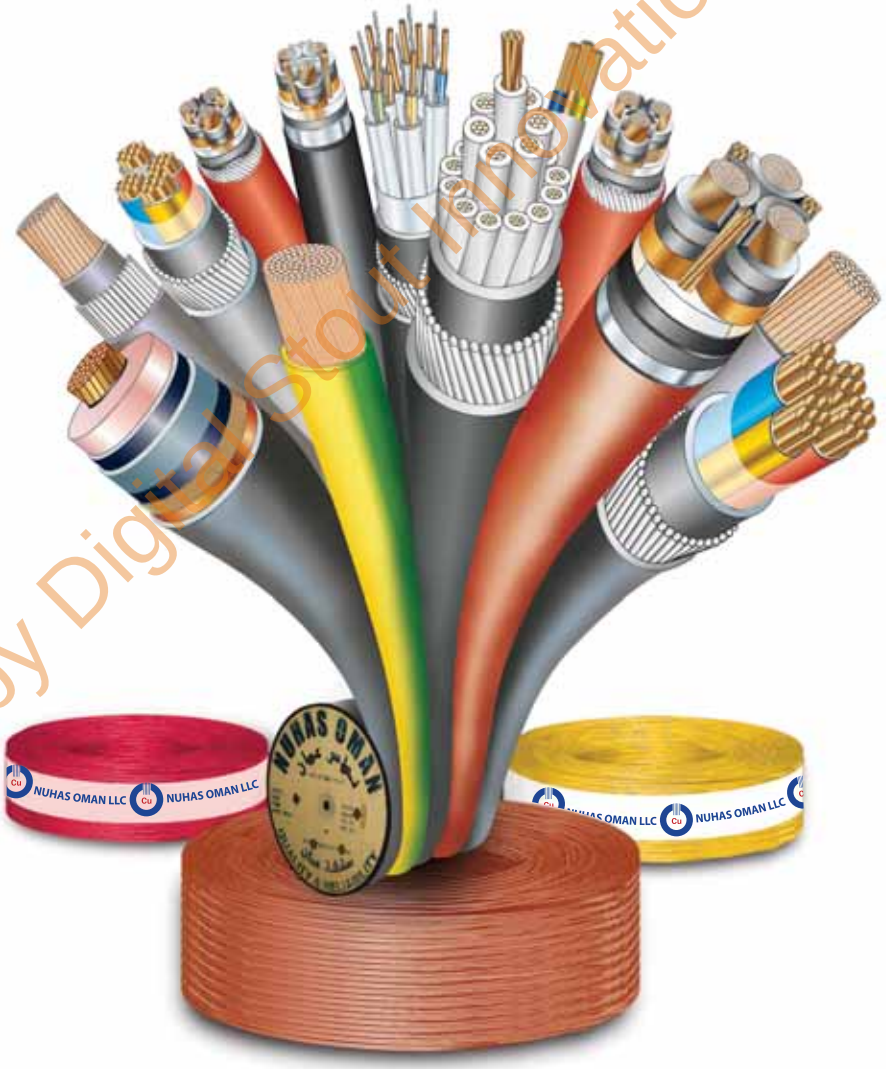
CABLES & WIRES



INSULATED WIRING CABLES

QUALITY & RELIABILITY

NUHAS OMAN

"We at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers. It is our mission to produce globally competitive products through continuous development of production capabilities, skill sets and simultaneously contributing to industrial and economic development of Oman."

INTRODUCTION

Nuhas Oman LLC, an integral part of The Al Bahja Group of Companies, is a Quality producer of:

- **HV, MV and LV Cables**
- **Enamelled Copper Wires**
- **Oxygen Free Continuous Cast Copper Wire Rods**
- **Drawn Copper Conductors**

Our state-of-the-art manufacturing facilities with cutting edge technology ensure that our products meet with highest quality standards. All our products utilize only **OXYGEN FREE HIGH CONDUCTIVITY ELECTRONIC GRADE** Copper produced through the **Outokompu UPCAST** technology, producing minimum 99.99% pure copper with oxygen content less than 5 ppm. The usage of *Oxygen Free High Conductivity Copper enables us in achieving quality excellence.*

Our range of World-class HV, MV and LV Cables includes Single & Multi Core Armoured and Un-armoured Cables, Specialty, Control, Instrumentation and also LSF, FRLS, LSOH & Custom Cables to meet the requirements of a broad spectrum of applications ranging from *Power Distribution, Industrial, Petrochemical, Oil & Gas, Aeronautical, Constructions, Instrumentation, Hospitals, Hotels & Security etc.*

The Cables are produced in compliance to the requirements of **BS, IEC, VDE, ASTM, ICEA & UL** specifications. The *Cables are routinely type tested* by acclaimed independent international certifying agencies confirming compliance to respective standards.

Nuhas *is committed to deliver quality products* that conform to relevant International standards and *Quality assurance is the driving force behind the Company's operations.*

Our Quality Management System has been certified to conform to ***ISO : 9001 : 2008 by BASEC, UK.***

Our quality cycle encompasses raw material and consumable sourcing, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility, manned by qualified professionals from the industry, ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped to test as per relevant international standards as also to individual customer specifications.

The company endeavours to cater to the domestic, regional and global markets while maintaining the sanctity of our pristine environment.

New product development is a continuing process at **Nuhas Oman LLC** and we at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers.

NUHAS OMAN – QUALITY & RELIABILITY.

SINGLE CORE PVC INSULATED CABLES

Type	H05V-U, H07V-U, H07V R	**Applications**	In dry rooms, in apparatus, switch and distribution boards, for laying in conduit on and under plaster and on insulating supports above plaster
Standards	BS 6004:2000		
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) PVC Insulation	**Technical Data**	Max. Operating Temperature: 70°C Rated Voltage: 300/500 V (H05V-U) 450/750 V(H07V-U, H07V-R)
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION (mm²)	CLASS OF COPPER CON-DUCTOR	INSULATION THICKNESS (mm Nominal)	MAX. OVERALL DIAMETER (mm)	APPROX. NET WEIGHT (kg/km)	STANDARD LENGTH
H05V-U 300/500 V					**Yards**
0.50	1	0.6	2.3	9	100
0.75	1	0.6	2.5	11	100
1.0	1	0.6	2.7	14	100
H07V-U 450/750 V					
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4	1	0.8	4.4	47	100
6	1	0.8	5.0	66	100
H07V-R 450/750 V					
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4	2	0.8	4.6	47	100
6	2	0.8	5.2	66	100
					Meters
10	2	1.0	6.7	115	300
16	2	1.0	7.8	175	300
25	2	1.2	9.3	260	1000
35	2	1.2	10.5	350	1000
50	2	1.4	11.9	480	1000
70	2	1.4	13.6	670	1000
95	2	1.6	15.7	925	1000
120	2	1.6	17.2	1150	1000
150	2	1.8	19.0	1415	1000
185	2	2.0	21.1	1775	1000
240	2	2.2	23.8	2320	1000
300	2	2.4	26.5	2895	1000
400	2	2.6	29.6	3695	1000
500	2	2.8	33.0	4720	1000
630	2	2.8	36.7	6030	500

SINGLE CORE PVC INSULATED FLEXIBLE CABLES

Type	H05V-K, H07V-K	**Applications**	Flexible wire, for protected installation in equipment and lighting fitting conduit or under plaster
Standards	BS 6004:2000		
Construction	**1) Fine stranded Oxygen Free Electronic copper wire** 2) PVC Insulation	**Technical Data**	Max. Operating Temperature: 70°C Rated Voltage: 300/500 V H05V-K 450/750 V H07V-K
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION (mm²)	CLASS OF COPPER CON-DUCTOR	INSULATION THICKNESS (mm Nominal)	MAX. OVERALL DIAMETER (mm)	APPROX. NET WEIGHT (kg/km)	STANDARD LENGTH
H05V-K 300/500 V					**Yards**
0.5	5	0.6	2.5	9	100
0.75	5	0.6	2.7	11	100
1.0	5	0.6	2.8	14	100
H07V-K 450/750 V					
1.5	5	0.7	3.4	21	100
2.5	5	0.8	4.1	32	100
4	5	0.8	4.8	47	100
6	5	0.8	5.3	66	100
					Meters
10	5	1.0	6.8	110	300
16	5	1.0	8.1	170	300
25	5	1.2	10.2	266	1000
35	5	1.2	11.7	360	1000
50	5	1.4	13.9	494	1000
70	5	1.4	16.0	696	1000
95	5	1.6	18.2	965	1000
120	5	1.6	20.2	1203	1000
150	5	1.8	22.5	1483	1000
185	5	2.0	24.9	1852	1000
240	5	2.2	28.4	2424	1000

HEAT RESISTANT SINGLE CORE PVC INSULATED CABLES

Type	H07V2-R H07V2-U	**Applications**	In dry rooms, in apparatus, switch and distribution boards, for laying in conduit on and under plaster and on insulating supports above plaster
Standards	BS 6004:2000		
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) HR PVC Insulation	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION (mm²)	CLASS OF COPPER CON-DUCTOR	INSULATION THICKNESS (mm Nominal)	MAX. OVERALL DIAMETER (mm)	APPROX. NET WEIGHT (kg/km)	STANDARD LENGTH
H07V2-U 450/750 V					**Yards**
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4	1	0.8	4.4	47	100
6	1	0.8	5.0	66	100
H07V2-R 450/750 V					
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4	2	0.8	4.6	47	100
6	2	0.8	5.2	66	100
					Meters
10	2	1.0	6.7	110	300
16	2	1.0	7.8	170	300
25	2	1.2	9.3	255	1000
35	2	1.2	10.5	345	1000
50	2	1.4	11.9	470	1000
70	2	1.4	13.6	665	1000
95	2	1.6	15.7	920	1000
120	2	1.6	17.2	1145	1000
150	2	1.8	19.0	1410	1000
185	2	2.0	21.1	1765	1000
240	2	2.2	23.8	2310	1000
300	2	2.4	26.5	2885	1000
400	2	2.6	29.6	3685	1000
500	2	2.8	33.0	4710	1000
630	2	2.8	36.7	6030	500

HEAT RESISTANT SINGLE CORE PVC INSULATED FLEXIBLE CABLES

Type	H07V2K	**Applications**	Flexible wire, for protected installation in equipment and lighting fitting conduit or under plaster
Standards	BS 6004:2000		
Construction	**1) Fine stranded Oxygen Free Electronic copper wire** 2) HR PVC Insulation	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION (mm²)	CLASS OF COPPER CON-DUCTOR	INSULATION THICKNESS (mm Nominal)	MAX. OVERALL DIAMETER (mm)	APPROX. NET WEIGHT (kg/km)	STANDARD LENGTH
H07V2-K 450/750 V					**Yards**
1.5	5	0.7	3.4	21	100
2.5	5	0.8	4.1	32	100
4	5	0.8	4.8	47	100
6	5	0.8	5.3	66	100
					Meters
10	5	1.0	6.8	110	300
16	5	1.0	8.1	170	300
25	5	1.2	10.2	266	1000
35	5	1.2	11.7	360	1000
50	5	1.4	13.9	494	1000
70	5	1.4	16.0	696	1000
95	5	1.6	18.2	965	1000
120	5	1.6	20.2	1203	1000
150	5	1.8	22.5	1483	1000
185	5	2.0	24.9	1852	1000
240	5	2.2	28.4	2424	1000

FLEXIBLE CIRCULAR TWIN 2, 3, 4 & 5 CORE CABLES

Reference Standards	BS 6500:2000	**Applications**	For household appliances under medium mechanical stresses, also in damp and wet conditions
Construction	**1) Oxygen Free Electronic Copper Conductor – Class 5** 2) PVC Insulation Type TI 2 3) PVC Sheath – Type TM 2	**Technical Data**	Rated Voltage: 300/500 V Temperature: 70°C
Packing	In coils/drums or as per customer requirements		

No. of cores	Nominal Cross Section	Nominal Insulation thickness	Nominal Sheath Thickness	Approx. cable dia.	Approx. weight per km.
	mm²	(mm)	(mm)	(mm)	(kg.)
2	0.75	0.6	0.8	6.5	70
2	1.0	0.6	0.8	6.7	75
2	1.5	0.7	0.8	7.8	100
2	2.5	0.8	1.0	9.5	150
3	0.75	0.6	0.8	6.7	75
3	1.0	0.6	0.8	7.0	90
3	1.5	0.7	0.9	8.4	120
3	2.5	0.8	1.0	10.6	185
4	0.75	0.6	0.80	7.5	90
4	1.0	0.6	0.90	8.0	110
4	1.5	0.7	1.00	9.5	160
4	2.5	0.8	1.10	11.6	230
5	0.75	0.6	0.9	8.2	105
5	1.0	0.6	0.9	8.7	120
5	1.5	0.7	1.10	10.6	175
5	2.5	0.8	1.20	13.0	265

FIRE ALARM / SIGNAL CABLES

Reference Standards	BS 7629-1, BS 6387 Category CWZ	**Applications**	In populated places where there is risk of fire. Can be used in wide variety of applications including voice alarm, fire and security circuits and networking requirements due to excellent data/ signal transmission characteristics
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Mica tape 3) FRLSOH Insulation 4) Overall Screen with Aluminium Mylar tape and Tinned copper drain wire 5) FRLSOH Sheath	**Technical Data**	Voltage: 300/500 V Temperature: 70°C
Packing	In coils/drums or as per customer requirements		

No. of cores	Nominal Cross Section	Nominal Insulation thickness	Approx. cable dia.	Approx. weight per km.
(No.)	(mm²)	(mm)	(mm)	(kg.)
2	1.0	0.6	7.3	70
2	1.5	0.7	8.7	97
2	2.5	0.8	9.9	130
3	1.0	0.6	7.7	90
3	1.5	0.7	9.2	125
3	2.5	0.8	10.5	170

FLAT CABLES WITHOUT EARTH CONDUCTOR

Reference Standards	BS 6004:2000	**Applications**	Fixed installation in dry or damp premises, electric power & lighting devices, telecommunication appliances
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) PVC Insulation 3) PVC Sheath	**Technical Data**	Voltage: 300/500 V. Temperature : 70^0 C
Packing	In drums or as per customers requirements		

No. of cores	Nominal cross-sectional area of conductors mm^2	Radial thickness of Insulation (mm)	Mean overall dimension (mm)
2	1.0	0.6	4.7 x 7.4
2	1.5	0.7	5.4 x 8.4
2	2.5	0.8	6.2 x 9.8
2	4.0	0.8	7.2 x 11.5
2	6.0	0.8	8.0 x 13.0
2	10.0	1.0	9.6 x 16.0
2	16.0	1.0	11.0 x 18.5
3	1.0	0.6	4.7 x 9.8
3	1.5	0.7	5.4 x 11.5
3	2.5	0.8	6.2 x 13.5
3	4.0	0.8	7.4 x 16.5
3	6.0	0.8	8.0 x 18.0
3	10.0	1.0	9.6 x 22.5
3	16.0	1.0	11.0 x 26.5

FLAT CABLES WITH EARTH CONDUCTOR

Standards	BS 6004:2000	**Applications**	Fixed installation in dry or damp premises
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) PVC Insulation 3) PVC Sheath 4) Earth Conductor	**Technical Data**	Voltage: 300/500 V. Temperature : 70^{0}C
Packing	In drums or as per customer requirements		

No. of cores	Copper conductor mm^2	Thickness of Insulation (mm)	Approx. overall dimension (mm)	Earth Conductor, minimum nominal cross-sectional area mm^2
2	1.0	0.6	4.7 x 8.6	1
2	1.5	0.7	5.4 x 9.6	1
2	2.5	0.8	6.2 x 11.5	1.5
2	4.0	0.8	7.2 x 13.0	1.5
2	6.0	0.8	8.0 x 15.0	2.5
2	10.0	1.0	9.6 x 19.0	4
2	16.0	1.0	11.0 x 22.5	6
3	1.0	0.6	4.7 x 11.0	1
3	1.5	0.7	5.4 x 12.5	1
3	2.5	0.8	6.2 x 14.5	1
3	4.0	0.8	7.4 x 18.0	1.5
3	6.0	0.8	8.0 x 20.0	2.5
3	10.0	1.0	9.6 x 25.5	4
3	16.0	1.0	11.0 x 29.5	6

SINGLE CORE THERMOSETTING INSULATED LSF WIRING CABLES

Type	H05Z-U , H07Z- U, HO7Z- R	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire.
Reference Standards	BS 7211: 98		
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements.	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 300/500 V H05Z-U 450/750 V H07Z- U, HO7Z- R,
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

NOMINAL CROSS SECTION	CLASS OF COPPER CON-DUCTOR	INSULATION THICKNESS	MAX. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm²)		(mm)	(mm)	(kg/km)	
H05Z-U 300/500 V					**Yards**
0.50	1	0.6	2.3	9	100
0.75	1	0.6	2.5	11	100
1.00	1	0.6	2.7	14	100
H07Z-U 450/750 V					
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4.0	1	0.8	4.4	47	100
6.0	1	0.8	5.0	66	100
H07Z-R 450/750 V					
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4.0	2	0.8	4.6	47	100
6.0	2	0.8	5.2	66	100
					Meters
10	2	1.0	6.7	110	300
16	2	1.0	7.8	170	300
25	2	1.2	8.2	255	1000
35	2	1.2	9.3	345	1000
50	2	1.4	10.9	470	1000
70	2	1.4	12.6	665	1000
95	2	1.6	14.7	920	1000
120	2	1.6	16.2	1150	1000
150	2	1.8	17.8	1415	1000
185	2	2.0	20.1	1765	1000
240	2	2.2	22.8	2310	1000
300	2	2.4	25.3	2890	1000
400	2	2.6	29.0	3685	1000
500	2	2.8	32.2	4700	1000
630	2	2.8	35.4	6000	500

SINGLE CORE THERMOSETTING INSULATED SHEATHED LSF CABLES

Reference Standards	BS 7211: 98	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation 3) LSF Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements.	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 300/500 V
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	SHEATH THICKNESS	MAX. OVERALL DIAMETER	APPROX. NET WEIGHT
(mm²)		(mm)	(mm)	(mm)	(kg/km)
1.0	1	0.7	0.8	4.8	28
1.0	2	0.7	0.8	4.9	28
1.5	1	0.7	0.8	5.0	36
1.5	2	0.7	0.8	5.2	36
2.5	1	0.7	0.8	5.5	50
2.5	2	0.7	0.8	5.6	51
4	1	0.7	0.8	6.0	72
4	2	0.7	0.9	6.4	75
6	1	0.7	0.9	6.8	95
6	2	0.7	0.9	7.1	98
10	2	0.7	0.9	8.1	150
16	2	0.7	0.9	9.2	220
25	2	0.9	1.0	11.4	300
35	2	0.9	1.1	12.8	400

TWO CORE THERMOSETTING INSULATED SHEATHED LSF CABLES

Reference Standards	BS 7211: 98	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation 3) LSF Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

CONDUCTOR SIZE (mm²)	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS (mm)	INNER COVERING THICKNESS (mm)	SHEATH THICKNESS (mm)	MAX. OVERALL DIAMETER (mm)
2x1.0	1	0.7	0.4	1.2	9.5
2x1.0	2	0.7	0.4	1.2	9.7
2x1.5	1	0.7	0.4	1.2	10.1
2x1.5	2	0.7	0.4	1.2	10.3
2x2.5	1	0.7	0.4	1.2	11.0
2x2.5	2	0.7	0.4	1.2	11.3
2x4	1	0.7	0.4	1.2	12.1
2x4	2	0.7	0.4	1.2	12.4
2x6	1	0.7	0.4	1.2	13.2
2x6	2	0.7	0.4	1.2	13.7
2x10	1	0.7	0.4	1.4	15.5
2x10	2	0.7	0.6	1.4	16.7
2x16	2	0.7	0.6	1.4	18.8
2x25	2	0.9	0.8	1.4	23.2
2x35	2	0.9	0.8	1.6	26.0

THREE CORE THERMOSETTING INSULATED SHEATHED LSF CABLES

Reference Standards	BS 7211: 98	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation 3) LSF Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

CONDUCTOR SIZE (mm²)	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS (mm)	INNER COVERING THICKNESS (mm)	SHEATH THICKNESS (mm)	MAX. OVERALL DIAMETER (mm)
3x1.0	1	0.7	0.4	1.2	10.0
3x1.0	2	0.7	0.4	1.2	10.2
3x1.5	1	0.7	0.4	1.2	10.6
3x1.5	2	0.7	0.4	1.2	10.9
3x2.5	1	0.7	0.4	1.2	11.6
3x2.5	2	0.7	0.4	1.2	11.9
3x4	1	0.7	0.4	1.2	12.7
3x4	2	0.7	0.4	1.2	13.1
3x6	1	0.7	0.4	1.2	14.0
3x6	2	0.7	0.4	1.4	15.0
3x10	1	0.7	0.6	1.4	16.9
3x10	2	0.7	0.6	1.4	17.5
3x16	2	0.7	0.6	1.4	19.9
3x25	2	0.9	0.8	1.4	24.7
3x35	2	0.9	0.8	1.6	27.6

FOUR CORE THERMOSETTING INSULATED SHEATHED LSF CABLES

Reference Standards	BS 7211: 98	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation 3) LSF Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

CONDUCTOR SIZE	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	INNER COVERING THICKNESS	SHEATH THICKNESS	MAX. OVERALL DIAMETER
(mm²)		(mm)	(mm)	(mm)	(mm)
4x1.0	1	0.7	0.4	1.2	11.2
4x1.0	2	0.7	0.4	1.2	11.5
4x1.5	1	0.7	0.4	1.2	11.4
4x1.5	2	0.7	0.4	1.2	11.7
4x2.5	1	0.7	0.4	1.2	12.6
4x2.5	2	0.7	0.4	1.2	12.8
4x4	1	0.7	0.4	1.2	13.8
4x4	2	0.7	0.4	1.2	14.0
4x6	1	0.7	0.4	1.4	15.7
4x6	2	0.7	0.6	1.4	16.7
4x10	1	0.7	0.6	1.4	18.4
4x10	2	0.7	0.6	1.4	19.2
4x16	2	0.7	0.6	1.4	21.8
4x25	2	0.9	0.8	1.6	27.5
4x35	2	0.9	1.0	1.6	30.7

FIVE CORE THERMOSETTING INSULATED SHEATHED LSF CABLES

Reference Standards	BS 7211: 98	**Applications**	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	**1) Oxygen Free Electronic Copper Conductor** 2) Thermosetting / LSF Insulation 3) LSF Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements	**Technical Data**	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
		Requirements for LSF Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

CONDUCTOR SIZE	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	INNER COVERING THICKNESS	SHEATH THICKNESS	MAX. OVERALL DIAMETER
(mm²)		(mm)	(mm)	(mm)	(mm)
5x1.0	1	0.7	0.4	1.2	11.5
5x1.0	2	0.7	0.4	1.2	11.9
5x1.5	1	0.7	0.4	1.2	12.3
5x1.5	2	0.7	0.4	1.2	12.6
5x2.5	1	0.7	0.4	1.2	13.6
5x2.5	2	0.7	0.4	1.2	13.9
5x4	1	0.7	0.4	1.4	15.5
5x4	2	0.7	0.6	1.4	16.4
5x6	1	0.7	0.6	1.4	17.5
5x6	2	0.7	0.6	1.4	18.1
5x10	1	0.7	0.6	1.4	20.0
5x10	2	0.7	0.6	1.4	20.9
5x16	2	0.7	0.8	1.4	24.2
5x25	2	0.9	1.0	1.6	30.5
5x35	2	0.9	1.0	1.6	33.6

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6004:2000 Including AMD 14195 AMD 15646
Excluding clause 7.5 Absence of faults in the insulation

The complete detail of the tests performed and the results are recorded in BSI Test Report No: 243/4941646 / 3 of 4 *Dated:* 17 January 2007

Description of item tested: One sample of Electric Cable as follows:
1 x 6.0 mm² Red insulated cable

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness
Title Head of Section
Date 17 January 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:

1. *This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.*
2. *This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.*
3. *The general and specific conditions of the BSI Product Services, PS082 apply in all respects. Copies of this leaflet are available on request.*

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6004:2000 Including AMD 14195 AMD 15646
Excluding clause 7.5 Absence of faults in the insulation

The complete detail of the tests performed and the results are recorded in BSI Test Report No: 243/4941646 / 4 of 4 *Dated:* 17 January 2007

Description of item tested: One sample of Electric Cable as follows:
1 x 2.5 mm² Green/Yellow flexible insulated cable

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness
Title Head of Section
Date 17 January 2007

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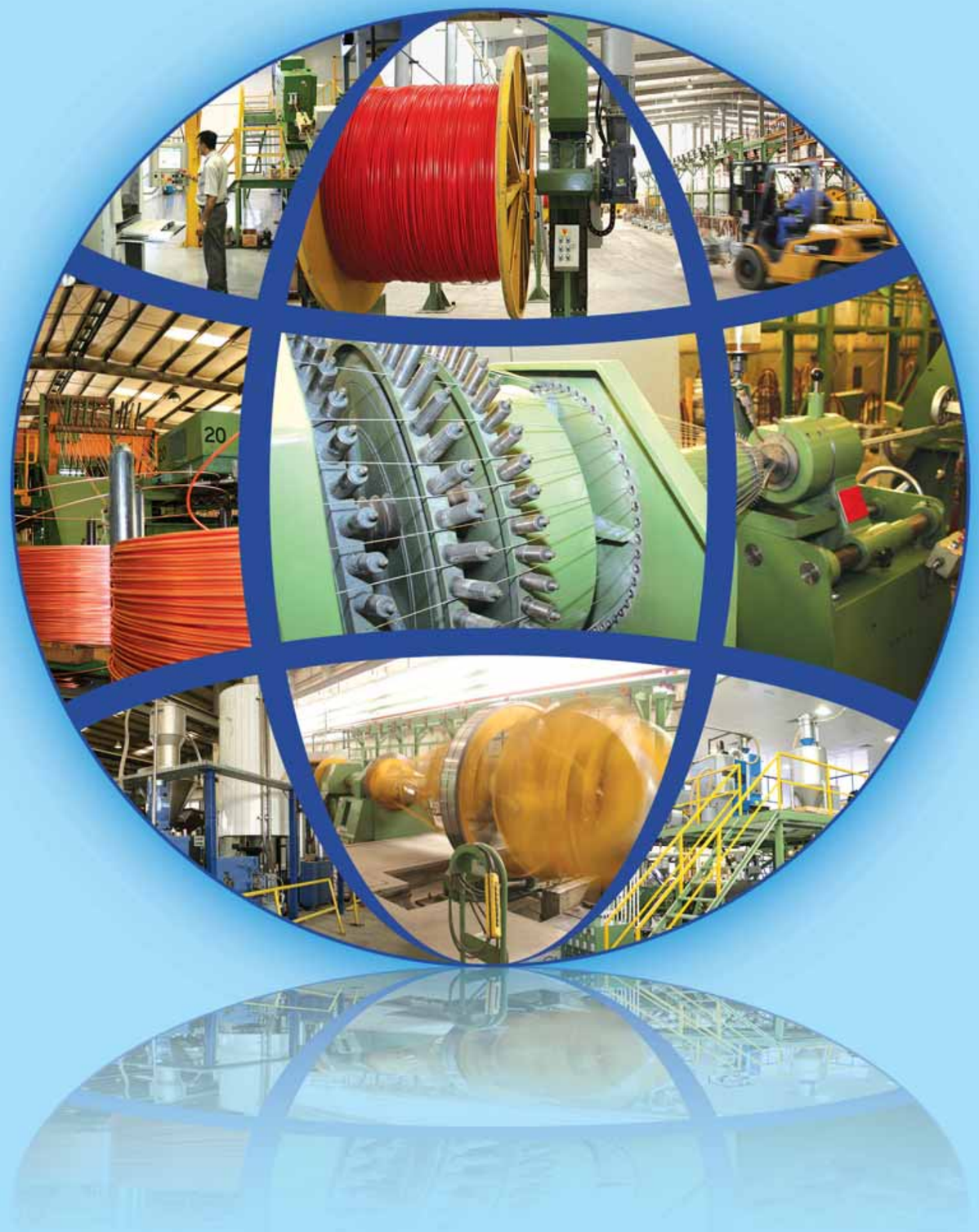
BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

GENERAL CABLE TECHNICAL DATA & RATING FACTORS



Current carrying capacities at ambient temperature 30°C

The tabulated current carrying capacities relate to continuous loading and are also known as the "full thermal ratings" implying that the cables will operate at their maximum conductor continuous temperature of 70°C. The data is extracted from IEE Wiring Regulations 16th Edition.

