

Conductor Resistance Temperature Calculator

Estimates conductor resistance at a second temperature from a known resistance basis and temperature coefficient. The calculation does not identify conductor material or select wire size.

Generated October 10, 2026

<https://www.elecatrix.com/wire-raceway-ampacity/conductor-resistance-temperature-calculator/>

Inputs

Input	Value	Unit
Base resistance	1.588	ohm
Base temperature	20	deg C
Operating temperature	70	deg C
Temperature coefficient	0.0039	1/deg C

Results

Result	Value	Unit
Adjusted resistance	1.9	ohm
Resistance change	19.65	%
Temperature change	50	deg C

Calculation details

Detail	Value	Unit
Calculation basis	Adjusted resistance uses the entered linear temperature coefficient and the difference between operating and base temperature.	
Selection boundary	Estimate only; no conductor material, alloy, AC effects, skin effect, installation temperature, ampacity, termination, manufacturer, or code-compliance result is made.	

Formulas

$$\Delta T = T_2 - T_1$$

$$R_2 = R_1 [1 + \alpha(T_2 - T_1)]$$

$$\text{Resistance change (\%)} = ((R_2/R_1) - 1) \times 100\%$$

Warnings and limitations

Conductor Resistance Temperature Calculator

Estimates conductor resistance at a second temperature from a known resistance basis and temperature coefficient. The calculation does not identify conductor material or select wire size.

Generated October 10, 2026

<https://www.elecatrix.com/wire-raceway-ampacity/conductor-resistance-temperature-calculator/>

This resistance-temperature estimate uses a user-supplied linear coefficient. It does not identify material, replace verified conductor data, select a wire, or determine code compliance.