

Motor Control Circuit Calculator

Estimate control-circuit VA, current, reserve requirement, transformer margin, and utilization from entered device loads.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/motor-control-circuit-calculator/>

Inputs

Input	Value	Unit
Contactor coil load	75	VA
Pilot device load	20	VA
Auxiliary load	40	VA
Spare allowance	25	%
Control voltage	120	V
Entered control transformer rating	200	VA

Results

Result	Value	Unit
Total control load	135	VA
Required control VA with spare	168.75	VA
Control current with spare	1.4063	A
Transformer margin	31.25	VA
Transformer utilization	84.375	%

Capacity comparison Within entered transformer capacity

Calculation details

Detail	Value	Unit
Calculation basis	Entered motor-control VA loads are summed, spare is applied, and current is estimated from control voltage.	
Control boundary	Control-power budget only; transformer selection, protection, SCCR, inrush, and device ratings remain external.	

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Formulas

total control load VA = coil VA + pilot device VA + auxiliary VA

required control VA = total control load VA x (1 + spare percent / 100)

control current = required control VA / control voltage

transformer margin = entered control transformer VA - required control VA

Warnings and limitations

This control-power budget does not select a transformer, fuse, conductor, relay, contactor, SCCR, or code-compliant control-circuit design.