The tabulated current rating capacities also relate to installations where the overload protection is afforded by a fuse to BS 88 or BS 1361 or a miniature circuit breaker to BS 3871. Where the conductor is protected by a semi-enclosed fuse to BS 3036, the size of the conductor is to be such that its tabulated current carrying capacity is not less than the value of the fuse rating adjusted by multiplier 1.38 in addition to the correction factors for ambient temperature, thermal insulation and grouping. For details refer to clause 6.2 of Appendix 4 - IEE Wiring Regulations 16th Edition.

Volt Drop Data

For a given cable run, to calculate the voltage drop (in mV), the tabulated value (mV/A/m) has to be multiplied by the cable route length in metres and the design current. For three-phase circuits the tabulated mV/A/m values relate to the line voltage.

For cables of 16mm^2 or less cross sectional area, the inductance can be ignored and mV/A/m values are based on resistance (r) only. For cables of cross sectional area greater than 16mm^2, mV/A/m values based on resistance (r) and inductance (x) are significant. However for brevity, Table, for single core cables of sizes 25mm^2 & 35mm^2, list (mV/A/m) z values based on total impedance (z) only.

Where the power factor of the A.C. load is widely different from the cable power factor, use of (mV/A/m) z values for calculating the volt drop may give a pessimistically high value. For detailed information, reference should be made to Appendix 4 of the IEE Wiring Regulations 16th Edition.

Table 1
Single Core PVC Insulated Non-Sheathed Cables - Cables in conduit on a wall or ceiling or in trunking (Reference Method 3)

Conductor Cross Sectional Area mm^2	Current carrying Capacities (amperes)		Volt Drop (mV/A/m)		Conductor Cross Sectional Area mm^2	Current carrying capacities (amperes)		Volt Drop (mV/A/m)					
	2 cables single phase ac or dc	3 or 4 cables three phase ac	2 cables single phase ac	3 or 4 cables three phase ac		2 cables single phase ac or dc	3 or 4 three phase ac	2 cables single phase ac			3 or 4 cables three phase ac		
								r	x	z	r	x	z
1	13.5	12	44	38	50	151	134	0.95	0.30	1.00	0.81	0.26	0.85
1.5	17.5	15.5	29	25	70	192	171	0.65	0.29	0.72	0.56	0.25	0.61
2.5	24	21	18	15	95	232	207	0.49	0.28	0.56	0.42	0.24	0.48
4	32	28	11	9.5	120	269	239	0.39	0.27	0.47	0.33	0.23	0.41
6	41	36	7.3	6.4	150	300	262	0.31	0.27	0.41	0.27	0.23	0.36
					185	341	296	0.25	0.27	0.37	0.22	0.23	0.32
10	57	50	4.4	3.8	240	400	346	0.195	0.26	0.33	0.17	0.23	0.29
16	76	68	2.8	2.4	300	458	394	0.160	0.26	0.31	0.14	0.23	0.27
+25	101	89	1.8	1.55	400	546	467	0.130	0.26	0.29	0.12	0.22	0.25
+35	125	110	1.3	1.10	500	626	533	0.110	0.26	0.28	0.10	0.22	0.25
					630	720	611	0.094	0.25	0.27	0.08	0.22	0.24

+ Volt drop for sizes 25mm^2 and 35mm^2 are based on total impedance 'z' only. For 'r' and 'x: data, IEE Wiring Regulations 16th Edition should be referred to.

NOTE: Data in the above table is based on IEE Wiring Regulations 16th Edition. The current carrying capacities of Heat Resistant PVC insulated cables are higher, please refer to Technical Department if data is required.

Thermal Insulation

Current ratings pertaining to cables or cable conduits totally surrounded by thermally insulating material are not included in the above tables. For such situations, in the absence of precise information, a rating factor of 0.5 may be applied to the appropriate current ratings.

For multi-core cables, current ratings of cables installed in thermally.insulated ceilings but in contact with a thermally conductive surface on one side are stated. For similar information applicable to single core cables, reference should be made to the IEE Wiring Regulations 16th Edition.

Table2
Rating Factors For ambient temperature other than 30°C, the tabulated current ratings should be adjusted by factors as follows:

Ambient temperature °C		25	30	35	40	45	50	55	60	65	70	75	80	85
Overload protection afforded by device other than semi-enclosed fuse to BS 3036	Heat resisting PVC (90°C)*	1.03	1.0	0.97	0.94	0.91	0.87	0.84	0.80	0.76	0.71	0.61	0.5	0.35
	Ordinary PVC (70°C)	1.03	1.0	0.94	0.87	0.79	0.71	0.61	0.50	035				
Semi-enclosed fuse to BS 3036 (formerly coarse excess current protection)	Heat resisting PVC (90°C)*	1.03	1.0	0.97	0.94	0.91	0.87	0.84	0.80	0.76	0.72	0.68	0.63	0.49
	Ordinary PVC (70°C)	1.03	1.0	0.97	0.94	0.91	0.87	0.84	0.69	0.48				

These factors are applicable only to ratings in Table1.

Table 3
Correction factors for groups of cables (Ref.IEE wiring regulation sixteenth edition)

Method of Installation		Correction factor												
		Number of circuits or multicore cables												
		2	3	4	5	6	7	8	9	10	12	14	16	18	20
Enclosed in conductor trunking (Method 3 or 4) or bunched and clipped directly to non-metallic surface (Method 1)		0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
Single layer clipped to a non-metallic surface (Method 1)	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	-	-	-	-	-	-
	Spaced*	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Single layer multicore on a perforated metal cable tray, vertical or horizontal (Method 11)	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71	0.70	-	-	-	-
	Spaced*	0.91	0.89	0.88	0.87	0.87	-	-	-	-	-	-	-	-	-
Single layer single core on a perforated metal cable tray. touching (Method 11)	Horizontal	0.90	0.85	-	-	-	-	-	-	-	-	-	-	-	-
	Vertical	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-
Single layer Multicore touching on ladder supports (Method 13)		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-	-

* 'Spaced ' means a clearance between adjacent surfaces of at least one cable diameter (D). Where the horizontal clearances between adjacent cables exceeds 2D no correction factor need be applied.

Notes:

1. The factors in the table are applicable to groups of cables all of one size. The value of current derived from application of the appropriate factors is the maximum continuous current to be carried by any of the cables in the group.
2. If, due to known operating conditions, a cable is expected to carry not more than 30% of its grouped rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group.

Table 4
Conductor Resistance

Nominal conductor area mm²	Maximum diameter of conductor mm	Maximum conductor resistance per km at 20°C ohm	Nominal conductor area mm²	Maximum diameter of conductor mm	Maximum conductor resistance per km at 20°C ohm
1.5*	1.38	12.1	50	8.30	0.387
1.5	1.59	12.1	70	10.00	0.268
2.5*	1.78	7.41	95	11.70	0.193
2.5	2.01	7.41	120	13.15	0.153
			150	14.55	0.124
4	2.55	4.61	185	16.30	0.0991
6	3.12	3.08	240	18.75	0.0754
10	4.05	1.83	300	21.00	0.0601
16	4.85	1.15	400	23.90	0.0470
25	6.15	0.727	500	28.40	0.0366
35	7.25	0.524	630	31.70	0.0283

Conductor short circuit ratings

Short circuit rating of copper conductor shall be calculated using following formula:
Short circuit current I = kA/ √t
Where,

k = 0.115
A = Cross sectional Area of conductor
t = Duration in seconds

e.g. Short circuit rating of 300mm² Cu conductor for 1 sec. I = 0.115 x 300/ √1
= 34.5kA/sec.

The values of short circuit ratings derived from above formula based on the PVC insulated cable being fully loaded at the start of the short circuit conductor temperature of 70°C and final conductor temperature of 160°C.

Wiring Cable Installation

Wiring cables should be installed in accordance with IEE Wiring Regulations, 16th Edition or local installation regulations.

Minimum internal radius at bends:

CABLE DIAMETER	Minimum internal radius
Up to 10 mm	3 x cable diameter
Exceeding 10 mm but less than 25 mm	4 x cable diameter
Exceeding 25 mm	6 x cable diameter

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6500:2000 Including AMD's 1, 2, 3 & Corrigendum No's 15407, 16644
Excluding clause 7.8.5 Absence of faults in the insulation

The complete detail of the tests performed and the results are recorded in BSI Test Report No: 243/7045619 *Dated:* 12 June 2007

Description of item tested: *Two* samples of Electric Cable as follows;
1) 3 x 2.5 mm² white sheath cable, Limited test
2) 5 x 2.5 mm² white sheath cable, Full test

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness

Title Head of Section

Date 12 June 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:

1. *This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.*
2. *This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.*
3. *The general and specific conditions of the BSI Product Services, PS082 apply in all respects. Copies of this leaflet are available on request.*

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6004:2000 Including AMD 14195 AMD 15646
Excluding clause 7.5 Absence of faults in the insulation

The complete detail of the tests performed and the results are recorded in BSI Test Report No: 243/4941646 / 1 of 4 *Dated:* 17 January 2007

Description of item tested: One sample of Electric Cable as follows;
1 x 2.5 mm² Green/Yellow insulated cable

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness

Title Head of Section

Date 17 January 2007

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BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

Product Services

Declaration of Test Results

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BS 6004:2000 Including AMD 14195 AMD 15646
Excluding clause 7.5 Absence of faults in the insulation

The complete detail of the tests performed and the results are recorded in BSI Test Report No: 243/4941646 / 2 of 4 *Dated:* 17 January 2007

Description of item tested: One sample of Electric Cable as follows;
1 x 4.0 mm² Red insulated cable

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness

Title *Head of Section*

Date *17 January 2007*

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BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

NUHAS OMAN LLC

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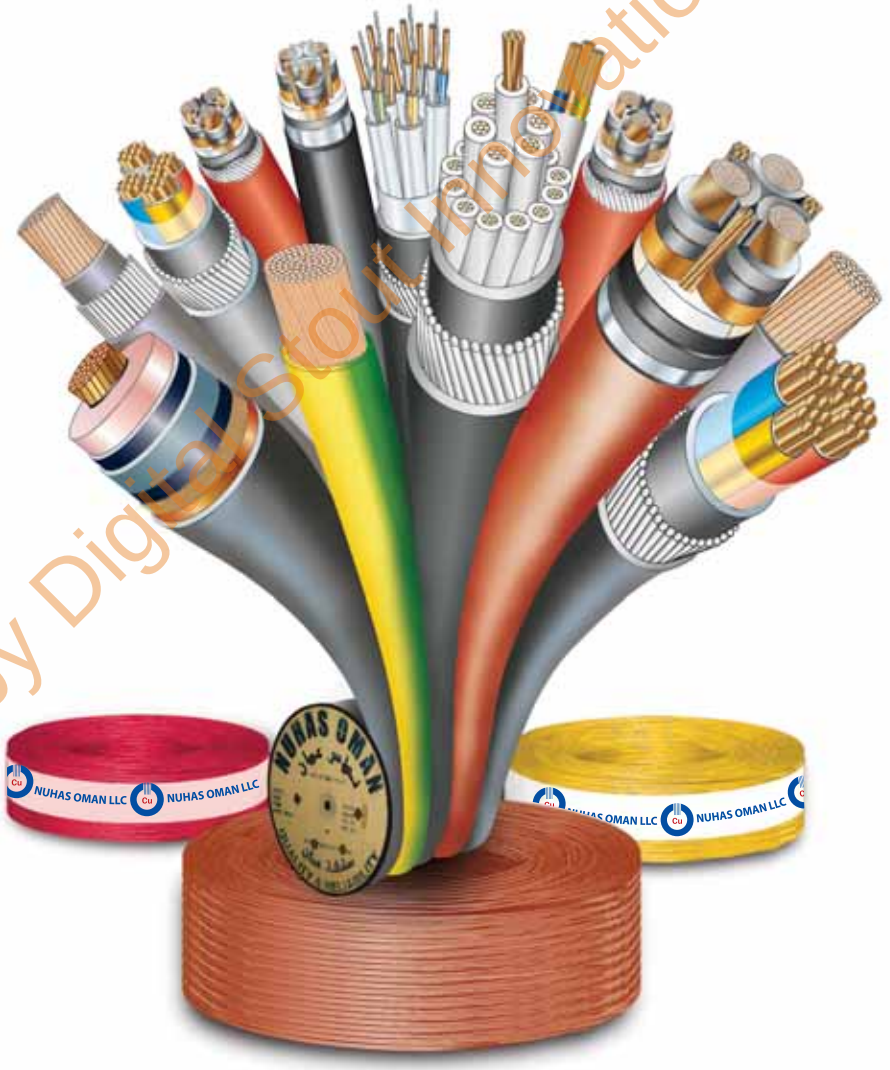
Tel : +968-24449007, 24449247, 24449249 Fax : +968 24446790
Email : marketing@nuhasoman.com Website:www.nuhasoman.com

(A Member of the Al Bahja Group)
AN ISO 9001:2008 COMPANY

NU/MKT/DBJ/003 Rev 2
Date: 01.03.2011

CABLES & WIRES



POWER & CONTROL CABLES

QUALITY & RELIABILITY

Cu

NUHAS OMAN

"We at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers. It is our mission to produce globally competitive products through continuous development of production capabilities, skill sets and simultaneously contributing to industrial and economic development of Oman."

INTRODUCTION

Nuhas Oman LLC, an integral part of The Al Bahja Group of Companies, is a Quality producer of:

- **HV, MV and LV Cables**
- **Enamelled Copper Wires**
- **Oxygen Free Continuous Cast Copper Wire Rods**
- **Drawn Copper Conductors**

Our state-of-the-art manufacturing facilities with cutting edge technology ensure that our products meet with highest quality standards. All our products utilize only **OXYGEN FREE HIGH CONDUCTIVITY ELECTRONIC GRADE** Copper produced through the **Outokompu UPCAST** technology, producing minimum 99.99% pure copper with oxygen content less than 5 ppm. The usage of *Oxygen Free High Conductivity Copper enables us in achieving quality excellence.*

Our range of World-class HV, MV and LV Cables includes Single & Multi Core Armoured and Un-armoured Cables, Specialty, Control, Instrumentation and also LSF, FRLS, LSOH & Custom Cables to meet the requirements of a broad spectrum of applications ranging from *Power Distribution, Industrial, Petrochemical, Oil & Gas, Aeronautical, Constructions, Instrumentation, Hospitals, Hotels & Security etc.*

The Cables are produced in compliance to the requirements of **BS, IEC, VDE, ASTM, ICEA & UL** specifications. The *Cables are routinely type tested* by acclaimed independent international certifying agencies confirming compliance to respective standards.

Nuhas *is committed to deliver quality products* that conform to relevant International standards and *Quality assurance is the driving force behind the Company's operations.*

Our Quality Management System has been certified to conform to ***ISO : 9001 : 2008 by BASEC, UK.***

Our quality cycle encompasses raw material and consumable sourcing, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility, manned by qualified professionals from the industry, ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped to test as per relevant international standards as also to individual customer specifications.

The company endeavours to cater to the domestic, regional and global markets while maintaining the sanctity of our pristine environment.

New product development is a continuing process at **Nuhas Oman LLC** and we at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers.

NUHAS OMAN – QUALITY & RELIABILITY.

TABLE 1

XLPE INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards BS 5467

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) PVC sheath

Applications
For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating tenperature with XLPE insulation.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Single Core	50	1.0	0.8	0.9	1.5	16.5	690
	70	1.1	0.8	1.25	1.5	19.0	950
	95	1.1	0.8	1.25	1.6	21.0	1230
	120	1.2	0.8	1.25	1.6	23.0	1490
	150	1.4	1.0	1.6	1.7	26.0	1900
	185	1.6	1.0	1.6	1.8	28.0	2320
	240	1.7	1.0	1.6	1.8	31.0	2930
	300	1.8	1.0	1.6	1.9	33.5	3580
	400	2.0	1.2	2.0	2.0	38.0	4600
	500	2.2	1.2	2.0	2.1	41.5	5680
	630	2.4	1.2	2.0	2.2	46.0	7160
	800	2.6	1.4	2.5	2.4	52.0	9315
	1000	2.8	1.4	2.5	2.5	57.0	11490
Two Core	1.5	0.7	0.8	0.9	1.3	12.0	255
	2.5	0.7	0.8	0.9	1.4	13.5	305
	4	0.7	0.8	0.9	1.4	14.5	360
	6	0.7	0.8	0.9	1.4	15.5	430
	10	0.7	0.8	0.9	1.5	17.5	580
	16	0.7	0.8	1.25	1.5	20.0	835
	25	0.9	0.8	1.25	1.6	19.5	995
	35	0.9	1.0	1.6	1.7	22.5	1395
	50	1.0	1.0	1.6	1.8	25.5	1735
	70	1.1	1.0	1.6	1.9	28.5	2250
	95	1.1	1.2	2.0	2.0	32.0	3055
	120	1.2	1.2	2.0	2.1	34.5	3635
	150	1.4	1.2	2.0	2.2	38.0	4360
	185	1.6	1.4	2.5	2.4	42.0	5495
	240	1.7	1.4	2.5	2.5	48.5	7000
	300	1.8	1.6	2.5	2.6	53.0	8450
	400	2.0	1.6	2.5	2.8	58.5	10335
Three Core	1.5	0.7	0.8	0.9	1.3	12.5	290
	2.5	0.7	0.8	0.9	1.4	14.0	350
	4	0.7	0.8	0.9	1.4	15.0	420
	6	0.7	0.8	0.9	1.4	16.0	505
	10	0.7	0.8	1.25	1.5	19.5	800
	16	0.7	0.8	1.25	1.6	21.0	1035
	25	0.9	1.0	1.6	1.7	23.0	1465
	35	0.9	1.0	1.6	1.8	25.5	1840
	50	1.0	1.0	1.6	1.8	28.0	2305
	70	1.1	1.0	1.6	1.9	31.5	3030
	95	1.1	1.2	2.0	2.1	36.0	4160
	120	1.2	1.2	2.0	2.2	40.0	5050
	150	1.4	1.4	2.5	2.3	45.0	6415
	185	1.6	1.4	2.5	2.4	48.0	7580
	240	1.7	1.4	2.5	2.6	54.0	9565
	300	1.8	1.6	2.5	2.7	60.0	11640
	400	2.0	1.6	2.5	2.9	64.0	14290

TABLE 1 (Contd.)

XLPE INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards BS 5467

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) PVC sheath

Applications
For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating tenperature with XLPE insulation.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Four Core	1.5	0.7	0.8	0.9	1.3	13.5	330
	2.5	0.7	0.8	0.9	1.4	14.5	400
	4	0.7	0.8	0.9	1.4	16.0	490
	6	0.7	0.8	1.25	1.5	18.5	700
	10	0.7	0.8	1.25	1.5	20.5	920
	16	0.7	0.8	1.25	1.6	22.0	1240
	25	0.9	1.0	1.6	1.7	26.0	1860
	35	0.9	1.0	1.6	1.8	28.5	2330
	50	1.0	1.0	1.6	1.9	31.5	2940
	70	1.1	1.2	2.0	2.1	37.0	4150
	95	1.1	1.2	2.0	2.2	40.5	5300
	120	1.2	1.4	2.5	2.3	47.0	6940
	150	1.4	1.4	2.5	2.4	50.0	8170
	185	1.6	1.4	2.5	2.6	55.0	9850
	240	1.7	1.6	2.5	2.7	62.0	12480
	300	1.8	1.6	2.5	2.9	68.0	15100
	400	2.0	1.8	3.15	3.2	78.0	19710
Five Core	1.5	0.6	0.8	0.9	1.4	15.5	420
	2.5	0.7	0.8	0.9	1.4	17.0	500
	4	0.7	0.8	1.25	1.5	19.0	700
	6	0.7	0.8	1.25	1.5	20.5	855
	10	0.7	0.8	1.25	1.6	23.0	1170
	16	0.7	1.0	1.6	1.7	26.0	1660
	25	0.9	1.0	1.6	1.8	30.0	2285
	35	0.9	1.0	1.6	1.9	33.0	2530
	50	1.0	1.2	2.0	2.0	38.5	3920
	70	1.1	1.2	2.0	2.2	43.5	5170

TABLE 2

PVC INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards BS 6346

Construction

1) Oxygen free Electronic Copper Conductor
2) PVC Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) PVC sheath

Applications
For installation under ground, indoor ducts where mechanical damage is not expected.

Technical data
Max. Operating temperature: 70ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Single Core	50	1.4	0.8	1.25	1.5	18.5	755
	70	1.4	0.8	1.25	1.6	20.5	985
	95	1.6	0.8	1.25	1.6	22.5	1285
	120	1.6	1.0	1.6	1.7	25.5	1625
	150	1.8	1.0	1.6	1.7	27.5	1950
	185	2.0	1.0	1.6	1.8	29.5	2345
	240	2.2	1.0	1.6	1.9	32.5	2975
	300	2.4	1.0	1.6	1.9	35.0	3625
	400	2.6	1.2	2.0	2.1	40.0	4655
	500	2.8	1.2	2.0	2.1	43.5	5770
	630	2.8	1.2	2.0	2.2	47.0	7250
	800	2.8	1.4	2.5	2.4	53.0	9250
	1000	3.0	1.4	2.5	2.5	58.0	11320
Two Core	1.5	0.6	0.8	0.9	1.4	12.5	265
	2.5	0.7	0.8	0.9	1.4	13.5	320
	4	0.8	0.8	0.9	1.4	15.0	395
	6	0.8	0.8	0.9	1.5	16.5	475
	10	1.0	0.8	1.25	1.6	20.0	770
	16	1.0	0.8	1.25	1.6	21.5	935
	25	1.2	1.0	1.6	1.7	22.5	1225
	35	1.2	1.0	1.6	1.8	24.5	1515
	50	1.4	1.0	1.6	1.9	28.0	1900
	70	1.4	1.0	1.6	1.9	30.0	2375
	95	1.6	1.2	2.0	2.1	35.0	3300
	120	1.6	1.2	2.0	2.2	37.0	3845
	150	1.8	1.2	2.0	2.3	40.5	4590
	185	2.0	1.4	2.5	2.4	44.0	5765
	240	2.2	1.4	2.5	2.5	51.5	7350
	300	2.4	1.6	2.5	2.7	56.5	8885
	400	2.6	1.6	2.5	2.9	62.0	10850
Three Core	1.5	0.6	0.8	0.9	1.4	12.5	295
	2.5	0.7	0.8	0.9	1.4	14.0	370
	4	0.8	0.8	0.9	1.4	15.5	465
	6	0.8	0.8	1.25	1.5	18.0	650
	10	1.0	0.8	1.25	1.6	21.0	925
	16	1.0	0.8	1.25	1.6	23.0	1160
	25	1.2	1.0	1.6	1.7	24.5	1595
	35	1.2	1.0	1.6	1.8	27.5	1985
	50	1.4	1.0	1.6	1.9	30.5	2520
	70	1.4	1.2	2.0	2.0	35.0	3470
	95	1.6	1.2	2.0	2.1	39.0	4470
	120	1.6	1.2	2.0	2.2	42.5	5335
	150	1.8	1.4	2.5	2.4	48.0	6805
	185	2.0	1.4	2.5	2.5	50.5	7995
	240	2.2	1.6	2.5	2.6	57.5	10150
	300	2.4	1.6	2.5	2.8	63.5	12315
	400	2.6	1.6	2.5	3.0	68.0	15000

TABLE 2 (Contd.)

PVC INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards BS 6346

Construction

1) Oxygen free Electronic Copper Conductor
2) PVC Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) PVC sheath

Applications
For installation under ground, indoor ducts where mechanical damage is not expected.

