

# Rosemount™ 935

## Open Path Combustible Gas Detectors



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### **⚠ WARNING**

#### **Physical access**

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

### **⚠ CAUTION**

The transmitter and receiver are not field-repairable due to the meticulous alignment and calibration of the sensors and the respective circuits.

Do not attempt to modify or repair the internal circuits or change their settings, as this will impair the system's performance and void the Emerson product warranty.

## Glossary and abbreviations

Abbreviation	Meaning
Analog video	Video values are represented by a scaled signal.
ATEX	Atmosphere explosives
AWG	American wire gauge
BIT	Built-in test
Digital video	Each component is represented by a number representing a discrete quantization.
DSP	Digital signal processing
EMC	Electromagnetic compatibility
EMI	Electromagnetic interference
EOL	End of line
FOV	Field of view

<b>Abbreviation</b>	<b>Meaning</b>
HART®	Highway addressable remote transducer communication protocol
IAD	Immune at any distance
IECEX	International Electrochemical Commission explosion
IP	Internet protocol
IPA	Isopropyl alcohol
IR	Infrared
IR3	Refers to the three infrared sensors
JP5	Jet fuel
Latching	Refers to relays remaining in the On state even after the On condition has been removed.
LED	Light-emitting diode
LEL	Lower explosive limit: The minimum concentration of a substance (gas/vapor) in air mixture that can be ignited. This mixture is different for every gas/vapor, measured in % of LEL.
LEL.m	Integral of concentration in LEL units (1 LEL = 100% LEL) and the operation distance in meters (m).
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
mA	MilliAmps (0.001 amps)
Modbus®	Master-slave messaging structure
N.C.	Normally closed
N.O.	Normally open
N/A	Not applicable
NFPA	National Fire Protection Association
NPT	National pipe thread
NTSC	National Television System Committee (a color encoding system)
PAL	Phase alternation by line (a color encoding system)
PN	Part number
RFI	Radio frequency interference
RTSP	Real time streaming protocol

<b>Abbreviation</b>	<b>Meaning</b>
SIL	Safety integrity level
UNC	Unified coarse thread
Vac	Volts alternating current
Vdc	Volts direct current
µm	Micrometer

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## **Contents**

Installation instructions..... 5

Operation..... 22

Product certifications..... 29

Wiring configurations..... 31

Declaration of Conformity..... 35

# 1 Installation instructions

## 1.1 General considerations

### 1.1.1 Personnel

Only employ suitably qualified personnel who are familiar with the local codes and practices and trained for gas detection maintenance.

Ensure that wiring is only performed and supervised by someone with knowledge of electronics and, in particular, wiring installation.

### 1.1.2 Site requirements

When installing the Rosemount™ 935, take into account the weight of the monitored gas compared to that of the surrounding air and the individual site requirements.

Ensure that the site selected gives the receiver a direct view to the transmitter. The mounting point for each item should be secure and stable with minimal vibrations. Mount the equipment in a position where it cannot be knocked out of alignment and is guarded from physical impact.

### 1.1.3 Transmitter and receiver

Select the appropriate receiver for the length of open path to be monitored.

To allow for aging of the transmitter and a reduction of the infrared signal due to adverse weather, Emerson recommends using a receiver that is not at the limit of its operating range. The general recommendation is to install the receiver at a distance from the transmitter of not more than 75 percent of the specified operating distance. In severe weather conditions, such as offshore oil production and exploration, reduce this distance to 50 percent. Keep the open path between the transmitter and receiver clear of any obstacles that might hinder the free movement of air in the protected area or block the infrared beam.

### 1.1.4 Tips for gas detector locations

To provide the best detection coverage, install the detector:

- Below potential leak source for gases heavier than air.
- Above potential leak sources for gases lighter than air.
- Near to leak sources along the expected leak trajectory, taking into account prevailing wind directions.

## ⚠ CAUTION

For optimal performance, avoid placing the detector in locations frequently covered by steam.

### 1.1.5 Separation distances

To avoid crosstalk between adjacent open path gas detector (OPGD) systems where transmitters are installed on the same side, keep the relevant separation distance between the neighboring OPGD systems according to the installation lengths as listed in [Table 1-1](#).

**Table 1-1: Minimum Separation Distances**

Installation line of sight distance	Minimum separation
33 ft. (10 m)	3.3 ft. (1 m)
66 ft. (20 m)	5 ft. (1.5 m)
98 ft. (30 m)	6.5 ft. (2 m)
131 ft. (40 m)	11.5 ft. (3.5 m)
164 ft. (50 m)	15 ft. (4.5 m)
197 ft. (60 m)	16.5 ft. (5 m)
230 ft. (70 m)	20 ft. (6 m)
262 ft. (80 m)	23 ft. (7 m)
295 ft. (90 m)	26 ft. (8 m)
328 ft. (100 m)	28 ft. (8.5 m)
361 ft. (110 m)	29.5 ft. (9 m)
394 ft. (120 m)	33 ft. (10 m)
427 ft. (130 m)	34.5 ft. (10.5 m)
459 ft. (140 m)	38 ft. (11.5 m)
492 ft. (150 m)	42.5 ft. (13 m)
525 ft. (160 m)	47.5 ft. (14.5 m)
558 ft. (170 m)	49 ft. (15 m)
591 ft. (180 m)	51 ft. (15.5 m)
693 ft. (211 m)	52.5 ft. (16 m)
656 ft. (200 m)	54 ft. (16.5 m)

### 1.1.6 Wiring

For wiring, use color-coded conductors or suitable wire markings or labels.

