

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Data transmission cables and systems**

with type designation(s)

Sensor Cable LI7Y(ST)7Y 4X1X0.34 VZN BK

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 GL.**Issued at **Hamburg** on **2018-11-22**This Certificate is valid until **2023-11-21**.DNV GL local station: **Bremerhaven**for **DNV GL**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.



Product description

Flame retardant, mud resistant, ETFE insulated and ETFE sheathed sensor cable.

Type: LI7Y(ST)7Y 4X1X0.34 VZN BK

Rated voltage (peak): ≤ 10 V
Conductor: Stranded tinned copper wire (22 AWG)
Insulation: ETFE acc. DIN VDE 0207, compound type 7YI1
Core: 4 wires + Stranded tinned copper drain wire (24 AWG)
Wrapping: Alulamine foil overlapped
Outer sheath: ETFE acc. DIN VDE 0207, compound type 7YI1

Electrical data at 20°C

Conductor resistance: ≤ 55.9 Ohm/km
Capacitance (1 kHz) (pair): nom. 85 pF/m
Inductance (1 kHz) (pair): nom. 0.77 μ H/m
Capacitance (1 kHz) (one wire/ screen): nom. 166 pF/m
Inductance (1 kHz) (one wire/ screen): nom. 0.70 μ H/m
Capacitance (1 kHz) (all wire/ screen): nom. 500 pF/m
Inductance (1 kHz) (all wire/ screen): nom. 0.53 μ H/m

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.

Sensor Cable for transmission of signals up to 10V
Flame retardant in bunch; Cat A.

Permissible temperature range:
Transport and fixed installation: -100 °C (-148 °F) up to 135 °C (275 °F)
Installation and flexible use: -50 °C (-58 °F) up to 135 °C (275 °F)

Type Approval documentation

Test reports: Leoni, dated 2018/04/06/11
MPA No. 20180992/01, dated 2018-10-15
VDE No. 253713-TL6-1, dated 2018-09-11

Data sheet: L45551-P41-H9-EN

Tests carried out

Standard	Release	General description	Limitation
VDE 0207-6	2004-10	Insulating and sheathing compounds for cables and flexible cords – Fluorelated polymeres	
IEC 60332-1-2	2015-07	Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable	Procedure for 1 kW pre-mixed flame

Job Id: **262.1-029384-1**
Certificate No: **TAE00003A1**

Standard	Release	General description	Limitation
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
NEK TS 606	2016	Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification.	MUD sheath: IRM902+IRM903 100°C 7d. Calcium Bromide 70°C 56d. EDC 95-11 70°C 56d.

Marking of product

LEONI L * LI7Y(ST)7Y 4X1X0.34 VZN SW * ≤ 10 V * IEC 60332-3-22 * "internal order 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