Technical data
Max. Operating temperature: 70ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Four Core	1.5	0.6	0.8	0.9	1.4	13.5	340
	2.5	0.7	0.8	0.9	1.4	15.0	430
	4	0.8	0.8	1.25	1.5	17.5	640
	6	0.8	0.8	1.25	1.5	19.0	765
	10	1.0	0.8	1.25	1.6	23.0	1100
	16	1.0	1.0	1.6	1.7	26.0	1575
	25	1.2	1.0	1.6	1.8	28.5	2045
	35	1.2	1.0	1.6	1.9	31.0	2520
	50	1.4	1.2	2.0	2.0	35.0	3405
	70	1.4	1.2	2.0	2.1	39.0	4375
	95	1.6	1.2	2.0	2.2	43.5	5675
	120	1.6	1.4	2.5	2.4	50.0	7305
	150	1.8	1.4	2.5	2.5	53.5	8630
	185	2.0	1.6	2.5	2.6	58.5	10400
	240	2.2	1.6	2.5	2.8	66.0	13130
	300	2.4	1.6	2.5	3.0	72.0	15895
	400	2.6	1.8	3.15	3.3	82.0	20655
Five Core	1.5	0.6	0.8	0.9	1.4	14.5	380
	2.5	0.7	0.8	0.9	1.5	16.0	495
	4	0.8	0.8	1.25	1.5	19.0	720
	6	0.8	0.8	1.25	1.6	20.5	885
	10	1.0	1.0	1.6	1.7	26.0	1450
	16	1.0	1.0	1.6	1.7	28.0	1845
	25	1.2	1.0	1.6	1.9	32.5	2530
	35	1.2	1.0	1.6	1.9	35.0	2750
	50	1.4	1.2	2.0	2.1	41.0	4280
	70	1.4	1.2	2.0	2.2	46.0	5495

TABLE 3

XLPE INSULATED AND LSF SHEATHED ARMOURED CABLES

Reference standards BS 6724

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) LSF sheath

Applications
These cables have self-extinguishing behaviour without halogen acid gas emission. Furthermore toxic and corrosive gases and smoke emission is reduced to very low level. These characteristics make the cable ideal for use where safety behaviour is important as at public places in case of fire.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Single Core	50	1.0	0.8	0.9	1.5	17.0	705
	70	1.1	0.8	1.25	1.5	19.5	965
	95	1.1	0.8	1.25	1.6	21.5	1250
	120	1.2	0.8	1.25	1.6	23.5	1510
	150	1.4	1.0	1.6	1.7	26.5	1925
	185	1.6	1.0	1.6	1.8	29.0	2345
	240	1.7	1.0	1.6	1.8	32.0	2960
	300	1.8	1.0	1.6	1.9	34.5	3610
	400	2.0	1.2	2.0	2.0	39.5	4635
	500	2.2	1.2	2.0	2.1	43.0	5715
	630	2.4	1.2	2.0	2.2	47.5	7200
	800	2.6	1.4	2.5	2.4	54.0	9355
	1000	2.8	1.4	2.5	2.5	59.0	11525
Two Core	1.5	0.7	0.8	0.9	1.3	11.5	260
	2.5	0.7	0.8	0.9	1.4	13.0	310
	4	0.7	0.8	0.9	1.4	14.0	370
	6	0.7	0.8	0.9	1.4	15.5	440
	10	0.7	0.8	0.9	1.5	17.5	590
	16	0.7	0.8	1.25	1.5	19.5	850
	25	0.9	0.8	1.25	1.6	19.5	1010
	35	0.9	1.0	1.6	1.7	22.5	1410
	50	1.0	1.0	1.6	1.8	25.0	1755
	70	1.1	1.0	1.6	1.9	28.0	2270
	95	1.1	1.2	2.0	2.0	32.0	3080
	120	1.2	1.2	2.0	2.1	35.0	3660
	150	1.4	1.2	2.0	2.2	38.5	4385
	185	1.6	1.4	2.5	2.4	43.5	5520
	240	1.7	1.4	2.5	2.5	48.0	7025
	300	1.8	1.6	2.5	2.6	52.0	8470
	400	2.0	1.6	2.5	2.8	57.5	10450
Three Core	1.5	0.7	0.8	0.9	1.3	12.0	295
	2.5	0.7	0.8	0.9	1.4	13.5	360
	4	0.7	0.8	0.9	1.4	15.0	430
	6	0.7	0.8	0.9	1.4	16.0	515
	10	0.7	0.8	1.25	1.5	19.0	815
	16	0.7	0.8	1.25	1.6	21.0	1050
	25	0.9	1.0	1.6	1.7	23.0	1485
	35	0.9	1.0	1.6	1.8	25.0	1860
	50	1.0	1.0	1.6	1.8	27.5	2330
	70	1.1	1.0	1.6	1.9	31.5	3055
	95	1.1	1.2	2.0	2.1	36.0	4190
	120	1.2	1.2	2.0	2.2	39.5	5085
	150	1.4	1.4	2.5	2.3	44.5	6450
	185	1.6	1.4	2.5	2.4	48.5	7615
	240	1.7	1.4	2.5	2.6	53.5	9595
	300	1.8	1.6	2.5	2.7	58.5	11665
	400	2.0	1.6	2.5	2.9	65.0	14305

TABLE 3 (Contd.)

XLPE INSULATED AND LSF SHEATHED ARMOURED CABLES

Reference standards BS 6724

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour for multicore & aluminium wire for single core cables
4) LSF sheath

Applications
These cables have self-extinguishing behaviour without halogen acid gas emission. Furthermore toxic and corrosive gases and smoke emission is reduced to very low level. These characteristics make the cable ideal for use where safety behaviour is important as at public places in case of fire.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	mm	mm	kg/km
Four Core	1.5	0.7	0.8	0.9	1.3	13.0	340
	2.5	0.7	0.8	0.9	1.4	14.5	410
	4	0.7	0.8	0.9	1.4	16.0	500
	6	0.7	0.8	1.25	1.5	18.0	710
	10	0.7	0.8	1.25	1.5	20.5	935
	16	0.7	0.8	1.25	1.6	22.5	1255
	25	0.9	1.0	1.6	1.7	25.5	1885
	35	0.9	1.0	1.6	1.8	27.5	2355
	50	1.0	1.0	1.6	1.9	31.0	2970
	70	1.1	1.2	2.0	2.1	36.5	4185
	95	1.1	1.2	2.0	2.2	40.5	5340
	120	1.2	1.4	2.5	2.3	46.0	6985
	150	1.4	1.4	2.5	2.4	50.0	8215
	185	1.6	1.4	2.5	2.6	55.0	9890
	240	1.7	1.6	2.5	2.7	61.5	12520
	300	1.8	1.6	2.5	2.9	67.0	15285
	400	2.0	1.8	3.15	3.2	76.5	19930
Five Core	1.5	0.6	0.8	0.9	1.4	14.0	430
	2.5	0.7	0.8	0.9	1.4	15.5	510
	4	0.7	0.8	1.25	1.5	17.0	715
	6	0.7	0.8	1.25	1.5	19.5	870
	10	0.7	0.8	1.25	1.6	22.0	1190
	16	0.7	1.0	1.6	1.7	26.0	1680
	25	0.9	1.0	1.6	1.8	30.5	2315
	35	0.9	1.0	1.6	1.9	34.0	2560
	50	1.0	1.2	2.0	2.0	39.5	3960
	70	1.1	1.2	2.0	2.2	45.0	5215

TABLE 4

XLPE INSULATED AND PVC SHEATHED UN - ARMOURED CABLES				
Reference standards	Single core cables -BS7889/IEC60502-1 Multicore cables - IEC 60502-1		**Applications** For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation.	
Construction	1) Oxygen free Electronic Copper Conductor 2) XLPE Insulation 3) PVC sheath		**Technical data** Max. Operating temperature: 90ºC **Voltage: 600/1000 V**	
Nominal Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
mm²	mm	mm	mm	kg/km
Single Core				
50	1.0	1.4	14.0	520
70	1.1	1.4	16.0	720
95	1.1	1.5	18.0	975
120	1.2	1.5	20.0	1215
150	1.4	1.6	22.0	1495
185	1.6	1.6	24.5	1830
240	1.7	1.7	27.5	2375
300	1.8	1.8	30.5	2955
400	2.0	1.9	34.0	3755
500	2.2	2.0	38.0	4805
630	2.4	2.2	42.5	6230
800	2.6	2.3	47.5	7940
1000	2.8	2.4	53.0	9855
Two Core				
1.5	0.7	1.8	10.0	110
2.5	0.7	1.8	11.0	135
4	0.7	1.8	12.0	170
6	0.7	1.8	13.0	220
10	0.7	1.8	15.0	325
16	0.7	1.8	16.5	450
25	0.9	1.8	16.0	615
35	0.9	1.8	18.0	810
50	1.0	1.8	20.5	1060
70	1.1	1.8	23.0	1465
95	1.1	2.0	26.0	1985
120	1.2	2.1	28.5	2470
150	1.4	2.2	32.0	3045
185	1.6	2.3	34.5	3730
240	1.7	2.5	41.5	4880
300	1.8	2.7	45.5	6075
400	2.0	2.9	51.0	7715
Three Core				
1.5	0.7	1.8	10.5	130
2.5	0.7	1.8	11.5	165
4	0.7	1.8	12.5	220
6	0.7	1.8	14.0	285
10	0.7	1.8	16.0	435
16	0.7	1.8	17.5	615
25	0.9	1.8	18.0	880
35	0.9	1.8	20.5	1165
50	1.0	1.8	23.5	1535
70	1.1	1.9	26.5	2145
95	1.1	2.0	30.0	2895
120	1.2	2.1	33.5	3630
150	1.4	2.3	37.5	4480
185	1.6	2.4	40.5	5505
240	1.7	2.6	46.5	7165
300	1.8	2.8	52.5	8930
400	2.0	3.1	57.0	11365

TABLE 4 (Contd.)

XLPE INSULATED AND PVC SHEATHED UN - ARMOURED CABLES				
Reference standards	Single core cables -BS7889/IEC60502-1 Multicore cables - IEC 60502-1		**Applications** For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation.	
Construction	1) Oxygen free Electronic Copper Conductor 2) XLPE Insulation 3) PVC sheath		**Technical data** Max. Operating temperature: 90ºC **Voltage: 600/1000 V**	
Nominal Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
mm²	mm	mm	mm	kg/km
Four Core				
1.5	0.7	1.8	11.5	155
2.5	0.7	1.8	12.5	200
4	0.7	1.8	13.5	270
6	0.7	1.8	15.0	355
10	0.7	1.8	17.5	545
16	0.7	1.8	19.0	795
25	0.9	1.8	22.0	1165
35	0.9	1.8	23.5	1530
50	1.0	1.9	26.0	2030
70	1.1	2.0	30.5	2840
95	1.1	2.1	34.0	3830
120	1.2	2.3	39.5	4825
150	1.4	2.4	43.0	5925
185	1.6	2.6	48.0	7320
240	1.7	2.8	55.0	9520
300	1.8	3.0	60.5	11860
400	2.0	3.3	69.0	15135
Five Core				
1.5	0.7	1.8	12.0	175
2.5	0.7	1.8	13.0	230
4	0.7	1.8	14.5	315
6	0.7	1.8	16.0	420
10	0.7	1.8	18.5	655
16	0.7	1.8	20.5	965
25	0.9	1.8	24.5	1450
35	0.9	1.8	27.5	1585
50	1.0	2.0	31.5	2560
70	1.1	2.1	36.5	3570

TABLE 5

PVC INSULATED AND PVC SHEATHED UN-ARMOURED CABLES

Reference standards IEC 60502-1

Construction
1) Oxygen free Electronic Copper Conductor
2) PVC Insulation
3) PVC sheath

Applications
For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground.

Technical data
Max. Operating temperature: 70ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	kg/km
Single Core	50	1.4	1.4	14.0	570
	70	1.4	1.4	16.0	775
	95	1.6	1.5	18.0	1055
	120	1.6	1.5	20.0	1300
	150	1.8	1.6	22.0	1595
	185	2.0	1.7	24.0	1960
	240	2.2	1.8	27.0	2545
	300	2.4	1.9	30.0	3165
	400	2.6	2.0	33.5	4000
	500	2.8	2.1	37.0	5070
	630	2.8	2.2	41.0	6480
	800	2.8	2.3	45.0	8185
	1000	3.0	2.5	50.0	10175
Two Core	1.5	0.8	1.8	10.5	120
	2.5	0.8	1.8	11.5	150
	4	1.0	1.8	13.5	205
	6	1.0	1.8	14.5	255
	10	1.0	1.8	16.5	370
	16	1.0	1.8	18.0	495
	25	1.2	1.8	17.0	675
	35	1.2	1.8	19.0	880
	50	1.4	1.8	22.0	1160
	70	1.4	1.9	24.5	1575
	95	1.6	2.0	28.0	2140
	120	1.6	2.1	30.0	2625
	150	1.8	2.2	33.5	3230
	185	2.0	2.4	36.0	3965
	240	2.2	2.6	43.5	5185
	300	2.4	2.7	48.0	6430
	400	2.6	3.0	54.0	8170
Three Core	1.5	0.8	1.8	11.0	150
	2.5	0.8	1.8	12.0	190
	4	1.0	1.8	14.0	265
	6	1.0	1.8	15.5	340
	10	1.0	1.8	17.5	495
	16	1.0	1.8	19.0	685
	25	1.2	1.8	19.5	965
	35	1.2	1.8	22.0	1265
	50	1.4	1.8	25.0	1680
	70	1.4	2.0	28.5	2305
	95	1.6	2.1	32.5	3130
	120	1.6	2.2	35.5	3870
	150	1.8	2.3	39.5	4750
	185	2.0	2.5	42.5	5845
	240	2.2	2.7	49.0	7605
	300	2.4	2.9	55.5	9480
	400	2.6	3.1	60.0	11995

TABLE 5 (Contd.)

PVC INSULATED AND PVC SHEATHED UN-ARMOURED CABLES

Reference standards IEC 60502-1

Construction
1) Oxygen free Electronic Copper Conductor
2) PVC Insulation
3) PVC sheath

Applications
For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground.

Technical data
Max. Operating temperature: 70ºC

Voltage: 600/1000 V

	Nominal Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
	mm²	mm	mm	mm	kg/km
Four Core	1.5	0.8	1.8	12.0	180
	2.5	0.8	1.8	13.0	230
	4	1.0	1.8	15.5	330
	6	1.0	1.8	16.5	425
	10	1.0	1.8	19.0	625
	16	1.0	1.8	21.0	885
	25	1.2	1.8	23.5	1280
	35	1.2	1.8	25.0	1660
	50	1.4	1.9	28.0	2215
	70	1.4	2.1	32.0	3050
	95	1.6	2.2	37.0	4140
	120	1.6	2.4	42.0	5140
	150	1.8	2.5	45.5	6300
	185	2.0	2.7	50.0	7770
	240	2.2	2.9	57.5	10100
	300	2.4	3.1	64.0	12580
	400	2.6	3.4	72.0	16005
Five Core	1.5	0.8	1.8	12.5	205
	2.5	0.8	1.8	13.5	265
	4	1.0	1.8	16.0	380
	6	1.0	1.8	17.5	495
	10	1.0	1.8	20.0	745
	16	1.0	1.8	22.0	1065
	25	1.2	1.8	26.5	1595
	35	1.2	1.9	29.0	1730
	50	1.4	2.1	34.0	2805
	70	1.4	2.2	38.5	3830

TABLE 6

ARMOURED CONTROL CABLES - XLPE INSULATION

Reference standards

BS 5467

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour
4) PVC sheath

Applications
For installation underground, indoor ducts and in open where mechanical protection is required or for higher tensile stresses during installation and operation. Suitable for comparatively higher operating tenperature with XLPE insulation.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

No. of cores	Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
nos	mm^2	mm	mm	mm	mm	mm	kg/km
7	1.5	0.6	0.8	0.9	1.4	15.0	455
12	1.5	0.6	0.8	1.25	1.5	19.0	725
19	1.5	0.6	0.8	1.25	1.6	21.5	965
27	1.5	0.6	1.0	1.6	1.7	26.0	1380
37	1.5	0.6	1.0	1.6	1.7	28.5	1675
48	1.5	0.6	1.0	1.6	1.8	32.0	2080
7	2.5	0.7	0.8	0.9	1.4	16.5	590
12	2.5	0.7	0.8	1.25	1.6	22.0	965
19	2.5	0.7	1.0	1.6	1.7	26.0	1465
27	2.5	0.7	1.0	1.6	1.8	30.0	1845
37	2.5	0.7	1.0	1.6	1.8	33.0	2275
48	2.5	0.7	1.2	2.0	2.0	38.5	3080
7	4.0	0.7	0.8	1.25	1.5	19.5	850
12	4.0	0.7	1.0	1.6	1.6	25.0	1405
19	4.0	0.7	1.0	1.6	1.7	29.0	1850
27	4.0	0.7	1.0	1.6	1.9	34.0	2385
37	4.0	0.7	1.2	2.0	2.0	38.5	3360
48	4.0	0.7	1.2	2.0	2.1	43.5	4053

TABLE 7

ARMOURED CONTROL CABLES - PVC INSULATION

Reference standards

BS 6346

Construction

1) Oxygen free Electronic Copper Conductor
2) PVC Insulation
3) Galvanized steel wire armour
4) PVC sheath

Applications
For installation underground, indoor ducts and in open where mechanical protection is required or for higher tensile stresses during installation and operation

Technical data
Max. Operating temperature: 70ºC

Voltage: 600/1000 V

No. of cores	Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
nos	mm^2	mm	mm	mm	mm	mm	kg/km
7	1.5	0.6	0.8	0.9	1.4	15.0	470
12	1.5	0.6	0.8	1.25	1.5	19.0	815
19	1.5	0.6	0.8	1.25	1.6	21.5	1100
27	1.5	0.6	1.0	1.6	1.7	26.0	1625
37	1.5	0.6	1.0	1.6	1.8	28.5	1910
48	1.5	0.6	1.0	1.6	1.9	32.5	2320
7	2.5	0.7	0.8	1.25	1.5	17.5	735
12	2.5	0.7	0.8	1.25	1.6	22.0	1070
19	2.5	0.7	1.0	1.6	1.7	26.0	1625
27	2.5	0.7	1.0	1.6	1.8	30.0	2080
37	2.5	0.7	1.0	1.6	1.9	33.5	2645
48	2.5	0.7	1.2	2.0	2.1	39.0	3495
7	4.0	0.8	0.8	1.25	1.6	20.0	920
12	4.0	0.8	1.0	1.6	1.7	26.5	1555
19	4.0	0.8	1.0	1.6	1.8	30.0	2035
27	4.0	0.8	1.2	2.0	2.0	36.5	2995
37	4.0	0.8	1.2	2.0	2.1	40.0	3690
48	4.0	0.8	1.2	2.0	2.2	45.5	4495

TABLE 8

ARMOURED CONTROL LSF CABLES - THERMOSETTING INSULATION

Reference standards BS 6724

Construction
1) Oxygen free Electronic Copper Conductor
2) Thermosetting Insulation
3) Galvanized steel wire armour
4) LSF sheath

Applications
These cables have self-extinguishing behaviour without halogen acid gas emission. Furthermore toxic and corrosive gases and smoke emission is reduced to very low level. These characteristics make the cable ideal for use where safety behaviour is important as at public places in case of fire.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

No. of cores	Area of conductor	Thickness of Insulation	Nom thickness of bedding	Armour wire Diameter	Nom thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
nos	mm^2	mm	mm	mm	mm	mm	kg/km
7	1.5	0.6	0.8	0.9	1.4	15.0	465
12	1.5	0.6	0.8	1.25	1.5	19.0	740
19	1.5	0.6	0.8	1.25	1.6	21.5	980
27	1.5	0.6	1.0	1.6	1.7	26.0	1405
37	1.5	0.6	1.0	1.6	1.7	28.5	1705
48	1.5	0.6	1.0	1.6	1.8	32.0	2115
7	2.5	0.7	0.8	0.9	1.4	16.5	600
12	2.5	0.7	0.8	1.25	1.6	22.0	980
19	2.5	0.7	1.0	1.6	1.7	26.0	1490
27	2.5	0.7	1.0	1.6	1.8	30.0	1875
37	2.5	0.7	1.0	1.6	1.8	33.0	2310
48	2.5	0.7	1.2	2.0	2.0	38.5	3130
7	4.0	0.7	0.8	1.25	1.5	19.5	865
12	4.0	0.7	1.0	1.6	1.6	25.0	1430
19	4.0	0.7	1.0	1.6	1.7	29.0	1880
27	4.0	0.7	1.0	1.6	1.9	34.0	2425
37	4.0	0.7	1.2	2.0	2.0	38.5	3415
48	4.0	0.7	1.2	2.0	2.1	43.5	4115

TABLE 9

UN-ARMOURED CONTROL CABLES - XLPE INSULATION

Reference standards IEC 60502-1

Construction
1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) PVC sheath

Applications
For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation.

Technical data
Max. Operating temperature: 90ºC

Voltage: 600/1000 V

No. of cores	Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
nos	mm^2	mm	mm	mm	kg/km
7	1.5	0.7	1.8	13.0	230
10	1.5	0.7	1.8	16.5	315
12	1.5	0.7	1.8	17.0	355
19	1.5	0.7	1.8	19.5	510
24	1.5	0.7	1.8	22.5	630
27	1.5	0.7	1.8	23.0	690
30	1.5	0.7	1.8	24.0	755
37	1.5	0.7	1.8	26.0	900
48	1.5	0.7	1.8	29.5	1135
7	2.5	0.7	1.8	14.5	305
10	2.5	0.7	1.8	18.0	420
12	2.5	0.7	1.8	18.5	480
19	2.5	0.7	1.8	21.5	705
24	2.5	0.7	1.8	25.0	875
27	2.5	0.7	1.8	25.5	960
30	2.5	0.7	1.8	26.5	1055
37	2.5	0.7	1.8	28.5	1265
48	2.5	0.7	1.9	33.0	1625
7	4	0.7	1.8	16.0	420
10	4	0.7	1.8	20.0	580
12	4	0.7	1.8	20.5	670
19	4	0.7	1.8	24.0	995
24	4	0.7	1.8	28.0	1240
27	4	0.7	1.8	29.0	1370
30	4	0.7	1.9	30.0	1520
37	4	0.7	1.9	32.5	1840
48	4	0.7	2.1	37.5	2380

TABLE 10

UN-ARMOURED CONTROL CABLES - PVC INSULATION					
Reference standards	IEC 60502-1			**Applications** For fixed installation in industrial areas, buildings and similar applications but not for direct burial in the ground.	
Construction	1) Oxygen free Electronic Copper Conductor 2) PVC Insulation 3) PVC sheath			**Technical data** Max. Operating temperature: 70ºC **Voltage: 600/1000 V**	
No. of cores	Area of conductor	Thickness of Insulation	Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
nos	mm²	mm	mm	mm	kg/km
7	1.5	0.8	1.8	14.0	275
10	1.5	0.8	1.8	17.0	375
12	1.5	0.8	1.8	18.0	425
19	1.5	0.8	1.8	20.5	615
24	1.5	0.8	1.8	24.0	765
27	1.5	0.8	1.8	24.5	840
30	1.5	0.8	1.8	25.5	920
37	1.5	0.8	1.8	27.5	1105
48	1.5	0.8	1.9	31.5	1415
7	2.5	0.8	1.8	15.0	355
10	2.5	0.8	1.8	19.0	490
12	2.5	0.8	1.8	19.5	560
19	2.5	0.8	1.8	22.5	825
24	2.5	0.8	1.8	26.5	1030
27	2.5	0.8	1.8	27.0	1135
30	2.5	0.8	1.8	28.0	1245
37	2.5	0.8	1.9	30.5	1515
48	2.5	0.8	2.0	35.0	1945
7	4	1.0	1.8	18.0	520
10	4	1.0	1.8	22.5	725
12	4	1.0	1.8	23.5	840
19	4	1.0	1.8	27.5	1250
24	4	1.0	1.9	32.5	1575
27	4	1.0	2.0	33.5	1760
30	4	1.0	2.0	34.5	1935
37	4	1.0	2.1	37.5	2355
48	4	1.0	2.3	43.5	3045

TABLE 11

Maximum DC resistance and Construction of conductor as per BS EN 60228				
Plain annealed copper stranded class 2 conductor				
Nominal conductor area mm²	Resistance of conductor at 20˚C per km (Ω)	Minimum number of wires in conductor		
		Circular	Circular compacted	Shaped
1.5	12.1	7	6	-
2.5	7.41	7	6	-
4	4.61	7	6	-
6	3.08	7	6	-
10	1.83	7	6	-
16	1.15	7	6	-
25	0.727	7	6	6
35	0.524	7	6	6
50	0.387	19	6	6
70	0.268	19	12	12
95	0.193	19	15	15
120	0.153	37	18	18
150	0.124	37	18	18
185	0.0991	37	30	30
240	0.0754	37	34	34
300	0.0601	61	34	34
400	0.0470	61	53	53
500	0.0366	61	53	-
630	0.0283	91	53	-
800	0.0221	91	53	-
1000	0.0176	91	53	-

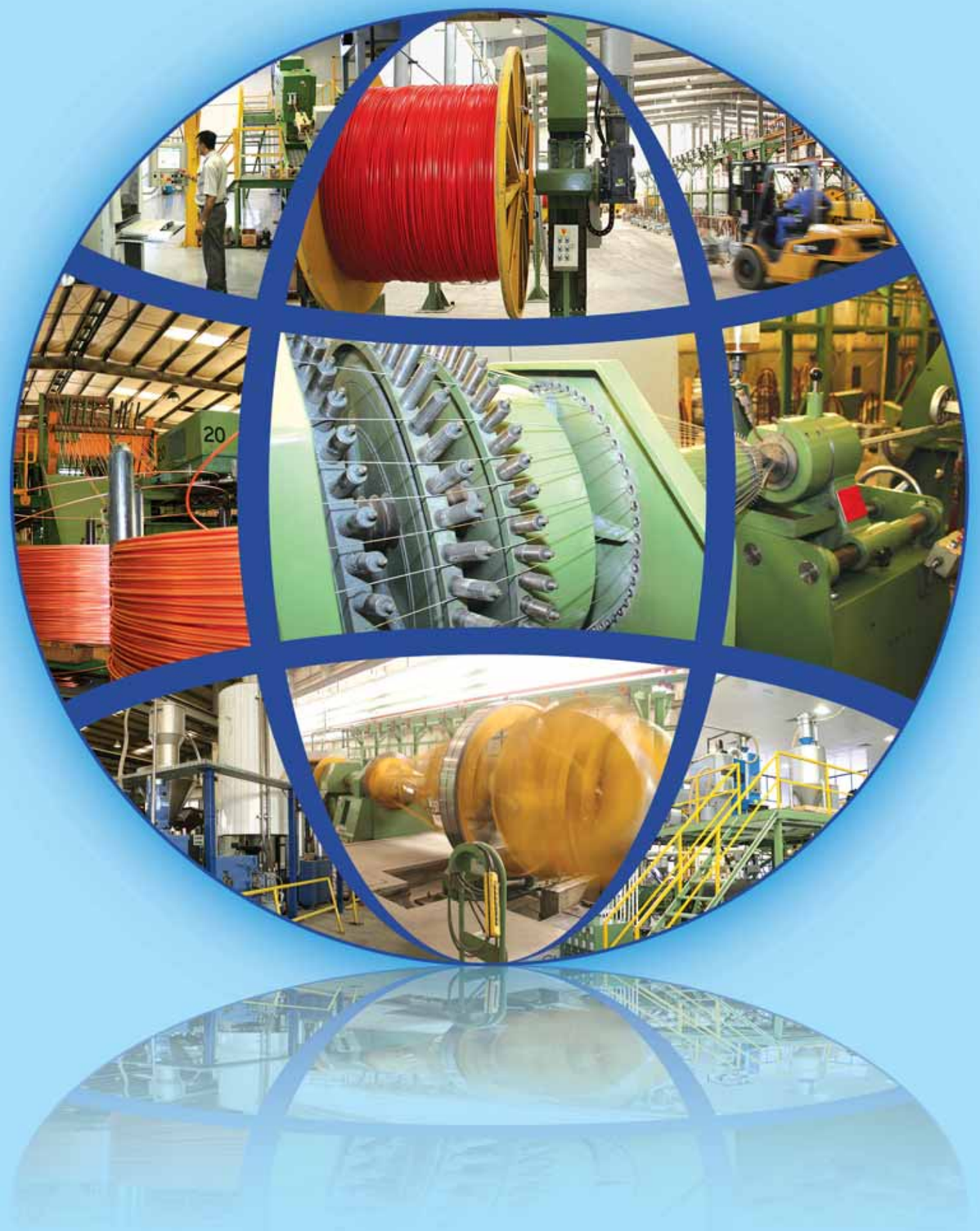
TABLE 12

Maximum resistance of armour for single and multicore XLPE insulated 600/1000 V cables having aluminium and steel wire armour					
(Maximum dc resistance per km of cable at 20ºC)					
Nominal cross sectional area of conductor mm²	Al wire armour	Galvanized Steel wire armour			
	Single core Ω	Two core Ω	Three core Ω	Four core Ω	Five core Ω
1.5	-	10.2	9.5	8.8	8.2
2.5	-	8.8	8.2	7.7	6.8
4	-	7.9	7.5	6.8	6.2
6	-	7.0	6.7	4.3	3.9
10	-	6.0	4.0	3.7	3.4
16	-	3.7	3.5	3.1	2.2
25	-	3.7	2.5	2.3	1.8
35	-	2.6	2.3	2.0	1.6
50	1.30	2.3	2.0	1.8	1.1
70	0.75	2.0	1.8	1.2	0.94
95	0.67	1.4	1.3	1.1	-
120	0.61	1.3	1.2	0.76	-
150	0.42	1.2	0.78	0.68	-
185	0.38	0.82	0.71	0.61	-
240	0.34	0.73	0.63	0.54	-
300	0.31	0.67	0.58	0.49	-
400	0.22	0.59	0.52	0.35	-
500	0.20	-	-	-	-
630	0.18	-	-	-	-
800	0.13	-	-	-	-
1000	0.12	-	-	-	-

