

## AHXAMK-W 12/20 (24) kV 3-core

Medium voltage cable

12/20 (24) kV



DryRex

### Application

Medium-voltage cable for fixed installations outdoors. May be buried directly in soil, also by ploughing. Cable is longitudinally and radially watertight and therefore it is suitable where wet soil and / or fresh water permanently occurs. Installations must be in accordance with national regulations and rules of installations. The cable is halogen-free, but without fire protection. The cable is not CPR-classified.

### Design

<b>Standards</b>	HD 620 10 F, SFS 5636
<b>Certificates</b>	SGS Fimko FI 40519
<b>Product Environmental Profile</b>	PEP NXNS-00428-V01.01-EN
<b>Conductor</b>	Watertight, circular, stranded aluminium, EN/IEC 60228 class 2
<b>Conductor screen</b>	Semiconducting cross-linked polyethylene XLPE
<b>Insulation</b>	Cross-linked polyethylene XLPE
<b>Insulation screen</b>	Semiconducting cross-linked polyethylene XLPE
<b>Core Identification</b>	White phase numbering: L1, L2, L3
<b>Cable lay up</b>	Three sheathed cores are laid up around a bare copper earth conductor
<b>Inner covering</b>	Semiconducting waterswellable tape against longitudinal water penetration

### Temperature limits

<b>Max. conductor temperature °C</b>	90
<b>Max. cond. temp. short circuit max. 5 s °C</b>	250
<b>Min. cable temperature during operation °C</b>	-50
<b>Min. cable temperature during handling °C</b>	-20
<b>Min. cable temperature during transport °C</b>	-40

<b>Metal screen</b>	Polyethylene laminated aluminium foil, which acts also as a radial water barrier
<b>Oversheath</b>	PE-plastic PELLD, Black
<b>Longitudinal watertightness</b>	Semiconducting water swellable tape

Technical information	3x50+35 Cu	3x70+35 Cu	3x95+25 Cu	3x95+35 Cu	3x120+35 Cu	3x150+35 Cu	3x185+35 Cu	3x185+50 Cu	3x185+70 Cu	3x240+35 Cu
<b>Product code</b>	<b>1187002</b>	<b>1187003</b>	<b>1187010</b>	<b>1187004</b>	<b>1187005</b>	<b>1187006</b>	<b>1187007</b>	<b>1187017</b>	<b>1187027</b>	<b>1187018</b>
Nominal diameter of a sheathed phase conductor mm	27	29	31	31	32	33	35	35	35	38
Nominal cross-sectional area of conductor mm <sup>2</sup>	50	70	95	95	120	150	185	185	185	240
Nominal diameter of conductor mm	8,0	9,5	11,1	11,1	12,6	13,9	15,6	15,6	15,6	17,8
Nominal thickness of conductor screen mm	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Nominal thickness of insulation mm	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5
Nominal diameter over the insulation without insulation screen mm	19,3	20,7	22,4	22,4	23,4	25,1	27,0	27,0	27,0	29,2
Nominal thickness of insulation screen mm	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Nominal diameter of earth conductor mm	6,9	6,9	6,1	6,9	6,9	6,9	6,9	8,2	9,9	6,9
Nominal thickness of PE-laminated aluminium foil mm	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,3
Nominal thickness of oversheath mm	2,8	2,8	2,9	2,9	2,9	2,9	3,0	3,0	3,0	3,1
(A1-A3) GWP figure kgCO <sub>2</sub> e/km	11834	13722	15592	16169	18096	20518	23923	24580	25771	30538
Nominal cable diameter mm	58,700	61,710	65,790	65,790	67,940	71,490	76,000	76,000	76,000	81,700
Nominal cable weight kg/km	2242,541	2531,084	2816,938	2905,244	3199,835	3570,126	4090,594	4191,058	4373,059	4867,559
Nominal weight of copper kg/m	0,302	0,302	0,220	0,302	0,302	0,302	0,302	0,410	0,592	0,302
Nominal weight of aluminium kg/m	0,383	0,545	0,733	0,735	0,953	1,149	1,461	1,458	1,458	1,901
<b>Maximum forces during installation when pulling by</b>										
Max. pulling force by pulling-eye kN	7,5	10,5	14,3	14,3	18,0	20,0	20,0	20,0	20,0	20,0
Max. pulling force by pulling-stocking kN	2,3	3,2	4,3	4,3	5,4	6,8	8,3	8,3	8,3	8,5
<b>Minimum bending radii</b>										
During handling and installation, phase conductor cm	41	44	47	47	48	50	53	53	53	57
During handling and installation, cable cm	70	74	79	79	82	86	91	91	91	98
In final installation, phase conductor cm	28	30	33	33	34	35	37	37	37	40
In final installation, cable cm	49	52	55	55	57	60	64	64	64	69
<b>Minimum bending radii</b>										
During handling and installation, phase conductor m	0,41	0,44	0,47	0,47	0,48	0,50	0,53	0,53	0,53	0,57
During handling and installation, cable m	0,70	0,74	0,79	0,79	0,81	0,86	0,91	0,91	0,91	0,98
In final installation, phase conductor m	0,28	0,30	0,33	0,33	0,34	0,35	0,37	0,37	0,37	0,40
In final installation, cable m	0,49	0,52	0,55	0,55	0,57	0,60	0,64	0,64	0,64	0,69
<b>DC resistance</b>										
Max. DC resistance of conductor at 20 °C Ω/km	0,641	0,443	0,320	0,320	0,253	0,206	0,164	0,164	0,164	0,125
Nominal DC resistance of PE-laminated aluminium foil 20 °C Ω/km	2,0	1,9	1,8	1,8	1,7	1,6	1,5	1,5	1,5	0,9

