

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Electric Power Cable**

with type designation(s)

XAI 0,6/1 kV, XAI-VFD(EMC) 0,6/1 kV, XAI-VFD(EMC) 1,8/3 kV

Issued to

Controlcavi Industria S.r.l.
Ferentino FR, Italy

is found to comply with

Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**Application :****General power and lighting. Control.****Flame retardant Cat. A. Halogen free. Low smoke. Low temp. (-40 °C).****Ozone and UV resistant.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Voltage class (kV)	Temp. class (°C)
XAI 0,6/1 kV	0,6/1	90
XAI-VFD(EMC) 0,6/1 kV	0,6/1	90
XAI-VFD(EMC) 1,8/3 kV	1,8/3	90

This Certificate is valid until .

Issued at **Høvik** on **2015-08-25**DNV GL local station: **Milan**Approval Engineer: **Ivar Bull**for **DNV GL**

Marit Laumann
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

XAI 0,6/1 kV,
XAI-VFD(EMC) 0,6/1 kV,
XAI-VFD(EMC) 1,8/3 kV

Construction:
Conductors: Plain or tinned copper flexible class 2 or class 5 IEC 60228
For VFD(EMC): Earth conductors
Core insulation: XLPE
Filler: Polyolefine compound
Separator: Halogen free tape (fiber glass tape > 10 mm²)
Metal covering: Plain or tinned copper wire braid or galv. steel wire braid.
For VFD(EMC): Plain copper tape.
Outer sheath: SHF1

XAI 0,6/1 kV,

No of Elements:	Cross sectional area [mm ²]
1	6 10 16 25 35 50 70 95 120 150 185 240 300
2	1,5 2,5 4 6 10 16 25 35 50 70 95
3	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
4	1,5 2,5 4 6 10 16 25 35 50 70 95 120 150 185 240 300
5 7 10 12 14 16 19 24 27 30 37	1,5 2,5

XAI-VFD(EMC) 0,6/1 kV and XAI-VFD(EMC) 1,8/3 kV:

No of Elements:	Cross sectional area power cores/earth conductors [mm ²]
3	50/10 70/16 95/16 120/25 150/25 185/50 240/50 300/50

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.

Type Approval documentation

Tests carried out

Standard	Issued	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	2011-08	Electrical installations in ships - Part 353: Power cables for rated voltages 1 kV and 3 kV	
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	Bunch test Category A
IEC 60332-1-2	2006-07	Tests on electric cables under fire conditions. Test for vertical flame propagation for a single insulated wire or cable.	
IEC 60754-1	2011-11	Test on gases evolved during combustion of materials from cables – Determination of the amount of halogen acid gas	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
IEC 61034-1/2	2013-07/09	Measurement of smoke density of cables burning under defined conditions – Test apparatus, procedure and requirements	Low smoke
IEC 60092-350	2014-08	Annex E: Cold bend test and impact test for low temperature behaviour	Cold bend: -40°C
IMO resolution MSC 41(64), ATS 100.001	1994-12	Interim standard for measuring smoke and toxic products of combustion	Concentration of 10 toxic gases shall not exceed stated limits
UL 1581 Ed4	2001-10	Reference standard for Electrical wires, Cables and Flexible Cords	720h E@B>0,8

Marking of product

XAI or XAI-VFD(EMC) – size – IEC 60332 Cat. A – 0,6/1 kV – Lot No. or
XAI-VFD(EMC) - size – IEC 60332 Cat. A – 1,8/3 kV – Lot No.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (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
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment to be performed at least every second year.

END OF CERTIFICATE