İZGA İnşaat Metal Dış Ticaret Ltd.Şti.
www.izgametal.com
info@izgametal.com

Our experience in electric cable is our core capability, with 1500 tons of supply capacity, we are leading cable supplier in the Balkan markets. Constant dynamic growth is, and will be the result of our activities towards the needs of our customers all over the world.

Over the years we built a strong reputation for clearly understanding and fulfilling the needs of each individual customer.

Since the beginning of its establishment we have endeavored to include all these new achievements in their own assortment climbing at large and faster development of them.

International Certification Network ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

Production program:

- Flexible cable
- Cables for stationary installation
- Power cables for rated voltages of 1 kV, 10 kV, 20 kV and 36 kV
- Armored cables with insulation from PVC or XLPE
- Self supporting bunch cables
- Date, telephone, coaxial and control cables, etc.
- Cables according to customer specification

We want and it is our desire to start and make a good cooperation if your needs are part of our production assortment.

Our comprehensive range of products is approved to International Standard (like VDE, BS, JUS, NF, GOST, IEC, BDS, HD, and EN).

What we can promise you is the following:

*competitive price
*on time delivery
*quality
*good cooperation

Please do not hesitate to contact us!
We will be glad to hear from you!

Flame retardant compounds

Weather resistance

UV irradiation resistance

The product is in conformity with DIRECTIVE 2006/95/EC

Flame retardant compounds

Oil resistance

Longitudinal water – tightness

Mechanical damage resistance

Radial water-tightness

- Packing
- Fire propagation acc. IEC 60332-3 cat.
- Hydrocarbon resistant outer sheath
- Termite and rodents protected outer
- Oil resistant outer sheath
- Protected against direct sun irradiation

Can be laid in water

Can be laid in air (outdoors)

Flexible cable

VDE approved product

Screened cable

Low smoke compounds

Can be laid in earth

Halogen free compounds

- RF - super-fine wire stranded (class 6)
- RM - mutliwire round shaped conductor (class 2)
- RE - solid round conductor (class 1)
- RF - fine wire stranded conductor (class 5)

- RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

- SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

- RE - solid round conductor

Copper:	Aluminium:
1.5mm² - 16mm²	25mm² - 50mm²

Acc. to IEC 60228 and VDE 0295

CONDUCTOR FOR ELECTRICAL APPLIANCE and ELECTRIC INSTALLATIONS
H03VH-H
H03VV-F, H03VVH2-F
H05VV-F, H05VVH2-F
H05V-U, K;H07V-U, R, K
NYM
NYM-T
NYIFY
NYM(St)

TELECOMMUNICATION AND CONROL CABLES
J-Y(St)Y ..Lg
J-YY ..Lg
TK-33-U
Coaxial cables
UTP cat. 5
FTP cat. 5
S-FTP cat. 5
LiYY, LiYCY
LiYY-TP, LiYCY-TP
NYSLY –OIL, NYSLYCY-OIL
SPZ, SEZ
YV

LOW VOLTAGE POWER CABLES WITH (PVC, PE and XLPE, HFFR) INSULATION
NYY, NAYY
NYBY, NAYBY
NYCY, NAYCY
NYCWY, NAYCWY
NYRY, NAYRY
NY2Y, NAY2Y (E-AY2Y)
N2XY, NA2XY; N2X2Y, NA2X2Y
N2XYRY, NA2XYRY
N2XCY; NA2XCY
N2XBY; NAXBY

MIDDLE VOLTAGE POWER CABLES
N2XSY, NA2XSY; N2XS2Y, NA2XS2Y
N2XSEY, N2XSE2Y; NA2XSEY, NA2XSE2Y
XHP 48; XHP48-A
XHE 49; XHE 49-A
N2XS(F)2Y, NA2XS(F)2Y
N2XS(FL)2Y, NA2XS(FL)2Y; N2XS(FB)2Y, NA2XS(FB)2Y-so CU/KO traka
N2XSYRY, NA2XSYRY; N2XSEYRY, NA2XSEYRY;
N2XSYBY, NA2XSYBY; N2XSEYBY, NA2XSEYBY
AASC-XLPE 20KV (PAS)
FR-N(10)XA8E-AR; FR-N(20)XA8E-AR
N2XS(F)2YY, NA2XS(F)2YY

CABLES ACCORDING TO BDS
SVT; SAVT
SVTT; SAVTT
SAVBT; SVBT
SVBT; SAVBT 6kV
A; AC; ACO
SHemT-ET; SAHemT-ET
PVO
PVU-A1
PVU-A2
PVV-MB1

POWER CABLES FOR OVERHEAD LINES 0.6/1 kV, BARE COPPER CONDUCTORS
N1XD4-AR; X00-A
N1XD9-AR; AL/R; X00/0-A
NFA2X
Bare copper conductors
- BARE ALUMINIUM CONDUCTORS AND ALUMINIUM CONDUCTORS, STEEL-REINFORCED FOR OVERHEAD LINES
ACSR
Aluminium Alloy rope
Steel rope
Bare Al conductors
Al1-ST1

MULTIWIRE CONDUCTORS
Multi wire copper and aluminium conductors class 2
Multi wire copper conductors class 5

Conductors

(for Electrical Appliance and Electrical Installation)

H03VH-H

PVC insulated flexible cord, parallel twin
Rated Voltage: U0/U - 300/300 V
Standard: DIN VDE 0281-302; HD 21.5.S3

Application

H03VH-H cable types are especially suited to use on small appliances with low mechanical stress and for connecting for light household appliances, e.g. kitchen utensils, desk lamps, floor lamps, vacuum cleaners, office machines, radios, etc. These cables are not permitted to use with cooking or heating apparatus. These cables are not suitable for outdoor use or use of industrial or farmer machineries.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	300/300 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range	
Fixed installation:	-40°C to +70°C
Flexible Installation:	-5°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm

Cable Structure:	
Conductor:	Bare copper, fine wire conductor, bunch stranded as per VDE 0295 cl.5 or cl.6 (HD 383)
Insulation:	PVC core insulation YI2 as per VDE 0207 part 4 (HD 21.1 TI2)
Core arrangement:	The conductors shall be laid parallel, and are sheathed together with insulation.
Color of insulation:	white, grey, black, green, red, blue or the customers request.

Note

The in design (flat profile) is constructed to enable the cores to be separated without causing damage to the insulation.

Constructive and electrical data: H03VH-H

Number of Cores and Nominal Cross Section	Number of wire and Diameter	Thickness of insulation	Approx. Overall Diameter	Conductor DC Resistance	Approx, total Weight	Max. Current Carrying	
Nº x mm²	Nº x mm²	mm	max. mm	Ω/km	kg/km	Pipe A	Air A
2x0.5	28 x 0.15	0.8	3.0 x 6.0	39	24	/	3
2x0.75	39 x 0.15	0.8	3.2 x 6.4	26	29	/	6

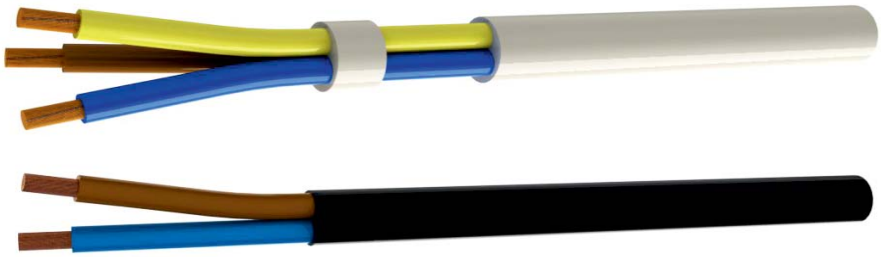
*other dimensions available on request

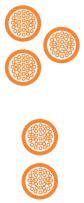
Packing

Standard packing length on cable coils: [50 m; 100 m];

H03VV-F, H03VVH2-F

Ordinary PVC insulated and sheathed flexible cable
Rated Voltage: U0/U - 300/300 V
Standard: DIN VDE 0281-5; HD 21.5.S3





Application

The cables are suitable for connection of light small duty appliances, i. e. desk-instructions of the lamps, fairy-lamps, house vacuum cleaners, radio sets etc. as far as this is allowed in the instructions of the electrical appliances. The cables with cross-section 0.5 and 0.75 mm² are not suitable for use in industrial electrical equipment, in agriculture and in open spaces.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 5
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Working voltage - U_0/U:	300/300 V
Max. permissible operating voltage:	
in three-phases AC system	Uo /U = 330/330V
in DC system	Uo /U = 495/495V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range	
Fixed installation:	-40°C to +70°C
Flexible Installation:	-5°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm

Cable Structure:	
Conductor:	Bare copper, fine wire conductor, bunch stranded as per VDE 0295 cl.5 (HD 383)
Insulation:	PVC core insulation YI2 as per VDE 0207 part 4 (HD 21.1 TI2)
Color code:	Cores colour coded to DIN VDE 0293 . (HD 27)
Core arrangement:	Cores layed up by H03VV-F, and laid parallel byH03VVH2-F
Outer jacket:	PVC outer jacket YM2 as per DIN VDE 0207/5(HD21.1 TM2), available in black, white or as per requirement

Packing

Standard packing length on cable coils: [50 m; 100 m];

Constructive and electrical data for H03VV-F; H03VVH2-F U0/U - 300/300V

Num. of Cores and Nominal Cross Section	Number of Wires and Diameter	Nominal Thickness of Insulation	Nominal Thickness of Sheath	Overall Diameter (Approx.)	Conductor DC Resistance at 20°C	Copper weight (Approx.)	Total Weight (Approx.)	Max. Current Carrying Capacity at 30 C°
No x mm²	No x mm	mm	mm	max.mm	Ω/km	kg/km	kg/km	A
H03VV-F								
2 x 0.5	15x0.2	0.5	0.6	5.04	39	9.6	40	3
2 x 0.75	22x0.2	0.5	0.6	5.5	26	14.4	48	6
3 x 0.5	15x0.2	0.5	0.6	5.4	39	14.4	47	3
3 x 0.75	22x0.2	0.5	0.6	5.8	26	21.6	57.8	6
4 x 0.5	15x0.2	0.5	0.6	6.0	39	19.2	56	3
4 x 0.75	22x0.2	0.5	0.6	6.5	26	29	70	6
H03VVH2-F								
2 x 0.5	15x0.2	0.5	0.6	5.1x3.1	39	9.6	28	3
2 x 0.75	22x0.2	0.5	0.6	5.5x3.4	26	14.4	35	6

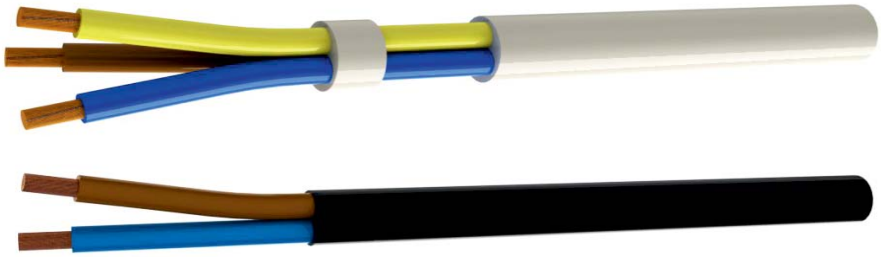
* other dimensions available on request.

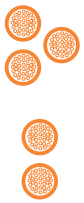
On Request:

- Fire propagation acc. IEC 60332-1 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath
- Oil resistant outer sheath.

H05VV-F, H05VVH2-F

Ordinary PVC insulated and sheathed flexible cable
Rated Voltage: U0/U - 300/500 V
Standard: DIN VDE 0281-5; HD 21.5.S3





Conductors for Electrical Appliances

Application

H05VV-F, H05VVH2-F cable types are especially suited to use for the appliances with medium mechanical stress in households, kitchens end offices also for household appliances in damp and wet areas , e.g. refrigerators, washing machines, spin - driver, etc. As far as this cable is admitted to the relevant specifications of the equipment.
These cable are suited to be use for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences of heat. The cable are suitable for fixed installation in furniture, partition walls, decoration covering and in hollow spaces of prefabricated building parts.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Working voltage - U_0/U:	300/500 V
Max. permissible operating voltage:	
in three-phases AC system	Uo /U = 330/550V
in DC system	Uo /U = 495/825V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range	
Fixed installation:	-40°C to +70°C
Flexible Installation:	-5°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm

Cable Structure:	
Conductor:	Bare copper, fine wire conductor, bunch stranded as per VDE 0295 cl.5 (HD 383)
Insulation:	PVC core insulation YI2 as per VDE 0207 part 4 (HD 21.1 TI2)
Color code:	Cores colour coded to DIN VDE 0293 . (HD 27)
Core arrangement:	Cores layed up by H05VV-F, and laid parallel by H05VVH2-F
Outer jacket :	PVC outer jacket YM2 as per VDE 0207 part 5 (HD21.1 TM2), available in black, white or as per requirement

On Request:

- Fire propagation acc. IEC 60332-1 cat. A, B, C
- Hydrocarbon resistant outer sheath
- Termite and rodents protected outer sheath

Construction data H05VV-F U0/U - 300/500V					
Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 0.75	RF	6,5	14,4	65	100
3 G 0.75	RF	6,7	21,6	75	100
4 G 0,75	RF	7,2	29	89	100
5 G 0.75	RF	8	36	103	100
2 x 1	RF	7	19	75	100
3 G 1	RF	7,3	29	87	100
4 G 1	RF	8	38	109	100
5 G 1	RF	8,6	48	128	100
2 x 1.5	RF	7,5	29	96	100
3 G 1.5	RF	8,3	43	118	100

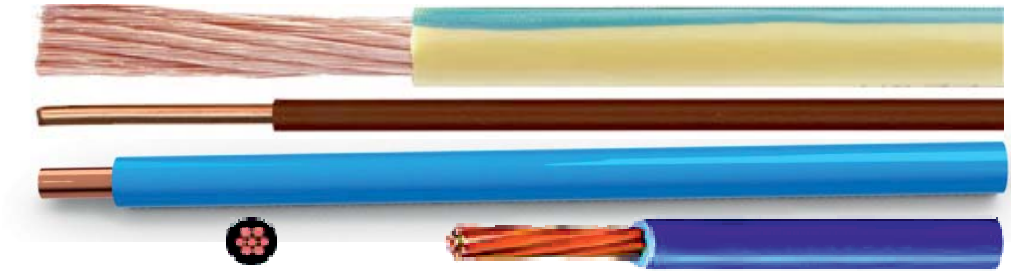
Construction data H05VV-F U0/U - 300/500V					
Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
4 G 1.5	RF	9	58	148	100
5 G 1.5	RF	10	72	178	100
2 x 2.5	RF	9,5	48	149	100
3 G 2.5	RF	10	72	183	100
4 G 2.5	RF	11	96	220	100
5 G 2.5	RF	12	120	266	100
2 x 4	RF	11	76	207	100
3 G 4	RF	11,5	115	257	100
4 G 4	RF	12,5	154	312	100
5 G 4	RF	13,8	192	370	100
H05VVH2-F					
2 x 0.75	RF	6,3x4,0	14,4	43	100
2 x 1	RF	6,6x4,2	19	50	100

*other dimensions available on request

RF - fine wire stranded conductor (class 5)

H05V-U-K, H07V-U/-R/-K

Single core, Non Sheathed PVC cable
Rated Voltage: U0/U - 450/750 V
Standard: DIN VDE: 0281-3 (HD 21.3)



Application

H07V-U/-R/-K PVC-insulated single-core cable according to VDE 0281 part 3,HD 21.3 S3 and IEC 227-3. These PVC-insulated single-core cables are used for the internal wiring of equipment switching systems and distributors as well as for the protected installation in and to lighting fixtures with a rated voltage up to 1000 V alternating current or a direct voltage up to 750 V, earthed.These cables are suitable for installation in dry rooms, switching and distribution systems,in conduit, on, in and under plaster as well as in closed installation ducts.
Note (for H07V): These single-core cables may not be used for direct installation on flatbed bodies, ducts or tanks.
Approved for use as potential-compensating cable directly on, in and underneath plaster as well as on flatbed bodies or similar.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Working voltage - U_0/U:	
for H05V up to 1mm²	Uo /U = 300/500V
for H07V from 1.5mm² and above	Uo /U = 450/750V
Test voltage:	AC - 2.5 kV; 50 Hz
Temperature Range	
Fixed installation:	-40°C to +70°C
Flexible Installation:	-5°C to +70°C
Bending radius, min.	from 12.5 to 15xDcable
Radiation resistance:	up to 80 x 106 cJ/kg (up to 80 Mrad)
Specific insulation resistance at 70°C:	min, 10 MΩ x km

Cable Structure:	
Conductor:	The conductor is made of copper wires as follows: bare copper at H07V-U, class 1 wire stranded at H07V-R, class 2 fine wire stranded at H07V-K, class 5, according to VDE 0295 (IEC 60228)
Insulation:	PVC, compound Type YI1 accordingto VDE 0207 part 4
Color of insulaion:	black, red, blue, pink, gray, yellow, green, brown, white, violet, orange or on request. Two-color combinations are not permitted except for green/yellow.

Packing

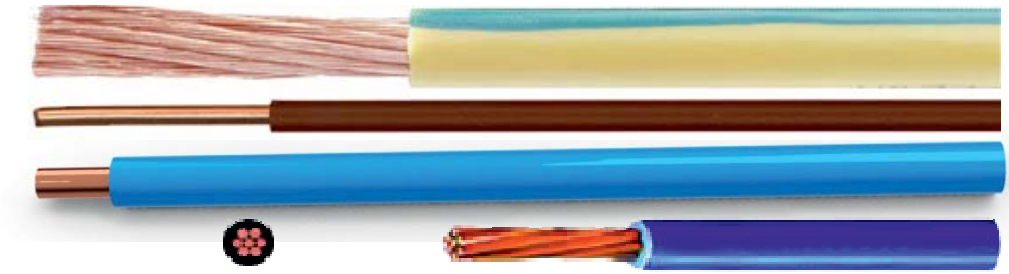
Up to 35sq.mm standard packing length in cable coils: (50m; 100m)
From 50sq.mm and above standard packing length on cable drums:(500m; 1000m)

On Request:

- Fire propagation acc. IEC 60332-1 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH)
- Termite and rodents protected outer sheath
- Oil resistant outer sheath.
- Protected against direct sun irradiation

H05V-U-K, H07V-U/-R/-K

Single core, Non Sheathed PVC cable
Rated Voltage: U0/U - 450/750 V
Standard: DIN VDE: 0281-3 (HD 21.3)



Construction data H07V-U/R/K U0/U - 450/750V					
NominalCross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
H07V-U					
1,5	RE	2,75	14,4	20	100
2,5	RE	3,35	24	31	100
4	RE	3,8	38,0	46,0	100
6	RE	4,3	58,0	65,2	100
10	RE	5,5	96,0	107,0	100
H07V-K					
1,5	RF	3,0	14,4	20,07	100
2,5	RF	3,6	24,0	32,0	100
4	RF	4,2	38,0	48,5	100
6	RF	5,3	58,0	68,0	100
10	RF	7,0	96,0	118,5	100
16	RF	8,1	154,0	172,8	100
25	RF	10,0	240,0	270,6	100
35	RF	11,4	336,0	375,8	9/1000
50	RF	13,6	480,0	524,3	9/1000
70	RF	15,7	672,0	714,8	9/500
95	RF	18,0	912,0	984,5	9/500
120	RF	19,8	1152,0	1203,0	10/500
150	RF	22,5	1440,0	1514,6	12/500
185	RF	24,7	1776,0	1877,0	12/500
240	RF	28,1	2304,0	2409,4	12/500
H07V-R					
1,5	RM	3,0	14,4	22,0	100
2,5	RM	3,7	24,0	35,0	100
4	RM	4,2	38,0	51,1	100
6	RM	4,8	58,0	72,0	100
10	RM	6,1	96,0	118,0	100
16	RM	7,2	145,0	178,2	100
25	RM	9,0	240,0	282,0	100
35	RM	10,0	336,0	369,6	8/1000
50	RM	11,6	480,0	560,0	9/1000
70	RM	13,7	672,0	723,0	10/1000
95	RM	16,0	912,0	974,0	9/500
120	RM	18,0	1152,0	1272,0	9/500
150	RM	19,5	1440,0	1483,0	10/500
185	RM	21,6	1776,0	1873,0	14/1000
240	RM	24,6	2304,0	2430,6	12/500

*other construction, sizes and packing length are available on request.

RM - multiwire round shaped conductor

RE - solid round conductor (class 1)

RF - fine wire stranded conductor

NYM-J, NYM-O

Single core, Non Sheathed PVC cable
Rated Voltage: U0/U - 450/750 V
Standard: DIN VDE: 0281-3 (HD 21.3)

Application

NYM is used as power and control cable in static installations for indoor installations, on, in and under plaster and in the air where mechanical damage is not anticipated.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	300/500 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range:	-20°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permissible tensile stress with cable grip:	For Cu conductor = 50 N/mm^2

Cable Structure:	
Conductor:	solid or multi-strand Cu wires class
	1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type YI1 acc. DIN VDE 0207/4
Core identification:	according to DIN VDE 0293, construction with 7 or more cores are numbered coded (for J-type one of them is yellow-green)
Cores assembly:	cores stranded concentrically
	(cores stranded in concentric layers, for signal)
Inner sheath:	rubber mass or PVC
Sheath:	PVC type YM1 acc. DIN VDE 0207/5

Packing

Standard packing length on wooden drums: (500m; 1000m)
Length Tolerance per drum ± 5%
Standard packing length on cable coils: (50m; 100m)

On Request:

- Fire propagation acc. IEC 60332-1 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH)
- Termite and rodents protected outer sheath
- Oil resistant outer sheath.
- Protected against direct sun irradiation

RF - fine wire stranded conductor (class 5)

Construction data NYM-J/O U0/U - 300/500V

Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1 x 1.5	RE	5.4	14.4	77.4	100
1 x 2.5	RE	6.0	24	61	100
1 x 4	RE	6.7	38	82.4	100
1 x 6	RE	7.2	58	105	100
1 x 10	RE	8.4	96	158.5	100
1 x 16	RM	10.0	154	242	100
2 x 1.5	RE	8.8	29	123	100
2 x 2.5	RE	10	48	166	100
2 x 4	RE	11.5	76	225	50
2 x 6	RE	12.5	116	284	50
2 x 10	RE	15.5	192	470	50
2 x 16	RM	18.5	308	712	9/500
2 x 25	RM	22.2	480	1085	10/500

Construction data NYM-J/O U0/U - 300/500V

Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 35	RM	25	647	1400	14/1000
3 x 1.5	RE	9.2	43	142.2	100
3 x 2.5	RE	10.5	72	195,5	100
3 x 4	RE	12	115	270.5	50
3 x 6	RE	13	173	359	50
3 x 10	RE	16.5	290	573	9/500
3 x 16	RM	19.5	462	903	12/1000
3 x 25	RM	24	720	1372.5	14/1000
3 x 35	RM	26.4	975	1750	14/1000
4 x 1.5	RE	9.8	58	167.5	100
4 x 2.5	RE	11.2	96	233	100
4 x 4	RE	13.3	154	338	50
4 x 6	RE	15.2	230	453	50

*other dimensions and packing length are available on request

NYMT-J, NYMT-O

Electric power and lighting PVC insulated and sheathed self supporting cable
Rated Voltage: U0/U - 300/500 V
Standard: DIN VDE 0250/206

Application

NYMT is used in open air for public illuminations, domestic wiring connections on constructions sites and the similar. They are installed on the poles, brackets next to facades of buildings or seel structures.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	300/500 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range:	-20°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permissible tensile stress with cable grip:	For Cu conductor = 50 N/mm^2

Cable Structure:	
Conductor:	solid or multi-strand Cu wires class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type YI1 acc. DIN VDE 0207/4
Core identification:	according to DIN VDE 0293, construction with 7 or more cores are numbered coded (for J-type one of them is yellow-green)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	rubber mass or PVC
Support:	strand of galvanized steel wires, with breaking strength of least 1300 N/mm2
Sheath:	PVC type YM1 acc. DIN VDE 0207/5, black

Construction data NYMT-J/O U0/U - 300/500V				
Num. of Cores and Nominal Cross Section	Shape	Copper weight (Approx.)	Total Weight (Approx.)	Min. breaking load
No x mm²		kg/km	kg/km	kN
2 x 1.5	RE	27	200	6
2 x 2.5	RE	44	242	6
2 x 4	RE	70	302	6
2 x 6	RE	105	366	6
2 x 10	RE	178	596	10,5
2 x 16	RM	288	792	10,5
2 x 25	RM	450	1105	10,5
2 x 35	RM	630	1510	16
3 x 1.5	RE	40	218	6
3 x 2.5	RE	65	270	6
3 x 4	RE	105	346	6
3 x 6	RE	157	446	6
3 x 10	RE	267	700	10,5
3 x 16	RM	432	950	10,5
3 x 25	RM	675	1430	16
3 x 35	RM	944	1845	16

Construction data NYMT-J/O U0/U - 300/500V				
Num. of Cores and Nominal Cross Section	Shape	Copper weight (Approx.)	Total Weight (Approx.)	Min. breaking load
No x mm²		kg/km	kg/km	kN
4 x 1.5	RE	53	243	6
4 x 2.5	RE	87	308	6
4 x 4	RE	140	423	6
2 x 6	RE	209	540	6
4 x 10	RE	356	826	10,5
4 x 16	RM	576	1163	10,5
4 x 25	RM	899	1757	16
4 x 35	RM	1259	2300	23,5
5 x 1.5	RE	66	273	6
5 x 2.5	RE	108	354	6
5 x 4	RE	174	508	6
5 x 6	RE	261	674	10,5
5 x 10	RE	445	976	10,5
5 x 16	RM	720	1472	16
5 x 25	RM	1124	2163	23,5
5 x 35	RM	1573	2803	23,5

*other dimensions available on request

On Request:

Fire propagation acc. IEC 60332-1 cat. A, B, C

Packing

Standard packing length on wooden drums: (500m; 1000m)
Length Tolerance per drum ± 5%

NYiFY, NYiFY-O

Flat webbed house wires
Rated Voltage: U0/U - 230/400 V
Standard: DIN VDE 0250/201

Application

For installation in dry environments only, both in and beneath plaster. The cables must be covered by plaster along their entire length. Installation in cavities of concrete, stone or non-inflammable building materials is allowed.
Installations notes:
- The cables cannot be installed on flammable building materials, immediately next to or under wire mesh or similar materials.
- For mounting, only materials and procedure shall be used which preclude a deformation or damage of the insulation, e. g. gypsum plaster, adhesives, nails with insulating washers.
- Flat house wire cables may only be installed beneath gypsum board if these are subsequently fixed using gypsum plaster. The cables may not be bundled together. Bunching flat webbed building wires to insertion points for electrical equipments is not considered as bunching.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	230/400 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range:	-20°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm

Cable Structure:	
Conductor:	Wire of soft annealed copper as per VDE 0295(IEC 60228) class 1.
Insulation:	PVC type YI1 acc. DIN VDE 0207/4
Core identification:	according to DIN VDE 0293
Cores assembly:	Parallel placed cores in a plane
Sheath:	PVC sealess layer type YM1 acc. DIN VDE 0207/5. Between the cores the sheath is in the shape of a path with wedge shaped groove in the middle, enabling provisional fixing of conductors.
Color of sheath:	white, black, gray

Packing

Standard packing length on cable coils: (50m; 100m)

On request:

Fire propagation acc. IEC 60332-3 cat. A or cat.C

Oil resistant outer sheath.

Construction data NYiFY-J/O U0/U - 230/400V

Num. of Cores and Nominal Cross Section	Shape	Approx. Overall Diameter	Approx. Copper weight	Approx. Total Weight	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 1.5	RE	3.8x11.2	29	65	100
2 x 2.5	RE	4,6x12.8	48	95	100
2 x 4	RE	5.2x14.4	76	135	100
3 x 1.5	RE	3.8x18.7	43	100	100
3 x 2.5	RE	4.5x21	72	145	100
3 x 4	RE	5.2x23.7	115	206	100
4 x 1.5	RE	3.8x32.8	58	135	100
4 x 2.5	RE	4.5x29	96	196	100
5 x 1.5	RE	3.8x32.8	72	170	100
5 x 2.5	RE	4.5x36.7	120	246	100

*other dimensions and packing length are available on request

(N)YM(St)-J, (N)YM(St)-O

PVC sheathed cable for fixing wiring
Rated Voltage: U0/U - 300/500 V
Standard: acc. DIN VDE 0250/204

Application

This cable has a static foil screen for limiting its irradiated electromagnetic field in areas with high requirements to EMC as computer rooms, hospitals as well as in living rooms with high sensitivity to electrical and/or magnetical fields.
For installation on and under plaster in dry and wet rooms, as well as inside of walls or in concrete. Also for outdoor use, if the cable is protected against direct sun irradiation.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	300/500 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range:	-20°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conductor = 50 N/mm^2

Cable Structure:	
Conductor:	solid or multi-strand Cu wires class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type YI1 acc. DIN VDE 0207/4
Core identification:	according to DIN VDE 0293, construction with 7 or more cores are numbered coded (for J-type one of them is yellow-green)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	rubber filling compound or PVC
Screen:	Coated aluminium foil shielding and solid copper drain-wire, tinned
Sheath:	PVC type YM1 acc. DIN VDE 0207/5, color gray RAL7035

Construction data NYM-J/O U0/U - 300/500V					
Num. of Cores and Nominal Cross Section	Shape	Approx. Overall Diameter	Approx. Copper weight	Approx. Total Weight	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1 x 1.5	RE	5.2	13	45	100
1 x 2.5	RE	5.8	22	60	100
1 x 4	RE	6.5	34	80	100
1 x 6	RE	7.1	52	102	100
1 x 10	RE	8.2	85	155	100
1 x 16	RM	9.5	143	223	100
2 x 1.5	RE	8.2	27	108	100
2 x 2.5	RE	9.5	44	150	100
2 x 4	RE	10.7	70	205	50
2 x 6	RE	11.8	105	265	50
2 x 10	RE	15	170	420	50
2 x 16	RM	17.5	285	625	N°9/500
2 x 25	RM	21	445	917	N°10/500

Construction data NYM-J/O U0/U - 300/500V					
Num. of Cores and Nominal Cross Section	Shape	Approx. Overall Diameter	Approx. Copper weight	Approx. Total Weight	Packing Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 35	RM	24	615	1230	N°14/1000
3 x 1.5	RE	8.5	40	125	100
3 x 2.5	RE	10	66	178	100
3 x 4	RE	11.5	105	248	50
3 x 6	RE	13	155	335	50
3 x 10	RE	15.5	260	520	N°9/500
3 x 16	RM	18.5	425	780	N°12/1000
3 x 25	RM	22.5	665	1165	N°14/1000
3 x 35	RM	25	920	1535	N°14/1000
4 x 1.5	RE	9.5	55	150	100
4 x 2.5	RE	11	90	215	100
4 x 4	RE	13	140	310	50
4 x 6	RE	14	210	418	50

Packing

Standard packing length on wooden drums: (500m; 1000m)
Length Tolerance per drum ± 5%
Standard packing length on cable coils: (50m; 100m)

On request:

Fire propagation acc. IEC 60332-3 cat. A, B, C

Termite and rodents protected outer sheath.

Protected against direct sun irradiation

Telecommunication and Control Cables

J-Y(St)Y...Lg

Wiring cable for telecommunication and data processing systems
Standard: DIN VDE 0815

Application

These cables are suitable for telephone stations and sub-extensions, for signal and data transmission. This cable type with electrostatic screening (St) protects the transmission circuits against extern electrical interferences. Installation cables laid up in pairs are preferably used for indoor telecommunication installation in dry and damp places, but also in the open for fixed installation on outer walls of buildings. The use of this cable is not allowed in energetic purposes.

Technical Data:		
Conductor diameter:	0.6mm	0.8mm
Loop resistance at 20°C - max.	130 Ω/km	73.2 Ω/km
Insulation resistance value at 20°C min.	100 MΩ/km	100 MΩ/km
Nominal voltage, max.	300 V	
Mutual capacitance at 800 Hz, max.	100 nF/km	100 nF/km
Capacitance unbalances at 800 Hz, max.	300 pF/100m	300 pF/100m
Line attenuation 800 Hz, max	1,7dB/km	1,1dB/km
Test voltage:		
core/core:	800 V	
core/screen:	800 V	
Temperature Range:		
Fixed installation:	-30°C to +70°C	
Flexible Installation:	-5°C to +50°C	
Bending radius, min.		
during delivery:	7.5xDcable	
single bending without tension:	2.5xDcable	
repeated bending under tension:	7.5xDcable	

Cable Structure:	
Conductor:	Bare copper conductor, solid, 0,6 and 0,8mm Ø according DIN VDE 0295
Insulation:	PVC core insulation, compound type YI1, as per DIN VDE 0207/4
Color code:	Insulation colour and pair identification as per DIN VDE 0815
Core arrangement:	Insulated cores are twisted in pairs and the pairs are stranded in concentric layers
Wrapping:	Core wrapping with plastic tape
Screen:	Electrostatic screen (St) of plastic coated aluminium foil and drain wire
Outer jacket:	PVC outer jacket grey RAL 7032, compound type YM1 as per DIN VDE 0207 part 5.

Note

Outer jacket is Red for fire signalisation systems.
The cable can be made in the same constructions but with thermoplastic polyethylene insulation and sheath and than is marked as: J-2Y(St)2Y ...Lg.

Construction data: J-Y(St)Y ...Lg

Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x0.6	RE	4,2	6,0	26,0
2x2x0.6	RE	4,6	13,0	36,0
3x2x0.6	RE	6,0	18,0	48,0
4x2x0.6	RE	6,5	24,0	58,0
5x2x0.6	RE	7,0	30,0	66,0
6x2x0.6	RE	7,4	35,0	75,0
10x2x0.6	RE	9,0	58,0	108,0
16x2x0.6	RE	10,0	93,0	156,0
20x2x0.6	RE	11,0	116,0	188,0
24x2x0.6	RE	11,5	139,0	219,0
30x2x0.6	RE	13,0	172,0	279,0

*other construction and sizes are available on request.

Construction data: J-Y(St)Y ...Lg

Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x0.8	RE	5,5	10,0	22,0
2x2x0.8	RE	6,2	21,0	60,0
3x2x0.8	RE	8,0	31,0	83,0
4x2x0.8	RE	9,0	41,0	100,0
5x2x0.8	RE	9,5	52,0	115,5
6x2x0.8	RE	10,5	62,0	134,0
10x2x0.8	RE	13,0	102,0	213,0
16x2x0.8	RE	15,0	164,0	310,0
20x2x0.8	RE	16,0	204,0	375,0
24x2x0.8	RE	18,0	244,0	440,0
30x2x0.8	RE	20,0	304,0	554,0

*other construction and sizes are available on request.

Hydrocarbon resistant outer sheath (RH).

J-YY...Lg

Wiring cable for telecommunication and data processing systems
Standard: DIN VDE 0815

Application

In communication technology, the following connections can be installed: telephone, telex as well as standard modems of postal services, burglar and fire alarm systems (cf. fire alarm cables), communication and paging systems, access control, time and data control systems Can be used in dry and wet interiors for fixed installation on and under plaster.

Technical Data:		
Conductor diameter:	0.6mm	0.8mm
Loop resistance at 20°C - max.	130 Ω/km	73.2 Ω/km
Insulation resistance value at 20°C min.	100 MΩxkm	100 MΩxkm
Nominal voltage, max.	300 V	
Mutual capacitance at 800 Hz, max.	100 nF/km	100 nF/km
Capacitance unbalances at 800 Hz, max.	300 pF/100m	300 pF/100m
Line attenuation 800 Hz, max	1.5dB/km	
Test voltage, core/core:		
	800 V	
Temperature Range:		
Fixed installation:	-30°C to +70°C	
Flexible Installation:	-5°C to +50°C	
Bending radius, min.		
during delivery:	7.5xDcable	
single bending without tension:	2.5xDcable	
repeated bending under tension:	7.5xDcable	

Cable Structure:	
Conductor:	Bare copper conductor, solid, 0,6 and 0,8mm Ø according DIN VDE 0295
Insulation:	PVC core insulation, compound type YI1, as per DIN VDE 0207/4
Color code:	Insulation colour and pair identification as per DIN VDE 0815
Core arrangement:	Insulated cores are twisted in pairs and the pairs are stranded in concentric layers
Wrapping:	Core wrapping with plastic tape
Outer jacket:	PVC outer jacket grey RAL 7032, compound type YM1 as per DIN VDE 0207 part 5.
Pairs available:	1 up to 100

Note

Outer jacket is Red for fire signalisation systems.

Packing

Standard Packing length on cable coils: [50 m; 100 m];

Hydrocarbon resistant outer sheath (RH).

Protected against direct sun irradiation

Construction data: J-YY ...Lg				
Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x0.6	RE	4,0	6,0	23,0
2x2x0.6	RE	4,2	13,0	33,0
3x2x0.6	RE	5,7	18,0	45,0
4x2x0.6	RE	6,2	24,0	56,0
5x2x0.6	RE	6,7	30,0	64,0
6x2x0.6	RE	7,1	35,0	74,0
10x2x0.6	RE	8,8	58,0	105,0
16x2x0.6	RE	9,9	93,0	155,0
20x2x0.6	RE	10,7	116,0	183,0
24x2x0.6	RE	11,2	139,0	215,0
30x2x0.6	RE	12,8	172,0	273,0

Construction data: J-YY ...Lg				
Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x0.8	RE	5,3	10,0	21,0
2x2x0.8	RE	6,0	21,0	58,0
3x2x0.8	RE	7,7	31,0	80,0
4x2x0.8	RE	8,8	41,0	98,0
5x2x0.8	RE	9,3	52,0	112,0
6x2x0.8	RE	10,2	62,0	130,0
10x2x0.8	RE	13,0	102,0	210,0
16x2x0.8	RE	12,7	164,0	306,0
20x2x0.8	RE	15,8	204,0	365,0
24x2x0.8	RE	17,8	244,0	430,0
30x2x0.8	RE	19,8	304,0	545,0

*other construction and sizes are available on request. Packing type and length is available on request.

TK-33 U

Self-supporting subscriber telephone cable with supporting strand
Standard: ZJPTT LNVIII/B.4.

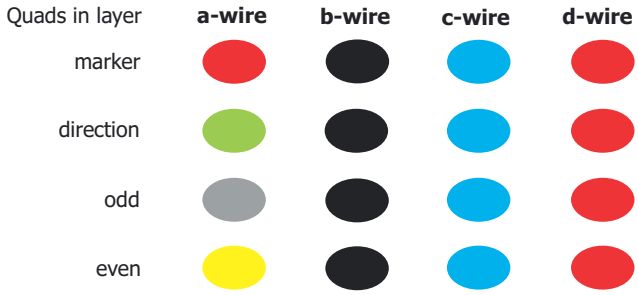
Application

Self-supporting telephone local cables with supporting rope are used only in the secondary telephone network. They are suitable for stringing along poles and other supports.

