

# MB Chassis Installation Guide

## MB6 and MB21 Chassis



This Installation Guide provides the steps required to install the MB6 and MB21 Multichannel Chassis. For product specific information including specifications, configuration, and operation, please refer to the Makito X, Makito, or Torpedo product documentation.

## Safety Information

### General Guidelines

Use the following guidelines when unsafe conditions exist or when potentially hazardous voltages are present:

- Always use caution and common sense.
- To reduce the risk of electrical shock, do not operate equipment with the cover removed.
- Repairs must be performed by qualified service personnel only.

Improper handling and/or installation practices of sensitive equipment may VOID the warranty.

#### **Warning**

Only trained and qualified personnel should install, replace, or service this equipment.  
**ATTENTION** Seul le personnel spécialisé et qualifié est habilité à effectuer l'installation, le remplacement et l'entretien de cet équipement.

**Warning**

This product is intended for installation in a restricted area. Limited access areas are protected by a specific mechanism, lock and key or other security device.

**ATTENTION** Ce produit est destiné à être installé dans une zone d'accès restreint. Les zones d'accès limité sont protégées par un mécanisme spécifique, une serrure et une clé ou tout autre dispositif de sécurité.

**Warning**

When using the AC/DC power adapter, the power cord is the main disconnect device. Ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

**ATTENTION** Quand on utilise l'adaptateur AC à DC, le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée à proximité de l'équipement et être facile d'accès.

**Warning**

This unit may have several power connections. All connections must be removed to turn off the unit.

**ATTENTION** Cette unité peut comporter plusieurs connexions d'alimentation. Toutes les connexions doivent être retirées pour éteindre l'unité.

**Warning**

The installation of the equipment must comply with local and national electrical regulations.

**ATTENTION** L'installation de l'équipement doit être conforme aux réglementations électriques locales et nationales en vigueur.

**Caution**

If you remove a power supply or fan module, replace it immediately to prevent disruption of service.

**ATTENTION** Si vous retirez une alimentation ou un module de ventilateur, remplacez-le immédiatement pour éviter toute perturbation du service.

**Warning****Blank Faceplates and Cover Panels**

Blank faceplates and cover panels serve three important functions: They prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

**ATTENTION****Couvercles et panneaux vides**

Ne jamais faire fonctionner le système sans que l'intégralité des cartes, des plaques métalliques et des panneaux avant et arrière ne soient fixés à leur emplacement. Ceux-ci remplissent trois fonctions essentielles : ils évitent tout risque de contact avec des tensions et des courants dangereux à l'intérieur du châssis, ils évitent toute diffusion d'interférences électromagnétiques qui pourraient perturber le fonctionnement des autres équipements, et ils canalisent le flux d'air de refroidissement dans le châssis.

## Antistatic Precautions

Electrostatic discharge (ESD) results from the buildup of static electricity and can cause computer components to fail. Electrostatic discharge occurs when a person whose body contains a static buildup touches a computer component.

The equipment contains static-sensitive devices that may be easily damaged, and proper handling and grounding is essential. Use ESD precautionary measures when installing systems or cards, and keep the parts and cards in antistatic packaging when not in use. If possible, use antistatic floor pads and workbench pads.

**Caution**

When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, such as a screwdriver or a paper clip, to set switches.

## EMC Warnings

### Notice with respect to Class A (FCC)

Changes to equipment without the permission of Haivision may result in its failure to comply with the FCC requirements for Class A digital devices. If applicable, your rights to use the equipment may be limited by the FCC rules and you may be able to remedy, at your own expense, any interference with radio or television equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference that may occur when the equipment is used in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Use of this equipment in residential areas may cause harmful interference. If necessary, users will have to resolve these issues at their own expense.

## Avis relatif aux appareils de classe A (FCC)

Toute modification de l'équipement sans l'autorisation de Haivision peut entraîner sa nonconformité aux exigences de la FCC concernant les appareils numériques de classe A. Le cas échéant, vos droits d'utilisation de l'équipement seront susceptibles d'être limités par les règlements de la FCC et vous pourrez être amené à remédier, à vos frais, aux éventuelles interférences avec des dispositifs radiophoniques ou télévisuels. Cet équipement a été testé et jugé conforme aux limites d'un périphérique numérique de classe A en vertu de la partie 15 des règlements de la FCC. Ces limites ont pour but de fournir une protection raisonnable contre les interférences nuisibles susceptibles de se produire, lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre de l'énergie radioélectrique. S'il n'est pas installé ni utilisé conformément au manuel d'instructions, il peut provoquer des interférences nuisibles aux communications radio. L'utilisation de cet équipement dans les zones résidentielles est susceptible de causer des interférences nuisibles. Le cas échéant, les utilisateurs devront résoudre ces problèmes à leurs frais.

## Notification for Class A (Canada)

This Class A digital apparatus complies with Canadian ICES-003.

## Notification pour les appareils de classe A (Canada)

Cet appareil numérique de Classe A est conforme à la norme NMB-003 du Canada.

## Safety instructions for Class A for CISPR32

**WARNING:** This product is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may need to take appropriate measures.

## Consigne de sécurité relative à la Classe A pour CISPR32

**ATTENTION:** Il s'agit d'un produit de Classe A. Dans un environnement domestique, ce produit peut entraîner des perturbations radioélectriques, auquel cas l'utilisateur devra éventuellement prendre des mesures adéquates.

## Waste Electrical and Electronic Equipment (WEEE) Disposal



In accordance with the European Union (EU) WEEE Directive, Haivision products that fall within the scope of the WEEE, are labeled with the above symbol, and customers are encouraged to responsibly recycle their equipment at the time of disposal. Haivision also offers its customers the option of returning Haivision equipment to facilitate its environmentally sound disposal.

