

Rosemount Analytical 0068P21C30N040E6

68 Series Temperature Sensor



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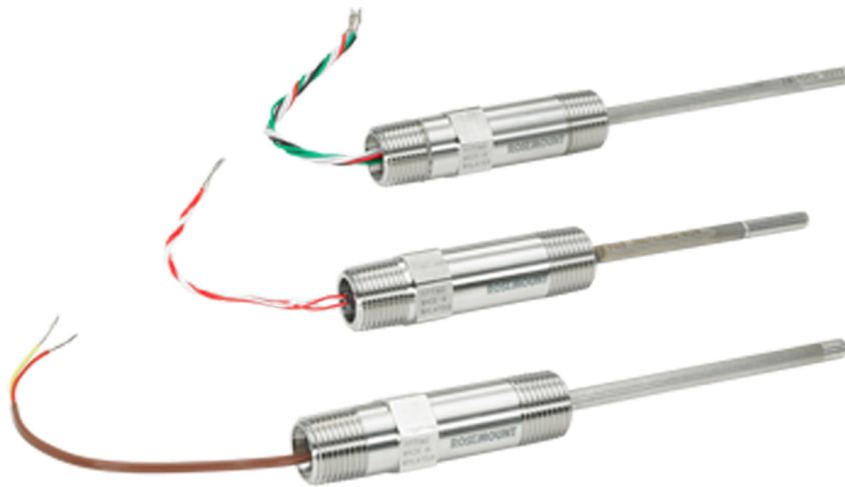
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Rosemount™ Volume 1 Sensor Assembly



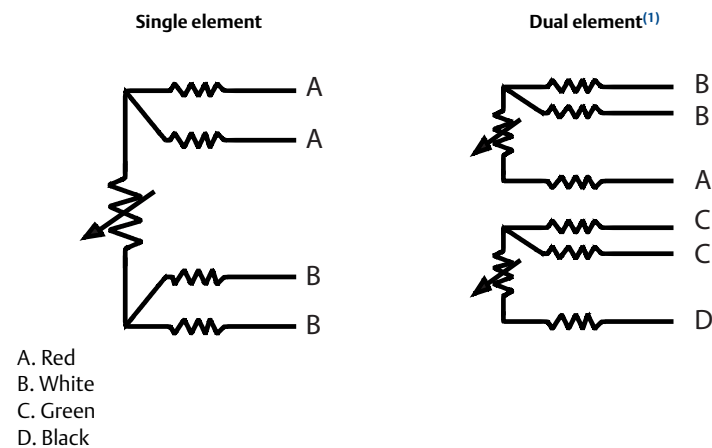
NOTICE

This guide provides basic guidelines for Rosemount 0068, 0078, and 0183 Sensor models. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, explosion-proof, flameproof, or intrinsically safe (I.S.) installations.

If the Rosemount Volume 1 Sensor was ordered assembled to a temperature transmitter, see the appropriate transmitter Quick Start Guide for information on configuration and hazardous locations certifications.

1.0 Wiring diagrams

Figure 1. Rosemount Series 68, 68Q, 78, and 58C RTD Wire Colors



1. Dual element sensors are only available on Rosemount Series 68Q and 78 Sensors.

Note
For three-wire systems, use one white and two red leads. Do not connect the white leads. Insulate or terminate the unused white lead in a manner that prevents shorting to the ground. For two-wire systems, connect both sets of leads.

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2.0 Rosemount Series 58C sheath cutting

1. Determine the length to which the sheath will be cut. The finished length needs to include an additional 1.5-in. for compression fittings, or 2.5-in. for spring-loaded fittings (see [Figure 2](#)).
2. Remove and save the heat shrink tubing from the rear of the sensor.
3. Place the sensor in a vise, taking care not to overtighten, and position the tubing cutter on the sheath.
4. Score the sheath to a depth of approximately $\frac{1}{64}$ -in. To prevent damage to the lead wire insulation, do not cut completely through the sheath.
5. Firmly grasp the end of the sheath with your hand or a pair of pliers. Using a sharp snapping motion, break off and remove the excess sheath material. Take care not to strip or damage the lead wire insulation while removing the excess sheath material.

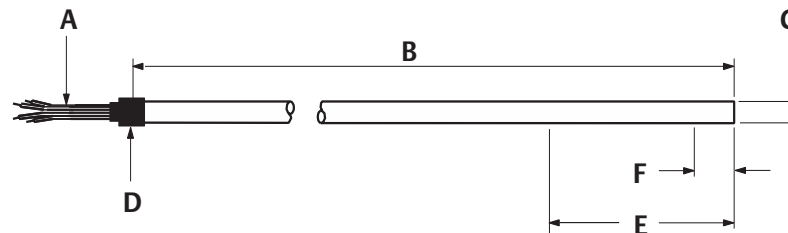
Note

If you are unable to easily break off excess sheath material, deepen the score and repeat [Step 5](#).

