

SWA Cable – BS5467 Steel Wire Armoured PVC



Application

SWA cable – power and auxiliary control cables for use in power networks, underground, outdoor and indoor applications and for use in cable ducting

Standards

BS5467, IEC 60502

Technical Data

Conductor: Class 2 plain stranded copper conductor to BS EN 60228:2005 (previously BS6360)

Insulation: XLPE (Cross-Linked Polyethylene)

Bedding: PVC (Polyvinyl Chloride)

Armouring: Single core: AWA (Aluminium Wire Armour)
Multi-Core: SWA (Steel Wire Armour)

Sheath: PVC (Polyvinyl Chloride)

Sheath Colour: Black

Voltage Rating: 600/1000V

Temperature Rating: 0°C to +90°C

Minimum Bending Radius: 1.5mm² - 16mm²
6 x overall diameter

25mm² and above: 8 x overall diameter

Core Identification: 1 Core: Brown
2 Cores: Brown, Blue
3 Cores: Brown, Black, Grey
4 Cores: Blue, Brown, Black, Grey
5 Cores: Green/Yellow, Blue, Brown, Black, Grey
Alternative core identification: White cores with Black numbers

Dimensions

Part No	No. of Cores x Nominal Cross Sectional Area # x mm ²	Nominal Thickness of Insulation mm	Nominal Diameter mm		Nominal Weight kg/Km
			Under Armour	Overall	

SWA Cable – BS5467 Steel Wire Armoured PVC – 2 Cores

SWA (2C) 1.5	2 x 1.5	0.6	7.3	12.1	302
SWA (2C) 2.5	2 x 2.5	0.7	8.5	13.6	346
SWA (2C) 4	2 x 4.0	0.7	9.4	14.7	410
SWA (2C) 6	2 x 6.0	0.7	10.5	15.9	499
SWA (2C) 10	2 x 10.0	0.7	12.3	18.0	648
SWA (2C) 16	2 x 16.0	0.7	14.3	20.4	978

SWA (2C) 25	2 x 25.0	0.9	14.7	20.4	1290
SWA (2C) 35	2 x 35.0	0.7	16.8	23.3	1500
SWA (2C) 50	2 x 50.0	1.0	19.0	25.8	1890
SWA (2C) 70	2 x 70.0	1.1	22.0	29.0	2450
SWA (2C) 95	2 x 95.0	1.1	25.1	33.1	3300
SWA (2C) 120	2 x 120.0	1.2	27.9	36.1	4020
SWA (2C) 150	2 x 150.0	1.4	30.9	39.3	4750

SWA Cable – BS5467 Steel Wire Armoured PVC – 3 Cores

SWA (3C) 1.5	3 x 1.5	0.6	7.8	12.6	330
SWA (3C) 2.5	3 x 2.5	0.7	9.2	14.1	390
SWA (3C) 4	3 x 4.0	0.7	10.0	15.3	464
SWA (3C) 6	3 x 6.0	0.7	11.2	16.6	568
SWA (3C) 10	3 x 10.0	0.7	13.1	19.5	866
SWA (3C) 16	3 x 16.0	0.7	15.3	21.6	1152
SWA (3C) 25	3 x 25.0	0.9	18.9	25.5	1800
SWA (3C) 35	3 x 35.0	0.9	21.3	28.0	2230
SWA (3C) 50	3 x 50.0	1.0	21.7	28.5	2490
SWA (3C) 70	3 x 70.0	1.1	25.2	32.2	3290
SWA (3C) 95	3 x 95.0	1.1	28.8	37.0	4440
SWA (3C) 120	3 x 120.0	1.2	32.0	40.4	5470
SWA (3C) 150	3 x 150.0	1.4	35.9	45.5	6930
SWA (3C) 185	3 x 185.0	1.6	40.0	49.8	8350
SWA (3C) 240	3 x 240.0	1.7	44.9	55.1	10400
SWA (3C) 300	3 x 300.0	1.8	49.8	60.2	12600
SWA (3C) 400	3 x 400.0	2.0	55.8	66.6	14600

