Technical Reference

RTD Specifications

OMEGAs sanitary RTD sensors are supplied standard with 100 Ω , Class A sensing elements that conform to the International IEC 60751 Standard. This standard specifies the resistance vs. temperature relationship, the Accuracy Classes, and the color code used. This information is included below to help in the application and use of these sanitary sensors.

Resistance vs. Temperature Characteristics

The Resistance vs. Temperature Characteristics of OMEGA sanitary RTD sensors conform to the following equation:

Equations

Platinum RTD resistance can be calculated using the Callendar-Van Dusen Equation as follows:

For temperatures below 0°C: $Rt = R0 [1 + At + Bt^{2} + C(t-100)t^{3}]$ where: $A = 3.9083 \times 10^{-3} (C^{-1})$ $B = -5.775 \times 10^{-7} (C^{-2})^{2}$ $C = -4.183 \times 10^{-12} (C^{-4})$ R0 = Resistance at 0°C t = Temperature in degrees celsius For temperatures above 0°C, this simplifies to: $Rt = R0(1 + At + Bt^{2})$

Resistance vs. Temperature Values per IEC 60751

Temp (°C)	Resistance (Ω)	Temp (°C)	Resistance (Ω)	Temp (°C)	Resistance (Ω)
-200	18.52	150	157.33	450	264.18
-150	39.72	200	175.86	500	280.98
-50	80.31	250	194.10	550	297.49
0	100.00	300	212.05	600	313.71
50	119.40	350	229.72	650	329.64
100	138.50	400	247.09	700	345.28

To see the full table (every 1°C), visit omega.com/rtdtable

Note: Resistance values for temperatures from -200 to 700°C are provided for reference. The RTD sensors included in these pages have specific temperature ranges assigned. See the applicable product pages for specific temperature ranges.

Accuracy Classes

There are four "Accuracy Classes" specified in IEC 60751, listed from least accurate to most accurate they are: (Note: Accuracy Values are in Degrees C)

(-50 to 500°C)

(-50 to 500°C)

(-30 to 300°C)

(0 to 150°C)



where t = temperature of interest in °C without regard to sign

(† also known as Class AA)



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OMEGAs Sanitary RTDs Come Standard

with Class A

Accuracies



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