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Medium Voltage Power Cables

Medium Voltage Power Cables

Medium Voltage Power Cables up to 30 kV with XLPE-insulation

The XLPE-insulation possesses very good electrical, mechanical and thermal characteristics in medium voltage networks. This type of insulation is excellent chemical resistant and also resistant to cold. Due to various advantages, the XLPE-insulated type has vastly displaced the traditional classical paper insulated types in many sectors.

The XLPE-insulated medium voltage cables are designed with longitudinally water-proof. In comparison to PVC and paper-insulated cables, the advantages of XLPE-insulated medium voltage power cables are possessing a low dielectric factor.

The good properties of XLPE-insulated cables remain constant at a long temperature range. These cables can be laid in earth, in air or in tubes.

Further information for laying, bending radius ambient temperatures, permissible tensile strength with pulling head test voltages should be taken in the following pages.

To the nearness of our customers (stock in Hemmingen/Stuttgart, Neuenhagen/Berlin, Pleiße/Chemnitz and Windsbach/Nürnberg) we are also direct deliverer to the **customers construction site** for short term scheduled.

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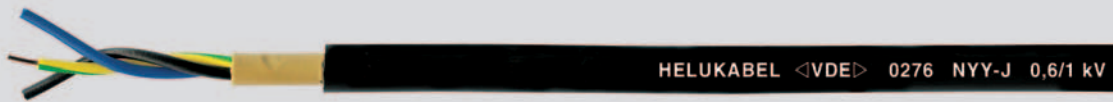


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Code-designation for power cables with PVC or XLPE insulation

Design	Identification of design	Explanations
Core	N	According to VDE standard (no abbreviation for copper conductor)
	A	Aluminium conductors
	Y	Insulation of thermoplastic Polyvinylchloride (PVC)
	2X	Insulation cross-linked Polyethylene (XLPE)
Concentric conductor, screen	C	Concentric conductors of copper wires and copper tape, helically wounded
	CW	Concentric conductor of copper wires in waveconal formation and copper tape, helically wounded
	CE	Concentric conductor of copper wires and copper tape over each individual core, helically wounded
Screen	S	Screen of copper wires and copper tape, helically wounded
	SE	Screen of copper wires and copper tape over each individual core, helically wounded
	(F)	Longitudinally water-proof screen
Armour	B	Armour of steel tape
	F	Armour of galvanized flat steel wires
	G	Counter helix of galvanized steel tape
Sheath	K	Lead sheath
Outer jacket	Y	PVC jacket
	2Y	PE jacket
Cable for U_0/U 0,6/1 kV are additionally designated with		
	-J	Cables with green-yellow (green-natural) core are marked with protective conductor
	-O	Cable without green-yellow (green-natural) core are marked without protective conductor

N



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
flexing - 5°C to +50°C
fixed installation -30°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius**
for single core approx. 15x cable \varnothing
for multi core approx. 12x cable \varnothing
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Plain copper conductor, to DIN VDE 0295 cl. 1 or cl. 2 solid or stranded type, BS 6360 cl. 1 or cl. 2, IEC 60228 and HD 383
- PVC core insulation, DIV4 to HD 603.1
- Cores stranded concentrically
- Colour coded to DIN VDE 0293, 0276 part 603 or HD 186
- PVC outer jacket black, DMV5 to HD 603.1, sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 20f

Caloric load values see page T 67

Application

Power cables for energy supply are installed in open air, in underground, in water, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603.

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems, single-phase systems 1,4 kV
- Both conductors insulated, single-phase systems 0,7 kV
- One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

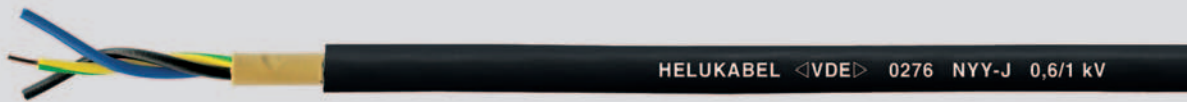
CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

No. cores x cross-sec. mm ²		Outer \varnothing ca. mm	Cop. weight kg/km	Weight ca. kg/km	J-type Part no.	O-type Part no.	AWG-no.*)
1 x 4	re	9,0	38	115	32001	32089	12
1 x 6	re	9,5	58	135	32002	32090	10
1 x 10	re	10,0	96	179	32003	32091	8
1 x 16	re	11,0	154	245	32004	32092	6
1 x 25	rm	12,0	240	360	32005	32093	4
1 x 35	rm	13,0	336	470	32006	32094	2
1 x 50	rm	15,0	480	620	32007	32095	1
1 x 70	rm	16,5	672	810	32008	32096	2/0
1 x 95	rm	19,0	912	1110	32009	32097	3/0
1 x 120	rm	20,5	1152	1360	32010	32098	4/0
1 x 150	rm	22,5	1440	1670	32011	32099	300 kcmil
1 x 185	rm	25,0	1776	2050	32012	32100	350 kcmil
1 x 240	rm	28,0	2304	2630	32013	32101	500 kcmil
1 x 300	rm	30,0	2880	3200	32014	32102	600 kcmil
1 x 400	rm	34,0	3840	4150	32015	32103	750 kcmil
1 x 500	rm	38,0	4800	5200	32556	32558	1000 kcmil
1 x 650	rm	43,0	6048	6650	32557	32559	-
2 x 1,5	re**	11,0	29	175	32016	32104	16
2 x 2,5	re**	12,0	48	215	32017	32105	14
2 x 4	re**	14,0	77	295	32018	32106	12
2 x 6	re**	15,0	115	370	32019	32107	10
2 x 10	re**	16,5	192	495	32020	32108	8
2 x 16	re**	18,5	307	670	32021	32109	6
2 x 25	rm**	23,5	480	960	32022	32110	4
3 x 1,5	re	11,5	43	195	32023	32111	16
3 x 2,5	re	12,5	72	250	32024	32112	14
3 x 4	re	14,0	115	340	32025	32113	12
3 x 6	re	15,0	173	430	32026	32114	10
3 x 10	re	17,0	288	590	32027	32115	8
3 x 16	re	19,0	461	820	32028	32116	6
3 x 25	rm	24,0	720	1320	32029	32117	4
3 x 35	sm	25,0	1008	1450	32030	32118	2
3 x 50	sm	26,5	1440	1850	32031	32119	1
3 x 70	sm	30,0	2016	2450	32032	32120	2/0
3 x 95	sm	34,5	2736	3300	32033	32121	3/0
3 x 120	sm	37,0	3456	4100	32034	32122	4/0
3 x 150	sm	40,0	4320	4900	32293	32296	300 kcmil
3 x 185	sm	46,0	5328	6500	32294	32297	350 kcmil
3 x 240	sm	51,0	6912	8300	32295	32298	500 kcmil

PVC cables will be changed to lead free PVC successively.
re = solid, round core. rm = stranded, round core. sm = stranded, sectional core.

Also available in NYFGBY, NYBY versions etc.
** Adapted to DIN VDE.

Continuation ▶



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
flexing - 5°C to +50°C
fixed installation -30°C to +70°C
- **Nominal voltage** U₀/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius**
for multi core approx. 12 x cable Ø
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Plain copper conductor, to DIN VDE 0295 cl. 1 or cl. 2 solid or stranded type, BS 6360 cl. 1 or. cl. 2, IEC 60228, HD 383
- PVC core insulation, DIV4 to HD 603.1
- Cores stranded concentrically
- Colour coded to DIN VDE 0293, 0276 part 603 or HD 186
- Core colour for 3+1/2 conductor
 - J-type
gnye (1/2), bk, bu, bn
 - O-type
bk, bu (1/2), bn, bk
- PVC outer jacket black, DMV5 to HD 603.1 sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 20f
Caloric load values see page T 67

Application

Power cables for energy supply are installed in open air, in underground, in water, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603.

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems, single-phase systems 1,4 kV
- Both conductors insulated, single-phase systems 0,7 kV
- One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

No. cores x cross-sec. mm ²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km	J-type Part no.	O-type Part no.	AWG-no. *)
3+1/2 conductors*						
3x25/16	rm/re 24,5	874	1530	32035	32123	4
3x35/16	sm/re 26,0	1162	1750	32036	32124	2
3x50/25	sm/rm 29,0	1680	2350	32037	32125	1
3x70/35	sm/sm 32,0	2352	2850	32038	32126	2/0
3x95/50	sm 38,0	3216	3850	32039	32127	3/0
3x120/70	sm 41,0	4128	4780	32040	32128	4/0
3x150/70	sm 46,0	4992	5800	32041	32129	300 kcmil
3x185/95	sm 51,0	6240	7600	32042	32130	350 kcmil
3x240/120	sm 58,0	8064	9800	32043	32131	500 kcmil
3x300/150	sm 64,0	10080	11500	32256	-	600 kcmil
4x1,5	re 12,0	58	230	32044	32132	16
4x2,5	re 13,5	96	300	32045	32133	14
4x4	re 15,0	154	410	32046	32134	12
4x6	re 16,5	230	520	32047	32135	10
4x10	re 18,5	384	730	32048	32136	8
4x16	re 21,5	614	1045	32049	32137	6
4x25	rm 26,0	960	1640	32050	32138	4
4x35	sm 27,5	1344	1760	32051	32139	2
4x50	sm 30,0	1920	2350	32052	32140	1
4x70	sm 34,0	2688	3100	32053	32141	2/0
4x95	sm 39,0	3648	4250	32054	32142	3/0
4x120	sm 42,5	4608	5300	32055	32143	4/0
4x150	sm 47,5	5760	6400	32056	32144	300 kcmil
4x185	sm 52,0	7104	8500	32057	32145	350 kcmil
4x240	sm 58,0	9216	11000	32058	32146	500 kcmil
5x1,5	re 13,0	72	270	32059	32147	16
5x2,5	re 14,5	120	360	32060	32148	14
5x4	re 16,5	192	490	32061	32149	12
5x6	re 18,0	288	600	32062	32150	10
5x10	re 20,0	480	890	32063	32151	8
5x16	re 22,5	768	1255	32064	32152	6
5x25	rm 28,0	1200	1960	32065	-	4
5x35	rm 34,0	1680	2400	32300	-	2
5x50	rm 40,0	2400	3500	32257	-	1

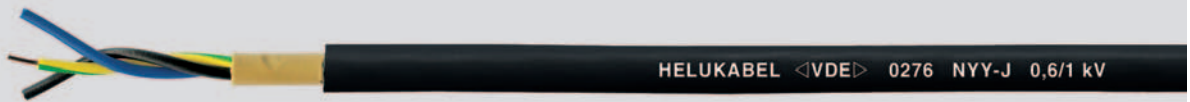
* Note

In respect to 3+1/2 conductors

Whereby only one conductor is allowed to contain a smaller cross-section (as per DIN VDE 0276 part 603 table 5) and permitted to place as insulated core (green-yellow and blue as 1/2-conductor), stranded in layer.

