Tonn
CABLE
(Power & Data Cable Manufacturer)

Product CATALOGUE 2019

COMPANY PROFILE

Tonn Cable Sdn Bhd, Incorporated in 2002 and located in Beranang, 40km from Kuala Lumpur, Malaysia. Tonn Cable is one of the fastest growing Low Voltage (0.6/1kV) power cable manufacturers in Malaysia and Singapore. Within a short period of time, it has gained recognition for providing products of superior quality, excellent customer service and reliable after-sale support.

Tonn Cable is ISO 9001:2008 accredited for its Quality Management System by TUV SUD PSB of Singapore. Backed by advanced machinery, facilities and technology, we manufacture products that are tested and awarded the Product Certification Scheme by SIRIM of Malaysia and TUV SUD PSB of Singapore and SNI of Indonesia. Our products are listed with Singapore Housing & Development Board (HDB), Brunei department of Electrical Services (DES), Jabatan Kerja Raya (Public Works Department of Malaysia) and Suruhanjaya Tenaga (Energy Commission of Malaysia). The company won the prestigious Malaysia 50 Enterprise Award in 2007. We firmly believe in continuously improving the quality of our products through research and development.

Tonn Cable supplies cables to local market and also export cables to countries in Asia, Middle East and etc, mainly to electrical dealers, wholesalers and contractors of private and public construction projects for commercial, industrial and residential developments. We seek to establish a good relationship with our Clients. We go the extra mile to understand their needs and create win-win solutions for all.

Finally, we believe our well experienced management will achieve the company's mission which is to be leading power cable manufacturer in Asia.

At Tonn Cable, it is not about producing and selling power cable, but about selling a world class quality brand.

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Type of Products

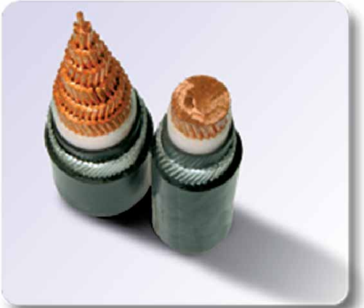

CU / XLPE / SWA / PVC 2 / 3 / 4-CORES


FIRE RESISTANT CABLES


CU / PVC / SWA / PVC & CU /PVC / PVC MULTICORE

NETWORK CABLES


CU / PVC

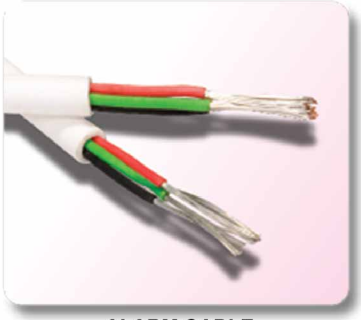

CU / XLPE / AWA / PVC


CU / XLPE / PVC 2 / 3 / 4-CORES


INTERNAL TELEPHONE CABLE


COPPER TAPE & BUS BAR


CU / PVC

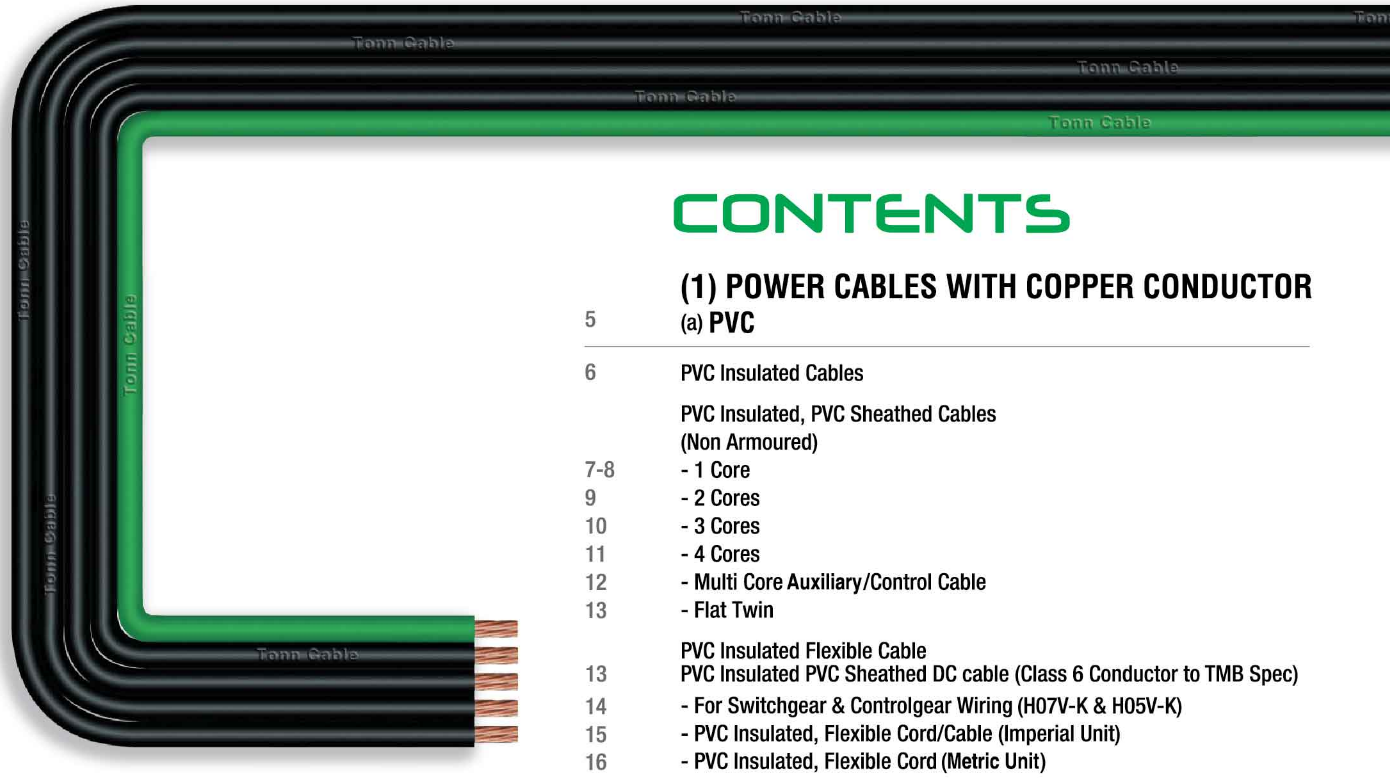

ALARM CABLE


FLEXIBLE CORD & H07V-K CABLE


INSTRUMENTATION CABLES


COMMUNICATION CABLE


ALUMINIUM CABLE



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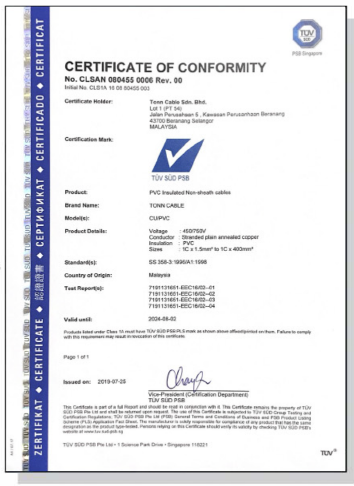


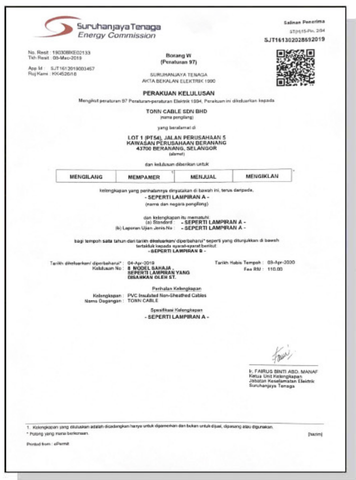
Singapore TUV SUD PSB

SIRIM QAS

Malaysia SIRIM

Indonesia SNI Certificate

Malaysia J.K.R. (Emal)
(Public Works & Department)



Malaysia Suruhanjaya Tenaga
(Energy Commission)

Malaysia Bomba
(Fire & Rescure Department)

Brunei Department of
Electrical Services (DES)

Malaysia 50 Enterprise Award

Certificates can be downloaded from company website: www.tonncable.com

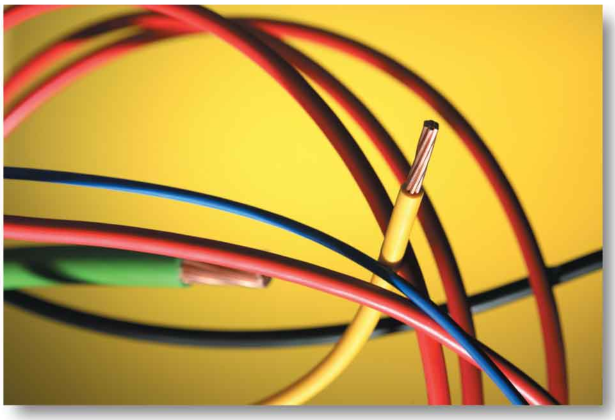
PVC

INSULATED CABLES FOR ELECTRIC POWER AND LIGHTING

300 / 500V , 450 / 750V & 600 / 1000V

MS 2112-3 / MS 136 / MS 2112-4 / BS 6004 /

IEC 60502-1 / SS 358-3 / SNI 04-6629.3



PVC / PVC & PVC / SWA / PVC

INSULATED CABLES FOR ELECTRICITY SUPPLY

600 / 1000V

MS 2100 / MS 2101 / MS 2102 / MS 2103

MS 274 / BS 6346 / IEC 60502-1

Product Specification

PVC INSULATED CABLES

CONSTRUCTION

CONDUCTOR : Plain annealed copper conductor, class 2 or class 1
INSULATION : PVC compound, 70°C
COLOUR OF INSULATION : Red, Yellow, Blue, Black, Green, White, Brown, Grey or Other Colours.

Cu / Pvc - 1 Core

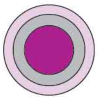
Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	kg/km
Class 2 Conductor	**MS 2112-3 / MS 136 / BS 6004 / SS 358-3 / SNI 04-6629.3 450 / 750 V**			
1.0	7/0.43	0.6	2.5	14
1.5	7/0.53	0.7	3.0	22
2.5	7/0.67	0.8	3.6	35
4	7/0.85	0.8	4.1	51
6	7/1.04	0.8	4.8	72
10	7/1.35	1.0	6.0	120
16	7/1.70	1.0	7.0	180
25	7/2.14	1.2	8.5	283
35	19/1.53	1.2	9.6	380
50	19/1.78	1.4	11.0	515
70	19/2.14	1.4	12.8	720
95	19/2.52	1.6	14.6	995
120	37/2.03	1.6	16.7	1230
150	37/2.25	1.8	18.5	1520
185	37/2.52	2.0	20.7	1900
240	61/2.25	2.2	23.4	2500
300	61/2.52	2.4	26.0	3130
400	61/2.85	2.6	29.5	3950
500	61/3.20	2.8	33.0	4960
630	61/3.63	2.8	37.4	6330
		BS 6231 600 / 1000 V		
1.5	7/0.53	0.8	3.0	25
2.5	7/0.67	0.8	3.6	35
4	7/0.85	0.8	4.1	51
6	7/1.04	0.8	4.8	72

Class 1 Conductor	**SNI 04-6629.3 / MS 136 / BS 6004 / SS 358-3 600 / 1000 V**			
1.5	1/1.38	0.7	2.8	21
2.5	1/1.78	0.8	3.4	33
4	1/2.25	0.8	3.9	48
6	1/2.76	0.8	4.4	68

PVC INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductor, class 2
INSULATION	:	PVC compound, 70°C
COLOUR OF CORES	:	Red or Black or (Brown or Blue)
SHEATH	:	PVC compound, colour Black



Cu / Pvc / Pvc - 1 Core

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		MS 2112-4 / MS 136 / BS 6004 300 / 500 V			
1.0	1/1.13 *	0.6	0.8	4.2	27
1.25	3/0.73	0.7	0.8	4.6	33
1.5	1/1.38 *	0.7	0.8	4.4	36
1.5	7/0.53	0.7	0.8	4.6	38
2.5	7/0.67	0.8	0.8	5.2	51
4	7/0.85	0.8	0.9	5.9	76
6	7/1.04	0.8	0.9	6.6	100
10	7/1.35	1.0	0.9	7.8	155
16	7/1.70	1.0	1.0	9.0	225
25	7/2.14	1.2	1.1	10.7	340
35	19/1.53	1.2	1.1	11.8	430

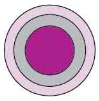
* Class 1 Conductor

Product Specification

PVC INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductor, class 2
INSULATION	:	PVC compound, 70°C
COLOUR OF CORES	:	1 core - Red or Black or (Brown or Blue) 2 cores - Red and Black or (Brown and Blue) 3 cores - Red, Yellow and Blue or (Brown, Black and Grey) 4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)
SHEATH	:	PVC compound colour Black



Cu / Pvc / Pvc - 1 Core

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		MS 2100 / IEC 60502-1 600 / 1000 V			
1.5	7/0.53	0.8	1.4	6.0	53
2.5	7/0.67	0.8	1.4	6.4	67
4	7/0.85	1.0	1.4	7.3	97
6	7/1.04	1.0	1.4	8.0	123
10	7/1.35	1.0	1.4	8.8	172
16	7/1.70	1.0	1.4	9.8	237
25	7/2.14	1.2	1.4	11.3	350
35	19/1.53	1.2	1.4	12.4	456
		MS 2100 / MS 274 / BS 6346 / IEC 60502-1 600 / 1000 V			
50	19/1.78	1.4	1.4	13.8	605
70	19/2.14	1.4	1.4	15.6	830
95	19/2.52	1.6	1.5	17.6	1135
120	37/2.03	1.6	1.5	19.7	1380
150	37/2.25	1.8	1.6	21.7	1690
185	37/2.52	2.0	1.7	24.1	2110
240	61/2.25	2.2	1.8	27.0	2740
300	61/2.52	2.4	1.9	29.8	3410
400	61/2.85	2.6	2.0	33.5	4300
500	61/3.20	2.8	2.1	37.1	5385
630	61/3.63	2.8	2.2	41.8	6830
800	127/2.85	2.8	2.3	48.3	8413
1000	127/3.20	3.0	2.5	51.2	10545

PVC INSULATED, PVC SHEATHED CABLES (NON-ARMOURED)

Cu / Pvc / Pvc - 2 Cores

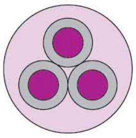
Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
MS 2112-4 / MS 136 / BS 6004 300 / 500 V					
1.5	7/0.53	0.7	1.2	8.4	110
2.5	7/0.67	0.8	1.2	9.6	140
4	7/0.85	0.8	1.2	10.6	200
6	7/1.04	0.8	1.2	12.0	260
10	7/1.35	1.0	1.4	15.2	410
16	7/1.70	1.0	1.4	17.2	550
25	7/2.14	1.2	1.4	20.3	840
35	19/1.53	1.2	1.6	18.8	900
MS 2102 / IEC 60502-1 600 / 1000 V					
1.5	7/0.53	0.8	1.8	10.2	140
2.5	7/0.67	0.8	1.8	11.0	176
4	7/0.85	1.0	1.8	12.9	251
6	7/1.04	1.0	1.8	14.3	279
MS 2102 / MS 274 / BS 6346 / IEC 60502-1 600 / 1000 V					
10	7/1.35	1.0	1.8	16.0	440
16	7/1.70	1.0	1.8	18.0	580
25	7/2.14	1.2	1.8	21.1	880
35	19/1.53	1.2	1.8	19.2	920
50	19/1.78	1.4	1.8	21.6	1250
70	19/2.14	1.4	1.9	24.3	1670
95	19/2.52	1.6	2.0	27.8	2270
120	37/2.03	1.6	2.1	30.2	2850
150	37/2.25	1.8	2.2	33.2	3410
185	37/2.52	2.0	2.4	36.9	4270
240	61/2.25	2.2	2.5/2.6*	41.5	5550
300	61/2.52	2.4	2.7	45.9	7000
400	61/2.85	2.6	2.9/3.0*	51.1	8880

* Value specified in MS 2102 & IEC 60502-1

PVC

Product Specification

PVC INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)



Cu / Pvc / Pvc - 3 Cores

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		MS 2112-4 / MS 136 / BS 6004 300 / 500 V			
1.5	7/0.53	0.7	1.2	8.9	130
2.5	7/0.67	0.8	1.2	10.2	180
4	7/0.85	0.8	1.2	11.3	240
6	7/1.04	0.8	1.4	13.2	320
10	7/1.35	1.0	1.4	16.1	500
16	7/1.70	1.0	1.4	18.4	710
25	7/2.14	1.2	1.6	22.1	1180
35	19/1.53	1.2	1.6	21.7	1530
		MS 2102 / IEC 60502-1 600 / 1000 V			
1.5	7/0.53	0.8	1.8	10.7	162
2.5	7/0.67	0.8	1.8	11.6	207
4	7/0.85	1.0	1.8	13.6	301
6	7/1.04	1.0	1.8	15.2	365
		MS 2102 / MS 274 / BS 6346 / IEC 60502-1 600 / 1000 V			
10	7/1.35	1.0	1.8	16.9	530
16	7/1.70	1.0	1.8	19.2	750
25	7/2.14	1.2	1.8	22.5	1200
35	19/1.53	1.2	1.8	22.1	1550
50	19/1.78	1.4	1.8	25.6	1810
70	19/2.14	1.4	1.9 / 2.0*	29.1	2480
95	19/2.52	1.6	2.1	33.2	3390
120	37/2.03	1.6	2.2	38.1	4780
150	37/2.25	1.8	2.3	42.7	5110
185	37/2.52	2.0	2.5	45.5	6410
240	61/2.25	2.2	2.6 / 2.7*	51.8	8360
300	61/2.52	2.4	2.8 / 2.9*	56.0	10400
400	61/2.85	2.6	3.1	60.8	13210

* Value specified in MS 2102 & IEC 60502-1

PVC

PVC INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)

Cu / Pvc / Pvc - 4 Cores

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		MS 2112-4 / MS 136 / BS 6004 300 / 500 V			
1.5	7/0.53	0.7	1.2	9.7	160
2.5	7/0.67	0.8	1.2	11.1	210
4	7/0.85	0.8	1.4	12.7	320
6	7/1.04	0.8	1.4	14.4	410
10	7/1.35	1.0	1.4	17.8	640
16	7/1.70	1.0	1.4	20.2	910
25	7/2.14	1.2	1.6	24.4	1350
35	19/1.53	1.2	1.6	24.4	1800
		MS 2102 / IEC 60502-1 600 / 1000 V			
1.5	7/0.53	0.8	1.8	11.6	192
2.5	7/0.67	0.8	1.8	12.6	248
4	7/0.85	1.0	1.8	14.8	369
6	7/1.04	1.0	1.8	16.6	448
		MS 2102 / MS 274 / BS 6346 / IEC 60502-1 600 / 1000 V			
10	7/1.35	1.0	1.8	18.6	670
16	7/1.70	1.0	1.8	21.0	950
25	7/2.14	1.2	1.8	24.8	1380
35	19/1.53	1.2	1.8	24.8	1820
50	19/1.78	1.4	1.9	28.8	2310
70	19/2.14	1.4	2.0 / 2.1*	32.7	3200
95	19/2.52	1.6	2.2	36.9	4380
120	37/2.03	1.6	2.3 / 2.4*	40.6	5430
150	37/2.25	1.8	2.5	45.4	6680
185	37/2.52	2.0	2.6 / 2.7*	48.9	8330
240	61/2.25	2.2	2.8 / 2.9*	58.0	10900
300	61/2.52	2.4	3.1	62.8	13650
400	61/2.85	2.6	3.3 / 3.4*	69.5	17300