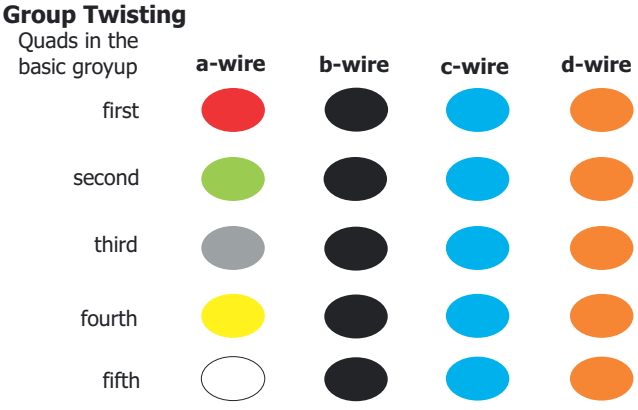
Technical Data:		
Conductor diameter:	0.6mm	0.8mm
Loop resistance at 20°C - max.	130 Ω/km	73.2 Ω/km
Loop resistance mean value at 20°C - max.	126 Ω/km	72 Ω/km
Insulation resistance value at 20°C min.	10000 MΩkm	
Permitted voltage, max.		
at AC:	150 V	
at DC:	210 V	
Mutual capacitance at 800 Hz, max.		
cable with one quad:	52 nF/km	
cable with several quads:	42 nF/km	
Capacitance unbalances at 800 Hz, max.		
K_1 for 100% values:	2700 pF/km	
K_1 for 98% values:	1350 pF/km	
K_{9-12}:	1000 pF/km	
Planned attenuation at 800 Hz		
cable with one quad:	120 mN/km	95 mN/km
cable with several quads:	110 mN/km	85 mN/km
Test voltage (2 sec, DC),core/core:	6 kV	8 kV
Temperature Range:		
before and after after installation:	-30°C to +50°C	
during operation:	+5°C to +50°C	
Bending radius, min.	15xDcable	

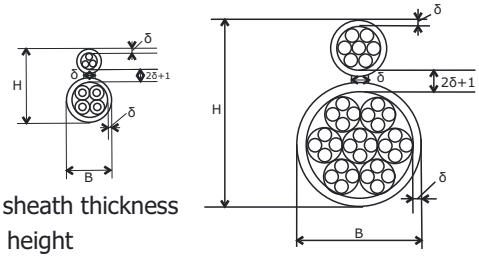
Cable Structure:	
Conductor:	Bare copper conductor, solid, 0,6 and 0,8mm Ø
Insulation:	solid polyethylene insulation type ETI1, according MKS N.CO.195
Core arrangement:	four insulated wires are twisted in a star quad,
Core wrapping:	quad group cable core is made in form of concentric layers or two polyester bands with orange thread under them as the mark of FKN.
Supporting element:	strand made of zinc-plated steel wire.
Outer sheath:	black PE, type ETP1 as per MKS N.CO.195

Concentric twisting



Group Twisting





δ - sheath thickness
H - height
B - diameter

Construction data: TK 33-U

Construction	Sheath Thickness	Supporting strand	Overall Diameter (Approx.)	Height (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	mm	kg/km	m or N°/m
1x2x0.6	1,0	3x1	4,5	9,0	50,0	7/1000
1x4x0.6	1,0	3x1	5,5	11,0	72,0	7/1000
3x4x0.6	1,6	7x1	10,0	17,5	180,0	9/1000
5x4x0.6	1,6	7x1	12,5	20,0	220,0	10/1000
10x4x0.6	1,8	12x1	16,5	25,0	370,0	12/1000
15x4x0.6	1,8	19x1	19,0	28,5	520,0	14/1000
20x4x0.6	1,8	19x1	20,5	31,0	610,0	14/1000
25x4x0.6	1,8	19x1	22,5	32,5	695,0	14/1000
30x4x0.6	2,0	19x1	25,5	35,5	810,0	16/1000
40x4x0.6	2,0	19x1.2	29,0	40,0	1045,0	16/1000
50x4x0.6	2,0	19x1.2	31,0	42,0	1215,0	18/1000
1x4x0.8	1,0	3x1	6,5	11,5	86,0	8/1000
3x4x0.8	1,6	7x1	13,0	20,0	230,0	10/1000
5x4x0.8	1,8	12x1	15,0	24,0	350,0	12/1000
10x4x0.8	1,8	19x1	19,0	28,5	560,0	14/1000
15x4x0.8	1,8	19x1	22,0	32,0	710,0	16/1000
20x4x0.8	2,0	19x1	25,5	35,5	890,0	16/1000
25x4x0.8	2,0	19x1.2	28,0	39,0	1100,0	16/1000
30x4x0.8	2,0	19x1.2	30,5	41,5	1240,0	18/1000

*other dimensions and packing length are available on request.
*values mentioned above are for concentrical twisted star quads.

RG-6, RG-58, RG-59

Coaxial cables
Standard: acc. to MIL C 17; MKS.N.C6.051

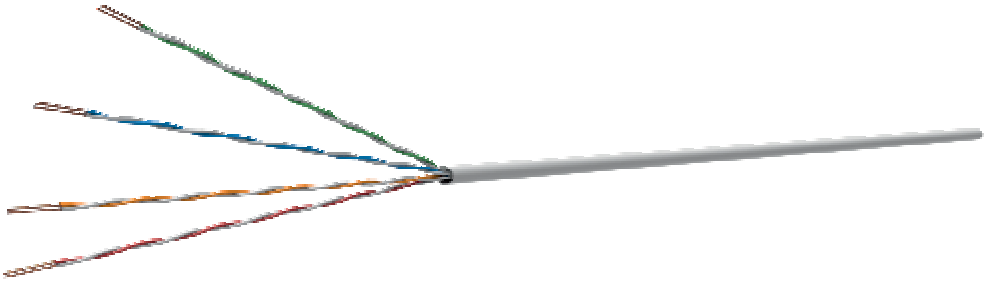
Application

Coaxialcables are used in high frequency transmission, especially for transmitters and receivers,computers, radio and TV transmissions. The varied mechanical, thermal and electronic properties of Coaxialcables mean that they can be used up into the GHz levels,as per cable type.

Cable Structure and Electrical characteristics:			
RG-Type. . . /U	RG-6	RG-58	RG-59
Cable structure			
Inner conductor, d[mm]	Cu-bare, 1.01mm	Cu-tinned, 19 x 0.18mm	Cu-bare, 0.584mm
Insulation, thickness [mm]:	foam PE, 4.65mm	PE, 3.0mm	PE, 3.7mm
Outer conductor, braid:	Al/PS+CuSn	CuSn	Cu-bare, 0.584mm
Outer jacket:	PVC	PVC	PVC
Min. bending radius, approx. [mm]:	40	25	30
Temperature range, °C:	-35 to +80	-35 to +80	-35 to +80
Cu weight, [kg/km];	16	23	25
Approx. outer D cable, [mm]:	6.87	5.15	6.1
Approx. weight, [kg/km]:	50	45	56
Electrical characteristics			
Impedance, [Ohm]:	75±3	50±3	75±3
Frequency range f (max), [GHz]:	3	3	3
Propagation velocity, v/c	0.83	0.66	0.66
Attenuation at 20°C, [dB/100m]			
100MHz	6.9	16	12.8
200MHz	9.7	24	16.0
500MHz	16.0	39	27.4
800MHz	21.0	51	35.0
1000MHz	22.9	56	41.0
Approx. capacitance, [pF/m]	54	100	67
Insulation resistance [MOhmx km]	min. 5000	min. 5000	min. 5000
Loop resistance max. [Ohm/km]	110	53	171
Nominal peak voltage [kV]	2.8	2.5	3.5

UTP Cat. 5 Cables

LAN cables for computer network
Standard: EIA/TIA 568-A; ISO IEC 11 801



Application

Used in data communication networks in transmission of analog or digital signals , has a maximum working transmission speed of 100 Mbit/s at frequency 100MHz.

Technical Data:	
Impedance:	100 Ω ± % 6 Ohm 1-100 Mhz
Mutual Capacitance at 1 KHz:	Max. 56 nf /km
Loop resistance at 20 °C:	max. 19.2 Ohm/km
Insulation resistance at 20 °C, min:	150 Mohmkm
Working Voltage, max:	250V
Test Voltage:	500V
Temperature Range:	
Fixed installation:	-20°C to +60°C
Flexible Installation:	0°C to +50°C
Bending radius, min.	10xDcable
Time delay:	up to 5.7ns/m at 10MHz
Tensile Strength:	Max.50 N/mm^2

Cable Structure:	
Conductor:	Bare copper conductor, solid, 0.51mm
Insulation:	Polyethylene insulation (PE high density).
Core arrangement:	Insulated cores are twisted in pairs with small lay and the pairs are stranded layer
Pairs color code :	pair 1: blue and white pair 2: orange and white pair 3: green and white pair 4: brown and white
Wrapping:	Core wrapping with plastic tape
Outer jacket:	PVC outer jacket grey RAL 7035
Cable outer diameter:	5.27 mm
Cable weight:	34 kg/km

On Request

Oil Resistant outer sheath (O)

Protected against direct sun irradiation

Packing

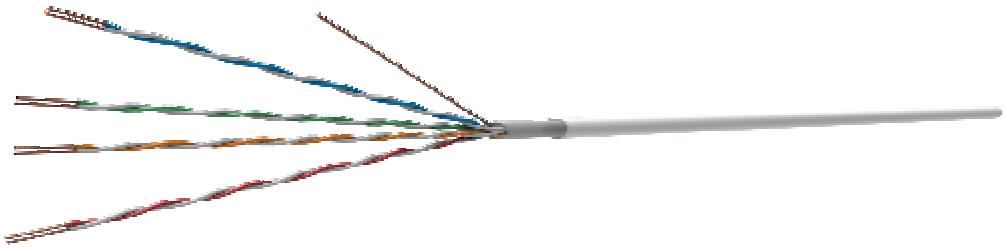
Standard packing length on cable coils: (100m)

Electrical Properties

Frequency	Structural Return Loss SRL (dB)	Attenuation Max.	NEXT (Near and Crosstalk) Min.
(MHz)	(dB)	(dB/100m)	(dB)
0.772	23	1.8	64
1	23	2.2	62
4	23	5.2	53
8	23	6.8	48
10	23	8.6	47
16	23	9.2	44
20	23	11.2	42
25	22	12.5	41
31.25	21.06	15.8	39
65.5	12.5	22.4	35
100	16	26	32

FTP Cat. 5 Cables

LAN cables for computer network
Standard: ANSI/EIA/TIA 568-A; EN 50 173



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Working Voltage, max:	250V
Test Voltage:	500V
Temperature Range:	
Fixed installation:	-20°C to +60°C
Flexible Installation:	0°C to +50°C
Bending radius, min.	10xDcable
Time delay:	up to 5.7ns/m at 10MHz
Tensile Strength:	Max.50 N/mm^2

Cable Structure:	
Conductor:	Bare copper conductor, solid, 0.51mm^2
Insulation:	Polyethylene insulation (PE high density).
Core arrangement:	Insulated cores are twisted in pairs with small lay and the pairs are stranded in layer
Pairs color code :	pair 1: blue and white pair 2: orange and white pair 3: green and white pair 4: brown and white
Wrapping:	Core wrapping with plastic tape
Screen:	Electrostatic screen (St) of plastic coated aluminium foil with drain tinned copper earth wire.
Outer jacket:	PVC outer jacket grey RAL 7035
Cable outer diameter:	5.35 mm
Cable weight:	36 kg/km

On Request

- Oil Resistant outer sheath (O)
- Protected against direct sun irradiation

Packing

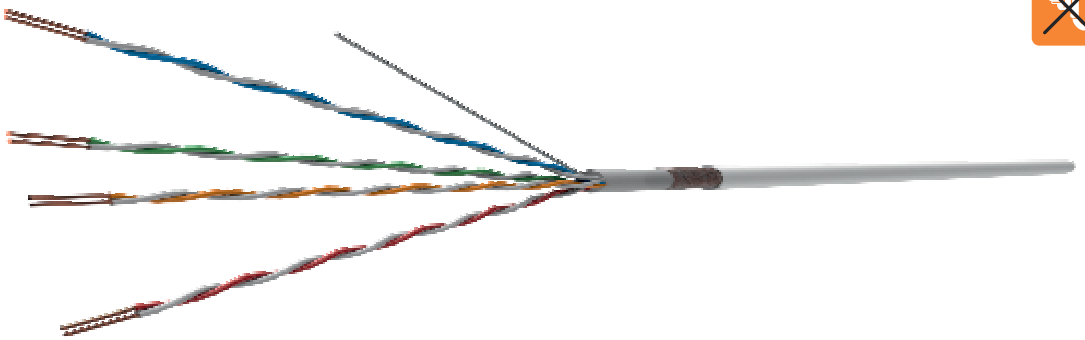
- Standard packing length on cable coils: (100m)

Electrical Properties

Frequency	Structural Return Loss SRL (dB)	Attenuation Max.	NEXT (Near and Crosstalk) Min.
(MHz)	(dB)	(dB/100m)	(dB)
0.772	23	1.8	64
1	23	2.2	62
4	23	5.2	53
8	23	6.8	48
10	23	8.6	47
16	23	9.2	44
20	23	11.2	42
25	22	12.5	41
31.25	21.06	15.8	39
65.5	12.5	22.4	35
100	16	26	32

S-FTP Cat. 5 Cables

LAN cables for computer network
Standard: ANSI/EIA/TIA 568-A; EN 50 173



Application

Used in data communication networks in transmission of analog or digital signals , has a maximum working transmission speed of 100 Mbit/s at frequency 100MHz.

Technical Data:	
Impedance:	100 Ω ± % 6 Ohm 1-100 Mhz
Mutual Capacitance at 1 KHz:	Max. 56 nf /km
Loop resistance at 20 °C:	max. 19.2 Ohm/km
Insulation resistance at 20 °C, min:	150 Mohmkm
Working Voltage, max:	250V
Test Voltage:	500V
Temperature Range:	
Fixed installation:	-20°C to +60°C
Flexible Installation:	0°C to +50°C
Bending radius, min.	10xDcable
Time delay:	up to 5.7ns/m at 10MHz
Tensile Strength:	Max.50 N/mm^2

Cable Structure:	
Conductor:	Bare copper conductor, solid, 0.51mm
Insulation:	Polyethylene insulation (PE high density).
Core arrangement:	Insulated cores are twisted in pairs with small lay and the pairs are stranded layer
Pairs color code :	pair 1: blue and white pair 2: orange and white pair 3: green and white pair 4: brown and white
Wrapping:	Core wrapping with plastic tape
Outer jacket:	PVC outer jacket grey RAL 7035 Screen: Electrostatic screen (St) of plastic coated aluminium foil and braid of tin coated Cu wires over the foil
Cable outer diameter:	5.27 mm
Cable weight:	34 kg/km

On Request

- Oil Resistant outer sheath (O)
- Protected against direct sun irradiation

Packing

Standard packing length on cable coils: (100m)

Electrical Properties			
Frequency	Structural Return Loss SRL (dB)	Attenuation Max.	NEXT (Near and Crosstalk) Min.
(MHz)	(dB)	(dB/100m)	(dB)
0.772	23	1.8	64
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31.25	21.06	15.8	39
65.5	12.5	22.4	35
100	16	26	32

LiYY, LiYCY

Multiconductor signal and control cable with or without overall braid, PVC sheath
Standard: DIN VDE 0812

Application

These screened and non-screened flexible control and interconnecting cables are used in instrumentation and control engineering where low current consumption are required, e.g. in industrial electronics, information and transmission systems, office machines and precision mechanics. These cables are ideal for voice communication in telecommunications systems.
These cables are also suitable for flexible and permanent installation for unimpeded movement, without tensile load and without forced movement in dry rooms.

Technical Data:							
Conductor cross sections mm²:	0.14	0.25	0.34	0.5	0,75	1.0	1.5
Cond. resistance at 20 °C, Ω/km: - max.	-	78	57	39	25.5	19.1	13
Capacitance (core/core), pF/m (for LiYCY)	-	110	110	120	130	130	130
Capacitance (core/screen), pF/m (for LiYCY)	-	220	250	260	320	350	360
Capacitance (core/core), pF/m (for LiYY)	-	120	120	150	150	150	150
Nominal voltage, pick value							
up to 0.25mm²	350V						
from 0.25mm²	500V						
Test voltage, core/core:							
up to 0.25mm²	800V						
from 0.25mm²	1200V						
Insulation resistance min.	20 MΩxkm						
Radiation resistance:	8 x 10^7 cJ/kg						
Temperature Range:							
Fixed installation:	-30 °C to +70 °C						
Flexible Installation:	-5 °C to +70 °C						
Bending radius, min.							
Fixed installation:	$5xD_{cable}$						
Free movement:	$10xD_{cable}$						

Cable Structure:	
Conductor:	Multiwire stranded tinned or untined electrolytic copper conductor class 5, according to DIN VDE 0295
Insulation:	PVC insulation type YI2 according toVDE 0207,part 4
Color code:	color coded with different colours according to DIN 47 100
Core arrangement:	Insulated cores are stranded in concentric layers
Wrapping:	Core wrapping with plastic tape
Screen:	braid of tinned copper wires, coverage approx. 85% (only for LiYCY)
Outer jacket:	PVC outer jacket grey RAL 7032, compound type YM1 as per DIN VDE 0207 part 5.

On Request

- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath
- Protected against direct sun irradiation
- Oil resistant outer sheath.

Packing

Standard packing length on cable coils: (50m, 100m)

Construction data: LiYY				
Number of wires	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
2x0.25	RF	3,7	4,5	16,0
3x0.25	RF	3,9	7,0	20,0
4x0.25	RF	4,2	9,3	25,0
5x0.25	RF	4,5	11,8	30,0
6x0.25	RF	4,9	14,0	35,0
7x0.25	RF	4,9	16,5	39,0
8x0.25	RF	5,4	19,0	45,0
9x0.25	RF	5,7	21,0	48,0
10x0.25	RF	6,2	23,5	53,0
2x0.34	RF	3,9	6,5	19,0
3x0.34	RF	4,1	9,8	25,0
4x0.34	RF	4,4	13,1	30,0
5x0.34	RF	4,8	16,3	35,0
6x0.34	RF	5,2	20,0	42,0
7x0.34	RF	5,2	23,0	47,0
8x0.34	RF	5,7	26,1	53,0
9x0.34	RF	6,0	30,0	57,0
10x0.34	RF	6,6	32,6	65,0
2x0.5	RF	4,7	8,8	26,0
3x0.5	RF	4,9	13,2	35,0
4x0.5	RF	5,4	18,0	42,0
5x0.5	RF	5,9	22,0	50,0
6x0.5	RF	6,4	26,0	58,0
7x0.5	RF	6,4	32,0	65,0
8x0.5	RF	7,1	36,0	75,0
9x0.5	RF	7,5	40,0	82,0
10x0.5	RF	8,2	45,0	90,0

Construction data: LiYY				
Number of wires	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
2x0.75	RF	5,1	14,3	32,0
3x0.75	RF	5,3	22,0	43,0
4x0.75	RF	5,8	28,5	54,0
5x0.75	RF	6,4	35,5	66,0
6x0.75	RF	7,0	42,5	77,0
7x0.75	RF	7,0	50,0	88,0
8x0.75	RF	7,8	57,0	99,0
9x0.75	RF	8,2	64,0	110,0
10x0.75	RF	10,0	71,0	135,0
2x1.0	RF	5,4	19,0	39,0
3x1.0	RF	5,7	28,5	52,0
4x1.0	RF	6,3	38,0	66,0
5x1.0	RF	6,9	47,5	80,0
6x1.0	RF	7,5	56,0	95,0
7x1.0	RF	7,5	66,0	107,0
8x1.0	RF	8,4	75,0	122,0
9x1.0	RF	9,8	85,0	158,0
10x1.0	RF	10,5	95,0	175,0
2x1.5	RF	6,4	28,0	53,0
3x1.5	RF	6,7	42,0	73,0
4x1.5	RF	7,4	55,0	93,0
5x1.5	RF	8,2	69,1	114,0
6x1.5	RF	10,0	83,0	158,0
7x1.5	RF	10,0	97,0	176,0
8x1.5	RF	11,0	111,0	200,0
9x1.5	RF	11,5	125,0	221,0
10x1.5	RF	12,6	139,0	245,0

LiYY, LiYCY

Standard: DIN VDE 0812

Construction data: LiYCY				
Number of wires	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
2x0.25	RF	3,9	14,0	26,0
3x0.25	RF	4,1	16,0	32,0
4x0.25	RF	4,4	20,0	37,0
5x0.25	RF	4,8	23,0	42,0
6x0.25	RF	5,2	25,0	49,0
7x0.25	RF	5,2	29,0	52,0
8x0.25	RF	5,7	39,0	68,0
9x0.25	RF	6,0	44,0	76,0
10x0.25	RF	6,6	47,0	78,0
2x0.34	RF	4,1	17,0	34,0
3x0.34	RF	4,3	22,0	43,0
4x0.34	RF	4,6	25,0	52,0
5x0.34	RF	5,0	30,0	62,0
6x0.34	RF	5,3	38,0	73,0
7x0.34	RF	5,3	42,0	83,0
8x0.34	RF	6,0	50,0	101,0
9x0.34	RF	6,3	55,0	112,0
10x0.34	RF	6,8	62,0	120,0
2x0.5	RF	5,1	22	38,0
3x0.5	RF	5,3	26,0	46,0
4x0.5	RF	6,0	35,0	60,0
5x0.5	RF	6,5	46,0	75,0
6x0.5	RF	7,0	52,0	86,0
7x0.5	RF	7,0	55,0	90,0
8x0.5	RF	7,7	65,0	110,0
9x0.5	RF	8,1	72,0	125,0
10x0.5	RF	9,8	77,0	148,0

Construction data: LiYCY				
Number of wires	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
2x0.75	RF	5,7	35,0	55,0
3x0.75	RF	5,9	42,0	65,0
4x0.75	RF	6,4	52,0	79,0
5x0.75	RF	7,0	60,0	92,0
6x0.75	RF	7,6	75,0	112,0
7x0.75	RF	7,6	80,0	117,0
8x0.75	RF	8,4	89,0	142,0
9x0.75	RF	9,8	97,0	180,0
10x0.75	RF	10,6	108,0	185,0
2x1.0	RF	5,4	35,0	56,0
3x1.0	RF	5,7	45,0	70,0
4x1.0	RF	6,3	52,0	83,0
5x1.0	RF	6,9	64,0	100,0
6x1.0	RF	7,5	75,0	120,0
7x1.0	RF	7,5	83,0	125,0
8x1.0	RF	9,4	93,0	174,0
9x1.0	RF	9,8	101,0	190,0
10x1.0	RF	10,6	112,0	196,0
2x1.5	RF	5,6	45,0	65,0
3x1.5	RF	5,9	55,0	85,0
4x1.5	RF	6,5	65,0	95,0
5x1.5	RF	7,1	75,0	115,0
6x1.5	RF	7,8	85,0	134,0
7x1.5	RF	7,8	90,0	140,0
8x1.5	RF	9,7	105,0	190,0
9x1.5	RF	10,2	112,0	205,0
10x1.5	RF	11,0	124,0	215,0

*other construction and sizes are available on request.
Packing type and length is available on request.

LiYY-TP, LiYCY-TP

Paired PVC data cables with or without overall braid and PVC she
Standard: DIN VDE 0812 and 0814

Application

These screened and non-screened flexible control and interconnecting cables are ideal for voice communication in telecommunication systems, for pulse, signal and data transmission applications. The twisted pairs with optimum pair and layer pitch prevent mutual interaction from neighboring conductor circuits. The overall braided screen, consisting of tinned copper wires with a visible coverage of approx. 85% provides protection against external pulses. These cables are also suitable for flexible and permanent installation in dry and moist rooms.

Technical Data:							
Conductor cross sections mm^2:	0.14	0.25	0.34	0.5	0,75	1.0	1.5
Cond. resistance at 20 °C, Ω/km: - max.	-	78	57	39	25.5	19.1	13
Capacitance (core/core), pF/m (for LiYCY)	-	110	110	120	130	130	130
Capacitance (core/screen), pF/m (for LiYCY)	-	220	250	260	320	350	360
Capacitance (core/core), pF/m (for LiYY)	-	120	120	150	150	150	150
Mutual capacitance at 800Hz-max.	150pF/m						
Capacitance unbalances at 800Hz; K1 max.	300pF/100m						
Nominal voltage, pick value							
up to 0.25mm^2	350V						
from 0.25mm^2	500V						
Test voltage, core/core:							
up to 0.25mm^2	800V						
from 0.25mm^2	1200V						
Insulation resistance min.	20 MΩxkm						
Radiation resistance:	8 x 10^7 cJ/kg						
Temperature Range:							
Fixed installation:	-30 °C to +70 °C						
Flexible Installation:	-5 °C to +70 °C						
Bending radius, min.							
Fixed installation:	5xD_{cable}						
Free movement:	10xD_{cable}						

Cable Structure:	
Conductor:	Multiwire stranded tinned or untined electrolytic copper conductor class 5, according to DIN VDE 0295
Insulation:	PVC insulation type YI2 according toVDE 0207,part 4
Pairs:	each 2 wires are twisted to a pair
Color code:	color coded with different colours according to DIN 47 100
Core arrangement:	the pairs are stranded into layer
Wrapping:	Core wrapping with plastic tape
Screen:	braid of tinned copper wires, coverage approx. 85% (only for LiYCY)
Outer jacket:	PVC outer jacket grey (RAL 7001/7032), compound type YM1 as per DIN VDE 0207 part 5.

On Request

- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath
- Protected against direct sun irradiation
- Oil resistant outer sheath.

Packing Standard packing length on cable coils: (50m, 100m)

Construction data: LiYY-TP				
Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm^2		max.mm	kg/km	kg/km
1x2x0.25	RF	3,7	4,8	28
2x2x0.25	RF	5,4	9,5	36,0
3x2x0.25	RF	5,7	14,0	45,0
4x2x0.25	RF	6,3	18,8	54,0
5x2x0.25	RF	6,9	23,5	65,0
1x2x0.34	RF	3,9	2,9	15
2x2x0.34	RF	5,7	5,6	26,0
3x2x0.34	RF	6,1	8,8	32,0
4x2x0.34	RF	6,7	11,0	39,0
5x2x0.34	RF	7,4	14,0	47,0
1x2x0.5	RF	4,7	8,7	25
2x2x0.5	RF	7,1	17,5	45,0
3x2x0.5	RF	7,5	26,2	60,0
4x2x0.5	RF	9,3	35,0	98,0
5x2x0.5	RF	10,2	44,0	116,0

Construction data: LiYY-TP				
Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm^2		max.mm	kg/km	kg/km
1x2x0.75	RF	5,1	14,2	32
2x2x0.75	RF	7,8	28,4	60,0
3x2x0.75	RF	9,3	42,6	102,0
4x2x0.75	RF	10,1	56,9	127,0
5x2x0.75	RF	11,1	71,0	152,0
1x2x1.0	RF	6,4	19	39
2x2x1.0	RF	9,4	38,0	94,0
3x2x1.0	RF	9,9	56,0	122,0
4x2x1.0	RF	10,8	76,0	152,0
5x2x1.0	RF	11,9	95,0	182,0
1x2x1.5	RF	6,4	28	53
2x2x1.5	RF	11,0	55,5	126,0
3x2x1.5	RF	11,6	83,3	167,0
4x2x1.5	RF	12,8	111,1	210,0
5x2x1.5	RF	14,1	139,0	254,0

LiYY-TP, LiYCY-TP

Paired PVC data cables with or without overall braid and PVC sheath
Standard: DIN VDE 0812 and 0814

Construction data: LiYCY-TP

Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x0.25	RF	4,1	15,0	35,0
2x2x0.25	RF	6,0	29,0	49,0
3x2x0.25	RF	6,3	38,0	60,0
4x2x0.25	RF	6,9	44,0	72,0
5x2x0.25	RF	7,5	55,0	85,0
1x2x0.5	RF	4,7	35,0	40,0
2x2x0.5	RF	7,1	62,0	80,0
3x2x0.5	RF	7,5	75,0	100,0
4x2x0.5	RF	9,3	95,0	133,0
5x2x0.5	RF	10,2	115,0	155,0
1x2x0.75	RF	5,1	35,0	55,0
2x2x0.75	RF	8,8	62,0	115,0
3x2x0.75	RF	9,3	75,0	138,0
4x2x0.75	RF	10,1	95,0	165,0
5x2x0.75	RF	11,1	115,0	195,0

*other construction and sizes are available on request.
Packing type and length is available on request.

Construction data: LiYY-TP

Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm²		max.mm	kg/km	kg/km
1x2x1.0	RF	5,4	38,0	58,0
2x2x1.0	RF	9,4	72,0	130,0
3x2x1.0	RF	9,9	95,0	160,0
4x2x1.0	RF	10,8	117,0	198,0
5x2x1.0	RF	11,9	140,0	230,0
1x2x1.5	RF	6,4	52,0	79,0
2x2x1.5	RF	11,0	98,0	170,0
3x2x1.5	RF	11,6	130,0	215,0
4x2x1.5	RF	12,8	160,0	265,0
5x2x1.5	RF	14,1	195,0	310,0

RF - fine wire stranded conductor (class 5)

NYSLY, NYSLYCY - OIL

Special PVC flexible control cables with oil-resistance outer sheat
Rated Voltage: U0/U - 300/500 V
Standard: DIN VDE 0281/part 5 and part 13

Application

In dry and wet conditions as supply cable or remote control and signal cable in assembling lines, machine tools, automatics, etc., at medium mechanical strains. Not designed for laying in the open air. Due to his chemical characteristics suitable for usage in brewaries and washing plants.

Technical Data:	
Conductor resistance:	acc. to DIN VDE 0295 and IEC 60228 for class 5
Permissable conductor temperature:	
in constant operation:	70°C
in short circuit (max 5s):	150°C
Working Voltage:	300/500 V
Insulation resistance, min.	20 MΩxkm
Test voltage:	
wire/wire:	2 kV,
wire/screen:	2 kV,
Temperature Range:	
Fixed installation:	-40°C to +70°C
Flexible Installation:	+5°C to +70°C
Radiation resisance:	$80x10^6$ cJ/kg (up to 80 Mrad)
Bending radius, min.	7.5xDcable
Oil resistance:	research according to VDE 0207 and VDE 0473.

Cable Structure:	
Conductor:	Multiwire stranded electrolytic copper conductor class 5, according to DIN VDE 0295 and IEC 60228
Insulation:	Special PVC compound, type TI 2, according to DIN VDE 0281 Teil 1
Color code:	The cores are black, marked with numbers, according to DIN VDE 0293. When green/yellow core exists (type code: -JZ), it is laid in outer layer.
Core arrangement:	Cores stranded in layer, without streched central core
Wrapping:	Core wrapping with plastic tape
Screen:	braid of tinned copperwires, coverage approx. 85% (only for NYSLYCO)
Outer jacket:	Special PVC compound layer, oil-resistant, complying to type TM 5 requirements according to DIN VDE 0281 Teil 1
Color:	Standard colour of the sheath: gray

On Request

Protected against direct sun irradiation

Oil resistant outer sheath.

RF - fine wire stranded conductor (class 5)

Packing

Standard packing length on cable coils: (50m, 100m)

Construction data NYSLYCÖ U0/U - 300/500V

Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
3x0.5	RF	8,6	35,0	99,0	100
4x0.5	RF	9,3	43,0	118,0	100
5x0.5	RF	10,4	49,0	141,0	100
7x0.5	RF	11,0	61,0	166,0	100
12x0.5	RF	13,9	107,0	263,0	10/1000
19x0.5	RF	16,8	150,0	382,0	12/1000
25x0.5	RF	19,5	189,0	505,0	12/1000
27x0.5	RF	18,6	200,0	473,0	12/1000
34x0.5	RF	21,1	238,0	599,0	14/1000
37x0.5	RF	21,1	256,0	608,0	14/1000
44x0.5	RF	24,3	301,0	772,0	14/1000
50x0.5	RF	25,4	354,0	877,0	14/1000
61x0.5	RF	27,2	417,0	1003,0	16/1000

Construction data: NYSLYCÖ U0/U - 300/500V

Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
3x0.75	RF	9,0	44,0	113,0	100
4x0.75	RF	10,2	54,0	144,0	100
5x0.75	RF	10,9	63,0	163,0	100
7x0.75	RF	11,6	80,0	194,0	9/1000
12x0.75	RF	14,7	139,0	310,0	10/1000
19x0.75	RF	17,8	200,0	453,0	12/1000
25x0.75	RF	20,7	254,0	600,0	14/1000
27x0.75	RF	20,5	270,0	596,0	14/1000
34x0.75	RF	22,8	328,0	742,0	14/1000
37x0.75	RF	23,5	353,0	788,0	14/1000
44x0.75	RF	25,9	414,0	930,0	16/1000
50x0.75	RF	27,1	483,0	1054,0	16/1000
61x0.75	RF	29,5	576,0	1242,0	16/1000

NYSLY, NYSLYCY - OIL

Special PVC flexible control cables with oil-resistance outer sheath
Rated Voltage: U0/U - 300/500 V
Standard: DIN VDE 0281/part 5 and part 13

Construction data NYSLYCÖ U0/U - 300/500V						Construction data: NYSLYCÖ U0/U - 300/500V					
Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum	Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m	No x mm²		max.mm	kg/km	kg/km	m or N°/m
3x1	RF	9,6	53,0	133,0	100	3x1.5	RF	12,2	104,0	228,0	100
4x1	RF	10,7	65,0	162,0	100	4x1.5	RF	13,3	131,0	275,0	100
5x1	RF	11,4	77,0	185,0	10/100	5x1.5	RF	14,6	172,0	332,0	10/1000
7x1	RF	12,2	99,0	222,0	10/100	7x1.5	RF	15,6	225,0	409,0	10/1000
12x1	RF	16,6	174,0	394,0	12/1000	12x1.5	RF	21,4	365,0	710,0	14/1000
19x1	RF	19,4	250,0	548,0	12/1000	19x1.5	RF	25,5	548,0	1031,0	14/1000
25x1	RF	22,3	321,0	716,0	14/1000	25x1.5	RF	29,6	738,0	1380,0	16/1000
27x1	RF	22,7	342,0	744,0	14/1000	27x1.5	RF	30,2	789,0	1439,0	16/1000
34x1	RF	24,8	415,0	895,0	14/1000	34x1.5	RF	32,8	968,0	1733,0	14/500
37x1	RF	24,9	448,0	919,0	14/1000	37x1.5	RF	33,2	1045,0	1807,0	14/500
44x1	RF	27,5	526,0	1088,0	16/1000	44x1.5	RF	37,8	1235,0	2233,0	16/500
50x1	RF	29,1	615,0	1260,0	16/1000	50x1.5	RF	39,2	1419,0	2499,0	16/500
61x1	RF	31,9	732,0	1485,0	14/500	61x1.5	RF	42,0	1663,0	2869,0	16/500

SPZ, SEZ

Copper conductors, PVC insulation, steel tape armour
Standard: JŽS S2.011 : 2008

Application

For connecting remote safety control and signal devices at electrificated railways. For laying in earth, in ducts.

Technical Data:		
Conductor diameter, mm	0.9	1.4
Conductor resistance at 20°C - max.	28.9 Ω/km	11.9 Ω/km
Max. operating temperature of Conductor:	70°C	70°C
Insulation resistance, min:		
for SPZ:	5 MΩ .km	5 MΩ .km
for SEZ:	10 GΩ .km	10 GΩ .km
Mutual capacitance, max:		
for SPZ:	180 nF/km	210 nF/km
for SEZ:	100 nF/km	120 nF/km
Dialectic strenght, wire/wire:	2000 V	2000 V
Temperature range:	-5°C to +50°C	
Minimum bending radius approx.	15xDcable	

Cable Structure:	
Conductor:	Annealed copper wire 0.9 mm
	diameter and 1.4 mm diameter
Insulation:	
for SPZ:	PVC compound
for SEZ:	PE compound
Core arrangement:	The cores are stranded, concentric laid
Inner covering:	thermoplastic tape
Inner sheath:	PVC compound
Armour:	Wrapped steel tape
Outer sheath:	PVC compound
Color:	Standard colour of the sheath: black

Packing

Packing length on wooden drums: (500m; 1000m)

Construction data: SPZ					Construction data: SPZ				
Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Number of pairs	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)
No x mm		max.mm	kg/km	kg/km	No x mm		max.mm	kg/km	kg/km
2x0.9	RE	9,0	12,2	155,0	2x1.4	RE	10,5	29,6	205,0
4x0.9	RE	11,0	24,0	174,0	4x1.4	RE	12,5	59,0	236,0
5x0.9	RE	12,0	31,0	196,0	5x1.4	RE	13,5	74,0	271,0
8x0.9	RE	13,0	49,0	242,0	8x1.4	RE	15,0	118,0	359,0
12x0.9	RE	14,5	73,0	321,0	12x1.4	RE	17,5	177,0	505,0
16x0.9	RE	16,0	98,0	385,0	16x1.4	RE	19,0	237,0	618,0
21x0.9	RE	17,5	128,0	460,0	21x1.4	RE	21,0	310,0	770,0
27x0.9	RE	18,5	165,0	530,0	27x1.4	RE	24,0	399,0	980,0
33x0.9	RE	19,5	201,0	610,0	33x1.4	RE	25,3	488,0	1141,0
40x0.9	RE	22,0	244,0	762,0	40x1.4	RE	27,5	591,0	1318,0
48x0.9	RE	23,5	293,0	869,0	48x1.4	RE	29,5	710,0	1524,0
Construction data: SEZ					Construction data: SEZ				
2x0.9	RE	9,0	12,2	153,0	2x1.4	RE	10,5	29,6	200,0
4x0.9	RE	10,5	24,0	160,0	4x1.4	RE	13,0	59,0	224,0
5x0.9	RE	11,0	31,0	181,0	5x1.4	RE	13,5	74,0	268,0
8x0.9	RE	12,5	49,0	224,0	8x1.4	RE	15,5	118,0	350,0
12x0.9	RE	14,5	73,0	304,0	12x1.4	RE	17,5	177,0	480,0
16x0.9	RE	15,5	98,0	360,0	16x1.4	RE	18,0	237,0	584,0
21x0.9	RE	16,5	128,0	423,0	21x1.4	RE	21,0	310,0	724,0
27x0.9	RE	18,0	165,0	500,0	27x1.4	RE	24,0	399,0	922,0
33x0.9	RE	19,5	201,0	606,0	33x1.4	RE	26,5	488,0	1150,0
40x0.9	RE	21,5	244,0	721,0	40x1.4	RE	28,0	591,0	1260,0
48x0.9	RE	23,5	293,0	821,0	48x1.4	RE	29,0	710,0	1419,0

* Other constructions are available on request

YV x 0.4/0.8, YV x 0.5/0.9

Tinned copper conductor, PVC insulation, single or stranded
Standard: VDE 0812

The jumper wire is used for wiring telephone and signal distributors.
Tinned copper conductor with a diameter of 0.4, and 0.5mm PVC insulating cover.
The operating voltages of the cables are 500 V.

