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### АПвЭгПнг-110 1x240 ТУ У 31.3-00214534-060:2011

Power cables with aluminium cunductor, flame-retardant, with XLPE, longitudinal screen sealing and polymer compound outer sheath

For the cable of this mark correspond the foreign-made analogues:

XnUHAKXS (PL)
Technical cable requirements correspond to IEC 60840

Cables are used for laying:

- in premises, tunnels, ducts, mines, dry soil and outdoor under shelter
- · single laying

It is possible to manufacture cables with extruded semiconductor layer along outer sheath.

Order entry example:

АПвЭгПнг-П-110 1х240/95 ТУ У 31.3-00214534-060:2011

An extruded semiconductor layer along outer sheath ensures the correct testing of cable line with sections of underground laying in polymer pipes.

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

Order entry example:

АПвЭгПнг-110 1х240/95 (ОМ) ТУ У 31.3-00214534-060:2011

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:

АПвЭгПнг-110 1х240/95 (г) ТУ У 31.3-00214534-060:2011

Fire safety code in accordance with ДСТУ 4809:2007: ПБ101122000

Products of this mark meet the requirements:

- · single wire cable flame retardance
- toxicity class Tk1 of the combustion products of nonmetallic elements (toxicity index from 13 up to 40 g/m<sup>3</sup>)
- class  $\mu$ TK1 on smoke-forming ability by smouldering of non-metallic elements (coefficient of smoke formation from 50 to 500 m²/kg)
- class ДΠκ2 on smoke-forming ability by combustion (minimum luminous flux more than 60 %)
- corrosive class  $K\kappa 2$  of combustion products of non-metallic elements (the number of halogen hydrides less than 150 mg/g, pH more than 4.3, specific conductivity less than 10  $\mu$ S/mm)







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Power cables with aluminium cunductor, flame-retardant, with XLPE, longitudinal screen sealing and polymer compound outer sheath

