DNV·GL

Certificate No:
TAE000003B

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
FM2XCH, FM2XAH, FM2XCCH, FM2XAAH

Issued to
Untel Kablolari San. ve Tic. A.S.
Dilovasi, Turkey

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards
IEC 60092-350 (2008-02)
IEC 60092-376 (2003-05)
IEC 60332-3-22 (2009-02)
IEC 60754-1/2 (2011-11)
IEC 61034-1/2 Ed. 3.1 (2013-06)

Application :

Control & Instrumentation.
Flame retardant Cat. A. Halogen free. Low smoke.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type	Voltage class (V)	Temp. class (°C)
FM2XCH	250	90
FM2XAH	250	90
FM2XCCH	250	90
FM2XAAH	250	90

This Certificate is valid until **2019-06-24**.

Issued at **Høvik** on **2015-06-25**

for **DNV GL**

DNV GL local station: **Istanbul**

Approval Engineer: **Georgy Abramenko**

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.

Job Id: **262.1-008110-2**
Certificate No: **TAE000003B**

Product description

Type: **FM2XCH 250 V, FM2XAH 250 V, FM2XCCH 250V, FM2XAAH 250 V**
Conductors: Stranded copper class 2 or 5. Tinned on request.
Core insulation: XLPE
Inner covering: Flame retardant halogen free compound
Screen: Common copper braid screen (C-types)
Individual or common screen with Al-backed PE tape with tinned copper drain wire (A-types)
Metal covering: Tinned copper wire braid (C-types)
Outer sheath: SHF1

Number of cores x conductor cross-section mm^2
M2XCH
1x2x0,75
2x2x0,75
4x2x0,75
7x2x0,75
10x2x0,75
14x2x0,75

Number of cores x conductor cross-section mm^2
19x2x0,75
24x2x0,75
FM2XAH
1x2x0,75
2x2x0,75
4x2x0,75
7x2x0,75

Number of cores x conductor cross-section mm^2
10x2x0,75
14x2x0,75
19x2x0,75
24x2x0,75
FM2XCCH
1x2x0,75
2x2x0,75

Number of cores x conductor cross-section mm^2
4x2x0,75
7x2x0,75
10x2x0,75
14x2x0,75
19x2x0,75
24x2x0,75
FM2XAAH

Number of cores x conductor cross-section mm^2
1x2x0,75
2x2x0,75
4x2x0,75
7x2x0,75
10x2x0,75
14x2x0,75
19x2x0,75
24x2x0,75

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	2008-02	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-376	2003-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
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	Bunch test 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	Low Halogen: <0,5% Halogen

Standard	Release	General description	Limitation
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	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

ÜNTEL KABLOLARI – FM2XCH or FM2XAH or FM2XCCH or FM2XAAH – size – IEC 60332 – Cat. A – 0,6/1 kV – Lot no.

Periodical assessment

The scope of the retention/renewal survey 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 survey 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.

Survey to be performed at least every second year.

END OF CERTIFICATE