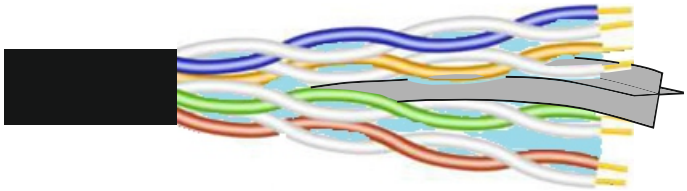
CATALOG CARD

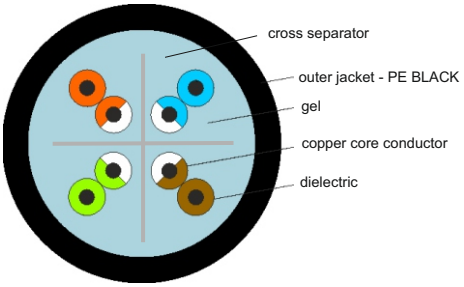
Model

5 904326 350519

U/UTP LAN cat.6 GEL 305m



(PE) (PE + GEL) (Cu)



APPLICABLE STANDARDS

1.ISO/IEC 11801:2010. Information technology. Generic cabling for customer premises.
2.PN-EN 50173-1:2011. Information technology – Structured cabling systems,
– Part 1: general requirements (*implement norm EN 50173-1:2011*).
3.IEC 61156-5:2002. Multicore and symmetrical pair/quad cables for digital communications
– Part 5-2: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz
– Horizontal floor wiring – Capability Approval – Sectional specification.
4.TIA/EIA-568-B.2:2001. Commercial Building Telecommunications Cabling Standard. Part 2: Balanced Twisted-Pair. Cabling Components.
5.TIA/EIA-568-C.2:2009. Balanced Twisted Pair. Telecommunications Cabling and Components Standard.
6.PN-EN 50289-1-2:2007. Telecommunications cables – test methods – Part 1-2: Methods of testing electrical properties – DC resistance.
7.PN-EN 50289-1-3:2007. Telecommunications cables – test methods – Part 1-3: Methods of testing electrical properties – electric endurance.
8.PN-EN 50289-1-4:2007. Telecommunications cables – test methods – Part 1-4: Methods of testing electrical properties – Insulation resistance.
9.PN-EN 50289-1-5:2008. Telecommunications cables – test methods – Part 1-5: Methods of testing electrical properties – Capacity.
10.PN-EN 50289-1-8:2010. Telecommunications cables – test methods – Part 1-8: Methods of testing electrical properties – Attenuation.
11.PN-EN 50289-1-10:2002.Telecommunications cables – test methods – Part 1-10: Methods of testing electrical properties – Perspicacity.
12.PN-EN 50289-1-11:2002. Telecommunications cables – test methods – Part 1-11: Methods of testing electrical properties – Wave impedance, Input impedance, return loss.
13.Directive 2011/65/EU with an annex II 2015/863 (RoHS 3)

TECHNICAL DATA

Type: U/UTP GEL + PE
Category: 6
Internal conductor: 100% CU, four pairs twisted asymmetrically + cross separator
Wires insulation: HDPE polyethylene (PE) + hydrophobic gel
Cross separator: polyethylene (PE)
Outer sheath: polyethylene (PE), UV resistant, black color
Outside diameter: Ø 6.3 ± 0.02 mm
Flammability class: Fca
Working temperature: -20 oC ÷ +70 oC
Laying temperature: 0 oC ÷ +70 oC
Purpose: outdoor and underground installations
Compliance with standards: ISO/IEC 11801:2010, EN 50173-1:2011, IEC 61156-5:2002 and TIA/EIA 568-B.2:2001
Length: 305 m.
Symbol: NS-711
Brand: CONOTECH

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Model

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U/UTP LAN cat.6 GEL 305m

ELECTRICAL DATA

Conductor resistance [Ω/km] : ≤ 150
Conductor resistance asymmetry [%] : ≤ 3,0
Effective capacity [nF/km] : 50 ± 3
Capacitance asymmetry [pF/km] : ≤ 1600
Conductor insulation resistance [Ω/km] : ≥ 150
Insulation resistance to test voltage (DC, 1min.) [V/AC] : 1000
Effective attenuation by f=250 MHz [dB] : ≤ 33,0
Near-pass loss (NEXT) by f=250 MHz [dB] : ≥ 39,0
Total Near-pass loss (PS NEXT) przy f=250 MH [dB] : ≥ 36,0
Return loss (RL) by f=250 MHz [dB] : ≥ 17,3

