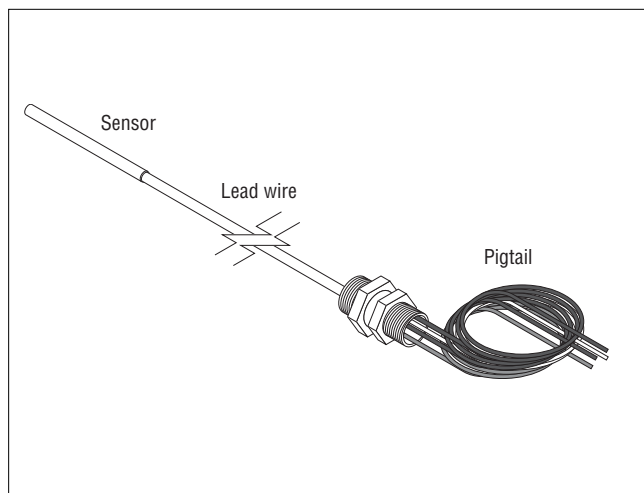


Resistance Temperature Detector (RTD) for temperature measurement up to 1100°F (593°C)

These instructions are also valid for made-to-order DigiTrace RTDs with catalog numbers RTD 1, 3, 7, 15, 25, 30, 50, 75, and 100

Installation Instructions



Description

The RTD10 and RTD20 are three-wire platinum RTDs (resistance temperature detectors) typically used with control and monitoring systems when accurate temperature control is required. These RTDs are designed to withstand highly corrosive applications. The alloy 825 sheathed lead wire is rugged yet flexible, allowing the sensor to get around obstructions or into areas where a rigid conduit is not practical.

Tools Required

3.5-mm flat-blade screwdriver

Additional Materials Required

Pipe straps

Kit Contents

Qty	Description
1	Resistance Temperature Detector

Specifications

Sensor

Housing	304 Stainless steel
Nominal dimensions	3 in (76 mm) length, 1/4 in (6.4 mm) diameter
Accuracy	±1°F (0.5°C) at 32°F (0°C)
Range	-76°F to 1100°F (-60°C to 593°C)
Resistance	100 ohms at 0°C α =0.00385 ohms/ohm/°C

Extension Wires

Pigtail wire size (each of 4)	16 AWG, stranded tinned copper
Pigtail wire insulation rating	600 volts
Lengths	RTD10 – Lead Wire: 10 ft – 2 in (3.1 M); Pigtail: 24 in (61 cm) RTD20 – Lead Wire: 20 ft – 2 in (6.1 M); Pigtail: 24 in (61 cm)
Lead wire outer sheath	Alloy 825 Stainless steel - 3/16 inches in diameter
Maximum exposure temperature	1100°F (593°C)
Conduit bushing	1/2" NPT, nickel plated brass gland

Approvals

Hazardous Locations



Class I, Div. 1 & 2, Groups A, B, C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III



Class I, Div. 1 & 2, Groups A, B, C, D
Class II, Div. 1 & 2, Groups E, F, G
Class III

The RTD10 and RTD20 are approved for Division 1 and 2 only when used with the appropriate rated enclosure suitable for the specific hazardous location.

⚠ WARNING:

This component is an electrical device. It must be installed correctly to ensure proper operation and to prevent shock or fire. Read these

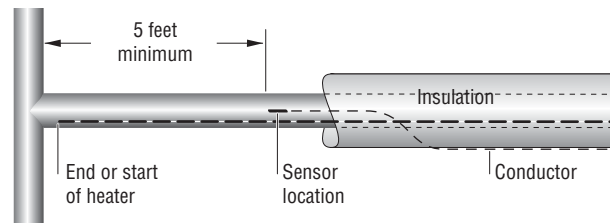
important warnings and carefully follow all the installation instructions. Component approvals and performance are based on the use of

specified parts only. Do not use substitute parts or vinyl electrical tape to make connections.

RTD10 RTD20 Installation Instructions

RTD Location

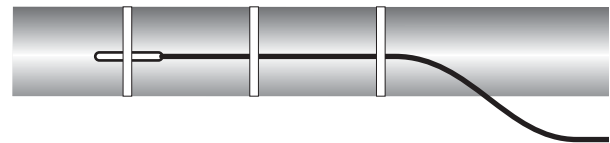
Position the RTD as indicated on the drawing. Try to be at least 5 feet from the end of the tracer circuit being controlled. If the pipe is shorter than 10 feet (3.05 meters), position the sensor midway along the circuit being controlled.