PVC cables will be changed to lead free PVC successively.
re = solid, round core. rm = stranded, round core. sm = stranded, sectional core.
Also available in NYFGYB, NYBY versions etc.

Continuation ▶



Technical data

- Power and control cable to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
flexing – 5°C to +50°C
fixed installation –30°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius** for multi core approx. 12 x cable \varnothing
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Plain copper conductor, to DIN VDE 0295 cl. 1 or cl. 2, IEC 60228 cl. 1 or cl. 2 solid or stranded type, BS 6360 cl. 1 or cl. 2
- PVC core insulation, DIV4 to HD 603.1
- Cores stranded concentrically
- Colour coded to DIN VDE 0293, 0276 part 603 or HD 186
- PVC outer jacket black, DMV5 to HD 603.1
sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 20f

Caloric load values see page T 67

Application

Power cables for energy supply are installed in open air, in underground, in water, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

Attention should be paid to DIN VDE 0298 part 1 and 0276 part 627.

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems, single-phase systems 1,4 kV
- Both conductors insulated, single-phase systems 0,7 kV
- One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

No. cores x cross-sec. mm ²	Outer \varnothing ca. mm	Cop. weight kg/km	Weight ca. kg/km	J-type Part no.	O-type Part no.	AWG-no. *)
7 x 1,5 re	15,5	101	310	32066	32153	16
10 x 1,5 re	18,0	144	380	32067	32154	16
12 x 1,5 re	19,0	173	420	32068	32155	16
14 x 1,5 re	20,0	202	470	32069	32156	16
16 x 1,5 re	21,0	230	520	32070	32157	16
19 x 1,5 re	22,0	274	570	32071	32158	16
21 x 1,5 re	23,0	302	650	32072	32159	16
24 x 1,5 re	25,0	346	750	32073	32160	16
30 x 1,5 re	26,0	432	860	32074	32161	16
40 x 1,5 re	29,0	576	1070	32075	32162	16
61 x 1,5 re	34,0	878	1680	32176	–	16
7 x 2,5 re	16,5	168	450	32076	–	14
10 x 2,5 re	19,5	240	520	32077	–	14
12 x 2,5 re	20,5	288	600	32078	–	14
14 x 2,5 re	21,0	336	680	32079	–	14
16 x 2,5 re	22,0	384	750	32080	–	14
19 x 2,5 re	23,0	456	850	32081	–	14
21 x 2,5 re	24,5	504	980	32082	–	14
24 x 2,5 re	27,0	576	1100	32083	–	14
30 x 2,5 re	28,0	720	1280	32084	–	14
40 x 2,5 re	31,5	960	1700	32085	–	14
52 x 2,5 re	35,0	1248	2150	32169	–	14
7 x 4 re	18,5	269	640	32086	–	12
7 x 6 re	20,0	403	850	32087	32174	10
7 x 10 re	23,5	672	1200	32088	32175	8

*) Note

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

re = solid, round core.
rm = stranded, round core.
sm = stranded, sectional core.
Also available in NYFGBY, NVBY versions etc.

PVC cables will be changed to lead free PVC successively.



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
flexing - 5°C to +50°C
fixed installation -30°C to +70°C
- Permissible **short circuit temperature** +160°C (short circuit duration 5 sec.)
- **Nominal voltage** U₀/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Alu-conductor = 30 N/mm²
- **Current carrying capacity** as per DIN VDE 0276 part 603, in normal operation table 14 and 15, under short circuit conditions table 17
- **Minimum bending radius** for multi core approx. 12 x cable Ø
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Solid aluminium conductor, as per VDE 0295 cl. 1 or cl. 2 (round and sector shaped), BS 6360 cl. 1 or cl. 2, IEC 60228 and HD 383
- PVC core insulation, DIV4 to HD 603.1
- Conductor colours: black, blue, brown and green-yellow
- Inner covering
- PVC outer jacket black, DMV5 to HD 603.1 sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 29

Caloric load values see page T 67

Application

Power cables for energy supply are installed in open air, in underground, in water, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not be expected.

Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603.

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems, single-phase systems 1,4 kV
- Both conductors insulated, single-phase systems 0,7 kV
- One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

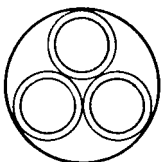
CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer Ø ca. mm	Alu weight kg / km	Weight ca. kg / km	AWG-no. *)
32301	4 x 16 re	23,0	186	750	6
32302	4 x 25 re	26,0	290	950	4
32303	4 x 35 re	28,5	406	1120	2
32304	4 x 50 se	30,0	580	1151	1
32305	4 x 70 se	35,0	812	1549	2/0
32306	4 x 95 se	39,5	1102	2030	3/0
32307	4 x 120 se	44,0	1392	2400	4/0
32308	4 x 150 se	46,0	1740	3030	300 kcmil
32309	4 x 185 se	51,0	2146	3650	350 kcmil
32310	4 x 240 se	56,0	2784	4800	500 kcmil

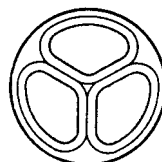
***) Note**

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

PVC cables will be changed to lead free PVC successively.



re = round solid core



se = sectional core



HELUKABEL <VDE> 0276 NYCY 0,6/1 kV

Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
flexing - 5°C to +50°C
fixed installation -30°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius**
for single core approx. 15 x cable \varnothing
for multi core approx. 12 x cable \varnothing

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems, single-phase systems 1,4 kV
- Both conductors insulated, single-phase systems 0,7 kV
- One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

Cable structure

- Plain copper solid conductor as per VDE 0295 cl. 1, BS 6360 cl. 1, IEC 60228 and HD 383
- PVC core insulation, DIV4 to HD 603.1
- Colour coded to VDE 0293 and HD 186
- Cores stranded concentrically
- Filling compound
- Concentric conductor in inner layer of round copper wires, outer layer with copper tape
- PVC outer sheath, DMV5 to HD 603.1, sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 20f

Caloric load values see page T 67

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test data. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, indoors and in cable ducts. The concentric conductor (C) is allowed to use as neutral-, protective or earthed conductor. Simultaneously, this also is permitted to apply as a screen for example earth-connected protection against contact. Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603.

PVC cables will be changed to lead free PVC successively.

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer \varnothing ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no.¹)
32200	1 x 10 re/10	11,0	216	280	8
32201	1 x 16 re/16	12,0	336	440	6
32202	2 x 1,5 re/1,5	13,0	52	205	16
32203	2 x 2,5 re/2,5	13,5	80	270	14
32204	2 x 4 re/4	15,5	123	360	12
32205	2 x 6 re/6	17,0	182	435	10
32206	2 x 10 re/10	19,5	312	590	8
32207	2 x 16 re/16	20,5	489	820	6
32208	3 x 1,5 re/1,5	13,5	66	225	16
32209	3 x 2,5 re/2,5	14,5	104	290	14
32210	3 x 4 re/4	16,5	161	400	12
32211	3 x 6 re/6	17,5	240	510	10
32212	3 x 10 re/10	20,0	408	850	8
32213	3 x 16 re/16	23,0	643	1080	6
32214	4 x 1,5 re/1,5	14,5	81	260	16
32215	4 x 2,5 re/2,5	15,5	128	350	14
32216	4 x 4 re/4	17,0	200	470	12
	4 x 6 re/6	18,5	297	590	10
32217					
32218	4 x 10 re/10	21,0	504	900	8
32219	4 x 16 re/16	23,0	796	1250	6
32220	5 x 1,5 re/1,5	15,0	95	330	16
32221	5 x 2,5 re/2,5	16,0	152	400	14
32222	5 x 4 re/4	19,0	238	560	12
32223	5 x 6 re/6	21,0	355	710	10
32224	5 x 10 re/10	23,0	600	1000	8
32225	7 x 4 ¹⁾ re/4	21,0	315	670	12
32255	7 x 6 ¹⁾ re/6	24,0	470	790	10

* Construction according to DIN VDE 0276 part 627 see page N 7.
Medium voltage cable of copper and aluminium conductor see pages N 15 – N 21.

Continuation ▶

Available with outer sheath in alternative colours on request.



HELUKABEL <VDE> 0276 NYCY 0,6/1 kV

Technical data

- Power and control cable to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range**
 - flexing - 5°C to +50°C
 - fixed installation -30°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius**
 - for single core approx. 15x cable \varnothing
 - for multi core approx. 12x cable \varnothing
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Plain copper solid conductor as per VDE 0295 cl. 1, BS 6360 cl. 1 or IEC 60228
- PVC core insulation, DIV4 to HD 603.1
- Colour coded to DIN VDE 0293 and HD 186
- Cores stranded concentrically
- Filling compound
- Concentric conductor in inner layer of round copper wires, outer layer with copper tape
- PVC outer sheath, DMV5 to HD 603.1 sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Power ratings table see page T 20f

Caloric load values see page T 67

PVC cables will be changed to lead free PVC successively.

Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test data. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, indoors and in cable ducts. The concentric conductor (C) is allowed to use as neutral-, protective or earthed conductor. Simultaneously, this also is permitted to apply as a screen for example earth-connected protection against contact. Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603.

