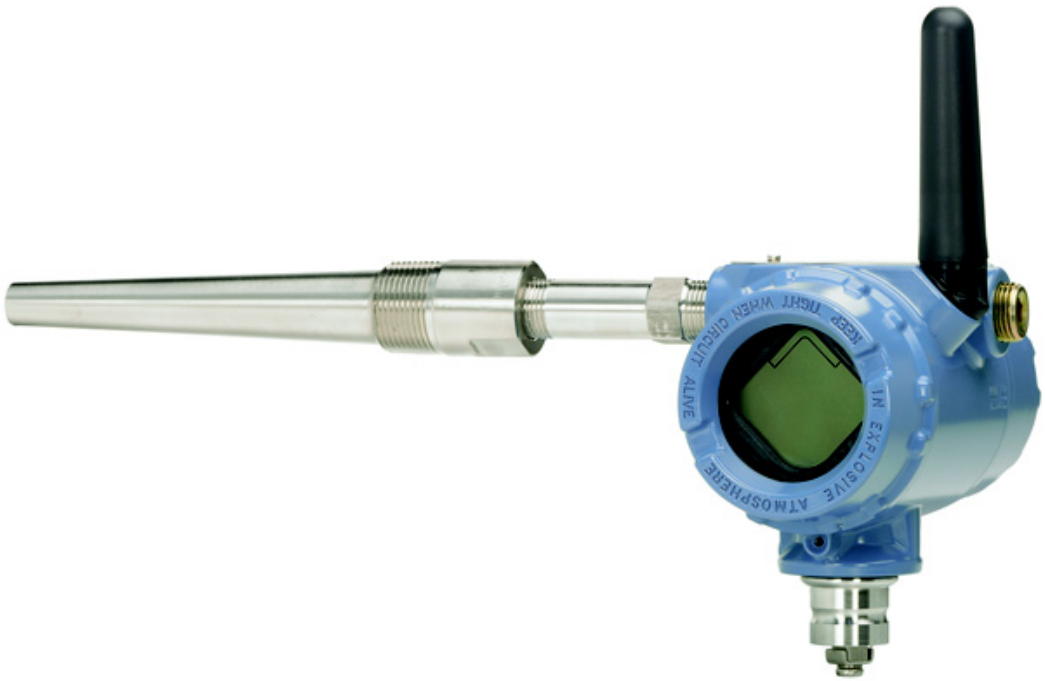
Product Data Sheet
September 2014
00813-0100-4648, Rev GA

Rosemount 648 Wireless Temperature Transmitter



- Industry-leading temperature transmitter delivers field reliability as a wireless measurement solution.
- Achieve optimal efficiency with Best-in-Class product specifications and capabilities.
- Smart Wireless delivers innovative wireless solutions for temperature measurement and overall transmitter performance.
- Explore the benefits of a Complete Point Solution from Rosemount Temperature.

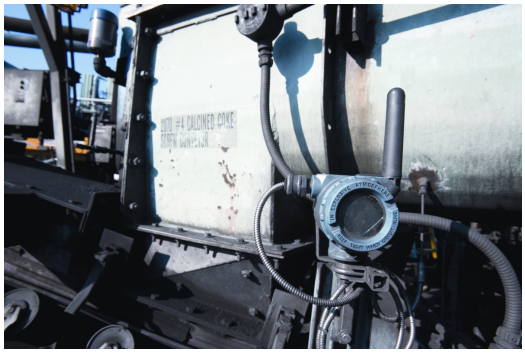
ROSEMOUNT

EMERSON.
Process Management

Rosemount 648 Wireless Temperature Transmitter

Industry-leading temperature transmitter delivers field reliability as a wireless measurement solution

- Superior accuracy and stability
- Single sensor capability with universal sensor inputs (RTD, T/C, mV, ohms)
- Transmitter-Sensor Matching with Callendar-Van Dusen
- IEC-approved *Wireless*HART® protocol
- Dual-compartment housing, available in aluminum or stainless steel
- Large LCD display
- Extended range antenna options available



Achieve optimal efficiency with Best-in-Class product specifications and capabilities

- Two-year stability rating reduces maintenance costs
- Transmitter-Sensor Matching eliminates the interchangeability error of sensors, improving measurement point accuracy by 75%
- User-centric Device Dashboards communicate important diagnostics and ensure process health
- Compensation for ambient temperature enhances transmitter performance
- Dual-compartment housing provides the highest reliability in harsh industrial environments

A standard diagnostic offering increases measurement reliability and provides visibility into process conditions

- Four user-configurable alerts provide increased process information and measurement point insight
- Open/short sensor diagnostics assist with detecting issues in sensor loops
- Terminal temperature feature verifies installation location temperature conditions to ensure optimal transmitter operation

