nVent RTD3CS RTD Temperature Sensors for Temperature Measurement Instruction Manual

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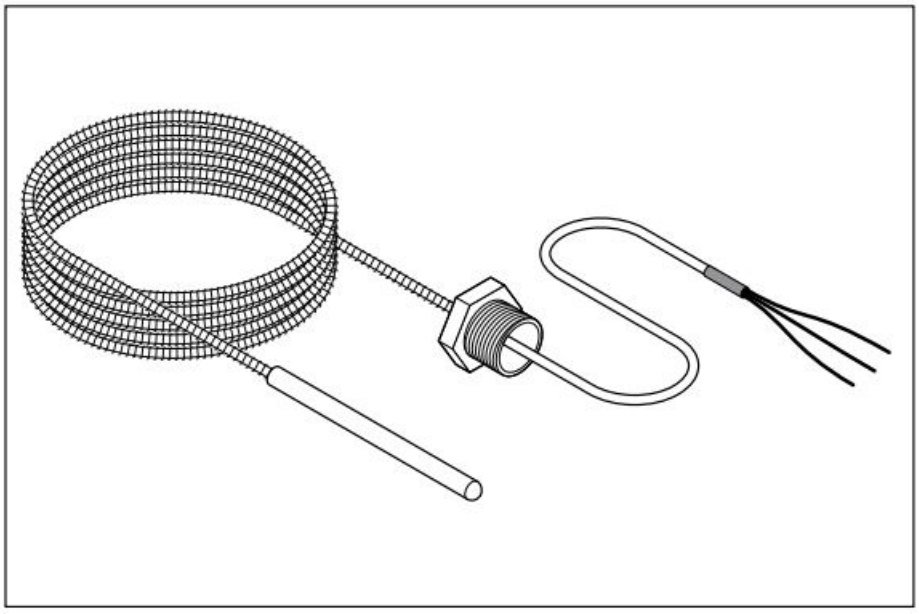
nVent RAYCHEM

RTD3CS and RTD10CS

RTD Temperature Sensors for Temperature Measurement
Up to 400°F (204°C) Installation Instructions



Contents

DESCRIPTION

The nVent RAYCHEM RTD3CS and RTD10CS are three-wire platinum RTD (resistance temperature detectors) typically used with monitoring and control systems, such as our RAYCHEM 910 controller, when accurate temperature control is required.
The RTD3CS and RTD10CS can be installed directly to the controller using the supplied ½ inch conduit fitting or to an RTD junction box where RTD extension wire is used.

TOOLS REQUIRED

- 3.5-mm flat-blade screwdriver

ADDITIONAL MATERIALS REQUIRED

- nVent RAYCHEM AT-180 aluminum tape

APPROVALS

Approvals associated with control device, however not to be used in Div. 1 locations.

SPECIFICATIONS

Sensor	
Housing	316 stainless steel
Dimensions	3 in (76 mm) length 3/16 in (8 mm) diameter
Sensing area	1½ in (38 mm)
Accuracy	±1°F (0.5°C) at 32°F (0°C)
Range	−76°F to 400°F (−60°C to 204°C)
Resistance	100 ohms at 0°C α =0.00385 ohms/ohm/°C

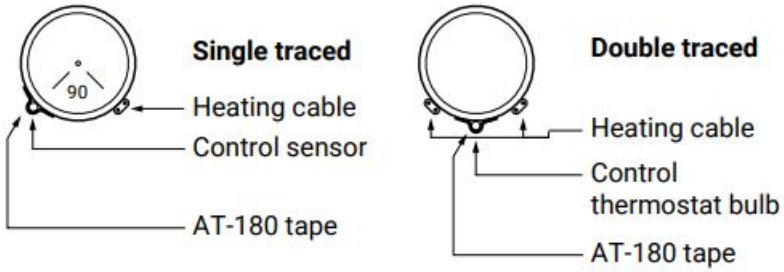
KIT CONTENTS

Qty	**Description**
1	RTD temperature sensor

Extension Wires		
Wire size (each of 3)	20 AWG, stranded tinned copper	
Wire insulation rating	300 volts	
Length	**RTD3CS:**	3 ft (.3 m) flexible armor, 18 in (457 mm) lead wire
	RTD10CS:	10 feet (3 m) flexible armor, 18 in (457 mm) lead wire
Outer shield	Stainless steel flexible armor	
Maximum exposure temperature	400°F (204°C)	
Conduit bushing	½ in NPT	

