

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
CJ86/SC-VFD, CJ85/SC-VFD

Issued to

Jiangsu Jiangyang Special Cable Co., Ltd.
Yangzhou, 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 **2019-06-20**

This Certificate is valid until **2024-06-19**.

DNV GL local station: **Nanjing**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

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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: CJ86/SC-VFD, CJ85/SC-VFD 0,6/1 kV or 1,8/3 kV
Conductor: Stranded, circular copper or tinned copper conductor (class 2)
Insulation: XLPE
Armour / braid: 8 - Tinned copper wire braid
Outer sheath: 5 - (SHF2) or 6 - (SHF1)

0,6/1 kV (3 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×1.5	10,0
3×2.5	11,0
3×4	12,3
3×6	13,6
3×10	16,2
3×16	18,5
3×25	22,6
3×35	25,4
3×50	28,8
3×70	33,3
3×95	37,6
3×120	42,6
3×150	46,9
3×185	52,2
3×240	58,7
3×300	64,7

0,6/1 kV (3+1 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×2.5+1×2.5	12,2
3×4+1×4	13,4
3×6+1×6	15,4
3×10+1×10	17,8
3×16+1×16	20,4
3×25+1×16	23,9
3×35+1×25	27,3
3×50+1×25	30,1
3×70+1×35	34,6
3×95+1×50	39,7
3×120+1×70	44,8
3×150+1×95	49,6
3×185+1×95	54,2
3×240+1×120	60,8
3×300+1×150	67,1

0,6/1 kV (3+3 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×2.5+3×1	12,9
3×4+3×1.5	14,7
3×6+3×2.5	16,4
3×10+3×4	18,6
3×16+3×6	21,2
3×25+3×6	23,8
3×35+3×6	25,4
3×50+3×10	29,2
3×70+3×16	33,8

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×95+3×16	37,6
3×120+3×25	42,9
3×150+3×25	46,9
3×185+3×35	52,2
3×240+3×50	58,7
3×300+3×50	64,7

1,8/3 kV (3 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×10	22,2
3×16	24,5
3×25	27,8
3×35	30,6
3×50	33,3
3×70	37,4
3×95	42,3
3×120	46,2
3×150	49,6
3×185	54,2
3×240	60,2
3×300	65,8

1,8/3 kV (3+1 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×10+1×10	22,9
3×16+1×16	25,5
3×25+1×16	28,1
3×35+1×25	31,5
3×50+1×25	33,9
3×70+1×35	38,7
3×95+1×50	43,2
3×120+1×70	47,9
3×150+1×95	52,0
3×185+1×95	55,6
3×240+1×120	61,9
3×300+1×150	67,8

1,8/3 kV (3+3 core)
CJ86/SC-VFD, CJ85/SC-VFD

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×10+3×4	22,3
3×16+3×6	24,9
3×25+3×6	27,8
3×35+3×6	30,6
3×50+3×10	33,3
3×70+3×16	37,4

Number of cores x conductor cross- section	Overall diameter nom.
mm ²	mm
3×95+3×16	42,3
3×120+3×25	46,2
3×150+3×25	49,6
3×185+3×35	54,2
3×240+3×50	60,2
3×300+3×50	65,8

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. Low smoke.

Type Approval documentation

Test report: CT19-00909-1, CT19-00909-2, CT15-1458-1, CT15-1458-2,
CT16-3301-4, CT16-5495-1, CT16-5495-2

Specification: Jiangsu Jiangyang Special Cable Co., Ltd., updated 5/2019

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%

Marking of product

Example:

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

Job Id: **262.1-029413-1**
Certificate No: **TAE00003K4**

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