

Lighting Circuit Voltage Drop Calculator

Estimate lighting-circuit voltage drop, percent drop, end voltage, and approximate conductor loss from entered electrical values.

Generated October 10, 2026

<https://www.elecatrix.com/lighting/lighting-circuit-voltage-drop-calculator/>

Inputs

Input	Value	Unit
Circuit current	12	A
One-way length	150	ft
Conductor resistance	2	ohm/1000 ft
System voltage	120	V
Phase model	Single-phase two-conductor	

Results

Result	Value	Unit
One-way resistance	0.3	ohm
Phase multiplier	2	x
Voltage drop	7.2	V
Voltage drop	6	%
End voltage	112.8	V
Approximate circuit loss	86.4	W

Calculation details

Detail	Value	Unit
Calculation basis	Voltage drop uses the selected phase multiplier, circuit current, one-way length, and entered conductor resistance.	
Screening boundary	Lighting circuit voltage-drop arithmetic only; no conductor table, temperature, reactance, ampacity, breaker, equipment, utility, or code approval result is made.	

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Formulas

$\text{one-way resistance} = \text{one-way length} \times \text{conductor resistance} / 1000$

$\text{phase multiplier} = 2 \text{ for single-phase two-conductor; } \sqrt{3} \text{ for balanced three-phase}$

$\text{voltage drop} = \text{phase multiplier} \times \text{current} \times \text{one-way resistance}$

$\text{voltage-drop percent} = \text{voltage drop} / \text{system voltage} \times 100$

$\text{estimated end voltage} = \text{system voltage} - \text{voltage drop}$

Warnings and limitations

This voltage-drop estimate uses entered resistance and length only. It does not verify conductor table values, temperature, reactance, ampacity, breaker sizing, equipment limits, utility terms, or code compliance.