

X-VOLT[®] AL (-OL)

HEPRZ1

Medium Voltage aluminium cable, HEPR insulation.

ACCORDING TO: UNE-HD 620-9E (type 9E-1) / NI 56.43.01



F_{ca}

APPLICATION

X-VOLT[®] HEPRZ1 AL is a Medium Voltage aluminium cable for the transmission and distribution of electricity.

CONSTRUCTION

Conductor

Aluminium class 2 according to EN 60228 and IEC 60228.

Conductor screen

Screen over the conductor, made of thermosetting semiconductor material.

Insulation

High module ethylene propylene rubber (HEPR) type DIH-2 according to HD 620-1, in dry atmosphere catenary tube, through a triple layer extrusion process.

Insulation screen

Screen over the insulation, made of thermosetting and strippable semiconductor material.

Metallic screen

Screen of copper wires and copper tape, with a minimum cross-section of 16mm².

Separator

Polyester tape completely covering the screen to facilitate the stripping of the outer sheath.

Optionally, substituted by hygroscopic tape (cables with longitudinal water tightness, type -OL).

Outer sheath

Polyolefin, type DMZ1 according to HD 620-1.
Red colour.

CHARACTERISTICS



Electrical performance

Medium Voltage: 12/20 (24) kV
18/30 (36) kV



Thermal performance

Maximum conductor temperature: 105°C.
Maximum short-circuit temperature: 250°C (max 5 s).
Minimum service temperature: -15°C.



Fire performance

Reaction to fire CPR: F_{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: 20x cable diameter.
Abrasion resistant.
Tear resistant.



Environmental performance

UV Resistant according to UNE 211605.
Water resistance: AD7 Immersion.



Installation conditions

Open Air.
Buried.
In conduit.

STANDARDS / COMPLIANCE



According to
UNE-HD 620-9E (type 9E-1) / NI 56.43.01



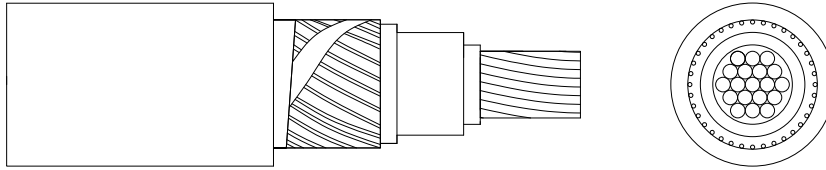
Standards and approvals
AENOR



CPR (Construction Products Regulation)
F_{ca}



DIMENSIONS & ADMISSIBLE INTENSITIES



X-VOLT [®] HEPRZ1 12/20 (24) kV										
Cross-section (mm ²)	Screen (mm ²)	Conductor Diameter (mm)	Insulation Diameter (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
1 x 50	H16	7,9	17,5	24,2	680	0,641	0,130	0,246	180	145
1 x 95	H16	11,1	20,3	27,0	865	0,320	0,115	0,322	275	215
1 x 95	H25	11,1	20,3	27,0	970	0,320	0,114	0,322	275	215
1 x 120 *	H16	12,9	22,1	29,6	1.015	0,253	0,112	0,358	320	245
1 x 150	H16	14,0	23,2	30,7	1.110	0,206	0,109	0,382	360	275
1 x 150	H25	14,0	23,2	30,7	1.110	0,206	0,109	0,382	360	275
1 x 185 *	H16	15,5	25,1	32,6	1.275	0,164	0,106	0,397	415	315
1 x 240	H16	17,9	27,5	34,6	1.490	0,125	0,101	0,444	495	365
1 x 240	H25	17,9	27,5	35,0	1.580	0,125	0,101	0,444	495	365
1 x 300 *	H16	20,2	29,8	37,3	1.715	0,100	0,098	0,489	565	410
1 x 300 *	H25	20,2	29,8	37,3	1.800	0,100	0,098	0,489	565	410
1 x 400	H16	22,8	33,0	41,1	2.070	0,0778	0,096	0,551	660	470
1 x 400	H25	22,8	33,0	41,1	2.155	0,0778	0,096	0,551	660	470
1 x 500 *	H16	26,4	36,5	44,1	2.400	0,0605	0,091	0,620	775	540
1 x 630	H16	29,9	40,0	47,6	2.895	0,0469	0,088	0,688	905	615
1 x 630	H25	29,9	40,0	47,6	2.985	0,0469	0,088	0,688	905	615
1 x 800 *	H16	34,1	45,0	52,6	3.545	0,0367	0,086	0,785	1.065	710

* Cable based on UNE-HD 620-9E

¹ Three single-core cables in open air at 40°C ambient temperature according to UNE 211435.

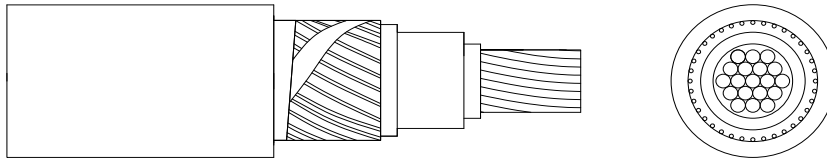
² Three single-core cables direct buried at 1 m depth with soil thermal resistivity of 1,5 K·m/W and 25°C of ground temperature according to UNE 211435.

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.

