

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **Low Voltage Cable**

with type designation(s)

XIOI(i) or XIOI(c) or XIOI(i/c) or XICI(i) or XICI(c) or XICI(i/c), XIOI(i)-FLEX or XIOI(c)-FLEX or XIOI(i/c)-FLEX or XICI(i)-FLEX or XICI(c)-FLEX or XICI(i/c)-FLEX

Issued to

Nexans (Suzhou) Cable Solutions Co.,Ltd
Suzhou, Jiangsu, China

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Control and instrumentation. Fire resistant.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Type

Rated voltage

Temp. class

(V)

(°C)

XIOI(i) or XIOI(c) or XIOI(i/c) or XICI(i) or XICI(c) or XICI(i/c)

250

90

XIOI(i)-FLEX or XIOI(c)-FLEX or XIOI(i/c)-FLEX or XICI(i)-FLEX or XICI(c)-FLEX or XICI(i/c)-FLEX

250

90

Issued at **Høvik** on **2024-09-03**

This Certificate is valid until **2029-09-02**.

for **DNV**

DNV local unit: **Shanghai**

Approval Engineer: **Ivar Bull**

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Frederik Tore Elter
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

XIOI(I) or XIOI(C) or XIOI(I/C) or XICI(I) or XICI(C) or XICI(I/C),
XIOI(I)-FLEX or XIOI(C)-FLEX or XIOI(I/C)-FLEX or XICI(I)-FLEX or XICI(C)-FLEX or XICI(I/C)-FLEX

Conductor :	Stranded annealed tinned or bare copper conductor, Class 2 or Class 5 (-FLEX type)
Insulation :	XLPE + Mica tape
Individual screen:	AL/PET or Cu/PET tape with tinned copper drain wire [(I) and (I/C) type]
Collective screen :	AL/PET or Cu/PET tape with tinned copper drain wire [(C) and (I/C) type]
Inner sheath :	SHF1
Armour :	Copper wire braid (O) or Galvanized steel wire braid (C)
Outer sheath :	SHF1

No of elements	Conductor cross section (mm ²)
2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 19, 24, 27, 30, 37, 40, 44 Cores	1, 1,5 2,5
1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 19, 24, 27, 30, 33, 37 Pairs	0,75 1, 1,5 2,5
1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 19, 24 Triples	0,75 1, 1,5 2,5

Application/Limitation

This type of cable is fire resistant in accordance with IEC Publication 60331.

The requirement of SOLAS Chapter II-1 Part D Reg.45, 5.2 to limit Fire Propagation along Bunches of cables or wires are fulfilled without any additional measure.

Type Approval documentation

Tests carried out

Standard	Release	General description	Limitation
DNV CP-0399	2021-08	Electric cables.	
IEC 60092-350	2020-01	Electrical installations in ships - Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications	
IEC 60092-360	2021-01	Electrical installations in ships - Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables	
IEC 60092-376	2017-05	Cables for control and instrumentation circuits 150/250 V (300 V)	
IEC 60331-21	1999-04	Tests for electric cables under fire conditions – Circuit integrity – Part 21: Procedures and requirements – Cables of rated voltage up to and including 0,6/1,0 kV	Minimum 90 min
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	Charred portion of sample does not exceed 2,5m above bottom edge of burner.
IEC 60754-1	2019-11	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	2019-11	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	2019-11	Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus Part 2: Test procedure and requirements	Low smoke Light transmittance >60%

Standard	Release	General description	Limitation
UL 1581	2020	UV sunlight resistant	720hrs
CSA C22.2 No. 03	2019	5.11 Flexibility at any specified temperature	Cold bend: -40°C
CSA C22.2 No. 03	2019	5.12 Abnormal low temperature – impact	Cold impact: -35°C
Nexans test specification based on test procedure IEC 60811-404	2012-03	Optional Oil resistant test	IRM 902 4hrs at 70°C Max change TS: +40% Max change E@B: +40%

Marking of product

Voltage rating – Cable type – Size – Nexans 488 – IEC 60331 – IEC 60332-3-22 – YYYY – MM – meter mark

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type Approval Certificate are complied with and that no alterations are made to the design and/or the material of product.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Check of the results from Production Sample Tests(PST) and Routine Tests(RT) (if not available, PST and RT are to be carried out)
- Review of type approval documentation
- Review of possible changes in design, material 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