

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**

with type designation(s)

LM-HF 0,6/1 kV or TEMAR PHFX-U 0,6/1 kV

Issued to

**Prysmian Group Finland Oy
PIKKALA, Finland**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****General power and lighting. Control.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Rated voltage (kV) 0,6/1****Temp. class (°C) 90**This Certificate is valid until **2025-06-30**.Issued at **Høvik** on **2020-09-17**DNV GL local station: **Helsinki FIS**for **DNV GL**Approval Engineer: **Ivar Bull**

**Marta Alonso Pontes
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.

Job Id: **262.1-011072-3**
Certificate No: **TAE00000SV**
Revision No: **1**

Product description

Type: LM-HF 0,6/1 kV or TEMAR PHFX-U 0,6/1 kV

Construction:

Conductors: Plain stranded copper class 2 or class 5
Insulation: XLPE
Inner covering: Possible extruded in multicore class 5 cables (not for single core cables)
Outer sheath: SHF1

Class 2:

No of cores	Cross sectional area [mm ²]
1	16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
2	1.5, 2.5, 4, 6
3	1.5, 2.5, 4, 6, 10, 16, 25, 35*, 50*, 70*, 95*, 120*, 150*, 185*, 240*, 300*
4	1.5, 2.5, 4, 6, 10, 16, 25, 35*, 50*, 70*, 95*, 120*
5G	1.5, 2.5, 4, 6, 10, 16, 25
5, 7, 12, 19, 27, 37	1.5
5, 7, 12, 19	2.5

* Sector shaped

Class 5 :

No of cores	Cross sectional area [mm ²]
1	25, 35, 50, 70, 95, 120, 150, 185, 240, 300
2	1.5, 2.5, 4, 6
3	35, 50, 70, 95, 120, 150, 185
4	35, 50, 70, 95, 120, 150, 185
5G	35, 50, 70, 95

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.

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 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-353	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60332-3-22	2018-07	Tests on electric cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically mounted	Charred portion of sample does not exceed 2,5m above

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		bunched wires or cables - Category A	bottom edge of burner.
IEC 60754-1:2011 +AMD1:2019 CSV	2019-11	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content	Low Halogen:
IEC 60754-2:2011 +AMD1:2019 CSV	2019-11	Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity	Halogen free:
IEC 61034-1&2:2005 +AMD1:2013 +AMD2:2019 CSV	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

PRYSMIAN (FI20) – LM-HF or TEMAR PHFX-U – size – 0,6/1kV – 60092-353 - 60332-3-22 – Year

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) 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