

Fire Alarm/Control Cable™ Performance Charts

Electrical Properties (ohms to neutral per 1000 feet)

Conductor Size AWG	XL, Reactance ¹	Rac, Resistance, 75°C ²	Z, Effective ³ Impedance
18	.047	7.77	6.24
16	.043	4.89	3.93
14	.042	3.07	2.48
12	.040	1.93	1.57

¹ In Steel Armor

² To correct for 90°C, multiply by 1.048

³ Effective Impedance is defined as $R \cos(\Theta) + X \sin(\Theta)$ where Θ is the power factor angle of the circuit. Effective impedance values shown in the table above are valid at 80% power factor.

Mutual Capacitance (pico farads per foot)

Conductor Size AWG	Twisted Pair ¹	Twisted Shielded Pair ²
18	30.0	47.3
16	33.5	54.8
14	36.3	60.7
12	38.8	66.4

¹ Between conductors

² Between one conductor and the other conductor(s) plus the shield

Inductance (L) to neutral, per 1000 feet is typically 0.0002mH for sizes 18 AWG through 250 kcmil

$$[*L = 0.1404 \text{ Log}_{10}(\text{GMD}/\text{GMR}) \times 10^{-3} \text{ Henrys to neutral per 1000 feet}]$$

Twists per Foot

Size	Total Number of Conductors Including Ground	Conductor Diameter	Length of Lay	Twists per Foot
18	3	0.08	2.8	4.3
18	4	0.08	3.2	3.8
18	5	0.08	3.3	3.7
16	3	0.09	3.2	3.8
16	4	0.09	3.6	3.3
16	5	0.09	3.7	3.3
14	3	0.105	3.7	3.3
14	4	0.105	4.2	2.9
14	5	0.105	4.3	2.8
12	3	0.125	4.4	2.7
12	4	0.125	5.0	2.4
12	5	0.125	5.1	2.4