

HELMACAB



DRUM HANDLING AND CABLE INSTALLATION

**HELMACAB CABLE HANDLING |
STORAGE | PRESERVATION |
INSTALLATION & REPAIR INSTRUCTIONS**

2025

INSTALLATION GUIDELINES FOR HALOGEN-FREE SHIPBOARD CABLES

GENERAL CONSIDERATIONS

This document presents the guidelines for installing Helmacab halogen-free shipboard cables. The guidelines are based on the standard IEC 60092-352-1 and on the experience from users.

Because the requirements of the classification societies may differ, it is strongly recommended to get installation procedures approved by the classification society involved in each project.

CABLE SELECTION

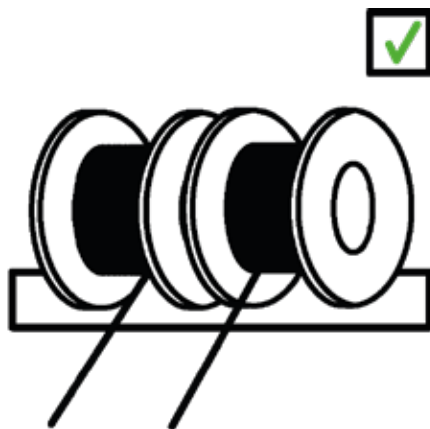
Helmacab halogen-free cables can be installed outside on open deck. If the cable will be exposed to heavy direct sunlight, black outer sheath colour is recommended. Power and control cables with rated voltage 0,6/1 kV have a black outer sheath as standard. Other cable types are available in black on request. Another option for colour is to paint the cables with water solvent paint.

CABLE PULLING

Only cables of same size should be pulled at the same time. If different sizes are pulled at the same time, the small cables may get damaged.

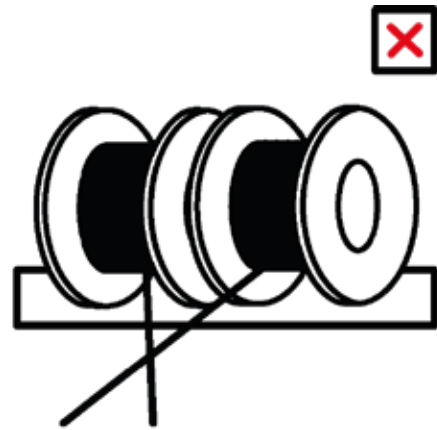
When pulling big cables, it is recommended to use rollers, especially if the cables are pulled with the help of winches.

Never cross the cables when pulling to avoid abrasion damage to the outer sheath at crossing point.



Only pull same size cables together.
Use rollers when pulling big cables.

The number of cables to be pulled at the same time is determined by the installation conditions at site: distance to be pulled, open space available for looping the cable at intermediary drawing stations, and the routing of cables (number of bends and number of corners).



Cables should not be pulled crossing each other to avoid abrasion of the sheath at the crossing point.

PROTECTION OF CABLES DURING BUILDING OR REPAIR

Against welding sparks

When welding close to cable drums or already installed cables:

- The drum and cable should be protected against the welding sparks e.g. with a fire blanket or with a protection plate. A fire blanket is found to be very practical and easy to use.
- Same methods can be used for the protection of installed cables.

Against abrasions on outer sheath

- Temporary cables used at the site (e.g. for welding and lighting) should not be pulled crossing already installed cables to avoid abrasion of the sheath at the crossing point.

MINIMUM CABLE BENDING RADIUS

The minimum bending radius during installation and for fixed installation shall be according to the following table.

UNARMoured AND UNSHIELDED CABLE TYPES

(LKM-HF AND LKMM-HF)

Diameter range	During installation	Fixed installation
≤ 25 mm	6 x Ø	4 x Ø

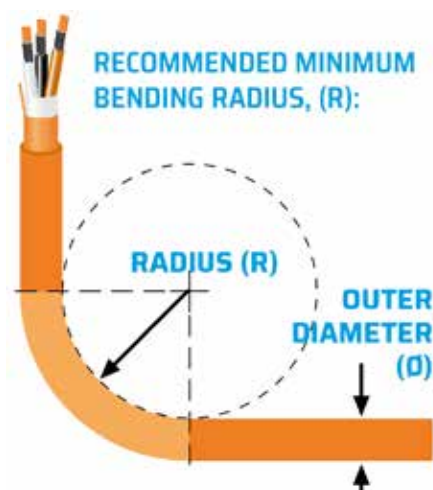
UNARMoured AND UNSHIELDED CABLE TYPES

(LKM-HF, LKMM-HF AND LKM-FRHF)

Diameter range	During installation	Fixed installation
> 25 mm	9 x Ø	6 x Ø

ALL OTHER CABLE TYPES

Diameter range	During installation	Fixed installation
All sizes	9 x Ø	6 x Ø



MINIMUM INSTALLATION AND OPERATION TEMPERATURE

Minimum installation temperature for all cable types:
-15 °C.

