

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**with type designation(s)
Special cable BWTS 105 C

Issued to

Miltronic AB
Nyköping Södermanlands Län, Swedenis found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Special power cable for BWTS UV lamps.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Rated voltage (kV) 1,8/3****Temp. class (°C) 90**Issued at **Høvik** on **2017-06-20**This Certificate is valid until **2022-06-19**.DNV GL local station: **Stockholm**for **DNV GL**Approval Engineer: **Ivar Bull**

Andreas Kristoffersen
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

Special power cable for BWTS UV lamps 1,8/3kV.

Construction:

Conductors: Tinned copper class 5
Core insulation: Cross linked HF polymer
Inner covering: Polyester tape
Metal covering: Tinned copper braid
Outer sheath: SHF2

3 variants: 1, 8 and 10 cores with conductor cross section 1,5 mm².

1 core for use between junction box and UV-lamp.

8- and 10-cores for use between lamp power supply and junction box.

Application/Limitation

Onboard DNV GL classed vessels these special cables shall only be used as BWTS UV cable.

DNV GL rules and IEC 60092-353 requires minimum cross sectional area 10mm² for 1,8/3kV cables. These special constructions with 1,5mm² conductors are accepted as special cable for UV lamps.

Type Approval documentation

Tests carried out

	Release	General description	Limitation
IEC 60092-350	2014-08	General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
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 60092-353	2016-09	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	1,5mm ² conductors are accepted for special UV lamp cable.
IEC 60332-1-2	2004-07	Tests on electric and optical fibre cables under fire conditions – Part 1-1: Test for vertical flame propagation for a single insulated wire or cable – Apparatus	
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

Job Id: **262.1-024350-1**
Certificate No: **TAE000021H**

	Release	General description	Limitation
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%

Marking of product

LAPP KABEL - SPECIAL CABLE BWTS 105 C - Size - 1,8/3kV - Year and month

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