



Магна

**PRODUCTION OF INDUSTRIAL
CABLES AND MARINE
UMBILICAL**



**PRODUCT
CATALOGUE**

The company "MAGNA" was founded in 1996. The main activity is the production of cable and wire products. Today LLC "MAGNA" is a dynamically developing enterprise. In the entire chain of technological operations is carried out in the production process of cable and wire products at the enterprise.

To fulfill the assigned tasks, the enterprise has three coarse drawing mills for copper, two coarse drawing mills for aluminum, as well as two medium-sized mills, 10 twisting machines of various types of twisting, which makes it possible to obtain a conductive core from the first to the fifth class.

Focusing on the needs of customers, MAGNA LLC is constantly expanding your assortment. Currently, the company produces a wide range of cables and conductors with polyvinyl chloride insulation and sheath with a cross-section conductive conductors up to 400 mm², inclusive, using copper and aluminum conductors.

- CABLES: power, control, flexible, control, assembly.
- WIRES: production of installation power, self-supporting insulated wires has been established, including wires with XLPE insulation - SIP-2, SIP-3.

Highly qualified personnel and modern production equipment, equipped with automation and control means, ensures the release of high-quality products that are widely known in many regions of our country and use increased demand.

All products of the plant meet safety requirements, which is confirmed by certificates of conformity and fire safety issued by an accredited certification body for cable products.

Quality control system complying with the requirements of GOST R ISO standards 9001: 2001 (MS ISO 9001: 2000), developed and operating at the enterprise, allows the production of quality products that meet the standards.

Prompt delivery of goods to the warehouses of consumers (clients) is provided by our own transport division, which consists of modern heavy-duty imported cars.

Every year MAGNA LLC spends more than 30 million rubles for the purchase of cable equipment aimed at expanding, modernizing the existing production, which allows it to respond in a timely manner to the needs of the cable products market.

The company "MAGNA" in the field of equipment procurement has developed reliable partnerships with the following European companies:

- VAFO SCREWS AND CYLINDERS GMBH,
- VAFO CLAUS WAGNER GmbH,
- BONGARD TRADING GMBH,
- E KRUGER GmbH,
- KOSTA MACHINERY GMBH / Export,
- HENSCHER ANTRIBSTECHNIK GmbH,
- SARMAKINO SANAYI VE TIKARET AS.

Following the needs of the market, the main goal of MAGNA LLC is to provide our buyers of high-quality and competitive cable products, which is characterized by high manufacturability, and the availability of a wide range of products in stock of cable and wire products, fast shipment, minimum production time, flexible discount system, individual approach to the client - these are the factors thanks to which we intend to maintain and strengthen our position in the market in the foreseeable future.

CERTIFICATES

SYSTEM OF VOLUNTARY CERTIFICATION
«SYSTEM OF TRADE AND INDUSTRIAL STANDARDS AND MANAGEMENT»
 Reg. № POCC RU.3992.04ФЖИИ0

Certification body
«GLAVSTANDART»
Limited Liability Company
 7/3, Eniseyskaya St., Moscow, 129344, e-mail: info@glavstandart.ru

CERTIFICATE OF CONFORMITY
 Reg.№ POCC RU.3992.04ФЖИИ0.0075

Is given to **«Magna» LLC**
 6A, Melioratorov str., Velikiye Luki, Pskov Region, 182170, Russia
IIN 6002004428

THIS CERTIFICATE CERTIFIES THAT:
quality management system

Quality Management System as applying to the manufacture of cables and wires.

CONFORMS TO REQUIREMENTS
 ГОСТ ISO 9001-2011 (ISO 9001:2008)

The certificate is issued on the basis of the solution of a commission of experts
 The protocol No 25/14 of 30 September 2014

Date of issue 07.10.2014

[Signature]
Dubsky I.P.
Head of the Certification Body

Valid till 06.10.2017

[Signature] Andreeva L.A.
Chairman of the commission

Governing on Certification body
 «GLAVSTANDART»
 Limited Liability Company
 7/3, Eniseyskaya St., 129344, Moscow, e-mail: info@glavstandart.ru
000324

ЕНЕС
СЕРТИФИКАЦИЯ
 № 000324

СЕРТИФИКАЦИЯ на соответствие требованиям стандарта EN ISO 9001:2008
 «Система менеджмента качества» (СМК) для производства кабелей и проводов.

ИЗДАТЕЛЬ: 000324

СЕРТИФИКАЦИЯ выдана на основании решения экспертной комиссии
 от 30 сентября 2014 года № 25/14.

ИЗДАТЕЛЬ: 000324

СЕРТИФИКАЦИЯ действует до 06.10.2017 года.

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CONTENT

POWER CABLES FOR STATIONARY GASKET

VVG.....	4
VVG-P.....	6
AVVG-P.....	7
AVVG.....	8
VVG ng (A).....	10
AVVG-P ng (A).....	12
VVG-P ng (A).....	13
AVVG ng (A).....	14
VVG ng (A) LS.....	16
VVG-P ng (A) LS.....	18
VBSHV.....	20
VBSHV ng (A).....	22
AVBSHV.....	24
AVBSHV ng (A).....	26
AVBSHV ng (A) LS.....	28
VVG ng (A) FRLS.....	30
PVVG.....	32
PvPG.....	34
PPGng.....	35
NYM.....	36
APvBSHV.....	37
APvBSHV.....	38

CONTROL CABLES

KVVG.....	39
KVVG ng (A).....	40
KVVG ng (A) LS.....	41

CABLES FOR NON-STATIONARY INSTALLATION

KGTP.....	42
-----------	----

WIRES AND CORD

PVS.....	45
ShVVP.....	46

POWER WIRES FOR ELECTRICAL INSTALLATIONS

PuV.....	47
PuGV.....	48

SELF-SUPPORTING INSULATED WIRES

SIP-4.....	49
SIP-2.....	50
SIP-3.....	52

VVG CABLE FOR 0.66 / 1 KV IN ACCORDANCE WITH GOST 31996-2012/ TU 3500-021-41602515-2014
Power cables with copper conductors, PVC insulated, PVC sheathed.

DESIGN



1. CURRENT CONDUCTOR - copper, single-wire or multi-wire, round or sector-shaped, 1 or 2 classes in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic compound (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue colors. Insulation of the grounding conductor is carried out two-tone (yellow-green).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core have all conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. SHELL - PVC compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0,66 / 1 kV frequency 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying on open air. The cable is not recommended for laying in the ground (trenches). VVG cables flame retardant with single laying.

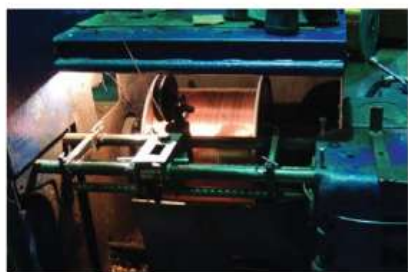


SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

Brand	Cross section
VVG	1x1,5
VVG	1x2,5
VVG	1x4
VVG	1x6
VVG	1x10
VVG	1x16 (ok)
VVG	1x25 (mk)
VVG	1x35 (mk)
VVG	1x50 (mk)
VVG	1x70 (mk)
VVG	1x95 (mk)
VVG	1x120 (mk)
VVG	1x150 (mk)
VVG	1x185 (mk)
VVG	1x240 (mk)
VVG	3x1.5
VVG	3x2.5
VVG	3x4
VVG	3x6
VVG	3x10
VVG	3x16 (ok)
VVG	3x25 (mk)
VVG	3x35 (mk)
VVG	3x50 (mk)
VVG	3x70 (mk)
VVG	3x95 (mk)
VVG	4x1,5
VVG	4x2,5
VVG	4x4
VVG	4x6
VVG	4x10

Brand	Cross section
VVG	4x16 (ok)
VVG	4x25 (mk)
VVG	4x35 (mk)
VVG	4x50 (mk)
VVG	4x70 (mk)
VVG	4x70 (ms)
VVG	4x95 (mk)
VVG	4x95 (ms)
VVG	4x120 (ms)
VVG	4x150 (ms)
VVG	4x185 (ms)
VVG	4x240 (ms)
VVG	5x1,5
VVG	5x2,5
VVG	5x4
VVG	5x6
VVG	5x10
VVG	5x16 (ok)
VVG	5x25 (mk)
VVG	5x35 (mk)
VVG	5x50 (mk)
VVG	5x70 (mk)
VVG	5x70 (ms)
VVG	5x95 (mk)
VVG	5x95 (ms)
VVG	5x120 (ms)
VVG	5x150 (ms)
VVG	5x185 (ms)
VVG	5x240 (ms)



DESIGN



1. CURRENT CONDUCTOR - copper, single-wire, round, class 1 according to GOST 22483, nominal cross-section up to 16 mm² inclusive.

2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated stranded conductors cables have a distinctive color.

3. INSULATED CONDUITS - laid in one plane.

4. SHELL - PVC compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0,66 / 1 kV frequency 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying on open air. Cable not recommended for laying in the ground (trenches). Brand cables VVG-P are flame retardant with a single gasket.

SPECIFICATIONS

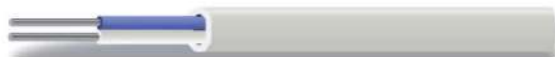
Type of climatic version of UHL and T cables, placement categories 1 and 5 by GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity at temperatures up to +35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz:	
• for a voltage of 0.66 kV	3 kV
• for a voltage of 1 kV	3,5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1,5 to 16 mm ²	450 metres
• when delivered in coils, it is agreed between the consumer and the manufacturer	
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	30 years

Brand	Cross section
VVG-P	2x1,5
VVG-P	2x2,5
VVG-P	2x4
VVG-P	2x6
VVG-P	2x10
VVG-P	2x16 (ok)
VVG-P	2x25 (mk)
VVG-P	2x35 (mk)
VVG-P	2x50 (mk)

Brand	Cross section
VVG-P	3x1,5
VVG-P	3x2,5
VVG-P	3x4
VVG-P	3x6
VVG-P	3x10
VVG-P	3x16 (ok)
VVG-P	3x25 (mk)
VVG-P	3x35 (mk)
VVG-P	3x50 (mk)

Cable AVVG-P for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014
Power cables with aluminum conductors, PVC insulated, PVC sheathed

DESIGN



1. CURRENT CONDUCTOR - aluminum, single-wire, round, class 1 according to GOST 22483, nominal cross-section up to 16 mm² inclusive.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated stranded conductors cables have a distinctive color.
3. INSULATED CONDUITS - laid in one plane.
4. SHELL - PVC compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0,66 / 1 kV frequency 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying on open air. Cable not recommended for laying in the ground (trenches). Brand cables AVVG-P are flame retardant with single laying.

SPECIFICATIONS

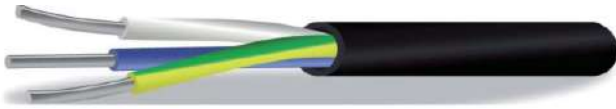
Type of climatic version of UHL and T cables, placement categories 1 and 5 by GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz:	
• for a voltage of 0.66 kV	3 kV
• for a voltage of 1 kV	3,5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2,5 to 16 mm ²	450 metres
• when delivered in coils, it is agreed between the consumer and the manufacturer	
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	30 years

Brand	Cross section
AVVG-P	2x2,5
AVVG-P	2x4
AVVG-P	2x6
AVVG-P	2x10
AVVG-P	2x16 (ok)
AVVG-P	2x25 (ok)
AVVG-P	2x35 (ok)
AVVG-P	2x50 (ok)

Brand	Cross section
AVVG-P	3x2,5
AVVG-P	3x4
AVVG-P	3x6
AVVG-P	3x10
AVVG-P	3x16 (ok)
AVVG-P	3x25 (ok)
AVVG-P	3x35 (ok)
AVVG-P	3x50 (ok)

AVVG cable for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014
Power cables for stationary installation with aluminum conductors, with PVC insulation

DESIGN



1. CURRENT CONDUCTOR - aluminum, single-wire or multi-wire, round or sector-shaped, class 1 or 2 according to GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic compound (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue colors. Insulation of the grounding conductor is carried out two-tone (yellow-green).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core have all conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. SHELL - PVC compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0,66 / 1 kV frequency 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying on open air. Cable not recommended for laying in the ground (trenches). Brand cables AVVG do not spread combustion in single gasket.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 according to GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
AVVG	1x2,5
AVVG	1x4
AVVG	1x6
AVVG	1x10
AVVG	1x16 (ok)
AVVG	1x25 (ok)
AVVG	1x35 (ok)
AVVG	1x50 (ok)
AVVG	1x70 (ok)
AVVG	1x95 (ok)
AVVG	1x120 (mk)
AVVG	1x150 (mk)
AVVG	1x185 (mk)
AVVG	1x240 (mk)
AVVG	3x2,5
AVVG	3x4
AVVG	3x6
AVVG	3x10
AVVG	3x16 (ok)
AVVG	3x25 (ok)
AVVG	3x35 (ok)
AVVG	3x50 (ok)
AVVG	3x70 (ok)
AVVG	3x95 (ok)
AVVG	4x2,5
AVVG	4x4
AVVG	4x6
AVVG	4x10

