

# Rosemount™ 644H and 644R Smart Temperature Transmitters

Device Revision 7 or Previous



## Safety messages

### NOTICE

This guide provides basic guidelines for installing the Rosemount™ 644 Temperature Transmitter. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, or installation. Refer to the Rosemount 644 Reference Manual for more instruction. The manual and this guide are also available electronically on [Emerson.com/Rosemount](http://Emerson.com/Rosemount).

#### Important

Read this manual 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. Central Standard Time)

National Response Center: 1-800-654-7768 (24 hours a day). Equipment service needs

International: 1-(952)-906-8888

### ⚠ WARNING

#### Follow instructions

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

Ensure only qualified personnel perform the installation.

### ⚠ WARNING

#### Explosions

Explosions could result in death or serious injury.

Installation of the transmitters in a hazardous environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the Product Certifications section for any restrictions associated with a safe installation.

Do not remove the connection head cover in explosive atmospheres when the circuit is live.

Before connecting a handheld communicator in an explosive atmosphere, ensure the instruments are installed in accordance with intrinsically safe or non-incendive field wiring practices. Verify the operating atmosphere of the transmitter is consistent with the appropriate hazardous locations certifications.

All connection head covers must be fully engaged to meet explosion-proof requirements.

### ⚠ WARNING

#### Process leaks

Process leaks could result in death or serious injury.

Do not remove the thermowell while in operation.

Install and tighten thermowells and sensors before applying pressure.

**⚠ WARNING**

**Electrical shock**

Electrical shock could cause death or serious injury.

Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.

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# 1 Configure (bench calibration)

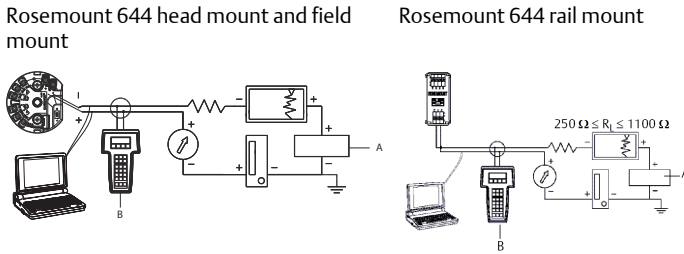
The Rosemount™ 644 communicates using the Field Communicator. Communication requires a loop resistance between 250 and 1100 ohms. Do not operate when power is below 12 Vdc at the transmitter terminal. Refer to the Rosemount 644 [Reference Manual](#) and the Field Communicator [Reference Manual](#) for more information.

## 1.1 Update the field communicator software

The Field Communicator field device revision Dev v6, Device Dashboard (DD) v1 or higher is required for complete functionality. The device will communicate with all previous Rosemount™ 644 DD revisions.

Use this procedure to determine if a software upgrade is required.

**Figure 1-1: Connecting a communicator to a bench loop**



- A.  $250\Omega \leq R_L \leq 1100\Omega$
- B. AMS™ Device Manager
- C. Power supply
- D. Field Communicator

### Procedure

1. Connect the sensor.  
See the wiring diagram on the inside of housing cover.
2. Connect the bench power supply to the power terminals (“+” or “-”).
3. Connect a Field Communicator to the loop across a loop resistor or at the power/signal terminals on the transmitter.  
The following message will appear if the communicator has a previous version of the device descriptors (DDs). Upgrade the communicator software to access new XMTR functions. Continue with old description?

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**Need help?**

- If this notice does not appear, the latest DD is installed.
- If the latest version is not available, the communicator will communicate properly.

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**Note**

When the transmitter is configured to use the advanced features of the transmitter (i.e., one of the added sensor input types), the user will experience trouble communicating and will be prompted to turn the communicator off. To prevent this from happening, upgrade to the latest DD or answer NO to the question and default to the generic transmitter functionality.

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## 2 Verify configuration

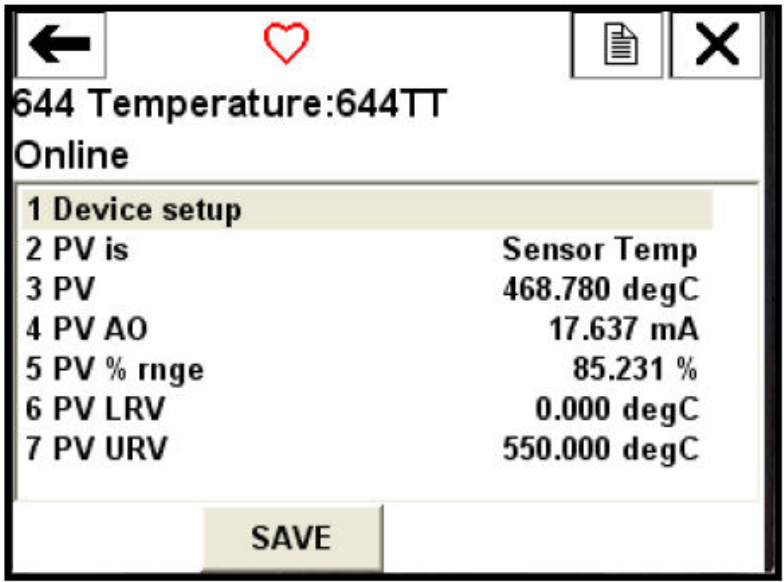
Use fast key sequences to verify transmitter configuration.

The traditional interface Fast Key sequences in [Table 2-1](#) and [Table 2-2](#) may be used for transmitter configuration and startup.

### 2.1 Field communicator traditional user interface

The traditional interface and fast key sequences.

**Figure 2-1: Field Communicator Traditional Interface**



**Table 2-1: Traditional Interface Fast Key Sequences**

Function	Fast keys	Function	Fast Keys
Active Calibrator	1, 2, 2, 1, 3	Open Sensor Holdoff	1, 3, 5, 3
Alarm/Saturation	1, 3, 3, 2	Percent Range	1, 1, 5
AO Alarm Type	1, 3, 3, 2, 1	Poll Address	1, 3, 3, 3, 1
Burst Mode	1, 3, 3, 3, 3	Process Temperature	1, 1
Burst Option	1, 3, 3, 3, 4	Process Variables	1, 1
Calibration	1, 2, 2	PV Damping	1, 3, 3, 1, 3

**Table 2-1: Traditional Interface Fast Key Sequences (continued)**

Function	Fast keys	Function	Fast Keys
Callendar-Van Dusen	1, 3, 2, 1	PV Unit	1, 3, 3, 1, 4
Configuration	1, 3	Range Values	1, 3, 3, 1
D/A Trim	1, 2, 2, 2	Review	1, 4
Damping Values	1, 1, 10	Scaled D/A Trim	1, 2, 2, 3
Date	1, 3, 4, 2	Sensor Connection	1, 3, 2, 1, 1
Descriptor	1, 3, 4, 3	Sensor 1 Setup	1, 3, 2, 1, 2
Device Info	1, 3, 4	Sensor Serial Number	1, 3, 2, 1, 4
Device Output Configuration	1, 3, 3	Sensor 1 Trim	1, 2, 2, 1
Diagnostics and Service	1, 2	Sensor 1 Trim-Factory	1, 2, 2, 1, 2
Filter 50/60 Hz	1, 3, 5, 1	Sensor Type	1, 3, 2, 1, 1
Hardware Rev	1, 4, 1	Software Revision	1, 4, 1
HART Output	1, 3, 3, 3	Status	1, 2, 1, 4
Intermittent Detect	1, 3, 5, 4	Tag	1, 3, 4, 1
LCD Display Options	1, 3, 3, 4	Terminal Temperature	1, 3, 2, 2
Loop Test	1, 2, 1, 1	Test Device	1, 2, 1
LRV (Lower Range Value)	1, 1, 6	URV (Upper Range Value)	1, 1, 7
LSL (Lower Sensor Limit)	1, 1, 8	USL (Upper Sensor Limit)	1, 1, 9
Measurement Filtering	1, 3, 5	Variable Mapping	1, 3, 1
Message	1, 3, 4, 4	Variable Re-Map	1, 3, 1, 5
Meter Configuring	1, 3, 3, 4, 1	Write Protect	1, 2, 3
Meter Decimal Point	1, 3, 3, 4, 2	2-Wire Offset	1, 3, 2, 1, 2, 1
Num Req Preams	1, 3, 3, 3, 2		



