

Series Resistor Value Calculator

Calculate the equivalent resistance of three fixed resistors in series for component-level circuit review. Final component selection still requires rated voltage, power, tolerance, and application checks.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/resistor-series-value-calculator/>

Inputs

Input	Value	Unit
Resistance 1	10	ohm
Resistance 2	20	ohm
Resistance 3	30	ohm

Results

Result	Value	Unit
Equivalent resistance	60	ohm
Equivalent-to-smallest ratio	6	x

Calculation details

Detail	Value	Unit
Calculation basis	Ideal fixed-resistance series arithmetic. Resistance values add because the same current flows through each series element.	
Component boundary	This result does not model tolerance, temperature coefficient, resistor wattage, voltage rating, parasitics, frequency behavior, or manufacturer data.	
U.S. project boundary	United States electrical estimate only. Verify resistor ratings, enclosure and thermal conditions, equipment listings, manufacturer instructions, and the adopted local requirements before use.	

Formulas

$$R_{eq} = R_1 + R_2 + R_3$$

$$\text{Ratio} = \frac{R_{eq}}{\min(R_1, R_2, R_3)}$$

Warnings and limitations

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This series-resistance estimate uses ideal fixed-resistance arithmetic. It does not select resistor wattage or voltage rating, model tolerance or temperature, or verify equipment, installation, manufacturer, or code requirements.