* Value specified in MS 2102 & IEC 60502-1

PVC

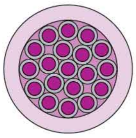
Product Specification

PVC INSULATED, PVC SHEATHED MULTI-CORE AUXILIARY CABLES / CONTROL CABLES

(NON-ARMOURED)

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductor, class 2
INSULATION	:	PVC compound, 70°C
COLOUR OF INSULATION	:	White with numbering.
SHEATH	:	PVC compound, colour Black



Cu / Pvc / Pvc - Multi Cores

Number of cores	Number cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	kg/km
			Reference: MS 274 / BS 6346 600 / 1000 V			
5	1.5	7/0.53	0.6	1.4	11.0	174
7	1.5	7/0.53	0.6	1.4	11.9	217
9	1.5	7/0.53	0.6	1.4	14.2	281
12	1.5	7/0.53	0.6	1.4	15.2	342
19	1.5	7/0.53	0.6	1.5	17.9	513
27	1.5	7/0.53	0.6	1.6	21.4	712
37	1.5	7/0.53	0.6	1.7	24.1	947
48	1.5	7/0.53	0.6	1.8	27.6	1214
5	2.5	7/0.67	0.7	1.4	12.7	241
7	2.5	7/0.67	0.7	1.4	13.7	308
9	2.5	7/0.67	0.7	1.5	16.7	406
12	2.5	7/0.67	0.7	1.5	18.0	503
19	2.5	7/0.67	0.7	1.6	21.2	759
27	2.5	7/0.67	0.7	1.7	25.4	1056
37	2.5	7/0.67	0.7	1.8	28.6	1410
48	2.5	7/0.67	0.7	1.9	32.8	1809
5	4	7/0.85	0.8	1.4	14.6	341
7	4	7/0.85	0.8	1.4	15.9	444
9	4	7/0.85	0.8	1.5	19.4	582
12	4	7/0.85	0.8	1.6	21.2	743
19	4	7/0.85	0.8	1.7	25.0	1128
			MS 2102 / IEC 60502-1 600 / 1000 V			
5	1.5	7/0.53	0.8	1.8	12.9	221
7	1.5	7/0.53	0.8	1.8	13.9	273
9	1.5	7/0.53	0.8	1.8	16.5	350
12	1.5	7/0.53	0.8	1.8	17.7	424
19	1.5	7/0.53	0.8	1.8	20.5	613
27	1.5	7/0.53	0.8	1.8	24.3	833
37	1.5	7/0.53	0.8	1.8	27.1	1090
48	1.5	7/0.53	0.8	1.9	31.1	1394
5	2.5	7/0.67	0.8	1.8	14.0	281
7	2.5	7/0.67	0.8	1.8	15.1	354
9	2.5	7/0.67	0.8	1.8	18.1	454
12	2.5	7/0.67	0.8	1.8	19.4	558
19	2.5	7/0.67	0.8	1.8	22.6	820
27	2.5	7/0.67	0.8	1.8	26.9	1124
37	2.5	7/0.67	0.8	1.9	30.2	1498
48	2.5	7/0.67	0.8	2.0	34.7	1920
5	4	7/0.85	1.0	1.8	16.5	402
7	4	7/0.85	1.0	1.8	17.9	516
9	4	7/0.85	1.0	1.8	21.6	662
12	4	7/0.85	1.0	1.8	23.3	829
19	4	7/0.85	1.0	1.8	27.2	1235

PVC

Product Specification

PVC INSULATED, PVC SHEATHED FLAT TWIN CABLES

CONSTRUCTION

CONDUCTOR : Plain annealed copper conductor, class 2
INSULATION : PVC compound, 70°C
COLOUR OF INSULATION : Red and Black or (Brown and Blue) shall be laid parallel.
SHEATH : PVC compound, colour Black, Grey or Other Colours

Cu / Pvc / Pvc - 2 Cores Flat Twin

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		MS 136 / BS 6004 300 / 500 V			
1.0	1/1.13 *	0.6	0.9	4.4 x 6.8	54
1.5	1/1.38 *	0.7	0.9	4.9 x 7.7	64
1.5	7/0.53	0.7	0.9	5.0 x 7.9	68
2.5	7/0.67	0.8	1.0	5.8 x 9.6	102
4	7/0.85	0.8	1.0	6.4 x 10.6	160
6	7/1.04	0.8	1.1	7.0 x 11.8	224
10	7/1.35	1.0	1.2	8.7 x 14.5	360
16	7/1.70	1.0	1.3	10.0 x 17.0	532

* Class 1 Conductor

PVC INSULATED PVC SHEATHED FLEXIBLE DC CABLE (With Class 6 Conductor to TMB Spec)

CONSTRUCTION

CONDUCTOR : Flexible plain annealed copper wires, Class 6
INSULATION : PVC compound Type TI I
COLOUR OF CORES : Red (for DC Negative) or Blue (for DC positive)
SHEATH : PVC compound Type TM I
COLOUR OF SHEATH : Red for Red Core or Blue for Blue Core

Cu / PVC / PVC - I Core

Nominal cross-sectional area	Construction, number/wire diameter	Thickness of insulation	Thickness of sheath	Approx. Overall diameter	Approx. Net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		TMB Spec. / IEC 60502-1 / MS 274 600 / 1000V			
1.5	84/0.15	0.8	1.4	6.0	53
2.5	139/0.15	0.8	1.4	6.8	69
4	224/0.15	1.0	1.4	7.8	96
6	189/0.20	1.0	1.4	8.4	125
10	327/0.20	1.0	1.4	9.6	178
16	513/0.20	1.0	1.4	10.6	246
25	799/0.20	1.2	1.4	12.5	360
35	1125/0.20	1.2	1.4	14.0	473
50	717/0.30	1.4	1.4	15.8	655
70	1018/0.30	1.4	1.4	17.4	880
95	1334/0.30	1.6	1.5	19.9	1155
120	1722/0.30	1.6	1.5	21.6	1435
150	2150/0.30	1.8	1.6	24.3	1785
185	1445/0.40	2.0	1.7	26.4	2130
240	1909/0.40	2.2	1.8	30.0	2775

Product Specification

PVC INSULATED FLEXIBLE CABLES

(For Switchgear and Controlgear wiring / d.c Power Cable)

H07V-K & H05V-K

CONSTRUCTION

CONDUCTOR : Flexible Plain annealed copper conductor, Class 5

INSULATION : PVC compound, 70°C

COLOUR OF INSULATION : Red, Yellow, Blue, Black, Brown, Grey, Green / Yellow or Other Colours.

Cu / Pvc - 1 Core

Nominal cross-section area	Max wire diameter in conductor	Thickness of Insulation	Approx. overall diameter	Approx. net weight
sq.mm	mm	mm	mm	kg/km
BS 6004 (H05V-K) / MS 2112-3 300 / 500 V			BS 6231 600 / 1000 V	
0.5	0.21	0.6/0.8*	2.2/2.6*	10/11*
0.75	0.21	0.6/0.8*	2.4/2.8*	12/14*
1.0	0.21	0.6/0.8*	2.5/2.9*	14/16*
BS 6004 (H07V-K) / MS 2112-3 450 / 750 V			BS 6231 600 / 1000 V	
1.5	0.26	0.7/0.8*	3.0/3.2*	21/23*
2.5	0.26	0.8	3.6	34
4	0.31	0.8	4.2	51
6	0.31	0.8	4.9	74
10	0.41	1.0	6.2	122
16	0.41	1.0	7.7	190
25	0.41	1.2	9.5	294
35	0.41	1.2	10.9	404
50	0.41	1.4	13.1	583
70	0.51	1.4	15.2	813
95	0.51	1.6	17.7	1079
120	0.51	1.6	19.2	1346
150	0.51	1.8	21.6	1683
185	0.51	2.0	24.0	2063
240	0.51	2.2	27.4	2717

* Value specified in BS 6231

Product Specification

PVC INSULATED CIRCULAR FLEXIBLE CORD / CABLE
(IMPERIAL UNIT)

CONSTRUCTION

CONDUCTOR : Plain annealed copper conductor, Class 5
INSULATION : PVC compound Type TI 1 70°C
COLOUR OF CORES : 1 core - Brown, Blue or other colours
2 cores - Brown and Blue
3 cores - Brown, Blue, Green / Yellow
4 cores - Brown, Blue, Black, Green / Yellow (or Brown; Black, Grey, Green / Yellow)
SHEATH : PVC compound Type 6, colour Black or Grey

Nominal cross-section area	Construction, number / wire diameter	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./in	No./mm	mm	mm	mm	kg/km
Cu / Pvc / Pvc - 1 Core						
			BS 2004 250 / 440 V			
1C x 0.41	14/0.0076	14/0.193	0.64	1.02	4.2	23
1C x 0.67	23/0.0076	23/0.193	0.64	1.02	4.4	27
1C x 1.17	40/0.0076	40/0.193	0.64	1.02	4.8	34
1C x 2.05	70/0.0076	70/0.193	0.64	1.02	5.2	44
1C x 3.22	110/0.0076	110/0.193	0.64	1.02	5.7	56
1C x 4.74	162/0.0076	162/0.193	0.76	1.02	6.4	75
Cu / Pvc / Pvc - 2 Cores						
2C x 0.41	14/0.0076	14/0.193	0.64	1.02	6.3	50
2C x 0.67	23/0.0076	23/0.193	0.64	1.02	6.8	62
2C x 1.17	40/0.0076	40/0.193	0.64	1.02	7.5	77
2C x 2.05	70/0.0076	70/0.193	0.64	1.27	9.0	102
2C x 3.22	110/0.0076	110/0.193	0.64	1.27	10.0	131
2C x 4.74	162/0.0076	162/0.193	0.76	1.27	11.3	176
Cu / Pvc / Pvc - 3 Cores						
3C x 0.41	14/0.0076	14/0.193	0.64	1.02	6.6	58
3C x 0.67	23/0.0076	23/0.193	0.64	1.02	7.1	64
3C x 1.17	40/0.0076	40/0.193	0.64	1.02	7.9	91
3C x 2.05	70/0.0076	70/0.193	0.64	1.27	9.5	129
3C x 3.22	110/0.0076	110/0.193	0.64	1.27	10.5	168
3C x 4.74	162/0.0076	162/0.193	0.76	1.27	12.2	231
Cu / Pvc / Pvc - 4 Cores						
4C x 0.41	14/0.0076	14/0.193	0.64	1.02	7.2	64
4C x 0.67	23/0.0076	23/0.193	0.64	1.02	7.7	81
4C x 1.17	40/0.0076	40/0.193	0.64	1.27	9.2	102
4C x 2.05	70/0.0076	70/0.193	0.64	1.27	10.3	156
4C x 3.22	110/0.0076	110/0.193	0.64	1.27	11.4	206
4C x 4.74	162/0.0076	162/0.193	0.76	1.27	13.2	285

NOTE: 0.193 mm = 0.0076 in

Product Specification

PVC INSULATED CIRCULAR FLEXIBLE CORD

(METRIC UNIT)
H05VV-F

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductor, Class 5
INSULATION	:	PVC compound, 70°C
COLOUR OF CORES	:	1 core - Brown, Blue or other colours 2 cores - Brown and Blue 3 cores - Brown, Blue, Green / Yellow 4 cores - Brown, Blue, Black, Green / Yellow (or Brown, Black, Grey, Green / Yellow)
SHEATH	:	PVC compound, colour Black or Grey

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
Cu / Pvc / Pvc - 2 Cores					
MS 2112-5 / MS 140 / BS 6500 / BS EN 50525-2-11 / IEC 60227-5 300 / 500 V					
0.5	16/0.20	0.6	0.8	6.0	53
0.75	24/0.20	0.6	0.8	6.4	62
1.0	32/0.20	0.6	0.8	6.7	72
1.25	40/0.20	0.7	0.8	7.4	76
1.5	30/0.25	0.7	0.8	7.7	85
2.5	50/0.25	0.8	1.0	9.4	127
Cu / Pvc / Pvc - 3 Cores					
0.5	16/0.20	0.6	0.8	6.3	57
0.75	24/0.20	0.6	0.8	6.8	72
1.0	32/0.20	0.6	0.8	7.1	81
1.25	40/0.20	0.7	0.9	8.1	95
1.5	30/0.25	0.7	0.9	8.3	102
2.5	50/0.25	0.8	1.1	10.2	160
Cu / Pvc / Pvc - 4 Cores					
0.5	16/0.20	0.6	0.8	6.9	72
0.75	24/0.20	0.6	0.8	7.4	87
1.0	32/0.20	0.6	0.9	8.0	105
1.25	40/0.20	0.7	1.0	9.0	118
1.5	30/0.25	0.7	1.0	9.3	130
2.5	50/0.25	0.8	1.1	11.1	191

Note: H03VV-F, H03VVH2-F & H05VVH2-F are available upon request

Product Specification

YSLY-JZ AND YSLY-OZ FLEXIBLE CONTROL CABLES

CONSTRUCTION

CONDUCTOR : Flexible circular plain annealed copper wires, Class 5
INSULATION : PVC compound Type TI 2
COLOUR OF CORES : YSLY - JZ - Green/Yellow (earth core) and Black with White numbering
YSLY - OZ - Black with White numbering
SHEATH : PVC compound Type TM 2, Grey colour

Cu / Pvc / Pvc - Flexible Multi-core

Number of cores	Nominal cross-sectional area	Max wire diameter in conductor	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	mm	mm	mm	mm	kg/km
		DIN VDE 0295, DIN VDE 0293 & DIN VDE 281 300 / 500 V				
2	1.5	0.26	0.5	0.8	6.8	74
3	1.5	0.26	0.5	0.8	7.2	92
4	1.5	0.26	0.5	0.8	7.9	114
5	1.5	0.26	0.5	0.8	8.7	141
7	1.5	0.26	0.5	1.0	9.8	186
8	1.5	0.26	0.5	1.0	11.4	229
9	1.5	0.26	0.5	1.0	12.3	267
12	1.5	0.26	0.5	1.2	13.1	322
14	1.5	0.26	0.5	1.2	13.8	367
18	1.5	0.26	0.5	1.4	15.8	484
25	1.5	0.26	0.5	1.6	18.7	594
3	2.5	0.26	0.6	0.9	8.8	144
4	2.5	0.26	0.6	0.9	9.7	180
5	2.5	0.26	0.6	0.9	10.6	221
7	2.5	0.26	0.6	1.2	12.2	297
12	2.5	0.26	0.6	1.2	15.8	528
18	2.5	0.26	0.6	1.6	19.4	798
25	2.5	0.26	0.6	1.6	22.6	1109

Note: YSLY control cables with cross-sectional area of 4mm^2 to 50mm^2 are available upon requst

TPR INSULATED WELDING CABLES

CONSTRUCTION

CONDUCTOR : Flexible Plain annealed copper conductor, Class 5 / Class 6
INSULATION : Thermoplastic rubber (TPR), 105°C
COLOUR OF INSULATION : Black, Orange or Other Colours.

Cu / TPR - 1 Core

Nominal cross-sectional area	Max wire diameter in conductor	Class of conductor	Thickness of insulation	Approx. overall diameter	Approx. net weight
sq.mm	mm		mm	mm	kg/km
		100 V			
10	0.21	6	2.0	8.7	159
16	0.21	6	2.0	9.9	228
25	0.21	6	2.0	11.4	331
35	0.21	6	2.0	12.9	449
50	0.31	6	2.2	14.9	626
70	0.31	6	2.4	17.5	881
95	0.31	6	2.6	19.8	1146
120	0.51	5	2.8	21.6	1420
150	0.51	5	3.0	24.0	1760
185	0.51	5	3.2	26.4	2160
240	0.51	5	3.4	29.8	2820

Reference: BS 638: Part 4

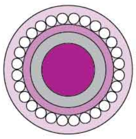
PVC

Product Specification

PVC INSULATED, PVC SHEATHED ARMOURED CABLES

CONSTRUCTION

CONDUCTOR	: Plain annealed copper conductor, class 2
INSULATION	: PVC compound, 70°C
COLOUR OF CORES	: 1 core - Red, Black or (Brown, Blue)
	2 cores - Red and Black or (Brown and Blue)
	3 cores - Red, Yellow and Blue or (Brown, Black and Grey)
	4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)
BEDDING	: PVC Compound, colour Black
ARMOUR	: Single core - Aluminium wire
	: 2, 3 or 4 cores - Galvanized steel wire
SHEATH	: PVC Compound, colour Black

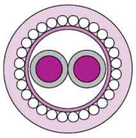


Cu / Pvc / Awa / Pvc - 1 Core

Nominal cross-section area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of aluminium wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			MS 274 / BS 6346 600 / 1000 V				
50	19/1.78	1.4	0.8	1.25	1.5	18.1	845
70	19/2.14	1.4	0.8	1.25	1.6	20.1	1085
95	19/2.52	1.6	0.8	1.25	1.6	21.9	1400
120	37/2.03	1.6	1.0	1.6	1.7	25.3	1790
150	37/2.25	1.8	1.0	1.6	1.7	27.1	2100
185	37/2.52	2.0	1.0	1.6	1.8	29.5	2550
240	61/2.25	2.2	1.0	1.6	1.9	32.4	3260
300	61/2.52	2.4	1.0	1.6	1.9	35.0	3980
400	61/2.85	2.6	1.2	2.0	2.1	40.1	5100
500	61/3.20	2.8	1.2	2.0	2.1	43.6	6220
630	61/3.63	2.8	1.2	2.0	2.2	48.2	7730
800	127/2.85	2.8	1.4	2.5	2.4	53.3	9890
1000	127/3.20	3.0	1.4	2.5	2.5	59.0	12180
			MS 2101 / IEC 60502-1 600 / 1000 V				
50	19/1.78	1.4	1.0	1.25	1.8	19.1	888
70	19/2.14	1.4	1.0	1.25	1.8	20.9	1100
95	19/2.52	1.6	1.0	1.25	1.8	22.7	1440
120	37/2.03	1.6	1.0	1.6	1.8	25.5	1860
150	37/2.25	1.8	1.0	1.6	1.8	27.3	2110
185	37/2.52	2.0	1.0	1.6	1.8	29.5	2550
240	61/2.25	2.2	1.0	1.6	1.9	32.4	3260
300	61/2.52	2.4	1.0	2.0	2.0	36.0	4070
400	61/2.85	2.6	1.2	2.0	2.1	40.1	5100
500	61/3.20	2.8	1.2	2.0	2.2	43.8	6240
630	61/3.63	2.8	1.2	2.0	2.4	48.6	7770
800	127/2.85	2.8	1.4	2.5	2.5	53.5	9910
1000	127/3.20	3.0	1.4	2 5	2.7	59.4	12230