For more information, please visit our website at: <https://www.haivision.com/environment>.

## Multichannel Chassis Introduction

Haivision’s Makito™ X and classic Makito encoders/decoders and Torpedo DVB-to-IP gateways are available as single product appliances or as independent mini-blades. For installations where rack mounting is desired, the MB6 and MB21 High Density Multichannel Chassis can contain up to 6 or 21 blades, respectively, within the single highest density platform available. MB series enclosures feature redundant power supplies, allow for in-service blade replacement, and incorporate fan-management circuitry to minimize fan noise.

- MB6 series and MB21B (F-MB21B-R) enclosures can be populated with any combination of Haivision’s Makito X, classic Makito and Barracuda encoders and decoders, as well as Torpedo DVB-to-IP gateways.
- MB21X (F-MB21X-R) enclosures support Makito X products *only* (and any future products that require +12V power only).

**Tip**

All blades manufactured by Haivision are hot-swap capable, meaning that they can be installed and removed with the chassis powered.

## MB6 (6-Slot) Chassis

The single rack unit (1RU) MB6 6-Slot chassis is available in three power supply types:

- F-MB6X-RAC: Redundant AC Power supply (Dual-Input, Dual-Power supply)
- F-MB6X-MED: Medical Grade AC power supply, Non-Redundant (Single-Input, Single power supply)
- F-MB6X-DC: DC Power supply, Non-Redundant (Single-Input, Dual-Power supply)

**Note**

References to "MB6" can be taken to include any of the above, unless specifically stated otherwise.



## MB6 Installation

### **Warning**

To prevent electric shock, do not remove the cover of the MB6 chassis. There are no userserviceable parts inside. The MB6 chassis is to be installed and serviced by qualified personnel only.

### To install the MB6:

1. Unpack the box and visually inspect the package contents for any evidence of shipping damage. See the *Important Notice* document in the box for a list of contents.
2. For desktop installation, place the MB6 chassis on a solid surface.

3.

### **Note**

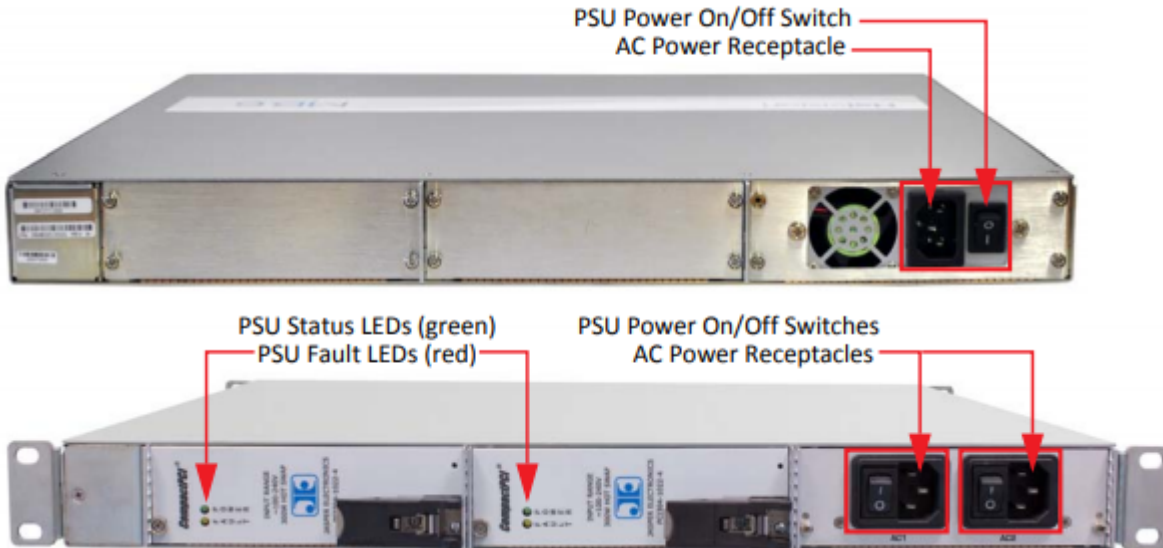
For 4-post racks, use the brackets supplied to secure the rear of the chassis.

4. Insert the cards from the front.

## F-MB6X-MED or F-MB6X-RAC Chassis

To power up the F-MB6X-MED or F-MB6X-RAC Chassis:

1. Make sure the power switch(es) on the back of the chassis are in the OFF (2) position.

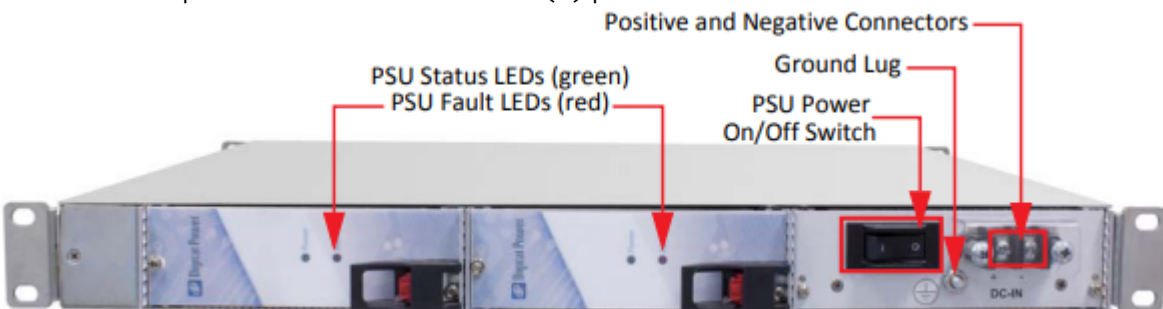


2. Connect the power cord(s) to one (or both) of the power receptacles shown in the figures above.
3. Plug the cord(s) into a grounded AC power source.
4. Turn one (or both) PSU Power On/Off switches to the ON (1) position.
5. Wait until the Status LEDs stay solid green, indicating that the chassis is ready for operation.