TABLE 13

OVERHEAD LINE COPPER CONDUCTOR					
Bare copper conductors					
Reference standard: BS 7884:1997					
Nominal conductor area	No. of strands & diameter	Approx. overall diameter	Approx. net weight	DC Resistance at 20ºC	Minimum breaking load
mm²	mm	mm	kg/km	Ωkm	N
10	7/1.35	4.05	89.82	1.8290	3752
14	7/1.60	4.80	126.2	1.3030	5267
16	3/2.65	5.70	148.3	1.1060	6194
16	7/1.70	5.10	142.4	1.1540	5946
25	7/2.10	6.30	217.3	0.7563	9073
32	3/3.75	8.06	296.9	0.5520	12400
32	7/2.46	7.38	298.2	0.5497	12442
35	7/2.50	7.50	308	0.5337	12860
50	7/3.00	9.00	443.5	0.3706	18520
50	19/1.80	9.00	435.8	0.3819	17700
70	7/3.55	10.65	621.1	0.2646	25930
70	19/2.10	10.50	593.2	0.2806	24090
95	19/2.50	12.50	840.7	0.1980	34140
100	7/4.30	12.90	911.2	0.1810	36540
120	19/2.80	14.00	1055	0.1578	42830
125	19/2.90	14.50	1131	0.1471	45940
150	19/3.20	16.00	1377	0.1208	55940
150	37/2.25	15.75	1334	0.1264	53880
185	19/3.55	17.75	1695	0.0982	68860
185	37.2.50	17.50	1647	0.1024	66490

GENERAL CABLE TECHNICAL DATA & RATING FACTORS



TECHNICAL DATA

POWER CABLES - CURRENT RATINGS

Current ratings and Voltage drop of single core cables							
Copper conductor XLPE insulated armoured/unarmoured cable							
Nominal conductor area	AC Current Ratings in Amp				Approximate Voltage Drop		
	In Ground	In Duct	In Air		In Ground	In Duct	In Air
mm^2	ARMRD	ARMRD	UNARM	ARMRD	mV/A/m	mV/A/m	mV/A/m
50	199	200	185	192	0.88	0.92	0.86
70	244	240	236	245	0.63	0.69	0.61
95	292	282	292	300	0.48	0.55	0.46
120	332	316	342	349	0.4	0.47	0.38
150	371	342	394	401	0.34	0.42	0.32
185	417	377	457	461	0.29	0.38	0.27
240	480	421	546	543	0.25	0.34	0.23
300	536	459	632	618	0.22	0.31	0.2
400	594	488	736	706	0.21	0.29	0.19
500	658	527	852	799	0.19	0.27	0.17
630	723	568	984	900	0.18	0.25	0.16
800	764	593	1118	978	0.18	0.24	0.16
1000	810	630	1247	1061	0.17	0.23	0.15

In Ground Direct in ground in trefoil touching
In Duct - 3 cables flat touching
In Air - 3 cables in trefoil touching

Installation Conditions considered for Current ratings

Ground Temperature	:	35ºC
Ambient air temperature	:	45ºC
Depth of laying	:	0.50m
Soil thermal Resistivity	:	1.20Cm/W

Max permissible operating temperature at rated current: 90ºC
Note: for other installation conditions please refer appropriate rating factors

The data provided are for guidance only Nuhas reserve the rights to edit/modify
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POWER CABLES - CURRENT RATINGS

Current ratings and Voltage drop of two core cables							
Copper conductor, XLPE insulated armoured/unarmoured cable							
Nominal conductor area	AC Current Ratings in Amp				Approximate Voltage Drop		
	In Ground	In Duct	In Air		In Ground	In Duct	In Air
mm²	ARMRD	ARMRD	UNARM	ARMRD	mV/A/m	mV/A/m	mV/A/m
1.5	33	27	23	26	31	31	31
2.5	42	35	32	34	19	19	19
4	56	46	42	46	12	12	12
6	70	58	54	58	7.9	7.9	7.9
10	94	77	71	79	4.7	4.7	4.7
16	121	99	103	105	2.91	2.89	2.89
25	157	127	129	136	1.91	1.89	1.89
35	188	153	160	168	1.31	1.29	1.29
50	223	181	195	203	1.01	0.99	0.99
70	273	224	247	254	0.71	0.69	0.69
95	328	269	305	314	0.51	0.49	0.49
120	372	307	356	363	0.41	0.39	0.39
150	417	345	408	414	0.41	0.39	0.39
185	470	391	472	478	0.31	0.29	0.29
240	544	453	563	564	0.21	0.19	0.19
300	609	509	650	643	0.21	0.19	0.19
400	687	575	756	740	0.20	0.18	0.18

In Ground Direct in ground in trefoil touching
In Duct Single way ducts touching
In Air Spacing 3 x cable diameter

Installation Conditions considered for Current ratings
Ground Temperature : 35ºC
Ambient air temperature : 45ºC
Depth of laying : 0.50m
Soil thermal Resistivity : 1.20Cm/W
Max. permissible operating temperature at rated current: 90ºC
Note: for other installation conditions please refer appropriate rating factors

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POWER CABLES - CURRENT RATINGS

Current ratings and Voltage drop of three and four core cables							
Copper conductor, XLPE insulated armoured/unarmoured cable							
Nominal conductor area	AC Current Ratings in Amp				Approximate Voltage Drop		
	In Ground	In Duct	In Air		In Ground	In Duct	In Air
mm²	ARMRD	ARMRD	UNARM	ARMRD	mV/A/m	mV/A/m	mV/A/m
1.5	28	22	20	22	27	27	27
2.5	36	29	29	29	16	16	16
4	47	39	36	39	10	10	10
6	59	48	47	49	6.8	6.8	6.8
10	79	65	61	68	4	4	4
16	102	83	89	89	2.5	2.5	2.5
25	131	107	111	116	1.71	1.69	1.69
35	157	128	137	143	1.21	1.19	1.19
50	187	152	167	173	0.91	0.89	0.89
70	229	187	212	218	0.61	0.59	0.59
95	274	226	262	269	0.51	0.49	0.49
120	312	258	306	312	0.41	0.39	0.39
150	349	291	351	357	0.31	0.29	0.29
185	394	329	406	411	0.31	0.29	0.29
240	455	380	483	485	0.21	0.19	0.19
300	509	427	558	553	0.21	0.19	0.19
400	574	490	647	636	0.21	0.19	0.19

In Ground Direct in ground in trefoil touching
In Duct Single way ducts touching
In Air Spacing 3 x cable diameter

Installation Conditions considered for Current ratings
Ground Temperature : 35ºC
Ambient air temperature : 45ºC
Depth of laying : 0.50m
Soil thermal Resistivity : 1.20Cm/W
Max permissible operating temperature at rated current: 90ºC
Note: for other installation conditions please refer appropriate rating factors

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POWER CABLES - CURRENT RATINGS

Current ratings and Voltage drop of five core cables							
Copper conductor, XLPE insulated armoured / unarmoured cable							
Nominal conductor area	AC Current Ratings in Amp				Approximate Voltage Drop		
	In Ground	In Duct	In Air		In Ground	In Duct	In Air
mm^2	ARMRD	ARMRD	UNARM	ARMRD	mV/A/m	mV/A/m	mV/A/m
1.5	28	22	20	22	27	27	27
2.5	36	29	29	29	16	16	16
4	47	39	36	39	10	10	10
6	59	48	47	49	6.8	6.8	6.8
10	79	65	61	68	4	4	4
16	102	83	89	89	2.5	2.5	2.5
25	131	107	111	116	1.71	1.69	1.69
35	157	128	137	143	1.21	1.19	1.19
50	187	152	167	173	0.91	0.89	0.89
70	229	187	212	218	0.61	0.59	0.59

In Ground — Direct in ground in trefoil touching
In Duct — Single way ducts touching
In Air — Spacing 3 x cable diameter

Installation Conditions considered for Current ratings

Ground Temperature	:	35ºC
Ambient air temperature	:	45ºC
Depth of laying	:	0.50m
Soil thermal Resistivity	:	1.20Cm/W
Max permissible operating temperature at rated current:		90ºC

Note: for other installation conditions please refer appropriate rating factors

The data provided are for guidance only Nuhas reserve the rights to edit/modify any or whole of the data as a part of their effort of continuous Reaserch & Development

RATING FACTORS

Where the conditions of installation are differes from those defined in the Current rating tables, the following rating factors may be used to determine the data for actual installation conditions

CABLE LAID DIRECTLY IN GROUND

Rating factors for variation in ground temperature							
Ground Temperature	10ºC	15ºC	20ºC	25ºC	30ºC	35ºC	40ºC
Cable Type	Cross Linked Polyethelyne (XLPE) insulated						
Rating Factors	1.20	1.16	1.13	1.08	1.03	1.00	0.95

Rating Factors for variation in thermal resistivity of Soil							
Size of Cable in mm^2	Soil Thermal Reststivity in c-m/W						
	0.8	0.9	1.0	1.2	1.5	2.0	2.5
Single Core Cables							
Up to 150	1.16	1.12	1.07	1.00	0.91	0.81	0.73
from 185 to 300	1.17	1.12	1.07	1.00	0.91	0.80	0.73
from 300 to 1000	1.17	1.12	1.07	1.00	0.91	0.80	0.73
Multi Core Cables							
Up to 16	1.12	1.08	1.05	1.00	0.93	0.84	0.77
from 25 to 150	1.14	1.10	1.06	1.00	0.92	0.82	0.75
from 185 to 400	1.15	1.10	1.07	1.00	0.92	0.81	0.74

Rating factors for Depth of Laying (to centre of the cable or Trefoil group of cable)			
Depth of Laying in m	600/1000 Volt		
	Upto 50 mm^2	from 70 to 300 mm^2	400 mm^2 and above
0.50	1.00	1.00	1.00
0.60	0.99	0.98	0.97
0.80	0.97	0.96	0.94
1.00	0.95	0.93	0.92
1.25	0.94	0.92	0.89
1.50	0.93	0.90	0.87
1.75	0.92	0.89	0.86
2.00	0.91	0.88	0.85
2.50	0.90	0.87	0.84
3.00 or more	0.89	0.85	0.82

Group Rating Factors for Circuits of three single core cables in trefoil flat touching, in horizontal formation						
Voltage grade 600/1000 V	Spacing of Circuits					
	Touching			Spaced by		
Number of circuits	Trefoil	Laid Flat	0.15 m	0.30 m	0.45 m	0.60 m
2	0.78	0.81	0.83	0.88	0.91	0.93
3	0.66	0.7	0.73	0.79	0.84	0.87
4	0.61	0.64	0.68	0.73	0.81	0.85
5	0.56	0.6	0.64	0.73	0.79	0.85
6	0.53	0.57	0.61	0.71	0.78	0.82

Group Rating Factors for Multicore cables in horizontal formation					
Number of Cable group	Touching	Spaced by			
		0.15 m	0.30 m	0.45 m	0.60 m
2	0.81	0.87	0.91	0.93	0.95
3	0.70	0.78	0.84	0.88	0.90
4	0.63	0.74	0.81	0.86	0.89
5	0.59	0.70	0.78	0.84	0.87
6	0.55	0.68	0.77	0.83	0.87
7	0.50	0.66	0.75	0.82	0.86
8	0.48	0.63	0.74	0.81	0.85

CABLES INSTALLED IN DUCTS

Recommended Duct dimensions and Cable sizes		
Overall cable diameter	Duct Diameter in mm	
	Inside diameter	Outside diameter
up to and including 65 mm	100	130
above 65 & up to and including 90 mm	125	168

Rating factors for variation in ground temperature for cables laid in ducts							
Ground Temperature	10ºC	15ºC	20ºC	25ºC	30ºC	35ºC	40ºC
Cable Type	Cross Linked Polyethelyne (XLPE) insulated						
Rating Factors	1.20	1.16	1.13	1.08	1.03	1.00	0.95

Rating Factors for variation in thermal resistivity of Soil							
Size of Cable in mm^2	Soil Thermal Reststivity in C-m/W						
	0.8	0.9	1.0	1.2	1.5	2.0	2.5
Single Core Cables							
Up to 150	1.10	1.07	1.04	1.00	0.94	0.86	0.80
from 185 to 300	1.11	1.08	1.05	1.00	0.93	0.85	0.79
from 300 to 1000	1.12	1.08	1.05	1.00	0.93	0.84	0.78
Multi Core Cables							
Up to 16	1.04	1.03	1.02	1.00	0.97	0.92	0.88
from 25 to 150	1.06	1.04	1.03	1.00	0.95	0.90	0.85
from 185 to 400	1.07	1.05	1.03	1.00	0.95	0.88	0.83

Rating factors for depth of laying (to centre of duct or trefoil group of ducts)		
Depth of Laying	600 / 1000 Volts	
in m	Singlecore	Multicore
0.50	1.00	1.00
0.60	0.98	0.99
0.80	0.95	0.98
1.00	0.93	0.96
1.25	0.91	0.95
1.50	0.89	0.94
1.75	0.88	0.94
2.00	0.87	0.93
2.50	0.86	0.92
3.00	0.85	0.91

Group Rating factors for single core cables in trefoil single way ducts, horizontal formation (average value)			
Number of circuits	Touching	Spaced by	
		0.45 m	0.60 m
2	0.87	0.91	0.93
3	0.78	0.84	0.87
4	0.74	0.81	0.85
5	0.7	0.79	0.83
6	0.69	0.78	0.82

Group Rating factors for multicore cables in single way ducts, horizontal formation (average value)				
Number of ducts in ground	Spaced by in m			
	Touching	0.30	0.45	0.60
2	0.9	0.93	0.95	0.96
3	0.83	0.88	0.91	0.93
4	0.79	0.85	0.89	0.92
5	0.75	0.83	0.88	0.91
6	0.73	0.82	0.87	0.90

CABLE INSTALLED IN AIR

Rating factors for variation in ground temperature for cables laid in ducts							
Air temperature	25ºC	30ºC	35ºC	40ºC	45ºC	50ºC	55ºC
Cable Type	Cross Linked Polyethelyne (XLPE) insulated						
Rating factor	1.20	1.16	1.11	1.06	1.00	0.94	0.88

SHORT CIRCUIT CURRENT RATINGS OF 600/1000 V CABLES

COPPER CONDUCTOR, XLPE INSULATION

CALCULATION OF SHORT CIRCUIT CURRENT

$$I_{sc}^{\ 2} = \frac{K^2 * A^2}{T} \log_e \left(\frac{\theta_f + \beta}{\theta_0 + \beta} \right)$$

where,

I_{sc} = *short ckt current (KA)*

T = *short ckt duration (Sec)*

K = *constant for copper 226*

A = *cross-sectional area (mm2)*

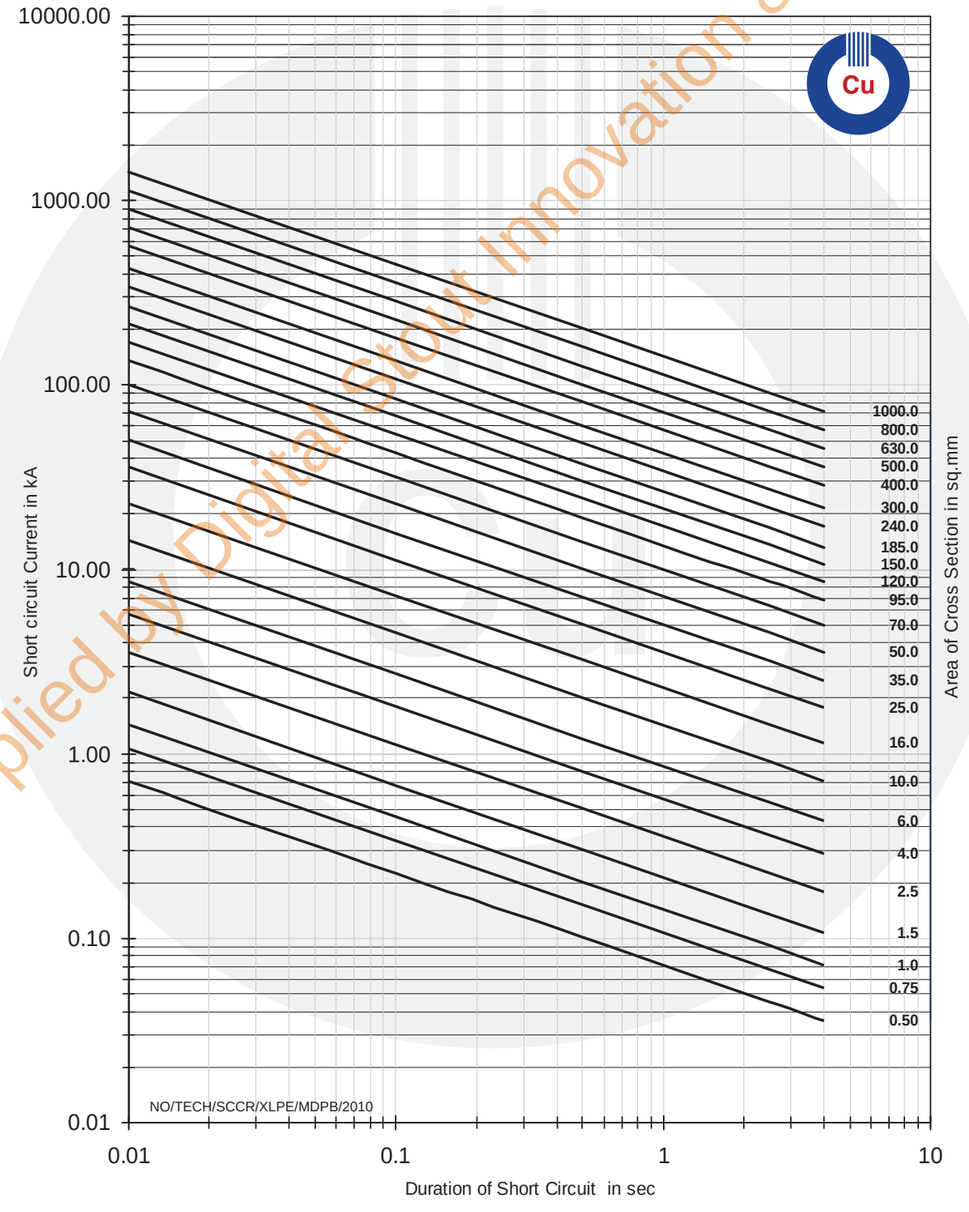
θ_f = *final temperature (°C)*

θ_0 = *initial temperature (°C)*

β = *reciprocal of resistance-temperature co-efficient (234.5 for copper)*

Nominal cross sectional area of conductor	Short circuit current for 1 sec
mm^2	in KA
1.5	0.21
2.5	0.36
4	0.57
6	0.86
10	1.43
16	2.29
25	3.58
35	5.01
50	7.15
70	10.0
95	13.6
120	17.2
150	21.5
185	26.5
240	34.3
300	42.9
400	57.2
500	71.5
630	90.1
800	114.5
1000	143.1

SHORT CIRCUIT CURRENT CHART OF COPPER CONDUCTOR, XLPE INSULATED 600/1000 V CABLES



BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6346:1997 Including AMD 14197 AMD 15650
Excluding clause 6.3 and 11.3 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7111444 / 3 of 3 Dated: 05 November 2007

Description of item tested: One sample of Electric Cable as follows:
4 x 16 mm² CU/PVC/SWA/PVC Black sheath

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:
Mr. Ian McGuinness
Title Head of Section
Date 05 November 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:
1. This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS080 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 5467:1997 Including AMD 14196 AMD 15645 and A3
Excluding clauses 6.3 and 11.3 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7279943 Dated: 10 November 2008

Description of item tested: One sample of Electric Cable as follows:
1 x 630 mm² CU/XLPE/EBIAL/PVC Black sheath

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:
Mr. Damon Mackie
Title Laboratory Manager
Date 10 November 2008

Attention is drawn to the conditions upon which this declaration is issued, namely:
1. This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS080 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

مجلس مراجعة قواعد التوزيع
DISTRIBUTION CODE REVIEW PANEL

Date of Issue: 03 December 2008
Reg. No.: DCRP/ PAWG / 2008 / 009

PRODUCT APPROVAL CERTIFICATE

DISTRIBUTION CODE REVIEW PANEL
CERTIFIES THAT THE FOLLOWING ITEM/S IS REGISTERED
WITH THE PANEL AS AN APPROVED MATERIAL

Electrical Material Specifications	: ***XLPE LV Cables***
Manufacturer	: *Nuhas Oman LLC*
Country of Origin	: *Oman*
Address	: *P. O. Box 186 P.C.124, Rusayl Sultanate of Oman Ph: +968-24449007 Fax: +968-24445790 E-mail: marketing @nuhasoman.com Contact official: Alok Basu*

Note: *This approval letter comprises of four (4) pages in total. Page no: 1 is this covering letter; Page no: 2 comprises of Annexure-A, which elaborates the salient features of the product and Pages no: 3 & 4 comprise of Annexure-B, which contain the list of sub-suppliers of the major individual components.*

Manufacturer is hereby informed that no changes shall be permitted in the list of sub-suppliers and salient features of the product, without the written consent of the DCRP. In the event that the manufacturer changes those sub-suppliers and salient features without written consent of the DCRP, the approval shall be suspended, without any further notice.

CHAIRMAN
DISTRIBUTION CODE REVIEW PANEL

Condition: Any defacing or mutilation to this certificate shall render this certificate invalid.

Sharjah Electricity & Water Authority
Planning, Design & Projects Office
P.O Box : 135/150 Sharjah, U.A.E
Telephone: 06 5420077
Fax : 06 5432211
Email : sewanet@emirates.net.ae

هيئة كهرباء وماء الشارقة
قسم التخطيط التصميم والمشاريع
ص. ب : ١٣٥/١٥٠ الشارقة ـ إ.ع.م
هاتف: ٠٦/٥٤٢٠٠٧٧
فاكس: ٠٦/٥٤٣٢٢١١
البريد الإلكتروني: sewanet@emirates.net.ae

السادة / مؤسسة الزبير للتجارة
أبوظبي ، ص.ب: ٧٠٠٩٦
هاتف: 02-6740271

M/S Al Zubair General Trading
Abu Dhabi, P.O.Box 70096
Tel: 02-6740271
Email: zubairdxb@zubairdxb.com

تحية طيبة وبعد،،،

Dear Sirs,

الموضوع / تأهيل واعتماد مصنع نحاس عمان - سلطنة عمان
Subject: Pre-qualification of Nuhas Oman LLC - Sultanate of Oman

Please be advised that your request for pre-qualification of your factory Nuhas Oman LLC in Sultanate of Oman, as a registered factory of manufacturing Low Voltage Cables & Wires is approved.

Thanking you.

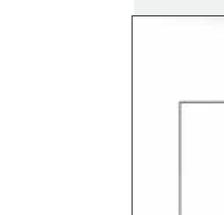
This certificate is valid till 1/3/2013

يسرنا أن نخطركم بأن هيئة كهرباء وماء الشارقة وبعد الرجوع للوثائق المقدمة قد اعتمدت مصنع نحاس عمان ومقره سلطنة عمان ليكون إحدى المصانع المعتمدة لتصنيع كبلات الضغط المنخفض والأسلاك الكهربائية، والمدرجة ضمن قائمة الهيئة.

وتفضلوا بقبول وافر التحية والإحترام

هذا الشهادة صالحة لغاية ٢٠١٣/٣/١

Director General



BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 5467:1997 Including AMD 14195 AMD 15645
Excluding clauses 6.3 and 11.3 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7226340 / 1 of 3 Dated: 28 August 2008

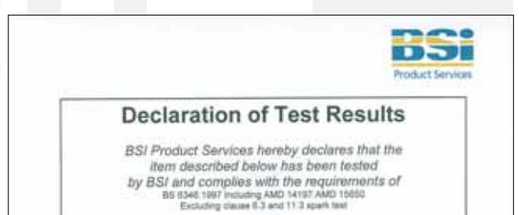
Description of item tested: One sample of Electric Cable as follows:
4 x 240 mm² CU/XLPE/ES/SWA/PVC Black sheath

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:
Mr. Ian McGuinness
Title Head of Section
Date 28 August 2008

Attention is drawn to the conditions upon which this declaration is issued, namely:
1. This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS080 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ



BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 6346:1997 Including AMD 14197 AMD 15650
Excluding clause 6.3 and 11.3 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7143370 / 1 of 5 Dated: 23 January 2008

Description of item tested: One sample of Electric Cable as follows:
19 x 2.5 mm² CU/PVC/SWA/PVC Black sheath

Submitted by:
Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:
Mr. Ian McGuinness
Title Head of Section
Date 23 January 2008

Attention is drawn to the conditions upon which this declaration is issued, namely:
1. This declaration does not indicate provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS080 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

KAHRAMAA
Qatar General Electricity & Water Corporation

فاكس
facsimile

To:	M/S. NUHAS OMAN	إلى	Facsimile	00968 - 24446790	فاكس
From:	DIRECTOR, ELECTRICITY NETWORKS AFFAIRS	من	Facsimile	44834850	فاكس
Date:	29/10/2010 التاريخ	Ref:	KM/DEN-NUHAS/PQ-CAB-001/2010- 836	إشارة	Number of pages including cover: 1 عدد الصفحات متضمنة الغلاف

Subject: *Pre-qualification Approval of Nuhas Oman Cable*

We are pleased to inform you that your application for pre-qualification of below mentioned **product** has been accepted and included in our approved vendor list. This approval is given subject to below mentioned conditions

Product Description	Product Details
Name of Product	Distribution Cables
Type/Model	MV, LV & PILOT Cables
Rating & Capacity	11kV, 0.6/1kV
KM Specification Reference	ED-03-030 version # 4 Rev-0/2010, ED-03-040 version # 5 Rev-0/2010 & ED-03-050 version # 4 Rev-0/2010.
Manufacturer Name/Product Origin	Nuhas Oman
Manufacturer's Product ID/Code	n.a.
Name of Local Agent/Supplier	United Contracting for Elect.Mech & Air Cond. W.L.

