# Ohm's Law and Electrical Power Calculator

Voltage, current, resistance and power of a DC circuit or a resistive AC load from any two of them, by Ohm's law V = I R and P = V I.

**Method:** Ohm's law (G.S. Ohm, 1827); Joule's law P = V I

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Values you know | Voltage and current | |
| Voltage | 230.00 | V |
| Current | 10.000 | A |
| Resistance | 23.000 | Ω |
| Power | 2,300.0 | W |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Voltage | 230.00 | V |
| Current | 10.000 | A |
| Resistance | 23.000 | Ω |
| Power | 2,300.0 | W |

**Notes for this case**

- For AC this is a purely resistive load; with reactance use the impedance and P = V I cos φ.

## Formula and method

$$V = I\,R$$

$$P = VI = I^2 R = \frac{V^2}{R}$$

### Variables

| | | |
|---|---|---|
| $\mathrm{known}$ | Values you know | - |
| $V$ | Voltage | V |
| $I$ | Current | A |
| $R$ | Resistance | Ω |
| $P$ | Power | W |

### Method and standards

Ohm's law relates voltage, current and resistance; power follows from Joule's law. Any two of the four quantities fix the other two.

### Assumptions and limits

- Only the two values named by the chosen mode are used; the other inputs on the form are ignored.
- Linear resistance at its working temperature.
- DC or resistive AC loads.

### References

- Ohm's law (G.S. Ohm, 1827); Joule's law P = V I

## Report details

| | |
|---|---|
| Report reference | FCC-PRAM-Y2S9 (the same inputs always give the same reference) |
| Generated | 17 November 2026, 19:45 UTC |
| Calculator | Ohm's Law and Electrical Power Calculator |
| Method last reviewed | 12 November 2026 |
| Software release | FireCAD Calc, release of 17 November 2026 |
| Release checks | 4 reference cases of this calculator, computed independently, are checked on every release |

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

### This calculator online

https://calc.firecad.com/electrical/circuits/ohms-law-power

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.