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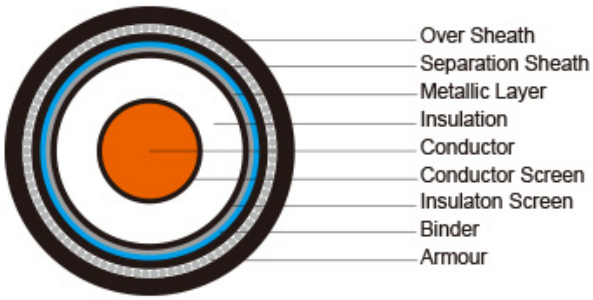
Single Core Cables to IEC 60502



Application:	The single core cables are designed for distribution of electrical power with nominal voltage Uo/U ranging from 1.8/3KV to 26/35KV and frequency 50Hz. They are suitable for installation mostly in power supply stations, indoors and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switchboards and power stations.
Standards:	IEC 60502 Part 1(1.8/3KV) IEC 60502 Part 2(3.6/6KV to 18/30KV
Conductor:	Plain annealed copper or aluminium complying with IEC 60228/BS 6360. Copper conductors shall be stranded (class 2) and aluminium conductors shall be either solid or stranded (class 2).
Conductor Screen:	The conductor screen consists of an extruded layer of non metallic, semi-conducting compound firmly bonded to the insulation to exclude all air voids. The conductor screen is not necessary for both PVC and EPR/HEPR insulated 1.8/3KV and 3.6/6KV cables.
Insulation:	Insulation is of polyvinyl chloride (PVC) intended for 1.8/3KV and 3.6/6KV cables, cross-linked polyethylene compound (XLPE) or ethylene propylene rubber (EPR/HEPR).

Table 1. Insulation Thickness Of XLPE Or EPR/HEPR Insulation

Nom. CrossSection Area	Insulation Thickness at Nominal Voltage									
	1.8/3KV (Um=3.6 KV)	3.6/6KV (Um=7.2KV)			6/10KV (Um=12 KV)	8.7/15KV (Um=17.5 KV)	12/20KV (Um=24 KV)	18/30KV (Um=36 KV)	21/35KV (Um=42 KV)	26/35KV (Um=42 KV)
mm2	mm	mm			mm	mm	mm	mm	mm	mm
	XLPE/EPR	XLPE	EPR		XLPE/EPR	XLPE/EPR	XLPE/EPR	XLPE/EPR	XLPE/EPR	XLPE/EPR
			Unscreened	Screened						
10	2.0	2.5	3.0	2.5	-	-	-	-	-	-
16	2.0	2.5	3.0	2.5	3.4	-	-	-	-	-
25	2.0	2.5	3.0	2.5	3.4	4.5	-	-	-	-
35	2.0	2.5	3.0	2.5	3.4	4.5	5.5	-	-	-
50 – 185	2.0	2.5	3.0	2.5	3.4	4.5	5.5	8.0	9.3	10.5
240	2.0	2.6	3.0	2.6	3.4	4.5	5.5	8.0	9.3	10.5
300	2.0	2.8	3.0	2.8	3.4	4.5	5.5	8.0	9.3	10.5

400	2.0	3.0	3.0	3.0	3.4	4.5	5.5	8.0	9.3	10.5
500 - 1600	2.2-2.8	3.2	3.2	3.2	3.4	4.5	5.5	8.0	9.3	10.5

*Insulation Thickness of PVC is 3.4mm (1- 1600mm sq) for 3.6/6KV cables.

Insulaton Screen: The insulation screen consists of an extruded layer of non metallic, semi- conducting compound extruded over the insulation. The extruded semi-conducting layer shall consist of bonded or cold strippable semi-conducting compound capable of removal for jointing or terminating. As an option, a semi-conducting tape may be applied over the extruded semi-conducting layer as a bedding for the metallic layer. The minimum thickness is 0.3 mm and the maximum resistivity is 500 Ohm-m at 90°C. The screen is tightly fitted to the insulation to exclude all air voids and can be easily hand stripped on site. The insulation screen is not necessary for both PVC and EPR/HEPR insulated 1.8/3KV and 3.6/6KV cables. The screen may be covered by semi-conductive water blocking swellable tape to ensure longitudinal watertightness.**Metallic Layer:** The metallic layer may be applied over the individual cores or the core assembly collectively.The following types of metallic layers are provided:1) Metallic Screen2) Concentric Conductor3) Metallic Sheath4) Metallic armourThe metallic screen shall consist of either copper tapes or a concentric layer of copper wires or a combination of tapes and wires to provide an earth fault current path. The concentric conductor is applied directly either over the insulation, or over the insulation screen or over an inner covering. The metallic sheath consists of lead or lead alloy applied as a tightly fitting seamless tube. The metallic armour consists of either flat wire armour, round wire armour, and double tape armour.

Table 2. Minimum Total Cross Section Of Metallic Screen

Nom. Cross-Section Area of Cable	Min. Cross-Section of Metallic Screen	DC Resistance of the Copper Wire Screen
mm²	mm²	mm
up to 120	16	1.06
150-300	25	0.72
400-630	35	0.51
800-1000	50	0.35

Separation Sheath (for armoured cable): The separation sheath comprises a layer of extruded PVC, PE or LSZH, applied under the armour .The nominal thickness is calculated by 0.02Du + 0.6mm where Du is the fictitious diameter under the sheath in mm. For cables without a lead sheath, the nominal separation sheath thickness shall not be less than 1.2mm. For cables where the separation sheath is applied over the lead sheath, the nominal separation sheath thickness shall not be less than 1.0mm.**Lapped Bedding (for armoured lead sheathed cable):** The lapped bedding consists of either impregnated/synthetic compounded paper tapes or a combination of two layers of these paper tapes followed by a few layers of compounded fabulous materials. The thickness is around 1.5mm.**Armour (for armoured cable):** The armour consists of round aluminium wire armour applied helically over an extruded separation sheath.**Table 3.** Round Armour Wire Diameter

Fictitious Diameter Under the Armour	Armour Wire Diameter
mm	mm

>	<	
-	10	0.8
10	15	1.25
15	25	1.6
25	35	2.0
35	60	2.5
60	-	3.15

Over Sheath: Overall sheath comprises a layer of extruded thermoplastic compound (PVC, PE or LSZH can be offered as an option.) or elastomeric compound (polychlorprene CSP or chlorosulfonated PE). The nominal oversheath thickness is calculated by 0.035D+1 where D is the fictitiuous diameter immediately under the oversheath in mm. For unarmoured cables and cables with the oversheath not applied over the armour, metallic screen or concentric conductor, the nominal oversheath thickness shall not be less than 1.4mm. And for cables with oversheath applied over the armour, metallic screen or concentric conductor, the nominal oversheath thickness shall not be less than 1.8mm.

PHYSICAL PROPERTIES:

Operating Temperature: up to 70°C (PVC insulation); up to 90°C (XLPE or EPR insulation)**Temperature Range:** -5°C (PVC sheath); -20°C (PE sheath)**Short Circuit Temperature(5 seconds maximum duration):** 140-160°C (PVC insulation);250°C (XLPE or EPR insulation)**Bending Radius:** 12 x OD

Table 4. Nominal /Operating /Testing Voltages

Rated Voltage Uo/U	Operating Voltage (Um)	Testing Voltage (rms)
1.8/3KV	3.6KV	6.5KV
3.6/6KV	7.2KV	12.5KV
6/10KV	12KV	21KV
8.7/15KV	17.5KV	30.5KV
12/20KV	24KV	42KV
18/30KV	36KV	63KV
21/35KV	42KV	73.5(53)*KV
26/35KV	42KV	91(65)*KV

*21/35KV and 26/35kV power frequency voltage test can be made under the following conditions: 2.5Uo x 30mins or 3.0Uo x 15mins. Numbers in brackets refer to the test values for 3.0Uo x 1.5mins.

Single Core 1.8/3KV (Um=3.6KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Steel Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area *	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						CU	AL					CU	AL
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
10	2.0	0.1	16	1.8	13	240	180	1.2	1.6	1.8	18	460	400
16	2.0	0.1	16	1.8	13	300	200	1.2	1.6	1.8	19	530	430
25	2.0	0.1	16	1.8	15	410	250	1.2	1.6	1.8	20	650	500
35	2.0	0.1	16	1.8	16	510	300	1.2	1.6	1.8	21	780	560
50	2.0	0.1	16	1.8	17	640	350	1.2	1.6	1.8	22	930	640
70	2.0	0.1	16	1.8	19	850	440	1.2	1.6	1.8	24	1170	750
95	2.0	0.1	16	1.8	20	1130	540	1.2	1.6	1.8	26	1460	870
120	2.0	0.1	16	1.8	22	1370	630	1.2	1.6	1.8	27	1730	990
150	2.0	0.1	25	1.8	23	1650	730	1.2	1.6	1.8	29	2030	1110
185	2.0	0.1	25	1.8	25	2010	860	1.2	1.6	1.9	30	2430	1280
240	2.0	0.1	25	1.8	27	2570	1050	1.2	1.6	2.0	33	3040	1530
300	2.0	0.1	25	1.8	29	3160	1250	1.2	2.0	2.1	36	3760	1860
400	2.0	0.1	35	1.9	33	3980	1560	1.2	2.0	2.2	39	4660	2230
500	2.2	0.1	35	2.1	35.5	4910	1905	1.3	2.5	2.5	43	5930	2930
630	2.4	0.1	35	2.2	39.7	6340	2420	1.4	2.5	2.6	49	7370	3430

800	2.6	0.1	50	2.3	44.5	7890	2980	1.4	2.5	2.7	52	9070	4230
1000	2.8	0.1	50	2.5	49.4	9890	3700	1.5	2.5	2.9	56	11100	4950

