Rosemount™ 628 Wireless Gas Monitor
Sensor Module
Integrated Wireless Gas Monitoring
NOTICE

This guide provides configuration and basic installation information for Rosemount 628 Gas Sensor Module. It does not provide diagnostics, maintenance, service, troubleshooting, Intrinsically Safe (I.S.) installation, or ordering information. It does not provide configuration or installation information for the Rosemount 928 Wireless Gas Monitor. Refer to the Rosemount 928 Wireless Gas Monitor Quick Start Guide. Refer also to the Rosemount 928 Wireless Gas Monitor Reference Manual for more information. The manual and this guide are also available electronically on Emerson.com/Rosemount.

CAUTION

Read this quick start guide before working with the product. For personal and system safety, and for optimum product performance, make sure to thoroughly understand the contents before installing, using, or maintaining this product.

The United States has two toll-free assistance numbers and one international number.

Customer Central
1 800 999 9307 (7:00 a.m. to 7:00 p.m. CST)

National Response Center
1 800 654 7768 (24 hours a day)

Equipment service needs
International
1 952 906 8888

The products described in this document are NOT designed for nuclear-qualified applications.

Using non-nuclear qualified products in applications that require nuclear-qualified hardware or products may cause inaccurate readings.

For information on Rosemount nuclear-qualified products, contact an Emerson™ Sales Representative.

WARNING

Failure to follow these installation guidelines could result in death or serious injury:

- Ensure that only qualified personnel perform the installation.
- Installation of this sensor module in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices.
- Explosions could result in death or serious injury.
- Before connecting a Field Communicator in an explosive atmosphere, make sure that the instruments are installed in accordance with Intrinsically Safe or non-incendive field wiring practices.
- Verify that the operating atmosphere of the sensor module and associated transmitter is consistent with the appropriate hazardous locations certifications.
- Electrical shock could cause death or serious injury.
- Use extreme caution when making contact with the leads and terminals.
- Substitution of components may impair intrinsic safety.

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1.0 Overview

The Rosemount 628 Series of Sensor Modules is compatible with the Rosemount 928 Wireless Gas Monitor. The sensor module fits integrally into the Rosemount 928 Wireless Gas Monitor Transmitter housing without the use of tools. Electrical connections are made when the sensor module is fully seated in the Rosemount 928 Transmitter sensor module housing.

Note
Use Rosemount 628 Series Gas Sensor Modules only with the Rosemount 928 Transmitter.

⚠ CAUTION
The Ingress Protection (IP) filter must be installed.

Do not operate the Rosemount 928 Wireless Gas Monitor without the correct IP filter installed in the Rosemount 628 Series Gas Sensor Module. If the IP filter is not installed, damage may occur to the sensor inside the Rosemount 628 Series Gas Sensor Module.

When installing the IP filter, verify that the IP filter gasket is in place, is properly aligned, and that it does not block the white filter media. Refer to Figure 1 on page 4.

- When handling the IP filter, avoid contact with the filter media.
- Verify that all three legs are fully latched by pushing upward on each leg of the IP filter.
- Avoid getting water inside the IP filter.

Do not attempt to clean the IP filter.

- Do not rinse or spray the IP filter with water.
- Do not immerse the IP filter in water.
2.0 Installing the Sensor Module

The Sensor Module is held in place using a tight-fitting seal and snap connections. The Rosemount 628 Series Gas Sensor Module is connected to the Rosemount 928 Transmitter by two latching tabs that fit into the bottom portion of the housing as shown in the following figure. The seal between the transmitter housing and the Sensor Module assembly is designed so that a snug, airtight fit is achieved between the two assemblies when properly installed.

1. Remove the Rosemount 628 Gas Sensor Module from its packaging.
2. If installing a Rosemount 628 Gas Sensor Module on the Rosemount 928 Transmitter for the first time, remove the protective plastic cap from the sensor module housing at the bottom of the Rosemount 928 Transmitter.
3. The Rosemount 628 Gas Sensor Module contains a keying feature that ensures that the module cannot be forced into the transmitter housing in an incorrect alignment. Confirm that the keying feature is aligned by rotating it into position before installing the Rosemount 628 Gas Sensor Module into the Rosemount 928 Transmitter.
4. Slide the sensor module assembly up into the main Rosemount 928 Transmitter housing until it is completely seated.

