

Voltage Sag Calculator

Estimates voltage sag and remaining voltage from system voltage, available fault current, and a load-current step for initial power-quality review.

Generated October 10, 2026

<https://www.elecatrix.com/power-quality-transformers/voltage-sag-calculator/>

Inputs

Input	Value	Unit
System voltage	480	V
Available fault current	10000	A
Load-current step	800	A
Phase count	Three-phase	

Results

Result	Value	Unit
Estimated source impedance	0.0277	ohm
Estimated voltage sag	38.4	V
Estimated sag	8	%
Remaining voltage	441.6	V
Remaining voltage	92	%
Phase multiplier	1.7321	x

Calculation details

Detail	Value	Unit
Calculation basis	Voltage sag is estimated from available fault current as a source-strength proxy and the entered step load current.	
Selection boundary	Power-quality estimate only; verify real source impedance, motor starting profile, utility data, transformer impedance, and equipment ride-through requirements.	

Formulas

$m = 1$ for single-phase; $m = \sqrt{3}$ for balanced three-phase

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$$Z_{\text{source}} = \frac{V_{\text{system}}}{I_{\text{fault}}}$$

$$V_{\text{sag}} = I_{\text{step}} Z_{\text{source}}$$

$$\text{Sag (\%)} = 100 \times \frac{V_{\text{sag}}}{V_{\text{system}}}$$

$$V_{\text{remaining}} = V_{\text{system}} - V_{\text{sag}}$$

$$\text{Remaining voltage (\%)} = 100 \times \frac{V_{\text{remaining}}}{V_{\text{system}}}$$

Warnings and limitations

This is a voltage-sag estimate. It does not replace utility data, transformer impedance studies, motor-start analysis, power-quality monitoring, or equipment ride-through verification.