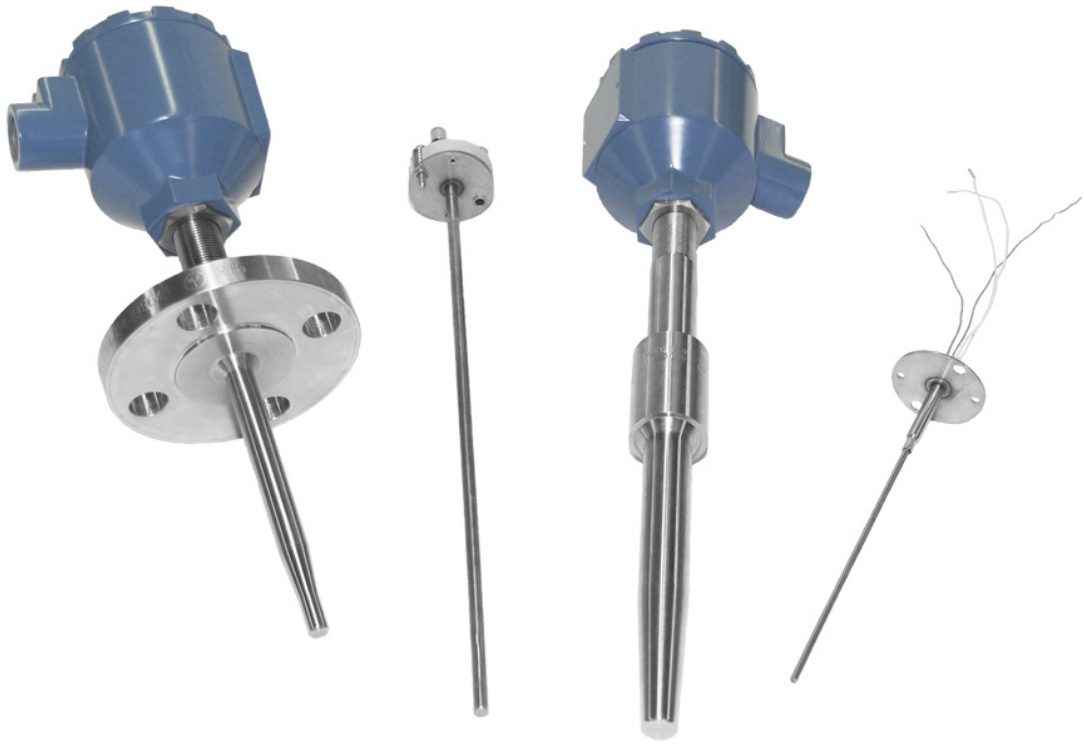
Product Data Sheet
August 2017
00813-0100-4951, Rev EA

Rosemount™ 1067 Compact Sensor and 1097 Thermowell



- RTD and Thermocouple single and dual sensor models (Rosemount 1067 Model)
- Wide selection of materials available for thermowells (Rosemount 1097 Model)
- Integrated temperature assembly available with Rosemount 248 and 644 Temperature Transmitters

Rosemount 1067 Compact Sensor and 1097 Thermowell

Optimize plant efficiency and increase measurement reliability with industry proven design and specifications

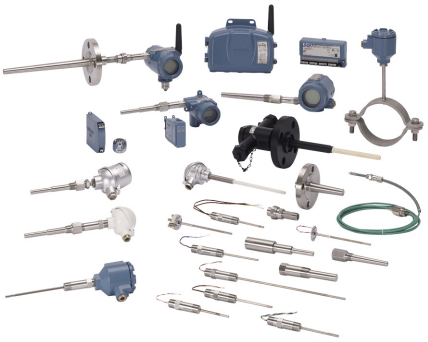
- Available in a wide variety of sensing technologies – RTD and Thermocouples.
- All sensor styles and lengths are available in 6 mm (standard) and 3 mm diameters, allowing for quicker response times.
- State of the art manufacturing procedures provide robust element packaging, increasing reliability.
- Full penetration weld standard on Rosemount 1097 Thermowells increases thermowell strength.
- Tapered tips on Rosemount 1097 Thermowells allow for a faster time response.

Streamline operations and maintenance with sensor and thermowell design

- DIN style sensor uses connection heads that allow quick mounting and replacement while maintaining environmental integrity.
- Integral thermowell extensions eliminate components to provide a simple configuration and installation.

Contents

Explore the benefits of a Complete Point Solutions™ from Rosemount Temperature Measurement



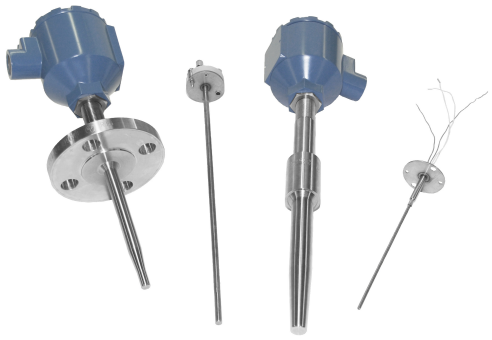
- An “Assemble Sensor to Specific Transmitter” option enables Emerson™ to provide a complete point temperature solution, delivering an installation-ready transmitter and sensor assembly.
- Emerson has a complete portfolio of single point and high density temperature measurement solutions, allowing you to effectively measure and control your processes with the reliability you trust from Rosemount products.

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.

Ordering Information

Rosemount 1067 Compact Sensor and 1097 Thermowell



The Rosemount 1067 Compact Sensor and 1097 Thermowell have designs that provide flexible and reliable temperature measurements in process environments.

Features include:

- Industry-standard sensor types, including RTD and thermocouple varieties
- DIN-style design for easy mounting and replacement
- Variety of enclosure and connection head options
- Global hazardous-location approvals (option codes E1, E5, and E6)
- Assemble to Sensor options (option code XA)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 11 for more information on Material Selection.

Table 1. Rosemount 1067 Compact Sensor Ordering Information

For information on thermowell and sensor sizing and selection, see guide on s.
The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Product description				
1067	Compact Sensor				
Connection head		**IP rating**	**Process thread**	**Conduit thread(1)**	
D	Rosemount Aluminum	66/68	M20 × 1.5	1/2-in. NPT	★
N	No Connection Head	N/A	N/A	N/A	★
C	Polypropylene (BUZ)	65	M20 × 1.5	1/2-in. NPT	
Sensor lead wire termination					
0	Flying Lead - No Springs on DIN plate				★
2	Terminal Block - DIN 43762				★
Sensor type					
P1	RTD, PT-100, single element, 4-wire				★
P2	RTD, PT-100, dual element, 3-wire				★
E1	Thermocouple, Type E single element, ungrounded				★
E2	Thermocouple, Type E dual element, isolated, ungrounded				★
K1	Thermocouple, Type K, single element, ungrounded				★
K2	Thermocouple, Type K Dual Element, Isolated, Ungrounded				★
J1	Thermocouple, Type J, Single Element, Ungrounded				★
J2	Thermocouple, Type J Dual Element, Isolated, Ungrounded				★
T1	Thermocouple, Type T, single element, ungrounded				★
T2	Thermocouple, Type T, dual element, isolated, ungrounded				★

Table 1. Rosemount 1067 Compact Sensor Ordering Information

For information on thermowell and sensor sizing and selection, see guide on s.
The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

N1	Thermocouple, Type N, single element, ungrounded	
N2	Thermocouple, Type N, dual element, isolated, ungrounded	
R1	Thermocouple, Type R, single element, ungrounded	
R2	Thermocouple, Type R, dual element, isolated, ungrounded	
S1	Thermocouple, Type S, single element, ungrounded	
S2	Thermocouple, Type S, dual element, isolated, ungrounded	
Sheath diameter		
3	3 mm	★
6	6 mm	★
Sensor length (X)		
0170	170 mm	★
0245	245 mm	★
0325	325 mm	★
0400	400 mm	★
0425	425 mm	★
0475	475 mm	★
0500	500 mm	★
0550	550 mm	★
XXXX	Non-standard sensor length (in 1 mm increments from 100 to 875 mm)	

Note
The sheath diameter and the sensor length must match the thermowell bore. See "Sensor and thermowell sizing" on page 20.