## F-MB6X-DC-DC Chassis

To power up the F-MB6X-DC-DC Chassis:

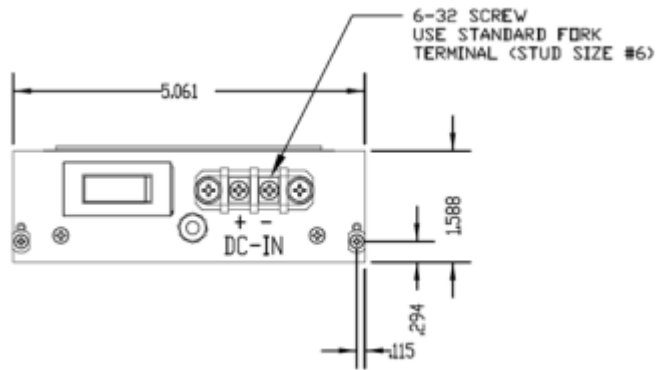
1. Make sure the power switch is in the OFF (2) position.



2. Locate DC Power IN connectors (+ and -) on the back of the chassis.
3. Connect the chassis ground wire to the ground lug on the back of the chassis.
4. Adhere to your organization's policy on the gauge of the ground wire (12 AWG, insulated, stranded) and the number of crimps on the lug.
- 5.

**Note**

Connect the screw marked + to a +28 VDC power source and the screw marked - to the neutral wire. The maximum width of the terminal lug is 0.32 inches (8.13 mm). The minimum wire gauge is 16 AWG.



6. Wait until the Status LEDs stay solid green, indicating that the chassis is ready for operation. To begin configuring the unit, open the Web interface and sign in. Please refer to the encoder, decoder, or gateway product documentation for details.



## MB6 Chassis Removable Fan Tray

The MB6 chassis has a removable fan tray located on the right side (as shown in the figure below).



### Gliffy Macro Error

Cannot find a diagram with these parameters:

- **Name:** MB6\_Fan\_Tray

Diagrams with the same name were found on the following pages:

Hover over the link to preview, click to set.

[MB6 Chassis Removable Fan Tray](#)

[MB6 Chassis Removable Fan Tray](#)

[MB6 Removable Fan Tray](#)

[MB6 Chassis Removable Fan Tray](#)

[MB6 Chassis Removable Fan Tray](#)

For the fan tray replacement part (#F-MB6X-FAN), see [Replacement Part Ordering Information](#).

## MB6 Fan Tray LED Indicators and Alarms

The following table summarizes the functions of the MB6 fan tray LED indicators. It also describes the alarm behaviors when faults occur.

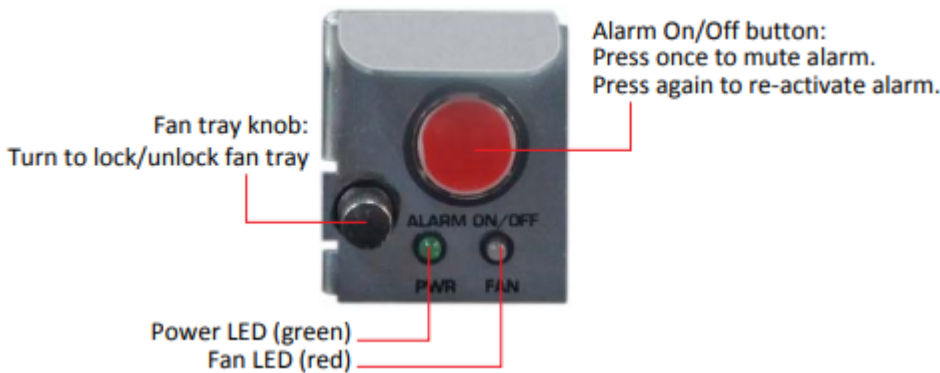
Indicator Color & Description			Configuration
Power LED	Fan LED	Audible Alarm	Indication
OFF	OFF	OFF	No power to chassis.
Solid Green	Solid Green	OFF	Power applied to chassis and no issue/fault is reported.

Indicator Color & Description			Configuration
Power LED	Fan LED	Audible Alarm	Indication
Solid Green	Solid Red	ON	Chassis Power-ON – Fault(s) Detected. The following faults will trigger the audible alarm and turn the FAN LED to RED: <ul style="list-style-type: none"> <li>• One, some, or all fans are blocked,</li> <li>• One, some, or all fans have no power,</li> <li>• An electrical short is detected (V+ to GND) on the fan tray,</li> <li>• Thermocouple is missing,</li> <li>• Thermocouple is shorted,</li> <li>• Ambient temperature is over 55°C.</li> </ul>
Solid Green	Solid Red	OFF	Chassis Power-ON – Fault(s) Detected – Mute button (Alarm ON/OFF) pushed. To mute the audible alarm, push the Alarm ON/OFF button. Once the button is pushed, the alarm is muted. To re-activate the alarm, push the Alarm ON/OFF button a second time.

## Replacing the MB6 Chassis Fan Tray

**Note**

You can remove and replace the fan tray without powering off the unit, which allows you to perform this maintenance procedure without stopping the service. However, do so only if you are able to replace the fan tray within five minutes. Otherwise, we recommend that you power off the unit before replacing a fan tray to avoid overheating.



To replace the MB6 Chassis fan tray:

Refer to "MB6 Fan Tray LED Indicators and Alarms" in [MB6 Chassis Removable Fan Tray](#) to determine when to replace the fan tray. During a failure condition, the Fan LED on the fan tray will show red.