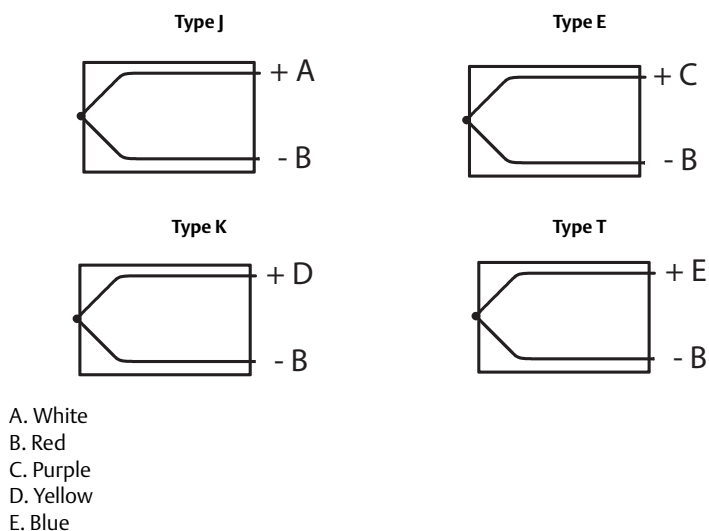
6. Replace the heat shrink tubing.

3.0 Drawings

Figure 2. Rosemount Series 58C Sensor



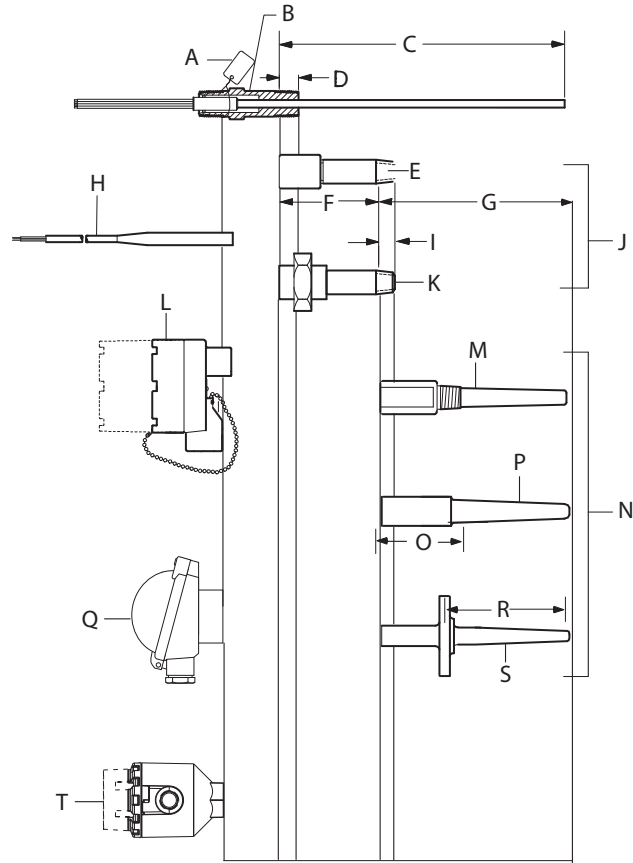
- A. Four lead wires 6 (152) long
 B. X length ± 0.25 (± 6)
 C. 0.25 ± 0.002 (6.35 ± 0.13) diameter
 D. Heat shrink tubing
 E. Do not cut or bend sheath within 2 (51)
 F. 0.6 (15) max. sensing element

Figure 3. Rosemount Series 183 Thermocouple Wire Colors**Table 1. Rosemount Series 183 Thermocouple Characteristics**

Thermocouple types	Thermocouple wire alloys	Temperature range		Limits of error (interchangeability)
		°C	°F	
J	Iron/constantan	0 to 760	32 to 1400	±1.1 °C (2.0 °F) or ±0.4% of measured temperature, whichever is greater
K	Chromel®/Alumel®	0 to 1150	32 to 2102	±1.1 °C (2.0 °F) or ±0.4% of measured temperature, whichever is greater
E	Chromel/constantan	0 to 871	32 to 1600	±1.0 °C (1.8 °F) or ±0.4% of measured temperature, whichever is greater
T	Copper/constantan	-180 to 0	-292 to 32	±1.0 °C (1.8 °F) or ±1.5% of measured temperature, whichever is greater
		0 to 371	32 to 700	±0.5 °C (1.0 °F) or ±0.4% of measured temperature, whichever is greater

Note

To distinguish the two sensors in dual Rosemount 183 Sensors, there is an outer insulation wrapped around each pair of sensor wires.

Figure 4. Sensor Assembly

- | | |
|---------------------------------------|---|
| A. Open identification tag | L. Flat or extended cover aluminum connection heads |
| B. Standard adapter sensor assembly | M. Threaded Thermowell |
| C. Sensor immersion length "X" | N. Thermowells |
| D. 0.5-in. (13 mm) nominal engagement | O. T + 1.75-in. (44.5 mm) |
| E. Coupling-nipple | P. Socket weld thermowell |
| F. Extension length | Q. Polypropylene connection head |
| G. Overall thermowell length | R. Thermowell immersion length |
| H. Lead wire extensions and seals | S. Flanged thermowell |
| I. 0.5-in. (13 mm) nominal engagement | T. Rosemount aluminum connection head |
| J. Extensions | |
| K. Union-nipple | |

Note

Sensor assemblies can be provided without an enclosure or with an enclosure such as the connection heads shown above or assembled to a Rosemount transmitter.