## 2.2 Input/verify the Callendar Van-Dusen constants on the Field Communicator traditional user interface

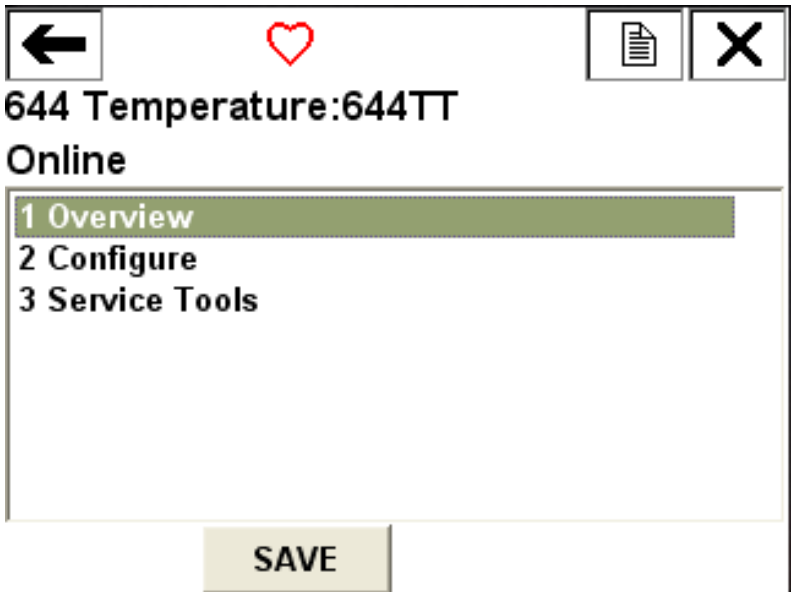
If using sensor matching with this combination of a transmitter and sensor, verify the constants input.

### Procedure

1. From the **Home** screen, select **1 Device Setup > 3 Configuration > 2 Sensor Config > 1 Sensor 1 > 3 Cal Van-Dusen**.
2. Set the control loop to manual and select **OK**.
3. At the **Enter Sensor Type** prompt, select **Cal Van-Dusen**
4. At the **Enter Sensor Connection** prompt, select the appropriate number of wires.
5. Enter the  $R_0$ , Alpha, Beta, and Delta values from the stainless steel tag attached to the special-order sensor.
6. Return the control loop to automatic control and select **OK**.

## 2.3 Field Communicator device dashboard

Figure 2-2: Device Dashboard



**Table 2-2: Device Dashboard Fast Key Sequences**

Function	Fast keys	Function	Fast keys
Active Calibrator	2, 2, 4, 2	Num Req Preams	2, 2, 5, 2
Alarm/Saturation	2, 2, 2, 6	Open Sensor Holdoff	2, 2, 4, 4
Burst Mode	2, 2, 5, 3	Percent Range	2, 2, 2, 4
Burst Option	2, 2, 5, 4	Poll Address	2, 2, 5, 1
Calibration	2, 1, 2	PV Damping	2, 2, 1, 6
Callendar-Van Dusen	2, 2, 1, 10	PV Unit	2, 2, 1, 4
Configuration	2, 1, 1	Range Values	2, 2, 2, 5
D/A Trim	3, 4, 2	Scaled D/A Trim	3, 4, 3
Damping Values	2, 2, 1, 6	Sensor Connection	2, 2, 1, 3
Date	1, 7, 8	Sensor 1 Setup	2, 2, 1
Descriptor	1, 7, 6	Sensor Serial Number	2, 2, 1, 7
Device Info	1, 7	Sensor 1 Trim	3, 4, 1
Device Output Configuration	2, 2, 2	Sensor 1 Trim-Factory	3, 4, 1, 2
Filter 50/60 Hz	1, 3, 3	Sensor Type	2, 2, 1, 2
Hardware Rev	1, 7, 9, 3	Software Revision	1, 7, 9, 4
HART Output	2, 2, 5	Tag	2, 2, 4, 1, 1
LCD Display Options	2, 2, 3	Terminal Temperature	3, 3, 2
Loop Test	3, 5, 1	URV (Upper Range Value)	2, 2, 2, 5, 2
LRV (Lower Range Value)	2, 2, 2, 5, 3	USL (Upper Sensor Limit)	2, 2, 1, 8
LSL (Lower Sensor Limit)	2, 2, 1, 9	Variable Mapping	2, 2, 5, 5
Message	1, 7, 7	Variable Re-Map	2, 2, 5, 5, 5
Meter Configuring	2, 2, 3, 1	Write Protect	2, 2, 4, 6
Meter Decimal Point	2, 2, 3, 2	2-Wire Offset	2, 2, 1, 5

## 2.4 Input/verify the Callendar Van-Dusen constants on the Field Communicator device dashboard

If using sensor matching with this combination of a transmitter and sensor, verify the constants input.

### Procedure

1. From the **Home** screen, select **2 Configure > 2 Manual Setup > 1 Sensor**.
2. Set the control loop to manual and select **OK**.
3. At the `Enter Sensor Type` prompt, select **Cal Van-Dusen**
4. At the `Enter Sensor Connection` prompt, select the appropriate number of wires.
5. Enter the  $R_0$ , Alpha, Beta, and Delta values from the stainless steel tag attached to the special-order sensor.
6. Return the control loop to automatic control and select **OK**.
7. Disable the transmitter-sensor matching feature.
  - a) From the **Home** screen, select **2 Configure > 2 Manual Setup > 1 Sensor > 10 SensorMatching-CVD**.
  - b) At the `Enter Sensor Type` prompt, select the appropriate sensor type.

## 3 Set switches

### 3.1 Set switches on the Rosemount™ 644H without LCD display

The switch is located on the bottom right of the electronics module.

#### Procedure

1. Set the loop to manual (if applicable) and disconnect the power.
2. Remove the electronics housing cover.
3. Set the switch to the desired position.
4. Replace the electronics housing cover.
5. Apply power and set the loop to automatic control.

### 3.2 Set switches on the Rosemount™ 644H with LCD display

The switch is located on the bottom right of the electronics module.

#### Procedure

1. Set the loop to manual (if applicable) and disconnect the power.
2. Remove the electronics housing cover.
3. Snap-off the LCD display straight off.
4. Set the switch to the desired position.
5. Reattach the LCD display and replace the electronics housing cover.  
Rotate the LCD display in 90° increments.
6. Apply power and set the loop to automatic control.

### 3.3 Set switches on the Rosemount™ 644R

The switch is located on the middle of the front panel.

#### Procedure

1. Open the transmitter's front door.
2. Set the switch to the desired position.

## 4 Mount the transmitter

Mount the transmitter at a high point in the conduit run to prevent moisture from draining into the transmitter housing.

### 4.1 Install connection head

Head mount transmitter with DIN plate style sensor.

#### Procedure

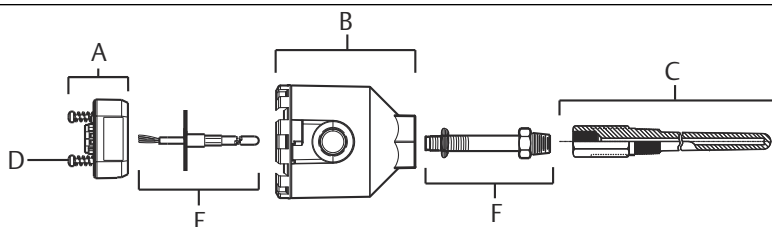
1. Attach the thermowell to the pipe or process container wall. Install and tighten the thermowell before applying process pressure.
2. Assemble the transmitter to the sensor. Push the transmitter mounting screws through the sensor mounting plate and insert the snap rings (optional) into the transmitter mounting screw groove.
3. Wire the sensor to the transmitter.
4. Insert the transmitter-sensor assembly into the connection head. Thread the transmitter mounting screws into the connection head mounting holes. Assemble the extension to the connection head. Insert the assembly into the thermowell.
5. Slip the shielded cable through the cable gland.
6. Attach the cable gland into the shielded cable.
7. Insert the shielded cable leads into the connection head through the cable entry. Connect and tighten the cable gland.
8. Connect the shielded power cable leads to the transmitter power terminals.  
Avoid contact with sensor leads and sensor connections.
9. Install and tighten the connection head cover.

