

Control Cable Shield Calculator

Calculate screening-only shield-loop quantities without deciding bonding, grounding, EMC, or protection practice.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/control-cable-shield-calculator/>

Inputs

Input	Value	Unit
One-way shield length	100	ft
Shield resistance	0.8	ohm/1000 ft
Shield current	0.5	A

Results

Result	Value	Unit
Round-trip length	200	ft
Shield loop resistance	0.16	ohm
Shield voltage drop	0.08	V
Shield power	0.04	W

Calculation details

Detail	Value	Unit
Calculation basis	The shield loop uses twice the entered one-way length. Resistance scales by length, voltage drop is current multiplied by resistance, and power is current squared multiplied by resistance.	
Screening boundary	Arithmetic screening only; verify shield construction, bonding topology, induced current, frequency, grounding method, cable data, EMC requirements, and qualified installation review.	

Formulas

round-trip length ft = 2 x one-way length ft

shield loop resistance ohm = round-trip length ft x resistance ohm/1000 ft / 1000

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shield voltage drop $V = \text{shield current } A \times \text{shield resistance ohm}$

shield power $W = \text{shield current } A \text{ squared} \times \text{shield resistance ohm}$

Warnings and limitations

This is shield-loop arithmetic only. It does not specify bonding, grounding, EMC performance, protection, cable approval, or code compliance.