

Appendix 11

Impedances of conduits and trunking

Table 11.1 Impedance of steel conduit at 20° C		
Heavy Gauge		
Nominal conduit size (mm)	Typical impedance (Note 3)	
	Resistance r (Note 1) (mΩ/m)	Reactance x (Note 1) (mΩ/m)
16	3.3	3.3
20	2.4	2.4
25	1.6	1.6
32	1.4	1.4
Light gauge		
Nominal conduit size (mm)	Typical impedance (Note 3)	
	Resistance r (Note 1) (mΩ/m)	Reactance x (Note 1) (mΩ/m)
16	4.5	4.7
20	3.7	3.7
25	2.1	2.1
32	1.5	1.5
Notes:		
1. Typical values are taken at fault currents greater than 100A. When I_f is less than 100A, the tabulated impedances should be doubled.		
2. When touch voltages on the conduit are being determined the product of current and resistance (r) gives a good approximation.		
3. The above values are at 20° C but may be assumed to be independent of temperature and are used for design and verification.		

Table 11.2 Impedance of steel trunking to BS4678 (Note 2)		
Size (mm x mm)	Typical impedance at 20° C	
	Resistance <i>r</i> (mΩ/m)	Reactance <i>x</i> (mΩ/m)
50 x 37	2.96	2.96
50 x 50	2.44	2.44
75 x 50	1.75	1.75
75 x 75	1.37	1.37
100 x 50	1.52	1.52
100 x 75	1.21	1.21
100 x 100	0.87	0.87
150 x 50	1.05	1.05
150 x 75	0.87	0.87
150 x 100	0.81	0.81
150 x 150	0.52	0.52
Notes: 1. When determining touch voltages on the trunking, the product of current and resistance (<i>r</i>) gives a good approximation. 2. The above values may be assumed to be independent of temperature and are used for design and verification.		

Table 11.3 Impedance of steel cable under floor trunking to BS 4678 Part 2 (Note 2)		
Size (mm x mm)	Typical impedance at 20° C	
	Resistance <i>r</i> (mΩ/m)	Reactance <i>x</i> (mΩ/m)
75 x 25	1.28	1.28
75 x 37.5	1.16	1.16
100 x 25	1.08	1.08
100 x 37.5	0.99	0.99
150 x 25	0.74	0.74
150 x 37.5	0.69	0.69
225 x 25	0.52	0.52
225 x 37.5	0.49	0.49
Notes: 1. When determining touch voltages on the ducting, the product of current and resistance (<i>r</i>) gives a good approximation. 2. The above values are at 20° C, but may be assumed to be independent of temperature and are used for design and verification.		