DNV·GL

Certificate No:
TAE00001YH

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
TFOU VFD 0,6/1 (1,8/3) kV

Issued to
Suzhou Draka Cable Co. Ltd.
SUZHOU JIANGSU, 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	Voltage class (kV)	Temp. class (°C)
TFOU VFD 0,6/1 (1,8/3) kV	**0,6/1 (1,8/3)**	**90**

Issued at **Hamburg** on **2017-05-12**
This Certificate is valid until **2022-05-11**.
DNV GL local station: **Shanghai**

for **DNV GL**

Approval Engineer: **Holger Jansen**

Joannis Papanuskas
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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Job Id: **262.1-013242-2**
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Product description

Type: TFOU VFD 0,6/1 kV (1,8/3 kV)

Conductors: Plain or Tinned, stranded copper class 5
Earth conductors: 3x distributed earth conductors in interstices
Core insulation: XLPE
Screen: Copper-PET tape and copper wire braiding
Outer sheath: SHF2

Number of cores x conductor cross-section	Overall diameter Nominal
mm^2	mm
3 x 25 + 3 x 6	28,6
3 x 35 + 3 x 6	31,4
3 x 50 + 3 x 10	34,6

Number of cores x conductor cross-section	Overall diameter Nominal
mm^2	mm
3 x 70 + 3 x 16	39,4
3 x 95 + 3 x 16	44,5
3 x 120 + 3 x 25	48,4

Number of cores x conductor cross-section	Overall diameter Nominal
mm^2	mm
3 x 150 + 3 x 25	51,1
3 x 185 + 3 x 35	55,2
3 x 240 + 3 x 50	61,2

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.

Power cable for variable frequency drives. Halogen free. Low smoke. Flame retardant in bunch Cat. A.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
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	Single and multicore non-radial field power cables with extruded solid insulation for rated Voltages of 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 60332-3-22	2009-02	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	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	
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	

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	

Marking of product

Suzhou Draka – TFOU VFD – Size – 0,6/1 (1,8/3kV) – IEC 60332-3-22 Cat. A – 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