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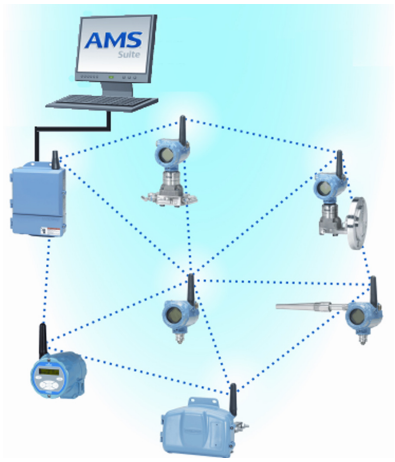
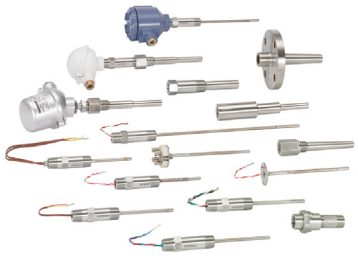
Smart Wireless delivers innovative wireless solutions for temperature measurement and overall transmitter performance



- Self-organizing network delivers information rich data with > 99% data reliability and establishes a highly stable network
- Smart Wireless capabilities extend the full benefits of PlantWeb® to previously inaccessible temperature measurement locations
- Emerson SmartPower™ Solutions provide an intrinsically safe power module, allowing field replacements without removing the transmitter from the process, keeping personnel safe, and reducing maintenance costs
- Emerson Process Management's layered approach to wireless network security ensures that data transmissions are secure

Explore the benefits of a Complete Point Solution from Rosemount Temperature Measurement

- An "Assemble To Sensor" option enables Emerson to provide a complete point temperature solution, delivering an installation-ready transmitter and sensor assembly
- Emerson offers a selection of RTDs, thermocouples, and thermowells that bring superior durability and Rosemount reliability to temperature sensing, complementing the Rosemount Transmitter portfolio



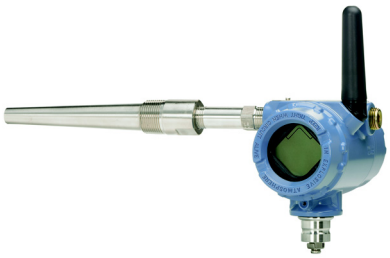
Experience global consistency and local support from numerous worldwide Rosemount Temperature manufacturing sites

- World-class manufacturing provides globally consistent product from every factory and the capacity to fulfill the needs of any project, large or small
- Experienced instrumentation consultants help select the right product for any temperature application and advise on best installation practices
- An extensive global network of Emerson service and support personnel can be on-site when and where they are needed

- Make wireless installation and configuration easy with the **Emerson Smart Wireless Gateway**.
- For installations that have a high number of temperature measurements in close proximity, consider the **Rosemount 848T** High Density Temperature Transmitter.
- Explore how Emerson's intrinsically safe **SmartPower Solutions** reduce maintenance costs.

Rosemount 648 Temperature Transmitter

Ordering information



The Rosemount 648 Wireless Temperature Transmitter delivers industry-leading temperature field reliability as a wireless process measurement with Best-in-Class specifications and capabilities.

Transmitter features include:

- IEC-approved *Wireless*HART protocol (Option Code WA3)
- External Antenna (Option Code WK1)
- Extended Range, External Antenna (Option Code WM1)
- Large LCD Display (Option Code M5)
- Transmitter-Sensor Matching (Option Code C2)
- 3-Point Calibration Certificate (Option Code Q4)
- Assemble to Sensor (Option Code XA)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 6 for more information on Material Selection.

Table 1. Rosemount 648 Temperature Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.
The Expanded offering is subject to additional delivery lead time.

Model	Product description		
648	Temperature Transmitter		
Transmitter type			
D	Wireless Field Mount		★
Transmitter output			
X	Wireless		★
Measurement configuration			
1	Single-Sensor Input		★
Housing style		**Material**	
D	Dual Compartment Housing	Aluminum	★
E	Dual Compartment Housing	SST	★
Conduit entry size			
1	1/2-14 NPT		★
Product certifications			
NA	No Approval		★
I5	FM Intrinsically Safe, Non-Incendive, and Dust Ignition-proof		★
N5	FM Non-Incendive and Dust Ignition-proof		★
I6	CSA Intrinsically Safe		★
I1	ATEX Intrinsic Safety		★
I7	IECEx Intrinsic Safety		★

Table 1. Rosemount 648 Temperature Transmitter Ordering Information

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.

The Expanded offering is subject to additional delivery lead time.

I4	TIIS Intrinsic Safety	★
I3	China Intrinsic Safety	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★

Wireless options (include with selected model number)

Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Wireless update rate, operating frequency, and protocol		
WA3	User Configurable Update Rate, 2.4 GHz DSSS, IEC 62591 (*Wireless*HART)	★
Omni-directional wireless antenna and SmartPower		
WK1	External Antenna, Adapter for Black Power Module (I.S. Power Module sold separately)	★
WM1	Extended Range, External Antenna, Adapter for Black Power Module (I.S. Power Module sold separately)	★
	NOTE: Black Power Module must be shipped separately, order Model 701PBKKF or Part #00753-9220-0001.	
Mounting bracket		
B5(1)	"L" Mounting Bracket for 2-in. pipe and panel mounting - All SST	★
Display		
M5	LCD Display	★
Software configuration		
C1	Custom Configuration of Date, Descriptor, Message, and Wireless Parameters (requires CDS with order)	★
Line filter		
F5	50 Hz Line Voltage Filter	★
F6	60 Hz Line Voltage Filter	★
Sensor trim		
C2	Transmitter-Sensor Matching - Trim to Specific Rosemount RTD Calibration Schedule (CVD Constants)	★
5-point calibration		
C4	5-Point Calibration (requires Q4 option code to generate a Calibration Certificate)	★
Calibration certificate		
Q4	Calibration Certificate (3-Point calibration)	★
Cable gland option		
G2	Cable Gland (7.5 mm - 11.9 mm)	★
G4	Thin Wire Cable Gland (3 mm - 8 mm)	★
Assemble to options		
XA (1)	Sensor Specified Separately and Assembled to Transmitter	★
Typical model number: 648 D X 1 D 1 NA WA 3 WK 1 M5 C1 F6		

(1) When ordering a Rosemount 648 with the XA option, a mounting bracket is not included. If a bracket is required, please order option code B5.

