DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-8732
This Certificate consists of 5 pages

This is to certify that the

Electric Cable, Power Current

with type designation(s)

U-HFA m, U-HFA m (C), U-HFA m EMC

Manufactured by

Unika Universal Kablo San. ve Tic. A.S.
ISTANBUL, 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 60092-353 (2001-04)
IEC 60332-3-22 (2000-10)
IEC 60754-1 (1994-01)
IEC 60754-2 (1997-04)
IEC 61034-2 (2005-04)

Application

General power and lighting. Screened. Electromagnetic interference Resistant. Halogen free. Low smoke.

Type	Voltage class (kV)	Temp. class (°C)
U-HFA m	0,6/1	90
U-HFA m (C)	0,6/1	90
U-HFA m EMC	0,6/1	90

Place and date
Høvik, 2009-03-06
for DET NORSKE VERITAS AS

Trond Sjåvåg
Head of Section

DET NORSKE VERITAS * 1864 *

Local Office
DNV Istanbul

This Certificate is valid until
2011-12-31

Ivar Bull
Surveyor

Notice: 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.

Product description

Type: U-HFA m & U-HFA m (C) & U-HFA m EMC 0,6/1 kV
Construction:
Conductors: Plain or tinned stranded copper class 2 or class 5
Core insulation: XLPE
Inner covering: Halogen free compound
Screen: Metal coated polyester tape (C)
Metal covering: Plain or tinned copper wire braid
Outer sheath: SHF1

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
U-HFA m	
1 x 1,0	5,4
1 x 1,5	5,9
1 x 2,5	6,3
1 x 4	6,9
1 x 6	7,3
1 x 10	8,5
1 x 16	9,5
1 x 25	11,8
1 x 35	12,9
1 x 50	14,6
1 x 70	16,7
1 x 95	18,6
1 x 120	20,9
1 x 150	22,7
1 x 185	25,1
1 x 240	28,1
1 x 300	30,8
2 x 1,0	7,9
2 x 1,5	9,1
2 x 2,5	9,9
2 x 4	11,7
2 x 6	12,5
2 x 10	14,7
2 x 16	16,9

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
2 x 25	22,9
2 x 35	25,5
2 x 50	29,1
2 x 70	34,1
2 x 95	39,1
3 x 1,0	8,5
3 x 1,5	9,6
3 x 2,5	10,4
3 x 4	12,3
3 x 6	13,2
3 x 10	15,6
3 x 16	17,9
3 x 25	24,2
3 x 35	27,0
3 x 50	31,0
3 x 70	36,7
3 x 95	41,6
3 x 120	46,6
3 x 150	50,2
3 x 185	55,4
3 x 240	61,8
4 x 1,0	9,2
4 x 1,5	10,4
4 x 2,5	11,9

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
4 x 4	13,4
4 x 6	14,5
4 x 10	17,2
4 x 16	19,8
4 x 25	26,5
4 x 35	29,6
4 x 50	34,0
4 x 70	40,2
4 x 95	45,6
4 x 120	51,1
4 x 150	55,3
5 x 1,0	9,9
5 x 1,5	11,8
5 x 2,5	12,9
7 x 1,0	10,6
7 x 1,5	12,7
7 x 2,5	14,1
8 x 1,5	18,0
10 x 1,0	13,5
10 x 1,5	15,4
10 x 2,5	17,1

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
12 x 1,0	14,4
12 x 1,5	16,7
12 x 2,5	18,3
16 x 1,0	15,8
16 x 1,5	18,3
16 x 2,5	20,4
19 x 1,0	16,8
19 x 1,5	19,4
19 x 2,5	21,4
24 x 1,0	18,7
24 x 1,5	21,5
24 x 2,5	24,0
27 x 1,0	19,8
27 x 1,5	23,1
27 x 2,5	25,7
37 x 1,0	22,2
37 x 1,5	25,8
37 x 2,5	28,8
U-HFA m (C)	
1 x 1,0	5,8
1 x 1,5	6,1
1 x 2,5	6,5
1 x 4	7,1
1 x 6	7,5
1 x 10	8,7
1 x 16	9,7
1 x 25	12,0
1 x 35	13,1
1 x 50	14,8
1 x 70	16,9
1 x 95	18,8
1 x 120	21,1

