DNV·GL

Certificate No:
TAE0000028

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
HFX-OSA/Cu-FR 250V & FHFX-OSA/Cu-FR 250V, HFX-OSA/Cu-FR-L 250V & FHFX-OSA/Cu-FR-L 250V

Issued to
PRYSMIAN CAVI E SISTEMI ITALIA SRL Stab.to di Merlino
Merlino LO, Italy

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

Instrumentation and communication.
Fire resistant. Flame retardant in bunch Cat. A. Halogen free. Low smoke.
Cold bend -40°C. Cold impact -35°C.

Type	Voltage class (V)	Temp. class (°C)
HFX-OSA/Cu-FR 250V & FHFX-OSA/Cu-FR 250V	250	90
HFX-OSA/Cu-FR-L 250V & FHFX-OSA/Cu-FR-L 250V	250	90

This Certificate is valid until .

Issued at **Høvik** on **2015-06-20**

for **DNV GL**

DNV GL local station: **Milan**

Approval Engineer: **Ivar Bull**

Marit Laumann
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: **262.1-018467-1**
Certificate No: **TAE0000028**

Product description

Type: HFX-OSA/Cu-FR 250V & FHFX-OSA/Cu-FR 250V,
HFX-OSA/Cu-FR-L 250V & FHFX-OSA/Cu-FR-L 250V

(L-types = reduced dimension)

Construction:

Conductors:	Plain or tinned annealed copper cl. 2 or cl.5 (types with F as first letter)
Core insulation:	Mica Tape (Fire barrier) + HF-XLPE
Screen:	Al-polyester tape w/tinned copper drain wire
Inner covering:	Halogen free thermoplastic compound
Metal covering:	Plain or tinned copper wire braid
Outer sheath:	SHF1

No of Elements:	Cross sectional area [mm^2]
1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 19, 24, 27, 30, 32, 37 pairs	0,75 1,0 1,5 mm^2
1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 19, 24 triples	0,75 1,0 1,5 mm^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.

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 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60092-376	2003-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-1/2	2009-05	Fire resistance / Circuit integrity – Test for method for fire with shock at temperature of at least 830ºC for cables rated up to and including 0,6/1 kV	120 min. + 15 min. cooling period.
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	90 min. + 15 min. cooling period.
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

Standard	Release	General description	Limitation
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 61034-1/2	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance ≥60%
IEC 60092-350	2014-08	Annex E: Procedure 8.9.1: Temperature requirements	Cold bend: -40°C Cold impact: -35°C

Marking of product

PRYSMIAN (P) – HFX-OSA/Cu-FR or FHFX-OSA/Cu-FR or HFX-OSA/Cu-FR-L or FHFX-OSA/Cu-FR-L – 250V– Size – IEC 60331(120min) – IEC 60332-3-22 – Year – Metre marking

Factory code: (P) = Merlino factory

Periodical assessment

The scope of the Periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the Periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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 to be performed at least every second year.

END OF CERTIFICATE