Product Data Sheet
00813-0100-4329, Rev AA
March 2019

Rosemount™ 327T Temperature Transmitter

The Rosemount 327T Temperature Transmitter, featuring Drift Monitoring Diagnostics and sensor backup technology, provides layers of safety to ensure your food and beverage operations are in specification.

ROSEMOUNT™

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Emerson is here to optimize your food and beverage operations

The Rosemount 327T Temperature Transmitter ensures your process temperatures are always in specification

- Measuring Range: 13°F to 302°F (-25°C to 150°C); up to 320°F (160°C) for a maximum of 30 minutes
- Wetted Materials: 316L SST Polished to Ra < 23 μ-in. (0.6 μ-m) Ingress Protection: IP69K
- Communication protocol: 4-20 mA, IO-Link
- Switch Drift Monitoring Diagnostic: diagnostic output for drift or fault monitoring

Emerson offers a broad portfolio of products to solve your toughest challenges

From simple measurements to critical applications, Emerson's extensive portfolio of solutions has you covered. Our reliable, easy-to-use, and innovative products will help you to maximize production, maintain quality control and product consistency, minimize product losses, and assure the safety of your products.

Emerson offers a full service organization to give you the support you need

From simple repairs to complex projects, Emerson supports you with training and instrument services that improve the maintenance, reliability and performance of your products and, ultimately, your process equipment and production quality. We have a full organization of experienced and certified personnel. With both factory and regional service centers, we offer unmatched local support around the world.

Contents

Ordering information

Table 1: 327T 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		
327T	Temperature transmitter	★
Immersion length		
L033	1.3 inches (33mm)	★
L050	1.97 inches (50mm)	★
L087	3.44 inches (87.5mm)	★
Process connection		
G10	G1" thread	★
Housing material		
A	Stainless steel	★

Optional options (include with the selected model number)

Calibration certification		
Q4	Calibration certificate	
Material traceability certification		
Q8	Material Traceability per EN 10204 3.1B	

Note
Optional options will not be included in the model string printed on the transmitter. For product reorder, make sure to include any desired optional options in the model string.

Accessories and spare parts

These accessories are available for the Rosemount 327T Temperature Transmitter.

Hygienic process connection adpaters

These hygienic adapters assemble to the G1" process connection of the Rosemount 327T Pressure Transmitter.

Type	Description	Part Number
1-1.5 in. Tri-clamp	316L SST, EPDM o-ring, 232 psi (16 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, 3-A, FDA	FB-1001
2.0 in. Tri-clamp	316L SST, EPDM o-ring, 232 psi (16 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, 3-A, FDA	FB-1002
Varivent Type F	316L SST, EPDM o-ring, 362 psi (25 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, 3-A, FDA	FB-1010

Type	Description	Part Number
Varivent Type N	316L SST, EPDM o-ring, 362 psi (25 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, 3-A, FDA	FB-1011
DIN 11851 DN32	316L SST, EPDM o-ring, 580 psi (40 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, FDA	FB-1020
DIN 11851 DN40	316L SST, EPDM o-ring, 580 psi (40 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, FDA	FB-1021
DIN 11851 DN50	316L SST, EPDM o-ring, 580 psi (40 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, FDA	FB-1022
D50 Weld-in Adapter	316L SST, EPDM o-ring, 725 psi (50 bar) max pressure, 16 µ-in (0.4 µ-m) surface finish, 3-A, FDA	FB-1041
Universal Adapter RD52	316L SST; EPDM o-ring; 232 psi (16 bar) max pressure; FDA	FB-1045
G1 Welding Mandrel	Absorbs heat and prevents warping during welding of FB-1041	FB-6041

Note
For a material traceability certificate, add option code Q8 after your part number (Ex: FB-1001Q8). Additional delivery lead times may apply. The certification option (Q8) will not be included in the part number printed on the transmitter. For product reorder, make sure to include any desired certification in the part number.

