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### ПвЭгПнг-45 1x70 ТУ У 31.3-00214534-060:2011

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

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

XnUHKXS (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:

ПвЭгПнг-П-45 1х70/95 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:

ПвЭгПнг-45 1х70/95 (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:

ПвЭгПнг-45 1х70/95 (г) ТУ У 31.3-00214534-060:2011

Fire safety code in accordance with ДСТУ 4809:2007: ПБ121122000

Products of this mark meet the requirements:

- · single wire cable flame retardance
- bunched cable flame retardance category A
- toxicity class Tk1 of the combustion products of nonmetallic elements (toxicity index from 13 up to 40 g/m3)
- class  $\Delta T \kappa 1$  on smoke-forming ability by smouldering of non-metallic elements (coefficient of smoke formation from 50 to 500 m<sup>2</sup>/kg)
- class ДПк2 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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# ПвЭгПнг-45 1x70 ТУ У 31.3-00214534-060:2011

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

### **TECHNICAL SPECIFICATIONS**

Rated voltage			
Conductor rated area mm² 70  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 3.3  minimum cross-section  Maximum permissible short-circuit current in core kA 10  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  Permissible continious current rating by burial *  · 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 A 260  · in trefoil formation with single-side screen earthing or A 264  · plane with double-side screen earthing or A 263  · plane with double-side screen earthing or cross screen A 275  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 44  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 22YJR-60: 882 · 3.1	Rated voltage	kV	45
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 3.3  minimum cross-section  Maximum permissible short-circuit current in core kA 10  Permissible continious current rating by aerial laying *  in trefoil formation with double-side screen earthing or A 302  cross screen earthing  plane with double-side screen earthing or cross screen arthing  plane with single-side screen earthing or cross screen arthing  in trefoil formation with double-side screen earthing or cross screen A 359  Permissible continious current rating by burial *  in trefoil formation with double-side screen earthing or cross screen arthing  Permissible continious current rating by burial *  in trefoil formation with double-side screen earthing or A 264  cross screen earthing  plane with double-side screen earthing or A 263  plane with single-side screen earthing or cross screen A 275  earthing  Maximum permissible conductor temperature  Continious  c +90  in emergency operation  c C +130  at short circuit  c C +250  Operating temperature range  Minimum bending radius by laying  mm 704  Rated outer diameter of the cable (for reference) **  mm 44  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 22YД-60: 882 • 3.1	Maximum voltage	kV	52
Partial discharge factor for rated voltage, not more than 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 · plane with double-side screen earthing or cross screen earthing · 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 cross screen earthing  · in trefoil formation with single-side screen earthing or cross screen earthing  · plane with double-side screen earthing or cross screen earthing  · 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  Rated outer diameter of the cable (for reference) **  mm 704  Rated outer diameter of the cable (for reference) **  Rated factory cable length and gross weight of the delivery  m, t # 22yД-60: 882 · 3.1	Conductor rated area	mm²	70
Permissible short circuit current across the screen of minimum cross-section  Maximum permissible short-circuit current in core kA 10  Permissible continious current rating by aerial laying *  · in trefoil formation with double-side screen earthing A 299  · in trefoil formation with single-side screen earthing or A 302  cross screen earthing  · plane with double-side screen earthing or cross screen A 359  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 A 260  · in trefoil formation with single-side screen earthing or cross screen earthing  · plane with double-side screen earthing or cross screen A 275  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  Rated outer diameter of the cable (for reference) **  Maximum permismine weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 22YJ-60: 882 · 3.1	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	Partial discharge factor for rated voltage, not more than	рС	6