Product Specification

PVC INSULATED, PVC SHEATHED
ARMOURED CABLES

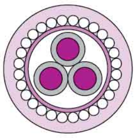


Cu / Pvc / Swa / Pvc - 2 Cores

Nominal cross-section area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			MS 274 / BS 6346 600 / 1000 V				
1.5	7/0.53	0.6	0.8	0.9	1.4	12.0	325
2.5	7/0.67	0.7	0.8	0.9	1.4	13.2	380
4	7/0.85	0.8	0.8	0.9	1.4	14.6	470
6	7/1.04	0.8	0.8	0.9	1.5	16.3	540
10	7/1.35	1.0	0.8	1.25	1.5	19.5	880
16	7/1.70	1.0	0.8	1.25	1.6	21.7	1080
25	7/2.14	1.2	1.0	1.6	1.7	26.1	1450
35	19/1.53	1.2	1.0	1.6	1.8	24.4	1750
50	19/1.78	1.4	1.0	1.6	1.9	27.0	2160
70	19/2.14	1.4	1.0	1.6	1.9	29.5	2660
95	19/2.52	1.6	1.2	2.0	2.1	34.4	3700
120	37/2.03	1.6	1.2	2.0	2.2	36.8	4300
150	37/2.25	1.8	1.2	2.0	2.3	39.8	5060
185	37/2.52	2.0	1.4	2.5	2.4	44.7	6550
240	61/2.25	2.2	1.4	2.5	2.5	49.1	8160
300	61/2.52	2.4	1.6	2.5	2.7	54.1	9860
400	61/2.85	2.6	1.6	2.5	2.9	59.1	12000
			MS 2103 / IEC 60502-1 600 / 1000 V				
1.5	7/0.53	0.8	1.0	0.9	1.8	14.0	368
2.5	7/0.67	0.8	1.0	0.9	1.8	14.8	427
4	7/0.85	1.0	1.0	0.9	1.8	16.7	530
6	7/1.04	1.0	1.0	1.25	1.8	18.8	645
10	7/1.35	1.0	1.0	1.25	1.8	20.5	930
16	7/1.70	1.0	1.0	1.25	1.8	22.5	1124
25	7/2.14	1.2	1.0	1.6	1.8	26.3	1460
35	19/1.53	1.2	1.0	1.6	1.8	24.4	1750
50	19/1.78	1.4	1.0	1.6	1.9	27.0	2240
70	19/2.14	1.4	1.0	2.0	2.0	30.5	2750
95	19/2.52	1.6	1.2	2.0	2.2	34.6	3715
120	37/2.03	1.6	1.2	2.0	2.3	37.0	4315
150	37/2.25	1.8	1.2	2.5	2.4	41.0	5080
185	37/2.52	2.0	1.4	2.5	2.6	45.1	6595
240	61/2.25	2.2	1.4	2.5	2.8	49.7	8220
300	61/2.52	2.4	1.6	2.5	2.9	54.5	9910
400	61/2.85	2.6	1.6	2.5	3.2	59.7	12080

Product Specification

PVC INSULATED, PVC SHEATHED
ARMOURED CABLES



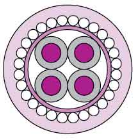
Cu / Pvc / Swa / Pvc - 3 Cores

Nominal cross-section area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			MS 274 / BS 6346 600 / 1000 V				
1.5	7/0.53	0.6	0.8	0.9	1.4	12.4	345
2.5	7/0.67	0.7	0.8	0.9	1.4	13.8	415
4	7/0.85	0.8	0.8	0.9	1.4	15.3	530
6	7/1.04	0.8	0.8	1.25	1.5	17.8	730
10	7/1.35	1.0	0.8	1.25	1.6	20.6	1030
16	7/1.70	1.0	0.8	1.25	1.6	22.9	1250
25	7/2.14	1.2	1.0	1.6	1.7	27.5	1800
35	19/1.53	1.2	1.0	1.6	1.8	27.3	2225
50	19/1.78	1.4	1.0	1.6	1.9	31.0	2800
70	19/2.14	1.4	1.2	2.0	2.0	35.5	3850
95	19/2.52	1.6	1.2	2.0	2.1	39.6	4930
120	37/2.03	1.6	1.2	2.0	2.2	44.5	5860
150	37/2.25	1.8	1.4	2.5	2.4	50.7	7460
185	37/2.52	2.0	1.4	2.5	2.5	53.3	8970
240	61/2.25	2.2	1.6	2.5	2.6	59.8	11300
300	61/2.52	2.4	1.6	2.5	2.8	64.0	13680
400	61/2.85	2.6	1.6	2.5	3.0	68.8	16650
			MS 2103 / IEC 60502-1 600 / 1000 V				
1.5	7/0.53	0.8	1.0	0.9	1.8	14.5	398
2.5	7/0.67	0.8	1.0	0.9	1.8	15.4	464
4	7/0.85	1.0	1.0	0.9	1.8	18.1	598
6	7/1.04	1.0	1.0	1.25	1.8	19.7	783
10	7/1.35	1.0	1.0	1.25	1.8	21.4	1069
16	7/1.70	1.0	1.0	1.25	1.8	23.7	1294
25	7/2.14	1.2	1.0	1.6	1.8	27.7	1813
35	19/1.53	1.2	1.0	1.6	1.8	27.3	2225
50	19/1.78	1.4	1.0	1.6	2.0	31.2	2813
70	19/2.14	1.4	1.2	2.0	2.1	35.7	3865
95	19/2.52	1.6	1.2	2.0	2.2	39.8	4947
120	37/2.03	1.6	1.2	2.0	2.3	44.7	5878
150	37/2.25	1.8	1.4	2.5	2.5	50.9	7483
185	37/2.52	2.0	1.4	2.5	2.7	53.7	9020
240	61/2.25	2.2	1.6	2.5	2.9	60.4	11380
300	61/2.52	2.4	1.6	2.5	3.1	64.6	13770
400	61/2.85	2.6	1.6	3.15	3.4	70.9	16990

PVC

Product Specification

PVC INSULATED, PVC SHEATHED
ARMOURED CABLES



Cu / Pvc / Swa / Pvc - 4 Cores

Nominal cross-section area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
MS 274 / BS 6346 600 / 1000 V							
1.5	7/0.53	0.6	0.8	0.9	1.4	13.2	385
2.5	7/0.67	0.7	0.8	0.9	1.4	14.7	470
4	7/0.85	0.8	0.8	1.25	1.5	17.3	735
6	7/1.04	0.8	0.8	1.25	1.5	19.1	860
10	7/1.35	1.0	0.8	1.25	1.6	22.3	1200
16	7/1.70	1.0	1.0	1.6	1.7	26.0	1750
25	7/2.14	1.2	1.0	1.6	1.8	30.0	2250
35	19/1.53	1.2	1.0	1.6	1.9	30.2	2770
50	19/1.78	1.4	1.2	2.0	2.0	35.4	3840
70	19/2.14	1.4	1.2	2.0	2.1	39.1	4870
95	19/2.52	1.6	1.2	2.0	2.2	43.3	6300
120	37/2.03	1.6	1.4	2.5	2.4	48.4	8070
150	37/2.25	1.8	1.4	2.5	2.5	53.2	9580
185	37/2.52	2.0	1.6	2.5	2.6	56.9	11500
240	61/2.25	2.2	1.6	2.5	2.8	65.0	14570
300	61/2.52	2.4	1.6	2.5	3.0	70.8	17530
400	61/2.85	2.6	1.8	3.15	3.3	79.2	22890
MS 2103 / IEC 60502-1 600 / 1000 V							
1.5	7/0.53	0.8	1.0	0.9	1.8	15.4	446
2.5	7/0.67	0.8	1.0	0.9	1.8	16.4	524
4	7/0.85	1.0	1.0	1.25	1.8	19.3	801
6	7/1.04	1.0	1.0	1.25	1.8	21.1	935
10	7/1.35	1.0	1.0	1.25	1.8	23.1	1244
16	7/1.70	1.0	1.0	1.6	1.8	26.2	1762
25	7/2.14	1.2	1.0	1.6	1.8	30.0	2250
35	19/1.53	1.2	1.0	1.6	1.9	30.2	2770
50	19/1.78	1.4	1.2	2.0	2.1	35.6	3855
70	19/2.14	1.4	1.2	2.0	2.2	39.3	4887
95	19/2.52	1.6	1.2	2.5	2.4	44.7	6508
120	37/2.03	1.6	1.4	2.5	2.5	48.6	8090
150	37/2.25	1.8	1.4	2.5	2.7	53.6	9631
185	37/2.52	2.0	1.6	2.5	2.9	57.5	11584
240	61/2.25	2.2	1.6	2.5	3.1	65.6	14665
300	61/2.52	2.4	1.6	2.5	3.3	71.4	17633
400	61/2.85	2.6	1.8	3.15	3.6	79.8	23122

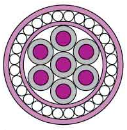
PVC

Product Specification

PVC INSULATED, PVC SHEATHED MULTI-CORE ARMOURED, AUXILIARY/CONTROL CABLES

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductor, class 2
INSULATION	:	PVC compound, 70°C
COLOUR OF INSULATION	:	White with numbering.
BEDDING	:	PVC compound, colour Black
ARMOUR	:	Galvanized Steel Wire
SHEATH	:	PVC compound, colour Black



Cu / Pvc / Swa / Pvc - Multi Cores

Number of cores	Nominal cross-sectional area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of Steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			MS 274 / BS 6346 600 / 1000 V					
5	1.5	7/0.53	0.6	0.8	0.9	1.4	14.0	456
7	1.5	7/0.53	0.6	0.8	0.9	1.4	14.9	467
9	1.5	7/0.53	0.6	0.8	1.25	1.5	18.1	693
12	1.5	7/0.53	0.6	0.8	1.25	1.5	19.1	784
19	1.5	7/0.53	0.6	0.8	1.25	1.6	21.8	1027
27	1.5	7/0.53	0.6	1.0	1.6	1.7	26.4	1512
37	1.5	7/0.53	0.6	1.0	1.6	1.8	30.1	1848
48	1.5	7/0.53	0.6	1.0	1.6	1.9	34.6	2246
5	2.5	7/0.67	0.7	0.8	0.9	1.5	15.9	516
7	2.5	7/0.67	0.7	0.8	1.25	1.5	17.6	707
9	2.5	7/0.67	0.7	0.8	1.25	1.6	20.6	887
12	2.5	7/0.67	0.7	0.8	1.25	1.6	21.9	1019
19	2.5	7/0.67	0.7	1.0	1.6	1.7	26.2	1550
27	2.5	7/0.67	0.7	1.0	1.6	1.8	30.4	1994
37	2.5	7/0.67	0.7	1.2	1.6	1.9	35.0	2508
48	2.5	7/0.67	0.7	1.2	2.0	2.1	41.2	3365
5	4	7/0.85	0.8	0.8	1.25	1.5	18.5	766
7	4	7/0.85	0.8	0.8	1.25	1.6	20.0	915
9	4	7/0.85	0.8	1.0	1.6	1.7	24.6	1329
12	4	7/0.85	0.8	1.0	1.6	1.7	26.2	1535
19	4	7/0.85	0.8	1.0	1.6	1.8	30.0	2052
			MS 2103 / IEC 60502-1 600 / 1000 V					
5	1.5	7/0.53	0.8	1.0	0.9	1.8	16.3	503
7	1.5	7/0.53	0.8	1.0	0.9	1.8	17.3	576
9	1.5	7/0.53	0.8	1.0	1.25	1.8	20.6	831
12	1.5	7/0.53	0.8	1.0	1.25	1.8	21.8	937
19	1.5	7/0.53	0.8	1.0	1.6	1.8	25.3	1359
27	1.5	7/0.53	0.8	1.0	1.6	1.8	29.1	1713
37	1.5	7/0.53	0.8	1.0	1.6	1.9	33.1	2095
48	1.5	7/0.53	0.8	1.0	1.6	2.0	38.9	2808
5	2.5	7/0.67	0.8	1.0	0.9	1.8	17.4	588
7	2.5	7/0.67	0.8	1.0	1.25	1.8	19.2	794
9	2.5	7/0.67	0.8	1.0	1.25	1.8	22.2	980
12	2.5	7/0.67	0.8	1.0	1.25	1.8	23.5	1122
19	2.5	7/0.67	0.8	1.0	1.6	1.8	27.4	1640
27	2.5	7/0.67	0.8	1.0	1.6	1.9	31.9	2111
37	2.5	7/0.67	0.8	1.0	1.6	2.0	36.2	2612
48	2.5	7/0.67	0.8	1.2	2.0	2.1	42.9	3536
5	4	7/0.85	1.0	1.0	0.9	1.8	19.9	764
7	4	7/0.85	1.0	1.0	1.25	1.8	22.0	1037
9	4	7/0.85	1.0	1.0	1.6	1.8	26.4	1447
12	4	7/0.85	1.0	1.0	1.6	1.8	28.1	1673
19	4	7/0.85	1.0	1.0	1.6	1.9	32.2	2237

PVC

XLPE

INSULATED POWER CABLES FOR ELECTRICITY SUPPLY

600 / 1000V

IEC 60502-1 / BS 5467 / MS 2104 / MS 2105 / MS 2106 / MS 2107

Product Specification

XLPE INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)

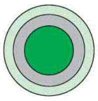
CONSTRUCTION

CONDUCTOR : Plain annealed copper conductors complying with IEC 60228 class 2

INSULATION : XLPE (cross-linked polyethylene) rated 90°C.

COLOUR OF CORES : 1 core - Natural
2 cores - Red and Black or (Brown and Blue)
3 cores - Red, Yellow and Blue or (Brown, Black, and Grey)
4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)

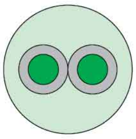
SHEATH : PVC Compound Type ST2, colour Black



Cu / XLPE / Pvc - 1 Core

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		IEC 60502-1 / BS 5467 / MS 2104 600 / 1000 V			
1.5	7/0.53	0.7	1.4	5.8	44
2.5	7/0.67	0.7	1.4	6.2	58
4	7/0.85	0.7	1.4	6.7	77
6	7/1.04	0.7	1.4	7.4	105
10	7/1.35	0.7	1.4	8.2	153
16	7/1.70	0.7	1.4	9.3	215
25	7/2.14	0.9	1.4	10.7	315
35	19/1.53	0.9	1.4	11.8	415
50	19/1.78	1.0	1.4	13.0	540
70	19/2.14	1.1	1.4	15.0	755
95	19/2.52	1.1	1.5	16.6	1025
120	37/2.03	1.2	1.5	18.9	1275
150	37/2.25	1.4	1.6	20.9	1555
185	37/2.52	1.6	1.6	23.1	1955
240	61/2.25	1.7	1.7	25.8	2540
300	61/2.52	1.8	1.8	28.4	3160
400	61/2.85	2.0	1.9	32.1	4015
500	61/3.20	2.2	2.0	35.8	5035
630	61/3.63	2.4	2.2	40.4	6530
800	127/2.85	2.6	2.3	44.9	8390
1000	127/3.20	2.8	2.4	50.6	10520

XLPE INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)

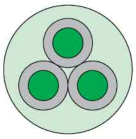


Cu / XLPE / Pvc - 2 Cores

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		IEC 60502-1 / BS 5467 / MS 2106 600 / 1000 V			
1.5	7/0.53	0.7	1.8	9.8	130
2.5	7/0.67	0.7	1.8	10.6	155
4	7/0.85	0.7	1.8	11.6	194
6	7/1.04	0.7	1.8	13.3	255
10	7/1.35	0.7	1.8	14.9	365
16	7/1.70	0.7	1.8	17.0	490
25	7/2.14	0.9	1.8	20.2	655
35	19/1.53	0.9	1.8	17.8	840
50	19/1.78	1.0	1.8	19.9	1120
70	19/2.14	1.1	1.8	22.7	1545
95	19/2.52	1.1	2.0	25.7	2050
120	37/2.03	1.2	2.1	28.4	2570
150	37/2.25	1.4	2.2	31.4	3150
185	37/2.52	1.6	2.3	34.9	3950
240	61/2.25	1.7	2.5	39.1	5130
300	61/2.52	1.8	2.7	43.1	6340
400	61/2.85	2.0	2.9	48.3	8120

Product Specification

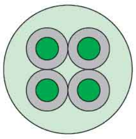
XLPE INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)



Cu / XLPE / Pvc - 3 Cores

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
IEC 60502-1 / BS 5467 / MS 2106 600 / 1000 V					
1.5	7/0.53	0.7	1.8	10.3	145
2.5	7/0.67	0.7	1.8	11.2	185
4	7/0.85	0.7	1.8	12.3	243
6	7/1.04	0.7	1.8	14.0	320
10	7/1.35	0.7	1.8	15.8	470
16	7/1.70	0.7	1.8	18.1	643
25	7/2.14	0.9	1.8	21.5	930
35	19/1.53	0.9	1.8	20.8	1230
50	19/1.78	1.0	1.8	23.8	1610
70	19/2.14	1.1	1.9	27.6	2280
95	19/2.52	1.1	2.0	30.8	3090
120	37/2.03	1.2	2.1	36.1	3880
150	37/2.25	1.4	2.3	40.9	4770
185	37/2.52	1.6	2.4	43.5	5950
240	61/2.25	1.7	2.6	49.4	7805
300	61/2.52	1.8	2.8	53.1	9680
400	61/2.85	2.0	3.1	58.1	12200

XLPE INSULATED, PVC SHEATHED CABLES
(NON-ARMOURED)



Cu / XLPE / Pvc - 4 Cores

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
		IEC 60502-1 / BS 5467 / MS 2106 600 / 1000 V			
1.5	7/0.53	0.7	1.8	10.9	173
2.5	7/0.67	0.7	1.8	11.8	225
4	7/0.85	0.7	1.8	13.0	302
6	7/1.04	0.7	1.8	15.3	400
10	7/1.35	0.7	1.8	17.2	595
16	7/1.70	0.7	1.8	19.9	825
25	7/2.14	0.9	1.8	23.7	1260
35	19/1.53	0.9	1.8	24.4	1650
50	19/1.78	1.0	1.9	28.0	2180
70	19/2.14	1.1	2.0	32.2	3080
95	19/2.52	1.1	2.1	35.5	4170
120	37/2.03	1.2	2.3	39.6	5260
150	37/2.25	1.4	2.4	44.4	6390
185	37/2.52	1.6	2.6	47.9	8000
240	61/2.25	1.7	2.8	55.6	10500
300	61/2.52	1.8	3.0	61.9	13050
400	61/2.85	2.0	3.3	68.7	16100

