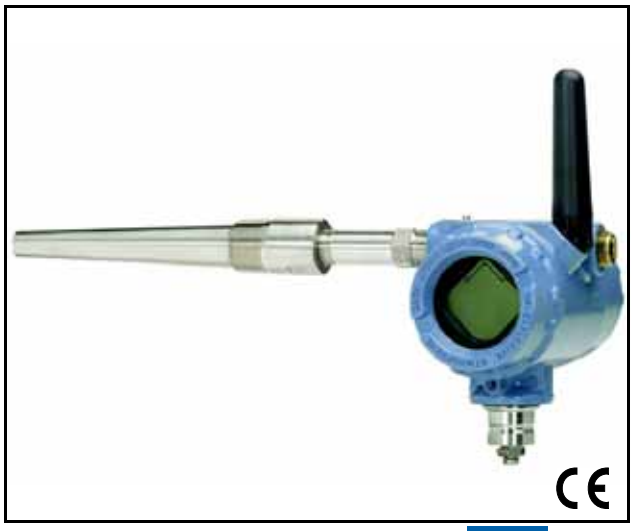
Rosemount 648 Wireless Temperature Transmitter

- *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*



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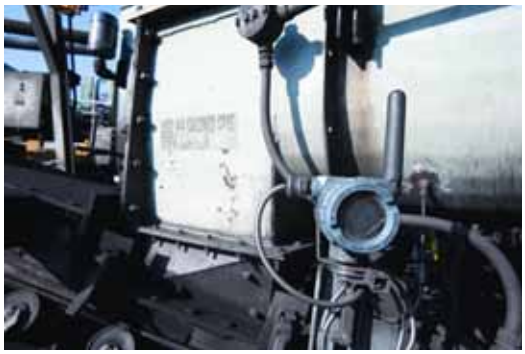
Rosemount 648 Wireless Temperature Transmitter

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 WirelessHART® 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
- The terminal temperature feature verifies the installation location temperature conditions to ensure optimal transmitter operation

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.

Rosemount 648 Temperature Transmitter

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)

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			
Standard			**Standard**
D	Wireless Field Mount		★
Transmitter Output			
Standard			**Standard**
X	Wireless		★
Measurement Configuration			
1	Single-Sensor Input		★
Housing Style		**Material**	
Standard			**Standard**
D	Dual Compartment Housing	Aluminum	★
E	Dual Compartment Housing	SST	★
Conduit Entry Size			
Standard			**Standard**
1	1/2-14 NPT		★
Product Certifications			
Standard			**Standard**
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		★
I4	TIIS Intrinsic Safety		★
I3	China 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.

Wireless Options (Include with selected model number)

Wireless Update Rate, Operating Frequency, and Protocol		
Standard		**Standard**
WA3	User Configurable Update Rate, 2.4 GHz DSSS, IEC 62591 (WirelessHART)	★
Omnidirectional Wireless Antenna and SmartPower™		
Standard		**Standard**
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 Part #00753-9220-0001.	
Mounting Bracket		
Standard		**Standard**
B5(1)	"L" Mounting Bracket for 2-inch pipe and panel mounting - All SST	★
Display		
Standard		**Standard**
M5	LCD Display	★
Software Configuration		
Standard		**Standard**
C1	Custom Configuration of Date, Descriptor, Message and Wireless Parameters (Requires CDS with order)	★
Line Filter		
Standard		**Standard**
F5	50 Hz Line Voltage Filter	★
F6	60 Hz Line Voltage Filter	★
Sensor Trim		
Standard		**Standard**
C2	Transmitter-Sensor Matching - Trim to Specific Rosemount RTD Calibration Schedule (CVD Constants)	★
5-Point Calibration		
Standard		**Standard**
C4	5-Point Calibration (Requires Q4 option code to generate a Calibration Certificate)	★
Calibration Certificate		
Standard		**Standard**
Q4	Calibration Certificate (3-Point Calibration)	★
Cable Gland Option		
Standard		**Standard**
G2	Cable Gland (7.5 mm - 11.9 mm)	★
G4	Thin Wire Cable Gland (3 mm - 8 mm)	★
Assemble To Options		
Standard		**Standard**
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 (WirelessHART), 2.4 GHz DSSS

Local Display

The optional five-digit integral LCD Display can display engineering units (°F, °C, °R, K, Ω, and millivolts). Display update rate up to once per minute.

