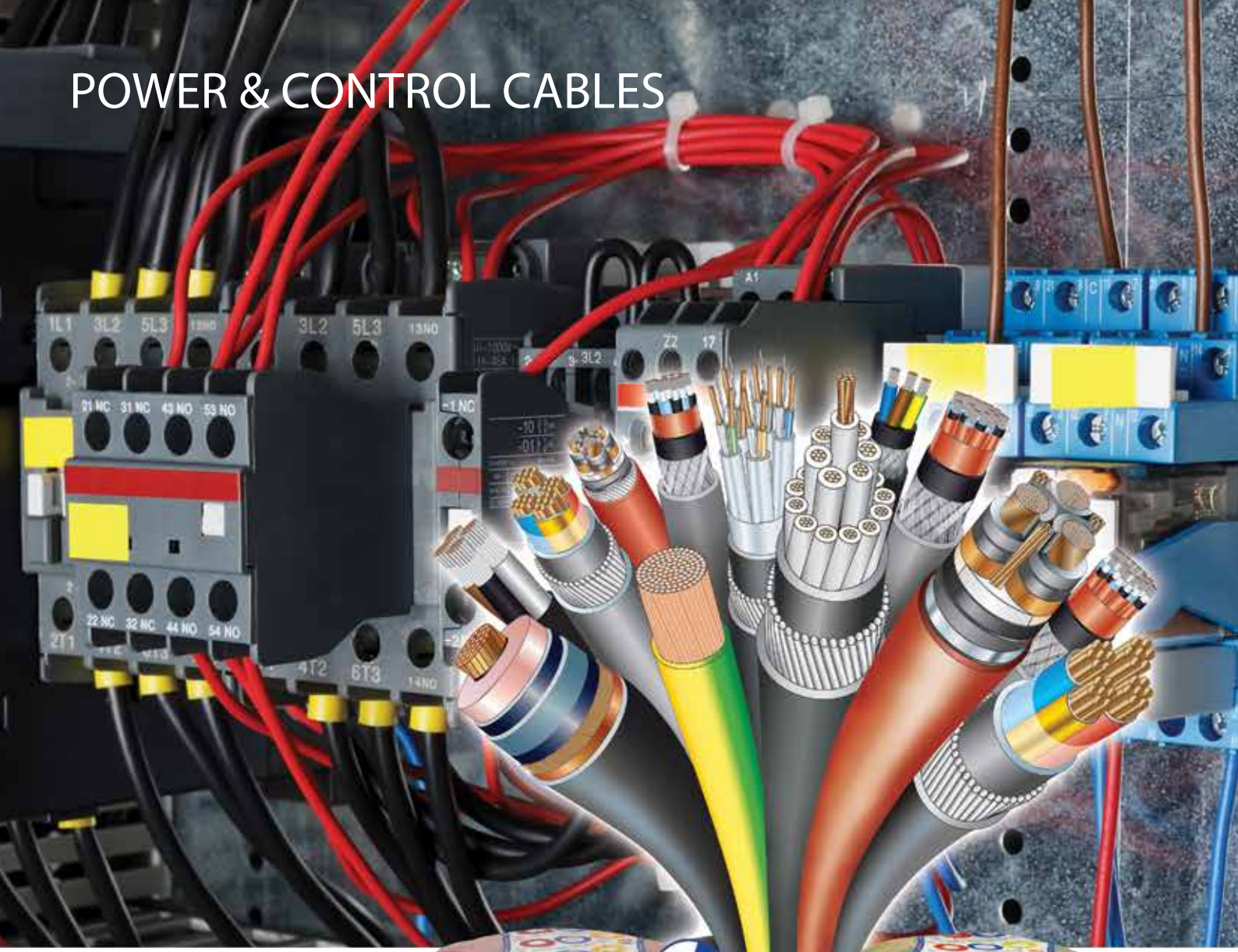
POWER & CONTROL CABLES



NUHAS OMAN

CABLES & WIRES

QUALITY & RELIABILITY


NUHAS OMAN • SPECIALITY WIRES & CABLES
شركة نحاس عمان للأسلاك والكابلات المتخصصة

NUHAS OMAN

COMPANY PROFILE

Nuhas Oman LLC, a member of the Al-Bahja Group of Companies, is an ISO 9001:2015 BASEC, UK certified integrated quality producer of LV and MV Cables, Wires & Conductors and Oxygen Free High Conductivity Continuous Cast Copper Rods in the Sultanate of Oman.

Nuhas is also certified to ISO 14001:2015 and ISO 45001:2018 by Bureau Veritas, Oman for HSE management system.

Our current capabilities are:

1. World-class Speciality Insulated Wires and Cables manufactured in state of art facility.
2. Oxygen Free High Conductivity Continuous Copper rod produced by UPCAST® System.
3. Nuhas Oman offers wide range of Cables :
   - Medium Voltage cables (Copper & Aluminium Conductor) up to 33 kV
   - Low Voltage cables
     - ❑ Power & Control Cables (Copper & Aluminium Conductor)
     - ❑ Instrumentation Cables
     - ❑ Flexible cords and Building wires
     - ❑ LPCB approved Fire Resistant Cables
     - ❑ LPCB approved Fire Alarm Cables
     - ❑ Offshore & Shipboard Cables
     - ❑ Multi layer sheathed chemical resistant Cables
     - ❑ Rubber Flexible Cables
     - ❑ Photovoltaic (Solar) Cables

Our product range meet the requirements of a broad spectrum of applications including - Industrial, Power & Control, Petrochemical, Oil & Gas, Ship Building and Offshore Platforms, Building & Construction, Hospitals, Hotels, Entertainment & Security etc. Nuhas Oman Cables are type test approved by BSI,U.K; KEMA,Netherlands; DEKRA,VDE,UL,LPCB & DNV-GL complying with relevant international BS & IEC Specifications. Our Cables are approved by various utilities, large corporates and global consultants such as Distribution Code Review Panel (DCRP),Oman; NAMA Holding (Mazoon,MEDC,Majan,Tanweer,DPC), Ministry of Electricity & Water,JSRS, Petroleum Development Oman (PDO), Oman Oil Refineries Petroleum Industries Company (ORPIC),Duqm Refinery, Daleel Petroleum,Oman Oil Company,Oman LNG, Oman Gas Company, Ministry of Transport, Ministry of Communications, Ministry of Defence, Royal Oman Police (ROP), Royal Court Affairs (RCA), Ministry of Health, Special Economic Zone Authority Duqm (SEZAD), Muscat Municipality, Occidental (Oxy), BP, Shell, Petrofac, Atkins, Parsons, Worley Parsons, SSH, Khatib and Alami, Mott MacDonald, Renardet etc.