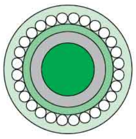
XLPE

Product Specification

XLPE INSULATED, PVC SHEATHED
ARMOURED CABLES

CONSTRUCTION

CONDUCTOR	:	Plain annealed copper conductors complying with IEC 60228 class 2.
INSULATION	:	XLPE (cross-linked polyethylene) rated 90°C.
COLOUR OF CORES	:	1 core - Natural 2 cores - Red and Black or (Brown and Blue) 3 cores - Red, Yellow and Blue or (Brown, Black and Grey) 4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)
BEDDING	:	PVC Compound Type ST2, colour Black
ARMOUR	:	Single core - Aluminium wire
	:	2, 3 or 4 cores - Galvanized steel wire
SHEATH	:	PVC Compound Type ST2, colour Black

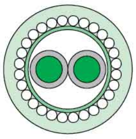


Cu / XLPE / Awa / Pvc - 1 Core

Nominal cross-sectional area	Number and diameter of wire	Thickness of Insulation	Diameter of aluminium wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
IEC 60502-1 / BS 5467 / MS 2105 600 / 1000 V						
50	19/1.78	1.0	1.25	1.8	18.3	765
70	19/2.14	1.1	1.25	1.8	20.3	980
95	19/2.52	1.1	1.25	1.8	21.7	1260
120	37/2.03	1.2	1.6	1.8	24.7	1600
150	37/2.25	1.4	1.6	1.8	26.5	1900
185	37/2.52	1.6	1.6	1.8	28.7	2350
240	61/2.25	1.7	1.6	1.9	31.4	2990
300	61/2.52	1.8	1.6	1.9	33.8	3750
400	61/2.85	2.0	2.0	2.1	38.9	4780
500	61/3.20	2.2	2.0	2.2	42.6	5900
630	61/3.63	2.4	2.0	2.3	47.6	7400
800	127/2.85	2.6	2.5	2.5	53.1	9550
1000	127/3.20	2.8	2.5	2.7	58.8	11796

XLPE

XLPE INSULATED, PVC SHEATHED ARMOURED CABLES

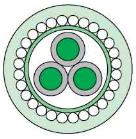


Cu / XLPE / Swa / Pvc - 2 Cores

Nominal cross-sectional area	Number and diameter of wire	Thickness of Insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
IEC 60502-1 / BS 5467 / MS 2107 600 / 1000 V						
1.5	7/0.53	0.7	0.9	1.8	13.6	364
2.5	7/0.67	0.7	0.9	1.8	14.4	400
4	7/0.85	0.7	0.9	1.8	15.4	470
6	7/1.04	0.7	0.9	1.8	17.1	550
10	7/1.35	0.7	1.25	1.8	19.4	700
16	7/1.70	0.7	1.25	1.8	21.5	860
25	7/2.14	0.9	1.6	1.8	25.4	1270
35	19/1.53	0.9	1.6	1.8	23.0	1500
50	19/1.78	1.0	1.6	1.8	25.1	1840
70	19/2.14	1.1	1.6	2.0	28.3	2450
95	19/2.52	1.1	2.0	2.1	32.3	3310
120	37/2.03	1.2	2.0	2.2	35.0	4000
150	37/2.25	1.4	2.0	2.3	38.0	4650
185	37/2.52	1.6	2.5	2.5	43.1	6100
240	61/2.25	1.7	2.5	2.7	47.3	7600
300	61/2.52	1.8	2.5	2.8	51.5	9100
400	61/2.85	2.0	2.5	3.1	56.9	11300

Product Specification

XLPE INSULATED, PVC SHEATHED
ARMOURED CABLES

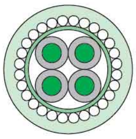


Cu / XLPE / Swa / Pvc - 3 Cores

Nominal cross-sectional area	Number and diameter of wire	Thickness of Insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
IEC 60502-1 / BS 5467 / MS 2107 600 / 1000 V						
1.5	7/0.53	0.7	0.9	1.8	14.1	383
2.5	7/0.67	0.7	0.9	1.8	15.0	450
4	7/0.85	0.7	0.9	1.8	16.1	532
6	7/1.04	0.7	0.9	1.8	17.8	640
10	7/1.35	0.7	1.25	1.8	20.3	830
16	7/1.70	0.7	1.25	1.8	22.6	1050
25	7/2.14	0.9	1.6	1.8	26.7	1650
35	19/1.53	0.9	1.6	1.8	26.0	2000
50	19/1.78	1.0	1.6	1.9	29.2	2500
70	19/2.14	1.1	2.0	2.0	34.2	3540
95	19/2.52	1.1	2.0	2.2	37.6	4550
120	37/2.03	1.2	2.0	2.3	42.9	5500
150	37/2.25	1.4	2.5	2.5	49.1	6950
185	37/2.52	1.6	2.5	2.6	50.6	8100
240	61/2.25	1.7	2.5	2.8	58.0	10480
300	61/2.52	1.8	2.5	3.0	61.7	12600
400	61/2.85	2.0	2.5	3.2	66.5	16300

Product Specification

XLPE INSULATED, PVC SHEATHED ARMOURED CABLES



Cu / XLPE / Swa / Pvc - 4 Cores

Nominal cross-sectional area	Number and diameter of wire	Thickness of Insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
			IEC 60502-1 / BS 5467 / MS 2107 600 / 1000 V			
1.5	7/0.53	0.7	0.9	1.8	14.7	431
2.5	7/0.67	0.7	0.9	1.8	15.6	510
4	7/0.85	0.7	0.9	1.8	16.8	610
6	7/1.04	0.7	1.25	1.8	19.8	740
10	7/1.35	0.7	1.25	1.8	21.8	990
16	7/1.70	0.7	1.6	1.8	25.1	1530
25	7/2.14	0.9	1.6	1.8	28.9	2100
35	19/1.53	0.9	1.6	1.9	29.8	2500
50	19/1.78	1.0	1.6	2.0	33.4	3400
70	19/2.14	1.1	2.0	2.2	39.0	4550
95	19/2.52	1.1	2.0	2.3	42.3	5800
120	37/2.03	1.2	2.5	2.5	47.8	7250
150	37/2.25	1.4	2.5	2.6	52.6	8950
185	37/2.52	1.6	2.5	2.8	56.1	10850
240	61/2.25	1.7	2.5	3.0	64.2	13800
300	61/2.52	1.8	2.5	3.2	70.5	16600
400	61/2.85	2.0	3.15	3.5	79.0	21800

Product Specification

COPPER TAPE FOR LIGHTNING PROTECTION

MATERIAL	:	Oxygen free high conductivity annealed copper
PACKING	:	Pancaked in coil form
WEIGHT PER COIL	:	Approx. 33 kg/coil or 60 kg/coil

Nominal Thickness x Width	Nominal cross-sectional area	Approx. net weight	Current rating
mm	sq.mm	kg/km	A
BS EN 13601			
1.6 x 25.0	40	0.355	62
3.0 x 25.0	75	0.666	116
6.0 x 50.0	300	2.667	465

Note: Other sizes are available upon request.

BARE COPPER CONDUCTOR
(PLAIN COPPER & TINNED COPPER)

CONSTRUCTION

MATERIAL	:	Plain or tinned annealed copper conductor.
CLASS	:	Class 2 *
FORM	:	Circular Stranded

Nominal cross-sectional area	Construction, number / wire diameter	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	kg/km
MS 69 / IEC 60228 / BS EN 60228			
1.5	7/0.53	1.6	14
2.5	7/0.67	2.0	22
4	7/0.85	2.6	36
6	7/1.04	3.1	54
10	7/1.35	4.1	78
16	7/1.70	5.1	135
25	7/2.14	6.4	209
35	19/1.53	7.4	302
50	19/1.78	8.6	398
70	19/2.14	10.2	582
95	19/2.52	12.2	817
120	37/2.03	13.5	1051
150	37/2.25	15.1	1278
185	37/2.52	16.8	1613
240	61/2.25	19.3	2130
300	61/2.52	21.5	2690
400	61/2.85	24.6	3540
500	61/3.20	27.6	4340
630	61/3.63	31.2	5500

* Class 5 flexible plain & tinned annealed copper are available upon request

ALUMINIUM CONDUCTOR

XLPE-INSULATED POWER CABLE FOR ELECTRICITY SUPPLY

600 / 1000 V

IEC 60502-1 / MS 2104 / MS 2105 / MS 2106 / MS 2107

&

PE-INSULATED AERIAL BUNDLED CABLE (ABC)

600 / 1000 V TO TNBD SPEC

Product Specification

600/1000V POWER CABLES WITH ALUMINIUM CONDUCTORS 1/2/3/4-CORES, XLPE INSULATED, PVC SHEATHED NON-ARMOURED & ARMOURED

CABLE CONSTRUCTION

(1) NON-ARMOURED CABLES

CONDUCTOR	: Plain aluminium conductors, Class 2
INSULATION	: XLPE (cross-linked polyethiyene) rated 90°C
COLOUR OF CORES	: 1 core - Natural
	2 cores - Red and Black or (Brown and Blue)
	3 cores - Red, Yellow and Blue or (Brown, Black and Grey)
	4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)
FILLERS	: PP yarn (optional)
CORE WRAPPING	: Polyester tape (optional)
SHEATH	: PVC Compound Type ST2, colour Black

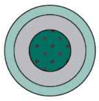
(2) ARMOURED CABLES

CONDUCTOR	: Plain aluminium conductors, Class 2
INSULATION	: XLPE (cross-linked polyethiyene) rated 90°C
COLOUR OF CORES	: 1 core - Natural
	2 cores - Red and Black or (Brown and Blue)
	3 cores - Red, Yellow and Blue or (Brown, Black and Grey)
	4 cores - Red, Yellow, Blue and Black or (Brown, Black, Grey and Blue)
FILLERS	: PP yarn (optional)
CORE WRAPPING	: polyester tape (optional)
BEDDING	: PVC Compound Type ST2, colour Black
AMOUR	: 1 core - Aluminium wires
	2, 3, 4 cores - Galvanized steel wires
SHEATH	: PVC Compound Type ST2, colour Black

RATED VOLTAGE : 600/1000 V

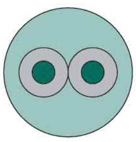
APPLICABLE STANDARDS : IEC 60502-1 / MS 2104 / MS 2105 / MS 2106 / MS 2107, IEC 60228 & IEC 60332-1

XLPE INSULATED, PVC SHEATHED CABLES (Al)
(NON-ARMOURED)



Al / XLPE / PVC - 1 CORE

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.4	9.2	107
25	7/2.14	0.9	1.4	10.7	152
35	19/1.53	0.9	1.4	11.8	191
50	19/1.78	1.0	1.4	13.0	239
70	19/2.14	1.1	1.4	15.0	321
95	19/2.52	1.1	1.5	16.6	420
120	37/2.03	1.2	1.5	18.9	520
150	37/2.25	1.4	1.6	20.9	628
185	37/2.52	1.6	1.6	23.1	768
240	61/2.25	1.7	1.7	25.8	988
300	61/2.52	1.8	1.8	28.4	1209
400	61/2.85	2.0	1.9	32.1	1522
500	61/3.20	2.2	2.0	35.8	1960
630	61/3.63	2.4	2.2	40.4	2410

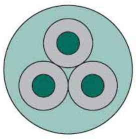


Al / XLPE / PVC - 2 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.8	17.0	283
25	7/2.14	0.9	1.8	20.2	402
35	19/1.53	0.9	1.8	17.8	503
50	19/1.78	1.0	1.8	19.9	507
70	19/2.14	1.1	1.8	22.7	670
95	19/2.52	1.1	2.0	25.7	870
120	37/2.03	1.2	2.1	28.4	1075
150	37/2.25	1.4	2.2	31.4	1324
185	37/2.52	1.6	2.3	34.9	1628
240	61/2.25	1.7	2.5	39.1	2080
300	61/2.52	1.8	2.7	43.1	2550
400	61/2.85	2.0	2.9	48.3	3250

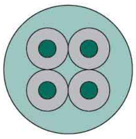
Product Specification

XLPE INSULATED, PVC SHEATHED CABLES (Al)
(NON-ARMOURED)



Al / XLPE / PVC - 3 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.8	18.1	341
25	7/2.14	0.9	1.8	21.5	495
35	19/1.53	0.9	1.8	20.8	625
50	19/1.78	1.0	1.8	23.8	717
70	19/2.14	1.1	1.9	27.6	980
95	19/2.52	1.1	2.0	30.8	1270
120	37/2.03	1.2	2.1	36.1	1570
150	37/2.25	1.4	2.3	40.9	1940
185	37/2.52	1.6	2.4	43.5	2395
240	61/2.25	1.7	2.6	49.4	3070
300	61/2.52	1.8	2.8	53.1	3750
400	61/2.85	2.0	3.1	58.1	4790

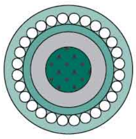


Al / XLPE / PVC - 4 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.8	19.9	425
25	7/2.14	0.9	1.8	23.7	620
35	19/1.53	0.9	1.8	24.4	787
50	19/1.78	1.0	1.9	28.0	960
70	19/2.14	1.1	2.0	32.2	1324
95	19/2.52	1.1	2.1	35.5	1724
120	37/2.03	1.2	2.3	39.6	2155
150	37/2.25	1.4	2.4	44.4	2620
185	37/2.52	1.6	2.6	47.9	3270
240	61/2.25	1.7	2.8	55.6	4180
300	61/2.52	1.8	3.0	61.9	5140
400	61/2.85	2.0	3.3	68.7	6520

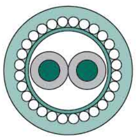
XLPE INSULATED, PVC SHEATHED CABLES (Al)

ARMOURED CABLES



Al / XLPE / AWA / PVC - 1 CORE

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Diameter of aluminium wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
50	19/1.78	1.0	1.25	1.8	18.3	488
70	19/2.14	1.1	1.25	1.8	20.3	600
95	19/2.52	1.1	1.25	1.8	21.7	718
120	37/2.03	1.2	1.6	1.8	24.7	895
150	37/2.25	1.4	1.6	1.8	26.5	1035
185	37/2.52	1.6	1.6	1.8	28.7	1210
240	61/2.25	1.7	1.6	1.9	31.4	1465
300	61/2.52	1.8	1.6	1.9	33.8	1720
400	61/2.85	2.0	2.0	2.1	38.9	2240
500	61/3.20	2.2	2.0	2.2	42.6	2710
630	61/3.63	2.4	2.0	2.3	47.6	3290



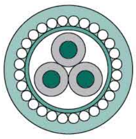
Al / XLPE / SWA / PVC - 2 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.25	1.8	21.5	775
25	7/2.14	0.9	1.6	1.8	25.4	1140
35	19/1.53	0.9	1.6	1.8	23.0	1330
50	19/1.78	1.0	1.6	1.8	25.1	1300
70	19/2.14	1.1	1.6	2.0	28.3	1610
95	19/2.52	1.1	2.0	2.1	32.3	2185
120	37/2.03	1.2	2.0	2.2	35.0	2500
150	37/2.25	1.4	2.0	2.3	38.0	2885
185	37/2.52	1.6	2.5	2.5	43.1	3800
240	61/2.25	1.7	2.5	2.7	47.3	4510
300	61/2.52	1.8	2.5	2.8	51.5	5270
400	61/2.85	2.0	2.5	3.1	56.9	6280

Product Specification

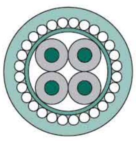
XLPE INSULATED, PVC SHEATHED CABLES (Al)

ARMOURED CABLES



Al / XLPE / SWA / PVC - 3 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.25	1.8	22.6	865
25	7/2.14	0.9	1.6	1.8	26.7	1280
35	19/1.53	0.9	1.6	1.8	26.0	1500
50	19/1.78	1.0	1.6	1.8	29.2	1640
70	19/2.14	1.1	2.0	2.0	34.2	2315
95	19/2.52	1.1	2.0	2.2	37.6	2780
120	37/2.03	1.2	2.0	2.3	42.9	3230
150	37/2.25	1.4	2.5	2.5	49.1	4250
185	37/2.52	1.6	2.5	2.6	50.6	4915
240	61/2.25	1.7	2.5	2.8	58.0	5980
300	61/2.52	1.8	2.5	3.0	61.7	6960
400	61/2.85	2.0	2.5	3.2	66.5	8350



Al / XLPE / SWA / PVC - 4 CORES

Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm	mm	mm	mm	mm	kg/km
16	7/1.70	0.7	1.6	1.8	25.1	1130
25	7/2.14	0.9	1.6	1.8	28.9	1479
35	19/1.53	0.9	1.6	1.9	29.8	1762
50	19/1.78	1.0	1.6	2.0	33.4	2010
70	19/2.14	1.1	2.0	2.2	39.0	2835
95	19/2.52	1.1	2.0	2.3	42.3	3430
120	37/2.03	1.2	2.5	2.5	47.8	4510
150	37/2.25	1.4	2.0	2.6	52.6	5180
185	37/2.52	1.6	2.5	2.8	56.1	6150
240	61/2.25	1.7	2.5	3.0	64.2	7460
300	61/2.52	1.8	2.5	3.2	70.5	8740
400	61/2.85	2.0	3.15	3.5	79.0	11540

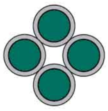
PE INSULATED AERIAL BUNDLED CABLE (ABC)

CONSTRUCTION

CONDUCTOR : Phase - H68 Condition aluminium conductor, Class 2
Neutral / Messenger - Aluminium alloy, Class 2

INSULATION : UV resistant PE (polyethylene) compound

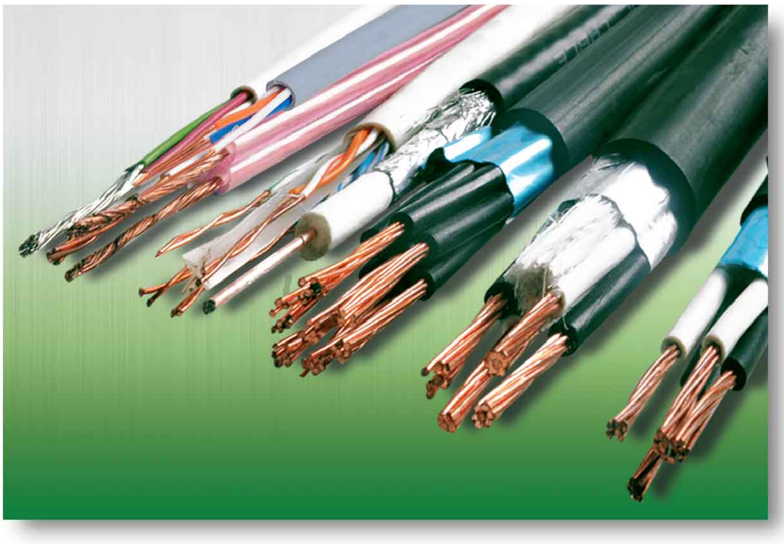
COLOUR OF CORES : Black



Al / PE - 3 Cores Phase + 1 Core Neutral / Messenger

Cable size	Phase Core				Neutral / Messenger Core					
	Number of cores	Nominal cross-sectional area	Thickness of insulation	Diameter over insulation	Number of cores	Nominal cross-sectional area	Thickness of insulation	Diameter over insulation	Approx. overall diameter	Approx. overall diameter
sq.mm		sq.mm	mm	mm		sq.mm	mm	mm	mm	kg/km
TNBD Spec. and IEC 502 600 / 1000 V										
1Cx16+1Cx25	1	16	1.0	6.7	1	25	1.2	8.3	15.0	158
3Cx16+1Cx25	3	16	1.0	6.7	1	25	1.2	8.3	17.5	186
3Cx35+1Cx25	3	35	1.2	9.5	1	25	1.2	8.3	22.7	490
3Cx50+1Cx35	3	50	1.4	11.2	1	35	1.2	9.5	26.6	672