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems,
 - single-phase systems 1,4 kV
 - Both conductors insulated, single-phase systems 0,7 kV
 - One conductor earthed, three-phase systems 1,2 kV
- With concentric conductor and a cross-section of 240 mm² and above 3,6 kV

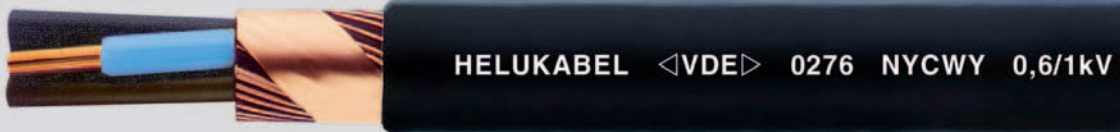
CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer \varnothing ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no.¹)
32226	7 x 1,5 re/1,5	15,0	124	320	16
32227	7 x 1,5 re/2,5	16,0	133	350	16
32228	8 x 1,5 re/1,5	17,0	138	380	16
32229	8 x 1,5 re/2,5	17,0	147	400	16
32230	10 x 1,5 re/2,5	19,0	176	440	16
32231	12 x 1,5 re/2,5	20,0	205	500	16
32232	14 x 1,5 re/2,5	20,5	234	540	16
32233	16 x 1,5 re/4	22,0	276	600	16
32234	19 x 1,5 re/4	23,0	320	690	16
32235	21 x 1,5 re/6	24,0	369	810	16
32236	24 x 1,5 re/6	26,0	413	860	16
32237	30 x 1,5 re/6	27,0	499	1230	16
32238	40 x 1,5 re/10	30,0	696	1590	16
32239	52 x 1,5 re/10	32,0	869	1820	16
32240	61 x 1,5 re/10	33,0	998	2000	16
32241	7 x 2,5 re/2,5	17,5	200	450	14
32242	8 x 2,5 re/2,5	18,0	224	510	14
32243	10 x 2,5 re/4	20,5	286	600	14
32244	12 x 2,5 re/4	21,0	334	660	14
32245	14 x 2,5 re/4	22,0	382	760	14
32246	14 x 2,5 re/6	22,5	403	800	14
32247	16 x 2,5 re/6	23,0	451	910	14
32248	19 x 2,5 re/6	23,5	523	950	14
32249	21 x 2,5 re/10	26,0	571	1100	14
32250	24 x 2,5 re/10	28,0	696	1300	14
32251	30 x 2,5 re/10	30,0	840	1610	14
32252	40 x 2,5 re/10	35,0	1080	2100	14
32253	52 x 2,5 re/10	38,0	1368	2500	14
32254	61 x 2,5 re/10	40,0	1584	2850	14

Medium voltage cable of copper and aluminium conductor see pages N 15 – N 21.

Available with outer sheath in alternative colours on request.





Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and jacket-compound of thermoplastic PVC
- **Temperature range** flexing - 5°C to +50°C fixed installation -30°C to +70°C
- **Nominal voltage** U₀/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius** for single core approx. 15x cable ∅ for multi core approx. 12x cable ∅

Attention should be paid to DIN VDE 0298 part 1 and 0276 part 603. Highest permissible voltage see NYCY – page N 7.

Power ratings table see page T 29f

Cable structure

- Plain copper conductors, as per VDE 0295 cl. 1 od. cl. 2, IEC 60228, BS 6360 cl. 1 and HD 383, solid or stranded versions, conductor types 10–16 mm² round, solid cores (re) alt. 10–25 mm², stranded conductor (rm), 35–240 mm², sector shaped conductor, stranded (sm)
- PVC core insulation, DIV4 to HD 603.1
- Colour coded to DIN VDE 0293 and HD 186
- Cores stranded concentrically
- Filling compound
- Concentric conductor (Ceander), inner layer of corrugated copper wires, outer layer with copper tape
- PVC outer sheath, DMV5 to HD 603.1, sheath colour black
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Caloric load values see page T 67

Application

Power cables for energy supply, preferably used for underground laying, especially in subscriber networks, power stations as well as control cables for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those 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.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer ∅ ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no.¹)
32260	2x10 re/10	19,0	312	650	8
32261	2x16 re/16	21,0	489	850	6
32262	2x25 rm/25**	24,0	763	1210	4
32263	3x10 re/10	19,5	408	730	8
32264	3x16 re/16	22,0	643	1000	6
32265	3x25 rm/16**	26,0	902	1550	4
32266	3x35 sm/16	27,0	1190	1750	2
32267	3x50 sm/25	29,0	1723	2250	1
32268	3x70 sm/35	33,0	2410	2950	2/0
32269	3x95 sm/50	38,0	3296	4100	3/0
32270	3x120 sm/70	41,0	4236	5050	4/0
32271	3x150 sm/70	45,0	5100	6000	300 kcmil
32272	3x185 sm/95	50,0	6383	7550	350 kcmil
32273	3x240 sm/120	57,0	8242	9950	500 kcmil
32274	3x25 rm/25**	26,0	1003	1600	4
32275	3x35 sm/35	27,5	1402	1850	2
32276	3x50 sm/50	29,5	2000	2450	1
32277	3x70 sm/70	34,0	2796	3350	2/0
32278	3x95 sm/95	38,5	3791	4550	3/0
32279	3x120 sm/120	42,0	4786	5550	4/0
32280	3x150 sm/150	46,0	5970	6900	300 kcmil
32281	3x185 sm/185	51,0	7363	8500	350 kcmil
32282	4x10 re/10	20,5	504	890	8
32283	4x16 re/16	23,5	796	1250	6
32284	4x25 rm/16**	28,0	1142	1800	4
32285	4x35 sm/16	29,0	1526	2050	2
32286	4x50 sm/25	33,0	2203	2700	1
32287	4x70 sm/35	37,0	3082	3750	2/0
32288	4x95 sm/50	43,5	4208	5000	3/0
32289	4x120 sm/70	47,0	5388	6350	4/0
32290	4x150 sm/70	51,0	6540	7650	300 kcmil
32291	4x185 sm/95	56,0	8159	9350	350 kcmil
32292	4x240 sm/120	62,5	10546	11600	500 kcmil

¹) Note

AWG sizes are approximate equivalent values, The actual cross-section is in mm² – see page T 15. **Medium voltage cable** of copper and aluminium conductor see pages N 15 – N 21.

PVC cables will be changed to lead free PVC successively. * Round cables are more compact thus smaller core ∅. Available with outer sheath in alternative colours on request.

A-Y(ST)YÖ

A-Y(STE)YÖ

A-LIY(STE)YÖ

Data transmission cables for petrol stations and refineries with BAM*-Test report



Cable structure

A-Y(ST)YÖ

- Copper conductor, solid, tinned
- Core insulation of special PVC, according to DIN VDE 0207
- Black cores with continuous white numbering
- Cores stranded in layers with optimal lay-length
- Foil taping, aluminium/polyester foil, drain wire tinned copper, 0,75 mm²
- Special PVC-outer sheath, oil- and fuel resistant
- Sheath colour black for 2x1 sheath colour blue*

Technical data

- Oil- and fuel-resistant data transmission cables
- **Temperature range** flexing - 5°C to +70°C fixed installation -30°C to +70°C
- **Nominal voltage** 200 V
- **Test voltage** 0,75 mm² = 1000 V 1 mm² = 1500 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** approx. 12 x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

A-Y(STE)YÖ

- Copper conductor, solid, tinned
- Core insulation of special PVC, according to DIN VDE 0207
- Black cores with continuous white numbering
- Each single core screened with aluminium polyester foil, metal layer at outside
- Screened cores in layers with optimal lay-length screenings of each core make contact mutually
- Drain wire, tinned copper 0,75 mm²
- Overall core-filler
- Special PVC-outer sheath, oil- and fuel resistant, sheath colour black

Application

These data transmission cables, oil- and fuel-resistant, are used for internal and external wiring applications at petrol pumps, for data transmission from the pumps to the cash desk and in the installation of video surveillance systems. These cables are also installed directly in the ground and are resistant to UV radiation. Special screens over individual cores guarantee good overall screening and ensure an interference-free transmission of control pulses.

Cable structure

A-LIY(STE)YÖ

- Tinned copper conductor, 7 strands
- Core insulation of special PVC according to DIN VDE 0207
- Black cores with continuous white numbering
- Each single core screened with aluminium polyester foil, metal layer at outside
- Screened cores in layers with optimal lay-length screenings of each core make contact mutually
- Drain wire, tinned copper 0,75 mm² 7 strands
- Overall core-filler
- Special PVC-outer sheath, oil- and fuel resistant, sheath colour black

Tests

- Compound characteristic according to DIN VDE 0207
- Oil- and fuel resistance of sheath: according to BAM-Specification
- Oil-resistance of sheath: DIN ISO 6722 part 1, 4.11, DIN VDE 0472 part 803 test method B
- Fuel-resistance of sheath: DIN ISO 6722 part 1, 4.12
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

A-Y(ST)YÖ (Overall screening), solid conductor

Part no.	No. cores x cross-sec. mm ²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km	AWG-no. *)
32438	4x0,75	8,8	38	102	18
32598	7x0,75	9,9	60	141	18
32439	8x0,75	10,5	68	159	18
32631	12x0,75	12,1	99	213	18
32632	2x1*	8,4	28	83	17

A-Y(STE)YÖ (Each core individually screened), solid conductor

Part no.	No. cores x cross-sec. mm ²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km	AWG-no. *)
32635	4x0,75	8,7	38	101	18
32636	7x0,75	9,9	60	142	18
32637	8x0,75	10,6	68	165	18
32638	12x0,75	12,3	99	216	18

A-LIY(STE)YÖ (Each core individually screened)

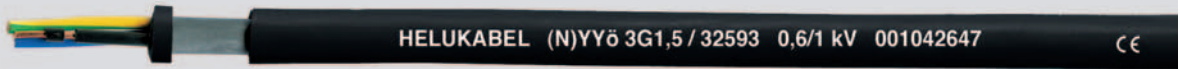
Part no.	No. cores x cross-sec. mm ²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km	AWG-no. *)
32597	4x0,75	9,0	38	105	18
32633	7x0,75	10,3	60	150	18
32599	8x0,75	11,0	68	169	18
32634	12x0,75	12,9	99	223	18

*) Note

AWG sizes are approximate equivalent values. The actual cross-section is in mm² – see page T 15.

* BAM = Bundesanstalt für Materialprüfung

Petrol station cable (N)YYö-J 0,6/1 kV, with BAM*-Test report



Technical data

- Power and data transmission cable based on DIN VDE 0271 with VDE registration number and BAM¹⁾-test report on manufacturing
- **Temperature range**
flexing - 5°C to +50°C
fixed installation -30°C to +70°C
- **Limiting temperature** at the conductor +70°C
- **Nominal voltage** U₀/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** by cable grip for Cu-conductor = 50 N/mm²
- **Minimum bending radius**
approx. 12 x cable Ø

Cable structure

- Plain copper conductor, solid according to DIN VDE 0295 cl. 1, BS 6360 cl. 1 and IEC 60228 cl. 1
- Core insulation of PVC, compound Y13 according to DIN VDE 0207 part 4
- Concentric lay-up of cores
- Core identification according to DIN VDE 0293
- PVC outer jacket black¹⁾ according to DIN VDE 0207 part 5
- Oil and fuel-resistant according to DIN ISO 6722
- PVC self-extinguishing and flame retardant according to DIN VDE 0482 part 265-2-1/EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Application

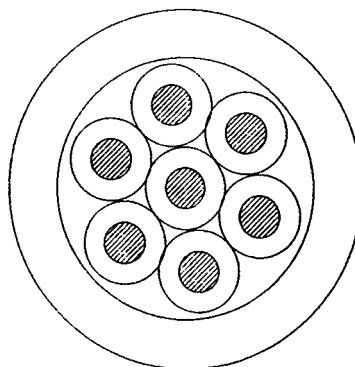
Power and data transmission cables are used for outdoor and underground applications, in water and in concrete provided mechanical damage can be ruled out. These cables are installed for applications such as petrol stations and oil refineries where resistance to oils and fuels is required.