Abu Dhabi Water & Electricity Authority (ADWEA), Abu Dhabi National Oil Company (ADNOC), Qatar General Electricity & Water Authority (Kahramaa), Qatar Civil Defense, Kuwait National Petroleum Company (KNPC), Electricity Distribution Directorate, Kingdom of Bahrain, Ministry of Electricity & Water authority,Kuwait; Saudi Electricity Company, KEO International, Arab Engineering Bureau, COWI etc.

New product development is a continuing activity at Nuhas Oman.

Nuhas is the first producer in the Middle East to have been certified by DNV-GL,Norway capable of manufacturing power, control and instrumentation cables for shipboard,high speed/light craft and off-shore applications. Nuhas Oman manufactures FRC 500 Fire Resistant LV cables and FRC 300 Fire Alarm screened cables which are type approved by LPCB, UK. Nuhas Oman also offers Power, Control & Instrumentation Cables with multilayer (AL-HDPE-PA) sheath as an alternative to Lead sheathed cables for better chemical protection mainly used in Petrochemical industry.

Nuhas is committed to deliver quality products that conform to relevant International standards. Our quality cycle commences from the time of sourcing of raw materials and consumables, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped for testing as per required standards as well as individual customer specifications.

Our production and quality management systems are manned by a team of experienced professionals backed with relevant industry experience. Nuhas Oman is committed to excellence in the management of health, safety, environment and labor practices. We are committed to promoting and protecting the welfare of our employees through "Safety First" work practices and providing a healthy workplace. Nuhas Oman also ensures compliance with the laws and regulations of the land. Nuhas Oman endeavors to be a responsible corporate citizen and fulfills its responsibilities through its Corporate Social Responsibility initiatives. Our global client base extending from Far East Asia, Indian sub-continent, the GCC, Africa to Europe is testimony to customer confidence and satisfaction. The company is committed to meet the challenges of the Domestic & Global markets for supply of world class Cables & Wires, while maintaining the sanctity of our pristine environment.

NUHAS OMAN

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 temperature 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**	**Applications**
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	For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating temperature 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

NUHAS OMAN

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

NUHAS OMAN

TABLE 3

XLPE INSULATED AND LSOH 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) LSOH 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 LSOH 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) LSOH 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	12.5	510
	70	1.1	1.4	14.5	720
	95	1.1	1.5	16.5	970
	120	1.2	1.5	18.0	1210
	150	1.4	1.6	20.0	1480
	185	1.6	1.6	22.0	1820
	240	1.7	1.7	23.0	2370
	300	1.8	1.8	27.5	2950
	400	2.0	1.9	30.5	3750
	500	2.2	2.0	34.0	4770
	630	2.4	2.2	39.0	6160
	800	2.6	2.3	43.5	7900
	1000	2.8	2.4	48.0	9820
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**	**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**

	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**	**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 temperature with XLPE insulation.
Construction	1) Oxygen free Electronic Copper Conductor 2) XLPE Insulation 3) Galvanized steel wire armour 4) PVC sheath	**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**	**Applications** For installation underground, indoor ducts and in open where mechanical protection is required or for higher tensile stresses during installation and operation
Construction	1) Oxygen free Electronic Copper Conductor 2) PVC Insulation 3) Galvanized steel wire armour 4) PVC sheath	**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	mm2	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 LSOH CABLES - THERMOSETTING INSULATION

Reference standards BS 6724

Construction

1) Oxygen free Electronic Copper Conductor
2) XLPE Insulation
3) Galvanized steel wire armour
4) LSOH 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	mm²	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**	**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**

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	0.7	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

XLPE INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards	**IEC 60502-1**	**Applications**
Construction	1) Aluminium Conductor 2) XLPE Insulation 3) Galvanized steel wire armour for multicore & aluminium wire for single core cables 4) PVC sheath	For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90°C **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	1.0	1.60	1.5	18.0	460
	70	1.1	1.0	1.60	1.5	20.0	560
	95	1.1	1.0	1.60	1.6	21.5	670
	120	1.2	1.0	1.60	1.7	23.5	790
	150	1.4	1.0	1.60	1.7	25.5	940
	185	1.6	1.0	1.60	1.8	27.5	1110
	240	1.7	1.0	1.60	1.9	30.5	1350
	300	1.8	1.0	1.60	1.9	33.0	1580
	400	2.0	1.2	2.00	2.1	37.5	2080
	500	2.2	1.2	2.00	2.2	41.0	2520
	630	2.4	1.2	2.00	2.3	45.5	3040
	800	2.6	1.4	2.50	2.5	51.5	3930
	1000	2.8	1.4	2.50	2.7	56.5	4740
Two Core	16	0.7	1.0	1.25	1.8	20.5	680
	25	0.9	1.0	1.60	1.8	22.0	810
	35	0.9	1.0	1.60	1.8	24.0	950
	50	1.0	1.0	1.60	1.8	25.0	1160
	70	1.1	1.0	1.60	2.0	28.0	1420
	95	1.1	1.2	2.00	2.1	31.5	1900
	120	1.2	1.2	2.00	2.2	34.0	2190
	150	1.4	1.2	2.00	2.3	37.5	2570
Three Core	16	0.7	1.0	1.25	1.8	21.5	780
	25	0.9	1.0	1.60	1.8	23.5	980
	35	0.9	1.0	1.60	1.8	25.0	1190
	50	1.0	1.0	1.60	1.9	28.0	1460
	70	1.1	1.2	2.00	2.0	32.5	2030
	95	1.1	1.2	2.00	2.2	36.0	2440
	120	1.2	1.2	2.00	2.3	39.5	2880
	150	1.4	1.4	2.50	2.5	45.0	3790
	185	1.6	1.4	2.50	2.6	47.5	4310
	240	1.7	1.6	2.50	2.8	54.0	5290
	300	1.8	1.6	2.50	3.0	59.5	6270
	400	2.0	1.6	2.50	3.2	64.0	7430

TABLE 11 (Contd.)