A. Rosemount 928 Transmitter housing
B. Rosemount 628 Gas Sensor Module
C. Latching tabs

5. To ensure a firm latch and seal, push the Rosemount 628 Gas Sensor Module upward until the two latching tabs are fully engaged. Push up on the bottoms of the latching tabs after they are seated.

6. Allow the Rosemount 928 Wireless Gas Monitor to warm up before continuing. Refer to the following table for maximum warm up times based on gas type. During the warm up period, the displayed values, alerts, and gas concentrations will not reflect actual measurements; readings will not be transmitted.

<table>
<thead>
<tr>
<th>Gas type</th>
<th>Maximum warm up period</th>
</tr>
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<tr>
<td>Hydrogen Sulfide (H\textsubscript{2}S)</td>
<td>One minute</td>
</tr>
</tbody>
</table>

To remove the Rosemount 628 Gas Sensor Module, compress the two latching tabs and pull downward until the module is released from the Rosemount 928 Transmitter housing.

### 3.0 Bench configuration

To perform configuration, the Rosemount 628 Gas Sensor Module must be installed in a functional Rosemount 928 Transmitter. The Rosemount 928 Wireless Gas Monitor will receive any HART\textsuperscript{®} communication from a handheld Field Communicator or from AMS Wireless Configurator. Remove the rear housing cover to expose the terminal block and HART communication terminals, then connect the power module to power the device for configuration.
3.1 Field Communicator bench configuration

A Rosemount 928 Transmitter Device Description (DD) is required for HART communication. To connect to the Rosemount 928 Wireless Gas Monitor using a Field Communicator, refer to “Guided setup” on page 7. To obtain the latest DD, go to Emerson.com/Device Install Kits and then visit the Emerson Web page for your handheld device.

1. On the Home screen, select Configure.

2. Do one of the following:
   - On the Configure screen, select Guided Setup to verify or change initial configuration settings. Refer to “Guided setup” on page 7. Refer to the Field Communicator subsections for each configuration task.
   - On the Configure screen, select Manual Setup to verify or change all configuration settings, including optional, advanced settings. Refer to the “Manual Setup” section in the Rosemount 928 Wireless Gas Monitor Reference Manual. Refer to the Field Communicator subsections for each configuration task.

3. When finished, select Send to implement configuration changes.

4. When configuration is completed, remove the HART communication leads from the COMM terminals on the terminal block and replace the rear housing cover.

3.2 AMS Wireless Configurator bench configuration

AMS Wireless Configurator is capable of connecting to devices directly, using a HART modem, or through a Wireless Gateway.

1. In the AMS Device Manager pane, select the HART modem.

2. In the device pane, double-click the device icon.
3. Select Configure.

4. In the Configure pane, do one of the following:
   - Select Guided Setup to verify or change initial configuration settings. Refer to “Guided setup” on page 7. Refer to the AMS Wireless Configurator subsections for each configuration task.
   - Select Manual Setup to verify or change all configuration settings, including advanced, optional settings. Refer to the “Manual Setup” section in the Rosemount 928 Wireless Gas Monitor Reference Manual. Refer to the AMS Wireless Configurator subsections for each configuration task.

5. When finished, select Send to implement configuration changes.

4.0 Guided setup

Guided setup contains basic configuration settings. The guided setup menus are useful during initial configuration.

Note
The Field Communicator Guided Setup configuration procedures in this quick start guide were developed using Emerson AMS Trex™ Device Communicator. The menus are identical to those found in other Field Communicators, but are navigated using touch screens rather than fast keys. Refer to the manual for your handheld communicator device for more information.

1. Connect the HART communication leads to the HART terminals on the handheld communicator.
2. Connect the HART communication leads to the COMM terminals on the Rosemount 928 Transmitter terminal block.

