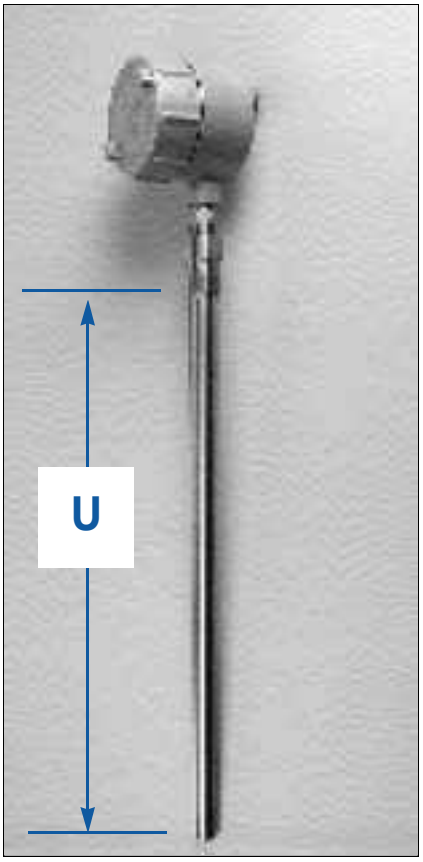
R800 TEMPERATURE TRANSMITTER/RTD ASSEMBLY

DESCRIPTION

The R800 temperature transmitter measures resistance changes as a function of temperature, using a two wire 100 ohm platinum RTD sensor. The transmitter is housed in an explosion-proof condulet enclosure, certified to Class 1, Groups C, D, Class 2, Groups E, F, G. The RTD temperature sensor is integrally mounted to the enclosure containing the electronic circuitry, permitting close-coupled mounting of the transmitter at the point of measurement



FEATURES

- Two wire signal
- Long term stability
- Zero-span controls
- Excellent repeatability

TECHNICAL SPECIFICATIONS

Input range: -300˚F to +900˚F (-185°C to +483°C) 100 ohm platinum

Span: 50˚F (10°C) minimum (30˚F/-1°C optional)

Output: 4-20 or 10-50 mAdc

Accuracy: ± 0.25% of span including RTD probe

Loop resistance maximum (at 24 Vdc): 4-20 mAdc, 500 ohms; 10-50 mAdc, 250 ohms

Power: 24 Vdc nominal 22 minimum to 48 Vdc maximum

Ambient operating temperature: -20˚F to 140˚F (-29°C to 60°C)*

Process connections: 1⁄2" NPT standard

RTD element: 100 ohm platinum 316SS sheath, well 304SS or 316SS

Transmitter housing: copper free aluminum (K-27)

* For process media temperatures that will expose the transmitter electronics to ambients above or below -20˚F to +140˚F (-29°C to 60°C), the condulet housing with transmitter electronics should be separated from the sensor.

Ordering Information

R 8 0 0 – ___ – ____ ° to ____ °

Part Number

"U" Length
Enter length in inches

Enter Temperature Range
Specify °F or °C

R800 TEMPERATURE TRANSMITTER/RTD ASSEMBLY

Platinum resistance thermometers provide the most accurate method of temperature measurement. The "heart" of resistance thermometer is the resistance element. It consists of a fine diameter platinum circuit imbedded in ceramic. The electrical resistance of the platinum circuit varies precisely with the temperature.

A heavy wall stainless steel sheath provides protection over the sensitive portion of the element without sacrificing speed of response. All joints are heliarc welded and the element and lead wires are enclosed in the sheath in a special way to insure years of dependable service.

CHARACTERISTICS OF PLATINUM 100 OHM RESISTANCE ELEMENTS

Temperature vs. Resistance (Ω) (T.R.C. 32 to 212˚F (0 to 100°C): .385/˚C: .214/˚F) ±.12% @ 32˚F (0°C)