XLPE INSULATED AND PVC SHEATHED ARMOURED CABLES

Reference standards	**IEC 60502-1**	**Applications**
Construction	1) Aluminium Conductor 2) XLPE Insulation 3) Galvanized steel wire armour for multicore & aluminium wire for single core cables 4) PVC sheath	For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90^{0}C **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	16	0.7	1.0	1.60	1.8	23.5	1020
	25	0.9	1.0	1.60	1.8	25.5	1220
	35	0.9	1.0	1.60	1.9	28.0	1450
	50	1.0	1.0	1.60	2.0	30.5	1750
	70	1.1	1.2	2.00	2.2	36.5	2480
	95	1.1	1.2	2.00	2.3	40.0	2970
	120	1.2	1.4	2.50	2.5	47.0	4010
	150	1.4	1.4	2.50	2.6	50.0	4600
	185	1.6	1.4	2.50	2.8	55.0	5400
	240	1.7	1.6	2.50	3.0	62.0	6620
	300	1.8	1.6	2.50	3.2	67.5	7800
	400	2.0	1.8	3.15	3.5	77.5	10430
Five Core	16	0.7	1.0	1.60	1.8	25.5	1150
	25	0.9	1.0	1.60	1.8	29.5	1510
	35	0.9	1.0	1.60	1.9	32.5	1800
	50	1.0	1.2	2.00	2.1	37.5	2560
	70	1.1	1.2	2.00	2.3	43.0	3170

Note: The above cables can also be manufactured & supplied with LSOH or FRLS on request

TABLE 12

XLPE INSULATED AND PVC SHEATHED UN-ARMOURED CABLES

Reference standards	**IEC 60502-1**	**Applications**
Construction	1) Aluminium Conductor 2) XLPE Insulation 3) PVC sheath	For fixed installation in industrial areas, buildings and similar applications dut not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90^{0}C **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	12.5	240
	70	1.1	1.4	14.5	320
	95	1.1	1.5	16.5	400
	120	1.2	1.5	18.0	490
	150	1.4	1.6	20.0	600
	185	1.6	1.6	22.0	730
	240	1.7	1.7	25.0	930
	300	1.8	1.8	27.5	1140
	400	2.0	1.9	30.5	1450
	500	2.2	2.0	34.5	1810
	630	2.4	2.2	39.0	2300
	800	2.6	2.3	43.5	2890
	1000	2.8	2.4	48.0	3590
Two Core	16	0.7	1.8	16.5	270
	25	0.9	1.8	16.0	320
	35	0.9	1.8	18.0	400
	50	1.0	1.8	20.5	510
	70	1.1	1.8	23.0	650
	95	1.1	2.0	26.0	850
	120	1.2	2.1	28.5	1030
	150	1.4	2.2	32.0	1280
Three Core	16	0.7	1.8	17.5	340
	25	0.9	1.8	18.0	430
	35	0.9	1.8	20.5	540
	50	1.0	1.8	23.5	710
	70	1.1	1.9	26.5	930
	95	1.1	2.0	30.0	1190
	120	1.2	2.1	33.5	1470
	150	1.4	2.3	37.5	1820
	185	1.6	2.4	40.5	2220
	240	1.7	2.6	46.5	2830
	300	1.8	2.8	52.5	3480
	400	2.0	3.1	57.0	4460

TABLE 12 (Contd.)

XLPE INSULATED AND PVC SHEATHED UN-ARMOURED CABLES

Reference standards	**IEC 60502-1**	**Applications**
Construction	1) Aluminium Conductor 2) XLPE Insulation 3) PVC sheath	For fixed installation in industrial areas, buildings and similar applications dut not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90^{0}C **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	16	0.7	1.8	19.0	420
	25	0.9	1.8	22.0	570
	35	0.9	1.8	23.5	700
	50	1.0	1.9	26.0	920
	70	1.1	2.0	30.5	1210
	95	1.1	2.1	34.0	1550
	120	1.2	2.3	39.5	1940
	150	1.4	2.4	43.0	2380
	185	1.6	2.6	48.0	2940
	240	1.7	2.8	55.0	3730
	300	1.8	3.0	60.5	4590
	400	2.0	3.3	69.0	5920
Five Core	16	0.7	1.8	20.5	500
	25	0.9	1.8	24.5	700
	35	0.9	1.8	27.5	540
	50	1.0	2.0	31.5	1180
	70	1.1	2.1	36.5	1540

Note: The above cables can also be manufactured & supplied with LSOH or LSLH/FRLS on request

TABLE 13

THREE AND HALF CORE XLPE INSULATED AND PVC SHEATHED ARMOURED CABLES		
Reference standards **Construction**	**IEC 60502-1** 1) Aluminium Conductor 2) XLPE Insulation 3) Galvanized steel wire armour 4) PVC sheath	**Applications** For installation under ground, indoor ducts where mechanical damage is not expected. Suitable for comparatively higher operating temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90^{0}C **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
Phase	Earth	Phase	Earth					
mm2	mm2	mm	mm	mm	mm	mm	mm	kg/km
25	16	0.9	0.7	1.0	1.60	1.8	25.5	1180
35	16	0.9	0.7	1.0	1.60	1.8	27.5	1360
50	25	1.0	0.9	1.0	1.60	1.9	30.5	1650
70	35	1.1	0.9	1.2	2.00	2.1	36.5	2370
95	50	1.1	1.0	1.2	2.00	2.2	39.5	2800
120	70	1.2	1.1	1.2	2.00	2.4	44.5	4010
150	70	1.4	1.1	1.4	2.50	2.5	50.5	4370
185	95	1.6	1.1	1.4	2.50	2.7	54.5	5060
240	120	1.7	1.2	1.6	2.50	2.9	61.9	6220
300	150	1.8	1.4	1.6	2.50	3.0	67.0	7230
400	185	2.0	1.6	1.6	3.15	3.3	76.5	9530

Note: The above cables can also be manufactured & supplied with LSOH or FRLS on request

TABLE 14

THREE AND HALF CORE XLPE INSULATED AND PVC SHEATHED UN-ARMOURED CABLES

Reference standards	**IEC 60502-1**	**Applications**
Construction	1) Aluminium Conductor 2) XLPE Insulation 3) PVC sheath	For fixed installation in industrial areas, buildings and similar applications dut not for direct burial in the ground. Suitable for comparatively higher temperature with XLPE insulation. **Technical data** Max. Operating temperature: 90^{0}C **Voltage: 600/1000 V**

Nominal Area of conductor		Thickness of Insulation		Thickness of oversheath	Approximate overall diameter	Approximate Cable Weight
Phase	Earth	Phase	Earth			
mm2	mm2	mm	mm	mm	mm	kg/km
25	16	0.9	0.7	1.8	20.5	490
35	16	0.9	0.7	1.8	23.0	590
50	25	1.0	0.9	1.8	25.5	770
70	35	1.1	0.9	1.9	30.0	1050
95	50	1.1	1.0	2.1	33.0	1370
120	70	1.2	1.1	2.2	38.5	1740
150	70	1.4	1.1	2.3	42.5	2080
185	95	1.6	1.1	2.5	46.5	2590
240	120	1.7	1.2	2.7	54.0	3310
300	150	1.8	1.4	2.9	59.0	4040
400	185	2.0	1.6	3.1	67.0	5090

