

Cable products

Cable marine universal GERDA-KSd in acc. with TU 3586-009-76960731-2007

– for control , for monitoring, mounting, power, for communication, inclusive flame retardant «ng», «ng-LS», «ng-HF» and incombustible «ng-FR» и «ng-FRHF», oil-and petrol-resistant, salts-resistant, UV-resistant

Doncable LLC – quality management system is certified according to ISO 9001

Fire safety certificate

GOST R Certificate of Conformity

Сертификаты об одобрении типового изделия Российских Речного и Морского регистров

Certificates of product types of the Russian River and Maritime Register

Cables GERDA-KSd cables are designed for use in power and lighting networks, control circuits, signaling and inter-instrument connections, the data lines forming, connecting sensors with digital frequency modulated signal, signal of 4-20 mA, the HART, with an RS485, RS482, RS422 and other interfaces, that require the use of "twisted pair" as a channel transmit / receive data channel.

. Cables are used for stationary and temporary laying indoors and outdoors, if protected from direct solar radiation exposure, channels, tunnels, ground (trenches), in places exposed to stray currents, on the river fleet and navy ships of unlimited navigation area, on floating and onshore plants, offshore platforms, in the fish-processing workshops, refrigerated rooms, as well as for fixed installation in sea water. Cables can be used in hazardous zones of 0, 1, 2 classes (in accordance with GOST R 51330.13-99), as well as in nuclear power plant safety systems.

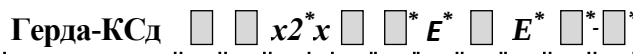
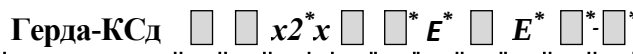
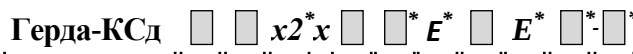
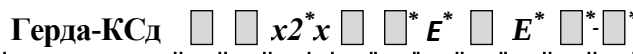
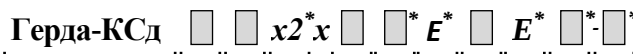
Design features, materials and performance types

The cable jacket with the material designation "Ps" is made of low flammable PVC composition, and with "the LS" material designation – made of and low smoking PVC composition, and the insulation is made of cross-linked polyolefin, so the cables are recommended for use as a "twisted pair" with improved frequency characteristics.

The cable insulation and the sheath with the material designation "P" is made of polymer compositions and does not contain halogens («HF»). The cables marked "T" have got the sheath and insulation made of thermoplastic elastomers, therefore have greater flexibility and extended operating temperature range. All cables can be manufactured in a flame retardant version - «FR». The cables with the material designation "Ps" and "P" are available with copper stranded conductor of 4th grade, and with the designation of "T" – of 5th grade.

The cables are made by general or double twisting ("twisted pair" with a pitch of 60 mm); conductors (pairs) may have a separate shield and / or a shared shield in a braid of copper wires or AlumoFlex coil or be unshielded. The cable core is covered with water blocking tape to prevent longitudinal propagation of moisture.

Ordering code:

Герда-КСд  x2* x  E*  E*  -  *

Cable marine with multiple copper wires

Fire safety index - See Table 3

Number of wires (pairs) – see Table 3 - 1..61 (cond.) or 1..30 (pairs)

«x2» – cable of double twisting («twisted pair») *

Cross-section - See Table 3

«л» - tinned wires*

Single shield for a wire (pair)*:

«Э» –AlumoFlex

«Эм» –copper wires

«Эл» –tinned copper wires

* – filled upon ordering

Cable special index*:

«YΦ» – solar radiation resistant

«T» – thermoplastic elastomer with operation T up to +200°C

«C» – cable with sheath of blue colour

«K» – wire armour under the outer sheath*

General shield under the sheath*:

«Э» – AlumoFlex

«Эм» – copper wires

«Эл» – tinned copper wires

Insulation and sheath material:

