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### АПвЭАкВнг-10 1х400 ТУ У 31.3-00214534-017-2003

Single-core power cables with aluminium conductor, flame-retardant, with XLPE, aluminium-wire armoured, with PVC compound outer sheath

Due to non-magnetic armour, cables operate at AC Technical cable requirements correspond to IEC 60502-2

#### Cables are used for laying:

- · in places, where small mechanical impacts on cable are possible, including tensile forces
- in premises, tunnels, ducts, mines, dry soil and outdoor under shelter
- · in bunches

It is possible to manufacture cables with an integrated fiber-optic module.

Order entry example:

АПвЭАкВнг-10 1х400/35 (ОМ) ТУ У 31.3-00214534-017-2003

In conjunction with the DTS system, the integrated fiber-optic module can act as a distributed cable line temperature sensor.

It is possible to manufacture cable with sealed conductor.

Order entry example:

АПВЭАкВнг-10 1х400/35 (г) ТУ У 31.3-00214534-017-2003

Fire safety code in accordance with ДСТУ 4809:2007: ПБ120000000

Products of this mark meet the requirements:

- · single wire cable flame retardance
- · bunched cable flame retardance category A







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# АПвЭАкВнг-10 1х400 ТУ У 31.3-00214534-017-2003

Single-core power cables with aluminium conductor, flame-retardant, with XLPE, aluminium-wire armoured, with PVC compound outer sheath