Note: The above cables can also be manufactured & supplied with LSOH or LSLH/FRLS on request

TABLE 15

Class-2 Stranded conductors for single-core and multi-core cables									
Nominal cross-sectional area mm²	Minimum number of wires in the conductor						Maximum resistance of conductor at 20°C		
	Circular		Circular compacted		Shaped		Annealed copper conductor		Aluminium Conductor Ω/km
	Cu	Al	Cu	Al	Cu	Al	Plain Wires Ω/km	Metal-coated wires Ω/km	
1.5	7	-	6	-	-	-	12.1	12.2	-
2.5	7	-	6	-	-	-	7.41	7.56	-
4	7	-	6	-	-	-	4.61	4.70	-
6	7	-	6	-	-	-	3.08	3.11	-
10	7	7	6	6	-	-	1.83	1.84	3.08
16	7	7	6	6	-	-	1.15	1.16	1.91
25	7	7	6	6	6	6	0.727	0.734	1.20
35	7	7	6	6	6	6	0.524	0.529	0.868
50	19	19	6	6	6	6	0.387	0.391	0.641
70	19	19	12	12	12	12	0.268	0.270	0.443
95	19	19	15	15	15	15	0.193	0.195	0.320
120	37	37	18	15	18	15	0.153	0.154	0.253
150	37	37	18	15	18	15	0.124	0.126	0.206
185	37	37	30	30	30	30	0.0991	0.100	0.164
240	37	37	34	30	34	30	0.0754	0.0762	0.125
300	61	61	34	30	34	30	0.0601	0.0607	0.100
400	61	61	53	53	53	53	0.0470	0.0475	0.0778
500	61	61	53	53	53	53	0.0366	0.0369	0.0605
630	91	91	53	53	53	53	0.0283	0.0286	0.0469
800	91	91	53	53	-	-	0.0221	0.0224	0.0367
1000	91	91	53	53	-	-	0.0176	0.0177	0.0291

*Conductor shall be as per IEC/BS EN 60288

TABLE 16

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 20°C)

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 17

OVERHEAD LINE COPPER CONDUCTOR

Bare copper conductors

Reference standard: BS 7884:1997

Nominal conductor area	No. of strands & diameter	Approximate overall diameter	Approximate net weight	DC Resistance at 20°C	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	**In Air**		**In Ground**	**In Duct**	**Approx Voltage drop of 3 Single core cables (3 Phase System)**
	Single Core in Trefoil		**Single Core in Trefoil**	**Single Core in Trefoil**	
	UNARM	**ARMRD**	**ARMRD**	**ARMRD**	**Trefoil**
mm²	**A**	**A**	**A**	**A**	**V/A/km**
1.5	22	--	--	--	26.73
2.5	30	--	--	--	16.37
4	39	--	--	--	10.19
6	49	--	--	--	6.81
10	67	67	82	78	4.04
16	92	92	108	101	2.56
25	123	123	139	134	1.62
35	146	146	165	154	1.18
50	174	180	199	199	0.878
70	222	230	244	239	0.620
95	275	282	292	281	0.463
120	321	328	332	315	0.379
150	371	377	371	341	0.326
185	430	433	417	376	0.276
240	513	510	480	421	0.235
300	594	581	536	459	0.212
400	692	664	594	488	0.192
500	801	751	658	529	0.179
630	925	846	723	571	0.168
800	1051	919	764	595	0.162
1000	1172	997	810	632	0.157

Installation Conditions considered for Current ratings

Ambient air temperature	:	50°C
Ground temperature	:	35°C
Depth of Laying	:	0.50 m
Thermal resistivity of Soil	:	1.2 K.m/W
Max permissible operating temperature at rated current	:	90°C

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 Research & Development

POWER CABLES - CURRENT RATINGS

Current ratings and voltage drop of two core cables					
Copper conductor XLPE insulated armoured/unarmoured cable					
Nominal conductor area	**In Air**		**In Ground**	**In Duct**	**Approx Voltage Drop (1 Phase System)**
	Two Core		**Two Core**	**Two Core**	
	UNARM	**ARMRD**	**ARMRD**	**ARMRD**	**Trefoil**
mm²	**A**	**A**	**A**	**A**	**V/A/km**
1.5	22	24	33	27	30.86
2.5	30	32	42	35	18.9
4	39	43	56	46	11.76
6	50	55	70	58	7.86
10	67	74	94	77	4.66
16	97	98	121	99	2.94
25	122	128	157	127	1.86
35	151	158	188	153	1.35
50	183	190	223	181	1.00
70	232	239	273	224	0.702
95	287	295	328	269	0.516
120	335	341	372	307	0.419
150	383	389	417	345	0.352
185	444	449	470	391	0.295
240	529	530	544	453	0.245
300	611	605	609	509	0.216
400	711	696	687	575	0.192

Installation Conditions considered for Current ratings

Ambient air temperature	:	50°C
Ground temperature	:	35°C
Depth of Laying	:	0.50 m
Thermal resistivity of Soil	:	1.2 K.m/W
Max permissible operating temperature at rated current	:	90°C

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 Research & Development

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	In Air		In Ground	In Duct	Approx Voltage Drop (3 Phase System)
	UNARM	ARMRD	ARMRD	ARMRD	Trefoil
mm²	A	A	A	A	V/A/km
1.5	19	20	28	22	26.73
2.5	27	27	36	29	16.37
4	34	37	47	39	10.19
6	44	46	59	48	6.81
10	58	64	79	65	4.04
16	83	83	102	83	2.55
25	105	109	131	107	1.61
35	129	134	157	128	1.17
50	157	163	187	152	0.87
70	200	205	229	187	0.608
95	246	253	274	226	0.447
120	288	293	312	258	0.363
150	330	335	349	291	0.305
185	381	386	394	329	0.256
240	454	456	455	380	0.212
300	524	519	509	427	0.187
400	608	597	574	490	0.167

Installation Conditions considered for Current ratings

Ambient air temperature	:	50°C
Ground temperature	:	35°C
Depth of Laying	:	0.50 m
Thermal resistivity of Soil	:	1.2 K.m/W
Max permissible operating temperature at rated current	:	90°C

