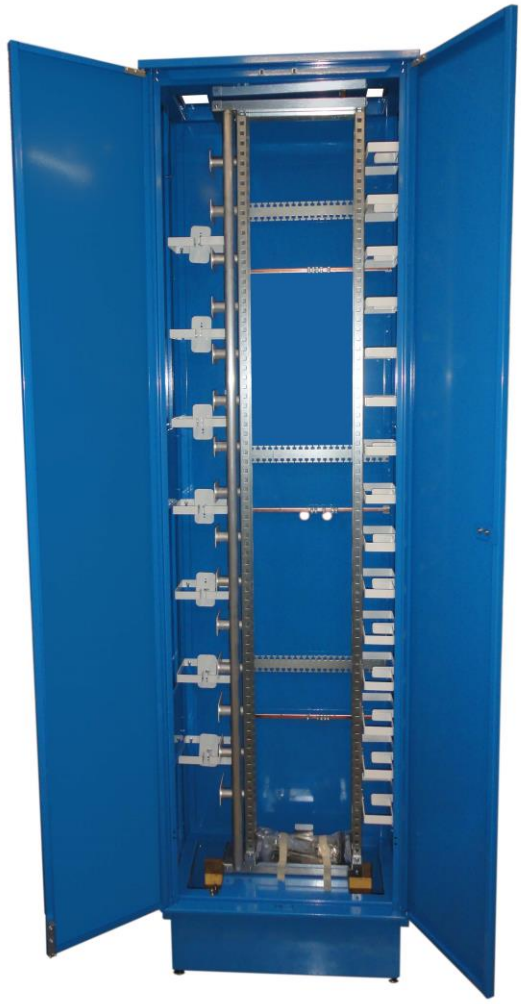
NAFICON



NAF1000 CROSS-CONNECTION CABINET INSTALLATION MANUAL

Naficon Liitin Oy
Lahdentie 7 D, 21660 NAUVO
www.naficon.fi

1. Cabinet installation

NAF1000 cabinets are delivered individually on pallets. At the installation site, move the cabinet into place. When the cabinet is in the correct position, the feet are adjusted so that the cabinet is in a straight position. Make sure the cabinet is level. It is a good idea to use the floor mounting kit, that comes with the cabinet, be sure that the cabinet is maintained in the right place.

If necessary, the cabinet can also be mounted on the wall from the top of the cabinet with wall mounting kit. The kit is an accessory.

2. Grounding of the cabinet

If outdoor cables containing metal are imported into the rack, the stand must always be grounded. Ground the cabinet by connecting it to the ground potential or ground of the IT area. Use a grounding cable of at least 16 mm² and connect the grounding cable to the grounding bar.

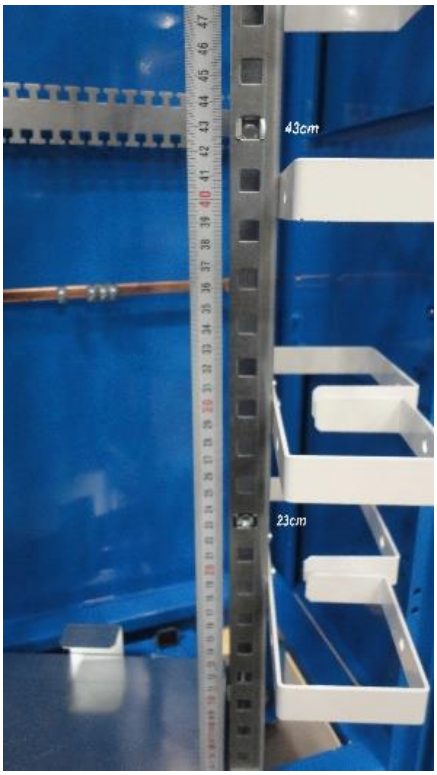
3. Terminating cables in the cabinet

The termination of cables to the NAF1000 cabinet can be done in two ways:

1. Splicing to the pigtail cables are done on a splice tray, which is mounted on the splice tray holder inside the cross-connection cabinet.
2. Splicing to the pigtail cables are done on a splice tray, which is mounted on the splice tray holder outside the cross-connection cabinet.

3.1 Installation of the splice tray holder inside the cross-connection cabinet

The splice tray holder is to be installed first. Cage nuts are installed as follows: 23cm and 43cm from the bottom of the rotating frame. The splice tray holder is installed using the cage nuts. The holder comes on the frontside of the rotating frame.