Technical Data:

Conductor diameter, mm	0.4	0.5
Conductor resistance at 20 ^{0}C - m		
-single wire	144	92.2
-multi-wire	148	95.0
Insulation resistancemin., MΩ .km	200	200
Test voltage 50Hz, 1 min	1200V	1200V
Nominal voltage peak value	500V	500V
Temperature range:		
mobile:	-30°C to +50°C	
fixed:	-5°C to +60°C	
Minimum bending radius approx.	10xDcable	

Cable Structure:

Conductor:	solid tinned copper conductor diameter: 0.4mm and 0.5mm
Conductor:	PVC insulation typeYI3 according to VDE 0207, part4
Cable core:	the wires are stranded into pairs, triples, quads and quintuples

Color coding:

number of wires	Wire color
1	brown, red, yellow, green, blue, gray, white, black
2	white/brown, white/green, white/blue
3	white/black/green
4	white/yellow/black/green
5	white/yellow/black/green/gray

Type Codes

V - tinned copper conductor
Y - insulating cover of PVC

Packing

Packing length in cable coils: (on request)

Constriction Data:

Number of wires	Outer diameter approx.	Copper weight approx.	Wire weight approx.
	mm x mm	kg/km	kg/km
YV x 0.4/0.8			
1	0.8	1.1	1.6
2	1.6	2.2	3.2
3	1.7	3.3	4.8
4	1.9	4.4	6.4
5	2.2	5.5	8.0
YV x 0.5/0.9			
1	0.9	1.7	2.3
2	1.8	3,5	4.8
3	1.9	5.2	7.0
4	2.2	7.0	9.2
5	2.4	8.7	11.6

Low Voltage Power Cables

Low Voltage Power Cables

NYY, NAYY

Power cable with PVC insulation and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: DIN VDE 0276/HD603 type 3G-2-power; DIN VDE 0276/HD627 type 4H1 - signal

Application

NYY, NAYY is used in power plants industrial and switching installations, in secondary distribution networks and other. These cables are preferentially used in outdoor applications, for indoor installations, in the open air, underground and in water where mechanical damage is not anticipated.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1(1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Bending radius, min.	
single core:	15xDcable
multi core:	12xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conducor = 50 N/mm²
	For Al conducor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type DIV4 acc. VDE0207
Core identification:	according to VDE 0293
Signal-command copper core:	Additional, cross section 2,5mm², red coloured (black coloured 1,5mm2 on request)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	rubber filling compound or tape
Sheath:	PVC type DMV5 acc. VDE 0207
Color of sheath:	black

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

Additional information and technical data

Available conductor sizes for power distribution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm² - 630mm²	25mm² - 630mm²
2 cores:	1.5mm² - 120mm²	25mm² - 120mm²
3 cores:	1.5mm² - 300mm²	25mm² - 240mm²
4 cores:	1.5mm² - 300mm²	25mm² - 240mm²
3 cores+1 earth core:	25mm² - 300mm² / + 16mm² - 150mm²	25mm² - 240mm² / + 25mm² - 120mm²
5 cores:	1.5mm² - 300mm²	25mm² - 300mm²
Available conductor sizes for signalling and control		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm²	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

Packing

Standard packing length on wooden drums: (500m; 1000m)
Length Tolerance per drum ± 5%

*other dimensions available on request.

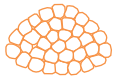
Construction data: NAYY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Al. weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
4x25+1.5	RM+RE	27,5	290,0	1081,0	12/500
4x35+1.5	RM+RE	30,0	406,0	1293,5	14/500
4x50+1.5	SM+RE	31,0	580,0	1340,0	14/500
4x70+1.5	SM+RE	35,0	812,0	1755,0	16/500
4x95+1.5	SM+RE	40,0	1102,0	2262,0	16/500
4x120+1.5	SM+RE	43,0	1392,0	2702,0	16/500
4x150+1.5	SM+RE	48,0	1740,0	3370,5	18/500
4x185+1.5	SM+RE	53,0	2146,0	4086,5	20/500
4x240+1.5	SM+RE	59,0	2784,0	5142,0	22/500

NYY, NAYY

Power cable with PVC insulation and PVC sheath

Rated Voltage: U0/U - 0.6/1 kV

Standard: DIN VDE 0276/HD603 type 3G-2-power; DIN VDE 0276/HD627 type 4H1 - signal



Low Voltage Power Cables

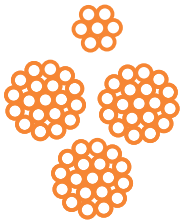
Construction data: NYY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1x4	RE	8,0	38,0	104,0	100
1x6	RE	9,0	58,0	128,0	100
1x10	RE	10,0	96,0	176,0	100
1x16	RE	11,0	154,0	239,0	9/1000
1x25	RM	13,0	240,0	380,0	9/1000
1x35	RM	14,0	336,0	477,0	10/1000
1x50	RM	15,0	480,0	650,0	10/1000
1x70	RM	17,0	672,0	864,0	12/1000
1x95	RM	19,0	912,0	1132,0	12/1000
1x120	RM	21,0	1150,0	1405,0	14/1000
1x150	RM	22,0	1440,0	1710,0	14/1000
1x185	RM	24,0	1776,0	2086,0	14/1000
1x240	RM	27,0	2304,0	2669,0	16/1000
1x300	RM	30,0	2880,0	3305,0	16/1000
1x400	RM	34,0	3840,0	4337,0	18/1000
3x1.5	RE	12,0	43,0	223,0	9/1000
3x2.5	RE	13,0	72,0	272,0	9/1000
3x4	RE	15,0	115,0	373,0	10/1000
3x6	RE	16,0	173,0	466,0	12/1000
3x10	RE	18,0	288,0	629,0	12/1000
3x16	RE	20,0	461,0	850,0	12/1000
3x25/16	RM/RM	25,0	874,0	1595,0	14/1000
3x35/16	SM/RM	27,0	1162,0	1718,0	16/1000
3x50/25	SM/RM	30,5	1680,0	2383,0	14/500
3x70/35	SM/SM	33,0	2352,0	3196,0	14/500
3x95/50	SM/SM	38,0	3216,0	4271,0	16/500
3x120/70	SM/SM	41,0	4128,0	5281,0	16/500
3x150/70	SM/SM	45,5	4992,0	6408,0	18/500
3x185/95	SM/SM	50,0	6240,0	7909,0	20/500
3x240/120	SM/SM	57,0	8064,0	10162,0	22/500
4x1.5	RE	13,0	58,0	256,0	9/1000
4x2.5	RE	14,0	96,0	316,0	10/1000
4x4	RE	15,0	154,0	439,0	10/1000
4x6	RE	17,0	230,0	547,0	12/1000
4x10	RE	19,0	384,0	743,0	12/1000
4x16	RE	22,0	614,0	1039,0	14/1000
4x25	RM	26,5	960,0	1620,0	16/1000
4x35	SM	27,0	1344,0	1916,0	16/1000
4x50	SM	31,0	1920,0	2639,0	14/500
4x70	SM	35,0	2688,0	3576,0	14/500
4x95	SM	40,0	3648,0	4746,0	16/500
4x120	SM	43,0	4608,0	5813,0	16/500
4x150	SM	48,0	5760,0	7263,0	18/500
4x185	SM	53,0	7104,0	8905,0	20/500
4x240	SM	60,0	9210,0	11430,0	24/500
5x1.5	RE	14,0	72,0	292,0	10/1000
5x2.5	RE	15,0	120,0	363,0	10/1000
5x4	RE	17,0	192,0	510,0	12/1000
5x6	RE	18,5	288,0	640,0	12/1000
5x10	RE	21,0	480,0	899,0	14/1000
5x16	RE	23,0	768,0	1240,0	14/1000
5x25	RM	30,0	1200,0	1957,0	16/1000
7x1.5	RE	15,0	101,0	350,0	10/1000
10x1.5	RE	17.5	144,0	476,0	12/1000
12x1.5	RE	18,0	173,0	523,0	12/1000
14x1.5	RE	18,7	202,0	578,0	12/1000
19x1.5	RE	20,5	274,0	716,0	14/1000
24x1.5	RE	23,5	346,0	885,0	14/1000
30x1.5	RE	25,0	432,0	1045,0	14/1000
40x1.5	RE	27,0	576,0	1310,0	16/1000
7x2.5	RE	16,0	168,0	445,0	12/1000
10x2.5	RE	19,0	240,0	610,0	12/1000
12x2.5	RE	19,5	288,0	680,0	12/1000
14x2.5	RE	20,5	336,0	755,0	14/1000
19x2.5	RE	22,5	456,0	950,0	14/1000
24x2.5	RE	26,0	576,0	1173,0	16/1000
30x2.5	RE	27,2	720,0	1398,0	16/1000
40x2.5	RE	30,0	960,0	1778,0	16/1000

*other dimensions and packing length are available on request.

Low Voltage Power Cables

NYBY, NAYBY

Power Cable PVC insulated and armoured with two steel tapes
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1(DIN VDE 0271)



Application

NYBY is used in power plants, industrial and switching installations, for street lighting, domestic power supply connections, in secondary distribution networks and other. These cables are also used as control cables for transmission of measured values control and regulation pulses. These cables are preferentially used for underground application as well as for interior installation in room and cable ducts and for outdoor and applications, for indoor installations, in the open air, underground and in wet ambient where greater mechanical protection an protection against accidental contact is required if damaged.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1 (1.2) kV
Test voltage:	AC - 3.5 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Bending radius, min.	
single core:	15xDcable
multi core:	12xDcable
Specific insulation resistance at 70°C:	min. 10^{10} Ωxcm
Max. permissible tensile stress with cable grip:	$P = D^2 \cdot 3$ N/mm^2 D = Cable diameter (mm)

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires
	class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC acc. to IEC 60502
Core identification:	single core-black, multiple core
	according to VDE 0293 (HD 308)
Cores assembly:	cores stranded concentrically
	(cores stranded in concentric layers, for signal)
Inner sheath:	PVC filling compound
Armour:	
for multi-core cable:	two steel tapes
for single-core cable:	two Aluminium tapes
Sheat:	PVC type ST1 acc. IEC 60502
Color:	black

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	size of Cu conductors	size of Al conductors
1 core:	4mm^2 - 630mm^2	16mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
Available conductor sizes for signaling and control		
Number of cores	size of Cu conductors	size of Al conductors
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

Packing

Standard packing length on wooden drums: (500m; 1000m)
Length Tolerance per drum ± 5%

NYBY, NAYBY

Power Cable PVC insulated and armoured with two steel tapes
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1(DIN VDE 0271)

Construction data: NYBY, NAYBY U0/U - 0.6/1kV

Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
NYBY					
2 x 1.5	RE	12,4	29,0	270,0	9/1000
2 x 2.5	RE	13,1	48,0	315,0	9/1000
2 x 4	RE	14,9	77,0	390,0	10/1000
2 x 6	RE	15,9	116,0	465,0	12/1000
2x10	RE	17,5	192,0	590,0	12/1000
2x16	RM	19,4	308,0	790,0	12/1000
2x25	RM	24,4	480,0	1215,0	14/1000
3 x 1.5	RE	13,0	43,0	280,0	9/1000
3 x 2.5	RE	14,0	72,0	340,0	10/1000
3 x 4	RE	16,0	115,0	440,0	12/1000
3 x 6	RE	17,0	173,0	540,0	12/1000
3 x 10	RE	19,0	288,0	710,0	12/1000
3 x 16	RM	21,0	461,0	970,0	12/1000
3x25/16	RM/RE	28,0	874,0	1740,0	12/500
3x35/16	RM/RE	32,0	1162,0	2340,0	14/500
3x50/25	SM/RM	33,0	1680,0	2765,0	14/500
3x70/35	SM/SM	36,0	2352,0	3590,0	14/500
3x95/50	SM/SM	41,0	3216,0	4700,0	16/500
3x120/70	SM/SM	43,0	4128,0	5720,0	16/500
3x150/70	SM/SM	49,0	4992,0	6880,0	18/500
3x185/95	SM/SM	53,0	6240,0	8440,0	20/500
3x240/120	SM/SM	60,0	8064,0	10880,0	22/500
4x1.5	RE	14,0	58,0	313,0	10/1000
4x2.5	RE	15,0	96,0	380,0	10/1000
4x4	RE	17,0	154,0	520,0	12/1000
4x6	RE	18,0	230,0	640,0	12/1000
4x10	RE	20,0	384,0	860,0	14/1000
4x16	RM	22,0	614,0	1170,0	14/1000
4x25	RM	28,0	960,0	1810,0	12/500
4x35	RM	32,0	1344,0	2630,0	14/500
4x50	SM	33,0	1920,0	2940,0	14/500
4x70	SM	37,0	2688,0	3860,0	16/500
4x95	SM	42,0	3648,0	5100,0	16/500
4x120	SM	44,0	4608,0	6150,0	16/500
4x150	SM	49,0	5760,0	7510,0	18/500
4x185	SM	53,0	7104,0	9170,0	20/500
5x1.5	RE	14,5	72,0	360,0	10/1000
5x2.5	RE	15,5	120,0	436,0	10/1000
5x4	RE	18,0	192,0	600,0	12/1000
5x6	RE	20,0	288,0	750,0	12/1000

NAYBY

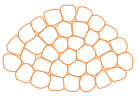
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
4x25+1.5	RM+RE	28,5	290,0	1233,0	16/1000
4x35+1.5	RM+RE	31,0	406,0	1730,0	18/1000
4x50+1.5	SM+RE	33,0	580,0	1940,0	18/1000
4x70+1.5	SM+RE	37,0	812,0	2310,0	20/1000
4x95+1.5	SM+RE	42,0	1102,0	2970,0	16/500
4x120+1.5	SM+RE	46,0	1392,0	3600,0	18/500
4x150+1.5	SM+RE	50,0	1740,0	4230,0	18/500
4x185+1.5	SM+RE	55,0	2146,0	5010,0	20/500
4x240+1.5	SM+RE	61,0	2784,0	6250,0	24/500

*other dimensions and packing length are available on request.

Low Voltage Power Cables

NYCY, NAYCY

Power Cable with concentric copper conductor
Rated Voltage: U0/U - 0.6/1 kV
Standard:DIN VDE 0276/HD603 - power ; DIN VDE 0276/HD627 type 4H1 - signal



Application

NYCY, NAYCY is used in power plants, industrial and switching installations, for street lighting, domestic power supply connections, in secondary distribution networks and other. These cables are preferentially used for underground application as well as for interior installation in room and cable ducts and for outdoor and applications, for indoor installations, in the open air, underground and in wet ambient where greater mechanical protection and protection against accidental contact is required if damaged.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1(1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Bending radius, min.	12xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
max Permessible tensile stress with cable grip:	For Cu conductor = 50 N/mm^2 For Al conductor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type DIV4 acc. VDE0207
Core identification:	according to VDE 0293 (HD 308)
Cores assembly	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	rubber filling compaund
Concentric copper conductor:	helicoidally copper wires and one copper tape around inner covering
Sheat:	PVC type DMV5 acc. VDE 0207, black color

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	size of Cu conductors	size of Al conductors
1 core:	4mm^2 - 500mm^2	25mm^2 - 500mm^2
2 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2
5 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
Available sizes for concentric copper conductor:		
nominal cross-section	1,5mm^2 - 240mm^2	1,5mm^2 - 240mm^2
Available conductor sizes for signalling and control:		
Number of cores	size of Cu conductors	size of Al conductors
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

Packing

Standard packing length on wooden drums: (500m; 1000m)

NYCY, NAYCY

Power Cable with concentric copper conductor
Rated Voltage: U0/U - 0.6/1 kV

Standard DIN VDE 0276/HD603 - power ; DIN VDE 0276/HD627 type 4H1 - signal

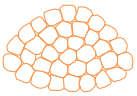
Construction data: NYCY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 1.5/1.5	RE	14	60,0	245,0	10/1000
2 x 2.5/2.5	RE	14	85,0	285,0	10/1000
2 x 4/4	RE	16,0	125,0	360,0	12/1000
3x1.5/1.5	RE	14,0	80,0	280,0	10/1000
3x2.5/2.5	RE	15,0	109,0	316	10/1000
3x4/4	RE	17,0	155,0	423,0	12/1000
3x6/6	RE	18,0	240,0	530,0	12/1000
3x10/10	RE	20,0	384,0	730,0	12/1000
3x16/16	RE	22,0	610,0	970,0	14/1000
3x25/16	RM	25,0	870,0	1340,0	14/1000
3x35/35	SM	27,0	1340,0	1820,0	16/1000
3x50/50	SM	31,0	1980,0	2490,0	12/500
3x70/70	SM	35,0	2680,0	3350,0	16/500
3x95/95	SM	40,0	3650,0	4490,0	16/500
3x120/120	SM	43,0	4610,0	5500,0	16/500
3x150/150	SM	48,0	5750,0	6950,0	18/500
4x1.5/1.5	RE	15,0	94,0	302,0	10/1000
4x2.5/2.5	RE	16,0	133,0	360,0	12/1000
4x4/4	RE	18,0	195,0	485,0	12/1000
4x6/6	RE	19,0	299,0	616,0	12/1000
4x10/10	RE	21,0	480,0	850,0	14/1000
4x16/16	RE	23,0	766,0	1160,0	14/1000
4x25/16	RM	28,0	1112,0	1630,0	16/1000
4x35/16	SM	30,0	1515,0	2080,0	16/1000
4x50/25	SM	34,0	2156,0	2775,0	14/500
4x70/35	SM	38,0	3070,0	3910,0	16/500
4x95/50	SM	43,0	4200,0	5180,0	16/500
4x120/70	SM	48,0	5275,0	6400,0	18/500
4x150/70	SM	53,0	6690,0	8075,0	20/500
4x185/95	SM	58,0	8030,0	9710,0	22/500
5x1.5/2.5	RE	16,0	109,0	344,0	12/1000
5x2.5/2.5	RE	17,0	158,0	412,0	12/1000
5x4/4	RE	19,0	259,0	560,0	12/1000
5x6/6	RE	20,0	355,0	690,0	12/1000
5x10/10	RE	23,0	575,0	965,0	14/1000
5x16/16	RE	25,0	940,0	1355,0	14/1000
7x1.5/2.5	RE	17,0	141,0	395,0	12/1000
8x1.5/2.5	RE	17,0	155,0	440,0	12/1000
10x1.5/2.5	RE	20,0	188,0	510,0	12/1000
12x1.5/2.5	RE	20,0	223,0	585,0	12/1000
14x1.5/2.5	RE	21,0	253,0	640,0	14/1000
19x1.5/4	RE	23,0	325,0	780,0	14/1000
24x1.5/6	RE	26,0	407,0	950,0	16/1000
30x1.5/6	RE	27,0	494,0	1105,0	16/1000
7x2.5/2.5	RE	18,0	209,0	490,0	12/1000
8x2.5/4	RE	19,0	233,0	550,0	12/1000
10x2.5/4	RE	21,0	291,0	670,0	14/1000
12x2.5/4	RE	22,0	339,0	730,0	14/1000
14x2.5/6	RE	23,0	397,0	825,0	14/1000
19x2.5/6	RE	25,0	516,0	1000,0	14/1000
24x2.5/10	RE	28,0	673,0	1270,0	16/1000
30x2.5/10	RE	30,0	820,0	1495,0	16/1000

*other dimensions and packing length are available on request.

Low Voltage Power Cables

NYCWY, NAYCWY

Power Cable with concentric copper conductor
Rated Voltage: U0/U - 0.6/1 kV
Standard:DIN VDE 0276/HD603 type 3G-1 - power ; DIN VDE 0276/HD627 - signal



Application

Power cables for energy supply, preferably used for underground laying, especially in subscriber networks, power station as well as control impulses and test data. Overall, where increased electrical and also mechanical protection are required. These cables are installed in open air, in underground, in water, indoors and in cable ducts. The corrugated concentric conductor (CW) is allowed to use as neutral, protective or earth conductor. Simultaneously, this also is permitted to apply as a screen for example earthed-connected protection against contact. Due to the typical construction of corrugated concentric conductors (Ceander), are possible to obtain many more cable joints, without cutting any conductor. In that way the operating reliability is guaranteed.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1(1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Bending radius, min.	12xDcable
pecific insulation resistance at 70°C:	min, 10^{10} Ω x cm
essible tensile stress with cable grip:	For Cu conductor = 50 N/mm^2 For Al conductor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or 5 acc. VDE 0295(IEC 60228)
Insulation:	PVC type DIV4 acc. VDE0207
Core identification:	according to VDE 0293 (HD 308)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	rubber filling compaund
Concentric copper conductor:	Waveconal outer conductor – copper wires and contrahelical copper tape (reverse lay copper tape)
Sheath:	PVC type DMV5 acc. VDE 0207
Color:	black

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

Additional information and technical data

Available conductor sizes for power distribution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm^2 - 300mm^2	25mm^2 - 300mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2
5 cores:	1.5mm^2 - 185mm^2	25mm^2 - 185mm^2
Available sizes for concentric copper conductor		
nominal cross-section	1,5mm^2 - 185mm^2	1,5mm^2 - 185mm^2
Available conductor sizes for signalling and control		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

Packing

Standard packing length on wooden drums: (500m; 1000m)

NYCWY, NAYCWY

Power Cable with concentric copper conductor
Rated Voltage: U0/U - 0.6/1 kV
Standard:DIN VDE 0276/HD603 type 3G-1 - power ; DIN VDE 0276/HD627 - signal

Construction data: NYCWY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
3x10/10	RE	20	394,0	775,0	12/1000
3x16/16	RE	22,0	630,0	1066,0	14/1000
3x25/16	RM	26,0	895,0	1584,0	16/1000
3x35/16	SM	28	1190,0	1710,0	16/1000
3x50/25	SM	30,0	1722,0	2368,0	14/500
3x70/35	SM	33,0	2411,0	3174	14/500
3x95/50	SM	38,0	3296,0	4256,0	16/500
3x120/70	SM	41,0	4231,0	5314,0	16/500
3x150/70	SM	45,0	5117,0	6344,0	18/500
3x185/95	SM	50,0	6396,0	8054,0	20/500
3x240/120	SM	56,0	8265,0	10274,0	22/500
4x10/10	RE	21,0	492,0	897,0	14/1000
4x16/16	RE	24,0	787,0	1250,0	14/1000
4x25/16	RM	28,0	1141,0	1822,0	16/1000
4x35/16	SM	29,0	1535,0	2140,0	16/1000
4x50/25	SM	33,0	2214,0	3031,0	14/500
4x70/35	SM	38,0	3100,0	4056,0	16/500
4x95/50	SM	43,0	4231,0	5364,0	16/500
4x120/70	SM	46,0	5412,0	6748,0	18/500
4x150/70	SM	51,0	6592,0	8159,0	20/500
4x185/95	SM	57,0	8216,0	10198,0	22/500

*other dimensions and packing length are available on request.

Low Voltage Power Cables

NYRY, NAYRY

Power Cable PVC insulation armored with steel wire armour
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1; DIN VDE 0271 (acc. to BS 6346)

Application

These cables are used in power plants, industrial and switching installations, for street lighting, domestic power supply connections, in secondary distribution networks and other.These cables are preferentially used for underground application as well as for interior installation in room and cableducts and for outdoor and applications, for indoor installations, in the open air, underground and in wet ambient where greater mechanical protection an protection against accidental contact is required if damaged.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 and BS 6360
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage U0/U(Umax):	0.6/1(1.2) kV
Test voltage, AC(50 Hz):	4kV (3.5kV by IEC)
Min. temp. during installation:	-5°C
Operating temperature:	-30°C to +70°C
Bending radius, min.	
single core:	15xDcable
multi core:	12xDcable
Spec. insulation resisance at 70°C:	min, 10^{10}Ωxcm
Max. permissible tensile stress with cable grip:	P = D^2· 9 N/mm^{2}D = Cable diameter (mm)

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or 5 acc.
	VDE 0295(IEC 60228) and BS 6360
Insulation:	PVC compound, type PVC/A acc. to IEC 60502
	(PVC type TI-1 acc. to BS 7655)
Core identification:	single core-black, multiple core
	according to VDE 0293 (HD 308) or according to BS 7655
Inner sheath:	PVC filling compound
Armour:	
for single-core:	aluminium round wires : NYR(AL)Y
for multi-core:	galvanized round steel wires
Optional armour:	Armour of galvanized flat steel wires and
	optional contra spiral galvanized steel tape
Sheath:	PVC compound, type PVC/ST1 acc. to IEC 60502
	(PVC compound type TM-1 acc. to BS 7655), black color

Additional information and technical data

Available conductor sizes for power distribution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	10mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2	25mm^2 - 240mm^2 / + 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 185mm^2	25mm^2 - 185mm^2
Available conductor sizes for signalling and control:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

NYRY, NAYRY

Power Cable PVC insulation armored with steel wire armour
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1; DIN VDE 0271 (acc. to BS 6346)

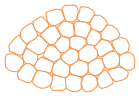
Construction data: NYRY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
NYR(AL)Y - armour with aluminium roound wires					
1x10	RE	14,4	96,0	326,0	10/1000
1x16	RE	15,4	154,0	402,0	10/1000
1x25	RM	17,2	240,0	541,0	12/1000
1x35	RM	18,3	336,0	658,0	12/1000
1x50	RM	20,5	480,0	841,0	12/1000
1x70	RM	22,5	672,0	1070,0	14/1000
1x95	RM	24,5	912,0	1365,0	14/1000
1x120	RM	26,5	1152,0	1662,0	16/1000
1x150	RM	28,5	1440,0	1967,0	16/1000
1x185	RM	31,0	1776,0	2406,0	18/1000
1x240	RM	34,0	2304,0	3071,0	18/1000
1x300	RM	38,0	2880,0	3781,0	16/500
1x400	RM	42,0	3840,0	4764,0	16/500
1x500	RM	46,5	4800,0	5968,0	18/500
1x630	RM	51,0	6048,0	7538,0	20/500
NYRY - armour with galvanized stell wires					
2x1.5	RE	14,0	28,8	347,0	10/1000
2x2.5	RE	15,0	48,0	403,0	10/1000
2x4.0	RE	16,9	76,8	516,0	12/1000
2x6.0	RE	18,8	115,2	701,0	12/1000
2x10	RE	21,0	192,0	874,0	14/1000
2x16	RE	23,0	308,0	1082,0	14/1000
2x25	RM	27,0	480,0	1565,0	16/1000
2x35	RM	29,0	672,0	1893,0	16/1000
2x50	RM	32,5	960,0	2293,0	18/1000
2x70	RM	37,0	1344,0	3150,0	16/500
2x95	RM	42,0	1824,0	4037,0	16/500
2x120	RM	45,0	2304,0	4725,0	18/500
2x150	RM	50,5	2880,0	6041,0	20/500
2x185	RM	55,5	3552,0	7253,0	22/500
NYRY - armour with galvanized stell wires					
3x1.5	RE	14,5	43,2	382,0	10/1000
3x2.5	RE	15,5	72,0	448,0	10/1000
3x4.0	RE	18,4	115,2	678,0	12/1000
3x6.0	RE	19,6	172,8	783,0	12/1000
3x10	RE	22,0	288,0	1006,0	14/1000
3x16	RE	24,0	462,0	1276,0	14/1000
3x25	RM	28,0	720,0	1863,0	16/1000
3x35	RM	30,5	1008,0	2279,0	14/500
3x50	SM	33,5	1440,0	2644,0	14/500
3x70	SM	38,5	2016,0	3664,0	16/500
3x95	SM	42,5	2736,0	4661,0	16/500
3x120	SM	45,5	3456,0	5478,0	18/500
3x150	SM	51,5	4320,0	7040,0	20/500
3x185	SM	56,5	5328,0	8457,0	22/500
3x240	SM	62,5	6912,0	10579,0	24/500
3x300	SM	68,0	8640,0	12683,0	24/500
NYRY - armour with galvanized stell wires					
4x1.5	RE	15,4	57,6	425,0	10/1000
4x2.5	RE	16,5	96,0	509,0	12/1000
4x4.0	RE	19,6	153,6	767,0	12/1000
4x6.0	RE	21,0	230,4	904,0	14/1000
4x10	RE	23,5	384,0	1179,0	14/1000
4x16	RE	27,0	616,0	1657,0	16/1000
4x25	RM	30,5	960,0	2236,0	16/1000
4x35	RM	33,5	1344,0	2768,0	14/500
4x50	SM	40,0	1920,0	3639,0	16/500
4x70	SM	43,0	2688,0	4592,0	16/500
4x95	SM	50,0	3648,0	6338,0	20/500
4x120	SM	54,0	4608,0	7547,0	20/500
4x150	SM	60,5	5760,0	9073,0	24/500
4x185	SM	65,0	7104,0	10835,0	24/500
4x240	SM	72,0	9216,0	13543,0	24/450
4x300	SM	78,0	11520,0	16333,0	24/400

*other dimensions and packing length are available on request.

Low Voltage Power Cables

NY2Y, NAY2Y

Power Cable PVC insulation and PE sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard:DIN VDE 0276/HD603; IEC 60502-1



Application

Power cable suitable for laying in air, soil, water, concrete, in enclosed locations, cable ducts, in Power Plants, Industrial Applications, City Power Grids where mechanical damages are not expected and cables are not exposed to excessive pulling.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage:	0.6/1 kV
Test voltage:	AC - 4 kV (3.5kV by IEC); 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Bending radius, min.	
single core:	15xDcable
multi core:	12xDcable
Specific insulation resisance at 70°C:	min, 10^{10}Ωxcm
Max. permissible tensile stress with cable grip:	For Cu conducor = 50 N/mm^2
	For Al conducor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires
	class 1, 2 or (5) acc. VDE 0295(IEC 60228)
Insulation:	PVC acc. to IEC 60502 or PVC type DIV4 acc. VDE0276
Core identification:	single core-black, multiple core
	according to VDE 0293 (HD 308)
Signal-command copper core:	Additional, cross section 2,5mm^2,
	red coloured (black coloured 1,5mm2 on request)
Cores assembly:	cores stranded concentrically
	(cores stranded in concentric layers, for signal)
Inner covering:	rubber filling compound
Sheath:	HDPE outer jacket, black, type DMP2
	according DIN VDE 0276-603 (HD603.1)
Color:	black

Additional information and technical data

Available conductor sizes for power distribution:		
Number of cores	size of Cu conductors	size of Al conductors
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
Available conductor sizes for signalling and control		
Number of cores	size of Cu conductors	size of Al conductors
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

NY2Y, NAY2Y

Power Cable PVC insulation and PE sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard:DIN VDE 0276/HD603; IEC 60502-1

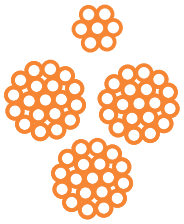
Construction data: NAY2Y U0/U - 0.6/1kV					
Nominal Cross Section	Shape	Overall Diameter (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
with signal wire - 2.5 mm².					
4x16+2,5	RM+RE	23,0	186,0	665,0	14/1000
4x25+2,5	RM+RE	27,0	290,0	1325,0	16/1000
4x35+2,5	RM+RE	29,0	406,0	1164,0	16/1000
4x50+2,5	SM+RE	32,0	580,0	1290,0	18/1000
4x70+2,5	SM+RE	36,0	812,0	1740,0	16/500
4x95+2,5	SM+RE	40,0	1102,0	2220	16/500
4x120+2,5	SM+RE	44,0	1392,0	2700,0	18/500
4x150+2,5	SM+RE	49,0	1740,0	3315,0	20/500
4x185+2,5	SM+RE	54,0	2146,0	3960,0	20/500
4x240+2,5	SM+RE	61,0	2784,0	5065,0	24/500
without signal wire					
4x16	RM	23,0	186,0	645,0	14/1000
4x25	RM	27,0	290,0	1295,0	16/1000
4x35	RM	29,0	406,0	1132,0	16/1000
4x50	SM	32,0	580,0	1270,0	18/1000
4x70	SM	36,0	812,0	1720,0	16/500
4x95	SM	40,0	1102,0	2190,0	16/500
4x120	SM	44,0	1392,0	2665,0	18/500
4x150	SM	49,0	1740,0	3295,0	20/500
4x185	SM	54,0	2146,0	3930,0	20/500
4x240	SM	61,0	2784,0	5035,0	24/500

*other dimensions and packing length are available on request.

Low Voltage Power Cables

N2XY, NA2XY, N2X2Y, NA2X2Y

Power cable with XLPE insulation and PVC or PE sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: VDE 0276/HD603 tip 5G-2; IEC 60502-1



Application

The power cables with insulation of cross-linked polyethylene (XLPE) are designed for distribution and supply of consumers with nominal voltage 0.6/1 kV and frequency 50 Hz in industrial installations and urban networks. They are suitable for fixed indoor assembly in cable ducts and conduits, over shelves and grilles, directly underground in ditch and outdoor under shelters providing the conditions determined for the type of cable.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	90°C in operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Rated voltage $U_0/U(U_{max})$:	0.6/1(1.2) kV
Test voltage:	AC - 4 kV (3.5kV by IEC); 50 Hz
Temperature range:	
flexing:	-5°C to +50°C
stationary:	-30°C to +90°C
Bending radius, min.	
for single-core:	15xDcable
for multi-core:	12xDcable
Specific insulation resistance at 90°C:	min, 10^{14} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conducor = 50 N/mm^2 For Al conducor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or (5) acc. VDE 0295 (IEC 60228)
Insulation:	XLPE type DIX3 acc. to VDE 0276-603/5G
Core identification:	according to VDE 0293 (HD 308)
Signal-command copper core:	Additional, cross section 2,5mm2, red coloured (black coloured 1,5mm2 on request)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Wrapping:	paper tape
Inner covering:	rubber filling compound
Sheath:	PVC type DMV6 acc. to VDE 0276-603/sec.1 or PE HDPE mass, type DMP2 acc. DIN VDE 0276/HD603
Color of sheath:	black

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	size of Cu conductors	size of Al conductors
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores + 1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2
5 cores:	1.5mm^2 - 300mm^2	25mm^2 - 300mm^2
Available conductor sizes for signaling and control		
Number of cores	size of Cu conductors	size of Al conductors
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

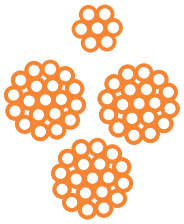
On request:

- Fire propagation acc. IEC 60332-3
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

N2XY, NA2XY, N2X2Y, NA2X2Y

Power cable with XLPE insulation and PVC or PE sheath
Rated Voltage: U0/U - 0.6/1 kV

Standard: **VDE 0276/HD603 tip 5G-2; IEC 60502-1**



Construction data: N2XY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper (or Al) weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
N x mm²		max.mm	kg/km	kg/km	m or N°/m
1x4	RE	6,5	38,0	74,0	100
1x6	RE	7,0	58,0	96,0	100
1x10	RE	8,0	96,0	142,0	100
1x16	RE	9,0	154,0	205,0	8/1000
1x25	RM	11,0	240,0	302,0	9/1000
1x35	RM	12,0	336,0	400	9/1000
1x50	RM	13,0	480,0	526,0	9/1000
1x70	RM	16,0	672,0	750,0	12/1000
1x95	RM	17,0	912,0	1000,0	12/1000
1x120	RM	18,5	1150,0	1240,0	12/1000
1x150	RM	21,0	1440,0	1550,0	14/1000
1x185	RM	23,0	1776,0	1890,0	14/1000
1x240	RM	26,0	2304,0	2430,0	16/1000
1x300	RM	28,0	2880,0	3015,0	16/1000
3x1.5	RE	10,0	43,0	142,0	8/1000
3x2.5	RE	11,0	72,0	183,0	9/1000
3x4	RE	12,0	115,0	242,0	9/1000
3x6	RE	13,0	173,0	320,0	9/1000
3x10	RE	15,0	288,0	480,0	10/1000
3x16	RE	17,0	461,0	700,0	12/1000
3x25/16	RM/RM	21,0	874,0	1230,0	14/1000
3x35/16	SM/RM	26,0	1162,0	1450,0	16/1000
3x50/25	SM/RM	29	1680,0	1955,0	14/500
3x70/35	SM/SM	31,0	2352,0	2720,0	14/500
3x95/50	SM/SM	37,0	3216,0	3756,0	16/500
4x1.5	RE	11,0	58,0	165,0	9/1000
4x2.5	RE	12,0	96,0	216,0	9/1000
4x4	RE	13,0	154,0	290,0	9/1000
4x6	RE	14,0	230,0	385,0	10/1000
4x10	RE	16,0	384,0	590,0	12/1000
4x16	RE	19,0	614,0	864,0	12/1000
4x25	RM	22	960,0	1293,0	14/1000
4x35	SM	27,0	1344,0	1750,0	16/1000
4x50	SM	30,0	1920,0	2300,0	14/500
4x70	SM	34,0	2688,0	3280,0	14/500
4x95	SM	38,0	3648,0	4300,0	16/500
4x120	SM	43,0	4608,0	5416,0	16/500
4x150	SM	47,0	5760,0	6700,0	18/500
4x185	SM	52,0	7104,0	8200,0	20/500
4x240	SM	58,0	9210,0	10560,0	22/500
5x1.5	RE	12,0	72,0	193,0	9/1000
5x2.5	RE	12,5	120,0	252,0	9/1000
5x4	RE	14,0	192,0	340,0	10/1000
5x6	RE	15,0	288,0	460,0	10/1000
5x10	RE	18,0	480,0	840,0	12/1000
5x16	RE	21,0	768,0	1040,0	14/1000
5x25	RM	25,0	1200,0	1560,0	14/1000
Construction data: NA2XY U0/U - 0.6/1kV					
4x16+1.5	RE+RE	21,0	186,0	596,0	14/1000
4x25+1.5	RM+RE	24	290,0	820,0	14/1000
4x35+1.5	RM+RE	27,0	406,0	1033,0	16/1000
4x50+1.5	SM+RE	30,0	580,0	1137,0	14/500
4x70+1.5	SM+RE	35,0	812,0	1568,0	16/500
4x95+1.5	SM+RE	39,0	1102,0	1946,0	16/500
4x120+1.5	SM+RE	43,0	1392,0	2436	16/500
4x150+1.5	SM+RE	47,0	1740,0	2973,0	18/500
4x185+1.5	SM+RE	52,0	2146,0	3592,0	20/500
4x240+1.5	SM+RE	58,0	2784,0	4573,0	22/500
4x16	RE	21,0	186,0	570,0	14/1000
4x25	RM	24	290,0	794,0	14/1000
4x35	SM	27,0	406,0	874,0	16/1000
4x50	SM	30,0	580,0	1110,0	14/500
4x70	SM	35,0	812,0	1540,0	16/500
4x95	SM	39,0	1102,0	1920,0	16/500
4x120	SM	43,0	1392,0	2410,0	16/500
4x150	SM	47,0	1740,0	2946,0	18/500
4x185	SM	52,0	2146,0	3565,0	20/500
4x240	SM	58,0	2784,0	4545,0	22/500

*other dimensions and packing length are available on request.

Low Voltage Power Cables

Low Voltage Power Cables

N2XYRY, NA2XYRY

Power cable with XLPE insulation, steel wire armor, PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1; BS 5467

Application

These power and control armoured cables are designed for open air installation, for direct burrial underground, in wet ambient, in cable ducts, power stations, for industry and distribution boards or subscriber networks, where mechanical damages to the cable may occur.

