POWER CABLES WITH PLASTIC INSULATION FOR VOLTAGE 0,66; 1 and 3 kV

acc. to ГОСТ Р 31996-2012 and ТУ 16-705.499-2010
GOST R 31996-2012 and TU 16-705.499-2010

(А)ВВГ, (А)ВВГ-П, (А)ВВГЭ, (А)ПвВГ, (А)ПвВГЭ, (А)ВБШв, (А)ПвБШв,
(A)VVG, (A)VVG-P, (A)VVGE, (A)PvVG, (A)PvVGE, (A)VBShv, (A)PvBShv,

(А)ПвБШп, (А)ВВГнг(А), (А)ВВГЭнг(А), (А)ВБШвнг(А), (А)ПвБШвнг(В),
(A)PvBShp, (A)BBGng(A), (A)VVGEng(A), (A)VBShvng(A), (A)PvBShvng(B),

(А)ВВГ-Пнг(А)
(A)VVG-Png(A)

APPLICATION

The cables are intended for transmission and distribution of electric power in fixed electrical installations for nominal AC voltage 0,66; 1 and 3 kV, 50 Hz. The cables are used in power systems with grounded or insulated neutral conductor, where duration of operation in conditions of single phase-to-ground fault does not exceed 8 hours, and total duration of operation in conditions of single phase-to-ground fault does not exceed 125 hours/year.

DESIGN

Conductor – copper or aluminum, single- or multi-conductor, sector-shaped or round, Class 1 or 2 acc. to GOST 22483-2012. Conductor resistance per 1 km and temperature 20°C complies with Class 1 and 2 acc. to requirements of GOST 22483-2012.
Conductor insulation – for cables Пв..., АПв... – XLPE; for cables В.., АВ… – PVC compound.
Insulation volume resistivity at continuously permissible conductor temperature:
- for cables В.., АВ… – min. $1 \cdot 10^{10}$ Ohm•cm;
- for cables Пв..., АПв... – min. $1 \cdot 10^{12}$ Ohm•cm.

Stranding – insulated conductors of multi-conductor cables are stranded into a cable core (right-hand direction). Interstices of the core composed of insulated conductors with cross-section 25 mm^2 and above are filled with extruded kordel. In cables with aluminum conductors, filling of external interstices between insulated conductors is performed simultaneously with extrusion of inner sheath. In cables with copper conductors, external interstices are filled with extruded kordels. Kordel material is similar to sheath material.
All the conductors of multi-conductor cables are of equal cross-section. Four-conductor cables with conductor nominal cross-section 25 mm^2 and above can have one conductor of lesser cross-section (neutral or ground conductor).
Inner sheath – for cables in versions «нг(А)», «нг(В)», inner sheath is extruded of flame-retardant PVC compound, for other cables - of PVC compound.
Shield – for cables АВВГЭ, ВВГЭ, АВВГЭнг(А), ВВГЭнг(А), АПвВГЭ, ПвВГЭ, АПвВГЭнг(А), ПвВГЭнг(А), shield consists of copper tapes wrapped around with overlapping.
Sheath - for cables in versions «нг(А)», «нг(В)», this sheath is extruded of flame-retardant PVC compound, for other cables - of PVC compound.
Nominal wall-thickness of outer sheath complies with category Обп-2 acc. to GOST 23286-78; at this, nominal sheath wall thickness for single-conductor cables is min. 1,4 mm, and the one for multi-conductor cables is min. 1,8mm.
Protective covering:
- armour of two galvanized steel tapes is applied helically so that upper tape overlaps the gaps between the wraps of the lower tape;
- protective jacket for cables in versions «нг(А)», «нг(В)» is extruded of flame-retardant PVC compound, for other cables - of PVC compound. Nominal wall thickness of protective jacket complies with requirements of GOST 31996-2012.

