

# HIGH-FREQUENCY COMMUNICATION CABLES, SINGLE-QUAD, PE-INSULATED

**ЗКП,  
ЗКР,**

**ЗКПз,  
ЗКРз,**

**ЗКПм,  
ЗКРм,**

**ЗКПБ,  
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**ЗКАШп,  
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**ЗКАШпм,  
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**ЗКАБпм,  
ЗКАБрм,**

**ЗКАКпШп,  
ЗКАКрШп,**

**ЗКАКпШпм,  
ЗКАКрШпм**

## APPLICATION

The cables are designed for area communication lines of K-60 transmission systems, operating in the frequency range up to 250 kHz at alternating voltage of remote power supply up to 690 V AC, 50 Hz.

## DESIGN

**Conductor** - soft copper wire, 1.2 mm dia.

**Insulation** - high-pressure insulation PE (HPPE).

**Core** - star quad made of four different color insulated conductors stranded around a filler.

**Belt insulation** - PE with Butyl Rubber filling (ZKP, ZKPB, ZKAShp, ZKABp, ZKAKpShp cables) or PETP film and HPPE filling (ZKPm, ZKPBm, ZKAShp, ZKABpm, ZKAKpShpm; PE with a hydrophobic filler (ZKPz, ZKPBz cables).

### Screen:

- helically applied tapes of aluminum foil with tin-plated copper wire underneath or copper foil (ZKP, ZKPm, ZKPB, ZKPBm cables);

- welded or extruded Al sheath (ZKAShp, ZKAShp, ZKABp, ZKABpm, ZKAKpShp, ZKAKpShpm cables).

**Sheath** — light-stabilized high-pressure PE jacket (ZKP, ZKPm, ZKPB, ZKPBm cables).

**Protective covering** is applied on top of the PE jacket in ZKPB, ZKPBm, ZKPBz and on top the Al sheath in ZKAShp, ZKAShp, ZKAShpz, ZKABp, ZKABpm, ZKABpz, ZKABpShp, ZKABpShpm, ZKABpShpz, ZKAKpShp, ZKAKpShpm, ZKAKpShpz.

**B** – a bedding of two crape paper tapes, a layer of bitumen; an armor of two steel tapes and an outer covering is of a layer of bitumen, a fiberglass yarn, a layer of bitumen and a lime coating.

**Shp** – a layer of bitumen and a PE protective jacket, a PE protective jacket.

**Bp** - a bedding of a layer of bitumen, a PE protective jacket, crape paper, bitumen, crape paper, bitumen; an armor of two steel tapes and an outer covering of a layer of bitumen, a fiberglass yarn, a layer of bitumen and a lime coating.

**BpShp** – a bedding of a layer of bitumen, a PE jacket, crape paper, bitumen, crape paper, bitumen; an armor of two steel tapes and an outer covering of a layer of bitumen, two steel tapes and an outer covering of a layer of bitumen and a PE protective jacket.

**KpShp** – a bedding of a layer of bitumen, a PE jacket; an armor of steel zinc-plated round wires and an outer covering of a layer of bitumen and a PE protective jacket.

## OPERATION AND LAYING CONDITIONS

**Operating temperature** — from minus 40 °C to plus 50 °C.

**Service life under normal operation conditions, min.** - 20 years.

**Cable laying** — in cable conduit systems, ducts, multiduct systems, over bridges and in ground, if not subject to mechanical stress and danger of damage by rodents (ZKPm, ZKAShp), directly in ground of all types exposed to danger of damage by rodents and not exposed to deformations under frozen conditions and chemical aggressiveness to steel armor (ZKPBm, ZKABpm), as well as across mountain, floatable and navigable rivers, water-logged ground and ground with deformations under frozen conditions (ZKAKpShpm). Mechanical laying is allowed.

Cable laying temperature range, min. - minus 10 °C.

**Cable bending radius during laying, min.** - 20 outside cable diameters.

## BASIC RANGE OF PRODUCTS AND ELECTRICAL PROPERTIES

Cable Type	ZKPm ZKPBm	ZKAShp ZKABpm	ZKAKpShpm	ZKPz ZKPBz
Electrical Properties				
<b>Conductor electrical resistance at 20 °C</b> ( $\Omega$ /km), max.	15.95	15.95	15.95	15.95
<b>Conductor resistance unbalance in a working pair</b> ( $\Omega$ /km), max.	0.21	0.21	0.21	0.21

<b>Insulation electrical resistance, at 20°C</b> (M $\square$ /km), min.	30 000	30 000	30 000	30 000
<b>Mutual capacitance</b> (nF/km)	36.9 $\pm$ 1.1	36.3 $\pm$ 1.1	36.3 $\pm$ 1.1	37.9 $\pm$ 1.1
<b>NEXT</b> in the frequency range 10–250 kHz (dB)/km, min. 100%/90%	58.1/64.2	58.1/64.2	58.1/64.2	58.1/64.2
<b>ELFEXT</b> in the frequency range 10–250 kHz(dB)/km, min. 100%/90%	66.7/71.8	66.7/71.8	66.7/71.8	66.7/71.8

#### **DELIVERY**

The cables are produced in accordance with Technical Specifications TU 16.505. 233-96 and delivered on wooden drums to GOST 5151–79 in factory lengths of 1000 m.

#### **OPTIONS**

Upon customer's special request cables ZKV, ZKVm with PVC sheath can be produced for indoor applications.