Brand	Cross section
AVVG	4x16 (ok)
AVVG	4x25 (ok)
AVVG	4x35 (ok)
AVVG	4x50 (ok)
AVVG	4x70 (ok)
AVVG	4x70 (ms)
AVVG	4x95 (ok)
AVVG	4x95 (ms)
AVVG	4x120 (ms)
AVVG	4x150 (ms)
AVVG	4x185 (ms)
AVVG	4x240 (ms)
AVVG	5x2,5
AVVG	5x4
AVVG	5x6
AVVG	5x10
AVVG	5x16 (ok)
AVVG	5x25 (ok)
AVVG	5x35 (ok)
AVVG	5x50 (ok)
AVVG	5x70 (ok)
AVVG	5x70 (ms)
AVVG	5x95 (ok)
AVVG	5x95 (mk)
AVVG	5x95 (ms)
AVVG	5x120 (ms)
AVVG	5x150 (ms)
AVVG	5x185 (ms)
AVVG	5x240 (ms)



VVG ng (A) cable for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014
Power cables with copper conductors, PVC insulated, PVC sheath with low flammability

DESIGN



1. CURRENT CONDUCTOR - copper, single-wire or multi-wire, round or sector-shaped, 1 or 2 classes in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated stranded conductors cables have a distinctive color. Insulation the zero core is blue. The insulation of the grounding conductor is carried out in two colors (yellow-green color).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core have all conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. SHELL - low flammability PVC compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0.66 / 1 kV, frequency 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying outdoors air. The cable is not recommended for laying in the ground (trenches). VVG ng (A) cables are not spreading combustion when laid in bundles.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 according to GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity at temperatures up to +35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
VVG ng (A)	1x1,5
VVG ng (A)	1x2,5
VVG ng (A)	1x4
VVG ng (A)	1x6
VVG ng (A)	1x10
VVG ng (A)	1x16 (ok)
VVG ng (A)	1x25 (mk)
VVG ng (A)	1x35 (mk)
VVG ng (A)	1x50 (mk)
VVG ng (A)	1x70 (mk)
VVG ng (A)	1x95 (mk)
VVG ng (A)	1x120 (mk)
VVG ng (A)	1x150 (mk)
VVG ng (A)	1x185 (mk)
VVG ng (A)	1x240 (mk)
VVG ng (A)	3x1,5
VVG ng (A)	3x2,5
VVG ng (A)	3x4
VVG ng (A)	3x6
VVG ng (A)	3x10
VVG ng (A)	3x16 (ok)
VVG ng (A)	3x25 (mk)
VVG ng (A)	3x35 (mk)
VVG ng (A)	3x50 (mk)
VVG ng (A)	3x70 (mk)
VVG ng (A)	3x95 (mk)
VVG ng (A)	4x1,5
VVG ng (A)	4x2,5
VVG ng (A)	4x4
VVG ng (A)	4x6

Brand	Cross section
VVG ng (A)	4x10
VVG ng (A)	4x16 (ok)
VVG ng (A)	4x25 (mk)
VVG ng (A)	4x35 (mk)
VVG ng (A)	4x50 (mk)
VVG ng (A)	4x70 (mk)
VVG ng (A)	4x70 (ms)
VVG ng (A)	4x95 (mk)
VVG ng (A)	4x95 (ms)
VVG ng (A)	4x120 (ms)
VVG ng (A)	4x150 (ms)
VVG ng (A)	4x185 (ms)
VVG ng (A)	4x240 (ms)
VVG ng (A)	5x1,5
VVG ng (A)	5x2,5
VVG ng (A)	5x4
VVG ng (A)	5x6
VVG ng (A)	5x10
VVG ng (A)	5x16 (ok)
VVG ng (A)	5x25 (mk)
VVG ng (A)	5x35 (mk)
VVG ng (A)	5x50 (mk)
VVG ng (A)	5x70 (mk)
VVG ng (A)	5x70 (ms)
VVG ng (A)	5x95 (mk)
VVG ng (A)	5x95 (ms)
VVG ng (A)	5x120 (ms)
VVG ng (A)	5x150 (ms)
VVG ng (A)	5x185 (ms)
VVG ng (A)	5x240 (ms)



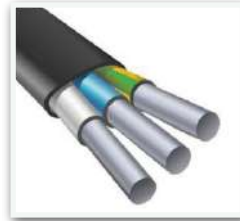
Cable AVVG-P ng (A) for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014
Power cables with copper conductors, PVC insulated, PVC sheath with low flammability

DESIGN

1. CURRENT CONDUCTOR - aluminum, single-wire, round, class 1 in accordance with GOST 22483, with a nominal cross-section up to 16 mm² inclusive.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme.
3. INSULATED VEINS - laid in one plane.
4. SHELL - low flammability PVC compound.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV and a frequency of 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying outdoors. The cable is not recommended for buried ground (trenches). AVVG-P ng (A) cables are flame retardant when laid in bundles.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 by GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz:	
• for a voltage of 0.66 kV	3 kV
• for a voltage of 1 kV	3,5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2,5 to 16 mm ²	450 metres
• when delivered in coils, it is agreed between the consumer and the manufacturer	
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	30 years

Brand	Cross section
AVVG-P ng (A)	2x2,5
AVVG-P ng (A)	2x4
AVVG-P ng (A)	2x6
AVVG-P ng (A)	2x10
AVVG-P ng (A)	2x16 (ok)
AVVG-P ng (A)	2x25 (ok)
AVVG-P ng (A)	2x35 (ok)
AVVG-P ng (A)	2x50 (ok)

Brand	Cross section
AVVG-P ng (A)	3x2,5
AVVG-P ng (A)	3x4
AVVG-P ng (A)	3x6
AVVG-P ng (A)	3x10
AVVG-P ng (A)	3x16 (ok)
AVVG-P ng (A)	3x25 (ok)
AVVG-P ng (A)	3x35 (ok)
AVVG-P ng (A)	3x50 (ok)

VVG-P ng (A) cable for 0.66 / 1 kV in accordance with GOST R 53769-2010 / TU 3500-016-41602515-2011

Power cables with copper conductors, PVC insulation, PVC sheath with low flammability, flat design

DESIGN

1. CURRENT CONDUCTOR - copper, single-wire, round, class 1 in accordance with GOST 22483, with a nominal cross-section up to 16 mm² inclusive.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme.
3. INSULATED VINS - laid in one plane.
4. SHELL - low flammability PVC compound.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV and a frequency of 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying outdoors. The cable is not recommended for buried ground (trenches). VVG-P ng (A) cables are flame retardant when laid in bundles.



SPECIFICATIONS

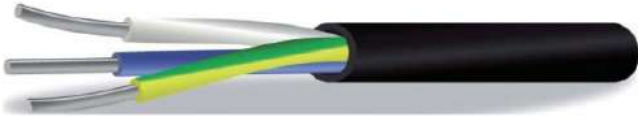
Type of climatic version of UHL and T cables, placement categories 1 and 5 by GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz:	
• for a voltage of 0.66 kV	3 kV
• for a voltage of 1 kV	3,5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1,5 to 16 mm ²	450 metres
• when delivered in coils, it is agreed between the consumer and the manufacturer	
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	30 years

Brand	Cross section
VVG-P ng (A)	2x1,5
VVG-P ng (A)	2x2,5
VVG-P ng (A)	2x4
VVG-P ng (A)	2x6
VVG-P ng (A)	2x10
VVG-P ng (A)	2x16 (ok)
VVG-P ng (A)	2x25 (mk)
VVG-P ng (A)	2x35 (mk)
VVG-P ng (A)	2x50 (mk)

Brand	Cross section
VVG-P ng (A)	3x1,5
VVG-P ng (A)	3x2,5
VVG-P ng (A)	3x4
VVG-P ng (A)	3x6
VVG-P ng (A)	3x10
VVG-P ng (A)	3x16 (ok)
VVG-P ng (A)	3x25 (mk)
VVG-P ng (A)	3x35 (mk)
VVG-P ng (A)	3x50 (mk)

Cable AVVG ng (A) for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014
Power cables with aluminum conductors, PVC insulated, PVC sheath with low flammability

DESIGN



1. CURRENT CONDUCTOR - aluminum, single-wire or multi-wire, round or sector-shaped, class 1 or 2 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue. The insulation of the grounding conductor is made in two colors (yellow-green).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-conductor have all conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. SHELL - low flammability PVC compound.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV and a frequency of 50 Hz. For laying in dry and damp industrial premises, on special cable racks, in blocks, as well as for laying outdoors. The cable is not recommended for buried ground (trenches). AVVG ng (A) cables are flame retardant when laid in bundles.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 according to GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	15 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
AVVG ng (A)	1x2,5
AVVG ng (A)	1x4
AVVG ng (A)	1x6
AVVG ng (A)	1x10
AVVG ng (A)	1x16 (ok)
AVVG ng (A)	1x25 (ok)
AVVG ng (A)	1x35 (ok)
AVVG ng (A)	1x50 (ok)
AVVG ng (A)	1x70 (ok)
AVVG ng (A)	1x95 (ok)
AVVG ng (A)	1x120 (mk)
AVVG ng (A)	1x150 (mk)
AVVG ng (A)	1x185 (mk)
AVVG ng (A)	1x240 (mk)
AVVG ng (A)	3x2,5
AVVG ng (A)	3x4
AVVG ng (A)	3x6
AVVG ng (A)	3x10
AVVG ng (A)	3x16 (ok)
AVVG ng (A)	3x25 (ok)
AVVG ng (A)	3x35 (ok)
AVVG ng (A)	3x50 (ok)
AVVG ng (A)	3x70 (ok)
AVVG ng (A)	3x95 (ok)
AVVG ng (A)	4x2,5
AVVG ng (A)	4x4
AVVG ng (A)	4x6
AVVG ng (A)	4x10
AVVG ng (A)	4x16 (ok)
AVVG ng (A)	4x25 (ok)

Brand	Cross section
AVVG ng (A)	4x35 (ok)
AVVG ng (A)	4x50 (ok)
AVVG ng (A)	4x70 (ok)
AVVG ng (A)	4x70 (ms)
AVVG ng (A)	4x95 (ok)
AVVG ng (A)	4x95 (ms)
AVVG ng (A)	4x120 (ms)
AVVG ng (A)	4x150 (ms)
AVVG ng (A)	4x185 (ms)
AVVG ng (A)	4x240 (ms)
AVVG ng (A)	5x2,5
AVVG ng (A)	5x4
AVVG ng (A)	5x6
AVVG ng (A)	5x10
AVVG ng (A)	5x16 (ok)
AVVG ng (A)	5x25 (ok)
AVVG ng (A)	5x35 (ok)
AVVG ng (A)	5x50 (ok)
AVVG ng (A)	5x70 (ok)
AVVG ng (A)	5x70 (ms)
AVVG ng (A)	5x95 (ok)
AVVG ng (A)	5x95 (ms)
AVVG ng (A)	5x120 (ms)
AVVG ng (A)	5x150 (ms)
AVVG ng (A)	5x185 (ms)
AVVG ng (A)	5x240 (ms)



VVG ng (A) LS cable for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014

Power cables with copper conductors, with insulation and sheath made of polyvinyl chloride compositions of reduced fire hazard. (The LS index in brands means low smoke and gas emission Low Smoke).

DESIGN



- CURRENT CONDUCTOR** - copper, single-wire or multi-wire, round or sector forms, 1 or 2 classes according to GOST 22483.
- INSULATION** - from a polyvinyl chloride composition of reduced fire hazard. Isolated the cores of multicore cables have a distinctive color. The insulation of the neutral core is blue colors. The insulation of the grounding conductor is made in two colors (yellow-green).
- TWIST** - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core have all cores of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
- INNER EXTRUDED SHELL** - applied over twisted insulated PVC conductors of a composition of reduced fire hazard, which fills the gaps between the conductors. The thickness of the inner shell is not less than 0.3 mm.
- OUTER SHELL** - made of PVC composition reduced fire hazard. For cables with a cross section round current-carrying conductors up to 16 mm², it is allowed to apply an outer sheath with the simultaneous filling of the gaps between the conductors. In this case, the inner extruded sheath is not applied.

APPLICATION

Flame retardant cables with low smoke and gas emissions are intended for the transmission and distribution of electricity in stationary installations for rated alternating voltage 0.66 kV / 1 kV with a frequency of 50 Hz. Cables are manufactured for general industrial use and nuclear power plants for supplies to the domestic market and for export. The cables are intended for use in cable structures and premises, including for use in systems of nuclear power plants of classes 2, 3 and 4 to classification OPB-88/97 (PNAE G-01-011-97). VVG ng (A) LS cables are flame retardant when laid in bundles.



