



Certificate No:
TAE0000499

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
Hybrid cable L45467-J319-W6

Issued to
LEONI Special Cables GmbH
Friesoythe, Niedersachsen, 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.

Rated voltage (V) 150/250 and 50 (Data Pair)

Temp. class (°C) 90

Issued at **Hamburg** on **2021-07-02**

This Certificate is valid until **2026-07-01**.

for **DNV**

DNV local station: **Hamburg – CMC North/East**

Approval Engineer: **Carsten Hunsalz**

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.

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.



Form code: TA 251

Revision: 2021-03

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Product description

Hybrid cable L45467-J319-W6, 02YS 1X2X0.9/1.9-100 LI PIMF LIH-J CH 3X1X1.5 GY

Construction:

Shielded data pair 02YS 1X2X0.9/1.9-100 LI PIMF

Rated voltage: 50 V

Wire: Stranded bare copper wire (21 AWG)

Insulation: Foamed Polyethylene (PE) with skin (2 wires, WH and BN twisted to a pair with fillers in gaps)

Screen: Plastic tape overlapped, stranded tinned copper drain wire (24 AWG) in electrical contact with alulamine foil overlapped

Impedance: 100 ±15 Ohm (1 MHz)

Wire LIH-J CH 3X1X1.5 GY

Rated voltage: 150/250 V

Maximum operating conductor temperature: 90° C

Conductor: Stranded bare copper wire (16 AWG)

Insulation: Thermoplastic copolymer (FRNC)

Braiding: Plastic tape overlapped, shield braiding of tinned copper wires, coverage about 85%

Outer sheath: SHF2

Application/Limitation

Temperature window for transport and fixed installation: -40°C to +80°C

If power conductors are operated with voltage above 50V, as a safety measure the braid and/or screen of all copper instrument and data cables shall be connected to earth potential. Conversely, when power conductors are operated below 50V the earthed braid/screen is not required.

If one power core trips on overcurrent or short circuit, all power cores shall trip simultaneously.

All power, control and data elements of hybrid cable shall serve same consumer.

System designer shall ensure that hybrid cable provides sufficient signal integrity for reliable operation of equipment. Special care shall be taken if analogue signals are transmitted in combined power and data cable. Please refer to guidelines in IEC 60533(2015) Table B.1.

Type Approval documentation

Test report: LEONI test report, dated 2020-12-10 and 1/2021 witnessed by DNV

Specification: L45467-J319-W6-EN, F45052-F7600 2021-01-15

Tests carried out

Standard	Release	General description	Limitation
IEC 60228	2004-11	Conductors of insulated cables	
UL Style		10113	
UL Style		10233	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	partly
EN 50290-2-23	2013-11	Communication cables -- Part 2-23: Common design rules and construction - Polyethylene insulation for multi-pair cables used in access telecommunication networks: Outdoor cables	
EN 50290-2-26	2007-06	Communication cables -- Part 2-26: Common design rules and construction - Halogen free flame retardant insulation compounds	

Standard	Release	General description	Limitation
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.	partly
IEC 60332-1-2	2015-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	

Marking of product

"sequential length in meters" LEONI L * 02YS 1X2X0.9/1.9-100 LI PIMF 50V + LIH-J CH 3X1X1.5 150/250V * "internal lot number"

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