Transmitter Specifications

Functional specifications

Input
Supports Thermocouple, RTD, millivolt, and ohm input types. See "Transmitter accuracy" on page 8 for sensor options.

Output
IEC 62591 (*Wireless*HART), 2.4 GHz DSSS

Local display
The optional five-digit integral LCD Display can display sensor temperature in engineering units (°F, °C, °R, K, Ω, and millivolts) and percent of range. The display updates based on the Wireless Update Rate.

Humidity limits
0–99% Non-condensing Relative Humidity

Update rate
*Wireless*HART, user-selectable 1 second to 60 minutes

Accuracy
(Pt 100 @ reference condition: 20 °C)
±0.225 °C (±0.405 °F)

Radio frequency power output from antenna
External Antenna (WK1 option): Maximum of 10 mW (10dBm) EIRP

Physical specifications

Material selection
Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Conformance to specification [±3σ (Sigma)]
Technology leadership, advanced manufacturing techniques, and statistical process control ensure measurement specification conformance to at least ±3σ.

Electrical connections
Power module
The Emerson SmartPower Power Module is field replaceable, featuring keyed connections that eliminate the risk of incorrect installation.

The power module is an Intrinsically Safe solution, containing Lithium-thionyl chloride with a polybutadine terephthalate (PBT) enclosure.

The Rosemount 648 Wireless has power module life time rating of 10 years with a one-minute update rate, at reference conditions.(1)

Sensor terminals
Sensor terminals permanently fixed to terminal block.

Field Communicator connections
Communication Terminals

Clips permanently fixed to terminal block, designated by the text "COMM."

Materials of construction
Enclosure
Housing - Low-copper aluminum or stainless steel
Paint - Polyurethane
Cover O-ring - Buna-N

Terminal block and power module
PBT

Antenna
PBT/Polycarbonate (PC) integrated omni-directional antenna

Mounting
Transmitters may be attached directly to the sensor. Mounting brackets also permit remote mounting. See "Dimensional Drawings" on page 14.

Weight
Low-copper aluminum
648 without LCD display - 4.1 lb. (1.9 kg)
648 with M5 LCD display - 4.2 lb. (2.0 kg)

Stainless steel
648 without LCD display - 8.0 lb. (3.5 kg)
648 with M5 LCD display - 8.1 lb. (3.6 kg)

Enclosure ratings (648)
Housing Style option codes D and E are Type 4X and IP66/67 rated dual-compartment housings.

(1) Reference conditions are 70 °F (21 °C), and routing data for three additional network devices.

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

Performance specifications

Electromagnetic compatibility (EMC)

All Models:
Meets all relevant requirements of EN 61326-1; 2006; EN 61326-2-3; 2006

Transmitter stability

The 648 has a stability of ±0.15% of output reading or 0.15 °C (whichever is greater) for 24 months.

Self calibration

The analog-to-digital measurement circuitry automatically self-calibrates for each temperature update by comparing the dynamic measurement to extremely stable and accurate internal reference elements.

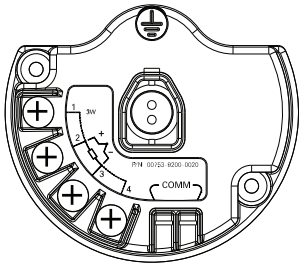
Vibration effect

Tested to the following with no effect on performance per IEC 60770-1, 1999:

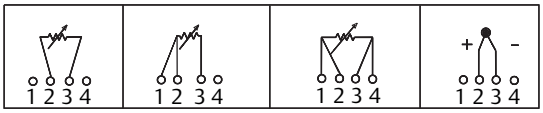
High Vibration Level - field or pipeline (10-60 Hz 0.21 mm displacement peak amplitude / 60-2000 Hz 3g).

Frequency	Acceleration
10-60 Hz	0.21 mm peak displacement
60-2000 Hz	3 g

Sensor connections



Rosemount 648 Wireless Sensor connections diagram



2-wire RTD and V * | 3-wire RTD and V * | 4-wire RTD and V | T/C and mV

* Rosemount Inc. provides 4-wire sensors for all single element RTDs. You can use these RTDs in 3-wire or 2-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.