**Caution**

Refer to "Antistatic Precautions" in [Safety Information](#) to prevent ESD damage to the equipment.

1. Turn the fan tray knob clockwise to unlock the fan tray.
2. Remove the fan tray by pulling it away from the chassis. Set it on an antistatic surface or repack it in packing materials.

3. Insert a new fan tray in the slot and slide it all the way into the chassis. (This will apply Power to the fan tray.)
4. Turn the fan tray knob counterclockwise to lock the fan tray into the slot.
5. If the device is powered on, listen for the fan. You should immediately hear it operating. If you do not hear it, ensure that the fan tray is inserted completely in the chassis.
6. Verify that the Power LED is green. If the LED is not green, the fan tray is faulty. If this problem occurs, contact your customer service representative for a replacement part.

Replacement fan trays are also available from Haivision. Please contact your sales representative or email Haivision at: [sales@haivision.com](mailto:sales@haivision.com).

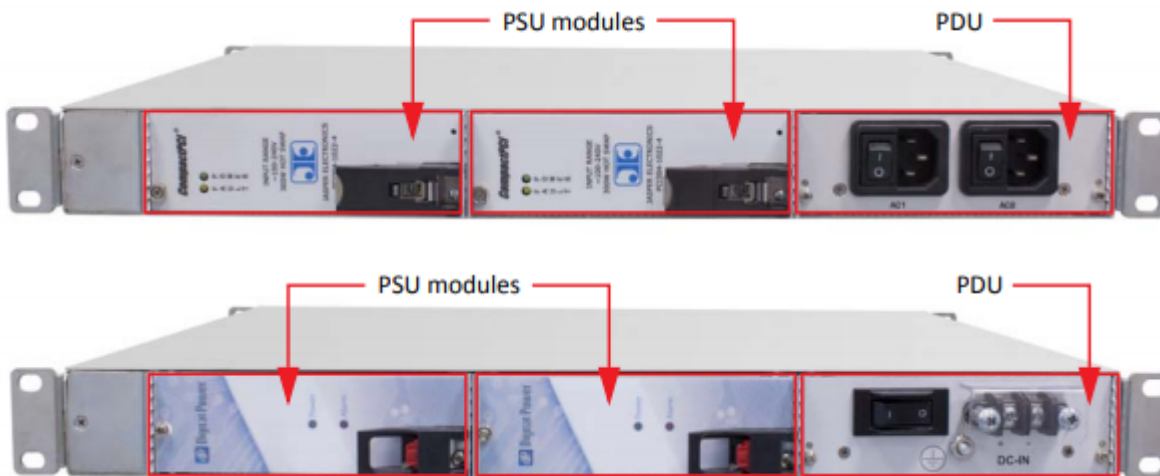
## F-MB6X-RAC and F-MB6X-DC Chassis Power Components

The F-MB6X-RAC and F-MB6X-DC chassis have removable power supplies (PSUs) and power distribution unit (PDU) (as shown in the figures below). The F-MB6X-RAC and F-MB6X-DC chassis are fully redundant and can run using one or both PSUs. If using both, they share the load 50-50. One PSU can power all six cards in the chassis.

Replacement parts are available for the power supply units (#P-MB6X-AC-PSU and #P-MB6X-DC-PSU) and the power distribution units (#P-MB6X-AC-PDU and #P-MB6X-DC-PDU). See [Replacement Part Ordering Information](#).

### ! Important

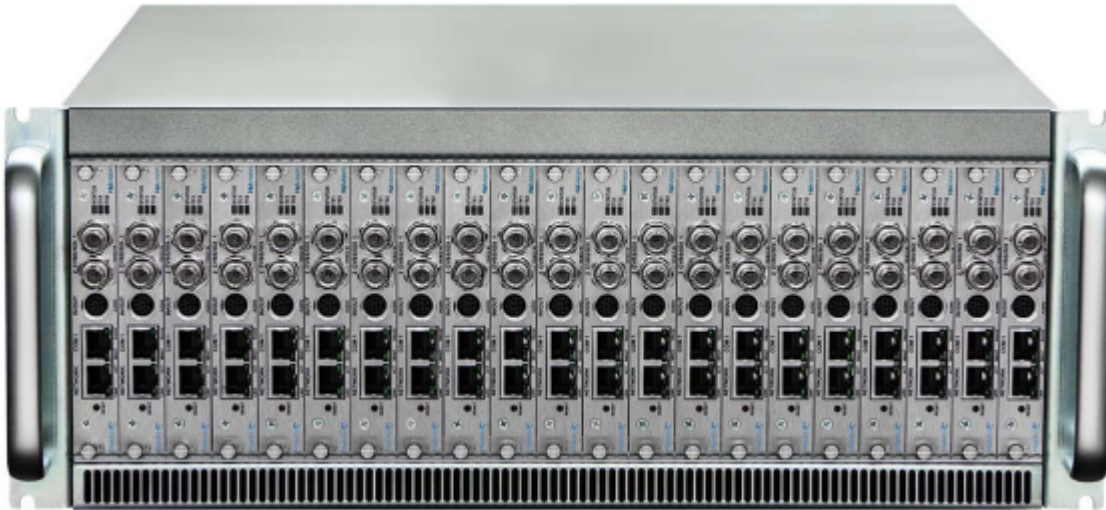
The F-MB6X-MED power supply cannot be replaced without opening the chassis, which would void the warranty. To replace the F-MB6X-MED power supply, you must return the unit to Haivision. If field-serviceability is a requirement, we recommend that you keep a second F-MB6X-MED chassis available on the premises.



## MB21 (21 Slot) Chassis

**Note**

References to "MB21" can be taken to include either model, unless specifically stated otherwise.