Lowest operation temperature for all cable types:
-40 °C.

CABLE FIXING

Cables shall be fixed by means of clips, saddles or straps of suitable material, which if ignited will not contribute to any spread of flame along the cables or insulated wire. The material shall have a surface area sufficiently large, and shaped so that the cables remain tight without their coverings being damaged.
(IEC 60092-352 Clause 3.19)

As a guideline, the following recommendations can be given for straps (partly from Panduit website):

Strap length (mm)	Strap width (mm)	Max. Ø of cable bunch (mm)
102	2.5	22
142	3.5	35
188	4.8	48
292	4.8	75
371	7.6	102
510	12.7	130
718	12.7	200

The distances between supports shall be chosen according to the type of cable and the probability of vibration. It shall not exceed 400 mm for a horizontal cable run where the cables are laid on cable supports in the form of tray plates, separate support brackets or hanger ladders. The spacing between the fixing points may be up to 900 mm, provided that there are supports with maximum spacing as specified above. This exemption shall not apply to cable runs along weather decks, when the cable run is arranged so that the cables can be subjected to forces by water washing over the deck.
(IEC 60092-352 Clause 3.19)

When designing a cable support system for single core cables, consideration shall also be given to the effects of electrodynamic forces developing in the occurrence of a short circuit. The distances between cable supports given above are not necessarily adequate for these forces. Cables with Class 5 conductors may require additional support to prevent sagging.
(IEC 60092-352 Clause 3.19)

The requirement above can be fulfilled by fixing the cables to each step of the cable tray or at maximum 400 mm intervals.

HELMACAB

Fixed installation must be used when the cable is protected with a heat shrinkable sleeve. If there is a possibility that the cable outside the heat shrinkable sleeve may vibrate or move, the sleeve must be long enough to be fixed on both ends.

REPAIR INSTRUCTIONS FOR HELMACAB HALOGEN-FREE SHIPBOARD CABLE OUTER SHEATH

If the cable has a damaged outer sheath, screen and insulation:

- The whole cable has to be replaced.

If the cable has damages only (a hole or similar) on outer sheath, it can be repaired according to following instructions:

- Clean the damaged cable surface with a suitable cleaning agent.
- Grind the cable surface with sandpaper.
- Clean the grinded cable surface from sliver.
- Wind tape (Scotch 70) around the cable with a little extension. Ensure the winding has 20-50% overlap.
- Set a shrink-on sleeve of flame retardant material over the taped length with 10% overlap. Ensure that the diameter of the shrunk sleeve is correct.
- Heat up with a hot-air blower, not with a fire blower. Start heating from the middle and work towards the ends.

If the cable has deformation but the outer sheath of the cable is undamaged:

- It may be difficult to determine if there is damage inside the cable.
- It is difficult to know if the screen wires have deformed the cable insulation. The screen wires may have damaged the cable insulation and the insulation wall thickness may have decreased.
- The characteristics will not be the same as for an undamaged cable.

If unsure, please contact the local representative of the classification society.



SPECIAL INSTRUCTIONS FOR LIGHT CABLES

Light cables are designed for applications where low weight and small size are required. Compared to standard cables, these cables are manufactured using smaller insulation and outer sheath wall thickness. Light cables include cable types LKM-HF L, LKSM-HF L, RFE-HF L, and LKSM-FRHF L.

All the instructions in this document are also applicable to Light cables. In addition, using special caution is recommended in handling Light cables during cable pulling due to smaller outer wall thickness.

IEC 60092-352 Ed.3.0 2009-9



INSTALLATION GUIDELINES FOR FIRE-RESISTANT ELECTRICAL & FIBER OPTIC CABLES

GENERAL CONSIDERATIONS

Installation procedures must adhere to guidelines outlined in standard SFS 6000, or other relevant local electrical installation standard, to ensure safe and proper installation. Installation of fire-resistant Marine cables shall follow rules and requirements of IACS/IMO/SOLAS.