A. +Comm Terminal
B. -Comm Terminal

⚠️ WARNING
Do not connect to the COMM terminals when an explosive atmosphere is present.

3. Start your handheld communicator device. If necessary, open HART Field Communicator on your handheld device to establish HART communication. Refer to the manual for your handheld communicator device for more information.

4. On the Overview screen, select Configure.
5. On the Configure screen, select **Guided Setup**.

6. Perform each of the configuration tasks in the following subsections.

### 4.1 Basic Setup

**Basic setup using Field Communicator**

1. On the **Guided Setup** screen, select **Basic Setup**.
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2. On the Device Information screen, select any of the following and configure as needed. Otherwise, continue with Step 3.

- **Long Tag**: Enter an identifier for the device up to 32 characters long using the virtual keypad. The Long Tag is blank by default and does not display if left blank.
**Tag:** Enter an identifier for the device up to eight uppercase alphabetic and numeric characters long using the virtual keypad. The Tag is blank by default and does not display if left blank.

**Descriptor:** Enter a description of the device up to 16 alphabetic, numeric, and special characters long. The Descriptor is blank by default and does not display if left blank.
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- **Message**: Enter a message up to 32 alphabetic, numeric, and special characters long. The Message is blank by default, does not display if left blank, and may be used for any purpose.

3. On the **Device Information** screen, select **Next**.
4. On the Configure Sensor screen, select **OK** to confirm successful sensor configuration.

Basic setup using AMS Wireless Configurator

1. On the **Guided Setup** tab, in the **Initial Setup** area, select **Basic Setup**.

2. On the **Device Information** tab, you have the option to configure any of the following as needed. Otherwise, continue with Step 3.
   - **Long Tag**: Enter an identifier for the device up to 32 characters long using the virtual keypad. The Long Tag is blank by default and does not display if left blank.
   - **Tag**: Enter an identifier for the device up to eight uppercase alphabetic and numeric characters long using the virtual keypad. The Tag is blank by default and does not display if left blank.
Quick Start Guide

- **Descriptor**: Enter a description of the device up to 16 alphabetic, numeric, and special characters long. The Descriptor is blank by default and does not display if left blank.

- **Message**: Enter a message up to 32 alphabetic, numeric, and special characters long. The Message is blank by default, does not display if left blank, and may be used for any purpose.

3. On the **Basic Setup** screen, select **Next**.

4. Select **Finish**.

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[Image of the Basic Setup screen with the next button selected.]
5.0 Calibrating the gas sensor module

Calibrating the Rosemount 628 Gas Sensor Module ensures that the analog, digital, and discrete outputs accurately transmit the target gas concentrations registered by the Rosemount 628 Gas Sensor Module. Although calibration was performed at the factory, the device must be calibrated at the following times to ensure accurate and correct operation:

- During installation
- At least every 90 days throughout the device’s service life
- When replacing the Rosemount 628 Gas Sensor Module

The Rosemount 628 Gas Sensor Module is a smart sensor. As such, it retains its own calibration information. It must be connected to a Rosemount 928 Transmitter to perform calibration, but the calibration settings are stored in the sensor itself rather than in the Rosemount 928 Transmitter. The Rosemount 628 Gas Sensor Module may be uninstalled from a Rosemount 928 Transmitter and reinstalled in another without affecting its calibration.

Note
A conventional calibration cup is not required to calibrate the Rosemount 628 Gas Sensor Module. Connect calibration tubing (PVC tubing, \( \frac{3}{16}\)-in. ID, \( \frac{5}{16}\)-in. OD) directly to the fitting on the Rosemount 628 Gas Sensor Module IP Filter Assembly (part number 00628-9000-0001).

5.1 Calibrating using Field Communicator

Note
The Field Communicator Guided Setup configuration procedures in this quick start guide were developed using Emerson AMS Trex Device Communicator. The menus are identical to those found in other Field Communicators, but are navigated using touch screens rather than fast keys. Refer to the manual for your handheld communicator device for more information.
1. Connect the HART communication leads from the Field Communicator HART terminals to the COMM terminals on the terminal block of the Rosemount 928 Transmitter.