Maximum permissible short-circuit current in corekA10Permissible continious current rating by aerial laying *. in trefoil formation with double-side screen earthingA299. in trefoil formation with single-side screen earthing or cross screen earthingA302. plane with double-side screen earthing or cross screenA344. plane with single-side screen earthing or cross screenA359earthingPermissible continious current rating by burial *. in trefoil formation with double-side screen earthingA260. in trefoil formation with single-side screen earthing or cross screen earthingA264. plane with double-side screen earthing or cross screen earthingA263. plane with single-side screen earthing or cross screenA275earthingMaximum permissible conductor temperature. C+90. in emergency operation° C+90. in emergency operation° C+130. at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22YД-60: 882 · 3.1	Permissible short circuit current across the screen of	kA	3.3
Permissible continious current rating by aerial laying *	minimum cross-section		
<ul> <li>in trefoil formation with double-side screen earthing</li> <li>in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-side 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>in trefoil formation with double-side screen earthing or in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-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>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 704</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 44</li> <li>Cable weight (approximate)</li> <li>kg/km 2450</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t #22YД-60: 882 · 3.1</li> </ul>	Maximum permissible short-circuit current in core	kA	10
<ul> <li>in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen earthing</li> <li>plane with single-side screen earthing or cross screen 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 A 264</li> <li>cross screen earthing</li> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen A 275</li> <li>earthing</li> <li>Maximum permissible conductor temperature</li> <li>Continious</li> <li>C +90</li> <li>in emergency operation</li> <li>α +250</li> <li>Operating temperature range</li> <li>C -60+50</li> <li>Minimum bending radius by laying</li> <li>mm 704</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 44</li> <li>Cable weight (approximate)</li> <li>kg/km 2450</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t #22yД-60: 882 · 3.1</li> </ul>	Permissible continious current rating by aerial laying *		
ross screen earthing  plane with double-side screen earthing or cross screen pearthing  Permissible continious current rating by burial * in trefoil formation with double-side screen earthing or cross screen earthing in trefoil formation with single-side screen earthing or cross screen earthing plane with double-side screen earthing or cross screen earthing plane with double-side screen earthing or cross screen earthing plane with single-side screen earthing or cross screen plane with single-side scr	in trefoil formation with double-side screen earthing	Α	299
<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 cross screen earthing</li> <li>plane with double-side screen earthing</li> <li>plane with double-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>in emergency operation</li> <li>in emergency operation</li> <li>c +90</li> <li>in emergency operation</li> <li>c +250</li> <li>Operating temperature range</li> <li>C -60 +50</li> <li>Minimum bending radius by laying</li> <li>mm 704</li> <li>Rated outer diameter of the cable (for reference) ** mm</li> <li>kg/km 2450</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t #22УД-60: 882 · 3.1</li> </ul>	in trefoil formation with single-side screen earthing or	Α	302
<ul> <li>plane with single-side screen earthing or cross screen earthing</li> <li>Permissible continious current rating by burial * <ul> <li>in trefoil formation with double-side screen earthing</li> <li>in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-side 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>continious</li> <li>C</li> <li>in emergency operation</li> <li>c</li> <li>at short circuit</li> <li>C</li> <li>c-60 +50</li> </ul> </li> <li>Minimum bending radius by laying</li> <li>mm</li> <li>mm</li> <li>mm</li> <li>cable weight (approximate)</li> <li>kg/km</li> <li>2450</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t</li> <li># 22УД-60: 882 • 3.1</li> </ul>	cross screen 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  earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation  • at short circuit  • C +250  Operating temperature range  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  Rated factory cable length and gross weight of the delivery  m, t # 229Д-60: 882 • 3.1	plane with double-side screen earthing	Α	344
