

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

with type designation(s)

**LAN S/FTP Cat.6A stranded cable,****LAN S/FTP Cat.6A stranded cable with extra strong sheathing**

Issued to

**Sohome AS****SØREIDGREND, Norway**

is found to comply with

**DNV GL rules for classification – Ships, offshore units, and high speed and light craft****Application :****Data communication cable.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2018-10-18**for **DNV GL**This Certificate is valid until **2023-10-17**.DNV GL local station: **Bergen**Approval Engineer: **Ivar Bull****Marta Alonso Pontes**  
**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

Data communication cable. Installation / Horizontal cable

Type(s):	<b>LAN S/FTP Cat.6A stranded cable</b> <b>LAN S/FTP Cat.6A stranded cable with extra strong sheathing</b>
Standards:	Category 6A, Installation cable according to: EN 50173-1; EN 50288-4-1, ISO/IEC 11801; IEC 61156-5 Power over Ethernet(PoE/PoE+)
Conductors:	Plain solid copper or plain stranded copper 0.27 mm <sup>2</sup> , AWG23
Core insulation:	Polyethylene
Screen:	Al/polyester tape
Metal covering:	Tinned, Copper wire braid
Outer sheath:	SHF1

### Electrical properties:

DC loop resistance		≤ 138 Ω/km
Resistance unbalance		≤ 2%
Insulation resistance	(500 V)	≤ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz)	100 ± 5 Ω
Nominal velocity of propagation		0,76c
Propagation delay		≤ 450 ns/100 m
Delay skew		≤ 15 ns/100 m
Transfer impedance	at 1 MHz at 10 MHz at 30 MHz	≤ 10 μΩ /μ ≤ 8 μΩ /μ ≤ 10 μΩ /μ
Coupling attenuation		≥ 85 dB
Segregation classification	Acc. to EN 50174-2	"D"

### Electric data at 20 °C

F (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2,0	90	88	87	85	85	85	82
4	3,6	90	86	27	87	83	85	82
10	5,5	90	84	30	87	81	79	76
16	7,5	90	82	30	87	79	75	72
20	7,7	90	82	30	87	79	73	70
31.25	9,8	90	80	30	87	77	69	66
62.50	14,0	86	72	30	83	69	63	60
100	17,9	83	65	30	80	62	59	56
155.00	22,4	81	59	26	78	55	57	54
200.00	25,6	78	52	25	75	49	53	50
250.00	28,8	77	51	25	74	45	51	48
500.00	41,9	72	45	19	69	42	45	41

## 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.

### Temperature window

Operation:	- 40°C to +85°C
Installation:	- 15°C to +50°C

In order to achieve a transmission link compliant with Category 6A, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

## Type Approval documentation

Data sheets: Bergen Cabling Maritime LAN S/FTP Cat.6A stranded cable, dated 03.09.2018  
 Bergen Cabling Maritime LAN S/FTP Cat.6A stranded cable with extra strong sheathing, dated 03.09.2018  
 Test report: Draka test report summary dated 2004-01-30

## Tests carried out

Standard	Release	General description	Limitation
	2015-12	DNV GL Type Approval Programme DNVGL-CP-0403	
IEC 61156-5	2009-05	Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1 000 MHz - Horizontal floor wiring - Sectional specification	Reference to requirement for category cable: Cat 5e (100MHz), Cat 7 (600MHz)
ISO/IEC 11801	2010-04	Information technology – Generic cabling for customer premises, inc Amd 1 and 2.	Reference to requirement for category cable: Cat 5e (100MHz), Cat 7 (600MHz)
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	
IEC 60332-3-24	2009-11	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 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	2013-07 2013-09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Job Id: **262.1-010044-5**  
Certificate No: **TAE000038J**

### **Marking of product**

Bergen Cabling Maritime LAN Part. No: BC-10-025 LAN S/FTP Cat.6A stranded cable - CERTIFIED BY DNV GL TYPE APPROVAL PROGRAMME DNVGL-CP-0403 4x2/0,27mm - IEC 61156-5 - EN 50288-4-1 - IEC 60332-3-24 - LSHF-FR - Batch no. - Meter marking or

Bergen Cabling Maritime LAN Part. No: BC-10-024 Bergen Cabling Maritime LAN S/FTP Cat.6A stranded cable with extra strong sheathing - CERTIFIED BY DNV GL TYPE APPROVAL PROGRAMME DNVGL-CP-0403 4x2/0,27mm - IEC 61156-5 - EN 50288-4-1 - IEC 60332-3-24 - LSHF-FR - Batch no. - Meter marking

### **Name and Place of Manufacturer**

Draka Comteq Germany GmbH & Co. KG, Wohlaer Str. 15, D-90457 Nürnberg

### **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