

APPLICATION

Cable for power distribution and power supply stations used in Utility and Industrial applications, for rated voltages up to 18/30kV. Suitable for fixed installations, directly buried. Good mechanical protection.

CABLE DESIGNATION

- A:** Cu / XLPE / Cu Tape screen / Galv. Steel Wire armour / PVC or PE
- B:** Cu / XLPE / Cu Wire screen / Galv. Steel Wire armour / PVC or PE
- C:** Al / XLPE / Cu Tape screen / Galv. Steel Wire armour / PVC or PE
- D:** Al / XLPE / Cu Wire screen / Galv. Steel Wire armour / PVC or PE
- E:** Cu / XLPE / Cu Tape screen / Steel Tape armour / PVC or PE
- F:** Cu / XLPE / Cu Wire screen / Steel Tape armour / PVC or PE
- G:** Al / XLPE / Cu Tape screen / Steel Tape armour / PVC or PE
- H:** Al / XLPE / Cu Wire screen / Steel Tape armour / PVC or PE

CONSTRUCTION CHARACTERISTICS

Conductor

Plain annealed Copper or Aluminium, circular, stranded, class 2 per IEC 60228.

Insulation

Semi-conductive screen over the conductor, XLPE (cross-linked polyethylene) insulation and semi conductive screen over the insulation (strippable¹), applied by simultaneous extrusion in just one operation.

Metallic Screen

Copper wire screen – annealed copper wires helically wound and an equalising copper tape applied in an open counter-helix. Poly Propylene tape is applied over the screen.

Or **Copper tape screen** – a copper tape, helically applied with overlap.

Fillers

Extruded polymeric material.

Inner Sheath

Extruded PVC or PE.

Armour

Steel double tape, helically applied.

Or Galvanized steel wires, helically applied.

Oversheath

Extruded PVC or PE.

Optionally, a Low Smoke Halogen Free thermoplastic compound can be used for cables with need for improved fire behaviour.



MEDIUM VOLTAGE CABLES

Cu or Al - XLPE - Cu - STA or SWA - PVC or PE
Three Core Cable
Armoured - XLPE Insulation - IEC 60502-2

GENERAL CHARACTERISTICS

Construction and test standards	IEC 60228 IEC 60502-2
Rated voltage $U_0/U(U_m)$	3.6/6 (7.2) kV · 6/10 (12) kV · 8.7/15 (17.5) kV · 12/20 (24) kV · 18/30 (36) kV
Standard cross-section of wire screen (mm ²)	16 · 25 · 35
Test voltage	3.5 x U_0
Conductor maximum operating temperature	90°C
Maximum short-circuit temperature	250°C (t ≤ 5s)
Minimum bending radius – during installation (mm)	15 x d
Minimum bending radius – after installation (mm)	12 x d
Maximum pulling force over conductor (N)	Copper – 50 x S Aluminium – 30 x S
Flame retardant (for PVC oversheath)	IEC 60332-1-2 · EN 60332-1-2 (cable vertically mounted, length of charred cable ≤ 540 mm).
Fire retardant (for PVC oversheath, upon agreement)	IEC 60332-3-24 · EN 60332-3-24 (bunch of cables vertically mounted on a ladder, length of charred cable ≤ 2.5 cm)

S – conductor cross-section (mm²)
d – cable outer diameter (mm)

