

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Electric Power Cable**with type designation(s)  
**M2XSY-FR 0,6/1 kV**

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 60092-353 (2011-08)**  
**IEC 60331-21 (1999-04)**  
**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.****Fire resistant. 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.****Voltage class (kV) 0,6/1 kV**  
**Temp. class (°C) 90**This Certificate is valid until **2019-06-24**.Issued at **Høvik** on **2016-01-11**DNV GL local station: **Istanbul**Approval Engineer: **Hanwee Low**for **DNV GL**

---

**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: **TAE000003D**  
 Revision No: **3**

## Product description

Type: **M2XSY-FR 0,6/1 kV**  
 Conductors: Stranded copper class 2 or 5. Tinned on request.  
 Core insulation: XLPE  
 Inner covering: Flame retardant halogen free compound  
 Metal covering: Galvanized steel wire braid (multicore cables only)  
 Outer sheath: SHF1

Number of cores x conductor cross-section mm <sup>2</sup>	Number of cores x conductor cross-section mm <sup>2</sup>	Number of cores x conductor cross-section mm <sup>2</sup>	Number of cores x conductor cross-section mm <sup>2</sup>	Number of cores x conductor cross-section mm <sup>2</sup>
2x1,5	3x6	4x2,5	5x1	12x1,5
2x2,5	3x10	4x4	5x1,5	14x1,5
2x4	3x16	4x6	5x2,5	16x1,5
2x6	3x25	4x10	5x4	19x1,5
2x10	3x35	4x16	5x6	24x1,5
2x16	3x50	4x25	5x10	27x1,5
2x25	3x70	4x35	5x16	37x1,5
3x1	3x95	4x50	7x1	60x1,5
3x1,5	3x120	4x70	7x1,5	
3x2,5	4x1	4x95	7x2,5	
3x4	4x1,5	4x120	10x1,5	

## Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331.

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 70-013 Rev. 2 Rev. Tar. 09.02.2011.**  
 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	
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 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. test

Job Id: **262.1-008110-3**  
Certificate No: **TAE000003D**  
Revision No: **3**

<b>Standard</b>	<b>Release</b>	<b>General description</b>	<b>Limitation</b>
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 – M2XSY-FR – size – IEC 60331-21 – 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