VDE 0298 part 1 shall be observed.

 = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. of cores x cross-section mm ²	Outer Ø ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no.*)
32592	2x1,5	12,2	29	180	16
32593	3G1,5	13,2	43	225	16
32594	4G1,5	14,2	58	260	16
32595	5G1,5	15,2	72	280	16
32596	7G1,5	16,2	101	370	16

Design: 7 x 1,5



*) Note

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

* BAM = Bundesanstalt für Materialprüfung.

¹⁾ Version with blue outer jacket available upon request.



Technical data

- Power and control cable, PVC insulation and lead inner-sheath to DIN VDE 0265
- **Temperature range**
-5°C to +70°C
- **Temperature at conductor** +70°C
- **Short circuit temperature** +160°C (short circuit duration 5 sec.)
- **Nominal voltage** U_0/U 0,6/1 kV
nominal voltage U
 - for three-phase system 1,0 kV
 - for one-phase system 1,2 kV (outer conductor insulated)
 - for one phase system 0,6 kV (one outer conductor earthed)
- **nominal voltage**
 U_0 = between conductor and lead sheath
U = voltage between the outer conductors, e. g. U_0/U for cables:
 - For three-phase system $U_0 = U \cdot \frac{1}{\sqrt{3}}$
 - For one-phase d.c. system, $U_0 = U \cdot \frac{1}{2}$ (both outer conductor insulated)
 - For one-phase and d.c. system $U_0 = U$ (one outer conductor earthed)
- **operating voltage**
the voltage between the conductors of a current-circuit (or between conductor and earth) in a given time during undisturbed operation under specified condition
- **Test voltage** (5 min.) 6,0 kV
- Min. permissible **bending radius**
approx. 12xcable \varnothing

Cable structure

- Bare copper conductor to DIN VDE 0295, BS 6360, IEC 60228 and HD 383
- Core insulation of PVC, compound type DIV4 to VDE 0276 part 603
- Core identification to DIN VDE 0293
 - up to 5 cores coloured
 - 7 cores black with numbering
- Green-yellow earth core
- Cores stranded concentrically
- Overall jacket of soft plastics material, if exists, permits also as extrusion or taping or a combination of both
- Lead inner-sheath, jointless and enclosed
- PVC outer jacket black, DMV5 to DIN VDE 0276 part 603, sheath colour black

Advantage

Good coupling resistance due to enclosed lead sheath is suitable for special **EMC-requirements** (Electromagnetic Compatibility).

Power ratings table see page T 30

Application

These cables of PVC insulation and lead inner-sheath are installed everywhere, where the danger of chemical reaction of solvents, energy fuels, oils, gasolines or of that kind in filling stations particularly in petrol pump areas for carburetor propellants, in refining plants and in chemical industries are to be caused. Suitable for installation under ground, in water, indoor areas and cable conduits.

Resistant to

- Turpentine substitute - Xylol
- Fuels - Trichlor
- Oils - Petroleum
- Toluene - Hydrocarbon

Note

- The lead sheath is **not** permitted to use as neutral-conductor (N).
- If drain-wire exists, only for use as earthing of lead sheath in a grounding system e.g. in hazardous areas to DIN VDE 0165. This drain-wire is **not** allowed to install as protective, neutral or earth conductor.

CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer \varnothing ca. mm	Cop. weight kg / km	Lead weight kg / km	Weight ca. kg / km	AWG-no. *)
32640	3 x 1,5 re	13,5	43	427	598	16
32641	3 x 2,5 re	14,8	72	487	690	14
32642	3 x 4 re	16,2	115	555	840	12
32643	3 x 6 re	17,3	173	610	990	10
32644	3 x 25/16 re	27,8	874	1290	2550	4
	3 x 35/16 sm	29,2	1162	1340	3080	2
32645						
32646	3 x 50/25 sm	32,7	1680	1670	3850	1
32647	3 x 70/35 sm	35,8	2352	2020	5360	2/0
32648	3 x 95/50 sm	40,3	3216	2440	6950	3/0
32649	3 x 120/70 sm	43,2	4128	2770	8235	4/0
32650	3 x 150/70 sm	48,8	4992	3530	9620	500 kcmil
32651	3 x 185/95 sm	53,4	6240	4230	11940	350 kcmil
32652	3 x 240/120 sm	59,8	8064	5250	15380	500 kcmil
32653	4 x 1,5 re	14,5	58	464	650	16
32654	4 x 2,5 re	15,5	96	530	760	14
32655	4 x 4 re	17,5	154	605	960	12
32656	4 x 6 re	18,5	230	665	1100	10

Continuation ►

*) Note

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² - see page T 15.



CE = The product is conformed with the EC Low-Voltage Directive 73/23/EEC and 93/68/EEC.

Part No.	No. cores x cross-sec. mm ²	Outer Ø ca. mm	Cop. weight kg / km	Lead weight kg / km	Weight ca. kg / km	AWG-no. *)
32657	4 x 10 re	21,3	384	750	1400	8
32658	4 x 16 re	24,2	614	975	1910	6
32659	4 x 25 rm	28,5	960	1290	2750	4
32660	4 x 35 rm	30,5	1344	1340	3630	2
32661	4 x 50 sm	33,3	1920	1680	4580	1
32662	4 x 70 sm	37,5	2688	2020	5340	2/0
32663	4 x 95 sm	42,3	3648	2440	7120	3/0
32664	5 x 1,5 re	15,3	72	505	710	16
32665	5 x 2,5 re	17,2	120	580	910	14
32666	5 x 4 re	19,4	192	665	1090	12
32667	5 x 6 re	20,2	288	730	1270	10
32668	5 x 10 re	22,8	480	930	1700	8
32669	5 x 16 re	26,4	768	1070	2231	6
32670	7 x 1,5 re	17,2	101	545	810	16
32671	10 x 1,5 re	21,3	144	680	918	16
32672	12 x 1,5 re	21,3	173	710	988	16
32673	14 x 1,5 re	21,3	202	735	1100	16
32674	19 x 1,5 re	23,0	274	900	1440	16
32675	24 x 1,5 re	27,3	346	1170	1610	16
32676	30 x 1,5 re	28,2	432	1240	1830	16
32677	40 x 1,5 re	31,4	576	1390	2300	16
32678	7 x 2,5 re	18,0	168	625	1070	14
32679	10 x 2,5 re	22,4	240	865	1330	14
32680	12 x 2,5 re	23,2	288	940	1440	14
32681	14 x 2,5 re	24,5	336	980	1530	14
32682	19 x 2,5 re	26,0	456	1170	1680	14
32683	24 x 2,5 re	31,0	576	1370	2160	14
32684	30 x 2,5 re	32,3	720	1550	2530	14
32685	40 x 2,5 re	36,4	960	1770	3310	14
32686	3 x 1,5 re+1,5	14,5	57	427	610	16
32687	4 x 1,5 re+1,5	15,3	72	464	650	16
32688	5 x 1,5 re+1,5	16,4	86	505	780	16
32689	7 x 1,5 re+1,5	17,2	115	545	970	16

***) Note**

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

Medium Voltage Power Cables XLPE-insulated

6/10 kV, 12/20 kV, 18/30 kV

Since about 1970 the cross-linked polyethylene (XLPE)-insulated power cables has been used in Germany. The XLPE-insulation possesses very good electrical, mechanical and thermal characteristics in medium voltage networks. This type of insulation is excellent chemical resistant and also resistant to cold. Due to various advantages, the XLPE-insulated type has vastly displaced the traditional classical paper-insulated types in many sectors.

In order to prevent the penetration of moisture and also to extend the duration of life, the XLPE-insulated medium voltage cables are designed with longitudinally water-proof screen including an additional swell tape and a PE outer sheath.

The manufacture of this sheath is based on high density polyethylene (HDPE), in which an additive organic peroxide is mixed. Due to the heating and pressure the molecule chains are joined each other, assuring the transition from thermoplastic to elastic condition.

In comparison to PVC and paper-insulated cables, the advantages of XLPE-insulated medium voltage power cables are possessing a low dielectric factor, such as it is 100 times smaller than of PVC-insulated cables.

Moreover, a better dielectric constant value has an effect on the low mutual capacitance, the short-circuit to ground and the charging current of XLPE-insulated cables.

The good properties of XLPE-insulated cables remain constant at a long temperature range.

Characteristics of XLPE

- permissible operating temperature
 - For permanent (normal) operation + 90°C
 - In short circuit +250°C
 - In overload operation and damage by sea up to +130°C
- Specific heat resistance 3,5 K·m/W
- Dielectric constant 2,4
- Specific resistance (20°C) min. 10^{16} Ohm·cm
- Loss factor (tan δ) (20°C) max. $0,5 \cdot 10^{-3}$
- Density 0,92 g/cm³
- Breaking strength min. 200%
- Tensile strength min. 12,5 N/mm²

Conductor

- Copper or aluminium, round, multiwire stranded and compact, according to VDE 0295 and HD 383.

Inner semi-conducting layer

- Semi-conducting compound, cross-linked, minimum wall-thickness 0,3 mm.

Insulation

- Cross-linked polyethylene (XLPE), compound type 2XI1 according to DIN VDE 0207 part 22 and HD 620.1.
- Insulation nominal wall-thickness
 - for 6/10 kV = 3,4 mm
 - 12/20 kV = 5,5 mm
 - 18/30 kV = 8,0 mm

Outer semi-conducting layer

- Outer semi-conducting layer is extruded together with the inner semi-conducting layer and the insulation in one working process and are spliced with each other.
- Semi-conducting compound, cross-linked, wall-thickness 0,3 to 0,6 mm.

Concentricity of conductor

- The difference between the maximum and minimum value of 0,5 mm should not be exceeded.

Semi-conducting type

- Over the outer semi-conducting layer, a semi-conducting tape must be used.

Screen

- Screening of copper wires must have a minimum diameter of 0,5 mm and over that a copper tape applied helically with a minimum thickness of 0,1 mm.
- Copper cross-section according to DIN VDE 0273 and 0276 to the corresponded table 2.

Separator

- Over the screen as well as under outer jacket, a separating layer must be used (e.g. taping).

Outer jacket

- PE compound DMP2 according to HD 620.1 and 2YM3 to DIN VDE 0276 part 3, black or
- PVC compound DMV6 according to HD 620.1 and YM5 to DIN VDE 0207 part 5, red
- Wall-thickness = 2,5 mm,
for 1x500 mm²/30 kV = 2,6 mm

Continuation ►

Medium Voltage Power Cables XLPE-insulated

6/10 kV, 12/20 kV, 18/30 kV

Laying of Cable

In order to avoid any damage, the XLPE-insulated medium voltage cables should carefully laid and installed. It must be ensured that the cables should not be pulled over the hard or sharp edges. The cable ends must be water-tight-sealed. After cutting the length both ends must be sealed immediately.