Options (include with selected model number)

Thermocouple wire color code		
U1	Wire Color per ISA	★
U2	Wire Color per IEC	★
RTD options		
A1	Class A Sensor from –50 to 300 °C (–58 to 572 °F)	★
Product certifications[(3)]		
E1	ATEX Flameproof and Dust-Ignition Proof Approval	★
E5	U.S. FM Explosion-Proof Approval	★
E6	Canadian Explosion-Proof	★
Assemble to options[(2)]		
XA	Assemble sensor to specific temperature transmitter	★

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For information on thermowell and sensor sizing and selection, see guide on s.
The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

External ground screw[3]		
G1	External ground screw	★
Cover chain[3]		
G3	Cover chain	★

1. To maintain IP rating, use a suitable cable gland or other conduit connection. All of the threads must be sealed with a suitable sealing tape.
2. If ordering assemble to option XA with a transmitter, specify the same option on the transmitter model number. Connection head must be ordered with the Rosemount 1067 model.
3. Not available with polypropylene connection head.

Rosemount 1097 Compact Barstock Thermowell

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 11 for more information on Material Selection

Table 2. Rosemount 1097 Compact Barstock Thermowell Ordering Information

For information on thermowell and sensor sizing and selection, see guide on "Selection of thermowells and sensors" on page 18.
The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Model	Product description			
1097	Compact Barstock Thermowell			
Material		**Available with CRN**	**CRN temperature limit (°C)(1)**	
A2	316L Stainless steel	Yes	426	★
A5	304L Stainless steel	Yes	426	★
C1	Carbon steel	Yes	482	★
A6	304L Stainless steel with carbon steel flange	Yes	426	
B2	Tantalum sheath over 316L Stainless steel	Yes	426	
B3	Tantalum sheath over 316L Stainless steel (Permanently Attached)	Yes	426	
B4	316L Stainless steel with PFA coating	Yes	426	
D1	Alloy 20	No	N/A	
D2	Alloy C276	No	N/A	
D4	Nickel 200	No	N/A	
D8	Alloy 825	Yes	317	
F3	Duplex 2205 F51	No	N/A	
G1	Alloy 400	Yes	482	
H1	Alloy 600	No	N/A	
K1	Titanium Gr 2	No	N/A	
L1	13 Cr Mo 44	No	N/A	
Immersion length (U)		**Suitable for sensor diameter**		
0025	25 mm	3 mm (see Figure 14)		★
0050	50 mm	3 mm (see Figure 11 and Figure 13)		★
0070	70 mm	3 mm (see Figure 11 and Figure 13)		★
0130	130 mm	3 mm (see Figure 11 and Figure 13)		★
0150	150 mm	6 mm (see Figure 10 and Figure 12)		★
0225	225 mm	6 mm (see Figure 10 and Figure 12)		★
0250	250 mm	6 mm (see Figure 10 and Figure 12)		★
0300	300 mm	6 mm (see Figure 10 and Figure 12)		★
0325	325 mm	6 mm (see Figure 10 and Figure 12)		★
0375	375 mm	6 mm (see Figure 10 and Figure 12)		★
XXXX	Non-standard Immersion Length (in 1 mm increments from 25 to 500 mm). Lengths greater than 130 mm = 6 mm diameter.			

Table 2. Rosemount 1097 Compact Barstock Thermowell Ordering Information

For information on thermowell and sensor sizing and selection, see guide on "Selection of thermowells and sensors" on page 18.
The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Thermowell mounting style[2]		
F01	Flanged, RF, 3/4-in. 150 lb	★
F04	Flanged, RF, 1-in. 150 lb	★
F10	Flanged, RF, 1 1/2-in. 150 lb	★
F16	Flanged, RF, 2-in. 150 l	★
F17	Flanged, RF, 3-in. 150 lb	★
F22	Flanged, RF, 1-in. 300 lb	★
F23	Flanged, RF, 3/4-in. 300 lb	★
F28	Flanged, RF, 1 1/2-in. 300 lb	★
F34	Flanged, RF, 2-in. 300 lb	★
F37	Flanged, RF, 3-in. 300 lb	★
F39	Flanged, RF, 3/4-in. 600 lb	★
F40	Flanged, RF, 1-in. 600 lb	★
F46	Flanged, RF, 1 1/2-in. 600 lb	★
F52	Flanged, RF, 2-in. 600 lb	★
F55	Flanged, RF, 3-in. 600 lb	★
F57	Flanged, RF, 3/4-in. 900 lb	★
F58	Flanged, RF, 1-in. 900 lb	★
F64	Flanged, RF, 1 1/2-in. 900 lb	★
F70	Flanged, RF, 2-in. 900 lb	★
F73	Flanged, RF, 3-in. 900 lb	★
W10	Welded, 3/4-in. Pipe (only available with Immersion Lengths 50 to 130 mm)	★
W12	Welded, 1-in. Pipe (only available with Immersion Lengths 25 to 49 mm)	★
Lagging length [3]		
T025	25 mm	★
T030	30 mm	★
T035	35 mm	★
T040	40 mm	★
T045	45 mm	★
T050	50 mm	★
T100	100 mm	★
T125	125 mm	★
T000	Flanged Thermowells	★
TXXX	Non-standard Lagging Length (in 1 mm increments from 25 to 250 mm)	

Table 2. Rosemount 1097 Compact Barstock Thermowell Ordering Information

For information on thermowell and sensor sizing and selection, see guide on "Selection of thermowells and sensors" on page 18.

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

Options (include with selected model number)

Material certification		
Q8	Thermowell material Certification, EN 10204 3.1	★
Flange type		
R10	Flat flanged face	★
R16	Ring Joint flange face	★
Typical model number: 1097 A2 0250 F01 T00 Q8 R10		

1. Consult factory for availability.
2. All flanges are full penetration weld.
3. Block T lengths longer than T125 with high pressure design.

Overview

Rosemount 1067 overview

Emerson offers a wide range of RTDs and thermocouples alone, or as complete point solutions including Rosemount Temperature Transmitters, connection heads, and thermowells.

Rosemount 1067 Platinum RTD Temperature Sensors are highly linear and have a stable resistance versus temperature relationship. They are used primarily in industrial environments where high accuracy, durability, and long-term stability are required, and are designed to meet the most critical parameters of international standards: IEC 751 1983/DIN EN 60751 incorporating Amendments 1 and 2.[(1)] Standardization provides sensor interchangeability with no transmitter circuitry adjustment required.

