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## АПвЭгаПнг-60 1x1200 ТУ У 31.3-00214534-060:2011

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

For the cable of this mark correspond the foreign-made analogues: AHXCHBMK (FI)

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:

АПвЭгаПнг-П-60 1х1200/95 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:

АПвЭгаПнг-60 1х1200/95 (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:

АПвЭгаПнг-60 1х1200/95 (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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# АПвЭгаПнг-60 1x1200 ТУ У 31.3-00214534-060:2011

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

### **TECHNICAL SPECIFICATIONS**

| Maximum voltage       kV       72.5         Conductor rated area       mm³       1200         Minimum screen cross-section       mm³       35         Partial discharge factor for rated voltage, not more than       pC       6         Permissible short circuit current across the screen of minimum cross-section       kA       10.2         Maximum permissible short-circuit current in core       kA       113         Permissible continious current rating by aerial laying *       *         * in trefoil formation with double-side screen earthing       A       1212         * in trefoil formation with single-side screen earthing or cross screen earthing       A       1377         * plane with double-side screen earthing or cross screen       A       1662         * arthing       A       1159         Permissible continious current rating by burial *       *       *         * in trefoil formation with double-side screen earthing or cross screen earthing       A       854         * in trefoil formation with single-side screen earthing or cross screen earthing       A       998         * in trefoil formation with single-side screen earthing or cross screen earthing       A       733         * plane with double-side screen earthing or cross screen       A       1056         * plane with single-side screen earthing   | Rated voltage  | kV    | 60                          |
|---|--|-------|-----------------------------|
| 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 113 Permissible continious current rating by aerial laying *  · in trefoil formation with double-side screen earthing A 1212 · in trefoil formation with single-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  · in trefoil formation with double-side screen earthing or cross screen earthing  · plane with single-side screen earthing or cross screen earthing or cross screen earthing  · in trefoil formation with double-side screen earthing or A 998  · in trefoil formation with single-side screen earthing or A 998  · in trefoil formation with single-side screen earthing or A 998  · plane with double-side screen earthing or A 1056  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 1424  Rated outer diameter of the cable (for reference) **  mm 89  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 259Д-90: 396 · 5.7   | Maximum voltage  | kV    | 72.5                        |
| 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 113 Permissible continious current rating by aerial laying *  · in trefoil formation with double-side screen earthing A 1212 · in trefoil formation with single-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  · in trefoil formation with double-side screen earthing or cross screen earthing  · plane with single-side screen earthing or cross screen earthing or cross screen earthing  · in trefoil formation with double-side screen earthing or A 998  · in trefoil formation with single-side screen earthing or A 998  · in trefoil formation with single-side screen earthing or A 998  · plane with double-side screen earthing or A 1056  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 1424  Rated outer diameter of the cable (for reference) **  mm 89  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 259Д-90: 396 · 5.7   | Conductor rated area   | mm²   | 1200                        |
| 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  in trefoil formation with single-side screen earthing or A 1377  cross screen earthing  plane with double-side screen earthing or cross screen  plane with single-side screen earthing or cross screen  arthing  Permissible continious current rating by burial *  in trefoil formation with double-side screen earthing or cross screen earthing or cross screen earthing  plane with double-side screen earthing or cross 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 double-side screen earthing or cross screen  plane with single-side screen earthing or cross screen  arthing  Maximum permissible conductor temperature  Continious  c C +90  in emergency operation  c C +130  at short circuit  c C +250  Operating temperature range  mm 1424  Mated outer diameter of the cable (for reference) **  mm 89  Cable weight (approximate)  kg/km 10340  Rated factory cable length and gross weight of the delivery  m, t #25yД-90: 396 · 5.7  | Minimum screen cross-section   |       | 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  · plane with double-side screen earthing or cross screen earthing  · plane with single-side screen earthing or cross screen  · plane with single-side screen earthing or cross screen  A 1662  earthing  Permissible continious current rating by burial *  · in trefoil formation with double-side screen earthing or A 998  cross screen earthing  · plane with double-side screen earthing or A 998  cross screen earthing  · plane with double-side screen earthing or cross screen  A 1056  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  mm 1424  Rated outer diameter of the cable (for reference) **  mm 89  Cable weight (approximate)  kg/km 10340  Rated factory cable length and gross weight of the delivery  m, t # 25yД-90: 396 · 5.7  | Partial discharge factor for rated voltage, not more than                    | рС    | 6                           |