- The wire cross-section must be between 28 to 14 AWG (0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup>).
- Select the wire gauge based on the number of detectors used on the same loop and the distance from the control unit. The maximum number of wire connections in one terminal is two wire cross-sections, each 1 mm<sup>2</sup>.
- To fully comply with electromagnetic compatibility (EMC) directive 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.

## 1.2 Preparations for installation

It is important to ensure that installation complies with local, national, and international regulations and norms as applicable to gas detectors and approved electrical devices installed in hazardous areas.

### 1.2.1 Equipment

The system should include the following (in addition to the Quick Start Guide):

**Figure 1-1: Box Contents**



Commissioning kit not pictured.

- A. Transmitter or receiver (per box)*
- B. Tilt mounts*

- Receiver unit: 935-R1F01XXXX

- Transmitter unit: 935-TXFXXXXXX
- Two tilt mount bases (one for the transmitter and one for the receiver)<sup>(1)</sup>
- Extended Commissioning Kit
- Commissioning kit, three options when ordered:
  - For methane calibration
  - For propane calibration
  - For ethylene calibration

The commissioning kit includes:

- Alignment tool kit
- Function check filters
- HART® hand-held harness kit

Other accessories are available (per customer request):

- 5-in. pole mount kit
- 2 to 3-in. pole mount
- Wall mount
- Protective cover

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### Note

See the [Rosemount™ 935 Product Data Sheet](#) for accessory part numbers.

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## 1.2.2 Required tools

Install the device using the following general purpose common tools and equipment.

**Table 1-2: Tools**

Tool	Function
Alignment kit	Provides tools to install fine alignment tool.
Hex key 8 mm	Mounts the detector on the tilt mount.
Hex key 3/16-in.	Aligns the detector.
Hex key 5/16-in.	Screws ¾ stop plug.
Flat screwdriver 4 mm	Connects ground terminal.

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*(1) If you order a transmitter or receiver separately, then you will receive one tilt mount.*



**Table 1-2: Tools (continued)**

Tool	Function
Flat screwdriver 2.5 mm	Connects wires to the terminal block.

## 1.3 Certification instructions

### **⚠ WARNING**

#### **EXPLOSION**

Do not open the detector, even when isolated, in a flammable atmosphere.

- The cable entry point may exceed 182 °F (83 °C). Take suitable precautions when selecting the cable.
- The equipment may be used with flammable gases and vapors with apparatus groups IIA and IIB+H2 T4 in the ambient temperature range: -67 °F (-55 °C) to 149 °F (65 °C).
- Only suitably trained personnel shall install the detector in accordance with the applicable code of practice, e.g., EN 60079-14: 1997.
- Only suitably trained personnel shall inspect and maintain this equipment in accordance with the applicable code of practice, e.g., EN 60079-19.
- Only suitably trained personnel shall repair this equipment in accordance with the applicable code of practice, e.g., EN 60079-19.
- The certification of this equipment relies upon the following materials used in its construction:
  - Enclosure: Stainless steel 316
  - Windows: Sapphire glass
  - Seals: EPDM
- If the equipment is likely to come into contact with aggressive substances, then it is your responsibility to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.
  - Aggressive substances: For example, acidic liquids or gases that may attack metal or solvents that may affect polymeric materials.

- Suitable precautions: For example, regular checks as part of routine inspections or establishing from the material's Safety Data Sheets that it is resistant to specific chemicals.

## 1.4 Special conditions for safe use from ATEX IECEx certificate

The dimensions of the flameproof joints differ from the relevant minimum or maximum values required by Table 2 of IEC/EN 60079-1: 2007 for IIB + H<sub>2</sub>, as detailed in [Table 1-3](#).

**Table 1-3: Flamepaths**

Flamepath description	Type of joint	Minimum width "L"	Maximum gap "i <sub>c</sub> "
Cylindrical section of spigot (both ends of Ex d compartment)	Cylindrical	0.59 in. (15 mm)	0.003 in. (0.1 mm)
1.2 in. (30 mm) diameter window fitted against enclosure	Flanged	0.42 in. (11 mm)	0.001 in. (0.03 mm)
1.6 in. (39.5 mm) diameter window fitted against enclosure	Flanged	0.39 in. (10 mm)	0.001 in. (0.03 mm)

- Gaps, "i<sub>c</sub>", should not be modified to be any larger, and widths, "L", should not be modified to be any shorter than the values in [Table 1-3](#).
- Connections to the Intrinsically Safe (IS) port on the side of the receiver enclosure should be made using equipment that maintains the intrinsically safe levels of protection.
- The Um should be installed in accordance with one of the following:
  - The Um is 18 to 32 Vdc in a SELV/PELV system.
  - Via a safety isolating transformer, complying with the requirements of IEC 61588-2-6 or technically equivalent standard.
  - Directly connected to apparatus, complying with IEC 60950, IEC 61010-1, or technically equivalent standard.
  - Fed directly from cells or batteries.
- If the product is to be used as a safety related device, then independent certification is important.

