

## Application

- Horizontal and building backbone cable.
- Support current and future **Category 6 and Category 5 enhanced** applications, such as: 10 Base-T, 100 Base-T, 1000 Base-T (Gigabit Ethernet), FDDI, ATM

## Key features and Standards

- General standards: **ISO/IEC 11801 2<sup>nd</sup> edition (2002)**, **EN 50173 2<sup>nd</sup> edition (2001)**, **ANSI/TIA/EIA 568-b.2 (2002)**

## Construction & Dimensions



- Construction: Unshielded 4 twisted pairs
- Conductor: solid bare copper
- Conductor diameter: AWG 23 (0,57 mm)
- Conductor insulation material: Polyolefine
- Diameter over insulation: 1,05 mm
- Cross web: FRNC compound
- Jacket material: Flame retardant PVC
- Outer diameter: 6,5 mm

|        |                     |
|--------|---------------------|
| Pair 1 | White-Blue/Blue     |
| Pair 2 | White-Orange/Orange |
| Pair 3 | White-Green/Green   |
| Pair 4 | White-Brown/Brown   |

Colour identification according to IEC 60304

## Electrical characteristics (at 20 °C)

|                                                       |                           |
|-------------------------------------------------------|---------------------------|
| Nominal mutual capacitance at 1 kHz                   | 50 nF/km                  |
| Maximum conductor DCR                                 | 77 Ohm/km                 |
| NVP - Nominal Velocity of Propagation                 | 0.70 c                    |
| SKEW – Propagation delay difference (100 MHz)         | typical $\leq 15$ ns/100m |
| Mean Characteristic Impedance 4-100 MHz <sup>1)</sup> | 100 $\pm$ 5 Ohm           |

<sup>1)</sup>: According to cable requirements of ISO/IEC 11801 category 6, Sept. 2002.

## General and environmental characteristics

|                                                 |               |
|-------------------------------------------------|---------------|
| Temperature range - operation                   | -20°C - +60°C |
| Temperature range - installation                | +0°C - +50°C  |
| Minimum bending radius - operation              | 26 mm         |
| Minimum bending radius - installation           | 52 mm         |
| Maximum pulling tension                         | 80 N          |
| Flame retardancy                                | IEC 332-1     |
| Caloric value                                   | 555 kJ/m      |
| Weight (approx.)                                | 43 kg/km      |
| Maximum operating voltage                       | 48 V rms      |
| Maximum continuous current per conductor (25°C) | 1.4 A         |

### Electrical characteristics (at 20 °C)

#### Attenuation

| Frequency                  | 1     | 4   | 10  | 16  | 20  | 31.2 | 62.5 | 100  | 155  | 200  | 250  | MHz      |
|----------------------------|-------|-----|-----|-----|-----|------|------|------|------|------|------|----------|
| Spec. (Max.) <sup>1)</sup> | -     | 4.0 | 6.0 | 7.6 | 8.5 | 10.8 | 15.5 | 19.9 | 25.3 | 29.2 | 33   | dB/ 100m |
| Typical                    | [1.8] | 3.5 | 5.7 | 7.3 | 8.2 | 10.4 | 15.1 | 19.4 | 24.3 | 27.5 | 30.8 | dB/ 100m |

#### NEXT (Near end crosstalk)

| Frequency                  | 1    | 4  | 10 | 16 | 20 | 31.2 | 62.5 | 100 | 155 | 200 | 250 | MHz      |
|----------------------------|------|----|----|----|----|------|------|-----|-----|-----|-----|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 66 | 60 | 57 | 56 | 53   | 48   | 45  | 42  | 41  | 39  | dB/ 100m |
| Typical                    | [80] | 76 | 70 | 67 | 66 | 63   | 58   | 55  | 51  | 49  | 45  | dB/ 100m |

#### Power sum NEXT

| Frequency                  | 1    | 4  | 10 | 16 | 20 | 31.2 | 62.5 | 100 | 155 | 200 | 250 | MHz      |
|----------------------------|------|----|----|----|----|------|------|-----|-----|-----|-----|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 63 | 57 | 54 | 53 | 50   | 45   | 42  | 39  | 38  | 36  | dB/ 100m |
| Typical                    | [78] | 74 | 68 | 65 | 64 | 61   | 56   | 53  | 49  | 47  | 43  | dB/ 100m |

#### Power sum ELFEXT

| Frequency                  | 1    | 4  | 10 | 16 | 20 | 31.2 | 62.5 | 100 | 155 | 200 | 250 | MHz      |
|----------------------------|------|----|----|----|----|------|------|-----|-----|-----|-----|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 53 | 45 | 41 | 39 | 35   | 29   | 25  | 21  | 19  | 17  | dB/ 100m |
| Typical                    | [70] | 64 | 57 | 51 | 49 | 45   | 39   | 35  | 31  | 29  | 27  | dB/ 100m |

#### ACR

| Frequency                  | 1    | 4    | 10   | 16   | 20   | 31.2 | 62.5 | 100  | 155  | 200  | 250 | MHz      |
|----------------------------|------|------|------|------|------|------|------|------|------|------|-----|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 62.0 | 54.0 | 49.4 | 47.5 | 42.2 | 32.5 | 25.1 | 16.7 | 11.8 | 6.0 | dB/ 100m |
| Typical                    | [78] | 72   | 64   | 60   | 58   | 53   | 43   | 36   | 27   | 22   | 14  | dB/ 100m |

#### Power sum ACR

| Frequency                  | 1    | 4    | 10   | 16   | 20   | 31.2 | 62.5 | 100  | 155  | 200 | 250 | MHz      |
|----------------------------|------|------|------|------|------|------|------|------|------|-----|-----|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 59.0 | 51.0 | 46.4 | 44.5 | 39.2 | 29.5 | 22.1 | 13.7 | 8.8 | 3.0 | dB/ 100m |
| Typical                    | [76] | 71   | 62   | 58   | 56   | 51   | 41   | 34   | 25   | 20  | 12  | dB/ 100m |

#### Return Loss

| Frequency                  | 1    | 4    | 10   | 16   | 20   | 31.2 | 62.5 | 100  | 155  | 200  | 250  | MHz      |
|----------------------------|------|------|------|------|------|------|------|------|------|------|------|----------|
| Spec. (Min.) <sup>1)</sup> | -    | 23.0 | 25.0 | 25.0 | 25.0 | 23.6 | 21.5 | 20.1 | 18.8 | 18.0 | 17.3 | dB/ 100m |
| Typical                    | [34] | 34   | 41   | 42   | 44   | 46   | 45   | 43   | 40   | 40   | 36   | dB/ 100m |

<sup>1)</sup>: Specification values according to cable requirements of ISO/IEC 11801 category 6, Sept. 2002.

Note: Values between brackets are for information only

### Ordering information

#### MARKING

Text on the cable jacket      Inkjet printing

**BELDEN 7812E UTP CAT6 4PR AWG23 ISO/IEC 11801 EN50173 VERIFIED 100 OHM**

Meter marking:                      Yes

#### JACKET COLOUR

| Colour | RAL code | Colour | RAL code |
|--------|----------|--------|----------|
| Grey   | RAL 7032 | Blue   | RAL 5015 |

#### PACKAGING (PUT UP)

305m unreel box and 305m, 500m and 1000m Crate reels