

VFD Harmonic Current Calculator

Calculate per-drive and fleet harmonic RMS current from fundamental current, current THD, drive count, and an entered comparison reference.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/vfd-harmonic-current-calculator/>

Inputs		
Input	Value	Unit
Fundamental current per drive	100	A
Current THD	35	%
Drive count	4	drives
Entered harmonic current reference	160	A
Results		
Result	Value	Unit
Harmonic RMS current per drive	35	A
Total RMS current per drive	105.9481	A
Fleet harmonic current	140	A
Fleet total RMS current	423.7924	A
Reference margin	20	A
Status		
Status	Value	Unit
Harmonic reference	At or below entered harmonic-current reference	
Calculation details		
Detail	Value	Unit
Calculation basis	Entered THD is applied to fundamental current, combined by RMS quadrature, and multiplied by drive count.	
Harmonic boundary	Harmonic-current screen only; IEEE 519, filters, resonance, transformer heating, and utility review remain external.	

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Formulas

$$I_{\text{harmonic}} = I_{\text{fundamental}} \times \frac{\text{THD}_{\%}}{100}$$

$$I_{\text{RMS, total}} = \sqrt{I_{\text{fundamental}}^2 + I_{\text{harmonic}}^2}$$

$$I_{\text{fleet, harmonic}} = I_{\text{harmonic}} \times N_{\text{drives}}$$

$$M_{\text{reference}} = I_{\text{reference}} - I_{\text{fleet, harmonic}}$$

Warnings and limitations

This harmonic-current worksheet does not verify IEEE 519 compliance, filter performance, transformer heating, resonance, utility limits, or manufacturer drive data.