A laying depth of 60 to 80 cm is recommended. Single conductor cables are normally arranged in a trefoil touching or triangular shape. For laying in conduits, specially the influence of thermal insulation of air space between the cable and the inner wall of conduit should be considered. The inner diameter of the conduit should be at least 1,5 times that of the diameter of the cable.

Bending radius

During the laying of XLPE cables, the bending radius should not be below of the following values:

- Cable without metal sheath = 15xcable Ø
- Cable with Alu-laminated sheath = 30xcable Ø

Temperature range

During the installation, the temperature should not be below the following values:

- for XLPE-insulation + PVC jacket = - 5°C
- for XLPE-insulation + PE jacket = -20°C

Max. permissible tensile strength

By pulling the conductors with a pulling head (not for armoured cables)

$$P = \text{No. of cores} \times \text{conductor cross-section} \times \delta$$

$$\delta = \text{permissible pulling tension N/mm}^2$$

- For Cu-conductor: 50 N/mm²
- For Alu-conductor: 30 N/mm²

Current carrying capacity

according to VDE 0276 part 620, -5C or HD 620 S1

Laying in earth (ground)

- Laying depth 0,7–0,8 m
- Earth temperature in the laying depth 20°C
- Specific heat resistance 1,0 K·m/W
- Load factor 0,7 (EVU-Load)

Laying in air

- Air temperature 30°C
- Load factor (permanent load) 1,0

Laying in conduits

Cables for conduit systems laying in earth, a reduction of the current carrying capacity with a factor of 0,85 is recommended.

Test voltages

Kind of voltage test	Voltage test in kV		
	U ₀ /U = 6/10 kV	U ₀ /U = 12/20 kV	U ₀ /U = 18/30 kV
Voltage test a. c. in kV	15	30	45
Voltage test d. c. in kV	48	96	144
Voltage test a. c. (voltage test = 1000 h)	18	36	54

Voltage test to cable system

During the operation or after laying the medium voltage power cables, the dielectric can be tested with alternating or direct current. The test duration continues 30 minutes.

Kind of voltage test	U ₀ /U = 6/10 kV	U ₀ /U = 12/20 kV	U ₀ /U = 18/30 kV
Voltage test a. c. in kV	24	24	36
Voltage test d. c. in kV	34 up to 48	67 up to 96	76 up to 108

N2XSY 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated



Cu-conductor, single core, screened, PVC-jacket



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S1 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
 for 6/10 kV = max. 12 kV
 12/20 kV = max. 24 kV
 18/30 kV = max. 36 kV
- **Test voltages**
 for 6/10 kV = 15 kV
 12/20 kV = 30 kV
 18/30 kV = 45 kV
- **Minimum bending radius**
 max. $15 \times \text{cable } \varnothing$

Power ratings table see page T 35f

Cable structure

- Circular bare Cu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Screen of copper wires and one or two copper tape(s) applied helically
- Inner covering or tape lapping
- PVC outer jacket, compound DMV6 to HD 620.1, jacket colour red

Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. See DIN VDE 0298 part 1. To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

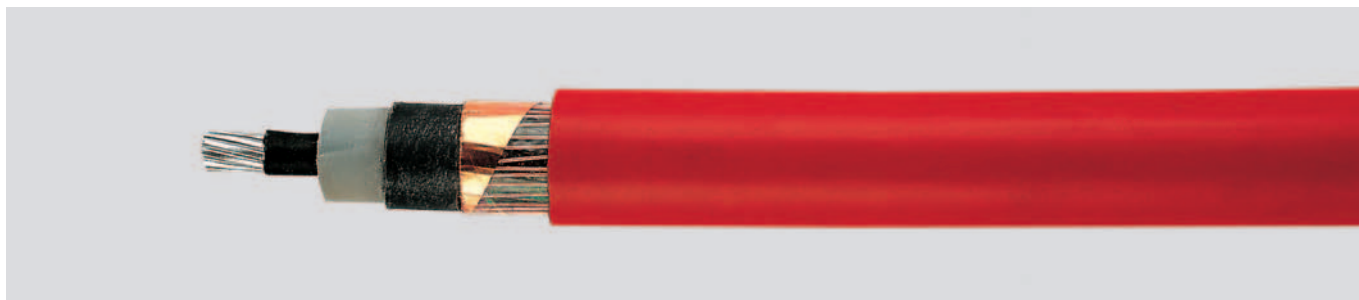
Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	PVC-jacket thickness mm	Outer \varnothing		Cop. weight kg / km	Weight ca. kg / km	AWG-no. *)
				min. mm	max. mm			
N2XSY 6/10 kV								
32400	1 x 35 mm ²	3,4	2,5	23	28	518	905	2
32401	1 x 50 mm ²	3,4	2,5	24	29	662	1080	1
32402	1 x 70 mm ²	3,4	2,5	26	31	860	1310	2/0
32403	1 x 95 mm ²	3,4	2,5	27	32	1094	1580	3/0
32404	1 x 120 mm ²	3,4	2,5	29	34	1334	1860	4/0
32405	1 x 150 mm ² *	3,4	2,5	30	35	1723	2040	300 kcmil
32406	1 x 150 mm ² /25	3,4	2,5	30	35	1725	2210	300 kcmil
32407	1 x 185 mm ² *	3,4	2,5	32	37	1958	2450	350 kcmil
32408	1 x 185 mm ² /25	3,4	2,5	32	37	2059	2580	350 kcmil
32409	1 x 240 mm ² *	3,4	2,5	34	39	2486	3000	500 kcmil
32410	1 x 240 mm ² /25	3,4	2,5	34	39	2587	3130	500 kcmil
32411	1 x 300 mm ² /25	3,4	2,5	36	41	3163	3780	600 kcmil
32412	1 x 400 mm ² /35	3,4	2,5	40	45	4234	4670	750 kcmil
32413	1 x 500 mm ² /35	3,4	2,5	43	48	5194	5750	1000 kcmil
N2XSY 12/20 kV								
32414	1 x 35 mm ²	5,5	2,5	27	32	518	1110	2
32415	1 x 50 mm ²	5,5	2,5	28	33	662	1250	1
32416	1 x 70 mm ²	5,5	2,5	30	35	854	1510	2/0
32417	1 x 95 mm ²	5,5	2,5	31	36	1094	1780	3/0
32418	1 x 120 mm ²	5,5	2,5	33	38	1334	2070	4/0
32419	1 x 150 mm ² *	5,5	2,5	34	39	1622	2310	300 kcmil
32420	1 x 150 mm ² /25	5,5	2,5	34	39	1723	2420	300 kcmil
32421	1 x 185 mm ² *	5,5	2,5	36	41	1958	2650	350 kcmil
32422	1 x 185 mm ² /25	5,5	2,5	36	41	2059	2810	350 kcmil
32423	1 x 240 mm ² *	5,5	2,5	39	44	2486	3260	500 kcmil
32424	1 x 240 mm ² /25	5,5	2,5	39	44	2587	3360	500 kcmil
32425	1 x 300 mm ² /25	5,5	2,5	41	46	3163	4020	600 kcmil
32426	1 x 400 mm ² /35	5,5	2,5	44	49	4234	4930	750 kcmil
32427	1 x 500 mm ² /35	5,5	2,5	47	52	5194	6050	1000 kcmil
N2XSY 18/30 kV								
32428	1 x 50 mm ²	8,0	2,5	33	38	662	1480	1
32429	1 x 70 mm ²	8,0	2,5	35	40	854	1730	2/0
32430	1 x 95 mm ²	8,0	2,5	36	41	1094	2060	3/0
32431	1 x 120 mm ²	8,0	2,5	38	43	1334	2330	4/0
32432	1 x 150 mm ² /25	8,0	2,5	39	44	1723	2720	300 kcmil
32433	1 x 185 mm ² /25	8,0	2,5	41	46	2059	3100	350 kcmil
32434	1 x 240 mm ² /25	8,0	2,5	43	48	2587	3730	500 kcmil
32435	1 x 300 mm ² /25	8,0	2,5	46	51	3163	4000	600 kcmil
32436	1 x 400 mm ² /35	8,0	2,5	49	54	4234	5330	750 kcmil
32437	1 x 500 mm ² /35	8,0	2,5	52	57	5194	6480	1000 kcmil

* For cables laying in earth a screen-cross section of 16 mm² is permitted. Further types and dimensions on request.

NA2XSY 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated



Alu-conductor, single core, screened, PVC-jacket



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S1 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
 for 6/10 kV = max. 12 kV
 12/20 kV = max. 24 kV
 18/30 kV = max. 36 kV
- **Test voltages**
 for 6/10 kV = 15 kV
 12/20 kV = 30 kV
 18/30 kV = 45 kV
- **Minimum bending radius**
 max. $15 \times \text{cable } \varnothing$

Cable structure

- Circular bare alu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Screen of copper wires and one or two copper tapes(s) applied helically
- Inner covering or tape lapping
- PVC outer jacket, compound DMV6 to HD 620.1, jacket colour red