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 Research & Development

POWER CABLES - CURRENT RATINGS

Current ratings and voltage drop of single core cables

Aluminium conductor XLPE insulated armoured/unarmoured cable

Nominal conductor area	In Air		In Ground	In Duct	Approx Voltage drop of 3 Single core cables (3 Phase System)
	Single Core in Trefoil		Single Core in Trefoil	Single Core in Trefoil	
	UNARM	ARMRD	ARMRD	ARMRD	Trefoil
mm²	A	A	A	A	V/A/km
50	129	135	152	153	1.44
70	165	172	187	186	1.00
95	204	211	224	219	0.733
120	237	245	255	248	0.587
150	274	282	285	271	0.490
185	319	325	322	301	0.402
240	381	385	372	341	0.324
300	442	441	418	377	0.276
400	535	526	481	415	0.236
500	619	595	534	451	0.209
630	713	672	589	485	0.188
800	833	760	649	520	0.175
1000	956	843	706	559	0.166

Installation Conditions considered for Current ratings

Ambient air temperature	:	50°C
Ground temperature	:	35°C
Depth of Laying	:	0.50 m
Thermal resistivity of Soil	:	1.2 K.m/W
Max permissible operating temperature at rated current	:	90°C

POWER CABLES - CURRENT RATINGS

Current ratings and voltage drop of two core cables

Aluminium conductor XLPE insulated armoured/unarmoured cable

Nominal conductor area	In Air		In Ground	In Duct	Approx Voltage Drop (1 Phase System)
	Two Core		Two Core	Two Core	
	UNARM	ARMRD	ARMRD	ARMRD	Trefoil
mm²	A	A	A	A	V/A/km
16	73	74	93	76	4.90
25	90	95	119	96	3.08
35	111	116	142	116	2.23
50	134	140	169	138	1.65
70	171	177	207	169	1.15
95	211	218	248	204	0.835
120	235	235	266	232	0.668
150	269	269	304	256	0.550

Current ratings and voltage drop of three and four core cables

Aluminium conductor XLPE insulated armoured/unarmoured cable

Nominal conductor area	In Air		In Ground	In Duct	Approx Voltage Drop (3 Phase System)
	UNARM	ARMRD	ARMRD	ARMRD	Trefoil
mm²	A	A	A	A	V/A/km
16	63	63	78	64	4.25
25	79	83	100	82	2.67
35	97	101	120	97	1.93
50	118	122	142	116	1.43
70	150	154	175	144	0.994
95	185	190	210	173	0.723
120	216	221	239	198	0.578
150	247	253	267	223	0.476
185	287	293	304	253	0.388
240	342	346	352	294	0.308
300	395	396	396	332	0.258
400	420	420	428	357	0.216

Installation Conditions considered for Current ratings

Ambient air temperature	:	50°C
Ground temperature	:	35°C
Depth of Laying	:	0.50 m
Thermal resistivity of Soil	:	1.2 K.m/W
Max permissible operating temperature at rated current	:	90°C

SHORT CIRCUIT CURRENT RATINGS OF 600/1000 V CABLES

COPPER & ALUMINIUM 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 & for aluminium 148*

