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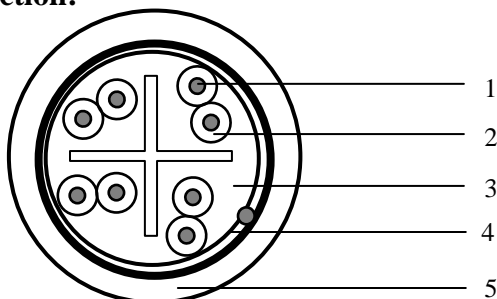
Application:

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

General standards:

- ISO/IEC 11801 2nd edition, 2002
- EN 50173-1, 2002
- ANSI/TIA/EIA 568-B.2-1, 2002

Construction:



1. Conductor


Material Solid bare copper ETP
Diameter AWG 23

2. Insulation

Material Polyethylene
Nominal diameter over insulation 1.15 mm

3. Cable core

Pair 2 twisted insulated conductors
Cross web Polyolefin
Number of pairs 4, all twisted together
Colour code pair 1 White / Blue & Blue
Colour code pair 2 White / Orange & Orange
Colour code pair 3 White / Green & Green
Colour code pair 4 White / Brown & Brown
Foil Overlapping polyester foil over cable core

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4. Foil shielding

Material	Laminated Aluminium / Polyester
Position aluminium	Facing outside, in contact with drainwire
Drainwire material	Solid tinned copper
Drainwire diameter	AWG 26

5. Jacket

Material	LSNH
Diameter	7.3 ± 0.3 mm
Colour	Grey (RAL 7032), Blue (RAL 5015) or Purple (RAL 4005)
Standard text:	BELDEN 7860NBH F/UTP CAT6 4PR AWG23 LSNH ISO/IEC 11801 EN50173 VERIFIED 100 OHM (+ length indication per meter)

Requirements and test methods


Electrical characteristics (reference standard: ISO/IEC 61156-5):

Low frequency and D.C. (at 20° C)

	<u>Specification</u>	<u>Unit</u>
- D.C. resistance conductor	< 9.5	Ω/100m
- Resistance unbalance: within a pair / between pairs	< 2 / < 4	%
- D.C. insulation resistance	≥ 5000	MΩ.km
- Dielectric strength cond. – cond. (2 sec)	2.5	kV D.C.
- Dielectric strength cond – screen (2 sec)	2.5	kV D.C.
- Mutual capacitance	< 56	nF/km
- Capacitance unbalance	< 1600	pF/km

High frequency (at 20° C)

	<u>freq. (MHz)</u>	<u>Specification</u>	<u>Unit</u>
- Velocity of propagation (for information only)	4 – 250	≥ 0.6	c
- Skew	4 – 250	≤ 45	ns/100m
- Propagation delay	4 – 250	≤ 534 + 36/Vf	ns/100m
- Longitudinal attenuation	4 – 250	≤ 1.82*Vf+0.0169*f+0.25/Vf	dB
- Transverse Conversion Loss (TCL, level 1)	1 – 250	> 40 – 10*log (f)	dB
- Equal Level Transverse Conversion Loss (ELTCL)	1 – 30	> 35 – 20*log (f)	dB
- Near end cross talk (NEXT)	4 – 250	≥ 75.3-15*log(f)	dB
- Power sum near end cross talk (PSNEXT)	4 – 250	≥ 72.3-15*log(f)	dB
- Equal level far end cross talk (ELFEXT)	4 – 250	≥ 68.0-20*log(f)	dB
- Power sum equal level far end cross talk (PSELFEXT)	4 – 250	≥ 65.0-20*log(f)	dB
- Attenuation cross talk ratio (ACR)	4 – 250	NEXT- longitudinal att.	dB
- Power sum attenuation cross talk ratio (PSACR)	4 – 250	PSNEXT - longitudinal att.	dB