Technical information	3x50+35 Cu	3x70+35 Cu	3x95+25 Cu	3x95+35 Cu	3x120+35 Cu	3x150+35 Cu	3x185+35 Cu	3x185+50 Cu	3x185+70 Cu	3x240+35 Cu
<b>AC resistance of phase conductor, screen circuit closed</b>										
Conductor temperature 40 °C Ω/km	0,6927	0,4788	0,3460	0,3460	0,2736	0,2229	0,1776	0,1776	0,1776	0,1356
Conductor temperature 65 °C Ω/km	0,7573	0,5234	0,3782	0,3782	0,2991	0,2436	0,1941	0,1941	0,1941	0,1482
Conductor temperature 70 °C Ω/km	0,7702	0,5324	0,3846	0,3846	0,3042	0,2478	0,1974	0,1974	0,1974	0,1507
Conductor temperature 90 °C Ω/km	0,8219	0,5681	0,4104	0,4104	0,3246	0,2644	0,2106	0,2106	0,2106	0,1607
<b>Inductance per phase</b>										
In flat formation, free space between cables equal to one cable diam	0,61	0,59	0,57	0,57	0,55	0,54	0,53	0,53	0,53	0,52
In trefoil formation, cables touching each other mH/km	0,43	0,41	0,39	0,39	0,37	0,36	0,35	0,35	0,35	0,34
<b>Electrical values</b>										
Calculated operation capacitance µF/km	0,17	0,18	0,20	0,20	0,23	0,24	0,26	0,26	0,26	0,29
Calculated charging current with main voltage A/km	0,6	0,7	0,7	0,7	0,8	0,9	1,0	1,0	1,0	1,1
Calculated earth fault current with main voltage A/km	1,8	2,0	2,2	2,2	2,5	2,6	2,9	2,9	2,9	3,2
<b>Current ratings</b>										
<b>Cables in air (25 °C)</b>										
Flat, conductor 90 °C, open screen A	210	265	320	320	370	425	485	485	485	570
Flat, conductor 90 °C, closed screen A	205	255	310	310	350	395	440	440	440	515
Trefoil, conductor 90 °C, open screen A	195	235	285	285	330	380	430	430	430	505
Trefoil, conductor 90 °C, closed screen A	195	235	280	280	325	370	425	425	425	490
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>										
Trefoil, conductor 65 °C, open screen A	155	205	240	240	270	305	345	345	345	395
Trefoil, conductor 65 °C, closed screen A	155	200	235	235	265	300	330	330	330	385
Trefoil, conductor 90 °C, open screen A	185	240	280	280	320	360	405	405	405	465
Trefoil, conductor 90 °C, closed screen A	185	235	275	275	310	355	390	390	390	455
<b>Maximum thermal short circuit current during 1 s</b>										
Phase (initial 90 °C, final 250 °C) kA	4,7	6,6	8,9	8,9	11,3	14,1	17,4	17,4	17,4	22,6
Metal screen (initial 35 °C, final 250 °C) kA	2,9	3,0	3,2	3,2	3,4	3,6	3,8	3,8	3,8	5,3
Metal screen (initial 60 °C, final 250 °C) kA	2,7	2,8	2,9	2,9	3,1	3,3	3,5	3,5	3,5	4,9
Metal screen (initial 85 °C, final 250 °C) kA	2,4	2,5	2,7	2,7	2,9	3,0	3,2	3,2	3,2	4,4
Bare earth conductor (initial 55 °C, final 200 °C) kA	5	5	3,6	5	5	5	5	7,2	10	5

