

Application

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

Standards

- General standards: **ISO/IEC 11801, EN 50173, TIA/EIA 568-A-5 enhanced**
- Future standards like: **ISO/IEC 11801 2<sup>nd</sup> edition, EN 50173 2<sup>nd</sup> edition und prEN 50288-3-1**

Construction & Dimensions

- Construction: Unshielded 4 twisted pairs
- Conductor: solid bare copper
- Conductor diameter: AWG 23 (0,57 mm)
- Conductor insulation material: Polyethylene (PE)
- Diameter over insulation: 1.05 mm  $\pm$  0.05 mm
- Jacket material: PVC (Flame retardant)
- Outer diameter: 6.5 mm  $\pm$  0.3 mm



Colour code

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

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 | 4.0 | 6.0 | 7.6 | 8.5 | 10.7 | 15.5 | 19.9 | 25.3 | 29.1 | 33.0 | 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> | 65 | 65 | 59 | 56 | 55 | 52   | 47   | 44  | 41  | 40  | 38  | 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> | 65 | 65 | 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>2)</sup> | 64 | 64 | 46 | 41 | 40 | 36   | 30   | 26  | 22  | 20  | 18  | 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> | 61.0 | 61.0 | 53.0 | 48.4 | 46.5 | 41.3 | 31.5 | 24.1 | 15.7 | 10.9 | 5.0  | dB/ 100m |
| Typical                    | 78.2 | 72.5 | 64.3 | 59.7 | 57.8 | 52.6 | 42.9 | 35.6 | 26.7 | 21.5 | 14.2 | 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> | 58.0 | 58.0 | 50.0 | 45.4 | 43.5 | 38.3 | 28.5 | 21.1 | 12.7 | 7.9  | 2.0  | dB/ 100m |
| Typical                    | 76.2 | 70.5 | 62.3 | 57.7 | 55.8 | 50.6 | 40.9 | 33.6 | 24.7 | 19.5 | 12.2 | dB/ 100m |

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

<sup>2)</sup>: Specification values according to cable requirements of ANSI/TIA/EIA-568-A-5 (enhanced)



**Electrical characteristics (at 20 °C)**

|                                               |                           |
|-----------------------------------------------|---------------------------|
| Nominal mutual capacitance at 1 kHz           | 80 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 |
| Impedance 1 - 100 MHz                         | 100 $\pm$ 15 Ohm          |
| Impedance 100 - 250 MHz                       | 100 $\pm$ 18 Ohm          |

**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     |
| Energy of flame                                 | 555 kJ/m      |
| Weight (approx.)                                | 43 kg/km      |
| Maximum operating voltage                       | 48 V rms      |
| Maximum continuous current per conductor (25°C) | 1.4 A         |

**Ordering information**

**MARKING**

Text on the cable jacket                      Inkjet printing

**BELDEN 7812E UTP CAT6 4PR AWG23 ISO/IEC 11801 EN 50173 VERIFIED 100 OHM**

Meter marking:                      Yes

**JACKET COLOUR**

| Colour | RAL code | Belden colour code |
|--------|----------|--------------------|
| Grey   | RAL 7032 | 3136               |
| Blue   | RAL 5015 | 3135               |

**PACKAGING (PUT UP)**

| Belden code    | Delivery length | Weight | Remark              |
|----------------|-----------------|--------|---------------------|
| 46078 xxxx 179 | 305 m           | 13 kg  | Unreel box          |
| 46078 xxxx 079 | 305 m           | 13 kg  | Non returnable reel |
| 46078 xxxx 240 | 500 m           | 23 kg  | Non returnable reel |
| 46078 xxxx 241 | 1000 m          | 43 kg  | Non returnable reel |

xxxx: Belden colour code