D1 - rev:00

Nexans

THEORETICAL SIZE CHARACTERISTICS

THEORETICAL ELECTRICAL CHARACTERISTICS

Current ratings based on IEC 60502-2
Conditions for installation underground (Trefoil) - Thermal resistivity of soil: 1.5 K.m/W - Burying depth: 0.8 m
Conditions for installation in air (Flat spaced) - Horizontal

POS N°	NEXANS N°	DESIGNATION	STANDARD	VOLTAGE RATE	SECTION	CONDUCTOR		INSULATION	PROTECTIVE SHEATH			BENDING	WEIGHT	RESISTANCE		CURRENT RATING		REACTANCE	CAPACITANCE	ZERO SEQUENCE			SHORT-CIRCUIT CURRENT		VOLTAGE DROP	IMPEDANCE
						Class	Diam. (approx)	Thickness (nominal)	Thickness (min.)	Outer Diameter (min.)	Outer Diameter (max.)	RADIUS (minimum)	(approx.)	DC at 20°C	AC at Max°C	in free air at 30°C	underground at 20°C	50Hz approx.	at 20°C	Resistance	Reactance	Impedance	0,3 s maximum	1 s maximum	AC approx.	50Hz approx.
					mm²	#	mm	mm	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	A	A	Ω/km	µF/km	Ω/km	Ω/km	Ω/km	kA	kA	V/A.km	Ω/km
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	10565155	AL/XLPE/WB/CWS/WB/MDPE	BS 7870-4.10	19/33 kV	1x500/35	Class 2	26,0	8,0	2,11	48,3	55,7	624	2930	0,0605	0,0810	829	517	0,10	0,29	0.191+j0.463	0.149+j0.362	0.322+j0.825	85,8	47,0	0,2	0,120
3	10565156	AL/XLPE/WB/CWS/WB/MDPE	BS 7870-4.10	19/33 kV	1x400/35	Class 2	23,6	8,0	2,02	45,9	52,9	593	2580	0,0778	0,103	769	476	0,11	0,27	0.243+j0.472	0.192+j0.369	0.413+j0.841	68,6	37,6	0,2	0,142
4	10565157	AL/XLPE/WB/CWS/WB/MDPE	BS 7870-4.10	19/33 kV	1x185/35	Class 2	16,1	8,0	1,77	38,1	43,9	492	1740	0,164	0,213	504	317	0,12	0,20	0.517+j0.512	0.404+j0.400	0.872+j0.912	31,8	17,4	0,4	0,237
5	10565158	AL/XLPE/WB/CWS/WB/MDPE	BS 7870-4.10	19/33 kV	1x95/35	Class 2	11,6	8,0	1,68	33,6	38,8	434	1320	0,320	0,412	338	221	0,13	0,16	1.01+j0.556	0.788+j0.434	1.70+j0.990	16,3	8,93	0,7	0,426

ELSEWEDY CABLES

Technical Datasheet
Medium Voltage Power Cable

Inquiry No.	
Version No.	
Revision No.	0
Issue Date	6/22/2021

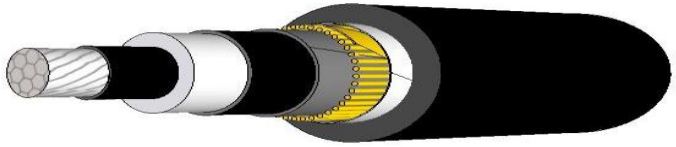
Description	Size (mm²)	Voltage Grade (kV)
AL/XLPE/CWS/MDPE	**1X240/35**	**19/33 (36)**

Reference Standards

BS EN 60228
BS 7870-4.10

Application

For outdoor fixed installations and it's normally used for power distribution in urban networks and industrial plants.
Suitable for laying underground in ducts or on trays in free air.