## MB21 Installation

**Warning**

To prevent electric shock, do not remove the cover of the MB21 chassis. There are no userserviceable parts inside. The MB21 chassis is to be installed and serviced by qualified personnel only.

**To install the MB21:**

1. Unpack the box and visually inspect the package contents for any evidence of shipping damage. See the *Important Notice* document in the box for a list of contents.
2. In addition to the contents of the MB21 box, you may need to have the following items available:
  - 5/16 hex nut driver
  - Screwdriver with Phillips #1 and #2 bits
  - Right-angle ratchet screwdriver or Allen key (for rack screws)
  - 8 x rack screws

3.

**Caution**

The MB21 should always be moved or lifted by two persons. The handles on the front of the chassis should be used for a solid grip.

4. Using a 5/16 hex nut driver, remove the hex head screws - **(E)** and **(F)** in the figure below - holding the support brackets in place. Remove the support brackets.

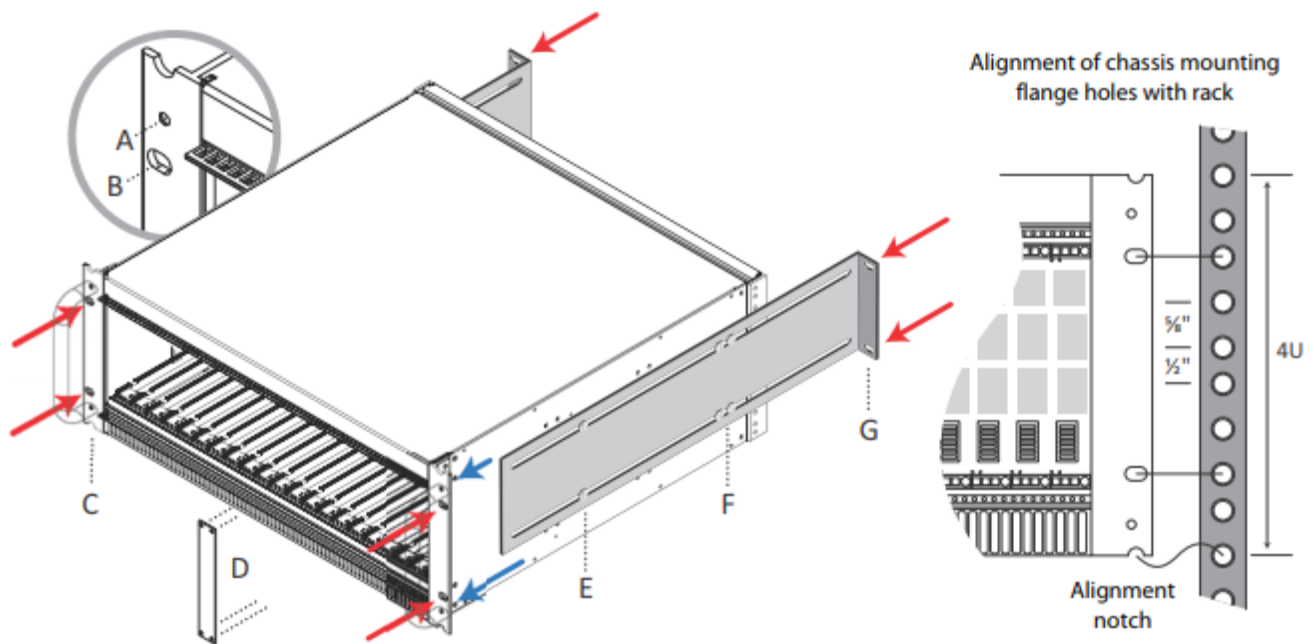
5. If the MB21 is to be installed on a desktop or rack shelf, screw the rubber footpads into the base of the chassis. Move it to the desired location, and then skip ahead to [step #11](#). Otherwise, continue to the next step.

6. **Tip**  
 If space allows, put two screws into the rack posts just below the bottom of the MB21, and then rest the MB21 on those screws using the alignment notches at the bottom of the chassis mounting flanges. This will line up the screw holes on the MB21 flanges with the corresponding holes in the rack posts.

7. Using a right-angle ratchet screwdriver or Allen key, secure the front chassis mounting flanges to the rack (see red arrows in figure below; screws **not** provided).

**Note**  
 If necessary, you may remove the handles on the front of the chassis by using a Phillips #2 screwdriver to unscrew the four handle screws (see blue arrows in the following figure).

**A** = handle screw hole    **B** = mounting screw hole    **C** = chassis mounting flange    **D** = slot cover  
**E** = support bracket screws (optional)    **F** = support bracket screws (optional)    **G** = support bracket flange



8. Loosely fasten the support brackets to the sides of the chassis with hex nut screws at **(E)** and **(F)**. Slide them into place and secure them to the back of the rack (see red arrows in figure above; screws not provided).

**Note**  
 If you need to further extend the support brackets, you may safely remove the two screws at position **(E)** on each side.

- 9. Using a 5/16 hex nut driver, tighten the four screws at position **(F)** on each support bracket.
- 10. If needed, tighten the two screws at position **(E)** on each support bracket.
- 11. Using a Phillips #1 screwdriver, remove slot covers **(D)** as required.

**⚠ Caution**

Failure to properly secure or support the MB21 as described above may result in serious damage to the enclosure and/or its contents.

12. (F-MB21X-R only) If using a system interface, insert it now. The mating connector is provided but you will need to add your own wiring.
13. Insert the cards from the front (as shown in the figure on MB21 (21 Slot) Chassis).

To power up the MB21 Chassis:

1. Turn all two or four PSU Power On/Off switches to the ON (1) position.
2. Connect the power cords to both power receptacles.
- 3.

