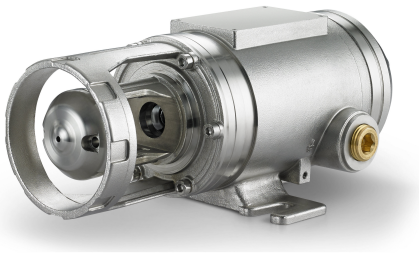
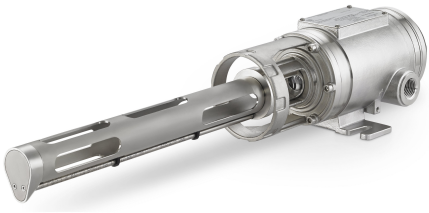
Quick Start Guide
MS-00825-0100-3625, Rev AD
February 2025

Rosemount™ 625IR Gas Detector

Hydrocarbon Gas Detection





ROSEMOUNT™

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Safety messages

⚠ WARNING

If the product is not used and maintained in accordance with the manufacturer's instructions, the product may not perform as intended.

Carefully read the manual in its entirety.

All those responsible for operating and maintaining this product must read and understand the manual.

⚠ WARNING

If the product is not used and maintained as described in this manual, warranties with respect to the product are voided.

Warranties are also voided if the product is used outside temperature and vibration certified ranges.

Please read the general warnings in the following chapters.

⚠ WARNING

The Rosemount 625IR Optical Gas Detector is certified for and intended for use in potentially hazardous areas. Install and use the gas detector in accordance with the appropriate local or national regulations.

⚠ WARNING

Ensure that the gas detector is properly earthed to protect against electrical shock and minimize electrical interference.

⚠ WARNING

Test gases may be combustible.

Refer to Material Safety Data Sheets for appropriate warnings.

⚠ WARNING

Only trained and qualified personnel should install and operate the detector.

⚠ 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 in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

NOTICE

The warranty is not valid if the detector housing is opened.

Do not open the detector housing. There are no user-serviceable parts or settings inside. Return to service point for service or repair.

Contents

1 Device overview

The Rosemount 625IR Gas Detector is a fixed general purpose gas detector sensor.

The 625IR is available as a standalone detector for open area applications, or with an extended gas sensing section for duct applications.

There is a range of accessories available to keep operation and maintenance as simple as possible.

2 Installation

⚠ WARNING

Ensure that the area for which the detector will be installed is in accordance with the certification of the detector and with the standards of the appropriate authority in the country concerned.

⚠ WARNING

If the service temperature of the installation may exceed +158 °F (+70 °C), ensure the following:

Cable glands are certified for the given temperature range.
Cables are suited for use at temperatures above +172 °F (+78 °C).

2.1 Install the detector

Prerequisites

Emerson recommends that the user be familiar with *IEC 60079-29-2: Explosive atmospheres gas detectors - Selection, installation, use, and maintenance of detectors for flammable gases and oxygen*.

Procedure

1. Verify that the detector is mounted in a horizontal orientation with tight bolts.
2. Verify correct wiring of the terminals.
3. Verify that the cable gland is a suitable type and has the appropriate certification.
4. Verify cable shielding has been correctly terminated.
5. Verify correct earthing to external earthing point on the detector housing.

Related information

Mounting the detector
Electrical connections and earthing

2.2 Preparations and positioning considerations

The Rosemount 625IR is a point gas detector, and qualified personnel should carefully assess its chosen location. However, each installation is unique, and the operators must make detailed considerations

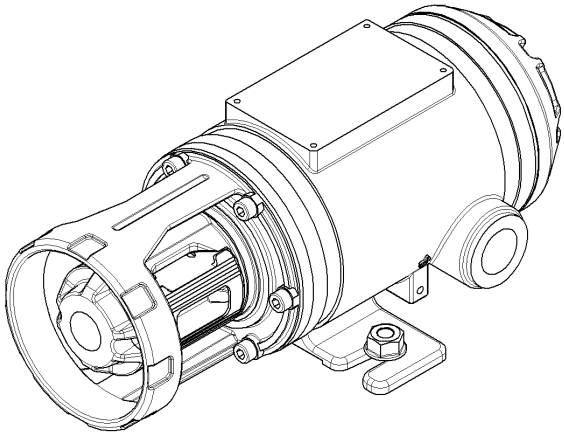
locally in order to get the best coverage. Below are some general matters to consider.

- Place the detector where maintenance, such as cleaning of optics, can be easily performed.
- Take into account the relative weight of the target gas compared to air when deciding the optimum installation height.
- The concentration of a gas cloud may quickly reduce with the distance from the leak source. Therefore, consider placing the detector as close as possible to potential leakage sources.
- Pressure building up in a duct or similar applications will change the gas reading with the same relative amplitude as the pressure changes. This applies to all optical gas detectors.
- Do not mount the detector in areas where it can be continually drenched by water.