A thermocouple is a junction between two dissimilar metals that produces a change in thermoelectric emf in relationship to a temperature change. Rosemount 1067 Thermocouple Sensors are manufactured from selected materials to meet IEC 60584 Tolerance Class 1 and ASTM E230 Special Limits. The junction is laser welded to form a pure joint that maintains the integrity of the circuit and ensures accuracy. A sensor sheath protects ungrounded junctions from the environment. The ungrounded and isolated junctions provide electrical isolation from the sensor sheath.

Rosemount 1067 Thermocouples conform to IEC 60584 or ASTM E230 and are available in types E, J, K, N, R, S, and T. They are available in two configurations: single sensor ungrounded, or dual sensor ungrounded and isolated.

All of the sensors are available in a variety of lengths and ranges with flying lead or terminal block lead wire terminations.

Rosemount 1097 overview

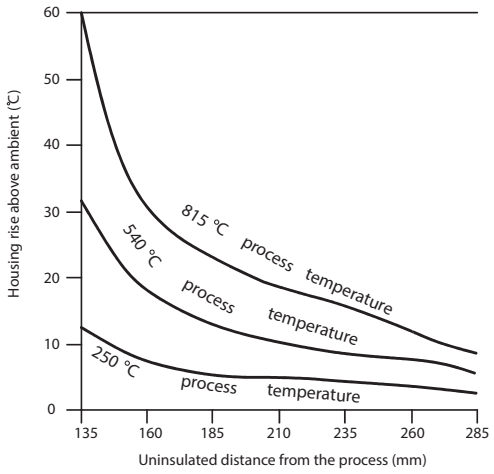
Emerson offers thermowells in a wide range of materials, styles, and lengths for most industrial applications. Standard materials include SST 316L and SST 304L, but other materials are available for corrosive environments. Please consult with your Emerson representative for information on additional material availability.

Emerson also provides engineering services and reports to ensure the proper thermowell is used for your application.

Selecting the lagging length for a thermowell

A direct mounting configuration allows heat from the process, aside from ambient temperature variations, to transfer from the thermowell to the transmitter housing. If the expected process temperature is near or above the transmitter specification limits, consider using additional thermowell lagging length or a remote mounting configuration to isolate the transmitter. Figure 1 provides an example of the relationship between transmitter housing temperature rise and distance from the process. The following example and Figure 1 can be used as a guide to determine adequate thermowell lagging length.

Figure 1. Transmitter Housing Temperature Rise vs. Uninsulated Distance from the Process



Example

The rated ambient temperature specification for the transmitter is 85 °C. If the maximum ambient temperature is 40 °C and the temperature to be measured is 540 °C, the maximum allowable housing temperature rise is the rated temperature specification limit minus the existing ambient temperature (85 – 40), or 45 °C.

As shown in Figure 1, an uninsulated distance from the process of 90 mm will result in a housing temperature rise of 22 °C. Therefore, 100 mm would be the minimum recommended distance from the process providing a safety factor of about 25 °C. A longer length, such as 150 mm, is desired to reduce errors caused by transmitter temperature effect, although in that case the transmitter may require extra support.

1. *100 Ω at 0 °C, α = 0.00385 Ω x °C/Ω*

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 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.

Rosemount 1067 Platinum RTD

100 Ω RTD at 0 °C,
$\alpha = 0.00385\ \Omega/\Omega \times °C$

Temperature range

–196 to 300 °C (–320.8 to 572 °F)

Insulation resistance

1,000 MΩ minimum insulation resistance when measured at 500 Vdc and at room temperature.

Sheath material

316 SST/321 SST with mineral-insulated cable construction

Lead wire

PTFE insulated, 24 AWG, silver-plated copper wire. See Figure 2 for wire configuration.

Ingress Protection (IP) ratings

For information see Table 9 on page 22.

Self heating

0.15 K/mW when measured per method defined in DIN EN 60751:1996

Thermal response time

Thermal response times for the 1067 sensor only. Tested in accordance to IEC 751 guidelines.

Table 3. Water Flowing at 0.4 m/s

	Pt 100	TC grounded	TC ungrounded	Deviation
Sensor	**t(0.5) [s]**	**t(0.5) [s]**	**t(0.5) [s]**	
6-mm dia.	7.7	1.8	2.8	± 10%
3-mm dia.	2.5	1.1	1.2	± 10%

Table 4. Air Flowing at 3.0 m/s

	Pt 100	TC grounded	TC ungrounded	Deviation
Sensor	t(0.5) [s]	t(0.5) [s]	t(0.5) [s]	
6-mm dia.	35	38	42	± 10%
3-mm dia.	18	14	14	± 10%

More response time information is available online for other sensor and thermowell configurations

Rosemount 1067 Thermocouple

Temperature range

See Table 5 and Table 6.

Insulation resistance

1,000 MΩ minimum insulation resistance when measured at 500 Vdc and at room temperature.

Sheath material

Rosemount thermocouples are made of a mineral insulated cable design wit h a variety of sheath materials available to suit both the temperature and the environment. For temperature up to 800 °C (1472 °F) in air, the sheath is made from 321 SST. For temperatures above 800 °C (1472 °F) in air, the sheath is made from Alloy 600. For strongly oxidizing or reducing atmospheres, consult your local Emerson representative for information.

Lead wires

Thermocouple, internal – 19 AWG solid wire (max) and 21 AWG solid wire (min.). External extension leads, Type E, J, K, N, R, S, and T. PTFE insulated. 20 AWG (max.) and 24 AWG (min.) Color coded per IEC or ISA standards. Figure 3 shows the wire configuration.

Ingress Protection (IP) ratings

For information see Table 9 on page 22.

Table 5. Characteristics of 1067 IEC Thermocouples (IEC Standards are Typically Used in European Applications)

Type	Wire alloys	Sheath material	Temperature range	Interchangeability error IEC 60584-2[1]	Accuracy
E	Chromel/Constantan	321 SST	-40 to 800 °C (-40 to 1472 °F)	±1.5 °C (±2.7 °F) or ±0.4%	Class 1
J	Iron/Constantan	321 SST	-40 to 750 °C (-40 to 1382 °F)	±1.5 °C (±2.7 °F) or ±0.4%	Class 1
K	Chromel/Alumel	Alloy 600	-40 to 1000 °C (-40 to 1832 °F)	±1.5 °C (±2.7 °F) or ±0.4%	Class 1
N	Nicrosil/Nisil	Alloy 600	-40 to 1000 °C (-40 to 1832 °F)	±1.5 °C (±2.7 °F) or ±0.4%	Class 1
R	Platinum-13% Rhodium/Platinum	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±1.0 °C (±1.8 °F) or ±(1+0.3% x [t-1100]) °C	Class 1
S	Platinum-10% Rhodium/Platinum	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±1.0 °C (±1.8 °F) or ±(1+0.3% x [t-1100]) °C	Class 1
T	Copper/Constantan	321 SST	-40 to 350 °C (-40 to 662 °F)	±0.5 °C (±1.0 °F) or ±0.4%	Class 1

1. Whichever is greater.

Table 6. Characteristics of 1067 ASTM Thermocouples (ASTM Standards are Typically Used in North American Applications)