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<u>High frequency</u>	<u>freq. (MHz)</u>	<u>Specification</u>	<u>Unit</u>
- Input Impedance open / short (Z_o/s)	4 – 250	100 ± (see table)	Ω
- Return Loss (RL)	4 ≤ f ≤ 10	≥ 20 + 5 log (f)	dB
	10 ≤ f ≤ 20	≥ 25	dB
	20 ≤ f ≤ 250	≥ 25 – 7 log (f/20)	dB
- Coupling Attenuation (type 2)	30 – 100	> 55	dB
	100 – 250	> 55 – 20*log (f/100)	dB
- Transfer Impedance (Z_T , grade 2)	1	< 50	mΩ/m
	10	< 100	mΩ/m
	30	< 200	mΩ/m
	100	< 1000	mΩ/m

Reference standard:


ISO/IEC 61156-5

TYPE	1*	4	10	16	20	31.2	62.5	100	155	250	MHz
Attenuation	2.1	3.8	6.0	7.6	8.5	10.7	15.5	19.9	25.3	33.0	dB/100m
NEXT	75.3	66.3	60.3	57.2	55.8	52.9	48.4	45.3	42.4	39.3	dB/100m
PS NEXT	72.3	63.3	57.3	54.2	52.8	49.9	45.4	42.3	39.4	36.3	dB/100m
ACR	73.2	62.4	54.3	49.6	47.3	42.1	32.9	25.4	17.1	6.3	dB/100m
PS ACR	70.2	59.4	51.3	46.6	44.3	39.1	29.9	22.4	14.1	3.3	dB/100m
ACR-F	68.0	56.0	48.0	43.9	42.0	38.1	32.1	28.0	24.2	20.0	dB/100m
PS ACR-F	65.0	53.0	45.0	40.9	39.0	35.1	29.1	25.0	21.2	17.0	dB/100m
Return Loss	20.0	23.0	25.0	25.0	25.0	23.6	21.5	20.1	18.8	17.3	dB/100m
TCL level 1	40.0	34.0	30.0	28.0	25.1	22.0	20.0	19.0	17.0	16.0	dB/100m
ELTCTL	35.0	23.0	15.0	10.9	9.0	5.1					dB/100m
Impedance upper limit	122.2	115.2	111.9	111.9	111.9	114.1	118.3	121.9	126.0	131.5	Ω
Impedance lower limit	81.8	86.8	89.4	89.4	89.4	87.7	84.5	82.0	79.3	76.0	Ω

NOTE: Limits below 4MHz are for information only

Mechanical characteristics

	<u>Specification</u>	<u>Unit</u>
- Elongation at break of the conductors	≥ 8	%
- Minimum elongation at break of the insulation	≥ 100	%
- Minimum elongation at break of the sheath	≥ 100	%
- Tensile strength of sheath	≥ 9	MPa

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Environmental and overall characteristics

	Specification	Unit
- Maximum operating voltage (for all temperatures cable is intended to be used)	72	V D.C.
- Maximum continuous current per conductor (@25°C)	1.5	A
- Temperature rating installation	0 / 50	°C
- Temperature rating operation	- 30 / 60	°C
- Total cable weight	48	kg/km
- Minimum bending radius during operation (4D) and installation (8D)	29 / 58	mm
- Maximum pulling strength	90	N
- Burning load	700	kJ/m
- Smoke density acc. to IEC 61034-1/2 & EN50268-1/2	transmittance >60%	
- Amount of halogen acid gas acc. to IEC 60754-1/2 & EN50267-1/2	pH > 4.3	
	Conductivity < 10	µS/m
- Fire performance acc. to IEC 60332-1	Pass	

Change history:

- 2009-12-16: First issue of this specification.
- 2010-04-22: Second issue. Some editorial changes. Added info for smoke density and amount of halogen acid gas. Only term "LSNH" is used.



Belden declares this product to be in compliance with the environmental regulations EU RoHS (Directive 2002/95/EC, 27 January 2003); this is valid for all material produced after the RoHS compliant date for this product.