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A C Resistance CU / AL	Short Circuit Rating of Conductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen 1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil		Flat Spaced	
												cu	AL	cu	AL
mm2	μΩ/m	μΩm	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/ m		μΩ/ m	
10	1830/3080	2330/3920	1.4/0.9	182	0.27	2.6	0.2	151	201	384	558	2332	3846	2332	3840
16	1150/1910	1460/2420	2.2/1.4	201	0.29	2.6	0.3	140	193	362	546	1462	2411	1478	2420
25	727/1200	927/1538	3.6/2.3	222	0.32	2.6	0.3	131	185	345	535	936	1544	952	1554
35	524/868	668/1113	5.0/3.2	251	0.35	2.6	0.4	122	178	327	524	679	1121	695	1131
50	387/641	494/822	6.8/4.4	281	0.39	2.6	0.4	116	172	313	514	511	834	527	844
70	268/443	343/568	9.8/6.3	341	0.45	2.6	0.5	110	165	300	495	364	583	386	597
95	193/320	248/410	13.3/8.5	397	0.50	2.6	0.5	104	160	287	485	272	427	300	446
120	153/253	196/325	17.2/11.0	430	0.55	2.6	0.6	104	159	283	480	225	345	257	367

150	124/206	159/266	21.2/13.5	464	0.59	4.3	0.6	100	156	280	475	193	287	229	313
185	99.1/164	128/211	26.6/17.0	513	0.65	4.3	0.7	98	154	274	465	165	237	206	267
240	75.4/125	98/161	34.9/22.3	573	0.70	4.3	0.9	94	150	267	459	140	191	185	226
300	60.1/100	80/130	43.8/28.0	652	0.72	4.3	1.0	91	147	260	455	128	163	174	203
400	47.0/77.8	64/102	57.3/36.6	727	0.75	5.8	1.1	90	147	253	445	113	141	164	184
500	36.6/60.5	51/81	72.3/46.2	754	0.79	5.8	1.2	89	145	248	435	105	124	158	171
630	28.3/46.9	42/64	91.2/58.3	786	0.87	5.8	1.3	86	143	245	425	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	846	0.91	8.2	1.4	85	142	243	415	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	916	0.99	8.2	1.5	83	141	239	405	88	95	144	148

Single Core 3.6/6KV (Um=7.2KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area *	Nom .Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						CU	AL					CU	AL
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
10	2.5	0.1	16	1.8	16	320	260	1.2	1.6	1.8	22	610	550
16	2.5	0.1	16	1.8	16	390	290	1.2	1.6	1.8	22	680	580
25	2.5	0.1	16	1.8	18	500	340	1.2	1.6	1.8	23	810	660
35	2.5	0.1	16	1.8	19	610	400	1.2	1.6	1.8	24	940	730
50	2.5	0.1	16	1.8	20	750	450	1.2	1.6	1.8	26	1100	810
70	2.5	0.1	16	1.8	22	970	550	1.2	1.6	1.8	27	1350	930

95	2.5	0.1	16	1.8	23	1250	660	1.2	1.6	1.9	29	1670	1080
120	2.5	0.1	16	1.8	25	1500	760	1.2	1.6	1.9	31	1950	1200
150	2.5	0.1	25	1.8	26	1790	860	1.2	1.6	2.0	32	2270	1350
185	2.5	0.1	25	1.8	28	2150	1000	1.2	2.0	2.1	35	2770	1620
240	2.6	0.1	25	1.9	31	2770	1250	1.2	2.0	2.2	38	3440	1930
300	2.8	0.1	25	2.0	34	3400	1500	1.2	2.0	2.2	41	4120	2210
400	3.0	0.1	35	2.1	38	4280	1850	1.3	2.5	2.4	46	5250	2820
500	3.2	0.1	35	2.1	41.5	5325	2240	1.4	2.5	2.6	50	6520	3520
630	3.2	0.1	35	2.2	45.3	6745	2750	1.5	2.5	2.7	56	7960	4020
800	3.2	0.1	50	2.4	49.9	8290	3310	1.5	2.5	2.8	59	9660	4820
1000	3.2	0.1	50	2.5	54.2	10255	3990	1.6	2.5	3.0	63	11690	5540

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A C Resistance CU / AL	Short Circuit Rating ofConductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Ratingof Copper Wire Screen1 sec	Short Circuit Ratingof Copper TapeScreen1 sec	Reactance		Inductance		Impedance			
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	Trefoil		Flat Spaced	
												CU	AL	CU	AL
mm2	μΩ/m	μΩm	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/m		μΩ/m	

10	1830/3080	2330/3920	1.4/0.9	202	0.26	2.6	0.4	160	214	420	610	2332	3846	2345	3840
16	1150/1910	1460/2420	2.2/1.4	232	0.29	2.6	0.4	152	205	410	600	1462	2411	1478	2421
25	727/1200	927/1538	3.6/2.3	262	0.32	2.6	0.4	142	196	400	590	936	1544	952	1554
35	524/868	668/1113	5.0/3.2	291	0.35	2.6	0.5	133	187	390	580	679	1121	695	1131
50	387/641	494/822	6.8/4.4	321	0.39	2.6	0.5	121	179	380	570	511	834	527	844
70	268/443	343/568	9.8/6.3	371	0.45	2.6	0.6	115	173	370	550	364	583	386	597
95	193/320	248/410	13.3/8.5	417	0.50	2.6	0.6	110	168	350	540	272	427	300	446
120	153/253	196/325	17.2/11.0	459	0.55	2.6	0.7	107	165	340	520	225	345	257	367
150	124/206	159/265	21.2/13.5	494	0.59	4.3	0.7	103	161	330	510	193	287	229	313
185	99.1/164	128/211	26.6/17.0	543	0.65	4.3	0.8	100	158	320	500	165	237	206	267
240	75.4/125	98/161	34.9/22.3	583	0.70	4.3	0.9	97	155	310	490	140	191	185	226
300	60.1/100	80/130	43.8/28.0	602	0.72	4.3	1.0	95	153	300	490	126	163	174	203
400	47.0/77.8	64/102	57.3/36.6	627	0.75	5.8	1.1	92	150	290	480	113	141	164	184
500	36.6/60.5	51/81	72.3/46.2	654	0.79	5.8	1.2	90	147	290	470	105	124	158	171
630	28.3/46.9	42/64	91.2/58.3	726	0.87	5.8	1.3	87	145	280	460	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	786	0.91	8.2	1.4	85	143	270	460	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	856	0.99	8.2	1.5	83	141	260	450	88	95	144	148