4.0 Product certifications

Rev 2.10

4.1 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..

4.2 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).

4.3 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

North America

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($-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$); 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; ($-50^{\circ}\text{C} \leq T_a \leq 85^{\circ}\text{C}$); 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: 2014, EN 60529:1991
+A1:2000 +A2:2013

Markings:  II 2 G Ex db IIC T6...T1 Gb, T6($-50^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$), T5...T1($-50^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$)

Specific Conditions of 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.

International**E7** IECEx Flameproof

Certificate: IECEx FMG 12.0022X

Standards: IEC 60079-0:2011, 60079-1:2014-06

Markings: Ex db IIC T6...T1 Gb, T6(−50 °C ≤ T_a ≤ +40 °C), T5...T1(−50 °C ≤ T_a ≤ +60 °C)**Specific Conditions of 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.

Brazil**E2** INMETRO Flameproof

Certificate: UL-BR 13.0535X

Standards: ABNT NBR IEC 60079-0:2013; ABNT NBR IEC 60079-1:2016; ABNT NBR IEC60079-31:2014

Markings: Ex db IIC T6...T1 Gb T6...T1: (−50 °C ≤ T_a ≤ +40 °C), T5...T1: (−50 °C ≤ T_a ≤ +60 °C), Ex tb IIIC T130 °C Db (−40 °C ≤ T_a ≤ +70 °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. A suitable certified Ex d or Ex tb enclosure is required to be connected to temperature probes with Enclosure option "N".
5. 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.
6. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

EAC

EM Technical Regulations Customs Union (EAC) Flameproof
Certificate: RU C-US.Gb05.B.00289
Markings: 1Ex d IIC T6...T1 Gb X

Korea

EP Korea Explosionproof/Flameproof
Certificate: 13-KB4BO-0560X
Markings: Ex d IIC T6...T1; T6($-50\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +40\text{ }^{\circ}\text{C}$), T5...T1($-50\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$)




Special Condition for Safe Use (X):



1. See certificate.

Combinations

KF Combination of E1 and E6
KD Combination of E5, E6, and E1

Figure 5. Rosemount Series 68, 68Q, 78, and 58C Declaration of Conformity

	EU Declaration of Conformity No: RMD 1059 Rev. N	
<p>We,</p> <p>Rosemount, Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>declare under our sole responsibility that the product,</p> <p>Rosemount™ Model 65, 68, 78, 85, 183, 185, and 1067 Temperature Sensors</p> <p>manufactured by,</p> <p>Rosemount, Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.</p> <p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>		
 _____ (signature)	_____ Vice President of Global Quality (function)	
_____ Chris LaPoint (name)	_____ 7-Sept-2017 (date of issue)	
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	<h2>EU Declaration of Conformity</h2> <p>No: RMD 1059 Rev. N</p>	
ATEX Directive (2014/34/EU)		
FM12ATEX0065X - Flameproof Certificate Equipment Group II Category 2 G (Ex db IIC T6...T1 Gb) Harmonized Standards: EN60079-0:2012+A11:2013, EN60079-1:2014		
FM12ATEX0065X - Dust Certificate Equipment Group II Category 2 D (Ex tb IIIC T130°C Db) Harmonized Standards: EN60079-0:2012+A2013, EN60079-31:2014		
BAS00ATEX3145 - Type n Certificate Equipment Group II Category 3 G (Ex na IIC T5 Gc) Harmonized Standards: EN60079-0:2012+A11:2013, EN60079-15:2010		
Baseefa16ATEX0101X - Intrinsic Safety Certificate Equipment Group II Category 1 G (Ex ia IIC T5/T6 Ga) Harmonized Standards: EN60079-0:2012+A11:2013, EN60079-11:2012		
RoHS Directive (2011/65/EU)		
Harmonized Standard: EN 50581:2012		
ATEX Notified Bodies		
FM Approvals [Notified Body Number: 1725] 1151 Boston Providence Turnpike P.O. Box 9102 Norwood, MA 02062 USA		
SGS Baseefa Limited [Notified Body Number: 1180] Rockhead Business Park Staden Lane Buxton Derbyshire SK17 9RZ United Kingdom		
ATEX Notified Body for Quality Assurance		
SGS Baseefa Limited [Notified Body Number: 1180] Rockhead Business Park Staden Lane Buxton Derbyshire SK17 9RZ United Kingdom		
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含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 68/78/183
List of Rosemount 68/78/183 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	O	O	O	O	O	O
壳体组件 Housing Assembly	O	O	O	O	O	O
传感器组件 Sensor Assembly	O	O	O	O	O	O

本表格系依据 SJ/T11364 的规定而制作。
This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求。
O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求。
X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.



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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

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

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



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