#### **⚠ WARNING**

Enclosure covers must be fully engaged to meet explosion-proof requirements.

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## Example



- A. Rosemount™ 644 Transmitter
- B. Connection head
- C. Thermowell
- D. Transmitter mounting screws
- E. Integral mount sensor with flying leads
- F. Extension

## 4.2 Install universal head

Head mount transmitter with threaded sensor.

### Procedure

1. Attach the thermowell to the pipe or process container wall. Install and tighten thermowells before applying process pressure.
2. Attach necessary extension nipples and adapters to the thermowell. Seal the nipple and adapter threads with silicone tape.
3. Screw the sensor into the thermowell. Install drain seals if required for severe environments or to satisfy code requirements.
4. Verify the correct installation of Integral Transient Protection (option code T1).
  - a) Ensure the transient protector unit is firmly connected to the transmitter puck assembly.
  - b) Ensure the transient protector power leads are adequately secured under the transmitter power terminal screws.
  - c) Verify the transient protector's ground wire is secured to the internal ground screw found within the universal head.

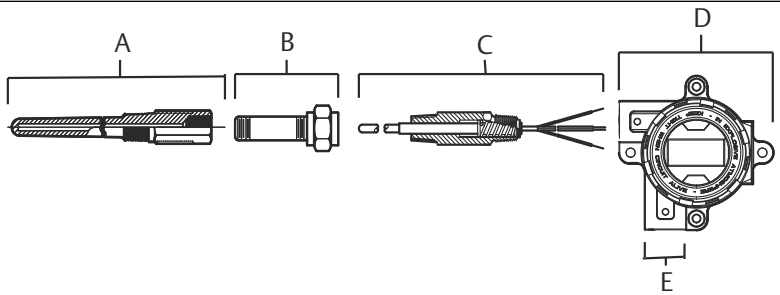
### Note

The transient protector requires the use of an enclosure of at least 3.5-in. (89 mm) in diameter.

5. Pull the sensor wiring leads through the universal head and transmitter. Mount the transmitter in the universal head by

- threading the transmitter mounting screws into the universal head mounting holes.
6. Mount the transmitter-sensor assembly into the thermowell. Seal adapter threads with silicone tape.
  7. Install conduit for field wiring to the conduit entry of the universal head. Seal conduit threads with PTFE tape.
  8. Pull the field wiring leads through the conduit into the universal head. Attach the sensor and power leads to the transmitter. Avoid contact with other terminals.
  9. Install and tighten the universal head cover. Enclosure covers must be fully engaged to meet explosion-proof requirements.

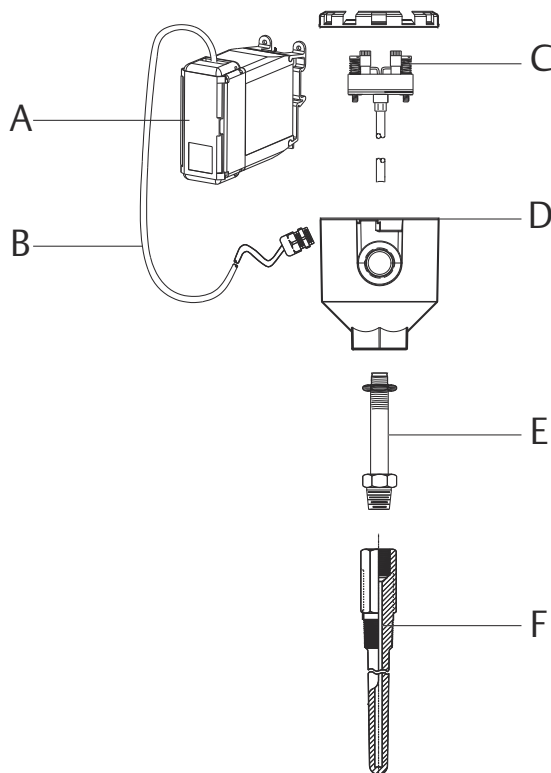
### Example



- A. Threaded thermowell
- B. Standard extension
- C. Threaded style sensor
- D. Universal head (transmitter and LCD inside)
- E. Conduit entry

## 4.3 Rail mount transmitter and sensor

**Figure 4-1: Rail mount transmitter and sensor exploded view**



- A. Rail mount transmitter
- B. Sensor leads with cable glands
- C. Integral mount sensor with terminal block
- D. Connection head
- E. Standard extension
- F. Threaded thermowell

### Procedure

1. Attach the transmitter to a suitable rail or panel.
2. Attach the thermowell to the pipe or process container wall.
3. Install and tighten the thermowell, according to plant standards, before applying pressure.
4. Attach the sensor to the connection head and mount the entire assembly to the thermowell.



5. Attach and connect sufficient lengths of sensor lead wire from the connection head to the sensor terminal block.
6. Tighten the connection head cover.

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### Important

Enclosure covers must be fully engaged to meet explosion-proof requirements.

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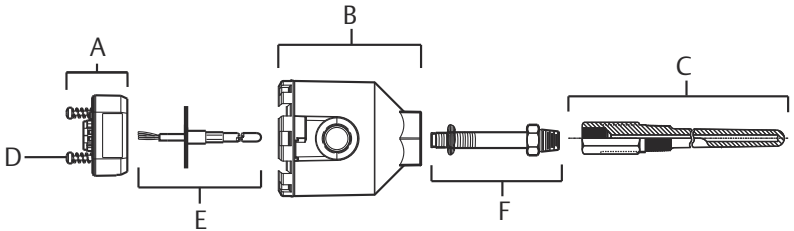
7. Run sensor lead wires from the sensor assembly to the transmitter.
8. Verify the transmitter failure mode switch.
9. Attach the sensor wires to the transmitter.

See [Wire and apply power](#)

## 4.4 Rail mount transmitter with threaded sensor

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**Figure 4-2: Rail Mount Transmitter with Threaded Sensor Exploded View**



- A. Rail mount transmitter
  - B. Threaded sensor connection head
  - C. Threaded style sensor
  - D. Standard extension
  - E. Threaded thermowell
- 

### Procedure

1. Attach the transmitter to a suitable rail or panel.
2. Attach the thermowell to the pipe or process container wall.
3. Install and tighten the thermowell, according to plant standards, before applying pressure.
4. Attach the necessary extension nipples and adapters.  
Seal the nipple and adapter threads with silicone tape.
5. Screw the sensor into the thermowell.

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**Important**

Install drain seals if required for severe environments or to satisfy code requirements.

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6. Screw the connection head to the sensor.
7. Attach the sensor lead wires to the connection head terminals.
8. Attach additional sensor lead wires from the connection head to the transmitter.
9. Attach and tighten the connection head cover.

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**Important**

Enclosure covers must be fully engaged to meet explosion-proof requirements.

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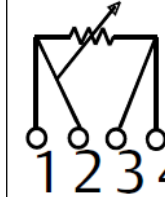
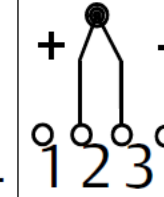
10. Set the transmitter failure mode switch.
11. Attach the sensor wires to the transmitter.  
See [Wire and apply power](#)

## 5 Wire and apply power

### 5.1 Wire the transmitter

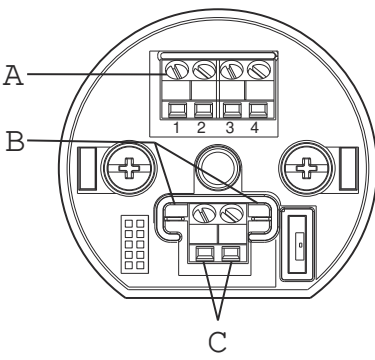
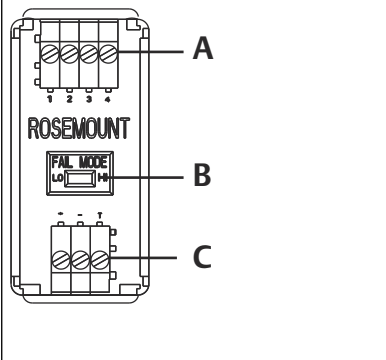
Wiring diagrams are located inside the terminal block cover.