Technical Data:	
Conductor resistance at 20°C:	according to IEC 60228
Core temperature, max:	90°C in operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Rated voltage $U_0/U(U_{max})$:	0.6/1(1.2)kV
Test voltage:	AC - 3.5 kV; 50 Hz
Service temperature:	-20°C to +90°C
Temperature of exploitation:	-30°C to +50°C
Min. laying temperature:	-5°C
Specific insulation resistance at 90°C:	min. 10^{14} Ω x cm
Max. permessible tensile stress with cable grip:	P = $D^2 \cdot 9$ N/mm^2 D = Cable diameter (mm)
Bending radius, min.	8xDcable

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1 or class 2, in class 5 acc. IEC 60228
Insulation:	XLPE
Core identification:	according to HD 308
Core assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheat:	extruded PVC
Armour:	
for single-core:	aluminium round wires - N2XYR(AL)Y
for multi-core:	galvanized round steel wires
Optional armour:	Armour of galvanized flat steel wires and optional contra spiral galvanized steel tape
Sheath:	PVC , black color

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores / + 1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2
5 cores:	1.5mm^2 - 185mm^2	25mm^2 - 185mm^2
Available conductor sizes for signaling and control		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

On request:

- Fire propagation acc. IEC 60332-3
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

N2XYRY, NA2XYRY

Power cable with XLPE insulation, steel wire armor, PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: IEC 60502-1; BS 5467

Construction data: N2XYRY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
N2XYR(AL)Y - armour with aluminium roound wires					
1x50	RM	17,5	480,0	742,0	12/1000
1x70	RM	19,0	672,0	975,0	12/1000
1x95	RM	21,0	912,0	1277,0	14/1000
1x120	RM	23,0	1152,0	1547,0	14/1000
1x150	RM	24,5	1440,0	1860,0	14/1000
1x185	RM	26,2	1776,0	2268,0	16/1000
1x240	RM	30,0	2304,0	2952,0	16/1000
1x300	RM	32,3	2880,0	3434,0	18/1000
1x400	RM	37,0	3840,0	4738,0	20/1000
N2XYRY - armour with galvanized stell wires					
2x1.5	RE	13,0	28,8	397,0	9/1000
2x2.5	RE	14,0	48,0	455,0	10/1000
2x4.0	RE	14,5	76,8	524,0	10/1000
2x6.0	RE	17,5	115,2	715,0	12/1000
2x10	RE	18,5	192,0	869,0	12/1000
2x16	RE	20,5	307,0	1102,0	12/1000
2x25	RM	24,5	480,0	1637,0	14/1000
N2XYRY- armour with galvanized stell wires					
3x1.5	RE	13,5	43,2	429,0	10/1000
3x2.5	RE	14,5	72,0	498,0	10/1000
3x4.0	RE	15,5	115,2	583,0	10/1000
3x6.0	RE	18,0	172,8	800,0	12/1000
3x10	RE	19,5	288,0	996,0	12/1000
3x16	RE	21,5	460,0	1287,0	14/1000
3x25	RM	25,5	720,0	1918,0	14/1000
3x35	RM	30,0	1008,0	2602,0	14/500
3x50	SM	31,0	1440,0	2771,0	14/500
3x70	SM	35,0	2016,0	3826,0	16/500
3x95	SM	38,5	2736,0	4849,0	16/500
3x120	SM	42,5	3456,0	6158,0	16/500
3x150	SM	47,0	4320,0	7356,0	18/500
3x185	SM	51,5	5328,0	8914,0	20/500
3x240	SM	57,0	6912,0	11082,0	22/500
3x300	SM	62,5	11520,0	13366,0	24/500
N2XYRY- armour with galvanized stell wires					
3x25+16	RM/RM	26,5	873,0	2135,0	16/1000
3x35+16	RM/RM	31,0	1161,0	2793,0	14/500
3x50+25	SM/RM	35,5	1680,0	3492,0	16/500
3x70+35	SM/SM	38,5	2352,0	4414,0	16/500
3x95+50	SM/SM	44,0	3216,0	6063,0	18/500
3x120+70	SM/SM	48,0	4128,0	7298,0	18/500
3x150+70	SM/SM	53,0	4992,0	8586,0	22/500
3x185+95	SM/SM	58,0	6240,0	10409,0	24/500
3x240+120	SM/SM	65,5	8064,0	12960,0	24/500
3x300+150	SM/SM	71,5	12960,0	15497,0	24/450
N2XYRY - armour with galvanized stell wires					
4x1.5	RE	14,0	57,6	466,0	10/1000
4x2.5	RE	15,0	96,0	556,0	10/1000
4x4.0	RE	16,0	153,6	657,0	12/1000
4x6.0	RE	19,0	230,4	906,0	12/1000
4x10	RE	21,0	384,0	1160,0	14/1000
4x16	RE	23,5	614,0	1669,0	14/1000
4x25	RM	27,5	960,0	2289,0	16/1000
4x35	RM	33,0	1344,0	3153,0	14/500
4x50	SM	35,5	1920,0	3725,0	16/500
4x70	SM	38,5	2688,0	4759,0	16/500
4x95	SM	44,0	3648,0	6550,0	18/500
4x120	SM	48,0	4608,0	7817,0	18/500
4x150	SM	53,0	5760,0	9386,0	20/500
4x185	SM	58,0	7104,0	11342,0	22/500
4x240	SM	65,5	9216,0	14230,0	24/500
4x300	SM	74,0	11520,0	18205,0	24/450

*other dimensions and packing length are available on request.

Low Voltage Power Cables

N2XCY, NA2XCY

Power cable with XLPE insulation. concentric conductor and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: VDE 0276/HD603; IEC 60502-1

Application

The power cables with insulation of cross-linked polyethylene (XLPE) are designed for distribution and supply of consumers with nominal voltage 0.6/1 kV and frequency 50 Hz in industrial installations and urban networks. They are suitable for fixed indoor assembly in cable ducts and conduits, over shelves and grilles, directly underground in ditch and outdoor under shelters providing the conditions determined for the type of cable.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228
Core temperature, max:	90°C in operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Rated voltage $U_0/U(U_{max})$:	0.6/1(1.2) kV
Test voltage:	AC - 4 kV (3.5kV by IEC); 50 Hz
Temperature range:	
flexing:	-5°C to +50°C
stationary:	-30°C to +90°C
Bending radius, min.	
for single-core:	15xDcable
for multi-core:	12xDcable
Specific insulation resistance at 90°C:	min, 10^{14} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conducor = 50 N/mm² For Al conducor = 30 N/mm2

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1, 2 or (5) acc. VDE 0295 (IEC 60228)
Insulation:	XLPE type DIX3 acc. to VDE 0276-603/5G
Core identification:	according to VDE 0293 (HD 308)
Signal-command copper core:	Additional, cross section 2,5mm2, red coloured (black coloured 1,5mm2 on request)
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Wrapping:	paper tape
Inner covering:	rubber filling compound
Concentric conductor:	helicoidaly copper wires and one copper tape around inner covering
Sheath:	PVC type DMV6 acc. to VDE 0276-603/sec.1
Color of sheath:	black

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm² - 500mm²	25mm² - 500mm²
2 cores:	1.5mm² - 120mm²	25mm² - 120mm²
3 cores:	1.5mm² - 300mm²	25mm² - 240mm²
4 cores:	1.5mm² - 300mm²	25mm² - 240mm²
3 cores+1 earth core:	25mm² - 300mm² / + 16mm² - 150mm²	25mm² - 240mm² / + 16mm² - 120mm²
5 cores:	1.5mm² - 120mm²	25mm² - 120mm²
Available sizes for concentric copper conductor:		
nominal cross-section	1,5mm² - 240mm²	1,5mm² - 240mm²
Available conductor sizes for signaling and control:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm²	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

On request:

- Fire propagation acc. IEC 60332-3
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

N2XCY, NA2XCY

Power cable with XLPE insulation. concentric conductor and PVC sheath

Rated Voltage: U0/U - 0.6/1 kV

Standard: VDE 0276/HD603; IEC 60502-1

Construction data: N2XCY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1x1.5/1.5	RE	9,7	44,0	120,0	8/1000
1x2.5/2.5	RE	10,2	61,0	143,0	8/1000
1x4/4	RE	10,8	86,0	180,0	9/1000
1x6/6	RE	11,3	124,0	226,0	9/1000
1x10/10	RE	12,4	201,0	322,0	9/1000
1x16/16	RM	13,8	307,0	456,0	10/1000
1x25/16	RM	15,5	393,6	580,0	10/1000
1x35/16	RM	16,6	489,6	689,0	12/1000
1x50/25	RM	18,8	720,0	945,0	12/1000
1x70/35	RM	21,0	1008,0	1279,0	14/1000
1x95/50	RM	23,5	1392,0	1696,0	14/1000
1x120/70	RM	26,0	1824,0	2167,0	16/1000
1x150/70	RM	28,0	2112,0	2459,0	16/1000
1x185/95	RM	30,5	2688,0	3118,0	18/1000
1x240/120	RM	34,0	3456,0	3986,0	18/1000
1x300/150	RM	37,0	4320,0	4866,0	16/500
1x400/185	RM	41,0	5616,0	6179,0	16/500
2x1.5/1.5	RE	13,0	60,0	209,0	9/1000
2x2.5/2.5	RE	13,9	85,0	253,0	10/1000
2x4.0/4.0	RE	15,0	125,0	322,0	10/1000
2x6.0/6.0	RE	16,2	182,0	407,0	12/1000
2x10/10	RE	18,1	292,0	578,0	12/1000
2x16/16	RM	21,0	461,0	811,0	14/1000
2x25/16	RM	24,0	633,0	1091,0	14/1000
2x35/16	RM	26,0	825,0	1359,0	16/1000
2x50/25	RM	29,5	1200,0	1728,0	16/1000
2x70/35	RM	33,0	1680,0	2381,0	14/500
2x95/50	RM	37,5	2304,0	3209,0	16/500
2x120/70	RM	42,0	2976,0	4046,0	16/500
2x150/70	RM	46,0	3552,0	4797,0	18/500
3x1.5/1.5	RE	13,5	80,0	231,0	9/1000
3x2.5/2.5	RE	14,5	109,0	286,0	10/1000
3x4.0/4.0	RE	15,7	155,0	368,0	12/1000
3x6.0/6.0	RE	16,9	240,0	472,0	12/1000
3x10/10	RE	19,0	384,0	683,0	12/1000
3x16/16	RM	22,0	610,0	970,0	14/1000
3x25/16	RM	25,0	870,0	1335,0	14/1000
3x35/16	RM	27,5	1162,0	1692,0	16/1000
3x50/25	SM	30,0	1680,0	2034,0	16/1000
3x70/35	SM	34,0	2352,0	2858,0	14/500
3x95/50	SM	37,5	3216,0	3824,0	16/500
3x120/70	SM	41,5	4128,0	4802,0	16/500
3x150/70	SM	46,5	4992,0	5786,0	18/500
3x185/95	SM	51,0	6240,0	7229,0	20/500
3x240/120	SM	57,5	8064,0	9364,0	22/500
3x300/150	SM	62,5	10080,0	11552,0	24/500
4x1.5/1.5	RE	14,3	94,0	265,0	10/1000
4x2.5/2.5	RE	15,4	133,0	333,0	12/1000
4x4.0/4.0	RE	16,8	195,0	430,0	12/1000
4x6.0/6.0	RE	18,1	299,0	554,0	12/1000
4x10/10	RE	20,5	480,0	818,0	14/1000
4x16/16	RE	23,5	766,0	1166,0	14/1000
4x25/16	RM	27,5	1112,0	1633,0	16/1000
4x35/16	RM	30,0	1515,0	2094,0	14/500
4x50/25	SM	33,5	2156,0	2573,0	14/500
4x70/35	SM	38,5	3070,0	3623,0	16/500
4x95/50	SM	42,5	4200,0	4857,0	16/500
4x120/70	SM	48,0	5275,0	6155,0	18/500
4x150/70	SM	54,0	6690,0	7411,0	20/500
4x185/95	SM	58,5	8030,0	9226,0	22/500
4x240/120	SM	65,5	10368,0	11950,0	24/500
4x300/150	SM	71,5	12960,0	14755,0	24/500

*other dimensions and packing length are available on request.

Low Voltage Power Cables

N2XBY, NA2XBY

Power cable with XLPE insulation, double steel tapes armoured, PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: DIN VDE 0271; IEC 60502-1

Application

These power and control armoured cables are designed for open air installation, for direct burrial underground, in wet ambient, in cable ducts, power stations, for industry and distribution boards or subscriber networks, where mechanical damages to the cable may occur.

Technical Data:	
Conductor resistance at 20°C:	according to IEC 60228
Core temperature, max:	90°C in operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Rated voltage $U_0/U(U_{max})$:	0.6/1(1.2)kV
Test voltage:	AC - 3.5 kV; 50 Hz
Service temperature:	-20°C to +90°C
Temperature of exploitation:	-30°C to +50°C
Min. laying temperature:	-5°C
Specific insulation resistance at 90°C:	min. 10^{14} Ω x cm
Max. permessible tensile stress with cable grip:	$P = D^2 \cdot 3$ N/mm^2 D = Cable diameter (mm)
Bending radius, min.	8xDcable

Cable Structure:	
Conductor:	solid or multi-strand Cu or Al wires class 1 or class 2, in same case class 5 acc. IEC 60228
Insulation:	XLPE
Core identification:	according to HD 308
Core assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheat:	extruded PVC
Armour:	
for multi-core:	double steel tapes
for single-core:	doube aluminium tapes - N2XB(AL)Y
Sheat:	PVC, black color

Additional information and technical data

Available conductor sizes for power distibution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores /+ 1 earth core:	25mm^2 - 300mm^2 / + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 / + 16mm^2 - 120mm^2
5 cores:	1.5mm^2 - 185mm^2	25mm^2 - 185mm^2
Available conductor sizes for signaling and control		
Number of cores	**size of Cu conductors**	**size of Al conductors**
over 7 cores (class 5)	(1.5 - 2.5)mm^2	/
7 -19 cores:	(1.5 - 4) RE; RM	/
over 19 cores	(1.5 - 2.5) RE; RM	/

*other dimensions and packing length are available on request.

Packing

Standard packing length on wooden drums: (500m; 1000m)

RM - mutliwire round shaped

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

On request:

- Fire propagation acc. IEC 60332-3
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

N2XBY, NA2XBY

Power cable with XLPE insulation, double steel tapes armoured, PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: DIN VDE 0271; IEC 60502-1

Construction data: N2XBY U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
N2XB(AL)Y (Cu/XLPE/PVC/ATA/PVC) - armour with two aluminium tapes					
1x16	RE	15,4	154,0	400,0	10/1000
1x25	RM	15,6	240,0	475,0	10/1000
1x35	RM	16,7	336,0	585,0	12/1000
1x50	RM	18,5	480,0	755,0	12/1000
1x70	RM	20,5	672,0	995,0	14/1000
1x95	RM	22,5	912,0	1260,0	14/1000
1x120	RM	24,0	1152,0	1530,0	14/1000
1x150	RM	26,0	1440,0	1830,0	16/1000
1x185	RM	28,5	1776,0	2265,0	16/1000
1x240	RM	31,5	2304,0	2900,0	18/1000
1x300	RM	34,5	2880,0	3500,0	14/500
1x400	RM	38,0	3840,0	4450,0	16/500
1x500	RM	42,5	4800,0	5630,0	16/500
1x630	RM	47,5	6048,0	7280,0	18/500
N2XBY (Cu/XLPE/PVC/STA/PVC) - armour with two galvanized steel tapes					
2x1.5	RE	14,4	28,8	305,0	10/1000
2x2.5	RE	14,4	48,0	325,0	10/1000
2x4.0	RE	14,4	76,8	344,0	10/1000
2x6.0	RE	15,4	115,2	416,0	10/1000
2x10	RE	17,4	192,0	559,0	12/1000
2x16	RE	19,4	308,0	740,0	12/1000
2x25	RM	22,5	480,0	1035,0	14/1000
2x35	RM	25,0	672,0	1314,0	14/1000
2x50	RM	28,0	960,0	1605,0	16/1000
2x70	RM	32,0	1344,0	2180,0	14/500
2x95	RM	35,5	1824,0	2875,0	16/500
2x120	RM	40,5	2304,0	3949,0	16/500
2x150	RM	45,0	2880,0	4789,0	18/500
N2XBY (Cu/XLPE/PVC/STA/PVC) - armour with two galvanized steel tapes					
3x1.5	RE	14,4	43,2	319,0	10/1000
3x2.5	RE	14,4	72,0	343,0	10/1000
3x4.0	RE	15,0	115,2	395,0	10/1000
3x6.0	RE	16,2	172,8	486,0	12/1000
3x10	RE	18,2	288,0	669,0	12/1000
3x16	RE	20,5	462,0	903,0	14/1000
3x25	RM	24,0	720,0	1284,0	14/1000
3x35	RM	26,5	1008,0	1652,0	12/500
3x50	SM	28,5	1440,0	1908,0	14/500
3x70	SM	32,5	2016,0	2643,0	14/500
3x95	SM	36,0	2736,0	3535,0	16/500
3x120	SM	41,0	3456,0	4718,0	16/500
3x150	SM	45,5	4320,0	5775,0	18/500
3x185	SM	50,0	5328,0	7055,0	20/500
3x240	SM	56,0	6912,0	9024,0	22/500
3x300	SM	61,0	8640,0	10997,0	24/500
N2XBY (Cu/XLPE/PVC/STA/PVC) - armour with two galvanized steel tapes					
4x1.5	RE	14,4	57,6	328,0	10/1000
4x2.5	RE	14,7	96,0	367,0	10/1000
4x4.0	RE	16,0	153,6	466,0	12/1000
4x6.0	RE	17,4	230,4	580,0	12/1000
4x10	RE	19,7	384,0	819,0	12/1000
4x16	RE	22,5	616,0	1118,0	14/1000
4x25	RM	26,0	960,0	1608,0	16/1000
4x35	RM	29,0	1344,0	2085,0	14/500
4x50	SM	32,5	1920,0	2497,0	14/500
4x70	SM	37,0	2688,0	3455,0	16/500
4x95	SM	42,5	3648,0	5010,0	16/500
4x120	SM	47,5	4608,0	6172,0	18/500
4x150	SM	53,5	5760,0	7530,0	20/500
4x185	SM	57,5	7104,0	9170,0	22/500
4x240	SM	64,0	9216,0	11752,0	24/500
4x300	SM	69,5	11520,0	14341,0	24/500

*other dimensions and packing length are available on request.

Middle Voltage Power Cables

Middle Voltage Power Cables

N2XSY, NA2XSY, N2XS2Y, NA2XS2Y

Cu or Al single-core cables with insulation XLPE and PVC or PE sheath
Rated Voltage: U0/U - 3.6/6; 6/10; 8.7/15; 12/20; 18/30; 20/35; 20.8/36kV;
Standard: VDE 0276/HD620.S2; IEC 60502-2

Application

For installation in ground, in water, outdoors, indoors and in cable ducts for power stations, industry, and distribution networks. The good installation properties of this cable make installation easy, even on difficult routes.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Highest system voltage, U_{max}	3.6/6 kV = max. 7.2 kV 6/10 kV = max. 12 kV 8.7/15 kV = max. 17.5 kV 12/20 kV = max. 24 kV 18/30 kV = max. 36 kV 20/35 kV = max. 42kV 20.8/36 kV = max. 42 kV
Test voltage = 3.5Uo(IEC60502-2); 3.5Uo(VDE 0276/HD620) AC (50Hz) - 5 min	3.6/6 kV = 12.6 kV 6/10 kV = 21kV 8.7/15 kV = 30.45 kV 12/20 kV = 42 kV 18/30 kV = 63 kV 20/35 kV = 70kV 20.8/36 kV = 72.8 kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, (0.8-3)x10^{-4}
Spec.volume insulation resistance	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests:	according to IEC 60502-2 or DIN VDE 0276-620
Force of strain in laying, N max.	Al cores - 30*S Cu cores - 50*S where: S is cross section of cores in mm2

Cable Structure:	
Conductor:	Cu or Al stranded compacted, according to IEC 60228 and VDE 0295 class 2
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compoundDIX8 as per DIN VDE 0276-620 part 1.
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Warapping:	Semi-conductive tape helicoidally wrapped
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.1mm.
Optional metal screen:	overlapping one or two Cu tapes
PE Sheath:	PE compound type ST7 according to IEC 60502-2 type DMP 2 according to VDE 0276, black color
PVC Sheath:	PVC mass type DMV6, red (or black) coloured

Available constructions:	
Single Al core:	1x(25 - 630)mm^2
Single Cu core:	1x(25 - 500)mm^2
Standard Cross section of metallic screen for conductor sizes:	
from 25mm^2 to 120 mm^2	16mm^2
from 150mm^2 to 300mm^2	25mm^2
from 400mm^2 to 630mm^2	35mm^2

Standard shape of conductor

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

On Request:

Fire propagation acc. IEC 60332-3 cat.

Packing

Standard packing length on wooden drums: [500 m; 1000 m];

N2XSY, NA2XSY, N2XS2Y, NA2XS2

Cu or Al single-core cables with insulation XLPE and PVC or PE shea

Rated Voltage: U0/U - 3.6/6;6 10 8.7/15; 12 20 18 30 20/35; 20.8/36kV;

Standard: VDE 0276/HD620.S2; IEC 60502 2

Construction data: N2XSY, NA2XSY							
Number of cores x Nominal Cross Section	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Copper weight (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	kg/km	m or N°/m
N2XSY 6/10kV							
1x25RM/16	3.4	2.5	22.4	408	-	800	14/1000
1x35RM/16	3.4	2.5	24.4	518	-	960	14/1000
1x50RM/16	3.4	2.5	25	662	-	1160	14/1000
1x70RM/16	3.4	2.5	27	854	-	1360	16/1000
1x95RM/16	3.4	2.5	28.2	1094	-	1600	16/1000
1x120RM/16	3.4	2.5	29.5	1334	-	1870	16/1000
1x150RM/25	3.4	2.5	31.1	1723	-	2270	16/1000
1x185RM/25	3.4	2.5	32.6	2059	-	2640	18/1000
1x240RM/25	3.4	2.5	35.4	2587	-	3210	20/1000
1x300RM/25	3.4	2.5	37.1	3163	-	3800	20/1000
NA2XSY 6/10kV							
1x35RM/16	3.4	2.5	24.4	182	101	700	14/1000
1x50RM/16	3.4	2.5	25	182	145	780	16/1000
1x70RM/16	3.4	2.5	27	182	203	890	16/1000
1x95RM/16	3.4	2.5	28.2	182	276	990	18/1000
1x120RM/16	3.4	2.5	29.5	182	348	1100	9/1000
1x150RM/25	3.4	2.5	31.1	283	435	1300	9/1000
1x185RM/25	3.4	2.5	32.6	283	537	1440	10/1000
1x240RM/25	3.4	2.5	35.4	283	696	1680	12/1000
1x300RM/25	3.4	2.5	37.1	283	870	1890	12/1000
N2XSY 12/20kV							
1x35RM/16	5.5	2.5	27.8	518	-	1100	16/1000
1x50RM/16	5.5	2.5	29.3	662	-	1290	16/1000
1x70RM/16	5.5	2.5	31.2	854	-	1540	18/1000
1x95RM/16	5.5	2.5	32.5	1094	-	1810	18/1000
1x120RM/16	5.5	2.5	33.7	1334	-	2080	18/1000
1x150RM/25	5.5	2.5	35.4	1723	-	2500	20/1000
1x185RM/25	5.5	2.5	37	2059	-	2870	20/1000
1x240RM/25	5.5	2.5	40	2587	-	3470	20/1000
1x300RM/25	5.5	2.5	41.3	3163	-	4080	22/1000
NA2XSY 12/20kV							
1x35RM/16	5.5	2.5	27.8	182	101	880	16/1000
1x50RM/16	5.5	2.5	29.3	182	145	970	16/1000
1x70RM/16	5.5	2.5	31.2	182	203	1090	18/1000
1x95RM/16	5.5	2.5	32.5	182	276	1200	18/1000
1x120RM/16	5.5	2.5	33.7	182	348	1310	18/1000
1x150RM/25	5.5	2.5	35.4	283	435	1530	20/1000
1x185RM/25	5.5	2.5	37	283	537	1680	20/1000
1x240RM/25	5.5	2.5	40	283	696	1920	20/1000
1x300RM/25	5.5	2.5	41.3	283	870	2150	22/1000
N2XSY 20/35kV							
1x35RM/16	9.0	2.5	34.8	518	-	1460	20/1000
1x50RM/16	9.0	2.5	36.4	662	-	1660	20/1000
1x70RM/16	9.0	2.5	38.2	854	-	1930	20/1000
1x95RM/16	9.0	2.5	39.5	1094	-	2220	22/1000
1x120RM/16	9.0	2.5	40.7	1334	-	2500	22/1000
1x150RM/25	9.0	2.5	42.4	1723	-	2930	24/1000
1x185RM/25	9.0	2.5	43.9	2059	-	3310	24/1000
1x240RM/25	9.0	2.5	46.7	2587	-	3950	18/500
1x300RM/25	9.0	2.5	48.3	3163	-	4580	20/500
NA2XSY 20/35kV							
1x35RM/16	9.0	2.5	34.8	182	101	1230	20/1000
1x50RM/16	9.0	2.5	36.4	182	145	1340	20/1000
1x70RM/16	9.0	2.5	38.2	182	203	1480	20/1000
1x95RM/16	9.0	2.5	39.5	182	276	1610	22/1000
1x120RM/16	9.0	2.5	40.7	182	348	1730	22/1000

* other dimensions for conductor, metallic screen and packing length are available on request.

Middle Voltage Power Cables

N2XSEY, NA2XSEY, N2XSE2Y, NA2XSE2Y

Cu or Al triple-core cables with insulation XLPE and PVC or PE sheath
Rated Voltage: U0/U - 3.6/6; 6/10; 8.7/15; 12/20; 18/30; 20/35; 20.8/36kV;
Standard:VDE 0276/HD620.S2; IEC 60502-2

Application

For installation in ground, in water, outdoors, indoors and in cable ducts for power stations, industry, and distribution networks. The good installation properties of this cable make installation easy, even on difficult routes. Acc. to VDE 0276-603 cables with PVC sheath must be protected against direct sun irradiation and cables with PE sheath with high mechanical durability of the PE-sheath permits strong mechanical stress during installation or during operation.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Highest system voltage, U_{max}	3.6/6 kV = max. 7.2 kV 6/10 kV = max. 12 kV 8.7/15 kV = max. 17.5 kV 12/20 kV = max. 24 kV 18/30 kV = max. 36 kV 20/35 kV = max. 42kV 20.8/36 kV = max. 42 kV
Test voltage = 3.5Uo(IEC60502-2); 3.5Uo(VDE 0276/HD620) AC (50Hz) - 5 min	3.6/6 kV = 12.6 kV 6/10 kV = 21kV 8.7/15 kV = 30.45 kV 12/20 kV = 42 kV 18/30 kV = 63 kV 20/35 kV = 70kV 20.8/36 kV = 72.8 kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests:	according to IEC 60502-2 orDIN VDE 0276-620
Force of strain in laying, N max.	Al cores - 30*S*n Cu cores - 50*S*n where: S is cross section of cores in mm2 n - cross section of cores

Cable Structure:	
Conductor:	Cu or Al stranded compacted, according to IEC 60228 and VDE 0295 class 2
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compoundDIX8 as per DIN VDE 0276-620 part 1.
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Warapping:	Semi-conductive tape helicoidally wrapped
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.15mm over each core
Optional metal screen:	Overlapping one or two Cu tapes
Core arrangment:	screened cores are laid-up
Inner sheath:	PVC applied around the laid-up cores
PE Sheath:	PE compound type ST7 according to IEC 60502-2
	type DMP 2 according to VDE 0276, black color
PVC Sheath:	PVC mass type DMV6, red (or black) color

Available constructions:		
	Cu cores	Al cores
6/10 kV	3x(35 -300)mm²	3x(35 - 300)mm²
12/20 kV	3x(35 - 185)mm²	3x(35 - 185)mm²
18/30 kV	3x(35 - 120)mm²	3x(35 - 120)mm²
20/35 kV	3x(35 - 120)mm²	3x(35 - 120)mm²
Standard Cross section of metallic screen for conductor sizes:		
from 25mm² to 120 mm²	16mm²	
from 150mm² to 300mm²	25mm²	
from 400mm² to 630mm²	35mm²	

Construction data: N2XSEY, NA2XSEY

Number of cores x Nominal Cross Section	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Cu weight (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	kg/km	m or N°/m
N2XSEY 6/10kV							
3x50RM/16	3.4	2.5	48	1774	-	3650	24/1000
3x70RM/16	3.4	2.7	53	2380	-	4640	20/500
3x95RM/16	3.4	2.8	57	3132	-	5580	22/500
3x120RM/16	3.4	2.9	60	3877	-	6540	24/500
3x150RM/25	3.4	3.0	63	4768	-	7720	24/500
3x185RM/25	3.4	3.2	67	5808	-	9040	24/500
3x240RM/25	3.4	3.4	74	7424	-	11290	22/250
3x300RM/25	3.4	3.4	77	9203	-	13340	24/250
NA2XSEY 6/10kV							
3x50RM/16	3.4	2.5	48	297	435	2680	24/1000
3x70RM/16	3.4	2.7	53	330	609	3270	20/500
3x95RM/16	3.4	2.8	57	357	827	3730	22/500
3x120RM/16	3.4	2.9	60	378	1044	4200	24/500
3x150RM/25	3.4	3.0	63	406	1305	4840	24/500
3x185RM/25	3.4	3.2	67	428	1610	5440	24/500
3x240RM/25	3.4	3.4	74	474	2038	6550	22/250
3x300RM/25	3.4	3.4	77	502	2610	7500	24/250

Standard shape of conductor

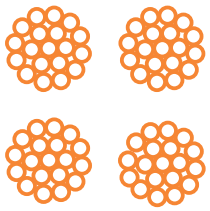
RM - class 2 conductor acc. to IEC 60228 and VDE 0295

A2XSYT, A2XS2YT
XHE 48/0-A, XHP 48/0-A

Aerial bundled cables for medium voltage

Rated Voltage: U0/U -6/10kV; 12/20kV; 20/35 kV

Standard: HD620.S2, SRPS N.C5.231



Application

For middle voltage power distribution in distribution networks (6/10(12);12/20(24);20/35(40)) kV. May be put on on the overhead lines in old and residential areas. Provides a shortcut to electrification without affecting the townscape and its environs. This cables can be strung safeluy on the same poles with low-voltage and telecomunication cables.

Technical Data:	
Conductor resistance at 20°C:	according to N.60.228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12/20; 20/35 kV
Highest system voltage, U_{max}	6/10 kV = max. 12 kV 12/20 kV = max. 24 kV 20/35 kV = max. 40 kV
Test voltage = 2.5Uo(HD.620.S2), AC (50Hz) - 5 min:	6/10 kV = 15 kV 12/20 kV = 30 kV 20/35 kV = 50 kV
Level of partial discharge:	no more than 2pC
Bending radius, min:	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance:	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests for cable:	according to HD620.S2
Test for messanger:	according to HD620.S2
Tensile force during the laying must not exceed:	for Cu conductors - 50 N/mm^2 for Al conductors - 30 N/mm2
Breaking load of messenger, min:	for 50 mm2 = 60 kN for 70 mm2 = 82kN
Modulus of elasticity of messenger:	175 kN/mm^2

Cable Structure:	
Conductor:	Round, stranded and compacted aluminium conductors cl.2, according to EN.60.228
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE type XI 1
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Wrapping:	Layer of semi-conductive tape helicoidally wrapped.
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with thickness of 0.1mm.
Optional metal screen:	one or more overlapping Cu tapes with min.thickness of 0.1mm
Separator:	Polyester tape helicoidally wrapped.
PE sheath (A2XS2YT):	PE compound, black color for each phase conductor and steel
PVC sheath (A2XS2YT):	PVC compaund type, Black Color for each phase conductor and steel
Messenger (for 10, 20 kV):	Galvanized steel messenger 50 mm^2. Mass of zink coated.
Messenger (for 35 kV):	Galvanized steel messenger 70 mm^2 .
Cores assembly:	Three single-phase cables twisted around a steel messenger as an aerial bundled cable

Available constructions:	
Single Al core:	1x(25 - 150)mm^2
Standard Cross section of metallic screen for conductor sizes:	
from 25mm^2 to 120 mm^2	16mm^2
from 150mm^2 to 300mm^2	25mm^2
from 400mm^2 to 630mm^2	35mm^2

* other dimensions for metallic screen are available on request.

Packing:

Standard packing length on wooden drums:
Min. length on drum: 200m

Standard shape of conductor

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

Middle Voltage Power Cables

A2XS(F) 2YT, XHE 49/0-A

Aerial bundled cables for medium voltage
Rated Voltage: U0/U - 6/10kV; 12/20kV; 20/35 kV
Standard: HD 620.S2; acc: IEC 60502-2; SRPS N.C5.231

Application

For middle voltage power distribution in distribution networks (6/10(12);12/20(24)) kV. May be put on the overhead lines in old and residential areas. Provides a shortcut to electrification without affecting the townscape and its environs. This cables can be strung safeluy on the same poles with low-voltage and telecomunication cables and water resistant.

Technical Data:	
Conductor resistance at 20°C:	according to EN.60.228
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12/20; 20/35 kV
Highest system voltage, U_{max}	6/10 kV = max. 12 kV 12/20 kV = max. 24 kV 20/35 kV = max. 40 kV
Test voltage = 2.5Uo(HD.620.S2), AC (50Hz) - 5 min	6/10 kV = 15 kV 12/20 kV = 30 kV 20/35 kV = 50 kV
Level of partial discharge:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance:	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests for cable:	according to HD 620.S2
Test for messanger:	according to HD 620.S2
Tests - water penetration in the region of metallic screen:	IEC 60502-2 annex F (125x4h, 90°C)
Tensile force during the laying must not exceed:	for Cu conductors - 50 N/mm^2 for Al conductors - 30 N/mm2
Breaking load of messenger, min:	for 50 mm2 = 60 kN for 70 mm2 = 82kN
Modulus of elasticity of messenger:	175 kN/mm^2

Available constructions:	
Single Al core:	1x(25 - 150)mm^2
Standard Cross section of metallic screen for conductor sizes:	
from 25mm^2 to 120 mm^2	16mm^2
from 150mm^2 to 300mm^2	25mm^2
from 400mm^2 to 630mm^2	35mm^2

* other dimensions for metallic screen are available on request.

Packing:

Standard packing length on wooden drums:
Min. length on drum: 200m

Cable Structure:	
Conductor:	Round, stranded and compacted aluminium conductors cl.2, according to EN.60.228
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE type XI 1
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Water resisting element:	Layer of semi-conductive water absorbing tape helicoidally wrapped.
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.1mm.
Water resisting element:	Layer of non-conductive water absorbing tape helicoidally wrapped.
PE sheath	PE compound type EP 1 acc.to N.C0.195, black color for each phase conductor and steel
Messenger (for 10, 20 kV):	Galvanized steel messenger 50 mm^2. Mass of zink coated
Messenger (for 35 kV):	Galvanized steel messenger 70 mm^2. Mass of zink coated
Cores assembly:	Three single-phase cables twisted around a steel messenger as an aerial bundled cable

Standard shape of conductor

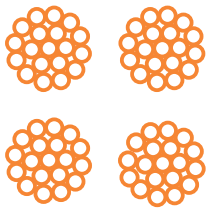
RM - class 2 conductor acc. to IEC 60228 and VDE 0295

A2XS(F) 2YT, XHE 49/0-A

Aerial bundled cables for medium voltage

Rated Voltage: U0/U - 6/10kV; 12/20kV; 20/35 kV

Standard: HD 620.S2; acc: IEC 60502-2; SRPS N.C5.231



Construction data: XHE 49/0-A

Number of cores x Nominal Cross Section	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Cu weight (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	kg/km	m or N°/m
XHE 49/0-A 6/10kV							
3x35RM/16+50	3.4	1.8	57.6	191	305	2060	22/500
3x50RM/16+50	3.4	2.0	60.8	215	440	2280	24/500
3x70RM/16+50	3.4	2.0	64.8	215	615	2590	24/450
3x95RM/16+50	3.4	2.0	68.0	230	835	2900	24/400
3x120RM/16+50	3.4	2.0	70.6	230	1055	3185	24/400
3x150RM/25+50	3.4	2.0	74.0	275	1318	3861	22/350
XHE 49/0-A 12/20kV							
3x35RM/16+50	5.5	2.0	66.8	191	305	2555	22/400
3x50RM/16+50	5.5	2.0	69.2	215	440	2755	24/400
3x70RM/16+50	5.5	2.0	73.2	215	615	3105	24/350
3x95RM/16+50	5.5	2.0	76.7	230	835	3445	24/300
3x120RM/16+50	5.5	2.0	79.0	230	1055	3750	24/300
3x150RM/25+50	5.5	2.0	82.4	275	1318	4505	22/300

* other dimensions for conductor, metallic and packing lenght are available on request.

N2XS(F)2Y, NA2XS(F)2Y

Cu or Al single-core cables with insulation XLPE, longitudinal water-tight and PE sheath
Rated Voltage: U0/U - 6/10kV; 12/20kV; 20/35 kV
Standard: VDE 0276/HD620, IEC 60502-2

Application

The single-core cables with insulation of cross-linked polyethylene (XLPE) and longitudinal water-blocking elements are designed for transfer and distribution of electrical power in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants. They are suitable for use in distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12/20; 20/35 kV
Highest system voltage, U_{max}	6/10 kV = max. 12 kV 12/20kV = max. 24 kV 20/35 kV = max. 42kV
Test voltage AC (50Hz):	6/10 kV = 21kV 12/20 kV = 42 kV 20/35 kV = 70kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.internal volume resistivity:	at 90°C, min 10^{12} Ω x m
Intensity of electric field:	max. 6.9-5.3 kV/mm
Force of strain in laying, N max.	120 x D where: D is diameter od cable in (mm)
Tests - water penetration in the region of metallic screen:	IEC 60502-2 annex F (125x4h, 90°C)

Standard shape of conducto

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

Cable Structure:	
Conductor:	Cu or Al stranded compacted acc. DIN VDE 0295 cl.2 (HD383).
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound around isolation
Water resisting element:	Layer of semi-conductive water absorbing tape helicoidally wrapped.
Metal screen:	Cu wires concentrically laid andone contact of Cu tape with min.thickness of 0.1mm
Water resisting element:	Layer of non-conductive water absorbing tape helicoidally wrapped.
Color of sheath	Black

Available constructions:		
	Al conductor	Cu conductor
6/10 kV	35 - 500mm^2	25 - 300mm^2
12.7/22kV	50 - 500mm^2	35 - 240mm^2
20/35 kV	50 - 500mm^2	50 - 240mm^2
Standard Cross section of metallic screen for conductor sizes:		
from 25mm^2 to 120 mm^2	16mm^2	
from 150mm^2 to 300mm^2	25mm^2	
from 400mm^2 to 500mm^2	35mm^2	

N2XS(FL)2Y, NA2XS(FL)2Y

Single-core cables with insulation of cross-linked polyethylene (XLP
longitudinal water-tight and PE sheath

Rated Voltage: U0/U - 6/10; 12/20; 18/30 kV; Standard:VDE 0276/HD620.S2; IEC 60502-2

Similar as: XHE 49-A by standard: N.C5.230

Application

The single-core cables with insulation of cross-linked polyethylene (XLPE) and longitudinal water-blocking elements are designed for transfer and distribution of electrical power in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants. They are suitable for use in distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12/20; 18/30 kV
Highest system voltage	6/10; 12/20; 18/30 kV
Uo/U, no more than:	12kV; 24kV; 36kV
Test voltage Uo/ U AC ( ) - 5 min DC (=) - 15 min	6/10; 12/20; 18/30kV 21kV; 42kV; 63kV 67kV; 134kV; 201kV
Level of partial dischargeat 2*Uo:	max. 5 pC / 2 pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Temperature of exploitation:	-30 to 50°C
Tests:	according to IEC 60502-2 or DIN VDE 0276-620 or HD620.S2
Force of strain in laying N max.	Al cores - 30*n*S core Cu cores - 50*n*S core where: N is number of cores and S is cross section of cores in mm2
Tests - water penetration in the region of metallic screen:	IEC 60502-2 annex F

Cable Structure:	
Conductor:	Cu and Al stranded compacted, according to IEC 60228 class 2 and VDE 0295 class 2
Inner semi-conductive layer:	semi-conductive XLPE compound
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound
Water resisting element:	Layer of semi-conductive water absorbing tape
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with thickness of 0.1mm.
Water resisting element:	Layer of non-conductive water absorbing tape
Radial protection:	Al foil with copolymer protectionfrom moisture ingress
Sheath:	PE compound type ST7 according to IEC 60502-2 type DMP 2 according to VDE 0276
Color:	black

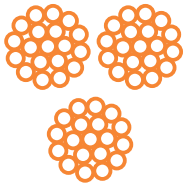
Standard shape of conducto

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

Middle Voltage Power Cables

NA2XSYRY, NA2XSEYRY

One or three core XLPE-insulated cables with steel wire armour and PVC sheath
Rated Voltage: U0/U - 3.6/6kV; 6/10kV; 8.7/15kV; 12/20kV; 18/30kV;
Standard: IEC 60502-2



Application

The three-core armored cables with insulation of cross-linked polyethylene (XLPE) are designed for transfer and distribution of electrical power with nominal voltage Uo/U - 3.6/6kV; 6/10kV; 8.7/15kV; 12/20kV; 18/30kV and frequency 50 Hz in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants.
They are suitable for use in distribution installations, electric power stations and industrial systems.
The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	3.6/6; 6/10; 8.7/15; 12/20; 18/30 kV
Highest system voltage, U_{max}	3.6/6 kV = max. 7.2 kV 6/10 kV = max. 12 kV 8.7/15 kV = max. 17.5 kV 12/20 kV = max. 24 kV 18/30 kV = max. 36 kV
Test voltage = 3.5Uo(IEC60502-2); 3.5Uo(VDE 0276/HD620) AC (50Hz) - 5 min	3.6/6 kV = 12.5 kV 6/10 kV = 21 kV 8.7/15 kV = 30.5 kV 12/20 kV = 42 kV 18/30 kV = 63 kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests:	according to IEC 60502-2 or DIN VDE 0276-620
Force of strain in laying, N max.	Al cores - 30*S*n Cu cores - 50*S*n where: S is cross section of cores in mm2 n - cross section of cores

Cable Structure:	
Conductor:	Cu or Al stranded compacted, according to IEC 60228 and VDE 0295 class 2
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound around isolation
Warapping:	Semi-conductive tape helicoidally wrapped
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.1mm over each core
Optional metal screen:	overlapping one or two Cu tape
Core arrangment:	screened cores are laid-up
Inner sheath:	PVC applied around the laid-up cores
Armour:	
for single core:	aluminium round wires
for three-core:	galvanized round steel wires
Optional armour:	galvanized flat steel wires and optional contra spiral galvanized steel tape
Sheath:	PVC compound type ST2 according to IEC 60502, red or black color
Optional sheath	PE mass, black color

Standard shape of conducto

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

On request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

N2XSYBY, N2XSEYBY, NA2XSYBY, NA2XSEYBY

Single Core and Three-core Cables with insulation of cross-linked polyethylene (XLPE), alow steel wire armour and PVC sheath

Rated Voltage: U0/U - 6/10; 12/20; 18/30 kV; Standard:VDE 0276/HD620.S2; IEC 60502-2

Similar as: XHE 49-A by standard: N.C5.230

Application

The three-core cables with insulation of cross-linked polyethylene (XLPE) are designed for transfer and distribution of electrical power with nominal voltage Uo/U - 3.6/6kV; 6/10kV; 8.7/15kV; 12/20kV; 18/30kV and frequency 50 Hz in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants. They are suitable for use in distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	3.6/6; 6/10; 8.7/15; 12/20; 18/30 kV
Highest system voltage, U_{max}	3.6/6 kV = max. 7.2 kV 6/10 kV = max. 12 kV 8.7/15 kV = max. 17.5 kV 12/20 kV = max. 24 kV 18/30 kV = max. 36 kV
Test voltage = 3.5Uo(IEC60502-2); 3.5Uo(VDE 0276/HD620) AC (50Hz) - 5 min	3.6/6 kV = 12.5 kV 6/10 kV = 21 kV 8.7/15 kV = 30.5 kV 12/20 kV = 42 kV 18/30 kV = 63 kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests:	according to IEC 60502-2 orDIN VDE 0276-620
Force of strain in laying, N max.	Al cores - 30*S*n Cu cores - 50*S*n where: S is cross section of cores in mm2 n - cross section of cores

Cable Structure:	
Conductor:	Cu or Al stranded compacted, according to IEC 60228 and VDE 0295 class 2
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Wrapping:	Semi-conductive tape helicoidally wrapped
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.1mm over each core
Optional metal screen:	overlapping one or two Cu tapes
Core arrangment:	screened cores are laid-up
Inner sheath:	PVC applied around the laid-up cores
Armour:	
for single-core:	two aluminium tapes
for three-cores:	two galvanized steel tapes
Sheath:	PVC compound type ST2 according to IEC 60502, red or black color
Optional sheath:	PE mass, Black color

Standard shape of conducto

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

On request:

- Fire propagation acc. IEC 60332-3
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Oil resistant outer sheath.