DATA COMMUNICATION CABLES

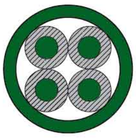


Product Specification

INTERNAL TELEPHONE CABLES

CONSTRUCTION

CONDUCTOR : Solid circular plain annealed copper wire, Class I
INSULATION : PVC compound Type 2, rated 70°C.
COLOUR OF CORES : I pair - White and Orange
2 pair - White and Orange, White and Blue
3 wires - White, Orange, Green
SHEATH : PVC compound Type 2, Grey colour



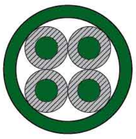
Cu / PVC / PVC

Conductor diameter	No. of pairs / wire	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
mm		mm	mm	mm	kg/km
		Telekom Malaysia Bhd Specification Lines CI 0001			
0.5	1 pair	0.25	0.75	3.5	15
0.5	3 wires	0.25	0.75	3.8	18
0.5	2 pairs	0.25	0.75	4.9	25
0.63	1 pair	0.25	0.75	3.9	18
0.63	3 wires	0.25	0.75	4.1	22
0.63	2 pairs	0.25	0.75	5.2	28

ALARM CABLES

CONSTRUCTION

CONDUCTOR : Circular Stranded tinned annealed copper wires
INSULATION : PVC compound Type TI1, rated 70°C.
COLOUR OF CORES : 4-core - Red, Blue, White & Black or
Red, Green, Black & White
6-core - Black, Red, Blue, Orange, White & Grey
8-core - Orange, Red, Black, Green, Blue, Yellow,
White & Grey
SHEATH : PVC compound Type TM1, white colour



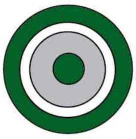
Tinned Cu / Pvc / Pvc

Number of cores	Nominal cross sectional area	Construction, number / wire diameter	Thickness of Insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	kg/km
			BS 4737-3.30			
4	0.14	7/0.16	0.25	0.62	3.6	17
4	0.22	7/0.20	0.25	0.62	3.9	22
6	0.22	7/0.20	0.25	0.62	4.5	30
8	0.22	7/0.20	0.25	0.62	5.1	37

COAXIAL CABLES

CONSTRUCTION

INNER CONDUCTOR : Circular solid or stranded plain annealed copper
INSULATION : Solid PE or foamed PE
COLOUR OF INSULATION : Natural
BRAIDING Plain or tinned copper braid
SHEATH : PVC White



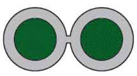
Cu / PE / CWB / Pvc

Type	Inner conductor	Type of Insulation	Thickness of Insulation	Braiding material	Thickness of sheath	Approx. overall diameter	Approx. net weight
sq.mm	No./mm		mm		mm	mm	kg/km
RG 6	1/1.02	Foamed PE	1.84	Tinned copper	0.7	7.0	58
RG 59	1/0.643	Solid PE	1.53	Plain copper	0.8	6.1	54
RG 213	7/0.752	Solid PE	2.49	Plain copper	1.1	10.3	105

AUDIO / SPEAKER CABLES

CONSTRUCTION

CONDUCTOR : Flexible tinned (or bare) annealed copper wires,
INSULATION : Transparent soft PVC compound Type TI 2
COLOUR OF CORES : Pink or other colour



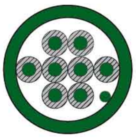
Tinned Cu / PVC - 2 Cores (Flat Twin)

Nominal cross-section area	Construction, number / wire diameter	Thickness of Insulation	Approx. overall diamension (Height x Width)	Approx. net weight
sq.mm	No./mm	mm	mm	kg/km
0.50	20/0.18	0.9	2.93 x 6.06	28
0.75	30/0.18	1.0	3.14 x 6.48	34
1.0	140/0.10	1.2	3.77 x 7.74	49
1.5	168/0.10	1.4	4.30 x 8.80	62
2.5	315/0.10	1.5	5.05 x 10.3	95

CATEGORY 5e UTP NETWORK CABLES

CONSTRUCTION

CONDUCTOR	: Solid circular plain annealed copper wire, Class 1
INSULATION	: HDPE (high density polyethylene)
COLOUR OF CORES	: Pair 1 - Blue and White / Blue
	Pair 2 - Orange and White / Orange
	Pair 3 - Green and White / Green
	Pair 4 - Brown and White / Brown
RIP CORD	: Nylon rope
SHEATH (JACKET)	: PVC, White colour, Flame Retardant to VW-1 test
STANDARDS	: TIA / EIA 568B.2, UL 444 / CSA C22.2 & ISO / IEC-11801



4 pairs x 24 AWG UTP Category 5e Cable

Cable Dimensions		Electrical Properties		
Cable size	: 4 Pr x 24 AWG (1/0.51mm)	dc conductor resistance at 20°C	: ≤ 93.8	Ω/km
Nom. Insulation thickness	: 0.21 mm	dc conductor resistance unbalance	: ≤ 5	%
Nom. sheath thickness	: 0.55 mm	Characteristic impedance	: 100±15 Ω	
Approx. overall diameter	: 5.3 mm	Mutual capacitance	: ≤ 5600	pF/100m
Approx. net weight	: 10 kg/coil	Pair to ground capacitance unbalance	: ≤ 330	pF/100m
Cable length per coil	: 305 m	Delay skew	: ≤ 45	ns/100m

Transmission Characteristics

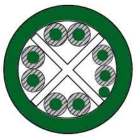
Frequency	Attenuation (Insertion) Loss	NEXT	PS NEXT	ACR	PS ACR	ELFEXT	PS ELFEXT	Return Loss
	Max.	Min.	Min.	Min.	Min.	Min.	Min.	Min.
MHz	dB/100m	dB	dB	dB/100m	dB/100m	dB/100m	dB/100m	dB
1	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0
4	4.1	56.3	53.3	52.2	49.2	51.8	48.7	23.0
8	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0
16	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0
20	9.3	45.8	42.8	36.5	33.5	37.8	34.7	25.0
25	10.4	44.3	41.3	33.9	30.9	35.8	32.8	24.3
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.8	21.5
100	22.0	35.3	32.3	13.3	10.3	23.8	20.8	20.1

Product Specification

CATEGORY 6 UTP NETWORK CABLES

CONSTRUCTION

CONDUCTOR	: Solid circular plain annealed copper wire, Class 1
INSULATION	: HDPE (high density polyethylene)
COLOUR OF CORES	: Pair 1 - Blue and White / Blue
	Pair 2 - Orange and White / Orange
	Pair 3 - Green and White / Green
	Pair 4 - Brown and White / Brown
DIVIDER	: PE Material
RIP CORD	: Nylon rope
SHEATH (JACKET)	: PVC, White colour, Flame Retardant to VW-1 test
STANDARDS	: TIA / EIA.2-1, UL444 / CSA22.2 & ISO / IEC-11801



4 pairs x 23 AWG UTP Category 6 Cable

Cable Dimensions		Electrical Properties	
Cable size	: 4 Pr x 23 AWG (1/0.58mm)	dc conductor resistance at 20°C	: ≤ 73.2 Ω/km
Nom. Insulation thickness	: 0.22 mm	dc conductor resistance unbalance	: ≤ 5 %
Nom. sheath thickness	: 0.6 mm	Characteristic impedance	: 100±15 Ω
Approx. overall diameter	: 6.0 mm	Mutual capacitance	: ≤ 5600 pF/100m
Approx. net weight	: 12.2 kg/coil	Pair to ground capacitance unbalance	: ≤ 330 pF/100m
Cable length per coil	: 305 m	Delay skew	: ≤ 45 ns/100m

Transmission Characteristics

Frequency	Attenuation (Insertion) Loss	NEXT	PS NEXT	ACR	PS ACR	ELFEXT	PS ELFEXT	Return Loss
	Max.	Min.	Min.	Min.	Min.	Min.	Min.	Min.
MHz	dB/100m	dB	dB	dB/100m	dB/100m	dB/100m	dB/100m	dB
1	2.0	74.3	72.3	72.3	70.3	67.8	64.8	20.0
4	3.8	65.3	63.3	61.5	59.5	55.8	52.8	23.0
8	5.3	60.8	58.8	55.5	53.5	49.7	46.7	24.5
10	6.0	59.3	57.3	53.3	51.3	47.8	44.8	25.0
16	7.6	56.2	54.2	48.6	46.6	43.7	40.7	25.0
20	8.5	54.8	52.8	46.3	44.3	41.8	38.8	25.0
25	9.5	53.3	51.3	43.8	41.8	39.8	36.8	24.3
31.25	10.7	51.9	49.9	41.2	39.2	37.9	34.9	23.6
62.5	15.4	47.4	45.4	32.0	30.0	31.9	28.9	21.5
100	19.8	44.3	42.3	24.5	22.5	27.8	24.8	20.1
200	29.0	39.8	37.8	10.8	8.8	21.8	18.8	18.0
250	32.8	38.3	36.3	5.5	3.5	19.8	16.8	17.3

Product Specification

INSTRUMENTATION CABLES
(MULTI-CORE NON-ARMOURED)

CONSTRUCTION

CONDUCTOR	: Stranded circular plain annealed copper wire, Class 2
INSULATION	: PVC or PE or XLPE
COLOUR OF CORES	: 3 cores (1 Triad) - Red, Black & White 4 cores & above - Black with White numbering
DRAIN WIRE	: Stranded circular tinned copper wire
COLLECTIVE SCREEN	: Aluminium/polyester tape
SHEATH	: PVC compound Type TM 1, Black colour

Cu / PVC / OSCR / PVC or
Cu / PE / OSCR / PVC or
Cu / XLPE / OSCR / PVC - Multi-core

Number of cores	Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	kg/km
		BS EN 50288-7 / BS 5308 300 / 500 V				
3	1.0	7/0.43	0.6	0.9	7.8	84
4	1.0	7/0.43	0.6	0.9	8.5	102
6	1.0	7/0.43	0.6	1.0	10.2	148
8	1.0	7/0.43	0.6	1.0	11.0	182
10	1.0	7/0.43	0.6	1.1	13.0	228
20	1.0	7/0.43	0.6	1.2	16.6	402
30	1.0	7/0.43	0.6	1.3	19.5	578
40	1.0	7/0.43	0.6	1.4	22.1	758
3	1.5	7/0.53	0.6	0.9	8.5	102
4	1.5	7/0.53	0.6	1.0	9.5	130
6	1.5	7/0.53	0.6	1.0	11.1	183
8	1.5	7/0.53	0.6	1.1	12.2	233
10	1.5	7/0.53	0.6	1.1	14.2	285
20	1.5	7/0.53	0.6	1.3	18.4	521
30	1.5	7/0.53	0.6	1.4	21.7	752
40	1.5	7/0.53	0.6	1.5	24.6	985
3	2.5	7/0.67	0.6	1.0	9.7	138
4	2.5	7/0.67	0.6	1.0	10.5	172
6	2.5	7/0.67	0.6	1.1	12.6	250
8	2.5	7/0.67	0.6	1.1	13.6	313
10	2.5	7/0.67	0.6	1.2	16.1	393
20	2.5	7/0.67	0.6	1.4	20.9	727
30	2.5	7/0.67	0.6	1.5	24.7	1053
40	2.5	7/0.67	0.6	1.6	28.0	1382

Product Specification

INSTRUMENTATION CABLES
(MULTI-CORE ARMOURED)

CONSTRUCTION

CONDUCTOR	: Stranded circular plain annealed copper wire, Class 2
INSULATION	: PVC or PE or XLPE
COLOUR OF CORES	: 3 cores (1 Triad) - Red, Black & White 4 cores & above - Black with numbering
DRAIN WIRE	: Stranded cirular tinned copper wire
COLLECTIVE SCREEN	: Aluminium/polyester tape
BEDDING	: PVC compound Type TM 1, Black colour
ARMOUR	: Round galvanized steel wire
SHEATH	: PVC compound Type TM 1, Black colour

Cu / PVC / OSCR / SWA / PVC or
Cu / PE / OSCR / SWA / PVC or
Cu / XLPE / OSCR / SWA / PVC - Multi-core

Number of cores	Nominal cross-sectional area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			BS EN 50288-7 / BS 5308 300 / 500 V					
3	1.0	7/0.43	0.6	1.0	0.9	1.4	12.6	321
4	1.0	7/0.43	0.6	1.0	0.9	1.4	13.3	356
6	1.0	7/0.43	0.6	1.0	0.9	1.4	14.8	433
8	1.0	7/0.43	0.6	1.0	0.9	1.4	15.6	486
10	1.0	7/0.43	0.6	1.0	1.25	1.5	18.3	684
20	1.0	7/0.43	0.6	1.0	1.6	1.6	22.6	1100
30	1.0	7/0.43	0.6	1.0	1.6	1.7	25.5	1383
40	1.0	7/0.43	0.6	1.0	1.6	1.7	27.9	1640
3	1.5	7/0.53	0.6	1.0	0.9	1.4	13.3	356
4	1.5	7/0.53	0.6	1.0	0.9	1.4	14.1	398
6	1.5	7/0.53	0.6	1.0	0.9	1.4	15.7	491
8	1.5	7/0.53	0.6	1.0	0.9	1.5	16.8	564
10	1.5	7/0.53	0.6	1.0	0.9	1.5	18.8	665
20	1.5	7/0.53	0.6	1.0	1.25	1.6	23.5	1127
30	1.5	7/0.53	0.6	1.0	1.25	1.7	26.8	1454
40	1.5	7/0.53	0.6	1.0	1.25	1.8	29.7	1771
3	2.5	7/0.67	0.6	1.0	0.9	1.4	14.3	411
4	2.5	7/0.67	0.6	1.0	0.9	1.4	15.1	465
6	2.5	7/0.67	0.6	1.0	0.9	1.5	17.2	592
8	2.5	7/0.67	0.6	1.0	0.9	1.5	18.2	679
10	2.5	7/0.67	0.6	1.0	0.9	1.6	20.7	817
20	2.5	7/0.67	0.6	1.0	1.25	1.7	26.0	1405
30	2.5	7/0.67	0.6	1.0	1.25	1.8	29.8	1843
40	2.5	7/0.67	0.6	1.0	1.25	1.9	33.1	2267

Product Specification

INSTRUMENTATION CABLES
(MULTI-PAIR NON-ARMOURED)

CONSTRUCTION

CONDUCTOR	: Stranded circular plain annealed copper wire, Class 2
INSULATION	: PVC or PE or XLPE
COLOUR OF CORES	: 1 pair - Black & White 2 pair & above - Black/White with numbering
DRAIN WIRE	: Stranded cirular tinned copper wire
COLLECTIVE SCREEN	: Aluminium/polyester tape
SHEATH	: PVC compound Type TM 1, Black colour

Cu / PVC / OSCR / PVC or
Cu / PE / OSCR / PVC or
Cu / XLPE / OSCR / PVC - Multi-core

Number of pairs	Nominal cross-sectional area	Construction, number / wire diameter	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	kg/km
			BS EN 50288-7 / BS 5308 300 / 500 V			
1	1.0	7/0.43	0.6	0.8	7.2	70
2	1.0	7/0.43	0.6	0.9	10.7	127
3	1.0	7/0.43	0.6	0.9	11.4	158
4	1.0	7/0.43	0.6	1.0	12.7	203
5	1.0	7/0.43	0.6	1.0	13.8	231
6	1.0	7/0.43	0.6	1.0	15.1	277
7	1.0	7/0.43	0.6	1.0	15.1	293
8	1.0	7/0.43	0.6	1.1	17.2	356
10	1.0	7/0.43	0.6	1.1	19.5	427
1	1.5	7/0.53	0.6	0.9	8.0	87
2	1.5	7/0.53	0.6	1.0	11.9	159
3	1.5	7/0.53	0.6	1.0	12.7	200
4	1.5	7/0.53	0.6	1.0	13.9	250
5	1.5	7/0.53	0.6	1.0	15.2	289
6	1.5	7/0.53	0.6	1.1	16.8	354
7	1.5	7/0.53	0.6	1.1	16.8	381
8	1.5	7/0.53	0.6	1.1	19.0	447
10	1.5	7/0.53	0.6	1.2	21.8	551
1	2.5	7/0.67	0.6	0.9	8.9	109
2	2.5	7/0.67	0.6	1.0	13.4	203
3	2.5	7/0.67	0.6	1.0	14.2	263
4	2.5	7/0.67	0.6	1.0	15.6	332
5	2.5	7/0.67	0.6	1.1	17.4	399
6	2.5	7/0.67	0.6	1.1	19.0	475
7	2.5	7/0.67	0.6	1.1	19.0	520
8	2.5	7/0.67	0.6	1.2	21.6	619
10	2.5	7/0.67	0.6	1.3	24.8	764

Product Specification

INSTRUMENTATION CABLES
(MULTI-PAIR ARMOURED)

CONSTRUCTION

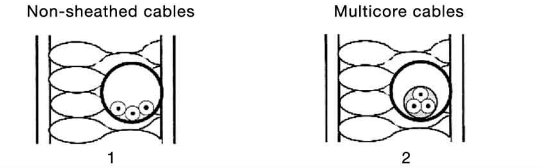
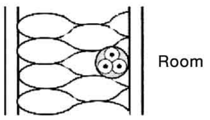
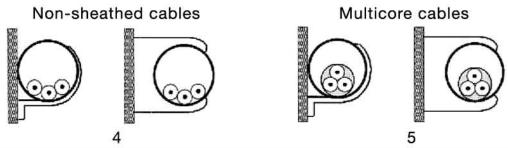
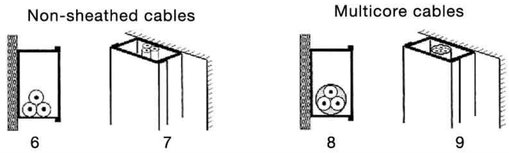
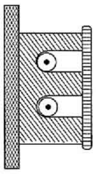
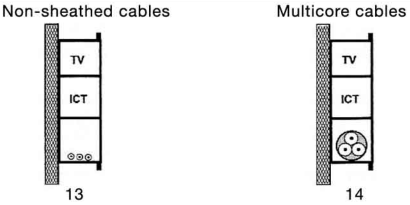
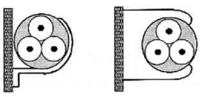
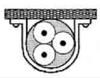
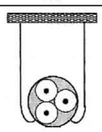
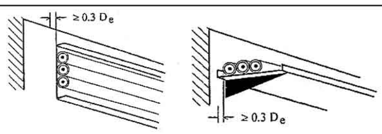
CONDUCTOR	: Stranded circular plain annealed copper wire, Class 2
INSULATION	: PVC or PE or XLPE
COLOUR OF CORES	: 1 pair - Black & White 2 pair & above - Black/White with numbering
DRAIN WIRE	: Stranded cirular tinned copper wire
COLLECTIVE SCREEN	: Aluminium/polyester tape
BEDDING	: PVC compound Type TM 1, Black colour
ARMOUR	: Round galvanized steel wire
SHEATH	: PVC compound Type TM 1, Black colour