Only trained and skilled electrical technicians are permitted to conduct cable installations. Regulatory authorization is required for all installations.

MATERIALS AND EQUIPMENT

All installation materials and equipment must be fire-resistant. For example, cable racks or trays must be fabricated from steel. Racks or trays made of aluminium do not withstand heat as well as steel. The choice of installation materials and equipment is at the discretion of the installer; Helmacab does not specify the use of specific manufacturers' materials. All installation accessories must be compatible with the cables.

TECHNICAL SPECIFICATIONS

Refer to the official Helmacab company website helmacab.com for the technical specifications of the cables. Maintain a recommended bending radius specified in above mentioned technical specifications during the installation process.

Note! The bending radius factor can vary between different cable types.

REPAIR INSTRUCTIONS FOR HELMACAB FIRE-RESISTANT & FIBER OPTIC CABLE OUTER SHEATH

If the cable has a damaged outer sheath, screen and insulation:

- The whole cable has to be replaced.

If the cable has damages only (a hole or similar) on outer sheath, it can be repaired according to following instructions:

- Clean the damaged cable surface with a suitable cleaning agent.
- Grind the cable surface with sandpaper.
- Clean the grinded cable surface from sliver.
- Wind tape (Scotch 70) around the cable with a little extension. Ensure the winding has 20-50% overlap.

- Set a shrink-on sleeve of flame retardant material over the taped length with 10% overlap. Ensure that the diameter of the shrunk sleeve is correct.
- Heat up with a hot-air blower, not with a fire blower. Start heating from the middle and work towards the ends.

If the cable has deformation but the outer sheath of the cable is undamaged:

- It may be difficult to determine if there is damage inside the cable.
- It is difficult to know if the screen wires have deformed the cable insulation. The screen wires may have damaged the cable insulation and the insulation wall thickness may have decreased.
- The characteristics will not be the same as for an undamaged cable.

SPECIAL CONSIDERATIONS

When vertically installing fire-resistant cables, it is crucial to account for the fact that in the event of a fire, the tensile strength of the copper conductor significantly reduces due to heat exposure. Additionally, all supporting materials (insulation and sheath) are combustible. Therefore, the maximum permissible height for conduit installations is 3.5 meters, and cable fastening must be secured with appropriate fixtures that ensure sufficient strain relief. An example of such fixtures includes WUM bracket hangers.

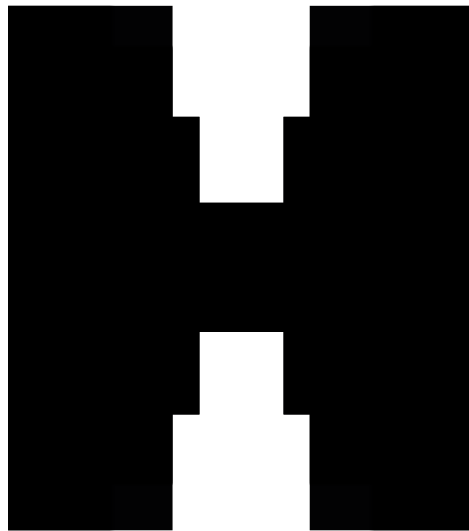
APPLIED STANDARDS

FIRE TEST STANDARDS

BUNDLE	IEC 60332-3-22 (EN 60332-3-22)
SINGLE CABLE	IEC 60332-1 (EN 60332-1)
FIRE RESISTANCE	IEC 60331-21 IEC 60331-25 (optical cables) or IEC 60331-1 / IEC 60331-2
SMOKE EMISSION	IEC 61034 series (EN 61034 series)



Adhere to guidelines to ensure safe and effective installation of fire-resistant cables. For inquiries or further information, contact our technical support team.



helmacab.com

HELMACAB OY

Lakimiehenkatu 4
FI-20780 KAARINA, FINLAND

Lasitehtaankatu 12
FI-10960 HANKO, FINLAND

Tel. +358 2 410 8700
customer.care@helmacab.com

HELMACAB Shanghai Co., Ltd.

Plot 1-2, MinHang Export Processing Zone
No. 3111 Huan Cheng
West Road
Fengxian District
Shanghai 201401, CHINA

Tel. +86 21 3365 5333
sales.shanghai@helmacab.com

HELMACAB HOLLAND B.V.

Griendweg 72
4209 DB Schelluinen,
THE NETHERLANDS

Tel. +31 183 617 109
sales.holland@helmacab.com

