

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Category cables

with type designation(s)

S/FTP Cat.7 VOKA MLAN 1000 DNV/1000 DNV SHF2/1000 Flex DNV/1000 Flex DNV SHF2
S/FTP Cat.7A VOKA MLAN 1500 DNV/1500 Flex DNV

Issued to

Vogtländisches Kabelwerk GmbH
Plauen, Sachsen, 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 **2020-05-14**

This Certificate is valid until **2025-05-13**.

DNV GL local station: **Magdeburg**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

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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

Types: VOKA MLAN 1000 DNV S/FTP Cat 7. 4x2xAWG 23/1
VOKA MLAN 1000 DNV SHF2 S/FTP Cat 7. 4x2xAWG 23/1
VOKA MLAN 1000 Flex DNV S/FTP Cat 7. 4x2xAWG 23/7
VOKA MLAN 1000 Flex DNV SHF2 S/FTP Cat 7. 4x2xAWG 23/7
VOKA MLAN 1500 DNV S/FTP Cat 7A. 4x2xAW G22/1
VOKA MLAN 1500 Flex DNV S/FTP Cat 7A. 4x2xAW G22/7

Conductor Solid or stranded bare copper wire
Insulation Foam skin SFS-PE
Cabling Twisted pairs with Al/Polyester foil
Metallic covering Tinned copper wire braid
Sheath SHF1 or SHF2 (VOKA MLAN 1000 Flex DNV SHF2)

Type	Number of cores x conductor cross-section	Overall diameter
VOKA MLAN 1000 DNV S/FTP Cat 7.	4x2xAWG 23/1	8.1±0.2 mm
VOKA MLAN 1000 DNV SHF2 S/FTP Cat 7.	4x2xAWG 23/1	8.5±0.2 mm
VOKA MLAN 1000 Flex DNV S/FTP Cat 7.	4x2xAWG 23/7	8.3±0.2 mm
VOKA MLAN 1000 Flex DNV SHF2 S/FTP Cat 7.	4x2xAWG 23/7	8.5±0.2 mm

f in MHz	Attenuation (dB/10m) nom.	NEXT (dB) nom.	ACR (dB/10m) nom.	ELFEXT (dB/100m) nom.	RL (dB) nom.
1	1,7	105	103	95	25
4	3,2	105	102	93	28
10	5,2	105	100	92	30
16	6,5	105	98	91	30
20	7,3	105	98	90	30
31,25	9,4	105	96	86	30
62,5	13,6	103	89	82	30
100	17,0	100	83	77	30
155	22,2	98	76	73	28
200	24,3	95	71	70	26
300	30,2	93	73	67	25
400	35,2	90	55	64	24
500	39,1	87	48	62	23
600	43,5	85	41	60	23
900	55,2	81	26	53	21
1000	58,1	80	22	50	20

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Type	Number of cores x conductor cross-section	Overall diameter
VOKA MLAN 1500 DNV S/FTP Cat 7A.	4x2xAWG 22/1	8.7±0.3 mm

f in MHz	Attenuation (dB/10m) nom.	NEXT (dB) nom.	ACR (dB/10m) nom.	ELFEXT (dB/100m) nom.	RL (dB) nom.
1	1,7	110	108	105	25
4	3,2	110	107	103	28
10	5,0	110	105	100	30
16	6,3	110	104	98	30
20	7,0	110	103	95	30
31,25	8,9	110	101	93	30
62,5	13,0	110	97	90	30
100	16,2	108	92	85	30
155	21,2	105	84	82	29
200	23,0	102	79	78	28
300	28,5	100	71	70	27
500	36,2	96	60	63	26
600	40,7	93	52	60	25
1000	54,2	88	34	52	24
1200	57,9	85	27	42	23
1500	67,2	83	16	30	21

Type	Number of cores x conductor cross-section	Overall diameter
VOKA MLAN 1500 Flex DNV S/FTP Cat 7A.	4x2xAWG 22/7	9.0±0.3 mm

f in MHz	Attenuation (dB/10m) nom.	NEXT (dB) nom.	ACR (dB/10m) nom.	ELFEXT (dB/100m) nom.	RL (dB) nom.
1	1,8	110	108	105	25
4	3,3	110	107	103	28
10	5,1	110	105	100	30
16	6,4	110	104	98	30
20	7,2	110	103	95	30
31,25	9,1	110	101	93	30
62,5	13,3	110	97	90	30
100	16,5	108	91	85	30
155	21,5	105	83	82	29

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200	23,4	102	78	78	28
300	28,9	100	71	70	27
500	36,5	96	59	63	26
600	41,0	93	52	60	24
1000	54,6	88	33	52	23
1200	58,4	85	27	42	22
1500	67,8	83	15	30	20

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.

Due to the low cross section of these cables, extra precautions shall be made during installation. In order to achieve a transmission link compliant with Category 7/7A, cables shall be installed with suitable termination equipment according to manufacturer's recommendations.

Horizontal cables Cat. 7/7A (can also be used for work area wiring)
Flame retardant in bunch; cat A. Low smoke

Temperature window

Operation: - 20°C to +75°C SHF1
- 50°C to +80°C SHF2

Installation: 0°C to +50°C

Type Approval documentation

Data sheet: TDB 09-19/24, dated 24.09.19
TDB 09-19/23, dated 24.09.19
TDB 09-19/25, dated 24.09.19
TDB 05-19/16, dated 22.05.19
TDB 05-19/17, dated 22.05.19
TDB 02-20/05, dated 19.02.20

Test reports: VOKA Type Test Report No. 30/2018, dated 23.07.2018
VOKA KAT.7A Ring Labormessung, dated 28.10.2019
VOKA Type Test Report No. 3/2010, dated 26.01.2010

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0403	2015-12	DNV GL Type approval program for Data communication cables – category cables	Ref. IEC 61156-5 standard Category 7/7A
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 wiring – Sectional specification	Reference to requirement for category cable: 7 (600MHz), 7A (1000MHz)

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Standard	Release	General description	Limitation
ISO/IEC 11801	2010-04	Information technology – Generic cabling for customer premises, inc Amd 1 and 2.	Reference to requirement for category cable: 7 (600MHz), 7A (1000MHz)
IEC 60332-3-22	2018-07	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
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	2013-06	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke Light transmittance >60%

Marking of product

Example:

VOKA-MLAN 1000 DNV S/FTP FRNC 4PR AWG 23/1 Cat.7 ISO/IEC 11801 DNV GL TAE00003V0
IEC 60332-3-22 IEC 60754-1/2 CE xxxxxm – Batch No.

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