Cu / PVC / OSCR / SWA / PVC or
Cu / PE / OSCR / SWA / PVC or
Cu / XLPE / OSCR / SWA / PVC - Multi-pair

Number of pairs	Nominal cross-sectional area	Construction, number / wire diameter	Thickness of Insulation	Thickness of bedding	Diameter of steel wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	sq.mm	No./mm	mm	mm	mm	mm	mm	kg/km
			BS EN 50288-7 / BS 5308 300 / 500 V					
1	1.0	7/0.43	0.6	1.0	0.9	1.3	12.0	295
2	1.0	7/0.43	0.6	1.0	0.9	1.4	15.5	436
3	1.0	7/0.43	0.6	1.0	0.9	1.4	16.2	483
4	1.0	7/0.43	0.6	1.0	0.9	1.5	17.5	558
5	1.0	7/0.43	0.6	1.0	0.9	1.5	18.6	615
6	1.0	7/0.43	0.6	1.0	0.9	1.5	19.9	692
7	1.0	7/0.43	0.6	1.0	0.9	1.5	19.9	708
8	1.0	7/0.43	0.6	1.0	1.25	1.6	22.7	955
10	1.0	7/0.43	0.6	1.0	1.25	1.7	25.2	1112
1	1.5	7/0.53	0.6	1.0	0.9	1.4	12.8	330
2	1.5	7/0.53	0.6	1.0	0.9	1.5	16.7	495
3	1.5	7/0.53	0.6	1.0	0.9	1.5	17.5	555
4	1.5	7/0.53	0.6	1.0	0.9	1.5	18.7	635
5	1.5	7/0.53	0.6	1.0	0.9	1.5	20.0	707
6	1.5	7/0.53	0.6	1.0	1.25	1.6	22.3	941
7	1.5	7/0.53	0.6	1.0	1.25	1.6	22.3	968
8	1.5	7/0.53	0.6	1.0	1.25	1.7	24.7	1114
10	1.5	7/0.53	0.6	1.0	1.25	1.7	27.3	1290
1	2.5	7/0.67	0.6	1.0	0.9	1.4	13.7	373
2	2.5	7/0.67	0.6	1.0	0.9	1.5	18.2	574
3	2.5	7/0.67	0.6	1.0	0.9	1.5	19.0	656
4	2.5	7/0.67	0.6	1.0	0.9	1.6	20.6	770
5	2.5	7/0.67	0.6	1.0	1.25	1.6	22.9	1003
6	2.5	7/0.67	0.6	1.0	1.25	1.7	24.7	1143
7	2.5	7/0.67	0.6	1.0	1.25	1.7	24.7	1188
8	2.5	7/0.67	0.6	1.0	1.25	1.7	27.1	1352
10	2.5	7/0.67	0.6	1.0	1.25	1.8	30.3	1595

INSTALLATION METHOD

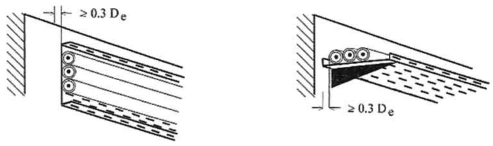
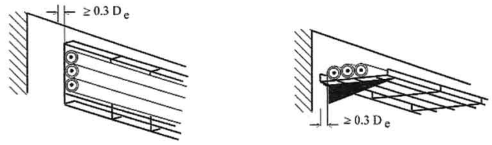
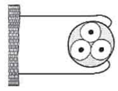
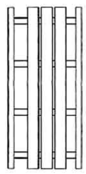
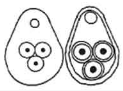
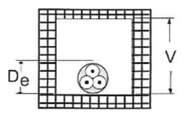
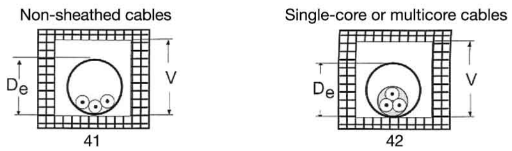
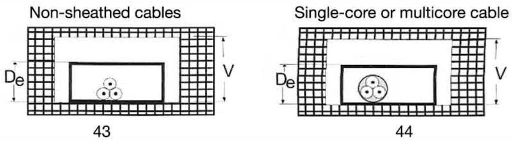
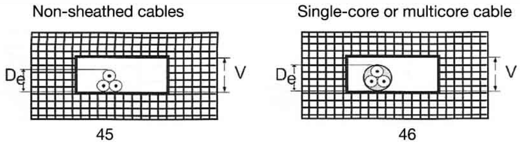
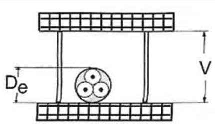
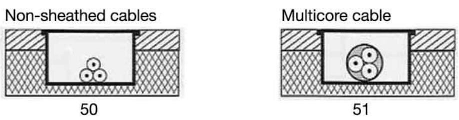
Table 1 - Installation Methods of Cables (Ref: IEE Wiring Regulations 17th Edition)

Installation Method			Reference Method
No.	Examples	Description	
1 2		In conduit in a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m^{2}k	A
3		Multicore cable direct in a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m^{2}k	A
4 5		in conduit on a wooden or masonry wall or spaced less than 0.3 x conduit diameter from it [c]	B
6 7 8 9		in cable trunking on a wooden or masonry wall 6 - run horizontally [b] 7 - run vertically [b,c] 8 - run horizontally [b] 9 - run vertically [b,c]	B
10 11		in suspended cable trunking [b]	B
12		Non-sheathed cables run in mouldings [c,e]	A
13 14		in skirting trunking	B
20		Single-core or multicore cables: - fixed on (clipped direct), or spaced less than 0.3 x cable diameter from a wooden or masonry wall [c]	C
21		Single-core or multicore cables: - fixed directly under a wooden or masonry ceiling	B
22		Single-core or multicore cables: - spaced from a ceiling	E, F or G*
30		Single-core or multicore cables: - on unperforated tray run horizontally or vertically [c,h]	C with item 2 of Table 4.4

CURRENT RATING

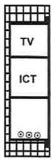
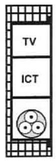
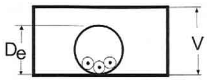
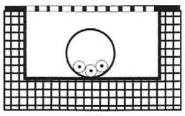
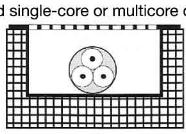
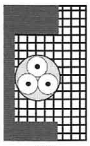
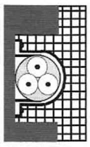
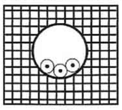
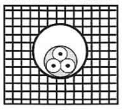
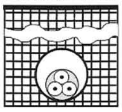
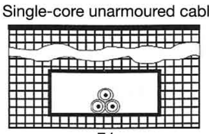
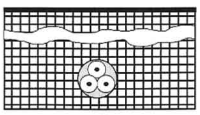
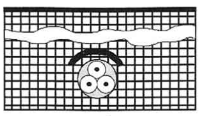
INSTALLATION METHOD

Table I - (cont'd)

Installation Method			Reference Method
No.	Examples	Description	
31		Single-core or multicore cables: - on perforated tray run horizontally or vertically [c, h]	E or F
32		Single-core or multicore cables: - on brackets or on a wire mesh tray run horizontally or vertically [c, h]	E or F
33		Single-core or multicore cables: - spaced more than 0.3 times the cable diameter from a wall	E, F or G[g]
34		Single-core or multicore cables: - on a ladder [c]	E or F
35		Single-core or multicore cable suspended from or incorporating a support wire or harness	E or F
36		Bare or non-sheathed cables on insulators	G
40		Single-core or multicore cable in a building void [c, h, i]	Where 1.5 De ≤ V < 50 De use B
41 42		in conduit in a building void in masonry having a thermal resistivity not greater than 2 K.m/W [c, j]	Where 1.5 De ≤ V use B
43 44		in cable ducting in a building void in masonry having a thermal resistivity not greater than 2 K.m/W [c, i, j]	Where 1.5 De ≤ V use B
45 46		in cable ducting in masonry having a thermal resistivity not greater than 2 K.m/W [c, h, i]	Where 1.5 De ≤ V < 50 De use B
47		Single-core or multicore cable: - in a ceiling void - in a suspended floor [h, i]	Where 1.5 De ≤ V < 50 De use B
50 51		in flush cable trunking in the floor	B

INSTALLATION METHOD

Table I - (cont'd)

No.	Examples	Description	Reference Method
52 53	Non-sheathed cables  52 Multicore cables  53	In flush trunking [c]	B
54		Non-sheathed cable or single-core cables in conduit in an unventilated cable channel run horizontally or vertically [c, i*, k, m]	Where 1.5 De ≤ V use B
55 56	Non-sheathed cables  55 Sheathed single-core or multicore cable  56	in conduit in an open or ventilated cable channel in the floor [i, m]	B
57 58	 57  58	Single-core or multicore cable direct in masonry having a thermal resistivity not greater than 2 K.m/W - without added mechanical protection [n, o] [57] - without added mechanical protection [n, o] (e.g. capping) [58]	C
59 60	Non-sheathed cables or single-core cables  59 Multicore cables  60	in conduit in masonry having a thermal resistivity not greater than 2 K.m/W [o]	B
70 71	Multicore unarmoured cable  70 Single-core unarmoured cable  71	in conduit or in cable ducting in the ground	D
72 73	 72  73	Sheathed, armoured or multicore cables direct in the ground: - without added mechanical protection P [72] - without added mechanical protection (e.g. cable covers) P [73]	D

b Values giver for Installation Method B in Appendix 4 are for a single circuit. Where there is more than one circuit in the trunking the group rating factor given in Table 4.3 is applicable, irrespective of the presence of an internal barrier or partition.
c Care is needed where the cable runs vertically and ventilation is restricted. The ambient temperature at the top of the vertical section can be much higher.
e The thermal resistivity of the enclosure is assumed to be poor because of the material of construction and possible air spaces. Where the construction is thermally equivalent to installation Methods 6 or 7, Reference Method B may be used.
g The factors in Table 4.3 may also be used.
h D_e = the external diameter of a multi-core cable:
- 2.2 x the cable diameter when three single-core cables are bound in trefoil, or
- 3 x the cable diameter when three single-core cables are laid in flat formation.

i V = the smaller dimension or diameter of a masonry duct or void, or the vertical depth of a rectangular duct, floor or ceiling void or channel.
i* V = the smaller dimension or diameter of a masonry duct or void, or the vertical depth of a rectangular duct, floor or ceiling void or channel. The depth of the channel is more important than the width.
j D_e = external diameter of conduit or vertical depth of cable ducting.
k D_e = external diameter of conduit.
l For multi-core cable installed as Method 55, use current-carrying capacity for Reference Method B.
m It is recommended that these Installation Methods are used only in areas where access is restricted to authorized persons so that the reduction in current-carrying and the fire hazard due to the accumulation of debris can be prevented.
n For cables having conductors not greater than $16mm^2$, the current-carrying capacity may be higher.
o Thermal resistivity of masonry is not greater than 2 K.m/W. The term masonry is taken to include brickwork, concrete, plaster and the like (excludes thermally insulating materials.
p The inclusion of directly buried cables is satisfactory where the soil thermal resistivity is of the order of 2.5 K.m/W. For lower soil resistivities, the current-carrying capacity for directly buried cables is appreciably higher than for cables in ducts.

** Still under consideration in IEC*

RATING FACTORS

Table 4

4.1 Rating factors for ambient air temperature other than 30° C for cables in free air

Ambient air temperature, °C	25	30	35	40	45	50	55	60	65	70	75	80
PVC insulation	1.03	1.00	0.94	0.87	0.79	0.71	0.61	0.50	-	-	-	-
XLPE insulation	1.02	1.00	0.93	0.91	0.87	0.82	0.76	0.71	0.62	0.58	0.50	0.41

4.2 Rating factors for ambient ground temperature other than 20° C for cables buried direct in ground or in underground conduit

Ground temperature, °C	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
PVC insulation	1.10	1.05	1.00	0.95	0.89	0.84	0.77	0.71	0.63	0.55	0.45	-	-	-	-
XLPE insulation	1.07	1.04	1.00	0.95	0.93	0.89	0.85	0.80	0.76	0.71	0.65	0.60	0.53	0.46	0.38

4.3 Rating factors for soil thermal resistivities other than 2.5 K.m/W

Thermal resistivity, K.m/W	0.5	0.8	1	1.2	1.5	2	2.5	3
For cables in buried ducts	1.28	1.20	1.18	1.15	1.10	1.05	1.00	0.96
For direct buried cables	1.88	1.62	1.50	1.41	1.28	1.12	1.00	0.90

Note 1: The rating factors given have been averaged over the range of conductor sizes and types of installation included in the relevant tables. The overall accurancy of rating factors is within ± 5%.

Note 2: The rating factors are applicable to cables drawn into buried ducts. For cables laid direct in the ground the rating factors for thermal resistivities less than 2.5 K.m/W will be higher.

Note 3: The rating factors are applicable to ducts buried at depths of up to 0.8 m.

4.4 Rating factors for one circuit or one multicore cable or for a group of circuits, or a group of multicore cables

Arrangement (Cable touching)	Number of circuits or multicore cables												Reference Method*
	1	2	3	4	5	6	7	8	9	12	16	20	
Bunched in air, on a surface, embedded or enclosed	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.45	0.41	0.38	A to F
Single layer on wall or floor	1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70	C
Single layer multicore on a perforated horizontal or vertical cable tray system	1.00	0.88	0.82	0.77	0.75	0.73	0.73	0.72	0.72	0.72	0.72	0.72	E & F
Single layer multicore on cable ladder system or cleats etc.	1.00	0.87	0.82	0.80	0.80	0.80	0.79	0.78	0.78	0.78	0.78	0.78	E & F

* To be used with current-carrying capacities.

Note 1: These factors are applicable to uniform groups of cables, equally loaded.

Note 2: When horizontal clearances between adjacent cables exceed twice their overall diameter, no rating need be applied.

Note 3: The same factors are applied to: a) groups of two or three single-core cables; b) multicore cables.

Note 4: If a system consists of both two-and three-core cables, the total number of cables is taken as the number of circuits, and the corresponding factor is applied to the tables for two loaded conductors for two-core cables, and to the Tables for three loaded conductors for three-core cables.

Note 5: If a group consists of *n* single-core cables it may either be considered as *n/2* circuits of two loaded conductors or *n/3* circuits of three loaded conductors

Note 6: The rating factors given have been averaged over the range of conductor sizes and types of installation included in Table 5.1 to 12.2. the overall accurancy of tabulated values is within 5%

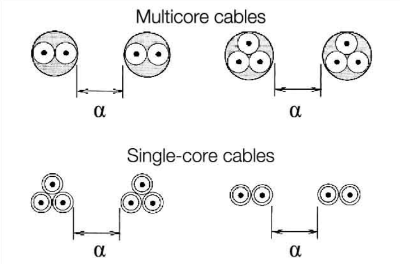
Note 7: For some installations and for other methods not provided for in the above table, it may be appropriate to use factors calculated for specific cases, see for example Tables 4.6 and 4.7.

Note 8: When cables having different conductor operating temperature are group together, the current rating is to be based upon lowest operating temperature of any cable in the group.

Note 9: If, due to known operating conditions, a cable is expected to carry not more than 30% of its group rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group. For example, a group of N loaded cables would normally require a group rating factors of Cg applied to the tabulated I_t. However, if M cables in the group carry loads which are not greater than 0.3 CgI_t ampres the other cables can be sized by using the grouprating factor corresponding to (N-M) cables.

4.4 Rating factors for more than one circuit, cables laid directly in the ground (Reference Method D in Tables 5.1 to 12.2)

Number of circuits	Cable-to-cable clearance (α)				
	Nil (cables Touching)	One cable diameter	0.125 m	0.25 m	0.5 m
2	0.75	0.80	0.85	0.90	0.90
3	0.65	0.70	0.75	0.80	0.85
4	0.60	0.60	0.70	0.75	0.80
5	0.55	0.55	0.65	0.70	0.80
6	0.50	0.55	0.60	0.70	0.80



Note 1: Values given apply to an insulation depth of 0.7 m and a soil thermal resistivity of 2.5 K.m/W. These are average values for the range of cable sizes and types quoted for Tables 5.1 to 12.2. The process of averaging, together with round off, can result in some cases in errors of up to ±10%. (Where more precise values are required they may be calculated by methods given in BS 7769 (BS IEC 650287).

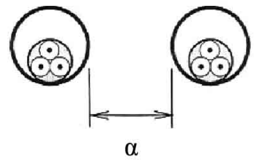
Note 2: In case of a thermal resistivity <2.5 K.m/W the rating factors can be increased and can be calculated by the methods given in BS 7769 (BS IEC 650287).

RATING FACTORS

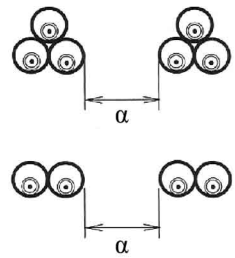
Table 4 - (cont'd)

4.5 Rating factors for more than one circuit, cables laid in ducts in the ground (Reference Method D in Tables 5.1 to 12.2)

i) Multicore cables in single-way ducts

Number of cables	Duct-to-duct clearance (α)				
	Nil (cables Touching)	0.25 m	0.5 m	1.0 m	
2	0.85	0.90	0.95	0.95	
3	0.75	0.85	0.90	0.95	
4	0.70	0.80	0.85	0.90	
5	0.65	0.80	0.85	0.90	
6	0.60	0.80	0.80	0.90	

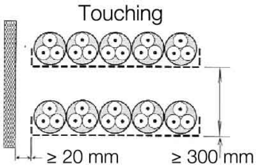
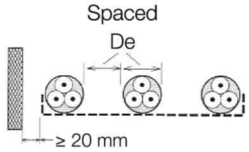
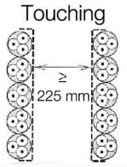
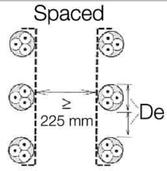
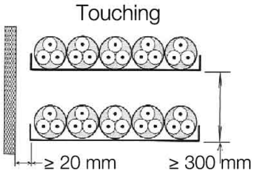
i) Single-core cables in non-ferrous single-way ducts

Number of single-core circuits of two or three cables	Duct-to-duct clearance (α)				
	Nil (cables Touching)	0.25 m	0.5 m	1.0 m	
2	0.85	0.90	0.90	0.95	
3	0.75	0.85	0.85	0.90	
4	0.65	0.75	0.80	0.90	
5	0.60	0.70	0.80	0.90	
6	0.60	0.70	0.80	0.90	

Note 1: Values given apply to an insulation depth of 0.7 m and a soil thermal resistivity of 2.5 K.m/W. These are average values for the range of cable sizes and types quoted for Tables 5.1 to 12.2. The process of averaging, together with round off, can result in some cases in errors of up to ±10%. (Where more precise values are required they may be calculated by methods given in BS 7769 (IEC 650287).