Approvals Conditions

1. KM reserves the right to cancel this approval, at any time, without assigning the reasons nor be liable for such action.
2. This approval does not vouch, in any way, for the performance of the product, and shall not be used as testimonial for promotion of the product.
3. This approval does not provide any guarantee to the manufacturer/supplier/Local agent, in any way, for automatic acceptance of the product against any KM tender(s) or other external projects. This will merely provide an equal opportunity to compete with other vendors.
4. In the event the manufacturer makes any changes in the product design, construction or use of different materials/components/accessories, they need to obtain KM approval.
5. Since this approval is given based on specific manufacturing facility (factory/country of Origin), any change in the source of product origin shall be considered as new product, and pre-qualification process becomes mandatory.
6. Should there be any change in your company or manufacturer's profile (e.g. name, address, telephone, fax, renewal/ termination of local agency agreement etc), the same shall be notified to KM immediately
7. KM reserves the right to inspect the material/witness FAT tests at factory when required. The supplier/ manufacturer/ project owner need to inform KM at-least one month in advance before delivery of materials from factory, against external project requirements.
8. KM reserves the right to witness type tests or special tests when required. Only brand new material/equipment need to be delivered against any projects, old and used material are not acceptable
9. If any of these conditions are violated, or any deviations are found in the equipment/materials at the time of Inspection or Installation, this approval shall become void and material shall be liable for rejection.
10. This approval is valid for two (2) years from the date of issue **for Small & Medium Scale Private Projects.** A new approval to be obtained upon the expiry of this approval.

Best Regards.

ENG. ALI JASSIM AL NAJJAR
DIRECTOR, ELECT. NETWORKS AFFAIRS

cc: Manager, EP.
Head of MS Section

17. Jan. 2010 12:00 SEC HQ 3rd Floor 4619935 No. 4046 P. 1

Headquarters
External Correspondence

المركز الرئيس
مراسلات خارجية

الشركة السعودية للكهرباء
Saudi Electricity Company

الخدمات العامة
قطاع المواد
دائرة شؤون الموردين و المساندة
المركز الرئيسي (الفيصلية) – الدور الثالث
هاتف 01-4619454 فاكس 01-4619937

الرقم: 10/10/06056
الموافق: 17/1/2010 م

السادة/ شركة دار البيان المحترمين
فاكس 01-4794101 الموضوع/ إشعار بتأهيل منتجات مواد كوزيع

السلام عليكم ورحمة الله و بركاته،،

إشارة إلى طلبكم لتأهيل مصنع NUHAS Oman العماني، نود إفادتكم بأنه قد تم تأهيل المصنع المذكور في مجال كابلات الجهد المنخفض و المتوسط .

هذا ومتاح لكم الفرصة في المناقصات القائمة حسب المواد المؤهلين فيها على أن تقدموا شهادات فحص و اختبار حديثة لهذه المواد من مختبر دولي معتمد لدى الشركة السعودية للكهرباء.

نرجو أن لا يفسر هذا الإشعار على أنه التزام من الشركة السعودية للكهرباء بالشراء ، هذا ومتاح لكم الفرصة لتقديم عروضكم عند الحاجة و تقيم حسب سياسات و إجراءات الشراء المعمول بها في الشركة.

كما نؤكد على أهمية مراجعتكم المستمرة لموقع الشركة الرسمي www.se.com.sa رابط المشتريات/المناقصات الإلكترونية لمتابعة ما قد يصدر لكم من مناقصات جديدة.

شاكرين لكم رغبتكم بالتعامل مع الشركة السعودية للكهرباء.

وتقبلوا تحياتي،،

مدير دائرة شؤون الموردين و المساندة
مجدل القحطاني

صورة / إدارة المساندة الفنية التوزيع.
صورة / دائرة مشتريات مواد التوزيع.
صورة / المشتريات بمدنق الأصل.

KINGDOM OF BAHRAIN
Electricity & Water Authority
Electricity Distribution Directorate

مملكة البحرين
هيئة الكهرباء والماء
إدارة توزيع الكهرباء

5310/6.910/3652 /08/JB

December 21, 2008

FAX

Sea Star Trading & Cont. Fax: 17466304
Attn.: Mr. Wael Hamed Ali Al Hulaibi

SUBJECT: EQUIPMENTS APPROVAL
LV CABLES UPTO 4C X 240 MMSQ CU/XLPE/EB/SWA/PVC
MAKE: NUHAS OMAN /OMAN

Name of the Project: General

This has reference to your letter dated 24th November 2008 along with technical documents.

Based on the technical submissions, our comments are as under.

The cable can be considered as approved.

Please note the following.

1) The approvals for the pertinent items are valid for five years only.
2) It is the responsibility of the local agent to ensure the standards and specifications of the above approved articles.
3) Any alteration or changes to the specifications of the above items will invalidate this approval.

Regards,

HIBA NAYIF HARARA
CHIEF, PLANNING & MATERIALS

hh/Jb Pln (Tech)

cc: File /Prakash

N.B. Please send your reply on Planning & Materials Fax No.17203650

شركة تنمية نفط عمان ش.م.م

Petroleum Development Oman L.L.C.

www.pdo.co.om/PDO/Commercialinfo/

CERTIFICATE OF REGISTRATION - PRODUCT VENDOR

CERTIFICATE NUMBER: 104271

First Registered With PDO:	Date of Issue: 18/07/2010

PETROLEUM DEVELOPMENT OMAN LLC
CERTIFIES THAT:

Manufacture:	Nuhas Oman LLC
Country of Origin:	Oman
Local Agent:	Nuhas Oman LLC
Postal Address:	P.O. Box 186 , PC 124, Rusayl – Sultanate of Oman

IS REGISTERED WITH THE COMPANY AS AN APPROVED PRODUCT VENDOR WITH EFFECT FROM THE DATE OF ISSUE OF THIS CERTIFICATE FOR THE FOLLOWING SERVICE PRODUCT CATEGORIES:

Electrical

AVME 4.15.1 - CABLES - LV - EXTRUDED INSULATION (XLPE, EPR, PVC) (68....) - SSI 68AACA 26 12 16 CABLE, DISTRIBUTION, LV, EXTRUDED INSULATION (up to 600v)
AVME 4.15.1 – CABLES – LV – EXTRUDED INSULATION (XLPE, EPR, PVC) (68....) – SSI 68AACA 26 15 16 CABLE, DISTRIBUTION, LV, EXTRUDED INSULATION (UP TO 600v)
AVME 4.15.2.1 - CABLES - HV - EXTRUDED INSULATION (XLPE, EPR) (68....) - SSI 68AAGB 26 12 16 CABLE, DISTRIBUTION, HV, EXTRUDED INSULATION (up to 33kv)
AVME 4.15.2.1 – CABLES – HV – EXTRUDED INSULATION (XLPE, EPR) (68....) – SSI 68AAGB 26 12 16 CABLE, DISTRIBUTION, HV, EXTRUDED INSULATION (UP TO 33kv)
AVME 4.15.3 - CABLES - FIRE RESISTANT / FLAME RETARDANT (68....) - SSI 68AACB 26 12 16 CABLE,FIRE RESISTANT / FLAME RETARDANT
AVME 4.15.3 – CABLES – FIRE RESISTANT / FLAME RETARDANT (68....) – SSI 68AACB 26 12 16 CABLE, FIRE RESISTANT / FLAME RETARDANT
AVME 4.15.4 - CABLES - SPECIAL APPLICATIONS (68...) - SSI 68AAAA 26 12 16 CABLE & ACCESSORIES
AVME 4.15.4 – CABLES – SPECIAL APPLICATIONS (68....) – SSI 68AAAA 26 12 16 CABLE & ACCESSORIES

KHALFAN AL BUSAIDY (FPS)
HEAD BUSINESS DEVELOPMENT

NB: THIS CERTIFICATE IS VALID UNTIL: **22/05/2011**

PLEASE REFER OVERLEAF FOR DETAILS.

Address post registration, non procurement related queries to e-mail PermanentVendorReg@pdo.co.om
telephone number + (968) 24673314.

NUHAS OMAN LLC

P O Box 186, Postal Code 124,
Rusayl Industrial Estate, Sultanate of Oman
Tel : +968-24449007, 24449247, 24449249 Fax : +968 24446790
Email : marketing@nuhasoman.com Website:www.nuhasoman.com

(A Member of the Al Bahja Group)
AN ISO 9001:2008 COMPANY

NU/MKT/DBJ/001 Rev 1
Date: 01.12. 2010

CABLES & WIRES

INSTRUMENTATION CABLES

QUALITY & RELIABILITY

NUHAS OMAN

"We at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers. It is our mission to produce globally competitive products through continuous development of production capabilities, skill sets and simultaneously contributing to industrial and economic development of Oman."

INTRODUCTION

Nuhas Oman LLC, an integral part of The Al Bahja Group of Companies, is a Quality producer of:

- **HV, MV and LV Cables**
- **Enamelled Copper Wires**
- **Oxygen Free Continuous Cast Copper Wire Rods**
- **Drawn Copper Conductors**

Our state-of-the-art manufacturing facilities with cutting edge technology ensure that our products meet with highest quality standards. All our products utilize only **OXYGEN FREE HIGH CONDUCTIVITY ELECTRONIC GRADE** Copper produced through the **Outokompu UPCAST** technology, producing minimum 99.99% pure copper with oxygen content less than 5 ppm. The usage of *Oxygen Free High Conductivity Copper enables us in achieving quality excellence.*

Our range of World-class HV, MV and LV Cables includes Single & Multi Core Armoured and Un-armoured Cables, Specialty, Control, Instrumentation and also LSF, FRLS, LSOH & Custom Cables to meet the requirements of a broad spectrum of applications ranging from *Power Distribution, Industrial, Petrochemical, Oil & Gas, Aeronautical, Constructions, Instrumentation, Hospitals, Hotels & Security etc.*

The Cables are produced in compliance to the requirements of **BS, IEC, VDE, ASTM, ICEA & UL** specifications. The *Cables are routinely type tested* by acclaimed independent international certifying agencies confirming compliance to respective standards.

Nuhas *is committed to deliver quality products* that conform to relevant International standards and *Quality assurance is the driving force behind the Company's operations.*

Our Quality Management System has been certified to conform to ***ISO : 9001 : 2008 by BASEC, UK.***

Our quality cycle encompasses raw material and consumable sourcing, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility, manned by qualified professionals from the industry, ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped to test as per relevant international standards as also to individual customer specifications.

The company endeavours to cater to the domestic, regional and global markets while maintaining the sanctity of our pristine environment.

New product development is a continuing process at **Nuhas Oman LLC** and we at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers.

NUHAS OMAN – QUALITY & RELIABILITY.

TABLE 1

Instrumentation Cable - Unarmoured Type - 1

Cu /PE /Osc /PVC

Reference Standards	**BS 5308 Part 1**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference
Construction	1) **Oxygen Free Electronic Copper Conductor Class 1/ 2 / 5** 2) PE Insulation 3) Overall screen with Aluminium Mylar Tape & Tinned Copper drain wire 4) PVC outer sheathing	**Technical Data**	Please refer table A on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Sheath	Approx Overall Diameter
mm^2		**mm**	**mm**
0.50 (1/0.8)	1	0.8	6.5
	2(Quad)	0.8	7.3
	5	1.1	11.9
	10	1.2	15.3
0.50 (16/0.2)	1	0.8	7.2
	2(Quad)	0.8	8.1
	5	1.1	13.4
	10	1.2	17.5
1.0 (1/1.13)	1	0.8	7.6
	2(Quad)	0.8	8.6
	5	1.2	14.5
	10	1.2	18.7
1.5 (7/0.53)	1	0.8	8.5
	2(Quad)	0.9	9.9
	5	1.2	16.7
	10	1.3	22.0

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 2

Instrumentation Cables - Armoured Type -2

Cu / PE / Osc / SWA / PVC

Reference Standards	**BS 5308 part 1**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference alongwith protection from mechanical damage
Construction	1) **Oxygen Free Electronic Copper Conductor class 1 / 2 & 5** 2) PE Insulation 3) Overall screen with Aluminium Mylar tape & Tinned Copper drain wire 4) PVC Bedding 5) Galvanized steel wire Armour 6) PVC Outer sheathing	**Technical Data**	Please refer Table A on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Bedding	Size of Armour wire	Thickness of Sheath	Approx Overall Diameter
mm^2		**mm**	**mm**	**mm**	**mm**
0.50 (1/0.8)	1	0.8	0.9	1.3	11.0
	2(Quad)	0.8	0.9	1.3	11.8
	5	1.1	0.9	1.4	16.5
	10	1.2	1.25	1.6	21.1
0.50 (16/0.2)	1	0.8	0.9	1.3	11.7
	2(Quad)	0.8	0.9	1.3	12.6
	5	1.1	0.9	1.5	18.2
	10	1.2	1.25	1.6	23.3
1.0 (1/1.13)	1	0.8	0.9	1.3	12.1
	2(Quad)	0.8	0.9	1.4	13.3
	5	1.2	1.25	1.5	20.0
	10	1.2	1.25	1.7	24.7
1.5 (7/0.53)	1	0.8	0.9	1.4	13.2
	2(Quad)	0.9	0.9	1.4	14.6
	5	1.2	1.25	1.6	22.4
	10	1.3	1.6	1.8	28.8

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 3

Instrumentation cables Unarmoured Type -1

Cu/PE/ISc/OSc/PVC

Reference Standards	**BS 5308 Part 1**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference
Construction	1) **Oxygen Free Electronic Copper Conductor Class 2 & 5** 2) PE Insulation 3) Individual pair screened with Aluminium Mylar tape & Tinned Copper drain wire 4) Overall screen with Aluminium mylar Tape & Tinned Copper drain wire 5) PVC outer sheathing	**Technical Data**	Please refer Table A on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**
0.50 (1/0.8)	2	0.9	10.6
	5	1.2	13.8
	10	1.2	18.6
0.50 (16/0.2)	2	1.1	12.3
	5	1.2	15.5
	10	1.3	21.5
1.0 (1/1.13)	2	1.1	13.1
	5	1.2	15.5
	10	1.3	23.0
1.5 (7/0.53)	2	1.2	15.0
	5	1.3	19.1
	10	1.5	26.9

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 4

Instrumentation cables - Armoured Type -2

Cu /PE /Isc /Osc /SWA /PVC

Reference Standards	**BS 5308 Part 1**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference alongwith protection from mechanical damage
Construction	1) **Oxygen Free Electronic Copper Conductor class 1/2/5** 2) PE Insulation 3) Individual pair screen with Aluminium Mylar tape & Tinned Copper drain wire 4) Overall screened with Aluminium Mylar tape & Tinned Copper drain wire 5) PVC Bedding 6) Galvanized steel wire Armour 7) PVC Outer sheathing	**Technical Data**	Please refer Table A on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Bedding	Size of Armour wire	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**	**mm**	**mm**
0.50 (1/0.8)	2	0.8	0.9	1.3	11.8
	5	1.1	0.9	1.4	16.5
	10	1.2	1.25	1.6	21.1
0.50 (16/0.2)	2	1.1	0.9	1.5	17.1
	5	1.2	1.25	1.6	21.3
	10	1.3	1.6	1.8	28.3
1.0 (1/1.13)	2	1.1	0.9	1.5	17.9
	5	1.2	1.25	1.6	22.3
	10	1.3	1.6	1.8	29.8
1.5 (7/0.53)	2	1.2	1.25	1.6	20.8
	5	1.3	1.6	1.7	25.8
	10	1.5	1.6	1.9	33.9

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 5

Instrumentation cables Unarmoured Type - 1

Cu /PVC /Osc /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference
Construction	1) **Oxygen Free Electronic Copper Conductor Class 2 & 5** 2) PVC Insulation 3) Overall screen with Aluminium Mylar Tape & Tinned Copper drain wire 4) PVC outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	**Number of pairs**	**Thickness of Sheath**	**Nominal Overall Diameter**
mm²		**mm**	**mm**
0.50 (16/0.2)	1	0.8	7.2
	2 (Quad)	0.8	8.1
	5	1.1	13.4
	10	1.2	17.5
0.75 (24/0.2)	1	0.8	7.5
	2 (Quad)	0.8	8.5
	5	1.2	14.6
	10	1.3	19.0
1.5 (7/0.53)	1	0.8	8.5
	2 (Quad)	0.9	9.9
	5	1.2	16.7
	10	1.3	22.0

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 6

Instrumentation cables - Armoured Type 2

Cu /PVC /Osc /SWA /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference alongwith protection from mechanical damage
Construction	1) **Oxygen Free Electronic Copper Conductor class 2 & 5** 2) PVC Insulation 3) Overall screen with Aluminium Myla tape and Tinned Copper drain wire 4) PVC Bedding 5) Galvanized steel wire Armour 6) PVC Outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	**Number of pairs**	**Thickness of Bedding**	**Size of Armour wire**	**Thickness of Sheath**	**Approx Overall Diameter**
mm²		**mm**	**mm**	**mm**	**mm**
0.50 (16/0.2)	1	0.8	0.9	1.3	11.7
	2 (Quad)	0.8	0.9	1.3	12.6
	5	1.1	0.9	1.5	18.2
	10	1.2	1.25	1.6	23.2
0.75 (24/0.2)	1	0.8	0.9	1.3	12.0
	2 (Quad)	0.8	0.9	1.4	13.2
	5	1.2	1.25	1.5	20.1
	10	1.3	1.6	1.7	25.7
1.5 (7/0.53)	1	0.8	0.9	1.4	13.2
	2 (Quad)	0.9	0.9	1.4	14.6
	5	1.2	1.25	1.6	22.5
	10	1.3	1.6	1.8	28.8

Note : The above cables can also be manufactured & supplied with LSF on request.

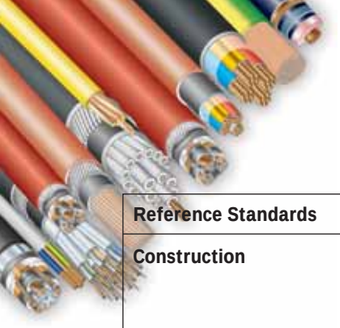


TABLE 7

Instrumentation cables - Unarmoured Type 1

Cu /PVC /Isc /Osc /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference
Construction	1) Oxygen Free Electronic Copper Conductor Class 2 & 5 2) PVC Insulation 3) Individual pair screened with Aluminium 4) Overall screened with Aluminium Mylar Tape and Tinned Copper drain wire 5) PVC outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**
0.50 (16/0.2)	2	1.1	12.3
	5	1.2	15.5
0.75 (24/0.2)	10	1.3	21.5
	2	1.1	13.1
	5	1.2	16.6
1.5 (7/0.53)	10	1.3	23.1
	2	1.2	15.0
	5	1.3	19.1
	10	1.5	26.9

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 8

Instrumentation cables - Armoured Type 2

Cu /PVC /Isc /Osc /SWA /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference alongwith protection from mechanical damage
Construction	1) **Oxygen Free Electronic Copper Conductor class 2 & 5** 2) PVC Insulation 3) Individual pair screen with Aluminium Mylar tape and Tinned Copper drain wire 4) Overall screened with Aluminium Mylar tape and Tinned Copper wire 5) PVC Bedding 6) Galvanized steel wire Armour 7) PVC Outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	Number of pairs	Thickness of Bedding	Size of Armour wire	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**	**mm**	**mm**
0.50 (16/0.2)	2	1.1	0.9	1.5	17.1
	5	1.2	1.25	1.6	21.3
	10	1.3	1.6	1.8	28.3
0.75 (24/0.2)	2	1.1	0.9	1.5	17.9
	5	1.2	1.25	1.6	22.4
	10	1.3	1.6	1.8	29.9
1.5 (7/0.53)	2	1.2	1.25	1.6	20.8
	5	1.3	1.6	1.7	25.8
	10	1.5	1.6	1.9	33.9

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 9

Instrumentation cables - Unarmoured Type 1

Cu /PVC /Osc /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic,electrostatic and radio frequency interference
Construction	1) **Oxygen Free Electronic Copper Conductor Class 2 & 5** 2) PVC Insulation 3) Overall screen with Aluminium mylar Tape and Tinned Copper drain wire 4) PVC outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	Number of cores	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**
0.50 (16/0.2)	2	0.8	7.2
	3	0.8	7.5
	4	0.8	8.1
	6	0.9	9.5
	10	1.1	12.2
	20	1.2	15.2
0.75 (24/0.2)	2	0.8	7.5
	3	0.8	7.9
	4	0.8	8.5
	6	0.9	10.1
	10	1.1	13.0
	20	1.2	16.4
1.5 (7/0.53)	2	0.8	8.5
	3	0.9	9.1
	4	0.9	9.9
	6	1.1	12.0
	10	1.2	15.0
	20	1.3	19.1

Note : The above cables can also be manufactured & supplied with LSF on request.

TABLE 10

Instrumentation cables - Armoured Type 2

Cu /PVC /Osc /SWA /PVC

Reference Standards	**BS 5308 Part 2**	**Applications**	For instrumentation purpose to reduce crosstalk and to protect signals from outside electromagnetic, electrostatic and radio frequency interference alongwith protection from mechanical damage
Construction	1) **Oxygen Free Electronic Copper Conductor class 2 & 5** 2) PVC Insulation 3) Overall screen with Aluminium Mylar tape and Tinned copper drain wire 4) PVC Bedding 5) Galvanized steel wire Armour 6) PVC Outer sheathing	**Technical Data**	Please refer Table B on page No.11
		Voltage	300/500 V

Conductor Size	Number of Cores	Thickness of Bedding	Size of Armour wire	Thickness of Sheath	Approx Overall Diameter
mm²		**mm**	**mm**	**mm**	**mm**
0.50 (16/0.2)	2	0.8	0.9	1.3	11.7
	3	0.8	0.9	1.3	12.0
	4	0.8	0.9	1.3	12.6
	6	0.9	0.90	1.4	14.2
	10	1.1	0.9	1.5	17.0
	20	1.2	1.25	1.6	19.9
0.75 (24/0.2)	2	0.8	0.9	1.3	12.0
	3	0.8	0.9	1.3	12.4
	4	0.8	0.9	1.4	13.2
	6	0.9	0.90	1.4	14.8
	10	1.1	0.9	1.5	17.8
	20	1.2	1.3	1.6	21.9
1.5 (7/0.53)	2	0.8	0.90	1.4	13.2
	3	0.9	0.90	1.4	13.8
	4	0.9	0.90	1.4	14.6
	6	1.1	0.9	1.4	16.9
	10	1.2	1.25	1.6	20.8
	20	1.3	1.6	1.7	25.9

Note : The above cables can also be manufactured & supplied with LSF on request.

Instrumentation Cables - Technical data

TABLE A

(PROPERTIES AS PER BS 5308 PART 1)

Electrical Properties	Unit	Cross sectional area of conductor			
		0.5 mm² (1/0.8 mm)	**0.5 mm² (16/0.2 mm)**	**1.0 mm² (1/1.13 mm)**	**1.5 mm² (7/0.53 mm)**
Maximum Mutual Capacitance					
a) Cables without screens	pF/m	75	75	75	85
b) Cables with only collective screens (except one-pair and two-pair)	pF/m	75	75	75	85
c) One-pair and two-pair cables collectively screened and all cables with individual pair screens	pF/m	115	115	115	120
L/R ratio (max)	µH/ohm	25	25	25	40
Max. DC conductor Resistance at 20ºC	ohm/km	36.8	39.7	18.4	12.3
Minimum Insulation Resistance					
a) Core to core/screen/armour for 1 km	GΩ	5	5	5	5
b) Screen to screen for 1 km	MΩ	1	1	1	1

Conductor nominal area (mm²)	Nom. Insulation thickness (mm)	Maximum core diameter (mm)
0.5 (1/0.8)	0.50	1.90
0.5 (16/0.2)	0.60	2.35
1.0 (1/1.13)	0.60	2.45
1.5 (7/0.53)	0.60	3.00

TABLE B

(PROPERTIES AS PER BS 5308 PART 2)

Electrical Properties	Unit	Cross sectional area of conductor		
		0.5 mm² (16/0.2 mm)	**0.75 mm² (24/0.2 mm)**	**1.5 mm² (7/0.53 mm)**
Maximum Mutual Capacitance				
a) Mutual capacitance of pairs or adjacent cores	pF/m	250	250	250
b) Between any core and core screen	pF/m	450	450	450
L/R ratio (max)	µH/ohm	25	25	40
Max. DC conductor Resistance at 20ºC	ohm/km	39.7	26.5	12.3
Minimum Insulation Resistance				
a) Core to core/screen/armour for 1 km	MΩ	25	25	25
b) Screen to screen for 1 km	MΩ	1	1	1

Conductor nominal area (mm²)	Nom. Insulation thickness (mm)	Maximum core diameter (mm)
0.5 (16/0.2)	0.60	2.35
0.75 (24/0.2)	0.60	2.45
1.5 (7/0.53)	0.60	3.00

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 5308 Part 2:1986 Including AMD 7618
Excluding clause 14 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7129100 / 1 of 3 *Dated:* 18 December 2007

Description of item tested: One sample of Electric Cable as follows; 2 x 1.5 mm² unarmoured, PVC Black sheath instrumentation cable

Submitted by: Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness
Title Head of Section
Date 18 December 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:

1. This declaration does not indicate,provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS382 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

B • A • S • E • C
BRITISH APPROVALS SERVICE FOR CABLES

CERTIFICATE OF CONFORMITY

This is to certify that the

Quality Management System

of

Nuhas Oman L.L.C
P.O. Box 186, Postal Code 124
Road No. 2, Plot No. 70
Rusayl Industrial Estate
Sultanate of Oman

conforms to the

BASEC Product Certification Requirements

Including Clause 2.6 (Formerly BA 2250:1996 Parts 1 & 2)

'Enhanced Quality Management Systems For Product Related Functions'

SCOPE OF CERTIFICATION:

The design, manufacture and supply of:

Copper Rod and Wires, Enamelled Wire, Building Wires, Flexible Cords, Low Voltage Power, Control and Instrumentation Cables, MV and HV Extruded Dielectric Power Cables up to and including 38/66 (72) kV

Certificate No: **PCR-213** Date of Issue: 10th September 2009

Date of Original Certification: 10th September 2009 Expiry Date: 30th March 2012

This certificate is issued subject to and in accordance with BASEC Regulations and continued compliance. Includes requirements for Environmental issues directly relating to the Product and Manufacturing processes as well as limited Health & Safety issues directly relating to the Product and Manufacturing processes.