SPECIFICATIONS

Climatic version of cables B, placement categories 1-5, placement category 5 according to GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Limiting temperature of conductive conductors of cables according to condition non-combustion of the cable at short-circuit	+400°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
VVG ng (A)-LS	1x1,5
VVG ng (A)-LS	1x2,5
VVG ng (A)-LS	1x4
VVG ng (A)-LS	1x6
VVG ng (A)-LS	1x10
VVG ng (A)-LS	1x16 (ok)
VVG ng (A)-LS	1x25 (mk)
VVG ng (A)-LS	1x35 (mk)
VVG ng (A)-LS	1x50 (mk)
VVG ng (A)-LS	1x70 (mk)
VVG ng (A)-LS	1x95 (mk)
VVG ng (A)-LS	1x120 (mk)
VVG ng (A)-LS	1x150 (mk)
VVG ng (A)-LS	1x185 (mk)
VVG ng (A)-LS	1x240 (mk)
VVG ng (A)-LS	3x1,5
VVG ng (A)-LS	3x2,5
VVG ng (A)-LS	3x4
VVG ng (A)-LS	3x6
VVG ng (A)-LS	3x10
VVG ng (A)-LS	3x16 (ok)
VVG ng (A)-LS	3x25 (mk)
VVG ng (A)-LS	3x35 (mk)
VVG ng (A)-LS	3x50 (mk)
VVG ng (A)-LS	3x70 (mk)
VVG ng (A)-LS	3x95 (mk)
VVG ng (A)-LS	4x1,5
VVG ng (A)-LS	4x2,5
VVG ng (A)-LS	4x4
VVG ng (A)-LS	4x6

Brand	Cross section
VVG ng (A)-LS	4x10
VVG ng (A)-LS	4x16 (ok)
VVG ng (A)-LS	4x25 (mk)
VVG ng (A)-LS	4x35 (mk)
VVG ng (A)-LS	4x50 (mk)
VVG ng (A)-LS	4x70 (mk)
VVG ng (A)-LS	4x70 (ms)
VVG ng (A)-LS	4x95 (mk)
VVG ng (A)-LS	4x95 (ms)
VVG ng (A)-LS	4x120 (ms)
VVG ng (A)-LS	4x150 (ms)
VVG ng (A)-LS	4x185 (ms)
VVG ng (A)-LS	4x240 (ms)
VVG ng (A)-LS	5x1,5
VVG ng (A)-LS	5x2,5
VVG ng (A)-LS	5x4
VVG ng (A)-LS	5x6
VVG ng (A)-LS	5x10
VVG ng (A)-LS	5x16 (ok)
VVG ng (A)-LS	5x25 (mk)
VVG ng (A)-LS	5x35 (mk)
VVG ng (A)-LS	5x50 (mk)
VVG ng (A)-LS	5x70 (mk)
VVG ng (A)-LS	5x70 (ms)
VVG ng (A)-LS	5x95 (mk)
VVG ng (A)-LS	5x240 (ms)
VVG ng (A)-LS	5x95 (ms)
VVG ng (A)-LS	5x120 (ms)
VVG ng (A)-LS	5x150 (ms)
VVG ng (A)-LS	5x185 (ms)
VVG ng (A)-LS	5x240 (ms)



VVG-P ng (A) LS cable for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014

Power cables with copper conductors, PVC insulation and sheath compositions of reduced fire hazard in flat design. (The LS index in brands means low smoke and gas emission Low Smoke).

DESIGN



APPLICATION

1. CURRENT CONDUCTOR - copper, single-wire, round, class 1 in accordance with GOST 22483, with a nominal cross-section up to 16 mm² inclusive.
2. INSULATION - from a polyvinyl chloride composition of reduced fire hazard. Isolated the cores of multicore cables have a distinctive color.
3. INSULATED CONDUITS - stacked in one plane.
4. INNER EXTRUDED SHELL - applied along insulated conductors, laid in one plane, made of PVC composition with reduced fire hazard that fills the gaps between veins. The thickness of the inner shell is not less than 0.3 mm.
4. OUTER SHELL - made of PVC composition reduced fire hazard. For cables with a cross section round current-carrying conductors up to 16 mm², it is allowed to apply an outer sheath with the simultaneous filling of the gaps between the conductors. In this case, the inner extruded sheath is not applied.

Flame retardant cables with low smoke and gas emissions are intended for the transmission and distribution of electricity in stationary installations for rated alternating voltage 0.66 kV / 1 kV with a frequency of 50 Hz. Cables are manufactured for general industrial use and nuclear power plants for supplies to the domestic market and for export. The cables are intended for use in cable structures and premises, including for use in systems of nuclear power plants of classes 2, 3 and 4 to classification OPB-88/97 (PNAE G-01-011-97).

VVG-P ng (A) LS cables do not extend burning when laying in bundles.



SPECIFICATIONS

Climatic version of cables B, placement categories 1-5, category placement 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz:	
• for a voltage 0.66 kV	3 kV
• for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Limiting temperature of conductive conductors of cables according to condition non-combustion of the cable at short-circuit	+400°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
when delivered in coils, it is agreed between the consumer and the manufacturer	
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

Brand	Cross section
VVG-P ng (A)-LS	2x1,5
VVG-P ng (A)-LS	2x2,5
VVG-P ng (A)-LS	2x4
VVG-P ng (A)-LS	2x6
VVG-P ng (A)-LS	2x10
VVG-P ng (A)-LS	2x16 (ok)
VVG-P ng (A)-LS	2x25 (mk)
VVG-P ng (A)-LS	2x35 (mk)
VVG-P ng (A)-LS	2x50 (mk)

Brand	Cross section
VVG-P ng (A)-LS	3x1,5
VVG-P ng (A)-LS	3x2,5
VVG-P ng (A)-LS	3x4
VVG-P ng (A)-LS	3x6
VVG-P ng (A)-LS	3x10
VVG-P ng (A)-LS	3x16 (ok)
VVG-P ng (A)-LS	3x25 (mk)
VVG-P ng (A)-LS	3x35 (mk)
VVG-P ng (A)-LS	3x50 (mk)



VBShv cable for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014

*Power cables for stationary laying with copper conductors,
with PVC insulation with a protective cover, type BShv*

DESIGN



1. CURRENT CONDUCTOR - copper, single-wire or multi-wire, round or sector-shaped, class 1 or 2 in accordance with GOST 22483.

2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue. The insulation of the grounding conductor is made in two colors (yellow-green).

3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core wires have all the conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).

4. BELT INSULATION - in cables with a protective cover, type BShv, it is pressed out of PVC compound, or insulation material, or other equivalent material.

5. PROTECTIVE COVER - type BShv:
- armor made of two steel tapes, superimposed so that the upper tape overlaps the gaps between the rolls of the lower tape;
- protective hose, extruded from PVC compound.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV and a frequency of 50 Hz, single-core cables are used in DC networks. For laying in the ground (trenches), rooms, tunnels, canals, mines (except for laying in blocks), as well as in the open air, if the cable is not subjected to significant tensile forces, but if there is a danger of mechanical damage during operation. VBShv cables are flame retardant with single laying.



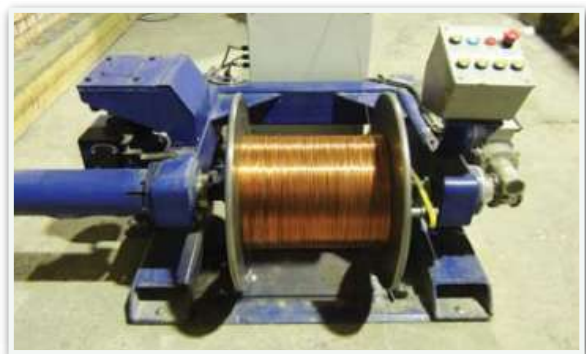
SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
VBShv	1x1,5
VBShv	1x2,5
VBShv	1x4
VBShv	1x6
VBShv	1x10
VBShv	1x16 (ok)
VBShv	1x25 (mk)
VBShv	1x35 (mk)
VBShv	1x50 (mk)
VBShv	1x70 (mk)
VBShv	1x95 (mk)
VBShv	1x120 (mk)
VBShv	1x150 (mk)
VBShv	1x185 (mk)
VBShv	1x240 (mk)
VBShv	3x1,5
VBShv	3x2,5
VBShv	3x4
VBShv	3x6
VBShv	3x10
VBShv	3x16 (ok)
VBShv	3x25 (mk)
VBShv	3x35 (mk)
VBShv	3x50 (mk)
VBShv	3x70 (mk)
VBShv	3x95 (mk)
VBShv	4x1,5
VBShv	4x2,5
VBShv	4x4
VBShv	4x6
VBShv	4x10
VBShv	4x16 (ok)

Brand	Cross section
VBShv	4x25 (mk)
VBShv	4x35 (mk)
VBShv	4x50 (mk)
VBShv	4x70 (mk)
VBShv	4x70 (ms)
VBShv	4x95 (mk)
VBShv	4x95 (ms)
VBShv	4x120 (ms)
VBShv	4x150 (ms)
VBShv	4x185 (ms)
VBShv	4x240 (ms)
VBShv	5x1,5
VBShv	5x2,5
VBShv	5x4
VBShv	5x6
VBShv	5x10
VBShv	5x16 (ok)
VBShv	5x25 (mk)
VBShv	5x35 (mk)
VBShv	5x50 (mk)
VBShv	5x70 (mk)
VBShv	5x70 (ms)
VBShv	5x95 (mk)
VBShv	5x95 (ms)
VBShv	5x120 (ms)
VBShv	5x150 (ms)
VBShv	5x185 (ms)
VBShv	5x240 (ms)



Cable VBSHV ng (A), VBSHV ng (A) LS for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014

Power cables with copper conductors, with PVC insulation with a protective cover, type BbShv, low flammability

DESIGN



1. CURRENT CONDUCTOR - copper, single-wire or multi-wire, round or sector-shaped, class 1 or 2 in accordance with GOST 22483.

2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue. The insulation of the grounding conductor is made in two colors (yellow-green).

3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core wires have all the conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).

4. BELT INSULATION - in cables with a protective cover, type BShv, it is pressed out of PVC-compound of low flammability with filling in the gaps between the conductors.

5. PROTECTIVE COVER - type BShv:

- armor made of two steel tapes, superimposed so that the upper tape overlaps the gaps between the rolls of the lower tape;
- protective hose, extruded from PVC compound of low flammability.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV and a frequency of 50 Hz, single-core cables are used in DC networks. For laying in the ground (trenches), rooms, tunnels, canals, mines (except for laying in blocks), as well as in the open air, if the cable is not subjected to significant tensile forces, but if there is a danger of mechanical damage during operation. VBSHV ng (A) cables are flame



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity at temperatures up to +35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	15 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
VBShv ng (A)	1x1,5
VBShv ng (A)	1x2,5
VBShv ng (A)	1x4
VBShv ng (A)	1x6
VBShv ng (A)	1x10
VBShv ng (A)	1x16 (ok)
VBShv ng (A)	1x25 (mk)
VBShv ng (A)	1x35 (mk)
VBShv ng (A)	1x50 (mk)
VBShv ng (A)	1x70 (mk)
VBShv ng (A)	1x95 (mk)
VBShv ng (A)	1x120 (mk)
VBShv ng (A)	1x150 (mk)
VBShv ng (A)	1x185 (mk)
VBShv ng (A)	1x240 (mk)
VBShv ng (A)	3x1,5
VBShv ng (A)	3x2,5
VBShv ng (A)	3x4
VBShv ng (A)	3x6
VBShv ng (A)	3x10
VBShv ng (A)	3x16 (ok)
VBShv ng (A)	3x25 (mk)
VBShv ng (A)	3x35 (mk)
VBShv ng (A)	3x50 (mk)
VBShv ng (A)	3x70 (mk)
VBShv ng (A)	3x95 (mk)
VBShv ng (A)	4x1,5
VBShv ng (A)	4x2,5
VBShv ng (A)	4x4
VBShv ng (A)	4x6

Brand	Cross section
VBShv ng (A)	4x10
VBShv ng (A)	4x16 (ok)
VBShv ng (A)	4x25 (mk)
VBShv ng (A)	4x35 (mk)
VBShv ng (A)	4x50 (mk)
VBShv ng (A)	4x70 (mk)
VBShv ng (A)	4x70 (ms)
VBShv ng (A)	4x95 (mk)
VBShv ng (A)	4x95 (ms)
VBShv ng (A)	4x120 (ms)
VBShv ng (A)	4x150 (ms)
VBShv ng (A)	4x185 (ms)
VBShv ng (A)	4x240 (ms)
VBShv ng (A)	5x1,5
VBShv ng (A)	5x2,5
VBShv ng (A)	5x4
VBShv ng (A)	5x6
VBShv ng (A)	5x10
VBShv ng (A)	5x16 (ok)
VBShv ng (A)	5x25 (mk)
VBShv ng (A)	5x35 (mk)
VBShv ng (A)	5x50 (mk)
VBShv ng (A)	5x70 (mk)
VBShv ng (A)	5x70 (ms)
VBShv ng (A)	5x95 (mk)
VBShv ng (A)	5x95 (ms)
VBShv ng (A)	5x120 (ms)
VBShv ng (A)	5x150 (ms)
VBShv ng (A)	5x185 (ms)
VBShv ng (A)	5x240 (ms)



Cable AVBShv for 0.66 / 1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2012

Power cables with aluminum conductors, PVC insulation with a protective sheathing type BbShv

DESIGN



1. CURRENT CONDUCTOR - aluminum, single-wire or multi-wire, round or sector-shaped, class 1 or 2 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue. The insulation of the grounding conductor is made in two colors (yellow-green).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core wires have all the conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. BELT INSULATION - in cables with a protective sheath, type BbShv, it is pressed out of PVC compound, or insulation material, or other equivalent material.
5. PROTECTIVE COVER - type Bbshv:
 - armor made of two steel belts, applied in such a way, so that the top tape bridges the gaps between loops of the lower tape;
 - PVC extruded protective hose plastic compound.

