X-VOLT® Al TSLF

Cable for fixed installations.

BASED ON: HD 620-10K

E_{ca}

APPLICATION

X-VOLT® TSLF is a halogen free cable for fixed installations.
Suitable for transport and distribution of electric power in medium voltage networks.
This cable is suitable for indoor, outdoor and buried installations.

CONSTRUCTION

Conductor
Aluminium, class 2 according to EN 60228 and IEC 60228.
Hygroscopic tapes applied to achieve longitudinal watertightness on the conductor.
Conductor screen
Cross-linked semiconductor screen applied over conductor in a triple-extrusion process.
Insulation
Cross-linked polyethylene insulation type DIX8 according to HD 620-1; natural colour.
Cross-linked in catenary line with nitrogen atmosphere.
Insulation screen
Cross-linked semiconductor screen applied over insulation in a triple-extrusion process. Bonded to the insulation layer.
Longitudinal water-blocking
Hygroscopic tape completely covering the screen.
Metallic screen
Metallic screen with copper wires, applied over the semi-conducting swellable tape.
Radial water-blocking barrier
Made up of an aluminium foil/polymer laminate bonded to the outer sheath.
Outer sheath
Polyethylene type DMP 17 according to HD 620-1 (with conductive covering).
Black colour.

CHARACTERISTICS

Electrical performance
Maximum voltage: 12kV, 24kV and 36kV.

Thermal performance
Maximum conductor temperature: 90°C.
Maximum short-circuit temperature: 250°C (max. 5 s).
Minimum installation temperature: -20°C.
Minimum service temperature: -40°C (fixed and protected installation).

Fire performance
Reaction to fire CPR: E_{ca} according to EN 50575.
Halogen free according to EN 60754-1 / IEC 60754-1.
Low corrosive gases emission according to EN 60754-2 / IEC 60754-2.

Mechanical performance
Minimum bending radius, fixed: 15x cable diameter.
Minimum bending radius during installation: 30x cable diameter.
Abrasion resistant.
Tear resistant.

Environmental performance
Water resistance: AD8 Submersion.

Installation conditions
Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE

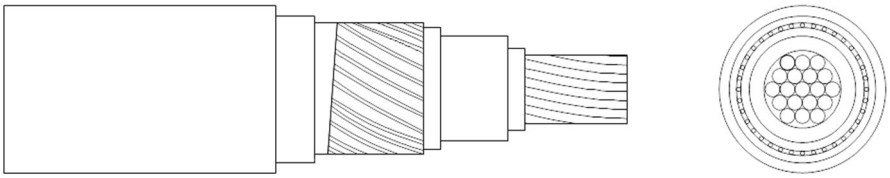
Based on
HD 620-10K

CPR (Construction Products Regulation)
E_{ca}

sales@topcable.com | www.topcable.com

X-VOLT® Al TSLF

DIMENSIONS & ADMISSIBLE INTENSITIES



X-VOLT® TSLF 12kV

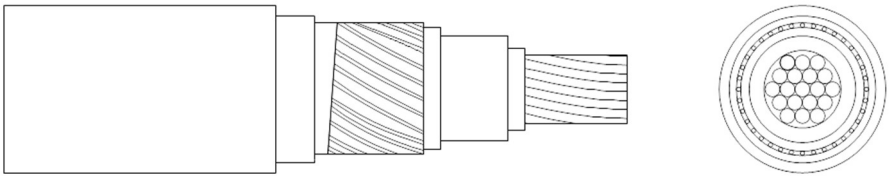
Cross-section (mm^2)	Conductor Diameter (mm)	Insulation Diameter (mm)	Metallic Screen (mm^2)	Screen short-circuit Adiabatic current (kA-1s) [3]	Sheath Thickness (mm)	External Diameter (mm)	Weight (Kg/Km)	R max. 20°C (Ω/km)	X (Ω/km)	C (µF/km)	Open air (A) [1]		Buried (A) [2]	
											Trefoil	Flat spaced	Trefoil	Flat spaced
1 x 300	20,3	28,1	35	3,96	2,1	36,0	1.640	0,100	0,095	0,557	600	704	438	443
1 x 400	23,0	30,8	35	4,07	2,2	38,9	1.960	0,0778	0,092	0,617	700	800	498	494
1 x 500	26,5	34,8	35	4,38	2,3	43,1	2.320	0,0605	0,090	0,707	808	955	574	572
1 x 630	30,1	38,4	35	4,59	2,4	46,9	2.820	0,0469	0,087	0,788	931	1.092	652	647
1 x 800	34,2	43,3	50	5,90	2,6	52,2	3.575	0,0367	0,086	0,898	1.077	1.253	743	736

[1] Open air installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation and ambient temperature of 25 °C; protected from direct sun radiation and with adequate ventilation (supported by cleats and hangers or on perforated tray).
[2] Buried installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation direct buried at a depth of 0,7 m, ground temperature of 15 °C and soil thermal resistivity of 1,5 K·m/W.
[3] Initial temperature=75°C. Final temperature=150°C.

