DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00000HZ
Revision No:
3

This is to certify:

That the Electric Power Cable

with type designation(s)
U-HFFRA m,
U-HFFRA m (C),
U-HFFRA m EMC,
U-HFFRA m EMC

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

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

General power and lighting.
Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Type	Rated voltage (kV)	Temp. class (°C)
U-HFFRA m	0,6/1	90
U-HFFRA m (C)	0,6/1	90
U-HFFRA m EMC	0,6/1	90
U-HFFRA m EMC	1,8/3	90

Issued at **Høvik** on **2020-12-17**
This Certificate is valid until **2025-12-16**.
DNV GL local station: **Istanbul**

for **DNV GL**

Approval Engineer: **Ivar Bull**

Marta Alonso Pontes
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: **262.1-034881-1**
Certificate No: **TAE00000HZ**
Revision No: **3**

Product description

Type: U-HFFRA m, U-HFFRA m (C), U-HFFRA m EMC 0,6/1 kV

Construction:

Conductors:	Plain or tinned stranded copper class 2 or class 5
Core insulation:	Mica tape + XLPE
Inner covering:	Halogen free compound
Screen:	Metal coated polyester tape (C)
Metal covering:	Copper (plain or tinned) or galvanized steel wire braid (multicore cables only)
Outer sheath:	SHF1 or SHF2

U-HFFRA m (IEC 60331-21 + IEC 60331-1)

No of cores:	Cross sectional area [mm2]
1	1,0 – 300, 630
2	1,0 – 95
3	1,0 - 240
4	1,0 - 240
5G	10, 25, 50
5, 7, 10, 12, 16, 19, 24, 27, 37	1,0 - 2,5
6, 8, 9, 14, 15, 25	1,5

U-HFFRA m (C) (IEC 60331-21 + IEC 60331-1)

No of cores:	Cross sectional area [mm2]
1	1,0 – 300
2	1,0 – 95
3	1,0 - 240
4	1,0 - 150
5G	10, 25, 50
5, 7, 10, 12, 16, 19, 24, 27, 37	1,0 - 2,5

U-HFFRA m EMC (IEC 60331-21 + IEC 60331-1)

No of cores:	Cross sectional area [mm2]
1	120

U-HFFRA m EMC 1,8/3 kV (IEC 60331-1 Test voltage 1,8/3kV)

No of cores:	Cross sectional area [mm2]
1	185

These types of cables are 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

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-350	2020-01	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	

Standard	Issued	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 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60331-1/2	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV	Minimum 90 min
IEC 60331-21	1999-04	Fire resistance / Circuit integrity – Test for electric cables under fire conditions-Circuit integrity – Part 21	
IEC 60332-3-22	2018-07	Tests on electric cables under fire conditions - Part 3-22: Test for vertical flame spread of vertical-mounted bunched wires or cables - Category A	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1:2011 +AMD1:2019 CSV	2019-11	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 +AMD1:2019 CSV	2019-11	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&2:2005 +AMD1:2013 +AMD2:2019 CSV	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

UNIKA - U-HFFRA m or U-HFFRA m (C) - size - 0,6/1 kV– IEC 60331-21/1 - IEC 60332-3-22 – Year OR

UNIKA – Lot Number - U-HFFRA m EMC – 185mm^2 – 1,8/3 kV – IEC 60092-353 – IEC 60331-1 – 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