Signed for and on behalf of the British Approvals Service for Cables Date 11 Sept 2009

BSF121.001 / A1640/ Issue No: 01/ Copy No: 1

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 5308 Part 2:1986 Including AMD 7618
Excluding clause 14 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7129100 / 2 of 3 *Dated:* 18 December 2007

Description of item tested: One sample of Electric Cable as follows; 4 x 1.5 mm² unarmoured, PVC Black sheath instrumentation cable

Submitted by: Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness
Title Head of Section
Date 18 December 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:

1. This declaration does not indicate,provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS382 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

BSI
Product Services

Declaration of Test Results

BSI Product Services hereby declares that the item described below has been tested by BSI and complies with the requirements of
BS 5308 Part 2:1986 Including AMD 7618
Excluding clause 14 spark test

The complete detail of the tests performed and the results are recorded in
BSI Test Report No: 243/7129100 / 3 of 3 *Dated:* 19 December 2007

Description of item tested: One sample of Electric Cable as follows; 5 pair x 1.5 mm² Armoured, Black sheath instrumentation cable

Submitted by: Nuhas Oman LLC
PO Box 186
Postal Code 124
Rusayl Industrial Estate
Sultanate of Oman

Declaration authorised by:

Mr. Ian McGuinness
Title Head of Section
Date 19 December 2007

Attention is drawn to the conditions upon which this declaration is issued, namely:

1. This declaration does not indicate,provide or imply any measure of Approval, Certification, Supervision, Control or Surveillance by BSI to this or any related product.
2. This Declaration applied only to the particular sample tested and to the specific tests carried out as detailed in the Report referred to above.
3. The general and specific conditions of the BSI Product Services, PS382 apply in all respects. Copies of this leaflet are available on request.

BSI Product Services, Maylands Avenue, Hemel Hempstead, Hertfordshire HP2 4SQ

NUHAS OMAN LLC

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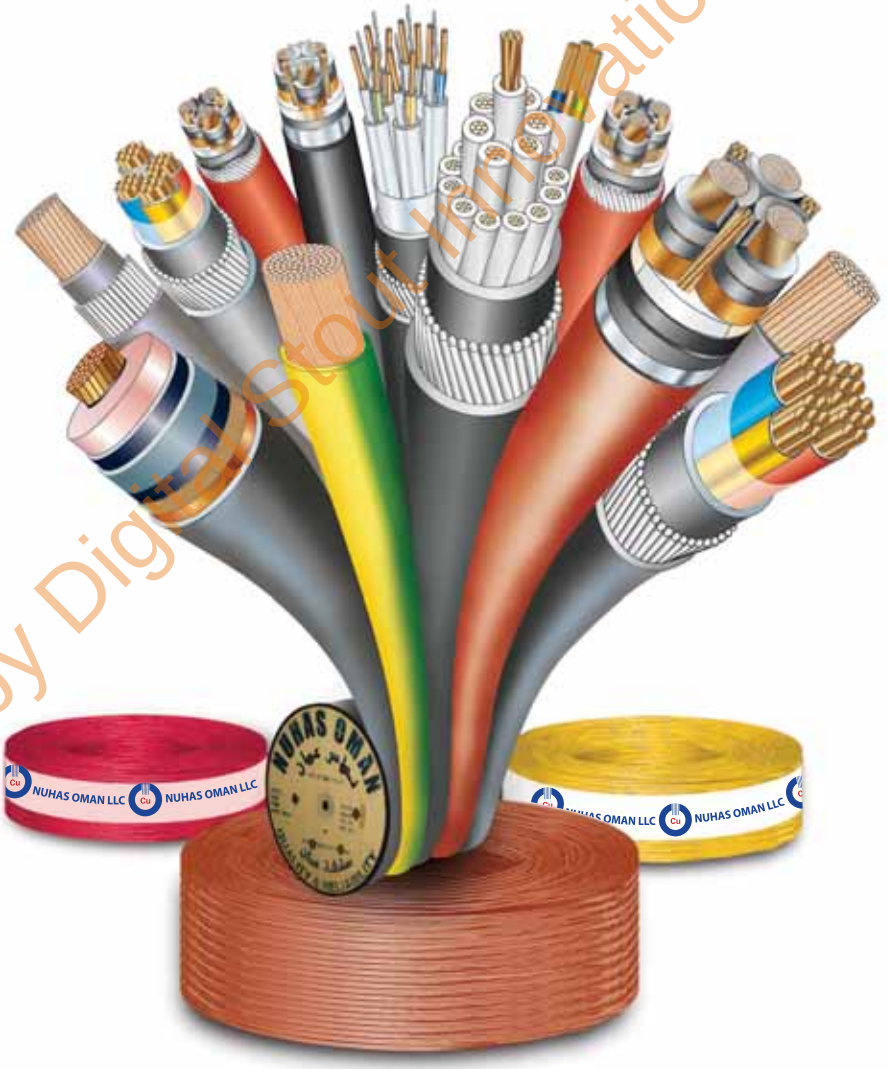
(A Member of the Al Bahja Group)
AN ISO 9001:2008 COMPANY

NU/MKT/DBJ/004 Rev 1
Date 01.04.2011

CABLES & WIRES



MEDIUM VOLTAGE CABLES

QUALITY & RELIABILITY

NUHAS OMAN

"We at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers. It is our mission to produce globally competitive products through continuous development of production capabilities, skill sets and simultaneously contributing to industrial and economic development of Oman."

INDEX PAGE

Description of Cables

INTRODUCTION

Nuhas Oman LLC, an integral part of The Al Bahja Group of Companies, is a Quality producer of:

- **HV, MV and LV Cables**
- **Enamelled Copper Wires**
- **Oxygen Free Continuous Cast Copper Wire Rods**
- **Drawn Copper Conductors**

Our state-of-the-art manufacturing facilities with cutting edge technology ensure that our products meet with highest quality standards. All our products utilize only **OXYGEN FREE HIGH CONDUCTIVITY ELECTRONIC GRADE** Copper produced through the **Outokompu UPCAST** technology, producing minimum 99.99% pure copper with oxygen content less than 5 ppm. The usage of *Oxygen Free High Conductivity Copper enables us in achieving quality excellence.*

Our range of World-class HV, MV and LV Cables includes Single & Multi Core Armoured and Un-armoured Cables, Specialty, Control, Instrumentation and also LSF, FRLS, LSOH & Custom Cables to meet the requirements of a broad spectrum of applications ranging from *Power Distribution, Industrial, Petrochemical, Oil & Gas, Aeronautical, Constructions, Instrumentation, Hospitals, Hotels & Security etc.*

The Cables are produced in compliance to the requirements of **BS, IEC, VDE, ASTM, ICEA & UL** specifications. The *Cables are routinely type tested* by acclaimed independent international certifying agencies confirming compliance to respective standards.

Nuhas *is committed to deliver quality products* that conform to relevant International standards and *Quality assurance is the driving force behind the Company's operations.*

Our Quality Management System has been certified to conform to ***ISO : 9001 : 2008 by BASEC, UK.***

Our quality cycle encompasses raw material and consumable sourcing, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility, manned by qualified professionals from the industry, ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped to test as per relevant international standards as also to individual customer specifications.

The company endeavours to cater to the domestic, regional and global markets while maintaining the sanctity of our pristine environment.

New product development is a continuing process at **Nuhas Oman LLC** and we at Nuhas Oman ceaselessly strive to achieve product excellence through **TOTAL QUALITY MANAGEMENT** to provide the best value to our customers.

NUHAS OMAN – QUALITY & RELIABILITY.

Technical Data for 3.6/6(7.2) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Aluminium Round Wire Armoured cable
Table 1

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.8	2.9
Overall Diameter (Approx)	mm	25.2	27.1	28.8	30.6	32.3	33.9	36.6	39.2	42.1	46.5	50.5	55.2	59.6
Weight of cable (Approx)	kg/km	1079	1335	1634	1931	2243	2628	3247	3900	4766	6015	7500	9328	11384
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	378	406	432	459	485	509	549	588	632	697	757	828	894
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076	0.075	0.074	0.073	0.073
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125	0.108	0.095	0.087	0.082
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61	0.65	0.68	0.71	0.75
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69	0.74	0.77	0.81	0.85
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556	607	649	692	734
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453	487	530	564	589
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734	813	909	997	1075
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption: 1 Ground temperature 35°C; 2. Air temperature 40°C; 3. Thermal resistivity of soil 1.2°C/m/W

4. Depth of laying 800 mm for any other condition(s) please refer to the appropriate table for recommended installation data.

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Technical Data for 6/10(12) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Aluminium Round Wire Armoured cable
Table 2

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	g/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.9	1.9	2	2.0	2.1	2.2	2.2	2.3	2.4	2.6	2.7	2.8	3
Overall Diameter (Approx)	mm	27.3	28.9	30.9	32.5	34.4	36.0	38.6	41.0	44.1	48.5	52.6	57.0	61.7
Weight of cable (Approx)	kg/km	1191	1440	1766	2046	2380	2771	3390	4041	4927	6205	7716	9522	11620
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	409	433	464	487	516	540	578	615	661	728	789	855	925
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080	0.079	0.077	0.075	0.074
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128	0.110	0.097	0.089	0.083
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47	0.52	0.57	0.63	0.70
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89	0.97	1.08	1.20	1.32
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556	607	649	692	734
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453	487	530	564	589
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734	813	909	997	1075
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption: 1 Ground temperature 35°C; 2. Air temperature 40°C; 3. Thermal resistivity of soil 1.2°C/m/W; 4. Depth of laying 800 mm

for any other condition(s) please refer to the appropriate table for recommended installation data.

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Technical Data for 8.7/15(17.5) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Aluminium Round Wire Armoured cable
Table 3

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.9	2	2.1	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.8	2.9	3.1
Overall Diameter (Approx)	mm	29.5	31.4	33.4	34.9	36.9	38.3	41.0	43.4	47.5	50.8	55.0	59.6	64.1
Weight of cable (Approx)	kg/km	1321	1599	1925	2212	2563	2943	3582	4244	5280	6419	7972	9810	11914
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	442	471	500	523	554	575	615	652	713	761	826	893	962
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084	0.082	0.080	0.078	0.077
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130	0.113	0.100	0.091	0.085
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38	0.42	0.46	0.51	0.56
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04	1.14	1.25	1.39	1.53
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556	607	649	692	734
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453	487	530	564	589
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734	813	909	997	1075
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption: 1 Ground temperature 35°C; 2. Air temperature 40°C; 3. Thermal resistivity of soil 1.2°C/m/W; 4. Depth of laying 800 mm

for any other condition(s) please refer to the appropriate table for recommended installation data.

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Technical Data for 12/20(24) kV, Single Core Copper conductor XLPE insulated IEC: 60502-2 Aluminium Round Wire Armoured cable

Table 4

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	2	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.7	2.9	3	3.2
Overall Diameter (Approx)	mm	31.8	33.7	35.4	37.2	39.2	40.6	43.2	45.8	49.7	53.1	57.3	61.8	66.4
Weight of cable (Approx)	kg/km	1469	1747	2064	2383	2733	3118	3768	4450	5495	6659	8216	10071	12209
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	478	505	531	559	588	608	649	687	746	797	859	927	997
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088	0.086	0.084	0.081	0.080
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133	0.116	0.103	0.094	0.088
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32	0.35	0.39	0.43	0.47
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21	1.33	1.46	1.61	1.77
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	385	436	487	547	598	649	692	734
2. Laid into ducts	A	180	222	260	291	316	342	385	419	453	487	521	572	589
3. Laid in air in trefoil touching	A	227	279	333	385	428	489	568	638	726	822	937	997	1075
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Single Core Copper conductor XLPE insulated IEC: 60502-2 Aluminium Round Wire Armoured cable

Table 5

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.8	2.9	3	3.2	3.3
Overall Diameter (Approx)	mm	37.4	39.3	41.0	42.7	44.6	46.2	48.8	52.4	55.3	58.7	62.7	67.4	71.7
Weight of cable (Approx)	kg/km	1860	2156	2490	2817	3175	3594	4270	5131	6069	7266	8834	10763	12895
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	562	589	615	641	669	692	733	786	830	881	940	1011	1076
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0960	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097	0.094	0.091	0.088	0.086
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139	0.122	0.109	0.100	0.094
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24	0.26	0.29	0.32	0.35
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38	1.50	1.64	1.80	1.96
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	385	436	487	547	598	649	692	734
2. Laid into ducts	A	180	222	256	291	316	342	385	419	453	487	521	572	598
3. Laid in air in trefoil touching	A	197	241	290	342	390	443	523	595	683	788	908	1037	1150
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 6

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal Outer sheath thickness	mm	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.2	2.3	2.5	2.6	2.8
Overall Diameter (Approx)	mm	21.0	22.7	24.6	26.2	28.1	29.7	32.2	34.8	37.7	41.1	45.3	49.8	54.4
Weight of cable (Approx)	kg/km	798	1019	1304	1564	1864	2228	2795	3412	4236	5303	6740	8464	10468
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	420	453	492	524	563	595	644	695	754	822	905	996	1088
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076	0.075	0.074	0.073	0.073
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125	0.108	0.095	0.087	0.082
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61	0.65	0.68	0.71	0.75
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69	0.74	0.77	0.81	0.85
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	393	453	513	581	641	709	786	854
2. Laid into ducts	A	192	230	274	307	342	376	431	478	521	581	641	709	778
3. Laid in air in trefoil touching	A	206	249	314	363	410	472	560	647	734	822	970	1110	1224
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 7

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal Outer sheath thickness	mm	1.7	1.8	1.9	1.9	2.0	2	2.1	2.2	2.3	2.4	2.5	2.7	2.8
Overall Diameter (Approx)	mm	22.9	24.7	26.7	28.3	30.2	31.6	34.4	36.8	39.9	43.1	47.2	51.8	56.3
Weight of cable (Approx)	kg/km	871	1108	1406	1666	1973	2328	2926	3544	4388	5457	6897	8649	10643
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	457	494	534	565	604	631	687	736	797	862	944	1036	1125
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080	0.079	0.077	0.075	0.074
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128	0.110	0.097	0.089	0.083
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47	0.52	0.57	0.63	0.70
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89	0.97	1.08	1.20	1.32
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	393	453	513	581	641	709	786	854
2. Laid into ducts	A	192	230	274	307	342	376	431	478	521	581	641	709	778
3. Laid in air in trefoil touching	A	206	249	314	363	410	472	560	647	734	822	970	1110	1224
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 8

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal Outer sheath thickness	mm	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.8	2.9
Overall Diameter (Approx)	mm	25.3	27.2	29.0	30.7	32.5	34.1	36.8	39.2	42.3	45.6	49.6	54.4	58.7
Weight of cable (Approx)	kg/km	981	1232	1519	1799	2107	2482	3085	3713	4570	5653	7111	8895	10894
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	506	545	579	614	651	682	736	785	846	911	993	1087	1174
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084	0.082	0.080	0.078	0.077
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130	0.113	0.100	0.091	0.085
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38	0.42	0.46	0.51	0.56
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04	1.14	1.25	1.39	1.53
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	393	453	513	581	641	709	786	854
2. Laid into ducts	A	192	230	274	307	342	376	431	478	521	581	641	709	778
3. Laid in air in trefoil touching	A	206	249	314	363	410	472	560	647	734	822	970	1110	1224
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1
Assumption: 1 Ground temperature 35°C	2. Air temperature 40°C				3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.													

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Technical Data for 12/20(24) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 9

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal Outer sheath thickness	mm	1.9	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.7	2.8	3.0
Overall Diameter (Approx)	mm	27.6	29.3	31.2	33.0	34.8	36.4	39.0	41.4	44.3	47.7	51.9	56.4	61.0
Weight of cable (Approx)	kg/km	1097	1336	1644	1937	2245	2627	3240	3868	4726	5831	7316	9092	11149
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	553	585	624	661	695	727	781	828	887	954	1038	1128	1221
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088	0.086	0.084	0.081	0.080
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133	0.116	0.103	0.094	0.088
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32	0.35	0.39	0.43	0.47
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21	1.33	1.46	1.61	1.77
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	393	453	513	589	649	727	795	863
2. Laid into ducts	A	192	230	274	307	346	380	444	487	539	598	666	727	786
3. Laid in air in trefoil touching	A	214	262	314	371	424	481	568	647	743	857	988	1119	1241
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1
Assumption: 1 Ground temperature 35°C	2. Air temperature 40°C				3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.													

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Technical Data for 18/30(36) kV, Single Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 10

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	408	586	814	1027	1267	1578	2074	2602	3327	4272	5548	7100	8900
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal Outer sheath thickness	mm	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.7	2.9	3.0	3.2
Overall Diameter (Approx)	mm	33.2	34.9	36.8	38.3	40.4	42.0	44.4	47.0	49.9	53.3	57.5	62.0	66.5
Weight of cable (Approx)	kg/km	1412	1666	1992	2278	2628	3026	3644	4316	5202	6340	7866	9686	11774
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	665	523	552	575	606	629	667	705	749	800	862	930	998
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599	0.0466	0.0360	0.0281	0.0224
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097	0.094	0.091	0.088	0.086
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139	0.122	0.109	0.100	0.094
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24	0.26	0.29	0.32	0.35
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38	1.50	1.64	1.80	1.96
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	188	230	274	307	350	393	453	513	589	649	727	795	863
2. Laid into ducts	A	192	230	274	307	346	380	444	487	539	598	666	727	786
3. Laid in air in trefoil touching	A	214	262	314	371	424	481	568	647	743	857	988	1119	1241
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2	71.5	90.1	114.5	143.1

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

Technical Data for 3.6/6(7.2) kV, Three Core Copper conductor XLPE insulated
IEC: 60502-2 Steel Round Wire Armoured cable
Table 11

Nominal cross sectional area of conductor	mm^2	16	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	4.8	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	414	655	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15
Nominal Outer sheath thickness	mm	2.2	2.3	2.4	2.5	2.6	2.8	2.9	3.0	3.1	3.3	3.5	3.7
Overall Diameter (Approx)	mm	37.5	40.1	42.6	46.5	50.2	54.5	58.0	62.0	65.2	71.1	77.7	84.2
Weight of cable (Approx)	kg/km	2420	2859	3297	4214	5076	6153	7110	8211	9445	11509	14472	17386
Standard packing length (± 5%)	m	500	500	500	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	450	482	511	558	603	654	696	744	783	853	933	1010
DC resistance at 20°C (max)	ohm/km	1.15	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.668	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.1151	0.1074	0.102	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	2.44	1.54	1.11	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.18	0.21	0.23	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.20	0.23	0.26	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.													
direct in ground,	A	99	129	155	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	92	123	147	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	90	119	146	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec													
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	5.00	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

Technical Data for 6/10(12) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 12

Nominal cross sectional area of conductor	mm^2	16	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	4.8	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	414	654.9	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal armour wire diameter	mm	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	2.3	2.4	2.5	2.6	2.8	2.9	3.0	3.2	3.3	3.5	3.7	3.9
Overall Diameter (Approx)	mm	41.7	44.4	47.8	50.7	54.7	58.7	62.2	66.5	69.7	76.9	82.2	88.6
Weight of cable (Approx)	kg/km	2782	3247	4078	4656	5578	6652	7628	8782	10034	12957	15178	18129
Standard packing length (± 5%)	m	500	500	500	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	500	533	574	608	656	705	747	798	836	922	986	1064
DC resistance at 20°C (max)	ohm/km	1.15	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.668	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.126	0.117	0.111	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	2.44	1.54	1.11	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.28	0.32	0.36	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.													
1. Laid direct in ground,	A	99	129	155	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	92	123	147	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	90	119	146	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec													
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	5.00	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 13

Nominal cross sectional area of conductor	mm^2	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	655	908	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	2.6	2.7	2.8	2.9	3.1	3.2	3.3	3.5	3.7	3.8	4
Overall Diameter (Approx)	mm	50.7	53.2	56.0	59.8	64.0	67.6	71.5	76.3	82.2	87.2	93.7
Weight of cable (Approx)	kg/km	4161	4666	5263	6186	7297	8315	9445	11592	13801	15993	18984
Standard packing length (± 5%)	m	500	500	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	608	638	672	718	768	811	858	916	986	1047	1124
DC resistance at 20°C (max)	ohm/km	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.126	0.120	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084
Impedance at 50 Hz approx.	ohm/km	1.54	1.11	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.39	0.43	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.												
1. Laid direct in ground,	A	129	155	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	123	147	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	119	146	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec												
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 14

Nominal cross sectional area of conductor	mm^2	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	2.9	3.0	3.1	3.2	3.3	3.5	3.6	3.8	4.0	4.2
Overall Diameter (Approx)	mm	57.9	60.9	64.6	68.7	72.2	77.7	81.0	86.8	92.2	98.6
Weight of cable (Approx)	kg/km	5221	5854	6782	7907	8926	10971	12325	14544	16833	19865
Standard packing length (± 5%)	m	500	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	696	731	776	824	866	933	972	1042	1106	1183
DC resistance at 20°C (max)	ohm/km	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.927	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.127	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	1.12	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.14	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.52	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.											
1. Laid direct in ground,	A	150	180	218	252	286	321	359	410	453	504
2. Laid into ducts	A	137	158	192	222	256	286	324	368	410	462
3. Laid in air in trefoil touching	A	136	197	240	289	333	376	428	498	568	647
Short circuit current rating for 1 sec											
Cond.temp 90°C initial 250°C max.final	kA	3.58	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 15

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal armour wire diameter	mm	2.5	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	3.4	3.5	3.7	3.8	3.9	4.0	4.2	4.4	4.6
Overall Diameter (Approx)	mm	72.9	78.0	82.2	85.7	89.8	92.9	98.8	104.2	110.6
Weight of cable (Approx)	kg/km	7426	9250	10524	11639	12925	14303	16636	19008	22138
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	1094	1169	1233	1286	1346	1394	1482	1563	1659
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	180	218	256	291	324	368	419	462	513
2. Laid into ducts	A	154	183	218	248	282	316	363	401	453
3. Laid in air in trefoil touching	A	192	236	289	328	376	428	498	568	647
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV, Three Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 16

Nominal cross sectional area of conductor	mm^2	16	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	4.8	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	414	655	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal Outer sheath thickness	mm	2.1	2.2	2.2	2.3	2.5	2.6	2.7	2.8	2.9	3.1	3.3	3.5
Overall Diameter (Approx)	mm	33.3	35.9	38.2	41.1	45.0	49.1	52.6	56.6	59.8	65.7	71.0	77.5
Weight of cable (Approx)	kg/km	1229	1571	1902	2340	3046	3905	4697	5604	6687	8474	10349	12881
Standard packing length (± 5%)	m	500	500	500	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	500	539	572	616	675	736	789	849	897	985	1066	1162
DC resistance at 20°C (max)	ohm/km	1.15	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.668	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.1151	0.1074	0.102	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	2.44	1.54	1.11	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.18	0.21	0.23	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.20	0.23	0.26	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.													
1. Laid direct in ground,	A	103	125	155	190	231	272	308	344	390	444	490	543
2. Laid into ducts	A	91	123	142	163	194	231	262	300	335	385	425	480
3. Laid in air in trefoil touching	A	91	119	144	200	245	300	341	391	446	518	591	673
Short circuit current rating for 1 sec													
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	5.00	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Three Core Copper conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 17

Nominal cross sectional area of conductor	mm^2	16	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	4.8	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	414	654.9	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal Outer sheath thickness	mm	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0	3.1	3.3	3.4	3.7
Overall Diameter (Approx)	mm	37.5	40.2	42.6	45.5	49.3	53.3	56.8	61.1	64.3	70.2	75.3	81.9
Weight of cable (Approx)	kg/km	1432	1797	2159	2604	3320	4201	5010	5968	7069	8890	10761	13365
Standard packing length (± 5%)	m	500	500	500	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	562	603	639	682	739	800	853	916	964	1052	1130	1229
DC resistance at 20°C (max)	ohm/km	1.15	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.668	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.126	0.117	0.111	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	2.44	1.54	1.11	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.28	0.32	0.36	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.													
1. Laid direct in ground,	A	103	125	155	190	231	272	308	344	390	444	490	543
2. Laid into ducts	A	91	123	142	163	194	231	262	300	335	385	425	480
3. Laid in air in trefoil touching	A	91	119	144	200	245	300	341	391	446	518	591	673
Short circuit current rating for 1 sec													
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	5.00	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 18

Nominal cross sectional area of conductor	mm^2	25	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	5.9	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	655	908	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal Outer sheath thickness	mm	2.5	2.5	2.6	2.8	2.9	3.0	3.1	3.3	3.4	3.6	3.8
Overall Diameter (Approx)	mm	45.5	47.8	50.6	54.6	58.6	62.2	66.1	69.6	75.3	80.5	87.0
Weight of cable (Approx)	kg/km	2109	2476	2939	3705	4600	5447	6388	7557	9383	11306	13914
Standard packing length (± 5%)	m	500	500	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	682	716	759	819	879	933	992	1044	1130	1208	1305
DC resistance at 20°C (max)	ohm/km	0.727	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	1.47	0.927	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.126	0.120	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084
Impedance at 50 Hz approx.	ohm/km	1.54	1.11	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.39	0.43	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.												
1. Laid direct in ground,	A	125	155	190	231	272	308	344	390	444	490	543
2. Laid into ducts	A	123	142	163	194	231	262	300	335	385	425	480
3. Laid in air in trefoil touching	A	119	144	200	245	300	341	391	446	518	591	673
Short circuit current rating for 1 sec												
Cond.temp 90°C initial 250°C max.final	kA	2.29	3.58	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 19

Nominal cross sectional area of conductor	mm^2	35	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	6.9	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	908.4	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal Outer sheath thickness	mm	2.7	2.8	2.9	3.1	3.2	3.3	3.4	3.6	3.8	4.0
Overall Diameter (Approx)	mm	52.57	55.5	59.2	63.5	67.0	71.0	74.3	80.1	85.5	91.9
Weight of cable (Approx)	kg/km	2808	3301	4053	5014	5868	6849	8006	9884	11859	14508
Standard packing length (± 5%)	m	500	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	789	833	889	952	1005	1066	1115	1202	1282	1379
DC resistance at 20°C (max)	ohm/km	0.524	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.927	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.127	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	1.12	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.14	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.52	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.											
1. Laid direct in ground,	A	157	190	231	268	303	340	380	435	485	537
2. Laid into ducts	A	139	168	204	235	272	303	344	390	433	486
3. Laid in air in trefoil touching	A	140	204	250	300	346	391	446	518	591	673
Short circuit current rating for 1 sec											
Cond.temp 90°C initial 250°C max.final	kA	3.58	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 20

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal Outer sheath thickness	mm	3.2	3.3	3.4	3.6	3.7	3.8	4	4.2	4.4
Overall Diameter (Approx)	mm	67.5	71.3	75.3	79.0	83.1	86.2	92.1	97.5	103.9
Weight of cable (Approx)	kg/km	4307	5114	6106	7049	8091	9280	11266	13323	16070
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	1351	1425	1506	1580	1661	1725	1842	1949	2078
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1249	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1269	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	190	231	268	303	340	380	435	485	537
2. Laid into ducts	A	168	204	235	272	303	344	390	433	486
3. Laid in air in trefoil touching	A	204	250	300	346	391	446	518	591	673
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 21