Features

Conductor Operating Temp. up to 90 °C
Conductor Short Circuit Temp. up to 250 °C

Cable Identification

Outer Sheath Color
Black
Marking Over the Outer Sheath
EL SEWEDY CABLES ELECTRIC CABLE 1X240 AL mm2 33 000 V
AL/XLPE/CWS/MDPE BS 7870-4.10 Manufacturing Year

Construction

Conductor	Circular Stranded Compacted Aluminum (Class 2)
Conductor Screen	Extruded Thermosetting Semi-conducting Compound
Insulation	XLPE (DIX 3)
Insulation Screen	Extruded Thermosetting Semi-conducting Compound (Bonded)
Water Blocking Tape	Semi-conductive Water Blocking Tape
Metallic Screen	Copper Wire Screen **(41X1.04mm)**
Metallic Screen	Copper Tape Screen (Open Helix)
Water Blocking Tape	Non-conductive Water Blocking Tape
Outer Sheath	MDPE (DMP 5)

Electrical Data

Conductor Max. DC Resistance at 20°C	0.125	Ω/km
Conductor Max. AC Resistance at 90°C	0.1612	Ω/km
Inductance	0.3677	mH/km
Reactance at 50 Hz	0.1155	Ω/km
Capacitance	0.2434	µF/km
Charging Current at 50 Hz	1.4531	Amp/km
Dielectric Losses at 50 Hz	110.43	W/km/phase
Conductor Short Circuit Current for 1 sec.	22.7	kA
Metallic Screen Short Circuit Current for 1 sec.	4.5	kA
Rated Current (laid in Air) *	513	A
Rated Current (laid in Duct) *	386	A
Rated Current (laid in Ground) *	468	A

** Air Temperature = 30 °C , Ground Temperature = 20 °C , Soil Thermal Resistivity = 1 °C.m/W , Burial Depth = 0.5 m , Trefoil Formation*

General Data

Nominal Cable Diameter	44 *	mm
Approximate Cable Weight	1995	kg/km
Minimum Bending Radius	20 × Outer Diameter	

* Cable Diameter is subjected to manufacturing tolerance, Diameter Table can be submitted on request.

Testing

All routine tests required by BS 7870-4.10 will be performed on the cable and a test certificate will be supplied on request.

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ELSEWEDY CABLES

Technical Datasheet
Medium Voltage Power Cable

Inquiry No.	
Version No.	
Revision No.	0
Issue Date	6/22/2021

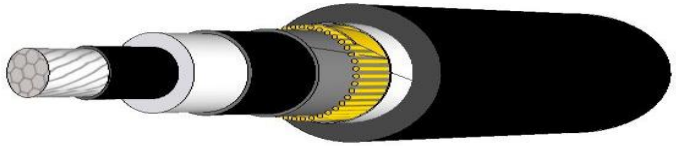
Description	Size (mm²)	Voltage Grade (kV)
AL/XLPE/CWS/MDPE	**1X500/35**	**19/33 (36)**

Reference Standards

BS EN 60228
BS 7870-4.10

Application

For outdoor fixed installations and it's normally used for power distribution in urban networks and industrial plants.
Suitable for laying underground in ducts or on trays in free air.



Features

Conductor Operating Temp. up to 90 °C
Conductor Short Circuit Temp. up to 250 °C

Cable Identification

Outer Sheath Color
Black
Marking Over the Outer Sheath
EL SEWEDY CABLES ELECTRIC CABLE 1X500 AL mm2 33 000 V
AL/XLPE/CWS/MDPE BS 7870-4.10 Manufacturing Year

Construction

Conductor	Circular Stranded Compacted Aluminum (Class 2)
Conductor Screen	Extruded Thermosetting Semi-conducting Compound
Insulation	XLPE (DIX 3)
Insulation Screen	Extruded Thermosetting Semi-conducting Compound (Bonded)
Water Blocking Tape	Semi-conductive Water Blocking Tape
Metallic Screen	Copper Wire Screen **(41X1.04mm)**
Metallic Screen	Copper Tape Screen (Open Helix)
Water Blocking Tape	Non-conductive Water Blocking Tape
Outer Sheath	MDPE (DMP 5)

Electrical Data

Conductor Max. DC Resistance at 20°C	0.0605	Ω/km
Conductor Max. AC Resistance at 90°C	0.0799	Ω/km
Inductance	0.3298	mH/km
Reactance at 50 Hz	0.1036	Ω/km
Capacitance	0.32	µF/km
Charging Current at 50 Hz	1.91	Amp/km
Dielectric Losses at 50 Hz	145.16	W/km/phase
Conductor Short Circuit Current for 1 sec.	47.2	kA
Metallic Screen Short Circuit Current for 1 sec.	4.5	kA
Rated Current (laid in Air) *	803	A
Rated Current (laid in Duct) *	587	A
Rated Current (laid in Ground) *	684	A