![Diagram of Rosemount 928 Transmitter terminals]

A. +Comm Terminal
B. -Comm Terminal

**WARNING**
Do not connect to the COMM terminals when an explosive atmosphere is present.

2. Establish communication between the Rosemount 928 Transmitter and the Field Communicator.

3. On the Home screen, select **Configure**.

4. On the Configure screen, select **Guided Setup**.

5. On the Guided Setup screen, select **Calibrate Sensor**.
6. Select **OK** to accept the current date as the calibration date and continue.

7. Acknowledge the warning. If necessary, remove the loop from automatic control.

8. Expose the sensor to clean air to zero the reading. If the ambient air may contain trace amounts of target gas or other gases (for example, carbon monoxide from engine exhaust) that may interfere with zeroing the device, do the following:
   a. Obtain a cylinder of verified clean air and a length of calibration tubing (PVC tubing, \(\frac{3}{8}\)-in. ID, \(\frac{1}{2}\)-in. OD).
b. Install a regulator on the clean air cylinder.

c. Attach a length of calibration tubing (PVC tubing, 3/16-in. ID, 5/16-in. OD) from the regulator on the clean air cylinder to the fitting on the Rosemount 628 Gas Sensor Module IP Filter Assembly (part number 00628-9000-0001).

d. Release the clean air to the sensor.

Note
If a long length of calibration tubing is required to reach the device, make allowances for a delay in response time from the sensor while the clean air travels the length of the calibration tubing.

e. Perform steps 9—12.
f. Turn off the clean air when the sensor is correctly zeroed.
9. Select **OK** when the zero measurement reading stabilizes.

![Zero Adjustment Screen]

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**Note**

Negative measurement readings may occur and are normal during zeroing.

10. Wait while Field Communicator performs zero adjustment.
11. Select **OK** to accept the new zero measurement.
12. Select **OK** to accept the new zero.

13. On the *Calibrate Sensor* screen, enter a gas concentration level that corresponds to the concentration of calibration gas that will be applied during calibration. This value must be between 5 ppm and 100 ppm.

14. Select **OK**.

**WARNING**

- Before performing the next step, verify that the regulator is closed to avoid releasing target gas into the air during calibration.
15. Install a regulator on the target gas source.

16. Attach a length of calibration tubing (PVC tubing, \(\frac{1}{16}\)-in. ID, \(\frac{3}{16}\)-in. OD) from the regulator on the target gas source to the fitting on the Rosemount 628 Gas Sensor Module IP Filter Assembly (part number 00628-9000-0001).

17. Release the target gas from the target gas source. A flow rate of 1.0 liters per minute is recommended to ensure a consistent sensor reading.

**Note**
If a long length of calibration tubing is required to reach the device, make allowances for a delay in response time from the sensor while the target gas travels the length of the calibration tubing.
18. A gas concentration should begin to register on the LCD display and gradually increase to the calibration gas concentration level. The gas concentration level shown on the device display may not exactly match that shown on the label of the target gas source.

19. Wait while the gas concentration measurement stabilizes. Refer to the following figure.
20. Select **OK** when the gas concentration measurement stabilizes at or near the target gas concentration level.

21. Wait while Field Communicator performs calibration.

22. When the calibration process finishes, the new adjusted reading is displayed. Select **OK**.

**Note**

If unable to calibrate the sensor, verify that the correct sensor is installed, that the correct target gas is being applied, and that the IP filter is not clogged or obstructed. A sensor that cannot accept a new calibration may have reached the end of its service life. Replace the Rosemount 628 Gas Sensor Module and repeat this procedure. Refer to the “Replacing the Rosemount 628 Gas Sensor Module” section in the *Rosemount 928 Wireless Gas Monitor Reference Manual*. 
23. Select **Accept new calibration** and then select **OK**.

24. The **Service Reminder** screen is displayed if a service reminder is configured and enabled. Select **OK** to accept the service reminder date or enter another date. Refer to the “Service reminders” section of the *Rosemount 928 Wireless Gas Monitor Reference Manual* for more information.