## 1.5 Installing conduits and cables

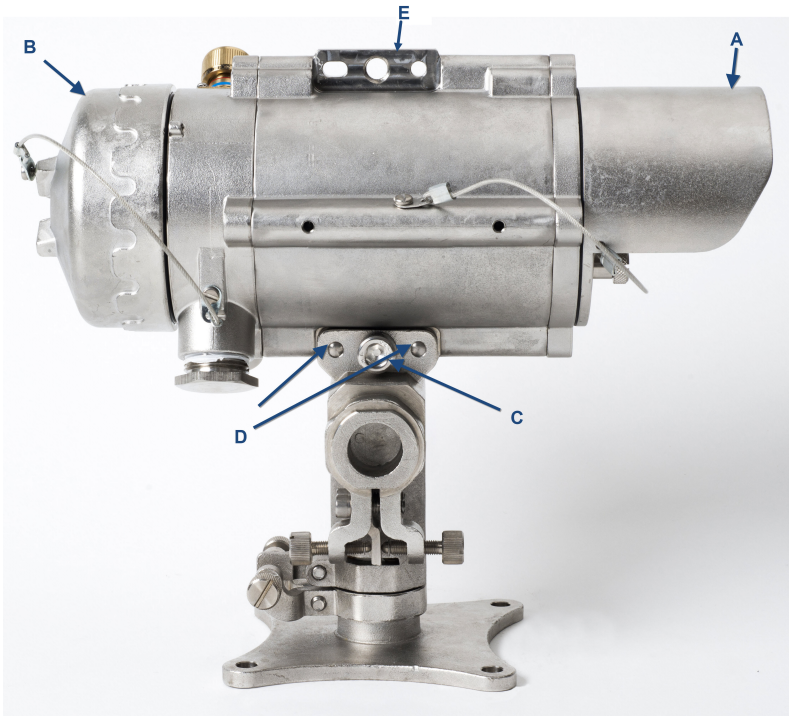
The conduit and cable installation must comply with the following guidelines:

- To avoid water condensation in the detector, install it with the conduits/cable entries facing downwards.
- Use flexible conduits/cables for the last portion connecting to the detector.
- When pulling the cables through the conduits, ensure that they are not tangled or stressed. Extend the cables about 12 in (305 mm) beyond the detector location to accommodate wiring after installation.
- After pulling the conductor cables through the conduits, perform a continuity test.

## 1.6 Mount receiver and transmitter to tilt mount

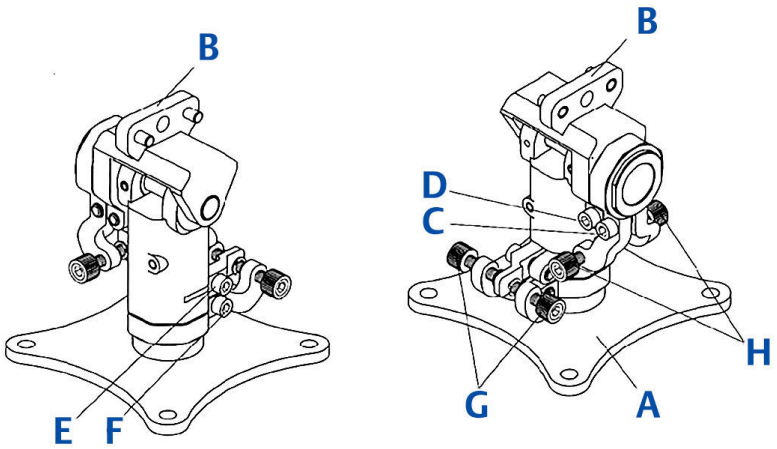
You can install the receiver and transmitter in two ways with the same tilt mount by using the upper or lower mounting access.

**Figure 1-2: Mounting the tilt mount and detector using the lower mounting access**



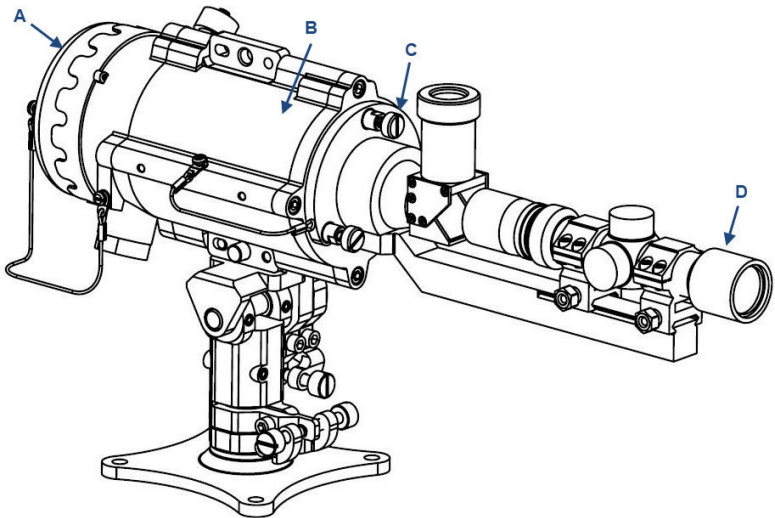
- A. Front shield
- B. Back cover
- C. Security screw
- D. Locating pins
- E. Alternate mounting location

**Figure 1-3: Tilt mount**



- A. Tilt mount holding plate
- B. Transmitter or receiver holding plate
- C. Vertical crude alignment tightening screw
- D. Vertical fine alignment tightening screw
- E. Horizontal fine alignment tightening screw
- F. Horizontal crude alignment tightening screw
- G. Horizontal fine alignment screw
- H. Vertical fine alignment screw

**Figure 1-4: Detector and tilt mount assembly using lower mounting access**



- A. Back cover
- B. Detector
- C. Alignment tool tightening bolt
- D. Alignment tool

**Table 1-4: Tilt mount kit**

Item	Quantity	Type / model
Tilt mount	1	N/A
Screw	1	M10 x 1.5
Spring washer	1	No. 10

### Prerequisites

Prior to mounting the tilt mount to a stable surface, verify that the line of site is unobstructed and corresponds to the detector's installation distance.