Single Core 6/10KV (Um=12KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area *	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						CU	AL					CU	AL
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
16	3.4	0.1	16	1.8	18	450	350	1.2	1.6	1.8	24	770	670
25	3.4	0.1	16	1.8	20	560	400	1.2	1.6	1.8	25	910	750
35	3.4	0.1	16	1.8	21	680	460	1.2	1.6	1.8	26	1040	820
50	3.4	0.1	16	1.8	22	810	520	1.2	1.6	1.8	28	1190	900
70	3.4	0.1	16	1.8	24	1050	620	1.2	1.6	1.9	29	1470	1040
95	3.4	0.1	16	1.8	25	1320	730	1.2	1.6	2.0	31	1780	1190
120	3.4	0.1	16	1.8	27	1580	840	1.2	2.0	2.0	34	2150	1410
150	3.4	0.1	25	1.9	28	1880	960	1.2	2.0	2.1	35	2480	1560
185	3.4	0.1	25	1.9	30	2250	1100	1.2	2.0	2.1	37	2890	1730
240	3.4	0.1	25	2.0	33	2870	1350	1.2	2.0	2.2	40	3570	2050
300	3.4	0.1	25	2.1	35	3490	1580	1.2	2.0	2.3	42	4230	2330
400	3.4	0.1	35	2.2	39	4350	1920	1.3	2.5	2.4	47	5320	2890
500	3.4	0.1	35	2.2	39.9	5235	2240	1.4	2.5	2.5	51	6510	3530
630	3.4	0.1	35	2.3	43.7	6675	2765	1.5	2.5	2.6	56	7960	4050
800	3.4	0.1	50	2.5	48.6	8225	3330	1.5	2.5	2.7	59	9670	4850
1000	3.4	0.1	50	2.6	52.9	10210	4030	1.6	2.5	2.9	63	11710	5570

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A C Resistance CU / AL	ShortCircuit Rating ofConductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
												Trefoil		Flat spaced	
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	CU	AL	CU	AL
mm2	μΩ/m	μΩm	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/m		μΩ/m	
16	1150/1910	1460/2420	2.2/1.4	187	0.39	2.6	0.5	152	216	480	680	1462	2411	1478	2421
25	727/1200	927/1538	3.6/2.3	208	0.42	2.6	0.5	144	210	460	660	936	1544	952	1554
35	524/868	668/1113	5.0/3.2	229	0.46	2.6	0.6	136	200	440	640	679	1121	695	1131
50	387/641	494/822	6.8/4.4	252	0.50	2.6	0.6	131	195	420	620	511	834	527	844
70	268/443	343/568	9.8/6.3	288	0.58	2.6	0.7	122	188	390	600	364	583	386	597
95	193/320	248/410	13.3/8.5	323	0.65	2.6	0.7	122	182	390	580	272	427	300	446
120	153/253	196/325	17.2/11.0	353	0.71	2.6	0.8	116	172	370	550	225	345	257	367
150	124/206	159/265	21.2/13.5	380	0.76	4.3	0.8	110	166	350	530	193	287	229	313
185	99.1/164	128/211	26.6/17.0	416	0.83	4.3	0.9	107	166	340	530	165	237	206	267
240	75.4/125	98/161	34.9/22.3	460	0.92	4.3	0.9	104	163	330	520	140	191	185	226
300	60.1/100	80/130	43.8/28.0	506	1.01	4.3	1.0	100	157	320	500	126	163	174	203

400	47.0/77.8	64/102	57.3/36.6	561	1.12	5.8	1.1	94	154	300	490	113	141	164	184
500	36.6/60.5	51/81.0	72.3/46.2	619	1.24	5.8	1.2	91	151	290	480	105	124	158	171
630	28.3/46.9	42/64.0	91.2/58.3	698	1.37	5.8	1.3	91	148	290	470	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	780	1.39	8.2	1.4	88	144	280	470	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	860	1.54	8.2	1.5	85	143	270	460	88	95	144	148

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.