«Пс» –insulation made of cross-linked PE, PVC sheath

«П» – both insulation and sheath are made of polymers

«T» – both insulation and sheath are made of thermoplastic elastomer

Таблица 1

Material code	Fire safety index	Insulation and sheath material	Coding example
Ps	ng-LS	insulation - cross-linked polyolefin; PVC outer sheath, low flammability composition (low smoke and gas emission)	GERDA-KSd ng-LS 3x2,5 E Ps
	ng-FRLS	insulation - cross-linked polyolefin; flame retardant cable; outer sheath made of PVC composition of low flammability	GERDA-KSd ng -FRLS 5x10l Ps
P	ng-HF	insulation and outer sheath made of polymeric compositions that do not contain halogens	GERDA-KSd ng -HF 2x2x0,5 El P
	ng-FRHF	flame retardant cable; insulation and outer sheath made of polymeric compositions that do not contain halogens	GERDA-KSd ng -FRHF 5x2 P E
T	ng	insulation and outer sheath made of a thermoplastic elastomer	GERDA-KSd ng 1x50 T K-UV
	нг-FR	flame retardant cable; insulation and outer sheath made of a thermoplastic elastomer	GERDA-KSd ng -FR 10x2x1,0 T-T

Flame retardant cable (index «ng-FR», «ng-FRHF», «ng-FRLS»)

In fire-resistant cable (with index "ng-FR», «ng-FRHF», «ng-FRLS») a conductor under insulation is wound with two mica tapes. The cable keeps working in conditions of open flames and temperature to + 780 ° C within at least 90 minutes. In case of fire, it helps to avoid accidental power failure (for example, in fire alarm systems, emergency lighting, smoke, in fire pumps, elevators, etc.)

Production of cables on request

It's possible to manufacture cable on request:

- With coloured outer sheath (yellow, red or other colour);
- With combined cross-section of conducting wires (pairs) – for example, cable with four wires may have one wire of smaller cross-section (grounding or zero);
- Hybrid cables – within the same cable there is power transmission (by conducting wires) and optic signal transmission (by optic fibre);
- Made of thermos-resistant materials (up to +200°C).

Cable technical data

Table 2

Operating temperature	- from -30° up to +85°C - from -60° up to +125°C for the "T" material labelled cables - from -40° up +200°C for «T-T» material labelled cables
Minimal mounting temperature	- above minus 30°C - above minus 15°C for «ng-LS» material labelled cables
Rated voltage	- up to 690V of AC voltage at up to 400 Hz or up to 1000V DC for cables with cross-section of 0,35..2,5 mm ² - Up to 1000V AC voltage at up to 700Hz or DC voltage up to 1200V for cables with cross-section more than 2.5mm ²
Insulation electrical resistance during operation, t = +20°C	- above 50 MΩ·km - above 150 MΩ·km for the cables with «LS» index
Bending radius (measured by cable outer diameter D)	- above 6D - above 3D for the cables with index «T»
Resistance to alternating bending	Up to 20 000 alternating bends, for the sheath and insulation material with "T" index and cross-section of 0,35..2,5 mm ²
Radial hydrostatic pressure impact resistance	- up to 2,94 MPa (30 kgs/sm ²) - stand for hydrostatic pressure of 6,0 MPa within 3 hours
Climatic performance	Performance B, placement category 2-5 (no ГОСТ 15150-69). It's possible to use the cables at all micro-climatic areas, including tropical ones.
Resistance to specific environments	gasoline, diesel oil, sea water, salt (sea) fog, vapors and condensate of oil and fuel, vapors of acids and alkalis; apatite, coal, cement and other dust; fish and other seafood flour
Resistance to longitudinal moisture spread in case of the outer shell damage	the moisture is completely blocked
Fire resistance (for «FR» cable)	above 90 minutes while exposed to open flame and temperature up to +780°C
Resistance to short-term heating of the conductor	Up to +250°C within 1 sec, number of heating cycles not more than 10 within service life
Service life	- above 30 years - above 25 years for cables with material index «T»

