Certificate No:
TAE00004M1

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
CJPF86/NSC CJPF96/NSC CJPJ85/NSC CJPJ95/NSC 0,6/1kV, CJPJ85/NSC-VFD CJPF86/NSC-VFD 0,6/1, CJPJ85/NSC-VFD CJPF86/NSC-VFD 1,8/3kV

Issued to
Yangzhou Zhongda Cable Co., Ltd
Yangzhou, **China**

is found to comply with
DNV 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.

Type	Rated voltage (kV)	Temp. class (°C)
CJPF86/NSC CJPF96/NSC CJPJ85/NSC CJPJ95/NSC 0,6/1kV	0,6/1	90
CJPJ85/NSC-VFD CJPF86/NSC-VFD 0,6/1	0,6/1	90
CJPJ85/NSC-VFD CJPF86/NSC-VFD 1,8/3kV	1,8/3	90

Issued at **Høvik** on **2022-12-16**
This Certificate is valid until **2027-12-15**.
DNV local unit: **Nanjing NB & CMC**

Approval Engineer: **Carsten Hunsalz**

for **DNV**

Frederik Tore Elter
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

Type: CJPF86/NSC, CJPF96/NSC, CJPJ85/NSC, CJPJ95/NSC 0,6/1 kV
CJPJ85/NSC-VFD, CJPF86/NSC-VFD 0,6/1 kV
CJPJ85/NSC-VFD, CJPF86/NSC-VFD 1,8/3 kV

Conductors:	Stranded copper class 2 or class 5
Insulation:	XLPE + mica tape
Inner sheath:	PF – SHF1
	PJ – SHF2
Armor:	8 – Tinned copper wire braid
	9 – Galvanized steel wire braid
Outer sheath:	5 – SHF2
	6 – SHF1

CJPF86/NSC, CJPF96/NSC, CJPJ85/NSC, CJPJ95/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1x1	7,9
1x1,5	8,2
1x2,5	8,6
1x4	9,2
1x6	9,9
1x10	10,9
1x16	12,7
1x25	14,6
1x35	16,0
1x50	17,7
1x70	20,0
1x95	22,2
1x120	24,2
1x150	26,5
1x185	29,1
1x240	32,3
1x300	35,3
2x1	11,3
2x1,5	11,9
2x2,5	13,5
2x4	14,7
2x6	16,0
2x10	18,1
2x16	20,5
2x25	24,5
2x35	27,3
2x50	30,6
2x70	35,2
2x95	40,1
2x120	44,2
2x150	47,4
2x185	52,6

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3x1	11,1
3x1,5	11,7
3x2,5	13,3
3x4	14,4
3x6	15,9
3x10	18,1
3x16	20,7
3x25	24,9
3x35	27,9
3x50	31,4
3x70	36,8
3x95	41,4
3x120	45,8
3x150	50,7
3x185	56,3
4x1	11,8
4x1,5	12,9
4x2,5	14,3
4x4	15,7
4x6	17,2
4x10	19,8
4x16	22,7
4x25	27,4
4x35	30,8
4x50	35,2
4x70	40,6
4x95	45,9
4x120	50,8
4x150	56,3
4x185	62,6

CJPF86/NSC, CJPF96/NSC, CJPJ85/NSC, CJPJ95/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
5x1	14,3
7x1	15,3
10x1	18,8
12x1	19,4
14x1	20,3
16x1	21,3
19x1	22,3
24x1	25,8
27x1	26,4
30x1	27,3
33x1	28,3
37x1	29,4
5x1,5	15,1
7x1,5	16,2
10x1,5	20,1
12x1,5	20,7
14x1,5	21,6
16x1,5	22,7

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
19x1,5	23,9
24x1,5	27,7
27x1,5	28,3
30x1,5	29,3
33x1,5	30,4
37x1,5	31,5
5x2,5	16,6
7x2,5	17,9
10x2,5	22,3
12x2,5	23,0
14x2,5	24,1
16x2,5	25,3
19x2,5	26,6
24x2,5	31,0
27x2,5	31,7
30x2,5	32,8
33x2,5	34,1
37x2,5	35,4

