DNV·GL

Certificate No:
TAE00003K9

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Category cables

with type designation(s)
Leoni SeaLine Cat 6 / Cat 6A, Leoni SeaLine Cat 7

Issued to
LEONI Cable(China)Co.,Ltd.
Changzhou, China

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 **2019-07-17**
This Certificate is valid until **2024-07-16**.
DNV GL local station: **Nanjing**

Approval Engineer: **Carsten Hunsalz**

for **DNV GL**

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.

Job Id: **262.1-029492-1**
Certificate No: **TAE00003K9**

Product description

LEONI SeaLine® Leoni part number (for example L45467-J416-C16-C) Cat. 6 / Cat. 6A and Cat. 7 cables

Conductor	Solid or stranded bare copper wire
Insulation	PE foam with skin
Cabling	Twisted pairs with aluminum foil and central strain relief
Metallic covering	Tinned copper wire braid (> 65 % coverage)
Inner-sheath (optional)	SHF1 (optional (if SWB or SWA))
Metallic covering (optional)	SWB - Steel wire braid (optional) SWA - Steel wire armouring (optional)
Sheath	SHF1

List refers to specification Version 2019-06-19 / F45052-F6500_China:

CAT 6 / CAT 6A / CAT 7 cables:

LEONI Type Designation nomenclature	AWG	Conductor cross section mm²	overall diameter in mm	metal covering *)	sheath material
02YSCH 4X2X0.60/1.4-100 LI PIMF	24	0.22	8.7	-	SHF1
02YSCH(Z)H 4X2X0.60/1.4-100 LI PIMF	24	0.22	11.3	SWB	SHF1
02YSCHBH 4X2X0.60/1.4-100 LI PIMF	24	0.22	12.4	SWA	SHF1
02YSCH 4X2X0.5/1.2-100 PIMF	24	0.21	7.5	-	SHF1
02YSCH(Z)H 4X2X0.5/1.2-100 PIMF	24	0.21	9.9	SWB	SHF1
02YSCHBH 4X2X0.5/1.2-100 PIMF	24	0.21	11.0	SWA	SHF1

*)

SWB	-	Steel wire braid
SWA	-	Steel wire armouring

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

Work area cables Cat. 6 / 6A and 7
Outer sheath SHF 1

Type Approval documentation

Data sheets: Specification Version 2019-06-19 / F45052-F6500_China
L45467-J416-C476-C-EN, L45467-J417-C36-C-EN,

Test reports Leoni dated 2018-12-03 / 2019-03-12 / 2019-03-20 / 2019-04-24

J415-C246 MPA dresden test report no 2012-b-3477/03
J415-C246 MPA dresden test report no 2012-b-5326/01
DNV Type Test _ 29052013 _ 26AWG Cat7 SHF1.pdf
MPA Dresden test report no 20180868/01
MPA Dresden test report no 20190412/01
Leoni dated 05.06. / 14.06. / 29.11.2018

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 6/6A and 7 (26AWG up to 60m working length)
IEC 61156-6	2010-01	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: 6 (250MHz), 6A (500MHz), 7 (600MHz),
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 60332-3-24	2018-07	Tests on electric cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables	Bunch test Category C
IEC 60754-1	2011-11	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	2011-11	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	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

"sequential length in meter" * LEONI LA SeaLine® * Leoni part number * nomenclature (type designation) CAT6 or CAT6A or CAT7 IEC 60332-3-22 SHF1 * "internal order number"

Example:
00020m * LEONI LA SeaLine® * L45467-J416-C16-C * 02YSCH 4X2X0.60/1.4-100 LI PIMF CAT7 IEC 60332-3-22 SHF1 * 192101234

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