



Certificate No. 03-002001/031705

## TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

### TYPE AND DESCRIPTION OF PRODUCT:

**SHIPBOARD POWER AND CONTROL CABLE HALOGEN FREE AND FIRE RESISTANT**

**LKM-FRHF/LKSM-FRHF/LKAM-FRHF/LKSM-EMC-FRHF 0,6/1 (1,2) kV**

**LKM-FRSHF2/LKSM-FRSHF2/LKAM-FRSHF2/LKSM-EMC-FRSHF2 0,6/1 (1,2) kV**

### MANUFACTURER:

**HELKAMA BICA Oy**  
Lakimiehenkatu 4  
FI-20780 Kaarina  
**FINLAND**

### ADDITIONAL PLACES OF PRODUCTION:

**HELKAMA Bica Oy, Lasitehtaankatu 12, FI-10960 Hanko, FINLAND**

### THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

CRS RULES FOR THE CLASSIFICATION OF SHIPS, PART 12 - ELECTRICAL EQUIPMENT

Helkama specification: HBKQ 9 spec. 23, 24, 60, 84, 108, 109, 113 and 116

Technical specification:

Design standard: IEC 60092-353 Ed.4.0 (2016-09),  
Single and multicore non-radial field power cable 0,6/1 kV

Other standards:

- testing: IEC 60092-350 Ed.5.0 (2020-01), General constructions and testing requirements
- insulation: IEC 60092-360 Ed.1.0 (2021-01), Insulating materials for shipboard power cables
- sheathing: IEC 60092-360 Ed.1.0 (2021-01),  
Sheathing materials for shipboard power and telecommunication cables

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2028-02-10**

Place and date: Split, 2024-02-11 Seal

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

**DETAILED PRODUCT DESCRIPTION:**

Multi core power and control cable for fixed marine installations. Flame retardant, fire resistant, low smoke, halogen free. XLPE insulated, 0.6/1 kV (1.2 kV)

The LKSM-EMC-FRHF/ LKSM-EMC-FRSHF2 is designed with enhanced Electromagnetic compatibility (EMC) characteristics.

LKM-FRHF/ LKM-FRSHF2 – Unscreened

LKSM-FRHF/ LKSM-FRSHF2 – Cu-braid screened

LKAM-FRHF/ LKAM-FRSHF2 – Al-polyester- tape screened

LKSM-EMC-FRHF/ LKSM-EMC-FRSHF2 – Cu-tape & Cu-braid screened

Cable Type	No of Cores	Cross Sect area [mm <sup>2</sup> ]
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF/LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2	1	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2	2	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF/LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2	3	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF/LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2	4	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2	5	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF/ LKSM-EMC-FRHF LKSM-FRSHF2 LKSM-EMC-FRSHF2	7	1.0, 1.5, 2.5, 4, 6, 10, 16, 25
LKAM-FRHF/LKAM-FRSHF2	2, 3, 4, 5, 7	1.0, 1.5, 2.5
LKM-FRHF/LKM-FRSHF2 LKSM-FRHF/LKSM-FRSHF2 LKSM-EMC-FRHF LKSM-EMC-FRSHF2 LKAM-FRHF/LKAM-FRSHF2	10, 12, 14, 16, 19, 24, 27, 37	1.0, 1.5, 2.5

**APPLICATION / LIMITATIONS:**

*Fixed installations in marine, offshore and industrial use.*

**TYPE APPROVAL DOCUMENTATION:**

Helkama LKM-FRHF/LKM-FRSHF2 0.6/1 (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 23/108	2020-07-08
Helkama LKSM-FRHF/LKSM-FRSHF2 0.6/1 (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 24/109	2020-07-08
Helkama LKAM-FRHF/LKAM-FRSHF20.6/1 (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 60/113	2020-07-08
Helkama LKSM-EMC-FRHF/ LKSM-EMC-FRSHF2 0.6/1 (1.2) kV Cable Data Sheet Specification HBKQ 9 Spec 84/116	2020-07-08

Test report:

LKSM-FRHF/ TT doc\_h/S TT\_1\_5 sm; LKM-FRHF/67184 Tt\_1\_5; LKAMFR-HF/LKAM-FRHF 3x1,5\_TTI  
Helkama Test report for SHF2 sheathed cables dated 19.03.2012.

**MARKING OF PRODUCT:**

LOT ##### LKM-FRHF/LKM-FRSHF2/ LKSM-FRHF/ LKSM-FRSHF2/ LKAM-FRHF/ LKAM-FRSHF2/  
LKSM-EMC-FRSHF2 "number of core" x "size of conductor" mm<sup>2</sup> 0,6/1 kV + 90°C IEC 60092-353,  
60331-2 (180) or 60331-1 (180), 60332-3-22 HELKAMA "month-year" and "length marking".

LOT ##### LKSM-EMC-FRHF "number of core" x "size of conductor" mm<sup>2</sup> 0,6/1 kV + 90°C IEC 60092-353,  
60331-2 (180) or 60331-1 (180), 60332-3-22 HELKAMA "month-year" and "length marking".

Note: Cables with conductor of IEC 60228 class 5 shall be marked on the sheath with "cl. 5"

Note: Cables with tinned conductor shall be marked on the sheath with "CuSn"

**CONDITIONS FOR CERTIFICATION:**

NON