

# Rosemount™ 248 Wireless Temperature Transmitter



# Rosemount 248 Wireless Temperature Transmitter

(Polymer housing)

Rosemount 248 Hardware Revision	1	
HART® Device Revision	1	
Device Install Kit/Device Driver (DD) Revision		Device Revision 01, DD Revision 01 or greater
Device Type	2676	

(Aluminum housing)

Rosemount 248 Hardware Revision	1	
HART Device Revision	2	
Device Install Kit/DD Revision		Device Revision 02, DD Revision 02 or greater
Device Type	0076	

## NOTICE

This guide provides basic guidelines for the Rosemount 248 Wireless. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, or installations. Refer to the Rosemount 248 Wireless [Reference Manual](#) for more instruction. The manual and this guide are also available electronically on [EmersonProcess.com/Rosemount](http://EmersonProcess.com/Rosemount).

## ⚠ WARNING

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

- Make sure only qualified personnel perform the installation.

**Explosions could result in death or serious injury.**

- Before connecting a Field Communicator in an explosive atmosphere, make sure 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.

**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.

**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.

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:**

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operations.
- This device must be installed to ensure a minimum antenna separation distance of 20 cm from all person.
- The power module may be replaced in a hazardous area. The power module has surface resistivity greater than one giga-ohm and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

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**NOTICE****Shipping considerations for wireless products (Lithium Batteries: Green Power Module, model number 701PGNKF):**

The unit was shipped to you without the Power Module installed. Remove the power module prior to shipping the unit.

Each green power module contains one “D” size primary lithium-thionyl chloride battery. Primary lithium batteries are regulated in transportation by the U. S. Department of Transportation, and are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Consult current regulations and requirements before shipping.

**Shipping considerations for wireless products (Lithium Batteries: Black Power Module, model number 701PBKKF):**

The unit was shipped to you without the Power Module installed. Remove the power module prior to shipping the unit.

Each black power module contains two “C” size primary lithium-thionyl chloride battery. Primary lithium batteries are regulated in transportation by the U. S. Department of Transportation, and are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Consult current regulations and requirements before shipping.

**NOTICE****Power module considerations (Green Power Module, model number 701PGNKF):**

The green power module with the wireless unit contains one “D” size primary lithium-thionyl chloride battery (model number 701PGNKF). Each battery contains approximately 5.0 grams of lithium. Under normal conditions, the battery materials are self-contained and are not reactive as long as the batteries and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage. Contacts should be protected to prevent premature discharge.

Battery hazards remain when cells are discharged.

Power modules should be stored in a clean and dry area. For maximum power module life, storage temperature should not exceed 30 °C.

**Power module considerations (Black Power Module, model number 701PBKKF):**

The black power module with the wireless unit contains two “C” size primary lithium-thionyl chloride battery (model number 701PGNKF). Each battery contains approximately 2.5 grams of lithium, for a total of 5 grams in each pack. Under normal conditions, the battery materials are self-contained and are not reactive as long as the batteries and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage. Contacts should be protected to prevent premature discharge.

Battery hazards remain when cells are discharged.

Power modules should be stored in a clean and dry area. For maximum power module life, storage temperature should not exceed 30 °C.

## 1.0 Wireless considerations

### 1.1 Power up sequence

The power module should not be installed on any wireless device until the Smart Wireless Gateway is installed and functioning properly. Wireless devices should also be powered up in order of proximity from the Gateway, beginning with the closest. This will result in a simpler and faster network installation. Enable Active Advertising on the Gateway to ensure new devices join the network faster. For more information, see the Smart Wireless Gateway [Reference Manual](#).

### 1.2 Antenna position

#### Polymer housing (enclosure option code P)

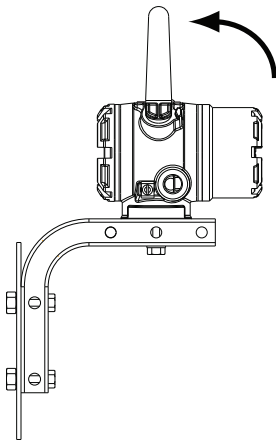
The internal antenna is designed for multiple mounting orientations. The transmitter should be mounted according to best practices for your temperature measurement application. The transmitter should be approximately 3 ft. (1 m) from any large structure or building to allow clear communication to other devices.

#### Aluminum housing (enclosure option code D)

The external antenna should be positioned vertically, either straight up or straight down. The transmitter should be mounted according to best practices for your temperature measurement application. The transmitter should be approximately 3 ft. (1 m) from any large structure or building to allow clear communication to other devices.

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**Figure 1. External Wireless Antenna Position (Aluminum Housing)**

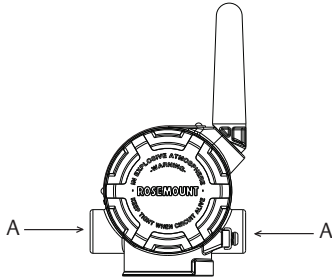


## 1.3 Conduit entry

### Aluminum housing only

Upon installation, ensure that each conduit entry is either sealed with a conduit plug using an approved thread sealant, or has an installed conduit fitting or cable gland with approved threaded sealant.

**Figure 2. Conduit Entries (Aluminum Housing)**



A. Conduit entry

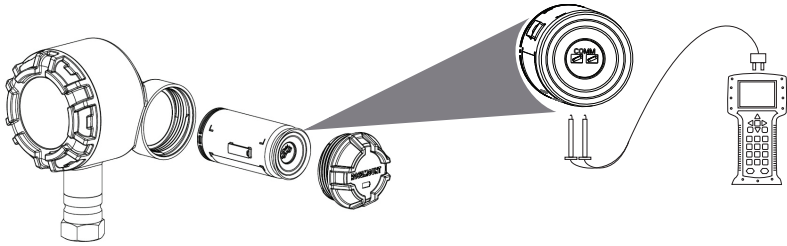
## 1.4 Field Communicator connections

### Polymer housing

The power module must be installed in the device for the Field Communicator to interface with the Rosemount 248 Wireless. The Field Communicator connections are located on the green power module. To communicate to the transmitter, begin by removing the power module cover. This will expose the HART communication terminals located on the green power module. Next, connect the Field Communicator leads to the COMM port connections on the green power module.