### **TECHNICAL SPECIFICATIONS**

Rated voltage kV 10  Maximum voltage kV 12  Number and rated area of conductors mm² 1 x 400  Insulation thikness mm 3.4  Minimum screen cross-section mm² 35  Permissible short circuit current across the screen of kA 7.1  minimum cross-section  Maximum permissible short-circuit current in core kA 37.6  Permissible continious current rating *  • by aerial laying in trefoil formation A 673  • by aerial flat laying A 769  • by burial in trefoil formation A 466  Partial discharge factor for rated voltage, not more than pC 6  Maximum permissible conductor temperature  • Continious CONTINION CONT			
Number and rated area of conductors mm² 1 x 400 Insulation thikness mm 3.4 Minimum screen cross-section mm² 35 Permissible short circuit current across the screen of minimum cross-section Maximum permissible short-circuit current in core kA 37.6 Permissible continious current rating *  · by aerial laying in trefoil formation A 673  · by aerial flat laying A 769  · by burial in trefoil formation A 470  · by burial flat Partial discharge factor for rated voltage, not more than pC 6  Maximum permissible conductor temperature  · Continious °C +90  · in emergency operation °C +130  · at short circuit °C +250  Operating temperature range (in climate version NF) °C -50 +50  Operating temperature range (in climate version T) °C -25 +65  Minimum bending radius by laying mm 784  Rated outer diameter of the cable (for reference) ** mm 49  Cable weight (approximate) kg/km 3280  Rated factory cable length and gross weight of the delivery on the drums *** # 20ayД-60: 810 · 3.4	Rated voltage	kV	10
Insulation thikness mm 3.4  Minimum screen cross-section mm² 35  Permissible short circuit current across the screen of kA 7.1  minimum cross-section  Maximum permissible short-circuit current in core kA 37.6  Permissible continious current rating *  · by aerial laying in trefoil formation A 673  · by aerial flat laying A 769  · by burial in trefoil formation A 470  · by burial flat A 466  Partial discharge factor for rated voltage, not more than pC 6  Maximum permissible conductor temperature  · Continious C +90  · in emergency operation C +130  · at short circuit C C +250  Operating temperature range (in climate version NF) C -50 +50  Operating temperature range (in climate version T) C -25 +65  Minimum bending radius by laying mm 784  Rated outer diameter of the cable (for reference) ** mm 49  Cable weight (approximate) kg/km 3280  Rated factory cable length and gross weight of the delivery m, t # 22yД-60: 661 · 3.1  value A 7.1  mm 47  value A 7.1  mm 48  value A 7.1  mm 49  Cable weight (approximate) kg/km 3280  Rated factory cable length and gross weight of the delivery m, t # 22yД-60: 661 · 3.1  value A 7.1  mm 49  Cable weight (approximate) m, t # 22yД-60: 661 · 3.1  value A 7.6  mm 49  Cable weight (approximate) m, t # 22yД-60: 661 · 3.1  value A 7.1  mm 49  Cable weight (approximate) m, t # 22yД-60: 661 · 3.1  value A 7.1  value A 7.6  value A 7.6  value A 7.1  value A 7.6  value A 7.1  value A 7.6  value A 7.1  value A 7.6  value A 7.6  value A 7.1  value A 7.1  value A 7.6  value A 7.1  value	Maximum voltage	kV	12
Minimum screen cross-sectionmm²35Permissible short circuit current across the screen of minimum cross-sectionkA7.1Maximum permissible short-circuit current in corekA37.6Permissible continious current rating * • by aerial laying in trefoil formationA673• by aerial flat layingA769• by burial in trefoil formationA470• by burial flatA466Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the delivery on the drums ***m, t# 22УД-60: 661 * 3.1on the drums ***# 20аУД-60: 810 * 3.4	Number and rated area of conductors	mm²	1 x 400
Permissible short circuit current across the screen of minimum cross-section  Maximum permissible short-circuit current in core kA 37.6  Permissible continious current rating *	Insulation thikness	mm	3.4
minimum cross-section  Maximum permissible short-circuit current in core  Permissible continious current rating *  · by aerial laying in trefoil formation  · by aerial flat laying  · by burial in trefoil formation  · by burial in trefoil formation  · by burial flat  A 470  · by burial flat  Partial discharge factor for rated voltage, not more than  Pc 6  Maximum permissible conductor temperature  · Continious  · in emergency operation  · in emergency operation  · at short circuit  Operating temperature range (in climate version NF)  Operating temperature range (in climate version T)  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 49  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery on the drums ***  # 20ayД-60: 810 · 3.4	Minimum screen cross-section	mm²	35
Maximum permissible short-circuit current in corekA37.6Permissible continious current rating *. by aerial laying in trefoil formationA673. by aerial flat layingA769. by burial in trefoil formationA470. by burial flatA466Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature. Continious° C+90. in emergency operation° C+130. at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 229Д-60: 661 · 3.1on the drums ***# 20ayД-60: 810 · 3.4	Permissible short circuit current across the screen of	kA	7.1
Permissible continious current rating *     · by aerial laying in trefoil formation     · by aerial flat laying     · by burial in trefoil formation     · by burial in trefoil formation     · by burial flat     · A     · 466  Partial discharge factor for rated voltage, not more than     pC     6  Maximum permissible conductor temperature     · Continious     · C     · 190     · in emergency operation     · C     · in emergency operation     · at short circuit     · C     · 250  Operating temperature range (in climate version NF)     ° C     · 25 +50  Operating temperature range (in climate version T)     ° C     · 25 +65  Minimum bending radius by laying     mm     784  Rated outer diameter of the cable (for reference) **     mm     49  Cable weight (approximate)     kg/km     3280  Rated factory cable length and gross weight of the delivery     on the drums ***     # 20ayД-60: 810 · 3.4	minimum cross-section		
• by aerial laying in trefoil formationA673• by aerial flat layingA769• by burial in trefoil formationA470• by burial flatA466Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ****# 20аУД-60: 810 • 3.4	Maximum permissible short-circuit current in core	kA	37.6
• by aerial flat layingA769• by burial in trefoil formationA470• by burial flatA466Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 · 3.1on the drums ***# 20аУД-60: 810 · 3.4	Permissible continious current rating *		
<ul> <li>by burial in trefoil formation</li> <li>by burial flat</li> <li>A 466</li> <li>Partial discharge factor for rated voltage, not more than</li> <li>pC 6</li> <li>Maximum permissible conductor temperature</li> <li>Continious</li> <li>in emergency operation</li> <li>at short circuit</li> <li>C +250</li> <li>Operating temperature range (in climate version NF)</li> <li>C -50 +50</li> <li>Operating temperature range (in climate version T)</li> <li>C -25 +65</li> <li>Minimum bending radius by laying</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 784</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 49</li> <li>Cable weight (approximate)</li> <li>kg/km 3280</li> <li>Rated factory cable length and gross weight of the delivery on the drums ***</li> <li># 20аУД-60: 810 · 3.4</li> </ul>	by aerial laying in trefoil formation	Α	673
· by burial flatA466Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature· Continious° C+90· in emergency operation° C+130· at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 · 3.1on the drums ***# 20аУД-60: 810 · 3.4	by aerial flat laying	Α	769
Partial discharge factor for rated voltage, not more thanpC6Maximum permissible conductor temperature°C+90• Continious°C+130• in emergency operation°C+250• at short circuit°C+250Operating temperature range (in climate version NF)°C-50 +50Operating temperature range (in climate version T)°C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	<ul> <li>by burial in trefoil formation</li> </ul>	Α	470
Maximum permissible conductor temperature  • Continious  • in emergency operation • at short circuit  Operating temperature range (in climate version NF)  Operating temperature range (in climate version T)  Operating temperature range (in climate version T)  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery on the drums ***  *C +250  -50 +50  -25 +65  mm 784  mm 49  Kg/km 3280  Rated factory cable length and gross weight of the delivery on the drums ***  # 229Д-60: 661 • 3.1	• by burial flat	Α	466
· Continious°C+90• in emergency operation°C+130• at short circuit°C+250Operating temperature range (in climate version NF)°C-50 +50Operating temperature range (in climate version T)°C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Partial discharge factor for rated voltage, not more than	рС	6
• in emergency operation°C+130• at short circuit°C+250Operating temperature range (in climate version NF)°C-50 +50Operating temperature range (in climate version T)°C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Maximum permissible conductor temperature		
• at short circuit° C+250Operating temperature range (in climate version NF)° C-50 +50Operating temperature range (in climate version T)° C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Continious	°C	+90
Operating temperature range (in climate version NF)°C-50 +50Operating temperature range (in climate version T)°C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 · 3.1on the drums ****# 20аУД-60: 810 · 3.4	in emergency operation	°C	+130
Operating temperature range (in climate version T)°C-25 +65Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	at short circuit	°C	+250
Minimum bending radius by layingmm784Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Operating temperature range (in climate version NF)	°C	-50 +50
Rated outer diameter of the cable (for reference) **mm49Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Operating temperature range (in climate version T)	°C	-25 +65
Cable weight (approximate)kg/km3280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 661 • 3.1on the drums ***# 20аУД-60: 810 • 3.4	Minimum bending radius by laying	mm	784
Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 661 • 3.1 on the drums *** # 20аУД-60: 810 • 3.4	Rated outer diameter of the cable (for reference) **	mm	49
on the drums *** # 20aУД-60: 810 • 3.4	Cable weight (approximate)	kg/km	3280
	Rated factory cable length and gross weight of the delivery	m, t	# 22УД-60: 661 • 3.1
# 25УД-90: 1323 • 5.9	on the drums ***		# 20аУД-60: 810 • 3.4
			# 25УД-90: 1323 • 5.9

