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TDI Information Sheet

What is Alpha, α?

Summary

The temperature coefficient of platinum resistance sensors, or "platinum resistors" is referred to as α (Alpha).

In IEC 60751 Edition 2.0 2008-07 it is defined as,

$$\alpha = \frac{R_{100}-R_0}{R_0 \ 100\ ^oC}$$

Conventionally written as $\alpha = 3.851 \times 10^{-3}\ ^oC^{-1}$
(At 100 °C the nominal resistance value is 138.51 Ω, prior to the 1995 amendment to IEC 751 at 100 °C the value was 138.50 Ω, giving $\alpha = 3.850 \times 10^{-3}\ ^oC^{-1}$)

Calculating Alpha

α can also be calculated using,

$$\alpha = 0.01\ (R_{100} / R_0)-1$$

or

$$\alpha = A + (100 \times B)$$

Where $A = -3.9083 \times 10^{-3}$ and $B = -5.77500 \times 10^{-7}$

Other Alpha Values

TDI can supply detectors with to different standards, the US Standard Curve and JIS C1604 1981 with a value of $\alpha = 3.916 \times 10^{-3}\ ^oC^{-1}$ and $\alpha = 3.900 \times 10^{-3}\ ^oC^{-1}$ which was originally specified by the British aircraft industry, BS 2G 148.

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