This transmitter uses the green power module; order model number 701PGNKF. The power module is keyed and can only be inserted in one orientation. Field communication with this device requires a HART-based Field Communicator. Refer to [Figure 3](#) for instructions on connecting the Field Communicator to the Rosemount 248 Wireless.

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**Figure 3. Field Communicator Connection (Polymer Housing)**

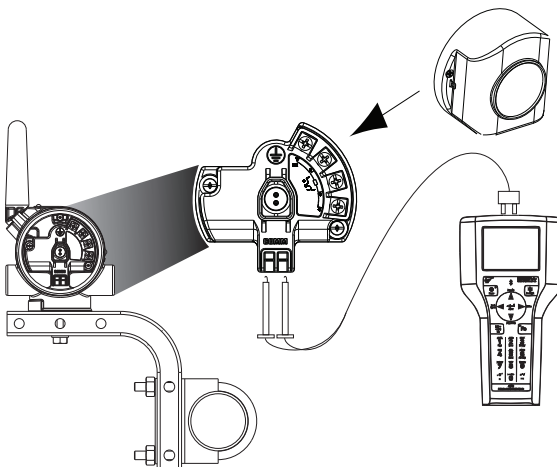
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### Aluminum housing

The power module must be installed in the device for the Field Communicator to interface with the Rosemount 248 Wireless. The Field Communicator connections are located on the terminal block. To communicate to the transmitter, begin by removing the power module-side housing cover, indicated as “Field terminals” by text located on the side of the device. This will expose the terminal block and HART communication terminals. Next, connect the Field Communicator leads to the COMM port connections on the terminal block and connect the black power module to supply power for configuration.

This transmitter uses the black power module; Order model number 701PBKKF. The power module is keyed and can only be inserted in one orientation. Field communication with this device requires a HART-based Field Communicator. Refer to [Figure 4](#) for instructions on connecting the Field Communicator to the Rosemount 248 Wireless.

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**Figure 4. Field Communicator Connection (Aluminum Housing)**

## 2.0 Physical installation

The Rosemount 248 Wireless can be installed in one of two configurations: Direct Mount, where the sensor is connected directly to the Rosemount 248 Wireless conduit entry, or remote mount, where the sensor is mounted separately from the 248 Wireless housing, then connected to the Rosemount 248 Wireless via wiring or conduit. Select the installation sequence that corresponds to the mounting configuration.

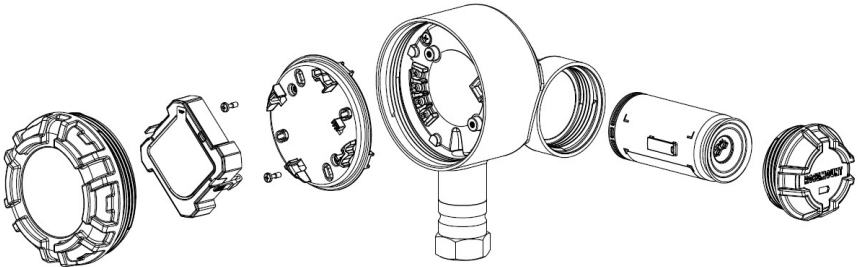
### 2.1 Direct mount

#### Polymer housing

The direct mount installation should not be used when installing with a Swagelok® fitting.

1. Remove the transmitter enclosure cover.
2. Remove the LCD display (if applicable).
3. Loosen the captive screws and Remove LCD display adapter plate (if applicable).

**Figure 5. Exploded View of LCD Display and Power Module Assembly (Polymer Housing)**



4. Attach the sensor to the Rosemount 248 Wireless housing using the threaded conduit entry. Be sure to use an approved thread sealant on all connections.
5. Attach the sensor wiring to the terminals as indicated on [Figure 15](#).
6. Reattach and secure LCD display adapter plate to 5 in-lb of torque (if applicable).
7. Reattach the LCD display (if applicable).
8. Reattach and tighten the transmitter enclosure cover.
9. Remove the power module cover.
10. Connect the green power module.

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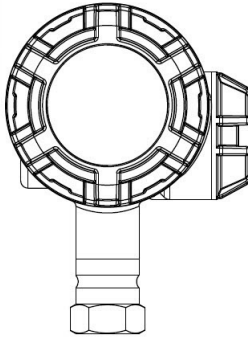
**Note**

Wireless devices should be powered up in order of proximity from the Smart Wireless Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

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11. Reattach and tighten the power module cover.
  12. Always ensure a proper seal by installing the electronics housing cover(s) so that polymer contacts polymer (i.e. no o-ring visible). Use Rosemount O-rings.
  13. Provide 1.75-in. (45 mm) of clearance for units without an LCD display. Provide 3-in. (76 mm) of clearance for units with an LCD display for cover removal.
- 

**Figure 6. Direct Mount (Polymer Housing)**



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**Note**

Wireless devices should be powered up in order of proximity from the Smart Wireless Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

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### Aluminum housing

The direct mount installation should not be used when installing with a Swagelok fitting.

1. Install the sensor according to standard installation practices. Be sure to use an approved thread sealant on all connections.
2. Attach the Rosemount 248 Wireless housing to the sensor using the threaded conduit entry.
3. Attach the sensor wiring to the terminals as indicated on the wiring diagram.
4. Connect the black power module.



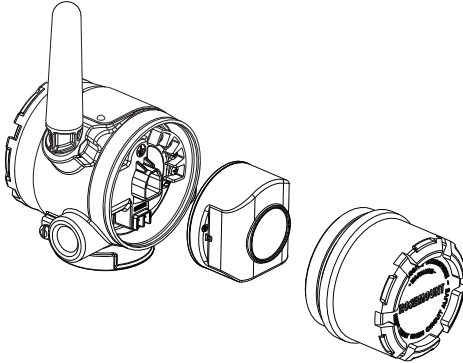
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**Note**

