

TYPE APPROVAL CERTIFICATE

This is to certify:**That the High Voltage Cable**with type designation(s)
MPRXCX & MPRXCX FLEXISHIP

Issued to

Nexans Deutschland GmbH
Mönchengladbach Nordrhein-Westfalen, Germanyis 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.****Rated voltage (kV) 3,6/6 & 6/10**
Temp. class (°C) 90Issued at **Hamburg** on **2017-11-16**This Certificate is valid until **2022-11-15**.
DNV GL local station: **Essen**Approval Engineer: **Carsten Hunsalz**for **DNV GL**.....
Oliver Darley
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

Type: MPRXCX & MPRXCX FLEXISHIP 3,6/6 & 6/10 kV
 Conductors: Plain or tinned copper – stranded class 2 or class 5
 Cond. screening: Extruded semi-conductor
 Core insulation: XLPE
 Insul. screening: Semi-conductor extruded or lapped + copper tape or plain or tinned copper wire braid
 Inner covering: Halogen free
 Metal covering: Plain or tinned copper braid
 Outer sheath: SHF1

| Number of cores x conductor cross-section mm ² | Overall Diameter Min. mm | Overall Diameter Max. mm |
|--|-----------------------------|-----------------------------|
| MPRXCX | | |
| 3,6/6 kV | | |
| 1 x 10 | 17,0 | 19,0 |
| 1 x 16 | 18,0 | 20,5 |
| 1 x 25 | 19,0 | 21,5 |
| 1 x 35 | 20,5 | 23,0 |
| 1 x 50 | 21,5 | 24,0 |
| 1 x 70 | 23,5 | 26,0 |
| 1 x 95 | 25,0 | 28,0 |
| 1 x 120 | 27,0 | 30,5 |
| 1 x 150 | 28,5 | 32,0 |
| 1 x 185 | 30,0 | 33,5 |
| 1 x 240 | 33,5 | 37,0 |
| 1 x 300 | 36,0 | 39,5 |
| 6/10 kV | | |
| 1 x 25 | 22,0 | 24,5 |
| 1 x 35 | 23,0 | 26,0 |
| 1 x 50 | 24,0 | 26,5 |
| 1 x 70 | 26,0 | 29,0 |
| 1 x 95 | 27,5 | 31,0 |
| 1 x 120 | 29,5 | 33,0 |
| 1 x 150 | 31,0 | 34,5 |
| 1 x 185 | 33,0 | 36,5 |

| Number of cores x conductor cross-section mm ² | Overall Diameter Min. mm | Overall Diameter Max. mm |
|--|-----------------------------|-----------------------------|
| 1 x 240 | 35,5 | 39,5 |
| 1 x 300 | 38,0 | 42,0 |
| MPRXCX FLEXISHIP | | |
| 3,6/6 kV | | |
| 3 x 16 | 40,0 | 44,0 |
| 3 x 25 | 43,0 | 47,5 |
| 3 x 35 | 45,5 | 50,0 |
| 3 x 50 | 47,5 | 52,5 |
| 3 x 70 | 51,5 | 56,5 |
| 3 x 95 | 55,5 | 61,0 |
| 3 x 120 | 59,5 | 65,0 |
| 3 x 150 | 62,5 | 69,0 |
| 3 x 185 | 65,5 | 72,0 |
| 3 x 240 | 72,0 | 79,0 |
| 6/10 kV | | |
| 1 x 16 | 20,5 | 23,0 |
| 1 x 25 | 21,5 | 24,5 |
| 1 x 35 | 22,5 | 25,0 |
| 1 x 50 | 24,0 | 27,0 |
| 1 x 70 | 26,0 | 29,0 |
| 1 x 95 | 28,5 | 31,5 |
| 1 x 120 | 30,0 | 33,0 |
| 1 x 150 | 32,0 | 35,5 |
| 1 x 185 | 34,0 | 37,5 |
| 1 x 240 | 37,5 | 41,5 |
| 1 x 300 | 39,5 | 44,0 |
| 3 x 16 | 40,0 | 44,5 |
| 3 x 25 | 42,5 | 47,5 |
| 3 x 35 | 45,0 | 50,0 |
| 3 x 50 | 48,5 | 53,5 |
| 3 x 70 | 52,5 | 57,5 |
| 3 x 95 | 57,5 | 63,0 |
| 3 x 120 | 60,5 | 66,5 |
| 3 x 150 | 64,5 | 71,0 |

Job Id: **262.1-006567-7**
 Certificate No: **TAE00002BV**

| Number of cores x conductor cross-section | Overall Diameter Min. | Overall Diameter Max. |
|---|-----------------------|-----------------------|
| mm ² | mm | mm |
| 3 x 185 | 68,0 | 75,0 |
| 3 x 240 | 76,5 | 84,0 |
| 6/10 kV | | |
| 1 x 16 | 22,0 | 25,0 |
| 1 x 25 | 23,5 | 26,0 |
| 1 x 35 | 24,5 | 27,5 |
| 1 x 50 | 26,0 | 29,5 |
| 1 x 70 | 28,0 | 31,5 |
| 1 x 95 | 30,5 | 33,5 |
| 1 x 120 | 32,0 | 35,5 |
| 1 x 150 | 34,0 | 37,5 |
| 1 x 185 | 35,5 | 39,5 |

| Number of cores x conductor cross-section | Overall Diameter Min. | Overall Diameter Max. |
|---|-----------------------|-----------------------|
| mm ² | mm | mm |
| 1 x 240 | 39,5 | 44,0 |
| 1 x 300 | 41,0 | 45,5 |
| 6/10 kV | | |
| 3 x 16 | 44,0 | 49,0 |
| 3 x 25 | 46,5 | 51,5 |
| 3 x 35 | 49,0 | 54,0 |
| 3 x 50 | 52,5 | 57,5 |
| 3 x 70 | 56,5 | 62,0 |
| 3 x 95 | 61,0 | 67,0 |
| 3 x 120 | 64,0 | 70,5 |
| 3 x 150 | 68,0 | 75,0 |
| 3 x 185 | 72,5 | 79,5 |
| 3 x 240 | 80,0 | 87,5 |

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.

High voltage power.
 Flame retardant in bunch Cat. A. Halogen free. Low smoke.

Type Approval documentation

Data sheets: [Dimension of MPRXCX SHF1 & SHF2 3,6/6 kV dated 2009-02-16](#)
[Dimension of MPRXCX SHF1 & SHF2 6/10 kV dated 2009-02-16](#)
[Dimension of MPRXCX FLEXISHIP SHF1 & SHF2 3,6/6 kV dated 2009-02-16](#)
[Dimension of MPRXCX FLEXISHIP SHF1 & SHF2 6/10 kV dated 2009-02-16](#)

Tests carried out

| Standard | 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 60092-354 | 2014-08 | Electrical installations in ships - Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV) | |
| 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. | |

| Standard | Release | General description | Limitation |
|----------------|--------------------|---|---|
| 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 60332-3-22 | 2009-02 | 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 | Charred portion of sample does not exceed 2,5m above bottom edge of burner. |
| 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 – Determination of the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH 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% |
| 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

NEXANS MPRXCX or MPRXCX FLEXISHIP – size – 3,6/6 kV or 6/10 kV – 90C – IEC 60092-354 – IEC 60332-3-22- CE(Symbol) Order-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