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 0.66 / 1 kV, frequency 50 Hz, single-core cables are used in DC voltage networks. For laying in the ground (trenches), rooms, tunnels, canals, mines (except for laying in blocks), as well as in the open air, if the cable is not subjected to significant tensile forces, but in the presence of danger of mechanical damage during operation. Cables of the AVBShv brand are flame retardant with a single laying.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
AVBShv	1x2,5
AVBShv	1x4
AVBShv	1x6
AVBShv	1x10
AVBShv	1x16 (ok)
AVBShv	1x25 (ok)
AVBShv	1x35 (ok)
AVBShv	1x50 (ok)
AVBShv	1x70 (ok)
AVBShv	1x95 (ok)
AVBShv	1x120 (mk)
AVBShv	1x150 (mk)
AVBShv	1x185 (mk)
AVBShv	1x240 (mk)
AVBShv	3x2,5
AVBShv	3x4
AVBShv	3x6
AVBShv	3x10
AVBShv	3x16 (ok)
AVBShv	3x25 (ok)
AVBShv	3x35 (ok)
AVBShv	3x50 (ok)
AVBShv	3x70 (ok)
AVBShv	3x95 (ok)
AVBShv	4x2,5
AVBShv	4x4
AVBShv	4x6
AVBShv	4x10

Brand	Cross section
AVBShv	4x16 (ok)
AVBShv	4x25 (ok)
AVBShv	4x35 (ok)
AVBShv	4x50 (ok)
AVBShv	4x70 (ok)
AVBShv	4x70 (ms)
AVBShv	4x95 (ok)
AVBShv	4x95 (ms)
AVBShv	4x120 (ms)
AVBShv	4x150 (ms)
AVBShv	4x185 (ms)
AVBShv	4x240 (ms)
AVBShv	5x2.5
AVBShv	5x4
AVBShv	5x6
AVBShv	5x10
AVBShv	5x16 (ok)
AVBShv	5x25 (ok)
AVBShv	5x35 (ok)
AVBShv	5x50 (ok)
AVBShv	5x70 (ok)
AVBShv	5x70 (ms)
AVBShv	5x95 (ok)
AVBShv	5x95 (ms)
AVBShv	5x120 (ms)
AVBShv	5x150 (ms)
AVBShv	5x185 (ms)
AVBShv	5x240 (ms)



**Cable AVBShv ng (A) for 0.66 / 1 kV in accordance with GOST 31996-2012 /
TU 3500-021-41602515-2012**

Power cables with aluminum conductors, PVC insulation with a protective sheathing type BbShv

DESIGN



1. **CURRENT CONDUCTOR** - aluminum, single-wire or multi-wire, round or sector-shaped, 1 or 2 class according to GOST 22483.
2. **INSULATION** - made of polyvinyl chloride plastic (PVC). Insulated conductors of multicore cables have a distinctive color scheme. The insulation of the neutral core is blue. The insulation of the grounding conductors is made in two colors (yellow-green).
3. **TWIST** - insulated conductors of two-, three-, four- and five-core cables are twisted; two-core cables have cores of the same cross-section; three-, four- and five-core have all the conductors of the same cross-section, or one conductor of a smaller cross-section (grounding conductor or zero).
4. **BELT INSULATION** - in cables with a protective cover, type BShv, it is pressed out of PVC compound of low flammability with filling of gaps between conductors.
5. **PROTECTIVE COVER** - type BShv:
 - armor of two steel belts superimposed so that the top tape overlaps the gaps between the turns of the lower tape;
 - a protective hose pressed out of PVC compound of low flammability.

APPLICATION

For the transmission and distribution of electricity in stationary installations for a rated alternating voltage of 0.66 / 1 kV frequency 50 Hz, single-core cables are used in DC networks. For laying in the ground (trenches), rooms, tunnels, canals, mines (except for laying in blocks), as well as in the open air, if the cable is not subjected to significant tensile forces, but if there is a risk of mechanical damage in the process exploitation. AVBShv ng (A) cables are flame retardant when laid in bundles.



SPECIFICATIONS

Type of climatic version of UHL and T cables, placement categories 1 and 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	15 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Construction length of cables for cross-sections of main conductors:	
• from 2.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
AVBShv ng (A)	1x2.5
AVBShv ng (A)	1x4
AVBShv ng (A)	1x6
AVBShv ng (A)	1x10
AVBShv ng (A)	1x16 (ok)
AVBShv ng (A)	1x25 (ok)
AVBShv ng (A)	1x35 (ok)
AVBShv ng (A)	1x50 (ok)
AVBShv ng (A)	1x70 (ok)
AVBShv ng (A)	1x95 (ok)
AVBShv ng (A)	1x120 (mk)
AVBShv ng (A)	1x150 (mk)
AVBShv ng (A)	1x185 (mk)
AVBShv ng (A)	1x240 (mk)
AVBShv ng (A)	3x2,5
AVBShv ng (A)	3x4
AVBShv ng (A)	3x6
AVBShv ng (A)	3x10
AVBShv ng (A)	3x16 (ok)
AVBShv ng (A)	3x25 (ok)
AVBShv ng (A)	3x35 (ok)
AVBShv ng (A)	3x50 (ok)
AVBShv ng (A)	3x70 (ok)
AVBShv ng (A)	3x95 (ok)
AVBShv ng (A)	4x2,5
AVBShv ng (A)	4x4
AVBShv ng (A)	4x6
AVBShv ng (A)	4x10

Brand	Cross section
AVBShv ng (A)	4x16 (ok)
AVBShv ng (A)	4x25 (ok)
AVBShv ng (A)	4x35 (ok)
AVBShv ng (A)	4x50 (ok)
AVBShv ng (A)	4x70 (ok)
AVBShv ng (A)	4x70 (ms)
AVBShv ng (A)	4x95 (ok)
AVBShv ng (A)	4x95 (ms)
AVBShv ng (A)	4x120 (ms)
AVBShv ng (A)	4x150 (ms)
AVBShv ng (A)	4x185 (ms)
AVBShv ng (A)	4x240 (ms)
AVBShv ng (A)	5x2.5
AVBShv ng (A)	5x4
AVBShv ng (A)	5x6
AVBShv ng (A)	5x10
AVBShv ng (A)	5x16 (ok)
AVBShv ng (A)	5x25 (ok)
AVBShv ng (A)	5x35 (ok)
AVBShv ng (A)	5x50 (ok)
AVBShv ng (A)	5x70 (ok)
AVBShv ng (A)	5x70 (ms)
AVBShv ng (A)	5x95 (ok)
AVBShv ng (A)	5x95 (ms)
AVBShv ng (A)	5x120 (ms)
AVBShv ng (A)	5x150 (ms)
AVBShv ng (A)	5x185 (ms)
AVBShv ng (A)	5x240 (ms)



**Cable AVBShv ng (A) LS for 0.66 kV in accordance with GOST 31996-2012 /
TU 3500-021-41602515-2014**

Power cables with aluminum conductors, with insulation and sheath made of polyvinyl chloride compositions of reduced fire hazard, with a protective cover of the BShv type. (The LS index in brands means low smoke and gas emission Low Smoke).

DESIGN



1. CURRENT CONDUCTOR - aluminum, single-wire or multi-wire, round or sector-shaped, class 1 or 2 according to GOST 22483.
2. INSULATION - made of polyvinyl chloride compositions of reduced fire hazard. Insulated conductors of multicore cables have a distinctive color scheme. Zero insulation the cores are blue. Core insulation grounding is performed in two colors (yellow-green colors).
3. TWIST - insulated conductors of two-, three-, four- and five-core cables are twisted; two- and three-core cables have cores of the same cross-section; four- and five-core have all conductors of the same cross-section or one conductor of a smaller cross-section (grounding conductor or zero).
4. INTERNAL EXTRUDED SHELL - applied over twisted insulated PVC conductors of a composition of low fire hazard, which fills the gaps between the conductors. Internal thickness shells not less than 0.9 mm.
5. PROTECTIVE COVER - type BShv:
 - armor made of two steel belts, applied in such a way, so that the top tape bridges the gaps between loops of the lower tape;
 - PVC extruded protective hose compositions of reduced fire hazard.

APPLICATION

Flame retardant cables with low smoke and gas emission are designed for transmission and distribution of electricity to stationary installations for a rated alternating voltage of 0.66 kV / 1 kV and a frequency of 50 Hz. Cables are manufactured for general industrial use and nuclear power plants upon delivery to the domestic market and for export. Cables are intended for use in cable structures and premises, including for use in systems of nuclear power plants of classes 2, 3 and 4 according to the OPB-88/97 classification (PNAE G-01-011- 97). AVBShv ng (A) LS cables are flame retardant when laid in bundles.



SPECIFICATIONS

Climatic version of cables B, placement category 5 according to GOST 15150-69	
Operating temperature range	from -30°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Rated frequency	50 Hz
Test alternating voltage with a frequency of 50 Hz for a voltage of 0.66 kV	3 kV
• for voltage 1 kV	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
The limiting temperature of the conductive cores of the cables according to the condition of the cable non-combustion at short circuit	+400°C
Construction length of cables for cross-sections of main conductors:	
• from 2.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

SPECIFICATIONS

Brand	Cross section
AVBShv ng (A)-LS	1x2.5
AVBShv ng (A)-LS	1x4
AVBShv ng (A)-LS	1x6
AVBShv ng (A)-LS	1x10
AVBShv ng (A)-LS	1x16 (ok)
AVBShv ng (A)-LS	1x25 (ok)
AVBShv ng (A)-LS	1x35 (ok)
AVBShv ng (A)-LS	1x50 (ok)
AVBShv ng (A)-LS	1x70 (ok)
AVBShv ng (A)-LS	1x95 (ok)
AVBShv ng (A)-LS	1x120 (mk)
AVBShv ng (A)-LS	1x150 (mk)
AVBShv ng (A)-LS	1x185 (mk)
AVBShv ng (A)-LS	1x240 (mk)
AVBShv ng (A)-LS	3x2,5
AVBShv ng (A)-LS	3x4
AVBShv ng (A)-LS	3x6
AVBShv ng (A)-LS	3x10
AVBShv ng (A)-LS	3x16 (ok)
AVBShv ng (A)-LS	3x25 (ok)
AVBShv ng (A)-LS	3x35 (ok)
AVBShv ng (A)-LS	3x50 (ok)
AVBShv ng (A)-LS	3x70 (ok)
AVBShv ng (A)-LS	3x95 (ok)
AVBShv ng (A)-LS	4x2,5
AVBShv ng (A)-LS	4x4
AVBShv ng (A)-LS	4x6
AVBShv ng (A)-LS	4x10
AVBShv ng (A)-LS	4x16 (ok)

Brand	Cross section
AVBShv ng (A)-LS	4x25 (ok)
AVBShv ng (A)-LS	4x35 (ok)
AVBShv ng (A)-LS	4x50 (ok)
AVBShv ng (A)-LS	4x70 (ok)
AVBShv ng (A)-LS	4x70 (ms)
AVBShv ng (A)-LS	4x95 (ok)
AVBShv ng (A)-LS	4x95 (ms)
AVBShv ng (A)-LS	4x120 (ms)
AVBShv ng (A)-LS	4x150 (ms)
AVBShv ng (A)-LS	4x185 (ms)
AVBShv ng (A)-LS	4x240 (ms)
AVBShv ng (A)-LS	5x2.5
AVBShv ng (A)-LS	5x4
AVBShv ng (A)-LS	5x6
AVBShv ng (A)-LS	5x10
AVBShv ng (A)-LS	5x16 (ok)
AVBShv ng (A)-LS	5x25 (ok)
AVBShv ng (A)-LS	5x35 (ok)
AVBShv ng (A)-LS	5x50 (ok)
AVBShv ng (A)-LS	5x70 (ok)
AVBShv ng (A)-LS	5x70 (ms)
AVBShv ng (A)-LS	5x95 (ok)
AVBShv ng (A)-LS	5x95 (ms)
AVBShv ng (A)-LS	5x120 (ms)
AVBShv ng (A)-LS	5x150 (ms)
AVBShv ng (A)-LS	5x185 (ms)
AVBShv ng (A)-LS	5x240 (ms)



Cable VVG ng (A) -FRLS, VVG png (A)-FRLS for 0.66 /

1 kV in accordance with GOST 31996-2012 / TU 3500-021-41602515-2014

Power cable with copper conductors, fire-resistant, with PVC insulation and sheath, low fire hazard



DESIGN

APPLICATION

1. CURRENT-CONDUCTING WIRE - single-wire copper class 1 in accordance with GOST 22483.
2. SEPARATING LAYER - a thermal barrier made of mica-containing tapes applied over a conductive core.
3. INSULATION made of PVC-compound of low fire hazard. Insulated conductors are color-coded.
4. INNER SHELL made of polymer composition, applied with compression and filling the gaps between insulated conductors.
5. OUTER SHELL made of polyvinyl chloride plastic compound of reduced fire hazard.

Fire-resistant power cable, designed for cable power lines of security systems equipment, wiring of fire safety systems (fire alarm circuits, power supply of fire extinguishing pumps, notification of emergency exits and escape routes, smoke exhaust and supply ventilation systems, evacuation elevators). For electrical wiring in operating rooms of hospitals, emergency power supply circuits and power supply of equipment (pantographs), which must be kept performance under fire conditions.