Single Core 8.7/15KV (Um=17.5KV) Dimensional Data

Nom. Cross - Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables				
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area*	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight
						CU	AL					CU
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km
25	4.5	0.1	16	1.8	22	640	480	1.2	1.6	1.8	28	1020
35	4.5	0.1	16	1.8	23	760	540	1.2	1.6	1.9	29	1170
50	4.5	0.1	16	1.8	24	900	610	1.2	1.6	1.9	30	1340
70	4.5	0.1	16	1.8	26	1140	710	1.2	1.6	2.0	32	1610
95	4.5	0.1	16	1.8	27	1420	830	1.2	2.0	2.1	35	2020
120	4.5	0.1	16	1.9	29	1700	950	1.2	2.0	2.1	36	2310
150	4.5	0.1	25	1.9	31	1990	1070	1.2	2.0	2.2	38	2660
185	4.5	0.1	25	2.0	32	2380	1230	1.2	2.0	2.2	39	3070
240	4.5	0.1	25	2.1	35	3010	1490	1.2	2.0	2.3	42	3750
300	4.5	0.1	25	2.1	37	3620	1720	1.3	2.5	2.4	46	4590
400	4.5	0.1	35	2.2	41	4490	2070	1.3	2.5	2.5	49	5550
500	4.5	0.1	35	2.3	43	5460	2460	1.3	2.5	2.6	52	6590

630	4.5	0.1	35	2.4	48	6790	2590	1.4	2.5	2.7	57	8060
800	4.5	0.1	50	2.6	52	8420	3570	1.5	2.5	2.8	61	9800
1000	4.5	0.1	50	2.7	55	10330	4180	1.6	2.5	3.0	65	10850

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A C Resistance CU / AL	ShortCircuit Rating ofConductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
												Trefoil		Flat spaced	
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	CU	AL	CU	AL
mm2	μΩ/m	μΩm	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/m		μΩ/m	
25	727/1200	927/1538	3.6/2.3	171	0.47	2.6	0.6	150	210	480	680	936	1544	952	1554
35	524/868	668/1113	5.0/3.2	187	0.51	2.6	0.6	141	207	460	660	679	1121	695	1131
50	387/641	494/822	6.8/4.4	204	0.57	2.6	0.7	138	195	440	640	511	834	527	844
70	268/443	343/568	9.8/6.3	232	0.63	2.6	0.7	132	188	420	600	364	583	386	597
95	193/320	248/410	13.3/8.5	258	0.71	2.6	0.8	126	182	400	580	272	427	300	446
120	153/253	196/325	17.2/11.0	281	0.74	2.6	0.8	119	179	380	570	225	345	257	367

150	124/206	159/265	21.2/13.5	301	0.79	4.3	0.9	113	176	360	560	193	287	229	313
185	99.1/164	128/211	26.6/17.0	329	0.87	4.3	0.9	110	170	350	540	165	237	206	267
240	75.4/125	98/161	34.9/22.3	363	0.96	4.3	1.0	107	166	340	530	140	191	185	226
300	60.1/100	80/130	43.8/28.0	398	1.03	4.3	1.1	104	160	330	510	126	163	174	203
400	47.0/77.8	64/102	57.3/36.6	439	1.17	5.8	1.2	97	157	310	500	113	141	164	184
500	36.6/60.5	51/81	72.3/46.2	483	1.28	5.8	1.3	94	154	300	490	105	124	158	171
630	28.3/46.9	42/64	91.2/58.3	534	1.42	5.8	1.4	91	151	290	480	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	590	1.61	8.2	1.4	91	147	290	470	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	640	1.75	8.2	1.5	88	144	280	460	88	95	144	148

Single Core 12/20KV (Um=24KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area *	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						Cu	AL					Cu	AL
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
25	5.5	0.1	16	1.8	24	720	560	1.2	1.6	1.8	29	1200	980
35	5.5	0.1	16	1.8	25	840	620	1.2	1.6	1.9	30	1350	1070

50	5.5	0.1	16	1.8	26	990	690	1.2	2.0	2.0	33	1550	1250
70	5.5	0.1	16	1.8	28	1230	800	1.2	2.0	2.1	35	1840	1420
95	5.5	0.1	16	1.9	30	1530	940	1.2	2.0	2.1	37	2160	1570
120	5.5	0.1	16	2.0	31	1810	1050	1.2	2.0	2.2	38	2470	1730
150	5.5	0.1	25	2.0	33	2110	1190	1.2	2.0	2.2	40	2810	1890
185	5.5	0.1	25	2.1	35	2510	1360	1.2	2.0	2.3	42	3240	2090
240	5.5	0.1	25	2.1	38	3130	1610	1.3	2.5	2.4	45	4150	2580
300	5.5	0.1	25	2.2	40	3760	1860	1.3	2.5	2.5	48	4800	2890
400	5.5	0.1	35	2.3	43	4650	2220	1.4	2.5	2.6	52	5780	3350
500	5.5	0.1	35	2.4	46	5530	2545	1.5	2.5	2.7	55	6850	3850
630	5.5	0.1	35	2.5	50	6700	3100	1.5	2.5	2.9	60	8380	4400
800	5.5	0.1	50	2.6	55	8580	3690	1.6	2.5	3.0	64	10130	5270
1000	5.5	0.1	50	2.7	59	10620	4445	1.7	2.5	3.1	68	12180	6000