| Maximum permissible short-circuit current in core       kA       113         Permissible continious current rating by aerial laying * <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>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 or cross screen earthing</li> <li>plane with single-side screen earthing or cross screen</li> <li>plane</li></ul>  | Permissible short circuit current across the screen of                       | kA    | 10.2                        |
| 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       1212         • in trefoil formation with single-side screen earthing or cross screen earthing       A       1377         cross screen earthing       A       1159         • plane with double-side screen earthing or cross screen earthing       A       1662         earthing       A       1662         Permissible continious current rating by burial *       • in trefoil formation with double-side screen earthing       A       854         • in trefoil formation with single-side screen earthing or cross screen earthing       A       998         cross screen earthing       A       733         • plane with double-side screen earthing or cross screen       A       1056         earthing       A       1056         washinum permissible conductor temperature       • C       +90         • in emergency operation       • C       +90         • in emergency operation       • C       +250         Operating temperature range       • C       -60 +50         Minimum bending radius by laying       mm       1424         Rated outer diameter of the cable (for reference) **       mm       89         Cable weight (approximate)       kg/km       10340         Rated factory cable length and gro   | Maximum permissible short-circuit current in core                            | kA    | 113                         |
| <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>plane with single-side screen earthing or cross screen</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>plane with double-side 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>Continious</li> <li>*C</li> <li>+90</li> <li>in emergency operation</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>1424</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm</li> <li>89</li> <li>Cable weight (approximate)</li> <li>kg/km</li> <li># 25УД-90: 396 · 5.7</li> </ul>  | Permissible continious current rating by aerial laying *                     |       |                             |
| ross screen earthing  plane with double-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 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 plane with single-side screen earthing or cross screen plane with singl | <ul> <li>in trefoil formation with double-side screen earthing</li> </ul>    | Α     | 1212                        |
| ・plane with double-side screen earthing A 1159 ・plane with single-side screen earthing or cross screen A 1662 earthing Permissible continious current rating by burial * ・in trefoil formation with double-side screen earthing A 854 ・in trefoil formation with single-side screen earthing or A 998 cross screen earthing ・plane with double-side screen earthing A 733 ・plane with single-side screen earthing or cross screen A 1056 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 1424 Rated outer diameter of the cable (for reference) ** mm 89 Cable weight (approximate) kg/km 10340 Rated factory cable length and gross weight of the delivery m, t # 25УД-90: 396 • 5.7  | <ul> <li>in trefoil formation with single-side screen earthing or</li> </ul> | Α     | 1377                        |
| • plane with single-side screen earthing or cross screen<br>earthingA1662Permissible continious current rating by burial *<br>• in trefoil formation with double-side screen earthing<br>• in trefoil formation with single-side screen earthing or<br>cross screen earthingA854• in trefoil formation with single-side screen earthing or<br>cross screen earthingA998• plane with double-side screen earthing or cross screen<br>earthingA1056Maximum permissible conductor temperatureC+90• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   | cross screen earthing  |       |                             |
| earthing Permissible continious current rating by burial * • in trefoil formation with double-side screen earthing A 998 • in trefoil formation with single-side screen earthing or A 998 cross screen earthing • plane with double-side screen earthing A 733 • plane with single-side screen earthing or cross screen A 1056 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 1424 Rated outer diameter of the cable (for reference) ** mm 89 Cable weight (approximate) kg/km 10340 Rated factory cable length and gross weight of the delivery m, t # 25УД-90: 396 • 5.7   | <ul> <li>plane with double-side screen earthing</li> </ul>                   | Α     | 1159                        |
