

Technical Specification

Cable Type: Indoor DSL Multi-Pair Cable 48x2x26# PE Insulated U/UTP 100 Ohm

Western Wire Part Number: FU448D9E

Spec 458006-3000-0693

Revision: 02/08 Date: 15 December 2008 Page 1 of 2



General description

A multi-pair cable, made of 48 twisted pairs cabled in a concentric formation, tape-wrapped and overall jacketed with a PVC compound for indoor use.

The cable supports a large variety of applications using digital signaling in central offices and in customer premise including ADSL.

Physical Description

| | |
|-------------------------------|---|
| Basic wire conductor | Solid 0.404±0.008mm (26 AWG) tin-coated annealed copper conforming to ASTM B33. |
| Basic wire insulation | Solid HDPE conforming to ASTM D1248-02. |
| Insulation Thickness | 0.20±0.05 mm |
| Insulation OD | 0.75±0.07mm |
| Total number of wires | 96 |
| Total number of twisted pairs | 48 |
| Lays of twisted pairs | Suitable to meet the transmission requirements, 50 mm max. |
| Cabling formation | All pairs cabled in four concentric layers (3+9+15+21). Core OD: 9.6 mm nom. |
| Color code | See Page No. 2 |
| Overall tape wrap | Polyester tape, providing 100% coverage and 25% overlap. |
| Overall jacket | PVC compound conforming to ASTM D1047, sleeve extrusion. |
| Rip cord | Stranded polyamide rope, 130N min. breaking strength. |
| Jacket color | Gray RAL 7032 |
| Jacket thickness | 1.1 mm nom. The longitudinal variations in jacket thickness shall be ±0.1 mm max. |
| Jacket eccentricity | 10% max. (Tmax/Tmin=1.1 Max.) |
| Overall diameter | 12.0±0.5 mm. |
| Surface marking (3mm fonts) | WESTERN WIRE FU448D9E U/UTP 48x2x26AWG IEC 60332-1 300VDC CE 2002/95/EC (RoHS) [Batch Number] [Seq. meter mark] METER |
| Total weight | 205 Kg/Km nom. |
| Total copper weight | 114 Kg/Km nom. |
| Minimum bend radius | 100 mm. |
| Operating temperature range | -20 to +80C |
| Flame test | IEC 60332-1. All flames shall be extinguished 30 sec max. after burner removal. |

Electrical Properties @ 20C

| | |
|--|--------------------------|
| Characteristic Impedance | 100±15 Ohm @ 1-32 MHz |
| Average Capacitance | 55 pF/m max. @ 1 KHz |
| Individual Capacitance | 58 pF/m max. @ 1 KHz |
| Capacitance unbalance - pair to shield acc. to IEC 61156-1 (2002) Para. 2.1.2. | 1600 pF/m max @ 1 KHz |
| Capacitance unbalance - pair to pair | 400 pF/500m max. @ 1 KHz |
| Coupling attenuation (IEC Absorbing Clamp method) | 40dB min. @ 32 MHz |
| Velocity of Propagation | 58% min. @ 1-32 MHz |
| Propagation Delay Skew | 48 ns/100m max. |
| DC Resistance | 148 Ohm /Km max. |
| DC Resistance unbalance | 2% max. |
| Voltage rating | 300V rms max. |
| Dielectric strength | 2000 Vdc / 1 minute min. |
| Jacket spark-test | 2.5 KV ac min. |
| Insulation resistance | 1GOhm·Km min @ 500V |

Transmission Properties tested on 100m sample @ 20C

| Frequency MHz | Max. Attenuation dB/100m | Min. PS-NEXT dB | Min. PS-ELFEXT dB |
|---------------|--------------------------------------|-------------------------------|-------------------------------|
| | $2.93 \cdot f^{1/2} + 0.176 \cdot f$ | $53 - 15 \cdot \text{Log}(f)$ | $53 - 20 \cdot \text{Log}(f)$ |
| 1.0 | 3.1 | 53 | 53 |
| 10 | 11.0 | 38 | 33 |
| 16 | 14.5 | 34.9 | 28.9 |
| 32 | 22.2 | 30.4 | 22.9 |

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Mechanical Properties

| | |
|--|--|
| Basic conductor elongation at break | 15% min. |
| Conductor insulation tensile properties Aging: 168h @ 100C. | Tensile strength: 2.4 Kg/mm ² min. 80% retention after accelerated aging. Elongation: 300% min. 80% retention after accelerated aging. |
| Insulation to Conductor adhesion | 2N min. 1" sample. |
| Insulation eccentricity | Tmax/Tmin < 1.2 at any point. (T=Insulation thickness) |
| Insulation cold bend | The insulation material shall remain pliable and shall not crack @ -20C. |
| Insulation heat shock | The insulation shall not crack and shall not deform at temperature variation between -20 to +80C. |
| Outer jacket tensile properties Aging: 168h @ 100C. | Tensile strength: 1.22 Kg/mm ² (12 MPa) min. 80% retention after accelerated aging. Elongation: 125% min. 80% retention after accelerated aging. |
| Outer jacket cold bend | The jacketing material shall remain pliable and shall not crack @ -20C. |
| Jacket heat shock | The jacketing material shall not crack and shall not deform at temperature variation between -20 to +80C. |

Color Code

| Pair | Wire A | Wire B | Pair | Wire A | Wire B |
|------|--------|--------|------|--------|--------|
| 1 | White | Blue | 26 | White | Red |
| 2 | White | Orange | 27 | White | Black |
| 3 | White | Green | 28 | White | Yellow |
| 4 | White | Brown | 29 | White | Purple |
| 5 | White | Gray | 30 | Red | Black |
| 6 | Red | Blue | 31 | Red | Yellow |
| 7 | Red | Orange | 32 | Red | Purple |
| 8 | Red | Green | 33 | Black | Yellow |
| 9 | Red | Brown | 34 | Black | Purple |
| 10 | Red | Gray | 35 | Yellow | Purple |
| 11 | Black | Blue | 36 | Blue | Orange |
| 12 | Black | Orange | 37 | Blue | Green |
| 13 | Black | Green | 38 | Blue | Brown |
| 14 | Black | Brown | 39 | Blue | Gray |
| 15 | Black | Gray | 40 | Orange | Green |
| 16 | Yellow | Blue | 41 | Orange | Brown |
| 17 | Yellow | Orange | 42 | Orange | Gray |
| 18 | Yellow | Green | 43 | Green | Brown |
| 19 | Yellow | Brown | 44 | Green | Gray |
| 20 | Yellow | Gray | 45 | Gray | Brown |
| 21 | Purple | Blue | 46 | Pink | Blue |
| 22 | Purple | Orange | 47 | Pink | Orange |
| 23 | Purple | Green | 48 | Pink | Green |
| 24 | Purple | Brown | 49 | Pink | Brown |
| 25 | Purple | Gray | 50 | Pink | Gray |

All colors shall be stable in the temperature operating range of the cable.