3.2 Importing of the cables

The cables can be brought into the cabinet either from above or from the bottom. The cables are imported from the inside of the brackets on the back of the cabinet, where they are grounded if necessary. The fibers are imported in protective tubes on to splice trays. The splice trays are fitted on the splice tray holder.
Note, when installing cables during the splicing phase, cables are not attached to the cabinet brackets. The ends of the cables are brought through the lower part of the cabinet to the front of the cabinet, where the peeling of the cables and splicing is carried out. The splicing is done to the ready-assembled NAF1000 pigtail cables.
The cables are brought into the cabinet in the following stages:

- Release the lock at the bottom of the rotating frame and turn it completely open.
- Pull the ends of the cables out from the bottom of the cabinet.
- Pull the ends of the cables out of the cabinet, over the cable peeling length, which is about 250 cm to allow the cables to be handled properly during peeling.
- If necessary, cut off the extra cable lengths

3.3 Peeling and grounding

- Peel the cable sheath for about 250 cm.
- Peel and prepare the fibers for splicing and ground the cable if necessary

3.3.1 Peeling instruction from Nestor Cables inc.

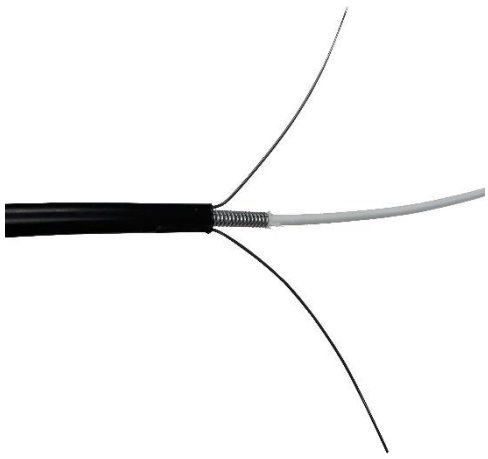
The cable manufacturer's instructions for peeling and grounding cables are described below.

3.3.1.1 Multi loose tube (MLT) cables

- Cut the cable jacket at the cable peeling point.
- Remove the jacket from the end of the cable for about 10 cm and locate the tear-off wires.
- Split the cable jacket up to the peeling point plus about 30 mm, using the tear-off wires and cut the halves of the jacket at the cable peeling point.
- Remove various layers and bands from the fiber tubes up to the peeling point of the cable.
- Separate fiber tubes and possible filling elements.
- Cut off the center element of the cable and the filling elements at the base.
- Straighten the fiber tubes using a hot air fan or hot water. If you are using a hot air fan, be careful not to heat up the fiber tubes too much.
- If there is an aluminum laminate or a corrugated steel sheet in the cable, attach the earthing connector to the splitted sheet at the peeling point and pin the connector. Protect the joint with an insulating tape.

3.3.1.2 Central loose tube (CLT) cables

- Whittle the jacket off from both sides of the cable from the top of the rods and unveil the rods. For indoor/outdoor cables, these traction elements do not exist.
- Cut the metal rods about 20 cm long and turn them aside. If the traction elements are metal-free, cut them off at the base of the cable jacket peeling point.



- If the cable is metal-free, remove the cable jacket and its protective layers in several parts until the start of the peeling point.

If there is an aluminum laminate or a corrugated steel sheet in the, the cable peeling can be done as follows:

- Remove the cable jacket and other protective layers in several parts to approximately 50 mm from the starting point of the peeling.
- Remove the jacket from top of the aluminum laminate or steel sheet using pliers and hot air blower.
- To ensure electrical contact, remove the plastic film on top of the aluminum laminate or steel sheet, e.g. with a steel brush or knife.
- Bend the cable traction elements parallel to the side of the cable and approximately 30 mm from the cable. Try to get the traction elements as straight and close as possible to each other so that they can be inserted as easily as possible into the grounding connector.
- Cut the traction elements to the same length as aluminum laminate or steel sheet.

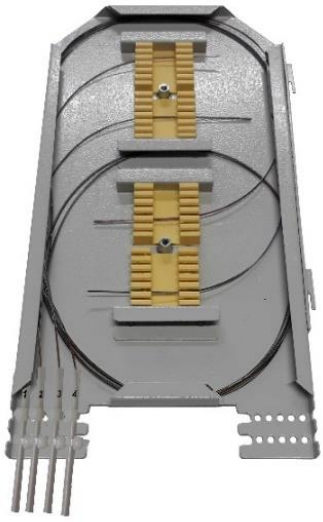
The protection of fibers in CLT cables with SPA-U installation kit:

- Insert the fastener of SPA-U installation kit to the base of the central tube.
- Cut the central tube of the cable at approximately 30 mm from the edge of the aluminum laminate or steel sheet and with a metal-free cable at approximately 30 mm from the cable jacket. Cut the central tube, first making a transverse incision around the tube, and then gently bending the tube on both sides until it breaks.
- Pull the center tube off the fibers while holding the fibers at the cutting point.
- Clean the fibers from gel.
- Push the SPA-U installation kit divider over the center tube while controlling the fiber bundles through the slots. Fasten the divider to the central tube with a previously threaded fastener. If the attachment is not tight enough, use the fitting pieces supplied with the installation kit.
- Pull the fibers in bundles into the protective tubes of the installation kit using the pull spring in the set. The minimum length of the installation kit is 110 cm.
- Mark the ends of fiber tubes with numbers.