**Table 5-1: Sensor Connections Diagram**

			
2-wire RTD and V	3-wire RTD and V <sup>(1)</sup>	4-wire RTD and V	T/C and mV <sup>(2)</sup>

- (1) Rosemount™ provides 4-wire sensors for all single element RTDs. Use these RTDs in 3-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.
- (2) The transmitters must be configured for at least a 3-wire RTD in order to recognize an RTD with a compensation loop.

### 5.2 Power the transmitter

Rosemount 644H	Rosemount 644R
	
<p><b>Note</b> Max torque is 6 in-lbs. (0.7 N-m)</p>	

- A. Sensor terminals
- B. Communication terminals

### C. Power/configuration terminals

#### Prerequisites

An external power supply is required to operate the transmitter.

#### Procedure

1. Remove the terminal block cover (if applicable).
2. Connect the power leads to the terminals.
  - a) Connect the positive power lead to the "+" terminal.
  - b) Connect the negative power lead to the "-" terminal.
3. Tighten the terminal screws.

When tightening the sensor and power wires, the max torque is 6 in-lbs. (0.7 N-m).
4. Reattach and tighten the cover (if applicable).
5. Apply power (12–42 Vdc).

## 5.3 Load limitation

The power required across the transmitter power terminals is 12 to 42.4 Vdc; the power terminals are rated to 42.4 Vdc.

### NOTICE

To prevent damaging the transmitter, do not allow terminal voltage to drop below 12.0 Vdc when changing the configuration parameters.

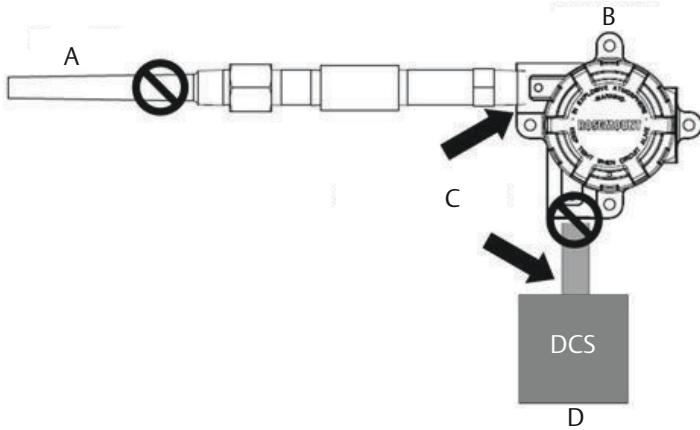
## 5.4 Ungrounded thermocouple, mV, and RTD/Ohm inputs

Each process installation has different requirements for grounding. Use the grounding options recommended by the facility for the specific sensor type, or begin with grounding option 1 (the most common).

### 5.4.1 Ground the transmitter: option 1

#### Procedure

1. Connect sensor wiring shield to the transmitter housing.
2. Ensure the sensor shield is electrically isolated from surrounding fixtures that may be grounded.
3. Ground signal wiring shield at the power supply end.

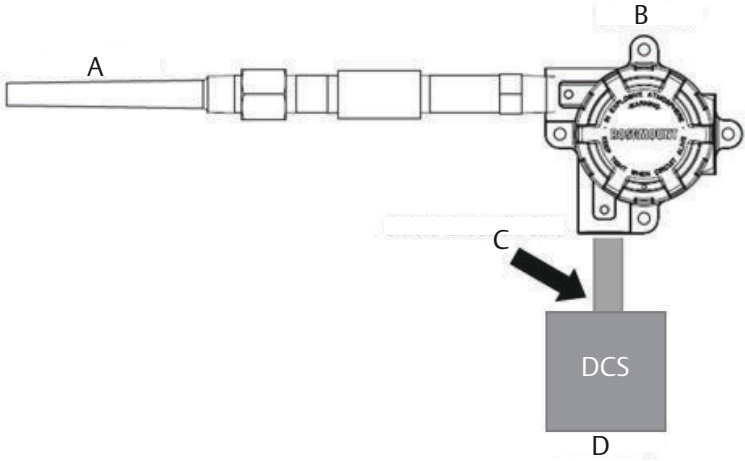
**Example**

- A. Sensor wires
- B. Transmitter
- C. Shield ground point
- D. 4-20 mA loop

**5.4.2 Ground the transmitter: option 2****Procedure**

1. Connect signal wiring shield to the sensor wiring shield.
2. Ensure the two shields are tied together and electrically isolated from the transmitter housing.
3. Ground shield at the power supply end only.
4. Ensure the sensor shield is electrically isolated from the surrounding grounded fixtures.

**Example**



- A. Sensor wires
- B. Transmitter
- C. Shield ground point
- D. 4-20 mA loop

**Note**

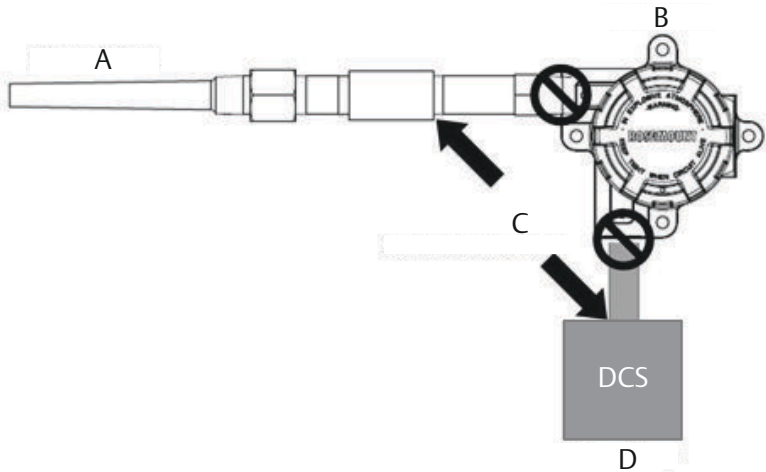
Connect shields together, electrically isolated from the transmitter.

5.4.3 Ground the transmitter: option 3

**Procedure**

1. Ground sensor wiring shield at the sensor if possible.
2. Ensure the sensor wiring and signal wiring shields are electrically isolated from the transmitter housing.
3. Do not connect the signal wiring shield to the sensor wiring shield.
4. Ground the signal wiring shield at the power supply end.

### Example



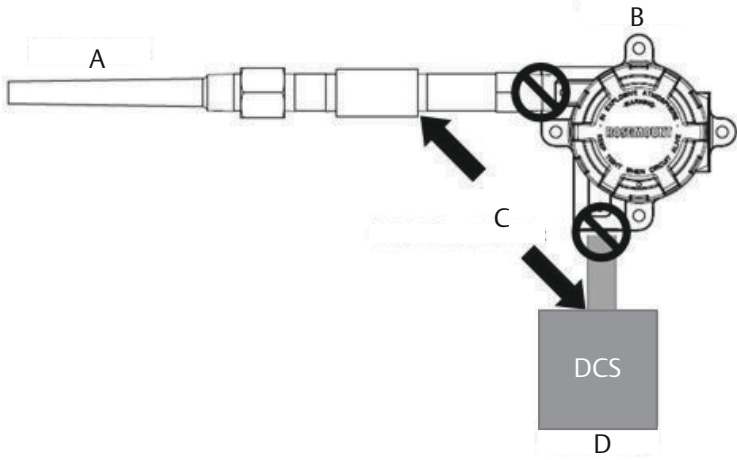
- A. Sensor wires
- B. Transmitter
- C. Shield ground point
- D. 4-20 mA loop

#### 5.4.4 Ground the transmitter: option 4

##### Procedure

1. Ground sensor wiring shield at the sensor.
2. Ensure the sensor wiring and signal wiring shields are electrically isolated from the transmitter housing.
3. Do not connect the signal wiring shield to the sensor wiring shield.
4. Ground signal wiring shield at the power supply end.