SPECIFICATIONS

Climatic modification type B, placement category 5 in accordance with GOST 15150-69	
Operating temperature range	from -50°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	
• single-core cables	10 outer diameters
• multicore cables	7.5 outer diameters
Permissible core heating temperature at short circuit no more than	250°C
The duration of the short circuit should not exceed	4s
Permissible core heating temperature in overload mode no more than	90°C
Long-term permissible heating temperature of cable conductors during operation	+70°C
Cables are flame retardant when laid in bundles	
Duration of operation of cables in overload mode	no more than 8 hours per day and no more than 1000 hours per period service
Smoke formation during burning and smoldering cables does not lead to a decrease in light transmission in the test chamber by more than	50%
Fire resistance of cables not less than	180 min.
Construction length of cables for cross-sections of main conductors:	
• from 1.5 to 16 mm ²	450 metres
• from 25 to 70 mm ²	300 metres
• from 95 mm ² and more	200 metres
Warranty period of operation (from the date of cable entry into exploitation)	5 years
Cable life	30 years

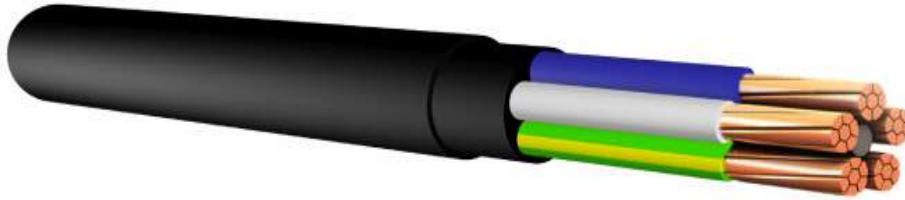
SPECIFICATIONS

Brand	Cross section
VVG ng (A)-FRLS	1x1.5
VVG ng (A)-FRLS	1x2.5
VVG ng (A)-FRLS	1x4
VVG ng (A)-FRLS	1x6
VVG ng (A)-FRLS	1x10
VVG ng (A)-FRLS	1x16 (ok)
VVG ng (A)-FRLS	1x25 (mk)
VVG ng (A)-FRLS	1x35 (mk)
VVG ng (A)-FRLS	1x50 (mk)
VVG ng (A)-FRLS	1x70 (mk)
VVG ng (A)-FRLS	1x95 (mk)
VVG ng (A)-FRLS	1x120 (mk)
VVG ng (A)-FRLS	1x150 (mk)
VVG ng (A)-FRLS	1x185 (mk)
VVG ng (A)-FRLS	1x240 (mk)
VVG ng (A)-FRLS	3x1.5
VVG ng (A)-FRLS	3x2.5
VVG ng (A)-FRLS	3x4
VVG ng (A)-FRLS	3x6
VVG ng (A)-FRLS	3x10
VVG ng (A)-FRLS	3x16 (ok)
VVG ng (A)-FRLS	3x25 (mk)
VVG ng (A)-FRLS	3x35 (mk)
VVG ng (A)-FRLS	3x50 (mk)
VVG ng (A)-FRLS	3x70 (mk)
VVG ng (A)-FRLS	3x95 (mk)
VVG ng (A)-FRLS	4x1.5
VVG ng (A)-FRLS	4x2.5
VVG ng (A)-FRLS	4x4
VVG ng (A)-FRLS	4x6
VVG ng (A)-FRLS	4x10
VVG ng (A)-FRLS	4x16 (ok)

Brand	Cross section
VVG ng (A)-FRLS	4x25 (mk)
VVG ng (A)-FRLS	4x35 (mk)
VVG ng (A)-FRLS	4x50 (mk)
VVG ng (A)-FRLS	4x70 (mk)
VVG ng (A)-FRLS	4x70 (ms)
VVG ng (A)-FRLS	4x95 (mk)
VVG ng (A)-FRLS	B4x95 (ms)
VVG ng (A)-FRLS	4x120 (ms)
VVG ng (A)-FRLS	4x150 (ms)
VVG ng (A)-FRLS	4x185 (ms)
VVG ng (A)-FRLS	4x240 (ms)
VVG ng (A)-FRLS	5x1.5
VVG ng (A)-FRLS	5x2.5
VVG ng (A)-FRLS	5x4
VVG ng (A)-FRLS	5x6
VVG ng (A)-FRLS	5x10
VVG ng (A)-FRLS	5x16 (ok)
VVG ng (A)-FRLS	5x25 (mk)
VVG ng (A)-FRLS	5x35 (mk)
VVG ng (A)-FRLS	5x50 (mk)
VVG ng (A)-FRLS	5x70 (mk)
VVG ng (A)-FRLS	5x70 (ms)
VVG ng (A)-FRLS	5x95 (mk)
VVG ng (A)-FRLS	5x95 (ms)
VVG ng (A)-FRLS	B5x120 (ms)
VVG ng (A)-FRLS	5x150 (ms)
VVG ng (A)-FRLS	5x185 (ms)
VVG ng (A)-FRLS	5x240 (ms)



**Cable PvVG, PvVGng (A), PvVGng (A) LS for 1 kV by
GOST 31996-2012 / TU 3500-021-41602515-2014**
XLPE insulated cable, PVC sheathed



DESIGN

1. **CURRENT-CONDUCTING CORE** - single-wire or multi-wire made of copper or aluminum and has a round or sector shape. Cables have all conductors of the same cross-section or one conductor of a smaller cross-section - zero or ground.
2. **INSULATION** - made of silanol-crosslinked polyethylene for multicore cables has a distinctive color, zero core - blue, ground core - yellow-green.
3. **TWIST** - insulated conductors of power cables are twisted into a core around a bundle made of PVC compound.
4. **SHELL** - over the twisted cores, belt insulation is made of PVC or polyethylene, outside - a sheath of the same materials.

APPLICATION

The cables are designed for operation on land, rivers and lakes at altitudes up to 4300 m above sea level and are used in areas with temperate and cold climates. Their laying can be carried out in the air - in the absence of the danger of mechanical damage; in dry or damp rooms (tunnels), ducts, cable half-floors, mines, collectors, industrial premises, partially flooded structures in the presence of an environment with low, medium and high corrosive activity, on special cable racks, on bridges and in blocks. With a single laying, PVVG cables are flame retardant.

SPECIFICATIONS

The PVVG power cable can be operated at temperatures from -50°C to $+50^{\circ}\text{C}$ and relative air humidity up to 98% (at a temperature of $+35^{\circ}\text{C}$).

The maximum long-term permissible heating temperature of cable conductors in the operating mode is $+90^{\circ}\text{C}$, in emergency mode or in overload mode $+130^{\circ}\text{C}$ (with heating duration no more than 8 hours per day and 1000 hours for the entire service life). In case of short circuit (up to 4 sec) the maximum permissible temperature core heating is $+250^{\circ}\text{C}$, the maximum core temperature under the condition of non-ignition with a short short circuit $+400^{\circ}\text{C}$.

Within 10 min. the PVVG cable withstands the test with an alternating voltage of 3.5 kV.

The electrical resistance of the core insulation at a temperature of 20°C is at least $150\text{ M}\Omega / \text{km}$, at a long-term permissible temperature of core heating - at least $50\text{ MOhm} / \text{km}$

Maximum working electrical network voltage - 1.2 kV.

Laying and installation of PVVG cables at a temperature not lower than -15°C can be carried out without preheating.

The minimum bending radius when laying cables is $7.5 D_H$ (D_H - outer cable diameter).

Construction length of cables for cross-sections of main conductors:

- 1.5 - 16 mm²
- 450 m;
- 25 - 70 mm²
- 300 m;
- 95-240 mm²
- 200 m.

The warranty period of the PVVG power cable is 5 years, the service life is 30 years

SPECIFICATIONS

Brand	Cross section
PVVG	1x1.5
PVVG	1x2.5
PVVG	1x4
PVVG	1x6
PVVG	1x10
PVVG	1x16
PVVG	1x25
PVVG	1x35
PVVG	1x50
PVVG	2x1.5
PVVG	2x2.5
PVVG	2x4
PVVG	2x6
PVVG	2x10
PVVG	2x16
PVVG	2x25
PVVG	2x35
PVVG	2x50
PVVG	3x1.5
PVVG	3x2.5
PVVG	3x4
PVVG	3x6
PVVG	3x10

Brand	Cross section
PVVG	3x16
PVVG	3x25
PVVG	3x35
PVVG	3x50
PVVG	4x1.5
PVVG	4x2.5
PVVG	4x4
PVVG	4x6
PVVG	4x10
PVVG	4x16
PVVG	4x25
PVVG	4x35
PVVG	4x50
PVVG	5x1.5
PVVG	5x2.5
PVVG	5x4
PVVG	5x6
PVVG	5x10
PVVG	5x16
PVVG	5x25
PVVG	5x35
PVVG	5x50



**Cable PvPG, APvPg, PvPu2g, APvPu2g, PvPu, APvPu for 6-10 kV
in accordance with GOST 55025-2012 / TU 3500-021-41602515-2014**

Power cables type PvPg, with XLPE insulation



DESIGN

1. CURRENT CONDUCTING WIRE - round multi-wire sealed (aluminum or copper), 1-2 classes according to GOST 22483.
2. INSULATION - extruded cross-linked polyethylene semi-conductive layer, extruded cross-linked polyethylene, extruded semi-conductive cross-linked polyethylene layer, a layer of electrically conductive paper or electrically conductive water blocking tape.
3. SCREEN - made of copper wires, over which a copper tape is applied.
4. SEPARATING LAYER - made of cable paper or rubberized fabric, aluminopolymer tape.
5. SHELL - made of polyethylene.

APPLICATION

This cable is used when stationary laying in the ground, while the degree of corrosiveness of the soil or water does not matter. The cable is protected from moisture penetration, this property allows it to be used in soils with high humidity or in damp / partially flooded premises, as well as in non-navigable water bodies or, if it is a navigable water body, then additional safety measures must be observed to exclude mechanical damage to the cable. It is possible to lay in the air without using protection from solar radiation, including in cable structures, if additional fire safety measures are provided. The cable can be laid without limiting the level difference.

SPECIFICATIONS

Working voltage:	10 kV
Ambient temperature during operation:	from -50°C to + 50°C
Relative air humidity (at temperatures up to + 35°C):	up to 98%
Long-term permissible operating temperature of conductors:	+ 90°C
Permissible heating of conductors in emergency mode no more:	+ 130°C
Cables can be laid without preheating when temperature:	not lower than -15°C
Maximum core heating temperature during short circuit:	+ 250°C
Minimum routing bend radius:	7.5 outer diameters
The warranty period for the power cable PvPG	5 years
Service life	30 years



Cable PPGng (A) HF, PPGng (A) FRHF, PvPGng (A) HF, PvPGng (A) FRHF according to GOST 31996-2012 / TU 3500-026-41602515-2014

Power cable with copper conductors, with insulation and sheath made of polymer compositions that do not contain halogens



DESIGN

1. CURRENT CONDUCTOR - copper single or multi-wire corresponds to class 1 or 2 according to GOST 22483-2012. Conductive conductors of single-core cables of all cross-sections and multicore cables with cross-sections up to 50 mm² are round.
2. INSULATION - for PvPGng-HF cable made of cross-linked polyethylene, for cables of other brands - from halogen-free polymer composition.
3. TWISTING - insulated conductors are twisted into a core. Insulated conductors of multicore power cables have a distinctive color. The insulation of neutral conductors is blue (light blue). Core insulation grounding has a two-color (green-yellow) color. Insulated conductors of single-core cables can be of any color.
4. INNER SHELL - extruded, superimposed over twisted strands of halogen-free polymer composition that fills gaps between the veins.
5. WRAPPING - for PvPGng-HF cables with conductive conductors with a cross-section from 50 to 240 mmg inclusive of one mica tape with a thickness not less than 0.14 mm or one glass tape not less than less than 0.2 mm with at least 30% overlap.
6. ARMOR - for cables of PBbPng-HF brands, it is applied spirally of two galvanized steel strips with a nominal thickness of each strip 0.3 mm.
7. OUTER SHELL - made of a halogen-free polymer composition.

APPLICATION

Cables are designed for transmission and distribution of electricity in stationary installations at normal alternating voltage 0.66 and 1 kV with frequency up to 100 Hz, including for operation in NPP systems of class ZN according to the classification of PNAE G-1-011-97. PPNng-HF, PvPGng-HF cables for laying in rooms and cable structures in the absence of danger of mechanical damage during operation. PBbPng-HF cables for indoor installation and cable structures in the presence of the risk of mechanical damage during operation. Cables are intended for laying in industrial and office premises where computers and other microprocessor equipment are installed, as well as in metro structures, residential and public buildings (in cinemas, medical and educational institutions, shops, etc.) Fire hazard indicators of cables according to NPB 248-97 classification correspond to:

- according to the limit of propagation of combustion - PRG1
 - according to the fire resistance limit - PPST7
 - in terms of corrosiveness of cable products - PKA1
- Cables are designed for group laying.

SPECIFICATIONS

Operating temperature range from -30°C to + 50°C

Relative air humidity at 35°C up to 98%

Cables are laid without preheating at a temperature not lower than -15°C

Minimum bending radius for laying:

- single core 10 outer diameters cable
- stranded 7.5 outer diameters cable

Insulation made of halogen-free polymer composition, resistant to deformation after holding at a temperature of (80 + 2)°C for 4 hours - for cables with an outer diameter no more than 12.5 mm and 6 hours - for other cables. XLPE insulation resistant to thermal deformation. Cables are flame retardant when laid in groups. Smoke formation during burning and smoldering cables does not lead to a decrease in light transmission in the test chamber by more than 40% The values of the indicators of the corrosiveness of the products of smoke and gas release at combustion and smoldering of insulation, filling and shell materials correspond to the specified in the table: The duration of the short circuit must not exceed 4 s. Limiting temperature of conductive conductors of cables according to cable non-combustion conditions at short circuit no more than + 400°C The duration of operation of cables in emergency mode is not more than 8 hours per day and not more than 1000 hours during the service life.

