

LOCAL COMMUNICATION CABLES HIGH FREQUENCY FOR DIGITAL TRANSMISSION SYSTEMS IN FREQUENCY RANGE UP TO 100 MHZ

КЦППэп-5, КЦПВП-5, КЦПВэп-5, КЦПВнг-5, ЦПВнг-LS-5, КЦПппП-5,
КТsPPep-5, КTsPVP-5, КTsPVeP-5, КTsPVng-5, КTsPVng-LS-5, КTsPppP-5,

КЦПппВП-5, КЦПппПБбШп-5
КТsPppVP-5, КTsPppPBbShp-5

ТУ 16.К17-059-2009

TU 16.K17-059-2009

Cable type	OKP code
КЦППэп	35 7211 0300
КЦПВП	35 7211 0400
КЦПВэп	35 7212 0100
КЦПВнг	35 7212 0700
ЦПВнг-LS	35 7212 2000
КЦПппП	35 7211 5300
КЦПппВП	35 7211 0700
КЦПппПБбШп	35 7211 5400

APPLICATION

The cables are intended for operation in broadband subscriber networks, equipped with xDSL systems (including ADSL, ADSL2+, VDSL, VDSL2) at transfer rate up to 100 MBit/s and in structured cable networks in frequency range up to 100 MHz (Category 5 acc. to the Standard ISO/IEC 11801).

Climatic category: UHL or T, placement categories: 1, 2 acc. to the Russian Standard GOST 15150-69.

Cable **КТsPPep-5, КTsPppP-5** – for laying in telephone conduits, in cable galleries, on buildings' walls and for suspension on poles of air communication lines for subscriber networks.

Cable **КТsPVP-5, КTsPppVP-5** – the same, in conditions of high humidity.

Cable **КТsPppPBbShp-5** – for laying in grounds of all categories with the exception of rocky landscapes, in areas captured with rodents, for subscriber networks.

Cable **КТsPVeP-5** – for laying on internal walls of buildings and indoors for subscriber networks.

Cable **КТsPVng-5** – the same, and for bunched laying.

Cable **КТsPVng-LS-5** – for laying on internal walls of buildings, including multi-purpose high-rise buildings, and indoors, also for use in systems of nuclear power plants, subscriber networks.

DESIGN

Conductors – single-wire of soft copper round wire with nominal dia. 0,5 and 0,64 mm.

Insulation - for cables types КTsPPep-5, КTsPVP-5, КTsPVeP-5, КTsPVng-5, КTsPVng-LS-5 – solid, made of insulating PE;

-for cables types КTsPppP-5, КTsPppVP-5, КTsPppPBbShp-5 – skin-foam-skin (3 layers - PE solid layer, PE foamed layer and PE solid layer). Insulated conductors are twisted into pairs with lay length max. 40 mm.

By twisting of pairs of cable types КTsPVP-5, КTsPppVP-5, a water-blocking yarn is longitudinally applied next to insulated conductors.

Nominal number of pairs in cable: 5, 10, 20, 25, 30, 50, 75 and 100.

For cable type КTsPppPBbShp with conductor diameter 0,64 mm, nominal number of pairs in cable: 5, 10, 20, 25, 30, 50.

Pairs are stranded into sub-units consisting of three, four or five pairs.

A water-blocking tape applied over sub-units of cables types КTsPVP-5, КTsPppVP-5.

Over stranded sub-units, and for cables types КTsPVP-5, КTsPppVP-5 over water-blocking tape, a screen of foil-laminated or metallized film is applied, with nominal thickness of Al layer min. 0.02 mm.

Cable core stranded of sub-units of different colours. By core stranding of cables types КTsPVP-5, КTsPppVP-5, yarns of water-blocking material are applied.

Belt wrapping – polyethylenterephthalate tape or foamed polypropylene tape. For cables types КTsPVP-5, КTsPppVP-5, belt wrapping consists of two layers: polyethylenterephthalate tape and water-blocking tape.

Shield – Al-PE tape with nominal thickness of Al layer min. 0,08 mm with tinned copper wire under it.