### **TECHNICAL SPECIFICATIONS**

Maximum voltage kV 126 Conductor rated area mm² 240 Minimum screen cross-section mm² 35 Partial discharge factor for rated voltage, not more than pC 6 Permissible short circuit current across the screen of kA 7.1 Minimum cross-section kA 7.1 Maximum permissible short-circuit current in core kA 22.7  Permissible continious current rating by aerial laying *  - in trefoil formation with double-side screen earthing A 487  - in trefoil formation with single-side screen earthing or cross screen earthing  - plane with double-side screen earthing or cross screen A 572  - earthing  - permissible continious current rating by burial *  - in trefoil formation with double-side screen earthing or cross screen A 572  - earthing  - plane with single-side screen earthing or cross screen A 405  - in trefoil formation with double-side screen earthing or A 405  - in trefoil formation with single-side screen earthing or A 405  - in trefoil formation with single-side screen earthing or A 405  - in trefoil formation with single-side screen earthing or A 405  - in trefoil formation with single-side screen earthing or A 405  - in trefoil formation with single-side screen earthing or Cross screen earthing  - plane with single-side screen earthing or cross screen  - A 422  - earthing  Maximum permissible conductor temperature  - Continious  - C +90  - in emergency operation  - C +130  - at short circuit  - C +250  Operating temperature range  - C -60 +50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery on the drums ***  # 25VJA-90: 611 · 4.8  # 26VJA-100: 869 · 6.4	Rated voltage	kV	110
Minimum screen cross-section mm² 35 Partial discharge factor for rated voltage, not more than pC 6 Permissible short circuit current across the screen of minimum cross-section  Maximum permissible short-circuit current in core kA 22.7  Permissible continious current rating by aerial laying *  - in trefoil formation with double-side screen earthing A 487  - in trefoil formation with single-side screen earthing or cross screen earthing  - plane with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  - in trefoil formation with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  - in trefoil formation with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  - in trefoil formation with single-side screen earthing or A 405  - cross screen earthing  - plane with double-side screen earthing or A 405  - cross screen earthing  - plane with double-side screen earthing or A 388  - plane with single-side screen earthing or cross screen A 422  - earthing  Maximum permissible conductor temperature  - Continious  - C +90  - in emergency operation  - C +130  - at short circuit  - C -60+50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  kg/km 5280  Rated factory cable length and gross weight of the delivery  n the drums ***  # 25VД-90: 611 • 4.8	Maximum voltage	kV	126
Partial discharge factor for rated voltage, not more than pC 6 Permissible short circuit current across the screen of minimum cross-section  Maximum permissible short-circuit current in core kA 22.7  Permissible continious current rating by aerial laying *  • in trefoil formation with double-side screen earthing A 487  • in trefoil formation with single-side screen earthing or cross screen earthing  • plane with double-side screen earthing or cross screen earthing or cross screen earthing  • plane with single-side screen earthing or cross screen A 572  earthing  Permissible continious current rating by burial *  • in trefoil formation with double-side screen earthing or cross screen earthing or cross screen earthing or an A 405  cross screen earthing  • in trefoil formation with single-side screen earthing or A 405  cross screen earthing  • plane with double-side screen earthing or A 405  cross screen earthing  • plane with double-side screen earthing or cross screen A 422  earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation  • C +130  • at short circuit  • C -60 +50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  kg/km 5280  Rated factory cable length and gross weight of the delivery  m, t # 22VД-60: 339 • 2.7  on the drums ***  # 25VД-90: 611 • 4.8	Conductor rated area	mm²	240
Permissible short circuit current across the screen of minimum cross-section  Maximum permissible short-circuit current in core  Permissible continious current rating by aerial laying *  · in trefoil formation with double-side screen earthing or cross screen earthing  · plane with double-side screen earthing or cross screen earthing or plane with single-side screen earthing or earthing  Permissible continious current rating by burial *  · in trefoil formation with double-side screen earthing or cross screen earthing or earthing  Permissible continious current rating by burial *  · in trefoil formation with double-side screen earthing or cross screen earthing or c	Minimum screen cross-section	mm²	35
minimum cross-section  Maximum permissible short-circuit current in core  Permissible continious current rating by aerial laying *  • in trefoil formation with double-side screen earthing or cross screen earthing  • plane with double-side screen earthing or cross screen earthing or plane with single-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  • in trefoil formation with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  • in trefoil formation with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  • in trefoil formation with single-side screen earthing or A 405  cross screen earthing  • plane with double-side screen earthing or cross screen earthing or cross screen earthing or cross screen earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation  • C +130  • at short circuit  • C +250  Operating temperature range  • C -60 +50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  kg/km 5280  Rated factory cable length and gross weight of the delivery  m, t # 22YД-60: 339 • 2.7  on the drums ***  # 25YД-90: 611 • 4.8	Partial discharge factor for rated voltage, not more than	рС	6