Conductors

Class 2 stranded conductors for Single Core and Multi-Core cables

Nominal Cross Sectional Area mm ²	Minimum Number of Wires in the Conductor						Maximum Resistance of Conductor at 20°C
	Circular		Circular Compacted		Shaped		Annealed Copper Conductor
	Cu	Al	Cu	Al	Cu	Al	Plain Wires ohms/Km
1.50	7	-	6	-	-	-	12.1000
2.50	7	-	6	-	-	-	7.4100
4.00	7	-	6	-	-	-	4.6100
6.00	7	-	6	-	-	-	3.0800
10.00	7	7	6	6	-	-	1.8300
16.00	7	7	6	6	-	-	1.1500
25.00	7	7	6	6	6	6	0.7270
35.00	7	7	6	6	6	6	0.5420
50.00	19	19	6	6	6	6	0.3870
70.00	19	19	12	12	12	12	0.2680
95.00	19	19	15	15	15	15	0.1930
120.00	37	37	18	15	18	15	0.1530
150.00	37	37	18	15	18	15	0.1240
185.00	37	37	30	30	30	30	0.0991
240.00	37	37	34	30	34	30	0.0754
300.00	61	61	34	30	34	30	0.0601
400.00	61	61	53	53	53	53	0.0470

Table in accordance with BS EN 60228:2005 (previously BS6360)

Electrical Characteristics XLPE/PVC/AWA/PVC

Current carrying capacity (amperes)

Conductor Cross Sectional Area mm ²	Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by One Cable Diameter					
	2 Cables Single Phase AC or DC Flat Amps	3 or 4 Cables Three Phase AC Flat Amps	2 Cables Single Phase AC or DC Flat Amps	3 Cables Three Phase AC Flat Amps	3 Cables Three Phase AC Trefoil Amps	2 Cables DC Amps		2 Cables Single Phase AC Amps		3 or 4 Cables Three Phase AC Amps	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
50	237	220	253	232	222	284	270	282	266	288	266
70	303	277	322	293	285	356	349	357	337	358	331
95	367	333	389	352	346	446	426	436	412	425	393
120	425	383	449	405	402	519	497	504	477	485	449
150	488	437	516	462	463	600	575	566	539	549	510
185	557	496	587	524	529	688	660	643	614	618	574
240	656	579	689	612	625	815	782	749	714	715	666
300	755	662	792	700	720	943	906	842	805	810	755
400	853	717	899	767	815	1137	1094	929	889	848	797
500	962	791	1016	851	918	1314	1266	1032	989	923	871
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978
1000	1261	961	1345	1055	1214	2100	2026	1289	1328	1110	1041

Ambient temperature: 30°C

Conductor operating temperature: 70°C

- Where a conductor operates at a temperature exceeding 70°C it must be ascertained that the equipment connect to the conductor is suitable for the conductor operating temperature (see Regulation 512.1.2).
- Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C thermoplastic insulated cables (Table 4D3A) must be used (see Regulation 523.1).

The above table is in accordance with Table 4E3A of the 17th Edition of IEE Wiring Regulations.

Voltage Drop (per ampere per metre)

Conductor Cross Sectional Area mm ²	2 Cables DC	Reference Method C & F (clipped direct, on tray or in free air)														
		2 Cables Single Phase AC mV/A/m						3 or 4 Cables Three Phase AC mV/A/m								
		Touching			Spaced*			Trefoil and Touching			Flat and Touching			Flat and Spaced*		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.980	0.990	0.210	1.000	0.980	0.29	1.00	0.860	0.180	0.870	0.840	0.250	0.88	0.840	0.330	0.90
70	0.670	0.680	0.200	0.710	0.690	0.29	0.75	0.590	0.170	0.620	0.600	0.250	0.65	0.620	0.320	0.70
95	0.490	0.510	0.195	0.550	0.530	0.28	0.60	0.440	0.170	0.470	0.460	0.240	0.52	0.490	0.310	0.58
120	0.390	0.410	0.190	0.450	0.430	0.27	0.51	0.350	0.165	0.390	0.380	0.240	0.44	0.410	0.300	0.51

150	0.310	0.330	0.185	0.380	0.360	0.27	0.45	0.290	0.160	0.330	0.310	0.230	0.39	0.340	0.290	0.45
185	0.250	0.270	0.185	0.330	0.300	0.26	0.40	0.230	0.160	0.280	0.260	0.230	0.34	0.290	0.290	0.41
240	0.195	0.210	0.180	0.280	0.240	0.26	0.35	0.180	0.155	0.240	0.210	0.220	0.30	0.240	0.280	0.37
300	0.155	0.170	0.175	0.250	0.195	0.25	0.32	0.145	0.150	0.210	0.170	0.220	0.28	0.200	0.270	0.34
400	0.115	0.145	0.170	0.220	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.210	0.27	0.200	0.270	0.33
500	0.093	0.125	0.170	0.210	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.200	0.25	0.190	0.240	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.230	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.165	0.125	0.170	0.21	0.165	0.180	0.24

Conductor operating temperature: 90°C

* Spacings larger than one cable diameter will result in a larger voltage drop.