Humidity Limits

0–99% Non-condensing Relative Humidity

Update Rate

WirelessHART, user-selectable 4 seconds 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

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 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 omnidirectional antenna

Mounting

Transmitters may be attached directly to the sensor. Mounting brackets also permit remote mounting. See “Dimensional Drawings” on page 12.

Weight

Low-copper Aluminum:
- 648 without LCD - 4.6 lbs. (2.0 kg)
- 648 with M5 LCD - 4.7 lbs (2.1 kg)

Stainless Steel:
- 648 without LCD - 8.0 lbs. (3.6 kg)
- 648 with M5 LCD - 8.1 lbs (3.7 kg)

Enclosure Ratings (648)

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

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

No effect when tested per the requirements of IEC60770-1:

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

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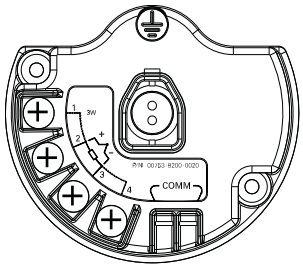
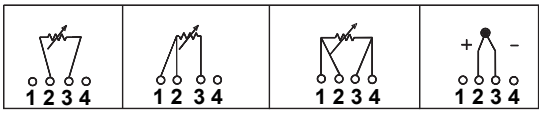
(1) Reference conditions are 70 °F (21 °C), and routing data for three additional network devices.
NOTE: Continuous exposure to ambient temperature limits (-40 °F or 185 °F; -40 °C or 85 °C) may reduce specified life by less than 20 percent.

Sensor Connections



648 Wireless Sensor Connections Diagram



2-wire RTD and Ω *

3-wire RTD and Ω *

4-wire RTD and Ω

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 WirelessHART.

(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)	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.

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 American Certifications

Factory Mutual (FM) Approvals

I5 FM Intrinsically Safe, Non-incendive and Dust Ignition-proof
Certificate Number: 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 Number: 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 Number: 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.

European Certifications

I1 ATEX Intrinsic Safety
Certificate Number: Baseefa07ATEX0011 ⟨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 = 23.8 uF
L_o = 25 mH

Intrinsically Safe when installed per Rosemount drawing 00648-1025.
For use with Rosemount Power Module P/N 753-9220-XXXX only.

Special Conditions for Safe Use
The surface resistivity of the antenna is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

International Certifications

I7 IECEx Intrinsic Safety
Certificate Number: IECEx BAS 07.0007
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 = 23.8 uF
L_o = 25 mH

Intrinsically Safe when installed per Rosemount drawing 00648-1025.
For use with Rosemount Power Module P/N 753-9220-XXXX only.

Special Conditions for Safe Use
The surface resistivity of the antenna is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

Japanese Certifications

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

China (NEPSI) Certifications

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

Special Conditions for Safe Use:

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

Temperature Class	Ambient Temperature Range
T4	(-55 to 70) °C
T5	(-55 to 40) °C

2. Safety Parameters:

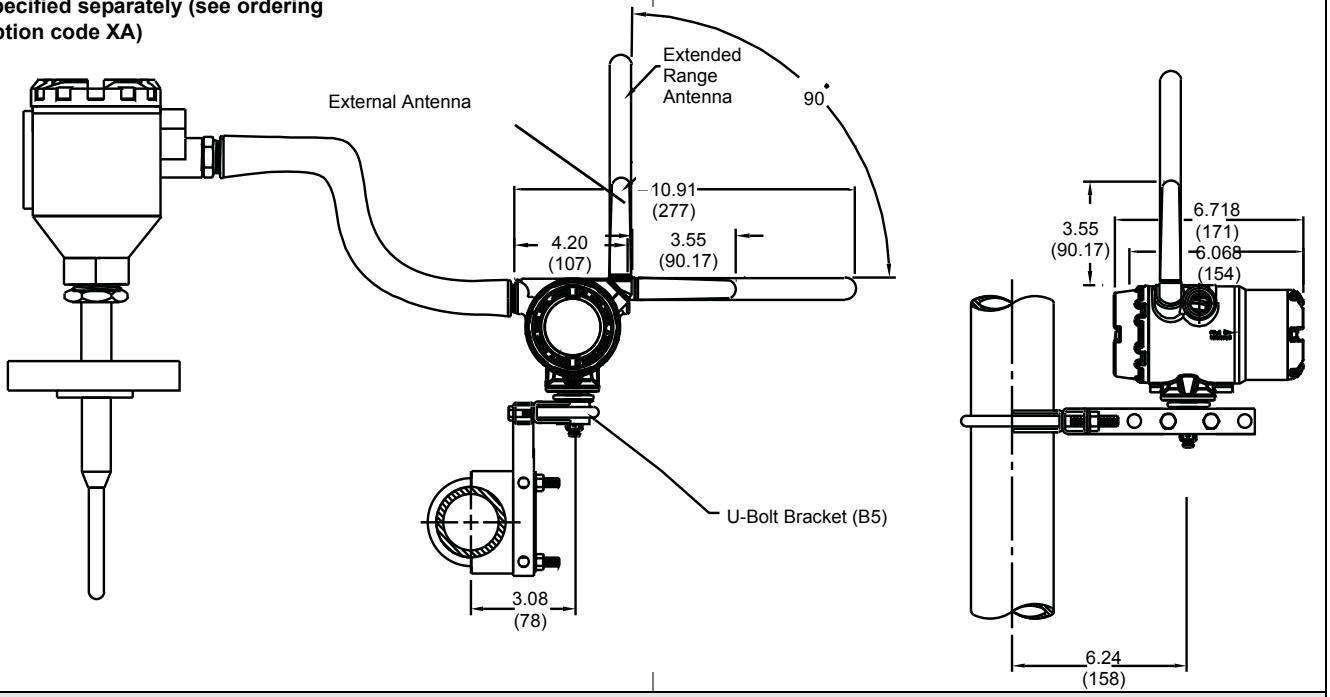
   U_o = 6.6 V
   I_o = 26 mA
   P_o = 42.6 mW
   C_o = 11 uF
   L_o = 25 uH

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

Dimensional Drawings

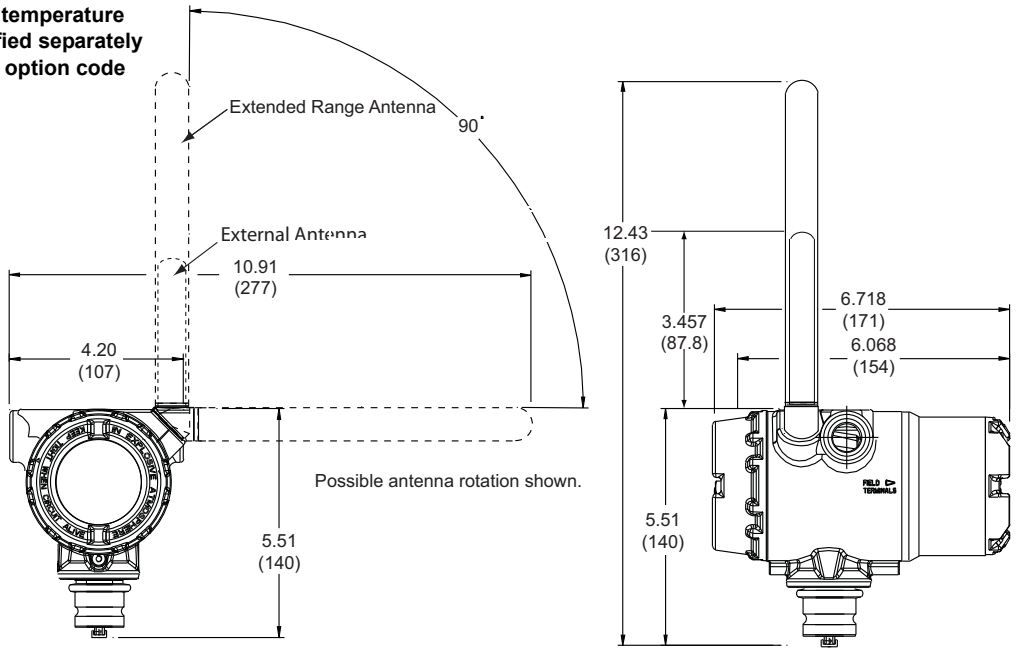
648 Remote Mount

Remote mount temperature sensor specified separately (see ordering option code XA)



648 Direct Mount

Direct mount temperature sensor specified separately (see ordering option code



Dimensions are in inches (millimeters)

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