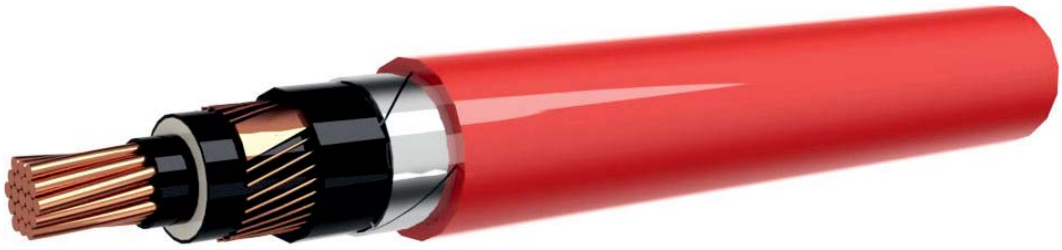
Middle Voltage Power Cables

N2XSYBY, N2XSEYBY, NA2XSYBY, NA2XSEYBY

Single Core and Three-core Cables with insulation of cross-linked polyethylene (XLPE), alow steel wire armour and PVC sheath

Rated Voltage: U0/U - 6/10; 12/20; 18/30 kV; Standard:VDE 0276/HD620.S2; IEC 60502-2

Similar as: XHE 49-A by standard: N.C5.230



Construction data: N2XSEYBY						
Number of cores x Nominal	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	m or N°/m
N2XSEYBY 6/10kV (U_{max}=12kV)						
3x25RM/16	3.4	2.5	46.0	910	3975	18/500
3x35RM/16	3.4	2.5	49.0	1210	4600	18/500
3x50RM/16	3.4	2.6	52.0	1670	5280	20/500
3x70RM/16	3.4	2.7	56.0	2247	6340	22/500
3x95RM/16	3.4	2.8	61.0	2994	7760	24/500
3x120RM/16	3.4	2.9	64.0	3714	8880	24/500
3x150RM/25	3.4	3.1	68.0	4640	10420	24/500
3x185RM/25	3.4	3.2	71.5	5646	12115	24/450
3x240RM/25	3.4	3.4	77.5	7272	14690	24/400
3x300RM/25	3.4	3.5	83.0	9015	17360	24/350
N2XSEYBY 8.7/15kV (U_{max}=17.5kV)						
3x25RM/16	4.5	2.6	51.5	910	4611	20/500
3x35RM/16	4.5	2.7	54.5	1210	5180	20/500
3x50RM/16	4.5	2.8	57.0	1670	5900	22/500
3x70RM/16	4.5	2.9	61.5	2247	7134	24/500
3x95RM/16	4.5	3.0	65.5	2994	8511	24/500
3x120RM/16	4.5	3.1	69.0	3714	9858	24/500
3x150RM/25	4.5	3.3	72.5	4640	11300	24/450
3x185RM/25	4.5	3.4	77.5	5646	13015	24/400
N2XSEYBY 12/20kV (U_{max}=24kV)						
3x25RM/16	5.5	2.8	58.5	910	5607	22/500
3x35RM/16	5.5	2.8	59.0	1210	5925	22/500
3x50RM/16	5.5	2.9	61.5	1670	6709	24/500
3x70RM/16	5.5	3.0	66.0	2247	7844	24/500
3x95RM/16	5.5	3.2	70.0	2994	9434	24/500
3x120RM/16	5.5	3.3	74.0	3714	10663	24/450
3x150RM/25	5.5	3.4	77.0	4640	12221	24/400
3x185RM/25	5.5	3.5	82.0	5646	13910	24/350
N2XSEYBY 18/30kV (Umax=36kV)						
3x50RM/16	8.0	3.3	72.5	1670	8640	24/450
3x70RM/16	8.0	3.4	77.0	2247	10070	24/400
3x95RM/16	8.0	3.6	82.5	2994	12614	24/350

*other dimensions for conductor, metallic screen and packing length are available on request.

AASC-XLPE 20kV (PA

XLPE insulated aluminium alloy conductors for MV overhead l

Rated Voltage: U0/U - 12 2

Standard: AC SFS 5791

Application

These power cables are used for overhead lines at specific environmental conditions like strong wind, ice, snow and when the route of the cables is placed over mountains and forests. Cable's construction enables smaller destination between two phases, opposites against strong wind and tolerates bigger mechanical and electrical loads provoked by fallen trees. The primary advantage of cross linked PE is despite the two conductors are close too much to each other because of the wind, the line isn't fallen out. The ice sheath over the cross linked PE sheath doesn't retain as long as over the bare conductor.

Technical Data:	
Max. temperature of conductor:	80 °C
Working voltage:	12/20kV
Test voltage in water:	4 kV
Insulation resistance at 80°C:	10^{14} Ω x cm
Max. permissible tensile stress:	100 N/mm^2
Calculated breaking load:	table 1
Max. electric. resistance, at 20°C	table 1
Permissible permanent current:	table 2
Distance between phases:	
horizontal:	500 mm
vertical:	600 mm

Cable Structure:	
Conductor:	The conductor is rope according MKS N.C1.402 (DIN 48 201/6)
	of wrapped wires of AlMgSi-E alloys according
	MKS N. C1.401(DIN 48 200/6) . The rope is compacted.
Insulation:	XLPE outer jacket, black coloured, XI3,
	according MKS N.C0.195(DIN VDE 0207/22),
	with content of carbon black at least 2%,
	low temperature and UV resistance.

Additional Information and technical data:

Nominal cross-section	Max.electric resistance at 20°C	Calculated breaking load
mm^2	Ω/km	kN
35	0.986	9.65
50	0.720	14.20
70	0.493	20.60
95	0.363	27.90
120	0.288	35.20
150	0.236	43.40

Nominal cross-section	Permissible permanent current	Short circuit current
mm^2	A	kA
35	200	3.2
50	245	4.3
70	310	6.4
95	370	8.6
120	430	11.0
150	485	13.5

Nominal cross-section	Number of wires	Outer diameter of conductor	Outer diameter of cable
mm^2		mm	mm
35	7	7	12
50	7	8.3	13
70	19	9.8	15
95	19	11.6	17
120	19	12.8	18
150	19	14.2	19

Note: Values given in tables at:

- Environmental temperature - 20°C
- Conductor temperature - 80°C
- Wind velocity - 0,6 m/s
- Sun influence - 1000Ω/m
- Short circuit temperature - 150 °C
- Short circuit time - 1 s

Note: Nominal thickness of sheath - 2.3mm
Minimal thickness of sheath - 2.0mm
Maximal thickness of sheath - 2.5mm

FRN-N10XA8E-AR, FR-N20XA8E-AR

Single-core XLPE-insulated cables with PE sheath, longitudinally and radially watertight
Rated Voltage: U0/U - 6/10kV; 12/20kV
Standard: HD620.S1; NF C33-223

Middle Voltage Power Cables

Application

The single-core cables with insulation of cross-linked polyethylene (XLPE) and longitudinal and radial water-blocking elements are designed for transfer and distribution of electrical power in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants. They are suitable for use in distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12/20; kV
Highest system voltage, U_{max}	6/10 kV = max. 12 kV 12/20 kV = max. 24 kV
Test voltage = 3.5Uo	6/10 kV = 21kV 12/20 kV = 42 kV
AC (50Hz) - 5 min	
Level of partial discharge at 1.73*Uo:	no more than 5pC
Bending radius, min	30xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.volume insulation resistance	at 20°C, min 10^{15} Ω x cm
Intensity of electric field:	max. 6.9-5.3 kV/mm
Tests:	acc. to. HD626S2, NF C33-223
Force of strain in laying, N max.	Al cores - 30*S where: S is cross section of cores in mm2

Cable Structure:	
Conductor:	Al stranded compacted acc. DIN VDE 0295 cl.2 (HD383).
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Water resisting element:	Layer of semi-conductive water absorbing tape helicoidally wrapped.
Metallic screen :	Al foil with copolymer layer tightly bonded to the PE sheath
Sheath:	PE compound - HDPE

Standard shape of conductor:

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

Packing:

- Standard packing length on wooden drums: (500m; 1000m)

Construction data: FR-N(10)XA8E-AR; FR-N(20)XA8E-AR

Number of cores x Nominal Cross Section	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Al cond. Weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	m or N°/m
FR-N(10)XA8E-AR 6/10 kV						
1x185RM/16	3.4	2.5	32.5	540	1188	18/1000
1x185RM/25	3.4	2.5	33.0	540	1214	18/1000
FR-N(20)XA8E-AR 12/20 kV						
1x50RM/16	5.5	2.5	29.0	145	765	18/1000
1x95RM/16	5.5	2.5	32.5	280	1022	18/1000
1x120RM/16	5.5	2.5	34.0	350	1134	18/1000
1x150RM/16	5.5	2.5	35.5	435	1282	20/1000
1x185RM/16	5.5	2.5	37.0	540	1410	20/1000
1x185RM/25	5.5	2.5	37.5	540	1416	20/1000

*other dimensions for conductor and metallic screen are available on request.

N2XS(F)2YY, NA2XS(F)2YY

Al or Cu single core cables with insulation XLPE, longitudinal water-tight and PE+PVC sheath

Rated Voltage: U0/U -6 10kV 12.7 22kV; 20 35 kV

Standard: IEC 60502-2

Application

The single-core cables with insulation of cross-linked polyethylene (XLPE) and longitudinal water-blocking elements are designed for transfer and distribution of electrical power in urban and district electrical networks and for electrical supply of transformer's substations, small and medium industrial plants. They are suitable for use in distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	according to VDE 0295 and IEC 60228 class 2
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U:	6/10; 12.7/22; 20/35 kV
Highest system voltage, U_{max}	6/10 kV = max. 12 kV 12.7/22kV = max. 25 kV 20/35 kV = max. 40.5kV
Test voltage AC (50Hz):	6/10 kV = 28kV 12.7/22 kV = 50 kV 20/35 kV = 75kV
Level of partial discharge at 2*Uo:	no more than 2pC
Bending radius, min	20xDcable
Temperature of laying:	no less than - 5 °C
Dielectric factor of losses, 50 Hz:	at 20°C, $(0.8\text{-}3)x10^{-4}$
Spec.internal volume resistivity:	at 90°C, min 10^{12} Ω x m
Intensity of electric field:	max. 6.9-5.3 kV/mm
Force of strain in laying, N max.	120 x D where: D is diameter od cable in (mm)
Tests - water penetration in the region of metallic screen:	IEC 60502-2 annex F (125x4h, 90°C)

Available constructions:		
	Al conductor	Cu conductor
6/10 kV	35 - 500mm^2	25 - 300mm^2
12.7/22kV	50 - 500mm^2	35 - 240mm^2
20/35 kV	50 - 500mm^2	50 - 240mm^2
Standard Cross section of metallic screen for conductor sizes:		
from 25mm^2 to 120 mm^2	16mm^2	
from 150mm^2 to 300mm^2	25mm^2	
from 400mm^2 to 500mm^2	35mm^2	

On Request:

Fire propagation acc. IEC 60332-3 cat.

Cable Structure:	
Conductor:	Cu or Al stranded compacted acc. DIN VDE 0295 cl.2 (HD383).
Inner semi-conductive layer:	semi-conductive XLPE compound around conductor
Insulation:	XLPE compound
Outer semi-conductive layer:	semi-conductive XLPE compound around insulation
Water resisting element:	Layer of semi-conductive water absorbing tape helicoidally wrapped.
Metal screen:	Cu wires concentrically laid and one contact of Cu tape with min. thickness of 0.1mm
Water resisting element:	Layer of non-conductive water absorbing tape helicoidally wrapped.
Sheath:	combined PE+PVC sheath (two layers) with thickness 2.5+1.5 mm. PVC is stabilized against the sun irradiation.
Color of sheath	Black or red

Standard shape of conductor:

RM - class 2 conductor acc. to IEC 60228 and VDE 0295

Packing:

Standard packing length on wooden drums: (500m; 1000m)

N2XS(F)2YY, NA2XS(F)2YY

Al or Cu single-core cables with insulation XLPE, longitudinal water-tight and PE+PVC sheath

Rated Voltage: U0/U - 6/10kV; 12.7/22kV; 20/35 kV

Standard: IEC 60502-2

Middle Voltage Power Cables

Construction data: N2XS(F)2YY, NA2XS(F)2YY							
Number of cores x Nominal Cross Section	Nominal insulation thickness	Nominal sheath thickness	Overall Diameter (Approx.)	Copper weight (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm	max.mm	kg/km	kg/km	kg/km	m or N°/m
10-CXEKVCEY (N2XS(F)2YY) 6/10kV							
1x25RM/16	3.4	2.5+1.5	28.0	408	-	990	16/1000
1x35RM/16	3.4	2.5+1.5	29.0	518	-	1070	16/1000
1x50RM/16	3.4	2.5+1.5	30.0	662	-	1220	16/1000
1x70RM/16	3.4	2.5+1.5	32.0	854	-	1460	16/1000
1x95RM/16	3.4	2.5+1.5	34.0	1094	-	1760	18/1000
1x120RM/16	3.4	2.5+1.5	35.0	1334	-	2000	20/1000
1x150RM/25	3.4	2.5+1.5	36.0	1723	-	2400	20/1000
1x185RM/25	3.4	2.5+1.5	38.0	2059	-	2770	20/1000
1x240RM/25	3.4	2.5+1.5	41.0	2587	-	3280	22/1000
10-AXEKVCEY (NA2XS(F)2YY) 6/10kV							
1x35RM/16	3.4	2.5+1.5	29.0	182	101	855	16/1000
1x50RM/16	3.4	2.5+1.5	30.0	182	145	930	16/1000
1x70RM/16	3.4	2.5+1.5	32.0	182	203	1040	16/1000
1x95RM/16	3.4	2.5+1.5	34.0	182	276	1170	16/1000
1x120RM/16	3.4	2.5+1.5	35.0	182	348	1270	18/1000
1x150RM/25	3.4	2.5+1.5	36.0	283	435	1490	20/1000
1x185RM/25	3.4	2.5+1.5	38.0	283	537	1650	20/1000
1x240RM/25	3.4	2.5+1.5	41.0	283	696	1830	20/1000
1x300RM/25	3.4	2.5+1.5	43.0	283	870	2090	22/1000
1x400RM/35	3.4	2.5+1.5	46.0	395	1160	2140	24/1000
1x500RM/35	3.4	2.5+1.5	49.0	395	1450	2890	24/1000
22-CXEKVCEY (N2XS(F)2YY) 12/20kV							
1x35RM/16	5.5	2.5+1.5	33.0	518	-	1220	18/1000
1x50RM/16	5.5	2.5+1.5	34.0	662	-	1410	18/1000
1x70RM/16	5.5	2.5+1.5	36.0	854	-	1660	20/1000
1x95RM/16	5.5	2.5+1.5	37.5	1094	-	1970	20/1000
1x120RM/16	5.5	2.5+1.5	39.0	1334	-	2220	20/1000
1x150RM/25	5.5	2.5+1.5	40.5	1723	-	2610	22/1000
1x185RM/25	5.5	2.5+1.5	42.5	2059	-	2990	22/1000
1x240RM/25	5.5	2.5+1.5	44.5	2587	-	3530	24/1000
22-AXEKVCEY (NA2XS(F)2YY) 12/20kV							
1x35RM/16	5.5	2.5+1.5	33.0	182	101	-	18/1000
1x50RM/16	5.5	2.5+1.5	34.0	182	145	1120	18/1000
1x70RM/16	5.5	2.5+1.5	36.0	182	203	1230	20/1000
1x95RM/16	5.5	2.5+1.5	37.5	182	276	1370	20/1000
1x120RM/16	5.5	2.5+1.5	39.0	182	348	1490	20/1000
1x150RM/25	5.5	2.5+1.5	40.5	283	435	1710	22/1000
1x185RM/25	5.5	2.5+1.5	42.5	283	537	1860	22/1000
1x240RM/25	5.5	2.5+1.5	44.5	283	696	2080	24/1000
1x300RM/25	5.5	2.5+1.5	47.0	283	870	2350	24/1000
1x400RM/35	5.5	2.5+1.5	50.0	395	1160	2790	20/500
1x500RM/35	5.5	2.5+1.5	53.5	395	1450	3190	20/500
35-CXEKVCEY (N2XS(F)2YY) 20/35kV							
1x50RM/16	9.0	2.5+1.5	41.0	662	-	1790	22/1000
1x70RM/16	9.0	2.5+1.5	43.0	854	-	2050	22/1000
1x95RM/16	9.0	2.5+1.5	44.5	1094	-	2380	24/1000
1x120RM/16	9.0	2.5+1.5	46.0	1334	-	2640	24/1000
1x150RM/25	9.0	2.5+1.5	47.5	1723	-	2980	24/1000
1x185RM/25	9.0	2.5+1.5	49.5	2059	-	3370	20/500
1x240RM/25	9.0	2.5+1.5	51.5	2587	-	3940	20/500
35-AXEKVCEY (NA2XS(F)2YY) 20/35kV							
1x50RM/16	9.0	2.5+1.5	41.0	182	145	1500	22/1000
1x70RM/16	9.0	2.5+1.5	43.0	182	203	1630	22/1000
1x95RM/16	9.0	2.5+1.5	44.5	182	276	1790	24/1000
1x120RM/16	9.0	2.5+1.5	46.0	182	348	1920	24/1000

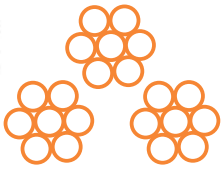
*other dimensions for conductor, metallic screen and packing length are available on request.

Cables According to BDS

SVT, SAVT

Power cable with PVC insulation and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291-85

According to BDS



Application

Used for transferring and distribution of electrical power for switching installations and outdoor installation or for interior installation in rooms, in canals, tunnels, shafts or pits, at rated voltage Uo/U to 0,6/1 kV with frequency 50 Hz.

Technical Data:	
Conductor resistance at 20°C:	According to BDS 904-84
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1(1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Min. temperaure of laying:	-5°C
Bending radius, min.	10xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conducor = 50 N/mm2 For Al conducor = 30 N/mm^2
Flame test:	acc. to IEC 60332-1

Cable Structure:	
Conductor:	solid or twisted copper or Al wires, class 1 or 2 according to BDS 904-84 (IEC 60228).
Insulation:	PVC compaund
Core identification:	according to BDS 16291
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Sheath:	PVC compaund
Colorof sheath:	Gray or black

Standard shapes and size of conductors:

RM - mutliwire round shaped conductor

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped conductor

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - solid round conductor

On Request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C (SVT-FR)
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Protected against direct sun irradiation (SVT_c)
- Oil resistant outer sheath.

Additional information and technical data:

Available conductor sizes for power distibution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 + 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
Available conductor sizes for signaling and control		
Number of cores	**size of Cu conductors**	**size of Al conductors**
7 -19 cores:	(1.5 - 10) RE	/
over 19 cores	(1.5 - 2.5) RE	/

* Other dimensions available on request.

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];
Length Tolerance per drum ± 5%

SVT, SAVT

Al conductors, XLPE insulation, twisted cable
Rated Voltage: U0/U - 0.6/1 kV
Standard:HD 626/part 4F

According to BDS

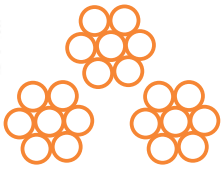
Construction data: SAVT U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1x4	RE	8,0	12,0	78,0	100
1x6	RE	8,5	17,0	91,0	100
1x10	RE	9,3	28,0	115,0	100
1x16	RM	10,8	45,0	150,0	100
1x25	RM	11,9	68,0	187,0	9/1000
1x35	RM	13,0	95,0	225,0	9/1000
1x50	RM	14,2	127,0	265,0	10/1000
1x70	RM	16,7	190,0	360,0	12/1000
1x95	RM	18,4	260,0	465,0	12/1000
1x120	RM	19,9	325,0	550,0	12/1000
1x150	RM	21,9	405,0	680,0	14/1000
1x185	RM	24,3	510,0	830,0	14/1000
1x240	RM	27,2	665,0	1065,0	16/1000
1x300	RM	30,3	830,0	1305,0	16/1000
1x400	RM	33,8	1060,0	1595,0	18/1000
1x500	RM	37,9	1410,0	2070,0	20/1000
2x2.5	RE	10,6	14,0	120,0	100
2x4.0	RE	12,1	23,0	160,0	100
2x6.0	RE	13,2	34,0	185,0	100
2x10	RE	15,2	56,0	245,0	100
2x16	RM	17,8	90,0	340,0	12/1000
2x25	RM	21,5	137,0	470,0	14/1000
3x2.5	RE	11,0	21,0	130,0	100,0
3x4.0	RE	12,8	36,0	185,0	100,0
3x6.0	RE	14,0	51,0	225,0	10/1000
3x10	RE	16,0	85,0	290,0	12/1000
3x16	RE	18,9	135,0	380,0	12/1000
3x25	RM	22,8	210,0	610,0	14/1000
3x35	RM	25,3	290,0	740,0	14/1000
3x50	RM	28,9	385,0	950,0	16/1000
3x70	SM	28,8	585,0	1090,0	14/500
3x95	SM	33,1	810,0	1490,0	14/500
3x120	SM	35,9	1020,0	1710,0	16/500
3x150	SM	39,3	1255,0	2060,0	16/500
3x185	SM	43,4	1560,0	2610,0	16/500
3x240	SM	48,9	2035,0	3320,0	20/500
3x4.0+2.5	RE/RE	13,4	42,0	205,0	9/1000
3x6.0+4.0	RE/RE	14,4	63,0	240,0	10/1000
3x10+6.0	RE/RE	16,7	101,0	320,0	12/1000
3x16+10	RE/RE	19,5	165,0	475,0	12/1000
3x25+16	RM/RE	24,4	255,0	630,0	14/1000
3x35+16	RM/RE	27,1	340,0	825,0	16/1000
3x50+25	RM/RM	30,8	480,0	1025,0	14/500
3x70+35	SM/RM	31,8	670,0	1250,0	14/500
3x95+50	SM/SM	36,8	910,0	1680,0	16/500
3x120+70	SM/SM	40,1	1180,0	2010,0	16/500
3x150+70	SM/SM	44,3	1405,0	2415,0	18/500
3x185+95	SM/SM	49,3	1780,0	2975,0	20/500
3x240+120	SM/SM	55,4	2310,0	3805,0	22/500

* Other dimensions and packing length are available on request.

SVT, SAVT

Power cable with PVC insulation and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291-85

According to BDS



Construction data: SAVT U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
4x2.5	RE	11,9	28,0	152,0	9/1000
4x4.0	RE	13,6	46,0	216,0	10/1000
4x6.0	RE	14,4	68,0	260,0	10/1000
4x10	RE	16,8	112,0	340,0	12/1000
4x16	RE	19,2	180,0	460,0	12/1000
4x25	RM	25,2	270,0	670,0	14/1000
4x35	RM	28,0	390,0	905,0	16/1000
4x50	RM	32,0	520,0	1180,0	14/500
4x70	SM	33,0	760,0	1390,0	14/500
4x95	SM	37,3	1060,0	1860,0	16/500
4x120	SM	41,2	1340,0	2210,0	16/500
4x150	SM	45,2	1650,0	2710,0	18/500
4x185	SM	49,5	2100,0	3320,0	20/500
4x240	SM	56,4	2720,0	4110,0	22/500
5x2.5	RE	12,8	35,0	180,0	9/1000
5x4.0	RE	15,5	58,0	270,0	10/1000
5x6.0	RE	16,8	85,0	320,0	12/1000
5x10	RE	19,2	140,0	430,0	12/1000
5x16	RE	23,2	225,0	580,0	14/1000
5x25	RM	27,9	345,0	855,0	16/1000
5x35	RM	32,4	480,0	1210,0	18/1000
5x50	RM	36,9	650,0	1470,0	16/500
5x70	RM	42,0	965,0	1955,0	16/500

* Other dimensions and packing length are available on request.

SVTT, SAVTT

Power cable with PVC insulation and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291 85

Application

Used for transferring and distribution of electrical power for switching installations and outdoor installation or for interior installation in rooms, in canals, tunnels, shafts or pits, at rated voltage Uo/U to 0,6/1 kV with frequency 50 Hz.

According to BDS

Technical Data:	
Conductor resistance at 20°C:	According to BDS 904-84
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1(1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Min. temperature of laying:	-5°C
Bending radius, min.	10xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm
Max. permessible tensile stress with cable grip:	For Cu conducor = 50 N/mm2
	For Al conducor = 30 N/mm^2
Flame test:	acc. to IEC 60332-1

Cable Structure:	
Conductor:	solid or twisted copper or Al wires, class 1 or 2 according to BDS 904-84 (IEC 60228).
Insulation:	PVC compaund
Core identification:	according to BDS 16291
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheath:	PVC compaund
Outer sheath:	PVC compaund
Color:	Gray or black

Standard shapes and size of conductors:

RM - mutliwire round shaped conductor

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped conductor

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - Solid Round Conductor

On Request:

- Fire propagation acc. IEC 60332-3 cat. A, B, C (SVT-FR)
- Hydrocarbon resistant outer sheath (RH).
- Termite and rodents protected outer sheath.
- Protected against direct sun irradiation (SVT_c)
- Oil resistant outer sheath.

Available conductor sizes for power distibution:

Number of cores	size of Cu conductors	size of Al conductors
1 core:	4mm^2 - 630mm^2	25mm^2 - 630mm^2
2 cores:	1.5mm^2 - 120mm^2	25mm^2 - 120mm^2
3 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
4 cores:	1.5mm^2 - 300mm^2	25mm^2 - 240mm^2
3 cores+1 earth core:	25mm^2 - 300mm^2 + 16mm^2 - 150mm^2	25mm^2 - 240mm^2 + 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 240mm^2	25mm^2 - 240mm^2
Available conductor sizes for signaling and control		
Number of cores:	size of Cu conductors	size of Al conductors
7 -19 cores:	(1.5 - 10) RE	/
over 19 cores	(1.5 - 2.5) RE	/

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];
Length Tolerance per drum ± 5%

SVTT, SAVTT

Power cable with PVC insulation and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard:BDS 16291-85

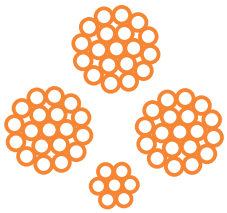
According to BDS

Construction data: SVTT U0/U-0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1x1.5	RE	9,5	14,0	108,0	100
1x2.5	RE	9,9	23,0	124,0	100
1x4	RE	10,3	37,0	143,0	100
1x6	RE	10,8	55,0	170,0	100
1x10	RE	11,6	93,0	221,0	100
1x16	RE	13,2	148,0	308,0	100
1x16	RM	13,2	148,0	308,0	100
1x25	RM	14,3	229,0	412,0	10/1000
1x35	RM	15,4	325,0	524,0	10/1000
1x50	RM	16,6	458,0	659,0	12/1000
1x70	RM	18,4	648,0	880,0	12/1000
1x95	RM	20,4	885,0	1161,0	12/1000
1x120	RM	22,0	1120,0	1430,0	14/1000
1x150	RM	23,9	1378,0	1752,0	14/1000
1x185	RM	26,2	1703,0	2156,0	16/1000
1x240	RM	29,3	2208,0	2735,0	16/1000
1x300	RM	32,0	2765,0	3412,0	18/1000
1x400	RM	35,6	3680,0	4324,0	20/1000
1x500	RM	39,9	4600,0	5432,0	22/1000
2x1.0	RE	10,3	20,0	132,0	100
2x1.5	RE	10,8	28,0	158,0	100
2x2.5	RE	11,5	46,0	182,0	100
2x4.0	RE	13,4	75,0	250,0	100
2x6.0	RE	14,2	110,0	305,0	100
2x10	RE	16,1	182,0	418,0	100
2x16	RE	19,1	303,0	587,0	12/1000
2x25	RM	22,2	470,0	875,0	14/1000
2x35	RM	24,2	652,0	1235,0	14/1000
2x50	RM	27,6	928,0	1510,0	16/1000
3x1.0	RE	10,7	28,0	145,0	100,0
3x1.5	RE	11,2	42,0	170,0	100,0
3x2.5	RE	12,0	69,0	214,0	100,0
3x4.0	RE	14,0	110,0	295,0	100,0
3x6.0	RE	15,0	165,0	374,0	10/1000
3x10	RE	16,9	275,0	520,0	12/1000
3x16	RE	20,2	450,0	765,0	12/1000
3x25	RM	23,2	700,0	1125,0	14/1000
3x35	RM	25,6	980,0	1465,0	14/1000
3x50	RM	29,1	1390,0	1960,0	16/1000
3x70	SM	30,0	1950,0	2450,0	14/500
3x95	SM	34,5	2650,0	3310,0	14/500
3x120	SM	37,3	3350,0	4065,0	16/500
3x150	SM	40,9	4185,0	4950,0	16/500
3x185	SM	45,4	5160,0	6160,0	18/500
3x240	SM	51,0	6720,0	7950,0	20/500
3x2.5+1.5	RE/RE	12,5	82,0	230,0	9/1000
3x4.0+2.5	RE/RE	14,6	132,0	330,0	10/1000
3x6.0+4.0	RE/RE	15,7	202,0	390,0	12/1000
3x10+6.0	RE/RE	17,5	330,0	590,0	12/1000
3x16+10	RE/RE	19,6	540,0	895,0	12/1000
3x25+16	RM/RE	24,9	850,0	1303,0	14/1000
3x35+16	RM/RE	27,1	1130,0	1661,0	16/1000
3x50+25	RM/RM	30,8	1630,0	2228,0	14/500
3x70+35	SM/RM	33,2	2280,0	2859,0	14/500

* Other dimensions and packing length are available on request.

SVBT, SAVBT

Power cable with PVC insulation, armored with two steel tapes and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291-85



According to BDS

Application

Used for transfer and distribution of electrical power for switching installation and in static installations, at rated voltage Uo/U to 0,6/1 kV with frequency 50 Hz. These cables are used for indoor installations, in the open air, in ditches, tunnels,canals and shafts.

Technical Data:	
Conductor resistance at 20°C:	According to BDS 904-84
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	0.6/1 (1.2) kV
Test voltage:	AC - 4 kV; 50 Hz
Temperature Range	
Fixed installation:	-30°C to +70°C
Flexible Installation:	-5°C to +50°C
Min. temperature of laying:	-5°C
Bending radius, min.	15xDcable
Specific insulation resisance at 70°C:	min. 10^{10}Ωxcm
Max. permessible tensile stress with cable grip:	$P = D^2 \cdot 3$ N/mm^2 D = Cable diameter (mm)

Cable Structure:	
Conductor:	solid or twisted copper or Al wires, class 1 or 2, acc.to BDS 904-84
Insulation:	PVC compound
Core identification:	according BDS 16291
Cores assembly:	cores stranded concentrically (cores stranded in concentric layers, for signal)
Inner sheat:	PVC filling compound
Armour:	
for multi-core cable:	two steel tapes
for single-core cable:	two Aluminium tapes
Sheath:	PVC compound
Color of sheath:	black or gray

Standard shapes and size of conductors:

RM - mutliwire round shaped conductor

Copper:	Aluminium:
1.5mm² - 630mm²	50mm² - 630mm²

SM - mutliwire sector shaped conductor

Copper:	Aluminium:
35mm² - 300mm²	50mm² - 240mm²

RE - Solid Round Conductor

On Request:

Fire propagation acc. IEC 60332-3 cat. A, B, C (SVT-FR)

Hydrocarbon resistant outer sheath (RH).

Termite and rodents protected outer sheath.

Oil resistant outer sheath.

Available conductor sizes for power distibution:				
Number of cores	**size of Cu conductors**		**size of Al conductors**	
1 core:	4mm^2 - 630mm^2		25mm^2 - 630mm^2	
2 cores:	1.5mm^2 - 120mm^2		25mm^2 - 120mm^2	
3 cores:	1.5mm^2 - 300mm^2		25mm^2 - 240mm^2	
4 cores:	1.5mm^2 - 240mm^2		25mm^2 - 240mm^2	
3 cores+1 earth core:	25mm^2 - 240mm^2	+ 16mm^2 - 150mm^2	25mm^2 - 240mm^2	+ 25mm^2 - 120mm^2
5 cores:	1.5mm^2 - 240mm^2		25mm^2 - 240mm^2	
Available conductor sizes for signaling and control				
Number of cores	**size of Cu conductors**		**size of Al conductors**	
over 7 cores (class 5)	(1.5 - 2.5)mm^2		/	
7 -19 cores:	(1.5 - 4) RE; RM		/	
over 19 cores	(1.5 - 2.5) RE; RM		/	

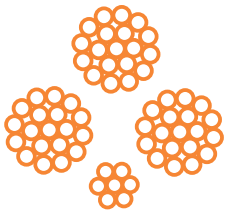
Packing

Standard Packing length on wooden drums: [500 m; 1000 m];
Length Tolerance per drum ± 5%

SVBT, SAVBT

Power cable with PVC insulation, armored with two steel tapes and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291-85

According to BDS

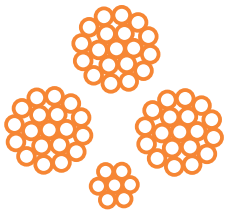


Construction data: SVBT U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
1x10	RE	12,5	93,0	302,0	9/1000
1x16	RM	13,5	148,0	381,0	9/1000
1x25	RM	15,3	229,0	515,0	10/1000
1x35	RM	16,4	325,0	624,0	12/1000
1x50	RM	17,6	458,0	771,0	12/1000
1x70	RM	19,9	648,0	1025,0	12/1000
1x95	RM	21,6	885,0	1305,0	14/1000
1x120	RM	23,3	1120,0	1575,0	14/1000
1x150	RM	25,1	1378,0	1890,0	14/1000
1x185	RM	27,7	1703,0	2307,0	16/1000
1x240	RM	30,6	2208,0	2935,0	18/1000
2x2.5	RE	12,7	46,0	261,0	9/1000
2x4.0	RE	14,6	75,0	346,0	10/1000
2x6.0	RE	15,7	110,0	415,0	12/1000
2x10	RE	17,3	182,0	538,0	12/1000
2x16	RE	19,3	303,0	711,0	12/1000
2x25	RM	23,7	470,0	1038,0	14/1000
2x35	RM	25,9	652,0	1315,0	16/1000
2x50	RM	29,4	928,0	1706,0	16/1000
3x1.5	RE	12,4	42,0	252,0	9/1000
3x2.5	RE	13,2	69,0	297,0	9/1000
3x4.0	RE	15,4	110,0	410,0	10/1000
3x6.0	RE	16,4	165,0	490,0	12/1000
3x10	RE	18,3	275,0	660,0	12/1000
3x16	RE	20,3	450,0	880,0	12/1000
3x25	RM	25,0	700,0	1326,0	14/1000
3x35	RM	27,5	980,0	1685,0	16/1000
3x50	RM	31,3	1390,0	2210,0	14/500
3x70	SM	32,2	1950,0	2754,0	14/500
3x95	SM	36,7	2650,0	3670,0	16/500
3x120	SM	39,5	3350,0	4452,0	16/500
3x150	SM	43,1	4185,0	5368,0	16/500
3x185	SM	47,6	5160,0	6635,0	18/500
3x240	SM	53,4	6720,0	8501,0	20/500
3x2.5+1.5	RE/RE	13,7	82,0	295,0	10/1000
3x4.0+2.5	RE/RE	16,0	132,0	450,0	12/1000
3x6.0+4.0	RE/RE	17,1	202,0	545,0	12/1000
3x10+6.0	RE/RE	19,1	330,0	736,0	12/1000
3x16+10	RE/RE	21,2	540,0	996,0	14/1000
3x25+16	RM/RE	26,3	850,0	1514,0	16/1000
3x35+16	RM/RE	29,1	1130,0	1890,0	16/1000
3x50+25	RM/RM	33,0	1630,0	2499,0	14/500
3x70+35	SM/RM	35,4	2280,0	3212,0	16/500
3x95+50	SM/SM	40,2	3120,0	4180,0	16/500
3x120+70	SM/SM	43,7	4010,0	5260,0	18/500
3x150+70	SM/SM	48,1	4850,0	6220,0	18/500
3x185+95	SM/SM	53,3	6070,0	7786,0	20/500
3x240+120	SM/SM	59,6	7840,0	9910,0	22/500

* Other dimensions and packing length are available on request.