O-rings

Description	Part number
Hygienic Adapter O-ring; FKM, Qty 1	FB-3001
Hygienic Adapter O-ring; FKM; Qty 5	FB-3002
Hygienic Adapter O-ring; EPDM; Qty 5	FB-3003
Hygienic Adapter Upper Gasket; PEEK; Qty 1	FB-3010

Cables and connectors

Description	Length	Part number
Hygienic Wireable Terminal Connector - M12 Female (angled) to Screw Terminals Operating voltage: < 250 AC / < 300 DC, Max current: 4A, Ambient temp: -13°F - 212°F (-25°C - 100°C), Screw Terminals: 23AWG - 17AWG 316L SST, gold plated contacts, EPDM sealing, IP69K	Wirable socket	FB-4000
Hygienic Cable - M12 Female (angled) to Flying Lead (4 x 22AWG) Operating voltage: <250 AC / <300 DC, Max current: 4A, Ambient temp: -13°F - 212°F (-25°C - 100°C), cULus approval limited to 149°F (65°C) 316L SST, gold plated contacts, EPDM sealing, IP69K	6.6 ft. (2 m)	FB-4002
	16.4 ft. (5 m)	FB-4005
	32.8 ft. (10 m)	FB-4010
	65.6 ft. (20 m)	FB-4020
	164 ft. (50 m)	FB-4050
Hygienic Patch Cable - M12 Female (angled) to M12 Male Operating voltage: < 250 AC / < 300 DC, Max current: 4A, Ambient temp: -13°F - 212°F (-25°C - 100°C), cULus approval limited to 149°F (65°C) 316L SST, gold plated contacts, EPDM sealing, IP69K	1.97 ft. (0.6 m)	FB-4106
	3.3 ft. (1 m)	FB-4101
	6.6 ft. (2 m)	FB-4102
	16.4 ft. (5 m)	FB-4105

Description	Length	Part number
	32.8 ft. (10 m)	FB-4110

Performance specifications

Transmitter accuracy

Temperature range	Deviation
14 to 266 °F (-10 to 130 °C)	±0.36 °F (0.2 °C)
266 to 284 °F (130 to 140 °C)	±0.54 °F (0.3 °C)
284 to 320 °F (140 to 160 °C)	±0.54 °F ± (0.1% span)
-13 to 14 °F (-25 to -10 °C)	±0.54 °F ± (0.1% span)

Dynamic performance

T05: 3 seconds

T09: 6 seconds

Ambient temperature effect

0.1% span per 18°F (10°C)

Vibration

The Rosemount 327T is tested to DIN EN 60068-2-6 and has a peak acceleration of 20 g in the frequency range 10 to 2000 Hz.

Electromagnetic compatibility (EMC)

The Rosemount 327T meets the requirements of DIN EN 61000-6-2 and DIN EN 61000-6-3.

Functional specifications

Service

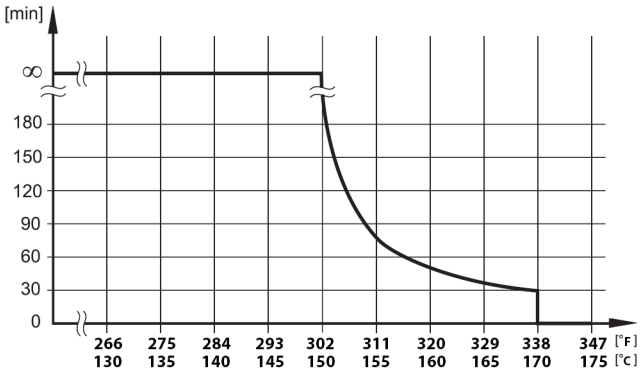
Liquid and gas applications

Measuring range

-25 to 320°F (-25 to 160°C)

Maximum continuous temperature is 302°F (150°C). Maximum operation time above this temperature depends on process temperature:

Figure 1: Maximum Operating Time by Process Temperature



Factory settings

4 mA: 0°F

20 mA: 300 °F

Temperature limits

Ambient

-13 to 158 °F (-25 to 70 °C)

Storage

-40 to 185 °F (-40 to 85 °C)

Max working pressure

725 psi (50 bar)

Vacuum resistance

-14.5 psi (-1 bar)

Power supply

18 – 32 V DC (For cULus a Class 2 source required)

Current draw

< 6 mA (at 24V)

Load limitation

(Power Supply Voltage – 15) x 50 Ω

Protection class

III

Output

In a two-wire configuration, the Rosemount 327T provides a 4-20 mA analog output. In a three-wire configuration, digital IO-Link communication or Drift Monitoring Diagnostics can also be utilized for increased transmitter functionality

OUT2: 4-20 mA (analog)

OUT1: IO-Link (digital) / Drift Monitoring Diagnostics

For more information on how to acess these outputs see Electrical connection.

Switch output

Max voltage drop: 2.0 V

See the below table for current ratings of the switching output by temperature.

Ambient temperature	Permanent current rating of switching output
-13 to 150 °F (-25 to 70 °C)	150 mA
-13 to 140 °F (-25 to 60 °C)	200 mA
-13 to 104 °F (-25 to 40°C)	250 mA

Resolution of analog output

≤ 0.09 °F (0.05 °C)

IO-Link

Table 2:

IO-Link Device Parameters	
Transfer type	COM1 (4.8 kBaud)
IO-Link Revision	1.1
SDCI standard	IEC 61131-9 CDV
SIO mode	Yes
Required master port class	A
Process data analog	1

Table 2: ***(continued)***

IO-Link Device Parameters	
Process data binary	18
Minimum process cycle time	18 ms

Diagnostics

Drift monitoring diagnostic

The temperature transmitter uses two different, thermally coupled sensor elements (NTC, PT 1000) to automatically detect drifts and errors in the temperature measurement. The temperature transmitter forms an average value using the individual NTC and PT 1000 measured values. It then calculates the deviation of each sensing element to the average. The permissible temperature deviation is configurable and the transmitter will send alerts/alarms when it is outside the set specification. Different diagnostic states can be communicated by the transmitter via either the analog signal or a separate configurable switch output.

Sensor backup

If one of the two internal sensor elements fails, the temperature transmitter will continue to communicate the temperature reading of the remaining sensor to prevent loss of measurement. The transmitter can also send an alert that it is in sensor backup mode using the switch output on pin 4 (OUT1).

Note
For more information on diagnostic configuration, please see the Rosemount 327T Temperature Transmitter Quick Start Guide (00825-0100-4329).

Turn-on time

8 seconds

Physical specifications

Material selection

Emerson provides a variety of Rosemount products 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 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.

Measuring elements

The Rosemount 327T Temperature Transmitter has two sensing elements, an RTD (PT1000) and a thermistor (NTC).

Process connections

External threaded G1" connection

Process wetted parts

316L SST (1.4435)

Surface finish: Ra < 32 µ-in. (0.8 µ-m)

Non-wetted parts

- 316L SST
- PEI
- FKM

Environmental seal for housing

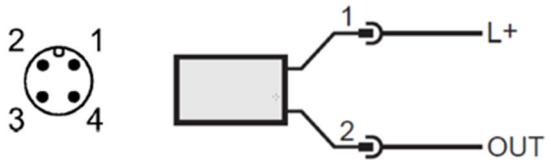
Enclosures meet IP67, IP68, and IP69K ratings when properly installed

Electrical connection

The Rosemount 327T is equipped with an M12 Female electrical connector which features gold-plated contacts.

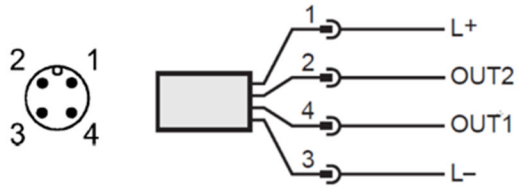
Use either a two-wire or three-wire configuration to access the desired number of outputs.