Temperature limits

Description	Operating limit	Storage limit
Without LCD Display	–40 to 185 °F –40 to 85 °C	–40 to 185 °F –40 to 85 °C
With LCD Display	–4 to 175 °F –20 to 80 °C	–40 to 185 °F –40 to 85 °C

Transmitter accuracy

Table 2. Rosemount 648 Input Options and Accuracy

Sensor options	Sensor reference	Input ranges		Digital accuracy[1]	
2-, 3-, 4-wire RTDs		°C	°F	°C	°F
Pt 100 (α = 0.00385)	IEC 751	–200 to 850	–328 to 1562	± 0.225	± 0.405
Pt 200 (α = 0.00385)	IEC 751	–200 to 850	–328 to 1562	± 0.405	± 0.729
Pt 500 (α = 0.00385)	IEC 751	–200 to 850	–328 to 1562	± 0.285	± 0.513
Pt 1000 (α = 0.00385)	IEC 751	–200 to 300	–328 to 572	± 0.285	± 0.513
Pt 100 (α = 0.003916)	JIS 1604	–200 to 645	–328 to 1193	± 0.225	± 0.405
Pt 200 (α = 0.003916)	JIS 1604	–200 to 645	–328 to 1193	± 0.405	± 0.729
Ni 120	Edison Curve No. 7	–70 to 300	–94 to 572	± 0.225	± 0.405
Cu 10	Edison Copper Winding No. 15	–50 to 250	–58 to 482	± 2.1	± 3.78
Pt 50 (α = 0.00391)	GOST 6651-94	–200 to 550	–328 to 990	± 0.45	± 0.81
Pt 100 (α = 0.00391)	GOST 6651-94	–200 to 550	–328 to 990	± 0.225	± 0.405
Cu 50 (α = 0.00426)	GOST 6651-94	–50 to 200	–58 to 392	± 0.72	± 1.296
Cu 50 (α = 0.00428)	GOST 6651-94	–185 to 200	–301 to 392	± 0.72	± 1.296
Cu 100 (α = 0.00426)	GOST 6651-94	–50 to 200	–58 to 392	± 0.36	± 0.648
Cu 100 (α = 0.00428)	GOST 6651-94	–185 to 200	–301 to 392	± 0.36	± 0.648
Thermocouples[2]					
Type B[3]	NIST Monograph 175, IEC 584	100 to 1820	212 to 3308	± 1.155	± 2.079
Type E	NIST Monograph 175, IEC 584	–50 to 1000	–58 to 1832	± 0.30	± 0.54
Type J	NIST Monograph 175, IEC 584	–180 to 760	–292 to 1400	± 0.525	± 0.945
Type K[4]	NIST Monograph 175, IEC 584	–180 to 1372	–292 to 2501	± 0.75	± 1.35
Type N	NIST Monograph 175, IEC 584	–200 to 1300	–328 to 2372	± 0.75	± 1.35
Type R	NIST Monograph 175, IEC 584	0 to 1768	32 to 3214	± 1.125	± 2.025
Type S	NIST Monograph 175, IEC 584	0 to 1768	32 to 3214	± 1.05	± 1.89
Type T	NIST Monograph 175, IEC 584	–200 to 400	–328 to 752	± 0.525	± 0.945
DIN Type L	DIN 43710	–200 to 900	–328 to 1652	± 0.525	± 0.945
DIN Type U	DIN 43710	–200 to 600	–328 to 1112	± 0.525	± 0.945
Type W5Re/W26Re	ASTM E 988-96	0 to 2000	32 to 3632	± 1.05	± 1.89
GOST L	GOST R 8.585-2001	–200 to 800	–328 to 1472	± 0.525	± 0.945
Other input types					
Millivolt Input		–10 to 100 mV		± 0.0225 mV	
2-, 3-, 4-wire Ohm Input		0 to 2000 ohms		± 0.675 ohm	

(1) The published digital accuracy applies over the entire sensor input range. Digital output can be accessed by HART® Communications or *Wireless*HART.

(2) Total digital accuracy for thermocouple measurement: sum of digital accuracy +0.8 °C. (cold junction accuracy).

(3) Digital accuracy for NIST Type B T/C is ±4.5 °C (±8.1 °F) from 100 to 300 °C (212 to 572 °F).

(4) Digital accuracy for NIST Type K T/C is ±1.05 °C (±1.895 °F) from –180 to –90 °C (–292 to –130 °F).

