

## Trouble Shooting an RTD

Resistance is read across a ball of solder. This solder changes with temperature. The resistance is known, and is described by this table. Two wires are connected to one side of the ball (Red to Red) to be used for subtracting out lead resistance. This allows for long lead lengths without the need for calibration.

Readings taken from white to white should only show the lead length (1-2 ohms). The reading between each white and the red should be the resistance in the table for the RTD temperature plus that of the lead resistance (Note that some manufactures may use red,red white or other color combinations for the same type of device)

Resistance at 100 ohms

**Resistance vs Temperature for a 100Ohm RTD**

°F	0	1	2	3	4	5	6	7	8	9	10	°F
-50	82.07	81.85	81.63	81.41	81.19	80.97	80.75	80.53	80.31	80.09	79.86	-50
-40	84.27	84.05	83.83	83.61	83.39	83.17	82.95	82.73	82.51	82.29	82.07	-40
-30	86.47	86.25	86.03	85.81	85.59	85.37	85.15	84.93	84.71	84.49	84.27	-30
-20	88.66	88.44	88.22	88	87.78	87.56	87.34	87.13	86.91	86.69	86.47	-20
-10	90.85	90.63	90.41	90.19	89.97	89.75	89.54	89.32	89.1	88.88	88.66	-10
0	93.03	92.82	92.6	92.38	92.16	91.94	91.72	91.5	91.29	91.07	90.85	0
10	95.21	95.03	94.85	94.67	94.49	94.31	94.13	93.95	93.77	93.59	93.41	10
20	97.39	97.25	97.11	96.97	96.83	96.69	96.55	96.41	96.27	96.13	95.99	20
30	99.57	99.48	99.39	99.3	99.21	99.12	99.03	98.94	98.85	98.76	98.67	30
40	101.74	101.69	101.64	101.59	101.54	101.49	101.44	101.39	101.34	101.29	101.24	40
50	103.9	103.87	103.84	103.81	103.78	103.75	103.72	103.69	103.66	103.63	103.6	50
60	106.07	106.06	106.05	106.04	106.03	106.02	106.01	106.0	105.99	105.98	105.97	60
70	108.23	108.23	108.23	108.23	108.23	108.23	108.23	108.23	108.23	108.23	108.23	70
80	110.38	110.38	110.38	110.38	110.38	110.38	110.38	110.38	110.38	110.38	110.38	80
90	112.53	112.53	112.53	112.53	112.53	112.53	112.53	112.53	112.53	112.53	112.53	90
100	114.68	114.68	114.68	114.68	114.68	114.68	114.68	114.68	114.68	114.68	114.68	100
110	116.83	116.83	116.83	116.83	116.83	116.83	116.83	116.83	116.83	116.83	116.83	110
120	118.97	118.97	118.97	118.97	118.97	118.97	118.97	118.97	118.97	118.97	118.97	120
130	121.11	121.11	121.11	121.11	121.11	121.11	121.11	121.11	121.11	121.11	121.11	130
140	123.24	123.24	123.24	123.24	123.24	123.24	123.24	123.24	123.24	123.24	123.24	140
150	125.37	125.37	125.37	125.37	125.37	125.37	125.37	125.37	125.37	125.37	125.37	150
160	127.5	127.5	127.5	127.5	127.5	127.5	127.5	127.5	127.5	127.5	127.5	160
170	129.62	129.62	129.62	129.62	129.62	129.62	129.62	129.62	129.62	129.62	129.62	170
180	131.74	131.74	131.74	131.74	131.74	131.74	131.74	131.74	131.74	131.74	131.74	180
190	133.86	133.86	133.86	133.86	133.86	133.86	133.86	133.86	133.86	133.86	133.86	190
200	135.97	135.97	135.97	135.97	135.97	135.97	135.97	135.97	135.97	135.97	135.97	200
210	138.08	138.08	138.08	138.08	138.08	138.08	138.08	138.08	138.08	138.08	138.08	210
220	140.19	140.19	140.19	140.19	140.19	140.19	140.19	140.19	140.19	140.19	140.19	220
230	142.29	142.29	142.29	142.29	142.29	142.29	142.29	142.29	142.29	142.29	142.29	230
240	144.39	144.39	144.39	144.39	144.39	144.39	144.39	144.39	144.39	144.39	144.39	240
250	146.49	146.49	146.49	146.49	146.49	146.49	146.49	146.49	146.49	146.49	146.49	250

Our reading of 105.6 within 2F

Resistance at 51 F

### Temperature

Temperature is reading 56.3. From the table we get 105.2 F



56.3 F

### RED to RED

low resistance equal to ohms.ft of lead wires (In this case 0.4 ohms)



0.4 Ω

### Each White to Red

reading should match ohms on chart at the expected temperature of the RTD being measured. This example 105.6 ohms equals 58F

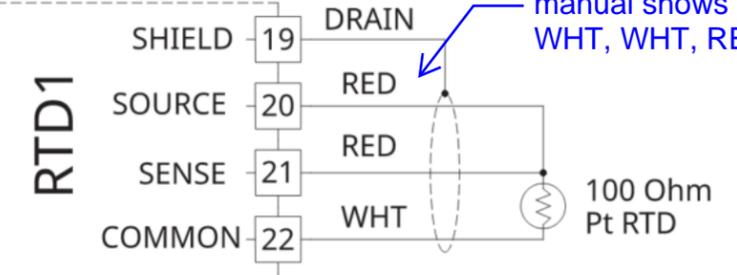


105.6 Ω



105.6 Ω

C910 Controller



See the C910 Installation Manual which can be found here:

<https://cdn.chemex.com/Product%20Documents/Installation%20Manuals/Raychem-IM-H58415-C910series-EN.pdf>

**NOTE THAT THE COLORS MAY DIFFER FOR DIFFERENT RTDs**



TITLE: Testing a 100Ω RTD		
SCALE: NONE	DATE: 2/16/26	REV: A