SVBT, SAVBT

Power cable with PVC insulation, armored with two steel tapes and PVC sheath
Rated Voltage: U0/U - 0.6/1 kV
Standard: BDS 16291-85



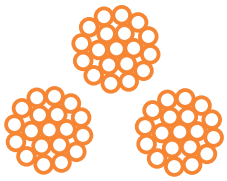
According to BDS

Construction data: SVBT U0/U - 0.6/1kV					
Number of cores x Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
4x1.5	RE	13,2	55,0	286,0	9/1000
4x2.5	RE	14,1	92,0	350,0	10/1000
4x4.0	RE	16,5	146,0	480,0	12/1000
4x6.0	RE	17,6	218,0	580,0	12/1000
4x10	RE	19,8	363,0	800,0	12/1000
4x16	RE	22,0	582,0	1080,0	14/1000
4x25	RM	27,4	925,0	1642,0	16/1000
4x35	RM	30,4	1303,0	2175,0	14/500
4x50	RM	34,4	1857,0	2762,0	14/500
4x70	SM	36,6	2601,0	3478,0	16/500
4x95	SM	42,0	3540,0	4791,0	16/500
4x120	SM	45,4	4460,0	5800,0	18/500
4x150	SM	50,0	5575,0	7975,0	20/500
4x185	SM	55,2	6880,0	8117,0	22/500
4x240	SM	62,2	8928,0	10080,0	24/500
5x1.5	RE	14,0	69,0	331,0	10/1000
5x2.5	RE	15,2	114,0	413,0	10/1000
5x4.0	RE	17,7	182,0	567,0	12/1000
5x6.0	RE	19,2	257,0	708,0	12/1000
5x10	RE	21,4	455,0	970,0	14/1000
5x16	RE	24,0	745,0	1324,0	14/1000
5x25	RM	30,7	1165,0	2048,0	18/1000
5x35	RM	33,4	1640,0	2758,0	18/1000
5x50	RM	38,7	2330,0	3840,0	16/500
5x70	RM	43,7	3260,0	5128,0	18/500
7x1.5	RE	15,2	96,0	421,0	10/1000
8x1.5	RE	16,2	110,0	465,0	12/1000
10x1.5	RE	18,3	140,0	571,0	12/1000
12x1.5	RE	18,8	165,0	610,0	12/1000
14x1.5	RE	19,5	195,0	675,0	12/1000
16x1.5	RE	20,5	220,0	740,0	14/1000
19x1.5	RE	21,3	260,0	814,0	14/1000
24x1.5	RE	24,5	330,0	1042,0	14/1000
30x1.5	RE	25,7	410,0	1180,0	16/1000
37x1.5	RE	27,7	506,0	1370,0	16/1000
7x2.5	RE	16,3	160,0	508,0	12/1000
8x2.5	RE	17,3	182,0	570,0	12/1000
10x2.5	RE	19,9	228,0	719,0	12/1000
12x2.5	RE	20,4	275,0	778,0	12/1000
14x2.5	RE	21,4	320,0	838,0	14/1000
16x2.5	RE	22,6	365,0	941,0	14/1000
19x2.5	RE	23,5	435,0	1050,0	14/1000
24x2.5	RE	27,0	546,0	1354,0	16/1000
30x2.5	RE	28,4	685,0	1551,0	16/1000
37x2.5	RE	30,8	845,0	1820,0	18/1000

SVBT, SAVBT - 6kV

PVC-insulated cables with PVC sheath and steel tape armour
Rated Voltage: U0/U - 3.6/6 kV
Standard: BDS 16291-85

According to BDS



Application

The one-core and three-core cables with insulation of polyvinylchloride (PVC) are designed for distribution of electrical power and for electrical supply of consumers with nominal voltage Uo/U 3.6/6 kV and frequency 50 Hz. They are suitable for distribution installations, electric power stations and industrial systems. The cables are for fixed assembly in lines with unlimited difference levels, for indoor installations, in cable ducts, conduits and shafts, over shelves and grills directly underground in ditch and outdoor shelter.

Technical Data:	
Conductor resistance at 20°C:	(IEC60228) class 2
	According to BDS904
Core temperature, max:	70°C in operation
Max. short circuit temperature:	
for cross-section up to 300mm²	160 °C , not more than 5 sec
for cross-section above 300mm²	140 °C , not more than 5 sec
Rated voltage - U_0/U (U_{max}):	3.6/6(7.2) kV
Test voltage:	AC - 11 kV; 50 Hz
Temperature Range:	-30°C to +70°C
Min. temperature for laying and manipulation with cables:	-5°C
Bending radius, min.	$15xD_{cable}$
max Permessible tensile stress with cable grip:	P = D2 · 3 N/mm2
	D = Cable diameter (mm)

Cable Structure:	
Conductor:	Cu and Al stranded compacted, according to BDS 904 (IEC60228) class 2
Insulation:	PVC compound
Color of insulation:	natural
Cores assembly:	insulated cores are twisting together
Inner sheat:	PVC filling compound
Armour:	
for one-core cable:	two aluminium tapes
for three-core cable:	two galvanized steel tapes
Sheath:	PVC compound type P-1
Color of sheath:	black or gray

Additional information and technical data:

Available conductor sizes for power distibution:		
Number of cores	**size of Cu conductors**	**size of Al conductors**
1 core:	35mm² - 500mm²	35mm² - 630mm²
3 cores:	35mm² - 185mm²	35mm² - 185mm²

RM - Multiwire conductor round shape class 2

SM - Multiwire sector shaped conductor class 2

On Request:

Fire propagation acc. IEC 60332-3

Hydrocarbon resistant outer sheath (RH).

Termite and rodents protected outer sheath.

Oil resistant outer sheath.

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

Construction data: SVBT, SAVBT U0/U - 3.6/6kV								
Number of cores x Nominal Cross Section	Nonminal insulation Thickness	Armour section equivalent to copper	Overall Diameter (Approx.)	Copper weight - SVBT (Approx.)	Total Weight -SVBT (Approx.)	AL weight - SAVBT (Approx.)	Total Weight -SAVBT (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm²	max.mm	kg/km	kg/km	kg/km	kg/km	m or N°/m
3x25RM/6	3,4	6,0	37,7	700,0	2685,0	210,0	2150,0	16/500
3x35RM/6	3,4	6,0	40,0	630,0	3155,0	290,0	2535,0	16/500
3x50SM/6	3,4	6,0	43,2	1390,0	3600,0	385,0	2700,0	16/500
3x70SM/6	3,4	6,0	44,6	1950,0	4170,0	585,0	2945,0	18/500
3x95SM/6	3,4	6,0	45,6	2650,0	5080,0	810,0	3380,0	18/500
3x120SM/6	3,4	6,0	48,6	3350,0	5980,0	1020,0	3818,0	20/500
3x150SM/6	3,4	6,0	51,6	4185,0	6920,0	1255,0	4250,0	20/500
3x185SM/6	3,4	6,0	55,1	5160,0	8175,0	1560,0	4830,0	22/500
3x240SM/6	3,4	6,0	60,0	6720,0	10110,0	2035,0	5660,0	24/500

* Other dimensions and packing length are available on request.

A, AC, ACO

Bare Aluminium conductors and aluminium conductors, steel reinforced
Standards: BDS 1133-89

According to BDS

Application

For overhead electric power transmission

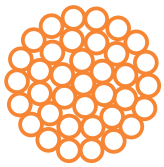
Construction data					
Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Electrical resistance at 20°C max	Net weight aprox.
mm²	No x mm	mm	kN	Ω/km	kg/km
Type A					
16	7x1.70	5.1	2.838	1.804	44
25	7x2.12	6.36	4.249	1.16	68
35	7x2.50	7.5	5.778	0.834	94
50	7x3.0	9.0	7.944	0.579	136
70	7x3.55	10.65	10.663	0.414	190
95	7x4.12	12.36	14.185	0.307	256
120	19x2.8	14.0	18.783	0.246	322
150	19x3.15	15.75	23.351	0.195	407
185	19x3.5	17.5	28.48	0.158	503
240	19x4.0	20.0	36.292	0.121	657
300	37x3.2	22.4	46.927	0.097	820
400	37x3.69	25.83	60.895	0.073	1091
500	37x4.15	29.05	76.073	0.058	1380
630	61x3.55	31.95	88.031	0.048	1668

Construction data							
Nominal Cross Section	Number of Wires and Diameter	Cable diameter	Breaking load min	Electrical resistance at 20°C max	Net weight of Al aprox.	Net weight of St aprox.	Net weight of AC rope
mm²	No x mm	mm	kN	Ω/km	kg/km	kg/km	kg/km
Type AC							
	Al St						
16	6x1.8+1x1.8	5.4	5.83	1.882	42	20	62
25	6x2.2+1x2.2	6.6	8.652	1.26	62	30	92
35	6x2.8+1x2.8	8.4	13.386	0.778	101	48	149
50	6x3.2+1x3.2	9.6	17.02	0.595	132	63	195
70	6x3.8+1x3.8	11.4	23.59	0.422	187	88	275
95	6x4.5+1x4.5	13.5	32.986	0.301	262	124	386
120	28x2.29+7x2.0	15.16	46.582	0.251	319	172	491
150	28x2.59+7x2.2	16.96	57.19	0.196	407	209	616
185	28x2.87+7x2.5	18.98	70.47	0.16	500	269	796
240	28x3.29+7x2.8	21.56	89.038	0.121	657	338	995
300	28x3.66+7x3.2	24.24	110.776	0.098	814	441	1255
400	28x4.24+19x2.2	27.96	149.204	0.073	1092	568	1660
Type ACO							
150	24x2.8+7x1.8	16.60	46.172	0.195	408	139	547
185	24x3.1+7x2.0	18.40	56.293	0.159	500	172	672
240	24x3.59+7x2.4	21.56	77039,00	0.119	607	248	918
300	54x2.62+7x2.6	23.52	93.477	0.099	805	291	1096
400	54x3.04+7x3.0	27.24	120.481	0.074	1083	388	1471
500	54x3.37+19x2.0	30.22	150.024	0.060	1332	469	1801
630	54x3.69+19x2.2	33.14	179.5	0.050	1596	568	2164

According to BDS

SHEmT-et, SAHEmT-et

Al or Cu conductor, XLPE insulation, Cu screen, PVC sheath
Rated Voltage: U0/U(AC) - 0.6/1kV; U(DC) - 3kV
Standard: BDS 2581-86



Application

The single-core cables with cross-linked polyethylene (XLPE) insulation Cu screen are used mainly for electrical systems with nominal voltage 3 kV and are applicable for electrical public and metropolitan transportation. They can be used for transfer, distribution and electrical power supply with nominal voltage Uo/U 0.6/1 kV and frequency of 50Hz. The cables are for fixed assembly in lines with unlimited difference levels, underground, in cable ducts, tunnels and conduits, over shelves and grilles outdoor under shelter.

Technical Data:	
Conductor resistance at 20°C:	(IEC60228) class 2 According to BDS904
Core temperature, max:	90 °C in continuous operation
Max. short circuit temperature:	250 °C , not more than 5 sec
Overload temperature:	130°C /100h per year max.
Nominal voltage Uo/U (Umax):	
alternating:	0.6/1(1.2) kV
constant:	3 kV
Test voltage, AC (50Hz) - 5 min	Between core and screen - 3.5kV
Bending radius, min	15xDcable
Temperature of laying:	no less than - 5 °C
Temperature of exploitation:	-30 to 50 °C
Force of strain in laying, N max.	Al cores - 30*S Cu cores - 50*S where: S is cross section of cores in mm2

Cable Structure:	
Conductor:	Al or Cu solid round multi cores acc.to BDS 2581-86(IEC 60228) class2
Insulation:	XLPE compound
Metal screen:	copper tapes
Sheath:	PVC compound type P-5
Color of sheath:	red

Standard shape of conductor:

RM - class 2 conductor acc. to BDS 904

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

Additional information and technical data:

Construction data: SAHEmT-et U0/U - 0.6/1kV, U(=) - 3kV							
Number of cores x Nominal Cross Section	Nonminal insulation Thickness	Nominal cross section of screen, min.	Nonminal Sheath Thickness	Overall Diameter (Approx.)	Al weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²	mm	mm²	mm	max.mm	kg/km	kg/km	m or N°/m
1x95RM	2,5	2,5	2,5	22,9	260,0	735,0	14/1000
1x120RM	2,5	2,5	2,5	24,3	325,0	855,0	14/1000
1x150RM	2,5	2,5	2,5	25,8	405,0	943,0	16/1000
1x185RM	2,5	2,5	2,5	27,5	510,0	1084,0	16/1000
1x240RM	2,5	2,5	2,5	29,9	665,0	1287,0	16/1000
1x300RM	3,0	2,5	3,0	34,2	830,0	1628,0	18/1000
1x400RM	3,0	2,5	3,0	39,9	1060,0	1920,0	22/1000
1x500RM	3,0	2,5	3,0	42,0	1410,0	2323,0	22/1000

* Other dimensions and packing length are available on request.

PVO

Copper conductor and PVC insulation
Nominal Volage: Uo/U - 0.6/1kV
Standard: FN KI 06 003 06

According to BDS

Application

For Connecting home and other electrical installations to open air electrical distribution network.

Technical Data:	
Conductor resistance:	according to BDS 904-84 class1
Permissable conductor temperature:	70°C
Working Voltage U_0/U:	0.6/1kV
Test Voltage AC (50Hz):	4kV
Temperature of exploitation:	- 30°C to + 50°C
Minimum bending radius:	6 x cable diameter

Cable Structure:	
Conductor:	copper wires according to
	BDS 904-84 (IEC 60228)
	class 1 - 6 mm2 and 10mm2
	class 2 - 16 mm2 to 70 mm2
Insulation:	PVC compound, type Iaccording to BDS 5792-84
Insulation color:	black

Constriction Data:

Nominal cross section	Outer diameter approx.	Copper weight approx.	Cable weightapprox.
mm^2	mm x mm	kg/km	kg/km
6	4.8	55	73
10	6.0	91	120
16	7.5	152	191
25	9.3	225	300
35	10.4	315	400
50	12.1	420	530
70	13.9	620	745

Packing

Packing length in cable coils and wooden drums: [on request];

PVU-A1

Copper conductor, PVC insulation, stranded wires
Nominal Volage: Uo/U - 300/500 V; Uo/U - 450/750 V
Standard: BDS 4305-90

According to BDS

Application

Installation in lighting installations, power and distribution systems, machines, apparatus and other.

Technical Data:	
Conductor resistance:	according to BDS 904-84 class1
Permissable conductor temperature:	70°C
Working Voltage U_0 / U:	
0.35 mm² to 1 mm²	300/500 V
1.5 mm² to 4 mm²	450/750 V
Test Voltage AC (50Hz):	
0.35 mm² to 1 mm²	2000 V
1.5 mm² to 4 mm²	2500 V
Temperature of exploitation:	- 25°C to + 50°C
Minimum bending radius:	6 x cable diameter
Testing:	BDS 4305-90

Cable Structure:	
Conductor:	copper wires according toBDS 904-84, class 1 (IEC 60228)
Insulation:	PVC compound, type I-2according to BDS 5792-84
Cores assembly:	Insulated cores are twisted

Color coding:		
number of cores	With yellow/green	Without yellow/green
2 core	-	Blue, brown
3 core	yellow/green , blue , brown	brown ,black , gray

Constriction Data:			
N x mm	Outer diameter approx.	Copper weight approx.	Wire weight approx.
	mm x mm	kg/km	kg/km
PVU-A1 300/500V			
2x0.35	4.0	6.6	16
2x0.5	4.2	9.2	19
2x0.75	4.5	13.4	24
2x1.0	4.8	18.4	31
2x1.5	5.8	27.6	45
2x2.5	7.0	44.0	70
2x4	7.8	71	100
PVU-A1 450/750V			
3x0.35	4.3	11	23
3x0.5	4.6	13.8	28
3x0.75	5.0	20.1	39
3x1.0	5.2	27.6	49
3x1.5	6.2	41.4	75
3x2.5	7.5	66	115
1x4	8.4	106.5	157

Packing

Packing length in cable coils: [on request];

PVU-A2

Copper conductor, PVC insulation, stranded wires
Nominal Volage: Uo/U - 300/500 V; Uo/U - 450/750 V
Standard: BDS 4305-90

Application

Installation in lighting installations, power and distribution systems, machines, apparatus and other.

Technical Data:	
Conductor resistance:	according to BDS 904-84 class1
Permissable conductor temperature:	70°C
Working Voltage U_0/U:	
0.35 mm² to 1 mm²	300/500 V
1.5 mm² to 4 mm²	450/750 V
Test Voltage AC (50Hz):	
0.35 mm² to 1 mm²	2000 V
1.5 mm² to 4 mm²	2500 V
Temperature of exploitation:	- 25°C to + 50°C
Minimum bending radius:	6 x cable diameter

Cable Structure:	
Conductor:	copper wires according toBDS 904-84, class 5 (IEC 60228)
Insulation:	PVC compound, type I-2according to BDS 5792-84
Cores assembly:	Insulated cores are twisted

Color coding:		
number of cores	With yellow/green	Without yellow/green
2 core	-	Blue, brown
3 core	yellow/green , blue , brown	brown ,black , gray

Constriction Data:			
N x mm	Outer diameter approx.	Copper weight approx.	Wire weight approx.
	mm x mm	kg/km	kg/km
PVU-A1 300/500V			
2x0.35	4.1	7.0	15.5
2x0.5	4.5	9.2	18
2x0.75	4.8	15	25
2x1.0	5.1	19.2	29
2x1.5	6.2	28.0	44
2x2.5	7.3	48.0	68
2x4	8.4	76.0	100
PVU-A1 450/750V			
3x0.35	4.5	10.0	23
3x0.5	4.9	14.0	28
3x0.75	5.2	20.5	39
3x1.0	5.6	27.6	49
3x1.5	6.7	41.4	75
3x2.5	7.9	66	115
1x4	9.1	107	157

Packing

Packing length in cable coils and wooden drums: [on request];

According to BDS

PVV-MB1

Flat webbed house wires
Rated Voltage: U0/U - 220/380 V
Standard: BDS 4305-90

According to BDS

Application

For installation in dry environments only, both in and beneath plaster. The cables must be covered by plaster along their entire length. Installation in cavities of concrete, stone or non-inflammable building materials is allowed. Installations notes:
- The cables cannot be installed on flammable building materials, immediately next to or under wire mesh or similar materials.For mounting, only materials and procedure shall be used which preclude a deformation or damage of the insulation, e. g. gypsum plaster, adhesives, nails with insulating washers.
- Flat house wire cables may only be installed beneath gypsum board if these are subsequently fixed using gypsum plaster. The cables may not be bundled together. Bunching flat webbed building wires to insertion points for electrical equipments is not considered as bunching.

Technical Data:	
Conductor resistance at 20°C:	according to BDS 904-84 class 1
Core temperature, max:	70°C in operation
Max. short circuit temperature:	160 °C , not more than 5 sec
Rated voltage - U_0/U:	220/380 V
Test voltage:	AC - 2 kV; 50 Hz
Temperature Range:	-20°C to +70°C
Bending radius, min.	6xDcable
Specific insulation resistance at 70°C:	min, 10^{10} Ω x cm

Cable Structure:	
Conductor:	copper wires according to BDS 904-84,class 1 (IEC 60228)
Insulation:	PVC compound, type I-2according to BDS 5792-84
Core identification:	according to DIN VDE 0293
Cores assembly:	Insulated cores are parallel in between in a unified sheath
Sheath:	PVS compound, type P-1according to BDS 5792-84
Color of sheath:	white, gray, black

Color coding:

number of cores	With yellow/green	Without yellow/green
2 core	-	Blue, brown
3 core	yellow/green , blue , brown	brown, black, gray
4 core	yellow/green , brown ,black , gray	blue, brown, black, gray
5 core	yellow/green , blue , brown , black, gray	black , blue , brown , black , gray

Construction data PVV-MB1 U0/U - 220/380V

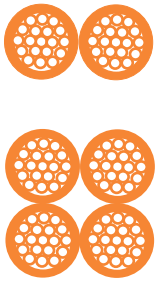
Num. of Cores and Nominal Cross Section	Shape	Overall Diameter (Approx.)	Copper weight (Approx.)	Total Weight (Approx.)	Packing: Cable coil or Drum
No x mm²		max.mm	kg/km	kg/km	m or N°/m
2 x 1.5	RE	3.8x11.2	29	65	100
2 x 2.5	RE	4,6x12.8	48	95	100
2 x 4	RE	5.2x14.4	76	135	100
3 x 1.5	RE	3.8x18.7	43	100	100
3 x 2.5	RE	4.5x21	72	145	100
3 x 4	RE	5.2x23.7	115	206	100
4 x 1.5	RE	3.8x32.8	58	135	100
4 x 2.5	RE	4.5x29	96	196	100
5 x 1.5	RE	3.8x32.8	72	170	100
5 x 2.5	RE	4.5x36.7	120	246	100

Overhead cables

Overhead Cables

N1XD4-AR, X00-A, AL/R

XLPE insulated cable bunch without supporting neutral conductor
Rated voltage: Uo/U - 0,6/1 kV
Standard: HD 626/part 4E; N.C5.250; NF C 33-209



Application

The power cables with XLPE insulation for overhead lines - self-supporting type are designed for transfer, distribution and supply with electrical power in networks with or without Public Lighting (between Pole to Pole) for low voltage Uo/U-0.6/1 kV. In constructions for distribution networks these cable permit suspension on facades and trees. They allow crossing of forest areas without cutting and maintenance of openings in the wood. The suspension and support of the whole bundle is carried out by the phase (basic) insulated current-conductive.

Technical Data:	
Operating temperature:	90°C
Short-circuit temperature:	250°C (5 s. maximum duration)
Nominal voltage AC:	0.6/1 kV
Highest system voltage AC, not more than:	1.2 kV
Test voltage AC - 50 Hz:	4 kV (3 kV acc. To N.C5.250)
Temperature of using:	-20°C to +90°C
Temperature of laying, min:	-20°C
Bending radius, min:	for cable - 14xDcable
	for one core - 6xDcore
Conductor resistance at 20° C:	16mm2- 1.91 Ω/km
	25mm2 - 1.20 Ω/km
	1.5mm^2 - 12.1 Ω/km (pilot core)
Breaking force min.	16mm2- 1.9kN
	25mm^2 - 3.0kN

Cable Structure:	
Phases Conductors:	Compacted round shaped aluminium rope
Neutral conductor:	Compacted round shaped aluminium rope
Pilot cores (optional):	Copper solid wires
Insulation:	XLPE
Color:	Black
Cable lay up:	Cores twisted into a bundle include:
	Phase cores
	Neutral core
	Two additional pilot cores
Standard identification of cores:	Phase cores are identified by numbers:
	Cores for street lighting are identified by letters: R1 and R2
	Neutral core is identified by longitudinal convexity an insulation.

Packing

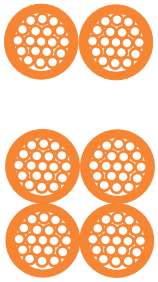
Standard Packing length on wooden drums: [500 m; 1000 m];

X00-A; N1XD4-AR; AL/R U0/U - 0.6/1 kV								
Num. of Cores and Nominal Cross Section	Average tickness of insulating sheath	Approx. external diameter	Approx. Total Weight	Max. continuous current-carring capacity in phases conductors. Conductors temperature: 90°C (A)			Voltage drop with cos=0.8 (V/A/km)	Packing on wooden drum
No x mm²	mm	mm	kg/km	In duct through walls	In Air at 30°C	Along house fronts	Phase conductor	N° x m
2 x 16 (SP)	1,2	15	140	72	93	83	3,98	1000
2 x 25 (SP)	1,4	18	213	95	122	109	2,54	1000
4 x 16 (TP)	1,2	18	280	63	83	74	3,44	1000
4 x 25 (TP)	1,4	22	426	83	111	100	2,2	1000
2 x 16 + 2 x 1.5 (SP)	1,2/1,2	16	191	72	93	83	3,98	1000
2 x 25 + 2 x 1.5 (SP)	1,4/1,2	19,5	270	95	122	110	2,54	1000
4 x 16 + 2 x 1.5 (TP)	1,2/1,2	20	330	63	83	74	3,44	1000
4 x 25 + 2 x 1.5 (TP)	1,4/1,2	24	476	83	111	100	2,2	1000

(SP) - Single-Phase System
(TP) - Three-Phase System

N1XD9-AR, X00/0-A, AL/R

XLPE insulated cable bunch with supporting neutral conductor
Rated Voltage: U0/U - 0.6/1 kV
Standard: HD 626/part 6E; N.C5.250; N.C5.251; NF C 33-209



Application

The power cables with XLPE insulation for overhead lines - self-supporting type are designed for transfer, distribution and supply with electrical power in networks low voltage Uo/U-0.6/1 kV. In constructions for distribution networks these cable permit suspension on fasades and trees.They allow crossing of forest areas without cutting and maintenance of openings in the wood.The suspension and support of the whole bundle is carried out by a supporting insulated neutral wire of aluminium steel conductor or of aluminium alloy.

Cable Structure:	
Phases Conductors:	compacted round shaped aluminium rope
Neutral conductor-Self Supporing:	compacted round shaped rope of aluminium alloy AlMgSi of 95mm2, 70mm2 or 54.6mm2 nominal cross-sectio, or aluminium alloy AlMg 1 (1% magnesium) of 71.5mm2 nominal cross-sectio, or Al/Fe core of 50/8mm^2 or 61/10mm^2
Public lighting, optional:	compacted round shaped aluminium rope, 16 and 25mm^2
Pilot cores, optional:	copper solid wire, 1.5 mm^2
Insulation:	XLPE for all elements of cable
Color:	black
Cable lay up:	Phase core and cores for street lighting twisted in a bunch around supporting neutral core.
Standard identification of cores:	Phase cores are identified by numbers: 1,2,3 Cores for street lighting are identified by letters: R1 and R2 Neutral core is identified by longitudinal convexity an insulation.

Technical Data:	
Operating temperature:	90°C
Short-circuit temp. on phase cores:	250°C (5 s. maximum duration)
Short-circuit temp. on neutral core:	130°C (5 s. maximum duration)
Nominal voltage AC:	0.6/1 kV
Highest system voltage, AC:	1.2 kV
Test voltage AC - 50 Hz:	4 kV (3 kV acc. To N.C5.250)
Temperature of using:	-20°C to +90°C
Temperature of laying, min:	-20°C
Bending radius, min:	for cable -14xDcable for one core - 6xDcore
Specific volume resistance at 90°C:	min, 10^{14} Ω x cm

Packing

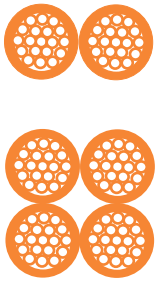
Standard Packing length on wooden drums: [500 m; 1000 m];

X00/O-A; N1XD9-AR; AL/R U0/U - 0.6/1 kV									X00/O-A; N1XD9-AR; AL/R U0/U - 0.6/1 kV		
Type	Nominal Cross Section	Min. number of wires	Max.electrical resistance	Diameter od conductors		Breaking Force, min	Insulation thickness	Outside diameter		Num. of Cores and Nominal Cross Section	Max. continuous current-carrying capacity in phase conductors and in Public lighting conducor at temp. 90°C:	
	mm^2		Ω/km	min. (mm)	max. (mm)	kN	mm	min. (mm)	max. (mm)	No x mm^2	in Air at 30°C stretched between poles	in air at 30°C
Phase conductor	16	7	1,91	4,6	5,1	/	1,2	7	7,8	3x25+54.6(TP)	112	/
	25	7	1,2	5,8	6,3	/	1,4	8,6	9,4	3x35+Kx16+54.6(TP)	138	83
	35	7	0,868	6,8	7,3	/	1,6	10	10,9	3x50+Kx16+54.6(TP)	168	83
	50	7	0,641	7,9	8,4	/	1,6	11,1	12	3x70+Kx16+54.6(TP)	213	83
	70	12	0,443	9,7	10,2	/	1,8	13,3	14,2	3x70+Kx25+54.6(TP)	213	111
	95	19	0,32	11	12	/	1,8	14,6	15,7	3x70+Kx16+70(TP)	213	83
	120	19	0,253	12	13,1	/	1,8	15,6	16,7	3x95+Kx16+70(TP)	258	83
	150	19	0,206	13,7	15	/	1,8	17,3	18,6	3x120+Kx16+70(TP)	300	83
Neutral conductor	54.6	7	0,63	9,2	9,6	16,6	1,6	12,3	13	3x120+Kx16+95(TP)	300	83
	70	7	0,5	10	10,2	20,5	1,5	12,9	13,6	3x150+Kx16+70(TP)	344	83
	95	19	0,343	12,2	12,9	27,5	1,6	15,3	16,3	3x150+Kx16+95(TP)	344	83
	71.5	7	0,47	9,8	10.6	15,5	1,8	14,2	14,6	3x70+71.5(TP)	213	/
	50/8	6+1	0,59	9,2	9,7	17	1,5(1,6)	12,7	12,9	3x70+Kx16+71.5(TP)	213	83
	61/10	6+1	0,51	10,5	/	17	1,8	14	15	3x70+Kx16+50/8(TP)	213	83
Pilot core	1.5	1		/	1,5		1,2	3,7	4,2	3x70+Kx16+61/10(TP)	213	83

*Natural conductors: 71.5 mm²; 61/10; 50/8 - only for type X00/0-A (TP) - Three-Phase

NFA2X

Al conductors, XLPE insulation, twisted cable
Rated Voltage: U0/U - 0.6/1 kV
Standard:HD 626/part 4F



Overhead Cables

Application

The power cables with XLPE insulation for overhead lines - self-supporting type are designed for transfer, distribution and supply with electrical power in networks with or without Public Lighting (between Pole to Pole) for low voltage Uo/U-0.6/1 kV. In constructions for distribution networks these cable permit suspension on facades and trees. They allow crossing of forest areas without cutting and maintenance of openings in the wood. The suspension and support of the whole bundle is carried out by the phase (basic) insulated current-conductive.

Technical Data:	
Operating temperature:	80°C
Short-circuit temperature:	130°C
Nominal voltage AC:	0.6/1 kV
Highest system voltage AC, not more than:	1.2 kV
Test voltage AC - 5 min:	4 kV
Max. operating temperature, fixed:	20°C to 80°C
Temperature of laying:	no less than - 10° C, recommended 15° C
Bending radius:	18xDcable
Conductor resistance at 20° C:	16 - 1.91 Ω/km; 50 - 0.641Ω/km 25 - 1.20 Ω/km; 70 - 0.443 Ω/km 35 - 0.868Ω/km; 95 - 0.320Ω/km
Breaking force min.:	16 - 2.84 kN; 50 - 8.45 kN 25 -4.17 kN; 70 -11.32 kN 35 - 5.78 kN; 95 - 15.68 kN

Cable Structure:	
Phases Conductors: (M):	compacted round shaped aluminium rope
Neural conductor: (N):	compacted round shaped aluminium rope
Conductors for lighting: (R) :	compacted round shaped aluminium rope
Insulation:	XLPE with min. 2% carbon blackcontent type TIX-2
Color:	black constructions twisted into a bundle include: phase cores (M) neutral (N)
Cable lay up (cable constructions):	one, two, or three additional reduced insulated cores for lighting (R)
Cores identification:	with color printing or with longitudinal ribs acc. To HD 626 S1

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

Standard constructions and currents:	
One core:	1x(16 - 95)mm^2
Two cores:	2x(16 - 95)mm^2
Four cores:	4x(16 - 95)mm^2
Four cores with one lighting conductor:	4x(16 - 95)mm^2+1x(16 - 35)mm^2
Four cores with two lighting conductors:	4x(16 - 95)mm^2+2x(16 - 35)mm^2
nominal cross section:	Allowed current in power supply networks
16mm^2	81 A
25mm^2	107 A
35mm^2	132 A
50mm^2	162 A
70mm^2	205 A
95mm^2	245 A

Bare Copper Conductors

Standard: DIN 48201 part 1

Application

For overhead electric power transmission systems.

Construction data Cu class 2

Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Electrical resistance at 20°C max	Net weight of copper aprox.	Continuous current carring capacity
mm²	No x mm	mm	kN	Ω/km	kg/km	A
10	7x1.35	4.1	4.02	1.806	90	90
16	7x1.70	5.1	6.37	1.139	143	125
25	7x2.1	6.3	9.72	0.746	218	160
35	7x2.50	7.5	13.77	0.527	310	200
50	7x3.0	9.0	19.84	0.376	446	250
50	19x1.8	9.0	19.38	0.376	437	250
70	19x2.1	10.5	26.38	0.276	596	310
95	19x2.5	12.5	37.39	0.195	845	380
120	19x2.8	14.0	46.90	0.155	1060	440
150	37x2.25	15.8	58.98	0.124	1337	510
185	37x2.5	17.5	72.81	0.1	1649	585
240	61x2.25	20.3	97.23	0.075	2209	700
300	61x2.5	22.5	120.04	0.061	2725	800
400	61x2.89	26.0	160.42	0.042	3640	960
500	61x3.23	29.1	200.38	0.036	4545	1110

Lay Ratio (Table 2)

1	2	3	4	5	6	7	8	9
number of wires in the rope	6-wire layer		12-wire layer		18-wire layer		24-wire layer	
	min.	max.	min.	max.	min.	max.	min.	max.
7	10	14	-	-	-	-	-	-
19	10	16	10	14	-	-	-	-
37	10	17	10	16	10	14	-	-
61	10	17	10	16	10	15	10	14

Note

Copper wire is accordance with DIN 48 200 Part 1
Conductor weights are calculated with a density of 8.9 kg/dm³ and the average lay ratio. The arithmetical mean of the relevant min. and max. values given in the Table 2 for the lay ratio is taken as the average lay ratio.
The calculated breaking load is determinated in according with DIN 48 203 Part 1.
Values for current carrying capacity are applicable up to 60 Hz at a wind velocity of 0.6m/s and solar effects for an original ambient temperature of 35 C and a final conductor e temperature of 70 C. The values must be reduced by an average of approx. 30% in case of special location in still air.

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

Bare AL Conductor Steel Reinforced

Standard:48204

Overhead Cables

Application

For overhead electric power transmission systems

Construction and Technical data

Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Electrical resistance at 20°C max	Net weight approx.	Continuous current carring capacity
mm²	No x mm	mm	kN	Ω/km	kg/km	A
	Al St					
16/2.5	6x1.8+1x1.8	5.4	5.95	1.8793	62	90
25/4	6x2.25+1x2.25	6.8	9.2	1.2028	97	125
35/6	6x2.7+1x2.7	8.1	12.65	0.8353	140	145
44/32	14x2+7x2.4	11.2	45	0.6573	372	-
50/8	6x3.2+1x3.2	'9.6	'17.1	0.5946	196	170
50/30	12x2.33+7x2.33	11.7	43.8	0.5644	378	-
70/12	26x1.85+7x1.44	11.7	26.8	0.4130	284	290
95/15	26x2.15+7x1.67	13.6	35.75	0.3058	383	350
95/55	12x3.2+7x3.2	16	79.35	0.2992	712	-
105/75	14x3.1+19x2.25	17.5	108.45	0.2736	891	-
120/20	26x2.44+7x1.9	15.5	45.65	0.2374	494	410
120/70	12x3.6+7x3.6	18	100	0.2364	901	-
125/30	30x2.33+7x2.33	16.1	57.6	0.2259	591	425
150/25	26x2.7+7x2.1	17.1	55.25	0.1939	605	470
170/40	30x2.7+7x2.7	18.9	76.75	0.1682	794	520
185/30	26x3+7x2.33	19	66.2	0.1571	746	535
210/35	26x3.2+7x2.49	20.3	74.9	0.1380	850	590
210/50	30x3+7x3	21	93.9	0.1363	981	610
230/30	24x3.5+7x2.33	21	73.1	0.1249	877	630
240/40	26x3.45+7x2.68	21.9	86.4	0.1188	987	645
265/35	24x3.74+7x2.49	22.4	83.05	0.1094	1002	680
300/50	26x3.86+7x3	24.5	107	0.0949	1236	740
305/40	54x2.68+7x2.68	24.1	99.4	0.0949	1160	790
340/30	48x3+7x2.33	25	92.9	0.0851	1180	740
380/50	54x3+7x3	27	123.1	0.0757	1453	840
385/35	48x3.2+7x2.49	26.7	104.8	0.0748	1344	850
435/55	54x3.2+7x3.2	28.8	136.45	0.0666	1653	900
450/40	48x3.45+7x2.68	28.7	120.75	0.0644	1561	920
490/65	54x3.4+7x3.4	30.6	153.1	0.0590	1866	960
495/35	45x3.74+7x2.49	29.9	121.80	0.0584	1646	985
510/45	48x3.68+7x2.87	30.7	136.65	0.0566	1778	995
550/70	54x3.6+7x3.6	32.4	170.6	0.0526	2092	1020
560/50	48x3.86+7x2.87	32.2	148.95	0.0514	1954	1040
570/40	45x4+7x2.68	32.2	139	0.0506	1888	1050
632/45	45x4.23+7x2.87	34	155.8	-	2118	1120
680/85	54x4+19x2.4	36	210.4	-	2570	1150

ALMgSi Stranded Conductors

Standard: DIN 48201 part 6

Application

For overhead electric power transmission systems.

Construction data					
Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Net weight aprox.	Continuous current carring capacity
mm²	No x mm	mm	kN	kg/km	A
16	7x1.70	5.1	4.44	43	105
25	7x2.1	6.3	6.77	66	135
35	7x2.50	7.5	9.6	94	170
50	7x3.0	9.0	13.82	135	210
50	19x1.8	9.0	13.5	133	210
70	19x2.1	10.5	18.38	181	255
95	19x2.5	12.5	26.05	256	320
120	19x2.8	14.0	32.68	322	365
150	37x2.25	15.8	41.09	406	425
185	37x2.5	17.5	50.73	500	490
240	61x2.25	20.3	67.74	670	585
300	61x2.5	22.5	83.63	827	670
400	61x2.89	26.0	111.76	1104	810
500	61x3.23	29.1	139.60	1379	930

Lay Ratio (Table 2)								
1	2	3	4	5	6	7	8	9
number of wires in the rope	6-wire layer		12-wire layer		18-wire layer		24-wire layer	
	min.	max.	min.	max.	min.	max.	min.	max.
7	10	14	-	-	-	-	-	-
19	10	16	10	14	-	-	-	-
37	10	17	10	16	10	14	-	-
61	10	17	10	16	10	15	10	14

Note

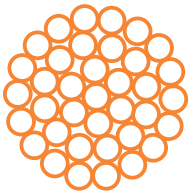
AlMgSi wire is accordance with DIN 48 200 Part 6
Conductor weights are calculated with a density of 2.7 kg/dm and the average lay ratio. The arithmetical mean of the relevant min. and max. values given in the Table 2 for the lay ratio is taken as the average lay ratio.
The calculated breaking load is determinated in according with DIN 48 203 Part 6.
Values for current carrying capacity are applicable up to 60 Hz at a wind velocity of 0.6m/s and solar effects for an original ambient temperature of 35 C and a final conductor e temperature of 80 C. The values must be reduced by an average of approx. 30% in case of special location in still air.