Ambient temperature effect

Table 3. Ambient Temperature Effect on Digital Accuracy

Sensor options	Sensor reference	Effects per 1.0 °C (1.8 °F) change in ambient temperature[1] [2]	Input temperature (T)
2-, 3-, 4-wire RTDs			
Pt 100 (α = 0.00385)	IEC 751	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Pt 200 (α = 0.00385)	IEC 751	0.006 °C (0.0108 °F)	Entire Sensor Input Range
Pt 500 (α = 0.00385)	IEC 751	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Pt 1000 (α = 0.00385)	IEC 751	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Pt 100 (α = 0.003916)	JIS 1604	0.0045 °C (0.0108 °F)	Entire Sensor Input Range
Pt 200 (α = 0.003916)	JIS 1604	0.006 °C (0.0108 °F)	Entire Sensor Input Range
Ni 120	Edison Curve No. 7	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Cu 10	Edison Copper Winding No. 15	0.045 °C (0.081 °F)	Entire Sensor Input Range
Pt 50 (α = 0.003910)	GOST 6651-94	0.009 °C (0.0162 °F)	Entire Sensor Input Range
Pt 100 (α = 0.003910)	GOST 6651-94	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Cu 50 (α = 0.00426)	GOST 6651-94	0.009 °C (0.0162 °F)	Entire Sensor Input Range
Cu 50 (α = 0.00428)	GOST 6651-94	0.009 °C (0.0162 °F)	Entire Sensor Input Range
Cu 100 (α = 0.00426)	GOST 6651-94	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Cu 100 (α = 0.00428)	GOST 6651-94	0.0045 °C (0.0081 °F)	Entire Sensor Input Range
Thermocouples			
Type B	NIST Monograph 175, IEC 584	0.021 °C	T ≥ 1000 °C
		0.048 °C – [0.00375% of (T – 300)]	300 °C ≤ T < 1000 °C
		0.081 °C – [0.0165% of (T – 100)]	100 °C ≤ T< 300 °C
Type E	NIST Monograph 175, IEC 584	0.0075 °C +(0.000645% of T)	All
Type J	NIST Monograph 175, IEC 584	0.0081 °C +(0.000435%of T)	T ≥ 0 °C
		0.0081 °C + (0.00375% of absolute value T)	T < 0 °C
Type K	NIST Monograph 175, IEC 584	0.0092 °C +(0.00081% of T)	T ≥ 0 °C
		0.0092 °C + (0.00375% of absolute value T)	T < 0 °C
Type N	NIST Monograph 175, IEC 584	0.0102 °C +(0.00054% of T)	All
Type R	NIST Monograph 175, IEC 584	0.024 °C	T ≥ 200 °C
		0.0345 °C – (0.0108% of T)	T < 200 °C
Type S	NIST Monograph 175, IEC 584	0.024 °C	T ≥ 200 °C
		0.0345 °C – (0.0108% of T)	T < 200 °C
Type T	NIST Monograph 175, IEC 584	0.0096 °C	T ≥ 0 °C
		0.0096 °C +(0.00645% of absolute value T)	T < 0 °C
DIN Type L	DIN 43710	0.0081 °C + (0.000435% of T)	T ≥ 0 °C
		0.0081 °C +(0.00375% of absolute value T)	T < 0 °C
DIN Type U	DIN 43710	0.0096 °C	T ≥ 0 °C
		0.0096 °C +(0.00645% of absolute value T)	T < 0 °C
Type W5Re/W26Re	ASTM E 988-96	0.024 °C	T ≥ 200 °C
		0.0345 °C – (0.0108% of T)	T < 200 °C
GOST L	GOST R. 8.585-2001	0.0105 °C	T ≥ 0 °C
		0.0105 °C + (0.0045% of absolute value T)	T < 0 °C
Other input types			
Millivolt Input		0.0008 mV	Entire Sensor Input Range
2-, 3-, 4-wire Ohm Input		0.0126 Ω	Entire Sensor Input Range

(1) Change in ambient is with reference to the calibration temperature of the transmitter 68 °F (20 °C) from factory.

(2) Ambient temperature effect specification valid over minimum temperature span of 28°C (50°F)

Transmitters can be installed in locations where the ambient temperature is between –40 and 85 °C (–40 and 185 °F). In order to maintain excellent accuracy performance, each transmitter is individually characterized over this ambient temperature range at the factory.

Temperature effects example

When using a Pt 100 (α = 0.00385) sensor input at 30 °C ambient temperature:

- Digital Temperature Effects: 0.0045 °C x (30 - 20) = 0.045 °C
- Worst Case Error: Digital + Digital Temperature Effects = 0.225 °C + 0.045 °C = 0.27 °C
- Total Probable Error: $\sqrt{0.225^2 + 0.045^2} = 0.23$

Product Certifications

Approved Manufacturing Locations

Rosemount Inc. – Chanhassen, Minnesota, USA
Emerson Process Management GmbH & Co. - Karlstein, Germany
Emerson Process Management Asia Pacific Private Limited - Singapore

European Union Directive Information

The current Declaration of Conformity is located at the end of this document. The most recent revision of the European Union Declaration of Conformity can be found at www.emersonprocess.com.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

Electro Magnetic Compatibility (EMC) (2004/108/EC)

Emerson Process Management complies with EMC Directive.

Radio and Telecommunications Terminal Equipment Directive (R&TTE)(1999/5/EC)

Emerson Process Management complies with the R&TTE Directive.

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.

Ordinary Location Certification for FM

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certificates

North America

Factory Mutual (FM) Approvals

I5 FM Intrinsically Safe, Non-incendive, and Dust Ignition-proof
Certificate: 3027705
Intrinsically Safe for Class I/II/III, Division 1, Groups A, B, C, D, E, F, and G.
Zone Marking: Class I, Zone 0, AEx ia IIC
Temperature Codes: T4(T_{amb} = -50 to 70 °C)
T5(T_{amb} = -50 to 40 °C)
Non-incendive for Class I, Division 2, Groups A, B, C, and D.
Temperature Codes: T4(T_{amb} = -50 to 70 °C)
T5(T_{amb} = -50 to 40 °C)
Dust Ignition-proof for Class II/III, Division 1, Groups E, F, and G.
Ambient temperature limits: -50 to 85 °C

Enclosure: Type 4X/IP66/IP67
Intrinsically Safe and Non-incendive when installed in accordance with Rosemount drawing 00648-1000.
For use with Rosemount Power Module P/N 753-9220-XXXX only.