Maximum permissible short-circuit current in core  RA 22.7  Permissible continious current rating by aerial laying *  in trefoil formation with double-side screen earthing  in trefoil formation with single-side screen earthing or  plane with double-side screen earthing or  plane with double-side screen earthing or cross screen  plane with single-side screen earthing or cross screen  plane with single-side screen earthing or cross screen  permissible continious current rating by burial *  in trefoil formation with double-side screen earthing or  in trefoil formation with single-side screen earthing or  plane with double-side screen earthing or  plane with double-side screen earthing or  plane with double-side screen earthing or cross screen  plane with single-side screen earthing  plane with single-side	Permissible short circuit current across the screen of	kA	7.1
Permissible continious current rating by aerial laying *     · in trefoil formation with double-side screen earthing	minimum cross-section		
• in trefoil formation with double-side screen earthing       A       487         • in trefoil formation with single-side screen earthing or cross screen earthing       A       496         • plane with double-side screen earthing       A       533         • plane with single-side screen earthing or cross screen earthing       A       572         earthing       Permissible continious current rating by burial *       • in trefoil formation with double-side screen earthing       A       394         • in trefoil formation with single-side screen earthing or cross screen earthing       A       405         • cross screen earthing       A       388         • plane with double-side screen earthing or cross screen earthing or cross screen earthing       A       405         • plane with double-side screen earthing or cross screen earthing       A       405         • plane with double-side screen earthing or cross screen e	Maximum permissible short-circuit current in core	kA	22.7
• in trefoil formation with single-side screen earthing or cross screen earthing A 496   • plane with double-side screen earthing A 533   • plane with single-side screen earthing or cross screen earthing A 572   earthing A 394   Permissible continious current rating by burial * • in trefoil formation with double-side screen earthing A 394   • in trefoil formation with single-side screen earthing or cross screen earthing A 405   • plane with double-side screen earthing A 388   • plane with single-side screen earthing or cross screen A 422   earthing A 422   Maximum permissible conductor temperature • C +90   • in emergency operation • C +90   • in emergency operation • C +130   • at short circuit • C +250   Operating temperature range • C -60 +50   Minimum bending radius by laying mm 1120   Rated outer diameter of the cable (for reference) ** mm 70   Cable weight (approximate) kg/km 5280   Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 339 • 2.7   on the drums *** # 25УД-90: 611 • 4.8	Permissible continious current rating by aerial laying *		
cross screen earthing  • plane with double-side screen earthing or cross screen earthing  Permissible continious current rating by burial *  • in trefoil formation with double-side screen earthing or A  • in trefoil formation with single-side screen earthing or A  • in trefoil formation with single-side screen earthing or A  • in trefoil formation with single-side screen earthing or A  • plane with double-side screen earthing or cross screen earthing  A 388  • plane with single-side screen earthing or cross screen A 422  earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation • C +130  • at short circuit • C +250  Operating temperature range  © C -60 +50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  kg/km 5280  Rated factory cable length and gross weight of the delivery on the drums ***  # 25УД-90: 611 • 4.8	in trefoil formation with double-side screen earthing	Α	487
<ul> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>earthing</li> <li>Permissible continious current rating by burial *</li> <li>in trefoil formation with double-side screen earthing</li> <li>in trefoil formation with single-side screen earthing or</li> <li>cross screen earthing</li> <li>plane with double-side screen earthing or cross screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane with single-side screen earthing or cross screen</li> <li>earthing</li> <li>Maximum permissible conductor temperature</li> <li>Continious</li> <li>°C +90</li> <li>in emergency operation</li> <li>°C +130</li> <li>at short circuit</li> <li>°C +250</li> <li>Operating temperature range</li> <li>°C -60 +50</li> <li>Minimum bending radius by laying</li> <li>mm 1120</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 70</li> <li>Cable weight (approximate)</li> <li>kg/km 5280</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>on the drums ***</li> <li># 25УД-90: 611 · 4.8</li> </ul>	<ul> <li>in trefoil formation with single-side screen earthing or</li> </ul>	Α	496
• plane with single-side screen earthing or cross screen earthingA572Permissible continious current rating by burial * • in trefoil formation with double-side screen earthing • in trefoil formation with single-side screen earthing or cross screen earthingA394• plane with double-side screen earthing or • plane with double-side screen earthingA388• plane with single-side screen earthing or cross screen earthingA422Maximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the delivery on the drums ***# 22УД-60: 339 · 2.7	cross screen earthing		
earthing Permissible continious current rating by burial * • in trefoil formation with double-side screen earthing • in trefoil formation with single-side screen earthing or cross screen earthing • plane with double-side screen earthing or cross screen • plane with single-side screen earthing or cross screen • plane with single-side screen earthing or cross screen • A 422 • earthing  Maximum permissible conductor temperature • Continious • C +90 • in emergency operation • C +130 • at short circuit • C +250  Operating temperature range • C -60 +50  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  Maximum bending radius by laying  Rated factory cable length and gross weight of the delivery on the drums ***  # 22УД-60: 339 • 2.7  # 25УД-90: 611 • 4.8	<ul> <li>plane with double-side screen earthing</li> </ul>	Α	533