**Example**



- A. Sensor wires
- B. Transmitter
- C. Shield ground point
- D. 4-20 mA loop



## 6 Perform a loop test

The analog loop test verifies the output of the transmitter, the integrity of the loop, and the operations of any recorders or similar devices installed in the loop. To initiate a loop test, follow the steps below.

The host system may provide a current measurement for the 4–20 mA HART® output. If not, connect a reference meter to the transmitter by either connecting the meter to the test terminals on the terminal block, or shunting transmitter power through the meter at some point in the loop.

### 6.1 Perform a loop test on the traditional interface

#### Procedure

1. Connect an external ampere meter in series with the transmitter loop.  
The power to the transmitter should go through the meter at some point in the loop.
2. From the **Home** screen, select **644H and 644R: 1 Device Setup > 2 Diag/Serv > 1 Test Device > 1 Loop Test**.
3. Select a discrete milliampere level for the transmitter to output.
  - At **Choose Analog Output**, select **1 4mA** or **2 20mA**
  - Select **3 Other** to manually input a value between 4 and 20 milliamperes.
4. To show the fixed output, select **Enter**.
5. Select **OK**.
6. In the test loop, verify the transmitter's actual mA output and the HART® mA reading are the same value.  
If the readings do not match, either the transmitter requires an output trim or the meter is malfunctioning.  
After completing the test, the display returns to the loop test screen and allows you to choose another output value.
7. To end the loop test, select **5 End** and **Enter**.

### 6.2 Perform a loop test on the device dashboard

#### Procedure

1. Connect an external ampere meter in series with the transmitter loop.  
The power to the transmitter should go through the meter at some point in the loop.

2. From the **Home** screen, select **644H and 644R: 3 Service Tools > 5 Simulate > 1 Loop Test**.
3. Select a discrete milliampere level for the transmitter to output.
  - At **Choose Analog Output**, select **1 4mA** or **2 20mA**
  - Select **3 Other** to manually input a value between 4 and 20 milliamperes.
4. To show the fixed output, select **Enter**.
5. Select **OK**.
6. In the test loop, verify the transmitter's actual mA output and the HART® mA reading are the same value.

If the readings do not match, either the transmitter requires an output trim or the meter is malfunctioning.

After completing the test, the display returns to the loop test screen and allows you to choose another output value.
7. To end the loop test, select **5 End** and **Enter**.

## 7 Product Certifications

Rev 1.9

### 7.1 European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](http://Emerson.com/Rosemount).

### 7.2 Ordinary Location Certification

As standard, the transmitter 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).

### 7.3 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.

### 7.4 USA

#### 7.4.1 E5 USA Explosionproof, Non-Incendive, Dust-Ignitionproof

**Certificate:** [XP & DIP]: 3006278; [NI]: 3008880 & 3044581

**Standards:** FM Class 3600: 2011, FM Class 3615: 2006, FM Class 3616: 2011, FM Class 3810: 2005, ANSI/NEMA® 250: 2003, ANSI/IEC 60529: 2004

**Markings:** XP CL I, DIV 1, GP B, C, D; DIP CL II / III, DIV 1, GP E, F, G; T5(-50 °C ≤ T<sub>a</sub> ≤ +85 °C); Type 4X; IP66; See I5 description for Non-Incendive markings

**Certificate:** 1091070

**Standards:** FM Class 3600: 2011, FM Class 3615: 2006, FM Class 3616: 2011, UL Std. No. 61010-1-12, UL Std. No. 50E, CAN/CSA C22.2 No. 60529-05

**Markings:** XP CL I, DIV 1, GP B, C, D; DIP CL II / III, DIV 1, GP E, F, G; T5 (-50 °C ≤ T<sub>a</sub> ≤ +85 °C); Type 4X; IP66;

## 7.4.2 I5 USA Intrinsic Safety and Non-Incendive

**Certificate:** 3008880 [Headmount Fieldbus/PROFIBUS®, Railmount HART®]

**Standards:** FM Class 3600: 2011, FM Class 3610: 2010, FM Class 3611: 2004, FM Class 3810: 2005, NEMA – 250: 1991

**Markings:** IS CL I/II/III, DIV I, GP A, B, C, D, E, F, G; NI CL I, DIV 2, GP A, B, C, D

### Special Conditions for Safe Use (X):

1. When no enclosure option is selected, the Rosemount 644 Temperature Transmitter shall be installed in an enclosure meeting the requirements of ANSI/ISA S82.01 and S82.03 or other applicable ordinary location standards.
2. Option code K5 is only applicable with a Rosemount enclosure. However, K5 is not valid with enclosure option S1, S2, S3, or S4.
3. An enclosure option must be selected to maintain a Type 4X rating.

**Certificate:** 3044581 [Headmount HART]

**Standards:** FM Class 3600: 2011, FM Class 3610: 2010, FM Class 3611: 2004, FM Class 3810: 2005, ANSI/NEMA – 250: 1991, ANSI/IEC 60529: 2004; ANSI/ISA 60079-0: 2009; ANSI/ISA 60079-11: 2009

**Markings:** [No Enclosure]: IS CL I, DIV I, GP A, B, C, D T4; CL I ZONE 0 AEx ia IIC T4 Ga; NI CL I, DIV 2, GP A, B, C, D T5 [With Enclosure]: IS CL I/II/III, DIV 1, GP A, B, C, D, E, F, G; NI CL I, DIV 2, GP A, B, C, D; Type 4X; IP68

### Special Conditions for Safe Use (X):

1. When no enclosure option is selected, the Rosemount 644 Temperature Transmitter shall be installed in a final enclosure meeting type of protection IP20 and meeting the requirements of ANSI/ISA 61010-1 and ANSI/ISA 60079-0.
2. The Rosemount 644 optional housings may contain aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact and friction.

**Certificate:** 1091070

**Standards:** FM Class 3600: 2011, FM Class 3610: 2010, FM Class 3611: 2004, UL Std. No. 61010-1-12, UL Std. No. 50E, CAN/CSA C22.2 No. 60529-05, UL Std. No. 60079-11: Ed. 6

**Markings:** IS CL I/ II/ III, DIV 1, GP A, B, C, D, E, F, G; CL I ZONE 0 AEx ia IIC; NI CL I, DIV 2, GP A, B, C, D

### Special Conditions for Safe Use (X):

1. When no enclosure option is selected, the Rosemount 644 Temperature Transmitter shall be installed in a final enclosure meeting type of protection IP20 and meeting the requirements of ANSI/ISA 61010-1 and ANSI/ISA 60079-0.
2. Option code K5 is only applicable with a Rosemount enclosure. However, K5 is not valid with enclosure options S1, S2, S3, or S4.
3. An enclosure option must be selected to maintain a Type 4X rating
4. The Rosemount 644 optional housings may contain aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact and friction.