N5 FM Non-incendive and Dust Ignition-proof
Certificate: 3027705
Non-incendive for Class I, Division 2, Groups A, B, C, and D.
Temperature Codes: T4(T_{amb} = -50 to 70 °C)
T5(T_{amb} = -50 to 40 °C)
Dust Ignition-proof for Class II/III, Division 1, Groups E, F, and G.
Ambient temperature limits: -50 to 85 °C

Enclosure: Type 4X/IP66/IP67
For use with Rosemount Power Module P/N 753-9220-XXXX only.

Canadian Standards Association (CSA)

I6 CSA Intrinsically Safe
Certificate: 1143113
Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D.
Temp Code T3C

Enclosure: Type 4X/IP66/IP67
Intrinsically Safe when installed per Rosemount drawing 00648-1020.

For use with Rosemount Power Module P/N 753-9220-XXXX only.

Europe

I1 ATEX Intrinsic Safety
Certificate: Baseefa07ATEX0011X
⟨Ex⟩ II 1G

Ex ia IIC T4(T_{amb} = -60 °C to 70 °C)
Ex ia IIC T5(T_{amb} = -60 °C to 40 °C)

Enclosure: IP66/IP67
CE 1180

Table 4. Sensor Parameters

Sensor
U_o = 6.6 V
I_o = 26.2 mA
P_o = 42.6 mW
C_o = 11 uF
L_o = 25 mH

For use with Rosemount Power Module P/N 753-9220-XXXX only.

Special Conditions for Safe Use (X):

1. The surface resistivity of the antenna is greater than one Gohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.
2. The Power Module may be replaced in a hazardous area. The Power Module has surface resistivity greater than one Gohm 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.

Technical Regulations Customs Union (EAC)

IM Contact an Emerson Process Management representative for additional information

International Certifications

I7 IECEx Intrinsic Safety
Certificate: IECEx BAS 07.0007X

Ex ia IIC T4(T_{amb} = -60 °C to 70 °C)
Ex ia IIC T5(T_{amb} = -60 °C to 40 °C)
Enclosure: IP66/IP67

Table 5. Sensor Parameters

Sensor
U_o = 6.6 V
I_o = 26.2 mA
P_o = 42.6 mW
C_o = 11 uF
L_o = 25 mH

For use with Rosemount Power Module P/N 753-9220-XXXX only.

Special Conditions for Safe Use (X):

1. The surface resistivity of the antenna is greater than one Gohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.
2. The power module may be replaced in a hazardous area. The power module has surface resistivity greater than one Gohm 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.

Japan

I4 TIIS Intrinsic Safety
Certificate: TC18638
Ex ia IIC T4(T_{amb} = -20 °C to 60 °C)
Various configurations available. Consult factory for certified assemblies.

China (NEPSI)

I3 China Intrinsic Safety
Certificate: GYJ071412
Ex ia IIC T4/T5

Special Conditions for Safe Use (X):

1. The temperature class depends on ambient temperature range as follows:

Temperature class	Ambient temperature range
T4	(-55 to 70) °C
T5	(-55 to 40) °C

2. Safety Parameters:

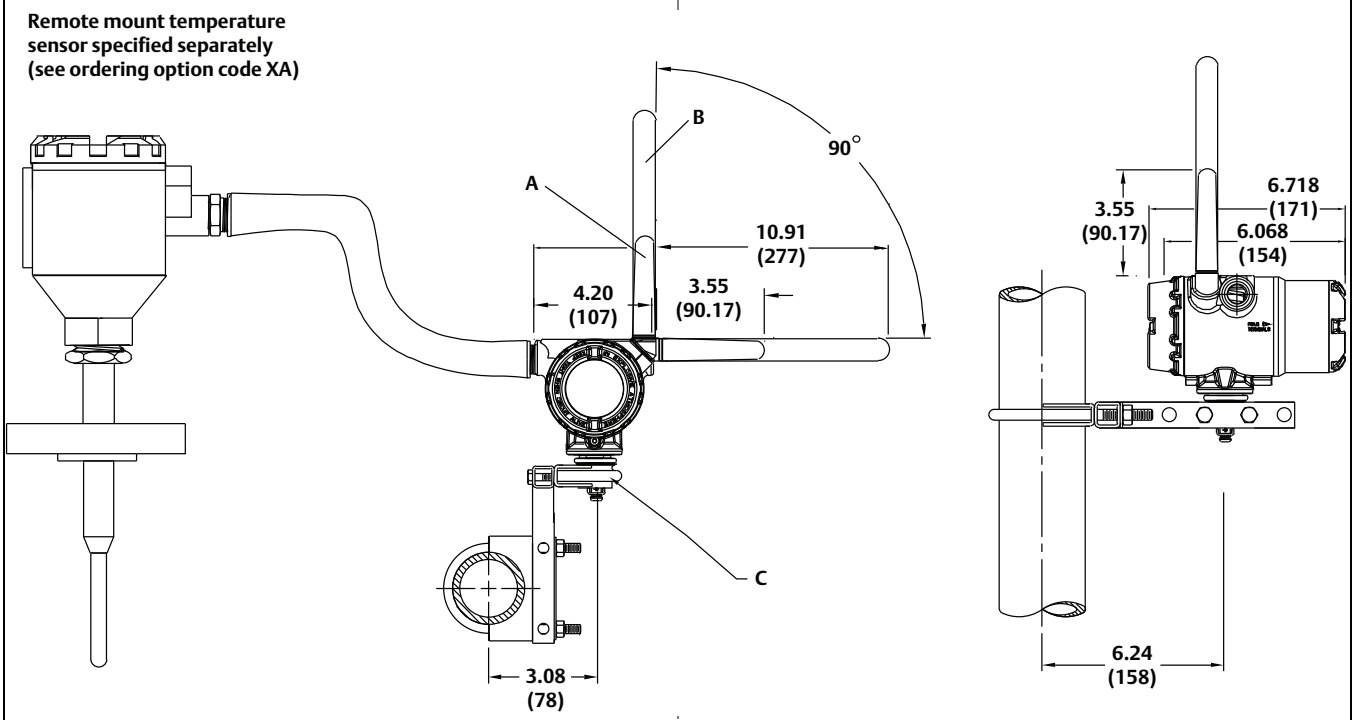
U_o = 6.6 V
I_o = 26 mA
P_o = 42.6 mW
C_o = 11uF
L_o = 25 uH

