

TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00000Y1
Revision No:
1

This is to certify:

That the Electric Power Cable

with type designation(s)
M2XCH VFD 0,6/1kV,
M2XCH VFD 1,8/3kV

Issued to

Untel Kablolari San. ve Tic. A.S.
Dilovasi, Turkey

is found to comply with

DNV GL rules for classification – Ships and offshore units

Application :

Power cable for Variable Frequency Drives

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

Type	Rated voltage (kV)	Temp. class (°C)
M2XCH VFD 0,6/1kV	0,6/1	90
M2XCH VFD 1,8/3kV	1,8/3	90

Issued at **Høvik** on **2021-03-13**

for **DNV**

This Certificate is valid until **2026-02-09**.

DNV local station: **Istanbul**

Approval Engineer: **Ivar Bull**

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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.

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 300,000 USD.



Product description

M2XCH VFD 0,6/1kV
 M2XCH VFD 1,8/3kV

Construction:
 Conductors: Tinned or annealed stranded copper class 2 (or class 5)
 Earth conductors: 3x distributed earth conductors in interstices (3 core cables)
 Core insulation: XLPE
 Bedding/Inner covering/filler: Halogen free compound
 Screen: CU/PETP Tape (100% coverage)
 Metal covering: Tinned or annealed copper wire braid
 Outer sheath: SHF1 or SHF2

No of cores:	Cross sectional area [mm ²]
1	10 - 240
3/3xE	16 – 240 / 6-50

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: See approval letter dated 21.01.2015
 Test reports: See approval letter dated 21.01.2015

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	
IEC 60092-360	2021-01	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 60332-3-22	2018-07	Tests on electric 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 60754-1:2011 +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

ÜNTEL - 0,6/1 kV - M2XCH VFD – No of cores x size [mm²] – IEC 60092/353, IEC 60332-1&3 A -CE - Month – Year or
 ÜNTEL – 1,8/3 kV - M2XCH VFD – No of cores x size [mm²] – IEC 60092/353, IEC 60332-1&3 A -CE - Month – Year



Job Id: **262.1-035377-1**
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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) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall 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