

Commercial Elevator Load Calculator

Calculate elevator motor input power, duty-adjusted apparent power, and current from stated motor output, efficiency, power factor, duty factor, and voltage.

Generated October 10, 2026

<https://www.elecatrix.com/commercial-industrial-loads/commercial-elevator-load-calculator/>

Inputs

Input	Value	Unit
Motor output power	20	kW
RMS voltage	480	V
Phase model	Balanced three-phase	
Power factor	0.85	PF
Efficiency	90	%
Duty factor	50	%

Results

Result	Value	Unit
Input power	22.2222	kW
Duty-adjusted apparent power	13.0719	kVA
Duty-adjusted current	15.723	A
Phase multiplier	1.7321	x
Power factor used	0.85	PF
Efficiency used	90	%

Calculation details

Detail	Value	Unit
Calculation basis	Elevator motor screening converts output kW to input kW by efficiency, then to kVA by power factor and applies the entered duty factor.	

Commercial Elevator Load Calculator

Calculate elevator motor input power, duty-adjusted apparent power, and current from stated motor output, efficiency, power factor, duty factor, and voltage.

Generated October 10, 2026

<https://www.elecatrrix.com/commercial-industrial-loads/commercial-elevator-load-calculator/>

Review boundary

Elevator load screening only; no elevator code, starting current, regeneration, controller data, feeder, protection, or equipment selection is determined.

Formulas

$$P_{\text{input}} = \frac{P_{\text{motor}}}{\eta}$$

$$S_{\text{duty}} = \frac{P_{\text{input}}}{\text{PF}} \times \frac{D_{\%}}{100}$$

$$I_{\text{duty}} = \frac{S_{\text{duty}}}{\sqrt{3} \times V_{\text{phase}}}$$

Warnings and limitations

This elevator load worksheet does not determine starting current, regeneration behavior, feeder requirements, protection, or code requirements.