DNV·GL

Certificate No:
TAE000025V

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Profibus 02YSH(ST)CH 1x2x0,75/2,55-150 LI __ FRNC,
Profibus 02YSH(ST)CHX 1x2x0,75/2,55-150 LI __ FRNC,
Profibus 02YSH(ST)CH 2x2x0,75/2,1-150 LI __ 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 **2017-09-14**
This Certificate is valid until **2022-09-13**.
DNV GL local station: **Leer**

Approval Engineer: **Carsten Hunsalz**

for **DNV GL**

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: **262.1-026230-1**
Certificate No: **TAE000025V**

Product description

Foamed polyethylene insulated, copper wire shielded and FRNC sheathed data cable

Rated voltage:	60 V
Temperature range:	-25° C up to 80° C
Conductor:	Stranded bare copper conductor
Insulation:	Foamed polyethylene (PE) with skin
Inner-Jacket:	Thermoplastic copolymer (FRNC)
Screen:	Tinned copper wire braiding
Outer sheath:	SHF1; thermoplastic copolymer (FRNC) for CH type SHF2; cross-linked copolymer (FRNC) for CHX type (outer sheath optional in blue colour)

Number of cores: 2 or 4 Cross-section: 22 AWG (0,34 mm²)

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.

Profibus
Flame retardant in bunch; Cat A. Low smoke

Type Approval documentation

Test report :	Leoni test report dated 21.05.2015, 21.07.2015, 16.11.2015 E6301-11-06; E6929-01-07; M6301-11-06; M6929-02-07 External tests acc. to table of contents
Data sheet:	L45467-G17-C46-EN, L45467-G17-C56-EN, L45497-F7299-A5-EN

Tests carried out

Standard	Release	General description	Limitation
EN 50290-2-23	2014-09	Communication cables - Part 2-23: Common design rules and construction - Polyethylene insulation for multi-pair cables used in access telecommunication networks: Outdoor cables	
EN 50290-2-27	2011-06	Communication cables -- Part 2-27: Common design rules and construction - Halogen free flame retardant thermoplastic sheathing compounds	
IEC 60092-360	2014-04	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables.	
IEC 60332-1-2	2004-07	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	
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

Standard	Release	General description	Limitation
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 61034-1/2	2005-04	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 SeaLine Profibus * Leoni part number * Type designation * IEC 60332-3-22 * "internal order number"

Example:

00020m * LEONI SeaLine Profibus * L45467-G17-C46-EN * 02YSH(ST)CH 1x2x0,75/2,55-150 LI VI FRNC * 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