Certificate No:
TAE00004JS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Cable

with type designation(s)
BXOI (c), BXOI (ic)

Issued to
Sindutch Cable Manufacturer Sdn. Bhd.
Alor Gajah, Melaka, **Malaysia**

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

Application :

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

Type	Rated voltage (V)	Temp. class (°C)
BXOI (c)	150/ 250	90
BXOI (ic)	150/ 250	90

Issued at **Høvik** on **2022-09-02**
This Certificate is valid until **2027-09-01**.
DNV local station: **Kuala Lumpur Verification**

Approval Engineer: **Georgy Abramenko**

for **DNV**

Marta Alonso Pontes
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

Instrument cables designed according to IEC 60092-376
Type: BXOI (c) & BXOI (ic) 150/ 250 V

Construction:

Conductors:	Tinned or Plain annealed stranded copper, Class 2 or 5
Core insulation:	Mica glass tape (MGT) + XLPE
Individual screen*	Aluminium backed polyester tape in contact with tinned annealed drain wire followed by a polyester tape wrapped over the screening tape
Overall screen:	Aluminium backed polyester tape in contact with tinned annealed drain wire followed by a polyester tape wrapped over the screening tape
Metal covering:	Tinned or Plain annealed copper wire braid
Outer sheath:	SHF1

*Provided in BXOI (ic) cables

Collective screen (c):

No of Elements:	Cross sectional area [mm^2]
Pairs, Triads: 1 2 4 7 10 12 14 19 27 37	0,5 0,75 1 1,5 2,5

Individual & Collective screen (ic):

No of Elements:	Cross sectional area [mm^2]
Pairs, Triads: 1 2 3 4 7 10 14 19 24 27 37	0,5 0,75 1 1,5 2,5

Application/Limitation

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

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

Tests carried out

Standard	Release	General description	Limitation
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 60331-1	2018-03	Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1 kV	120 minutes @ 830 °C + 15 minutes cooling down
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 0,6/1 kV	
IEC 60332-1-2:2004+AMD1:2015	2004	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	Flame retardant small scale

Standard	Release	General description	Limitation
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 1: Determination of the halogen acid gas content	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%

Marking of product

DRAKA BXOI-c 150/250V _x _x _MM2 IEC60332-3-22, IEC60331-21 YR-YYYY HALOGEN FREE, FIRE RESISTANT, or:
DRAKA BXOI-ic 150/250V _x _x _MM2 IEC60332-3-22, IEC60331-21 YR-YYYY HALOGEN FREE, FIRE RESISTANT, or:
PRYSMIAN BXOI-c 150/250V _x _x _MM2 IEC60332-3-22, IEC60331-21 YR-YYYY HALOGEN FREE, FIRE RESISTANT, or:
PRYSMIAN BXOI-ic 150/250V _x _x _MM2 IEC60332-3-22, IEC60331-21 YR-YYYY HALOGEN FREE, FIRE RESISTANT

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 Production Sample Tests (PST) and Routine Tests (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensure 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