

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**with type designation(s)
CJ85/SC-VFD (CBPJ85/SC), CJ86/SC-VFD (CBPJ86/SC)

Issued to

Yangzhou Guangming Cable Co., Ltd
YANGZHOU, JIANGSU, China

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Rated voltage (kV) 0,6/1 1,8/3****Temp. class (°C) 90**Issued at **Hamburg** on **2019-03-27**This Certificate is valid until **2024-03-26**.for **DNV GL**DNV GL local station: **Nanjing**Approval Engineer: **Carsten Hunsalz**

Arne Schaarmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Type: CJ85/SC-VFD (CBPJ85/SC), CJ86/SC-VFD (CBPJ86/SC)
0,6/1 kV or 1,8/3 kV

Conductor: Tinned, stranded, circular copper conductor (class 2)
Insulation: XLPE
Screen: Copper tape layer
Armour / braid: 8 - Tinned copper wire braid
Outer sheath: 5 - (SHF2) or 6 - (SHF1)

0,6/1 kV (3 core)

Number of cores x conductor cross-section	Overall diameter nom.	Overall diameter max.
mm ²	mm	mm
3x2,5	15,5	16,5
3x4	16,5	17,5
3x6	18	19
3x10	20,3	21,5
3x16	22,8	24
3x25	26,5	28
3x35	29,5	31
3x50	32,8	34,5
3x70	38	40
3x95	42,8	45
3x120	47	49,5
3x150	51,5	54
3x185	56,8	59,5

0,6/1 kV (3+3 core)

Number of cores x conductor cross-section	Overall diameter nom.	Overall diameter max.
mm ²	mm	mm
3x2,5 + 3x1	13,5	14,5
3x4 + 3x1,5	15,5	16,5
3x6 + 3x2,5	16,8	18
3x10 + 3x4	19	20
3x16 + 3x6	21,5	23
3x25 + 3x6	23,5	25
3x35 + 3x6	26,5	28
3x50 + 3x10	29,8	31,5
3x70 + 3x16	34,8	36,5
3x95 + 3x16	39	41
3x120 + 3x25	43,8	46
3x150 + 3x25	48	50,5
3x185 + 3x35	53,3	56

1,8/3 kV (3+3 core)

Number of cores x conductor cross-section	Overall diameter nom.	Overall diameter max.
mm ²	mm	mm
3x10 + 3x4	27	28,5
3x16 + 3x6	30,3	32
3x25 + 3x6	32	33,5
3x35 + 3x6	33,8	35,5
3x50 + 3x10	38	40
3x70 + 3x16	42,5	44,5
3x95 + 3x16	45,3	47,5
3x120 + 3x25	50	52,5
3x150 + 3x25	52	54,5
3x185 + 3x35	57,3	60

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Flame retardant Cat. A. Halogen free.

Type Approval documentation

Test report: CT18-06983-1, CT18-06983-2, CT18-06983-3, CT18-06983-4,
CT18-06983-5
Specification: Yangzhou Guangming Cable Co., Ltd, dated 3/2019

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0399	2016-03	Class Programme Electric cables	
IEC 60092-350	2014-08	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60332-1-2	2015-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	
IEC 60332-3-22	2018-07	Tests on electric and optical fibre cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free: pH > 4,3 Conductivity < 10µS/mm
IEC 60684-2	2011-08	Clause 45.2 Methods of determination of low levels of fluorine	HF max 0,1%
IEC 61034-1/2	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Job Id: **262.1-029508-1**
Certificate No: **TAE00003GB**

Marking of product

Example:

Yangzhou Guangming Cable Co., Ltd - CJ85/SC-VFD - 0,6/1kV – size - IEC 60332-3-22 - Lot no.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE