




TYPE APPROVAL CERTIFICATE
No. ELE066114CS/014

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	ELECTRIC CABLES
<i>Type</i>	LKSM-VFD 1,8/3 kV; LKSM-VFD-SHF2 1,8/3 kV.
<i>Applicant</i>	HELKAMA BICA OY LAKIMIEHENKATU 4 FIN 20780 KAARINA FINLAND
<i>Manufacturer</i>	HELKAMA BICA OY
<i>Place of manufacture</i>	LAKIMIEHENKATU 4 FIN 20780 KAARINA FINLAND
<i>Reference standards</i>	RINA Rules for the Classification of Ships, Part C, Chapter 2, Section 9; RINA Rules for Testing and Certification of Marine Materials and Equipment; IEC 60092-350; IEC 60092-353.

Issued in **Genova** on **April 7, 2015**. This Certificate is valid until **April 7, 2020**



RINA Services S.p.A.
Valerio Bonanni

This certificate consists of this page and 1 enclosure



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LKSM-VFD 1,8/3 kV

LKSM-VFD-SHF2 1,8/3 kV.

Materials/Components

Shipboard power cables, flame retardant, low smoke emission, halogen free, design to meet requirements for Variable Frequency Drivers (VFD).

Rated voltage: 1,8/3 kV

Type: LKSM-VFD 1,8/3 kV LKSM-VFD-SHF2 1,8/3 kV

Marking: "lot number" Cable type n x s mm² 1,8/3 kV 90°C IEC 60092-353 IEC 60332-3-22 HELKAMA "month-year" "length marking"

Construction:

conductor: stranded plain or tinned copper (according to IEC 60228 class 2 or class 5)

insulation: XLPE

stranding: cores stranded together and covered by wrapped tape

armour: braided armour of plain or tinned copper wires. Copper tape under the braid

sheath: SHF1 or SHF2

In accordance to IEC 60228 cl.2 and cl.5; IEC 60092-350; IEC 60092-351; IEC 60092-353; IEC 60092-359; IEC 60092-360 as applicable, IEC 60754-1; IEC 61034-1; IEC 61034-2; IEC 60332-1-2; IEC 60332-3-22; IEC 61196-1; RINAMIL Rules.

Maximum conductor temperature: 90°C

Technical Specification: HELKAMA SPECIFICATION HBKQ 9.SPEC. 61 17.07.2008/dk.

Measurement of transfer impedance according to IEC 61196-1: Test Report DELTA N. DANA-K-19J1956 DELTA-N312513, rev.1.

NOTE/Remarks:

The product is subject to the compliance with RINA Rules and Standards mentioned on the certificates

Type Approval certifies that a representative sample of the products has been found to meet the applicable design criteria

Any modification of change shall not be valid until approval is granted by RINA as a result of due assessment.

The present Certificate cancel and supersedes the previous N. ELE196009CS/010 dated April 8, 2010.

Other Place of Manufacturing:

a) HELKAMA BICA (SHANGHAI) Co., Ltd.

Plot 1-2 Minghang Export Processing Zone, Shanghai, 201401 P.R.C.

b) HELKAMA BICA Oy

Lasitehtaankatu 12, FI-10960 Hanko, Finland.

Genova April 7, 2015