

Commercial Neutral Diversity Calculator

Calculate the linear neutral-current component and phase imbalance from three entered phase currents, then apply an explicit diversity factor.

Generated October 10, 2026

<https://www.elecatrrix.com/commercial-industrial-loads/commercial-neutral-diversity-calculator/>

Inputs		
Input	Value	Unit
Phase A current	100	A
Phase B current	80	A
Phase C current	60	A
Neutral diversity factor	75	%
Results		
Result	Value	Unit
Total entered phase current	240	A
Average phase current	80	A
Linear neutral current	34.641	A
Diversity factor used	75	%
Diversified neutral current	25.9808	A
Maximum phase deviation	20	A
Phase-current imbalance	25	%
Calculation details		
Detail	Value	Unit
Calculation basis	Linear three-phase neutral current uses the vector-sum expression for 120-degree phase displacement, then applies the entered diversity percentage as a transparent arithmetic factor.	

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Review boundary

Screening arithmetic only. No harmonic neutral current, nonlinear-load behavior, conductor ampacity, shared-neutral rule, equipment rating, utility, or code-compliance result is made.

Formulas

$$I_{N, \text{linear}} = \sqrt{I_A^2 + I_B^2 + I_C^2 - I_A I_B - I_B I_C - I_C I_A}$$

$$I_{N, \text{diversified}} = I_{N, \text{linear}} \times \text{fracD}_{\%100}$$

$$I_{\text{avg}} = (I_A + I_B + I_C) / 3$$

$$\Delta I_{\text{max}} = \max(|I_A - I_{\text{avg}}|, |I_B - I_{\text{avg}}|, |I_C - I_{\text{avg}}|)$$

$$U_{\%} = \frac{\Delta I_{\text{max}}}{I_{\text{avg}}} \times 100$$

Warnings and limitations

This neutral-current worksheet does not model harmonic or nonlinear loads, select a neutral conductor, or establish code compliance.