Packing

Standard packing length on wooden drums: (500m; 1000m; 1500m; 2000m)

Steel Ropes

Standard:N.C1.702



Application

For overhead electric power transmission systems

Construction data							
Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Net weight aprox.	Breaking Force for steel class I	Breaking Force for steel class II	Breaking Force for steel class III	Breaking Force for steel class IV
mm²	No x mm	mm	kg/km	daN	daN	daN	daN
16	7x1.70	5.1	126	589,0	1 041,5	1 977,5	245,5
25	7x2.1	6.3	192	898,5	1 589,0	3 018,0	3 156,0
	12x1.6	6.6	193	893,5	1 581,0	3 002,0	3 139,0
35	7x2.5	7.5	272	1 273,0	2 252,5	4 276,0	4 472,0
	12x1.9	7.9	271	1 260,0	2 229,5	4 232,5	4 426,5
	12x1.96	8.1	289	1 341,0	2 372,5	4 504,0	4 710,0
	19x1.55	7.8	285	1 327,5	2 348,5	4 459,0	4 663,5
50	7x3	9.0	391	1 833,0	3 243,5	6 158,0	6 440,0
	12x2.3	9.5	396	1 846	3 266,5	6 201,5	6 485,5
	19x1.8	9.0	384	1 790,5	3 167,5	6 013,5	6 289,0
70	7x3.6	10.8	563	2 638,5	4 668,5	8 863,5	9 269,5
	12x2.7	11.2	548	2 544,0	4 501,5	8 546,0	8 937,4
	19x2.1	10.5	523	2 438,5	4 314,5	8 192,0	8 566,5
	37x1.55	10.9	556	2 585,5	4 574,0	8 684,0	9 082,0
95	12x3.15	13.1	745	3 463,0	6 127,0	11 632,5	12 165,0
	19x2.5	12.5	741	3 455,5	6 114,0	11 607,5	12 139,0
	37x1.8	12.6	749	3 487,0	6 169,0	11 720,0	12 248,5
120	12x3.6	14.9	973	4 524	8 003,5	15 195,5	15 891,5
	19x2.8	14.0	929	4 335	7 669,5	14 560,5	15 227,5
	37x2	14.0	925	4 305	7 617,0	14 461,0	15 123,5
150	19x3.15	15.8	1176	5 483,0	9 701,5	18 418,5	19 262,0
	37x2.25	15.8	1170	5 446,5	9 639,0	18 284,0	19 132,0
	61x1.76	15.8	1183	5 205,5	9 209,5	17 484,5	20 995,0
185	19x3.5	17.5	1451	6 769,0	11 967,0	22 737,0	23 778,5
	37x2.5	17.5	1445	6 724,5	11 897,5	22 587,5	23 622,0
	61x1.96	17.6	1467	6 458,5	11 426,5	21 693,5	25 999,0
240	37x2.9	20.3	1944	9 051,5	16 014,0	30 403,0	31 795,5
	61x2.25	20.3	1933	8 508,5	15 053,0	28 579	34 251
300	37x3.2	22.4	2367	11 018,5	19 494,5	37 011,5	38 706,5
	61x2.5	22.5	2387	10 505,5	18 586,5	35 287,5	42 291,0

Lay Ratio (Table 2)								
1	2	3	4	5	6	7	8	9
number of wires in the rope	6-wire layer		12-wire layer		18-wire layer		24-wire layer	
	min.	max.	min.	max.	min.	max.	min.	max.
7	10	14	-	-	-	-	-	-
19	10	16	10	14	-	-	-	-
37	10	17	10	16	10	14	-	-
61	10	17	10	16	10	15	10	14

Galvanized steel wire is accordance with N.C1.701. Conductor weights are calculated with a density of 7.8 kg/dm and the average lay ratio. The arithmetical mean of the relevant min. and max. values given in the Table 2 for the lay ratio is taken as the average lay ratio. The calculated breaking load is determinated in according with standard.

Bare Aluminium Cond.

Standard: DIN 48201 part 5

Application

For overhead electric power transmission systems.

Construction data						
Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Electrical resistance at 20°C max	Net weight aprox.	Continuous current carring capacity
mm²	No x mm	mm	kN	Ω/km	kg/km	A
16	7x1.70	5.1	2.84	1.802	43	110
25	7x2.1	6.3	4.17	1.181	66	145
35	7x2.50	7.5	5.78	0.833	94	180
50	7x3.0	9.0	7.94	0.579	135	225
50	19x1.8	9.0	8.45	0.635	133	225
70	19x2.1	10.5	11.32	0.437	181	270
95	19x2.5	12.5	15.68	0.309	256	340
120	19x2.8	14.0	18.78	0.246	322	390
150	37x2.25	15.8	25.3	0.196	406	455
185	37x2.5	17.5	30.54	0.1587	500	520
240	61x2.25	20.3	39.51	0.1194	670	625
300	61x2.5	22.5	47.7	0.0965	827	710
400	61x2.89	26.0	60.86	0.0722	1104	855
500	61x3.23	29.1	74.67	0.0578	1379	990

Lay Ratio (Table 2)								
1	2	3	4	5	6	7	8	9
number of wires in the rope	6-wire layer		12-wire layer		18-wire layer		24-wire layer	
	min.	max.	min.	max.	min.	max.	min.	max.
7	10	14	-	-	-	-	-	-
19	10	16	10	14	-	-	-	-
37	10	17	10	16	10	14	-	-
61	10	17	10	16	10	15	10	14

Note

Aluminium wire is accordance with DIN 48 201 Part 5

Conductor weights are calculated with a density of 2.7 kg/dm and the average lay ratio. The arithmetical mean of the relevant min. and max. values given in the Table 2 for the lay ratio is taken as the average lay ratio. The calculated breaking load is determinated in according with DIN 48 203 Part 5.

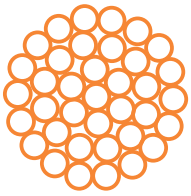
Values for current carrying capacity are applicable up to 60 Hz at a wind velocity of 0.6m/s and solar effects for an original ambient temperature of 35 C and a final conductore temperature of 80 C. The values must be reduced by an average of approx. 30% in case of special location in still air.

Packing

Standard packing length on wooden drums: (500m; 1000m; 1500m; 2000m)

AL1-ST1

Standard: EN 50182



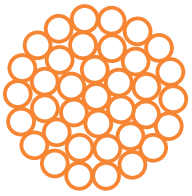
Application

For overhead electric power transmission systems

Construction data							
Nominal Cross Section	Number of Wires and Diameter	Cable diameer	Breaking load min	Electrical resistance at 20°C max	Weight Al	Weight St	Net weight aprox.
mm²	No x mm	mm	kN	Ω/km	kg/km	kg/km	kg/km
Type AL1/St1A conductors							
	Al St AL	St					
15-AL1/3-St1A	6x1,80+1x1,80	5,4	5.80	1,8769	41.85	19.85	61.7
24-AL1/4-St1A	6x2,25+1x2,25	6,75	8.95	1,2012	65.39	31.01	96.4
34-AL1/6-St1A	6x2,70+1x2,70	8,1	12.37	0,8342	94.16	44.66	138.82
44-AL1/32-St1A	14x2,00+7x2,40	11,2	44.24	0,6574	121.3	248.1	369.4
48-AL1/8-St1A	6x3,20+1x3,20	9,6	16.81	0,5939	132.26	62.73	194.99
51-AL1/30-St1A	12x2,33+7x2,33	11,7	42.98	0,5644	141.14	233.87	375.1
70-AL1/11-St1A	26x1,85+7x1,44	11,7	26.27	0,4132	192.76	89.32	282.1
94-AL1/15-St1A	26x2,15+7x1,67	13,6	34.93	0,3060	260.35	120.14	380.49
97-AL1/56-St1A	12x3,20+7x3,20	16	77.85	0,2992	266.22	441.12	707.34
106-AL1/76-St1A	14x3,10+19x2,25	17,5	105.82	0,2742	292.2	593.8	886
122-AL1/20-St1A	26x2,44+7x1,90	15,5	44.50	0,2376	335.32	155.51	490.83
122-AL1/71-St1A	12x3,60+7x3,60	18	97.92	0,2364	336.94	558.3	895.24
128-AL1/30-St1A	30x2,33+7x2,33	16,3	56.41	0,2260	353.09	233.87	586.96
149-AL1/24-St1A	26x2,70+7x2,10	17,1	53.67	0,194	410.6	189.97	600.57
172-AL1/40-St1A	30x2,70+7x2,70	18,9	74.89	0,1683	474.13	314.03	788.16
184-AL1/30-St1A	26x3,00+7x2,33	19	65.27	0,1571	506.91	233.87	741.0
209-AL1/34-St1A	26x3,20+7x2,49	20,3	73.36	0,1381	576.75	267.09	843.84
212-AL1/49-St1A	30x3,00+7x3,00	21	92.46	0,1363	585.35	387.7	973.05
231-AL1/30-St1A	24x3,50+7x2,33	21	72.13	0,125	636.44	233.87	870.31
243-AL1/39-St1A	26x3,45+7x2,68	21,8	85.12	0,1188	670.38	309.4	979.78
264-AL1/34-St1A	24x3,74+7x2,49	22,4	81.04	0,1095	726.72	267.09	993.81
304-AL1/49-St1A	26x3,86+7x3,00	24,4	105.09	0,0949	839.19	387.7	1226.89
305-AL1/39-St1A	54x2,68+7x2,68	24,1	96.80	0,0949	841.20	309.40	1150.6
339-AL1/30-St1A	48x3,00+7x2,33	25	91.71	0,0852	937.4	233.87	1171.2
382-AL1/49-St1A	54x3,00+7x3,00	27	121.30	0,0758	1054.1	387.7	1440.44
386-AL1/34-St1A	48x3,20+7x2,49	26,7	102.56	0,0749	1066.51	267.09	1333.6
434-AL1/56-St1A	54x3,20+7x3,20	28,8	133.59	0,0666	1199.3	441.12	1641.3
449-AL1/39-St1A	48x3,45+7x2,68	28,7	119.05	0,0644	1239.7	309.40	1549.1
490-AL1/64-St1A	54x3,40+7x3,40	30,6	150.81	0,059	1353.92	497.98	1851.9
494-AL1/34-St1A	45x3,74+7x2,49	29,9	117.96	0,0584	1365.5	267.09	1632.6
511-AL1/45-St1A	48x3,68+7x2,87	30,7	133.31	0,0566	1410.47	354.83	1765.3
550-AL1/71-St1A	54x3,60+7x3,60	32,4	166.32	0,0526	1517.9	558.29	2076.2
562-AL1/49-St1A	48x3,86+7x3,00	32,2	146.28	0,0515	1551.8	387.7	1939.5
571-AL1/39-St1A	45x4,02+7x2,68	32,2	136.40	0,0506	1577.7	309.4	1887.1

AL1-ST1

Standard: EN 50128



Construction data					
Nominal Cross Section	Number of Wires and Diameter	Cable diameter	Breaking load min	Electrical resistance at 20°C max	Net weight of rope
mm²	No x mm	mm	kN	Ω/km	kg/km
Type AL1 conductors					
16-AL1	7x1.70	5.10	3.02	17.986	43.4
24- AL1	7x2.10	6.30	4.36	11.787	66.3
34- AL1	7x2.50	7.50	6.01	0.8317	93.9
49- AL1	7x3.00	9.00	8.41	0.5776	135.2
48- AL1	19x1.80	9.0	8.94	0.5944	132.9
66- AL1	19x2.10	10.5	11.85	0.4367	180.9
93- AL1	19x2.50	12.5	16.32	0.3081	256.3
117- AL1	19x2.80	14.0	19.89	0.2456	321.5
147- AL1	37x2.25	15.8	26.48	0.1960	405.7
182- AL1	37x2.50	17.5	31.78	0.1588	500.9
243- AL1	61x2.25	20.3	43.66	0.1193	671.1
299- AL1	61x2.50	22.5	52.40	0.0966	828.5
400- AL1	61x2.89	26.0	68.02	0.0723	1107.1
500- AL1	61x3.23	29.1	82.47	0.0579	1382.9

Packing

Standard packing length on wooden drums: (500m; 1000m; 1500m; 2000m)

Multiwire Cables

Multiwire Cu&Al Conductors class 2

Standards: IEC 60228; DIN VDE 0295; BS 6360

Multiwire copper and aluminium conductors for cables and conductors

Construction Data: Cu/Al conductors class 2			
Nominal Cross Section	Number of Wires and Diametar	Electrical resistance at 20ºC max	
No x mm²	No x mm	Copper conductors [Ω/km]	Aluminium conductors [Ω/km]
0,5	7 x 0,31	36	-
0,75	7 x 0,37	24,5	-
1	7 x 0,42	18,1	-
1,5	7 x 0,52	12,1	-
2,5	7 x 0,67	7,41	-
4	7 x 0,87	4,61	7,41
6	7 x 1,06	3,08	4,61
10	7 x 1,35	1,83	3,08
16	7 x 1,74	1,15	1,91
25	7 x 2,26	0,727	1,2
35	7 x 2,52	0,524	0,868
50	19 x 1,8	0,387	0,641
70	19 x 2,18	0,268	0,443
95	19 x 2,52	0,193	0,32
120	37 x 2,03	0,153	0,253
150	37 x 2,24	0,124	0,206
185	37 x 2,52	0,0991	0,164
240	61 x 2,24	0,0754	0,125
300	61 x 2,52	0,0601	0,1
400	61 x 2,89	0,047	0,0778
500	61 x 3,18	0,0366	0,0605
600	61 x 3,63	0,0283	0,0469

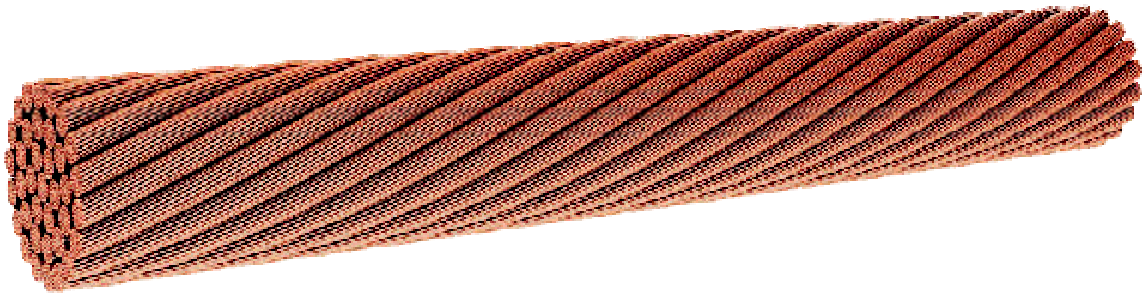
* Other Dimensions and information available on request

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

Multiwire Cu Conductors class 5

Standards: IEC 60228; DIN VDE 0295; BS 6360



Flexible copper wires for cables and conductors

Construction Data: Cu conductors class 5			
Nominal Cross Section	Number of Wires and Diametar	Electrical resistance at 20°C max	
No x mm²	No x mm	Copper conductors [Ω/km]	Aluminium conductors [Ω/km]
0,14	18 x 0,1	-	-
0,25	7 x 0,2	-	-
0,38	12 x 0,2	-	-
0,5	15 x 0,2	39	-
0,75	22 x 0,2	26	-
1	30 x 0,2	19,5	-
1,5	28 x 0,25	13,3	-
2,5	45 x 0,25	7,98	-
4	53 x 0,3	4,95	-
6	75 x 0,3	3,3	-
6	7 x 11 x 0,3	3,3	-
10	7 x 11 x 0,4	1,91	-
16	7 x 17 x 0,4	1,21	-
25	7 x 27 x 0,4	0,78	-
35	7 x 39 x 0,4	0,55	-
50	19 x 20 x 0,4	0,39	-
70	19 x 18 x 0,5	0,27	-
95	19 x 25 x 0,5	0,206	-
120	19 x 31 x 0,5	0,161	-
150	37 x 20 x 0,5	0,129	-
185	37 x 25 x 0,5	0,106	-
240	37 x 32 x 0,5	0,0801	-
300	61 x 25 x 0,5	0,0641	-
400	61 x 33 x 0,5	0,0486	-
500	61 x 29 x 0,6	0,0384	-

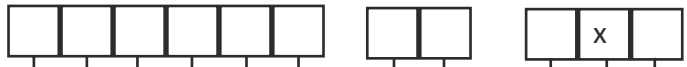
* Other Dimensions and information available on request

Packing

Standard Packing length on wooden drums: [500 m; 1000 m];

DESIGNATION CODE FOR POWER CABLES
according to DIN VDE 0271/0276

Construction reference



Identification of Designation
- N DIN VDE standard
- (N) similar to DIN VDE standard

Conductor Material
- A aluminium conductor
- - copper conductor

Insulating Materials
- Y PVC
- 2X cross-linked PE (XLPE)

Concentric conductor (screen)
- C concentric conductor of copper
- CE concentric conductor of copper over each individual core
- S screen of copper wires
- SE screen of copper wires over each individual core
- H conductive layers
- (F) longitudinally water-proof screen
- (FL) longitudinally and radial water-proof screen

Armouring
- B steel tape armouring
- R armour of galvanized round steel wires

Sheath Material
- Y PVC
- 2Y PE
- H halogen-free thermoplastic polymer

Protective Conductor
- I with protective conductor
- O without protective conductor

Number of Cores

Conductor Cross Section in mm ^{2}

Conductor Type
- r... circular conductor .. m stranded conductor
- s... sector conductor /V compact conductor
- ..e... circular, solid conductor

Rating Voltage
- 0.6/1 kV
- 3.6/6 kV
- 6.0/10 kV
- 12/20 kV
- 18/30 kV

Examples:

NYY-J 4x1.5 RE 0.6/1 kV - VDE 0276-603
Cable according to standard, PVC-insulated, sheath PVC, with green-yellow marked core, 4 cores with nominal cross-section 1.5 mm2, circular conductor, solid, rating voltage 0.6/1 kV.

A2XS2Y 1x35 RM/16 6/10 kV - IEC 60502-2
Single core XLPE-insulated cable with PE-sheath according to standard, circular, stranded aluminium conductor with nominal cross-section 35 mm2, covered with copper-screen 16 mm2 and rating vpltage (Uo/U) 6/10 kV.

Current Carrying Capacity and IndicaƟons for CalculaƟon of Power Cables and Wires

The guidelines for current carrying capacities of copper and aluminium are valid DIN VDE 0298 part 4 as well as DIN VDE 0276 part 603 and for the conversion factors DIN VDE 0276 part 1000.

The current carrying capacity of a cable should be limited in such a degree that all locations in a cable system which causes the generated heats under given proportions to lead safely in the environment.

The heat flow depends on the inner heat-resistance between conductor and outer surface of the cable and as well as from the heat emission to the surroundings.

The following recommended values are the current carrying capacity of cables for laying in earth and in air at normal operating conditions. Hints for the deviated operating conditions, see DIN VDE 0298 table 4 and DIN VDE 0276 part 603 and part 1000.

Indications for Calculation

● For Laying in Earth
- Deviating operating conditions with both conversion factors are to be considered, as these depend on both of specific heat resistance and the grade of load.
- EVU-load (load grade) is the maximum load factor of 0.7. The conversion factors for the load grades 0.5, 0.6, 0.85 and 1.0 are to be taken in tables DIN VDE 0276 part 603 and part 1000. Intermediate values can be interpolate (1.0 used for permanent load).
- Laying depth 0.7 m. The load capacity decreases with increasing of the laying depth. Usual depth of laying is 0.7 to 1.2 m.
- As normal value of the specific ground thermal resistivity in moist areas is selected with 1.0 K.m/W. For dry areas the chosen value is 2.5 K .m/W, under consideration of the applied usual bedding materials of sands.
- For favourable ground conditions or with thermal resisted bedding materials, lower value under well consolidation can be achieved. For individual case, the values and upon that the resulted current carrying loads are to be determined.

● For Laying in Air
− The values stated in the tables for outdoor laying in the air are defined for permanent operation.
− The arrangement of the cables is corresponded the presentation in table 3, DIN VDE 0276 part 1000.
− Conversion factors for other laying conditions and the heaping of cables are shown in tables 10 and 11, DIN VDE 0276 part 1000.
− The current carrying capacities of multi-core cables can be calculated by using the current load value for 3-core cables accord table 13 with help of the conversion factors.
− By using the cable channels of cable board underlays, etc., the air temperature will be increased. In this case the conversioning to factors according to table 12 for deviating air temperature should be used.
− For outdoor installation in air, the ambient temperature is based on 30 oC.

● Radiation of heats and solar influence must be taken into consideration, where a good air circulation is needed.

● A sufficient large distance is to be retained between the cables and the heating elements, because badly insulated heating elements often raise additionally the temperature of the cable.

● Distance between the cable and the wall, floor or ceiling = 2 cm

● Distance between the cables being laid one above the other = 2 x D

● Distance between the cable systems being laid one above the other = 20 cm

● Distance between the cables being laid side by side = 2 x D

● Specific Ground Thermal Resistivity
- very moist area = 0.7 K .m/W
- moist area = 1.0 K .m/W
- dry area = 2.0 K .m/W
- very dry area = 3.0 K .m/W

INSTALLATION METHODS AND OPERATING CONDITIONS - Power Cables and Insulated Wires for Fixed InstallaϴonInstallation method type A1

● Single core cables in insulation tube in a thermally insulated wall.

Installation method A2

● Multicore cables or multicore plastic sheathed cables in the insulation tube in a thermally insulated wall, whereby the walls for the methods of installation employed comprise an outer weatherproof board, thermal insulation and an inner board of wood or materials similar to wood, having a temperature lag of 0.1 m2.K/W. The plastic or metal insulation tube is mounted so that it is very close to the inner wall without actually being in conduct with the wall.

Installation method B1

● Single core cables in insulation tube on a wooden wall.

Installation method B2

● Multicore cables or multicore plastic sheath cables in insulation tube on a wooden wall.

For both installation methods, the insulation tube must be secured so that the space between conduit and the wall surface is less than 0.3 times the diameter of the insulation tube. The plastic or metal insulation tube can be installed directly on the masonry construction or plastered surface, whereby the current carrying capacity of the cables or wires can then be higher. This problem is still being investigated by CENELEC.

Installation method C

● Single core or multicore cables, or single core or multicore plastic-sheathed cables on a wooden wall.
The cables or insulated wires shall be mounted so that the space from the wall surface is less than 0.3 times the outer diameter of the cable or insulated wire. The current carrying capacity can be increased when installed directly on or in the masonry construction as well as underneath the plaster.

Installation methods E, F and G

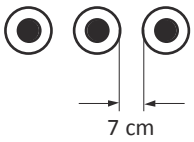
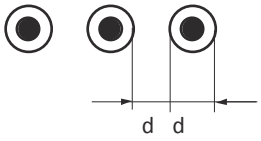
● Single core or multicore cables, or single core or multicore plastic-sheathed cables, installed in the open air.
The cable or insulated wire shall be installed so that the dissipation of heat is not impeded, whereby allowance shall be made for heating by other sources and for irradiation by sunshine. Natural convection shall not be obstructed. The space from the cable or insulated wire by each bordering surface shall be 0.3 times the outside diameter. A space equal to the one of the outside diameter is sufficient for single core cables and plastic-sheathed wires in order to meet the current carrying requirements for an installation in the open air.

Laying Conditions for Power Cables

As laying depth, the mathematical distance to the cable axis - for triangular bunched laying, the distance of the bundle axis to the earth surface of 70 cm is chosen. With increased laying depth the load ratings will be mathematically reduced. Hereby the same temperature and the same thermal earth resistances are to be presumed.

Normal operation conditions and indications for deviating operation conditions.

Normal Operation Conditions

Laid in Earth	Laid in Air	Indications
1 Multicore cable 	1 Multicore cable 	Conversion factors see the following tables as of collective laying conditions see the following tables
1 Single core cable in direct current-system 	1 Single core cable in direct current-system 	
3 Single core cables in 3-phase system, side by side, with a space of 7 cm 	3 Single core cables in 3-phase system, side by side, with a space of a cable ø 	
3 Single core cables in 3-phase system, in bundle form [1] 	3 Single core cables in 3-phase system, in bundle form [1] 	
Bedding in sand or earth shove and if necessary covering with bricks, cement plates or with flat to light curved thin covering of plastic 	- Laid in open air, i.e. unhindered heat radiation will be ensured at: Distance of cable from wall, floor or ceiling ≥ 2 cm - For cables laying side by side: Space at least two times of the cable ø - For cables laying one above the other: Vertical space of the cable at least two times of the cable ø cable length at least 30 cm - Consideration of thermal loss in cable, the incresed air temperature of sufficient big and ventilated rooms - Protection against direct heat radiation of sunlight, etc. - Air temperature 30 °C Adequate big or ventilated rooms, due to that the power loss of the cable not be noticeable increased Connecting and earthing of metal sheaths or screens on both sides	⍰ Conversion factors for laying in earth: - covering hood with air cavity = 0.9 laid in conduit = 0.85 ⍰ Conversion factors for laying in air: - alternating ambient temperatures - as of collecting laying conditions - for laying in conduits - see tables and indications according to DIN VDE 0298
Ambient Conditions - Ground temperature at installation depth: 20 °C - Soil-thermal resistivity of moist area: 1.0 K . m/W - Soil-thermal resistivity of dry area: 2.5 K . m/W		
Connecting and earthing of metal sheaths or screens on both ends		

[1] In "bunched" or triangle touching arrangement.

Current raΘngs for installaΘon A1, A2, B1 and B2
Cables for Ịxed installaΘon within buildings

Operating temperature at conductor 70°C ; Ambient temperature 30 °C

Type designation	H07V-U, -R, -K H07V3-U, -R, -K	NYM, NYBUY H05VV-U, N05VV-R NHXMH NYY NYCY [1]	H07V-U, -R, -K H07V3-U, -R, -K	NYM, NYBUY H05VV-U, N05VV-R NHXMH NYY NYCY [1]

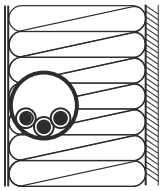
Installation:
* in thermally insulated walls
* in insulating tubes

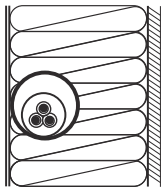
Single core cables in insulating tubes, in thermally insulated walls

Multicore sheathed cables in insulating tubes, in a thermally insulated walls

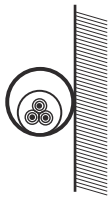
Single core cables in insulating tubes on a wall

Multicore cables or multicore shaethed cables in insulating tubes on a wall





Installation in thermally insulated walls



Installation in insulating tubes

Installation method [2]	**A1**		**A2**		**B1**		**B2**	
Number of loaded cores	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**3**
Cross-section, mm [2]	Current ratings in Ampere (A)							
1.5	15.5 [3]	13.5	15.5	13.0	17.5	15.5	16.5	15.0
2.5	19.5	18.0	18.5	17.5	24	21	23	20
4	26	24	25	23	32	28	30	27
6	34	31	32	29	41	36	38	34
10	46	42	43	39	57	50	52	46
10	-	-	-	-	-	-	-	47.17 [4]
16	61	56	57	52	76	68	69	62
25	80	73	75	68	101	89	90	80
35	99	89	92	83	125	110	111	99
50	119	108	110	99	151	134	133	118
70	151	136	139	125	192	171	168	149
95	182	164	167	150	232	207	201	179
120	210	188	192	172	269	239	232	206
150	240	216	219	196	-	-	-	-
185	273	245	248	223	-	-	-	-
240	320	286	291	261	-	-	-	-
300	367	328	334	298	-	-	-	-

Conversion factors for deviating ambient temperature. grouping. installation under the ceiling. multicore cables and insulated wires - see DIN VDE 0298 part 4.

[1] The current ratings are valid for cables with concentric conductor. only for versions.

[2] For further installation methods - see DIN VDE 0298 part 4.

[3] See DIN VDE 0298 part 4.

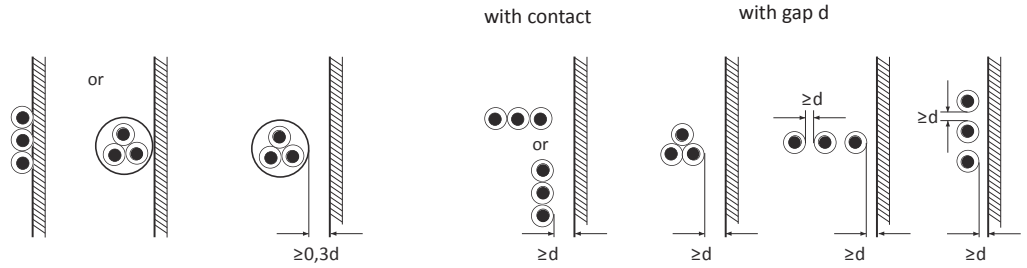
[4] Not permitted for the installation on a wooden wall and not for application of the conversion factors. see DIN VDE 0298 part 4.

Current ratings for installation methods C, E, F and G

Cables for fixed installation within buildings

Operating temperature at conductor 70°C ; Ambient temperature 30°C

Type designation	NYM, NYIF, NYIFY, NYBUY, H05W-U, N05W-R, NHXMH, NYY, NYCY		NYY
Insulation: * directly *in open air	singlecore or multicore cables or single or multicore sheathed cables on a wall	Multicore cables or multicore sheathed cables with a space of minimum 3.0x diameter d to wall	single core cables or single core sheathed cables with a space of minimum 1x diameter to wall



direct installation — installation in open air

Installation method [2]	C		E		F		G		
Number of loaded	2	3	2	3	2	3			
Cross-section, mm²	Current ratings in Ampere (A)								
1.5	19.5	17.5	22	18.5	-	-	-	-	-
2.5	27	24	30	25	-	-	-	-	-
4	36	32	40	34	-	-	-	-	-
4	-	33.02 [3]	-	-	-	-	-	-	-
6	46	41	51	43	-	-	-	-	-
10	63	57	70	60	-	-	-	-	-
10	-	59.43 [3]	-	-	-	-	-	-	-
16	85	76	94	80	-	-	-	-	-
25	112	96	119	101	131	114	110	146	130
35	138	119	148	126	162	143	137	181	162
50	168	144	180	153	196	174	167	219	197
70	213	184	232	196	251	225	216	281	254
95	258	223	282	238	304	275	264	341	311
120	299	259	328	276	352	321	308	396	362
150	344	299	379	319	406	372	356	456	419
185	392	341	434	364	463	427	409	521	480
240	461	403	514	430	546	507	485	615	569
300	530	464	593	497	629	587	561	709	659
400	-	-	-	-	754	689	656	852	795
500	-	-	-	-	868	789	749	982	920
630	-	-	-	-	1005	905	855	1138	1070

Conversion factors for deviating ambient temperature. grouping. installation under the ceiling. multicore cables and insulated wires - see DIN VDE 0298 part 4.

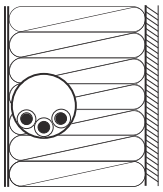
[1] The current ratings are valid for cables with concentric conductor. only for multicore versions.
[2] For further installation method - see DIN VDE 0298 part 4.
[3] See DIN VDE 0298 part 4.

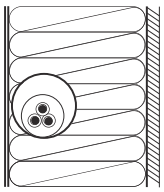
Current ratings for installation conditions

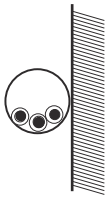
Cables for fixed installation within buildings A1, A2, B1 and B2

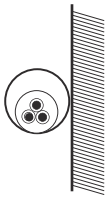
Operating temperature at conductor 70°C ; Ambient temperature 30°C

Type designation	H07V2-U, -K H07Z-U, -R, -K	N12XY, N2XY, NHXHX N2X2Y, N2XH, N2XCH FE 180 NHXCHX FE 180 NHXH FE NHXCH FE 180 NHXHX, NHXCHX	H07V2-U, -K H07Z-U, -R, -K	N12XY, N2XY, NHXHX N2X2Y, N2XH, N2XCH FE 180 NHXCHX FE 180 NHXH FE NHXCH FE 180 NHXHX, NHXCHX
Installation: * in thermally insulated walls * in insulating tubes	Single core cables in insulating tubes, in thermally insulated walls	Multicore sheathed cables in insulating tubes, in a thermally insulated walls	Single core cables in insulating tubes on a wall	Multicore cables or multicore shaethed cables in insulating tubes on a wall









Installation in thermally insulated walls

Installation in insulating tubes

Installation method [1]	A1		A2		B1		B2
Number of loaded cores	2	3	2	3	2	3	
Cross-section, mm²	**Current ratings in Ampere (A)**						
1.5	19.0	17.0	18.5	16.5	23	20	22	19.5
2.5	26	23	25	22	31	28	30	26
4	35	31	33	30	42	37	40	35
6	45	40	42	38	54	48	51	44
10	61	54	57	51	75	66	69	60
16	81	73	76	68	100	88	91	80
25	106	95	99	89	133	117	119	105
35	131	117	121	109	164	144	146	128
50	158	141	145	130	198	175	175	154
70	200	179	183	164	253	222	221	194
95	241	216	220	197	306	269	265	233
120	278	249	253	227	354	312	305	268
150	318	285	290	259	-	-	-	-
185	362	324	329	295	-	-	-	-
240	424	380	386	346	-	-	-	-
300	486	435	442	396	-	-	-	-

Conversion factors for deviating ambient temperature, grouping, installation under the ceiling, multucore cables and insulated wires - see DIN VDE 0298 part 4.

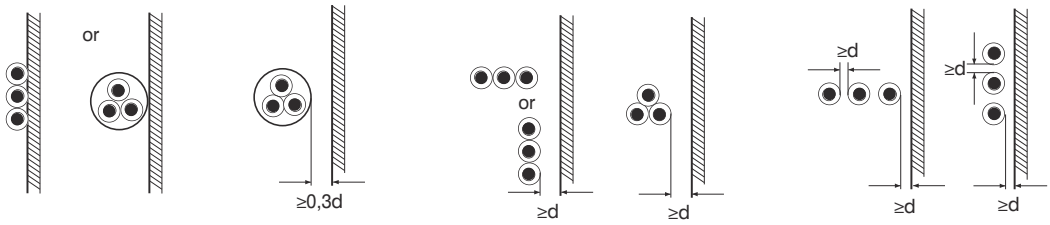
[1] For further installation conditions - see DIN VDE 0298 part 4.

Current raΘngs for installaΘon condiΘons C, E, F and G

Cables for fixed installation within buildings

Operating temperature at conductor 70°C ; Ambient temperature 30°C

Type designation	N12XY, N2XY,N2S2Y N2XH, N2XCH [1], NHXHX FE 180 NHXH FE180, NHXCH FE180 [1] NHXHX FE180, NHXCHX FE 180[1] NHXHX, NHXCHX,[1] NHXHX	N12XY, N2XY, N2X2Y N2XH, NHXH FE 180
Insulation: * directly *in open air	singlecore or multicore cables or single or multicore sheathed cables on a wall	Multicore cables or multicore sheathed cables with a space of minimum 3.0x diameter d to wall single core cables or single core sheathed cables with a space of minimum 1x diameter to wall



direct installation — installation in open air

Installation method [2]	C		E		F		G		
Number of loaded	2	3	2	3	2	3			
Cross-section, mm²	Current ratings in Ampere (A)								
1.5	24	22	26	23	-	-	-	-	-
2.5	33	30	36	32	-	-	-	-	-
4	45	40	49	42	-	-	-	-	-
6	58	52	63	54	-	-	-	-	-
10	80	71	86	75	-	-	-	-	-
16	107	96	115	110	-	-	-	-	-
25	138	119	149	127	161	141	135	182	161
35	171	147	185	158	200	176	169	226	201
50	209	179	225	192	242	216	207	275	246
70	269	229	289	246	310	279	268	353	318
95	328	278	352	298	377	342	328	430	389
120	382	322	410	346	437	400	383	500	454
150	441	371	473	399	504	464	444	577	527
185	506	424	542	456	575	533	510	661	605
240	599	500	641	538	679	634	607	781	719
300	693	576	741	621	783	736	703	902	833
400	-	-	-	-	940	868	823	1085	1008
500	-	-	-	-	1083	998	946	1253	1169
630	-	-	-	-	1254	1151	1088	1454	1362

Conversion factors for deviating ambient temperature, grouping, installation under the ceiling, multicore cables and insulated wires - see DIN VDE 0298 part 4.

[1] The current ratings are valid for cables with concentric conductor, only for multicore versions.

[2] For further installation methods - see DIN VDE 0298 part 4.

Currents for NYY, NYCY, NAYY, NAYCY 0,6/1 kV

Current carrying capacity in Ampere (A), laying in ground (20 °C)

Nominal cross-section mm²	Copper conductor					Aluminium conductor				
	NYY			NYCY		NAYY			NAYCY	
			 [1]					 [1]		
1.5	30	27	41	31	27	-	-	-	-	-
2.5	39	36	55	40	36	-	-	-	-	-
4	50	47	71	51	47	-	-	-	-	-
6	62	59	90	63	59	-	-	-	-	-
10	83	79	124	84	79	-	-	-	-	-
16	107	102	160	108	102	-	-	-	-	-
25	138	133	208	139	133	106	102	160	108	103
35	164	159	250	166	160	127	123	193	129	123
50	195	188	296	196	190	151	144	230	153	145
70	238	232	365	238	234	185	179	283	187	180
95	286	280	438	281	280	222	215	340	223	216
120	325	318	501	315	319	253	245	389	252	246
150	365	359	563	347	357	284	275	436	280	276
185	413	406	639	385	402	322	313	496	314	313
240	479	473	746	432	463	375	364	578	358	362
300	541	535	848	473	518	425	419	656	397	415
400	614	613	975	521	579	487	484	756	441	474
500	693	687	1125	574	624	558	553	873	489	528

[1] Rated current for direct current systems with a far-distanced return conductor

Current carrying capacity in Ampere (A), laying in air (30 °C)

Nominal cross-section mm²	Copper conductor					Aluminium conductor				
	NYY			NYCY		NAYY			NAYCY	
			 [1]					 [1]		
1.5	21	19.5	27	22	19,5	-	-	-	-	-
2.5	28	25	35	29	26	-	-	-	-	-
4	37	34	47	39	34	-	-	-	-	-
6	47	43	59	49	44	-	-	-	-	-
10	64	59	81	67	60	-	-	-	-	-
16	84	79	107	89	80	-	-	-	-	-
25	114	106	144	119	108	87	82	110	91	83
35	139	129	176	146	132	107	100	135	112	101
50	169	157	214	177	160	131	119	166	137	121
70	213	199	270	221	202	166	152	210	173	155
95	264	246	334	270	249	205	186	259	212	189
120	307	285	389	310	289	239	216	302	247	220
150	352	326	446	350	329	273	246	345	280	249
185	406	374	516	399	377	317	285	401	321	287
240	483	445	618	462	443	378	338	479	374	339
300	557	511	717	519	504	437	400	555	426	401
400	646	597	843	583	577	513	472	653	488	468
500	747	669	994	657	626	600	539	772	556	524

[1] Rated current for direct systems with a far-distanced return conductor

Conversion factors for multicore cable (≥ 5 cores)

The conversion factors are to be used for laying the cables in ground or in air, to the values given in above tables.

Number of loaded cores n	Laying in ground f	Laying in air f
5	0.70	0.75
7	0.60	0.65
10	0.50	0.55
14	0.45	0.50
19	0.40	0.45
24	0.35	0.40
40	0.30	0.35
61	0.25	0.30

Note: Valid for cross-section 1,5 to 10 mm².