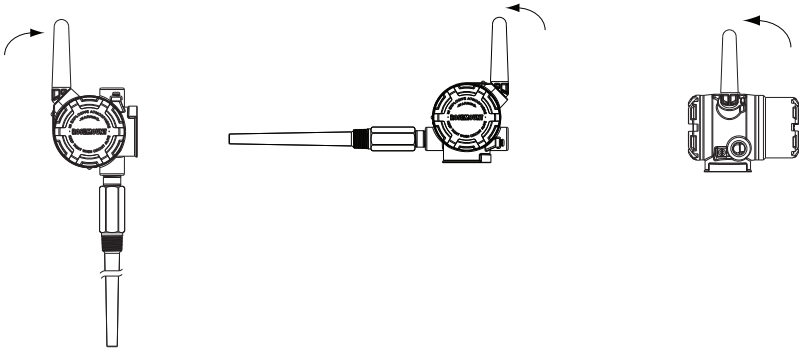
Wireless devices should be powered up in order of proximity from the Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

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**Figure 7. Exploded View of Power Module View (Aluminum Housing)**

- 
5. Close the housing cover and tighten to safety specification. Always ensure a proper seal by installing the electronics housing covers so that metal touches metal, but do not over tighten.
  6. Position the antenna such that it is vertical, either straight up or straight down. The antenna should be approximately 3 ft. (1 m) from any large structures or buildings, to allow clear communication to other devices.
- 

**Figure 8. Direct Mount External Antenna Position (Aluminum Housing)**

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**Note**

Possible antenna rotation shown. Antenna rotation allows best practices for any configuration.

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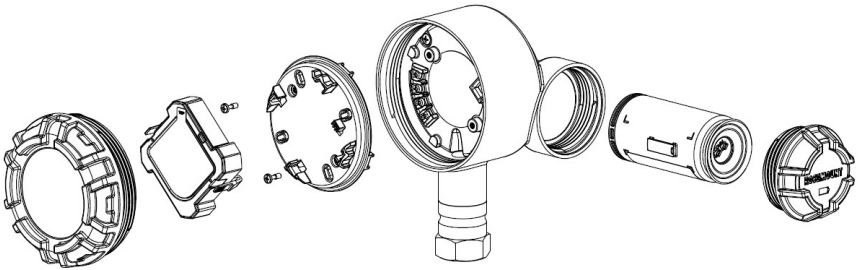
## 2.2 Remote mount

### Polymer housing

1. Remove the transmitter enclosure cover.
2. Remove the LCD display (if applicable).
3. Loosen the captive screws and Remove LCD display adapter plate (if applicable).

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**Figure 9. Exploded View of LCD Display and Power Module Assembly (Polymer Housing)**



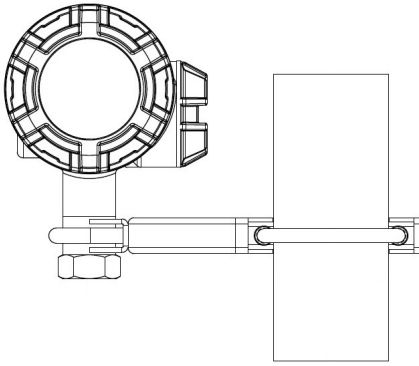
4. Run wiring (and conduit, if necessary) from the sensor to the Rosemount 248 Wireless. Use an 1/2-in. NPT when mating conduit to the Rosemount 248 Wireless.
5. Pull the wiring through the threaded conduit entry of the Rosemount 248 Wireless.
6. Attach the sensor wiring to the terminals as indicated on [Figure 15](#).
7. Reattach and secure LCD display adapter plate to 5 in-lb of torque (if applicable).
8. Reattach the LCD display (if applicable).
9. Reattach and tighten the transmitter enclosure cover.
10. Remove the power module cover.
11. Connect the green power module.
12. Reattach and tighten the power module cover.

**Note**

Wireless devices should be powered up in order of proximity from the Smart Wireless Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

13. Reattach and tighten the power module cover.
14. Always ensure a proper seal by installing the electronics housing cover(s) so that polymer contacts polymer (i.e. no o-ring visible). Use Rosemount O-rings.
15. Provide 1.75-in. (45 mm) of clearance for units without an LCD display.  
Provide 3-in. (76 mm) of clearance for units with an LCD display for cover removal.

**Figure 10. Remote Mount (Polymer Housing)**

**Note**

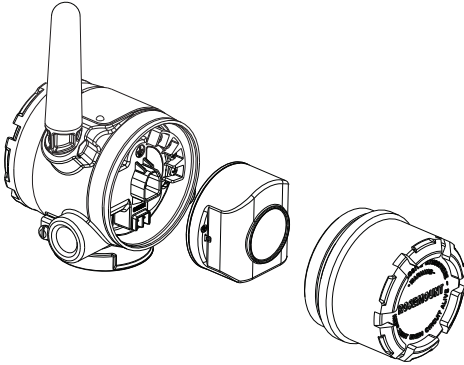
Wireless devices should be powered up in order of proximity from the Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

**Aluminum housing**

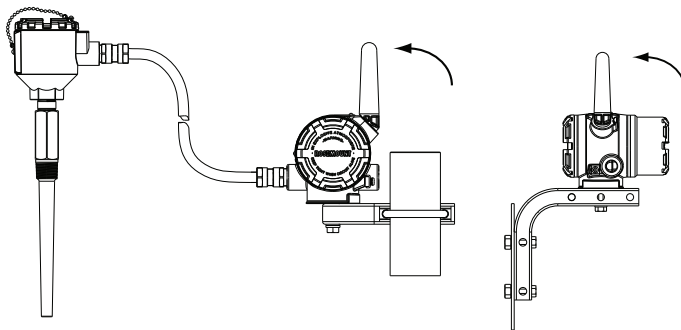
1. Install the sensor according to standard installation practices. Be sure to use an approved thread sealant on all connections.
2. Run wiring (and conduit, if necessary) from the sensor to the Rosemount 248 Wireless.
3. Pull the wiring through the threaded conduit entry of the Rosemount 248 Wireless.
4. Attach the sensor wiring to the terminals as indicated on the wiring diagram.
5. Connect the black power module.

**Note**

Wireless devices should be powered up in order of proximity from the Gateway, beginning with the closest device to the Gateway. This will result in a simpler and faster network installation.

**Figure 11. Exploded View of Power Module View (Aluminum Housing)**

6. Close the housing cover and tighten to safety specification. Always ensure a proper seal by installing the electronics housing covers so that metal touches metal, but do not over tighten.
7. Position the antenna vertically, either straight up or straight down. The antenna should be approximately 3 ft. (1 m) from any large structures or buildings to allow clear communication to other devices.

