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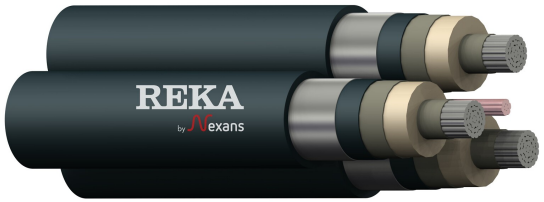
AHXAMK-W 19/33 (36) kV 3-core

Medium voltage cable

19/33 (36) kV



DryRex Nordic Wind

Application

DryRex Nordic Wind cables are designed especially to meet the requirements of 36 kV wind farms. 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

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

Temperature limits

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

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

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Technical information	3x95+35 Cu	3x120+35 Cu	3x150+35 Cu	3x150+70 Cu	3x185+35 Cu	3x185+70 Cu	3x240+35 Cu	3x240+70 Cu	3x300+35 Cu	3x300+70 Cu
Product code	**1181895**	**1181896**	**1181897**	**1181898**	**1181899**	**1181900**	**1181901**	**1181902**	**1181903**	**1181904**
Nominal diameter of a sheathed phase conductor mm	35	37	38	40	40	40	43	43	45	45
Nominal cross-sectional area of conductor mm²	95	120	150	150	185	185	240	240	300	300
Nominal diameter of conductor mm	11,1	12,6	13,9	13,9	15,6	15,6	17,8	17,8	19,8	19,8
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	8,0	8,0	8,0	8,0	8,0	8,0	8,0	8,0	8,0	8,0
Nominal diameter over the insulation without insulation screen mm	26,7	28,2	29,5	31,1	31,2	31,2	33,6	33,6	35,4	35,4
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	7	7	7	10	7	10	7	10	7	10
Nominal thickness of PE-laminated aluminium foil mm	0,3	0,3	0,3	0,2	0,3	0,3	0,3	0,3	0,3	0,3
Nominal thickness of oversheath mm	3,0	3,0	3,1	3,1	3,1	3,1	3,2	3,2	3,3	3,3
(A1-A3) GWP emission kgCO2e/km	20935	23552	26009	29108	29391	31288	34404	36301	39477	
Nominal cable diameter mm	75,790	79,120	82,240	85,360	86,000	86,000	91,590	91,590	95,780	95,780
Nominal cable weight kg/km	3633,791	4033,914	4409,544	4883,211	4926,507	5216,507	5692,908	5982,908	6468,375	6758,375
Nominal weight of copper kg/m	0,302	0,302	0,302	0,592	0,302	0,592	0,302	0,592	0,302	0,592
Nominal weight of aluminium kg/m	0,735	0,953	1,149	1,146	1,461	1,461	1,901	1,901	2,428	2,428
Maximum forces during installation when pulling by										
Max. pulling force by pulling-eye kN	14,3	18,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0
Max. pulling force by pulling-stocking kN	4,3	5,4	6,8	6,8	8,3	8,3	8,5	8,5	8,5	8,5
Minimum bending radii										
During handling and installation, phase conductor cm	53	56	57	60	60	60	65	65	68	68
During handling and installation, cable cm	91	95	99	102	103	103	110	110	115	115
In final installation, phase conductor cm	37	39	40	42	42	42	45	45	47	47
In final installation, cable cm	64	66	69	72	72	72	77	77	80	80
Minimum bending radii										
During handling and installation, phase conductor m	0,53	0,56	0,57	0,60	0,60	0,60	0,65	0,65	0,68	0,68
During handling and installation, cable m	0,91	0,95	0,99	1,02	1,03	1,03	1,10	1,10	1,15	1,15
In final installation, phase conductor m	0,37	0,39	0,40	0,42	0,42	0,42	0,45	0,45	0,47	0,47
In final installation, cable m	0,64	0,67	0,69	0,72	0,72	0,72	0,77	0,77	0,81	0,81
DC resistance										
Max. DC resistance of conductor at 20 °C Ω/km	0,320	0,253	0,206	0,206	0,164	0,164	0,125	0,125	0,100	0,100
Nominal DC resistance of PE-laminated aluminium foil 20 °C Ω/km	1,02	0,97	0,93	0,93	0,89	0,89	0,81	0,81	0,78	0,78

