

# Transformer Turns-Ratio Test Calculator

Compare transformer turns-ratio test records before manufacturer and standards review.

Generated October 10, 2026

<https://www.elecatrix.com/testing-protection-grounding/transformer-turns-ratio-test-calculator/>

## Inputs

| Input                       | Value | Unit |
|-----------------------------|-------|------|
| Tap or test-point label     | Tap 1 |      |
| Expected primary voltage    | 12470 | V    |
| Expected secondary voltage  | 480   | V    |
| Measured primary voltage    | 12470 | V    |
| Measured secondary voltage  | 479   | V    |
| Entered reference deviation | 0.5   | %    |

## Results

| Result                      | Value   | Unit |
|-----------------------------|---------|------|
| Expected ratio              | 25.9792 | x    |
| Measured ratio              | 26.0334 | x    |
| Signed deviation            | 0.2088  | %    |
| Absolute deviation          | 0.2088  | %    |
| Margin vs entered reference | 0.2912  | %    |

## Calculation details

| Detail            | Value                                                                                                                                                                             | Unit |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Calculation basis | Expected ratio equals expected primary voltage divided by expected secondary voltage. Measured ratio uses the paired measured voltages.                                           |      |
| Test boundary     | Measured-vs-nameplate ratio comparison only; verify tap position, vector group, phase connections, instrument procedure, manufacturer data, and current test standard separately. |      |

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## Formulas

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$$R_{\text{expected}} = \frac{V_{\text{primary}}}{V_{\text{secondary}}}$$

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$$R_{\text{measured}} = \frac{V_{\text{primary}}}{V_{\text{secondary}}}$$

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$$\text{Deviation} = \frac{R_{\text{measured}} - R_{\text{expected}}}{R_{\text{expected}}} \times 100\%$$

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$$\text{Reference margin} = \text{entered reference} - |\text{deviation}|$$

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## Warnings and limitations

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This measured-ratio comparison does not validate vector group, tap-changer operation, insulation condition, phase connections, transformer acceptance, or permission to energize.