Type	Wire alloys	Sheath material	Temperature range (°C)	Interchangeability error ASTM E230[1]	Accuracy
E	Chromel/Constantan	321 SST	0 to 900 °C (32 to 1652 °F)	±1.0 °C (±1.8 °F) or ±0.4%	Special limits
J	Iron/Constantan	321 SST	0 to 750 °C (32 to 1382 °F)	±1.1 °C (±2.0 °F) or ±0.4%	Special limits
K	Chromel/Alumel	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±1.1 °C (±2.0 °F) or ±0.4%	Special limits
N	Nicrosil/Nisil	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±1.1 °C (±2.0 °F) or ±0.4%	Special limits
R	Platinum-13% Rhodium/Platinum	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±0.6 °C (±1.0 °F) or ±0.1%	Special limits
S	Platinum-10% Rhodium/Platinum	Alloy 600	0 to 1000 °C (32 to 1832 °F)	±0.6 °C (±1.0 °F) or ±0.1%	Special limits
T	Copper/Constantan	321 SST	0 to 350 °C (32 to 662 °F)	±0.5 °C (±1.0 °F) or ±0.4%	Special limits

1. Whichever is greater.

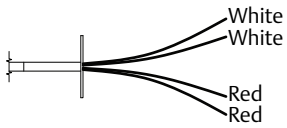
Wiring Diagrams

Figure 2. Rosemount 1067 RTD Lead Wire Configuration

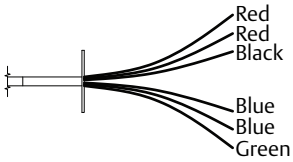
Flying Leads Termination Code 0

Terminal Block Termination Code 2

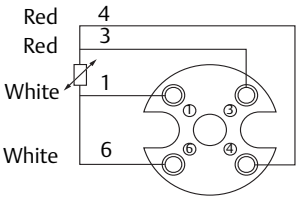
Single element



Dual element



Single element



Dual element

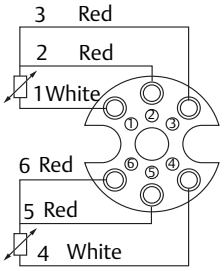


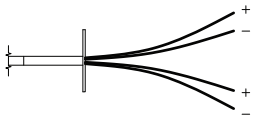
Figure 3. Rosemount 1067 Thermocouple Lead Wire Configuration

Flying Leads Termination Code 0

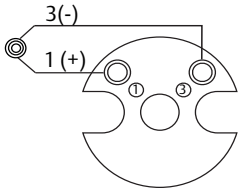
Terminal Block Termination Code 2

Single element

Dual element



Single element



Dual element

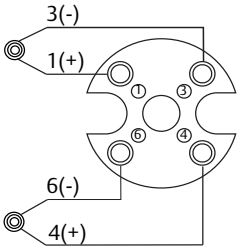


Table 7. 1067 Thermocouple Wire Color

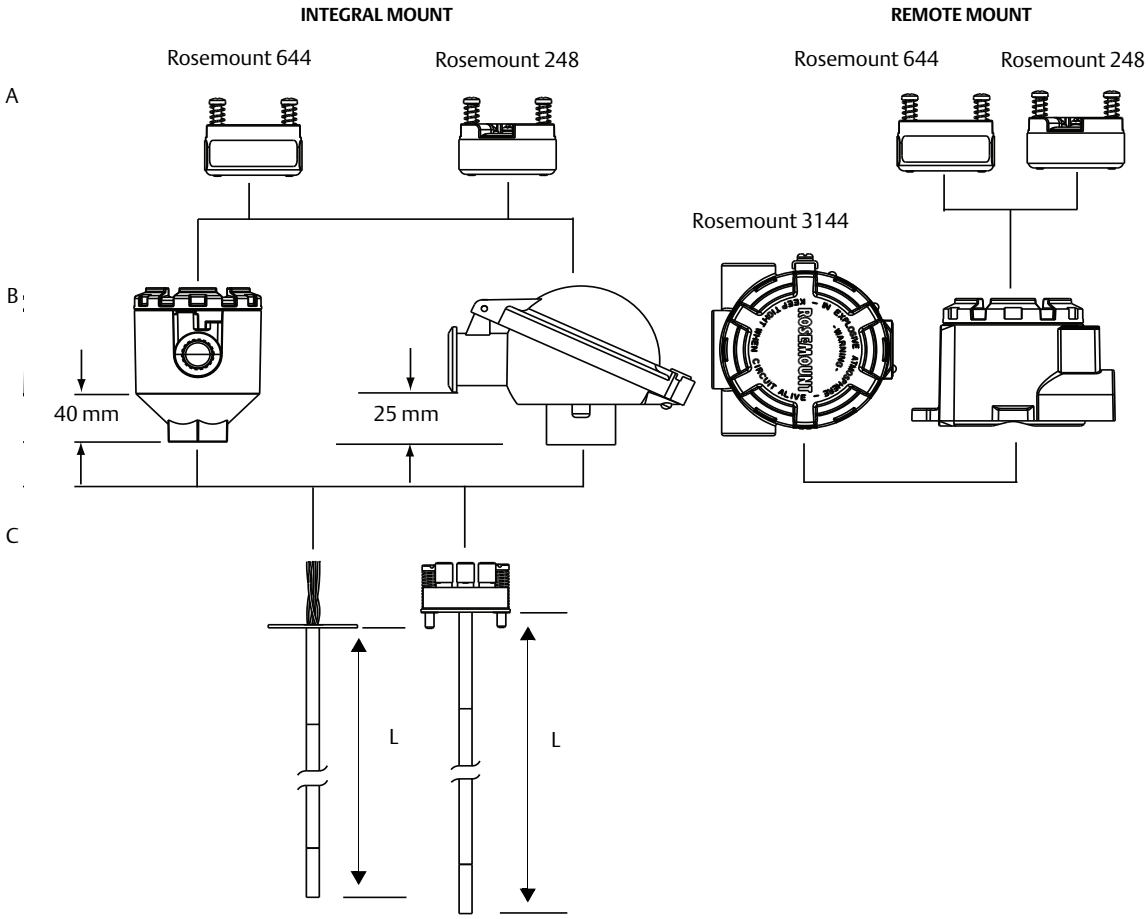
	IEC wire color		ISA wire color	
Type	**Positive (+)**	**Negative (-)**	**Positive (+)**	**Negative (-)**
E	Violet	White	Violet	Red
J	Black	White	White	Red
K	Green	White	Yellow	Red
N	Rose	White	Orange	Red
R	Orange	White	Black	Red
S	Orange	White	Black	Red
T	Brown	White	Blue	Red

Integral mount sensors and assemblies

Rosemount 1067 RTD and Thermocouple Temperature Sensors can be ordered as assemblies that provide a complete, yet simple, means of specifying the proper industrial hardware for most temperature measurements. An assembly model number is derived from the ordering table and defines the type of sensing element, the material length, and thermowell style.

