HAIVISION

Haivision PRO460

VERSION 3.5

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User's Guide

www.haivision.com

Edition Notice

About Haivision

Founded in 2004, Haivision is now a market leader in enterprise video and video streaming technologies. We help the world's top organizations communicate, collaborate and educate. Recognized as one of the most influential companies in video by Streaming Media and one of the fastest growing companies by Deloitte's Technology Fast 500, organizations big and small rely on Haivision solutions to deliver video. Headquartered in Montreal, Canada, and Chicago, USA, we support our global customers with regional offices located throughout the United States, Europe, Asia and South America.

Trademarks

Disclaimer

The information contained herein is subject to change without notice. Haivision assumes no responsibility for any damages arising from the use of this content, including but not limited to, lost revenue, lost data, claims by third parties, or other damages.

If you have comments or suggestions, please contact infodev@haivision.com.

While every effort has been made to provide accurate and timely information regarding this product and its use, Haivision Systems Inc. shall not be liable for errors or omissions contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Contents

About This Document

Conventions

The following conventions are used to help clarify the content.

Typographic Conventions and Elements

Italics	Used for the introduction of new terminology, for words being used in a different context, and for placeholder or variable text.
bold	Used for strong emphasis and items that you click, such as buttons.
`Monospaced`	Used for code examples, command names, options, responses, error messages, and to indicate text that you enter.
>	In addition to a math symbol, it is used to indicate a submenu. For instance, **File** > **New** where you would select the New option from the File menu.
...	Indicates that text is being omitted for brevity.

Action Alerts

The following alerts are used to advise and counsel that special actions should be taken.

Tip

Indicates highlights, suggestions, or helpful hints.

Note

Indicates a note containing special instructions or information that may apply only in special cases.

Important

Indicates an emphasized note. It provides information that you should be particularly aware of in order to complete a task and that should not be disregarded. This alert is typically used to prevent loss of data.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in damage to data or equipment. It may also be used to alert against unsafe practices.

Warning

Indicates a potentially hazardous situation that may result in physical harm to the user.

Getting Service Support

For more information regarding service programs, training courses, or for assistance with your support requirements, contact Haivision Technical Support using our Support Portal at: https://support.haivision.com.

This guide describes how to use the Havision Pro400 series device.

Contents

Preface

Compliance

Before using the unit, please inform yourself about laws and regulations in force in the country in which you use it. Please refer to the sticker pasted on the unit to know its version.

The declaration of conformity is available upon request. Should you need it, please contact Haivision.

Federal Communications Commission Statement

Model: Pro460

Contains FCC ID: 2ASIK-EM91

Contains FCC ID: 2ASIK-CB178NF
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device must be professionally installed

The Company "HAIVISION" is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.
This portable equipment with its antenna complies with FCC's radiation exposure limits set forth for an uncontrolled environment. This equipment has shown compliance with FCC's Specific Absorption Rate (SAR) limits. To maintain compliance, follow the instructions below:

1. This transmitter must not be co-located or operating with any other antenna or transmitter;
2. A minimum distance of 15 mm between the user and the antenna must be kept in order to comply with FCC SAR requirement.

Industry Canada statement

Model: Pro460

CAN ICES-3 (B)/NMB-3 (B)

Contains IC: 21415-EM91

Contains IC: 21415-CB178NF
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This portable equipment with its antenna complies with RSS102's radiation exposure limits set forth for an uncontrolled environment. This equipment has shown compliance with RSS102's Specific Absorption Rate (SAR) limits. To maintain compliance, follow the instructions below :

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. A minimum distance of 15 mm between the user and the antenna must be kept in order to comply with IC SAR requirement.

Cet équipement portable avec ses antennes est conforme aux limites d'expositions de la CNR102 applicables pour un environnement non contrôlé. Cet équipement a démontré la conformité aux limites de Débit d'Absorption Spécifique (DAS). Pour maintenir la conformité suivez les instructions ci-dessous:

1. Cet émetteur ne doit pas être co-localisé ou opérer en conjonction avec toute autre antenne ou émetteur.
2. Une distance minimale de 15 mm entre l'utilisateur et l'antenne doit être respectée afin de se conformer à l'exigence SAR de IC.

WI-FI 5GHz

Operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

La bande 5150-5 250 MHz est réservée uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Safety and Health Precautions

Handling the Unit

- To avoid any injury during the installation, observe local health and safety requirements and guidelines for manual material handling.
- The unit must be handled carefully and thoughtfully to prevent safety hazards and damage.

Servicing the Unit

- Only trained and approved service engineers are permitted to service this unit.
- Unauthorized maintenance or the use of non-approved replacements may affect the unit specifications and invalidate any warranties.

Electronic and Radio Interference

- To avoid any interference with electronic devices contained in vehicles, keep the unit away from the vehicle's dashboard.
- When connected to wireless networks (3G/4G/5G or Wi-Fi), the unit emits microwaves that can interfere with other electronic devices.
- The operation of this equipment in a residential environment could cause radio interference.

Safety Precautions

- Do not use the unit in any place where the use of mobile phones is usually banned: airplanes, hospitals, and areas with potentially explosive atmosphere (e.g. gas stations, repair shops, fuel or chemical storage areas).
- In accordance with IEC 62368-1:2014 standard, devices must be connected to PS2 power sources. Consequently, only PD2 type external batteries must be used. Pro Series devices are delivered with a design PS2 type power block.