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A C Resistance CU / AL	ShortCircuit Rating ofConductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
												Trefoil		Flat spaced	
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	Cu	AL	Cu	AL
mm2	μΩ/m	μΩm	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/ m		μΩ/m	
25	727/1200	927/1538	3.6/2.3	142	0.62	2.6	0.6	162	214	490	680	936	1544	952	1554
35	524/868	668/1113	5.0/3.2	162	0.65	2.6	0.7	150	207	470	660	679	1121	695	1131
50	387/641	494/822	6.8/4.4	177	0.71	2.6	0.8	141	201	450	640	511	834	527	844
70	268/443	343/568	9.8/6.3	200	0.80	2.6	0.8	135	195	430	620	364	583	386	597
95	193/320	248/410	13.3/8.5	222	0.89	2.6	0.9	129	188	410	600	272	427	300	446
120	153/253	196/325	17.2/11.0	241	0.96	2.6	0.9	122	182	390	580	225	345	257	367
150	124/206	159/265	21.2/13.5	257	1.03	4.3	1.0	116	176	370	560	193	287	229	313
185	99.1/164	128/211	26.6/17.0	280	1.12	4.3	1.0	116	173	370	550	165	237	206	267
240	75.4/125	98/161	34.9/22.3	307	1.23	4.3	1.1	110	170	350	540	140	191	185	226

300	60.1/100	80/130	43.8/28.0	336	1.34	4.3	1.2	107	166	340	530	126	163	174	203
400	47.0/77.8	64/102	57.3/36.6	370	1.48	5.8	1.3	100	160	320	510	113	141	164	184
500	36.6/60.5	51/81	72.3/46.2	406	1.62	5.8	1.4	97	154	310	490	105	124	158	171
630	28.3/46.9	42/64	91.2/58.3	449	1.80	5.8	1.5	94	151	300	480	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	490	1.85	8.2	1.6	91	151	290	480	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	540	2.03	8.2	1.7	87	148	280	470	88	95	144	148

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.

Single Core 18/30KV (Um=24KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area *	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						Cu	AL					Cu	AL
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
25	5.5	0.1	16	1.8	24	720	560	1.2	1.6	1.8	29	1200	980
35	5.5	0.1	16	1.8	25	840	620	1.2	1.6	1.9	30	1350	1070
50	5.5	0.1	16	1.8	26	990	690	1.2	2.0	2.0	33	1550	1250
70	5.5	0.1	16	1.8	28	1230	800	1.2	2.0	2.1	35	1840	1420
95	5.5	0.1	16	1.9	30	1530	940	1.2	2.0	2.1	37	2160	1570

120	5.5	0.1	16	2.0	31	1810	1050	1.2	2.0	2.2	38	2470	1730
150	5.5	0.1	25	2.0	33	2110	1190	1.2	2.0	2.2	40	2810	1890
185	5.5	0.1	25	2.1	35	2510	1360	1.2	2.0	2.3	42	3240	2090
240	5.5	0.1	25	2.1	38	3130	1610	1.3	2.5	2.4	45	4150	2580
300	5.5	0.1	25	2.2	40	3760	1860	1.3	2.5	2.5	48	4800	2890
400	5.5	0.1	35	2.3	43	4650	2220	1.4	2.5	2.6	52	5780	3350
500	5.5	0.1	35	2.4	46	5530	2545	1.5	2.5	2.7	55	6850	3850
630	5.5	0.1	35	2.5	50	6700	3100	1.5	2.5	2.9	60	8380	4400
800	5.5	0.1	50	2.6	55	8580	3690	1.6	2.5	3.0	64	10130	5270
1000	5.5	0.1	50	2.7	59	10620	4445	1.7	2.5	3.1	68	12180	6000

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A CResistance CU / AL	ShortCircuit Rating of Conductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen 1 sec	Short Circuit Rating of Copper Tape Screen 1 sec	Reactance		Inductance		Impedance			
								Trefoil	Flat spaced	Trefoil	Flat spaced	Trefoil		Flat spaced	
												Cu	AL	Cu	AL
mm2	μΩ/m	μΩ/m	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/ m		μΩ/ m	
50	387/641	494/822	6.8/4.4	138	0.83	2.6	1.0	151	214	480	680	511	834	527	844
70	268/443	343/568	9.8/6.3	154	0.92	2.6	1.0	144	201	460	640	364	583	386	597
95	193/320	248/410	13.3/8.5	169	1.01	2.6	1.1	138	195	440	620	272	427	300	446
120	153/253	196/325	17.2/11.0	183	1.10	2.6	1.1	132	188	420	600	225	345	257	367

150	124/206	159/265	21.2/13.5	194	1.16	4.3	1.2	126	182	400	580	193	287	229	313
185	99.1/164	128/211	26.6/17.0	210	1.26	4.3	1.2	122	182	390	580	165	237	206	267
240	75.4/125	98/161	34.9/22.3	229	1.37	4.3	1.3	119	176	380	560	140	191	185	226
300	60.1/100	80/130	43.8/28.0	249	1.49	4.3	1.4	113	173	360	550	126	163	174	203
400	47.0/77.8	64/102	57.3/36.6	273	1.64	5.8	1.5	107	163	340	520	113	141	164	184
500	36.6/60.5	51/81	72.3/46.2	298	1.79	5.8	1.6	104	163	330	520	105	124	158	171
630	28.3/46.9	42/64	91.2/58.3	327	1.96	5.8	1.7	100	160	320	510	97	110	151	160
800	22.1/36.7	35/55	114.4/75.0	350	1.98	8.2	1.8	97	154	310	490	92	101	147	153
1000	17.6/29.1	30/46	143.0/94.0	380	2.15	8.2	1.9	94	149	300	490	88	95	144	148

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.