### Procedure

1. Place the tilt mount holding plate in its designated location and secure it with four fasteners through four holes with diameters of 0.3-in. (8.5 mm).

## NOTICE

Skip this step if the tilt mount is already installed.

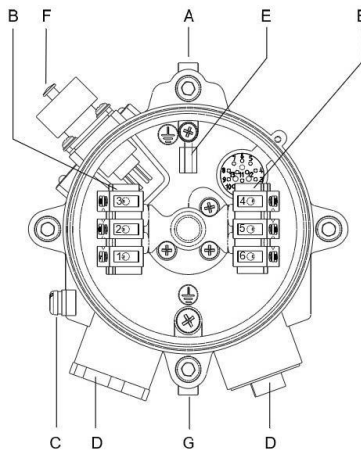
Removing the receiver for maintenance purposes does not require removing the tilt mount.

2. Place the receiver with its conduit/cable inlets pointing downwards on the receiver holding plate of the tilt mount.
3. Secure the receiver with M10 x 1.5 screws with number M10 spring washers.
4. Secure the receiver to the tilt mount using hex key number 7 for M10 x 1.5 screws.
5. Repeat steps [Step 1](#) through [Step 4](#) to install the transmitter.

### 1.7 Wire receiver

To install the receiver wiring:

**Figure 1-5: Receiver with cover removed**



- A. Housing
- B. Terminal board
- C. Earth terminal
- D. Inlet conduit
- E. Internal earth connection
- F. Connection to handheld unit
- G. Receiver holding plate



## Procedure

1. Release the back cover secure bolt and open the receiver back cover.
2. Remove the protective plug mounted on the receiver conduit/cable entry inlet; pull the wires through the receiver inlet.
3. Use a ¾-in-14 NPT or M25 x 1.5 explosion-proof conduit connection/cable gland to assemble the cable/explosion-proof conduit to the receiver.
4. Connect the wires to the required terminals according to the wiring diagram. See [Wiring configurations](#).
5. Connect the grounding wire to the ground screw outside the receiver. The receiver must be well grounded to earth ground.
6. Place and secure the receiver back cover by screwing the cover and securing the secure bolt.

## 1.8 Wiring to receiver terminals

The receiver has six wiring terminals. [Table 1-5](#) describes the function of each electrical terminal of the receiver.

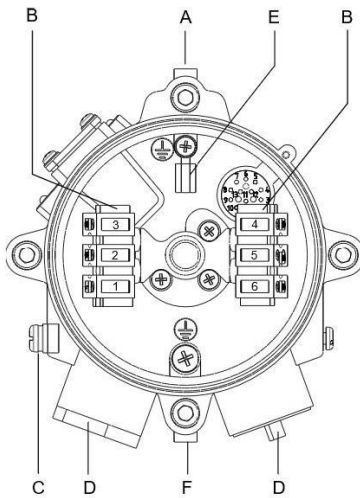
**Table 1-5: Wiring terminals**

Terminal number	Function
1	Power +24 Vdc
2	Return -24 Vdc
3	0–20 mA (input)
4	0–20 mA (output)
5	RS-485 (+)
6	RS-485 (-)

## 1.9 Transmitter wiring

### 1.9.1 Install flash transmitter wiring

To install the wiring:

**Figure 1-6: Transmitter with cover removed**

- A. Housing
- B. Terminal board
- C. Earth terminal
- D. Inlet conduit
- E. Internal earth connection
- F. Transmitter holding plate

### Procedure

1. Release the cover secure bolt and open the transmitter back cover.
2. Remove the protective plug mounted on the transmitter conduit/cable entry inlet; pull the wires through the transmitter inlet.
3. Use a ¾-in-14 NPT or M25 x 1.5 explosion-proof conduit connection/cable gland to assemble the cable/explosion-proof conduit to the transmitter.
4. Connect the wires to the required terminals according to the wiring diagram. See [Wiring to transmitter terminals](#) and [Wiring configurations](#).
5. Connect the grounding wire to the ground screw outside the receiver. The transmitter must be well grounded to earth ground.
6. Place and secure the transmitter back cover by screwing the cover and securing the secure bolt.

## 1.9.2 Wiring to transmitter terminals

The transmitter contains six wiring terminals.

**Table 1-6: Transmitter wiring terminals**

Terminal number	Function
1	Power + 24 Vdc
2	Return - 24 Vdc
3	Not used
4	Not used
5	Not used
6	Not used

## 1.10 Align detector

Use the alignment tool to perform full alignment.

Align the detector in two stages: crude alignment and fine alignment.

The alignment tool includes a periscope that consists of a prism and an ocular located vertical to the alignment tool assembly. This allows you to look into the opposite unit perpendicularly to the alignment when access from the rear of the unit is impossible.

### Note

For installations where rear access is possible, you don't need to install the periscope. It can be removed by releasing the periscope fastening screw.

## NOTICE

Prior to installing the alignment tool, verify that the alignment tool and its sight mounting are free from any dirt to ensure proper alignment according to factory calibration. Do not attempt to change any factory calibration at the alignment tool or its mounting.

To align the receiver (see [Figure 1-3](#) and [Figure 1-4](#)):

1. Ensure that the receiver and transmitter are installed properly. [Installation instructions](#) provides installation instructions.
2. Remove the front shield using the two captive screws.
3. Install the alignment tool assembly on the receiver/transmitter front.

4. Fasten the alignment tool with fastening screws.

### 1.10.1 Perform crude alignment

#### Prerequisites

Use a ¼-in. Allen screwdriver for all alignment screws.