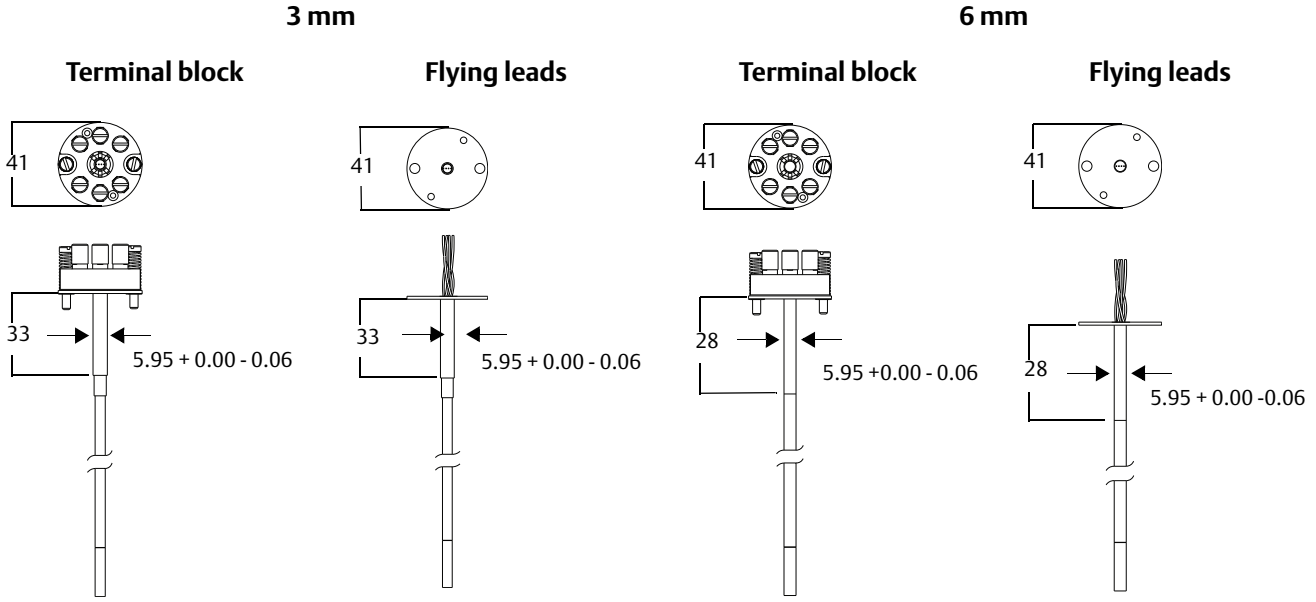
Emerson sizes and inspects all sensor assemblies to ensure complete component compatibility and performance.

Figure 4. Sensor Assembly without Thermowell



A. Head or Field Mount Transmitters
B. Connection Heads
C. Sensors with Flying Leads, Terminal Block

Figure 5. Rosemount 1067 RTD and Thermocouple Dimensional Drawings



Dimensions are in millimeters.

Table 8. Lead Wire Specifications

Rosemount 1067	Sensor diameter (mm)	Number of leads	Approximate lead wire length (flying leads)	
			Element 1 (mm)	Element 2 (mm)
RTD Single Element	3/6	4	140	N/A
RTD Dual Element	3/6	6	140	140
Thermocouple Single Element	3/6	2	140	N/A
Thermocouple Dual Element	3/6	4	140	190

Mounting configurations

The Rosemount 1067 RTDs and Thermocouples may be ordered with flying leads or a terminal block.

The flying lead configuration has sensors designed to be used with a head mount temperature transmitter attached directly to the sensor inside the connection head, allowing the removal of the sensor and transmitter as one assembly.

A terminal block configuration has sensors designed to be used with Rosemount 248, 644, 848T, 648, and 3144P in a remote mounting.

Hazardous area approvals are available with the Rosemount 1067 sensor types, but depend on the entire temperature measurement assembly configuration. See "Product Certifications" on page 17.

Temperature considerations

Ambient temperature limits for the connection head are –40 °C to +85 °C.

Product Certifications

Rev 0.2

European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.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).

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

E5 FM Explosion proof, Dust-Ignition proof
Certificate: FM17US0170X
Standards: FM Class 3600: 2011; FM Class 3611: 2004; FM Class 3615: 2006; FM Class 3810: 2005; ANSI/NEMA® - 250: 1991
Markings: XP CL I, Div 1, GP B, C, D; DIP CL II/III, Div 1, GP E, F, G; T5(–50 °C ≤ T_a ≤ 85 °C); when installed per Rosemount drawing 00068-0013; Type 4X

Canada

E6 CSA Explosion proof and Dust-Ignition proof
Certificate: 1063635
Standards: CSA C22.2 No. 0-M91; CSA C22.2 No. 25-1966; CSA C22.2 No. 30-M1986; CSA C22.2 No. 94-M91; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987
Markings: XP CL I, Div 1, GP B, C, D; DIP CL II/III, Div 1, GP E, F, G; CL I, Div 2, GP A, B, C, D; (–50 °C ≤ T_a ≤ 85 °C); when installed per Rosemount drawing 00068-0033; Type 4X (Spring loaded sensors must be installed in a thermowell to maintain Type 4X and Cl. II/III rating)

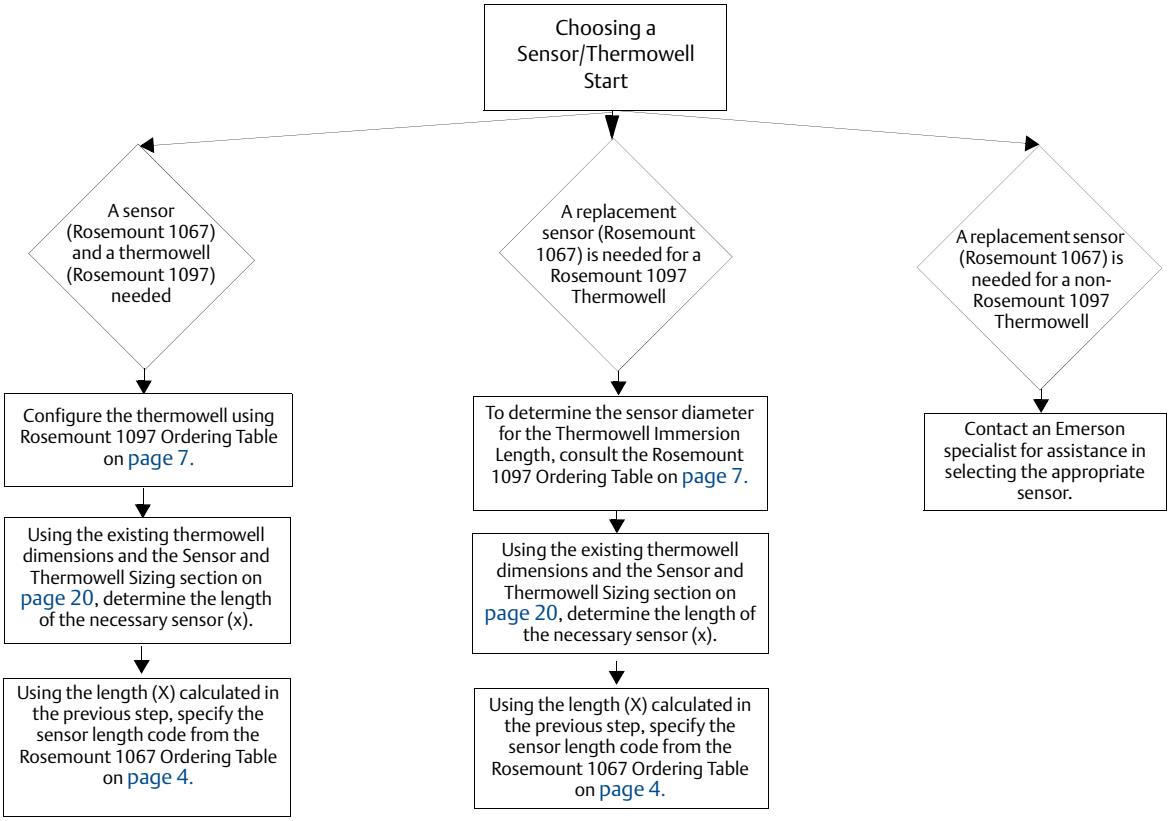
Europe

E1 ATEX Flameproof
Certificate: FM12ATEX0065X
Standards: EN 60079-0: 2012+A11:2013, EN 60079-1: 2007, EN 60529:1991 +A1:2000
Markings: Ⓔx II 2 G Ex d IIC T6...T1 Gb, T6(–50 °C ≤ T_a ≤ +40 °C), T5...T1(–50 °C ≤ T_a ≤ +60 °C)

