

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**with type designation(s)
TPYCY(VFD), FA-TPYCY(VFD)

Issued to

TMC Co., Ltd
Cheonan-si, Chungcheongnam-do, Republic of Koreais found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Power cable for variable frequency drive.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Rated voltage (kV) 0.6/1 (1.8/3)****Temp. class (°C) 90**Issued at **Busan** on **2019-12-18**This Certificate is valid until **2023-10-24**.for **DNV GL**DNV GL local station: **Seoul**Approval Engineer: **Dong Ho Park**

Andreas Kristoffersen
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.



Product description

Type : 0.6/1kV(1.8/3kV) (FA-)TPYCY(VFD)

Conductors : Stranded tinned annealed copper wires, class 2
Core insulation : EPR
Common shield : Copper or aluminum backed polyester tape (CU/PS or AL/PS tape)
Braid of tinned annealed copper wire
Inner sheath : PVC (ST2)
Armor : Galvanized steel wire braid
Outer sheath : PVC (ST2)

"FA-" denote flame retardant type according to IEC60332-3 Cat.A

Number of cores x conductor corss-section mm ²
(FA-)TPYCY(VFD)
3C x 10 + 3E x 4
3C x 16 + 3E x 6
3C x 25 + 3E x 6

Number of cores x conductor corss-section mm ²
3C x 35 + 3E x 6
3C x 50 + 3E x 10
3C x 70 + 3E x 16
3C x 95 + 3E x 16

Number of cores x conductor corss-section mm ²
3C x 120 + 3E x 25
3C x 150 + 3E x 25
3C x 185 + 3E x 35
3C x 240 + 3E x 50

Application/Limitation

For "FA-" type, 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.

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	Power cables for rated voltages 1kV and 3kV	
IEC 60092-360	2014-04	Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation, 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	Bunch test Category A "FA-" type only

Marking of product

0.6/1kV(1.8/3kV) – Cable type – Size – IEC 60332-3 CAT-A* – TMC – Year – Length (*"FA-" type only)
Ex) 6/1kV(1.8/3kV) FA-TPYCY(VFD) 150SQMMx3C+25SQMMx3C IEC 60332-3 CAT-A TMC 2019 0001M

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)



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Certificate No: **TAE00003HW**

- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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