Figure 2: Two-wire Configuration



OUT: 4-20 mA (analog)

Figure 3: Three-wire Configuration



OUT2: 4-20 mA (analog)

OUT1: IO-Link (digital) / Drift Monitoring Diagnostics

Shipping weights

Table 3:

Immersion Length Option Code String	Pounds	Grams
L033	0.88	399
L050	0.94	427
L087	0.91	412

Product certifications

European directive information

The most recent revision of the EC Declaration of Conformity can be found at Emerson.com/Rosemount.

Ordinary location information

As standard, this product 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).

Voltage supply to EN 50178, SELV, PELV / "supply class 2" to cULus.

3-A® certification

This product is authorized to display the 3-A symbol. Ensure gaskets and process connection accessories selected for installation meet both the application and 3-A requirements. A certificate of compliance is available at Emerson.com/Rosemount.

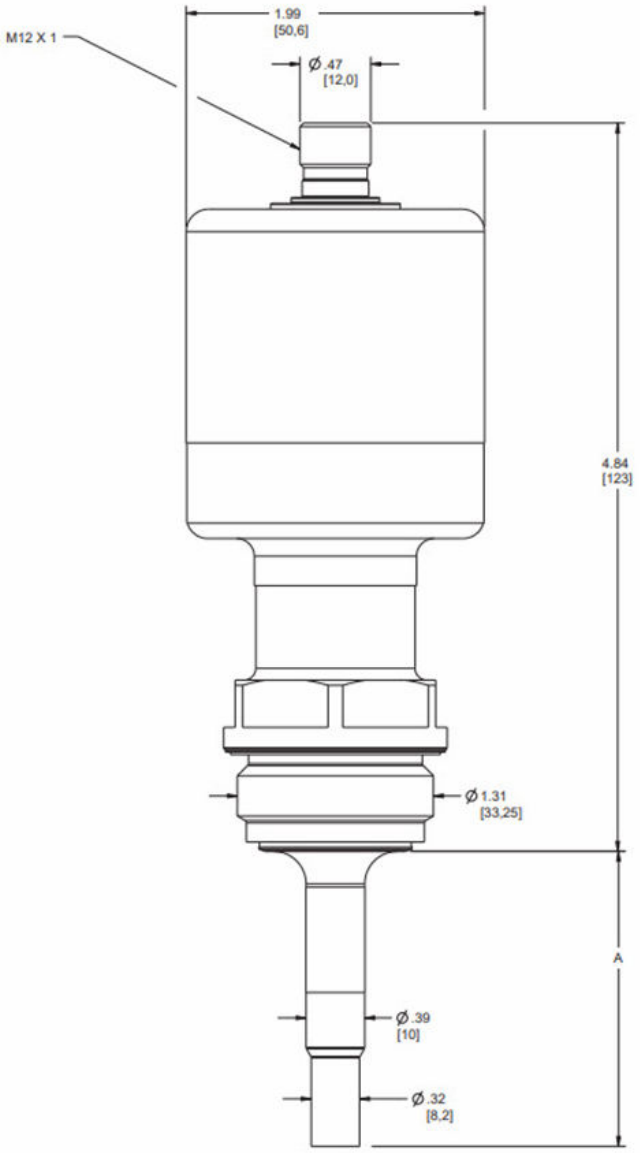
Other industry certifications

All Rosemount 327T Temperature transmitter surfaces and materials which come into contact with process medium comply with the following regulations:

- (EC) No. 1935/2004
- (EC) No. 2023/2006
- CFR Title 21 (FDA) § 177.2600
- CFR Title 21 (FDA) § 177. 2415

Dimensional drawing

Immersion Length Option Code	Length A
L033	1.30in. (33 mm)
L050	1.97in. (50 mm)
L087	3.45in. (87.5 mm)



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