

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

Cat. 6A/EA Copper Link

Issued to

**Sohome AS
Bergen, Norway**

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**IEC 61156-5 Ed. 2.1 (2012-12)****IEC 60603-7-51 (2010)****Application :****Link tested to category 6A/EA (500 MHz) consisting of:**

- Connector, category EA/6A (500MHz)
- Data communication cable, tested for cat. 7 (600MHz)

To be installed according to the manufacturers installation recommendation.**Voltage (kV)****Temp. class (°C)**This Certificate is valid until **2019-07-07**.Issued at **Høvik** on **2015-07-08**DNV GL local station: **Bergen**for **DNV GL**Approval Engineer: **Ludovico Gullifa**

**Marit Laumann
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: **262.1-010028-4**
Certificate No: **TAE000000B**

Product description

Link values* (cable and connector):

*Electrical data at 20°C

Frequency	Attenuation, Nom	NEXT
MHz	[dB/100m]	[dB]
1	4	65
4	4	64
10	5,5	57,8
16	6,9	54,5
20	7,7	53
31,25	9,6	50
62,5	13,8	45,1

Frequency	Attenuation, Nom	NEXT
MHz	[dB/100m]	[dB]
100	17,7	41,8
155	22,2	38,7
200	25,4	36,9
250	28,6	35,3
300	31,5	33,8
500	41,6	29,2

Cable:

Type(s): **Maritime LAN 7S S/FTP (PN:BC-10-001)**
Conductors: Solid Copper (Class 1) (AWG23)
Core insulation: Polyethylene foam skin
Screen: Al/polyester tape
Metal covering: Tinned, Copper wire braid
Outer sheath: SHF1

Number of cores x conductor diameter [mm] Overall diameter [mm]
4 x 2 x 0,56 7,8

Electrical data at 20°C:

Frequency	Attenuation, nom	NEXT
MHz	[dB/100m]	[dB]
1	1,8	100
4	3,4	100
10	5,4	100
16	6,8	100
20	7,7	100
31,25	9,6	100
62,5	13,7	100

Frequency	Attenuation, nom	NEXT
MHz	[dB/100m]	[dB]
100	17,4	100
155	21,9	94
200	25,0	92
250	28,1	90
300	30,9	89
600	44,8	85

Characteristic impedance: 100 Ohm

DC-loop resistance: $\leq 150 \Omega/\text{km}$

Connector information:

Connector type **BC-11-004 or BC-11-001**
RJ45 P/N 2623 Screened solid wire
Class; E_A (equal to cat. 6_A)
Frequency 500MHz
Ethernet speed $\leq 10\text{GB}$

Characteristic impedance

1-100MHz (100 ± 5) Ω
100-250MHz (100 ± 10) Ω
250-500MHz (100 ± 15) Ω

Cable Manufacturer:

DNV GL ref no. 10082991

Connector manufacturer:

DNV GL ref no. 1090506

Application/Limitation

Temperature window

Operation: - 40°C to +85°C

Installation: - 15°C to +50°C

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.

The information related to EN certification from recognised test institution is taken as information only

To be installed according to the manufacturers installation recommendation.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNV TAP 6-827.50-3	2010	DNV Type approval program for Maritime LAN – Horizontal cabling – Copper permanent link	
IEC 60332-3-24	2009-02	Tests on electric and optical fibre cables under fire conditions – Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category C	Bunch test Category C
IEC 61156-5	2013-01	Symmetrical pair/quad cables for digital communications – Symmetrical pair/quad cables with transmission characteristics up to 1000MHz horizontal floor wiring.	Cat. 7 – 600MHz
IEC 60603-7-51	2010-04	Connectors for electronic equipment - Part 7-51: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz	
ISO/IEC 11801	2010-04	Information technology – Generic cabling for customer premises, incl. Amd 1 and 2.	Ref. to requirement for link type: E _A /6 _A (500 MHz), for category cable: 7 (600MHz), for connector type: E _A (500 MHz),
EN 50173-1	2011-06	Information technology – Generic cabling systems – Part 1. General requirements.	
EN 50288-4-1	2013-06	Multi-element metallic cables used in analogue and digital communication and control - Part 4-1: Sectional specification for screened cables characterised up to 600MHz – Horizontal and building backbone cables	

Marking of product

Connector: Bergen Cabling <part no > Cat.6A Screened connector

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Cable: Bergen Cabling Maritime LAN - Cat.7 IEC 60332-3-24 – factory code - <part no > - order no - date – meter marking

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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 to be performed at least every second year.

END OF CERTIFICATE