

## 19/33kV Single Core XLPE insulated cables

**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.

### Design Standards:

- Nexans Spec: 122 D 16
- Network Rail NR/PS/ELP/00008 ISS. 3  
December 2005

### Voltage Rating:

- 19/33(36) kV

### Typical Constructions:

#### **Conductors:**

- Stranded Copper or...
- Stranded Aluminium water tight (yarns & tapes) to BS EN 60228

#### **Conductor Screen**

- SC XLPE to BS 6622

#### **Insulation**

- XLPE

#### **Insulation Screen**

- Strippable SC XLPE

#### **Paper separation Tapes**

- water swellable tapes

#### **Copper Wire Screen 50 mm<sup>2</sup>**

- 42 wires of 1.235 mm diameter to BS 6622

#### **Paper separation Tapes**

- Water swellable tapes

#### **Sheath**

- Black MDPE to BS 6234 with semi-conductive layer for sheath testing
- Option – LSOH Material
- Resistance – To Fuel & Mineral Oils
- Sheath embossed or indented with name of manufacturer, year of manufacture, size and type of conductor and ELECTRIC TRACTION CABLE 33kV
- [Option - Sequential metre marking](#)



## 19/33kV Single Core XLPE insulated cables

### Typical Data for cables with **ALUMINIUM** conductors

Nominal cross-sectional area	mm <sup>2</sup>	95	120	150	185	240	300	400
Approximate diameter over conductor	mm	11.4	12.9	14.2	16.3	18.2	20.7	23.5
Approximate diameter over insulation	mm	29.4	30.1	32.2	34.3	36.2	38.7	41.5
Approximate overall diameter	mm	43.7	45.2	46.5	48.6	50.5	53.0	55.8
Approximate weight of Cable	kg/m	1883	2013	2133	2336	2557	2843	3186
Minimum bending radius (static)	mm	460	470	490	510	530	550	590
Maximum pulling tension on Cable	kg	285	360	450	555	720	900	1200
Maximum DC resistance (R) @ 20°C	Ω/km	0.320	0.253	0.206	0.164	0.125	0.100	0.0778
Maximum AC resistance (R') @ 90°C	Ω/km	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Inductance (L) @ 50Hz @ 90°C	mH/km	0.45	0.43	0.41	0.40	0.38	0.37	0.35
Approximate Capacitance (C)	μF/km	0.17	0.18	0.20	0.22	0.23	0.26	0.28
<b>Short circuit rating</b>								
3 second Short Circuit Rating of Conductor (90 to 250°C)	kA	5,4	6,8	8,5	10,4	13,5	16,8	22,3
3 second Short Circuit Rating of a 50mm <sup>2</sup> Copper wire screen (80 to 200°C)	kA	5.3	5.3	5.3	5.3	5.3	5.3	5.3
<b>Current Carrying Capacity (cables laid in trefoil)</b>								
Direct Buried	A	245	280	315	355	410	465	530
Single way ducts	A	220	250	280	320	370	415	475
In Air	A	305	350	395	455	530	610	710

Values for minimum bending radius are multiplied by two for cables being laid (dynamic) to BS6622 or IEC60840

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
- Service conditions = -25°C to +40°C

Testing: This will be carried out in accordance with NR/PS/ELP/00008:

- Appendix A - Test at Works
- Appendix B - Test at Site
- Appendix C - Current Spiking Tests
- Appendix D - AC Step Voltage Test

## 19/33kV Single Core XLPE insulated cables

### Typical Data for cables with **COPPER** conductors

Nominal cross-sectional area	mm <sup>2</sup>	95	120	150	185	240	300	400
Approximate diameter over conductor	mm	11.5	12.8	14.2	15.9	18.2	20.5	23.1
Approximate diameter over insulation	mm	28.9	30.2	31.6	33.3	35.6	37.9	40.5
Approximate overall diameter	mm	43.2	44.5	45.9	47.6	49.9	52.2	54.9
Approximate weight of Cable	kg/m	2434	2717	3014	3402	4031	4654	5537
Minimum bending radius (static)	mm	450	460	480	500	520	540	570
Maximum pulling tension on Cable	kg	475	600	750	925	1200	1500	2000
Maximum DC resistance (R) @ 20°C	Ω/km	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.0470
Maximum AC resistance (R') @ 90°C	Ω/km	0.247	0.196	0.159	0.128	0.098	0.079	0.063
Inductance (L) @ 50Hz @ 90°C	mH/km	0.44	0.43	0.41	0.40	0.38	0.37	0.35
Approximate Capacitance (C)	μF/km	0.17	0.18	0.20	0.21	0.23	0.25	0.28
<b>Short circuit rating</b>								
3 Second Short Circuit Rating of Conductor (90 to 250°C)	kA	8,1	10,2	12,7	15,6	20,2	25,2	33,5
3 Second Short Circuit Rating of a 50 mm <sup>2</sup> Copper wire screen (80 to 200°C)	kA	5,3	5,3	5,3	5,3	5,3	5,3	5,3
<b>Current Carrying Capacity (cables laid in trefoil)</b>								
Direct Buried	A	320	360	405	455	525	590	665
Single way ducts	A	285	325	365	410	470	530	600
In Air	A	390	445	505	575	680	775	890

Values for minimum bending radius are multiplied by two for cables being laid (dynamic) to BS6622 or IEC60840

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
- Service conditions = -25°C to +40°C

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