DNV·GL

Certificate No:
TAE00001KY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
ÖLFLEX HEAT 125 MC

Issued to
U.I. Lapp GmbH
Stuttgart, 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.

Voltage class (V)	**300/500 + 450/750**
Temp. class (°C)	**125**

This Certificate is valid until **2021-12-19**.

Issued at **Hamburg** on **2016-12-20**
DNV GL local station: **Augsburg**

for **DNV GL**

Approval Engineer: **Carsten Hunsalz**

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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id:
Certificate No: **TAE00001KY**

Product description

Type: ÖLFLEX® HEAT 125 MC
Rated voltage: Up to 1.0mm² U_0/U 300/500 V from 1.5mm² U_0/U 450/750 V
Temperature range: -40 °C to +125 °C fixed installation (20.000 h)

Construction:

Conductors: Tinned flexible stranded copper class 5
Core insulation: Cross-linked polyolefin copolymer insulation EI5
Outer sheath: Cross-linked polyolefin copolymer insulation EM 104

Article No.	Number of cores x conductor cross-section	Overall Diameter	Overall Diameter Tolerance
	mm²	mm	
1024300	2 X 0,5	6,0	-0,4/+0,5
1024301	3 G 0,5	6,3	-0,4/+0,5
1024307	2 X 0,75	6,4	-0,4/+0,5
1024308	3 G 0,75	6,8	-0,4/+0,5
1024309	4 G 0,75	7,4	-0,4/+0,5
1024310	5 G 0,75	8,3	-0,4/+0,5
1024311	7 G 0,75	9,0	-0,4/+0,5
1024315	2 X 1	6,6	-0,4/+0,5
1024316	3 G 1	7,0	-0,4/+0,5
1024317	4 G 1	7,8	-0,4/+0,5
1024318	5 G 1	8,6	-0,4/+0,5
1024319	7 G 1	9,5	-0,4/+0,5
1024320	12 G 1	12,8	-0,5/+0,6
1024323	2 X 1,5	7,6	-0,4/+0,5
1024324	3 G 1,5	8,3	-0,4/+0,5
1024325	4 G 1,5	9,0	-0,4/+0,5
1024326	5 G 1,5	10,1	-0,5/+0,6
1024327	7 G 1,5	11,2	-0,5/+0,6
1024328	12 G 1,5	15,1	-0,6/+0,7
1024333	2 X 2,5	9,0	-0,4/+0,6
1024334	3 G 2,5	9,7	-0,4/+0,6
1024335	4 G 2,5	10,8	-0,5/+0,7
1024336	5 G 2,5	11,9	-0,5/+0,7
1024337	7 G 2,5	13,2	-0,5/+0,7
1024341	4 G 4	12,7	-0,5/+0,7
1024342	5 G 4	14,0	-0,5/+0,7
1024346	4 G 6	14,1	-0,5/+0,7
1024347	5 G 6	15,8	-0,6/+0,8

G = with protective earth conductor green/yellow
X = without protective earth conductor

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.

Type Approval documentation

Job Id:
Certificate No: **TAE00001KY**

Test report : LAPP KOREA LLC LKTR 161107 7-Nov-16
VDE 562800-9021-0001/207856_1 /_2 /_3 /_4 /_5 /_6

Specification: DB1024300EN

Tests carried out

Standard	Release	General description	Limitation
DNVGL-CP-0399	2016-03	DNV GL Type approval program for Electric cables	partly
IEC 60228	2004-11	Conductors of insulated cables	
EN 50363-5	2006-10	Insulating, sheathing and covering materials for low voltage energy cables – Part 5: Halogen-free, cross-linked insulating compounds	
EN 50525-3-41	2012-01	Electric cables - Low voltage energy cables of rated voltages up to and including 450/750 V. Cables with special fire performance - single core non-sheathed cables with halogen-free crosslinked insulation, and low emission of smoke	
EN 50525-2-51	2012-01	Electric cables. Low voltage energy cables of rated voltages up to and including 450/750 V (U0/U). Cables for general applications.	
EN 50264-1	2009-03	Railway applications - Railway rolling stock power and control cables having special fire performance -- Part 1: General requirements	
IEC 60332-1-2	2004-7	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 IEC 60332-3-24 IEC 60332-3-25	2009-02	Tests on electric cables under fire conditions - Part 3-22/24/25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A/C/D	Bunch test Category A/C/D
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 60684-2	2011-08	Clause 45.2 Methods of determination of low levels of fluorine	HF max 0,1% [0,02% can be detected]
EN 50305	2002-07	Clause 9.2 Toxity	
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:
Certificate No: **TAE00001KY**

Standard	Release	General description	Limitation
NEK TS 606	2016	Cables for offshore installations. Halogen-free and/or mud resistant. Technical specification.	Mud resistance test category c for cable types with EM 104 MUD sheath: IRM902/IRM903 100°C 7d. Calcium Bromide 70°C 56d. EDC 95-11 base oil 70°C 56d.

Marking of product

LAPP KABEL STUTTGART ÖLFLEX® HEAT 125 MC * size * voltage * IEC 60332-3-22/24/25
CE RV MM

Place of Production

LAPP KOREA LLC., Hwaseong, Korea

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