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9,7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal steel tape thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Nominal Outer sheath thickness	mm	2.4	2.5	2.7	2.8	2.9	3.0	3.2	3.4	3.6
Overall Diameter (Approx)	mm	43.3	47.0	51.3	54.8	58.8	62.0	67.9	73.2	80.9
Weight of cable (Approx)	kg/km	3061	3813	4769	5625	6607	7747	9641	11613	15068
Standard packing length (± 5%)	m	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	558	603	654	696	744	783	853	933	1010
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 22

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal steel tape thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Nominal Outer sheath thickness	mm	2.5	2.7	2.8	2.9	3.0	3.2	3.3	3.5	3.8
Overall Diameter (Approx)	mm	47.5	51.5	55.5	59.0	63.1	66.5	72.2	77.5	85.3
Weight of cable (Approx)	kg/km	3380	4188	5143	6017	7020	8209	10102	12103	15678
Standard packing length (± 5%)	m	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	608	656	705	747	798	836	922	986	1064
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6		21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 23

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9,7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal steel tape thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Nominal Outer sheath thickness	mm	2.7	2.8	3.0	3.1	3.2	3.3	3.5	3.7	3.9
Overall Diameter (Approx)	mm	52.8	56.6	60.8	64.4	68.3	71.6	77.5	83.9	90.4
Weight of cable (Approx)	kg/km	3832	4643	5637	6550	7564	8760	10725	13582	16376
Standard packing length (± 5%)	m	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	672	718	768	811	858	916	986	1047	1124
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	188	230	274	307	350	389	444	495	556
2. Laid into ducts	A	188	222	260	291	321	350	401	427	453
3. Laid in air in trefoil touching	A	219	271	328	376	428	481	568	647	734
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 24

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal steel tape thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Nominal Outer sheath thickness	mm	2.9	3.0	3.1	3.2	3.4	3.5	3.7	3.9	4.1
Overall Diameter (Approx)	mm	57.7	61.4	65.5	69.0	73.2	76.5	82.3	88.9	95.3
Weight of cable (Approx)	kg/km	4283	5102	6108	7024	8112	9330	11312	14274	17109
Standard packing length (± 5%)	m	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	731	776	824	866	933	972	1042	1106	1183
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	180	218	252	286	321	359	410	453	504
2. Laid into ducts	A	158	192	222	256	286	324	368	410	462
3. Laid in air in trefoil touching	A	197	240	289	333	376	428	498	568	647
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Three Core Copper conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 25

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	1224	1759	2443	3081	3801	4734	6222	7806	9981
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal steel tape thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8
Nominal Outer sheath thickness	mm	3.3	3.4	3.5	3.6	3.8	3.9	4.1	4.3	4.5
Overall Diameter (Approx)	mm	69.7	73.5	77.5	81.0	85.3	88.4	95.5	100.9	107.3
Weight of cable (Approx)	kg/km	5506	6381	7448	8417	9573	10819	13873	16083	19017
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	875	935	986	1028	1077	1115	1186	1250	1327
DC resistance at 20°C (max)	ohm/km	0.387	0.268	0.193	0.153	0.1240	0.0991	0.0754	0.0601	0.0470
AC resistance at 90°C (approx)	ohm/km	0.494	0.342	0.246	0.195	0.1581	0.1260	0.0961	0.0766	0.0599
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	hm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	180	218	256	291	324	368	419	462	513
2. Laid into ducts	A	154	183	218	248	282	316	363	401	453
3. Laid in air in trefoil touching	A	192	236	289	328	376	428	498	568	647
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	7.15	10.0	13.6	17.2	21.5	26.5	34.3	42.9	57.2

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV ,Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Aluminium Round Wire Armoured cable
Table 26

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.8	2.9
Overall Diameter (Approx)	mm	25.2	27.1	28.8	30.6	32.3	33.9	36.6	39.2	42.1	46.5	50.5	55.2	59.6
Weight of cable (Approx)	kg/km	796	931	1071	1221	1366	1543	1819	2101	2465	3050	3673	4416	5243
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	378	406	432	459	485	509	549	588	632	697	757	828	894
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076	0.075	0.074	0.073	0.073
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125	0.108	0.095	0.087	0.082
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61	0.65	0.68	0.71	0.75
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69	0.74	0.77	0.81	0.85
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	269	303	346	389	436	487	547	598	649
2. Laid into ducts	A	145	180	209	235	256	286	324	359	389	427	470	504	547
3. Laid in air in trefoil touching	A	170	210	257	311	333	380	446	507	585	673	770	857	944
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Aluminium Round Wire Armoured cable
Table 27

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.9	1.9	2	2.0	2.1	2.2	2.2	2.3	2.4	2.6	2.7	2.8	3
Overall Diameter (Approx)	mm	27.3	28.9	30.9	32.5	34.4	36.0	38.6	41.0	44.1	48.5	52.6	57.0	61.7
Weight of cable (Approx)	kg/km	908	1035	1202	1336	1502	1685	1962	2242	2626	3240	3889	4609	5479
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	409	433	464	487	516	540	578	615	661	728	789	855	925
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080	0.079	0.077	0.075	0.074
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128	0.110	0.097	0.089	0.083
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47	0.52	0.57	0.63	0.70
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89	0.97	1.08	1.20	1.32
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	269	303	346	389	436	487	547	598	649
2. Laid into ducts	A	145	180	209	235	256	286	324	359	389	427	470	504	547
3. Laid in air in trefoil touching	A	170	210	257	311	333	380	446	507	585	673	770	857	944
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Single Core Aluminium conductor XLPE insulated IEC: 60502-2 Aluminium Round Wire Armoured cable

Table 28

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	1.9	2	2.1	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.8	2.9	3.1
Overall Diameter (Approx)	mm	29.5	31.4	33.4	34.9	36.9	38.3	41.0	43.4	47.5	50.8	55.0	59.6	64.1
Weight of cable (Approx)	kg/km	1038	1194	1362	1502	1686	1857	2154	2445	2980	3454	4145	4897	5773
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	442	471	500	523	554	575	615	652	713	761	826	893	962
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084	0.082	0.080	0.078	0.077
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130	0.113	0.100	0.091	0.085
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38	0.42	0.46	0.51	0.56
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04	1.14	1.25	1.39	1.53
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	269	303	346	389	436	487	547	598	649
2. Laid into ducts	A	145	180	209	235	256	286	324	359	389	427	470	504	547
3. Laid in air in trefoil touching	A	170	210	257	311	333	380	446	507	585	673	770	857	944
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Single Core Aluminium conductor XLPE insulated IEC: 60502-2 Aluminium Round Wire Armoured cable

Table 29

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	2	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.6	2.7	2.9	3	3.2
Overall Diameter (Approx)	mm	31.8	33.7	35.4	37.2	39.2	40.6	43.2	45.8	49.7	53.1	57.3	61.8	66.4
Weight of cable (Approx)	kg/km	1186	1342	1501	1673	1855	2032	2340	2651	3194	3694	4389	5159	6068
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	478	505	531	559	588	608	649	687	746	797	859	927	997
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088	0.086	0.084	0.081	0.080
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133	0.116	0.103	0.094	0.088
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32	0.35	0.39	0.43	0.47
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21	1.33	1.46	1.61	1.77
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	265	300	346	385	436	487	547	598	649
2. Laid into ducts	A	145	175	209	235	256	286	324	354	393	436	478	513	547
3. Laid in air in trefoil touching	A	175	214	257	297	336	385	446	507	585	673	770	857	944
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Single Core Aluminium conductor XLPE insulated IEC: 60502-2 Aluminium Round Wire Armoured cable

Table 30

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal armour wire diameter	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Nominal Outer sheath thickness	mm	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.8	2.9	3	3.2	3.3
Overall Diameter (Approx)	mm	37.4	39.3	41.0	42.7	44.6	46.2	48.8	52.4	55.3	58.7	62.7	67.4	71.7
Weight of cable (Approx)	kg/km	1577	1751	1927	2107	2297	2508	2842	3332	3769	4301	5007	5851	6754
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	562	589	615	641	669	692	733	786	830	881	940	1011	1076
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097	0.094	0.091	0.088	0.086
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139	0.122	0.109	0.100	0.094
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24	0.26	0.29	0.32	0.35
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38	1.50	1.64	1.80	1.96
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	265	300	346	385	436	487	547	598	649
2. Laid into ducts	A	145	175	209	235	256	286	324	354	393	436	478	513	547
3. Laid in air in trefoil touching	A	175	214	257	297	336	385	446	507	585	673	770	857	944
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV, Single Core Aluminium conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 31

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal Outer sheath thickness	mm	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.2	2.3	2.5	2.6	2.8
Overall Diameter (Approx)	mm	21.0	22.7	24.6	26.2	28.1	29.7	32.2	34.8	37.7	41.1	45.3	49.8	54.4
Weight of cable (Approx)	kg/km	515	614	740	854	987	1142	1367	1613	1936	2338	2913	3552	4327
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	420	453	492	524	563	595	644	695	754	822	905	996	1088
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076	0.075	0.074	0.073	0.073
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125	0.108	0.095	0.087	0.082
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61	0.65	0.68	0.71	0.75
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69	0.74	0.77	0.81	0.85
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	274	307	354	406	462	521	581	658	727
2. Laid into ducts	A	150	183	218	244	269	300	346	389	436	487	547	607	675
3. Laid in air in trefoil touching	A	158	197	245	279	319	371	437	507	585	691	795	926	1040
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 32

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal Outer sheath thickness	mm	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.7	2.8
Overall Diameter (Approx)	mm	22.9	24.7	26.7	28.3	30.2	31.6	34.4	36.8	39.9	43.1	47.2	51.8	56.3
Weight of cable (Approx)	kg/km	588	704	843	956	1096	1242	1498	1745	2087	2492	3070	3737	4502
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	457	494	534	565	604	631	687	736	797	862	944	1036	1125
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080	0.079	0.077	0.075	0.074
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128	0.110	0.097	0.089	0.083
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47	0.52	0.57	0.63	0.70
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89	0.97	1.08	1.20	1.32
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	274	307	354	406	462	521	581	658	727
2. Laid into ducts	A	150	183	218	244	269	300	346	389	436	487	547	607	675
3. Laid in air in trefoil touching	A	158	197	245	279	319	371	437	507	585	691	795	926	1040
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0
Assumption: 1 Ground temperature 35°C		2. Air temperature 40°C			3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm		for any other condition(s) please refer to the appropriate table for recommended installation data.												

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Technical Data for 8.7/15(17.5) kV, Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 33

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.14	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal Outer sheath thickness	mm	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.8	2.9
Overall Diameter (Approx)	mm	25.3	27.2	29.0	30.7	32.5	34.1	36.8	39.2	42.3	45.6	49.6	54.4	58.7
Weight of cable (Approx)	kg/km	698	828	956	1089	1229	1397	1657	1914	2270	2688	3284	3982	4753
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	506	545	579	614	651	682	736	785	846	911	993	1087	1174
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084	0.082	0.080	0.078	0.077
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130	0.113	0.100	0.091	0.085
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38	0.42	0.46	0.51	0.56
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04	1.14	1.25	1.39	1.53
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	274	307	354	406	462	521	581	658	727
2. Laid into ducts	A	150	183	218	244	269	300	346	389	436	487	547	607	675
3. Laid in air in trefoil touching	A	158	197	245	279	319	371	437	507	585	691	795	926	1040
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0
Assumption: 1 Ground temperature 35°C		2. Air temperature 40°C			3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm		for any other condition(s) please refer to the appropriate table for recommended installation data.												

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Technical Data for 12/20(24) kV, Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 34

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal Outer sheath thickness	mm	1.9	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.7	2.8	3.0
Overall Diameter (Approx)	mm	27.6	29.3	31.2	33.0	34.8	36.4	39.0	41.4	44.3	47.7	51.9	56.4	61.0
Weight of cable (Approx)	kg/km	814	931	1080	1227	1367	1541	1812	2069	2425	2866	3489	4179	5008
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	553	585	624	661	695	727	781	828	887	954	1038	1128	1221
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088	0.086	0.084	0.081	0.080
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133	0.116	0.103	0.094	0.088
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32	0.35	0.39	0.43	0.47
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21	1.33	1.46	1.61	1.77
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	274	307	354	406	470	521	589	658	734
2. Laid into ducts	A	150	180	215	239	274	354	393	444	487	556	658	684	675
3. Laid in air in trefoil touching	A	166	205	245	289	328	376	446	507	595	691	804	926	1057
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0
Assumption: 1 Ground temperature 35°C		2. Air temperature 40°C			3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm		for any other condition(s) please refer to the appropriate table for recommended installation data.												

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Technical Data for 18/30(36) kV, Single Core Aluminium conductor XLPE insulated
IEC: 60502-2 Un-Armoured cable
Table 35

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3	26.3	30.0	34.1	38.2
Weight of conductor (Approx)	kg/km	125	182	251	317	390	493	646	803	1027	1307	1721	2188	2759
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal Outer sheath thickness	mm	2.1	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.6	2.7	2.9	3.0	3.2
Overall Diameter (Approx)	mm	33.2	34.9	36.8	38.3	40.4	42.0	44.4	47.0	49.9	53.3	57.5	62.0	66.5
Weight of cable (Approx)	kg/km	1129	1261	1429	1568	1751	1941	2216	2517	2902	3375	4039	4774	5633
Standard packing length (± 5%)	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum bending radius during installation	mm	665	697	736	767	807	839	940	999	1066	1150	1240	1331	
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990	0.0770	0.0600	0.0470	0.0370
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097	0.094	0.091	0.088	0.086
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139	0.122	0.109	0.100	0.094
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24	0.26	0.29	0.32	0.35
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38	1.50	1.64	1.80	1.96
Continuous Current Rating at cond temp. 90°C max.														
1. Laid direct in ground,	A	145	180	214	239	274	307	354	406	470	521	589	658	734
2. Laid into ducts	A	150	180	215	239	274	354	393	444	487	556	658	684	675
3. Laid in air in trefoil touching	A	166	205	245	289	328	376	446	507	595	691	804	926	1057
Short circuit current rating for 1 sec														
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6	47.0	59.2	75.2	94.0
Assumption: 1 Ground temperature 35°C		2. Air temperature 40°C			3. Thermal resistivity of soil 1.2°C/m/W									
4. Depth of laying 800 mm		for any other condition(s) please refer to the appropriate table for recommended installation data.												

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Technical Data for 3.6/6(7.2) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 36

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1168.5	1477.5	1938	2409	3080
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15
Nominal Outer sheath thickness	mm	2.5	2.6	2.8	2.9	3.0	3.1	3.3	3.5	3.7
Overall Diameter (Approx)	mm	46.5	50.2	54.5	58.0	62.0	65.2	71.1	77.7	84.2
Weight of cable (Approx)	kg/km	3365	3862	4463	4980	5579	6189	7225	9075	10484
Standard packing length (± 5%)	m	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	558	603	654	696	744	783	853	933	1010
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 37

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	2.6	2.8	2.9	3.0	3.2	3.3	3.5	3.7	3.9
Overall Diameter (Approx)	mm	50.7	54.7	58.7	62.2	66.5	69.7	76.9	82.2	88.6
Weight of cable (Approx)	kg/km	3807	4364	4962	5498	6149	6777	8673	9781	11228
Standard packing length (± 5%)	m	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	608	656	705	747	798	836	922	986	1064
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	or any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 38

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	2.8	2.9	3.1	3.2	3.3	3.5	3.7	3.8	4
Overall Diameter (Approx)	mm	56.0	59.8	64.0	67.6	71.5	76.3	82.2	87.2	93.7
Weight of cable (Approx)	kg/km	4414	4971	5608	6185	6813	8335	9517	10596	12082
Standard packing length (± 5%)	m	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	672	718	768	811	858	916	986	1047	1124
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Aluminium conductorXLPE insulated IEC: 60502-2 Steel Round WireArmoured cable

Table 39

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal armour wire diameter	mm	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	3	3.1	3.2	3.3	3.5	3.6	3.8	4	4.2
Overall Diameter (Approx)	mm	60.9	64.6	68.7	72.2	77.7	81.0	86.8	92.2	98.6
Weight of cable (Approx)	kg/km	5005	5568	6217	6796	8339	9068	10260	11436	12963
Standard packing length (± 5%)	m	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	731	776	824	866	933	972	1042	1106	1183
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	222	248	282	324	363	410
2. Laid into ducts	A	120	145	175	201	227	256	295	329	372
3. Laid in air in trefoil touching	A	153	188	227	262	293	341	402	454	524
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Round Wire Armoured cable

Table 40

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal armour wire diameter	mm	2.5	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
Nominal Outer sheath thickness	mm	3.4	3.5	3.7	3.8	3.9	4	4.2	4.4	4.6
Overall Diameter (Approx)	mm	72.9	78.0	82.2	85.7	89.8	92.9	98.8	104.2	110.6
Weight of cable (Approx)	kg/km	6577	8035	8834	9509	10292	11047	12352	13611	15237
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	1094	1169	1233	1286	1346	1394	1482	1563	1659
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	222	248	282	324	363	410
2. Laid into ducts	A	120	145	175	201	227	256	295	329	372
3. Laid in air in trefoil touching	A	153	188	227	262	293	341	402	454	524
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 3.6/6(7.2) kV, Three Core Aluminium conductorXLPE insulated IEC: 60502-2 Un-Armoured cable

Table 41

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9,7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1168.5	1477.5	1938	2409	3080
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal Outer sheath thickness	mm	2.3	2.5	2.6	2.7	2.8	2.9	3.1	3.3	3.5
Overall Diameter (Approx)	mm	41.1	45.0	49.1	52.6	56.6	59.8	65.7	71.0	77.5
Weight of cable (Approx)	kg/km	1491	1832	2216	2567	2972	3430	4190	4952	5979
Standard packing length (± 5%)	m	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	616	675	736	789	849	897	985	1066	1162
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	145	177	208	240	272	303	344	394	444
2. Laid into ducts	A	122	150	181	204	231	263	303	340	390
3. Laid in air in trefoil touching	A	155	191	227	268	300	350	409	464	537
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 42

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal Outer sheath thickness	mm	2.5	2.6	2.7	2.8	3.0	3.1	3.3	3.4	3.7
Overall Diameter (Approx)	mm	45.5	49.3	53.3	56.8	61.1	64.3	70.2	75.3	81.9
Weight of cable (Approx)	kg/km	1755	2105	2511	2880	3335	3812	4606	5364	6463
Standard packing length (± 5%)	m	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	682	739	800	853	916	964	1052	1130	1229
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	145	177	208	240	272	303	344	394	444
2. Laid into ducts	A	122	150	181	204	231	263	303	340	390
3. Laid in air in trefoil touching	A	155	191	227	268	300	350	409	464	537
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 43

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9,7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal Outer sheath thickness	mm	2.6	2.8	2.9	3.0	3.1	3.3	3.4	3.6	3.8
Overall Diameter (Approx)	mm	50.6	54.6	58.6	62.2	66.1	69.6	75.3	80.5	87.0
Weight of cable (Approx)	kg/km	2090	2491	2911	3317	3756	4300	5099	5909	7013
Standard packing length (± 5%)	m	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	759	656	703	746	794	835	904	967	1044
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.113	0.107	0.102	0.099	0.096	0.093	0.090	0.087	0.084
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	145	177	208	240	272	303	344	394	444
2. Laid into ducts	A	122	150	181	204	231	263	303	340	390
3. Laid in air in trefoil touching	A	155	191	227	268	300	350	409	464	537
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 44

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal Outer sheath thickness	mm	2.8	2.9	3.1	3.2	3.3	3.4	3.6	3.8	4.0
Overall Diameter (Approx)	mm	55.5	59.2	63.5	67.0	71.0	74.3	80.1	85.5	91.9
Weight of cable (Approx)	kg/km	2452	2838	3324	3738	4216	4750	5600	6462	7606
Standard packing length (± 5%)	m	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	833	889	952	1005	1066	1115	1202	1282	1379
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	145	177	208	235	263	299	344	385	435
2. Laid into ducts	A	127	154	185	213	240	272	312	348	394
3. Laid in air in trefoil touching	A	159	196	237	273	305	354	418	473	545
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

Technical Data for 18/30(36) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Un-Armoured cable

Table 45

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal Outer sheath thickness	mm	3.2	3.3	3.4	3.6	3.7	3.8	4.0	4.2	4.4
Overall Diameter (Approx)	mm	67.5	71.3	75.3	79.0	83.1	86.2	92.1	97.5	103.9
Weight of cable (Approx)	kg/km	3458	3899	4417	4919	5459	6023	6982	7926	9169
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	1351	1425	1506	1580	1661	1725	1842	1949	2078
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	145	177	208	235	263	299	344	385	435
2. Laid into ducts	A	127	154	185	213	240	272	312	348	394
3. Laid in air in trefoil touching	A	159	196	237	273	305	354	418	473	545
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

Technical Data for 3.6/6(7.2) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 46

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1168.5	1477.5	1938	2409	3080
Nominal insulation thickness	mm	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Nominal Steel Tape Thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.50	0.8
Nominal Outer sheath thickness	mm	2.4	2.5	2.7	2.8	2.9	3	3.2	3.4	3.6
Overall Diameter (Approx)	mm	43.3	47.0	51.3	54.8	58.8	62.0	67.9	73.2	80.9
Weight of cable (Approx)	kg/km	2212	2599	3080	3495	3974	4491	5357	6216	8166
Standard packing length (± 5%)	m	500	500	500	400	400	300	250	250	250
Minimum bending radius during installation	mm	520	564	615	657	706	744	815	879	971
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.097	0.092	0.089	0.086	0.084	0.082	0.080	0.078	0.076
Impedance at 50 Hz approx.	ohm/km	0.824	0.573	0.418	0.334	0.276	0.225	0.178	0.150	0.125
Capacitance at 50 Hz	µF/km	0.26	0.30	0.34	0.37	0.40	0.44	0.49	0.54	0.61
Charging current /phase at U_o=3.6kV,50Hz (approx)	mA/km	0.30	0.34	0.38	0.42	0.45	0.50	0.55	0.61	0.69
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 6/10(12) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 47

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Nominal Steel Tape Thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Nominal Outer sheath thickness	mm	2.5	2.7	2.8	2.9	3.0	3.2	3.3	3.5	3.8
Overall Diameter (Approx)	mm	47.5	51.5	55.5	59.0	63.1	66.5	72.2	77.5	85.3
Weight of cable (Approx)	kg/km	2531	2974	3454	3887	4387	4952	5818	6706	8777
Standard packing length (± 5%)	m	500	500	500	400	300	300	250	250	250
Minimum bending radius during installation	mm	570	618	666	708	757	798	866	930	1024
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.105	0.100	0.096	0.093	0.090	0.088	0.085	0.083	0.080
Impedance at 50 Hz approx.	ohm/km	0.825	0.574	0.420	0.336	0.278	0.227	0.181	0.152	0.128
Capacitance at 50 Hz	µF/km	0.21	0.24	0.27	0.29	0.32	0.34	0.38	0.42	0.47
Charging current /phase at U_o=6kV,50Hz (approx)	mA/km	0.40	0.45	0.50	0.55	0.60	0.65	0.72	0.79	0.89
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 8.7/15(17.5) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 48

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Nominal Steel Tape Thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Nominal Outer sheath thickness	mm	2.7	2.8	3	3.1	3.2	3.3	3.5	3.7	3.9
Overall Diameter (Approx)	mm	52.8	56.6	60.8	64.4	68.3	71.6	77.5	83.9	90.4
Weight of cable (Approx)	kg/km	2983	3429	3948	4420	4931	5503	6441	8185	9474
Standard packing length (± 5%)	m	500	500	400	400	300	250	250	250	250
Minimum bending radius during installation	mm	634	680	729	773	820	859	930	1007	1085
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Impedance at 50 Hz approx.	ohm/km	0.826	0.576	0.421	0.338	0.280	0.229	0.183	0.155	0.130
Capacitance at 50 Hz	µF/km	0.18	0.20	0.22	0.24	0.26	0.28	0.31	0.34	0.38
Charging current /phase at U_o=8.7kV,50Hz (approx)	mA/km	0.49	0.54	0.60	0.65	0.71	0.77	0.85	0.92	1.04
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	227	256	286	324	372	419
2. Laid into ducts	A	115	141	171	192	218	248	286	321	368
3. Laid in air in trefoil touching	A	148	183	219	257	289	336	393	446	516
Short circuit current rating for 1										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 12/20(24) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 49

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Nominal Steel Tape Thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Nominal Outer sheath thickness	mm	2.9	3.0	3.1	3.2	3.4	3.5	3.7	3.9	4.1
Overall Diameter (Approx)	mm	57.7	61.4	65.5	69.0	73.2	76.5	82.3	88.9	95.3
Weight of cable (Approx)	kg/km	3434	3888	4418	4894	5480	6073	7028	8877	10207
Standard packing length (± 5%)	m	500	400	300	300	300	250	250	250	250
Minimum bending radius during installation	mm	693	737	786	828	879	918	988	1066	1144
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.120	0.113	0.108	0.104	0.101	0.098	0.094	0.092	0.088
Impedance at 50 Hz approx.	ohm/km	0.827	0.577	0.423	0.339	0.282	0.231	0.185	0.157	0.133
Capacitance at 50 Hz	µF/km	0.15	0.17	0.19	0.21	0.22	0.24	0.26	0.29	0.32
Charging current /phase at U_o=12kV,50Hz (approx)	mA/km	0.58	0.65	0.72	0.77	0.84	0.90	1.00	1.08	1.21
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	222	248	282	324	363	410
2. Laid into ducts	A	120	145	175	201	227	256	295	329	372
3. Laid in air in trefoil touching	A	153	188	227	262	293	341	402	454	524
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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Technical Data for 18/30(36) kV, Three Core Aluminium conductor XLPE insulated IEC: 60502-2 Steel Tape Armoured cable

Table 50

Nominal cross sectional area of conductor	mm^2	50	70	95	120	150	185	240	300	400
Conductor diameter (Approx)	mm	8.1	9.7	11.4	12.9	14.6	16.0	18.4	20.6	23.3
Weight of conductor (Approx)	kg/km	375	545	753	951	1169	1477.5	1938	2409	3080
Nominal insulation thickness	mm	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Nominal Steel Tape Thickness	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8
Nominal Outer sheath thickness	mm	3.3	3.4	3.5	3.6	3.8	3.9	4.1	4.3	4.5
Overall Diameter (Approx)	mm	69.7	73.5	77.5	81.0	85.3	88.4	95.5	100.9	107.3
Weight of cable (Approx)	kg/km	4657	5167	5759	6287	6940	7563	9589	10686	12115
Standard packing length (± 5%)	m	300	300	300	250	250	250	250	250	250
Minimum bending radius during installation	mm	1046	1102	1163	1215	1279	1327	1433	1513	1610
DC resistance at 20°C (max)	ohm/km	0.641	0.443	0.320	0.253	0.2060	0.1640	0.1250	0.1000	0.0778
AC resistance at 90°C (approx)	ohm/km	0.818	0.565	0.408	0.323	0.2630	0.2090	0.1600	0.1280	0.0990
Reactance at 50 Hz (approx.)	ohm/km	0.134	0.127	0.121	0.116	0.112	0.109	0.104	0.101	0.097
Impedance at 50 Hz approx.	ohm/km	0.829	0.579	0.426	0.343	0.286	0.236	0.191	0.163	0.139
Capacitance at 50 Hz	µF/km	0.12	0.14	0.15	0.16	0.17	0.19	0.20	0.22	0.24
Charging current /phase at U_o=18kV,50Hz (approx)	mA/km	0.70	0.77	0.85	0.91	0.98	1.05	1.15	1.24	1.38
Continuous Current Rating at cond temp. 90°C max.										
1. Laid direct in ground,	A	136	167	197	222	248	282	324	363	410
2. Laid into ducts	A	120	145	175	201	227	256	295	329	372
3. Laid in air in trefoil touching	A	153	188	227	262	293	341	402	454	524
Short circuit current rating for 1 sec										
Cond.temp 90°C initial 250°C max.final	kA	4.7	6.6	8.9	11.3	14.1	17.4	22.6	28.2	37.6

Assumption:	1 Ground temperature 35°C	2. Air temperature 40°C	3. Thermal resistivity of soil 1.2°C/m/W
	4. Depth of laying 800 mm	for any other condition(s) please refer to the appropriate table for recommended installation data.	