#### Procedure

1. Loosen the horizontal lock screws.
2. Approximately aim the transmitter horizontally towards the receiver.
3. Tighten the horizontal lock screw adjacent to the plate.
4. Loosen the vertical lock screws.

#### **⚠ CAUTION**

If the receiver is not properly supported when the lock screws are loosened, then it can fall and get damaged.

Support the receiver when loosening the vertical lock screws.

5. Approximately aim the transmitter vertically towards the receiver.
6. Tighten the outer vertical lock screw.
7. Repeat this process for the receiver.

### 1.10.2 Perform fine alignment

Refer to [Figure 1-4](#) to see the receiver with the alignment tool installed.

#### Procedure

1. Remove the front shield and mount the alignment tool on the front of the transmitter using the three screws. The alignment tool is supplied in the commissioning kit.
2. Aim the transmitter towards the receiver within the horizontal access.
3. Aim the alignment tool to the center of the front window of the receiver or transmitter.
4. Tighten the outer horizontal lock screw.
5. Aim the vertical axis.
6. Tighten the inner vertical lock screw.

7. Make sure the alignment tool cross is pointing to the receiver and transmitter center of the window.
8. Repeat [Step 2](#) through [Step 7](#) to align the receiver.
9. Remove the alignment tool.
10. Install the front shield.

### Postrequisites

Once you have completed the fine alignment for both the transmitter and receiver, you can turn on the power.

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**Figure 1-7: View through the alignment tool**



## 2 Operation

### 2.1 Safety precautions

After powering up, the detector requires minimal attention in order to function properly, but note the following:

#### **⚠ WARNING**

After powering up, the detector requires minimal attention for proper functioning.

- Follow the manual instructions and refer to the drawings and specifications issued by the manufacturer.
- Do not open the transmitter/receiver housing while power is connected.
- External devices such as automatic extinguishing systems must be disconnected before performing maintenance tasks required by the warranty.

### 2.2 Power up

#### **⚠ WARNING**

Prior to operating or maintaining the detector, follow Safety precautions.

#### **Procedure**

1. Ensure that the transmitter and receiver are connected to power.
2. Ensure that the 4–20 mA wiring meter is connected to the receiver.
3. Power up the system 18 to 32 Vdc. After sixty seconds, the current meter indicates 4 mA.

#### **Postrequisites**

After powering up, zero calibrate the system.

## 2.3 Verify signal

Use an RS-485 or HART® Field Communicator to verify the signal in accordance with [Table 2-1](#).

**Figure 2-1: Light-Emitting Diode (LED) Indication Before Zero Calibration**



1. Verify LED indication.
2. Use Winhost or HART to verify installation parameters.

### 2.3.1 Signal limitation values

**Table 2-1: Maintenance Channels Limits**

Channel	Installation distance		
	Minimum	Medium	Maximum
Reference	1 V gain 1	1 V gain 2	1 V gain 5
Signal	1 V gain 1	1 V gain 2	1 V gain 5
Ratio	0.6 - 1.4	0.6 - 1.4	0.6 - 1.4
NQRat	0.98 - 1.02		
Lower explosive limit (LEL)	0 LEL x m		
Temperature	Up to 25 °C beyond ambient temperature		
Voltage	32 Vdc > V > 18 Vdc		

#### Note

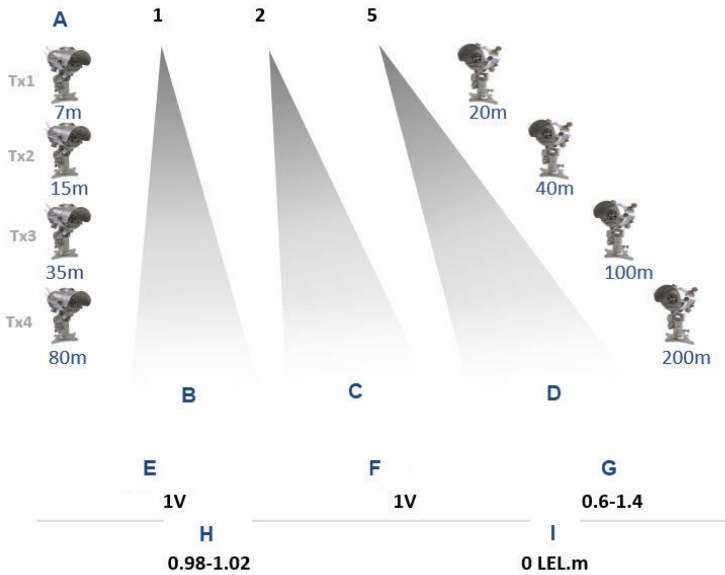
The installation information refers to the installation distance.

**Minimum** The minimum distance, as defined according to the model number.

**Medium** Half the maximum distance, as defined according to the model number.

**Maximum** The maximum distance, as defined according to the model number.

**Figure 2-2: Maintenance Channels' Limits**



- A. Maximum gain
- B. Minimum range
- C. Median range
- D. Maximum range
- E. Reference minimum
- F. Signal minimum
- G. Ratio
- H. NQ ratio
- I. LEL

## 2.4 Zero calibrate

### Prerequisites

Zero calibrate after any of the following:

