Transformer Full-Load Current (HV and LV)

Rated (full-load) current on the high-voltage and low-voltage sides of a three-phase or single-phase transformer from its kVA rating and voltages.

Method: IEC 60076-1 (rated current)

Input parameters

Unit system: SI

Parameter	Value	Unit
Rated power	1,000.0	kVA
Primary (HV) rated voltage, line to line	11.000	kV
Secondary (LV) rated voltage, line to line	433.00	V
System	Three-phase	

Calculated results

Parameter	Value	Unit
Primary rated current	52.486	A
Secondary rated current	1,333.4	A
Voltage ratio	25.404	

Formula and method

$$I_1 = \frac{S_r}{\sqrt{3}\,U_1} \qquad I_2 = \frac{S_r}{\sqrt{3}\,U_2} \qquad (\mathrm{single-phase:\ without}\ \sqrt{3}) \qquad \mathrm{ratio} = \frac{U_1}{U_2}$$

Variables

S_r	rated power	VA
U_1	primary (HV) rated voltage, line to line	V
U_2	secondary (LV) rated voltage, line to line	V
system	three-phase or single-phase	–
I_1	primary rated current	A
I_2	secondary rated current	A
U_1/U_2	voltage ratio	–

Method and standards

Rated current as defined in IEC 60076-1: the current flowing through a line terminal when rated power is applied at rated voltage.

Assumptions and limits

- Balanced three-phase or single-phase transformer; for a three-winding transformer apply it to each winding with its own rating.
- Rated (no-load) voltages; the current at a different operating voltage for the same kVA scales inversely.

References

- IEC 60076-1 (rated current)

Report details

Report reference	FCC-SNQ4-94WW (the same inputs always give the same reference)
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/electrical/transformers/transformer-flc

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.