
Send 4-20 mA Outputs Wirelessly with Rosemount® 648 and 248 Wireless Transmitters

1.1 Application

This technique is used to capture data from a 4-20 mA source that does not have a loop connection to traditional loop control and monitoring systems.

Applications include current sensor, MOVs, and anything with an active 4-20 mA output that does not require power from the 648 or 248 Wireless Transmitter.

1.2 Overview

This technical note illustrates the wiring and configuration of the 648 or 248 Wireless Transmitter to monitor a 4-20 mA signal through a conversion to a measurable millivolt signal.

Figure 1. Rosemount 648 Wireless Temperature Transmitter



Figure 2. Rosemount 248 Wireless Temperature Transmitter (Polymer housing)



Figure 3. Rosemount 248 Wireless Temperature Transmitter (Aluminum housing)



Note

The conversion of a 4-20 mA source to a measurable millivolt signal constitutes a second power source in the terminal block of the 648 or 248 Wireless Transmitter and voids Intrinsically Safe approval. Adding this second power source doesn't affect the Division 2/Non-Incendive approvals. Also, this technique should not be applied to a 4-20 mA source currently connected to a loop control or monitoring system.

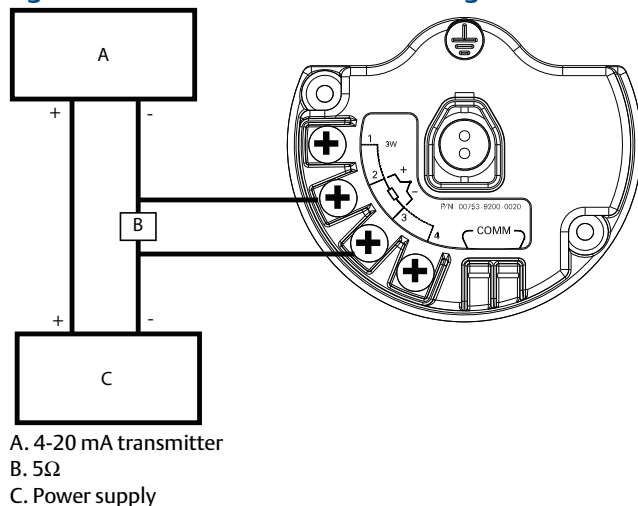
1.3 Signal conversion

The 648 or 248 Wireless Transmitter can measure a millivolt signal. To monitor a 4-20 mA signal, a conversion to millivolt will be required using a 5-Ohm resistor to create a 20-100 mV signal. It is optimal to use a low-error 5-Ohm resistor with stable operation over the ambient temperature range where the 648 or 248 Wireless Transmitter is located.

1.4 Transmitter configuration

Using a 475 HART® Field Communicator, 1420 Smart Wireless Gateway, or AMS® Device Manager, reconfigure the sensor type and device units to millivolts. Set the lower and upper range values to 20 and 100 to scale between 0-100%.

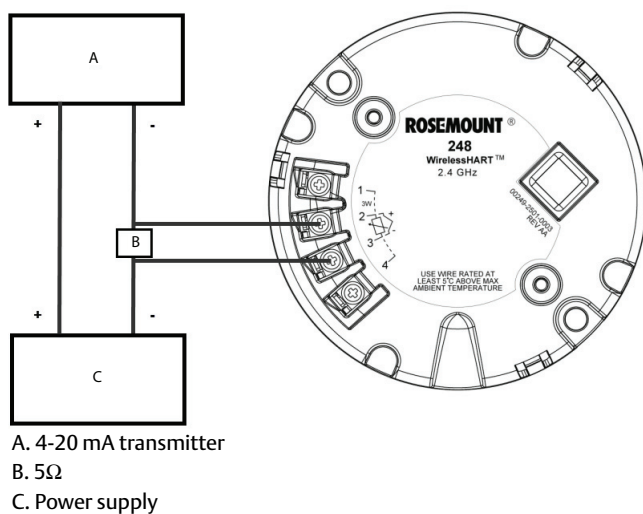
Figure 4. Rosemount 648 Terminal Diagram with 4-20 mA Conversion to 20-100 mV



Note

The 5-Ohm resistor must be installed before powering up the transmitter. Applying the mA source directly to the millivolts terminal may damage the transmitter.

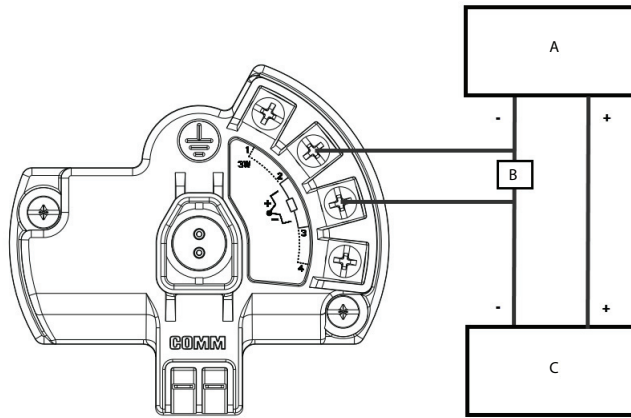
Figure 5. Rosemount 248 Wireless Terminal Diagram (Polymer housing) with 4-20 mA Conversion to 20-100 mV



Note

The 5-Ohm resistor must be installed before powering up the transmitter. Applying the mA source directly to the millivolts terminal may damage the transmitter.

Figure 6. Rosemount 248 Wireless Terminal Diagram (Aluminum housing) with 4-20 mA Conversion to 20-100 mV



- A. 4-20 mA transmitter
- B. 5Ω
- C. Power supply




Note

The 5-Ohm resistor must be installed before powering up the transmitter. Applying the mA source directly to the millivolts terminal may damage the transmitter.

Global Headquarters

Emerson Process Management




6021 Innovation Blvd
Shakopee, MN 55379, USA

-  +1 800 999 9307 or +1 952 906 8888
-  +1 952 949 7001
-  RFQ.RMD-RCC@EmersonProcess.com

North America Regional Office

Emerson Process Management




8200 Market Blvd.
Chanhassen, MN 55317, USA

-  +1 800 999 9307 or +1 952 906 8888
-  +1 952 949 7001
-  RMT-NA.RCCRFQ@Emerson.com

Latin America Regional Office

Emerson Process Management




1300 Concord Terrace, Suite 400
Sunrise, Florida, 33323, USA

-  +1 954 846 5030
-  +1 954 846 5121
-  RFQ.RMD-RCC@EmersonProcess.com

Europe Regional Office

Emerson Process Management 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@EmersonProcess.com

Asia Pacific Regional Office

Emerson Process Management Asia Pacific Pte Ltd




1 Pandan Crescent
Singapore 128461

-  +65 6777 8211
-  +65 6777 0947
-  Enquiries@AP.EmersonProcess.com

Middle East and Africa Regional Office

Emerson Process Management

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

The Emerson logo is a trademark and service mark of Emerson Electric Co. AMS, Rosemount and the Rosemount logotype are registered trademarks of Rosemount Inc. HART is a registered trademark of the FieldComm Group. All other marks are the property of their respective owners. © 2015 Rosemount Inc. All rights reserved.