25. Shut off the target gas flow at the regulator.

26. Detach the calibration tubing from the regulator on the target gas source and from the IP filter inlet on the bottom of the Rosemount 628 Gas Sensor Module.
5.2 Calibrating using AMS Wireless Configurator

1. On the Guided Setup screen, in the Initial Setup area, select **Calibrate Sensor**.

2. On the **Calibrate Sensor** screen, select **Next** to accept the current date as the calibration date and continue.
3. On the Warning screen, select **Next**.

4. Expose the sensor to clean air to zero the reading. If the ambient air may contain trace amounts of target gas or other gases (for example, carbon monoxide from engine exhaust) that may interfere with zeroing the device, do the following:
   b. Install a regulator on the clean air cylinder.
c. Attach a length of calibration tubing (PVC tubing, 3/16-in. ID, 5/16-in. OD) from the regulator on the clean air cylinder to the IP filter inlet on the bottom of the Rosemount 628 Gas Sensor Module.

d. Release the clean air to the sensor.

**Note**
If a long length of calibration tubing is required to reach the device, make allowances for a delay in response time from the sensor while the clean air travels the length of the calibration tubing.

e. Perform steps 5—7.
f. Turn off the clean air when the sensor is correctly zeroed.

5. Select **Next** when the zero measurement reading stabilizes.

6. Select **Next**.
7. Select **Accept New Zero**.

8. Select **Next**.

9. On the **Calibrate Sensor** screen, enter a gas concentration level that corresponds to the concentration of calibration gas that will be applied during calibration. This value must be between 5 ppm and 100 ppm.
10. Select **Next**.

![Image of calibration software interface]

**WARNING**

Before performing the next step, verify that the regulator is closed to avoid releasing gas into the air during calibration.

11. Install a regulator on the target gas source.

![Image of gas cylinder and regulator]


13. Release the target gas from the target gas source. A flow rate of 1.0 liters per minute is recommended to ensure a consistent sensor reading.

**Note**
If a long length of calibration tubing is required to reach the device, make allowances for a delay in response time from the sensor while the target gas travels the length of the calibration tubing.

14. A gas concentration should begin to register on the device display and gradually increase to the calibration gas concentration level. The gas concentration level shown on the device display may not exactly match that shown on the label attached to the target gas source.
15. Wait while the gas concentration measurement stabilizes. Refer to the following figure.

![Typical Calibration Profile](image)

16. Select **Next** when the gas concentration measurement stabilizes at or near the target gas concentration level.

![Calibration Sensor - Wireless Gas Monitor #199](image)

17. Wait while AMS Wireless Configurator performs calibration.
18. When the calibration process finishes, the new adjusted reading is displayed. Select **Next**.

19. Select **Accept calibration**.

20. Select **Next**.
21. The Service Reminder screen is displayed if a service reminder is configured and enabled. Select Next to accept the service reminder date or enter another date. Refer to the “Service reminders” section of the Rosemount 928 Wireless Gas Monitor Reference Manual for more information.

![Service Reminder Screen]

22. Shut off the target gas flow at the regulator.

23. Detach the calibration tubing from the regulator on the target gas source and from the IP filter inlet on the bottom of the Rosemount 628 Gas Sensor Module.

### 6.0 Verifying operating atmosphere

Verify that the operating atmosphere of the Rosemount 628 Gas Sensor Module is consistent with the appropriate hazardous locations certifications.

**Table 1. Temperature Limits**

<table>
<thead>
<tr>
<th>Operating limit</th>
<th>Sensor storage recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40 °F to 122 °F</td>
<td>34 °F to 45 °F</td>
</tr>
<tr>
<td>-40 °C to 50 °C</td>
<td>1 °C to 7 °C</td>
</tr>
</tbody>
</table>

**Note**

The electrochemical cells in sensor modules have a limited shelf life. Store sensor modules in a cool location that is not excessively humid or dry. Storing sensor modules for long periods may shorten their useful service life.
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