2.3 Mounting the detector

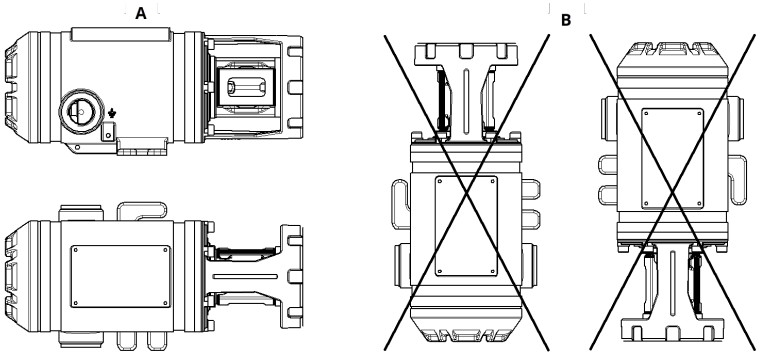
In Figure 2-1, the Rosemount 625IR is shown securely mounted.

Figure 2-1: Securely Mounted Detector



Mount the detector with the longitudinal axis in the horizontal direction as illustrated in Figure 2-2. You can rotate it in any direction along this longitudinal axis. This position reduces the accumulation of contamination on the optical parts (lens and mirror).

Figure 2-2: Mounting Direction

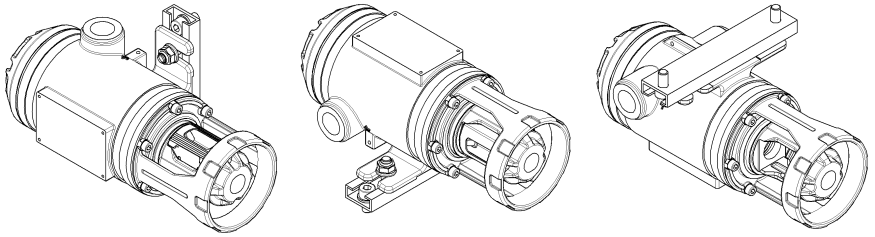


A. Correct position
B. Incorrect position

Most often, operators mount the detector on the wall, but they can also mount it flat or in the roof as illustrated in Figure 2-3.

Figure 2-3: Detector Mounting

Detector mounted on the wall	Detector mounted flat	Detector mounted in roof



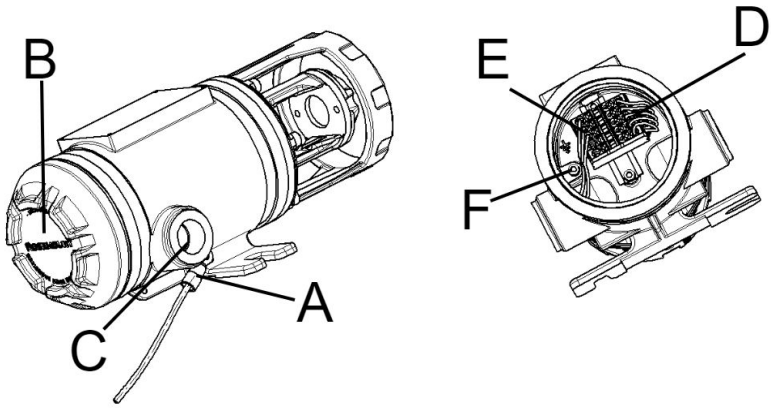
Refer to the Rosemount 625IR Manual for details of pole mounting and duct mounting.

2.4 Electrical connections and earthing

Connect the detector chassis to local clean earth.

Use one of the two external earthing points illustrated in Figure 2-4 using an earthing cable ring lug.

Figure 2-4: Electrical Connections and Earthing



A. External earthing point
B. Electrical terminals inside rear lid
C. Cable entries
D. Internal wiring terminals
E. Wire terminals according to Table 2-1
F. Internal earth point for an M4 screw for connection of cable lug

The electrical terminals are located inside the rear lid. Open them by unscrewing the three screws fixing the lid to the detector. There are cable entries on both sides of the detector. The right side of the terminals are for internal wiring. On the left side are the terminals (pin 1 at the top and pin 5 at the bottom) to be wired according to Table 2-1.

