

Residential Panel Phase Balance Calculator

Enter residential panel branch-circuit assignments and load currents for a preliminary 120/240 V or 120/208 V distribution review.

Generated October 10, 2026

<https://www.elecatrix.com/residential-load-service/residential-panel-phase-balance-calculator/>

Inputs

Input	Value	Unit
Panel system	120/240 V single-phase	
Panel branch rows	Rows: 3	
Row 1 - Row label	Kitchen receptacles	
Row 1 - Load connection	120 V line-to-neutral	
Row 1 - Leg assignment	L1	
Row 1 - Load current	12	A
Row 2 - Row label	Lighting	
Row 2 - Load connection	120 V line-to-neutral	
Row 2 - Leg assignment	L2	
Row 2 - Load current	8	A
Row 3 - Row label	Range	
Row 3 - Load connection	Line-to-line load	
Row 3 - Leg assignment	Both legs	
Row 3 - Load current	30	A

Results

Result	Value	Unit
L1 total load	42	A
L2 total load	38	A
Leg difference	4	A
Leg imbalance	9.5238	%

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Linear 120 V neutral current	4	A
Midpoint transfer	2	A
Counted branch rows	3	rows
Balance comparison	Entered legs are not equal	
Calculation details		

Detail	Value	Unit
Calculation basis	Line-to-line rows contribute equally to both legs. Only line-to-neutral rows contribute to the linear neutral-current comparison.	
Panel boundary	Preliminary panel distribution review only; verify circuit identity, breaker positions, panel listing, nonlinear loads, neutral details, service capacity, and AHJ requirements separately.	

Formulas

$$I_{L1} = \text{sum } I_{120V,L1} + \text{sum } I_{\text{line-line}}$$

$$I_{L2} = \text{sum } I_{120V,L2} + \text{sum } I_{\text{line-line}}$$

$$\text{Delta } I = |I_{L1} - I_{L2}|$$

$$\text{Imbalance\%} = \text{fracDelta } \text{Imax}(I_{L1}, I_{L2}) \times 100$$

$$I_N = |\text{sum } I_{120V,L1} - \text{sum } I_{120V,L2}|$$

$$I_{\text{midpoint}} = (\text{Delta } I/2)$$

Warnings and limitations

This is a preliminary panel load-distribution review. It does not select breakers or conductors, determine service size, calculate nonlinear neutral current, apply demand factors, or establish code compliance.