Reactance (X) is calculated at 50 Hz and for three single-core cables (in triangle or trefoil formation).
Capacitance values (C) are calculated in base to dimensional items of the cables that are in this specification.

X-VOLT® Al TSLF

DIMENSIONS & ADMISSIBLE INTENSITIES



X-VOLT® TSLF 24kV

Cross-section (mm^2)	Conductor Diameter (mm)	Insulation Diameter (mm)	Metallic Screen (mm^2)	Screen short-circuit Adiabatic current (kA-1s) [3]	Sheath Thickness (mm)	External Diameter (mm)	Weight (Kg/Km)	R max. 20°C (Ω/km)	X (Ω/km)	C (µF/km)	Open air (A) [1]		Buried (A) [2]	
											Trefoil	Flat spaced	Trefoil	Flat spaced
1 x 50	8,0	20,0	16	2,22	1,8	26,9	675	0,641	0,135	0,186	191	231	160	165
1 x 95	11,3	22,3	25	2,87	1,9	30,2	925	0,320	0,121	0,233	291	352	232	240
1 x 150	14,1	25,1	25	2,97	2,0	33,1	1.135	0,206	0,113	0,273	383	458	295	303
1 x 185	15,7	26,7	35	3,96	2,1	34,6	1.370	0,164	0,109	0,296	440	524	332	340
1 x 240	18,1	29,1	35	4,06	2,2	37,5	1.605	0,125	0,105	0,330	522	617	389	395
1 x 300	20,3	31,3	35	4,17	2,2	39,4	1.820	0,100	0,101	0,360	600	704	438	443
1 x 400	23,0	34,6	35	4,37	2,3	42,9	2.200	0,0778	0,0986	0,407	700	800	498	494
1 x 500	26,5	38,6	35	4,58	2,4	47,1	2.580	0,0605	0,0953	0,463	808	955	574	572
1 x 630	30,1	42,2	50	5,90	2,5	50,9	3.200	0,0469	0,0922	0,513	931	1.092	652	647
1 x 800	34,2	47,1	50	6,21	2,8	56,4	3.900	0,0367	0,0906	0,581	1.077	1.253	743	736
1 x 1000	38,5	51,4	50	6,52	2,9	60,9	4.660	0,0291	0,088	0,641	1.235	1.428	843	829
3 x 1 x 50	8,0	20,0	16	2,22	1,8	57,9	2.045	0,641	0,135	0,186	191	-	160	-
3 x 1 x 95	11,3	22,3	25	2,87	1,9	65,0	2.800	0,320	0,121	0,233	291	-	232	-
3 x 1 x 150	14,1	25,1	25	2,97	2,0	71,1	3.440	0,206	0,113	0,273	383	-	295	-
3 x 1 x 185	15,7	26,7	35	3,96	2,1	74,4	4.145	0,110	0,109	0,296	440	-	332	-
3 x 1 x 240	18,1	29,1	35	4,06	2,2	80,6	4.865	0,125	0,105	0,330	522	-	389	-
3 x 1 x 300	20,3	31,3	35	4,17	2,2	84,7	5.510	0,100	0,101	0,360	600	-	438	-
3 x 1 x 400	23,0	34,6	35	4,37	2,3	92,2	6.660	0,0778	0,0986	0,407	700	-	498	-
3 x 1 x 630	30,1	42,2	50	5,90	2,5	109,4	9.700	0,0469	0,0922	0,513	931	-	652	-

[1] Open air installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation and ambient temperature of 25 °C; protected from direct sun radiation and with adequate ventilation (supported by cleats and hangers or on perforated tray).
[2] Buried installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation direct buried at a depth of 0,7 m, ground temperature of 15 °C and soil thermal resistivity of 1,5 K·m/W.
[3] Initial temperature=75°C. Final temperature=150°C.

Reactance (X) is calculated at 50 Hz and for three single-core cables (in triangle or trefoil formation).
Capacitance values (C) are calculated in base to dimensional items of the cables that are in this specification.

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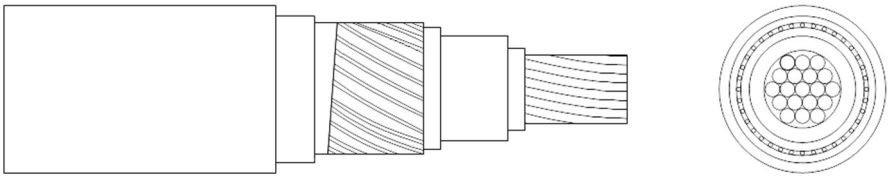
DIMENSIONS & ADMISSIBLE INTENSITIES



