmable via HART® or RS-485 Modbus® protocols compatible with modern user interface for ease of use
- Certified performance/Hazardous Area approved (ATEX/IECEX/CSA and more) for location in zone 1 areas
- Safety Integrity Level SIL2 (TÜV)
- High reliability - MTBF - minimum 100,000 hours

Ordering information

You can order the Rosemount 936 as separate parts: source (PN 936TXT00XXXX), detector (PN 936RT12XXXXX), and accessories.



- Accurate and reliable high-speed response in under three seconds
- Utilizes ultraviolet technology
- 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.

Visit our [website](#) 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; an example of a typical model code is shown in [Source \(Transmitter\)](#) and [Detector \(Receiver\)](#).

Source (Transmitter)

936T1T00F002SA1

Detector (Receiver)

936R1T262SA1

Specifications and options

See [Specifications](#) 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
936	Toxic Open Path Gas Detector Source (Transmitter)

Transmitter range

Code	Description
T1	Transmitter - Range of 17 to 52 ft (5 to 16 m)
T2	Transmitter - Range of 46 to 132 ft (14 to 40 m)
T3	Transmitter - Range of 115 to 200 ft (35 to 60 m)

Gas calibration

Code	Description
T00	Transmitter

Housing style / conduit

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

Product certifications

Code	Description
A1	ATEX and IECEx
A3	CSA
E2	INMETRO
EM	CU TR (EAC)

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

Code	Description
936	Toxic Open Path Gas Detector (Receiver)

Receiver selection

Code	Description
R1	Receiver

Gas calibration

Code	Description
T26	Hydrogen sulfide (receiver)
T27	Ammonia (receiver)

Housing style / conduit

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

Product certifications

Code	Description
A1	ATEX and IECEx
A3	CSA
E2	INMETRO
EM	CU TR (EAC)

Specifications

General specifications

Detected gases

- Hydrogen sulfide (H₂S)
- Ammonia (NH₃)

Table 1: Detection Distance Range

Detector	Source	Minimum installation distance	Maximum installation distance
H₂S			
RT126XXXX	T1T00XXXX	17 ft. (5 m)	52 ft. (16 m)
RT126XXXX	T2T00XXXX	46 ft. (14 m)	132 ft. (40 m)
RT126XXXX	T3T00XXXX	115 ft. (35 m)	200 ft. (60 m)
NH₃			
R1T127XXXX	T1T00XXXX	17 ft. (5 m)	52 ft. (16 m)
R1T127XXXX	T2T00XXXX	46 ft. (14 m)	132 ft. (40 m)
R1T127XXXX	T3T00XXXX	115 ft. (35 m)	200 ft. (60 m)

Response time

< 3 sec, < 10 sec to T90

Spectral response

200 to 300 nm

Sensitivity range

Full scale	Warning	Alarm
500 ppm/m	100 ppm/m	300 ppm/m

Field of view

Line of sight

Alignment tolerance

±1 degree

Minimum detectable gas volume

50 ppm/m

Temperature range

-67 to 149 °F (-55 to 65 °C)

Immunity to false alarm

Does not produce a false alarm and is not influenced by solar radiation, hydrocarbon flames, or other external infrared radiation sources.

Electrical specifications

Operating voltage

18-32 Vdc

Power consumption

Table 2: Detector and Source Maximum Power Consumption

	Without heated optic (max.)	With heated optic (max.)
Detector	150 mA	300 mA
Source	200 mA	300 mA

Electrical input protection

The input circuit is protected against voltage-reversed polarity, voltage transients, surges, and spikes, according to EN50270.

Electrical outputs

- 0-20 mA current output: The 0-20 mA is an isolated sink option. You can also configure this output as source (see [Wiring configurations](#)).
The maximum permitted load resistance is 500 Ω.
- Communication network: The detector is equipped with an RS-485 communication link that can be used in installations with computerized controllers.
Communication is compatible with the Modbus® protocol.
 - This protocol is standard and widely used.
 - It enables continuous communication between a single standard Modbus controller (master device) and a serial network of up to 247 detectors.
 - It enables connection between different types of Rosemount detectors or other Modbus devices to the same network.
- HART® protocol: A digital communication protocol used to communicate between intelligent field instruments and the host system.
Through the HART protocol, the detector can:
 - Display setup.
 - Reconfigure setup.
 - Display and determine the detector status.
 - Perform detector diagnostics.
 - Troubleshoot.

Mechanical specifications

Enclosure

The detector, source, and tilt mount are stainless steel, 316 electro chemical, and passivized coating.

