

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED
STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR UNARMoured COPPER CONTROL CABLES

| Sl. | Description | Drawing approval subject to valid vendor registration | | | | | Parameters / Values | | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------|-----------|------------|------------|---------------------|--|--|--|--|
| 1 | Material Description | CONTROL CABLES | | | | | | | | | |
| 2 | a) Type and description of the cable with size | Copper conductor PVC Insulated unarmoured cables as per IS : 1554 (Part- I)-1988 | | | | | | | | | |
| | b) Standards which they conform to | IS : 1554 (P-I), IS 8130, IS : 5831 | | | | | | | | | |
| | The type tests should have been conducted not earlier than 5 years in the Standard third party laboratory. The Manufacturer shall produce the type test reports at the time of acceptance tests. | | | | | | | | | | |
| | c) Quality of material & standard to which conform | BIS | | | | | | | | | |
| | The manufacturer shall produce the valid BIS certification at the time of acceptance tests. | | | | | | | | | | |
| 3 | CONDUCTOR (Sq.mm) | 2 c x 2.5 | 4 c x 2.5 | 6 c x 2.5 | 10 c x 2.5 | 12 c x 2.5 | | | | | |
| | a) Material | Stranded Copper conductor as per IS : 8130 class 2 | | | | | | | | | |
| | b) Whether stranded | Yes | | | | | | | | | |
| | c) If so, number of strands | 7 | 7 | 7 | 7 | 7 | | | | | |
| | d) Nominal Diameter of each strand before stranding (mm) | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | | | | | |
| | e) Max. resistance at 20 Deg.C (Ohms/Km) | 7.41 | | | | | | | | | |
| 4 | INSULATION | | | | | | | | | | |
| | a) Material | PVC Type A as per IS : 5831 | | | | | | | | | |
| | b) Nominal thickness (mm) | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | | | | | |
| | c) Minimum tensile strength without ageing (N/mm ²) and maximum % variation after ageing | 12.5 & +/-20% | | | | | | | | | |
| | d) Minimum elongation at break without ageing (%) and maximum % variation after ageing. | 150% & +/-20% | | | | | | | | | |
| | e) Minimum volume resistivity at | | | | | | | | | | |
| | i) 27 Deg.C (Ohm-Cm) | 1 x 10 ¹³ | | | | | | | | | |
| | ii) Max. rated temperature of 70 Deg.C (Ohm-Cm) | 1 x 10 ¹⁰ | | | | | | | | | |
| | f) Minimum insulation resistance constant at | | | | | | | | | | |
| | i) 27 Deg C (Mega ohm/Km) | 36.7 | | | | | | | | | |
| | ii) Max. rated temperature of 70 Deg.C (Mega ohm/Km) | 0.037 | | | | | | | | | |
| | iii) Whether application of insulation is by way of extrusion | Extrusion | | | | | | | | | |
| 5 | INNER SHEATH | | | | | | | | | | |
| | a) Material | PVC as per IS : 1554 (Part- I) | | | | | | | | | |
| | b) Minimum thickness inner sheath (in mm) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | | | | |
| | c) Whether method of application is by way of extrusion | Extrusion | | | | | | | | | |

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTANCE TESTS
 2. FOR EPC CONTRACTS ONLY



Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.



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|-----|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------|-----------|------------|------------|
| | | 2 c x 2.5 | 4 c x 2.5 | 6 c x 2.5 | 10 c x 2.5 | 12 c x 2.5 |
| 6 | OUTER SHEATH | | | | | |
| | a) Material | PVC Type ST - 1 as per IS : 5831 | | | | |
| | b) Nominal thickness (mm) | 1.8 | 1.8 | 1.8 | 2.0 | 2.0 |
| | c) Minimum tensile strength without ageing (N/mm ²) and maximum % variation after ageing | 12.5 & +/-20% | | | | |
| | d) Minimum elongation of break (%) and maximum variation after ageing (%) | 150 & +/-20% | | | | |
| | e) Whether method of application is by way of extrusion | Yes, Extrusion | | | | |
| | f) Are the inner and outer sheaths extruded in a single operation out of the material intended for outer sheaths | Inner and outer sheath shall be extruded separately | | | | |
| | g) Whether the PVC suitably treated for withstanding the working conditions. | YES | | | | |
| | h) Colour | BLACK | | | | |
| 7 | Physical parameters | | | | | |
| | a) Minimum fictitious Overall dia. of core (mm) | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 |
| | b) Minimum fictitious calculated diameter over laid up cores (mm) | 7.2 | 8.7 | 10.8 | 14.4 | 15 |
| | c) Minimum fictitious calculated diameter under the outer sheath (mm) | 7.8 | 9.3 | 11.4 | 15.0 | 15.6 |
| | d) Minimum fictitious Overall diameter of the finished cable (mm) | 11.4 | 12.9 | 15.0 | 19.0 | 19.6 |
| 8 | Drum length (mtrs) / tolerance (%) | 1000 +/-10% in general or as per the requirement in case of short lengths | | | | |
| 9 | Electrical parameters | | | | | |
| | a) Rated voltage (volts) | 1100Volts | | | | |
| | b) Voltage grade (volts) | 1100Volts | | | | |
| | c) Whether suitable for earthed/unearthed system | Both | | | | |
| | d) Short circuit current capacity for 1 sec. Duration KA | 284.5 Amps | | | | |
| | e) Max. Conductor temperature during short circuit condition. | 160 deg.C. | | | | |
| 10 | Markings | As per IS:1554 (Part-1) & "APTRANSCO" to be embossed with an interval of one meter throughout the cable | | | | |
| 11 | Identification | Cores shall be identified by different coloring of PVC insulation by adopting the following scheme: | | | | |
| | | a) 2 cores : Red and Black | | | | |
| | | b) 4 cores : Red, Yellow, Blue, Black | | | | |
| | | c) 6, 10 & 12 cores : Two adjacent core (counting and direction core) in each layer, blue and yellow remaining cores gray | | | | |
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