Certificate No:
TAE00004M7

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
CJPJ/NSC, CJPF/NSC, CJPJR/NSC, CJPFR/NSC,

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.

Rated voltage (kV)	**0,6/1**
Temp. class (°C)	**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: CJPJ/NSC, CJPF/NSC, CJPJR/NSC, CJPFR/NSC,

Conductors:	Stranded copper class 2 or class 5
Insulation:	XLPE + mica tape
Outer sheath:	PF – SHF1 PJ – SHF2

CJPJ/NSC, CJPF/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1x1	5,1
1x1,5	5,4
1x2,5	5,8
1x4	6,3
1x6	7,0
1x10	8,0
1x16	9,1
1x25	10,9
1x35	12,3
1x50	13,8
1x70	16,0
1x95	18,1
1x120	20,0
1x150	22,1
1x185	24,6
1x240	27,6
1x300	30,5
2x1	8,3
2x1,5	8,9
2x2,5	9,9
2x4	11,0
2x6	12,2
2x10	14,2
2x16	16,5
2x25	20,2
2x35	22,9
2x50	26,0
2x70	30,3
2x95	34,4
2x120	38,4
2x150	44,2
2x185	49,2

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3x1	8,8
3x1,5	9,4
3x2,5	10,6
3x4	11,8
3x6	13,1
3x10	15,3
3x16	17,7
3x25	21,7
3x35	24,6
3x50	28,0
3x70	32,6
3x95	37,1
3x120	41,3
3x150	45,8
3x185	51,2
4x1	11,5
4x1,5	12,2
4x2,5	13,4
4x4	14,8
4x6	16,3
4x10	18,7
4x16	21,4
4x25	25,9
4x35	29,1
4x50	32,9
4x70	38,2
4x95	43,1
4x120	47,8
4x150	53,1
4x185	59,1

CJPJ/NSC, CJPF/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
5x1	10,6
7x1	11,6
10x1	14,9
12x1	15,4
14x1	16,3
16x1	17,2
19x1	18,2
24x1	21,5
27x1	22,0
30x1	22,9
33x1	23,8
37x1	24,8
5x1,5	12,2
7x1,5	13,4
10x1,5	17,2
12x1,5	17,8
14x1,5	18,7
16x1,5	19,8

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
19x1,5	21,0
24x1,5	24,8
27x1,5	25,3
30x1,5	26,3
33x1,5	27,4
37x1,5	28,6
5x2,5	12,8
7x2,5	14,0
10x2,5	18,1
12x2,5	18,8
14x2,5	19,8
16x2,5	21,0
19x2,5	22,3
24x2,5	26,4
27x2,5	27,0
30x2,5	28,1
33x2,5	29,3
37x2,5	30,5

CJPJR/NSC, CJPFR/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1x1	6,1
1x1,5	6,4
1x2,5	6,8
1x4	7,8
1x6	8,7
1x10	10,0
1x16	10,9
1x25	12,8
1x35	14,9
1x50	16,9
1x70	19,4
1x95	20,8
1x120	23,0
1x150	25,4
1x185	28,1
1x240	31,4
1x300	32,4

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
2x1	10,2
2x1,5	10,8
2x2,5	11,7
2x4	13,8
2x6	15,5
2x10	18,2
2x16	20,0
2x25	23,8
2x35	28,4
2x50	32,5
2x70	37,5
2x95	40,3
2x120	44,6
2x150	49,3
2x185	54,7

CJPJR/NSC, CJPFR/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3x1	10,8
3x1,5	11,5
3x2,5	12,5
3x4	14,8
3x6	16,6
3x10	19,5
3x16	21,4
3x25	25,5
3x35	30,4
3x50	34,8
3x70	40,2
3x95	43,2
3x120	47,9
3x150	53,0
3x185	58,8

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
4x1	11,9
4x1,5	12,6
4x2,5	13,8
4x4	16,3
4x6	18,3
4x10	21,6
4x16	23,7
4x25	28,4
4x35	33,9
4x50	38,8
4x70	44,8
4x95	48,2
4x120	53,4
4x150	59,2
4x185	65,7

CJPJR/NSC, CJPFR/NSC 0,6/1 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
5x1	11.5
7x1	12.3
10x1	15.9
12x1	16.2
14x1	17.4
16x1	18.1
19x1	19.5
24x1	22.7
27x1	23.4
30x1	24.0
33x1	25.3
37x1	26.1
5x1,5	12.4
7x1,5	13.6
10x1,5	17.4
12x1,5	18.2
14x1,5	18.9
16x1,5	20.3

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
19x1,5	21.2
24x1,5	25.4
27x1,5	25.8
30x1,5	26.9
33x1,5	27.9
37x1,5	29.2
5x2,5	14.1
7x2,5	15.1
10x2,5	19.8
12x2,5	20.3
14x2,5	21.5
16x2,5	22.7
19x2,5	24.1
24x2,5	28.4
27x2,5	29.2
30x2,5	30.3
33x2,5	31.6
37x2,5	32.9

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 - CJPF/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