

Transformer Percent Impedance Test Calculator

Provides a transformer percent-impedance estimate from test voltage on the rated winding after confirming that test current matches the rated-current basis.

Generated October 10, 2026

<https://www.elecatrix.com/power-quality-transformers/transformer-percent-impedance-calculator/>

Inputs

Input	Value	Unit
Rated primary voltage	12470	V
Rated test-winding voltage	480	V
Rated current basis	90.211	A
Impedance-test voltage	27.6	V
Impedance-test current	90.211	A
Current-match tolerance	1	%

Results

Result	Value	Unit
Percent impedance	5.75	%Z
Primary-to-secondary voltage ratio	25.9792	x
Test-current deviation	N/A	%
Current-match tolerance used	1	%
Test-to-rated current ratio	1	x

Calculation details

Detail	Value	Unit
Calculation basis	Percent impedance equals impedance-test voltage on the rated winding divided by rated winding voltage, multiplied by 100, when the test current matches the rated-current basis.	

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Boundary

Reverse-direction impedance-test arithmetic only. Test voltage must be measured on the rated winding at the rated-current basis; no impedance in ohms, transformer-limited fault current, equipment rating, protection, or fault-study result is made.

Formulas

$$a = \frac{V_{\text{primary,rated}}[V] V_{\text{test winding,rated}}[V]}{V_{\text{test winding,rated}}[V]}$$
$$\Delta I_{\%} = \frac{|I_{\text{test}}[A] - I_{\text{rated}}[A]|}{I_{\text{rated}}[A]} \times 100$$
$$I_{\text{ratio}} = \frac{I_{\text{test}}[A]}{I_{\text{rated}}[A]}$$
$$Z_{\%} = \frac{V_{\text{test}}[V]}{V_{\text{test winding,rated}}[V]} \times 100$$

Warnings and limitations

This is reverse-direction impedance-test arithmetic only. The test current must match the rated-current basis and the test-winding voltage must be identified correctly. No impedance-ohms, transformer-limited fault-current, equipment, protection, or fault-study claim is made.