A = *cross-sectional area (mm2)*

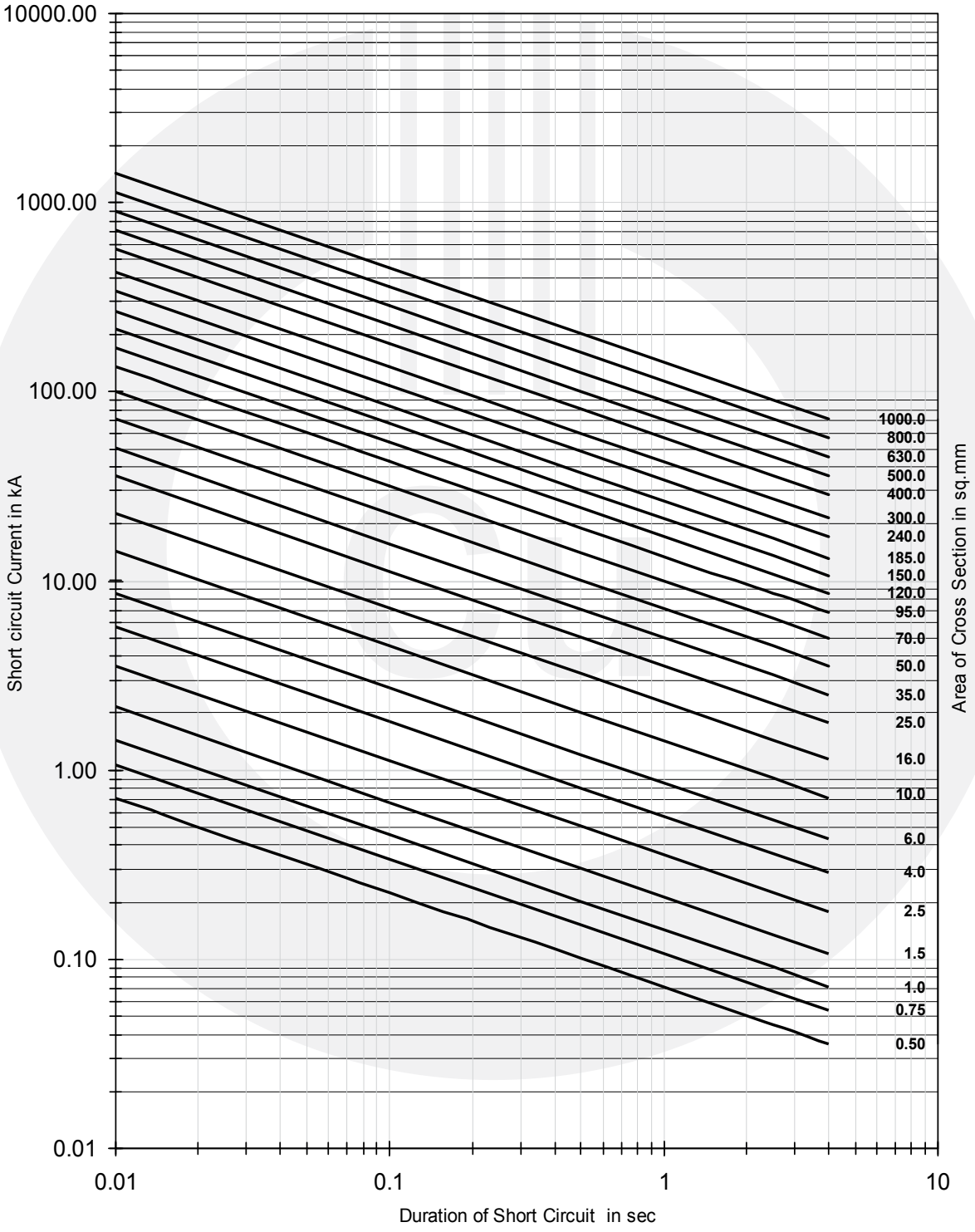
θ_f = *final temperature (°C)*

θ_0 = *initial temperature (°C)*

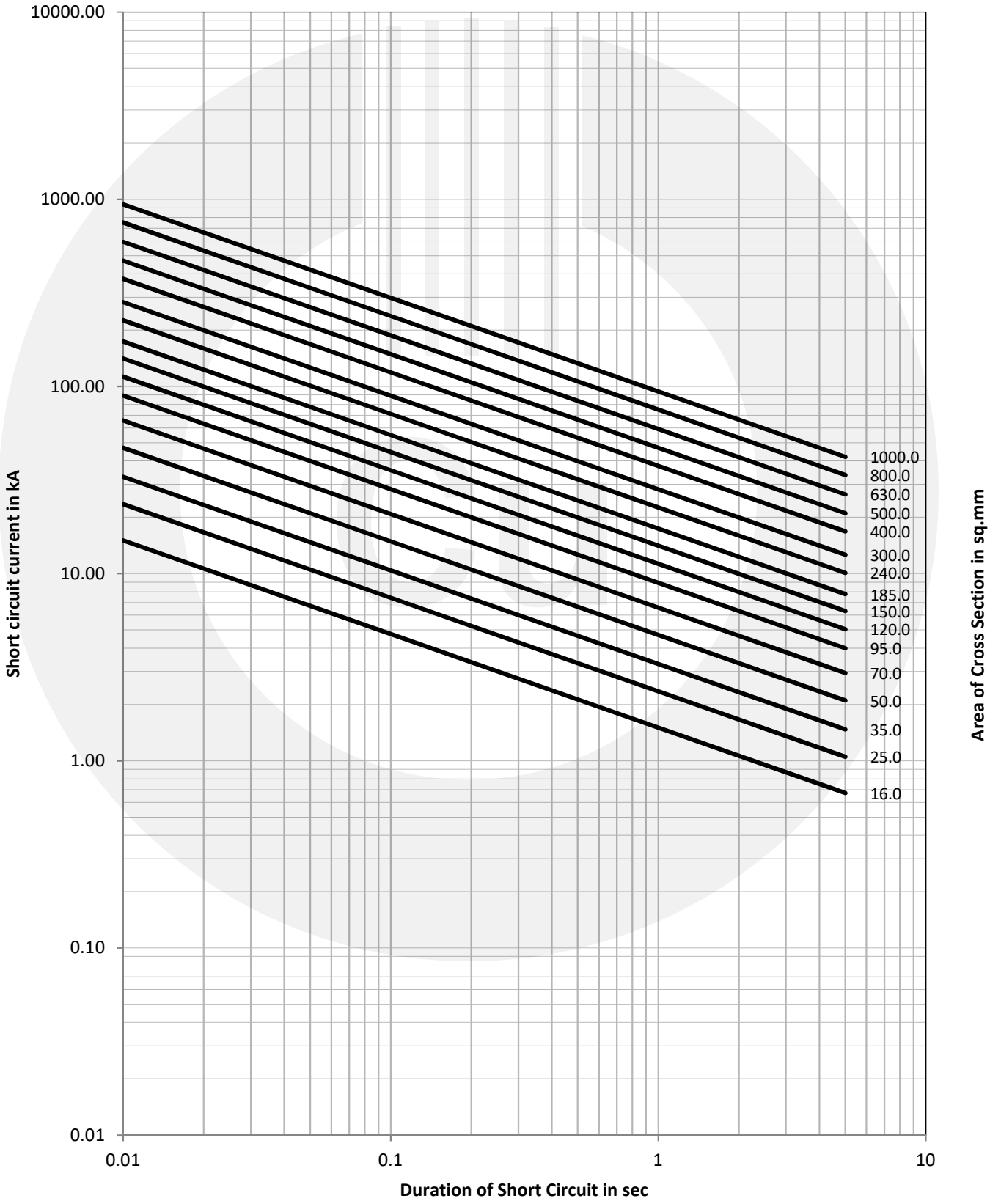
β = *reciprocal of resistance-temperature co-efficient (234.5 for copper & 228 for aluminium)*

Nominal cross-sectional area	Short circuit current for 1 sec	
	Copper	Aluminium
mm2	in KA	in KA
1.5	0.21	-
2.5	0.36	-
4	0.57	-
6	0.86	-
10	1.43	-
16	2.29	1.50
25	3.58	2.35
35	5.01	3.29
50	7.15	4.70
70	10.0	6.58
95	13.6	8.93
120	17.2	11.3
150	21.5	14.1
185	26.5	17.4
240	34.3	22.6
300	42.9	28.2
400	57.2	37.6
500	71.5	47.0
630	90.1	59.2
800	114.5	75.2
1000	143.1	94.0

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



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



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

RATING FACTORS FOR VARIATION IN AMBIENT TEMPERATURE FOR CABLES LAID IN AIR (FOR INSTALLATION IN AIR ONLY)							
Ambient temperature ° C	25	30	35	40	45	50	55
XLPE insulated cables	1.28	1.23	1.18	1.13	1.06	1.00	0.94
PVC insulated cables	1.49	1.40	1.31	1.22	1.11	1.00	0.86

RATING FACTORS FOR VARIATION IN AMBIENT TEMPERATURE FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS (FOR INSTALLATION IN GROUND & DUCTS ONLY)							
Ground temperature ° C	15	20	25	30	35	40	45
XLPE insulated cables	1.16	1.13	1.08	1.03	1.00	0.95	0.90
PVC insulated cables	1.25	1.19	1.12	1.06	1.00	0.92	0.85

RATING FACTORS FOR DEPTH OF LAYING FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS (FOR INSTALLATION IN GROUND & DUCTS ONLY)					
Depth of Laying	**Cables Laid Direct in Ground**			**Cables Laid in Ducts**	
Metre	**Upto 50mm2**	**70 mm² to 300mm2**	**Above 300 mm2**	**Single Core**	**Multicore**
0.75	0.975	0.965	0.947	0.957	0.982
0.8	0.970	0.960	0.940	0.950	0.980
1.0	0.950	0.930	0.920	0.930	0.960
1.25	0.940	0.920	0.890	0.910	0.950
1.5	0.930	0.900	0.870	0.890	0.940
1.75	0.920	0.890	0.860	0.880	0.940
2.0	0.910	0.880	0.850	0.870	0.930
2.5	0.900	0.870	0.840	0.860	0.920
3 or more	0.890	0.850	0.820	0.850	0.910

