

17.LOW VOLTAGE CABLES

| h) LOW VOLTAGE CABLES | | UNIT | DATA | |
|-----------------------|--|--------|--|---------|
| | | | REQUIRED | OFFERED |
| 1 | <u>Low Voltage Power Cable</u> | | | |
| 1.1 | Manufacturer | | | |
| | Name | | | |
| | Country | | | |
| | Type designation | | Low smoke- Zero halogen, flame retardant | |
| 1.2 | Applicable standard | | | |
| 1.3 | Rated voltage | kV rms | | |
| 1.4 | Number of cores / size | | | |
| 1.5 | Conductor material (Cu/Al) and its class acc. to IEC | | High conductivity/plain annealed/copper | |
| 1.6 | Type of conductor | | Stranded | |
| 1.7 | Min thickness & material of insulation | mm | XLPE | |
| 1.8 | Type and thickness of inner sheath material | mm | Halogen free | |
| 1.9 | Whether shield is provided? (Yes/No) | | | |
| 1.10 | Type and material of armor (wire/tape & Steel/Al) | | Galvanized steel wire | |
| 1.11 | Type and thickness of outer sheath material | mm | Halogen free | |

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| 1.12 | High voltage test | kV | | |
| 1.13 | Short circuit withstand current/time of conductor. | kA/Sec | | |
| 1.14 | Minimum bending radius at minimum temperature | | | |
| 1.15 | Conductor DC resistance at 20°C | Ω/km | | |
| 1.16 | Minimum temperature during installation | °C | | |
| 1.17 | Minimum pulling tension | N | | |
| 1.18 | Approx. weight of cable | kg/m | | |
| 1.19 | Core identification required | Yes/No | yes | |
| 1.20 | Type and routine tests required | Yes/No | yes | |
| 1.21 | Distance between cables laid horizontally or in flat | | equal to the outer diameter of cables | |
| 2 | <u>Control Cable</u> | | | |
| 2.1 | Manufacturer | | | |
| | Name | | | |
| | Country | | | |
| | Type designation | | | |
| 2.2 | Applicable standard | | | |
| 2.3 | Rated voltage | kV rms | | |

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| 2.4 | Type and material of conductor | | Stranded/ high conductivity plain annealed copper | |
| 2.5 | Diameter of each strand | mm | | |
| 2.6 | Number and cross section of wires in each cable | | | |
| | For CT cable | | $\geq 4 \text{ mm}^2$ | |
| | For CVT cable | | $\geq 4 \text{ mm}^2$ | |
| | For control cable | | 2.5 mm^2 | |
| 2.7 | Insulation material | | X.L.P.E | |
| 2.8 | Material and thickness of inner sheath | mm | Halogen free | |
| 2.9 | Material and thickness of shield | mm | Lead or copper | |
| 2.10 | Material and thickness of bedding for armor | mm | | |
| 2.11 | Material and thickness of armor | mm | Aluminium or galvanized steel | |
| 2.12 | Material and thickness of outer sheath | mm | Halogen free | |
| 2.13 | Type of sheath between shield and armor | | | |
| 2.14 | Short circuit withstand current/time of conductors | kA/Sec | | |
| 2.15 | Minimum bending radius at minimum temperature | | | |
| 2.16 | Conductor DC resistance at 20°C | Ω/km | | |

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| 2.17 | Minimum temperature during installation | °C | | |
| 2.18 | Minimum pulling tension | N | | |
| 2.19 | Core identification required | Yes/No | yes | |
| 2.20 | Type and routine tests required | Yes/No | yes | |
| 3 | Fiber Optic Cables | | | |
| 3.1 | Manufacturer | | | |
| 3.2 | Type of optical fiber cable | | | |
| 3.3 | Number of cores | | | |
| 3.4 | Mode - field diameter at 1550 nm & | μm | | |
| | Mode - field diameter at 1310 nm | | | |
| 3.5 | Effective core area | μm ² | | |
| 3.6 | Mode field concentricity error at 1550 nm & | ≤ μm | | |
| 3.7 | Mode field concentricity error at 1310 nm | | | |
| 3.8 | Mode field non - circularity error | | | |
| 3.9 | Cut - off wavelength λ _{CC} | | | |
| 3.10 | Attenuation coefficient : in 1550 nm & | dB/Km | | |
| | Attenuation coefficient : in 1310 nm | | | |

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| | | | REQUIRED | OFFERED |
| 3.11 | 1550 nm bend performance | ≤ db | | |
| 3.12 | Non - zero dispersion region | nm | | |
| 3.13 | Zero dispersion wavelength | < μm | | |
| 3.14 | Cladding diameter | μm | | |
| 3.15 | Cladding non - circularity | ≤ % | | |
| 3.16 | Primary coating diameter | μm | | |
| 3.17 | Primary coating concentricity error | ≤ μm | | |
| 3.18 | Primary coating non- circularity error | ≤ % | | |
| 3.19 | Fiber materials | | | |
| 3.20 | Fiber coating material | | | |
| 3.21 | Number of armor | | | |
| 3.22 | Material of outer jacket | | | |
| 3.23 | Color coding of fiber | | | |
| 3.24 | Normal drum length | m | | |
| 3.25 | Proof stress level | ≥ Gpa | | |
| 4 | <u>Cable Gland</u> | | | |
| 4.1 | Cable glands | | | |
| | Manufacturer | | | |
| | Material | | | |

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| | | | REQUIRED | OFFERED |
| | Type designation | | | |
| 5 | <u>Cable Tray, Ladder and Accessories</u> | | | |
| 5.1 | Manufacturer | | | |
| | Name | | | |
| | Country | | | |
| | Type designation | | | |
| 5.2 | Material | | | |
| 5.3 | Galvanized thickness | | | |