Installation notes see page N15

Power ratings table see page T 35 f

Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. See DIN VDE 0298 part 1. To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	PVC-jacket thickness mm	Outer \varnothing		Cop. weight kg/km	Alu weight kg/km	Weight ca. kg/km	AWG-no. *)
				min. mm	max. mm				
NA2XSY 6/10 kV									
32440	1x50 mm ² /16	3,4	2,5	24	29	182	145	780	1
32441	1x70 mm ² /16	3,4	2,5	26	31	182	203	875	2/0
32442	1x95 mm ² /16	3,4	2,5	27	32	182	276	990	3/0
32443	1x120 mm ² /16	3,4	2,5	29	34	182	348	1110	4/0
32444	1x150 mm ² /16*	3,4	2,5	30	35	182	435	1240	300 kcmil
32445	1x150 mm ² /25	3,4	2,5	30	35	283	435	1310	300 kcmil
32446	1x185 mm ² /16*	3,4	2,5	32	37	182	537	1405	350 kcmil
32447	1x185 mm ² /25	3,4	2,5	32	37	283	537	1460	350 kcmil
32448	1x240 mm ² /16*	3,4	2,5	34	39	182	696	1615	500 kcmil
32449	1x240 mm ² /25	3,4	2,5	34	39	283	696	1660	500 kcmil
32450	1x300 mm ² /25	3,4	2,5	36	41	283	870	1910	600 kcmil
32451	1x400 mm ² /35	3,4	2,5	40	45	394	1160	2315	750 kcmil
32452	1x500 mm ² /35	3,4	2,5	43	48	394	1450	2750	1000 kcmil
NA2XSY 12/20 kV									
32453	1x50 mm ² /16	5,5	2,5	28	33	182	145	950	1
32454	1x70 mm ² /16	5,5	2,5	30	35	182	203	1110	2/0
32455	1x95 mm ² /16	5,5	2,5	31	36	182	276	1220	3/0
32456	1x120 mm ² /16	5,5	2,5	33	38	182	348	1310	4/0
32457	1x150 mm ² /16*	5,5	2,5	34	39	182	435	1460	300 kcmil
32458	1x150 mm ² /25	5,5	2,5	34	39	283	435	1520	300 kcmil
32459	1x185 mm ² /16*	5,5	2,5	36	41	182	537	1660	350 kcmil
32460	1x185 mm ² /25	5,5	2,5	36	41	283	537	1720	350 kcmil
32461	1x240 mm ² /16*	5,5	2,5	39	44	182	696	1860	500 kcmil
32462	1x240 mm ² /25	5,5	2,5	39	44	283	696	1910	500 kcmil
32463	1x300 mm ² /25	5,5	2,5	41	46	283	870	2220	600 kcmil
32464	1x400 mm ² /35	5,5	2,5	44	49	394	1160	2620	750 kcmil
32465	1x500 mm ² /35	5,5	2,5	47	52	394	1450	3030	1000 kcmil
NA2XSY 18/30 kV									
32466	1x50 mm ² /16	8,0	2,5	33	38	182	145	1260	1
32467	1x70 mm ² /16	8,0	2,5	35	40	182	203	1360	2/0
32468	1x95 mm ² /16	8,0	2,5	36	41	182	276	1510	3/0
32469	1x120 mm ² /16	8,0	2,5	38	43	182	348	1610	4/0
32470	1x150 mm ² /16*	8,0	2,5	39	44	182	435	1760	300 kcmil
32471	1x150 mm ² /25	8,0	2,5	39	44	283	435	1810	300 kcmil
32472	1x185 mm ² /16*	8,0	2,5	41	46	182	537	1960	350 kcmil
32473	1x185 mm ² /25	8,0	2,5	41	46	283	537	2020	350 kcmil
32474	1x240 mm ² /16*	8,0	2,5	43	48	182	696	2210	500 kcmil
32475	1x240 mm ² /25	8,0	2,5	43	48	283	696	2260	500 kcmil
32476	1x300 mm ² /25	8,0	2,5	46	51	283	870	2560	600 kcmil
32477	1x400 mm ² /35	8,0	2,5	49	54	394	1160	2960	750 kcmil
32478	1x500 mm ² /35	8,0	2,6	52	57	394	1450	3460	1000 kcmil

* For cables laying in earth a screen-cross section of 16 mm² is permitted. Further types and dimensions on request.

N2XS2Y 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated



Cu-conductor, single core, screened, PE-jacket



Technical data

- XLPE-insulated power cables to IEC 60502, DIN VDE 0276 part 620, HD 620 S1
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
for 6/10 kV = max. 12 kV
12/20 kV = max. 24 kV
18/30 kV = max. 36 kV
- **Test voltages**
for 6/10 kV = 15 kV
12/20 kV = 30 kV
18/30 kV = 45 kV
- **Minimum bending radius**
max. $15 \times \text{cable } \varnothing$

Power ratings table see page T 35f

Cable structure

- Circular bare cu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Screen of copper wires and one or two copper tapes(s) applied helically
- Inner covering or tape lapping
- PE-outer jacket black, compound DMP2 to HD 620.1, jacket colour black

Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer jacket is resistant to high mechanical stress for laying the cables. This PE-jacket is not flame-resistant (does not conform the test method B, as per VDE 0472 part 804). To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$. See DIN VDE 0298 part 1.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	PE-jacket thickness mm	Outer \varnothing		Cop. weight kg / km	Weight ca. kg / km	AWG-no.*)
				min. mm	max. mm			
N2XS2Y 6/10 kV								
32480	1 x 35 mm ² /16	3,4	2,5	23	28	518	910	2
32481	1 x 50 mm ² /16	3,4	2,5	24	29	662	990	1
32482	1 x 70 mm ² /16	3,4	2,5	26	31	854	1205	2/0
32483	1 x 95 mm ² /16	3,4	2,5	27	32	1094	1520	3/0
32484	1 x 120 mm ² /16	3,4	2,5	29	34	1334	1760	4/0
32485	1 x 150 mm ² /16*	3,4	2,5	30	35	1622	2020	300 kcmil
32486	1 x 150 mm ² /25	3,4	2,5	30	35	1723	2130	300 kcmil
32487	1 x 185 mm ² /16*	3,4	2,5	32	37	1958	2360	350 kcmil
32488	1 x 185 mm ² /25	3,4	2,5	32	37	2059	2470	350 kcmil
32489	1 x 240 mm ² /16*	3,4	2,5	34	39	2486	2960	500 kcmil
32490	1 x 240 mm ² /25	3,4	2,5	34	39	2587	3020	500 kcmil
32491	1 x 300 mm ² /25	3,4	2,5	36	41	3163	3630	600 kcmil
32492	1 x 400 mm ² /35	3,4	2,5	40	45	4234	4560	750 kcmil
32493	1 x 500 mm ² /35	3,4	2,5	43	48	5194	5580	1000 kcmil
N2XS2Y 12/20 kV								
32494	1 x 35 mm ² /16	5,5	2,5	27	32	518	960	2
32495	1 x 50 mm ² /16	5,5	2,5	28	33	662	1160	1
32496	1 x 70 mm ² /16	5,5	2,5	30	35	854	1410	2/0
32497	1 x 95 mm ² /16	5,5	2,5	31	36	1094	1670	3/0
32498	1 x 120 mm ² /16	5,5	2,5	33	38	1334	1960	4/0
32499	1 x 150 mm ² /16*	5,5	2,5	34	39	1622	2220	300 kcmil
32500	1 x 150 mm ² /25	5,5	2,5	34	39	1723	2310	300 kcmil
32501	1 x 185 mm ² /16*	5,5	2,5	36	41	1958	2620	350 kcmil
32502	1 x 185 mm ² /25	5,5	2,5	36	41	2059	2670	350 kcmil
32503	1 x 240 mm ² /16*	5,5	2,5	39	44	2486	3160	500 kcmil
32504	1 x 240 mm ² /25	5,5	2,5	39	44	2587	3270	500 kcmil
32505	1 x 300 mm ² /25	5,5	2,5	41	46	3163	3880	600 kcmil
32506	1 x 400 mm ² /35	5,5	2,5	44	49	4234	4820	750 kcmil
32507	1 x 500 mm ² /35	5,5	2,5	47	52	5194	5860	1000 kcmil
N2XS2Y 18/30 kV								
32508	1 x 50 mm ² /16	8,0	2,5	33	38	662	1410	1
32509	1 x 70 mm ² /16	8,0	2,5	35	40	854	1660	2/0
32510	1 x 95 mm ² /16	8,0	2,5	36	41	1094	1970	3/0
32511	1 x 120 mm ² /16	8,0	2,5	38	43	1334	2220	4/0
32512	1 x 150 mm ² /25	8,0	2,5	39	44	1723	2650	300 kcmil
32513	1 x 185 mm ² /25	8,0	2,5	41	46	2059	2980	350 kcmil
32514	1 x 240 mm ² /25	8,0	2,5	43	48	2587	3570	500 kcmil
32515	1 x 300 mm ² /25	8,0	2,5	46	51	3163	4220	600 kcmil
32516	1 x 400 mm ² /35	8,0	2,5	49	54	4234	5170	750 kcmil
32517	1 x 500 mm ² /35	8,0	2,5	52	57	5194	6260	1000 kcmil

* For cables laying in earth a screen-cross section of 16 mm² is permitted. Further types and dimensions on request.

NA2XS2Y 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated

Alu-conductor, single core, screened, PE-jacket



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S1 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
for 6/10 kV = max. 12 kV
12/20 kV = max. 24 kV
18/30 kV = max. 36 kV
- **Test voltages**
for 6/10 kV = 15 kV
12/20 kV = 30 kV
18/30 kV = 45 kV
- **Minimum bending radius**
max. $15 \times \text{cable } \varnothing$

Power ratings table see page T 35f

Cable structure

- Circular bare alu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Screen of copper wires and one or two copper tapes(s) applied helically
- Inner covering or tape lapping
- PE-outer jacket black, compound DMP2 to HD 620.1, jacket colour black

Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer jacket is resistant to high mechanical stress for laying the cables. This PE-jacket is not flame-resistant (does not conform the test method B, as per VDE 0472 part 804). To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$. See DIN VDE 0298 part 1.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	PE-jacket thickness mm	Outer \varnothing		Cop. weight kg/km	Alu weight kg/km	Weight ca. kg/km	AWG-no.¹)
				min. mm	max. mm				
NA2XS2Y 6/10 kV									
32520	1 x 50 mm/16	3,4	2,5	24	29	182	145	710	1
32521	1 x 70 mm/16	3,4	2,5	26	31	182	203	790	2/0
32522	1 x 95 mm/16	3,4	2,5	27	32	182	276	920	3/0
32523	1 x 120 mm/16	3,4	2,5	29	34	182	348	990	4/0
32524	1 x 150 mm/16*	3,4	2,5	30	35	182	435	1110	300 kcmil
32525	1 x 150 mm/25	3,4	2,5	30	35	283	435	1220	300 kcmil
32526	1 x 185 mm/16*	3,4	2,5	32	37	182	537	1260	350 kcmil
32527	1 x 185 mm/25	3,4	2,5	32	37	283	537	1370	350 kcmil
32528	1 x 240 mm/16*	3,4	2,5	34	39	182	696	1480	500 kcmil
32529	1 x 240 mm/25	3,4	2,5	34	39	283	696	1530	500 kcmil
32530	1 x 300 mm/25	3,4	2,5	36	41	283	870	1820	600 kcmil
32531	1 x 400 mm/35	3,4	2,5	40	45	394	1160	2220	750 kcmil
32532	1 x 500 mm/35	3,4	2,5	43	48	394	1450	2570	1000 kcmil
NA2XS2Y 12/20 kV									
32533	1 x 50 mm/16	5,5	2,5	28	33	182	145	890	1
32534	1 x 70 mm/16	5,5	2,5	30	35	182	203	970	2/0
32535	1 x 95 mm/16	5,5	2,5	31	36	182	276	1120	3/0
32536	1 x 120 mm/16	5,5	2,5	33	38	182	348	1210	4/0
32537	1 x 150 mm/16*	5,5	2,5	34	39	182	435	1370	300 kcmil
32538	1 x 150 mm/25	5,5	2,5	34	39	283	435	1420	300 kcmil
32539	1 x 185 mm/16*	5,5	2,5	36	41	182	537	1530	350 kcmil
32540	1 x 185 mm/25	5,5	2,5	36	41	283	537	1570	350 kcmil
32541	1 x 240 mm/16*	5,5	2,5	39	44	182	696	1720	500 kcmil
32542	1 x 240 mm/25	5,5	2,5	39	44	283	696	1830	500 kcmil
32543	1 x 300 mm/25	5,5	2,5	41	46	283	870	2070	600 kcmil
32544	1 x 400 mm/35	5,5	2,5	44	49	394	1160	2460	750 kcmil
32545	1 x 500 mm/35	5,5	2,5	47	52	394	1450	2890	1000 kcmil
NA2XS2Y 18/30 kV									
32546	1 x 50 mm/16	8,0	2,5	33	38	182	145	1120	1
32547	1 x 70 mm/16	8,0	2,5	35	40	182	203	1270	2/0
32548	1 x 95 mm/16	8,0	2,5	36	41	182	276	1380	3/0
32549	1 x 120 mm/16	8,0	2,5	38	43	182	348	1530	4/0
32550	1 x 150 mm/25	8,0	2,5	39	44	283	435	1720	300 kcmil
32551	1 x 185 mm/25	8,0	2,5	41	46	283	537	1860	350 kcmil
32552	1 x 240 mm/25	8,0	2,5	43	48	283	696	2110	500 kcmil
32553	1 x 300 mm/25	8,0	2,5	46	51	283	870	2370	600 kcmil
32554	1 x 400 mm/35	8,0	2,5	49	54	394	1160	2820	750 kcmil
32555	1 x 500 mm/35	8,0	2,5	52	57	394	1450	3280	1000 kcmil

