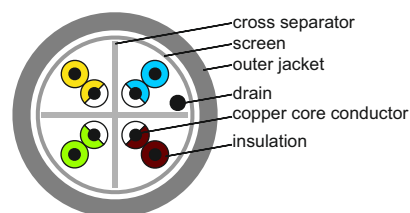
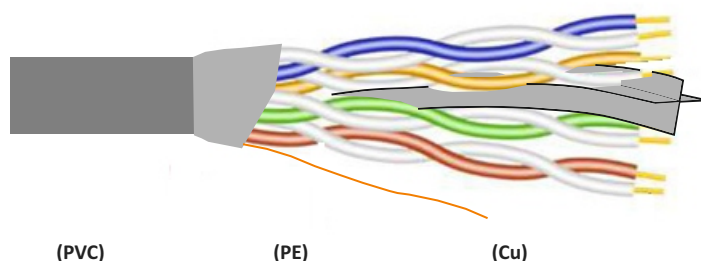


CATALOG CARD

Model



F/UTP LAN cat.6 305m



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.EN 50575:2014, EN 13501-6:2014 CPR directive (CE)
- 14.Directive 2011/65/EU with an annex II 2015/863 (RoHS 3)

TECHNICAL DATA

Type: F/UTP
 Category: 6
 Internal conductor: 100% CU, four pairs twisted asymmetrically
 Screen: aluminium with a thickness of 0,04mm (AL)
 Wires insulation: HDPE polyethylene (PE)
 Grounding: steel-copper plated with a diameter of 0,50 mm (FeCu)
 Cross separator: polyethylene (PE)
 Outer sheath: PVC, Gray color
 Outside diameter: $\varnothing 6.3 \pm 0.02$ mm
 Flammability class: Eca
 Working temperature: $-20\text{ }^{\circ}\text{C} \div +70\text{ }^{\circ}\text{C}$
 Laying temperature: $0\text{ }^{\circ}\text{C} \div +70\text{ }^{\circ}\text{C}$
 Purpose: Inside buildings
 Compliance with standards: ISO/IEC 11801:2010, EN 13501-6:2014 (CPR), EN 50173-1:2011, EN 50575:2014, IEC 61156-5:2002 oraz TIA/EIA 568-B.2:2001
 Length: 305 m.
 Brand: CONOTECH

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CATALOG CARD

Model



F/UTP LAN cat.6 305m

ELECTRICAL DATA

Conductor resistance [Ω/km] : ≤ 150
Conductor resistance asymmetry [%] : $\leq 3,0$
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 $f=125$ MHz [dB] : $\leq 33,0$
Near-pass loss (NEXT) by $f=125$ MHz [dB] : $\geq 39,0$
Total Near-pass loss (PS NEXT) przy $f=125$ MHz [dB] : $\geq 36,0$
Return loss (RL) by $f=125$ MHz [dB] : $\geq 17,3$

PRODUCT DESCRIPTION

High-quality network cable, shielded F/UTP LAN 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. The cable has an aluminum screen and a steel/copper-plated ground, which increases the insensitivity to electromagnetic interference in signal transmission. It has a cross separator that reduces interference between pairs of veins. The outer sheath is made of gray PVC with an outer diameter of $\varnothing 6.30 \pm 0.02$ mm, which protects against mechanical damage. 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 inside the buildings and industrial networks:

- Accordance with CPR (CE)
- Norms: EN 50575:2014
- Reaction to fire: ECA
- 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 exposed to the influence of external electromagnetic interference. Its functional properties ensure simple and comfortable locating inside buildings, 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 [%]
FTP cat.6	1	a	90,446	0,33
		b	91,055	
	2	a	91,492	0,23
		b	91,078	
	3	a	92,364	0,25
		b	92,818	
	4	a	92,466	0,24
		b	92,905	
Requirements	-	-	≤ 150	$\leq 3,0$

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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]
FTP cat.6	1	48,19	471
	2	51,08	1250
	3	52,16	662
	4	47,56	384
Requirements	-	-	≤ 1600

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

Cable model	Track	Wire	Insulation resistance [Ω/km]
FTP cat.6	1	a	$9,7 \cdot 10^4$
		b	$8,9 \cdot 10^4$
	2	a	$1,3 \cdot 10^5$
		b	$9,7 \cdot 10^4$
	3	a	$8,4 \cdot 10^4$
		b	$1,1 \cdot 10^5$
	4	a	$1,8 \cdot 10^5$
		b	$9,3 \cdot 10^4$
Requirements	-	-	≥ 150

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

Cable model	Track	Effective attenuation [dB]
FTP cat.6	1	32,60
	2	31,90
	3	32,00
	4	32,20
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]
FTP cat.6	1-2	49,70
	1-3	52,30
	1-4	48,50
	2-3	56,00
	2-4	50,40
	3-4	45,80
Requirements	-	$\geq 39,0$

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]
FTP cat.6	1	45,13
	2	46,51
	3	44,59
	4	43,05
Requirements	-	$\geq 36,0$

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

Cable model	Track	Return loss (RL) [dB]
FTP cat.6	1	20,10
	2	18,60
	3	19,20
	4	19,80
Requirements	-	$\geq 17,3$

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 transformer 3P 50/100Ω 3P
7. Puncture tester TP5S P.A.I.P.
8. Temperature and humidity meter - HMI 41

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