Single Core 21/35KV (Um=42KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area*	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						Cu	Al					Cu	Al
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
50	9.3	0.1	16	2.0	35.7	1526	1239	1.2	2.0	2.3	43.5	2331	2116
70	9.3	0.1	16	2.1	37.6	1809	1393	1.2	2.5	2.4	46.6	2680	2325
95	9.3	0.1	16	2.2	39.4	2123	1555	1.2	2.5	2.5	48.4	2981	2482
120	9.3	0.1	16	2.2	40.8	2405	1688	1.4	2.5	2.5	49.8	3487	2867
150	9.3	0.1	25	2.2	42.3	2733	1838	1.4	2.5	2.6	51.5	3870	3055
185	9.3	0.1	25	2.3	44.7	3216	2082	1.4	2.5	2.6	53.5	4420	3370

240	9.3	0.1	25	2.4	46.9	3766	2333	1.4	2.5	2.7	55.8	4981	3676
300	9.3	0.1	25	2.4	49.3	4408	2605	1.4	2.5	2.8	58.5	5661	3971
400	9.3	0.1	35	2.5	52.3	5473	3057	1.6	2.5	2.9	61.7	6865	4550

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A CResistance CU / AL	ShortCircuit Ratingof Conductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
												Trefoil		Flat spaced	
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	Cu	Al	Cu	Al
mm2	μΩ/m	μΩ/m	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/ m		μΩ/ m	
50	387/641	494/822	6.8/4.4	130	0.89	2.6	1.1	156	220	495	700	511	834	527	844
70	268/443	343/568	9.8/6.3	144	0.98	2.6	1.1	150	204	475	650	364	583	386	597
95	193/320	248/410	13.3/8.5	159	1.06	2.6	1.2	142	198	455	630	272	427	300	446
120	153/253	196/325	17.2/11.0	171	1.18	2.6	1.2	137	191	435	610	225	345	257	367
150	124/206	159/265	21.2/13.5	180	1.26	4.3	1.3	131	185	415	590	193	287	229	313
185	99.1/164	128/211	26.6/17.0	193	1.34	4.3	1.3	125	185	400	590	165	237	206	267

240	75.4/125	98/161	34.9/22.3	210	1.45	4.3	1.4	123	179	390	570	140	191	185	226
300	60.1/100	80/130	43.8/28.0	228	1.57	4.3	1.5	116	176	370	560	126	163	174	203
400	47.0/77.8	64/102	57.3/36.6	249	1.74	5.8	1.6	110	166	350	530	113	141	164	184

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.

Single Core 26/35KV (Um=42KV) Dimensional Data

Nom. Cross-Section Area				Unarmoured Cables				Aluminium Wire Armoured Cables					
	Nom. Insulation Thickness	Copper Tape Thickness	Copper Wire Screen Area*	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight		Nom. Bedding Thickness	Armour Wire Size	Nom. Sheath Thickness	Approx. Overall Diameter	Approx. Weight	
						Cu	Al					Cu	Al
mm2	mm	mm	mm2	mm	mm	kg/km		mm	mm	mm	mm	kg/km	
50	10.5	0.1	16	2.1	38.3	1689	1402	1.2	2.5	2.5	46.8	2580	2395
70	10.5	0.1	16	2.2	40.2	1980	1564	1.2	2.5	2.5	48.8	2937	2611
95	10.5	0.1	16	2.2	41.8	2283	1714	1.2	2.5	2.6	50.9	3206	2737
120	10.5	0.1	16	2.3	43.4	2588	1871	1.4	2.5	2.6	51.5	3753	3177
150	10.5	0.1	25	2.3	44.9	2923	2028	1.4	2.5	2.7	53.8	4143	3371
185	10.5	0.1	25	2.4	47.3	3415	2281	1.4	2.5	2.7	55.6	4694	3693
240	10.5	0.1	25	2.5	49.5	3975	2542	1.4	2.5	2.8	57.6	5258	4005
300	10.5	0.1	25	2.5	51.9	4625	2822	1.4	2.5	2.9	60.8	5940	4301
400	10.5	0.1	35	2.6	54.9	5704	3288	1.6	2.5	3.0	63.6	7155	4894

*Optional wire screen can be provided in combination of copper tapes. Nominal screen area, as stated in the table, can be supplied as standard.