## 7.5 Canada

### 7.5.1 I6 Canada Intrinsic Safety and Division 2

**Certificate:** 1091070

**Standards:** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, C22.2 No 60529-05, CAN/CSA C22.2 No. 60079-11:14, CAN/CSA Std. No. 61010-1-12

**Markings:** [HART] IS CL I GP A, B, C, D T4/T6; CL I, ZONE 0 IIC; CL I, DIV 2, GP A, B, C, D  
[Fieldbus/PROFIBUS] IS CL I GP A, B, C, D T4; CL I, ZONE 0 IIC; CL I, DIV 2, GP A, B, C, D

### 7.5.2 K6 Canada Explosionproof, Dust-Ignitionproof, Intrinsic Safety and Division 2

**Certificate:** 1091070

**Standards:** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std. C22.2 No. 30-M1986, CAN/CSA-C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CAN/CSA-C22.2 No. 157-92, CSA Std C22.2 No. 213-M1987, C22.2 No 60529-05, CAN/CSA C22.2 No. 60079-11:14, CAN/CSA Std. No. 61010-1-12

**Markings:** CL I/II/III, DIV 1, GP B, C, D, E, F, G

See I6 description for Intrinsic Safety and Division 2 markings

## 7.6 Europe

### 7.6.1 E1 ATEX Flameproof

**Certificate:** FM12ATEX0065X

**Standards:** EN 60079-0: 2012+A11: 2013, EN 60079-1: 2014, EN 60529:1991 +A1:2000+A2:2013

**Markings:** ⓈII 2 G Ex db IIC T6...T1 Gb, T6(-50 °C ≤ T<sub>a</sub> ≤ +40 °C), T5... T1(-50 °C ≤ T<sub>a</sub> ≤ +60 °C)

See [Table 7-1](#) for process temperatures.

#### Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option "N".
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

### 7.6.2 I1 ATEX Intrinsic Safety

**Certificate:** [Headmount HART]: Baseefa12ATEX0101X  
 [Headmount Fieldbus/PROFIBUS]: Baseefa03ATEX0499X  
 [Railmount HART]: BAS00ATEX1033X



**Standards:** EN IEC 60079-0: 2018, EN 60079-11: 2012

**Markings:** [HART]: ⓈII 1 G Ex ia IIC T6...T4 Ga; [Fieldbus/PROFIBUS]: ⓈII 1 G Ex ia IIC T4 Ga

See [Table 7-2](#) for Entity Parameters and Temperature Classifications.

**Special Conditions for Safe Use (X):**

1. The equipment must be installed in an enclosure which affords it a degree of protection of at least IP20 in accordance with the requirements of IEC 60529. Non-metallic enclosures must have a surface resistance of less than  $1\text{ G } \Omega$ ; light alloy or zirconium enclosures must be protected from impact and friction when installed in a Zone 0 environment.
2. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.

**7.6.3 N1 ATEX Type n – with enclosure****Certificate:** BAS00ATEX3145**Standards:** EN 60079-0: 2012+A11: 2013, EN 60079-15: 2010**Markings:**  II 3 G Ex nA IIC T5 Gc ( $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )**7.6.4 NC ATEX Type n – without enclosure****Certificate:** [Headmount Fieldbus/PROFIBUS, Railmount HART]:  
Baseefa13ATEX0093X  
[Headmount HART]: Baseefa12ATEX0102U**Standards:** EN IEC 60079-0: 2018, EN 60079-15: 2010**Markings:** [Headmount Fieldbus/PROFIBUS, Railmount HART]:  II 3 G Ex nA IIC T5 Gc ( $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )  
[Headmount HART]:  II 3 G Ex nA IIC T6...T5 Gc; T6( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ ); T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ )**Special Conditions for Safe Use (X):**

1. The Rosemount 644 Temperature Transmitter must be installed in a suitably certified enclosure such that it is afforded a degree of protection of at least IP54 in accordance with IEC 60529 and EN 60079-15.
2. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test as defined in Clause 6.5 of EN 60079-15: 2010. This must be taken into account during installation.

**7.6.5 ND ATEX Dust****Certificate:** FM12ATEX0065X

**Standards:** EN 60079-0: 2012+A11: 2013, EN 60079-31: 2014, EN 60529:1991 +A1:2000

**Markings:** ⒺII 2 D Ex tb IIIC T130 °C Db, ( $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ ); IP66

See [Table 7-1](#) for process temperatures.

### Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option "N".
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information

## 7.7 International

### 7.7.1 E7 IECEx Flameproof

**Certificate:** IECEx FMG 12.0022X

**Standards:** IEC 60079-0: 2011, IEC 60079-1: 2014

**Markings:** Ex db IIC T6...T1 Gb, T6( $-50\text{ °C} \leq T_a \leq +40\text{ °C}$ ), T5...T1( $-50\text{ °C} \leq T_a \leq +60\text{ °C}$ )

See [Table 7-1](#) for process temperatures.

### Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.



4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option "N".
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

### 7.7.2 I7 IECEx Intrinsic Safety

**Certificate:** [Headmount HART]: IECEx BAS 12.0069X  
 [Headmount Fieldbus/PROFIBUS, Railmount HART]: IECEx BAS 07.0053X

**Standards:** IEC 60079-0: 2017, IEC 60079-11: 2011

**Markings:** Ex ia IIC T6...T4 Ga

See [Table 7-2](#) for Entity Parameters and Temperature Classifications.

#### Special Conditions for Safe Use (X):

1. The equipment must be installed in an enclosure which affords it a degree of protection of at least IP20 in accordance with the requirements of IEC 60529. Non-metallic enclosures must have a surface resistance of less than 1G  $\Omega$ ; light alloy or zirconium enclosures must be protected from impact and friction when installed in a Zone 0 environment.
2. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test as defined in Clause 6.3.13 of IEC 60079-11:2011. This must be taken into account during installation.

### 7.7.3 N7 IECEx Type n – with enclosure

**Certificate:** IECEx BAS 07.0055

**Standards:** IEC 60079-0: 2011, IEC 60079-15: 2010

**Markings:** Ex nA IIC T5 Gc (-40 °C  $\leq$  T<sub>a</sub>  $\leq$  +70 °C)

### 7.7.4 NG IECEx Type n – without enclosure

**Certificate:** [Headmount Fieldbus/PROFIBUS, Railmount HART]: IECEx BAS 13.0053X

[Headmount HART]: IECEx BAS 12.0070U

**Standards:** IEC 60079-0: 2017, IEC 60079-15: 2010

**Markings:** [Headmount Fieldbus/PROFIBUS, Railmount HART]: Ex nA IIC T5 Gc ( $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ )

[Headmount HART]: Ex nA IIC T6...T5 Gc; T6 ( $-60\text{ °C} \leq T_a \leq +40\text{ °C}$ ); T5 ( $-60\text{ °C} \leq T_a \leq +85\text{ °C}$ )

#### Special Conditions for Safe Use (X):

1. The Rosemount 644 Temperature Transmitter must be installed in a suitably certified enclosure such that it is afforded a degree of protection of at least IP54 in accordance with IEC 60529 and IEC 60079-15.
2. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test. This must be taken into account during installation.

### 7.7.5 NK IECEx Dust

**Certificate:** IECEx FMG 12.0022X

**Standards:** IEC 60079-0: 2011, IEC 60079-31: 2013

**Markings:** Ex tb IIIC T130 °C Db, ( $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ ); IP66

See [Table 7-1](#) for process temperatures

#### Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option “N”.
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.

7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

## 7.8 Brazil

### 7.8.1 E2 INMETRO Flameproof and Dust

**Certificate:** UL-BR 13.0535X

**Standards:** ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-1:2016, ABNT NBR IEC 60079-31:2014

**Markings:** Ex db IIC T6...T1 Gb; T6...T1: ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ ), T5...T1: ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ ) Ex tb IIIC T130 °C; IP66; ( $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )

#### Special Conditions for Safe Use (X):

1. See product description for ambient temperature limits and process temperature limits.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments.
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

### 7.8.2 I2 INMETRO Intrinsic Safety

**Certificate:** [Fieldbus]: UL-BR 15.0264X [HART]: UL-BR 14.0670X

**Standards:** ABNT NBR IEC 60079-0:2008 + Corrigendum 1:2011, ABNT NBR IEC 60079-11:2011

**Markings:** [Fieldbus]: Ex ia IIC T\* Ga ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +**\text{ }^{\circ}\text{C}$ ) [HART]: Ex ia IIC T\* Ga ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +**\text{ }^{\circ}\text{C}$ )

See [Table 7-2](#) for Entity Parameters and Temperature Classifications.

#### Special Conditions for Safe Use (X):

1. The apparatus must be installed in an enclosure which affords it a degree of protection of at least IP20.
2. Non-metallic enclosures must have a surface resistance of less than 1 G  $\Omega$ ; light alloy or zirconium enclosures must be protected from impact and friction when installed in a zone 0 environment.

3. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test as defined on ABNT NBR IEC 60079-11. This must be taken into account during installation.
4. The ingress protection degree IP66 is provided only for the Rosemount 644 Field Mount Assembly which is formed by installing an Enhanced Model 644 Temperature Transmitter within a dual-compartment enclosure Plantweb enclosure.

## 7.9 China

### 7.9.1 E3 China Flameproof

**Certificate:** GYJ16.1192X

**Standards:** GB3836.1-2010, GB3836.2-2010, GB12476.1-2013, GB12476.5-2013

**Markings:** Ex d IIC T6...T1; Ex tD A21 T130 °C; IP66

### 7.9.2 I3 China Intrinsic Safety

**Certificate:** GYJ16.1191X

**Standards:** GB3836.1-2010, GB3836.4-2010, GB3836.20-2010

**Markings:** Ex ia IIC T4~T6 Ga

### 7.9.3 N3 China Type n

**Certificate:** GYJ15.1502

**Standards:** GB3836.1-2010, GB3836.8-2014

**Markings:** Ex nA IIC T5/T6 Gc

## 7.10 EAC - Belarus, Kazakhstan, Russia

### 7.10.1 EM Technical Regulation Customs Union TR CU 012/2011 (EAC) Flameproof

**Standards:** GOST 31610.0-2014, GOST IEC 60079-1-2011

**Markings:** 1Ex d IIC T6...T1 Gb X, T6(-50 °C ≤ T<sub>a</sub> ≤ +40 °C), T5...T1(-50 °C ≤ T<sub>a</sub> ≤ +60 °C);

#### Special Conditions for Safe Use (X):

1. See certificate TR CU 012/2011 for ambient temperature range.
2. Guard the LCD display cover against impact energies greater than 4 joules.

3. Flameproof joints are not intended for repair.
4. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special code, contact the manufacturer for more information.

### 7.10.2 IM Technical Regulation Customs Union TR CU 012/2011 (EAC) Intrinsic Safety

**Standards:** GOST 31610.0-2014, GOST 31610.11-2014

**Markings:** [HART]: 0Ex ia IIC T6...T4 Ga X; [Fieldbus, FISCO, Profibus PA]: 0Ex ia IIC T4 Ga X

See [Table 7-2](#) for Entity Parameters and Temperature Classifications.

#### Special Conditions for Safe Use (X):

1. The equipment must be installed in an enclosure which affords it a degree of protection of at least IP20 in accordance with the requirements of GOST 14254-96. Non-metallic enclosures must have a surface resistance of less than  $1 \Omega$ ; light alloy or zirconium enclosures must be protected from impact and friction when installed in a Zone 0 environment.
2. When fitted with the Transient Protector Assembly, the equipment is not capable of withstanding the 500 V test as defined in GOST 31610.11-2014. This must be taken into account during installation.
3. See certificate TR CU 012/2011 for ambient temperature range.

### 7.10.3 KM Technical Regulation Customs Union TR CU 012/2011 (EAC) Flameproof, Intrinsic Safety, and Dust-Ignitionproof

**Standards:** GOST 31610.0-2014, GOST IEC 60079-1-2011, GOST 31610.11-2014, GOST R IEC 60079-31-2010

**Markings:** Ex tb IIIC T130 °C Db X ( $-40 \text{ °C} \leq T_a \leq +70 \text{ °C}$ ); IP66

See [Table 7-1](#) for process temperatures.

See EM for Flameproof Markings and see IM for Intrinsic Safety Markings.

#### Special Conditions for Safe Use (X):

1. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments. Label must be cleaned by the damp cloth with antistatic to avoid store an electrostatic discharge.

- Guard the LCD display cover against impact energies greater than 4 joules.

See EM for Flameproof Specific Conditions of Use and see IM for Intrinsic Safety Specific Conditions of Use.

## 7.11 Japan

### 7.11.1 E4 Japan Flameproof

**Certificate:** TC20671 [J2 with LCD], TC20672 [J2], TC20673 [J6 with LCD], TC20674 [J6]

**Markings:** Ex d IIC T5

### 7.11.2 I4 Japan Intrinsic Safety

**Certificate:** CML 18JPN2118X

**Standards:** JNIOH-TR-46-1, JNIOH-TR-46-6

**Markings:** [Fieldbus] Ex ia IIC T4 Ga ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ );

#### Special Conditions for Safe Use (X):

- The apparatus must be installed in an enclosure which affords it a degree of protection of at least IP20.
- Non-metallic enclosures must have a surface resistance of less than  $1\text{G } \Omega$ ; light alloy or zirconium enclosures must be protected from impact and friction when installed in a zone 0 environment.

## 7.12 Combinations

**K1 Combination of E1, I1, N1, and ND**

**K2 Combination of E2 and I2**

**K5 Combination of E5 and I5**

**K7 Combination of E7, I7, N7, and NK**

**KA Combination of K6, E1, and I1**

**KB Combination of K5 and K6**

**KC Combination of I5 and I6**

**KD Combination of E5, I5, K6, E1, and I1**

## 7.13 Additional certifications

### 7.13.1 SBS American Bureau of Shipping (ABS) Type Approval

**Certificate:** 16-HS1553094-PDA

### 7.13.2 SBV Bureau Veritas (BV) Type Approval

**Certificate:** 26325 BV

**Requirements:** Bureau Veritas Rules for the Classification of Steel Ships

**Application:** Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS

### 7.13.3 SDN Det Norske Veritas (DNV) Type Approval

**Certificate:** TAA00000K8

**Application:** Location Classes: Temperature: D; Humidity: B; Vibration: A; EMC: B; Enclosure B/IP66: A, C/IP66: SST

### 7.13.4 SLL Lloyds Register (LR) Type Approval

**Certificate:** 11/60002

**Application:** For use in environmental categories ENV1, ENV2, ENV3, and ENV5.

## 7.14 Specification tables

**Table 7-1: Process Temperature**



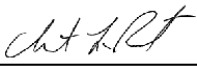
		T6	T5	T4	T3	T2	T1	T130	
Max Ambient		+40 °C	+60 °C	+60 °C	+60 °C	+60 °C	+60 °C	+70 °C	
		Transmitter with LCD display							
Sensor Extension	0-in.	55 °C	70 °C	95 °C	95 °C	95 °C	95 °C	95 °C	
	3-in.	55 °C	70 °C	100 °C	100 °C	100 °C	100 °C	100 °C	
	6-in.	60 °C	70 °C	100 °C	100 °C	100 °C	100 °C	100 °C	
	9-in.	65 °C	75 °C	110 °C	110 °C	110 °C	110 °C	110 °C	
			Transmitter without LCD display						
	0-in.	55 °C	70 °C	100 °C	170 °C	280 °C	440 °C	100 °C	
	3-in.	55 °C	70 °C	110 °C	190 °C	300 °C	450 °C	110 °C	
	6-in.	60 °C	70 °C	120 °C	200 °C	300 °C	450 °C	110 °C	
9-in.	65 °C	75 °C	130 °C	200 °C	300 °C	450 °C	120 °C		

**Table 7-2: Entity Parameters**

	Fieldbus/PROFIBUS [FISCO]	HART	HART (Enhanced)
$U_i$ (V)	30 [17.5]	30	30
$I_i$ (mA)	300 [380]	200	150 for $T_a \leq 80$ °C 170 for $T_a \leq 70$ °C 190 for $T_a \leq 60$ °C
$P_i$ (W)	1.3 at T4 ( $-50$ °C $\leq T_a \leq +60$ °C) [5.32 at T4 ( $-50$ °C $\leq T_a \leq +60$ °C)]	.67 at T6 ( $-60$ °C $\leq T_a \leq +40$ °C) .67 at T5 ( $-60$ °C $\leq T_a \leq +50$ °C) 1.0 at T5 ( $-60$ °C $\leq T_a \leq +40$ °C) 1.0 at T4 ( $-60$ °C $\leq T_a \leq +80$ °C)	.67 at T6 ( $-60$ °C $\leq T_a \leq +40$ °C) .67 at T5 ( $-60$ °C $\leq T_a \leq +50$ °C) .80 at T5 ( $-60$ °C $\leq T_a \leq +40$ °C) .80 at T4 ( $-60$ °C $\leq T_a \leq +80$ °C)
$C_i$ (nF)	2.1	10	3.3
$L_i$ (mH)	0	0	0