CJPJ85/NSC-VFD, CJPF86/NSC-VFD 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1x4	10,7
1x6	11,6
1x10	13,4
1x16	14,3
1x25	16,4
1x35	18,5
1x50	20,7
1x70	23,3
1x95	24,8
1x120	27,0
1x150	29,5
1x185	32,4
1x240	36,3
1x300	37,3

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3x2,5	15,8
3x4	17,9
3x6	19,7
3x10	22,8
3x16	24,7
3x25	29,1
3x35	33,7
3x50	38,7
3x70	44,3
3x95	47,5
3x120	52,3
3x150	57,7
3x185	63,7
3x240	71,3

CJPJ85/NSC-VFD, CJPF86/NSC-VFD 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×2,5+1×2,5	17,0
3×4+1×4	19,1
3×6+1×6	22,1
3×10+1×10	24,5
3×16+1×16	27,0
3×25+1×16	31,0
3×35+1×25	35,3
3×50+1×25	40,5
3×70+1×35	46,5
3×95+1×50	50,5
3×120+1×70	56,2
3×150+1×95	60,7
3×185+1×95	66,8
3×240+1×120	74,5

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×4+3×1,5	19,5
3×6+3×2,5	21,3
3×10+3×4	23,9
3×16+3×6	26,7
3×25+3×6	30,8
3×35+3×6	35,8
3×50+3×10	41,2
3×70+3×16	45,1
3×95+3×16	48,6
3×120+3×25	55,1
3×150+3×25	58,9
3×185+3×35	66,3
3×240+3×50	74,8

CJPJ85/NSC-VFD, CJPF86/NSC-VFD 1,8/3 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1x10	16,4
1x16	17,3
1x25	18,9
1x35	21,0
1x50	23,0
1x70	25,3
1x95	26,8
1x120	28,9
1x150	30,9
1x185	33,3
1x240	37,0
1x300	37,8

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3x10	29,1
3x16	31,0
3x25	34,9
3x35	39,5
3x50	43,6
3x70	48,7
3x95	51,9
3x120	56,2
3x150	60,6
3x185	65,7
3x240	72,7

CJPJ85/NSC-VFD, CJPF86/NSC-VFD 1,8/3 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×10+1×10	31,4
3×16+1×16	33,9
3×25+1×16	37,7
3×35+1×25	41,6
3×50+1×25	46,1
3×70+1×35	51,7
3×95+1×50	55,6
3×120+1×70	60,7
3×150+1×95	64,4
3×185+1×95	69,6
3×240+1×120	76,8

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×10+3×4	33,0
3×16+3×6	35,6
3×25+3×6	39,4
3×35+3×6	44,0
3×50+3×10	49,0
3×70+3×16	52,6
3×95+3×16	56,1
3×120+3×25	61,6
3×150+3×25	64,6
3×185+3×35	71,4
3×240+3×50	79,3

Application/Limitation

General power and lighting. Control.

This type of cable is fire resistant in accordance with IEC Publication 60331.

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.

Fire resistant. Flame retardant Cat. A. Halogen free. Low smoke.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC 60092-350	2020-01	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	2021-01	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 and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable –Procedure for 1 kW pre-mixed flame	
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 60331-1	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV	For cables with an overall diameter exceeding 20 mm (120 min.)
IEC 60331-2	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 2: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV	For cables with an overall diameter not exceeding 20 mm (120 min.)
IEC 60754-1	2019-11	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	2019-11	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	Fluorine content < 0,1%
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

Example:

Yangzhou Zhongda Cable Co., Ltd - CJPF86/NC - 0,6/1 kV - size - IEC 60332-3-22 - IEC 60331-1/2 - 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