DNV·GL

Certificate No:
TAE000025S

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Leoni SeaLine Cat 5+ 9Y(ST)CH…….-100 LI GN FRNC

Issued to
LEONI Special Cables GmbH
FRIESOYTHE, Germany

is found to comply with
DNV GL 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 GL.

Issued at **Hamburg** on **2017-08-02**
This Certificate is valid until **2021-03-29**.
DNV GL local station: **Leer**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

Duy Nam Le
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.

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Job Id: **262.1-024617-1**
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Product description

LEONI SeaLine® Leoni part number (for example L45467-J816-B6-EN) Cat. 5+ cable

Conductor:	Stranded bare copper conductor
Insulation:	Polypropylen
Pair or quads:	Plastic tape and aluminium foil overlapped
Shield braiding:	Tinned copper wire braiding for the cores
Outer sheath:	Thermoplastic copolymer (FRNC)

AWG 22 (0,34 mm²); number or cores: 8 up to 64

9Y(ST)CH 4x2x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 2x4x2x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 4x4x2x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 8x4x2x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 4x4x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 8x4x0,34 mm²-100 LI GN FRNC
9Y(ST)CH 16x4x0,34 mm²-100 LI GN FRNC

AWG 24 (0,22 mm²); number of cores: 8 up to 64

9Y(ST)CH 4x2xo,22 mm²-100 LI GN FRNC
9Y(ST)CH 2x4x2x0,22 mm²-100 LI GN FRNC
9Y(ST)CH 4x4x2x0,22 mm²-100 LI GN FRNC
9Y(ST)CH 8x4x2x0,22 mm²-100 LI GN FRNC
9Y(ST)CH 4x4x0,22 mm²-100 LI GN FRNC
9Y(ST)CH 8x4x0,22 mm²-100 LI GN FRNC
9Y(ST)CH 16x4x0,22 mm²-100 LI GN FRNC

AWG 26 /0,15 mm²); number of cores: 8

LI09YS(ST)CH 4x2x 0,15mm²-100 GN FRNC

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 5, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

Max. link length: 100m for cable with 0,34 mm² (AWG 22), 80m for cable with 0,22 mm² (AWG 24), 60m for cable with 0,15 mm² (AWG 26)

Horizontal cables Cat.5+
Flame retardant in bunch; Cat A. Low smoke

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0403	2015-12	DNV GL Type approval program for data communication cables – category cables	Ref. IEC 61156-5 standard Category 5

Standard	Release	General description	Limitation
IEC 61156-5	2009-05	Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz – Horizontal floor wiring – Sectional specification	Reference to requirement for category cable: 5 (100MHz),
IEC 60332-3-22	2009-02	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 60754-2	2011-11	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	2013-07/09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke

Marking of product

"sequential length in meter" * LEONI SeaLine® * Leoni part number * Type designation CAT5+ * IEC 60332-3-22 * "internal order number"

Example:

00020m * LEONI SeaLine® * L45467-J816-B6-EN * 9Y(ST)CH 4x2x0,34 mm²-100 LI GN FRNC CAT5+ * IEC 60332-3-22 * 130180

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