** Air Temperature = 30 °C , Ground Temperature = 20 °C , Soil Thermal Resistivity = 1 °C.m/W , Burial Depth = 0.5 m , Trefoil Formation*

General Data

Nominal Cable Diameter	52.7 *	mm
Approximate Cable Weight	3005	kg/km
Minimum Bending Radius	20 × Outer Diameter	

* Cable Diameter is subjected to manufacturing tolerance, Diameter Table can be submitted on request.

Testing

All routine tests required by BS 7870-4.10 will be performed on the cable and a test certificate will be supplied on request.

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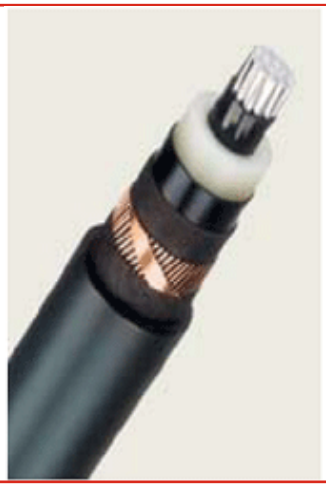
BS7870 - 4.10 19/33kv Single Core Un-armoured

19/33kV Single Core un-armoured XLPE insulated cables



DESCRIPTION

Important Note: this information is for general guidance only, based on standard design options. Exact data will vary based upon the options required, and therefore a full data sheet for the exact design should be requested prior to any order.

Voltage Rating:

- 19/33 (36) kV

Typical Constructions:

Conductors

- Stranded Copper or
- Stranded Aluminium
- Option - water swellable powders or tapes

Conductor Screen

- SC XLPE

Insulation

- XLPE

Insulation Screen

- Bonded SC XLPE
- Option - cold strippable SC XLPE

Paper separation Tapes

- Option - water swellable tapes

Copper Wire Screen

- Number and diameter of wires dependant upon required earth fault rating
- Option - copper equalising tapes applied helically

Sheath

- Black MDPE
- Option - LSOH material
- Sheath embossed or indented with year of manufacture, size and type of conductor and voltage in accordance with design standard employed
- Option - sequential metre marking

STANDARDS

International IEC 60502

National BS 7870-4.10

All drawings, designs, specifications, plans and particulars of weights, size and dimensions contained in the technical or commercial documentation of Nexans is indicative only and shall not be binding on Nexans or be treated as constituting a representation on the part of Nexans.

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BS7870 - 4.10 19/33kv Single Core Un-armoured

TYPICAL DATA FOR CABLES WITH COPPER CONDUCTORS

Nominal cross-sectional area	mm²	70	95	120	150	185	240	300	400	500	630	800	1000
Approximate diameter over conducto	mm	9.8	11.5	12.8	14.3	15.9	18.4	20.5	23.2	26.2	30.3	34.7	38
Approximate diameter over insulation	mm	27	28.7	30	31.5	33.1	35.6	38.1	41.2	44.2	48.3	52.7	57.3
Approximate overall diameter	mm	34.1	36.1	37.5	39.3	41	43.8	46.6	50.2	53.4	58	66	71
Approximate weight of Cable	kg/m	1560	1880	2160	2480	2860	3530	4220	5150	6250	7740	9630	12200
Minimum bending radius (static)	mm	340	360	380	390	420	440	470	500	540	580	660	710
Maximum pulling tension on Cable	kg	350	475	600	750	925	1200	1500	2000	2500	3150	4000	5000
Maximum DC resistance (R) @ 20°C	W/km	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Maximum AC resistance (R') @ 90°C	W/km	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.051	0.042	0.035	0.03
Inductance (L) @ 50Hz @ 90°C	mH/km	0.43	0.41	0.4	0.38	0.37	0.36	0.36	0.33	0.32	0.31	0.3	0.29
Approximate Capacitance (C)	µF/km	0.14	0.16	0.17	0.18	0.2	0.22	0.25	0.26	0.29	0.32	0.35	0.38
Short circuit ratings													
1 Second Short Circuit Rating of Conductor (90 to 250°C)	kA	9.7	13.5	17.1	21	26.3	34.6	43.4	57.7	72.1	90.7	115.1	143.8
1 Second Short Circuit Rating of a 35mm2 Copper wire screen (80 to 250°C)	kA	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
1 Second Short Circuit Rating of a 50mm2 Copper wire screen (80 to 250°C)	kA	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Current Carrying Capacity (cables laid in trefoil)													
Direct Buried	A	270	320	360	410	460	530	600	690	760	850	930	1010
Single way ducts	A	270	320	360	405	445	520	570	630	700	780	860	920
In Air	A	320	390	445	510	580	680	770	890	1020	1160	1290	1430

