



Certificate No. 03-001771/031474

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
FLAME RETARDANT**

**LKM-HF/LKSM-HF/LKAM-HF/LKMM-HF/LKMSM-HF/LKSM-EMC 0,6/1 (1,2) kV
LKM-SHF2/LKSM-SHF2/LKAM-SHF2/LKMM-SHF2/LKMSM-SHF2/LKSM-EMC-SHF2 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. 3, 5, 19, 28, 38, 59, 104, 105, 106, 107, 110 and 112

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 (2014-04), Insulating materials for shipboard power cables
- sheathing: IEC 60092-360 Ed.1.0 (2014-04),
Sheathing materials for shipboard power and telecommunication cables

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

APPROVAL IS VALID UNTIL: **2024-02-10**

Place and date: Split, 2020-10-09

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 with stranded plain annealed Cu conductors option tinned conductors, XLPE insulation, halogen free, flame retardant, low smoke, 0.6/1kV

The LKSM-EMC/LKSM-EMC-SHF2 is designed with enhanced Electromagnetic compatibility (EMC) characteristics
 LKM-HF/LKMM-HF/LKM-SHF2/LKMM-SHF2 – 0.6/1 kV (1.2 kV) – (Un-armoured)
 LKSM-HF/LKMSM-HF/LKSM-SHF2/LKMSM-SHF2 – 0.6/1 kV (1.2 kV) – (Armoured, Cu-braid)
 LKAM-HF/LKAM-SHF2 – 0.6/1 kV (1.2 kV) – (Screened, Al-polyester tape)

<u>Cable Type</u>	<u>No of Cores</u>	<u>Cross Sect area [mm²]</u>
LKM-HF/LKM-SHF2 LKSM-HF/LKSM-SHF2 LKSM-EMC/LKSM-EMC-SHF2	1	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-HF/LKSM-HF LKM-SHF2/LKSM-SHF2 LKMM-HF/LKMM-SHF2 LKMSM-HF/LKMSM-SHF2 LKSM-EMC LKSM-EMC-SHF2	2	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-HF/LKM-SHF2 LKSM-HF/LKSM-SHF2 LKMM-HF/LKMM-SHF2 LKMSM-HF/LKMSM-SHF2 LKSM-EMC LKSM-EMC-SHF2	3	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-HF/LKSM-HF LKM-SHF2/LKSM-SHF2 LKMM-HF/LKMM-SHF2 LKMSM-HF/LKMSM-SHF2 LKSM-EMC LKSM-EMC-SHF2	4	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-HF/LKSM-HF LKM-SHF2/LKSM-SHF2 LKMM-HF/LKMM-SHF2 LKMSM-HF/LKMSM-SHF2 LKSM-EMC LKSM-EMC-SHF2	5	1.0, 1.5, 2.5, 4, 6, 10, 16, 25, 35, 50, 70, 95, 120, 150, 185, 240, 300
LKM-HF/LKSM-HF LKM-SHF2/LKSM-SHF2 LKMM-HF/LKMSM-HF LKMM-SHF2/LKMSM-SHF2 LKSM-EMC LKSM-EMC-SHF2	7	1.0, 1.5, 2.5, 4, 6, 10, 16, 25
LKM-HF/LKM-SHF2 LKSM-HF/LKSM-SHF2 LKMM-HF/LKMM-SHF2 LKMSM-HF/LKMSM-SHF2 LKSM-EMC/LKSM-EMC-SHF2	10, 12, 14, 16, 19, 24, 27, 37	1.0, 1.5, 2.5
LKAM-HF/LKAM-SHF2	2, 3, 4, 5, 7, 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-HF/LKM-SHF2 0.6/1 kV (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 3/104	2020-07-08
Helkama LKSM-HF/LKSM-SHF2 0.6/1 kV (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 5/105	2020-07-08
Helkama LKMSM-HF/LKMSM-SHF2 0.6/1 kV (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 19/107	2020-02-06
Helkama LKAM-HF/LKAM-SHF2 0.6/1 kV (1.2 kV) Cable Data Sheet Specification HBKQ 9 Spec 28/112	2020-07-08
Helkama LKMM-HF/LKMM-SHF2 0.6/1 kV (1.2 kV) Cable Data Sheet Specification HBKQ 9. Spec 38/106	2020-02-06
Helkama LKSM-EMC/LKSM-EMC-SHF2 0.6/1 kV (1.2 kV), Cable Data Sheet Specification HBKQ 9. Spec 59/110	2020-02-28

Test report:

LKM-HF/1 TT 3 x 1_5; LKAM-HF/ATT 3 x 1_5; TT doc_h/S TT3 x 1_5; TT_LKSM-EMC 3 x 6
LKMM-HF/TT1_5MM.XLS ; LKMSM-HF/TT1_5MSM.XLS
Helkama Test report for SHF2 sheathed cables dated 19.03.2012.

MARKING OF PRODUCT:

LOT ##### LKM-HF/LKM-SHF2, LKSM-HF/LKSM-SHF2, LKAM-HF/LKAM-SHF2, LKMM-HF/LKMM-SHF2, LKMSM-HF/LKMSM-SHF2 or LKSM-EMC/ LKSM-EMC-SHF2 "number of core" x "size of conductor" mm² 0,6/1 kV + 90°C IEC 60092-353, 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:

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