

Current Limiting Resistor Calculator

Calculate DC series resistance and resistor power when the load voltage and target current are known.

Generated October 10, 2026

<https://www.elecatrrix.com/circuits-components/current-limiting-resistor-calculator/>

Inputs

Input	Value	Unit
Supply voltage	12	V
Load voltage	2	V
Target current	0.02	A

Results

Result	Value	Unit
Supply voltage used	12	V
Load voltage used	2	V
Current used	0.02	A
Resistor voltage	10	V
Ideal resistor value	500	ohm
Resistor power	0.2	W
Target current	20	mA

Calculation details

Detail	Value	Unit
Calculation basis	The resistor voltage is supply voltage minus load voltage. Resistance equals resistor voltage divided by target current, and resistor power equals resistor voltage multiplied by current.	
Component boundary	Ideal DC series-load arithmetic only. It does not choose a standard resistor, verify load I-V behavior, model supply tolerance or transients, or approve resistor wattage, temperature, or safety.	

Current Limiting Resistor Calculator

Calculate DC series resistance and resistor power when the load voltage and target current are known.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/current-limiting-resistor-calculator/>

Formulas

$\text{resistor voltage} = \text{supply voltage} - \text{load voltage}$

$\text{resistance} = \text{resistor voltage} / \text{target current}$

$\text{resistor power} = \text{resistor voltage} \times \text{target current}$

$\text{target current milliamps} = \text{target current amperes} \times 1000$

Warnings and limitations

This is ideal DC series-load arithmetic. It does not model the load current-voltage curve, supply tolerance, transients, temperature, resistor tolerance, standard values, or final resistor wattage selection.