3.4 Placing the fibers on the splice tray

- Remove the cover and the protective tape from it.
- Measure the fiber lengths on the splice tray. The fibers needed for Naficon's universal splice trays are about 120cm.

- Bring the fiber tubes to the splice tray from the left side, when viewed from the top, and arrange them side by side so that the outermost is the first tube and the innermost is the last tube.
- Fasten the tubes with cable ties.
- If the fiber tubes of MLT cable are brought to the splice tray, cut the tubes at approximately 25 mm from the mounting point and clean the fibers from the gel.
- If you are using Naficon's universal splice trays, rotate the fiber bundles for the two upper splice protection sleeves by using the whole splice tray and take them from the left side to the splice protection sleeves.
- The bundles to the lower two splice protection sleeves are first rotated from the middle of the tray to the other side of the tray, then around the whole tray and finally from the right side to the splice protection sleeves.
- The splice tray cover is inserted and marked with the necessary markings.



3.5 Placement of splice trays mounted on the splice tray holder

- Pull the cable into the cabinet enough to leave the cable jacket outside the cabinet.
- Temporarily attach the cable to the mounting points on the back of the cabinet.

- Place the splice tray in the splice tray holder in the correct position, waiting for the outdoor cable fibers to be spliced to the tail cables.
- Guide the fiber tubes under the splice trays from the hinge side of the rotating frame to the back of the cabinet. Take care of the bend radius of the tubes so that they will not be damaged.
- Important notes in the arrangement of fiber tubes:
  - Bend radius of the fibers
  - The trajectory of the rotating frame
  - removing the splice trays from the splice tray holder one by one

4. Installation of NAF1000 pigtail cables

4.1 Installation of NAF1000 ready assembled module

Install the cage nuts, **leaving the top opening empty**.

Open the coil of the tail cable and straighten it. Be sure to make the necessary markings on the cable. The cable comes with serial number and length markings.

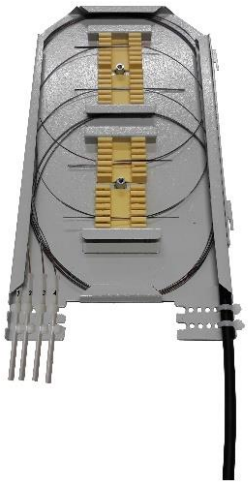
Insert the tail cable through the frame, steering the cable into the cable guides on the right side of the rotating frame. If you are installing multiple panels at the same time, you can push the ends of the cables through the frame and cable guides at the same time. Do not attach cables to the cable guides, but try to leave them as loose as possible so that the panels can be pulled out of the rotating frame, e.g. when cleaning the connectors.

Slide the module into its own place and fasten it with the screws.

4.2 Tail cable sizing

- Place the tail cable on its own splice tray loosely from below. To the side where the attachment hooks are.
- Measure the tail cable so that the about 30 mm of the cable jacket is on the splice tray and about 120 cm peeled fiber is on the tray. Mark the cable jacket peeling point and cable cut-off point.
- Cut the cable to a suitable length.
- Remove the splice tray from its holder and place it on the installation table.
- Peel the cable and remove unnecessary wires and filling and center elements. Attach the end of the tail cable to the opposite side with cable ties as the previously fastened.

  Peel the fiber tubes to approx. 6cm in length, remove the gel.
- If you are using Naficon's universal splice trays, rotate the fiber bundles for the two upper splice protection sleeves by using the whole splice tray and take them from the right side to the splice protection sleeves.



- The bundles to the lower two splice protection sleeves are first rotated from the middle of the tray to the other side of the tray, then around the whole tray and finally from the left side to the splice protection sleeves.
- Splice the fibers.

5. The fastening and grounding of the cables

- After splicing the cables, place the cables in the correct position behind the frame and secure them with cable ties to the mounting plates on the bracket.
- Connect the metal parts of the cables to the grounding rail on the rack.

- Guide the fiber tubes in bundles behind the mounting plates and grounding rail from the hinge side of the rotating frame.
- Attach fiber tube bundles behind the mounting plates. Keep in mind the bend radius of the fibers and the trajectory of the frame when attaching the tubes.

Close the rotating frame.