Table 2-1: Terminal Specifications

Terminal (detector wire color)	Signal type	Specification	Cable requirement
1 (white)	Power, positive supply voltage	24 Vdc	Defer to site standards. Minimum cross section is 0.01 in.^{2} (0.1 mm^2), and maximum cross section is 0.1 in.^{2} (3 mm^2) (stranded) or 0.2 in.^{2} (4 mm^2) (solid).
2 (brown)	Power, supply voltage return	0 Vdc	
3 (green)	Analog safety signal	Analog 0-20 mA DC signal overlaid with a HART® signal. The HART signal does not interfere with the analog DC signal. Maximum impedance: 500 Ω	
4 (yellow)	RS-485 A	Two wires for connection to digital RS-485 serial communication, Modbus® remote terminal unit (RTU)	Industrial communication cable with shielded twisted pair. Minimum/ maximum cross section 0.01 in.^{2} (0.1 mm)^2/0.1 in.^{2} (3 mm^2) (stranded) or maximum 0.2 in.^{2} (4 mm^2) (solid)
5 (grey)	RS-485 B		
Earth	External earth point	Use external grounding when the detector is installed in an Ex zone.	
	Internal earth point	Normally not used. Shield of the cable is typically connected to instrument earth in the central control cabinet and is normally not terminated at the detector. If extra radio frequency interference (RFI) is required, and the installation's grounding principles/regulations allow it, you can terminate the shield to local ground via the internal earth point at the detector.	

Note
Minimum voltage to the detector is 18 Vdc.

Table 2-2: Cable Size and Maximum Length

Cable cross section	Voltage drop	Maximum cable length(1)
0.03 in.^{2} (0.8 mm^2)	~5.8 V	656 ft. (200 m)
0.04 in.^{2} (1 mm^2)		820 ft. (250 m)
0.06 in.^{2} (2 mm^2)		1312 ft. (400 m)
0.1 in.^{2} (3 mm^2)		2133 ft. (650 m)
0.2 in.^{2} (4 mm^2)		3281 ft. (1000 m)

(1) For a nominal power of 24 V. Longer cable can be used with higher supply voltage.

2.4.1 Boot up the detector

Procedure

Turn on the power to the detector.
The detector has a boot-up time of < 2 minutes when ambient temperature is above -4 °F (-20 °C). During this time, the detector runs self-diagnostics and if the indicator is configured to be active, it will be yellow.

Postrequisites

After this boot-up time, the detector is ready to detect gas. However, for a very precise and accurate test, allow the detector another 20 minutes to warm up.

2.4.2 Performing loop test

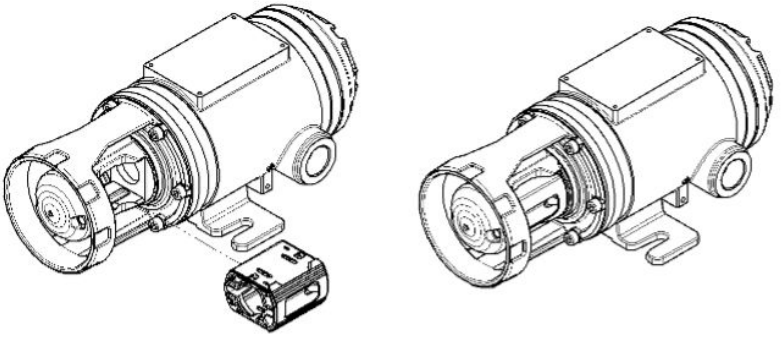
The detector can perform a loop test through the HART® or Modbus® interface. The loop test allows you to manually set the analog signal output to a selected value for a limited time.

2.5 Environment shield

Dirt, dust, snow, and liquids gathered on the lens and mirror will reduce the amount of infrared (IR) light used for detecting gas.

The environment shield for the detector consists of one compact unit fitting into the gas sensing section. Emerson has designed the environment shield for optimum performance of the detector. Figure 2-5 shows how the environment shield slots into the sensing section of the Rosemount 625IR. Before inserting the environment shield, visually inspect the detector to verify that it is free from dirt and blocking substances. Ensure that the shield is inserted all the way.

Figure 2-5: Inserting the Environment Shield



Refer to the Rosemount 625IR Manual for details of all accessories.

3 Configuration

3.1 Overview

Note
Unless otherwise specified, all sensor modules will leave the factory with default configuration options selected.
The operator can change the options in the field using HART® communication.

3.2 Configuration options

You can configure settings via HART or Modbus®.

A Product certifications

Rev 1.0

A.1 European Directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide.

The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/global.