Cable NYM-J, NYM-O for 0.66 kV in accordance with GOST 31996-2012 / TU 3500-025-41602515-2014
Copper PVC insulated power cables, PVC sheathed PVC sheathed and filled with non volcanic rubber

DESIGN

1. CURRENT CONDUCTOR - copper, round, class 1 and 2 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC).
3. TWIST - insulated conductors of multicore cables are twisted.
4. BELT INSULATION - from uncured rubber compound, NYM brand single core cables are made without belt insulation.
5. SHELL - PVC compound, gray colors.

APPLICATION

For power supply of industrial installations for stationary connection of devices household use in stationary installations for rated alternating voltage up to 380/660 V V rated frequency 50 Hz (NYM according to TU) and for a voltage of



SPECIFICATIONS

Operating temperature range	from +40°C to - 30°C
Relative air humidity up to 98%	up to + 35 ° C
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Bending radius when laying	7.5 outer diameters
Test alternating voltage with a frequency of 50 Hz:	2,5 kV
Long-term permissible heating temperature of cable conductors during operation	+70°C
Maximum allowable short-circuit temperature, no more	+160°C
Short circuit duration, no more	4s
Construction length of cables, not less	50m
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	40 years

Brand	Cross section
NYM	1x1.5
NYM	1x2.5
NYM	1x4
NYM	1x6
NYM	1x10
NYM	1x16
NYM	2x1.5
NYM	2x2.5
NYM	2x4

Brand	Cross section
NYM	2x6
NYM	2x10
NYM	2x16
NYM	2x25
NYM	2x35
NYM	3x1.5
NYM	3x2.5
NYM	3x4
NYM	3x6

**Cable APvBShp, PvBShp for 1 kV in accordance with GOST 31996-2012 /
TU 3500-021-41602515-2014**

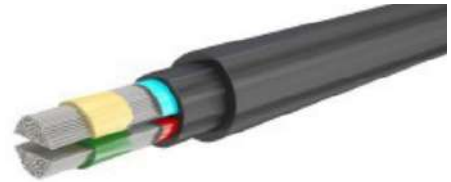
*Power cables with copper or aluminum conductors, insulated with silanol-cross-linked polyethylene, armored,
with an outer sheath made of polyethylene*

DESIGN

1. CURRENT CONDUCTOR - copper (PvBShp, PvzBbShp) or aluminum (APvBShp, APvzBShp), single-wire or multi-wire, round or sector-shaped, 1 or 2 classes according to GOST 22483. 2. INSULATION - made of silanol-crosslinked polyethylene. Insulated conductors of multicore cables have a distinctive color, which can be not only solid, but also in the form of a longitudinal strip with a width of at least 1 mm. The insulation of neutral conductors is blue. Core insulation grounding - two-color in the form of a combination of green and yellow colors. 3. TWIST - insulated cable conductors are twisted into a core around a bundle made of PVC compound or uncured rubber for PvzBShp, APvzBShp cables. Cables are made of four- and five-core and have all cores of the same cross-section or one core of a smaller cross-section (zero or ground) in four-core cables. 4. INNER SHELL - extruded, superimposed over twisted strands of polymer composition, not containing halogens, which fills the gaps between veins. 5. BELT INSULATION - made of polyethylene or PVC plastic compound applied over twisted cores with filling gaps between the veins. Two-layer belt insulation is allowed: the inner layer is made of unvulcanized rubber compound, and the outer layer is made of polyethylene or PVC plastic compound. PvzBShp, APvzBShp cables are manufactured only with two-layer belt insulation: the inner layer is made of unvulcanized rubber compound, and the outer layer is made of polyethylene. 6. PROTECTIVE COVER - type BShp: armor made of two steel galvanized strips applied so that the upper strip overlapped the gaps between the turns of the lower tape; protective the hose is extruded from polyethylene.

APPLICATION

For transmission and distribution of electricity in stationary installations at rated alternating voltage 1 kV frequency 50 Hz in networks with isolated or grounded neutral. Cables are designed for buried ground (trenches) regardless of the degree of corrosivity soils and groundwater, with the exception of heaving and subsidence soils, and for laying in soils with increased humidity and water. It is allowed to lay cables in cable structures, provided that additional fire protection measures are provided, for example, the application of fire retardant coatings. Fire hazard class according to NPB 248-97 - 02.7.1.3.



SPECIFICATIONS

Climatic version B, placement category 5 in accordance with GOST 15150-69	
Operating temperature range	from -60°C to + 50°C
Relative air humidity at temperatures up to + 35°C	up to 98%
Laying and installation of cables without preheating is carried out at a temperature not lower than	-15°C
Minimum bending radius for laying:	7.5 outer diameters
Test alternating voltage with a frequency of 50 Hz (duration test 10 min)	3.5 kV
Long-term permissible heating temperature of cable conductors during operation	+90°C
Permissible heating of cable conductors in overload mode, no more than	+130°C
Long-term permissible heating temperature of cable cores in case of short circuit	+250°C
Short circuit duration	no more than 4 seconds
The limiting temperature of the conductive cores of the cables according to the non-combustion condition cable at short circuit	+400°C
Duration of cable operation in overload mode, no more than 6 hours per day within 5 days, if the load currents in the remaining periods of this day are not exceed the nominal values, but not more than 1000 hours for the entire service life cables Face-to-face length of cables for cross-sections of main conductors:	
2.5-16 mm ²	7h 30m
25 - 70 mm ²	5h
95 mm ² and above	3h 20m
Warranty period of operation from the date the cables were put into exploitation	5 years
Product lifetime	30 years

**Cable APvBShv, PvBShv for 1 kV in accordance with GOST 31996-2012 /
TU 3500-021-41602515-2014**

Power cables with aluminum conductors, insulated with silanol-cross-linked polyethylene, armored, with an outer sheath made of PVC compound



DESIGN

1. **CURRENT CONDUCTOR** - aluminum or copper single-wire or multi-wire, round or sector-shaped, class 1 or 2 in accordance with GOST 22483.
2. **INSULATION** - made of silanol-crosslinked polyethylene. Insulated conductors of multicore cables have a distinctive color scheme that can be not only solid, but also in the form of a longitudinal strip at least 1 mm wide. The insulation of neutral conductors is blue. The insulation of the grounding conductor is two-color in the form of a combination of green and yellow colors.
3. **TWISTING** - insulated cable conductors are twisted into a core around a PVC-compound bundle or unvulcanized rubber in APvBShv cables, from PVC-compound of low fire hazard in cables of the APvBShng (A) -1B brand, from PVC-compound of low flammability in cables of the APvBShng (V) brand. Cables are available in two-, three-, four- and five-core and have all cores of the same cross-section or one core smaller cross-section (zero or ground) in four-core cables.
4. **BELT INSULATION** - applied over twisted PVC conductors in cables APvBbShv grade, from PVC-compound of low fire hazard in APvBShng (A) -15 cables, from PVC compound of low flammability in cables grades APvBShng (V) with filling the gaps between the veins. In cables of the APvBShv brand, the imposition of two-layer belt insulation is allowed: internal layer - from unvulcanized rubber compound, and the outer one is made of PVC compound.
5. **WINDING** - applied over the belt insulation in APvBShng (A) -1 cables, APvBbShng (V) made of glass tape or glass-mica tape with overlapping.
6. **PROTECTIVE COVER** - type BShv:
 - armor made of two steel galvanized strips, superimposed so that the top tape overlaps gaps between the turns of the lower tape;
 - PVC extruded protective hose plastic compound, in APvBShng (A) -1B cables made of PVC low fire risk compound, PVC low-flammability plastic compound in cables of the brand APvBShng (V).

APPLICATION

For transmission and distribution of electricity in stationary installations at nominal alternating voltage 1 kV with a frequency of 50 Hz in networks with isolated or grounded neutral. APvBShv cables are intended for laying in the ground (trenches), except heaving and subsiding soils, and for laying single cable lines in cable structures. Cables of APvBShng (A) - LS, APvBShng (V) brands are intended for group laying of cable lines in cable structures, premises, grade APvBShng (V), including in explosive zones of classes V-1g, V-II, V-16, V-IIa. Fire hazard class according to airbag 248- 97 for cables APvBShv - 01,7.2.3, for cables APvBShng (A) - LS - П1.7.2.2, for cables APvBShng (v) - P2.7.2.3

KVVG cable in accordance with GOST 1508-78
Control cables with copper conductors, PVC insulated, PVC sheathed



DESIGN

1. CURRENT CONDUCTOR - copper, single-wire, class 1 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride compound (PVC).
3. TWIST - the insulated conductors of the cables are twisted. In each layer there is a counting pair, the insulated veins of which differ in color from each other and from the rest lived.
4. SHELL - PVC compound.



APPLICATION

Designed for fixed connection to electrical devices, apparatus, assemblies electrical switchgear clamps with rated AC voltage up to 0.66 kV frequency up to 100 Hz or constant voltage up to 1 kV, for laying in rooms, channels, tunnels, in conditions of an aggressive environment, in the absence of mechanical stress on the cable. Gasket allowed cables in the ground (trenches) while providing protection cables at the points of exit to the surface. KVVG cables can be laid outdoors.

SPECIFICATIONS

Type of climatic version of UHL cables of placement categories 1-5, T (cables in tropical version) of placement categories 2-5 according to GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity up to + 35°C	up to 98%
Nominal insulation thickness for conductors with cross-section:	
• from 0.75 to 2.5 mm ²	0.6 mm
• from 4 to 6 mm ²	0.7 mm
• up to 10 mm ²	0.9 mm
Electrical resistance of conductor insulation at a temperature of 20°C with a cross-section:	
• from 0.75 to 1.5 mm ² not less than	10 MOhm * km
• from 2.5 to 4 mm ² not less than	9 MOhm * km
• from 6 to 10 mm ² not less than	6 MOhm * km
Long-term permissible core heating temperature during operation	70°C
The cables are resistant to assembly bends	
The bending radius of non-armored cables when laid at an ambient temperature of at least 0°C is:	
• for cables with outer diameter up to 10 mm incl., not less than	3 cable diameters
• for cables with outer diameter from 10 to 25 mm incl., not less than	4 cable diameters
Bending radius of non-armored cables during laying and installation without preheating at an ambient temperature not lower than -15°C, not less	6 cable diameters
Construction length of cables, not less than	230 metres
Warranty period of operation (from the date of cable entry into operation)	3 years
Cable life at least 15 years; when laying in rooms, channels, tunnels: at least 25 years	

Cross section (KVVG):

- 4x1 4x1.5
- 4x2.5 4x4
- 5x1 5x1.5
- 5x2.5 5x4
- 7x1 7x1.5
- 7x2.5

Cross section (KVVG):

- 7x4 10x1
- 10x1,5 10x2,5
- 10x4 14x1
- 14x1,5 14x2,5
- 14x4 19x1
- 19x1,5 19x2,5
- 19x4

Cable KVVG ng (A) in accordance with GOST 1508-78 / TU 3563-005-41602515-2009
Control cables with copper conductors, with PVC insulation, PVC sheath with low flammability



DESIGN

1. CURRENT CONDUCTOR - copper, single-wire, class 1 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride compound (PVC).
3. TWIST - the insulated conductors of the cables are twisted. In each layer there is a counting pair, the insulated veins of which differ in color from each other and from the rest lived.
4. SHELL - low flammability PVC compound.



APPLICATION

Designed for fixed connection to electrical devices, apparatus, assemblies electrical switchgear clamps with rated AC voltage up to 0.66 kV frequency up to 100 Hz or constant voltage up to 1 kV, for laying in rooms, channels, tunnels, in conditions of an aggressive environment, in the absence of mechanical stress on the cable. Gasket allowed cables in the ground (trenches) while providing protection cables at the points of exit to the surface. KVVG ng (A) cables are used for laying in cable structures and premises for ensuring fire safety of cable chains when laying in bundles. Cables of this brand can be laid outdoors.