ELECTRICAL AND DIMENSIONAL CHARACTERISTICS

Copper Conductor Constructions

Cu / XLPE / Cu Tape screen / Galv. Steel Wire armour / PVC

Voltage		Conductor cross-section (mm ²)	Diameter over insulation (mm)	Approx. outer diameter (mm)	Approx. weight B-PVC (kg/km)	Current carrying capacity Φ		Cond. max. short-circuit current, t=1s (kA)	Max symmetrical short-circuit for 3 second (kA)	Cond. DC resistance @ 20°C (Ω/km)	Inductance Φ (mH/km)	Capacitance (μF/km)
U_0/U (kV)	U_m (kV)					In air (A)	Buried (A)					
Copper conductor												
3.6/6	7.2	25	13.8	48	3900	142	132	3.6	2.0	0.7270	0.38	0.27
		35	14.8	49	4300	170	157	5.0	2.9	0.5240	0.36	0.30
		50	16.0	52	4980	204	186	7.1	4.1	0.3870	0.34	0.33
		70	17.6	56	5940	253	227	10.0	5.8	0.2680	0.32	0.38
		95	19.4	60	7220	304	270	13.6	7.8	0.1930	0.30	0.43
		120	20.8	64	8300	351	307	17.2	9.9	0.1530	0.29	0.48
		150	22.3	68	9460	398	344	21.4	12.3	0.1240	0.28	0.51
		185	23.8	72	11072	455	388	26.5	15.3	0.0991	0.28	0.54
		240	26.6	79	14150	531	447	34.3	19.8	0.0754	0.27	0.60
		300	28.6	86	16790	606	504	42.9	24.8	0.0601	0.26	0.63
400	32.6	90	19840	696	570	57.2	33.0	0.0470	0.26	0.66		

MEDIUM VOLTAGE CABLES

Cu or Al - XLPE - Cu - STA or SWA - PVC or PE
 Three Core Cable
 Armoured - XLPE Insulation - IEC 60502-2

Voltage		Conductor cross-section (mm ²)	Diameter over insulation (mm)	Approx. outer diameter (mm)	Approx. weight B-PVC (kg/km)	Current carrying capacity ⊗		Cond. max. short-circuit current, t=1s (kA)	Max symmetrical short-circuit for 3 second (kA)	Cond. DC resistance @ 20°C (Ω /km)	Inductance ⊗ (mH/km)	Capacitance (μ F/km)
U ₀ / U (kV)	U _m (kV)					In air (A)	Buried (A)					
Copper conductor												
6/10	12	25	15.6	52	4320	145	133	3.6	2.0	0.7270	0.41	0.23
		35	16.6	54	4760	175	167	5.0	2.9	0.5240	0.39	0.25
		50	17.8	57	5410	210	200	7.1	4.1	0.3870	0.37	0.28
		70	19.4	61	6420	260	245	10.0	5.8	0.2680	0.35	0.31
		95	21.2	65	7680	320	295	13.6	7.8	0.1930	0.33	0.35
		120	22.6	69	8800	365	335	17.2	9.9	0.1530	0.32	0.38
		150	24.1	74	10720	415	375	21.4	12.3	0.1240	0.31	0.41
		185	25.8	78	12400	470	420	26.5	15.3	0.0991	0.30	0.45
		240	28.2	83	14610	560	485	34.3	19.8	0.0754	0.29	0.50
		300	30.4	89	17100	630	540	42.9	24.8	0.0601	0.28	0.54
		400	33.4	92	20350	696	645	57.2	33.0	0.0470	0.26	0.59
8.7/15	17.5	25	17.8	58	5150	161	152	3.6	2.0	0.7270	0.42	0.18
		35	18.8	60	5600	195	180	5.0	2.9	0.5240	0.39	0.20
		50	20.0	63	6330	230	215	7.1	4.1	0.3870	0.37	0.22
		70	21.6	67	7350	285	280	10.0	5.8	0.2680	0.35	0.25
		95	23.4	71	8670	338	298	13.6	7.8	0.1930	0.34	0.28
		120	24.8	76	10630	388	340	17.2	9.9	0.1530	0.32	0.30
		150	26.3	80	11890	449	390	21.4	12.3	0.1240	0.31	0.32
		185	28.0	84	13620	505	437	26.5	15.3	0.0991	0.30	0.34
		240	30.4	89	15900	580	490	34.3	19.8	0.0754	0.29	0.38
		300	32.6	95	18470	610	545	42.9	24.8	0.0601	0.28	0.42
		400	35.6	103	20240	696	645	57.2	33.0	0.0470	0.27	0.46
12/20	24	35	21.2	56.0	6260	172	170	5.0	2.9	0.5240	0.43	0.17
		50	22.4	59.0	6980	205	200	7.1	4.1	0.3870	0.41	0.19
		70	24.0	63.0	8100	253	245	10.0	5.8	0.2680	0.37	0.21
		95	25.8	67.0	10300	307	293	13.6	7.8	0.1930	0.36	0.23
		120	27.2	70.5	11500	352	333	17.2	9.9	0.1530	0.34	0.25
		150	28.7	73.5	12790	396	373	21.4	12.3	0.1240	0.33	0.27
		185	30.4	76.5	14500	469	421	26.5	15.3	0.0991	0.32	0.28
		240	32.8	82.5	16870	549	486	34.3	19.8	0.0754	0.31	0.32
		300	35.0	88.5	19480	625	547	42.9	24.8	0.0601	0.30	0.35
18/30	36	50	27.8	86	10410	225	205	7.5	4.1	0.3870	0.45	0.14
		70	29.4	90	11630	275	250	10.0	5.8	0.2680	0.41	0.16
		95	31.2	95	13210	330	300	13.6	7.8	0.1930	0.39	0.18
		120	32.6	98	14500	380	335	17.2	9.9	0.1530	0.38	0.19
		150	34.1	102	15880	425	375	21.5	12.3	0.1240	0.36	0.20
		185	35.8	106	17740	485	420	26.5	15.3	0.0991	0.35	0.21
		240	38.2	111	20180	570	485	34.3	19.8	0.0754	0.34	0.24
		300	40.4	117	22920	640	540	42.9	24.8	0.0601	0.32	0.25

