DNV·GL

Certificate No:
TAE00003XJ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

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

Issued to
Dalian Yongxu Wire & Cable Manufacturing Co., Ltd
Dalian, 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.

Type	Rated voltage (kV)	Temp. class (°C)
CJ85/SC, CJ86/SC	1,8/3	90
CJ85/SC-VFD, CJ86/SC-VFD	1,8/3	90
CJ85/SC-VFD, CJ86/SC-VFD	0,6/1	90

Issued at **Hamburg** on **2020-03-20**
This Certificate is valid until **2025-03-19**.
DNV GL local station: **Dalian NB & CMC**

Approval Engineer: **Carsten Hunsalz**

for **DNV GL**

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.

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Product description

Type: CJ85/SC, CJ86/SC 1,8/3 kV
CJ85/SC-VFD, CJ86/SC-VFD 1,8/3 kV
CJ85/SC-VFD, CJ86/SC-VFD 0,6/1 kV

Conductor: Plain or tinned, stranded copper class 2 (optional class 5)
Insulation: XLPE
Armour / braid: 8 - Tinned copper wire braid
Outer sheath: 5 - (SHF2) or 6 - (SHF1)

CJ85/SC, CJ86/SC 1,8/3 kV

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
1×10	11,7
1×16	12,8
1×25	14,6
1×35	15,9
1×50	17,3
1×70	19,3
1×95	21,3
1×120	23,1
1×150	24,7
1×185	26,8
1×240	29,3
1×300	32,2
1×400	35,4
2×10	20,8
2×16	23,1
2×25	25,9
2×35	28,4
2×50	31,3
2×70	35,1
2×95	39,7
2×120	43,2

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×10	22,2
3×16	24,6
3×25	27,7
3×35	30,4
3×50	33,5
3×70	38,1
3×95	42,6
3×120	46,3
3×150	49,9
3×185	54,3
4×10	24,4
4×16	27,2
4×25	30,6
4×35	33,6
4×50	37,5
4×70	42,2
4×95	47,2
4×120	51,4
4×150	55,4

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×10	22,6
3×16	25,1
3×25	28,1
3×35	30,9
3×50	33,9
3×70	38,3
3×95	43,2
3×120	47,0
3×150	51,2
3×185	55,4
3×240	61,9

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×10	17,5
3×16	20,4
3×25	23,9
3×35	26,7
3×50	30,2
3×70	35,5
3×95	40,0
3×120	44,2
3×150	48,8
3×185	53,5
3×240	60,0

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×25+1x16	29,2
3×35+1x25	32,4
3×50+1x25	35,4
3×70+1x35	39,6
3×95+1x50	44,7
3×120+1x70	49,2
3×150+1x95	53,8
3×185+1x95	57,5
3×240+1x120	64,2

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×25+1x16	25,0
3×35+1x25	28,3
3×50+1x25	31,4
3×70+1x35	36,7
3×95+1x50	41,4
3×120+1x70	46,2
3×150+1x95	51,1
3×185+1x95	55,2
3×240+1x120	61,9

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×25+3x6	28,1
3×35+3x6	30,9
3×50+3x10	34,1
3×70+3x16	38,3
3×95+3x16	43,2
3×120+3x25	47,0
3×150+3x25	51,2
3×185+3x35	55,4
3×240+3x50	61,9

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

Number of cores x conductor cross-section	Overall diameter nom.
mm^2	mm
3×25+3x6	24,2
3×35+3x6	26,7
3×50+3x10	30,4
3×70+3x16	35,5
3×95+3x16	40,0
3×120+3x25	44,2
3×150+3x25	48,8
3×185+3x35	53,5
3×240+3x50	60,0

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: 2018200301006500542, 2018200301006500540, 2018200301006500543, 2018200301006500544, 2018200301006500541, 2019300402006500570, 2019300505003011217, Dalian Yongxu Wire & Cable Manufacturing Co., Ltd, dated 08/08/2019

Specification: Dalian Yongxu Wire & Cable Manufacturing Co., Ltd, updated 2/2020

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 eletric 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%

Standard	Release	General description	Limitation
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:

Dalian Yongxu Wire & Cable Manufacturing Co., Ltd - CJ85/SC-VFD – 1,8/3kV – 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