**Figure 12. Remote Mount External Antenna Position (Aluminum Housing)**

## 3.0 Verify operation

### 3.1 Polymer housing

Operations can be verified in four locations: at the device via the local display, using the Field Communicator, at the Gateway's integrated web interface, or using AMS™ Suite Wireless Configurator or AMS Device Manager.

### 3.2 Local display

During normal operation, the LCD display will display the PV value at the configured update rate.

For Device Status screens, see LCD screen messages on Rosemount 248 Wireless [Reference Manual](#).

### 3.3 Aluminum housing

Operations can be verified in three locations: using the Field Communicator, at the Smart Wireless Gateway's integrated web interface, or using AMS Suite Wireless Configurator or AMS Device Manager.

### 3.4 Field Communicator

For HART Wireless transmitter communication, a Rosemount 248 Wireless DD is required. To obtain the latest DD, visit the Emerson™ Process Management Easy Upgrade site at:

[EmersonProcess.com/Rosemount/Device-install-kits/Device-Install-Kit-Search](http://EmersonProcess.com/Rosemount/Device-install-kits/Device-Install-Kit-Search)

The communication status may be verified in the wireless device using the following Fast Key sequence.

**Table 1. Fast Key Sequence (Polymer Housing)**

Function	Fast Key sequence	Menu items
Communications	3, 4	Comm Status, Join Mode, Available Neighbors, Advertisement, Join Attempts

**Table 2. Fast Key Sequence (Aluminum Housing)**

Function	Fast Key sequence	Menu items
Communications	3, 4	Join Status, Communication Status, Join Mode, Number of Available Neighbors, Number of Advisements Heard, Number of Join Attempts

### 3.5 Smart Wireless Gateway

In the integrated web interface from the Gateway, navigate to the *Explorer>Status* page. This page shows whether the device has joined the network and if it is communicating properly.

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#### Note

It may take several minutes for the device to join the network.

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## Note

If the device joins the network and immediately has an alarm present, it is likely due to sensor configuration. Check the sensor wiring (see [Figure 15 on page 16](#)) and the sensor configuration (see [Table 5 on page 18](#)).

**Figure 13. Smart Wireless Gateway Network Settings**

The screenshot displays the 'Smart Wireless Gateway' web interface. The top navigation bar includes 'Home', 'Devices', and 'System Settings'. The left sidebar shows a menu with 'Gateway', 'Network', 'Channels', 'Network Settings', 'Access Control List', 'Network Statistics', 'Protocols', and 'Users'. The main content area is titled 'Network Settings' and contains the following fields and options:

- Network name:** Input field containing 'myNet'.
- Network ID:** Input field containing '33333'.
- Join Key:** Four masked input fields (each with 6 asterisks) and a checkbox for 'Show join key'.
- Rotate network key?:** Radio buttons for 'Yes' and 'No' (selected).
- Change network key now?:** Radio buttons for 'Yes' and 'No' (selected).
- Security mode:** Radio buttons for 'Common join key' (selected) and 'Access control list'.
- Active Advertising:** Radio buttons for 'Yes' (selected) and 'No'.

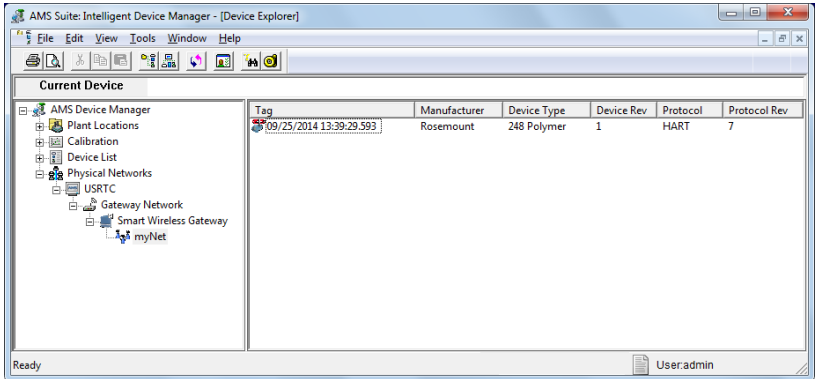
At the bottom of the form are 'Save Changes' and 'Cancel' buttons. The footer of the page includes the Emerson logo, navigation links (HOME, DEVICES, SYSTEM SETTINGS, ABOUT, HELP), and copyright information: '© 2015 Emerson Electric Co. All Rights Reserved. Contact Us'.

## 3.6 AMS Wireless Configurator

When the device has joined the network, it will appear in the Wireless Configurator window as illustrated in figure below. For HART Wireless transmitter communication, a Rosemount 248 Wireless DD is required. To obtain the latest DD, visit the Emerson Process Management Easy Upgrade site at:

[EmersonProcess.com/Rosemount/Device-install-kits/Device-Install-Kit-Search](http://EmersonProcess.com/Rosemount/Device-install-kits/Device-Install-Kit-Search)

**Figure 14. Rosemount 248 Wireless shown on AMS Wireless Configurator**



### 3.7 Troubleshooting

If the device is not joining to the network, check to make sure that you have a power supply in your device. If the device is not joined to the network after power up, verify the correct configuration of the Network ID and Join Key, and verify that Active Advertising has been enabled on the Gateway. The Network ID and Join Key in the device must match the Network ID and Join Key of the Gateway.

The Network ID and Join Key may be obtained from the Gateway on the *Setup>Network>Settings* page on the web server (see [Figure 13 on page 14](#)). The Network ID and Join Key may be changed in the wireless device by using the following Fast Key sequence.

