

TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE000012Y
Revision No:
4

This is to certify:

that the **Electric Power Cable**

with type designation(s)
RFOU VFD, RFOU VFD

issued to

Unika Universal Kablo San. ve Tic. A.S.
ISTANBUL, Türkiye

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft
DNV class programme DNV-CP-0399 – Type approval – Electric cables

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type	Rated voltage (kV)	Temp. class (°C)
RFOU VFD	0,6/1kV	90
RFOU VFD	0,6/1kV (1,8/3kV)	90

Issued at **Høvik** on **2026-08-20**

This Certificate is valid until **2027-06-29**.

DNV local unit: **Istanbul**

Approval Engineer: **Ivar Bull**



for **DNV**

This document has been digitally signed and will
therefore not have handwritten signature

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Type: RFOU-VFD 0,6/1 kV or 1,8/3kV
Construction: 3 conductors + 3 distributed ground conductors
Conductors: Plain or tinned, stranded copper IEC 60228 class 2 or class 5
Core insulation: HEPR
Filler: Flame retardant halogen-free compound
Metal covering: Plain or tinned copper wire braid
Outer sheath: SHF2 or SHF Mud

0,6/1kV

Number of cores and cross section			Overall diameter
3 x 25	+	3 x 10	28,9
3 x 35	+	3 x 16	31,6
3 x 50	+	3 x 16	35,0
3 x 70	+	3 x 25	39,8
3 x 95	+	3 x 35	43,9
3 x 120	+	3 x 35	49,0
3 x 150	+	3 x 50	53,7
3 x 185	+	3 x 70	59,4

0,6/1kV (1,8/3kV)

Number of cores and cross section			Overall diameter
3 x 150	+	3 x 25	53,9

Manufactured by

Unika Universal Kablo San. ve Tic. A.Ş.

Yeni Sulun Sok. No:5 İclevent 34330 Besiktas – Istanbul, Turkey

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 Bundles of Cables or Wires) are fulfilled without any additional measures.

RFOU-VFD is designed for variable frequency drives.

Type Approval documentation

Data sheets: Drawing doc. No. 500/TOVDD/103 rev.1 dated 17.11.2008.
Data table doc. No. 500/TOVD/103 rev.1 dated 17.11.2008.
Data sheet RFOU VFD 1,8/3kV No 250880-4542911
Test report no: Binder with test reports received 03.12.2008 and 02.01.2009.
Test report 3x150+3G25 mm² 1,8/3 kV dated 23.12.2025 drum 25/778-001
Rep.No:TR-2026-024 dated 09.07.2026

Tests carried out

Standard	Issued	General description	Limitation
IEC 60092-353	2024-06	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
IEC 60332-3-22	2018-07	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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	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	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

Standard	Issued	General description	Limitation
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%
UL2556	2021-04	UL2556 2021-04 UV Resistance Test. ASTM G155 Cycle 1 /UL2556:2021. Irradiance 0,35 W/m ² /nm.	720h. Max decay in tensile strength and elongation@break 20% compared with unaged material.

Marking of product

UNIKA – RFOU VFD - size – 0,6/1 kV – IEC 60332-3-22 – Lot No. or
 UNIKA – RFOU VFD - size – 1,8/3 kV – IEC 60332-3-22 – Lot No.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are 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 Routine tests (RT) checked (if not available tests according to 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.

Periodical assessment is to be performed after 2 years and after 3,5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE