TYPE APPROVAL CERTIFICATE

Certificate No:
TAE00001JE
Revision No:
1

This is to certify:

That the Category cables

with type designation(s)
ETHERLINE® MARINE FRNC FC CAT.5 2X2XAWG22/7

Issued to
U.I. Lapp GmbH
Stuttgart, **Germany**

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

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Hamburg** on **2022-04-21**

This Certificate is valid until **2027-04-20**.
DNV local station: **Augsburg**

Approval Engineer: **Carsten Hunsalz**

for **DNV**

Digitally Signed By: Schaarmann, Arne
Location: DNV GL SE Hamburg, Germany
Signing Date: 2022-04-21

Arne Schaarmann
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.

Product description

Halogen free Simatic Net Industrial Ethernet FC ITP Marine Cable Cat 5 Plus

Type: ETHERLINE® MARINE FRNC FC CAT.5 2X2XAWG22/7

Conductor:	Stranded plain or tinned copper conductor
Insulation:	Polypropylene, PP-compound
Cabling:	4 wire twisted, plastic tape overlapped, inner jacket (FRNC)
Metallic covering:	Aluminum / polyester tape covered by a braid of tinned copper wire
Sheath:	SHF1

CAT 5E

Type Designation	AWG	Conductor cross section mm²	overall diameter in mm	sheath material
ETHERLINE® MARINE FRNC FC CAT.5 2X2XAWG22/7	22	0.34	6.5	SHF1

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.

Due to the low cross section of these cables, extra precautions shall be made during installation. In order to achieve a transmission link compliant with Category 5E, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

Work area cables Cat. 5E
Flame retardant in bunch; cat A.

Temperature window for transport and fixed installation: -40°C to +75°C

Type Approval documentation

Data sheet: L45467-J16-B26-EN,
U.I. Lapp TN2170889EN_03 and Etherline Marine Customer Date Sheet

Test reports: LEONI test report, dated of 30/31.05.2000, 18.02.2015, 24.04.2020, 20.01.2021,
U.I. Lapp CA-22-178 dated 24.03.2022, P-027/22TZ [EP] dated 28.03.2022,

Tests carried out

Standard	Release	General description	Limitation
IEC 61156-6	2020-04	Multicore and symmetrical pair/quad cables for digital communications – Part 6: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Work area wiring – Sectional specification	Reference to requirement for category cable: 5E (100MHz),
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	Bunch test Category A
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	Release	General description	Limitation
IEC 61034-1/2	2019-11	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

LAPP KABEL STUTTGART ETHERLINE® MARINE FRNC FC CAT.5 2X2XAWG22/7

Place of Production

DNV id: 172419

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