Fastening the RTD to the Pipe

Position the RTD well away from the heaters. Attach to the pipe using the appropriate pipe strap from the table below.

Pipe Strap	Pipe Size (inches)
PS-01	1/4" to 1"
PS-03	1" to 3"
PS-10	3" to 10"
PS-20	10" to 20"



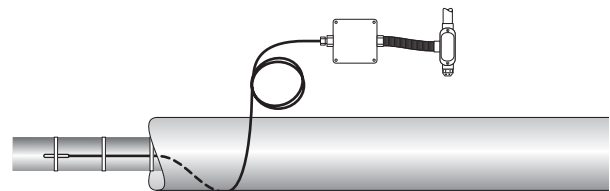
The RTD lead wire should emerge from the insulation cladding at the bottom of the pipe to ensure that water does not enter the insulation.



Excess Lead Wire

Excess lead wire should be wound neatly in a coil of about 4" diameter leaving sufficient length to connect into the enclosure.

Note: Where it is desirable to determine the approximate pipe temperature by measuring the resistance, measure the resistance between red/red and subtract from the resistance measured between red/white and compare the value to the table below.



RTD - Resistance Vs. Temperature Tables

DIN 43760 -100 OHM Platinum RTD (Resistance Temperature Detector — Alpha = 0.00385 Ohms/Ohm/°C)

Ohms	°C	°F
80.32	-50	-58
84.29	-40	-40
88.23	-30	-22
92.16	-20	-4
96.09	-10	14
98.05	-5	23
100.00	0	32
101.95	5	41
103.90	10	50
105.85	15	59
107.19	20	68
109.73	25	77
111.67	30	86
113.61	35	95

Ohms	°C	°F
115.54	40	104
117.47	45	113
119.39	50	122
123.24	60	140
127.07	70	158
130.89	80	176
134.70	90	194
138.50	100	212
142.29	110	230
146.06	120	248
149.82	130	266
153.58	140	284
157.32	150	302
161.04	160	320

Ohms	°C	°F
164.77	170	338
168.47	180	356
172.16	190	374
175.85	200	392
183.17	220	428
190.46	240	464
194.08	250	482
197.69	260	500
204.88	280	536
212.03	300	572
220.89	325	617
229.69	350	662

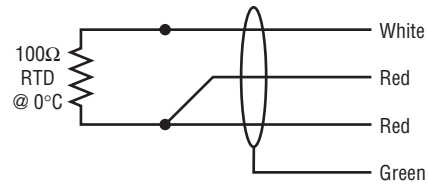
Connections

When testing Insulation Resistance, use 500 Volt D. C. max.

To megger the sensor, connect the test leads between one of the red or white wires, and the green wire. Minimum I.R. should be 100 megohms. Tolerance on lead length $\pm 3\%$.

NOTE: Do not apply a megger between the red and white leads as the RTD element may be damaged.

Do not bend sensor.



RTD Test Record

Controller Tag No. _____

Testing Prior to Installation	Installer: Initial/Date	Owner: Initial/Date
Visually inspect to ensure no apparent damage from shipping/handling		
Multimeter Resistance Reading <ul style="list-style-type: none"> • Red/Red (approaching 0 ohms) • Red/White (approx. 100 ohms) 		
Megger Reading (500 volts D. C. max.) <ul style="list-style-type: none"> • Minimum acceptable 100 megohms 		
Testing After Installation/Before Insulation is Applied	Installer: Initial/Date	Owner: Initial/Date
Visually inspect RTD located as per drawing		
RTD properly attached to pipe		
Multimeter Resistance Reading <ul style="list-style-type: none"> • Red/Red (approaching 0 ohms) • Red/White (approx. 100 ohms) 		
Megger Reading (500 volts D. C. max.) <ul style="list-style-type: none"> • Minimum acceptable 100 megohms 		
Prior to closing the cover on the enclosure check that RTD lead wires have been connected to the correct terminal blocks.		

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