In all cases are supposed a three-phase circuit.

DIMENSIONS & ADMISSIBLE INTENSITIES



X-VOLT[®] HEPRZ1 18/30 (36) kV

Cross-section (mm ²)	Screen (mm ²)	Conductor Diameter (mm)	Insulation Diameter (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
1 x 50	H16	7,9	24,1	31,2	990	0,641	0,145	0,167	180	145
1 x 50	H25	7,9	24,1	31,2	1.080	0,641	0,145	0,167	180	145
1 x 70 *	H16	10,1	24,5	32,0	1.050	0,443	0,132	0,210	225	180
1 x 95	H16	11,1	25,3	32,4	1.130	0,320	0,127	0,226	275	215
1 x 95	H25	11,1	25,3	32,8	1.235	0,320	0,126	0,226	275	215
1 x 120 *	H16	12,9	26,3	33,8	1.230	0,253	0,120	0,260	320	245
1 x 120 *	H25	12,9	26,3	33,8	1.320	0,253	0,120	0,260	320	245
1 x 150	H16	14,0	27,2	34,7	1.325	0,206	0,116	0,280	360	275
1 x 150	H25	14,0	27,2	34,7	1.415	0,206	0,116	0,280	360	275
1 x 150 *	H35	14,0	27,2	35,0	1.510	0,206	0,117	0,264	360	275
1 x 150 *	H50	14,0	27,2	35,4	1.665	0,206	0,117	0,264	360	275
1 x 185 *	H16	15,5	28,9	36,4	1.490	0,164	0,113	0,297	415	315
1 x 185 *	H25	15,5	28,9	36,4	1.575	0,164	0,113	0,297	415	315
1 x 240	H16	17,9	30,9	38,4	1.700	0,125	0,107	0,339	495	365
1 x 240	H25	17,9	30,9	38,4	1.785	0,125	0,107	0,339	495	365
1 x 240 *	H35	17,9	30,9	38,7	1.885	0,125	0,108	0,339	495	365
1 x 240 *	H50	17,9	30,9	39,1	2.035	0,125	0,108	0,339	495	365
1 x 300 *	H16	20,2	33,6	41,1	1.960	0,100	0,104	0,356	565	410
1 x 300 *	H25	20,2	33,6	41,1	2.050	0,100	0,104	0,356	565	410
1 x 300 *	H35	20,2	33,6	41,4	2.145	0,100	0,104	0,356	565	410
1 x 400	H16	22,8	36,8	44,4	2.335	0,0778	0,101	0,405	660	470
1 x 400	H25	22,8	36,8	44,4	2.420	0,0778	0,101	0,405	660	470
1 x 400 *	H35	22,8	36,8	44,6	2.520	0,0778	0,101	0,405	660	470
1 x 400 *	H50	22,8	36,8	45,0	2.675	0,0788	0,102	0,405	660	470
1 x 500 *	H16	26,4	40,3	47,9	2.695	0,0605	0,097	0,453	775	540
1 x 500 *	H25	26,4	40,3	47,9	2.780	0,0605	0,097	0,453	775	540
1 x 500 *	H35	26,4	40,3	48,1	2.880	0,0605	0,097	0,453	775	540
1 x 630	H16	29,9	43,8	51,4	3.205	0,0469	0,093	0,500	905	615
1 x 630	H25	29,9	43,8	51,4	3.265	0,0469	0,093	0,500	905	615
1 x 630 *	H35	29,9	43,8	51,6	3.300	0,0469	0,094	0,500	905	615
1 x 800 *	H16	34,1	49,4	57,0	3.950	0,0367	0,092	0,545	1.065	710
1 x 800 *	H25	34,1	49,4	57,0	4.035	0,0367	0,092	0,545	1.065	710
1 x 800 *	H35	34,1	49,4	57,2	4.135	0,0367	0,092	0,545	1.065	710
1 x 1000 *	H16	38,4	53,9	61,5	4.715	0,0291	0,045	0,593	1.230	805
3 x 1 x 300 *	H16	20,2	33,6	88,4	5.940	0,100	0,104	0,356	565	410

* Cable based on UNE-HD 620-9E

¹Three single-core cables in open air at 40°C ambient temperature according to UNE 211435.

X-VOLT[®] AL (-OL)

HEPRZ1

² Three single-core cables direct buried at 1 m depth with soil thermal resistivity of 1,5 K·m/W and 25°C of ground temperature according to UNE 211435.

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.
In all cases are supposed a three-phase circuit.

SHORT-CIRCUIT CURRENT-CARRYING CAPACITIES

Time (s)	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm²	281	199	162	126	89	73	63	56	51

CORRECTION FACTORS FOR AIR TEMPERATURE

Air T. (°C)	20	25	30	35	40	45	50	55	60
Factor	1,14	1,11	1,07	1,04	1	0,96	0,92	0,88	0,83

CORRECTION FACTORS FOR GROUND TEMPERATURE

Ground T. (°C)	10	15	20	25	30	35	40	45	50
Factor	1,09	1,06	1,03	1	0,97	0,94	0,90	0,87	0,83

CORRECTION FACTORS FOR SOIL THERMAL RESISTIVITY (calculated for 240 mm² cable)

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
Factor	1,29	1,18	1	0,88	0,80	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 UNE 211435.