A.2 Ordinary location certification

As standard, the device has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a Nationally Recognized Test Laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

A.3 Installing equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

A.4 USA

A.4.1 E5 Explosion-proof

Certificate	FM23US0098X
Markings	Class I, Division 1, Groups B, C, and D, T5 Ta = -50 °C to +75 °C 60079-29-1 Type 4X, IP66/67

Special Conditions for Safe Use (X):

1. Flameproof joints are not intended to be repaired.
2. If the service temperature of the installation exceeds +158 °F (+70 °C), ensure the following:
   - Cable glands are certified for the given temperature range.
   - Cables are suited for use at temperatures above +176 °F (+80 °C)

A.5 Canada

A.5.1 E6 Explosion-proof

Certificate	FM23CA0067X
Markings	Class I, Division 1, Groups B, C, and D, T5, Ta = -50 °C to +75 °C 60079-29-1 Type 4X, IP66/67

Special Conditions for Safe Use (X):

1. Flameproof joints are not intended to be repaired.
2. If the service temperature of the installation exceeds +158 °F (+70 °C), ensure the following:
   - Cable glands are certified for the given temperature range.
   - Cables are suited for use at temperatures above +176 °F (+80 °C)

A.6 Europe

A.6.1 E1 Performance evaluation

Certificate	FM23ATEX0053X
Markings	-60 ≤ Ta ≤ +75 °C IEC/EN 60079-29-1

Special Conditions for Safe Use (X):

1. Performance evaluation only.

A.6.2 E1 Flameproof

Certificate	DNV23ATEX56745X
Markings	 II 2 G Ex db IIC T5 Gb -60 °C ≤ Ta ≤ +75 °C

Special conditions for safe use (X):

1. Flameproof joints are not intended to be repaired.
2. The measuring function of the EUT is not covered by this type examination. It shall comply with the requirements from the relevant harmonized standards which provide guidance on the performance of gas detection equipment and safety devices.

A.7 International

A.7.1 E7 Performance evaluation

Certificate	IECEx FMG 23.0030X
Markings	IEC/EN 60079-29-1

Special Conditions for Safe Use (X):

1. Performance evaluation only.

A.7.2 E7 Flameproof

Certificate	IECEx DNV 23.0099X
Markings	Ex db IIC T5 Gb -60 °C ≤ Ta ≤ +75 °C

Special Conditions for Safe Use (X):

1. Flameproof joints are not intended to be repaired.
2. The measuring function of the EUT is not covered by this type examination. It shall comply with the requirements from the relevant harmonized standards which provide guidance on the performance of gas detection equipment and safety devices.

A.8 Brazil

A.8.1 E2 Flameproof

Certificate	UL-BR 24.1705X
Standards	ABNT NBR IEC 60079-0, ABNT NBR IEC 60079-1, ABNT NBR IEC 60079-29-1
Markings	Ex db IIC T5 Gb -60°C ≤ Ta ≤ +75°C

Special Conditions for Safe Use (X):

1. The measuring function of the EUT is not covered by this type examination. It shall comply with the requirements from the relevant harmonized standards which provide guidance on the performance of gas detection equipment and safety devices.
2. Flameproof joints are not intended to be repaired.

Based on IECEx DNV 23.0099X.

A.9 Declaration of Conformity

No: RAD1167 Rev. A

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Declaration of Conformity CE

We,

Rosemount Inc.
6021 Innovation Blvd
Shakopee, MN 55379
USA

declare under our sole responsibility that the product,

Rosemount™ Model 625IR Fixed Gas Detector

Authorized Representative in Europe:
Emerson S.R.L., company No. J12/88/2006, Emerson 4 street, Parcul Industrial
Regulatory Compliance Shared Services Department
Email: europeproductcompliance@emerson.com Phone: +40 374 132 035

to which this declaration relates, is in conformity with:

1) the provisions of the European Union Directives, including the latest amendments

March 27, 2024 | Mark Lee | Vice President, Quality | Boulder, CO, USA
(signature & date of issue) (name) (function) (place of issue)

ATEX Notified Body for EU Type Examination Certificate:
FM Approvals Europe Ltd. [Notified Body Number: 2908]
One Georges Quay Plaza
Dublin
D02 E440
Ireland

ATEX Notified Body for Quality Assurance:
For Chanhassen, USA and Singapore
SGS Fimko Oy [Notified Body Number: 0598]
Takomotie 8
00380 Helsinki
Finland

For Goteborg, Sweden
DNV Nemko Presafe AS [Notified Body Number: 2460]
Veritasveien 1,
1363 HØVIK
Norway

EMC Directive (2014/30/EU)
Harmonized Standards:
EN 61326-1:2013

RoHS Directive (2011/65/EU) Amended 2015/863
Harmonized Standards:
EN IEC 63000-2018

ATEX Directive (2014/34/EU)
FM23ATEX0053X – Performance Only
-60°C ≤ Ta ≤ +75°C
IEC/EN 60079-29-1

DNV23ATEX56745X – Flame-proof
II 2 G Ex db IIC T5 Gb
-60°C ≤ Ta ≤ +75°C
IEC/EN 60079-29-1

Harmonized Standards:
EN IEC 60079-0:2018
EN 60079-0:2014
EN 60079-11:2012
EN 60079-29-1:2016

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For more information: **Emerson.com/global**

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