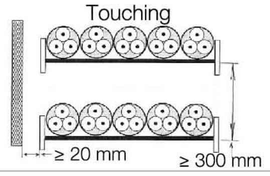
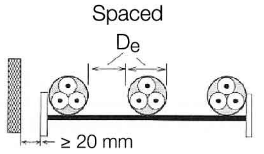
Note 2: In case of a thermal resistivity <2.5 K.m/W the rating factors can be increased and calculated by the methods given in BS7769 (BS IEC 650287).

4.6 Rating factors for group of more than one multicore cables in free air (Reference Method E in Tables 5.1 to 12.2)

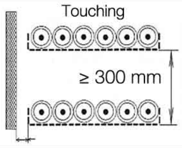
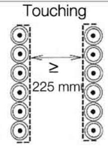
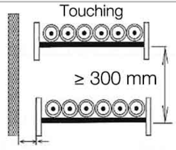
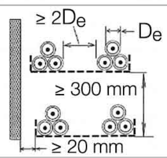
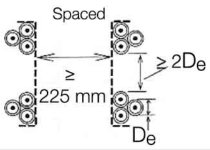
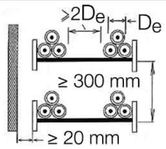
Installation Method in Table 1			Number of trays or ladders	Number of cables per tray or ladder					
				1	2	3	4	6	9
Perforated cable tray system (Note 3)	31	Touching 	1	See item 4 of Table 4.4					
			2	1.00	0.87	0.80	0.77	0.73	0.68
			3	1.00	0.86	0.79	0.76	0.71	0.66
			6	1.00	0.84	0.77	0.73	0.68	0.64
		Spaced 	1	1.00	1.00	0.98	0.95	0.91	-
			2	1.00	0.99	0.96	0.92	0.87	-
			3	1.00	0.98	0.95	0.91	0.85	-
Vertical perforated cable tray systems (Note 4)	31	Touching 	1	See item 4 of Table 4.4					
			2	1.00	0.88	0.81	0.76	0.71	0.70
		Spaced 	1	1.00	0.91	0.89	0.88	0.87	-
			2	1.00	0.91	0.88	0.87	0.85	-
Unperforated cable tray systems	30	Touching 	1	0.97	0.84	0.78	0.75	0.71	0.68
			2	0.97	0.83	0.76	0.72	0.68	0.63
			3	0.97	0.82	0.75	0.71	0.66	0.61
			6	0.97	0.81	0.73	0.69	0.65	0.58

RATING FACTORS

Table 4 - (cont'd)

Installation Method in Table 1			Number of trays or ladders	Number of cables per tray or ladder: 1	2	3	4	6	9
Cable ladder systems, cleats, wire mesh tray, etc. (Note 3)	32 33 34		1	See item 4 of Table 4.4					
			2	1.00	0.86	0.80	0.78	0.76	0.73
			3	1.00	0.85	0.79	0.76	0.73	0.70
			6	1.00	0.84	0.77	0.73	0.68	0.64
			1	1.00	1.00	1.00	1.00	1.00	-
			2	1.00	0.99	0.98	0.97	0.96	-
			3	1.00	0.98	0.97	0.96	0.93	-

4.7 Rating factors for group of one or more circuits of single-core in free air (Reference Method F in Tables 5.1 to 12.2)

Installation Method in Table 1			Number of trays or ladders	Number of three-phase circuits per tray or ladder: 1	2	3	Use as a multiplier to rating for
Perforated cable tray systems (Note 3)	31		1	0.98	0.91	0.87	Three cables in horizontal formation
			2	0.96	0.87	0.81	
			3	0.95	0.85	0.78	
Vertical perforated cable tray systems (Note 4)	31		1	0.96	0.86	-	Three cables in vertical formation
			2	0.95	0.84	-	
Cable ladder systems, cleats, wire mesh tray, etc (Note 3)	32 33 34		1	1.00	0.97	0.96	Three cables in horizontal formation
			2	0.98	0.93	0.89	
			3	0.97	0.90	0.86	
Perforated cable tray systems (Note 3)	31		1	1.00	0.98	0.96	Three cable in trefoil formation
			2	0.97	0.93	0.89	
			3	0.96	0.92	0.86	
Vertical perforated cable tray systems (Note 4)	31		1	1.00	0.92	0.89	
			2	1.00	0.90	0.86	
Cable ladder systems, cleats, wire mesh tray, etc (Note 3)	32 33 34		1	1.00	1.00	1.00	
			2	0.97	0.95	0.93	
			3	0.96	0.94	0.90	

Note 1: Values given are averages for the cable types and range of conductor sizes considered in Tables 5.1 to 12.2. The spread of values is generally less than 5%.

Note 2: Factors apply to single layer groups of cables (or trefoil groups) as shown above and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.

Note 3: Values are given for vertical spacing between cable trays of 300 mm and at least 20 mm between cable trays and wall. For closer spacing the factors should be reduced.

Note 4: Values are given for horizontal spacing between cable trays of 225 mm with cable trays mounted back to back. For closer spacing the factors should be reduced.

Note 5: For circuits having more than one cable in parallel per phase, each three-phase set of conductors is to be considered as a circuit for the purpose of this table.

CURRENT RATING & VOLTAGE DROP

SINGLE CORE - Cu / PVC & Cu / PVC / PVC CABLES

(UNARMOURED)

Table 5.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method A		Reference Method B		Reference Method C		Reference Method F				
	Enclosed in conduit in thermally insulating wall etc.		Enclosed in conduit on a wall or in trunking etc.		Clipped direct		In free air or on a perforated cable tray horizontal or vertical				
							Touching			Spacedby one diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. or trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
450 / 750 V or 600 / 1000 V MS 136 / BS 6004 / SS 358-3 / MS274 / BS 6346 / IEC 60502-1 / MS 2112-3 / MS 2100											
1	11	10.5	13.5	12	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	-	-	546	467	694	634	754	689	656	852	795
500	-	-	626	533	792	723	868	789	749	982	920
630	-	-	720	611	904	826	1005	905	855	1138	1070
800	-	-	-	-	1030	943	1086	1020	971	1265	1188
1000	-	-	-	-	1154	1058	1216	1149	1079	1420	1337

Table 5.2 Voltage Drop

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Reference Methods A & B	Reference Methods C & F		Reference Methods A & B	Reference Methods C & F		
		Enclosed in conduit or trunking	Clipped direct, on tray or in free air		Enclosed in conduit or trunking	Clipped direct, on tray or in free air		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
(mm^2)	(mV / A /m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)
1	44	44	44	44	38	38	38	38
1.5	29	29	29	29	25	25	25	25
2.5	18	18	18	18	15	15	15	15
4	11	11	11	11	9.5	9.5	9.5	9.5
6	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4
10	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8
16	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4

1	2	3			4			5			6			7			8			9		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.24	0.84	0.80	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.24	0.60	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.40	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.23	0.40	0.32	0.30	0.44
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.23	0.34	0.26	0.30	0.40
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.27	0.160	0.29	0.34
300	0.145	0.160	0.26	0.31	0.150	0.165	0.22	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.22	0.25	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.175	0.105	0.21	0.24	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.160	0.086	0.21	0.23	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.150	0.072	0.21	0.22	0.066	0.28	0.29
800	0.053	-	-	-	0.068	0.150	0.165	0.061	0.24	0.25	-	-	-	0.060	0.130	0.145	0.060	0.21	0.22	0.053	0.28	0.29
1000	0.042	-	-	-	0.059	0.150	0.160	0.050	0.24	0.24	-	-	-	0.052	0.130	0.140	0.052	0.20	0.21	0.044	0.28	0.28

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence
*Spacing larger than one cable diameter will result in a larger voltage drop

CURRENT RATING & VOLTOGE DROP

MULTI CORE - Cu / PVC / PVC CABLES

(UNARMOURED)

Table 6.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method A Enclosed in conduit in thermally insulating wall etc.		Reference Method B Enclosed in conduit on a wall or in trunking etc.		Reference Method C Clipped direct		Reference Method E Free air on a perforated cable tray etc, horizontal or vertically	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-core cable*, or 1 four-core cable, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core cable*, or 1 four-core cable, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core cable*, or 1 four-core cable, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-core cable*, or 1 four-core cable, three-phase a.c.
1	2	3	4	5	6	7	8	9
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
300/500V or 600/1000V MS 136 / BS 6004 / MS 274 / BS 6346 / IEC 60502-1 / MS 2112-4 / MS 2102								
1	11	10	13	11.5	15	13.5	17	14.5
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34
6	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	379	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400	-	-	470	402	634	557	715	597

* with or without a protective conductor

Table 6.2 Voltage Drop

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable single-phase a.c.			Three-or four-core cable, three-phase a.c.		
1	2	3			4		
(mm^2)	(mV/A/m)	(mV/A/m)			(mV/A/m)		
1	44	44			38		
1.5	29	29			25		
2.5	18	18			15		
4	11	11			9.5		
6	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence

CURRENT RATING & VOLTOGE DROP

SINGLE CORE - Cu / PVC / AWA / PVC CABLES
(ARMOURED)

Table 7.1 Current- Carrying Capacity

Conductor cross-sectional area	Reference Method C		Reference Method F									
	Clipped direct		In free air or on a perforated cable tray, horizontal or vertical									
	Touching		Touching			Spaced by one cable diameter						
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	
1	2	3	4	5	6	7	8	9	10	11	12	
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
600 / 1000 V MS 274 / BS 6346 / IEC 60502-1 / MS 2101												
50	193	179	205	189	181	229	216	229	217	230	212	
70	245	225	259	238	231	294	279	287	272	286	263	
95	296	269	313	285	280	357	340	349	332	338	313	
120	342	309	360	327	324	415	396	401	383	385	357	
150	393	352	413	373	373	479	458	449	429	436	405	
185	447	399	469	422	425	548	525	511	489	490	456	
240	525	465	550	492	501	648	622	593	568	566	528	
300	594	515	624	547	567	748	719	668	640	616	578	
400	687	575	723	618	657	885	851	737	707	674	632	
500	763	622	805	673	731	1035	997	810	777	721	676	
630	843	669	891	728	809	1218	1174	893	856	771	723	
800	919	710	976	777	886	1441	1390	943	905	824	772	
1000	975	737	1041	808	945	1685	1627	1008	967	872	816	

Table 7.2 Voltage Drop

Conductor cross-sectional area	2 cables d.c.	Reference Method C & F														
		Clipped direct, on tray or in free air														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		touching			spaced*			trefoil and touching			flat and touching			flat and spaced*		
1	2	3			4			5			6			7		
(mm^2)	(mV / A / m)	(mV / A / m)			(mV / A / m)			(mV / A / m)			(mV / A / m)			(mV / A / m)		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.93	0.93	0.22	0.95	0.92	0.30	0.97	0.80	0.190	0.82	0.79	0.26	0.84	0.79	0.34	0.86
70	0.63	0.64	0.21	0.68	0.66	0.29	0.72	0.56	0.180	0.58	0.57	0.25	0.62	0.59	0.32	0.68
95	0.46	0.48	0.20	0.52	0.51	0.28	0.58	0.42	0.175	0.45	0.44	0.25	0.50	0.47	0.31	0.57
120	0.36	0.39	0.195	0.43	0.42	0.28	0.50	0.33	0.170	0.37	0.36	0.24	0.43	0.40	0.30	0.50
150	0.29	0.31	0.190	0.37	0.34	0.27	0.44	0.27	0.165	0.32	0.30	0.24	0.38	0.34	0.30	0.45
185	0.23	0.26	0.190	0.32	0.29	0.27	0.39	0.22	0.160	0.27	0.25	0.23	0.34	0.29	0.29	0.41
240	0.180	0.20	0.180	0.27	0.23	0.26	0.35	0.175	0.160	0.23	0.20	0.23	0.30	0.24	0.28	0.37
300	0.145	0.160	0.180	0.24	0.190	0.26	0.32	0.140	0.155	0.21	0.165	0.22	0.28	0.20	0.28	0.34
400	0.105	0.140	0.175	0.22	0.180	0.24	0.30	0.120	0.130	0.195	0.160	0.21	0.26	0.21	0.25	0.32
500	0.086	0.120	0.170	0.21	0.165	0.23	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.30
630	0.068	0.105	0.165	0.195	0.150	0.22	0.27	0.091	0.145	0.170	0.135	0.195	0.23	0.175	0.22	0.28
800	0.053	0.095	0.160	0.185	0.145	0.21	0.25	0.082	0.140	0.160	0.125	0.180	0.22	0.170	0.195	0.26
1000	0.042	0.091	0.155	0.180	0.140	0.190	0.24	0.079	0.135	0.155	0.125	0.165	0.21	0.165	0.170	0.24

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence
*Spacing larger than one cable diameter will result in a larger voltage drop

CURRENT RATING & VOLTOGE DROP

MULTI CORE - Cu / PVC / SWA / PVC CABLES

(ARMOURED)

Table 8.1 Current- Carrying Capacity

Conductor cross-sectional area	Reference Method C		Reference Method E		Reference Method D	
	Clipped direct		In free air or on a perforated cable tray etc, horizontal or vertical		Direct in ground or in ducting in ground, in or around buildings	
	1 two-core cable, single-phase a.c. or d.c.	1 three-or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three-or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three-or 1 four-core cable, three-phase a.c.
1	2	3	4	5	6	7
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)
		600 / 1000 V MS 274 / BS 6346 / IEC 60502-1 / MS 2103			(Soil thermal resistivity: 2.5K.m/W) #	
1.5	21	18	22	19	22	18
2.5	28	25	31	26	29	24
4	38	33	41	35	37	30
6	49	42	53	45	46	38
10	67	58	72	62	60	50
16	89	77	97	83	78	64
25	118	102	128	110	99	82
35	145	125	157	135	119	98
50	175	151	190	163	140	116
70	222	192	241	207	173	143
95	269	231	291	251	204	169
120	310	267	336	290	231	192
150	356	306	386	332	261	217
185	405	348	439	378	292	243
240	476	409	516	445	336	280
300	547	469	592	510	379	316
400	621	540	683	590	-	-

#For soil thermal resistivity of 1.2K.m/W (TNB Spec.), current capacity in column 6 & 7 shall be multiplied by: (a) 1.41 for direct buried in ground cables; (b) 1.15 for cables in ducts buried in ground.

Table 8.2 Voltage Drop

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable single-phase a.c.			Three-or four-core cable, three-phase a.c.		
1	2	3			4		
(mm^2)	(mV/A/m)	(mV/A/m)			(mV/A/m)		
1.5	29	29			25		
2.5	18	18			15		
4	11	11			9.5		
6	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence

CURRENT RATING & VOLTAGE DROP

SINGLE CORE - Cu / XLPE / PVC CABLES
(UNARMOURED)

Table 9.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method A: Enclosed in conduit in thermally insulating wall etc.		Reference Method B: Enclosed in conduit on a wall or in trunking etc.		Reference Method C: Clipped direct		Reference Method F: In free air or on a perforated cable tray etc horizontal or vertical etc. — Touching			Reference Method G: In free air — Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat — Horizontal	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat — Vertical
1	2	3	4	5	6	7	8	9	10	11	12
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
					600 / 1000 V IEC 60502-1 / BS 5467 / MS 2104						
1	14	13	17	15	19	17.5	-	-	-	-	-
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Table 9.2 Voltage Drop

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.: Reference Methods A & B — Enclosed in conduit or trunking			Reference Methods C, F & G — Clipped direct, on tray or in free air: Cables touching			Reference Methods C, F & G — Clipped direct, on tray or in free air: Cables spaced*			3 or 4 cables, three-phase a.c.: Reference Methods A & B — Enclosed in conduit or trunking			Reference Methods C, F & G — Clipped direct, on tray or in free air: Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
(mm^2)	(mV / A /m)	(mV/A/m)			(mV/A/m)			(mV/A/m)			(mV/A/m)			(mV/A/m)			(mV/A/m)			(mV/A/m)		
1	46		46			46			46			40			40			40			40	
1.5	31		31			31			31			27			27			27			27	
2.5	19		19			19			19			16			16			16			16	
4	12		12			12			12			10			10			10			10	
6	7.9		7.9			7.9			7.9			6.8			6.8			6.8			6.8	
10	4.7		4.7			4.7			4.7			4.0			4.0			4.0			4.0	
16	2.9		2.9			2.9			2.9			2.5			2.5			2.5			2.5	
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.150	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.50	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.135	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-	-	-	0.072	0.150	0.170	0.064	0.24	0.25	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-	-	-	0.063	0.150	0.165	0.054	0.24	0.24	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence
*Spacing larger than one cable diameter will result in a larger voltage drop

The above Current-carrying Capacities and Voltage Drop are also applicable to Fire Resistant Cables and Flame Retardant Cables.

CURRENT RATING & VOLTOGE DROP

MULTICORE - Cu / XLPE / PVC CABLES

(UNARMOURED)

Table 10.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method A		Reference Method B		Reference Method C		Reference Method E	
	Enclosed in conduit in thermally insulating wall etc.		Enclosed in conduit on a wall or in trunking etc.		Clipped direct		Free air or on a perforated cable tray etc, horizontal or vertically	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four-core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four-core cable*, three-phase a.c.
1	2	3	4	5	6	7	8	9
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
			600 / 1000 V IEC 60502-1 / BS 5467 / MS 2106					
1	14.5	13	17	15	19	17	21	18
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
5	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400	-	-	625	536	803	667	865	741

* with or without a protective conductor

Table 10.2 Voltage Drop

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable single-phase a.c.			Three-or four-core cable, three-phase a.c.		
1	2	3			4		
(mm^2)	(mV/A/m)	(mV/A/m)			(mV/A/m)		
1	46	46			40		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence

The above Current-carrying Capacities and Voltage Drop are also applicable to Fire Resistant Cables and Flame Reterdant Cables.

Product Specification

CURRENT RATING & VOLTOGE DROP

SINGLE CORE - Cu / XLPE / AWA / PVC CABLES

(ARMOURED)

Table 11.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method C		Reference Method F									
	Clipped direct		In free air or on a perforated cable tray, horizontal or vertical									
	Touching		Touching			Spaced by one cable diameter						
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	
1	2	3	4	5	6	7	8	9	10	11	12	
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
				600 / 1000 V IEC 60502-1 / BS 5467 / MS 2105								
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	1238	1110	1041	

Table 11.2 Voltage Drop

Conductor cross-sectional area	2 cables d.c.	Reference Method C & F														
		Clipped direct, on tray or in free air														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		touching			spaced*			trefoil and touching			flat and touching			flat and spaced*		
1	2	3			4			5			6			7		
(mm^2)	(mV / A / m)	(mV / A / m)			(mV / A / m)			(mV / A / m)			(mV / A / m)			(mV / A / m)		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00	0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90
70	0.67	0.68	0.200	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.170	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	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	0.23	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	0.155	0.125	0.170	0.21	0.165	0.180	0.24

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence
*Spacing larger than one cable diameter will result in a larger voltage drop

The above Current-carrying Capacities and Voltage Drop are also applicable to Fire Resistant Cables and Flame Reterdant Cables.