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
1 x 150	22,9
1 x 185	25,3
1 x 240	28,3
1 x 300	31,0
2 x 1,0	8,7
2 x 1,5	9,3
2 x 2,5	10,1
2 x 4	11,9
2 x 6	12,7
2 x 10	14,9
2 x 16	17,1
2 x 25	22,9
2 x 35	25,7
2 x 50	29,3
2 x 70	34,3
2 x 95	39,3
3 x 1,0	9,1
3 x 1,5	9,8
3 x 2,5	10,6
3 x 4	12,1
3 x 6	13,0
3 x 10	15,3
3 x 16	17,7
3 x 25	23,8
3 x 35	26,7
3 x 50	30,8
3 x 70	36,1
3 x 95	41,0
3 x 120	45,7
3 x 150	49,6
3 x 185	54,8
3 x 240	61,2
4 x 1,0	9,8
4 x 1,5	10,5
4 x 2,5	12,1

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
4 x 4	13,6
4 x 6	14,7
4 x 10	17,3
4 x 16	20,0
4 x 25	26,5
4 x 35	29,7
4 x 50	34,2
4 x 70	40,4
4 x 95	45,8
4 x 120	51,2
4 x 150	55,5
5 x 1,0	10,5
5 x 1,5	12,0
5 x 2,5	13,1
7 x 1,0	11,9
7 x 1,5	12,9
7 x 2,5	14,3
10 x 1,0	14,3
10 x 1,5	15,5
10 x 2,5	17,2
12 x 1,0	15,3
12 x 1,5	16,8
12 x 2,5	18,4
16 x 1,0	16,9
16 x 1,5	18,4
16 x 2,5	20,5
19 x 1,0	17,7
19 x 1,5	19,5
19 x 2,5	21,5
24 x 1,0	19,8
24 x 1,5	21,6

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
24 x 2,5	24,1
27 x 1,0	21,0
27 x 1,5	23,1
27 x 2,5	25,8
37 x 1,0	23,5
37 x 1,5	25,9
37 x 2,5	28,9
U-HFA m EMC	
1 x 1,0	5,8
1 x 1,5	6,1
1 x 2,5	6,5
1 x 4	7,1
1 x 6	7,5
1 x 10	8,7
1 x 16	9,7
1 x 25	12,0
1 x 35	13,1
1 x 50	14,8
1 x 70	16,9
1 x 95	18,8
1 x 120	21,1
1 x 150	22,9
1 x 185	25,3
1 x 240	28,3
1 x 300	31,0
2 x 1,0	8,7
2 x 1,5	9,3
2 x 2,5	10,1
2 x 4	11,9
2 x 6	12,7
2 x 10	14,9
2 x 16	17,1

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
2 x 25	22,9
2 x 35	25,7
2 x 50	29,3
2 x 70	34,3
2 x 95	39,3
3 x 1,0	9,1
3 x 1,5	9,8
3 x 2,5	10,6
3 x 4	12,1
3 x 6	13,0
3 x 10	15,3
3 x 16	17,7
3 x 25	23,8
3 x 35	26,7
3 x 50	30,8
3 x 70	36,1
3 x 95	41,0
3 x 120	45,7
3 x 150	49,6
3 x 185	54,8
3 x 240	61,2
4 x 1,0	9,8
4 x 1,5	10,5
4 x 2,5	12,1
4 x 4	13,6
4 x 6	14,7
4 x 10	17,3
4 x 16	20,0
4 x 25	26,5
4 x 35	29,7
4 x 50	34,2
4 x 70	40,4
4 x 95	45,8
4 x 120	51,2
4 x 150	55,5

Number of cores x conductor cross-section	Overall Diameter ± 10 %
mm^2	mm
5 x 1,0	10,5
5 x 1,5	12,0
5 x 2,5	13,1
7 x 1,0	11,9
7 x 1,5	12,9
7 x 2,5	14,3
10 x 1,0	14,3
10 x 1,5	15,5
10 x 2,5	17,2
12 x 1,0	15,3
12 x 1,5	16,8
12 x 2,5	18,4
16 x 1,0	16,9
16 x 1,5	18,4
16 x 2,5	20,5
19 x 1,0	17,7
19 x 1,5	19,5
19 x 2,5	21,5
24 x 1,0	19,8
24 x 1,5	21,6
24 x 2,5	24,1
27 x 1,0	21,0
27 x 1,5	23,1
27 x 2,5	25,8
37 x 1,0	23,5
37 x 1,5	25,9
37 x 2,5	28,9

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 and drawings:
Data sheet and drawing U-HFA m
Data sheet and drawing U-HFA m (C)
Data sheet and drawing U-HFA m EMC

Test reports:
Electrical and physical routine test report No. 1031 dated 21.09.2007

Tests carried out

Type test according to IEC 60092-353, IEC 60332-3-22, IEC 60754-1/2, IEC 61034-1/2.

Marking of product

Product to be marked: UNIKA KABLO - U-HFA m or U-HFA m (C) or U-HFA m EMC - size - 0,6/1 kV

Certificate retention survey

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