

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Low Voltage Cable**

with type designation(s)

**U-HFAT m, U-HFAT m (I), U-HFAT m (C), U-HFAT m (I+C)**

Issued to

**Unika Universal Kablo San. ve Tic. A.S.  
ISTANBUL, Turkey**

is found to comply with

**DNV GL rules for classification – Ships and offshore units****Application :****Instrumentation, Control and Communication.****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)
<b>U-HFAT m</b>	<b>250</b>	<b>90</b>
<b>U-HFAT m (I)</b>	<b>250</b>	<b>90</b>
<b>U-HFAT m (C)</b>	<b>250</b>	<b>90</b>
<b>U-HFAT m (I+C)</b>	<b>250</b>	<b>90</b>

This Certificate is valid until **2020-12-28**.Issued at **Høvik** on **2015-12-29**DNV GL local station: **Istanbul**Approval Engineer: **Ivar Bull**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: **262.1-003326-11**  
Certificate No: **TAE00000JO**

## Product description

Type: U-HFAT m & U-HFAT m (C) & U-HFAT m (I) & U-HFAT m (I+C) 250 V

Construction:

Conductors: Plain or tinned stranded copper class 2 or class 5  
Core insulation: XLPE  
Screen: Metal coated polyester tape w/plain or tinned copper drain wire (C) or (I) or (I+C)  
Inner covering: Tape  
Metal covering: Copper (plain or tinned) or galvanized steel wire braid  
Outer sheath: SHF1 or SHF2

No of cores:	Cross sectional area [mm <sup>2</sup> ]
1, 2, 3, 4, 5, 7, 10, 12, 14, 16, 19, 24, 37 Pairs	0,5, 0,75 1,0 1,5 2,5
1, 2, 3, 4, 5, 7, 10 Triples	0,5, 0,75 1,0 1,5 2,5
1, 2, 3, 4, 5, 7 Quads	0,5, 0,75 1,0 1,5 2,5
8 Pairs	0,75
12 Triples	0,75

## 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

Data sheet and drawing U-HFAT m  
Data sheet and drawing U-HFAT m (I)  
Data sheet and drawing U-HFAT m (C)  
Data sheet and drawing U-HFAT m (I+C)  
IEC60332-3 Cat A dated 28.09.2007.  
Electrical and physical routine test report No. 08240 dated 28.09.2007.

## Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-350	2014-04	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 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 – Determination of the amount of halogen acid gas	Low Halogen: <0,5% Halogen
IEC 60754-2	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the degree of acidity of gases evolved during the combustion of materials taken from electric	Halogen free: pH > 4,3 Conductivity < 10µS

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<b>Standard</b>	<b>Issued</b>	<b>General description</b>	<b>Limitation</b>
		cables by measuring pH and conductivity	
IEC 61034-1/2	2013-07/09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

### **Marking of product**

UNIKA KABLO - U-HFAT m or U-HFAT m (I) or U-HFAT m (C) or U-HFAT m (I+C) - size – 250V  
– IEC 60332-3-22 - Year

### **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 assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routine Tests (RT) checked
- (if RT- and PST-test reports are 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
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment shall be performed at least every second year.

END OF CERTIFICATE