kVA to Amps and Amps to kVA Calculator

Current in amperes from apparent power in kVA and voltage, and kVA from amperes, for single-phase and three-phase supplies, generators and transformers.

Method: AC power relations S = V I (1φ); S = √3 V I (3φ)

Input parameters

Unit system: SI

Parameter	Value	Unit
Apparent power	100.00	kVA
Voltage (line to line for three phase)	415.00	V
Supply	Three phase	
Current (to find kVA)	100.00	A

Calculated results

Parameter	Value	Unit
Current for the kVA given	139.12	A
Apparent power for the current given	71.880	kVA

Formula and method

$$I = \frac{S}{\sqrt{3}\,V}\,(3\phi), \quad I = \frac{S}{V}\,(1\phi)$$

Variables

S	Apparent power	VA
V	Voltage (line to line for three phase)	V
phases	Supply	-
I_{given}	Current (to find kVA)	A
I	Current for the kVA given	A
S_I	Apparent power for the current given	VA

Method and standards

Definition of apparent power.

Assumptions and limits

- Balanced three-phase load.

References

- AC power relations S = V I (1φ)
- S = √3 V I (3φ)

Report details

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Software release	FireCAD Calc, release of 17 November 2026
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/power/kva-to-amps

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.