The above table is in accordance with Table 4E3B of the 17th Edition of IEE Wiring Regulations.

Electrical Characteristics XLPE/PVC/AWA/PVC

Current Carrying Capacity (amperes)

Conductor Cross Sectional Area mm ²	Reference Method C (clipped direct) Amps		Reference Method E (in free air or on a perforated cable tray, horizontal or vertical) Amp		Reference Method D (direct in ground or in ducting in ground, in or around buildings) Amps	
	1 Two Core Cable Single Phase AC or DC	1 Three or 1 Four Core Cable Three Phase AC	1 Two Core Cable Single Phase AC or DC	1 Three or 1 Four Core Cable Three Phase AC	1 Two Core Cable Single Phase AC or DC	1 Three or 1 Four Core Cable Three Phase AC
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4.0	49	42	52	44	43	36
6.0	62	53	66	56	53	44
10.0	85	73	90	78	71	58
16.0	110	94	115	99	91	75
25.0	146	124	152	131	116	96
35.0	180	154	188	162	139	115
50.0	219	187	228	197	164	135
70.0	279	238	291	251	203	167
95.0	338	289	354	304	239	197
120.0	392	335	410	353	271	223
150.0	451	386	472	406	306	251
185.0	515	441	539	463	343	281
240.0	607	520	636	546	395	324
300.0	698	599	732	628	446	365
400.0	787	673	847	728	-	-

Air ambient temperature: 30°C

Ground ambient temperature: 20°C

Conductor operating temperature: 90°C

1. Where a conductor operates at a temperature exceeding 70°C it must be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see Regulation 512.1.2).
2. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C thermoplastic insulated cables (Table 4D4A) must be used (see Regulation 532.1).

The above table is in accordance with Table 4E4A of the 17th Edition of IEE Wiring Regulations.

Voltage Drop (per ampere per metre)

Conductor Cross Sectional Area mm ²	Two Core Cable DC	Two Core Cable Single Phase AC mV/A/m			Three or Four Core Cable Three Phase AC mV/A/m		
		r	x	z	r	x	z
1.25	31.000			31.0			27.0
2.5	19.000			19.0			16.0
4.0	12.000			12.0			10.0
6.0	7.900			7.9			6.8
10.0	4.700			4.7			4.0
16.0	2.900			2.9			2.5
		r	x	z	r	x	z
25.0	1.850	1.85	0.160	1.900	1.600	0.140	1.650
35.0	1.350	1.35	0.155	1.350	1.150	0.135	1.150
50.0	0.980	0.99	0.155	1.000	0.860	0.135	0.870
70.0	0.670	0.67	0.150	0.690	0.590	0.130	0.600
95.0	0.490	0.50	0.150	0.520	0.430	0.130	0.450
120.0	0.390	0.40	0.145	0.420	0.340	0.130	0.370
150.0	0.310	0.32	0.145	0.350	0.280	0.125	0.300
185.0	0.250	0.26	0.145	0.290	0.220	0.125	0.260
240.0	0.195	0.20	0.140	0.240	0.175	0.125	0.210
300.0	0.155	0.16	0.140	0.210	0.140	0.120	0.185
400.0	0.120	0.13	0.140	0.190	0.115	0.120	0.165

Conductor operating temperature: 90°C

The above table is in accordance with Table 4E4B of the 17th Edition of IEE Wiring Regulations. For cables having conductors of 16mm² or less cross-sectional area their inductances can be ignored and (mV/A/m) r values only are tabulated. For cables having conductors greater than 16mm², cross-sectional area the impedance values are given as (mV/A/m)z, together with the resistive component (mV/A/m)r and the reactive component (mV/A/m)x.

The above paragraph is extracted from Appendix 4 of the 17th Edition of IEE Wiring Regulations.

This is a reprint of the manufacturer's datasheet; please refer to the cable manufacturer for further details. GCA Ltd makes no claims as to the warranty of the information contained in this datasheet.