| 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) **  mm 89  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t #25УД-90: 396 • 5.7  | <ul> <li>plane with single-side screen earthing or cross screen</li> </ul>   | Α     | 1662                        |
| • in trefoil formation with double-side screen earthingA854• in trefoil formation with single-side screen earthing or<br>cross screen earthingA998• plane with double-side screen earthingA733• plane with single-side screen earthing or cross screen<br>earthingA1056Maximum permissible conductor temperature• Continious° C+90• in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7  | 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>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 +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 1424</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 89</li> <li>Cable weight (approximate)</li> <li>kg/km 10340</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t #25УД-90: 396 · 5.7</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  • plane with single-side screen earthing or cross screen  • arthing  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 89  Cable weight (approximate)  Rated factory cable length and gross weight of the delivery  m, t # 25УД-90: 396 • 5.7   |  | Α     |                             |
| ・ plane with double-side screen earthing A 733 ・ plane with single-side screen earthing or cross screen A 1056 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 1424 Rated outer diameter of the cable (for reference) ** mm 89 Cable weight (approximate) kg/km 10340 Rated factory cable length and gross weight of the delivery m, t # 25УД-90: 396 • 5.7  | <ul> <li>in trefoil formation with single-side screen earthing or</li> </ul> | Α     | 998                         |
| <ul> <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 1424</li> <li>Rated outer diameter of the cable (for reference) **</li> <li>mm 89</li> <li>Cable weight (approximate)</li> <li>kg/km 10340</li> <li>Rated factory cable length and gross weight of the delivery</li> <li>m, t # 25УД-90: 396 · 5.7</li> </ul>  |  |       |                             |
| 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 layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   | <ul> <li>plane with double-side screen earthing</li> </ul>                   | Α     | 733                         |
| 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 layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7  | <ul> <li>plane with single-side screen earthing or cross screen</li> </ul>   | Α     | 1056                        |
| · Continious° C+90· in emergency operation° C+130· at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 · 5.7  | earthing   |       |                             |
| • in emergency operation° C+130• at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7  | Maximum permissible conductor temperature                                    |       |                             |
| • at short circuit° C+250Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   | Continious   |       |                             |
| Operating temperature range° C-60 +50Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7  | <ul> <li>in emergency operation</li> </ul>                                   | °C    | +130                        |
| Minimum bending radius by layingmm1424Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   | at short circuit   |       |                             |
| Rated outer diameter of the cable (for reference) **mm89Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   | Operating temperature range  | ° C   |                             |
| Cable weight (approximate)kg/km10340Rated factory cable length and gross weight of the deliverym, t# 25УД-90: 396 • 5.7   |  | mm    | 1424                        |
| Rated factory cable length and gross weight of the delivery m, t # 25УД-90: 396 • 5.7   | Rated outer diameter of the cable (for reference) **                         | mm    | 89                          |
|   | Cable weight (approximate)   | kg/km | 10340                       |
|   | ,                                      | m, t  | • •                         |
| 1.1   | on the drums ***   |       | # 26УД-100: 457 • 6.5       |
| # 30УД-130: **** 691 · 10.0   |  |       | # 30УД-130: **** 691 • 10.0 |

#### 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 %

<sup>\*\*\*\*</sup> Option delivery on not full drum



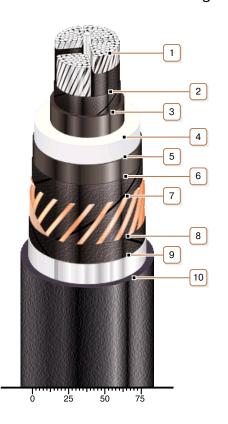




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## **АПвЭгаПнг-60 1х1200** ТУ У 31.3-00214534-060:2011

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



### CONSTRUCTION

- 1. Aluminium multiwire compacted conductor
- It is possible to manufacture cable with sealed conductor.
- · Conductor segment twisting is not illustrated
- 2. Lapping layer of semiconductive swellable tape
- 3. Inner extruded semiconducting layer
- 4. XLPE insulation
- 5. Outer extruded semiconducting layer
- 6. Lapping layer of semiconductive swellable tape
- 7. 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

- 8. Lapping layer of semiconductive swellable tape
- 9. Alumopolymer tape
- 10. Flame-retardant polymer compound outer sheath

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