* For cables laying in earth a screen-cross section of 16 mm² is permitted. Further types and dimensions on request.

*) Note

AWG sizes are approximate equivalent values. The actual cross-section is in mm² – see page T 15.

N2XS(F)2Y 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated

Cu-conductor, single core, screened, longitudinally water-tight, PE-jacket



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S1 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
 for 6/10 kV = max. 12 kV
 12/20 kV = max. 24 kV
 18/30 kV = max. 36 kV
- **Test voltages**
 for 6/10 kV = 15 kV
 12/20 kV = 30 kV
 18/30 kV = 45 kV
- **Minimum bending radius**
 max. $15 \times \text{cable } \varnothing$

Power ratings table see page T 35f

Cable structure

- Circular bare Cu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Tape of longitudinally water-tight material
- Screen of copper wires and one or two copper tape(s) applied helically
- Inner covering or tape lapping
- PE-outer jacket black, compound DMP2 to HD 620.1, jacket colour black

Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer jacket is resistant to high mechanical stress for laying the cables. This PE-jacket is not flame-resistant (does not conform the test method B, as per VDE 0472 part 804). To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$. See DIN VDE 0298 part 1.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	Screen cross-sec. mm ²	PE-jacket thickness mm	Outer \varnothing ca. mm	Cop. weight kg/km	Weight ca. kg/km	AWG-no. *)
N2XS(F)2Y 6/10 kV								
32560	1 x 35 mm ²	3,4	16	2,5	26	518	1050	2
32561	1 x 50 mm ²	3,4	16	2,5	28	662	1150	1
32562	1 x 70 mm ²	3,4	16	2,5	30	854	1460	2/0
32563	1 x 95 mm ²	3,4	16	2,5	31	1094	1700	3/0
32564	1 x 120 mm ²	3,4	16	2,5	32	1334	2050	4/0
32565	1 x 150 mm ²	3,4	25	2,5	34	1723	2350	300 kcmil
32566	1 x 185 mm ²	3,4	25	2,5	36	2059	2700	350 kcmil
32567	1 x 240 mm ²	3,4	25	2,5	38	2587	3300	500 kcmil
32568	1 x 300 mm ²	3,4	25	2,5	40	3163	3900	600 kcmil
32569	1 x 400 mm ²	3,4	35	2,5	44	4234	4850	750 kcmil
32570	1 x 500 mm ²	3,4	35	2,5	47	5194	6000	1000 kcmil
N2XS(F)2Y 12/20 kV								
32571	1 x 35 mm ²	5,5	16	2,5	31	518	1210	2
32572	1 x 50 mm ²	5,5	16	2,5	33	662	1400	1
32573	1 x 70 mm ²	5,5	16	2,5	34	854	1550	2/0
32574	1 x 95 mm ²	5,5	16	2,5	36	1094	1800	3/0
32575	1 x 120 mm ²	5,5	16	2,5	37	1334	2150	4/0
32576	1 x 150 mm ²	5,5	25	2,5	39	1723	2400	300 kcmil
32577	1 x 185 mm ²	5,5	25	2,5	41	2059	2850	350 kcmil
32578	1 x 240 mm ²	5,5	25	2,5	43	2587	3250	500 kcmil
32579	1 x 300 mm ²	5,5	25	2,5	45	3163	3850	600 kcmil
32580	1 x 400 mm ²	5,5	35	2,5	48	4234	4900	750 kcmil
32581	1 x 500 mm ²	5,5	35	2,5	52	5194	6100	1000 kcmil
N2XS(F)2Y 18/30 kV								
32582	1 x 50 mm ²	8,0	16	2,5	37	662	1700	1
32583	1 x 70 mm ²	8,0	16	2,5	38	854	1950	2/0
32584	1 x 95 mm ²	8,0	16	2,5	40	1094	2300	3/0
32585	1 x 120 mm ²	8,0	16	2,5	42	1334	2600	4/0
32586	1 x 150 mm ²	8,0	25	2,5	43	1723	3000	300 kcmil
32587	1 x 185 mm ²	8,0	25	2,5	45	2059	3350	350 kcmil
32588	1 x 240 mm ²	8,0	25	2,5	47	2587	4100	500 kcmil
32589	1 x 300 mm ²	8,0	25	2,5	50	3163	4800	600 kcmil
32590	1 x 400 mm ²	8,0	35	2,5	53	4234	5750	750 kcmil
32591	1 x 500 mm ²	8,0	35	2,5	56	5194	6700	1000 kcmil

Note

For longitudinally and crosswise water-tight cable type N2XS(F)2Y with PE-copolymer coated aluminium.
Further types and dimensions on request.

*) Note

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

NA2XS(F)2Y 6/10 kV, 12/20 kV, 18/30 kV XLPE-insulated

Alu-conductor, single core, screened, longitudinally water-tight, PE-jacket



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S1 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. 90°C
- **Short circuit temperature** 250°C (short circuit duration up to 5 sec.)
- **Nominal voltages**
 U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
 for 6/10 kV = max. 12 kV
 12/20 kV = max. 24 kV
 18/30 kV = max. 36 kV
- **Test voltages**
 for 6/10 kV = 15 kV
 12/20 kV = 30 kV
 18/30 kV = 45 kV
- **Minimum bending radius**
 max. $15 \times \text{cable } \varnothing$

Power ratings table see page T 35f

Cable structure

- Circular bare alu-conductor of stranded wires to HD 383
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound DIX8 to HD 620.1
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Tape of longitudinally water-tight material
- Screen of copper wires and one or two copper tape(s) applied helically
- Inner covering or tape lapping
- PE-outer jacket black, compound DMP2 to HD 620.1, jacket colour black

Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer jacket is resistant to high mechanical stress for laying the cables. This PE-jacket is not flame-resistant (does not conform the test method B, as per VDE 0472 part 804). To avoid the influence of the outer interferences, an adherent semi-conductive layer is extruded between the conductor and the VPE insulation and also a concentric copper conductor which guarantees the field-limitation and the resistance to the partial discharges $\leq 2 \text{ pC}$ by a measuring volt of $2 U_0$. See DIN VDE 0298 part 1.

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Part No.	No. cores x cross-sec. n x mm ²	Insulation thickness mm	Screen cross-sec. mm ²	PE-jacket thickness mm	Outer \varnothing ca. mm	Cop. weight kg / km	Alu weight kg / km	Weight ca. kg / km	AWG-no. *)	
NA2XS(F)2Y 6/10 kV										
32600	1 x 35	rm/16	3,4	16	2,5	26	182	102	780	2
32601	1 x 50	rm/16	3,4	16	2,5	28	182	145	850	1
32602	1 x 70	rm/16	3,4	16	2,5	30	182	203	980	2/0
32603	1 x 95	rm/16	3,4	16	2,5	31	182	276	1080	3/0
32604	1 x 120	rm/16	3,4	16	2,5	32	182	348	1150	4/0
32605	1 x 150	rm/25	3,4	25	2,5	34	283	435	1280	300 kcmil
32606	1 x 185	rm/25	3,4	25	2,5	36	283	537	1420	350 kcmil
32607	1 x 240	rm/25	3,4	25	2,5	38	283	696	1630	500 kcmil
32608	1 x 300	rm/25	3,4	25	2,5	40	283	870	1950	600 kcmil
32609	1 x 400	rm/35	3,4	35	2,5	44	394	1160	2350	750 kcmil
32610	1 x 500	rm/35	3,4	35	2,5	47	394	1450	2780	1000 kcmil
NA2XS(F)2Y 12/20 kV										
32611	1 x 50	rm/16	5,5	16	2,5	33	182	145	920	1
32612	1 x 70	rm/16	5,5	16	2,5	34	182	203	1030	2/0
32613	1 x 95	rm/16	5,5	16	2,5	36	182	276	1140	3/0
32614	1 x 120	rm/16	5,5	16	2,5	37	182	348	1250	4/0
32615	1 x 150	rm/25	5,5	25	2,5	39	283	435	1320	300 kcmil
32616	1 x 185	rm/25	5,5	25	2,5	41	283	537	1570	350 kcmil
32617	1 x 240	rm/25	5,5	25	2,5	43	283	696	1780	500 kcmil
32618	1 x 300	rm/25	5,5	25	2,5	45	283	870	2100	600 kcmil
32619	1 x 400	rm/35	5,5	35	2,5	48	394	1160	2480	750 kcmil
32620	1 x 500	rm/35	5,5	35	2,5	52	394	1450	2900	1000 kcmil
NA2XS(F)2Y 18/30 kV										
32621	1 x 50	rm/16	8,0	16	2,5	37	182	145	1250	1
32622	1 x 70	rm/16	8,0	16	2,5	38	182	203	1500	2/0
32623	1 x 95	rm/16	8,0	16	2,5	40	182	276	1700	3/0
32624	1 x 120	rm/16	8,0	16	2,5	42	182	348	1800	4/0
32625	1 x 150	rm/25	8,0	25	2,5	43	283	435	2050	300 kcmil
32626	1 x 185	rm/25	8,0	25	2,5	45	283	537	2150	350 kcmil
32627	1 x 240	rm/25	8,0	25	2,5	47	283	696	2400	500 kcmil
32628	1 x 300	rm/25	8,0	25	2,5	50	283	870	2700	600 kcmil
32629	1 x 400	rm/35	8,0	35	2,5	53	394	1160	3200	750 kcmil
32630	1 x 500	rm/35	8,0	35	2,5	56	394	1450	3550	1000 kcmil