- Installation
- Realignment



- Window cleaning
- Any change in receiver or transmitter position

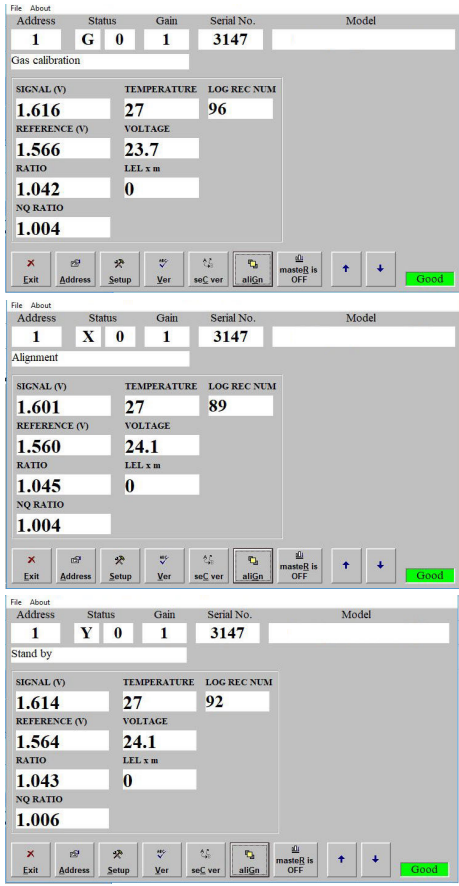
### Prerequisites

#### **⚠ WARNING**

Only zero calibrate when:

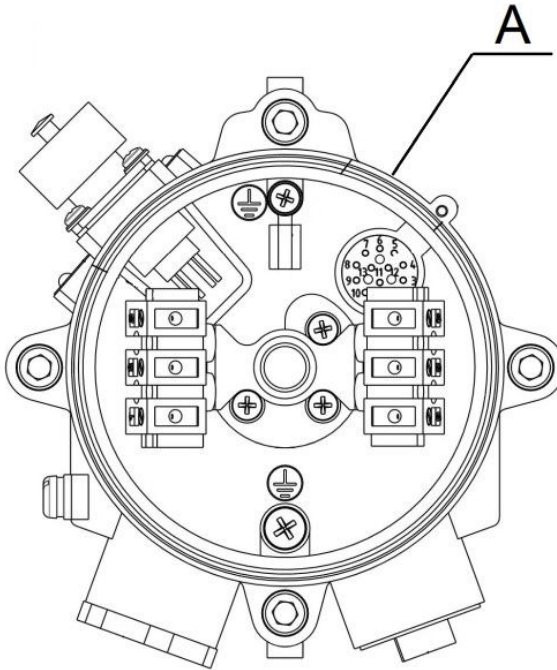
- No combustible gases are present.
  - There is a clear path between the transmitter and receiver.
  - Weather conditions are clear. Before zero-calibrating, align the detector precisely.
-

**Figure 2-3: Screens shown when zero calibrating with WinHost® software**



## Prerequisites

**Figure 2-4: Magnetic mode selector**



*A. Magnet*

To switch from each position ([Step 1](#) through [Step 3](#)), use either WinHost, HART®, or RS-485 or move the magnetic mode selector above the magnetic switch (see [Figure 2-4](#)).

## Procedure

1. Switch from Normal to Alignment mode.
2. Switch from Alignment to Standby mode.
3. Switch from Standby to Zero Calibration mode.  
The 0–20 mA output should now be at 1 mA.
4. Wait up to sixty seconds until it switches to Normal mode.  
The receiver reading is now set to Normal. The 0–20 mA output should now indicate 4 mA.

## Postrequisites

After zero calibration is complete, refer to [Signal limitation values](#) to verify the installation parameters.

## 2.5 Use check filters to validate configuration

### Procedure

1. Position the Warning Level check filter on the detector as shown. The check filters are provided in the commissioning kit.

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**Figure 2-5: Receiver with Check Filter Installed**



2. Check the receiver reading is within the range specified in the factory acceptance test (FAT) certificate.
3. Repeat [Step 1](#) and [Step 2](#) with the Alarm filter.
4. Remove all filters and wait 30 to 60 seconds. Then verify that the receiver returns to Normal status (light-emitting diode [LED] is green and blinking, and the output is 4 mA).

## 3 Product certifications

### 3.1 ATEX, IECEx

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

This product is suitable for use in hazardous zones 1 and 2 with IIB+H2 group vapors present, and zones 21 and 22 with IIIC combustible dust types.

### 3.2 UKCA

The Rosemount 935 is UK CA approved per CSAE 21UKEX1173X:

- 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<sub>Ambient</sub> -55 °C to +65 °C

This product is suitable for use in hazardous zones 1 and 2 with IIB+H2 group vapors present, and zones 21 and 22 with IIIC combustible dust types.

### 3.3 FM/FMC

The Rosemount™ 935 is approved to FM/FMC explosion proof per:

- Class I, Div. 1 Group B, C, and D, T6 -50 °C ≤ T<sub>a</sub> ≤ 65 °C
- Dust ignition proof - Class II/III Div. 1, Group E, F, and G
- Ingress protection - IP66 & IP68, NEMA® 250 Type 6P

IP68 is rated for 2-meter depth for 45 minutes.

### 3.4 TR CU (EAC) - pending

1Ex d e ib [ib Gb] IIB + H2 T4 Gb X

Ex tb [ib Db] IIIC T135 °C Db X

### 3.5 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

ABNT NBR IEC 60079-31

### Marking

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 16.1063X (Rosemount) and UL-BR 22.4058X (Spectronix).

## 3.6 SIL-2

The Rosemount 935 is TUV approved for SIL-2 requirements per IEC61508.

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.