-400˚ (-240°)	4.49	3.40	2.30								
-300˚ (-185°)	25.10	22.71	20.33	17.97	15.65	13.38	11.21	9.25	7.42	5.91	0.206
-200˚ (-129°)	48.38	46.09	43.08	41.49	39.18	36.87	34.54	32.21	29.87	27.48	0.233
-100˚ (-74°)	70.95	68.72	66.49	64.25	62.00	59.75	57.49	55.22	52.95	50.67	0.226
0˚ (-18°)	93.01	90.81	88.61	86.41	84.21	82.01	79.81	77.61	75.39	73.18	0.221
Deg. ˚F (°C)	**0˚ (-18°)**	**10˚ (-13°)**	**20˚ (-7°)**	**30˚ (-2°)**	**40˚ (5°)**	**50˚ (10°)**	**60˚ (16°)**	**70˚ (22°)**	**80˚ (27°)**	**90˚ (33°)**	**Ω/˚F**
0˚ (-18°)	93.01	95.20	97.38	99.57	101.74	103.59	106.06	108.22	110.38	112.53	0.217
+100˚ (+38°)	114.68	116.82	118.97	121.10	123.24	125.37	127.48	129.62	131.74	133.86	0.213
+200˚ (+94°)	135.97	138.08	140.18	142.29	144.38	146.48	148.57	150.66	152.74	154.82	0.209
+300˚ (+149°)	156.90	158.97	161.04	163.11	165.17	167.23	169.29	171.34	173.39	175.43	0.206
+400˚ (+205°)	177.48	179.51	181.55	183.58	185.61	187.63	189.65	191.67	193.68	195.69	0.202
+500˚ (+260°)	197.69	199.70	201.69	203.69	205.68	207.67	209.65	211.63	213.61	215.58	0.199
+600˚ (+316°)	217.55	219.52	221.48	223.44	225.40	227.35	229.30	231.24	233.19	235.12	0.195
+700˚ (+372°)	237.06	238.99	240.92	242.84	244.76	246.68	248.59	250.50	252.40	245.31	0.191
+800˚ (+427°)	256.20	258.10	259.99	261.88	263.76	265.64	267.52	269.39	271.26	273.13	0.188
+900˚ (+483°)	274.99	276.85	278.71	280.56	282.41	284.26	286.10	287.93	289.77	291.60	0.184
+1000˚ (+538°)	293.43	295.25	297.07	298.89	300.70	302.51	304.32	306.12	307.92	309.71	0.181
+1100˚ (+594°)	311.50	313.29	315.07	316.86	318.63	320.41	322.18	323.94	325.71	327.47	0.177
+1200˚ (+649°)	329.22	330.97	332.72	334.47	336.21	337.95	339.68	341.41	343.14	344.86	0.174

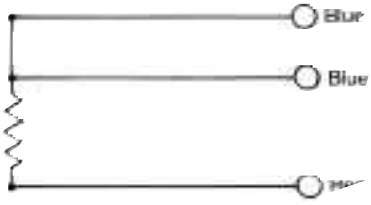
Lead Wire Configurations

Red

White

2-Wire RTD

Provides one connection to each end of the sensor. This configuration is suitable when the resistance of the lead wire can be considered an additive constant in the circuit and when changes in lead resistance, due to ambient temperature changes may be ignored.



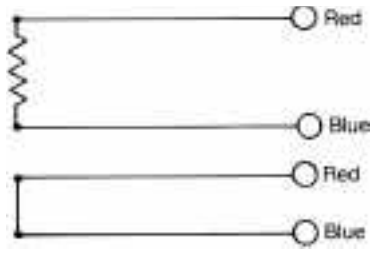
White

White

Red

3-Wire RTD Compensated

This is the most commonly used configuration. It provides one connection to one end of the sensor and two to the other end. When connected to an instrument designed to accept a three wire input, compensation is achieved for lead resistance and temperature change in lead resistance.



Red

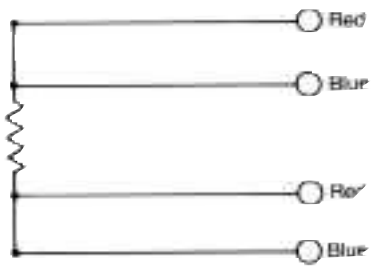
White

Red

White

4-Wire RTD Compensated

Similar to 2-wire configuration except that a separate pair of wires is provided as a loop to compensate for lead resistance and ambient temperature changes in lead resistance.



Red

White

Red

White

4-Wire RTD Connected

Provides connections to each end of the sensor. Used for measurements requiring highest precision.

Note: Above color coding may change due to various wire requirements.