(FOR INSTALLATION IN GROUND ONLY) RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWO OR THREE SINGLE-CORE CABLES LAID DIRECT IN THE GROUND											
Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.21	1.16	1.11	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
70	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
95	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
120	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
150	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
185	1.22	1.17	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.62	0.59
240	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
300	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
400	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
500	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
630	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.61	0.58
800	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58
1000	1.24	1.18	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58

(FOR INSTALLATION IN GROUND ONLY) RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI CORE CABLES LAID DIRECT IN THE GROUND											
Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.12	1.09	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.70	0.66
4	1.13	1.10	1.07	1.05	1.0	0.94	0.85	0.79	0.74	0.69	0.65
6	1.14	1.10	1.07	1.05	1.0	0.93	0.85	0.79	0.74	0.68	0.64
10	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.67	0.63
16	1.16	1.12	1.08	1.05	1.0	0.93	0.84	0.77	0.72	0.66	0.62
25	1.17	1.13	1.09	1.05	1.0	0.93	0.83	0.77	0.71	0.65	0.61
35	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
50	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
70	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
95	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
120	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.64	0.60
150	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.63	0.59
185	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.74	0.69	0.63	0.59
240	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
300	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
400	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59

(FOR INSTALLATION IN DUCT ONLY) RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWO OR THREE SINGLE-CORE CABLES LAID IN DUCT											
Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.11	1.08	1.06	1.04	1.0	0.94	0.87	0.82	0.77	0.73	0.69
70	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
95	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
120	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.72	0.67
150	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.71	0.67
185	1.13	1.10	1.07	1.04	1.0	0.93	0.86	0.79	0.75	0.70	0.67
240	1.14	1.11	1.07	1.04	1.0	0.93	0.86	0.79	0.74	0.70	0.66
300	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.79	0.74	0.69	0.65
400	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.65
500	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.64
630	1.15	1.12	1.08	1.05	1.0	0.93	0.84	0.78	0.72	0.68	0.64
800	1.16	1.12	1.09	1.05	1.0	0.93	0.84	0.77	0.72	0.67	0.64
1000	1.16	1.13	1.09	1.05	1.0	0.92	0.84	0.77	0.71	0.67	0.63

(FOR INSTALLATION IN DUCT ONLY) RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI-CORE CABLES LAID IN SINGLE-WAY DUCTS											
Nominal Area of Conductor mm²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.04	1.03	1.02	1.02	1.0	0.98	0.94	0.91	0.88	0.86	0.83
4	1.04	1.04	1.03	1.02	1.0	0.97	0.94	0.90	0.87	0.85	0.82
6	1.05	1.04	1.03	1.02	1.0	0.97	0.93	0.90	0.86	0.84	0.81
10	1.05	1.04	1.03	1.02	1.0	0.97	0.93	0.89	0.86	0.83	0.80
16	1.06	1.04	1.03	1.02	1.0	0.97	0.92	0.88	0.85	0.82	0.79
25	1.06	1.05	1.03	1.02	1.0	0.96	0.92	0.88	0.84	0.82	0.78
35	1.06	1.05	1.03	1.02	1.0	0.96	0.92	0.87	0.83	0.81	0.77
50	1.07	1.05	1.03	1.02	1.0	0.96	0.91	0.87	0.83	0.80	0.77
70	1.07	1.05	1.04	1.02	1.0	0.96	0.91	0.86	0.82	0.79	0.76
95	1.07	1.06	1.04	1.02	1.0	0.96	0.91	0.86	0.82	0.78	0.75
120	1.08	1.06	1.04	1.03	1.0	0.95	0.90	0.85	0.81	0.78	0.74
150	1.09	1.06	1.04	1.03	1.0	0.95	0.90	0.85	0.80	0.77	0.73
185	1.09	1.07	1.05	1.03	1.0	0.95	0.89	0.84	0.80	0.76	0.72
240	1.09	1.07	1.05	1.03	1.0	0.95	0.89	0.84	0.79	0.76	0.72
300	1.10	1.07	1.05	1.03	1.0	0.95	0.88	0.83	0.78	0.75	0.71
400	1.10	1.07	1.05	1.03	1.0	0.95	0.88	0.83	0.78	0.75	0.71

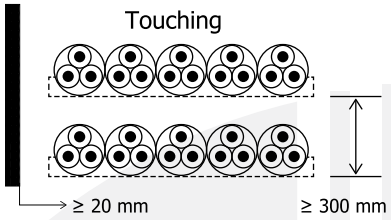
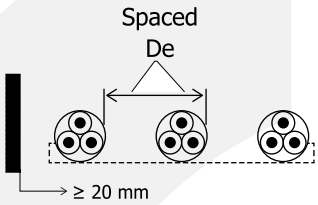
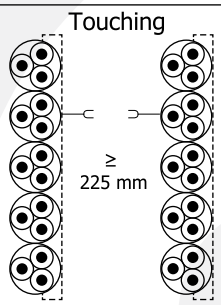
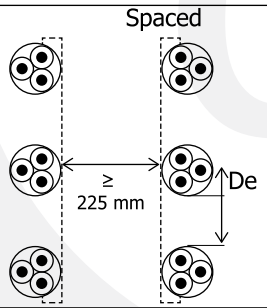
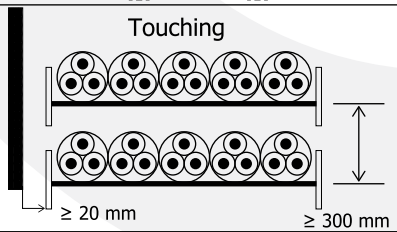
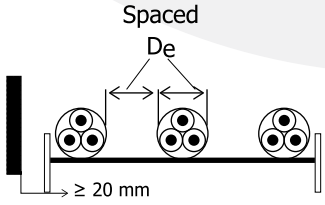
(FOR INSTALLATION IN GROUND ONLY) GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMOURED OR UNARMOURED CABLES IN HORIZONTAL FORMATION LAID IN DIRECT GROUND.											
No. of cables	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Cables laid touching	0.81	0.70	0.63	0.59	0.55	0.52	0.50	0.48	0.47	0.45	0.44
Cables laid 15 cm apart	0.87	0.78	0.74	0.70	0.68	0.66	0.64	0.63	0.62	0.61	0.60
Cables laid 30 cm apart	0.91	0.84	0.81	0.78	0.77	0.75	0.75	0.74	0.73	0.73	0.72
Cables laid 45 cm apart	0.93	0.88	0.86	0.84	0.83	0.82	0.81	0.81	0.80	0.80	0.80
Cables laid 60 cm apart	0.95	0.90	0.89	0.87	0.87	0.86	0.86	0.85	0.85	0.85	0.84