⚠ **WARNING:**
This component is an electrical device. It must be installed correctly to ensure proper operation and to prevent shock or fire. Read these important warnings and carefully follow all the installation instructions. Component approvals and performance are based on the use of specified parts only. Do not use substitute parts or vinyl electrical tape to make connections.

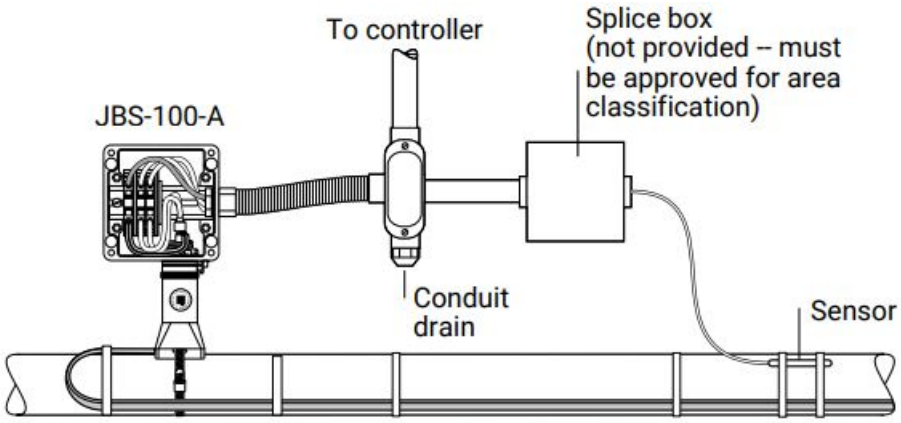
POSITIONING THE SENSOR



Position the RTD sensor in the lower quadrant of the pipe as shown in the diagram. Place the RTD sensor at least 3 feet (1 m) from pipe supports, valves, or other heat sinks. Tape the RTD firmly to the pipe with AT-180 aluminum tape, making sure there is no air space between the RTD and the pipe. Do not use the same piece of AT-180 tape to overlap the RTD and heat-trace cable.

INSTALLATION WITH HEATING CABLE

Electrical Wiring Guidelines: Most electrical codes (such as NEC 725.15) permit Class 1 circuits to occupy the same cable, enclosure, or raceway without regard to whether the individual circuits are alternating current or direct current, providing all conductors are insulated for the maximum voltage of any conductors in the cable, enclosure or raceway.
Additional Materials Required · nVent RAYCHEM JBS-100-A or other power connection kit · Pipe straps