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Technical information	3x95+35 Cu	3x120+35 Cu	3x150+35 Cu	3x150+70 Cu	3x185+35 Cu	3x185+70 Cu	3x240+35 Cu	3x240+70 Cu	3x300+35 Cu	3x300+70 Cu
AC resistance of phase conductor, screen circuit closed										
Conductor temperature 40 °C Ω/km	0,3460	0,2736	0,2229	0,2229	0,1776	0,1776	0,1356	0,1356	0,1088	0,1088
Conductor temperature 65 °C Ω/km	0,3782	0,2991	0,2436	0,2436	0,1941	0,1941	0,1482	0,1482	0,1188	0,1188
Conductor temperature 70 °C Ω/km	0,3846	0,3042	0,2478	0,2478	0,1974	0,1974	0,1507	0,1507	0,1208	0,1208
Conductor temperature 90 °C Ω/km	0,4104	0,3246	0,2644	0,2644	0,2106	0,2106	0,1607	0,1607	0,1288	0,1288
Inductance per phase										
In flat formation, free space between cables equal to one cable diam	0,60	0,58	0,57	0,58	0,56	0,56	0,54	0,54	0,53	0,53
In trefoil formation, cables touching each other mH/km	0,41	0,40	0,38	0,40	0,37	0,37	0,36	0,36	0,35	0,35
Electrical values										
Calculated operation capacitance µF/km	0,16	0,17	0,18	0,18	0,20	0,20	0,22	0,22	0,24	0,24
Calculated charging current with main voltage A/km	0,9	1,0	1,1	1,1	1,2	1,2	1,3	1,3	1,4	1,4
Calculated earth fault current with main voltage A/km	2,8	3,1	3,3	3,2	3,6	3,6	4,0	4,0	4,2	4,2
Current ratings										
Cables in air (25 °C)										
Flat, conductor 90 °C, open screen A	320	370	425	425	485	485	570	570	650	650
Flat, conductor 90 °C, closed screen A	310	350	395	395	440	440	515	515	580	580
Trefoil, conductor 90 °C, open screen A	285	330	380	380	430	430	505	505	580	580
Trefoil, conductor 90 °C, closed screen A	280	325	370	370	425	425	490	490	565	565
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m										
Trefoil, conductor 65 °C, open screen A	240	270	305	305	345	345	395	395	445	445
Trefoil, conductor 65 °C, closed screen A	235	265	300	300	330	330	385	385	435	435
Trefoil, conductor 90 °C, open screen A	280	320	360	360	405	405	465	465	525	525
Trefoil, conductor 90 °C, closed screen A	275	310	355	355	390	390	455	455	510	510
Maximum thermal short circuit current during 1 s										
Phase (initial 90 °C, final 250 °C) kA	8,9	11,3	14,1	14,1	17,4	17,4	22,6	22,6	28,3	28,3
Metal screen (initial 35 °C, final 250 °C) kA	4,8	5,0	5,2	5,2	5,5	5,5	6,0	6,0	6,2	6,2
Metal screen (initial 60 °C, final 250 °C) kA	4,4	4,6	4,8	4,8	5,0	5,0	5,5	5,5	5,7	5,7
Metal screen (initial 85 °C, final 250 °C) kA	4,0	4,2	4,4	4,4	4,6	4,6	5,0	5,0	5,2	5,2
Bare earth conductor (initial 55 °C, final 200 °C) kA	5	5	5	10	5	10	5	10	5	10

Technical information	3x400+35 Cu
Product code	**1181905**
Nominal diameter of a sheathed phase conductor mm	47
Nominal cross-sectional area of conductor mm²	400
Nominal diameter of conductor mm	22,4
Nominal thickness of conductor screen mm	0,5
Nominal thickness of insulation mm	8,0
Nominal diameter over the insulation without insulation screen mm	38,0
Nominal thickness of insulation screen mm	0,5
Nominal diameter of earth conductor mm	6,9
Nominal thickness of PE-laminated aluminium foil mm	0,3
Nominal thickness of oversheath mm	3,0
Nominal cable diameter mm	100,190
Nominal cable weight kg/km	7119,039
Nominal weight of copper kg/m	0,302
Nominal weight of aluminium kg/m	2,892
Maximum forces during installation when pulling by	
Max. pulling force by pulling-eye kN	20,0
Max. pulling force by pulling-stocking kN	8,5
Minimum bending radii	
During handling and installation, phase conductor cm	71
During handling and installation, cable cm	120
In final installation, phase conductor cm	49
In final installation, cable cm	84
Minimum bending radii	
During handling and installation, phase conductor m	0,71
During handling and installation, cable m	1,20
In final installation, phase conductor m	0,49
In final installation, cable m	0,84
DC resistance	
Max. DC resistance of conductor at 20 °C Ω/km	0,0778
Nominal DC resistance of PE-laminated aluminium foil 20 °C Ω/km	0,75

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Technical information	3x400+35 Cu
AC resistance of phase conductor, screen circuit closed	
Conductor temperature 40 °C Ω/km	0,0850
Conductor temperature 65 °C Ω/km	0,0927
Conductor temperature 70 °C Ω/km	0,0943
Conductor temperature 90 °C Ω/km	0,1005
Inductance per phase	
In flat formation, free space between cables equal to one cable diam	0,52
In trefoil formation, cables touching each other mH/km	0,33
Electrical values	
Calculated operation capacitance µF/km	0,26
Calculated charging current with main voltage A/km	1,5
Calculated earth fault current with main voltage A/km	4,6
Current ratings	
Cables in air (25 °C)	
Flat, conductor 90 °C, open screen A	790
Flat, conductor 90 °C, closed screen A	680
Trefoil, conductor 90 °C, open screen A	695
Trefoil, conductor 90 °C, closed screen A	680
Cables in the ground (15 °C and 1,0 K.m/W), Installation depth 0,7 m	
Trefoil, conductor 65 °C, open screen A	525
Trefoil, conductor 65 °C, closed screen A	510
Trefoil, conductor 90 °C, open screen A	615
Trefoil, conductor 90 °C, closed screen A	600
Maximum thermal short circuit current during 1 s	
Phase (initial 90 °C, final 250 °C) kA	37,8
Metal screen (initial 35 °C, final 250 °C) kA	6,4
Metal screen (initial 60 °C, final 250 °C) kA	5,9
Metal screen (initial 85 °C, final 250 °C) kA	5,4
Bare earth conductor (initial 55 °C, final 200 °C) kA	5