

Off Grid Load Calculator

Estimate daily energy, autonomy energy, average current, and amp-hours from an entered off-grid load, runtime, autonomy period, and system voltage.

Generated October 11, 2026

<https://www.elecatrrix.com/solar-backup-power/off-grid-load-calculator/>

Inputs

Input	Value	Unit
Average load	600	W
Hours per day	8	h/day
Days of autonomy	2	days
System voltage	48	V

Results

Result	Value	Unit
Daily load energy	4.8	kWh/day
Autonomy energy	9.6	kWh
Average DC current	12.5	A
Autonomy amp-hours	200	Ah

Calculation details

Detail	Value	Unit
Calculation basis	Daily energy equals average load watts multiplied by daily hours and divided by 1000. Autonomy energy scales that daily energy by entered days.	
Screening boundary	Off-grid load arithmetic only; no solar production, inverter surge, battery depth of discharge, temperature, code, or product approval result is made.	

Formulas

daily load kWh = average load W x hours per day / 1000

autonomy energy kWh = daily load kWh x days of autonomy

autonomy Ah = autonomy energy kWh x 1000 / system voltage V

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Warnings and limitations

This is load-energy arithmetic only. It does not include solar harvest, battery depth of discharge, inverter efficiency, temperature correction, surge load, or code compliance.