**✓ Tip**

To ensure redundancy, each power input should be connected to a different 120/240V circuit and be isolated.

The PSU Status LED will turn green indicating that the chassis is powered up (only if both or all four Power On/Of switches are On).

In the front of the chassis, the Status LEDs will start blinking green, indicating that the encoders/decoders/gateways are booting up.

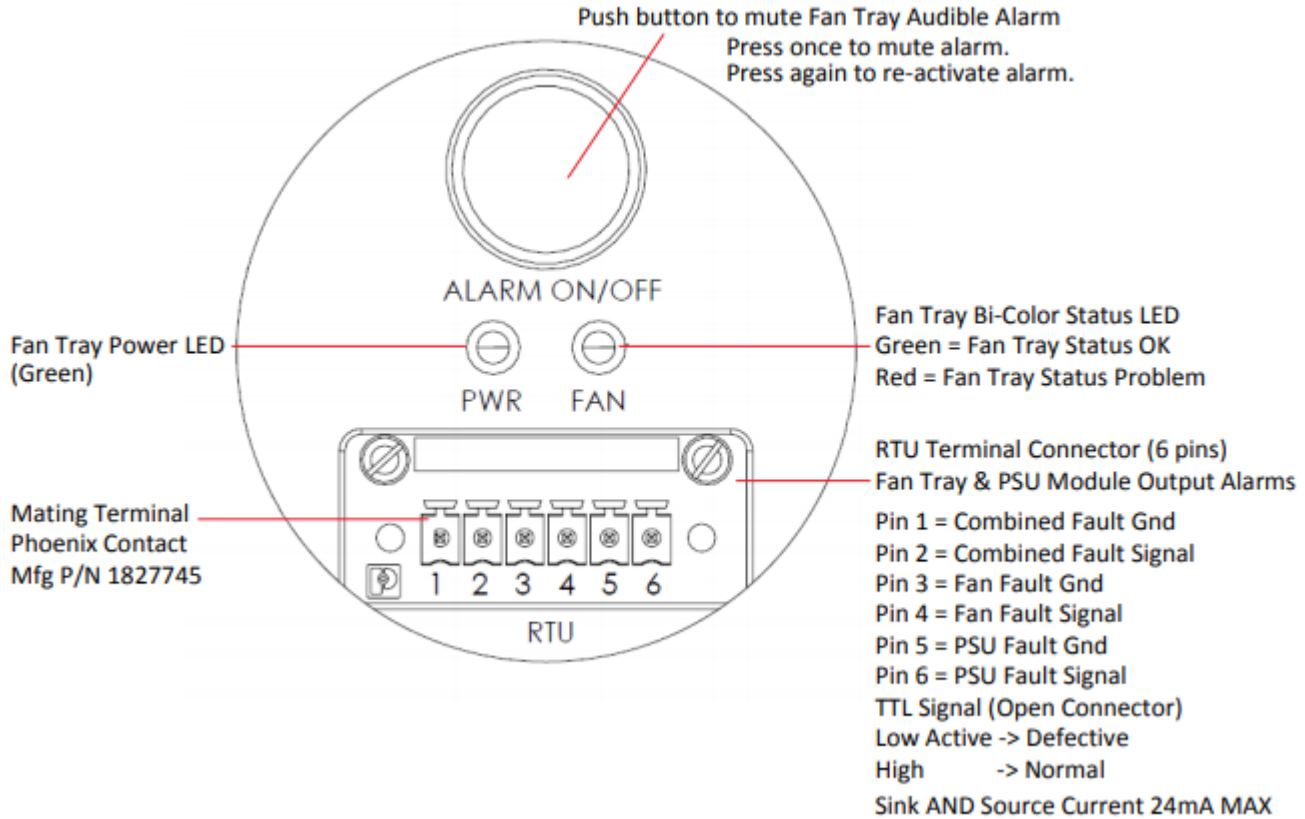
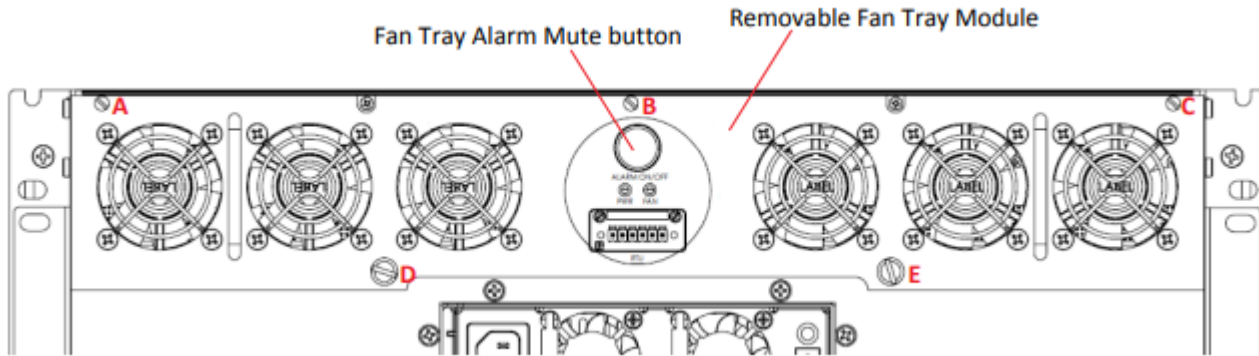
**4. ⚠ Caution**

The power supply cords are used as the main disconnect devices on the MB21 chassis. Therefore, ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

To begin configuring the unit, open the Web interface and sign in. Please refer to the product documentation for details.