Special Conditions for Safe Use (X):

1. See certificate for ambient temperature range.
2. The non-metallic label may store an electrostatic charge and become a source of ignition in Group III environments
3. Guard the LCD display cover against impact energies greater than 4 joules.
4. Flameproof joints are not intended for repair.
5. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option “N”.
6. Care shall be taken by the end user to ensure that the external surface temperature on the equipment and the neck of DIN Style Sensor probe does not exceed 130 °C.
7. Non-Standard Paint options may cause risk from electrostatic discharge. Avoid installations that cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

Selection of thermowells and sensors



Examples

1. Rosemount 1067 Sensor and 1097 Thermowell are needed:

   The user needs a thermowell with a 150 mm Immersion Length and a Flanged mounting style.

   Step 1: Configure Thermowell from Table 2 on page 7

   1097 A2 0150 F01 T000

   Option 0150 indicates the Thermowell Immersion Length of 150 mm with a sensor diameter of 6 mm (specified in the table). Option T000 represents the Flanged mounting style.

   Step 2: Sensor and Thermowell Sizing

   Select the figure and formula for the 6 mm flange (as determined in Step 1). For a Rosemount connection head, the Throat Length is 20 mm.

   Formula: Length (X) = 150 + 155 + 20 = 325 (mm).

   Step 3: Select the 1067 Sensor options from Table 1 on page 4

   1067 D 0 E1 6 0325

   Option D represents the Rosemount connection head (Step 2). Option 6 is determined from Step 1. Option 0325 is the length calculated in Step 2.

2. Rosemount 1067 Sensor is needed for a 1097 Thermowell

   The user has a 1097 thermowell with a 300 mm Immersion Length, a Welded mounting style, and a Lagging Length of 45.

   Step 1: Consult Thermowell *Table 2 on page 7*.

   For a Thermowell Immersion Length of 300, a sensor with a diameter of 6 mm is required.

   Step 2: Sensor and Thermowell Sizing

   Select the figure and formula for the 6 mm welded style (as determined in Step 1). For a polypropylene connection head, the Throat Length is 10 mm.

   Formula: Length (X) = 300 + 45 + 105 + 10 = 460 (mm).

   Step 3: Select the 1067 Sensor options from *Table 1 on page 4*

   1067 C 0 E1 6 0460

   Option C represents the polypropylene connection head (Step 2). Option 6 is determined from Step 1. Option 0460 is the length calculated in Step 2.

3. Replacement Rosemount 1067 Sensor is needed for a non-1097 Thermowell

   For this case, please contact an Emerson specialist for assistance in selecting the appropriate sensor.

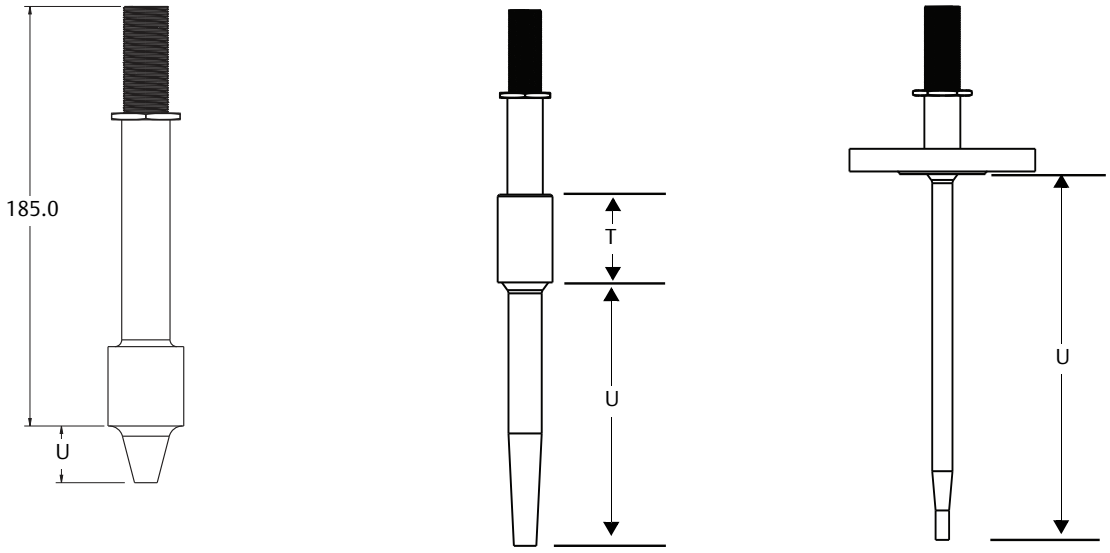
Reordering

When reordering just the 1067 sensor, specify the model number of the sensor being replaced and connection head code “N”. See “Rosemount 1067 Compact Sensor Ordering Information” on page 4. For information on thermowell and sensor sizing and selection, see guide “Selection of thermowells and sensors” on page 18.

When reordering only the 1097 Thermowell, specify the model number of the thermowell being replaced.

Figure 6. Welded or Flanged Thermowells

For U lengths of 25 to 49 mm **For U lengths of 50 to 500 mm**



U. Immersion Length
T. Lagging Length
Dimensions are in millimeters.

Sensor and thermowell sizing

To ensure compatibility, specify the thermowell first, The mounting style (flanged or welded) and the sensor diameter (3 mm or 6 mm) will determine the formula used to calculate the sensor length.

Formula for flange mount

X: Sensor length (see Figure 7)
U: Immersion length (see Figure 7)

Throat length

Use 20 mm for Rosemount Connection Head.

Use 10 mm for polypropylene head.