OPERATION AND LAYING CONDITIONS

1. Cables ПвБШп and АПвБШп are intended for laying in ground (trenches) irrespective of corrosive activity of grounds and ground waters. Laying of these cables across unnavigable rivers and water reservoirs is possible under the condition that the cables penetrate into ground.
2. Cables ВВГ, АВВГ, ВВГЭ, АВВГЭ, ПвВГ, АПвВГ, ПвВГЭ, АПвВГЭ, ВБШв, АВБШв, ПвБШв, АПвБШв are intended for laying of single cable lines in cable constructions and indoors. Using of a fireproofing is mandatory in case of bunched laying of these cables.
3. Cables ВВГнг(А), АВВГнг(А), ВВГЭнг(А), АВВГЭнг(А), ПвВГнг(А), АПвВГнг(А), ПвВГЭнг(А), АПвВГЭнг(А), ВБШвнг(А), АВБШвнг(А), ПвБШвнг(В) and АПвБШвнг(В) are intended for bunched laying in cable constructions of external (open) electrical installations (in overhead cable tray systems and in cable galleries).
4. Operation at ambient temperature:
- Cables АПвБШп, ПвБШп from - 60ºС to +50ºС

- All other cables (except for АПвБШп, ПвБШп) from - 50ºС to +50ºС
5. Laying without preheating of cables ПвБШп and АПвБШп is possible at ambient temperature not less than minus 20 °С. All other cables can be laid without preheating at ambient temperature not less than minus 15 °С.
6. Cable bending radius by laying, min.:
- single-conductor cable 10 cable diameters;
- multi-conductor cable 7,5 cable diameters.

DELIVERY

1. The cables are delivered on wooden drums acc. to GOST 5151-79 «Wooden drums for electrical wires and cables». Packing and marking comply with GOST 18690-2012 «Cables, wires, cords and cable accessories».
2. Max. cable length on drum is limited by weight of 5 tons.

BASIC RANGE OF PRODUCTS

<table>
<tr><td rowspan="3">Cable type</td><td rowspan="3">Number of conductors</td><td colspan="3">Nominal cross-section of main conductors, mm^2</td></tr>
<tr><td colspan="3">Nominal voltage, kV</td></tr>
<tr><td>0,66</td><td>1</td><td>3</td></tr>
<tr><td rowspan="2">ВВГ, ВВГЭ, ВВГнг(А), ВВГЭнг(А)</td><td>1</td><td rowspan="2">1,5 – 50</td><td>1,5 – 630</td><td>(1,5 – 240)*</td></tr>
<tr><td>2, 3, 4, 5</td><td>1,5 – 240</td><td>–</td></tr>
<tr><td rowspan="2">ПвВГ, ПвВГЭ, АПвВГ, АПвВГЭ</td><td>1</td><td rowspan="2">16 – 50</td><td>16 – 630</td><td>(16– 240)*</td></tr>
<tr><td>2, 3, 4, 5</td><td>16 – 240</td><td>–</td></tr>
<tr><td rowspan="2">АВВГ, АВВГЭ, АВВГнг(А), АВВГЭнг(А)</td><td>1</td><td rowspan="2">2,5 – 50</td><td>2,5 – 630</td><td>(2,5 – 240)*</td></tr>
<tr><td>2, 3, 4, 5</td><td>2,5 – 240</td><td>–</td></tr>
<tr><td rowspan="3">ВБШв, ВБШвнг(А)</td><td>1</td><td>–</td><td>(10 – 630)**</td><td>–</td></tr>
<tr><td>3</td><td rowspan="2">1,5 – 50</td><td rowspan="2">1,5 – 240</td><td>6 – 240</td></tr>
<tr><td>2, 4, 5</td><td>–</td></tr>
<tr><td rowspan="3">ПвБШв, ПвБШвнг(В), ПвБШп, АПвБШв, АПвБШвнг(В), АПвБШп</td><td>1</td><td>–</td><td>(16 – 630)**</td><td>–</td></tr>
<tr><td>3</td><td rowspan="2">16 – 50</td><td rowspan="2">16 – 240</td><td>16 – 240</td></tr>
<tr><td>2, 4, 5</td><td>–</td></tr>
<tr><td rowspan="3">АВБШв, АВБШвнг(А)</td><td>1</td><td>–</td><td>(16 – 400)**</td><td></td></tr>
<tr><td>3</td><td rowspan="2">2,5 - 50</td><td rowspan="2">2,5 – 240</td><td>10 – 240</td></tr>
<tr><td>2, 4, 5</td><td>–</td></tr>
<tr><td colspan="5">* for cables with copper shield only
** for operation in DC networks only</td></tr>
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