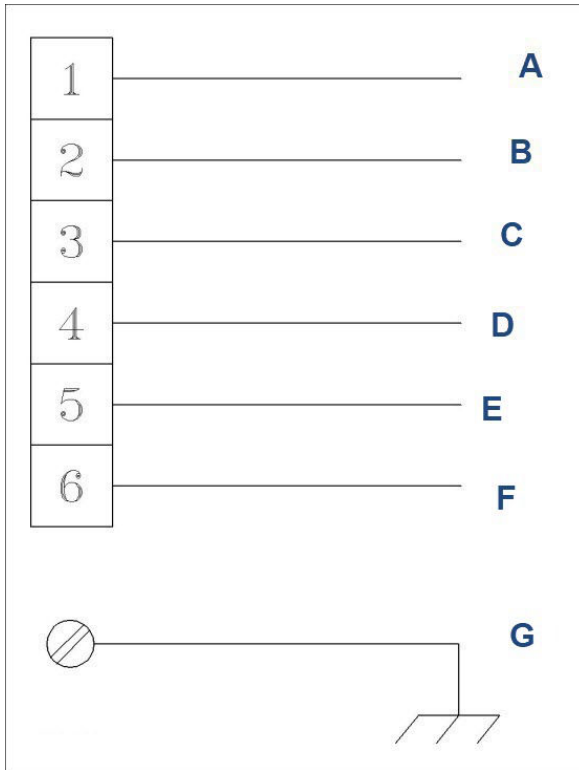
## 3.7 Performance approvals

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

The Rosemount 935 was functionally tested by FM per EN60079-29-4 and Ansi/FM 60079-29-4.

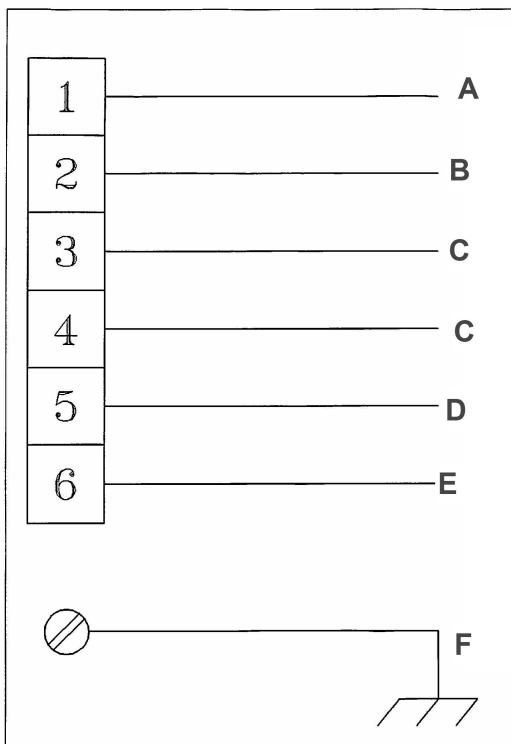
## A Wiring configurations

**Figure A-1: Receiver wiring terminal**



- A. Power (+)  
18 to 32 Vdc
- B. Return (-)
- C. 0-20 mA (input)
- D. 0-20 mA (output)
- E. RS-485 (+)
- F. RS-485 (-)
- G. Ground

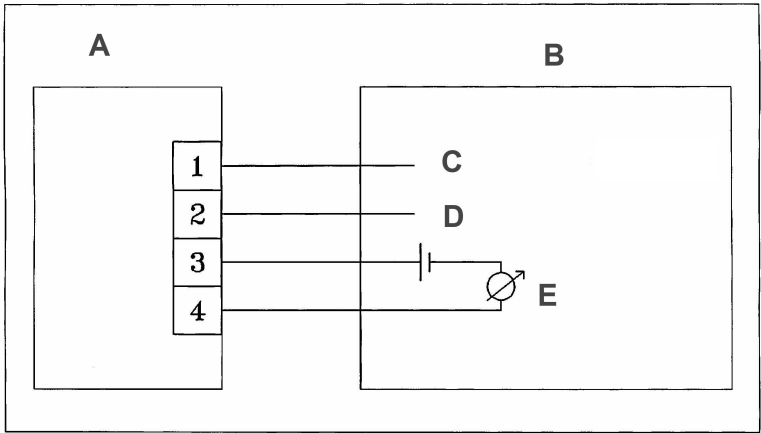
**Figure A-2: Transmitter wiring terminal**



- A. Power (+)  
18 to 32 Vdc
- B. Return (-)
- C. Not used
- D. Not used
- E. Not used
- F. Ground

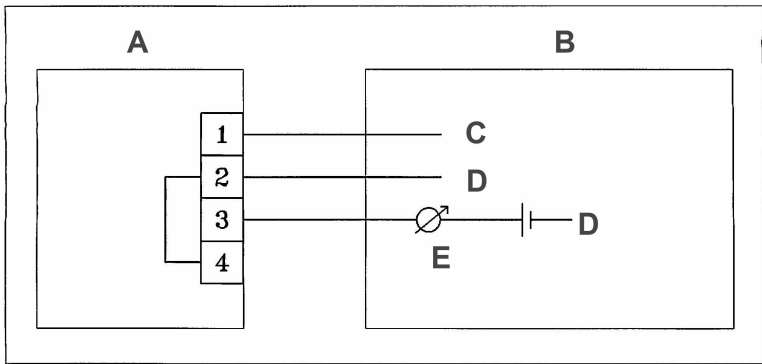


**Figure A-3: 0-20 mA Sink 4 Wire**



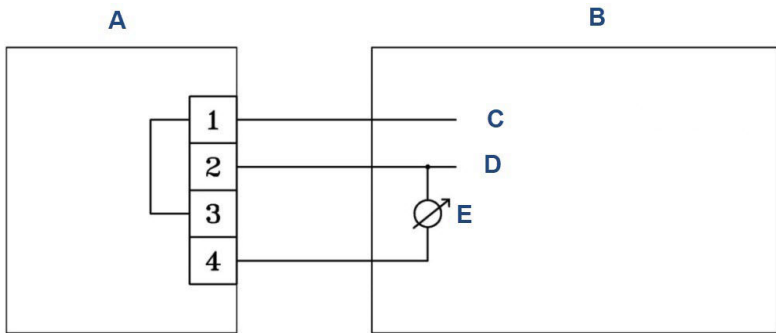
- A. Receiver
- B. Controller
- C. Input power: 18-32 Vdc
- D. Return
- E. 0-20 mA meter

