Certificate No:
TAE00004KM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
Hybrid Cable Li9YC11Y 4x1,5 + (2x0,5)C + (2x1,0)C UL21209

Issued to
Helukabel GmbH
Hemmingen, **Germany**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Hybrid cable, combined control, instrumentation and power. For use as „Power servo cable for propulsion engines“.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Rated voltage (V)	**0,6/1 kV**
Temp. class (°C)	**90**

Issued at **Høvik** on **2022-10-24**
This Certificate is valid until **2027-10-23**.
DNV local unit: **Augsburg**

Approval Engineer: **Carsten Hunsalz**

for **DNV**

Frederik Tore Elter
Head of Section

Product description

Type: Hybrid Cable Li9YC11Y 4x1,5 + (2x0,5)C + (2x1,0)C UL21209

Construction:

Operating voltage:	max. 0,6/1 kV AC (for all conductors)
Conductor:	Bare copper, Class 5
Insulation:	Polypropylene PP
Pair screen:	Tinned copper braiding for 2x1mm^2 and 2x0,5mm^2 pairs
Screening:	Braiding of tinned copper wire with polyester fleece
Outer sheath:	TMPU

Application/Limitation

For use as „Power servo cable for propulsion engines“.

Operation temperature for fixed installation: -50°C to +90°C

If power conductors are operated with voltage above 50V, as a safety measure the braid and/or screen of all copper instrument and data cables shall be connected to earth potential. Conversely, when power conductors are operated below 50V the earthed braid/screen is not required.

If one power core trips on overcurrent or short circuit, all power cores shall trip simultaneously.

All power, control and data elements of hybrid cable shall serve same consumer.

System designer shall ensure that hybrid cable provides sufficient signal integrity for reliable operation of equipment. Special care shall be taken if analogue signals are transmitted in combined power and data cable. Please refer to guidelines in IEC 60533(2015) Table B.1.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
UL Style		11657	
UL Style		21209	
IEC 60228	2004-11	Conductors of insulated cables	
EN 50290-2-25	2013-11	Communication cables - Part 2-25: Common design rules and construction - Polypropylene insulation compounds	
EN 50363-10-2	2005-11	Insulating, sheathing and covering materials for low voltage energy cables -- Part 10-2: Miscellaneous sheathing compounds - Thermoplastic polyurethane	
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	

Marking of product

HELUKABEL° TOPSERV° PUR 4 G 1,5 + (2 x 0,5 C) + (2 x 1,0 C) C E170315 cRUus AWM STYLE 21209 VW-1 AWM I/II A/B 90°C 1000V FT1 / DNV TAE00004KM - DESINA - manufacturing number CE

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

Certificate No:
TAE00004KN

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Data transmission cables and systems

with type designation(s)
Li9YC11Y 3x2x0,25 + 2x0,5qmm UL21209

Issued to
Helukabel GmbH
Hemmingen, **Germany**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

For use as „Data transmission encoder cable for propulsion engines“.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2022-10-24**
This Certificate is valid until **2027-10-23**.
DNV local unit: **Augsburg**

Approval Engineer: **Carsten Hunsalz**

for **DNV**

Frederik Tore Elter
Head of Section

Product description

Type: Li9YC11Y 3x2x0,25 + 2x0,5qmm UL21209

Construction:

Operating voltage:	max. 300 V AC
Conductor:	Bare copper, Class 5 (0,5 mm^2) Bare copper, 14-strand (0,25 mm^2)
Insulation:	Polypropylene PP
Screening:	Braiding of tinned copper wire with polyester fleece
Outer sheath:	TMPU

Application/Limitation

For use as „Data transmission encoder cable for propulsion engines“.

Operation temperature for fixed installation: -50°C to +90°C

All cables shall serve the same consumer.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
UL Style		11658	
UL Style		21209	
IEC 60228	2004-11	Conductors of insulated cables	
EN 50290-2-25	2013-11	Communication cables - Part 2-25: Common design rules and construction - Polypropylene insulation compounds	
EN 50363-10-2	2005-11	Insulating, sheathing and covering materials for low voltage energy cables -- Part 10-2: Miscellaneous sheathing compounds - Thermoplastic polyurethane	
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	

Marking of product

HELUKABEL° TOPGEBER PUR 3 x 2 x 0,25 + 2 x 0,5 QMM C E170315 cRUus AWM STYLE 21209 VW-1 AWM I/II A/B 90°C 300V FT1 / DNV TAE00004KN - DESINA - manufacturing number CE

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
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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