Nominal wire cross-section, number of wires and pairs

Table 3

Cable grade	Nominal wire cross-section, mm ²	Number of wires and pairs (pairs are designated with - «x2»)
GERDA-KSd ng-LS *** Ps GERDA-KSd ng-LS *** E Ps GERDA-KSd ng-LS *** Ps E	0,35;0,5;0,75;1,0;1,2;1,5;2,5	2;3;4;5;6;7;8;10;12;14;16;18;19;20;24;27;30;37;44;48;52;61
GERDA-KSd ng-HF *** P GERDA-KSd ng-HF *** E P GERDA-KSd ng-HF *** P E	0,35;0,5;0,75;1,0;1,2;1,5;2,5	1x2;2x2;3x2;4x2;5x2;6x2;7x2;8x2;10x2;12x2;14x2;16x2;18x2;19x2;20x2;24x2;27x2;30x2
GERDA-KSd ng *** T GERDA-KSd ng *** E T GERDA-KSd ng *** T E	4;6;10;16;25;35;50	1;2;3;4;5
	70;95;120;150;185;240	3;4;5
GERDA-KSd ng-FRLS *** Ps GERDA-KSd ng-FRLS *** E Ps GERDA-KSd ng-FRLS *** Ps E	0,35;0,5;0,75;1,0;1,2;1,5;2,5	2;3;4;5;6;7;8;10;12;14;16;18;19;20;24;27;30;37;44;48;52;61
GERDA-KSd ng-FRHF *** P GERDA-KSd ng-FRHF *** E P GERDA-KSd ng-FRHF *** P E	0,35;0,5;0,75;1,0;1,2	1x2;2x2;3x2;4x2;5x2;6x2;7x2;8x2;10x2;12x2;14x2;16x2;18x2;19x2;20x2;24x2;27x2;30x2
	1,5;2,5	1x2;2x2;4x2;6x2;8x2;10x2;12x2;14x2
GERDA-KSd ng-FR *** T GERDA-KSd ng-FR *** E T GERDA-KSd ng-FR *** T E	4;6;10;16;25;35;50	1;2;3;4;5
	70;95;120;150;185;240	3;4;5

*** - Number and designation of a twisted pair [if necessary], and cross section (see the notation structure when ordering.)

Current capacity of power cables when installing

Table 4

Nominal wire cross-section, mm ²	Current capacity of power cables, A		
	Single wire	Double wire	Triple, quadruple and quintuple
4	53	44	37
6	67	56	49
10	91	76	66
16	121	101	87
25	160	134	115
35	197	166	141
50	228	195	164
70	286	248	205
95	388	283	262
12	443	496	318
150	522	451	372
185	604	527	429
240	-	-	499

Cable electrical parameters (Reference data)

Table 5 Maximum operating capacitances and inductances of cable pair with the material designation "P" and "PS" at a temperature of 20 ° C, referred to 1 km of cable length

Frequency, kHz	Maximum operating capacitance, nF					Maximum inductances, mkHn				
Cross-section, mm ²	0,50	0,75	1,00	1,50	2,50	0,50	0,75	1,00	1,50	2,50
0,05	99	113	122	124	128	0,73	0,68	0,66	0,62	0,51
8,00	97	109	117	118	122	0,71	0,67	0,64	0,61	0,50
16,00	95	106	113	114	119	0,71	0,67	0,64	0,59	0,48
64,00	88	97	104	105	108	0,70	0,64	0,60	0,54	0,43
256,00	86	93	99	100	102	0,65	0,59	0,55	0,49	0,37

Table 6 The maximum ratio of inductance to resistance and maximum resistance of cable pair with the material designation "P" and "PS" at a temperature of 20 ° C, referred to 1 km of cable length

Frequency, kHz	Maximum ratio of inductance to resistance, mkHn /Om					Maximum resistance, Om				
Cross-section, mm ²	0,50	0,75	1,00	1,50	2,50	0,50	0,75	1,00	1,50	2,50
0,05	9,3	13,2	17,3	24,6	55,0	74	49	36	24	9
8,00	8,9	12,5	16,2	22,4	40,0	76	51	38	26	12
16,00	7,9	10,8	13,3	16,6	27,4	85	58	45	34	17
64,00	6,2	7,4	7,7	8,2	10,6	105	81	72	61	39
256,00	3,2	3,2	3,2	3,3	3,4	189	167	154	136	106

Note

The data presented in Table 5 and Table 6 are necessary for use of the cable in intrinsically safe circuits.