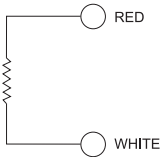


ELEMENT CONNECTIONS

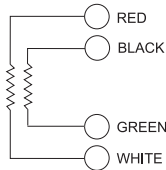
RTD sensor assemblies are available with two, three, and four wire leads. Two wire connected elements do not provide lead resistance compensation for the measuring device. Three and four wire connected elements provide a means for compensating for lead resistance between the sensor and the measuring device.

Two-Wire: Provides one connection to each end of the element. This construction is suitable where the resistance of the lead wire may be considered as an additive constant in the circuit, and particularly where the changes in lead resistance due to ambient temperature changes may be ignored.

2 WIRE SINGLE

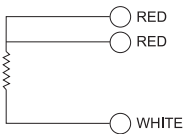


2 WIRE DUPLEX

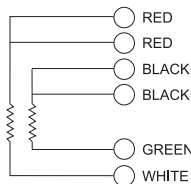


Three-Wire: Provides one connection to one end of the element and two to the other end of the element. Connected to an instrument designed to accept three wire input, sufficient compensation is usually achieved for leadwire resistance and temperature change in leadwire resistance. This is the most commonly used configuration.

3 WIRE SINGLE

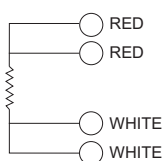


3 WIRE DUPLEX

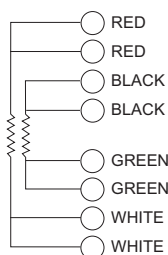


Four-Wire: Provides two connections to each end of the element to completely compensate for leadwire resistance and temperature change in leadwire resistance. This configuration is used where highly accurate temperature measurement is vital.

4 WIRE SINGLE



4 WIRE DUPLEX



LEADWIRE RESISTANCE

Lead resistance has a large effect on RTD temperature measurement accuracy. A two wire circuit provides no compensation and can provide large measurement errors. The following table shows the effects of leadwire resistance on temperature measurements using low temperature RTD assemblies with copper leadwire.

Leadwire Resistance

LEADWIRE WIRE GAUGE	RESISTANCE OHMS PER FOOT	UNCOMPENSATED 2-WIRE CIRCUITS	
		MAX. LENGTH FOR 1 °F ERROR	ERROR IN °F PER DOUBLE FT.
30	0.133	0.81 ft.	1.24 °F
24	0.0333	3.2 ft.	0.31 °F
22	0.0213	5.1 ft.	0.198 °F
20	0.0148	7.27 ft.	0.14 °F
18	0.0083	13.0 ft.	0.077 °F
16	0.0052	20.7 ft.	0.048 °F

Leadwire Transition Fitting Dimensions

CODE	SHEATH DIAMETER (inches)	FITTING OD (inches)	FITTING LENGTH (inches)	
			WITH SPRING	W/O SPRING
15, 16, 19	1/8	1/4	2 1/4	1 1/4
15, 16, 19	1/8 ^[1]	3/8	2 1/2	1 1/4
15, 16, 19	3/16	3/8	2 1/2	1 1/4
15, 16, 19	1/4	3/8	2 1/2	1 1/4
15, 16, 19	3/8	7/16	2 1/4	1 1/2

[1] Used with flexible armor tubing and duplex RTD's

Flexible Armor Tubing

DESCRIPTION	DIMENSIONS (inches)	MAX. TEMP RATING
304 SS Flexible Armored Tubing	0.188 ID x 0.275 OD	1600 °F
PVC Covered 304 SS Flexible Armored Tubing	0.188 ID x 0.343 OD	212 °F
Teflon® Covered 304 SS Flexible Armored Tubing	0.188 ID x 0.313 OD	400 °F