Permissible continious current rating by burial *     · in trefoil formation with double-side screen earthing	<ul> <li>plane with single-side screen earthing or cross screen</li> </ul>	Α	572
· in trefoil formation with double-side screen earthing · in trefoil formation with single-side screen earthing or cross screen earthing · plane with double-side screen earthing · plane with single-side screen earthing or cross screen · plane with single-side screen earthing or cross screen · plane with single-side screen earthing or cross screen · plane with single-side screen earthing or cross screen · plane with single-side screen earthing or cross screen · plane with single-side screen earthing  Maximum permissible conductor temperature · Continious · C +90 · in emergency operation · C +130 · at short circuit · C +250 Operating temperature range · C -60 +50 Minimum bending radius by laying  Mated outer diameter of the cable (for reference) ** mm 70 Cable weight (approximate)  Rated factory cable length and gross weight of the delivery on the drums *** # 25yД-60: 339 · 2.7 the drums *** # 25yД-90: 611 · 4.8	earthing		
・in trefoil formation with single-side screen earthing or cross screen earthing ・plane with double-side screen earthing ・plane with single-side screen earthing or cross screen ・plane with single-side screen earthing or cross screen earthing  Maximum permissible conductor temperature ・Continious ・C +90 ・in emergency operation ・C +130 ・at short circuit ・C +250 Operating temperature range ・C -60 +50 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 ***  # 25УД-90: 611 • 4.8	Permissible continious current rating by burial *		
cross screen earthing  • plane with double-side screen earthing or cross screen  • plane with single-side screen earthing or cross screen  earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation  • C +130  • at short circuit  • C +250  Operating temperature range  Minimum bending radius by laying  Mated outer diameter of the cable (for reference) **  mm 70  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  on the drums ***  # 22УД-60: 339 • 2.7  mth drums ***  # 25УД-90: 611 • 4.8	<ul> <li>in trefoil formation with double-side screen earthing</li> </ul>	Α	394
<ul> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>earthing</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</li> <li>C -60 +50</li> <li>Minimum bending radius by laying</li> <li>mm 1120</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 70</li> <li>Cable weight (approximate)</li> <li>kg/km 5280</li> <li>Rated factory cable length and gross weight of the delivery on the drums ***</li> <li># 22УД-60: 339 · 2.7</li> <li># 25УД-90: 611 · 4.8</li> </ul>	<ul> <li>in trefoil formation with single-side screen earthing or</li> </ul>	Α	405
・ plane with single-side screen earthing or cross screen earthing  Maximum permissible conductor temperature ・ Continious ° C +90 ・ in emergency operation ° C +130 ・ at short circuit ° C +250 Operating temperature range ° C -60 +50 Minimum bending radius by laying mm 1120 Rated outer diameter of the cable (for reference) ** mm 70 Cable weight (approximate) kg/km 5280 Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 339 • 2.7 on the drums *** # 25УД-90: 611 • 4.8			
earthingMaximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	<ul> <li>plane with double-side screen earthing</li> </ul>	Α	388
Maximum permissible conductor temperature°C+90• Continious°C+90• in emergency operation°C+130• at short circuit°C+250Operating temperature range°C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	<ul> <li>plane with single-side screen earthing or cross screen</li> </ul>	Α	422
• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	earthing		
• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	Maximum permissible conductor temperature		
• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	Continious		
Operating temperature range° C-60 +50Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	<ul> <li>in emergency operation</li> </ul>	°C	+130
Minimum bending radius by layingmm1120Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	at short circuit		
Rated outer diameter of the cable (for reference) **mm70Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8	· · · · · · · · · · · · · · · · · · ·	° C	
Cable weight (approximate)kg/km5280Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 339 • 2.7on the drums ***# 25УД-90: 611 • 4.8		mm	1120
Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 339 • 2.7 on the drums *** # 25УД-90: 611 • 4.8	Rated outer diameter of the cable (for reference) **	mm	70
on the drums *** # 25УД-90: 611 • 4.8		kg/km	
• • • • • • • • • • • • • • • • • • • •	, , , , , , , , , , , , , , , , , , , ,	m, t	
# 26УД-100: 869 • 6.4	on the drums ***		
			# 26УД-100: 869 • 6.4

#### 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, load factor 1.0, thermal resistivity of soil 1.0 °K • m/W, laying depth in the ground 1.5 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

<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 ± 7 %



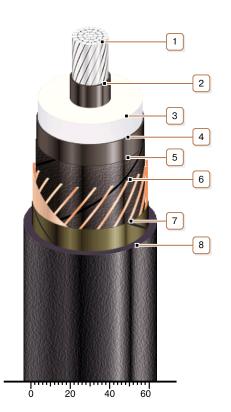




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# АПвЭгПнг-110 1x240 ТУ У 31.3-00214534-060:2011

Power cables with aluminium cunductor, flame-retardant, with XLPE, longitudinal screen sealing and polymer 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

Note: It is possible to manufacture a cable with a fiber optic module built into the screen, including as a DTS system sensor

- 7. Lapping layer of glass tape
- 8. Flame-retardant polymer compound outer sheath

Note: It is possible to manufacture cable with extruded semiconductor layer along outer sheath