**Table 3. Fast Key Sequence (Polymer Housing)**

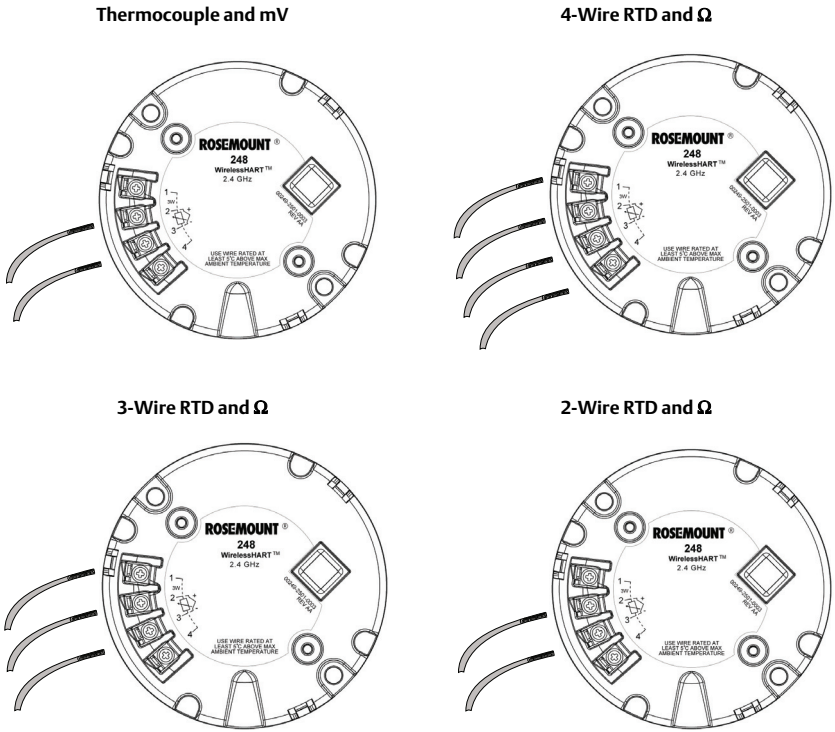
Function	Fast Key sequence
Join to Network	2, 1, 1

**Table 4. Fast Key Sequence (Aluminum Housing)**

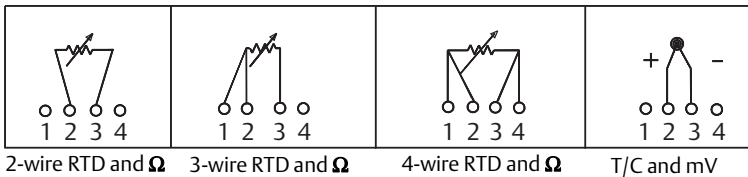
Function	Fast Key sequence
Join Device to Network	2, 1, 2

## 4.0 Reference Information

Figure 15. Rosemount 248 Wireless Sensor Wiring Diagram (Polymer Housing)



Sensor Connections Diagram



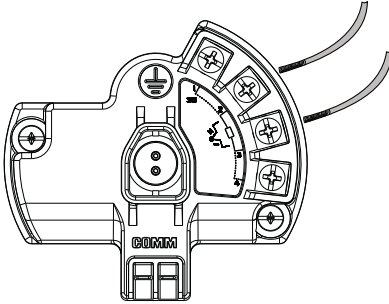
### Note

Emerson provides 4-wire sensors for all single element RTDs. Use these RTDs in 3- or 2-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

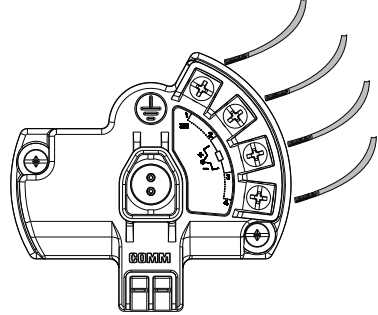


Figure 16. Rosemount 248 Wireless Sensor Wiring Diagrams (Aluminum Housing)

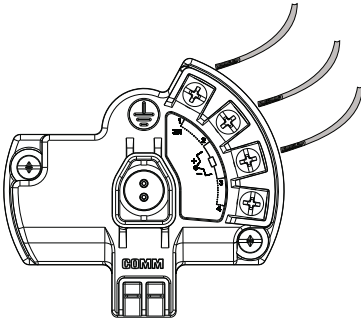
Thermocouple and mV



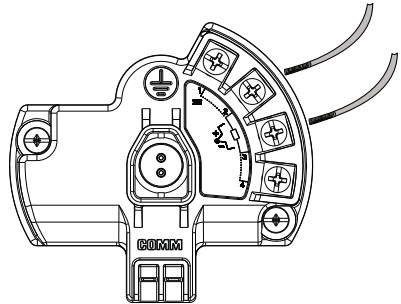
4-wire RTD and  $\Omega$



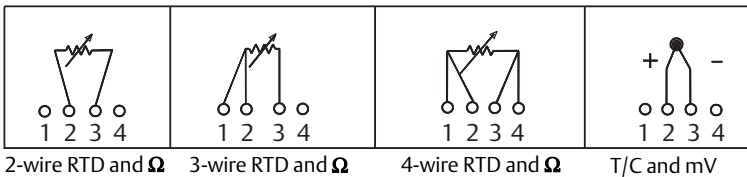
3-wire RTD and  $\Omega$



2-wire RTD and  $\Omega$



Sensor connections diagram



**Note**

Emerson Process Management provides 4-wire sensors for all single element RTDs. Use these RTDs in 3- or 2-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

**Note**

In order to communicate with a Field Communicator, the wireless device must be powered by connecting the power module.

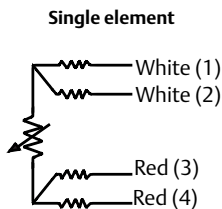
**Table 5. Rosemount 248 WirelessHART® Fast Key Sequences (Polymer Housing)**

Function	Fast Key sequence	Menu items
Device Information	1, 7	Identification, Revisions, Radio, Security
Guided Setup	2, 1	Join Device to Network, Configure Update Rate, Configure Sensor, Calibrate Sensor
Manual Setup	2, 2	Wireless, Process Sensor, Percent of Range, Device Temperatures, Device Information, Other
Wireless Configuration	2, 2, 1	Network ID, Join to Network, Broadcast Info
Sensor Calibration	3, 5, 2	Sensor Value, Sensor Status, Current Lower Trim, Current Upper Trim, Lower Sensor Trim, Upper Sensor Trim, Recall Factory Trim