Explosion proof

ATEX and IECEx

Ex II 2(2) G D

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

Ex tb [ib Db] IIIC T135 °C Db

Water and dust tight

IP66 and IP68

IP68 is rated for 7 ft. (2 m) depth for 45 minutes.

NEMA® 250 Type 6p

Electrical modules

Conformal coated

Electrical connection

Two options, specified at time of order:

- 2 x M25 (ISO)
- 2 x ¼-in.-14 national pipe thread (NPT) conduits

Dimensions

- Detector: 10.5 x 5.1 x 5.1 in. (267 x 130 x 130 mm)
- 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 140 mm)

Weight

Detector: 11 lb. (5 kg)

Source: 11 lb. (5 kg)

Tilt mount: 4.2 lb. (1.9 kg)

Environmental specifications

The Rosemount 936 system is designed to withstand harsh environmental conditions.

The source and detector units compensate for adverse conditions while maintaining accuracy.

High temperature

The Rosemount 936 is designed to meet DNVGL-CG-0039, class D.

Operating temperature 149 °F (65 °C)

Storage temperature 149 °F (65 °C)

Low temperature

The Rosemount 936 is designed to meet DNVGL-CG-0039, Class D.

Operating temperature -67 °F (-55 °C)

Storage temperature -67 °F (-55 °C)

Humidity

The Rosemount 936 is designed to meet DNVGL-CG-0339, class B.

Enclosure

The Rosemount 936 is designed to meet DNVGL-CG-0339, class C.

Water and dust

- IP68 per EN60529
- IP66 per EN60529

Dust Completely protected against dust.

Liquids Protected against immersion between 5.9 in. (15 cm) and 3.3 ft. (1 m) in depth. Protected against water jets from all directions.

Vibration

The Rosemount 936 is designed to meet DNVGL-CG-0339, class B.

Electromagnetic compatibility (EMC)

This product is in conformance with EMC per EN50270.

Radiated emission	EN55022
Conducted emission	EN55022
Radiated immunity	EN61000-4-3
Conducted immunity	EN61000-4-6
Electrostatic discharge (ESD)	EN61000-4-2
Burst	EN61000-4-4
Surge	EN61000-4-5
Magnetic field	EN61000-4-8

To fully comply with EMC directive 2014/30/EU and protect against interference caused by radio frequency interference (RFI) and electromagnetic interference (EMI), the cable to the detector must be shielded, and the detector must be grounded. Ground the shield at the detector end.

Product certification

ATEX and IECEx

The Rosemount 936 is approved per:

Ex II 2(2) G D

Ex db eb ib [ib Gb] IIB+H₂ T4 Gb

Ex tb [ib Db] IIIC T135 °C Db

T_a = -55 °C to +65 °C

SIL-2

The Rosemount 936 is TUV approved for SIL-2 requirements per IEC61508.

The alert condition according to SIL-2 can be implemented by alert signal via 0-20 mA current loop.

TR CU

The Rosemount 936 is in compliance with the standard TR CU 012/2011 per:

1Ex db eb ib [ib Gb] IIB + H2 T4 Gb X

Ex tb IIIC T135 °C Db X

-55 °C ≤ T_a ≤ +65 °C

For more details, see TR CU Certificate number *TC RU C-US.M ю 62.B.05535*.

INMETRO

The Rosemount 936 is in compliance with the 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, ABNT NBR IEC 60079-31, and INMETRO decree No. 179 as of May 18th, 2010.

Further details may be found on the Certificate of Compliance Number UL-BR 19.0726X.

CSA C/US

The Rosemount 936 is approved per CSA C/US for hazardous and ordinary locations:

Canada

Ex db eb ib [ib Gb] IIB+H₂ T4 Gb

Ex tb [ib Db] IIIC T135 °C Db

T_a = -55 °C to +65 °C

USA

Class I Zone 1 AEx db eb ib [ib Gb] IIB+H₂ T4 Gb

Zone 21 AEx tb [ib Db] IIIC T135 °C Db

T_a = -55 °C to +65 °C

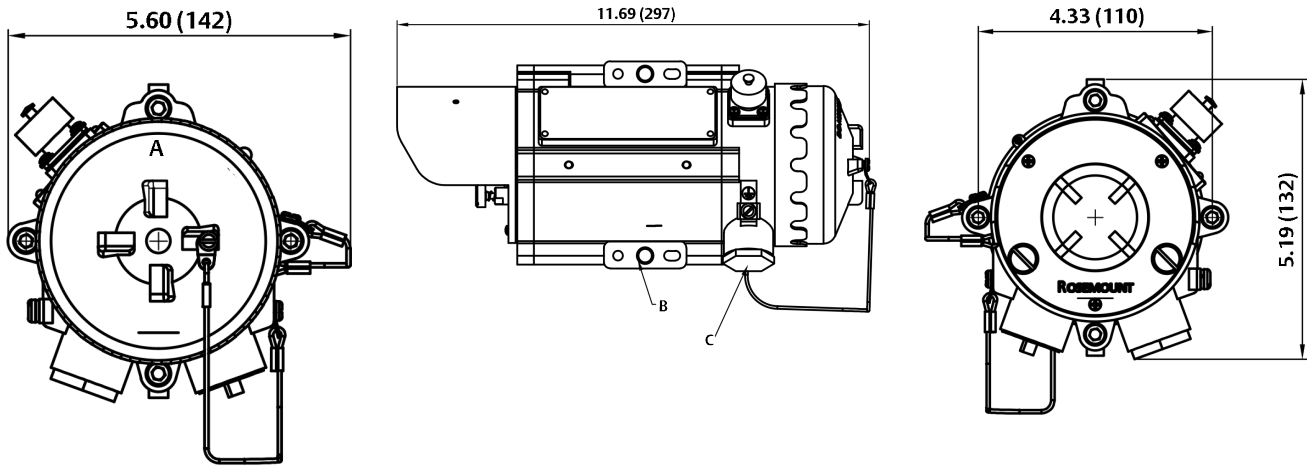


The Rosemount 936 is a "Class 1 Laser Product" per IEC 60825-1: 2014 ed. 05.

Dimensional drawings

Figure 1: Gas Detector Assembly

Dimensions are in inches [millimeters].

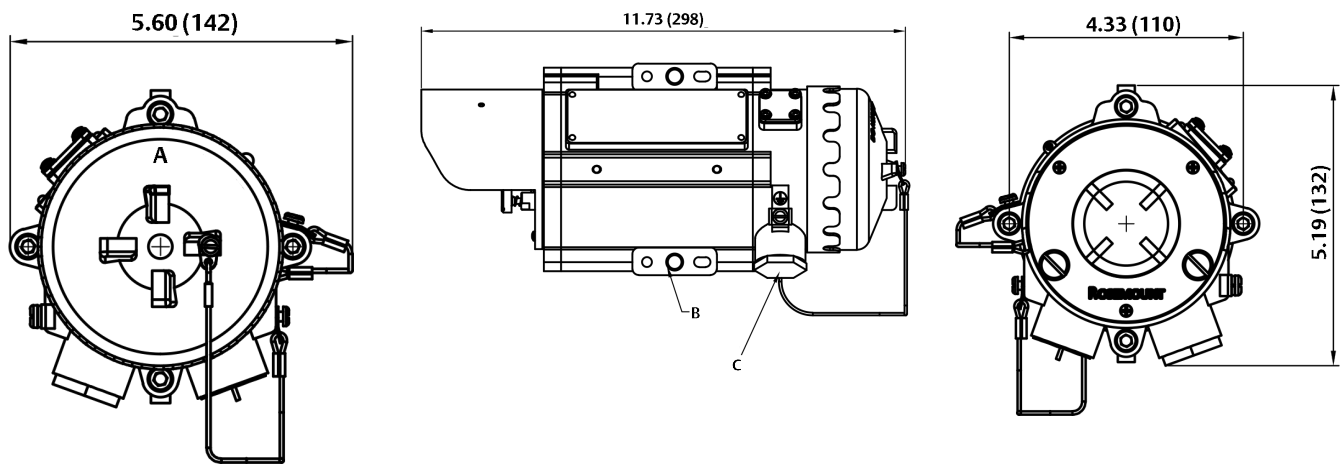


- A. Do not open while energized
- B. M10x1.5
- C. Two conduit entry locations, M25x1.5 mm ISO or 3/4-in. NPT.

Material
Stainless steel - 316L
Weight
11 lb. (5 kg) approximately

Figure 2: Gas UV Source Assembly

Dimensions are in inches [millimeters].



- A. Do not open while energized
- B. M10x1.5
- C. Two conduit entry locations, M25x1.5 mm ISO or 3/4-in. NPT.

Material
Stainless steel - 316L
Weight
11 lb. (5 kg) approximately

For more information: www.emerson.com

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