**Figure A-4: 0-20 mA Non-Isolated Sink 3 Wire**



- A. Receiver
- B. Controller
- C. Input power: 18-32 Vdc
- D. Return
- E. 0-20 mA meter


**Figure A-5: 0-20 mA Source 3 Wire**



- A. Receiver
- B. Controller
- C. Input power: 18-32 Vdc
- D. Return
- E. 0-20 mA meter

# B Declaration of Conformity

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## Declaration of Conformity /

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We, **Rosemount Inc.**  
**6021 Innovation Blvd**  
**Shakopee, MN 55379**  
**USA**


declare under our sole responsibility that the product,

**935/936 Open Path Gas Source**

<p>Authorized Representative in Europe:</p> <p>Emerson S.R.L., company No. J12/88/2006, Emerson 4 street, Parcul Industrial Tetarom II, Cluj-Napoca 400638, Romania</p> <p>Regulatory Compliance Shared Services Department          Email: <a href="mailto:europaeproductcompliance@emerson.com">europaeproductcompliance@emerson.com</a> Phone: +40 374 132 035</p>	<p>For product compliance destination sales questions in Great Britain, contact Authorized Representative:</p> <p>Emerson Process Management Limited at <a href="mailto:ukproductcompliance@emerson.com">ukproductcompliance@emerson.com</a> or +44 11 6282 23 84, Regulatory Compliance Department.</p> <p>Emerson Process Management Limited, company No 00671801, Meridian East, Leicester LE19 1UX, United Kingdom</p>
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to which this declaration relates, is in conformity with:

- 1) the relevant statutory requirements of Great Britain, including the latest amendments
- 2) the provisions of the European Union Directives, including the latest amendments



 October 3, 2022 (signature & date of issue)	Mark Lee (name)	VP Global Quality (function)	Boulder Colorado, USA (place of issue)
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<p><b>ATEX Notified Body for EU Type Examination Certificate:</b>  <b>CSA Group Netherlands B.V.</b> [Notified Body Number: 2613]          Utrechtseweg 310          6812 AR ARNHEM          Netherlands</p> <p><b>ATEX Notified Body for Quality Assurance:</b>  <b>SGS Fimko Oy</b> [Notified Body Number: 0536]          Takomitie 6          00380 Helsinki          Finland</p>	<p><b>UK Conformity Assessment Body for UK Type Examination Certificate:</b>  <b>CSA Group Testing UK Ltd</b> [Approved Body Number: 0518]          Unit 6 Hawarden Industrial Park, Hawarden, CH5 3US          United Kingdom</p> <p><b>UK Approved Body for Quality Assurance:</b>  <b>SGS Baseefa Ltd.</b> [Approved Body Number: 1180]          Rockhead Business Park, Staden Lane          Buxton, Derbyshire. SK17 9RZ          United Kingdom</p>
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# Declaration of Conformity

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**ATEX Directive (2014/34/EU)**  
 SIRA 16ATEX1224X  
 Ex II 2 (2) G D  
 Ex db eb Ib (Ib Gb) IIB + H2 T4 Gb  
 Ex tb (Ib Db) IIIC T135°C Db  
 Ta = -55 °C to +65 °C

Harmonized Standards:  
 EN 60079-0:2018/AC:2020  
 EN 60079-1:2014/AC:2018  
 EN 60079-7:2015+A1:2018  
 EN 60079-11:2012  
 EN 60079-28:2015  
 EN 60079-31:2014

**Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (S.I. 2016/1107)**  
 CSAE 210/REX1175X  
 Ex II 2 (2) G D  
 Ex db eb Ib (Ib Gb) IIB + H2 T4 Gb  
 Ex tb (Ib Db) IIIC T135°C Db  
 Ta = -55 °C to +65 °C

Designated Standards:  
 EN 60079-0:2018/AC:2020  
 EN 60079-1:2014/AC:2018  
 EN 60079-7:2015+A1:2018  
 EN 60079-11:2012  
 EN 60079-28:2015  
 EN 60079-31:2014

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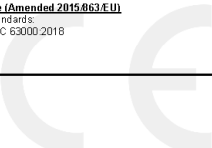

**EMC Directive (2014/30/EU)**  
 Harmonized Standards:  
 EN 50270:2016  
 EN 61000-6-3:2007+A1 2011+AC:2012

**Electromagnetic Compatibility Regulations 2016 (S.I. 2016/1091)**  
 Designated Standards:  
 EN 50270:2016  
 EN 61000-6-3:2007+A1 2011+AC:2012

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**RoHS Directive (Amended 2015/863/EU)**  
 Harmonized Standards:  
 EN IEC 63000:2018

**Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (S.I. 2012/2032)**  
 Designated Standards:  
 EN IEC 63000:2018









**Quick Start Guide**  
**00825-0100-4035, Rev. AB**  
**November 2023**

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