## F-MB21X-R Chassis Removable Fan Tray

The F-MB21X-R chassis has a removable fan tray located on the upper portion of the rear panel:



## F-MB21X-R Fan Tray LED Indicators and Alarms

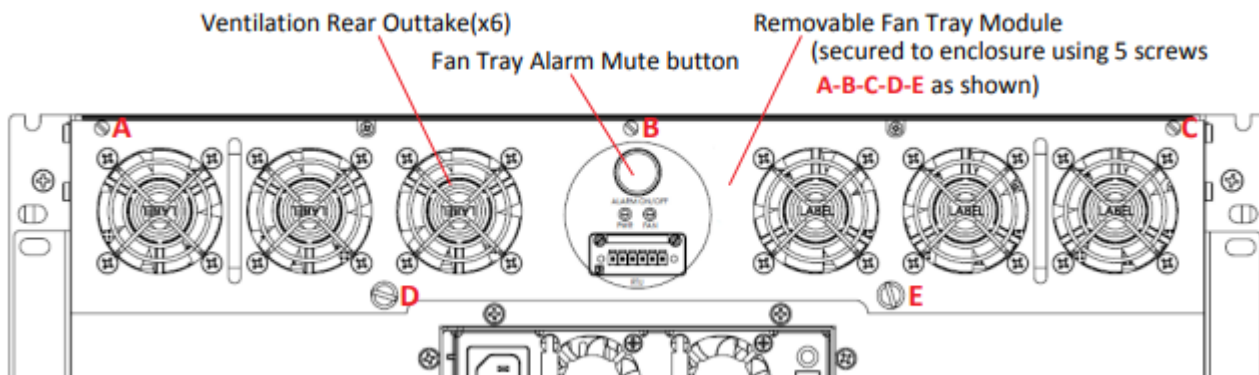
The following table summarizes the functions of the F-MB21X-R fan tray LED indicators. It also describes the alarm behaviors when faults occur.

Indicator Color & Description			Configuration
Power LED	Status LED	Audible Alarm	
OFF	OFF	OFF	No power to chassis.
Solid Green	Solid Green	OFF	Power applied to chassis and no issue/fault is reported.
Solid Green	Solid Red	ON	Chassis Power-ON - Fault(s) Detected. The following faults will trigger the audible alarm and turn the Status LED to RED: <ul style="list-style-type: none"> <li>• One, some, or all fans are blocked,</li> <li>• One, some, or all fans have no power,</li> <li>• An electrical short is detected (V+ to GND) on the fan tray,</li> <li>• Thermocouple is missing,</li> <li>• Thermocouple is shorted,</li> <li>• Ambient temperature is over 55°C.</li> </ul>
Solid Green	Solid Red	OFF	Chassis Power-ON - Fault(s) Detected - Mute button (Alarm ON/OFF) pushed. To mute the audible alarm, push the Alarm ON/OFF button. Once the button is pushed, the alarm is muted. To re-activate the alarm, push the Alarm ON/OFF button a second time.

## Replacing the F-MB21X-R Chassis Fan Tray

**Note**

You can remove and replace the fan tray without powering off the unit, which allows you to perform this maintenance procedure without stopping the service. However, do so only if you are able to replace the fan tray within five minutes. Otherwise, we recommend that you power off the unit before replacing a fan tray to avoid overheating.





**To replace the F-MB21X-R Chassis fan tray:**

Refer to the table on "F-MB21X-R Fan Tray LED Indicators and Alarms" under [F-MB21X-R Chassis Removable Fan Tray](#) to determine when to replace the fan tray. During a failure condition, the Fan LED on the fan tray will show red.

**⚠ Caution**  
 Refer to "Antistatic Precautions" in [Safety Information](#) to prevent ESD damage to the equipment.

1. Using a flat screwdriver, loosen all five captive screws (**A-B-C-D-E**) on the fan tray by turning them counterclockwise. Note that the screws are spring-attached to the panel.
2. If an RTU cable is connected, disconnect the cable.
3. Remove the fan tray by pulling it away from the chassis. Set it on an antistatic surface or repack it in packing materials.
4. Insert a new fan tray in the slot and slide it all the way into the chassis until the captive screws make contact with the chassis.
5. Tighten the five screws to lock the fan tray into the slot.
6. If the device is powered on, listen for the fans. You should immediately hear them operating. If you do not hear them, ensure that the fan tray is inserted completely in the chassis.
7. Verify that the Power LED is green. If the LED is not green, one or more fans are faulty. If this problem occurs, contact your customer service representative for a replacement part.

Replacement fan trays are available from Haivision. Please contact your sales representative or email Haivision at: [sales@haivision.com](mailto:sales@haivision.com)

## MB21 Chassis Power Components

### Technical Specifications

#### MB6X – 6 Blade Chassis

<b>MB6X - 6-Blade Chassis (#F-MB6X-RAC, #F-MB6X-MED, #F-MB6X-DC)</b>	
Dimensions (H x W x D)	19" rack mountable, 1 RU 44.069mm H x 440.004mm W x 420.37mm D (1.735" H x 17.323" W x 16.55" D) Tolerances are +/-0.50mm (+/- 0.020in.)
Weight	6 slot empty chassis: 7.94 kg. (17.5 lbs.) Single blade: Approximately 240 g (0.529 lbs.)
Power Requirements	Single Internal Power Supply: <ul style="list-style-type: none"> <li>• F-MB6X-RAC (Redundant AC type): 90-264VAC 47Hz-63Hz</li> <li>• F-MB6X-MED (Medical Grade): 90-264VAC 47Hz-63Hz</li> <li>• F-MB6X-DC (DC type): 20-36 VDC</li> </ul> 300 watt maximum (all types)
Temperature	Operating: 0°C to 50°C (32°F to 122°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Relative Humidity	Up to 95% without condensation
Heat	155 Watts or 530 BTU/hr
Sound Emission	<ul style="list-style-type: none"> <li>• Room temperature: 57.0 dB(A) L'p(AVG)</li> <li>• 50°C Ambient: 65.9 dB(A) L'p(AVG)</li> </ul>