Values for minimum bending radius are multiplied by two for cables being laid (dynamic)

Ampacity Values based on :
· Depth of cover = 800mm ,
· Thermal resistivity of soil = 1.2K.m/W ,
· Soil temperature = 15°C
· Ambient Air temperature = 25°C
· Maximum conductor temperature = 90°C

TYPICAL DATA FOR CABLES WITH ALUMINIUM CONDUCTORS

Nominal cross-sectional area	mm²	70	95	120	150	185	240	300	400	500	630	800	1000	1200
Approximate diameter over conducto	mm	9.8	11.4	12.9	14	16.2	18	20.5	23.3	26.4	30	34.7	38	41.2
Approximate diameter over insulation	mm	27	28.6	30.1	31.2	33.4	35.2	38.1	41.3	44.4	48	52.7	57.3	60.2
Approximate overall diameter	mm	34.1	36	37.6	39	41.3	43.4	46.6	50.2	53.7	57.6	66	71	74
Approximate weight of Cable	kg/m	1140	1290	1430	1550	1760	1990	2330	2740	3200	3770	4720	5480	6090
Minimum bending radius (static)	mm	340	360	380	390	420	440	470	500	540	580	660	710	740

All drawings, designs, specifications, plans and particulars of weights, size and dimensions contained in the technical or commercial documentation of Nexans is indicative only and shall not be binding on Nexans or be treated as constituting a representation on the part of Nexans.

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BS7870 - 4.10 19/33kv Single Core Un-armoured

Maximum pulling tension on Cable	**kg**	210	285	360	450	555	720	900	1200	1500	1890	2400	3000	3600
Maximum DC resistance (R) @ 20°C	**W/km**	0.443	0.32	0.253	0.206	0.164	0.125	0.1	0.0778	0.0605	0.0469	0.0367	0.0291	0.0247
Maximum AC resistance (R') @ 90°C	**W/km**	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.081	0.064	0.052	0.044	0.039
Inductance (L) @ 50Hz @ 90°C	**mH/km**	0.43	0.41	0.4	0.38	0.37	0.36	0.36	0.33	0.32	0.31	0.3	0.29	0.29
Approximate Capacitance (C)	**µF/km**	0.14	0.16	0.17	0.18	0.2	0.22	0.25	0.26	0.29	0.32	0.35	0.38	0.41
Short circuit ratings														
1 Second Short Circuit Rating of Conductor (90 to 250°C)	kA	6.8	9.2	11.6	14.5	17.8	23.1	28.8	38.3	47.8	60.2	76.4	95.4	114.4
1 Second Short Circuit Rating of a 35mm2 Copper wire screen (80 to 250°C)	kA	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
1 Second Short Circuit Rating of a 50mm2 Copper wire screen (80 to 250°C)	kA	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Current Carrying Capacity (cables laid in trefoil)														
Direct Buried	A	210	250	280	320	360	415	475	550	610	690	780	860	920
Single way ducts	A	210	250	280	320	350	415	460	520	570	650	770	800	980
In Air	A	250	305	345	400	450	530	600	700	820	940	1070	1210	1325

Values for minimum bending radius are multiplied by two for cables being laid (dynamic)

Ampacity Values based on :
· Depth of cover = 800mm ,
· Thermal resistivity of soil = 1.2K.m/W ,
· Soil temperature = 15°C
· Ambient Air temperature = 25°C
· Maximum conductor temperature = 90°C

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