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  • plane with single-side screen earthing or cross screen earthing  Maximum permissible conductor temperature  • Continious  • C +90  • in emergency operation  • at short circuit  • C +250  Operating temperature range  Minimum bending radius by laying  Rated outer diameter of the cable (for reference) **  Rated factory cable length and gross weight of the delivery  • in trefoil formation with double-side screen earthing or cross screen earthing or cross screen  A 263  • 275  • C +90  • C +90  • C +250  • C +250  • C -60 +50  Minimum bending radius by laying  Rated factory cable length and gross weight of the delivery  • Rated factory cable length and gross weight of the delivery  • T # 22УД-60: 882 • 3.1	plane with single-side screen earthing or cross screen	Α	359
<ul> <li>in trefoil formation with double-side screen earthing</li> <li>in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-side 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>carthing</li> <li>Maximum permissible conductor temperature</li> <li>Continious</li> <li>C</li> <li>in emergency operation</li> <li>c</li> <li>at short circuit</li> <li>c</li> <li>c</li> <li>description</li> <li>c</li> <li>description</li> <li>c</li> <li>description</li> <li>c</li> <li>description</li> <li>description<td>earthing</td><td></td><td></td></li></ul>	earthing		
<ul> <li>in trefoil formation with single-side screen earthing or cross screen earthing</li> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>carthing</li> <li>Maximum permissible conductor temperature</li> <li>Continious</li> <li>°C</li> <li>+90</li> <li>in emergency operation</li> <li>°C</li> <li>+130</li> <li>at short circuit</li> <li>°C</li> <li>+250</li> <li>Operating temperature range</li> <li>°C</li> <li>-60 +50</li> <li>Minimum bending radius by laying</li> <li>mm</li> <li>704</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm</li> <li>44</li> <li>Cable weight (approximate)</li> <li>kg/km</li> <li>2450</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t</li> <li># 22УД-60: 882 · 3.1</li> </ul>	Permissible continious current rating by burial *		
ross screen earthing  plane with double-side screen earthing  plane with single-side screen earthing or cross screen earthing  Maximum permissible conductor temperature  Continious  con	in trefoil formation with double-side screen earthing	Α	260
<ul> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane with double-side screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane with single-side screen</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane with single-side screen</li> <li>plane with single screen</li> <li>plane with single screen</li> <li>plane with single screen</li> <li>plane with single screen</li> <li>plane with screen</li> <li>plane with</li></ul>	• in trefoil formation with single-side screen earthing or	Α	264
<ul> <li>plane with single-side screen earthing or cross screen 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>Rated outer diameter of the cable (for reference) **</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>A 275</li> <li>C +90</li> <li>C +90</li> <li>C +250</li> <li>M10</li> <li>M2</li> <li>M3</li> <li>M4</li> <li>C450</li> <li>M6/km</li> <li>M6/km&lt;</li></ul>	cross screen earthing		
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 layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	plane with double-side screen earthing	Α	263
Maximum permissible conductor temperature° C+90• Continious° C+130• in emergency operation° C+250• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	<ul> <li>plane with single-side screen earthing or cross screen</li> </ul>	Α	275
· Continious°C+90• in emergency operation°C+130• at short circuit°C+250Operating temperature range°C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	earthing		
• in emergency operation°C+130• at short circuit°C+250Operating temperature range°C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	Maximum permissible conductor temperature		
• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	Continious		
Operating temperature range° C-60 +50Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	in emergency operation		+130
Minimum bending radius by layingmm704Rated outer diameter of the cable (for reference) **mm44Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1	at short circuit		+250
Rated outer diameter of the cable (for reference) ** mm 44 Cable weight (approximate) kg/km 2450 Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 882 • 3.1	Operating temperature range	° C	-60 +50
Cable weight (approximate)kg/km2450Rated factory cable length and gross weight of the deliverym, t# 22УД-60: 882 • 3.1		mm	704
Rated factory cable length and gross weight of the delivery m, t # 22УД-60: 882 • 3.1		mm	44
	Cable weight (approximate)	kg/km	2450
on the drums ***	, , , , , , , , , , , , , , , , , , , ,	m, t	# 22УД-60: 882 • 3.1
on the didnis	on the drums ***		

#### 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 %



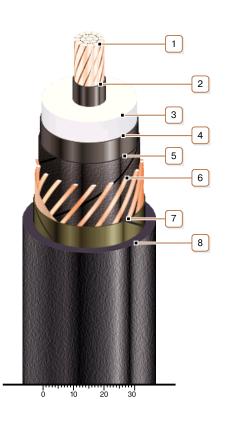




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## ПвЭгПнг-45 1x70 ТУ У 31.3-00214534-060:2011

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



### **CONSTRUCTION**

1. Copper multiwire compact 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