

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Power Cable

with type designation(s)
M2XH, M2XCH, M2XCH EMC

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 (2014-08)
IEC 60092-353 (2011-08)
IEC 60332-3-22 (2009-02)
IEC 60754-1/2 (2011-11)
IEC 61034-1/2 Ed. 3.1 (2013-06)

Application :

General power and lighting.
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 (kV)	Temp. class (°C)
M2XH	0,6/1 kV	90
M2XCH	0,6/1	90
M2XCH EMC	0,6/1	90

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

Issued at **Høvik** on **2015-12-30**

DNV GL local station: **Istanbul**

Approval Engineer: **Hanwee Low**

for **DNV GL**

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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: **262.1-008110-3**
 Certificate No: **TAE0000039**
 Revision No: **2**

Product description

Type: **M2XH, M2XCH, M2XCH EMC 0,6/1 kV**
 Conductors: Plain or tinned stranded copper (class 2 or class 5)
 Core insulation: Cross-Linked PolyEthylene (XLPE)

Option: Bedding/inner covering/filler
 Bedding/Inner covering: Halogen free & flame retardant compound
 Filler: Flame retardant & non hygroscopic material

Braiding: Plain or tinned Copper wires (C Type)
 EMC Screen: Electrolytic copper tape (EMC Type)
 Outer sheath: Halogen Free Compound (SHF1)

Number of cores x conductor cross-section mm ²	Number of cores x conductor cross-section mm ²	Number of cores x conductor cross-section mm ²	Number of cores x conductor cross-section mm ²	Number of cores x conductor cross-section mm ²
1 x 1,0	1 x 240	3 x 10	4 x 16	7x1,5
1 x 1,5	1 x 300	3 x 16	4 x 25	7x2,5
1 x 2,5	2 x 1,0	3 x 25	4 x 35	10x1,5
1 x 4	2 x 1,5	3 x 35	4 x 50	12x1,5
1 x 6	2 x 2,5	3 x 50	4 x 70	14x1,5
1 x 10	2 x 4	3 x 70	4 x 95	16x1,5
1 x 16	2 x 6	3 x 95	4 x 120	19x1,5
1 x 25	2 x 10	3 x 120	5x1	24x1,5
1 x 35	2 x 16	3 x 185	5x1,5	27x1,5
1 x 50	2 x 25	4 x 1,0	5x2,5	37x1,5
1 x 70	3 x 1,0	4 x 1,5	5x4	60x1,5
1 x 95	3 x 1,5	4 x 2,5	5x6	
1 x 120	3 x 2,5	4 x 4	5x10	
1 x 150	3 x 4	4 x 6	5x16	
1 x 185	3 x 6	4 x 10	7x1	

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

Data sheets:
 FR 70-022 Rev. 0 Rev. Tar. 01.09.2009.
 FR 70-023 Rev. 0 Rev. Tar. 01.09.2009.
 FR 70-024 Rev. 0 Rev. Tar. 01.09.2009.

Test reports: Üntel test reports dated 11/10/2010

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 60092-353	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	

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Standard	Release	General description	Limitation
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
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 – M2XH or M2XCH or M2XCH EMC – size – IEC 60332 – Cat. A – 0,6/1 kV – Lot nr.

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