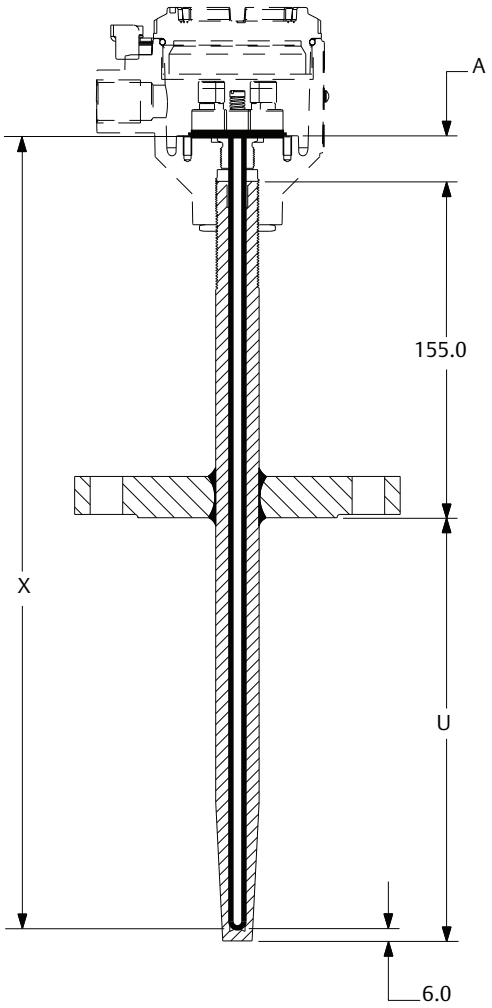
3 mm: X = U + 95 mm + throat length

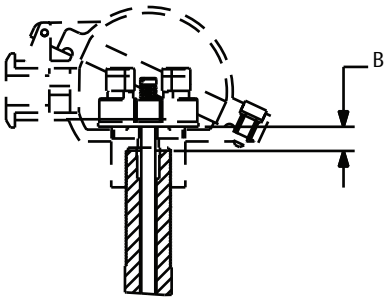
6 mm: X = U + 155 mm + throat length

Figure 7. Rosemount 1097 Flange Mounted Diagram

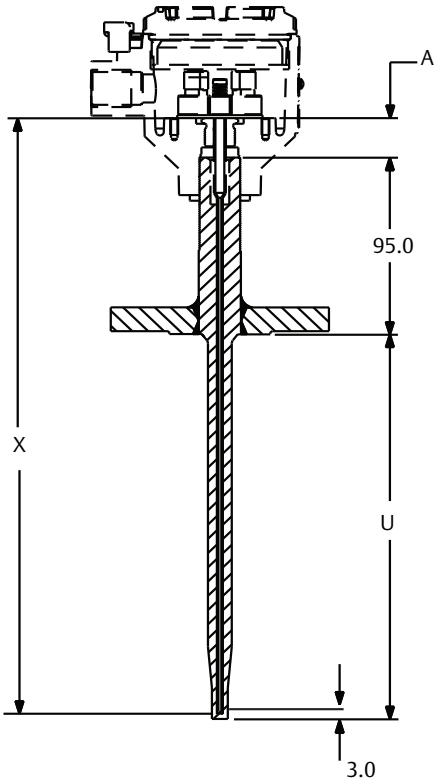
For U lengths of 50 to 500 mm

6 mm bore (flanged)





3 mm bore (flanged)



A. Rosemount Connection Head Throat Length (20.0 mm)
B. Polypropylene “BUZ” Head Throat Length (10.0 mm)
U. Immersion Length
X. Sensor length
Dimensions are in millimeters.

Formula for weld mount

X: Sensor Length (see Figure 8)
U: Immersion Length (see Figure 8)
T: Tagging Length (see Figure 8)

Throat length

Use 20 mm for Rosemount Connection Head.

Use 10 mm for polypropylene head.

For U length 25 to 49 mm

3 mm: X = U + 185 mm + throat length [1]

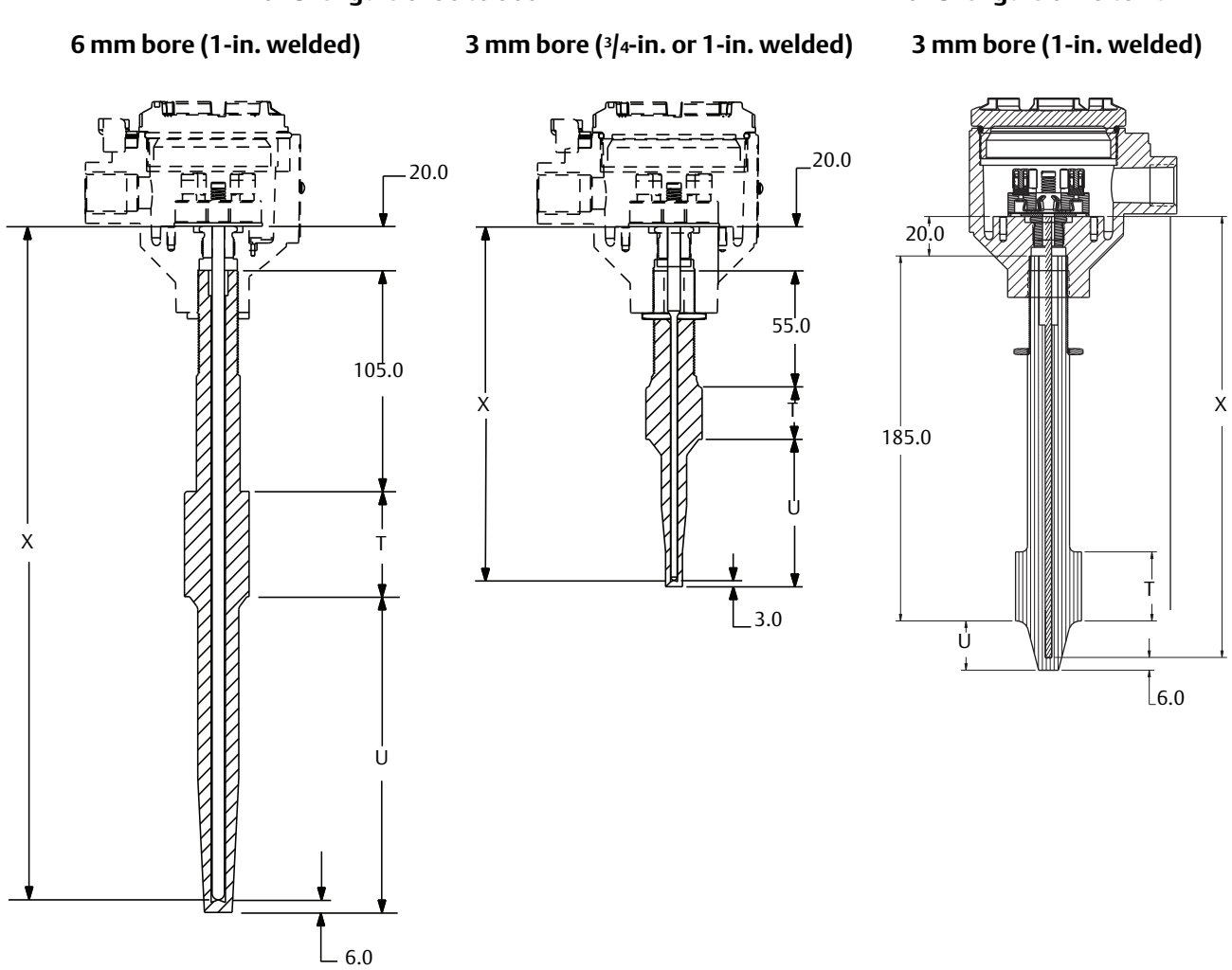
For U length 50 to 500 mm

3 mm: X = U + T + 55 mm + throat length

6 mm: X = U + T + 105 mm + throat length

1. *T length does not matter for this calculation.*

Figure 8. Rosemount 1067 Weld Mounted Diagram



T. Lagging Length
U. Immersion Length
X. Sensor length
Dimensions are in millimeters.

Accessories

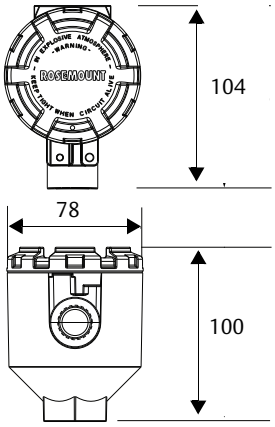
Table 9. Connection Head

Part number	Model/material	IP rating	Conduit connection	Process connection
00644-4190-0014	Rosemount, Aluminum	66/68	1/2-in. ANPT	M20 × 1.5
00644-4198-0014	BUZ, White Polypropylene	65	1/2-in. ANPT	M20 × 1.5