CURRENT RATING & VOLTOGE DROP

MULTI CORE - Cu / XLPE / SWA / PVC CABLES

(ARMOURED)

Table 12.1 Current-Carrying Capacity

Conductor cross-sectional area	Reference Method C		Reference Method E		Reference Method D	
	Clipped direct		In free air or on a perforated cable tray etc, horizontal or vertical		Direct in ground or in ducting in ground, in or around buildings	
	1 two-core cable, single-phase a.c. or d.c.	1 three-or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three-or 1 four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three-or 1 four-core cable, three-phase a.c.
1	2	3	4	5	6	7
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)
					(Soil thermal resistivity: 2.5K.m/W)#	
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4	49	42	52	44	43	36
6	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75
25	146	124	152	131	116	96
35	180	154	188	162	139	115
50	219	187	228	197	164	135
70	279	238	291	251	203	167
95	338	289	354	304	239	197
120	392	335	410	353	271	223
150	451	386	472	406	306	251
185	515	441	539	463	343	281
240	607	520	636	546	395	324
300	698	599	732	628	446	365
400	787	673	847	728	-	-

600 / 1000 V
IEC 60502-1 / BS 5467 / MS 2107

#For soil thermal resistivity of 1.2K.m/W (TNB Spec.), current capacity in column 6 & 7 shall be multiplied by: (a) 1.41 for direct buried in ground cables; (b) 1.15 for cables in ducts buried in ground.

Table 12.2 Voltage Drop

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable single-phase a.c.			Three-or four-core cable, three-phase a.c.		
1	2	3			4		
(mm^2)	(mV/A/m)	(mV/A/m)			(mV/A/m)		
1.5	31		31			27	
2.5	19		19			16	
4	12		12			10	
6	7.9		7.9			6.8	
10	4.7		4.7			4.0	
16	2.9		2.9			2.5	
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.20	0.140	0.24	0.175	0.125	0.21
300	0.155	0.16	0.140	0.21	0.140	0.120	0.185
400	0.120	0.13	0.140	0.190	0.115	0.120	0.165

Note: r = conductor resistance at operating temperature, x = reactance, z = impedence

The above Current-carrying Capacities and Voltage Drop are also applicable to Fire Resistant Cables and Flame Retardant Cables.

CURRENT RATING & VOLTOGE DROP

FLEXIBLE CORD - Cu / PVC / PVC

Table 13.1 Current-Carrying Capacity & Voltage Drop For Metric Sizes

Conductor		Current Rating	Voltage Drop	
cross-sectional area	Construction No. / Wire diameter	1 or 3 phase a.c. or d.c.	d.c. or 1 phase a.c.	3 phase a.c.
mm^2	No. / mm		mV / m	mV / m
0.50	16 / 0.2	3	83	72
0.75	24 / 0.2	6	56	48
1.00	32 / 0.2	10	43	37
1.25	40 / 0.2	13	35	29
1.50	30 / 0.25	16	31	26
2.50	50 / 0.25	25	18	16
4.00	56 / 0.30	32	11	10

Note: For rating factor of ambient temperature other than 30 °C please refer to Table 4.1

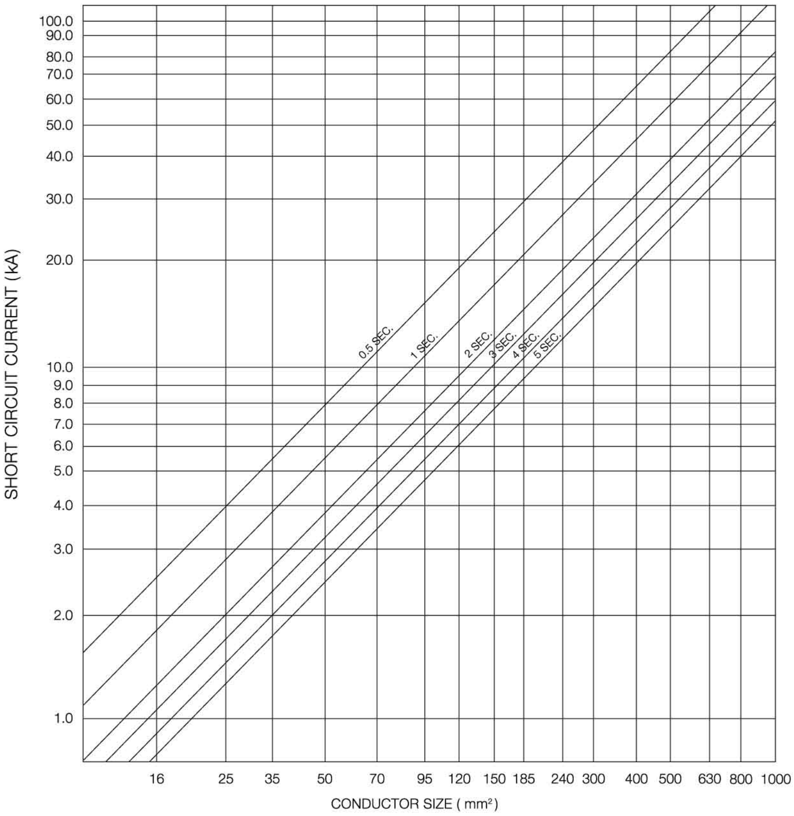
Table 13.2 Current-Carrying Capacity & Voltage Drop For Imperial Sizes

Conductor Construction		Current Rating	Voltage Drop	
No. / Wire diameter		1 or 3 phase a.c. or d.c.	d.c. or 1 phase a.c.	3 phase a.c.
No. / mm	No. / in		V / 100 ft.	V / 100 ft.
14 / 0.193	14 / 0.0076	3	8.9	7.7
23 / 0.193	23 / 0.0076	6	11	9.4
40 / 0.193	40 / 0.0076	13	14	12
70 / 0.193	70 / 0.0076	18	12	10
110 / 0.193	110 / 0.0076	24	9.6	8.3
162 / 0.193	162 / 0.0076	31	8.4	7.3

Note: For rating factor of ambient temperature other than 30 °C please refer to Table 4.1

SHORT CIRCUIT CURRENT

Table 14.1 Allowable Short Circuit Currents for PVC Insulated Cables (Copper Conductor)



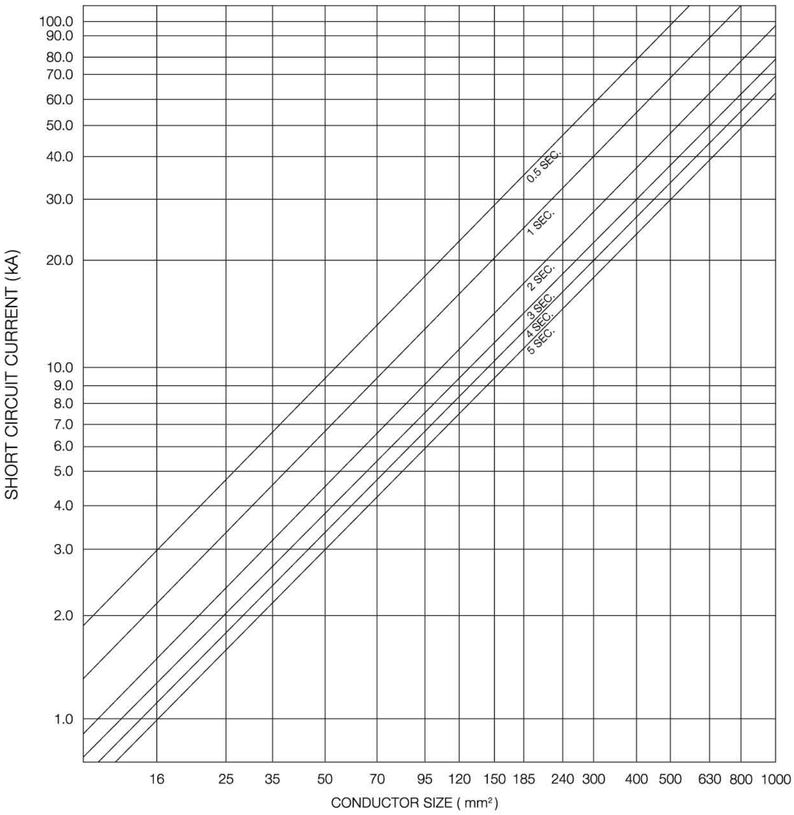
CONDUCTOR : COPPER
INSULATION : PVC
Curves based on formula:

$I = (0.115\,A \div \sqrt{t}\,)$

Where :

I = Short circuit current (kA)
A = Conductor area (mm²)
t = Time of short circuit (seconds)

Table 14.2 Allowable Short Circuit Currents for XLPE Insulated Cables (Copper Conductor)



CONDUCTOR : COPPER
INSULATION : CROSS-LINKED POLYETHYLENE
Curves based on formula -

$I = (0.143\,A \div \sqrt{t}\,)$

Where :

I = Short circuit current (kA)
A = Conductor area (mm²)
t = Time of short circuit (seconds)

TECHNICAL DATA

Table 15 Typical Properties Of Various Insulation Materials

Insulation	Specific Gravity	Volume Resistivity at 20ºC (ohm-cm)	Max. Cond. Temp. (ºC)	Max. Short. Circuit Temp. (ºC)
PVC	1.49	10^{14}	70	160
PVC-FR	1.57	10^{14}	90	250
PE	0.92 - 0.94	10^{16}	70	130
XLPE	0.92	10^{16}	90	250
XL-LSHF (XLEVA)	1.40	10^{14}	90	250
LSHF	1.50	10^{14}	90	250
TPR	1.33	10^{14}	105	250
EPR	0.9	10^{16}	90	250

Table 16 Properties Of Conductors

Properties	Unit	Aluminium	Annealed Copper
Density	g/cm³	2.703	8.89
Volume Resistivity	ohm mm³ /km	28.264	17.241
Coefficient of Resistance	PerºC	0.00403	0.00393
Ultimate Tensile Strength	N/mm²	205	275

Table 17 Conductor Resistance For Single-Core And Multicore Cable

Nominal cross-sectional area		Maximum dc Resistance of Conductor at 20ºC		Nominal cross-sectional area		Maximum dc Resistance of Conductor at 20ºC	
		Copper Conductor	Aluminium Conductor			Copper Conductor	Aluminium Conductor
mm²	No./mm	ohm/Km	ohm/Km	mm²	No./mm	ohm/Km	ohm/Km
1.5	1/1.38	12.1	-	120	37/2.03	0.153	0.253
1.5	7/0.53	12.1	-	150	37/2.25	0.124	0.206
2.5	1/1.78	7.41	-	185	37/2.52	0.0991	0.164
2.5	7/0.67	7.41	-	240	61/2.25	0.0754	0.125
4	7/0.85	4.61	7.41	300	61/2.52	0.0601	0.100
6	7/1.04	3.08	4.61	400	61/2.85	0.0470	0.0778
10	7/1.35	1.83	3.08	500	61/3.20	0.0366	0.0605
16	7/1.70	1.15	1.91	630	61/3.63	0.0283	0.0469
25	7/2.14	0.727	1.20				
35	19/1.53	0.524	0.868	800	127/2.85	0.0221	0.0367
50	19/1.78	0.387	0.641	1000	127/3.20	0.0176	0.0291
70	19/2.14	0.268	0.443				
95	19/2.52	0.193	0.320				

TECHNICAL DATA

Table 18 Formula For Electrical Calculation

To calculate	Given	D.C.	A.C. single phase	A.C. 3 phase
Current (A)	kW	$A = \frac{1000 \times kW}{V}$	$A = \frac{1000 \times kW}{V \times pf}$	$A = \frac{1000 \times kW}{1.73 \times V \times pf}$
Current (A)	kVA	-	$A = \frac{1000 \times kVA}{V}$	$A = \frac{1000 \times kVA}{1.73 \times V}$
Current (A)	hp	$A = \frac{746 \times hp}{V \times eff}$	$A = \frac{746 \times hp}{V \times eff \times pf}$	$A = \frac{746 \times hp}{1.73 \times V \times eff \times pf}$
Power (kW)	VA	$kW = \frac{A \times V}{1000}$	$kW = \frac{A \times V \times pf}{1000}$	$kW = \frac{1.73 \times A \times V \times pf}{1000}$
Apparent Power (kVA)	VA	-	$kVA = \frac{A \times V}{1000}$	$kVA = \frac{1.74 \times A \times V}{1000}$

Table 19 Formula For Electrical Calculation

Length				Energy			
Equivalent			Reciprocal	Equivalent			Reciprocal
1 foot	0.3048	m	3.2808	1 HP.h	2544.5	Btu	0.00393
1 yard	0.9144	m	1.0936	1 Btu	0.000293	kw.h	3413
1 mile	1.6093	km	0.6214	1 Btu	1.0551	Kj	0.9478
1 inch	25.4	mm	0.03937	1 Btu	107.59	kgf.m	0.00929

TECHNICAL DATA

Table 20 Wire Gauge

Gauge system	Cross-sectional area
A.W.G	mm^2
6/0	170.5
5/0	135.2
4/0	107.2
3/0	85.01
2/0	67.43
0	53.49
1	42.41
2	33.63
3	26.66
4	21.15
5	16.77
6	13.30
7	10.55
8	8.367
9	6.633
10	5.261
11	4.172
12	3.309
13	2.624
14	2.081
15	1.650
16	1.309
17	1.0380
18	0.8227
19	0.6529
20	0.5174
21	0.4105
22	0.3256

Gauge system	Cross-sectional area
A.W.G	mm^2
23	0.2581
24	0.2047
25	0.1623
26	0.1288
27	0.1021
28	0.08097
29	0.06422
30	0.05097
31	0.04039
32	0.03203
33	0.02540
34	0.02014
35	0.01597
36	0.01267
37	0.01005
38	0.007968
39	0.006319
40	0.005012
41	0.003973
42	0.003151
43	0.002499
44	0.001982
45	0.001572
46	0.001246
47	0.0009884
48	0.0007838
49	0.0006216
50	0.0004929

PROJECT REFERENCE

Projects in Malaysia

- The Crang Hotel, Kelana Jaya, Selangor
- Daihatsu Engine Manufacturing, Sendayan, Seremban
- Seri Zenith tractor assembly, Beranang, Selangor
- University Pendidikan Sultan Idris, Tg Malim, Perak
- Mydin Hypermarket, Kota Bahru, Kelantan
- Petronas Chemical Ethylene, Terengganu
- University Islam Antarabangsa, Pahang
- Perodua Car Assembly, Rawang, Selangor
- Rasa Sayang Hotel, Batu Ferringhi, Penang
- Plaza City Square, Johor
- Sunway University, Bandar Sunway, Selangor
- Coca Cola factory, Seremban
- M-City, Ampang, Selangor
- Polyplastic, Kuantan
- Loji Rawatan Air Jempol, Bahau, N. Sembilan
- Hospital Shah Alam, Selangor
- One City, UEP Subang Jaya, Selangor
- Hino Motor Manufacturing, Seremban
- Kuala Lumpur Mass Rapid Transit V4 project
- KK Gleneagle Hospital
- Naza TTDI Plaza in Shah Alam
- Sg. Siput & Tampin KTM Railway Station
- Bintang Mega Shopping Mall in Miri
- Ampang LRT Station
- Pekan Resort Hotel in Pahang
- Kluang Shopping Mall in Johor
- Mydin Hypermarket in Gopeng
- Calvary Convention Central in Kuala Lumpur
- Lafarge Cement Factory in Langkawi
- Kampar International School
- Canon Factory in Shah Alam
- Ipoh Police Headquarter
- Legoland Malaysia Theme Park
- Natioanal Heart Institute (IJN)
- Kuantan Tengku Ampuan Hospital
- Penang International Airport
- Shah Alam General Hospital
- Kuala Lumpur International Airport 2
- Melaka UITM University
- Ministry of Home Affairs Complex in Kuala Lumpur
- Istana Duta Highway in Kuala Lumpur
- Malaysian Rubber Board, Sabah
- Naza Plaza in Kuala Lumpur
- Malaysia University, Kelantan
- Kota Baru Prison
- Shah Alam Puspakom
- SOHU Mall in Kuala Lumpur
- Gemas Army Camp & Kuantan Army Camp
- Malaysia Northern University (UUM)
- Penang General Hopistal
- Klang KPJ Hospital
- Labuan Sport Complex
- Viva Shopping Mall in Kuala Lumpur
- University Of Malaya.
- SGL Carbon Factory in Banting
- Universiti Teknologi Malaysia in Skudai
- Tesco Hypermarket in Bukit Indah, JB
- Giant Hypermar-Nusa Bestari Johor Bahru
- Tawakal Hospital
- Jaya Jusco Shopping Mall in Permas Jaya, JB
- Carrefour Hypermarket in Kuantan
- Tun Hussein Onn University, Batu Pahat
- Danga Bay Waterfront City in Johor Bahru
- Sony Factory in Bangi
- Sunway Pyramid Phase 2
- Southern College in Skudai, JB
- Trengganu State Stadium
- Infineon(German) in Kulim Hi-tech Park
- Prai Sunway Carnival Mall
- Central Bank of Malaysia 2
- Ampang Tesco Hypermarket
- Cyberia-Cyberjaya
- Jaya Jusco Terbrau

Overseas Projects

- Mediacorp Mediaspolis (Buona Vista), Singapore
- HDB mechanised parking system (Bangkit Road), Singapore
- WCS condominium, Singapore
- System Maintenance P.L, Singapore
- Popular Bookstore Ltd - IMM building, Singapore
- Amore Fitness P.L - Starvista, Singapore
- Popular Bookstore Ltd - The Seleter Mall, Singapore
- Amore Fitness P.L - The Seleter Mall, Singapore
- Champion Hotel, Singapore
- Sri Verramakaliamman Temple, Singapore
- Orchard Gateway, Singapore
- Central Plaza, Singapore
- Austville Residences Condo, Singapore
- Corporation Place, Singapore
- China Point Project A & A, Singapore
- Boon Lay Place Shopping Centre, Singapore
- Aljunid/Hougang Town Council, Singapore
- Valley Condominium, Singapore
- Kan Choo Bin Landed Property, Singapore
- Kong Meng San Temple, Singapore
- Turo Landed Property, Singapore
- Watten Estate Landed Property, Singapore
- National Olympic Committee of Cambodia
- Borey Sen Sok Condo, Phnom Penh, Cambodia
- Top Sports Textile Ltd Factory, Vietnam
- 60-90tph Palm Oil Mill, Kalimantan Barat, Indonesia
- Algahdeer Housing Project - Najaf, Iraq
- AAA Resort & Hotel, Maldives
- Hondaafushi Project, Maldives
- Stadium Wunna Thake Hti, Myanmar
- UNITEAM Marine Office Building, Myanmar
- Nyaung Don Bridge, Myanmar
- Ayeyawady Bridge (Pakokku), Myanmar
- Ayeyawady Bridge (Sinkhan), Myanmar
- Ayeyawady Bridge (Nyaungdon)), Myanmar
- Jaffar Brothers Pte Ltd, Pakistan
- Ufone Building in Islamabad, Pakistan
- Berakas Flyover, Brunei
- Four Thousand Homes, Brunei

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