## MB21X (#F-MB21X-R)

<b>MB21X - 21-Blade Chassis (#F-MB21X-R)<sup>1</sup></b>	
Dimensions (H x W x D)	19-inch rack mountable, 4RU *177.29 mm H x †441.35 mm W x 461.92 mm D (6.980 inches H x 17.376 inches W x 18.186 inches D) *186.76 mm / 7.353 inches H with rubber feet installed †482.60 mm / 19.000 inches W including mounting flanges
Weight	Empty 21-slot chassis: 32.5 pounds Single blade: Approximately 240 gm (0.529 lbs.)
Power (internal power supply)	Dual redundant power supplies: <ul style="list-style-type: none"> <li>• 100-240VAC 47Hz-63Hz</li> <li>• 600 watt maximum per PSU</li> </ul>
Temperature	Operating: 0°C to 50°C (32°F to 122°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Relative Humidity	Up to 95% without condensation
Heat	560 Watts or 1910 BTU/hr *assumes chassis full of Makito X Series blades
Sound Emission	<ul style="list-style-type: none"> <li>• Room temperature: 56.4 dB(A) L'p(AVG)</li> <li>• 50°C Ambient: 63.3 dB(A) L'p(AVG)</li> </ul>
Advanced Features	<ul style="list-style-type: none"> <li>• Removable fan trays</li> <li>• Station Alarm Interface</li> </ul>

1. Supports Makito X/X4 products *only*, excludes classic Makito encoder/decoder or Torpedo blades

## MB21B (#F-MB21B-R)

<b>MB21B - 21-Blade Chassis (#F-MB21B-R)</b>	
Dimensions (H x W x D)	19-inch rack mountable, 4RU *177.29 mm H x †441.35 mm W x 462.55 mm D (6.980 inches H x 17.376 inches W x 18.211 inches D) *186.76 mm / 7.353 inches H with rubber feet installed †482.60 mm / 19.000 inches W including mounting flanges
Weight	Empty 21-slot chassis: 17.24 kg. (38 lbs.) Each blade: 230 g. (0.5 lbs.)
Power (internal power supply)	Quad redundant power supplies: <ul style="list-style-type: none"> <li>• 90-132V and 180-240VAC 47Hz-63Hz</li> <li>• 400 watt maximum per PSU</li> </ul>
Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Relative Humidity	Up to 95% without condensation
Heat	560 Watts or 1910 BTU/hr *assumes chassis full of Makito X or other Haivision blades
Sound Emission	<ul style="list-style-type: none"> <li>• Room temperature: 56.4 dB(A) L'p(AVG)</li> <li>• 50°C Ambient: 63.3 dB(A) L'p(AVG)</li> </ul>

## Replacement Part Ordering Information

<b>MB6X</b>	
F-MB6X-FAN	MB6X Replacement fan unit
P-MB6X-AC-PSU	(F-MB6X-RAC) 110-240 V AC power supply unit, 300 Watt max
P-MB6X-AC-PDU	(F-MB6X-RAC) Dual 110-240 V AC Input power distribution unit
P-MB6X-DC-PSU	(F-MB6X-DC) 28V DC power supply unit, 300 Watt max
P-MB6X-DC-PDU	(F-MB6X-DC) Single 28V DC Input power distribution unit
<b>MB21X</b>	

P-MB21B-PS	(F-MB21B-R) 110-240 V AC power supply unit, 300 W max, for Quad PSU version of F-MB21B-R
F-MB21X-FAN	(F-MB21X-R) Replacement fan and station alarm unit
P-MB21X-PS	(F-MB21X-R) Replacement 100-240 V; 47-63Hz AC power supply unit, 600 W max

# Terms of Service Agreement

## Copyright

© 2015-2023 Haivision. All rights reserved.

This edition and the products it describes contain proprietary and confidential information. No part of this content may be copied, photocopied, reproduced, translated or reduced to any electronic or machine-readable format without prior written permission of Haivision. If this content is distributed with software that includes an end-user agreement, this content and the software described in it, are furnished under license and may be used or copied only in accordance with the terms of that license. Except as permitted by any such license, no part of this content may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of Haivision Systems, Inc. Please note that the content is protected under copyright law even if it is not distributed with software that includes an end-user license agreement.

## Trademarks

The Haivision logo, Haivision, and certain other marks are trademarks of Haivision. CoolSign is a registered trademark licensed to Haivision Systems, Inc. All other brand or product names identified in this document are trademarks or registered trademarks of their respective companies or organizations.

## Obtaining Documentation

This document was generated from the Haivision InfoCenter. To ensure you are reading the most up-to-date version of this content, access the documentation online at <https://doc.haivision.com>. You may generate a PDF at any time of the current content. See the footer of the page for the date it was generated.

## Getting Help

<b>General Support</b>	<p style="text-align: center;">North America (Toll-Free)  <b>1 (877) 224-5445</b></p> <p style="text-align: center;">International  <b>1 (514) 334-5445</b></p> <p style="text-align: center;"><i>and choose from the following:</i>  Sales - 1, Cloud Services - 3, Support - 4</p>
<b>Managed Services</b>	<p style="text-align: center;">U.S. and International  1 (512) 220-3463</p>
<b>Fax</b>	<p style="text-align: center;">1 (514) 334-0088</p>
<b>Support Portal</b>	<p style="text-align: center;"><a href="https://support.haivision.com">https://support.haivision.com</a></p>

**Product Information**

[info@haivision.com](mailto:info@haivision.com)