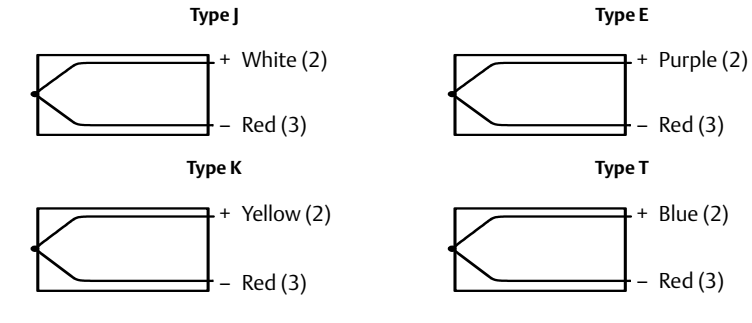
**Table 6. Rosemount 248 WirelessHART Fast Key Sequences (Aluminum Housing)**

Function	Fast Key sequence	Menu items
Device Information	2, 2, 5, 3	Manufacturer, Model, Final Assembly Number, Universal, Field Device, Software, Hardware, Descriptor, Message, Date, Model Number I, Model Number II, Model Number III, SI Unit Restriction, Country, Device ID
Guided Setup	2, 1	Join Device to Network, Configure Update Rate, Configure Sensor, Calibrate Sensor
Manual Setup	2, 2	Wireless, Process Sensor, Percent of Range, Device Temperatures, Device Information, Other
Wireless Configuration	2, 2, 1	Network ID, Join Device to Network, Update Rate, Configure Broadcast Power Level, Power Mode, Power Source
Sensor Calibration	3, 4, 1	Current Upper Trim, Current lower Trim, Lower Sensor Trim, Upper Sensor Trim, Recall Factory Trim, RTD 2 Wire Offset

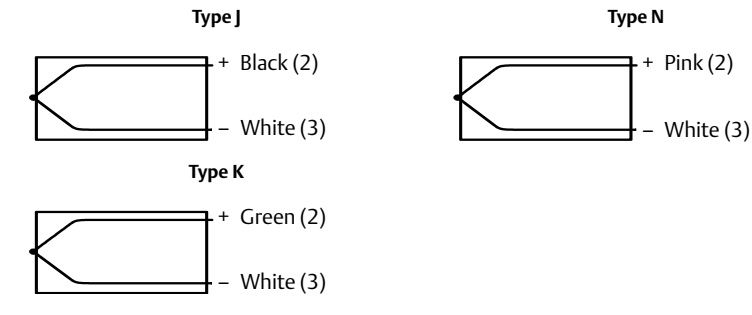
**Figure 17. Rosemount 65, 68, 78, and 58C Series Lead Wire Configurations**



**Figure 18. Rosemount 183 Series Lead Wire Configurations**



**Figure 19. Series 185 Thermocouple Lead Wire Configurations**



**Note**

The wiring diagram shown above apply only to Rosemount sensors.

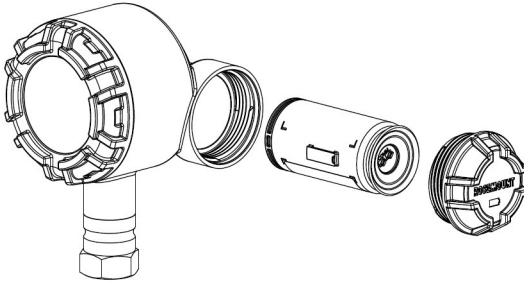
## 5.0 Power Module Replacement

Expected Power Module life is 10 years at reference conditions.<sup>(1)</sup>

### 5.1 Polymer housing

When power module replacement is required, remove the cover and remove the green power module. Replace the green power module (part number 701PGNKF) and replace the cover. Tighten to specification and verify operation.

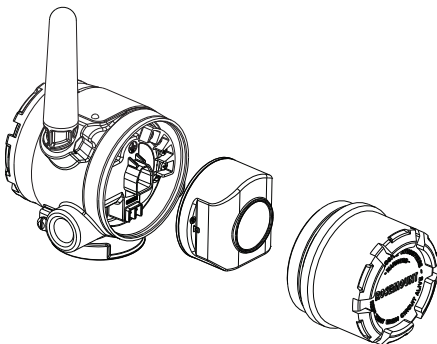
**Figure 20. Exploded Power Module View (Polymer Housing)**



### 5.2 Aluminum housing

When power module replacement is required, remove the cover on the field terminal side and remove the black power module. Replace the black power module (part number 701PBKKF) and replace the cover. Tighten to specifications and verify operation.

**Figure 21. Exploded Power Module View (Aluminum Housing)**



1. Reference conditions are 70 °F (21 °C), transmit rate of once per minute, and routing data for three additional network devices.

## 5.3 Handling considerations

### Polymer housing

The green power module with the wireless unit contains one “D” size primary lithium-thionyl chloride battery (green power module, model number 701PGNKF). Each battery contains approximately 5.0 grams of lithium. Under normal conditions, the battery materials are self-contained and are not reactive as long as the batteries and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage.

Contacts should be protected to prevent premature discharge.

Power modules should be stored in a clean and dry area. For maximum power module life, storage temperature should not exceed 30 °C.


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#### Note

Continuous exposure to ambient temperature limits of -40 °F or 185 °F (-40 °C or 85 °C) may reduce specified life by less than 20 percent.

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Use caution when handling the power module, it may be damaged if dropped from heights in excess of 20 ft.

 Battery hazards remain when cells are discharged.


### Aluminum housing

Each black power module with the wireless unit contains two “C” size primary lithium/thionyl chloride batteries (black power module, module number 701PBKKF). Each battery contains approximately 2.5 grams of lithium, for a total of 5 grams in each pack. Under normal conditions, the battery and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage.

Contacts should be protected to prevent premature discharge.

Power modules should be stored in a clean and dry area. For maximum power module life, storage temperature should not exceed 30 °C.

Use caution when handling the power module, it may be damaged if dropped from heights in excess of 20 ft.

 Battery hazards remain when cells are discharged.

## 5.4 Environmental considerations

As with any battery, local environmental rules and regulations should be consulted for proper management of spent batteries. If no specific requirements exist, recycling through a qualified recycler is encouraged. Consult the material's safety data sheet for battery specific information.

## 5.5 Shipping considerations

The unit was shipped to you without the power module installed. Remove the Power Module prior to shipping the unit.

## 6.0 Product Certifications

### 6.1 Rosemount 248 Wireless (Polymer)

Rev 1.5

#### 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 [EmersonProcess.com/Rosemount](http://EmersonProcess.com/Rosemount).