*) Note

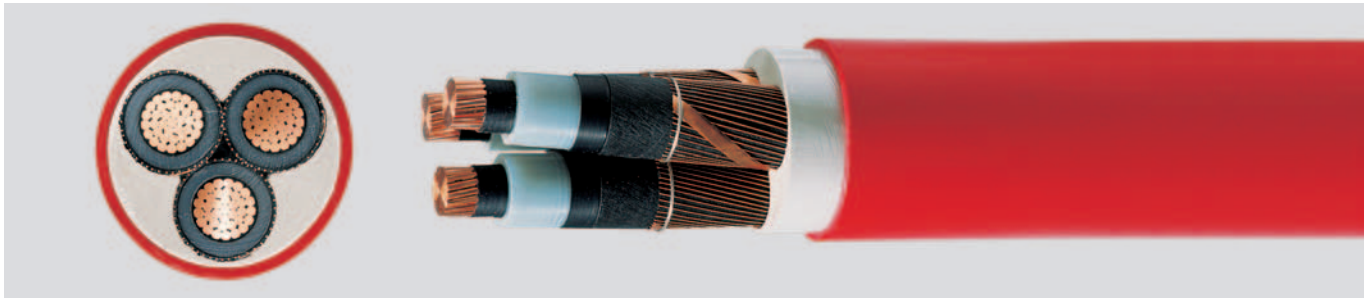
AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.

Note

For longitudinally and crosswise water-tight cable type N2XS(FU)2Y with PE-copolymer coated aluminium.

Further types and dimensions on request.

N2XSEY 3 x . . . 6/10 kV, XLPE-insulated Cu-conductor, PVC-jacket



Technical data

- Three core XLPE-insulated power cables to VDE 0273 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. 90°C
- **Short circuit temperature**
core 250°C
screen 350°C (duration)
(short circuit duration up to 5 sec.)
- **Nominal voltages**
U₀/U 6/10 kV
- **Operating voltages** max. 12 kV
- **Test voltages** 15 kV
- **Test voltages d. c.** 48 kV
- **Power rating**
to DIN VDE 0298 part 2
- **Minimum bending radius**
15 x cable ø
- **Tests**
according to
DIN VDE 0273 und IEC 60502
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Cable structure

- Circular bare Cu-conductor of stranded wires to DIN VDE 0295 cl. 2 and IEC 60228 cl. 2
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE), PE-compound 2X1 to DIN VDE 0207 part 22
- Outer extrusion of semi-conducting coating spliced with the insulation
- Tape of conductive material
- Screen of copper wires and one or two copper tape(s) applied helically
- 3 cores stranded in layer
- Extruded sheath over three cores
- PVC outer jacket red, compound YM5 to DIN VDE 0207 part 5, jacket colour red

Application

Because of its very low dielectric loss factor that remains constant over the entire operating range, a high-grade insulation material on the basis of high-molecular pure polyethylene of cross-linked structure proves very suitable for medium-voltage cables. High operational reliability is assured by the combination of both conducting layers in combination with the insulation. Suitable for installation in indoors and in cable ducts, outdoors as well as for laying on racks for industrial and switching systems and power plants. Limited use when buried in the earth if the PVC outer jacket could be damaged by high mechanical stress.

Installation note

The inner semi-conducting layer, core insulation and outer semi-conducting layer are co-extruded in one process, and thus the both semi-conducting layers are spliced very tightly. We therefore recommend the use of a stripping tool for installation work.

Part No.	No. cores x cross-sec. mm ²	Insulation thickness mm	PVC-jacket thickness mm	Screen cross-sec. mm ²	Outer ø ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no. *)
34339	3 x 25 rm/16	3,4	2,5	16	43	1046	2850	4
34340	3 x 35 rm/16	3,4	2,5	16	48	1210	3300	2
34341	3 x 50 rm/16	3,4	2,5	16	50	1670	3750	1
34342	3 x 70 rm/16	3,4	2,6	16	54	2250	4650	2/0
34343	3 x 95 rm/16	3,4	2,8	16	58	2995	5700	3/0
34344	3 x 120 rm/16	3,4	2,9	16	61	3715	6700	4/0
34345	3 x 150 rm/25	3,4	3,0	25	65	4635	7900	300 kcmil
34346	3 x 185 rm/25	3,4	3,1	25	68	5645	9200	350 kcmil
34347	3 x 240 rm/25	3,4	3,3	25	74	7274	11450	500 kcmil
34348	3 x 300 rm/25	3,4	3,3	25	79	9160	14450	600 kcmil

Power ratings and electrical characteristics

Cross-sec. mm ²	Power ratings		Conductor resistance 20°C Ohm / km	Operating capacity μF / km	Effective resistance 90°C Ohm / km	Inductance per core mH / km
	laying in earth ¹⁾	laying in air ²⁾				
3 x 25 rm/16	149	144	0,727	0,203	0,928	0,399
3 x 35 rm/16	179	175	0,524	0,225	0,669	0,378
3 x 50 rm/16	211	209	0,387	0,249	0,494	0,359
3 x 70 rm/16	258	260	0,268	0,283	0,343	0,338
3 x 95 rm/16	309	315	0,193	0,315	0,247	0,323
3 x 120 rm/16	351	362	0,153	0,345	0,197	0,311
3 x 150 rm/25	394	411	0,124	0,374	0,160	0,302
3 x 185 rm/25	445	469	0,0991	0,406	0,129	0,293
3 x 240 rm/25	517	552	0,0754	0,456	0,0991	0,282
3 x 300 rm/25	583	630	0,0601	0,495	0,0803	0,274

- Conversion factors for laying in earth especially for laying in bundle form and other requirements are noted in DIN VDE 0298 part 2 and 0276 part 1000.
- Conversion factors for laying in air
Air temperature °C 15 20 25 30 35 40 45 50
Conversion factor 1,12 1,08 1,04 1,00 0,96 0,91 0,87 0,82

*) Note

AWG sizes are approximate equivalent values. The actual cross-section is in mm² – see page T 15.

- 1) For ground thermal resistivity of 1 K·m/W, laying depth 0,7 m, Ground temperature 20°C. EVU load grade 0,7
- 2) For laying in air. Air temperature 30°C. EVU load grade 1,0.

ESUY (H00V-D) and ESY Earth conductors



Technical data

ESUY (H00V-D)

- Earthing cable of braid wires over core strands in adapted to DIN VDE 0283 part 3, and EN 61138, DIN 46438, DIN 46440
- **Conductor resistance** at 20°C according DIN VDE 0283 part 100
- **Temperature range** -5°C to +70°C
- **Nominal voltage** as per VDE 0105 part 1/5.75
- **Test voltage** 2000 V
- **Spark test** (during winding)
16 mm² to 35 mm² – 5000 V
50 mm² to 70 mm² – 6000 V
95 mm² to 240 mm² – 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimal bending radius** approx. 12x cable Ø

ESY

- Earthing cable in adapted to DIN VDE 0283 part 3 and EN 61138, DIN 46438, DIN 46440
- for further technical datas from conductor resistance – see above ESUY (H00V-D)

Cable structure

ESUY (H00V-D)

- Bare copper, extra fine wire conductors, high flexible
- Braiding of bare copper wires over the stranded copper conductor
- PVC-jacket, transparent (glass clear), compound type TM2 according DIN VDE 0281 part 1

ESY

- Bare copper, fine wire conductors
- Copper conductors of stranded wires
- PVC-jacket, transparent (glass clear), compound type TM2 according DIN VDE 0281 part 1

Application

ESUY (H00V-D) ESY

These high flexible earth conductors are used for earthing of portable equipment and short-circuiting. These cables specially perform a protective function in repair live working of high voltage power supply company as "EVU", in railway systems, failing current equipment, alternating current systems and in networks of transmission and distribution. Because of that these are designated as safety cables. These earthing cables offer special characteristics with low weights, high flexibility to a wide temperature range and the behavior in high temperature. The protective sheath over conductor assures the essential function for protection against the mechanical and chemical stresses.

Features

For these cable types no nominal voltages are mentioned, as these are: only used for earthing performances.

Note

For further requirements see European Norm EN 61230 and DIN VDE 0683 part 100:
"Live working – Portable equipment for earthing and earthing"

Type ESUY (H00V-D), high flexible

Part No.	Conductor sizes mm ²	Stranding x diameter	Outer Ø ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no. *)
28930	16	4200 x 0,07	9,1	194	230	6
28931	25	3192 x 0,10	10,5	280	335	4
28932	35	4480 x 0,10	12,5	415	475	2
28933	50	6383 x 0,10	14,2	585	670	1
28934	70	8918 x 0,10	16,8	820	905	2/0
28935	95	12100 x 0,10	19,8	1090	1220	3/0
28936	120	15300 x 0,10	21,5	1360	1505	4/0
28937	150	19152 x 0,10	24,0	1650	1940	300 kcmil
28938	185	23580 x 0,10	27,6	2150	2390	350 kcmil
28939	240	30600 x 0,10	31,0	2750	3090	500 kcmil

Type ESY, flexible

Part No.	Conductor sizes mm ²	Stranding x diameter	Outer Ø ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-no. *)
28940	16	525 x 0,20	8,5	155	185	6
28941	25	798 x 0,20	10,0	240	270	4
28942	35	1120 x 0,20	12,5	336	390	2
28943	50	1617 x 0,20	14,0	480	575	1
28944	70	2254 x 0,20	17,2	672	810	2/0
28945	95	3087 x 0,20	19,5	912	1080	3/0
28946	120	3822 x 0,20	22,8	1152	1320	4/0
28947	150	4802 x 0,20	25,4	1440	1680	300 kcmil

*) Note

AWG sizes are approximate equivalent values.
The actual cross-section is in mm² – see page T 15.



Photo: HELUKABEL®

HELUKABEL® presents at Baltic



It is important to know that for all exporters of machines and machinery plants as well as for measuring and control technique, HELUKABEL® is certified according to the GOST-R terms of references for the usual electrical cables and wires in respect of Eastern European and Russian market.