3. The cable entry of wireless temperature transmitter should be protected to ensure the degree of protection of the enclosure IP 20 (GB4208-1993) at least.
4. Associated apparatus should be installed in a safe location, and during installation, operation, and maintenance, the regulations of the instruction manual have to be strictly observed.
5. End users are not permitted to change any components inside.
6. During installation, use, and maintenance of the wireless temperature transmitter, observe the following standards:

- GB3836.13-1997 “Electrical apparatus for explosive gas atmospheres Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres”
- GB3836.15-2000 “Electrical apparatus for explosive gas atmospheres Part 15: Electrical installations in hazardous area (other than mines)”
- GB3836.16-2006 “Electrical apparatus for explosive gas atmospheres Part 16: Inspection and maintenance of electrical installation (other than mines)”
- GB50257-1996 “Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering”

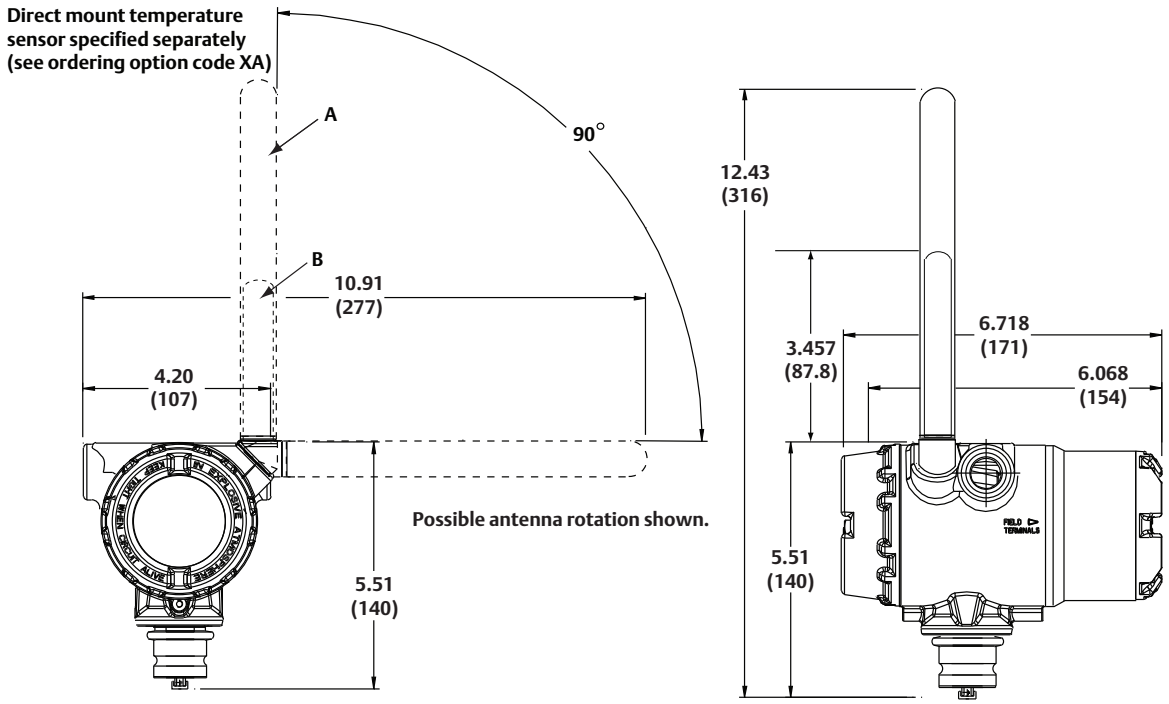
Dimensional Drawings

Rosemount 648 Remote Mount



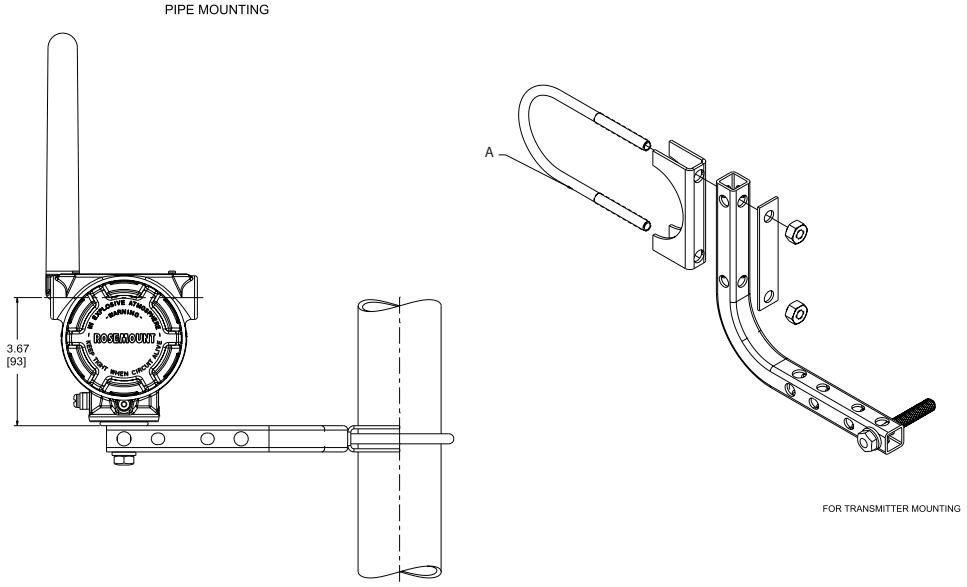
Dimensions are in inches (millimeters).
A. External Antenna
B. Extended Range Antenna
C. U-Bolt Bracket (B5)

Rosemount 648 Direct Mount



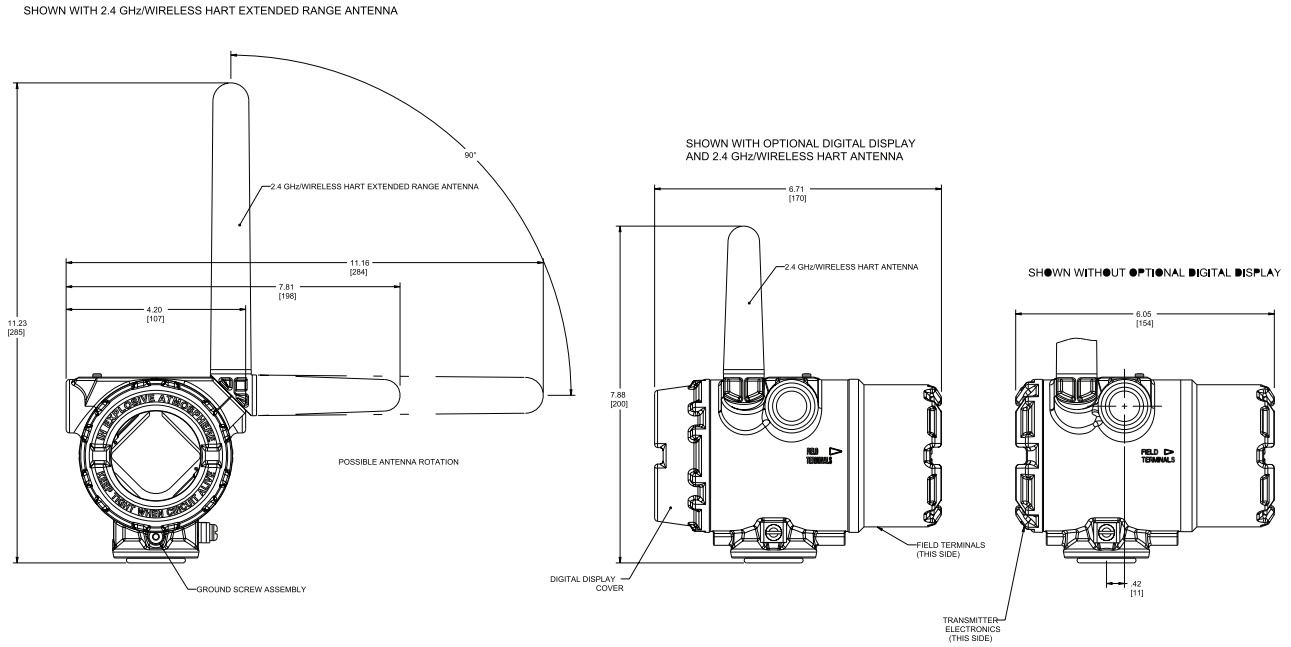
Dimensions are in inches (millimeters).
A. Extended Range Antenna
B. External Antenna

Rosemount 648 Remote Mount



Dimensions are in inches (millimeters).
A. 2 Inch U-Bolt for Pipe Mounting

Rosemount 648 Direct Mount



Dimensions are in inches (millimeters).
A. 2.4 GHz/Wireless HART Extended Range Antenna
B. Ground Screw Assembly
C. Digital Display Cover
D. Field Terminals (This Side)
E. Transmitter Electronics (This Side)
F. 2.4 GHz Wireless HART Antenna

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