#### 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).

#### Telecommunication compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

#### FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

#### 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.

#### USA

##### I5 USA Intrinsically Safe

Certificate: 70008071

Standards: FM 3600: 2011; FM 3610: 2010; FM 3611: 2004; UL 61010-1: 2012; UL 50E: 2012; ANSI/IEC 60529:2004

Markings: Intrinsically Safe: CL I, DIV 1, GP A, B, C, D; CL I, DIV 2, GP A, B, C, D; Class I, Zone 0, AEx ia IIC T4/T5 Ga; T4 (-50 °C ≤ T<sub>a</sub> ≤ +70 °C); T5 (-50 °C ≤ T<sub>a</sub> ≤ +40 °C); when installed per Rosemount drawing 00249-2020; Type 4x, IP66/67

See [Table 7](#) for entity parameters.

##### **Special Condition for Safe Use (X):**

1. Battery exchange: The battery module can be changed inside hazardous gas-explosive locations. During battery change it must be assured that the connections are free from dust or dirt.

## Canada

### I6 Canada Intrinsically Safe

Certificate: 70008071

Standards: CSA C22.2 No. 0-10; CSA C22.2 No. 94.2-07 (R2012); CSA C22.2 No. 213-M1987 (R2013); CAN/CSA-60079-0-11; CAN/CSA-60079-11-14; CAN/CSA C22.2 No. 60529-05; CAN/CSA-C22.2 No. 61010-1-12

Markings: Intrinsically Safe: CL I, DIV 1, GP A, B, C, D; CL I, DIV 2, GP A, B, C, D; Ex ia IIC T4/T5 Ga; T4 (-50 °C ≤ T<sub>a</sub> ≤ +70 °C); T5 (-50 °C ≤ T<sub>a</sub> ≤ +40 °C); when installed per Rosemount drawing 00249-2020; Type 4X, IP66/67

See [Table 7](#) for entity parameters.

#### **Special Condition for Safe Use (X):**


1. Battery exchange: The battery module can be changed inside hazardous gas-explosive locations. During battery change it must be assured that the connections are free from dust or dirt.

## Europe

### I1 ATEX Intrinsic Safety

Certificate: Baseefa14ATEX0359X

Standards: EN 60079-0: 2012; EN 60079-11: 2012

Markings:  II 1 G Ex ia IIC T4/T5 Ga; T4 (-60 °C ≤ T<sub>a</sub> ≤ +70 °C); T5 (-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

See [Table 7](#) for entity parameters.

#### **Special Condition for Safe Use (X):**

1. The plastic enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.

## International

### I7 IECEx Intrinsic Safety

Certificate: IECEx BAS 14.0158X

Standards: IEC 60079-0: 2011; IEC 60079-11: 2011

Markings: Ex ia IIC T4/T5 Ga; T4 (-60 °C ≤ T<sub>a</sub> ≤ +70 °C); T5 (-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

See [Table 7](#) for entity parameters.

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

1. The plastic enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.

## Brazil

### I2 INMETRO Intrinsic Safety

Certificate: UL-BR 15.0222X

Standards: ABNT NBR IEC 60079-0: 2008 + Corrigendum 1:2011; ABNT NBR IEC 60079-11: 2009

Markings: Ex ia IIC T4/T5 Ga; T4 (-60 °C ≤ T<sub>a</sub> ≤ +70 °C); T5 (-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

See [Table 7](#) for entity parameters.

#### **Special Condition for Safe Use (X):**

1. The plastic enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.

## China

### I3 NEPSI Intrinsic Safety

Certificate: GYJ15.1143X

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

Markings: Ex ia IIC T4/T5 Ga; T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ); T5 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ )

See [Table 7](#) for entity parameters.

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

1. Non-metallic parts incorporated in the enclosure of the product shall only be cleaned with a damp cloth to avoid electrostatic charge.
2. Must use Rosemount Model 701PGNKF SmartPower Green Power Module provided by the manufacture.

## Japan

### I4 TIIS Intrinsic Safety

Certificate: TC21031

Markings: Ex ia IIC T4 X ( $-20\text{ }^{\circ}\text{C} \sim +60\text{ }^{\circ}\text{C}$ )

See [Table 7](#) for entity parameters.

## EAC

### IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate: TC RU C-US.AA87.B.00057

Markings: 0Ex ia IIC T4,T5 Ga X, T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ ), T4( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ); IP66/IP67

#### **Special Condition for Safe Use (X):**

1. See certificate for special conditions.

**Table 7. Entity Parameters**

Parameters	USA, ATEX, IECEx, and Canada (Polymer)
Voltage $U_O$	6.6 V
Current $I_O$	26.2 mA
Power $P_O$	42.6 mW
Capacitance $C_O$	11 $\mu\text{F}$
Inductance $L_O$	25 mH



## 6.2 Rosemount 248 Wireless (Aluminum)

Rev 1.2

### 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 [EmersonProcess.com/Rosemount](http://EmersonProcess.com/Rosemount).

### 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).

### Telecommunication compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

### FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

### 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.

### USA

#### I5 USA Intrinsically Safe

Certificate: 3039717

Standards: FM Class 3600:1998, FM Class 3610:2010, FM Class 3611:2004, FM Class 3810:2005, ANSI/NEMA® 250:2003; ANSI/IEC 60529:2004

Markings: IS CL I/II/III, DIV 1, GP A, B, C, D, E, F, G; IS CL I, Zone 0, AEx ia IIC; NI CL I, DIV 2, GP A, B, C, D; T4(-50 °C ≤ T<sub>a</sub> ≤ +70 °C), T5(-50 °C ≤ T<sub>a</sub> ≤ +40 °C) when installed per Rosemount drawing 00249-1000; Type 4X; IP66/67

See [Table 8](#) at the end of the Product Certifications section for entity parameters.