Electrical Data

Nom. Cross-Section Area	D C Resistance CU / AL	A CResistance CU / AL	ShortCircuit Ratingof Conductor CU / AL1 sec	Capaci-tance	Charging Current	Short Circuit Rating of Copper Wire Screen1 sec	Short Circuit Rating of Copper Tape Screen1 sec	Reactance		Inductance		Impedance			
												Trefoil		Flat spaced	
								Trefoil	Flat Spaced	Trefoil	Flat Spaced	Cu	Al	Cu	Al
mm2	μΩ/m	μΩ/m	kA	pF/m	mA/m	kA	kA	μΩ/m		nH/m		μΩ/ m		μΩ/ m	
50	387/641	494/822	6.8/4.4	126	0.95	2.6	1.2	161	227	510	720	511	834	527	844
70	268/443	343/568	9.8/6.3	138	1.04	2.6	1.2	154	207	490	660	364	583	386	597
95	193/320	248/410	13.3/8.5	151	1.13	2.6	1.3	147	202	470	640	272	427	300	446
120	153/253	196/325	17.2/11.0	161	1.24	2.6	1.3	142	194	450	620	225	345	257	367
150	124/206	159/265	21.2/13.5	169	1.36	4.3	1.4	136	188	430	600	193	287	229	313
185	99.1/164	128/211	26.6/17.0	176	1.40	4.3	1.4	128	188	410	600	165	237	206	267
240	75.4/125	98/161	34.9/22.3	192	1.51	4.3	1.5	128	183	400	580	140	191	185	226
300	60.1/100	80/130	43.8/28.0	209	1.64	4.3	1.6	119	180	380	570	126	163	174	203

400	47.0/77.8	64/102	57.3/36.6	227	1.80	5.8	1.7	114	170	360	540	113	141	164	184

* For capacitance & charging current values, multiply values shown by 1.2 for EPR insulated cables.

Current Rating for Single Core 1.8/3KV(Um=3.6KV) to 26/35KV(Um=42KV) XLPE Insulation

Nom. Cross-Section Area	Buried direct in Ground				Laid in Single Way Duct				Laid in Air					
	Trefoil		Flat spaced		Trefoil		Flat Touching		Trefoil		Flat Touching		Flat spaced	
	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL
mm2	A		A		A		A		A		A		A	
10	84	59	87	62	78	55	98	56	103	75	106	77	122	88
16	109	84	113	88	103	80	104	81	125	97	128	99	150	116
25	140	108	144	112	132	102	133	103	163	127	167	130	196	153
35	166	129	172	134	157	122	159	123	198	154	203	157	238	185
50	196	152	203	157	186	144	188	146	238	184	243	189	286	222
70	239	186	246	192	227	176	229	178	296	230	303	236	356	278
95	285	221	293	229	271	210	274	213	361	280	369	287	434	338
120	323	252	332	260	308	240	311	242	417	324	426	332	500	391
150	361	281	366	288	343	267	347	271	473	368	481	376	559	440
185	406	317	410	324	387	303	391	307	543	424	550	432	637	504
240	469	367	470	373	447	351	453	356	641	502	647	511	745	593
300	526	414	524	419	504	397	510	402	735	577	739	586	846	677
400	590	470	572	466	564	451	571	457	845	673	837	676	938	769
500	650	530	672	546	604	504	661	537	935	773	938	776	1118	919
630	700	600	882	646	654	554	771	617	1045	883	1048	886	1318	1089
800	750	660	1002	756	694	594	871	717	1145	983	1148	986	1528	1279
1000	800	720	1112	856	724	644	971	807	1235	1083	1238	1086	1738	1469

Current Rating for Single Core 1.8/3KV(Um=3.6KV) to 26/35KV(Um=42KV) EPR Insulation

Nom. Cross-Section Area	Buried direct in Ground				Laid in Single Way Duct				Laid in Air					
	Trefoil		Flat spaced		Trefoil		Flat Touching		Trefoil		Flat Touching		Flat spaced	
	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL	CU	AL
mm2	A		A		A		A		A		A		A	
10	81	57	83	58	74	52	94	53	94	68	97	70	110	79
16	106	82	109	84	99	77	100	78	116	90	119	92	138	107

25	136	105	140	109	128	99	129	100	153	119	156	121	181	141
35	162	126	167	130	153	118	154	120	186	144	190	147	221	171
50	192	149	198	153	181	140	183	142	224	174	229	178	266	207
70	234	182	242	188	222	172	224	174	280	218	287	223	334	259
95	280	217	289	224	266	206	269	208	343	266	352	273	409	317
120	319	247	329	256	303	235	306	238	398	309	407	317	474	368
150	357	277	369	287	341	264	344	267	454	352	465	361	540	419
185	403	314	417	325	386	300	390	303	522	406	534	417	621	484
240	467	364	484	377	449	350	454	354	619	483	634	495	736	575
300	526	411	545	426	509	397	515	401	712	556	728	570	843	659
400	597	471	618	487	580	456	588	462	825	651	843	667	977	770
500	657	531	718	567	620	509	678	542	915	751	849	767	1157	920
630	707	601	928	667	670	559	788	622	1025	862	1054	876	1357	1090
800	757	661	1048	777	710	599	888	722	1125	961	1154	977	1567	1280
1000	807	721	1158	877	740	649	988	812	1215	1061	1244	1077	1777	1470

Current Rating Conditions:

Ground Temperature: 20°CAmbient Temperature (air): 30°CDepth of Soil: 0.8mThermal Resistance of Soil: 1.5K•m/W