X-VOLT® TSLF 36kV

Cross-section (mm^2)	Conductor Diameter (mm)	Insulation Diameter (mm)	Metallic Screen (mm^2)	Screen short-circuit Adiabatic current (kA-1s) [3]	Sheath Thickness (mm)	External Diameter (mm)	Weight (Kg/Km)	R max. 20°C (Ω/km)	X (Ω/km)	C (µF/km)	Open air (A) [1]		Buried (A) [2]	
											Trefoil	Flat spaced	Trefoil	Flat spaced
1 x 50	8,0	23,6	25	2,87	2,0	31,2	895	0,641	0,145	0,144	191	230	159	164
1 x 95	11,3	26,9	25	3,08	2,1	34,7	1.150	0,320	0,130	0,177	291	352	232	240
1 x 120	12,9	28,5	35	3,96	2,1	36,3	1.340	0,253	0,124	0,192	337	406	264	273
1 x 150	14,1	29,7	35	4,06	2,2	37,8	1.465	0,206	0,121	0,205	383	458	295	303
1 x 185	15,7	31,3	35	4,17	2,2	39,4	1.625	0,164	0,117	0,220	440	524	332	340
1 x 240	18,1	33,7	35	4,27	2,3	42,0	1.875	0,125	0,112	0,244	522	617	389	395
1 x 300	20,3	35,9	35	4,48	2,4	44,4	2.130	0,100	0,108	0,266	600	704	438	443
1 x 400	23,0	39,2	35	4,69	2,5	47,9	2.535	0,0778	0,105	0,298	700	800	498	494
1 x 500	26,5	44,6	35	5,11	2,6	53,5	3.065	0,0605	0,103	0,312	808	955	574	572
1 x 630	30,1	46,8	50	6,21	2,7	55,9	3.595	0,0469	0,0981	0,371	931	1.092	652	647
1 x 800	34,2	51,7	50	6,52	3,0	61,4	4.335	0,0367	0,0960	0,418	1.077	1.253	743	736
3 x 1 x 50	8,0	23,6	25	2,87	2,0	67,1	2.710	0,641	0,145	0,144	191	-	159	-
3 x 1 x 95	11,3	26,9	25	3,08	2,1	74,7	3.485	0,320	0,130	0,177	291	-	232	-
3 x 1 x 120	12,9	28,5	35	3,96	2,1	78,1	4.055	0,253	0,124	0,192	337	-	264	-
3 x 1 x 150	14,1	29,7	35	4,06	2,2	81,2	4.440	0,206	0,121	0,205	383	-	295	-
3 x 1 x 185	15,7	31,3	35	4,17	2,2	84,6	5.155	0,164	0,117	0,220	440	-	332	-
3 x 1 x 240	18,1	33,7	35	4,27	2,3	90,3	5.685	0,125	0,112	0,244	522	-	389	-
3 x 1 x 300	20,3	35,9	35	4,48	2,4	95,4	6.455	0,100	0,108	0,266	600	-	438	-
3 x 1 x 400	23,0	39,2	35	4,69	2,5	102,9	7.675	0,0778	0,105	0,298	700	-	498	-

[1] Open air installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation and ambient temperature of 25 °C; protected from direct sun radiation and with adequate ventilation (supported by cleats and hangers or on perforated tray).
[2] Buried installation according to IEC 60502-2: three single-core cables in trefoil or flat spaced formation direct buried at a depth of 0,7 m, ground temperature of 15 °C and soil thermal resistivity of 1,5 K·m/W.
[3] Initial temperature=75°C. Final temperature=150°C.

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SHORT-CIRCUIT CURRENT-CARRYING CAPACITIES

Time (s)	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm²	299	211	173	134	94	77	67	60	55

CORRECTION FACTORS FOR AIR TEMPERATURE

Air T. (°C)	20	25	30	35	40	45	50	55	60
Factor	1,04	1	0,96	0,92	0,88	0,84	0,79	0,73	0,68

CORRECTION FACTORS FOR GROUND TEMPERATURE

Ground T. (°C)	10	15	20	25	30	35	40	45	50
Factor	1,03	1	0,96	0,92	0,89	0,86	0,82	0,77	0,73

CORRECTION FACTORS FOR THERMAL RESISTIVITY OF THE GROUND IN CABLES DIRECTLY BURIED

Moisture degree of soil	Very Damp	Slightly Damp	Slightly dry	Dry	Very dry	Very dry
Thermal resist. (K·m/W)	**0,8**	**1**	**1,5**	**2**	**2,5**	**3**
50 mm²	1,26	1,16	1	0,89	0,81	0,74
95 mm²	1,28	1,18	1	0,89	0,80	0,74
120 mm²	1,28	1,18	1	0,88	0,80	0,74
150 mm²	1,28	1,18	1	0,88	0,80	0,74
185 mm²	1,29	1,18	1	0,88	0,80	0,74
240 mm²	1,29	1,18	1	0,88	0,80	0,73
300 mm²	1,30	1,19	1	0,88	0,80	0,73
400 mm²	1,30	1,19	1	0,88	0,79	0,73

Other correction factors (for grouping cables, for harmonic currents), that are not in this specification, can be applied. Further information can be found in IEC 60502-2.