Technical information	3x240+70 Cu	3x300+35 Cu	3x300+70 Cu	3x400+35 Cu	3x400+70 Cu
<b>Product code</b>	<b>1187008</b>	<b>1187019</b>	<b>1187009</b>	<b>1187020</b>	<b>1187028</b>
Nominal diameter of a sheathed phase conductor mm	38	40	40	42	42
Nominal cross-sectional area of conductor mm <sup>2</sup>	240	300	300	400	400
Nominal diameter of conductor mm	17,8	19,8	19,8	22,4	22,4
Nominal thickness of conductor screen mm	0,5	0,5	0,5	0,5	0,5
Nominal thickness of insulation mm	5,5	5,5	5,5	5,5	5,5
Nominal diameter over the insulation without insulation screen mm	29,2	31,0	31,0	33,6	33,6
Nominal thickness of insulation screen mm	0,5	0,5	0,5	0,5	0,5
Nominal diameter of earth conductor mm	9,9	6,9	9,9	6,9	9,9
Nominal thickness of PE-laminated aluminium foil mm	0,3	0,3	0,3	0,3	0,3
Nominal thickness of oversheath mm	3,1	3,2	3,2	2,9	2,9
(A1-A3) GWP figure kgCO <sub>2</sub> e/km	31006	33815	35712	37776	39673
Nominal cable diameter mm	81,700	85,890	85,890	90,300	90,300
Nominal cable weight kg/km	5173,356	5602,800	5892,800	6208,369	6498,369
Nominal weight of copper kg/m	0,592	0,302	0,592	0,302	0,592
Nominal weight of aluminium kg/m	1,902	2,428	2,428	2,892	2,892
<b>Maximum forces during installation when pulling by</b>					
Max. pulling force by pulling-eye kN	20,0	20,0	20,0	20,0	20,0
Max. pulling force by pulling-stocking kN	8,5	8,5	8,5	8,5	8,5
<b>Minimum bending radii</b>					
During handling and installation, phase conductor cm	57	60	60	63	63
During handling and installation, cable cm	98	103	103	108	108
In final installation, phase conductor cm	40	42	42	44	44
In final installation, cable cm	69	72	72	76	76
<b>Minimum bending radii</b>					
During handling and installation, phase conductor m	0,57	0,60	0,60	0,63	0,63
During handling and installation, cable m	0,98	1,03	1,03	1,08	1,08
In final installation, phase conductor m	0,40	0,42	0,42	0,44	0,44
In final installation, cable m	0,69	0,72	0,72	0,76	0,76
<b>DC resistance</b>					
Max. DC resistance of conductor at 20 °C Ω/km	0,125	0,100	0,100	0,0778	0,0778
Nominal DC resistance of PE-laminated aluminium foil 20 °C Ω/km	0,9	0,9	0,9	0,81	0,81

Technical information	3x240+70 Cu	3x300+35 Cu	3x300+70 Cu	3x400+35 Cu	3x400+70 Cu
<b>AC resistance of phase conductor, screen circuit closed</b>					
Conductor temperature 40 °C Ω/km	0,1356	0,1088	0,1088	0,0850	0,0850
Conductor temperature 65 °C Ω/km	0,1482	0,1188	0,1188	0,0927	0,0927
Conductor temperature 70 °C Ω/km	0,1507	0,1208	0,1208	0,0943	0,0943
Conductor temperature 90 °C Ω/km	0,1607	0,1288	0,1288	0,1005	0,1005
<b>Inductance per phase</b>					
In flat formation, free space between cables equal to one cable diam	0,52	0,51	0,51	0,49	0,49
In trefoil formation, cables touching each other mH/km	0,34	0,32	0,32	0,31	0,31
<b>Electrical values</b>					
Calculated operation capacitance μF/km	0,29	0,31	0,31	0,34	0,34
Calculated charging current with main voltage A/km	1,1	1,1	1,1	1,3	1,3
Calculated earth fault current with main voltage A/km	3,2	3,4	3,4	3,8	3,8
<b>Current ratings</b>					
<b>Cables in air (25 °C)</b>					
Flat, conductor 90 °C, open screen A	570	650	650	790	790
Flat, conductor 90 °C, closed screen A	515	580	580	680	680
Trefoil, conductor 90 °C, open screen A	505	580	580	695	695
Trefoil, conductor 90 °C, closed screen A	490	565	565	680	680
<b>Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m</b>					
Trefoil, conductor 65 °C, open screen A	395	445	445	525	525
Trefoil, conductor 65 °C, closed screen A	385	435	435	510	510
Trefoil, conductor 90 °C, open screen A	465	525	525	615	615
Trefoil, conductor 90 °C, closed screen A	455	510	510	600	600
<b>Maximum thermal short circuit current during 1 s</b>					
Phase (initial 90 °C, final 250 °C) kA	22,6	28,3	28,3	37,8	37,8
Metal screen (initial 35 °C, final 250 °C) kA	5,3	5,7	5,7	6,3	6,3
Metal screen (initial 60 °C, final 250 °C) kA	4,9	5,3	5,3	5,8	5,8
Metal screen (initial 85 °C, final 250 °C) kA	4,4	4,8	4,8	5,3	5,3
Bare earth conductor (initial 55 °C, final 200 °C) kA	10	5	10	5	10