Current ratings for N2XY, NA2XY; N2XCY; NA2XCY; N2X2Y; NA2X2Y; N2XC2Y, NA2XC2Y; N2XH, NA2XH; N2XCH

Current carrying capacity in Ampere (A), laying in ground (20°C)

Nominal cross-section mm²	Copper conductor					Aluminium conductor				
	N2XY;N2X2Y			N2XCY; N2XC2Y		NA2XY; NA2X2Y			NA2XCY; NA2XC2Y	
	●[1]	●●	●●●	●●	●●●	●[1]	●●	●●●	●●	●●●
1,5	48	31	33	31	33	-	-	-	-	-
2,5	63	40	42	40	43	-	-	-	-	-
4	82	52	54	52	55	-	-	-	-	
6	102	64	67	65	68	-	-	-	-	-
10	136	86	89	87	91	-	-	-	-	-
16	176	112	115	113	117	-	-	-	-	-
25	229	145	148	146	150	177	112	114	113	116
35	275	174	177	176	179	212	135	136	136	138
50	326	206	209	208	211	252	158	162	159	164
70	400	254	256	256	257	310	196	199	197	201
95	480	305	307	307	304	372	234	238	236	240
120	548	348	349	349	341	425	268	272	269	272
150	616	392	393	391	377	476	300	305	302	303
185	698	444	445	442	418	541	342	347	342	340
240	815	517	517	509	469	631	398	404	397	387
300	927	585	583	569	514	716	457	457	454	430
400	1064	671	663	637	565	825	529	525	520	479
500	1227	758	749	691	623	952	609	601	584	531

[1] Rated current for direct current systems witn a far-distanced retum conductor.

Current ratings - Conversion factors

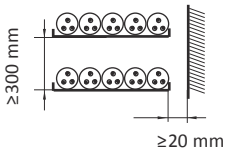
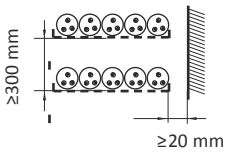
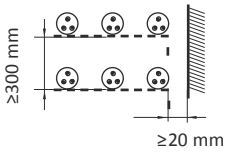
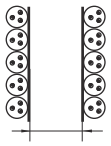
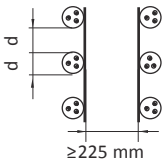
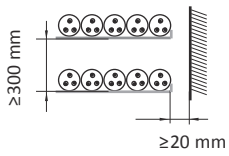
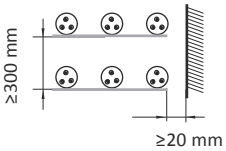
for grouping of **single** core cables or cables on troughs and trays

Number of three-phase systems with single core cables		**Used as multiplier for rating value for**	**Number of troughs or trays**	**1**	**2**	**3**
Installation method			**Coversion factors**			
Perforated cable troughs	with contact	Three-cores cable in horizontal-surface arrangement	1	0,98	0,91	0,87
			2	0,96	0,87	0,81
			3	0,95	0,85	0,78
	with contact	Three-cores cablet vertical-surface arrangemen	1	0,96	0,86	-
			2	0,95	0,84	-
Cable trays	with contact	Three-cores cable in horizontale surface arrangement	1	11,00	0,97	0,96
			2	0,98	0,93	0,89
			3	0,97	0,90	0,86
Perforated cable troughs			1	1,00	0,98	0,96
			2	0,97	0,93	0,89
			3	0,96	0,92	0,86
		Three-core cables in vertical-surface triangle arrangement	1	1,00	0,91	0,89
			2	1,00	0,90	0,86
Cable trays			1	1,00	1,00	1,00
			2	0,97	0,95	0,93
			3	0,96	0,94	0,90

Note: The conversion factors are used only for cables of one layer grouping arrangement. These are not valied when the cables are installed with contact one upon another or the given sprees between the cable toughs or cable trays, are not followed, in such cases the conversion factors can be reduced. To parallel current circuits each group of three conductors of the parallel circuit is regarded as single circuit.

Current raΘngs - conversion factors

for grouping of mulΘcore cables or cables on troughs and trays

Number of multicore cables		1	2	3	4	6	9	
Installation method		Number of troughs or trays	Conversion factors					
Non-perforated cable troughs	with contact	1	0,97	0,84	0,78	0,75	0,71	0,68
		2	0,97	0,83	0,76	0,72	0,68	0,63
		3	0,97	0,82	0,75	0,71	0,66	0,61
		6	0,97	0,81	0,73	0,69	0,63	0,58
Perforated cable troughs	with contact	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
		6	1,00	0,84	0,77	0,73	0,68	0,64
	with space	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	-
	with contact	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
	with space	1	1,00	0,91	0,89	0,88	0,87	-
		2	1,00	0,91	0,88	0,87	0,85	-
Cable trays	with contact	1	1,00	0,87	0,82	0,80	0,79	0,78
		2	1,00	0,86	0,81	0,78	0,76	0,73
		3	1,00	0,85	0,79	0,76	0,73	0,70
		6	1,00	0,83	0,76	0,73	0,69	0,66
	with space	1	1,00	1,00	1,00	1,00	1,00	
	-	2	1,00	0,99	0,98	0,97	0,9	
		3	1,00	0,98	0,97	0,96	0,93	-

Note: The conversion factor are used for cables of one layer grouping arrangement. These are not valid when the cables are installed with contact one upon another or the given spaces between the cable troughs or cable trays can not meet in such cases the conversion factor can be reduced.

Power ratings for XLPE-insulated Medium Voltage Power Cables 6/10 kV, 12/20 kV, 18/30 20/35 kV

N2XSY NA2XSY N2XS2Y NA2XS2Y N2XS(F)2Y NA2XS(F)2Y

Current carrying capacity in Amperes (A) in ground (20 °C)

Conductor material	Copper conductor						Aluminium conductor					
Arrangement												
U_0/U cross-section mm²	6/10 kV		12/20 kV		18/30 kV		6/10 kV		12/20 kV		18/30 kV	
	Current ratings in Ampere (A)											
25	157	179	-	-	-	-	-	-	-	-	-	-
35	187	212	189	213	-	-	145	165	-	-	-	-
50	220	249	222	250	225	251	171	194	172	195	174	195
70	268	302	271	303	274	304	208	236	210	237	213	238
95	320	359	323	360	327	362	248	281	251	282	254	283
120	363	405	367	407	371	409	283	318	285	319	289	321
150	405	442	409	445	414	449	315	350	319	352	322	354
185	456	493	461	498	466	502	357	394	361	396	364	399
240	526	563	532	568	539	574	413	452	417	455	422	458
300	591	626	599	633	606	640	466	506	471	510	476	514
400	662	675	671	685	680	695	529	558	535	564	541	570
500	744	748	754	760	765	773	602	627	609	634	616	642

This factors are also valid for longitudinally water-tight cable

Current carrying capacity* in Amperes (A) in air (30 °C)

Conductor material	Copper conductor						Aluminium conductor					
Arrangement												
U_0/U cross-section mm²	6/10 kV		12/20 kV		18/30 kV		6/10 kV		12/20 kV		18/30 kV	
	Current ratings in Ampere (A)											
25	163	194	-	-	-	-	-	-	-	-	-	-
35	197	235	200	235	-	-	153	182	-	-	-	-
50	236	282	239	282	241	282	183	219	185	219	187	219
70	294	350	297	351	299	350	228	273	231	273	232	273
95	358	426	361	426	363	425	278	333	280	332	282	331
120	413	491	416	491	418	488	321	384	323	384	325	382
150	468	549	470	549	472	548	364	432	366	432	367	429
185	535	625	538	625	539	624	418	496	420	494	421	492
240	631	731	634	731	635	728	494	583	496	581	496	578
300	722	831	724	830	725	828	568	666	569	663	568	659
400	827	920	829	923	831	922	660	755	660	753	650	750
500	949	1043	953	1045	953	1045	767	868	766	866	764	861

**This factors are also valid for longitudinally water-tight cable*

Electrical characteristics of XLPE-insulated

Medium Voltage Power Cables 6 - 35 kV

Conductor resistance 20°C

cross-section mm²	maximum value Cu-conductor Ohm/km	Alu-conductor Ohm/km
25	0.727	1.20
35	0.524	0.868
50	0.387	0.641
70	0.268	0.443
95	0.193	0.320
120	0.153	0.253
150	0.124	0.206
185	0.0991	0.164
240	0.0754	0.125
300	0.0601	0.100
400	0.0470	0.0778
500	0.0366	0.0605

Conversion factors for the conductor temperatures

Temperature at °C	60	65	70	80	90
Cu-conductor	1.157	1.177	1.196	1.236	1.275
Alu-conductor	1.161	1.181	1.202	1.242	1.282

Conversion formula:

$R_\delta = R_{20} \cdot \frac{234.5 + \delta}{254.5}$ for Cu-conductor

$R_\delta = R_{20} \cdot \frac{228 + \delta}{248}$ for Alu-conductor

Conductor temperature at °C = δ
Conductor resistance at δ C in Ohm/km = R_δ
Conductor resistance at 20°C in Ohm/km = R_{20}

Electrical characteristics of XLPE-insulated
Medium Voltage Power Cables, 6 - 35 kV

Effective resistance at 50 Hz (Alternating-current resistance)

Copper conductor

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section mm²			0hm/km			
35	0.671	0.673	0.671	0.672	-	-
50	0.497	0.498	0.496	0.498	0.496	0.497
70	0.345	0.346	0.345	0.346	0.344	0.346
95	0.249	0.251	0.249	0.250	0.249	0.250
120	0.198	0.200	0.198	0.200	0.198	0.199
150	0.163	0.165	0.163	0.165	0.162	0.164
185	0.132	0.134	0.131	0.133	0.131	0.133
240	0.102	0.104	0.101	0.103	0.101	0.103
300	0.082	0.085	0.082	0.084	0.082	0.084
400	0.068	0.071	0.067	0.070	0.067	0.069
500	0.055	0.058	0.055	0.058	0.054	0.057

Aluminium conductor

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section mm²			0hm/km			
35	1.12	1.12	1.12	1.12	-	-
50	0.825	0.826	0.825	0.826	0.824	0.826
70	0.571	0.572	0.571	0.572	0.571	0.572
95	0.413	0.415	0.413	0.414	0.413	0.414
120	0.327	0.329	0.327	0.329	0.327	0.328
150	0.269	0.271	0.268	0.270	0.268	0.270
185	0.215	0.217	0.215	0.217	0.214	0.216
240	0.165	0.167	0.165	0.167	0.164	0.166
300	0.133	0.135	0.133	0.135	0.133	0.135
400	0.106	0.109	0.106	0.109	0.106	0.108
500	0.085	0.088	0.084	0.087	0.084	0.087

Inductive resistance at 50 Hz

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section mm²			0hm/km			
35	0.144	0.158	0.153	0.168	-	-
50	0.136	0.150	0.145	0.159	0.154	0.169
70	0.129	0.143	0.138	0.152	0.147	0.161
95	0.123	0.137	0.131	0.145	0.139	0.154
120	0.118	0.132	0.126	0.140	0.134	0.148
150	0.114	0.128	0.121	0.135	0.129	0.143
185	0.110	0.124	0.117	0.131	0.125	0.139
240	0.105	0.120	0.112	0.126	0.120	0.134
300	0.102	0.116	0.108	0.123	0.115	0.130
400	0.097	0.111	0.103	0.117	0.110	0.124
500	0.094	0.108	0.100	0.114	0.106	0.120

Electrical characteristics of XLPE-insulated Medium Voltage Power Cables, 6 - 35 kV

Mutual capacitance

Nominal voltage Cross-section mm²	6/10 kV µF/km	12/20 kV µF/km	18/30 kV µF/km
35	0,22	0,16	-
50	0,25	0,18	0,14
70	0,28	0,20	0,15
95	0,31	0,22	0,17
120	0,23	0,23	0,23
150	0,37	0,25	0,19
185	0,40	0,27	0,20
240	0,44	0,30	0,22
300	0,48	0,32	0,24
400	0,55	0,36	0,27
500	0,60	0,40	0,29

Inductance

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section mm²	 mH/km	 mH/km	 mH/km	 mH/km	 mH/km	 mH/km
35	0,45	0,76	0,48	0,76	-	-
50	0,42	0,73	0,45	0,74	0,48	0,75
70	0,39	0,70	0,43	0,70	0,45	0,71
95	0,38	0,67	0,41	0,68	0,43	0,68
120	0,36	0,65	0,39	0,65	0,42	0,66
150	0,35	0,63	0,38	0,63	0,41	0,64
185	0,34	0,61	0,36	0,62	0,39	0,63
240	0,32	0,59	0,35	0,59	0,37	0,60
300	0,31	0,57	0,33	0,58	0,36	0,59
400	0,30	0,55	0,33	0,55	0,34	0,56
500	0,29	0,53	0,31	0,53	0,33	0,54

Electrical characterisΘcs of XLPE-insulated
Medium Voltage Power Cables, 6 - 35 kV

Short-circuit current carrying capacity up to 30 kV
Conductor temperature: 90 °C
Short-circuit temperature: 250 °C

Cable with Cu-conductors

cross-section mm²	short-circuit time in s (seconds)														
	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,5	2,0	3,0	4,0	5,0
	permissible short-circuit in kA														
25	11,3	8,0	6,5	5,7	5,1	4,6	4,3	4,0	3,8	3,6	2,9	2,5	2,1	1,8	1,6
35	15,8	11,2	9,1	7,9	7,1	6,5	6,0	5,6	5,3	5,0	4,1	3,5	2,9	2,5	2,2
50	22,6	16,0	13,1	11,3	10,1	9,2	8,5	8,0	7,5	7,2	5,8	5,1	4,1	3,6	3,2
70	31,7	22,4	18,3	15,8	14,2	12,9	12,0	11,2	10,6	10,0	8,2	7,1	5,8	5,0	4,5
95	43,0	30,4	24,8	21,5	19,2	17,5	16,2	15,2	14,3	13,6	11,1	9,6	7,8	6,8	6,1
120	54,3	38,4	31,3	27,1	24,3	22,2	20,5	19,2	18,1	17,2	14,0	12,1	9,9	8,6	7,7
150	67,8	48,0	39,2	33,9	30,3	27,7	25,6	24,0	22,6	21,5	17,5	15,2	12,4	10,7	9,6
185	83,7	59,2	48,3	41,8	37,4	34,2	31,6	29,6	27,9	26,5	21,6	18,7	15,3	13,2	11,8
240	108,5	76,7	62,7	54,3	48,5	44,3	41,0	38,4	36,2	34,3	28,0	24,3	19,8	17,2	15,3
300	135,7	95,9	78,3	67,8	60,7	55,4	51,3	48,0	45,2	42,9	35,0	30,3	24,8	21,5	19,2
400	180,9	127,9	104,4	90,4	80,9	73,8	68,4	64,0	60,3	57,2	46,7	40,4	33,0	28,6	25,6
500	226,1	159,9	130,5	113,1	101,1	92,3	85,5	79,9	75,4	71,5	58,4	50,6	41,3	35,8	32,0

Cable with Alu-conductors

cross-section mm²	short-circuit time in s (seconds)														
	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,5	2,0	3,0	4,0	5,0
	permissible short-circuit in kA														
25	7,4	5,3	4,3	3,7	3,3	3,0	2,8	2,6	2,5	2,4	1,9	1,7	1,4	1,2	1,1
35	10,4	7,4	6,0	5,2	4,7	4,2	3,9	3,7	3,5	3,3	2,7	2,3	1,9	1,6	1,5
50	14,9	10,5	8,6	7,4	6,6	6,1	5,6	5,3	5,0	4,7	3,8	3,3	2,7	2,4	2,1
70	20,8	14,7	12,0	10,4	9,3	8,5	7,9	7,4	6,9	6,6	5,4	4,7	3,8	3,3	2,9
95	28,2	20,0	16,3	14,1	12,6	11,5	10,7	10,0	9,4	8,9	7,3	6,3	5,2	4,5	4,0
120	35,7	25,2	20,6	17,8	16,0	14,6	13,5	12,6	11,9	11,3	9,2	8,0	6,5	5,6	5,0
150	44,6	31,5	25,7	22,3	19,9	18,2	16,9	15,8	14,9	14,1	11,5	10,0	8,1	7,1	6,3
185	55,0	38,9	31,7	27,5	24,6	22,5	20,8	19,4	18,3	17,4	14,2	12,3	10,0	8,7	7,8
240	71,3	50,4	41,2	35,7	31,9	29,1	27,0	25,2	23,8	22,6	18,4	16,0	13,0	11,3	10,1
300	89,2	63,1	51,5	44,6	39,9	36,4	33,7	31,5	29,7	28,2	23,0	19,9	16,3	14,1	12,6
400	118,9	84,1	68,6	59,5	53,2	48,5	44,9	42,0	39,6	37,6	30,7	26,6	21,7	18,8	16,8
500	148,6	105,1	85,8	74,3	66,5	60,7	56,2	52,5	49,5	47,0	38,4	33,2	27,1	23,5	21,0

Electrical characteristics of XLPE-insulated Medium Voltage Power Cables, 6 - 35 kV

Short-circuit to ground

Nominal voltage cross-section mm²	6/10 kV A/km	12/20 kV A/km	18/30 kV A/km
35	1,2	1,7	-
50	1,4	1,9	2,3
70	1,5	2,1	2,5
95	1,7	2,4	2,7
120	1,9	2,6	2,9
150	2,0	2,7	3,1
185	2,2	3,0	3,3
240	2,4	3,3	3,7
300	2,6	3,5	4,0
400	3,0	4,0	4,4
500	3,3	4,3	4,8

Short-cirguit current carrying capacity of copper screens

Short-circuit temperature: 350°C

Short-circuit time in seconds	Load of short-circuit current in kA		
s	bei 16 mm² kA	25 mm² kA	35 mm² kA
0,1	9,7	15,1	21,2
0,2	6,9	10,7	15,1
0,3	5,7	8,9	12,5
0,4	5,0	7,7	10,9
0,5	4,5	7,0	9,8
0,6	4,2	6,4	9,0
0,7	3,9	6,0	8,4
0,8	3,5	5,6	7,9
0,9	3,4	5,3	7,5
1,0	3,3	5,1	7,2
1,5	2,7	4,2	5,9
2,0	2,3	3,6	5,1
3,0	1,9	2,9	4,2
4,0	1,7	2,6	3,6
5,0	1,5	2,3	3,2

Coordination of screen-cross-section

conductor cross-section mm²	screen-cross-section mm²
35 bis 120	16
150 bis 300	25
400 und 500	35

Conversion factor for Medium Voltage Power Cables, 6 - 35 kV

Load rating for cables laid in ground
Load factor 0,7 and 1,0

Fundamental conditions*
Ground temperature 20 °C
Thermal resistivity 1,0 K · m/W
Distance between cables or systems 7 cm
Single core cables laid in trefoil touching arrangement

Load factor 0,7

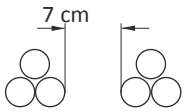
Type of insulation	Cable design	Nominal voltage	Number of cables or systems 2	4	6	8	10
PVC	Multicore cables	0,6/1 up to 3,6/6 kV	0,86	0,71	0,64	0,60	0,57
	Three core cables	up to 6/10 kV	0,87	0,71	0,63	0,59	0,54
	Single core cables	0,6/1 up to 3.6/6 kV	0,85	0,70	0,63	0,59	0,56
	Single core cables	up to 6/10 kV	0,83	0,66	0,57	0,53	0,49
VPE	Multicore cables	0,6/1 up to 18/30 kV	0,85	0,70	0,63	0,59	0,56
	Single core cables	0,6/1 up to 18/30 kV	0,85	0,70	0,63	0,58	0,56

Load factor 1,0

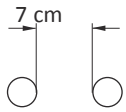
Type of insulation	Cable design	Nominal voltage	Number of cables or systems 1	2	4	6	8	10
PVC	Multicoe cables	0,6/1 up to 3,6/6 kV	0,81	0,66	0,52	0,46	0,43	0,40
	Tree core cables	up to 6/10 kV	0,82	0,67	0,51	0,45	0,41	
	Single core cables	0,6/1 up to 3.6/6 kV	0,79	0,65	0.51	0,46	0,42	0,40
	Single core cables	up to 6/10 kV	0,78	0,62	0,47	0,40	0,36	
VPE	Multicoe cables	0,6/1 up to 18/30 kV	0,83	0,67	0,53	0,47	0,44	0,41
	Single core cables	0,6/1 up to 18/30 kV	0,81	0,66	0,52	0,47	0,43	0,41

Build-up of systems:

- for single core cables



- for multicore cables



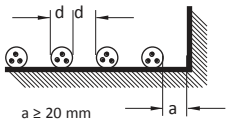
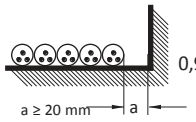
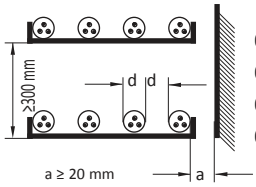
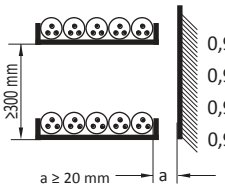
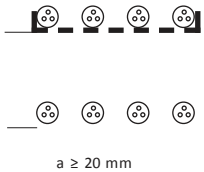
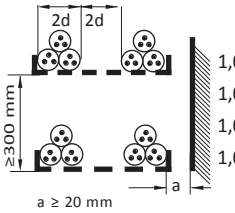
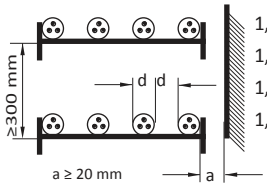
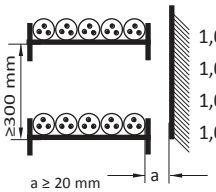
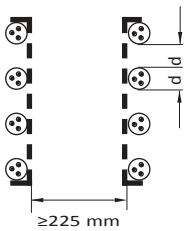
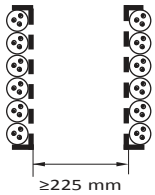
* Conversion factors for multicore cables (≥ 5 cores), Conductor cross-section from 1,5 to 10 mm²

Numbers of loaded cores	Conversion factors for the values of 1,5 to 10 mm² to the belonging table	
	Earth	Air
5	0,7	0,75
7	0,6	0,65
10	0,5	0,55
14	0,45	0,5
19	0,4	0,45
24	0,35	0,4
40	0,3	0,35
61	0,25	0,3

* For other conditions e. g. ground, temperature grouping, load factor, thermal resistance, the rating factors should be calculated according to DIN VDE 0276 part 1000.

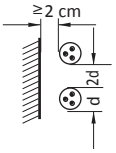
Rating conversion factors for installation of Medium Voltage Cables, 6 - 35 kV

Rating conversion factors for laying in air*)
Multicore cable and single core direrct current cable

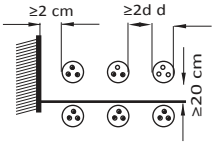
Arrangement of cables in laying condition	Number cables troughs or trays	Without inter-contact Space = cable ø d Distance from wall ≥ 2 cm						With inter-contact contact with wall						
		Installation method	Number of cables 1	2	3	4	6	Installation method	Number of cables 1	2	3	4	6	9
on the ground	1		0,97	0,96	0,94	0,93	0,90		0,97	0,85	0,78	0,75	0,71	0,68
on non-perforated cable troughs (restricted air circulation)	1		0,97	0,96	0,94	0,93	0,90		0,97	0,85	0,78	0,75	0,71	0,68
	2		0,97	0,95	0,92	0,90	0,86		0,97	0,84	0,76	0,73	0,68	0,63
	3		0,97	0,94	0,91	0,89	0,84		0,97	0,83	0,75	0,72	0,66	0,61
	6		0,97	0,93	0,90	0,88	0,83		0,97	0,81	0,73	0,69	0,63	0,58
on perforated cable troughs	1		1,00	1,00	0,98	0,95	0,90		1,00	0,88	0,82	0,79	0,76	0,73
	2		1,00	0,99	0,96	0,92	0,87		1,00	0,87	0,80	0,77	0,73	0,68
	3		1,00	0,98	0,95	0,91	0,85		1,00	0,86	0,79	0,76	0,71	0,66
	6		1,00	0,97	0,94	0,90	0,84		1,00	0,84	0,77	0,73	0,68	0,64
on cable trays or on cable ladders (unrestricted air circulation)	1		1,00	1,00	1,00	1,00	1,00		1,00	0,87	0,82	0,80	0,79	0,78
	2		1,00	0,99	0,98	0,97	0,96		1,00	0,86	0,80	0,78	0,76	0,73
	3		1,00	0,98	0,97	0,96	0,93		1,00	0,85	0,79	0,76	0,73	0,70
	6		1,00	0,97	0,96	0,94	0,91		1,00	0,83	0,76	0,73	0,69	0,66
on platform or on wall or on perforated cable tray	1		1,00	0,91	0,89	0,88	0,87		1,00	0,88	0,82	0,78	0,73	0,72
	2		1,00	0,91	0,88	0,87	0,85		1,00	0,88	0,81	0,76	0,71	0,70
laid on platform or on the wall									0,95	0,78	0,73	0,72	0,68	0,66

Arrangements, for which a reduction not necessary

Number of cable arranged one over another is optoinal



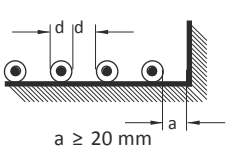
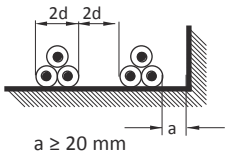
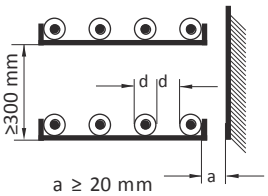
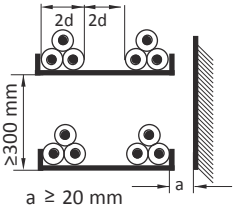
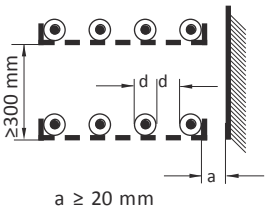
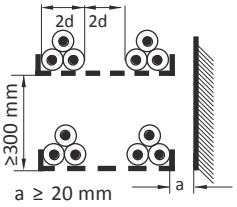
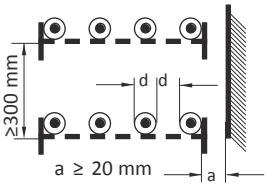
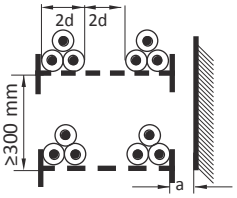
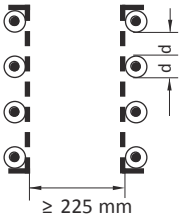
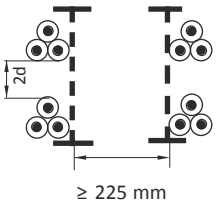
Number of cable arraanged side-by-syde is optoinal



1)In narrow rooms or for bigger grouping, the air temperature is increased due to energy losses of cable, so the additional conversion factors for deviating air-temperatures are to be taken in the given table.

Rating conversion factors for installation
of Medium Voltage Cables, 6 -35 kV

Rating conversion factors for laying in air*)
Single core cables in 3-phase systems

Arrangement of cables in laying condition	Number of cables troughs or trays on top of each other	For laying on plain surface Space = cable ø d Distance from wall ≥ 2 cm			For installation in grouping Space = 2x cable ø d Distance from wall ≥ 2 cm		
		Number of systems			Number of systems		
		1	2	3	1	2	3
		Installation method			Installation method		
on the ground	-		0,92	0,89 0,88		0,98	0,96 0,94
on non-perforated cable troughs (restricted air circulation)	1		0,92	0,89 0,88		0,98	0,96 0,94
	2		0,87	0,84 0,83		0,95	0,91 0,87
	3		0,84	0,82 0,81		0,94	0,90 0,85
	6		0,82	0,80 0,79		0,93	0,88 0,82
on perforated cable troughs	1		1,00	0,93 0,90		1,00	0,98 0,96
	2		0,97	0,89 0,85		0,97	0,93 0,89
	3		0,96	0,88 0,82		0,96	0,92 0,85
	6		0,94	0,85 0,80		0,95	0,90 0,83
on cable trays or on cable ladders (unrestricted air circulation)	1		1,00	0,97 0,96		1,00	1,00 1,00
	2		0,97	0,94 0,93		0,97	0,95 0,93
	3		0,96	0,93 0,92		0,96	0,94 0,90
	6		0,94	0,91 0,90		0,95	0,93 0,87
on platform or on the wall	1		0,94	0,91 0,89		1,00	0,91 0,89
	2		0,94	0,90 0,86		1,00	0,90 0,86

Arrangements, for which a reduction not necessary [1)]

For the installation on plain surface with greather distance, the muntual heating, is lower for this occur the additional sheath or screen-losses. Because of that no particulars can be made for reduction-free arrangements.

* Conversion factors for deviating ambient temperature

Temperature °C	10	15	20	25	30	35	40	45	50
XLPE-cable	1,15	1,12	1,08	1,04	1,0	0,96	0,91	0,87	0,82
PVC-cable	1,22	1,17	1,12	1,06	1,0	0,94	0,87	0,79	0,71

**1) In narrow rooms or for bigger grouping, the air temperature is increased due to energy losses of cable, so the additional conversion factors for deviating air-temperatures are to be taken in the given table.*

Designation Code for Harmonized Cables According to DIN VDE 0281/DIN VDE 0292

Construction reference

H	05	V					25	G	0.75

Identifications of Designation
- A Authorized national standards
- H Harmonized standards

Nominal Voltage U
- 01 100 V
- 03 300/300 V
- 05 300/500 V
- 07 450/750 V

Insulation Material
- B (EPR) Ethylene-Propylene Rubber
- G (EVA) Ethylene-Vinylacetat Copolymer
- N2 (CR) Chloroprene Rubber for welding cables
- R (NR a./o. SR) Natural a./o. Synthetic Rubber
- S (SiR) Silicone Rubber
- V (PVC) Polyvinyl Chloride
- V2 (PVC) Polyvinyl Chloride heat-resistant
- V3 (PVC) Polyvinyl Chloride low-temperature
- V4 (PVC) Polyvinyl Chloride cross-linked
- Z (PE) Polyethylene cross-linked

Structural Elements
- C Screen
- Q4 (PA) Additional polymide core jacket
- T Additional textile braiding over laid-up cores
- T6 Additional textile braiding over individual cores

Sheath/Jacket Material
- B (EPR) Ethylene-Propylene Rubber
- J Glass Fibre Braid
- N (CR) Chloroprene Rubber
- N2 (CR) Chloroprene Rubber for welding cables
- N4 (CR) Chloroprene Rubber heat-resistant
- Q (PUR) Polyurethane
- R (NR a./o. SR) Natural a./o. Synthetic Rubber
- T Textile braid
- T2 Textile braid with flame retardant compound
- V (PVC) Polyvinyl Chloride
- V2 (PVC) Polyvinyl Chloride heat-resistant
- V3 (PVC) Polyvinyl Chloride low-temperature
- V4 (PVC) Polyvinyl Chloride cross-linked
- V5 (PVC) Polyvinyl Chloride oil-resistant

Special Structural Features
- D3 Stress-relieving element (support wire)
- D5 Centre core (no supporting elements)
- FM Telecommunications cores integrated in power cables
- H Flat, separable cable (twin cable)
- H2 Flat, non-separable cable (two-core sheathed cable)
- H6 Flat, non-separable cable (multi-core and multiple sheathed cable)
- H7 Two-layer insulating jacket
- H8 Spiral cables

Conductor Type
- D Finely stranded, for welding cables
- E (Very) finely stranded, for welding cables
- F Finely stranded, for cables for fixed installation
- H (Very) finely stranded, for flexible cables
- K Finely stranded, for cables for fixed installation
- R Multiple-wire, round, class 2
- U Single-wire, round, class 1
- Y Tinsel wire, DIN 47104

Number of cores

Earth Core
- G With earth core
- X Without earth core

Conductor Nominal Cross Section in mm^2

Examples:

H07V-U 2.5 black (according to DIN VDE 0281) Harmonized PVC-insulated single-core sheathed cable, 2.5 mm, 2 single-core, nominal voltage 750 V

H07RN-F 3G, 1,5 (according to DIN VDE 0282) Harmonized rubber-sheathed cable for medium tensile loads, three-core 1.5 mm , 2 finely stranded, green-yellow earth core, nominal voltage 750 V

Permissible Minimum Bending Radius
according to DIN VDE Specifications

The indicated values for bending radius stated in the following table are not permitted to fall below the value. For non-complience of the values a short longevity is to be expected.

Permissible Minimum Bending Radius for Power Cables according to DIN 0298 - Part 3

- Nominal Votage 0.6/1 kV

- **Cables for Fixed Installations**

	Outer Ø of Cables or Thickness of Flat Cable in mm (D)		
Method of Laying	**Up to 10 mm**	**> 10 to 25 mm**	**> 25 mm**
- for permanent laying	4xD	4xD	4xD
- to form out	1xD	2xD	3xD

- **For Flexible Cables**

	up to 8 mm	> 8 mm to 12 mm	>12 to 20 mm	>20 mm
- for fixed installation	3xD	3xD	4xD	4xD
- for free movement	3xD	4xD	5xD	5xD
- to the inlet	3xD	4xD	5xD	5xD
- for forced guiding operation (such as trailing)	5xD	5xD	5xD	6xD
- Operation for trolly cable	3xD	4xD	5xD	5xD
- operation in power drag chain	4xD	4xD	5xD	5xD
- operation for return sheave	7.5xD	7.5xD	7.5xD	7.5xD

D = outer Ø of cables or thickness of flat table

DESIGNATION CODE FOR TELEPHONE CABLES, JUMPER WIRES AND STRANDED HOOK-UP WIRES according to DIN VDE 0271/0276

Construction reference

Basic cable Type with additional Information
A outdoor cable
I installation cable
YV/Li ... jumper wires/hook-up wires

Insulation
P dry paper
Y PVC (Polyvinylchloride)
2Y PE (Polyethylene)
02Y foamed PE (cellular)
02YS foam-skin insulation

Screening
C screen of braided tinned copper wires
F filling of cable core with petrol-jelly
(St) screen of plastic coated metallic foil
(L) aluminium tape

Sheath Material
L smooth aluminium sheath
M lead sheath
(L)2Y copolymer coated aluminium
Mz lead alloy sheath
moisture barrier sheath

Protective Coating
Y PVC sheath
2Y PE sheath

Number of Stranding Elements
..x1x single core
..x2x pair (double core)
..x3x triple
..x4x quad
..x5x five-core

Conductor Diameter in mm

Type of Stranding Components

St I star quad without phantom circuit
P twisted pair
PiMF pair in metal foil
St III star quad in local (Subscriber) cable

Stranding Layout
Lg layer stranded concentric
Bd unit stranding

Armouring Wire
b armouring
B armouring of steel band for inductive protection
1B 0.3 1 layer steel tape, thickness 0.3 mm
2B 0.5 2 layers steel tape, thickness 0.5 mm

DESIGNATION CODE FOR MEDIUM VOLTAGE CABLES

According to ТУ У 31.3-00214534-017-2003, IEC 60502-2:2005

	3х	three stranded single-core cables, twisted together
Conductor	А	aluminium conductor
	–	copper conductor (without designation)
Insulation	Пв	insulation of cross-linked polyethylene (XLPE)
Screen	Э	copper screen over the each core
	Эо	collective copper screen for three core cables
	Эоа	closure of common screen by alumpolyethylene band.
	г	longitudinal water-blocking of water-swelling tapes
	га	longitudinal and radial water-blocking with water-swelling tapes and aluminium-copolymer bands
Armour	Б	armour of steel strips
	К	armour of steel round wires
	Ак	armour of aluminium round wires
Outer sheath	П	outer sheath of polyethylene (PE) or polyethylene copolymer
	Пнг (А)*	outer jacket made of polymer composition, prevents spread of Ire (category A for non-spread of Ire in wisps according to IEC 60332-3).
	Пнг-HF (А)*	outer jacket of polymer halogen-free composition (category A for non-spread of Ire in wisps).
	Пу	reinforced polyethylene (PE) sheath
	В	outer sheath of polyvinylchloride (PVC) compound
	Внг	outer sheath of lame retardant polyvinylchloride (PVC) compound
	Внгд	outer sheath of lame retardant, low smoke of corrosive gases polyvinylchloride (PVC) compound
Climate conditions	–	«U» variant (UHL) (without marking)
	Т	«Т» variant (tropical)
	nxS/ Sэкр	number of cores, nominal cross-section in mm ^{2} /nominal cross-section of the screen in mm ^{2}
	(ож)	single-wire cores

* in other cases the marking of category, corresponding to non-spread of fire is not applied (cable corresponds to B category according to IEC 60332-3)

Example of designation: АПвЭгП-6 1х150/25 ТУ У 31.3-00214534-017-2003

- Aluminium conductor
- XLPE insulation
- Screen of copper wires and with longitudinal water-blocking
- Outer sheath of PE
- Rated voltage, kV
- Number of cores
- Nominal conductor cross-sectional area, mm ^{2}
- Nominal screen cross-sectional area, mm ^{2}
- Standards and specifications

!"##$%&"'($')$ "* +,-./0'%1234$(5$(015 6"2437$ power cables

Ukraine	Russia	Germany	Poland
With copper conductors			
ПвЭВ	ПвВ	N2XSY, N2XSEY (2XSY, 2XSEY)	YHKXS
ПвЭВнг	ПвВнг	N2XSY, N2XSEY (2XSY, 2XSEY)	YnHKXS
ПвЭгП	ПвПг	N2XS(F)2Y (2XS(F)2Y)	XUHKXS
ПвЭгПу	ПвПуг	N2XS(F)2Y (2XS(F)2Y)	XUHKXS
ПвЭгаП	ПвП2г	N2XS(FL)2Y (2XS(FL)2Y)	XRUHKXS
ПвЭгаПу	ПвПу2г	N2XS(FL)2Y (2XS(FL)2Y)	XRUHKXS
ПвЭВнгд	ПвВнг-LS		YnHKXS
ПвЭгВнг		N2XSY, N2XSEY (2XSY, 2XSEY)	YnUHKXS
ПвЭгаВнг		N2XS(FL)2Y	YnRUHKXS
ПвЭБВ		N2XSEB2Y	
ПвЭБВнг		N2XSEB2Y	
ПвЭБП		N2XSEBY	
ПвЭгПнг			XnUHKXSxn
ПвЭгПнг-HF		N2XS(F)H, N2XSE(F)H	NUHKXSn
ПвЭБПнг-HF		N2XSBH	
ПвЭКПнг-HF		N2XSRH	
With aluminium conductors			
АПвЭВ	АПвВ	NA2XSY, NA2XSEY (A2XSY, A2XSEY)	YHAKXS
АПвЭВнг	АПвВнг	NA2XSY, NA2XSEY (A2XSY, A2XSEY)	YnHAKXS
АПвЭгП	АПвПг	NA2XS(F)2Y (A2XS(F)2Y)	XUHAKXS
АПвЭгПу	АПвПуг	NA2XS(F)2Y (A2XS(F)2Y)	XUHAKXS
АПвЭгаП	АПвП2г	NA2XSF(L)2Y, NA2XS(FL)2Y	XRUHAKXS
АПвЭгаПу	АПвПу2г	NA2XSF(L)2Y, NA2XS(FL)2Y	XRUHAKXS
АПвЭВнгд		-	YnHAKXS
АПвЭгВнг		NA2XSY, NA2XSEY (A2XSY, A2XSEY)	YnUHAKXS
АПвЭгаВнг		NA2XS(FL)2Y	YnRUHAKXS
АПвЭБВ		NA2XSEB2Y	
АПвЭБВнг		NA2XSEB2Y	
АПвЭБП		NA2XSEBY	
АПвЭгПнг			XnUHAKXSxn
АПвЭгПнг-HF		NA2XS(F)H	NUHAKXSn
АПвЭБПнг-HF		NA2XSBH	
АПвЭКПнг-HF		NA2XSRH	