Sheath:

- for КЦППэп-5, КTsPVP-5, КTsPppP-5, КTsPppVP-5, КTsPppPBbShp-5 - PE;

- for KTSPVep -5 – PVC compound;
 - for KTSPVng -5 – flame-retardant PVC compound;
 - for KTSPVng-LS-5 – low-smoke fire-resistant PVC compound.
- Protective cover** – tape of crepe paper, armour, bitumen layer, protective PE jacket.

Colours of pairs in sub-unit

Colours of sub-units in cable

reference number of pair in sub-unit	designation and colour in a pair	
	a	b
1	white	light-blue (blue)
2		orange
3		green
4		brown
5		grey

reference number of sub-unit	colour of binding elements
1	light-blue
2	orange
3	green
4	brown
5	grey
6	white
7	red
8	black
9	yellow
10	violet

Colours of pairs in three- (four-) pair sub-units are the same as the ones of first three (four) pairs of 5-pair sub-unit.

Cable core stranding schema

nominal number of pairs	stranding schema
5	1x(5x2)
10	2x(3x2)+(4x2) or 2x(5x2)
20	4x(5x2) or 5x(4x2)
25	5x(5x2)
30	(1+5)x(5x2)
50	(3+7)x(5x2) or (2+8)x(5x2)
75	3x(5x(5x2))
100	4x(5x(5x2))

TECHNICAL PROPERTIES

Property	Current frequency, MHz	Standard value
DC conductor resistance 1 km at 20°C, Ohm, for conductor dia., mm: 0,50 0,64	DC	90 ^{+5,9} _{-6,0} 55±3
Conductor insulation electrical resistance, for 1 km, MOhm, min.: 100% of values 80% of values	DC	6500 8000
Mutual capacitance, for 1 km, nF, max.	0,8 *10 ⁻³ or 1,0*10 ⁻³	50
Ohmic unbalance of conductors in pair, %, max.	DC	1
NEXT between circuits in sub-unit, dB/100 m, min.	1 4 10 16 20 31,25 62,5 100	62 53 47 44 42 40 35 32
Attenuation for 100 m, dB, max.	1	2,1

	4	4,3
	10	6,6
	16	8,2
	20	9,2
	31,25	11,8
	62,5	17,1
	100	22,0
FEXT protection in sub-unit, dB/100 m, min.	1	61
	4	49
	10	41
	16	37
	20	35
	31,25	31
	62,5	25
	100	21
Characteristic impedance, Ohm	1-100	100±15
Test voltage during 1 minute, V, applied	0,05*10 ⁻³	1000
- between conductors of working pairs	DC	1500
- between conductors and shield	0,05*10 ⁻³	500
	DC	750
NEXT of total effect power, dB/100 m, min.	1	58,2
	4	48,2
	10	42,5
	16	39,3
	20	37,7
	31,25	34,6
	62,5	29,7
	100	26,3
Far-end protection from total effect power, dB/100 m, min.	1	57,0
	4	45,0
	10	37,0
	16	32,9
	20	31,0
	31,25	27,1
	62,5	21,1
	100	17,0
Return losses, dB, min.	1	17,3
	4	17,9
	10	20,0
	16	20,0
	20	20,0
	31,25	18,6
	62,5	16,5
	100	15,1
Cable transportation conditions considering climatic factors shall comply with storage conditions 8 acc. to the Russian Standard GOST 15150-69		
Cable storage conditions considering climatic factors shall comply with conditions 5 acc. to the Russian Standard GOST 15150-69		
Cable tensile load during laying shall be max. 50 N/mm ² of total conductor cross-section.		
Laying temperature:		
- for cables in PE sheath		from -15°C to +60°C
- for cables in PVC sheath		from -10°C to +60°C
Operation temperature for fixed installation:		
- for cables in PE sheath		from -50°C to +60°C
- for cables in PVC sheath		from -40°C to +60°C
Cable bending radius for laying and installation:		
- for unarmoured cables – min. 10 diameters over plastic sheath;		
- for armoured cables – min. 12 diameters over outer sheath.		
Warranty period for cable operation		3 years
Cable factory length: with number of pairs up to and including 30		min. 300 m,

with number of pairs 50 and 100

min. 250 m

Cable marking – on cable outer sheath: Manufacturer name, manufacturing year, cable type and length markings

Cable delivered on wooden drums acc. to the Russian Standard GOST 5151-79.