SPECIFICATIONS

Type of climatic version of UHL cables of placement categories 1-5, T (cables in tropical version) of placement categories 2-5 according to GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity up to + 35°C	up to 98%
Nominal insulation thickness for conductors with cross-section:	
• from 0.75 to 2.5 mm ²	0.6 mm
• from 4 to 6 mm ²	0.7 mm
• up to 10 mm ²	0.9 mm
Electrical resistance of conductor insulation at a temperature of 20°C with a cross-section:	
• from 0.75 to 1.5 mm ² not less than	10 MOhm * km
• from 2.5 to 4 mm ² not less than	9 MOhm * km
• from 6 to 10 mm ² not less than	6 MOhm * km
Long-term permissible core heating temperature during operation	70°C
The cables are resistant to assembly bends	
The bending radius of non-armored cables when laid at an ambient temperature of at least 0°C is:	
• for cables with outer diameter up to 10 mm incl., not less than	3 cable diameters
• for cables with outer diameter from 10 to 25 mm incl., not less than	4 cable diameters
Bending radius of non-armored cables during laying and installation without preheating at an ambient temperature not lower than -15°C, not less	6 cable diameters
Construction length of cables, not less than	230 metres
Warranty period of operation (from the date of cable entry into operation)	3 years
Cable life at least 15 years; when laying in rooms, channels, tunnels: at least 25 years	

Cross section KVVG ng (A):

4x1	5x1	7x1	10x1	14x1	19x1
4x1,5	5x1,5	7x1,5	10x1,5	14x1,5	19x1,5
4x2,5	5x2,5	7x2,5	10x2,5	14x2,5	19x2,5
4x4	5x4	7x4	10x4	14x4	19x4

Cable KVVG ng (A) LS in accordance with GOST 1508-78 / TU 3563-005-41602515-2009

Control cables with copper conductors, with insulation and sheath made of PVC compositions of low fire hazard (LS index in brands means low smoke and gas emission Low Smoke)



DESIGN

1. CURRENT CONDUCTOR - copper, single-wire, class 1 in accordance with GOST 22483.
2. INSULATION - from a polyvinyl chloride composition of reduced fire hazard.
3. TWISTING - the insulated conductors of the cables are twisted. Cables are digitally or color coded all insulated conductors, providing the ability identification of each core during installation. With digital marking, the color of the numbers differs from the color of the core insulation. Color coding solid or in the form longitudinal strips with a width of at least 1 mm. Allowed marking of cores using a counting pair in each layer, the insulated cores of which differ in color from each other and from the rest of the cores.
4. SHELL - applied over twisted insulated conductors made of PVC composition with reduced fire hazard.

APPLICATION

Designed for fixed connection to electrical devices, apparatus, assemblies electrical switchgear clamps with rated AC voltage up to 0.66 kV frequency up to 100 Hz or constant voltage up to 1kV, for laying in rooms, channels, tunnels, in conditions of an aggressive environment, in the absence of mechanical stress on the cable, including for use in NPP systems of classes 2, 3 and 4 according to the classification of OPB-88/97 (PNAE G-01-011-97). Cables are flame retardant when laid in bunches. Cables of this brand can be laid outdoors.

SPECIFICATIONS

Type of climatic modification of cables B, placement categories 1-5, placement category 5 according to GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity up to + 35°C	up to 98%
Nominal insulation thickness for conductors with cross-section:	
• from 0.75 to 2.5 mm ²	0.6 mm
• from 4 to 6 mm ²	0.7 mm
• up to 10 mm ²	0.9 mm
Long-term permissible core heating temperature during operation	70°C
The cables are resistant to assembly bends	
The bending radius of non-armored cables when laid at an ambient temperature of at least 0°C is:	
• for cables with outer diameter up to 10 mm incl., not less than	3 cable diameters
• for cables with outer diameter from 10 to 25 mm incl., not less than	4 cable diameters
Bending radius of non-armored cables during laying and installation without preheating at an ambient temperature not lower than -15°C, not less	
Construction length of cables, not less than	150 metres
Warranty period of operation (from the date of cable entry into operation)	5 years
Cable life	30 years

Cross section KVVG ng (A)-LS :

4x1	5x1	7x1	10x1	14x1	19x1
4x1,5	5x1,5	7x1,5	10x1,5	14x1,5	19x1,5
4x2,5	5x2,5	7x2,5	10x2,5	14x2,5	19x2,5
4x4	5x4	7x4	10x4	14x4	19x4

KGTP cable for 0.66 kV in accordance with GOST 24334-80 / TU 3544-020-41602515-2012

Flexible power cables with stranded copper conductors with insulation and sheath thermoplastic elastomer



DESIGN

1. CURRENT CONDUCTOR - copper, multi-wire, round, class 5 in accordance with GOST 22483.
2. SEPARATING LAYER - synthetic film, it is allowed to apply insulation without films in the absence of sticking thermoplastic elastomer.
3. INSULATION - from thermoplastic elastomer. Insulated conductors have a distinctive solid color or in the form of a longitudinal strip. The insulation of the zero core is blue; if there is no zero core, the blue color is used to color any core other than the ground one. The grounding conductor is yellow-green color. Coloring of single-core and two-core cables is not standardized.
4. TWIST - insulated conductors are twisted with a twist pitch of no more than 16 twisting diameters.
5. SEPARATING LAYER - synthetic film, or talc, or other similar material. It is allowed to manufacture without film, provided that the insulated conductors are separated from the sheath.
6. SHELL - from hose thermoplastic elastomer. In single-core cables of the KGTP brand, it is allowed to replace the insulation and sheath with an insulating protective sheath. Nominal thickness of the insulating-protective shell is equal to the sum of the nominal thicknesses of the insulation and the shell or twice the thickness of the insulation.

APPLICATION

Designed for connecting mobile mechanisms to electrical networks when alternating voltage 660 V with frequency up to 400 Hz or constant voltage 1000V, at bending with a radius of at least 8 cable diameters at an admissible heating temperature of conductive lived up to 75°C.



SPECIFICATIONS

Climatic version UHL, T category of placement - 1,2,3 in accordance with GOST 15150-69

Cables are resistant to changes in ambient temperature:

- KGTP grade from -40°C to $+50^{\circ}\text{C}$
- in cold-resistant version from -60°C to $+50^{\circ}\text{C}$
- in tropical version from -10°C to $+55^{\circ}\text{C}$

Face-to-face length of cables:

- with a nominal cross-section of the main conductors up to 35 mm^2 inclusive, not less than 150 m
- with a nominal cross-section of the main conductors of 50 mm^2 and more, not less than 125 m
- (by agreement with the consumer, delivery of cables of any length is allowed)

The warranty period for cables is 6 months from the date of commissioning, but not later than 12 months from the date of production

The service life of KGTP cables is 4 years (the service life is calculated from the date of manufacture of the cable)

SPECIFICATIONS

Brand	Cross section
KGTP	1x0.75
KGTP	1x1
KGTP	1x1.5
KGTP	1x2.5
KGTP	1x4
KGTP	1x6
KGTP	1x10
KGTP	1x16
KGTP	1x25
KGTP	1x35
KGTP	1x50
KGTP	1x70
KGTP	1x95
KGTP	1x120
KGTP	1x150
KGTP	1x185
KGTP	1x240
KGTP	2x0.75
KGTP	2x1
KGTP	2x1.5
KGTP	2x2.5
KGTP	2x4
KGTP	2x6
KGTP	2x10
KGTP	2x16
KGTP	2x25
KGTP	2x35
KGTP	2x50
KGTP	2x70
KGTP	2x95
KGTP	2x120
KGTP	2x150
KGTP	2x185
KGTP	2x240

Brand	Cross section
KGTP	3x0.75
KGTP	3x1
KGTP	3x1.5
KGTP	3x2.5
KGTP	3x4
KGTP	3x6
KGTP	3x10
KGTP	3x16
KGTP	3x25
KGTP	3x35
KGTP	3x50
KGTP	3x70
KGTP	3x95
KGTP	3x120

SPECIFICATIONS

Brand	Cross section
KGTP	3x150
KGTP	3x185
KGTP	3x240
KGTP	4x0.75
KGTP	4x1
KGTP	4x1.5
KGTP	4x2.5
KGTP	4x4
KGTP	4x6
KGTP	4x10
KGTP	4x16
KGTP	4x25
KGTP	4x35
KGTP	4x50
KGTP	4x70
KGTP	4x95
KGTP	4x120
KGTP	4x150
KGTP	4x185
KGTP	4x240
KGTP	5x0.75
KGTP	5x1
KGTP	5x1.5
KGTP	5x2.5
KGTP	5x4
KGTP	5x6
KGTP	5x10
KGTP	5x16
KGTP	5x25
KGTP	5x35
KGTP	5x50
KGTP	5x70
KGTP	5x95
KGTP	5x120

Brand	Cross section
KGTP	5x150
KGTP	5x185
KGTP	5x240
KGTP	3x2.5 + 1x1.5
KGTP	3x4 + 1x2.5
KGTP	3x6 + 1x4
KGTP	3x10 + 1x6
KGTP	3x16 + 1x6
KGTP	3x25 + 1x10
KGTP	3x35 + 1x10
KGTP	3x50 + 1x16
KGTP	3x70 + 1x25
KGTP	3x95 + 1x35

PVS wire for 380 V in accordance with GOST 7399-97

Twisted copper conductor, PVC insulated, PVC sheathed, flexible, up to 380 V for 380/660 V systems



DESIGN

1. CURRENT CONDUCTOR - copper or tinned copper (at the request of the consumer, with ordering add the letter "I" to the brand), round, multiwire class 5 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC).
3. TWIST - insulated conductors are twisted no placeholder. Insulated conductors of five-core wires are allowed to be twisted around the core.
4. SHELL - PVC compound. Shell in wires superimposed with gap filling between the wires, giving the wires a round shape.

APPLICATION

For connecting electrical appliances and home care power tool and repair, washing machines, refrigerators, small-scale mechanization equipment for gardening and gardening and other similar machines and devices, and for the manufacture of extension cords for voltages up to 380 V for systems 380/660 V.

SPECIFICATIONS

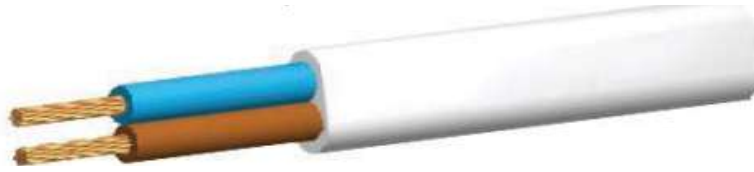
Climatic modification according to GOST 15150:	
Y - placement categories 1,2,3	
T - placement categories 4	
UHL - placement categories 4	
Y version wires are intended for operation at ambient temperatures	from -40°C to +40°C
Other types of wires	from -25°C to + 40°C
Maximum conductor temperature during operation	+70°C
After holding in water at a temperature of (20 + -5) ° C for 1 hour, the wires must withstand test with alternating voltage 2000 V, frequency 50 Hz for	15m
Wires are self-extinguishing when laid alone	
Resource of wires, expressed in resistance to alternating bending deformations at rated voltage, not less than n	30,000 (60,000) cycles (movements)
Installed trouble-free operating time, not less	5000 H
Installed trouble-free operating time for wires used in stationary el. devices, not less	12000 H
Construction length of wires, not less	50 metres
Warranty period of operation	2 years
Service life of wires, not less	6 years
Service life for wires used in stationary el. devices, not less	10 years

Cross section PVS:

2x0.5	2x2.5	3x1	4x0,5	4x2,5
2x0.75	2x4	3x1,5	4x0,75	4x4
2x1	3x0.5	3x2,5	4x1	
2x1.5	3x0.75	3x4	4x1,5	

ShVVP cord 380 V in accordance with GOST 7399-97

PVC insulated parallel copper cord with PVC sheath, flexible, for voltage up to 380 V for systems 380/660 V



DESIGN

1. CURRENT CONDUCTOR - copper or tinned copper (at the request of the consumer, with ordering add the letter "I" to the brand), round, multiwire class 5 in accordance with GOST 22483.
2. INSULATION - made of polyvinyl chloride plastic (PVC).
3. LOCATION OF HOUSES - isolated the cores are parallel.

APPLICATION

ShVVP cords are intended for connection of personal hygiene and microclimate devices, electric soldering irons, lamps, kitchen electromechanical appliances, electronic equipment, washing machines, refrigerators and other similar appliances, operated in residential and administrative premises, and for the manufacture of extension cords for voltages up to 380 V for systems 380/660 V.

SPECIFICATIONS

Climatic modification according to GOST 15150:	
Y - placement categories 1,2,3	
T - placement categories 4	
UHL - placement categories 4	
Y version wires are intended for operation at ambient temperatures	from -40°C to +40°C
Other types of wires	from -25°C to + 40°C
Maximum conductor temperature during operation	+70°C
After holding in water at a temperature of (20 + -5) ° C for 1 hour, the wires must withstand test with alternating voltage 2000 V, frequency 50 Hz for	15m
Wires are self-extinguishing when laid alone	
Resource of wires, expressed in resistance to alternating bending deformations at rated voltage, not less than n	30,000 (60,000) cycles (movements)
Installed trouble-free operating time, not less	5000 H
Installed trouble-free operating time for wires used in stationary el. devices, not less	12000 H
Construction length of wires, not less	50 metres
Warranty period of operation	2 years
Service life of wires, not less	6 years
Service life for wires used in stationary el. devices, not less	10 years

Cross section ShVVP:

2x0.5 2x2.5 3x1 4x0,5 4x2,5
2x0.75 2x4 3x1,5 4x0,75 4x4
2x1 3x0.5 3x2,5 4x1
2x1.5 3x0.75 3x4 4x1,5

PuV wire up to 450/750 V in accordance with GOST 31947-2012 / TU 3551-022-41602515-2014
Single-core wire with copper core, PVC-insulated, without sheath



DESIGN

1. CURRENT CONDUCTOR - from copper wire of 1 or 2 class according to GOST 22483-2012.
2. INSULATION - made of polyvinyl chloride plastic compound (PVC).
4. SHELL - PVC compound.

