Certificate no.:
TAE000054E

TYPE APPROVAL CERTIFICATE

This is to certify:

that the High Voltage Cable

with type designation(s)
Shore Connection Cable ADEF and ADEU

issued to
Jiangsu Shangshang Cable Group Co., Ltd.
LIYANG, JIANGSU, **China**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Cables for high voltage shore connection (HVSC) systems
Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Rated voltage (kV)	**3,6/6 6/10 8,7/15 12/20**
Temp. class (°C)	**90**

Issued at **Hamburg** on **2025-09-08**
This Certificate is valid until **2030-09-07**.
DNV local unit: **Nanjing NB & CMC**

for **DNV**

Approval Engineer: **Carsten Hunsalz**

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

High Voltage Ship to Shore Connection Cable

Type: ADEF / ADEU 3,6/6kV or 6/10kV or 8,7/15kV

3×(25～240)+(16～120)+(3～9)×1.5(2.5)
3×(25～240)+2×(16～120)/2+(3～9)×1.5(2.5)
3×(25～240)+3×(16～120)/3+(3～9)×1.5(2.5)
3×(25～240)+(16～120)+(3～9)×1.5(2.5)+12×62.5/125
3×(25～240)+2×(16～120)/2+(3～9)×1.5(2.5)+12×62.5/125
3×(25～240)+3×(16～120)/3+(3～9)×1.5(2.5)+12×62.5/125

Type: ADEF / ADEU 12/20kV

3×(35～240)+(25～120)+(3～9)×1.5(2.5)
3×(35～240)+2×(25～120)/2+(3～9)×1.5(2.5)
3×(35～240)+3×(25～120)/3+(3～9)×1.5(2.5)
3×(35～240)+(25～120)+(3～9)×1.5(2.5)+12×62.5/125
3×(35～240)+2×(25～120)/2+(3～9)×1.5(2.5)+12×62.5/125
3×(35～240)+3×(25～120)/3+(3～9)×1.5(2.5)+12×62.5/125

Power cores:	3 x 25mm^2 to 3 x 240mm^2
Conductors:	Tinned copper class 5
Cond. Screening:	Non-metallic extruded semi-conducting layer
Core insulation:	EPR
Insul. Screening:	Non-metallic extruded semi-conducting layer
Copper shield:	Used as earth conductors for variants 3×(16～120mm^2)/3
Earth conductors:	(16～120mm^2) or 2×(16～120mm^2)/2
Conductors:	Tinned copper class 5
Cond. Screening:	Non-metallic extruded semi-conducting layer
Earth conductors:	Tinned copper wire braid around insulation screening of power cores for types 3×(16～120mm^2)/3
Pilot elements:	150/250V (3～9)×1.5(2.5)mm^2
Conductors control cores:	Tinned copper class 5
Insulation control cores:	EPR
Shielding:	Tinned copper wire
Sheath:	SH
Fibre-elements:	12 optical fibre 62,5/125 tight buffered, protected with extruded rubber sheath combined with pilot elements or separated
Inner sheath:	SH + tensile fiber layer for type ADEF TPMU+ tensile fiber layer for type ADEU
Outer sheath:	SH for type ADEF TPMU for type ADEU

Application/Limitation

Cable according to IEC/ISO/IEEE 80005-1 for high voltage shore connection (HVSC) systems to supply the ship with electrical power from shore.

Please note that IEC/ISO/IEEE 80005-1 (2023) states 6/10(12) kV as standard voltage for ship to shore connection cables.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
IEC/ISO/IEEE 80005-1	2023-08	Utility connections in port – Part 1: High Voltage Shore Connection (HVSC) Systems – General requirements	Including tests acc. to Annex A A.3 a) to g) -Bending test: 5000 dynamic cycles at room temperature with bending diameter 10D. Acceptance criteria: - Max 20% broken conductor strands. - No broken optical fibres. - PD at 1.73U_0 max. 10pC. -Sunlight-resistance test -Abrasion test -Flame Propagation test -Behaviour at low temperature -Resistance test (partly)
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-354	2020-02	Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV)	partly
IEC 60092-376	2025-04	Electrical installations in ships – Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)	partly
IEC 60793-2-10	2019-05	Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres	
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	

Marking of product

Example:

Jiangsu Shangshang Cable Group Co., Ltd. - ADEU 3×25+16+3×1.5+12×62.5/125 - IEC/ISO/IEEE 80005-1 - IEC 60332-1 - SHORE CONNECTION CABLE. DANGER! HIGH VOLTAGE - 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