MEDIUM VOLTAGE CABLES

Cu or Al - XLPE - Cu - STA or SWA - PVC or PE
Three Core Cable
Armored - XLPE Insulation - IEC 60502-2

ELECTRICAL AND DIMENSIONAL CHARACTERISTICS

Aluminium conductor constructions

Voltage		Conductor cross-section (mm ²)	Diameter over insulation (mm)	Approx. outer diameter (mm)	Approx. weight B-PVC (kg/km)	Current carrying capacity A		Cond. max. short-circuit current, t=1s (kA)	Max symmetrical short-circuit for 3 second (kA)	Cond. DC resistance @ 20°C (Ω /km)	Inductance mH/km	Capacitance $(\mu\text{F/km})$
U ₀ / U (kV)	U _m (kV)					In air (A)	Buried (A)					
Aluminium conductor												
3.6/6	7.2	25	13.8	48	3480	110	103	2.4	1.3	1.2000	0.38	0.27
		35	14.8	49	3680	135	130	3.3	1.9	0.8680	0.36	0.30
		50	16.0	52	4120	160	155	4.7	2.7	0.6410	0.35	0.33
		70	17.6	56	4680	200	190	6.6	3.8	0.4430	0.32	0.38
		95	19.4	60	5440	240	225	9.0	5.1	0.3200	0.30	0.42
		120	20.8	64	6050	280	260	11.3	6.5	0.2530	0.29	0.47
		150	22.3	68	6680	315	290	14.2	8.1	0.2060	0.29	0.51
		185	23.8	72	7540	360	325	17.5	10.0	0.1640	0.28	0.55
		240	26.6	79	9520	425	340	22.7	13.0	0.1250	0.27	0.60
		300	28.6	86	10980	485	405	28.3	16.3	0.1000	0.26	0.63
		400	32.6	90	11740	545	451	37.8	21.8	0.0778	0.26	0.66
6/10	12	25	15.6	52	3820	110	111	2.4	1.3	1.2000	0.40	0.22
		35	16.6	54	4080	135	130	3.3	1.9	0.8680	0.39	0.24
		50	17.8	57	4500	160	155	4.7	2.7	0.6410	0.37	0.26
		70	19.4	61	5110	200	190	6.6	3.8	0.4430	0.34	0.30
		95	21.2	65	5840	240	225	9.0	5.1	0.3200	0.32	0.33
		120	22.6	69	6500	280	260	11.3	6.5	0.2530	0.31	0.37
		150	24.1	74	7900	315	290	14.2	8.1	0.2060	0.30	0.39
		185	25.8	78	8800	360	325	17.5	10.0	0.1640	0.29	0.43
		240	28.2	83	9940	425	370	22.7	13.0	0.1250	0.28	0.47
		300	30.4	89	11240	485	425	28.3	16.3	0.1000	0.27	0.53
		400	33.4	92	12930	562	487	37.8	21.8	0.0778	0.26	0.59
8.7/15	17.5	25	17.8	58	4670	110	110	2.4	1.3	1.2000	0.43	0.18
		35	18.8	60	4930	135	130	3.3	1.9	0.8680	0.41	0.19
		50	20.0	63	5420	160	155	4.7	2.7	0.6410	0.39	0.21
		70	21.6	67	6030	200	190	6.6	3.8	0.4430	0.36	0.24
		95	23.4	71	6840	240	225	9.0	5.1	0.3200	0.34	0.27
		120	24.8	76	8320	280	260	11.3	6.5	0.2530	0.33	0.29
		150	26.3	80	9050	315	290	14.2	8.1	0.2060	0.32	0.31
		185	28.0	84	10000	360	325	17.5	10.0	0.1640	0.31	0.34
		240	30.4	89	11220	425	370	22.7	13.0	0.1250	0.30	0.37
		300	32.6	95	12590	485	425	28.3	16.3	0.1000	0.29	0.42
		400	35.6	103	13010	562	487	37.8	21.8	0.0778	0.27	0.46