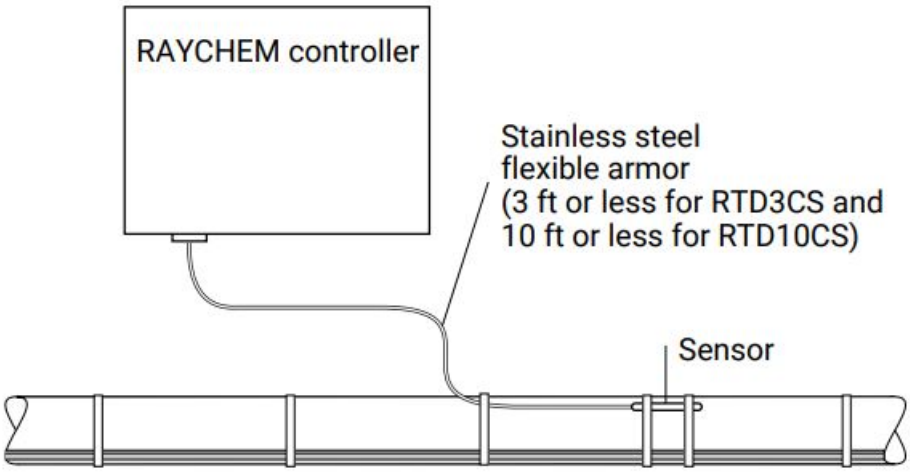
WIRING INFORMATION

The length of RTD extension wires is determined by the wire gauge used. To reduce the likelihood that electrical noise will affect temperature measurement, keep RTD extension wires as short as possible. Use shielded instrument cable such as nVent RAYCHEM MONI-RTD-WIRE (22AWG, PVC insulation, 30°F to 140°F, 20°C to 60°C) or Belden 83553 (22AWG, FEP insulation, 95°F to 395°F, 70°C to 200°C).

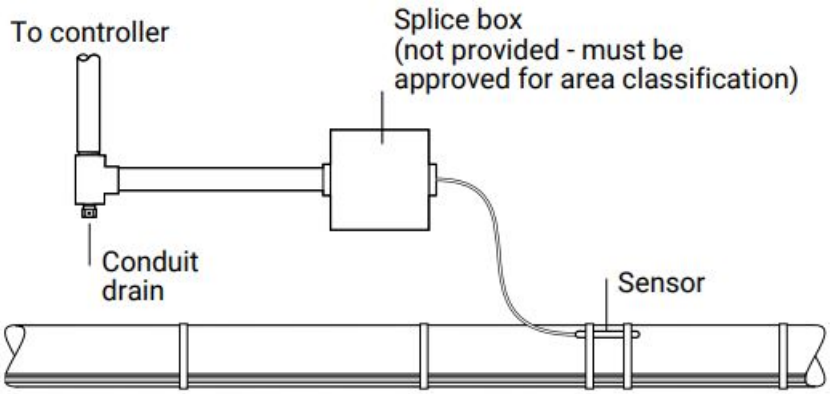
	Maximum RTD extension wire length	
AWG	Feet	(meters)
16	4500	(1400)
18	2800	(880)
20	1800	(550)
22	1100	(340)

RTD DIRECT CONNECTION TO CONTROLLER

(Distance from sensor bulb to controller must be less than 10 feet)
The RTD3CS and RTD10CS can be terminated directly at the controller using the supplied ½ inch NPT fitting. In this configuration, no additional extension wire is required.

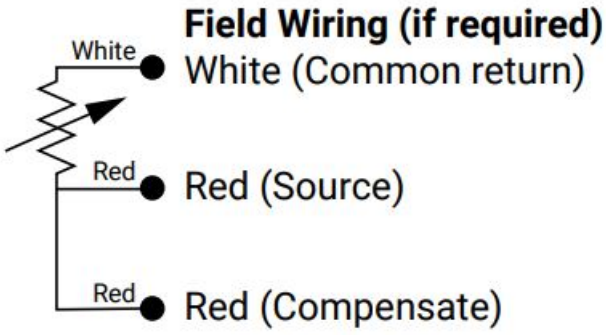


(Distance from sensor bulb to controller greater than 3 feet for the RTD3CS and 10 feet for the RTD10CS)



RTD3CS AND RTD10CS WIRING

Connect the wires as shown.
Note: Ground RTD extension wire shield at one end only, preferably at RAYCHEM electronics end.



North America
Tel +1.800.545.6258
Fax +1.800.527.5703
thermal.info@nVent.com

Europe, Middle East, Africa

Tel +32.16.213.511
Fax +32.16.213.604
thermal.info@nVent.com

Asia Pacific
Tel +86.21.2412.1688
Fax +86.21.5426.3167
cn.thermal.info@nVent.com

Latin America
Tel +1.713.868.4800
Fax +1.713.868.2333
thermal.info@nVent.com

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Documents / Resources

	nVent RTD3CS RTD Temperature Sensors for Temperature Measurement [pdf] Instruction Manual RTD3CS RTD Temperature Sensors for Temperature Measurement, RTD3CS, RTD Temperature Sensors for Temperature Measurement, Temperature Measurement

References

- Electrical Heat Tracing | Heat Tracing | nVent RAYCHEM