#### N5 USA Nonincendive and Dust-Ignitionproof

Certificate: 3039717

Standards: FM Class 3600:1998, FM Class 3611:2004, FM Class 3810:2005, ANSI/NEMA 250: 2003; ANSI/IEC 60529: 2004

Markings: NI CL I, DIV 2, GP A, B, C, D; T4(-50 °C ≤ T<sub>a</sub> ≤ +70 °C); DIP CL II/III, DIV 1, GP E, F, G; -50 °C ≤ T<sub>a</sub> ≤ +85 °C; when installed per Rosemount drawing 00249-1000; Type 4X; IP66/67

## Canada

### 16 Canada Intrinsically Safe

Certificate: 1091070

Standards: CAN/CSA C22.2 No. 0-10, CSA Std. C22.2 No. 25-1966, CAN/CSA C22.2 No. 94-M91, CAN/CSA C22.2 No. 157-92, CSA C22.2 No. 213-M1987, C22.2 No 60529-05, CSA Std. C22.2 No. 142-M1987

Markings: Intrinsically Safe: CL I, DIV 1 GP A, B, C, D; Suitable for use in CL I DIV 2 GP A, B, C, D; T3C; When installed per Rosemount drawing 00249-1020; Type 4X, IP66/67


See [Table 8](#) at the end of the Product Certifications section for entity parameters.

## Europe

### 11 ATEX Intrinsic Safety

Certificate: Baseefa10ATEX0121X

Standards: EN 60079-0:2009; EN 60079-11:2007;

Markings:  II 1 G Ex ia IIC T4/T5 Ga, T4(-60 °C ≤ T<sub>a</sub> ≤ +70 °C), T5(-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

See [Table 8](#) at the end of the Product Certifications section for entity parameters.

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

1. The plastic antenna may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.
2. The Rosemount 248 enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 area.

## International

### 17 IECEx Intrinsic Safety

Certificate: IECEx BAS 10.0059X

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

Markings: Ex ia IIC T4/T5 Ga, T4(-60 °C ≤ T<sub>a</sub> ≤ +70 °C), T5(-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

See [Table 8](#) at the end of the Product Certifications section for entity parameters.

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

1. The surface resistivity of the antenna is greater than 1 GΩ. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.
2. The Rosemount Model 701PBKPF Power Module and intelligent Power Module 71008 may be replaced in a hazardous area. The power modules have a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.
3. The Rosemount 248 enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 area.

## EAC – Belarus, Kazakhstan, Russia

### 1M Technical Regulations Custom Union (EAC) Intrinsic Safety




Certificate: TC RU C-US.AA87.B.00057; IP66/IP67

Markings: 0Ex ia IIC T4 Ga X (-60 °C ≤ T<sub>a</sub> ≤ +70 °C); 0Ex ia IIC T5 Ga X (-60 °C ≤ T<sub>a</sub> ≤ +40 °C)

**Table 8. Entity Parameters**

Parameters	USA, ATEX, & IECEx	Canada
Voltage $U_O$	6.6 V	6.6 V
Current $I_O$	26.2 mA	26.2 mA
Power $P_O$	42.6 mW	42.6 mW
Capacitance $C_O$	11 $\mu$ F	23.8 $\mu$ F
Inductance $L_O$	25 mH	25 mH

Figure 22. Rosemount 248 Wireless Declaration of Conformity

	<h1>EU Declaration of Conformity</h1> <p>No: RMD 1082 Rev. G</p>	
<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 248 Wireless 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>		
 _____ (signature)		Vice President of Global Quality _____ (function)
Kelly Klein _____ (name)		19 Apr 2016 _____ (date of issue)
Page 1 of 3		



# EU Declaration of Conformity



No: RMD 1082 Rev. G

**EMC Directive (2004/108/EC)** *This directive is valid until 19 April 2016*  
**EMC Directive (2014/30/EU)** *This directive is valid from 20 April 2016*

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

## R&TTE Directive (1999/5/EC)

Harmonized Standards:  
 EN 300 328 V 1.9.1  
 EN 301 489-17: V2.2.1  
 EN 61010-1: 2010  
 EN 62479: 2010

**ATEX Directive (94/9/EC)** *This directive is valid until 19 April 2016*  
**ATEX Directive (2014/34/EU)** *This directive is valid from 20 April 2016*

### Rosemount 248 Wireless Temperature Transmitter (with aluminum housing)

#### Baseefa10ATEX0121X – Intrinsic Safety Certificate

Equipment Group II, Category 1 G

Ex ia IIC T4/T5 Ga

#### Other Standards:

EN60079-0: 2009 (A review against EN60079-0: 2012, which is harmonized, shows no significant changes relevant to this equipment so EN60079-0: 2006 continues to represent “State of the Art”.)

EN60079-11: 2007 (A review against EN60079-11: 2012, which is harmonized, shows no significant changes relevant to this equipment so EN60079-11: 2007 continues to represent “State of the Art”.)

### Rosemount 248 Wireless Temperature Transmitter (with polymer housing)

#### Baseefa14ATEX0359X – Intrinsic Safety Certificate

Equipment Group II, Category 1 G

Ex ia IIC T4/T5 Ga

#### Harmonized Standards:

EN60079-0: 2012, EN60079-11: 2012



# EU Declaration of Conformity



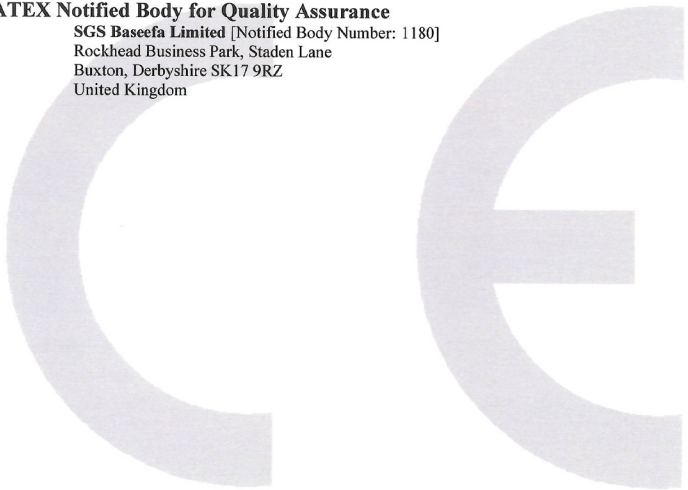
No: RMD 1082 Rev. G

**ATEX Notified Body**

SGS Baseefa Limited [Notified Body Number: 1180]  
Rockhead Business Park, Staden Lane  
Buxton, Derbyshire SK17 9RZ  
United Kingdom

**ATEX Notified Body for Quality Assurance**

SGS Baseefa Limited [Notified Body Number: 1180]  
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含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 248 Wireless  
List of Rosemount 248 Wireless 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.



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