## 7.15 Declaration of Conformity

	<b>EU Declaration of Conformity</b> No: RMD 1016 Rev. Y	
<p>We,</p>		
<p><b>Rosemount, Inc.</b>        8200 Market Boulevard        Chanhassen, MN 55317-9685        USA</p>		
<p>declare under our sole responsibility that the product,</p>		
<p><b>Rosemount™ 644 Temperature Transmitter</b></p>		
<p>manufactured by,</p>		
<p><b>Rosemount, Inc.</b>        8200 Market Boulevard        Chanhassen, MN 55317-9685        USA</p>		
<p>to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.</p>		
<p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>		
	Vice President of Global Quality	
_____ (signature)	_____ (function)	
Chris LaPoint	1-April-2019	
_____ (name)	_____ (date of issue)	
Page 1 of 4		



# EU Declaration of Conformity

No: RMD 1016 Rev. Y



## EMC Directive (2014/30/EU)

Harmonized Standards: EN 61326-1:2013, EN 61326-2-3: 2013

## ATEX Directive (2014/34/EU)

### Rosemount 644 Enhanced Head/Field Mount Temperature Transmitters (Analog/HART Output)

#### Baseefa12ATEX0101X – Intrinsic Safety Certificate

Equipment Group II, Category 1 G

Ex ia IIC T6...T4 Ga

Harmonized Standards:

EN IEC 60079-0:2018, EN 60079-11:2012

#### Baseefa12ATEX0102U – Type n Certificate; no enclosure option

Equipment Group II, Category 3 G

Ex nA IIC T6...T5 Gc

Harmonized Standards:

EN IEC 60079-0:2018, EN 60079-15:2010

### Rosemount 644 Head Mount Temperature Transmitter (Fieldbus Output)

#### Baseefa03ATEX0499X – Intrinsic Safety Certificate

Equipment Group II, Category 1 G

Ex ia IIC T4 Ga

Harmonized Standards:

EN IEC 60079-0:2018, EN 60079-11:2012

#### Baseefa13ATEX0093X – Type n Certificate; no enclosure option

Equipment Group II, Category 3 G

Ex nA IIC T5 Gc

Harmonized Standards:

EN IEC 60079-0:2018, EN 60079-15:2010



# EU Declaration of Conformity

No: RMD 1016 Rev. Y



**Rosemount 644 Head/Field Mount Temperature Transmitter  
(All output protocols)**

**FM12ATEX0065X – Flameproof Certificate**

Equipment Group II, Category 2 G  
Ex db IIC T6...T1 Gb

Harmonized Standards:  
EN 60079-0:2012+A11:2013, EN 60079-1:2014

**FM12ATEX0065X – Dust Certificate**

Equipment Group II, Category 2 D  
Ex tb IIIC T130°C Db

Harmonized Standards:  
EN 60079-0:2012+A11:2013, EN 60079-31:2014

**BAS00ATEX3145 – Type n Certificate**

Equipment Group II, Category 3 G  
Ex nA IIC T5 Gc

Harmonized Standards:  
EN 60079-0:2012+A11:2013, EN 60079-15:2010

**Rosemount 644R Rail Mount Temperature Transmitters  
(HART Output)**

**BAS00ATEX1033X – Intrinsic Safety Certificate**

Equipment Group II, Category 1 G  
Ex ia IIC T6...T4 Ga

Harmonized Standards:  
EN IEC 60079-0:2018, EN 60079-11:2012



**Basefal3ATEX0093X – Type n Certificate**

Equipment Group II, Category 3 G  
Ex nA IIC T5 Gc

Harmonized Standards:  
EN IEC 60079-0:2018, EN 60079-15:2010

**RoHS Directive (2011/65/EU)**

**644 HART Head Mount**  
Harmonized Standard: EN 50581:2012

 **EU Declaration of Conformity**   
**No: RMD 1016 Rev. Y**

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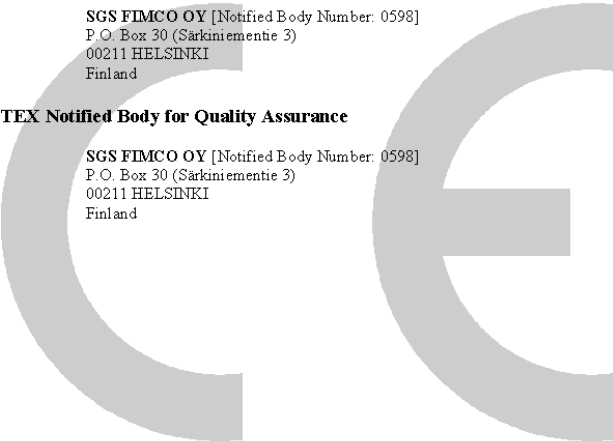
**ATEX Notified Bodies**

**FM Approvals Europe Limited** [Notified Body Number: 2809]  
One Georges Quay Plaza  
Dublin, Ireland. D02 E440

**SGS FIMCO OY** [Notified Body Number: 0598]  
P.O. Box 30 (Särkiniementie 3)  
00211 HELSINKI  
Finland

**ATEX Notified Body for Quality Assurance**

**SGS FIMCO OY** [Notified Body Number: 0598]  
P.O. Box 30 (Särkiniementie 3)  
00211 HELSINKI  
Finland



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**Figure 7-1: China RoHS Table**

含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 644  
 List of Rosemount 644 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	X	O	O	O	O	O
壳体组件 Housing Assembly	O	O	O	X	O	O
传感器组件 Sensor Assembly	X	O	O	O	O	O

本表格系依据 SJ/T11364 的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的均质材料里，至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求。




X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.










### **Global Headquarters**


Emerson Automation Solutions  
6021 Innovation Blvd.  
Shakopee, MN 55379, USA  
 +1 800 999 9307 or +1 952 906 8888  
 +1 952 949 7001  
 RFQ.RMD-RCC@Emerson.com


### **Latin America Regional Office**

Emerson Automation Solutions  
1300 Concord Terrace, Suite 400  
Sunrise, FL 33323, USA  
 +1 954 846 5030  
 +1 954 846 5121  
 RFQ.RMD-RCC@Emerson.com

### **Asia Pacific Regional Office**


Emerson Automation Solutions  
1 Pandan Crescent  
Singapore 128461  
 +65 6777 8211  
 +65 6777 0947  
 Enquiries@AP.Emerson.com

 [Linkedin.com/company/Emerson-Automation-Solutions](https://www.linkedin.com/company/Emerson-Automation-Solutions)

 [Twitter.com/Rosemount\\_News](https://twitter.com/Rosemount_News)

 [Facebook.com/Rosemount](https://www.facebook.com/Rosemount)

 [Youtube.com/user/RosemountMeasurement](https://www.youtube.com/user/RosemountMeasurement)

 [Google.com/+RosemountMeasurement](https://www.google.com/+RosemountMeasurement)

### **North America Regional Office**

Emerson Automation Solutions  
8200 Market Blvd.  
Chanhassen, MN 55317, USA  
 +1 800 999 9307 or +1 952 906 8888  
 +1 952 949 7001  
 RMT-NA.RCCRF@Emerson.com

### **Europe Regional Office**

Emerson Automation Solutions Europe GmbH  
Neuhofstrasse 19a P.O. Box 1046  
CH 6340 Baar  
Switzerland  
 +41 (0) 41 768 6111  
 +41 (0) 41 768 6300  
 RFQ.RMD-RCC@Emerson.com

### **Middle East and Africa Regional Office**

Emerson Automation Solutions  
Emerson FZE P.O. Box 17033  
Jebel Ali Free Zone - South 2  
Dubai, United Arab Emirates  
 +971 4 8118100  
 +971 4 8865465  
 RFQ.RMTMEA@Emerson.com

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