

Dwelling Water Heater Load Calculator

Screen residential water-heater connected and assessed current for tank, tankless, or heat-pump equipment using entered nameplate or rated-power data.

Generated October 10, 2026

<https://www.elecatrix.com/residential-load-service/dwelling-water-heater-load-calculator/>

Inputs

Input	Value	Unit
Water-heater type	Tank	
Electrical basis	Nameplate current	
Rated power	4.5	kW
Nameplate current	18.75	A
System voltage	240	V
Quantity	1	units
Entered demand factor	1	x

Results

Result	Value	Unit
Unit current from rated power	18.75	A
Selected unit current	18.75	A
Connected current	18.75	A
Assessed current	18.75	A

Selected basis

manufacturer nameplate current

Calculation details

Detail	Value	Unit
Calculation basis	Power-basis current equals rated watts divided by entered voltage. The selected unit current is multiplied by quantity and the entered demand factor.	

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Equipment boundary	Model-specific water-heater voltage, current, circuit, protection, installation, and manual requirements remain outside this estimate.
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Formulas

$$I_{\text{power}} = \frac{P_{\text{rated}}}{V} \times 1000$$

$$I_{\text{unit}} = \begin{cases} I_{\text{nameplate}}, & \text{nameplate basis} \\ I_{\text{power}}, & \text{power basis} \end{cases}$$

$$I_{\text{connected}} = I_{\text{unit}} \times N$$

$$I_{\text{assessed}} = I_{\text{connected}} \times F_{\text{demand}}$$

Warnings and limitations

Tank, tankless, and heat-pump water heaters vary by model, voltage, current, circuit arrangement, and installation manual. Use exact product data and qualified review; this page does not generalize a breaker or wire size.