APPLICATION

Wires are used for electrical installations for stationary laying in lighting and power networks, as well as for the installation of electrical equipment, machines, mechanisms and machine tools, internal electrical installations for rated alternating voltage up to 450/750 V inclusive with rated frequency up to 400 Hz or constant voltage up to 1 kV inclusive. The wire PuV for laying in steel pipes, boxes, on trays, etc., for installing electrical circuits. The wire does not spread combustion when single gasket.

SPECIFICATIONS

Type of climatic version of the wire UHL placement category 2 according to GOST 15150-69	
Operating temperature range	from -50°C to +50°C
Relative air humidity up to + 35°C	up to 98%
Installation of wires is carried out at a temperature not lower than	-15°C
Minimum bending radius when laying	5 outdoor diameters
Long-term permissible core heating temperature during operation	70°C
Construction length of cables, not less than	100 metres
Warranty period of operation (from the date of cable entry into operation)	3 years
Cable life	20 years

Brand	Cross section
PuV	1x1.5
PuV	1x2.5
PuV	1x4
PuV	1x6
PuV	1x10
PuV	1x16
PuV	1x25
PuV	1x35

Brand	Cross section
PuV	1x50
PuV	1x70
PuV	1x95
PuV	1x120
PuV	1x150
PuV	1x185
PuV	1x240

Wire PuGV up to 450/750 V in accordance with GOST 31947-2012 / TU 3551-022-41602515-2014
Single-core wire with flexible copper core, PVC insulation plastic compound (PVC), without sheath



DESIGN

1. CURRENT CONDUCTOR - from annealed copper wire of class 5 according to GOST 22483-2012.
2. INSULATION - made of polyvinyl chloride plastic compound (PVC).

APPLICATION

Wires are used for electrical installations with stationary laying in lighting and power networks, as well as for installation of electrical equipment, machines, mechanisms and machine tools, internal electrical installations for rated alternating voltage up to 450/750 V inclusive of rated frequency up to 400 Hz or DC voltage up to 1 kV inclusive. PUGV wire is used for laying in steel pipes, boxes, on trays, etc., for the installation of electrical circuits where increased flexibility in laying and installation. The wire does not spread combustion when single gasket.

SPECIFICATIONS

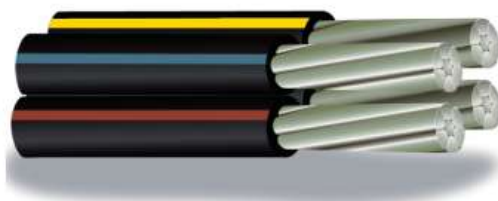
Type of climatic version of the wire UHL placement category 2 according to GOST 15150-69	
Operating temperature range	from -50°C to +65°C
Relative air humidity up to + 35°C	up to 98%
Installation of wires is carried out at a temperature not lower than	-15°C
Minimum bending radius when laying	5 outdoor diameters
Long-term permissible core heating temperature during operation	70°C
Construction length of cables, not less than	100 metres
Warranty period of operation (from the date of cable entry into operation)	3 years
Cable life	20 years

Brand	Cross section
PuGV	1x0.5
PuGV	1x0.75
PuGV	1x1
PuGV	1x1.5
PuGV	1x2.5
PuGV	1x4
PuGV	1x6
PuGV	1x10
PuGV	1x16

Brand	Cross section
PuGV	1x25
PuGV	1x35
PuGV	1x50
PuGV	1x70
PuGV	1x95
PuGV	1x120
PuGV	1x150
PuGV	1x185
PuGV	1x240

SIP-4 wire for 0.66 / 1 kV in accordance with GOST 31946-2012 / TU 3553-007-41602515-2014

Self-supporting wire without a supporting element, with aluminum conductive cores, insulated from light-stabilized thermoplastic polyethylene



DESIGN

1. CURRENT CONDUCTOR - aluminum, multi-wire, round, sealed, cross-section from 16 to 120 mm².
2. INSULATION - made of light-stabilized thermoplastic polyethylene.
3. TWIST - insulated conductors are twisted between themselves.

APPLICATION

SIP-4 wires are designed for overhead power lines and branches to inputs to residential buildings, outbuildings in areas with temperate and cold climates, in air atmosphere of types II and III in accordance with GOST 15150-69.

SPECIFICATIONS

Climatic version B, location category 1,2,3 according to GOST 15150-69	
Rated voltage	0,6 / 1 kV
Operating temperature range	from -60°C to +50°C
Relative air humidity up to + 35°C	up to 98%
The minimum temperature for laying the wire without preliminary heating	-20°C
Maximum long-term permissible operating temperature of conductors	+70°C
Minimum permissible bending radius during installation	not less than 10D, where D - calculated outside wire diameter, mm
Warranty period of operation (from the date of cable entry into operation)	3 years
Cable life	40 years

Brand	Cross section
SIP-4	2x16 (mk)
SIP-4	2x25 (mk)

Brand	Cross section
SIP-4	4x16 (mk)
SIP-4	4x25 (mk)



SIP-2

SIP-2 - self-supporting wire with aluminum conductors, insulated from light-stabilized cross-linked polyethylene (PE), with a zero load-bearing conductor made of aluminum alloy, insulated with light-stabilized cross-linked PE

DESIGN

1. CURRENT CONDUCTOR - aluminum, round forms, all cross-sections are multi-wire compacted, the number of wires in the phase conductor. The outer diameter of the conductors and their electrical resistance is shown in the table:

2. BEARING ZERO WIRE - made of aluminum alloy, round, twisted from round wires, sealed. Nominal cross-sections, number of wires per core, outer diameter lived, their breaking strength and electrical resistance are shown in the table:

3. INSULATION - in the SIP-1 wire, the zero carrier conductor is not isolated. The insulation is made of light-stabilized sewn PE. Insulated phase conductors have a distinctive color scheme. Insulation thickness is shown in the table:



4. TWIST - insulated phase conductive the conductors are twisted around the zero bearing conductor. The stranding of the cores is in the right direction. Allowed at the request of the customer production of wires of the SIP-1 and SIP-2 brands with additional insulated conductor cross-section 16 or 25 mm² for connection lighting circuits.

APPLICATION

SIP-2 - for overhead transmission lines (OHL) and linear branches from OHL in the air types I and II according to GTS 15150-69, including on the coast of the seas, salt lakes, industrial and saline areas sands.

SPECIFICATIONS

Type of climatic version of wires UHL, placement category 1, 2 and 3 according to GOST 15150-69.

The wires are resistant to solar radiation, characterized by the upper value of the integral heat flux density of 1120 W / m² ± 10%, in including the density of the ultraviolet part of the spectrum 68 W / m² ± 25%.

Wires are resistant to bending at a temperature of -40°C

Laying and installation of wires should be carried out at an ambient temperature of at least - 20°C

Permissible forces in the zero load-bearing conductor during tension and operation, no more than 45 N / mm²

Insulated conductors of wires withstand the test with an alternating voltage of 3.5 kV with a frequency of 50 Hz per passage

After holding in water at a temperature of 20°C for at least 10 minutes, the wires withstand alternating voltage tests frequency of 50 Hz for 5 minutes, the value of which: for SIP-2 wires - 4 kV

The wires withstand the test with an alternating voltage of 4 kV with a frequency of 50 Hz for 1 hour

The permissible heating of current-carrying conductors during operation should not exceed 90°C in normal mode and 250°C - at short circuit. Permissible current loads of wires, calculated at an ambient temperature of 25 ° C, a wind speed of 0.6 m / s and solar radiation intensity 1000 W / m², as well as permissible one-second short-circuit currents:

The construction length of the wire is agreed upon when ordering

Warranty period of operation 3 years from the date of commissioning of wires

Service life of wires, not less than 25 years

Brand and nominal wire voltage	Nominal external diameter, mm	Estimated outside wire diameter, mm	Estimated weight 1 km of wire, kg
SIP-2 - 0.6 / 1	3x16+1x25	24	308
	3x16+1x54,6	28	427
	3x25+1x35	27	424
	3x25+1x54,6	30	512
	3x35+1x50	31	571
	3x35+1x554,6	32	606
	3x50+1x50	34	727
	3x50+1x54,6	35	762

Brand and nominal wire voltage	Nominal external diameter, mm	Estimated outside wire diameter, mm	Estimated weight 1 km of wire, kg
SIP-2 - 0.6 / 1	3x50+1x70	36	798
	3x70+1x54,6	39	973
	3x70+1x70	40	1010
	3x70+1x95	41	1087
	3x95+1x70	43	1240
	3x95+1x95	45	1319
	3x120+1x95	48	1553
	3x150+1x95	50	1787
	3x185+1x95	55	2403

SIP-3

SIP-3 - self-supporting protected wire with a conductive core made of aluminum alloy, with protective insulation made of light-stabilized cross-linked PE

DESIGN

1. CURRENT CONDUCTOR - aluminum, round forms, all cross-sections are multi-wire compacted, the number of wires in the phase conductor. The outer diameter of the conductors and their electrical resistance is shown in the table:

2. BEARING ZERO WIRE - made of aluminum alloy, round, twisted from round wires, sealed. Nominal cross-sections, number of wires per core, outer diameter lived, their breaking strength and electrical resistance are shown in the table:

3. INSULATION - in the SIP-1 wire, the zero carrier conductor is not isolated. The insulation is made of light-stabilized sewn PE. Insulated phase conductors have a distinctive color scheme. Insulation thickness is shown in the table:

4. TWIST - insulated phase conductive the conductors are twisted around the zero bearing conductor. The stranding of the cores is in the right direction.



SPECIFICATIONS

Type of climatic version of wires UHL, placement category 1, 2 and 3 according to GOST 15150-69. The wires are resistant to solar radiation, characterized by the upper value of the integral thermal density flux $1120 \text{ W / m}^2 \pm 10\%$, including the density of the ultraviolet part of the spectrum $68 \text{ W / m}^2 \pm 25\%$.

Wires are resistant to bending at a temperature of -40°C

Laying and installation of wires should be carried out at an ambient temperature of at least -20°C

Permissible forces in the zero load-bearing conductor during tension and operation, no more than 45 N / mm^2

Insulated conductors of wires withstand the test with an alternating voltage of 3.5 kV with a frequency of 50 Hz for passage

After holding in water at a temperature of 20°C for at least 10 minutes, the wires withstand the test of variable voltage with a frequency of 50 Hz for 5 minutes, the value of which is:

- for wires of the SIP-3 brands for 20 kV 6 - kV

- for wires of the SIP-3 brands for 35 kV 10 - kV

The wires withstand the test with an alternating voltage of 4 kV with a frequency of 50 Hz for 1 hour

The permissible heating of current-carrying conductors during operation should not exceed 90°C in normal mode and 250°C - in case of short circuit.

Permissible current loads of wires, calculated at an ambient temperature of 25°C , a wind speed of 0.6 m / s and a solar radiation intensity of 1000 W / m^2 , as well as permissible one-second short currents closures:

The construction length of the wire is agreed upon when ordering

Warranty period of operation 3 years from the date of commissioning of wires

Service life of wires, not less than 25 years

Brand and nominal wire voltage	Nominal external diameter, mm	Estimated outside wire diameter, mm	Estimated weight 1 km of wire, kg
SIP-3 - 20	1x35	12	165
	1x50	13	215
	1x70	15	282
	1x95	16	364
	1x120	18	445
	1x150	19	540
	1x185	21	722
	1x240	24	950

Brand and nominal wire voltage	Nominal external diameter, mm	Estimated outside wire diameter, mm	Estimated weight 1 km of wire, kg
SIP-3 - 35	1x35	14	209
	1x50	16	263
	1x70	17	334
	1x95	19	421
	1x120	20	518
	1x150	22	618
	1x185	24	803
	1x240	26	1045

REFERENCE INFORMATION

WOODEN COILS

Coil number	Diameter, mm	Length, mm	Outside diameter, mm	Thickness, mm	Sheathing thickness, mm, not less	Estimated weight coils with casing, kg
5	500	230	230	38	16	18
6	600	200	250	38	16	25
8	800	450	230	38	16	43
8a	800	450	400	38	16	51
86	800	450	500	38	16	53
10	1000	545	500	50	19	56
12	1220	650	500	50	19	132
12a	1220	650	710	50	19	151
14	1400	750	710	58	19	217
14a	1400	900	500	58	19	200
146	1400	1000	600	58	19	234
16	1600	1200	600	58	25	308
17	1700	900	750	70	25	367
17a	1700	900	900	70	25	390
18	1800	1120	900	80	25	535
18a	1800	900	900	80	25	494
20	2000	1220	1000	90	32	763
20a	2000	1000	1060	90	32	725
206	2000	1500	1000	90	32	941
22	2200	1320	1000	118	32	965
22a	2200	1480	1050	118	32	1029
226	2200	1680	1100	118	32	1110

REFERENCE INFORMATION

SELECTION OF CABLE SECTION

Copper conductors			Cable section, mm ²	Aluminum conductors		
Electricity, A	Power, kWt			Power, kWt		Electricity, A
	220 V	380 V		220 V	380 V	
11	2*	-	0.5	-	-	-
15	3*	-	0.75	-	-	-
15	3	5	1	-	-	-
21	4	7	2.5	3	6	16
27	5	10	4	4	7	21
34	7	12	6	5	9	26
50	11	19v	10	8	14	38
80	17	30	16	12	20	55
100	22	38	25	14	24	65
135	29	51	35	16	28	75
175	38	66	50	23	39	105
215	47	81	70	29	51	135



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