

Transformer Service Factor Calculator

Provides a preliminary comparison of entered load kVA with a service-factor-adjusted transformer capacity when the factor is documented for the exact equipment and duty.

Generated October 10, 2026

<https://www.elecatrrix.com/power-quality-transformers/transformer-service-factor-calculator/>

Inputs		
Input	Value	Unit
Nameplate transformer rating	100	kVA
Service factor	1.15	x
Entered load	100	kVA
Results		
Result	Value	Unit
Service-factor-adjusted capacity	115	kVA
Load utilization	86.9565	%
Capacity margin	15	kVA
Nameplate kVA used	100	kVA
Service factor used	1.15	x
Load kVA used	100	kVA
Status		
Status	Value	Unit
Capacity comparison	Within adjusted capacity	
Calculation details		
Detail	Value	Unit
Calculation basis	Available capacity equals entered nameplate kVA multiplied by the explicitly entered service factor. Load utilization compares entered load kVA with that capacity.	

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Boundary

Planning arithmetic only. A service factor is not a universal transformer operating permission; manufacturer approval, temperature rise, duty cycle, harmonics, environment, protection, and code review remain required.

Formulas

$$S_{\text{available}}[\text{kVA}] = S_{\text{nameplate}}[\text{kVA}] \times f_{\text{service}}[x]$$

$$U_{\%} = \frac{S_{\text{load}}[\text{kVA}]}{S_{\text{available}}[\text{kVA}]} \times 100$$

$$M[\text{kVA}] = S_{\text{available}}[\text{kVA}] - S_{\text{load}}[\text{kVA}]$$

Warnings and limitations

A service factor is not a universal transformer operating permission. This estimate does not approve temperature, duty cycle, harmonics, environment, protection, equipment, manufacturer use, or code compliance.