

FLAME-RETARDANT LOW-SMOKE POWER CABLES, INCLUDING FIRE-RESISTANT CABLES

ACC. TO ГОСТ 31996-2012
GOST 31996-2012

ТУ 16.К71-310-2001, ТУ 16.К71-277-98,
ТУ 16.К71-310-2001, ТУ 16.К71-277-98,

ТУ 16.К71-337-2004
ТУ 16.К71-337-2004

(A)ВВГнг(A)-LS, (A)ВВГЭнг(A)-LS, (A)ПвВГнг(A)-LS, (A)ВБШвнг(A)-LS,
(A)VVGng(A)-LS, (A)VVGEng(A)-LS, (A)PvVGng(A)-LS, (A)VBShvng(A)-LS,

(A)ПвБШвнг(A)-LS, ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS, ВБШвнг(A)-FRLS
(A)PvBShvng(A)-LS, VVGng(A)-FRLS, VVGEng(A)-FRLS, VBShvng(A)-FRLS

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.

Thermal barrier – for cables ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS: two mica tapes, wrapped around with overlapping.

Conductor insulation – for cables Пв..., АПв... – XLPE; for cables В..., АВ... – fire-resistant 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 mm² and above are filled with extruded kordel of fire-resistant PVC compound. Filling of external interstices between insulated conductors is performed simultaneously with extrusion of inner sheath. All the conductors of multi-conductor cables are of equal cross-section. Four-conductor cables with conductor nominal cross-section 25 mm² and above can have one conductor of lesser cross-section (neutral or ground conductor).

Inner sheath – extruded of fire-resistant PVC compound.

Shield – for cables (A)ВВГЭнг(A)-LS, ВВГЭнг(A)-FRLS, shield consists of copper tapes wrapped around with overlapping.

Belt wrapping – for cables (A)ПвВГнг(A)-LS, (A)ПвБШвнг(A)-LS: glass tape, wrapped around with overlapping.

Sheath - extruded of fire-resistant 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 extruded of fire-resistant PVC compound. Nominal wall thickness of protective jacket complies with requirements of GOST P 53769-2012.

OPERATION AND LAYING CONDITIONS

1. Cables ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS are intended for cable lines that power equipment of nuclear plants safety systems, wiring of fire safety systems (fire alarm circuits, power for fire-fighting pumps, lighting of fire escapes and escape routs, smoke exhaust and forced ventilation systems, evacuation lifts), including explosion hazard zones of all classes except for Class B1; for wiring in hospital surgical units, emergency power supply circuits and for power of equipment (current collectors) activated in case of fire.

2. Armoured single-conductor cables ВБШвнг(A)-LS и АВБШвнг(A)-LS, ВБШвнг(A)-FRLS are intended for operation in DC power systems.

3. Cables (A)ВВГнг(A)-LS, (A)ВВГЭнг(A)-LS, (A)ВБШвнг(A)-LS are intended for operation in cable constructions and indoors, including places that use nuclear power in nuclear power plant systems Class 3 and 4 acc. to classification ОПБ-88 (atomics rules and norms ПНАЭ Г-01-011-97)

4. The cables can be used for operation in DC power systems not exceeding 2,4U₀.

5. Conductor limit temperature keeping requirement regarding non-inflammability in case of short-circuit:

- (A)ПвВГнг(A)-LS, (A)ПвБШвнг(A)-LS: 400 °C for short-circuit time up to 5 sec.

- (A)ВВГнг(A)-LS, (A)ВВГЭнг(A)-LS, (A)ВБШвнг(A)-LS, ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS, ВБШвнг(A)-FRLS: 350 °C.

6. Continuously permissible conductor temperature during operation:

- (A)ПвВГнг(A)-LS, (A)ПвБШвнг(A)-LS: max. 90 °C;

- (A)ВВГнг(A)-LS, (A)ВВГЭнг(A)-LS, (A)ВБШвнг(A)-LS, ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS, ВБШвнг(A)-FRLS: max. 70 °C.

7. Laying without preheating can be performed at ambient temperature not less than minus 15 °C.

8. Operation at ambient temperature from - 50°C to +50°C.

9. 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». Wooden drums dimensions are shown in the Table B.2 of Appendix B.

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

Cable type		number of conductors	Nominal cross-section of main conductors, mm ²			
			Nominal voltage, kV			
			0,66	1	3	
TU 16.K71-310-2001 The product is manufactured under a license agreement (patent holder is JSC «VNIIPK»)	ВВГнг(A)-LS, ВВГЭнг(A)-LS	1	1,5 – 50	1,5 – 630	(1,5 – 240)*	
		2, 3, 4, 5		1,5 – 240	–	
	АВВГнг(A)-LS, АВВГЭнг(A)-LS	1	2,5 – 50	2,5 – 630	(2,5 – 240)*	
		2, 3, 4, 5		2,5 – 240	–	
	ВБШвнг(A)-LS	1	–	(10 – 630)**	–	
		3	1,5 – 50	1,5 – 240	6 – 240	
		2, 4, 5			–	
	АВБШвнг(A)-LS	1	–	(16 – 400)**	–	
		3	2,5 – 50	2,5 – 240	10 – 240	
		2, 4, 5			–	
	TU 16.K71-277-98	ПвВГнг(A)-LS, АПвВГнг(A)-LS, ПвБШвнг(A)-LS АПвБШвнг(A)-LS	4, 5	-	16 – 240	–
	TU 16.K71-337-2004	ВВГнг(A)-FRLS, ВВГЭнг(A)-FRLS	1	–	1,5 – 630	–
2, 3, 4, 5			1,5 – 240			
ВБШвнг(A)-FRLS		1	–	10-630	–	
		2-5		1,5-240		
* for cables with copper shield only						
** for operation in DC networks only						