(FOR INSTALLATION IN GROUND ONLY) GROUP RATING FACTORS FOR MORE THAN ONE CIRCUITS OF 3 SINGLE CORE ARMOURED OR UNARMOURED CABLES IN TREFOIL TOUCHING,HORIZONTAL FORMATION LAID IN DIRECT GROUND											
No. of cables	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Cables laid touching	0.78	0.66	0.61	0.56	0.53	0.50	0.49	0.47	0.46	0.44	0.43
Cables laid 15 cm apart	0.83	0.73	0.68	0.64	0.61	0.59	0.57	0.56	0.55	0.54	0.53
Cables laid 30 cm apart	0.88	0.79	0.73	0.73	0.71	0.69	0.68	0.67	0.67	0.66	0.66
Cables laid 45 cm apart	0.91	0.84	0.81	0.79	0.78	0.76	0.76	0.75	0.75	0.74	0.74
Cables laid 60 cm apart	0.93	0.87	0.85	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.80

(FOR INSTALLATION IN DUCT ONLY) GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMOURED OR UNARMOURED CABLES IN HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS											
No. of cables	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Cables laid touching	0.90	0.83	0.79	0.75	0.73	0.71	0.70	0.68	0.67	0.66	0.66
Cables laid 30 cm apart	0.93	0.88	0.85	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.78
Cables laid 45 cm apart	0.95	0.91	0.89	0.88	0.87	0.86	0.85	0.85	0.85	0.84	0.84
Cables laid 60 cm apart	0.96	0.93	0.92	0.91	0.90	0.89	0.89	0.89	0.89	0.88	0.88

(FOR INSTALLATION IN DUCT ONLY) GROUP RATING FACTORS FOR MORE THAN ONE CIRCUITS OF 3 SINGLE CORE ARMOURED OR UNARMOURED CABLES IN TREFOIL TOUCHING ,HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS											
No. of cables	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Cables laid touching	0.87	0.78	0.74	0.70	0.69	0.67	0.66	0.65	0.64	0.63	0.63
Cables laid 45 cm apart	0.91	0.84	0.81	0.79	0.78	0.76	0.76	0.75	0.75	0.74	0.74
Cables laid 60 cm apart	0.93	0.87	0.85	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.80

(FOR INSTALLATION IN AIR ONLY)
GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE MULTI-CORE CABLE IN AIR - TO BE APPLIED TO THE CURRENT-CARRYING CAPACITY FOR ONE MULTI-CORE CABLE IN FREE AIR

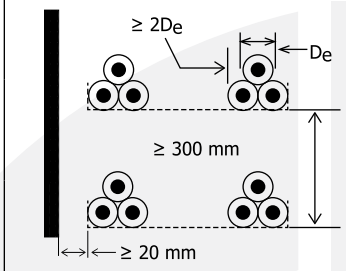
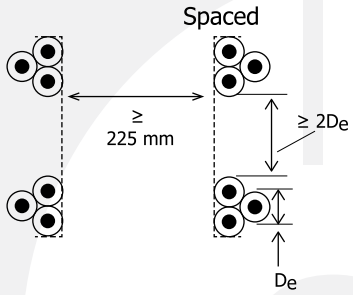
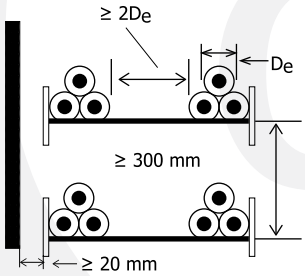
Method of Installation		Number of Trays	Number of cables					
			1	2	3	4	6	9
Cables on perforated trays		1	1.00	0.88	0.82	0.79	0.76	0.73
		2	1.00	0.87	0.80	0.77	0.73	0.68
		3	1.00	0.86	0.79	0.76	0.71	0.66
		1	1.00	1.00	0.98	0.95	0.91	-
		2	1.00	0.99	0.96	0.92	0.87	-
		3	1.00	0.98	0.95	0.91	0.85	-
Cables on vertical perforated trays		1	1.00	0.88	0.82	0.78	0.73	0.72
		2	1.00	0.88	0.81	0.76	0.71	0.70
		1	1.00	0.91	0.89	0.88	0.87	-
		2	1.00	0.91	0.88	0.87	0.85	-
Cables on ladder supports, cleats, etc		1	1.00	0.87	0.82	0.80	0.79	0.78
		2	1.00	0.86	0.80	0.78	0.76	0.73
		3	1.00	0.85	0.79	0.76	0.73	0.70
		1	1.00	1.00	1.00	1.00	1.00	-
		2	1.00	0.99	0.98	0.97	0.96	-
		3	1.00	0.98	0.97	0.96	0.93	-

Note 1: Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

Note 2: Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

Note 3: For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.

(FOR INSTALLATION IN AIR ONLY)
GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE CIRCUIT OF SINGLE CORE CABLES TO BE APPLIED TO THE CURRENT-CARRYING CAPACITY FOR ONE CIRCUIT OF SINGLE-CORE CABLES IN FREE AIR

Method of Installation		Number of Trays	Number of three-phase circuits (Note 3)			Use as a multiplier to rating for
			1	2	3	
Cables on perforated trays		1	1.00	0.98	0.96	Three cables in trefoil formation
		2	0.97	0.93	0.89	
		3	0.96	0.92	0.86	
Cables on vertical perforated trays		1	1.00	0.91	0.89	
		2	1.00	0.90	0.86	
Cables on ladder supports, cleats, etc		1	1.00	1.00	1.00	
		2	0.97	0.95	0.93	
		3	0.96	0.94	0.90	

Note 1: Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

Note 2: Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

Note 3: For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.

Recommended Minimum Bending Radius for Installation		
XLPE Insulated LV Cable	PVC Sheath	LSOH Sheath
Single Core	8D	16D
Multi Core	8D	16D

NOTES


20

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: 2015 COMPANY

NO/MKT/CAT/001/Rev.4
Date 21.02.2023

BASEC ISO 9001 UKAS MANAGEMENT SYSTEMS 0004
CERTIFICATE NO.: CS1-213

ISO 14001
ISO 45001
BUREAU VERITAS Certification

Omani