MEDIUM VOLTAGE CABLES

Cu or Al - XLPE - Cu - STA or SWA - PVC or PE
Three Core Cable
Armoured - XLPE Insulation - IEC 60502-2

Voltage		Conductor cross-section (mm ²)	Diameter over insulation (mm)	Approx. outer diameter (mm)	Approx. weight B-PVC (kg/km)	Current carrying capacity ⊗		Cond. max. short-circuit current, t=1s (kA)	Max symmetrical short-circuit for 3 second (kA)	Cond. DC resistance @ 20°C (Ω /km)	Inductance ⊗ (mH/km)	Capacitance (μ F/km)
U ₀ / U (kV)	U _m (kV)					In air (A)	Buried (A)					
Aluminium conductor												
12/20	24	35	21.2	56.0	5630	136	132	3.3	1.9	0.8680	0.43	0.17
		50	22.4	58.5	6100	162	156	4.7	2.7	0.6410	0.41	0.18
		70	24.0	62.5	6830	200	190	6.6	3.8	0.4430	0.38	0.21
		95	25.8	66.5	8540	242	227	9.0	5.1	0.3200	0.36	0.23
		120	27.2	70.5	9270	278	259	11.3	6.5	0.2530	0.34	0.25
		150	28.7	73.5	10060	313	289	14.2	8.1	0.2060	0.33	0.27
		185	30.4	76.5	11070	358	328	17.5	10.0	0.1640	0.32	0.29
		240	32.8	82.5	12370	422	379	22.7	13.0	0.1250	0.31	0.32
18/30	36	300	35.0	88.5	13830	481	427	28.3	16.3	0.1000	0.30	0.35
		50	27.8	86	9490	175	160	4.7	2.7	0.6410	0.45	0.16
		70	29.4	90	10310	215	195	6.6	3.8	0.4430	0.43	0.17
		95	31.2	95	11380	260	230	9.0	5.1	0.3200	0.41	0.19
		120	32.6	98	12190	295	265	11.3	6.5	0.2530	0.39	0.20
		150	34.1	102	13040	335	295	14.2	8.1	0.2060	0.38	0.22
		185	35.8	106	14130	380	330	17.5	10.0	0.1640	0.36	0.23
		240	38.2	111	15500	445	380	22.7	13.0	0.1250	0.35	0.25
		300	40.4	117	17050	480	444	28.3	16.3	0.1000	0.32	0.26

*Only for steel tape armoured or SWA cables.

Current carrying capacity calculated considering the following conditions:

Maximum conductor temperature = 90°C

Cables in air: Ambient temperature = 30°C

Cables directly buried: Ground temperature = 15°C • Depth of laying = 0.5 m • Thermal resistivity of soil = 1.5 K.m/W