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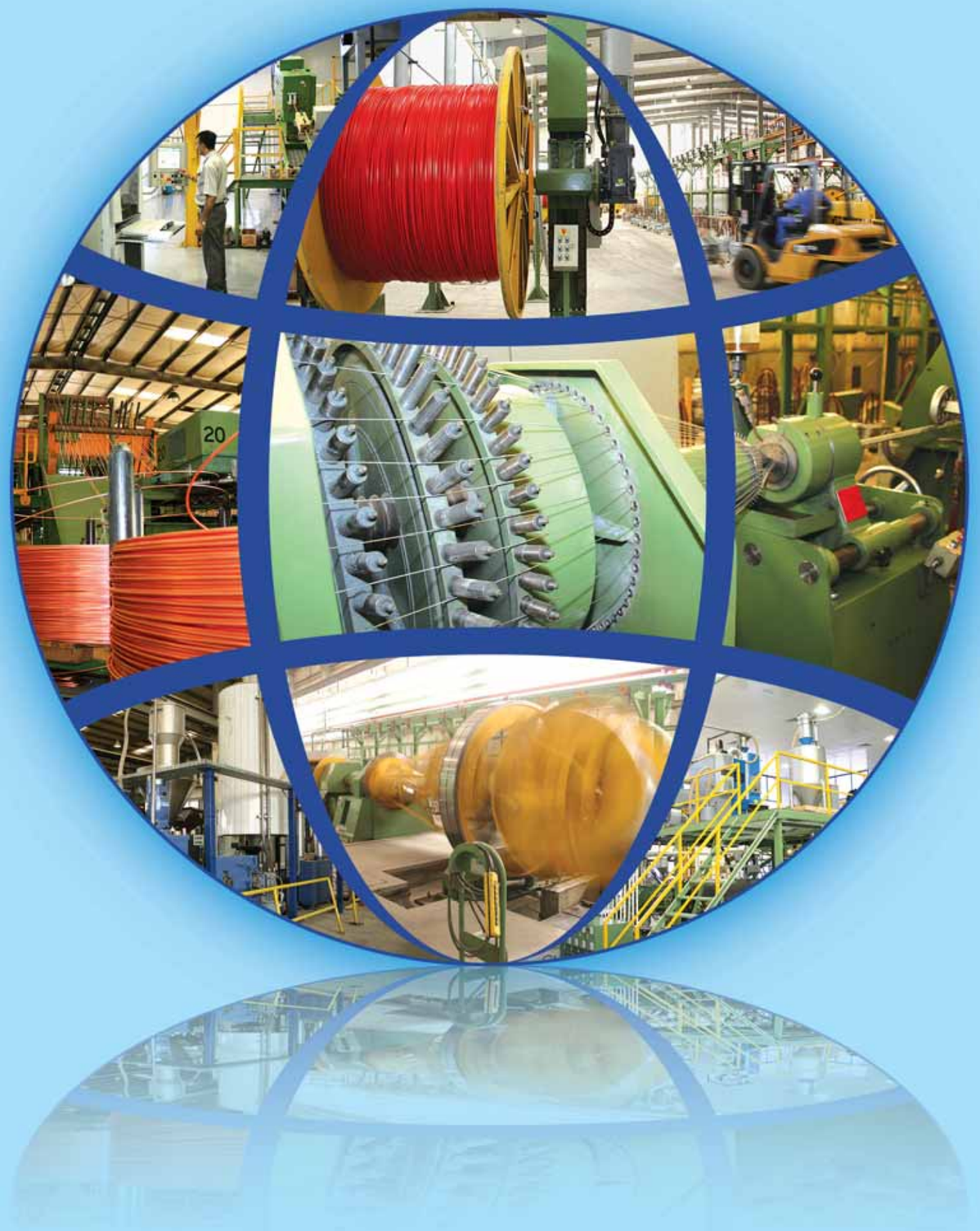


Table 51
Recommended minimum bending radius

XLPE cables up to 22 kV			
Type of cables		Minimum bending radius	
Single core	During laying	Adjacent to joints/termination	
1. Unarmoured 2. Armoured	20D 15D	15D 12D	
3 core			
1. Unarmoured 2. Armoured	15D 12D	12D 10D	Cable placed in position
33 kV - 132 kV	**Laid in ducts**	**laid in air**	or adjacent to joints/termination
1. Unarmoured	20D	20D	15D
2. Armoured	15D	15D	12D

Table 52
Rating Factors For Variation in Air Ambient Temperature

Air Temperature	20	25	30	40	45	50	55	60
Rating factors	1.2	1.16	1.12	1.00	0.96	0.89	0.82	0.76

Table 53
Rating Factors For Variation in Ground Temperature

Ground Temperature	15	20	30	35	40	45	50
Rating factors	1.15	1.12	1.03	1.00	0.95	0.89	0.86

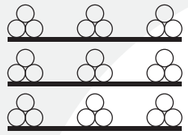
Table 54
Rating Factors For Variation in Depth of Laying

Depth of laying in mm	1.1 kV	upto 11 kV	22 & 33 kV
550	1	1	1
750	0.98	1	1
900	0.97	0.98	1
1050	0.95	0.97	0.98
1200	0.93	0.95	0.97
1500	0.91	0.94	0.95

Table 55
Rating Factors For Variation of Thermal Resistivity of Soil

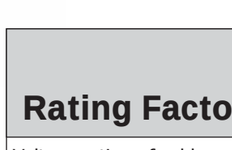
Voltage rating of cables	Thermal Resistivity of Soil in °C Cm/kW				
	100	**120**	**200**	**250**	**300**
up to 3.3 kV	1.19	1.04	0.87	0.82	0.75
up to 22 kV	1.18	1.08	0.89	0.85	0.74
33 kV	1.12	1.06	0.89	0.85	0.74

Table 56
RATING FACTORS FOR SINGLE CORE CABLE IN TREFOIL CIRCUITS LAID ON OPEN RACKS IN AIR



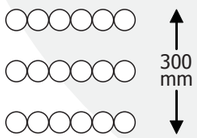
No of rackjs	No of circuits	
1	1.00	0.96
2	1.00	0.93
3	1.00	0.92
6	1.00	0.90

Table 57
RATING FACTORS FOR MULTICORE CABLES LAID ON OPEN RACKS IN AIR



Arrangement 1

No of racks	No. of cables per rack			
	1	2	6	9
1	1.00	0.98	0.93	0.92
2	1.00	0.95	0.90	0.89
3	1.00	0.94	0.89	0.88
6	1.00	0.93	0.87	0.86



Arrangement 2

No of racks	No. of cables per rack			
	1	2	6	9
1	1.00	0.84	0.75	0.73
2	1.00	0.80	0.71	0.69
3	1.00	0.78	0.70	0.68
6	1.00	0.76	0.68	0.66

Table 58
RATING FACTORS FOR GROUPING OF MULTICORE CABLES LAID DIRECT IN GROUND, IN HORIZONTAL FORMATION

	No of cables in group				
	2	3	6	8	10
Cables touching	0.79	0.69	0.54	0.5	0.46
spaced by 15 cm	0.82	0.72	0.59	0.54	0.51
spaced by 30 cm	0.86	0.76	0.65	0.62	0.59

Table 59
RATING FACTORS FOR GROUPING OF MULTICORE CABLES LAID DIRECT IN GROUND IN TIER FORMATION

	FORMATION OF CABLES		
			
Cables touching	0.60	0.51	0.43
spaced by 15 cm	0.64	0.55	0.46
spaced by 30 cm	0.69	0.60	0.50

Table 60
RATING FACTORS FOR GROUPING OF SINGLE CORE CABLES LAID IN TREFOIL CIRCUITS LAID DIRECT GROUND IN HORIZONTAL FORMATION

Spacing	No of circuits in group				
	2	3	6	8	10
Cables touching	0.78	0.68	0.53	0.48	0.50
spaced by 15 cm	0.81	0.71	0.57	0.53	0.50
spaced by 30 cm	0.85	0.76	0.64	0.60	0.58
spaced by 45 cm	0.91	0.84	0.79	0.78	0.72
spaced by 60 cm	0.93	0.87	0.85	0.82	0.76

Table 61
RECOMMENDED DUCT SIZES

Cable diameter in mm	Nominal duct diameter
up to 65 mm	100
over 65 upto 90 mm	125
over 90 upto 115 mm	150

Table 62
MAXIMUM RECOMMENDED PULLING TENSIONS
Using pulling eye on the conductor

Copper	0.070 kN/mm2
Aluminium stranded	0.050 kN/mm2
Using pulling on steel Wire armour	0.005 kN/mm2

Using stocking grip	0.0035D2 kN

B • A • S • E • C
BRITISH APPROVALS SERVICE FOR CABLES

CERTIFICATE OF CONFORMITY

This is to certify that the

Quality Management System

of

Nuhas Oman L.L.C
P.O. Box 186, Postal Code 124
Road No. 2, Plot No. 70
Rusayl Industrial Estate
Sultanate of Oman

conforms to the

BASEC Product Certification Requirements

Including Clause 2.6 (Formerly BA 2250:1996 Parts 1 & 2)

'Enhanced Quality Management Systems For Product Related Functions'

SCOPE OF CERTIFICATION:

The design, manufacture and supply of:

Copper Rod and Wires, Enamelled Wire,
Building Wires, Flexible Cords,
Low Voltage Power, Control and Instrumentation Cables,
MV and HV Extruded Dielectric Power Cables
up to and including 38/66 (72) kV

Certificate No: **PCR-213** Date of Issue: 10th September 2009

Date of Original Certification: 10th September 2009 Expiry Date: 30th March 2012

This certificate is issued subject to and in accordance with BASEC Regulations and continued compliance. Includes requirements for Environmental issues directly relating to the Product and Manufacturing processes as well as limited Health & Safety issues directly relating to the Product and Manufacturing processes.

Signed for and on behalf of the British Approvals Service for Cables Date 11 Sept 2009

BSF121.001 / A104G/ Issue No: 01/ Copy No. 1

مجلس مراجعة قواعد التوزيع
DISTRIBUTION CODE REVIEW PANEL

Date of Issue: 08 April 2009
Reg. No.: **DCRP/ PAWG / 2009 / 004**

PRODUCT APPROVAL CERTIFICATE

DISTRIBUTION CODE REVIEW PANEL
CERTIFIES THAT THE FOLLOWING ITEM/S IS REGISTERED
WITH THE PANEL AS AN APPROVED MATERIAL

Electrical Material Specifications	***: 11 KV Cables***
Manufacturer	*: Nuhas Oman LLC*
Country of Origin	*: Oman*
Address	*: P. O. Box 186 P.C.124, Rusayl* *Sultanate of Oman* *Ph: +968-24449007* *Fax: +968-24446790* *E-mail: marketing @nuhasoman.com* *Contact official: Alok Basu*

Note: *This approval letter comprises of four (4) pages in total. Page no: 1 is this covering letter; Page no: 2 comprises of Annexure-A, which elaborates the salient features of the product and Page nos: 3 & 4 comprise of Annexure-B, which contains the list of sub-suppliers of the major individual components.*

Manufacturer is hereby informed that no changes shall be permitted in the list of sub-suppliers and salient features of the product, without the written consent of the DCRP. In the event that the manufacturer changes those sub-suppliers and salient features without written consent of the DCRP, the approval shall be suspended, without any further notice.

مجلس مراجعة قواعد التوزيع Distribution Code Review Panel

CHAIRMAN
DISTRIBUTION CODE REVIEW PANEL

Condition: Any defacing or mutilation to this certificate shall render this certificate invalid.

17. Jan. 2010 12:00 SEC HQ 3rd Floor 4619935 No. 4046 P. 1

Headquarters
External Correspondence

المركز الرئيسي
مراسلات خارجية

الشركة السعودية للكهرباء
Saudi Electricity Company

الخدمات العامة
قطاع المواد
دائرة شؤون الموردين و المساندة
المركز الرئيسي (القيصلية) – الدور الثالث
هاتف 4619454-01 فاكس 4619937-01

الرقم: 10/10/06056
الموافق: 2010/1/17 م

السادة/ شركة دار البيان المحترمين
فاكس/4794101-01

الموضوع/ إشعار بتأهيل منتجات مواد توزيع

السلام عليكم ورحمة الله و بركاته،،

إشارة إلى طلبكم لتأهيل مصنع NUHAS Oman العماني، نود إفادتكم بأنه قد تم تأهيل المصنع المذكور في مجال كابلات الجهد المنخفض والمتوسط .

هذا ومستتاح لكم الفرصة في المناقصات القائمة حسب المواد المؤهلين فيها على أن تقدموا شهادات فحص و اختبار حديثة لهذه المواد من مختبر دولي معتمد لدى الشركة السعودية للكهرباء.

نرجو أن لا يفسر هذا الإشعار على أنه التزام من الشركة السعودية للكهرباء بالشراء ، هذا ومستمح لكم الفرصة لتقديم عروضكم عند الحاجة و تقيم حسب سياسات و إجراءات الشراء المعمول بها في الشركة.

كما نؤكد على أهمية مراجعتكم المستمرة لموقع الشركة الرسمي www.se.com.sa رابط المشتريات/المناقصات الإلكترونية لمتابعة ما قد يصدر لكم من مناقصات جديدة.

شاكرين لكم رغبتكم بالتعامل مع الشركة السعودية للكهرباء.

وتقبلوا تحياتي،،

مدير دائرة شؤون الموردين و المساندة
مجدل القحطاني

صورة / إدارة المساندة الفنية التوزيع.
صورة / دائرة مشتريات مواد التوزيع.
صورة / المشتريات بمناطق الأصل.

شركة تنمية نفط عمان ش.م.م
Petroleum Development Oman L.L.C.
www.pdo.co.om/PDO/Commercialinfo/

CERTIFICATE OF REGISTRATION - PRODUCT VENDOR

CERTIFICATE NUMBER: **104271**

First Registered With PDO: | Date of Issue: **18/07/2010**

PETROLEUM DEVELOPMENT OMAN LLC
CERTIFIES THAT:

Manufacture:	**Nuhas Oman LLC**
Country of Origin:	**Oman**
Local Agent:	**Nuhas Oman LLC**
Postal Address:	**P.O. Box 186, PC 124, Rusayl – Sultanate of Oman**

IS REGISTERED WITH THE COMPANY AS AN APPROVED PRODUCT VENDOR WITH EFFECT FROM THE DATE OF ISSUE OF THIS CERTIFICATE FOR THE FOLLOWING SERVICE PRODUCT CATEGORIES:

Electrical

AVME 4.15.1 - CABLES - LV - EXTRUDED INSULATION (XLPE, EPR, PVC) (68....) - SSI 68AACA 26 12 16 CABLE, DISTRIBUTION, LV, EXTRUDED INSULATION (up to 600v)
AVME 4.15.1 – CABLES – LV – EXTRUDED INSULATION (XLPE, EPR, PVC) (68....) – SSI 68AACA 26 15 16 CABLE, DISTRIBUTION, LV, EXTRUDED INSULATION (UP TO 600v)
AVME 4.15.2.1 - CABLES - HV - EXTRUDED INSULATION (XLPE, EPR) (68....) - SSI 68AAGB 26 12 16 CABLE, DISTRIBUTION, HV, EXTRUDED INSULATION (up to 33kv)
AVME 4.15.2.1 – CABLES – HV – EXTRUDED INSULATION (XLPE, EPR) (68....) – SSI 68AAGB 26 12 16 CABLE, DISTRIBUTION, HV, EXTRUDED INSULATION (UP TO 33kv)
AVME 4.15.3 - CABLES - FIRE RESISTANT / FLAME RETARDANT (68....) - SSI 68AACB 26 12 16 CABLE,FIRE RESISTANT / FLAME RETARDANT
AVME 4.15.3 – CABLES – FIRE RESISTANT / FLAME RETARDANT (68....) – SSI 68AACB 26 12 16 CABLE, FIRE RESISTANT / FLAME RETARDANT
AVME 4.15.4 - CABLES - SPECIAL APPLICATIONS (68...) - SSI 68AAAA 26 12 16 CABLE & ACCESSORIES
AVME 4.15.4 – CABLES – SPECIAL APPLICATIONS (68....) – SSI 68AAAA 26 12 16 CABLE & ACCESSORIES

KHALFAN AL BUSAIDY (FPS)
HEAD BUSINESS DEVELOPMENT

NB: THIS CERTIFICATE IS VALID UNTIL: **22/05/2011**

PLEASE REFER OVERLEAF FOR DETAILS.

Address post registration, non procurement related queries to e-mail PermanentVendorReg@pdo.co.om telephone number + (968) 24673314.

مجلس مراجعة قواعد التوزيع
DISTRIBUTION CODE REVIEW PANEL

Date of Issue: 08 April 2009
Reg. No.: **DCRP/ PAWG / 2009 / 005**

PRODUCT APPROVAL CERTIFICATE

DISTRIBUTION CODE REVIEW PANEL
CERTIFIES THAT THE FOLLOWING ITEM/S IS REGISTERED
WITH THE PANEL AS AN APPROVED MATERIAL

Electrical Material Specifications	***: 33 KV Cables***
Manufacturer	*: Nuhas Oman LLC*
Country of Origin	*: Oman*
Address	*: P. O. Box 186 P.C.124, Rusayl* *Sultanate of Oman* *Ph: +968-24449007* *Fax: +968-24446790* *E-mail: marketing @nuhasoman.com* *Contact official: Alok Basu*

Note: *This approval letter comprises of four (4) pages in total. Page no: 1 is this covering letter; Page no: 2 comprises of Annexure-A, which elaborates the salient features of the product and Page nos: 3 & 4 comprise of Annexure-B, which contains the list of sub-suppliers of the major individual components.*

Manufacturer is hereby informed that no changes shall be permitted in the list of sub-suppliers and salient features of the product, without the written consent of the DCRP. In the event that the manufacturer changes those sub-suppliers and salient features without written consent of the DCRP, the approval shall be suspended, without any further notice.

مجلس مراجعة قواعد التوزيع Distribution Code Review Panel

CHAIRMAN
DISTRIBUTION CODE REVIEW PANEL

Condition: Any defacing or mutilation to this certificate shall render this certificate invalid.

MAR-31-2010 01:57PM FROM-PLANNING & MATERIALS +97817963660 T-902 P.001/001 F-633 PAGE 01/

KINGDOM OF BAHRAIN
Electricity & Water Authority
Electricity Distribution Directorate

مملكة البحرين
هيئة الكهرباء والماء
إدارة توزيع الكهرباء

5310.2.410/558/10/JB
March 29, 2010

FAX

Sea Star Trading S.P.C. Fax: 17 466304
Attn.: Mr. Wael Hamad Ali Alsulaiti, Managing Director

Dear Sir,

Pre-Qualification of armoured MV Electric cables upto 18/30 KV
Mfr: Nuhas Oman L.L.C / Oman

This has reference to your letter dated 6th March 2010, along with M/s Bureau Veritas Inspection reports, based on their visit to the works of the subject manufacturer.

Based on the submitted documents, the above manufacturer can be considered pre-qualified for participation in CSD/EWA/Mini/Domestic tenders for EDD distribution HV Cables upto 11kV.

In the event the quoted price is found lowest, their offer can be considered for trial order subject to the following:

1) The offer fully meets the specification
2) The material passes successfully all Type/Special tests which shall be carried out at an approved independent laboratory at your own cost.

The order quantity and performance monitoring period will be based on the prevailing procedure of EWA at the time of award.

Yours sincerely,

Dr.Hiba Nayif Harara
Chief, Planning & Materials

HB/jh/7261

فاكس Facsimile

KAHRAMAA
Qatar General Electricity & Water Corporation

To:	M/S. NUHAS OMAN	إلى	Facsimile	00968 - 24446790	فاكس
From:	DIRECTOR, ELECTRICITY NETWORKS AFFAIRS	من	Facsimile	44834850	فاكس
Date:	29/010/2010 التاريخ	Ref:	KM/DEN-NUHAS/PO-CAB-001/2010- 636	إشارة	Number of pages including cover: 1	عدد الصفحات متضمنة الغلاف

Subject: ***Pre-qualification Approval of Nuhas Oman Cable***

We are pleased to inform you that your application for pre-qualification of below mentioned **product** has been accepted and included in our approved vendor list. This approval is given subject to below mentioned conditions

Product Description	Product Details
Name of Product	**Distribution Cables**
Type/Model	**MV, LV & PILOT Cables**
Rating & Capacity	**11kV, 0.6/1kV**
KM Specification Reference	ED-03-030 version # 4 Rev-0/2010, ED-03-040 version # 5 Rev-0/2010 & ED-03-050 version # 4 Rev-0/2010.
Manufacturer Name/Product Origin	**Nuhas Oman**
Manufacturer's Product ID/Code	n.a.
Name of Local Agent/Supplier	**United Contracting for Elect.Mech & Air Cond. W.L.L**

Approvals Conditions

1. KM reserves the right to cancel this approval, at any time, without assigning the reasons nor be liable for such action.
2. This approval does not vouch, in any way, for the performance of the product, and shall not be used as testimonial for promotion of the product.
3. This approval does not provide any guarantee to the manufacturer/supplier/Local agent, in any way, for automatic acceptance of the product against any KM tender(s) or other external projects. This will merely provide an equal opportunity to compete with other vendors.
4. In the event the manufacturer makes any changes in the product design, construction or use of different materials/components/accessories, they need to obtain KM approval.
5. Since this approval is given based on specific manufacturing facility (factory/country of Origin), any change in the source of product origin shall be considered as new product, and pre-qualification process becomes mandatory.
6. Should there be any change in your company or manufacturer's profile (e.g. name, address, telephone, fax, renewal/ termination of local agency agreement etc), the same shall be notified to KM immediately
7. KM reserves the right to inspect the material/witness FAT tests at factory when required. The supplier/ manufacturer/ project owner need to inform KM at-least one month in advance before delivery of materials from factory, against external project requirements.
8. KM reserves the right to witness type tests or special tests when required. Only brand new material/equipment need to be delivered against any projects, old and used material are not acceptable
9. If any of these conditions are violated, or any deviations are found in the equipment/materials at the time of Inspection or installation, this approval shall become void and material shall be liable for rejection.
10. This approval is valid for two (2) years from the date of issue **for Small & Medium Scale Private Projects.** A new approval to be obtained upon the expiry of this approval.

Best Regards.

ENG. ALI JASSIM AL NAJJAR
DIRECTOR, ELECT. NETWORKS AFFAIRS

cc: Manager, EP
Head of MS Section

better living

KEMA

09-1050

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	single-core power cable
TYPE	2XCweY
Rated voltage, U_0/U (U_m)	18/30 (36) kV
Conductor cross-section	1x300 mm²
Conductor material	Cu
Insulation material	XLPE
MANUFACTURER	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
CLIENT	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands
DATE OF TESTS	16 April 2009 until 22 July 2009

The object, constructed in accordance with the description, drawings and photographs incorporated in this certificate, has been subjected to the series of proving tests in accordance with

IEC 60502-2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

This certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 34 pages in total.

KEMA Nederland B.V.

P.J. Lemmens
KEMA T&D Testing Services
Managing Director

Arnhem, 14 September 2006

KEMA

09-1045

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	three-core power cable
TYPE	2XCwaTgY
Rated voltage, U_0/U (U_m)	8.7/15 (17.5) kV
Conductor cross-section	3x240 mm²
Conductor material	Cu
Insulation material	XLPE
MANUFACTURER	Nuhas Oman L.L.C Rusayl Industrial Estate, Sultanate of Oman
CLIENT	Nuhas Oman L.L.C Rusayl Industrial Estate, Sultanate of Oman
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands
DATE OF TESTS	16 April 2009 until 26 June 2009

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60502-2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 36 pages in total.

KEMA Nederland B.V.

P.G.A. Bus
KEMA T&D Testing Services
Managing Director

Arnhem, 14 September 2009

KEMA

08-1060

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	three-core power cable
TYPE	CU/XLPE/CTS/PVC/SWA/PVC
Rated voltage ($U_0/U/U_m$)	18/30/36 kV
Conductor cross-section	3x300 mm²
Conductor material	Cu
Insulation material	XLPE
MANUFACTURER	Nuhas Oman LLC Rusayl, Sultanate of Oman
CLIENT	Nuhas Oman LLC Rusayl, Sultanate of Oman
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands
DATE OF TESTS	3 October 2008 until 15 December 2008

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60502-2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 37 pages in total.

KEMA Nederland B.V.

P.G.A. Bus
KEMA T&D Testing Services
Managing Director

Arnhem, 15 January 2009

KEMA

09-1031

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	three-core power cable
TYPE	2XCwWY
Rated voltage, U_0/U (U_m)	6.35/11 (12) kV
Conductor cross-section	3x300 mm²
Conductor material	Cu
Insulation material	XLPE
MANUFACTURER	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
CLIENT	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands
DATE OF TESTS	9 February until 12 June 2009

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60502-2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 40 pages in total.

KEMA Nederland B.V.

P.G.A. Bus
KEMA T&D Testing Services
Managing Director

Arnhem, 30 July 2009

Version: 1 Order No.: 70870214

KEMA

09-1057

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	three-core power cable
TYPE	2XCE2YTg2Y
Rated voltage, U_0/U (U_m)	19/33 (36) kV
Conductor cross-section	3x240 mm²
Conductor material	Cu
Insulation material	XLPE
MANUFACTURER	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
CLIENT	Nuhas Oman L.L.C. Rusayl Industrial Estate, Sultanate of Oman
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands
DATE OF TESTS	12 August 2009 until 27 October 2009

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60502-2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 4.

This Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 42 pages in total.

KEMA Nederland B.V.

P.G.A. Bus
KEMA T&D Testing Services
Managing Director

NUHAS OMAN LLC

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Email : marketing@nuhasoman.com Website:www.nuhasoman.com

(A Member of the Al Bahja Group)
AN ISO 9001:2008 COMPANY

NU/MKT/DBJ/002 Rev 1
Date: 15.02. 2010