Figure 9. Connection Head Dimensional Drawing

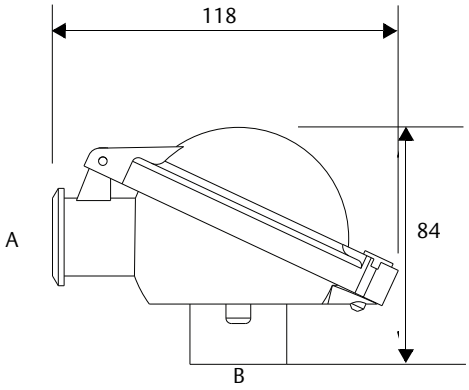
With standard cover

Option code D



Polypropylene (BUZ)

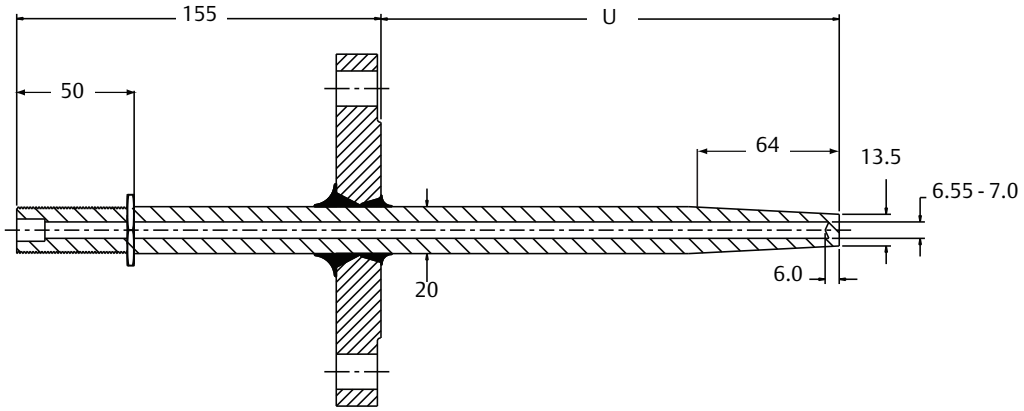
Option code C



A. Cable entry
B. Head connection
Dimensions are in millimeters.

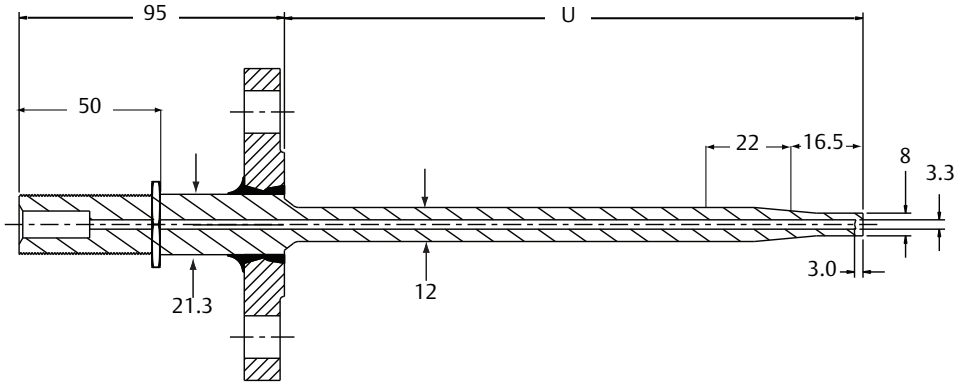
Rosemount 1097 Thermowells

Figure 10. Flanged Barstock Thermowell (6 mm)



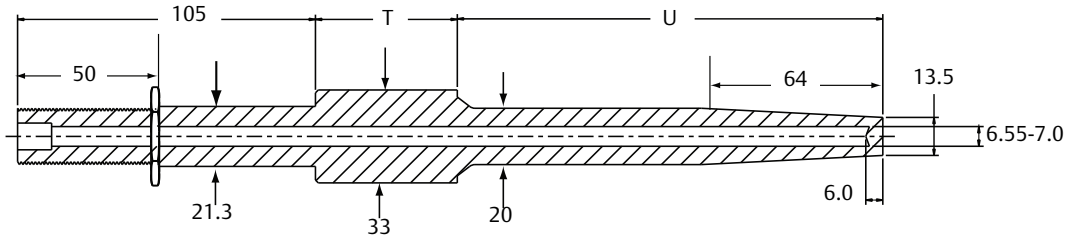
U. Immersion length
Dimensions are in millimeters.

Figure 11. Flanged Barstock Thermowell (3 mm)



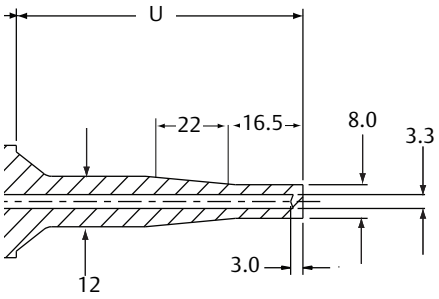
U. Immersion length
Dimensions are in millimeters.

Figure 12. Welded Barstock Thermowell (6 mm)



T. Lagging length
U. Immersion length
Dimensions are in millimeters.

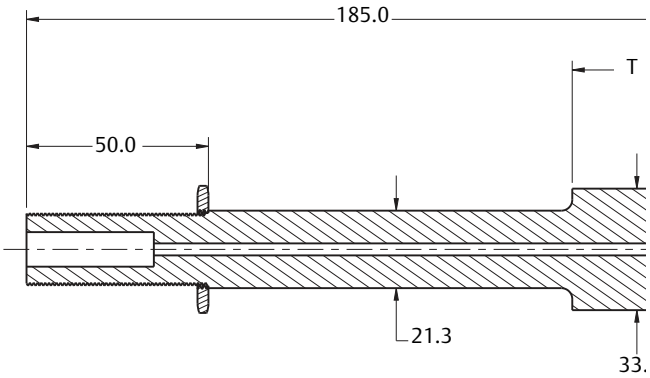
Figure 13. Welded Barstock Thermowell (3 mm)



Socket size	D
3/4-in.	26.7
1-in.	33.4

T. Lagging length
U. Immersion length
Dimensions are in millimeters.

Figure 14. Welded Barstock Thermowell (High Pressure)(3 mm)



T. Lagging length
U. Immersion length
Dimensions are in millimeters.

Global Headquarters

Emerson Automation Solutions
6021 Innovation Blvd.
Shakopee, MN 55379, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RFQ.RMD-RCC@Emerson.com

North America Regional Office

Emerson Automation Solutions
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 Automation Solutions
1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA
+1 954 846 5030
+1 954 846 5121
RFQ.RMD-RCC@Emerson.com

Europe Regional Office

Emerson Automation Solutions 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@Emerson.com

Asia Pacific Regional Office

Emerson Automation Solutions Asia Pacific Pte Ltd
1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.Emerson.com

Middle East and Africa Regional Office

Emerson Automation Solutions
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

Linkedin.com/company/Emerson-Automation-Solutions

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Google.com/+RosemountMeasurement