

Transformer Grounding Resistor Calculator

Calculate neutral-grounding-resistor resistance, fault power, fault energy, and current-rating margin from entered voltage, fault current, and clearing duration.

Generated October 10, 2026

<https://www.elecatrix.com/power-quality-transformers/transformer-grounding-resistor-calculator/>

Inputs

Input	Value	Unit
Line-to-neutral voltage	277	V
Target ground-fault current	10	A
Clearing duration	10	s
Entered resistor current rating	12	A

Results

Result	Value	Unit
Resistor value	27.7	ohm
Resistor power during fault	2.77	kW
Fault energy for duration	27.7	kJ
Current rating margin	2	A

Status

Status	Value	Unit
Current-rating comparison	Entered rating meets or exceeds target current	

Calculation details

Detail	Value	Unit
Calculation basis	Ohm law and energy arithmetic from entered voltage, target current, duration, and current rating.	
Grounding boundary	Grounding resistor arithmetic only; grounding method, protection settings, duty, and installation review remain external.	

Formulas

Resistor resistance = (Line-to-neutral voltage/Target ground-fault current)

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Resistor power (kW) = (Voltage x Current/1000)

Fault energy (kJ) = (Voltage x Current x Duration/1000)

Current-rating margin = Entered resistor current rating - Target current

Warnings and limitations

This estimate does not select or approve a neutral grounding resistor, grounding method, protection settings, insulation rating, thermal duty, or code compliance.