PRODUCT DESCRIPTION

High quality network cable, unshielded U/UTP LAN cable GEL + PE category 6, consists of four pairs of asymmetrically twisted wires made of pure copper. The conductors insulation are made of HDPE polyethylene, which is characterized by high density and particularly high dielectric insulation. It has a cross separator that reduces interference between pairs of veins. Additionally it was filled with a hydrophobic gel, which is responsible for preventing longitudinal water penetration in the cable. The outer sheath is made of black PE polyethylene with an outer diameter of Ø 6.30 ± 0.02 mm, which protects against mechanical damage, external weather conditions and UV radiation. The 305 m long twisted-pair cable is packed in an Easy Pull Box carton, which enables fast cable laying. The cable are intended for permanent installation outside the buildings and industrial networks:
- Norms: EN 50173-1:2011
- Certificated by Institute of Communication.

IMPLEMENTATION

Twisted-pair cable enables data transmission in both analog and digital form. It is used to create wired connections in ICT installations. The cable is used for permanent installation in the structured cabling of buildings, as well as in industrial networks. The outer sheath made of polyethylene PE is resistant to UV radiation and the internal gel filling guarantee uninterrupted signal transmission in external and terrestrial installations, bearing in mind the safety of the installation.

MEASUREMENT

Graph 1: Cat.6 cables resistance of pairs of conductors and asymmetry of resistance measurement results.

Cable model	Track	Wire	Conductor resistance [Ω/km]	Resistance asymmetry [%]
UTP cat.6	1	a	89,337	0,23
		b	88,926	
	2	a	90,244	0,25
		b	90,703	
	3	a	90,546	0,27
		b	91,036	
	4	a	91,705	0,20
		b	91,336	
Requirements	-	-	≤ 150	≤ 3,0

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Graph 2: Cat.6 cable effective capacitance and capacitance asymmetry measurements results.

Cable model	Track	Effective capacity [nF/km]	Capacitance asymmetry [pF/km]
UTP cat.6	1	48,44	84
	2	46,83	112
	3	46,06	312
	4	49,68	48
Requirements	-	-	≤ 1600

Graph 3: Cat.6 cable insulation resistance measurement results.

Cable model	Track	Wire	Insulation resistance [Ω/km]
UTP cat.6	1	a	$1{,}1 \cdot 10^5$
		b	$1{,}4 \cdot 10^5$
	2	a	$1{,}5 \cdot 10^5$
		b	$9{,}3 \cdot 10^4$
	3	a	$8{,}1 \cdot 10^4$
		b	$1{,}2 \cdot 10^5$
	4	a	$1{,}6 \cdot 10^5$
		b	$9{,}0 \cdot 10^4$
Requirements	-	-	≥ 150

Graph 4: Cat.6 cable effective attenuation measurements results at the frequency of f = 250 MHz

Cable model	Track	Effective attenuation [dB]
UTP cat.6	1	31,70
	2	32,00
	3	31,80
	4	32,40
Requirements	-	≤ 33,0

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Graph 5: Cat.6 cable near-pass loss (NEXT) measurements results at the frequency f = 250 MHz

Cable model	Track	Near-pass loss (NEXT) [dB]
UTP cat.6	1-2	52,70
	1-3	58,00
	1-4	55,30
	2-3	50,10
	2-4	56,90
	3-4	58,80
Requirements	-	≥ 39,0

Graph 6: Cat.6 cable total near-pass loss (PS NEXT) measurements results at the frequency f = 250 MHz

Cable model	Track	Total near-pass loss (PS NEXT) [dB]
UTP cat.6	1	50,04
	2	47,65
	3	48,68
	4	52,00
Requirements	-	≥ 36,0

Graph 7: Cat.6 cable return loss (RL) measurements results at the frequency f = 250 MHz

Cable model	Track	Return loss (RL) [dB]
UTP cat.6	1	19,20
	2	18,30
	3	19,00
	4	19,60
Requirements	-	≥ 17,3

TEST EQUIPMENT

1. Universal meter U1242A
2. Digital voltmeter V-541
3. Megohmmeter HP4339B Helwett Packard
4. Fluke multimeter RLC PM 6304
5. Network analyzer 8753C Agilent
6. Balance transfomer 3P 50/100Ω 3P
7. Puncture tester TP5S P.A.I.P.
8. Temperature and humidity meter - HMI 41

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