#### Notes:

When ordering it is neccesary to agree the factory length of the product with the manufacturer

<sup>\*</sup> Long permissible current loads are calculated for the following conditions: conductor temperature 90 °C, air temperature 30 °C, soil temperature 20 °C, thermal resistivity of soil 1.5 °K • m/W, laying depth in the soil 0.8 m, while laying in flat formation the distance between cables in clear is equal to the cable diameter, while laying in trefoil formation cables are laid side by side, shields are earthed on both ends of the line

<sup>\*\*</sup> The external diameter may differ from the rated up to  $\pm$  10 %

<sup>\*\*\*</sup> Отклонение фактической массы брутто от указанного значения может составлять  $\pm$  7 %



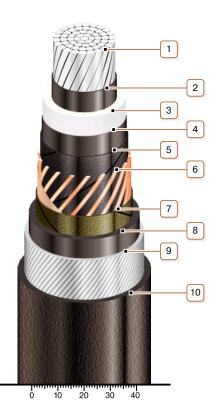




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Single-core power cables with aluminium conductor, flame-retardant, with XLPE, aluminium-wire armoured, with PVC compound outer sheath



### **CONSTRUCTION**

- 1. Aluminium multiwire compacted conductor
  Note: It is possible to manufacture cable with sealed conductor.
- 2. Inner extruded semiconducting layer
- 3. XLPE insulation
- 4. Outer extruded semiconducting layer
- 5. Lapping layer of semiconductive swellable tape
- 6. Copper screen
- 7. Lapping layer of nonwoven cloth tape
- 8. Extruded bedding of PVC compound
- 9. Aluminium-wire armour
- 10. Low flammable PVC compound outer sheath