Coin Battery Safety Precautions

- Lithium battery (ref: BR1225A)
- There is a risk of explosion if the battery is replaced by an incorrect type.

Health Precautions

Operating the unit is not recommended for:

- People with electronic implants (e.g. pacemakers, insulin pumps, implanted pulse generators, hearing aids).
- Pregnant women, old people, children, teenagers and people suffering from epilepsy.

Operating Environment

- Ensure that the environment corresponds to the conditions mentioned below:
  -  Only use at altitude not exceeding 2000 meters.
  -  Only use in not-tropical climate regions.
    - Ambient operating temperature (with internal battery): 0°C to 45°C (0°C to 35°C when unit placed in backpack).
    - Ambient operating temperature (with DC adapter): 0°C to 40°C (for the DC adapter).
    - Ambient operating humidity: 10% to 85% (no condensation).

      Important

      Operating the unit out of these ranges may cause damage and void the warranty.
- Protect the unit against rain, dust, and shocks.
- Avoid long exposure to direct sunlight.
- Do not obstruct the air inlets and outlets.

Caution - Safety Precautions

- Only use the DC adapter and the power cord provided by Haivision. Using another DC adapter and power cord can damage the device and void the warranty.

Device Disposal

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.

Product Presentation

The Pro460 is our latest generation of mobile video encoder and transmitter designed for live video producers (sports, concert, etc.) and news gathering professionals looking for video delivery performance from any location around the world. Multi-camera production in HD or single pristine 4K UHD capabilities are combined with mission-critical transmission in this 5G compliant solution.

With its compact form factor, the Pro460 supports the latest generation of UHD H.265/HEVC hardware encoders by offering premium video quality with optimized data usage and low end-to-end latency (down to 0.2 sec). The widely adopted H.264/AVC format is still supported for compliancy with deployed infrastructures. Our innovative design enables multiple encoding and transmission workflows from single HD source for news, to multiple HD sources (up to 4) for sports, through single 4K UHD for premium events coverage.

With Pro460, all required features for Remote Production or At-Home Production workflows are fulfilled. It supports perfect video synchronization and lip sync across multiple cameras in a venue to guarantee seamless camera switching and efficient video editing in the remote production studio. Our solution also enables remote control of network-based devices such as PTZ cameras and tally lights.

Our solution is camera agnostic and runs simultaneously with live transmission. In addition, the Pro460 supports low delay and high-quality video delivery from the studio to field units. Also known as Video Return, this feature allows delivering teleprompting information or studio feed to the field. Bi-directional audio intercom is also available for communication between the field and the studio.

The Pro460 embeds 6 world-wide compliant 3G/4G/5G cellular modems with high efficiency custom patented antennas. The transmission can also operate on other networks such as WiFi, Ka or Ku band satellite, IP leased line or even over the Internet. It is made possible thanks to our Emmy® awarded SST Technology (Safe Stream Transport). This technology offers advanced techniques for network aggregation, Adaptive packet Retransmission (ARQ) and Forward Error Correction (FEC) to reach the upper network throughput and maximize the Quality of Service. It ensures the delivery of video even in the midst of unpredictable and unmanaged network conditions by:

- Aggregating simultaneously multiple network connections,
- Dynamically adapting the video bitrate according to network bandwidth fluctuations,
- Protecting stream content,
- Supporting retransmission of lost data.

Front Panel

A	Touchscreen	E	microSD card slot
B	Activity indicator	F	Auto-start switch
C	USB C port	G	Power button
D	Intercom mini-jack (headphone, micro)	H	Link indicator

Rear Panel

A	DC input (18-V nominal)	G	6x Micro-SIM card slots
B	Ethernet 1 & 2	H	3G-SDI input 4
C	USB 3.0 (Type A) 1 & 2	I	3G-SDI input 3

D	HDMI 1.4 output	J	3G-SDI input 2
E	12G-SDI output	K	12G-SDI input 1
F	Genlock input		

Left and Right Sides

A Camera Mounting Plate (Gold Mount, V-Mount)

B Battery Mounting Plate (Gold Mount, V-Mount)

Indicator Definition

The front of the unit contains LED indicators to provide you with status information.

A Activity Indicator

Status	Meaning
Fixed Green	The unit is starting.
Flashing Green	Live, Record or Forward in progress.
Off	No Live, Record or Forward in progress.

B Link Indicator

Status	Meaning
Fixed Green	The unit is starting. The unit is connected to a destination.
Off	The unit is not connected to a destination.

Installing the Unit

1. Install the external battery onto the unit side or connect the AC/DC adapter and the power cable.
2. Insert a microSD card (if not already installed). It is recommended to use FAT32 or exFAT formats and class 10 microSD card.
3. Remove the SIM card cover and insert a SIM card into a slot according to indications written on the cover.
4. For Ethernet transmission, connect the Ethernet cable to ETH1.
5. Connect video input cable.


HAIVISION
Pro460
SYNC
SDI OUT - 12G
SDI IN
HDMI OUT
DP
ETH 1
DC IN
Micro-SIM Cards
1
2
3
4
5

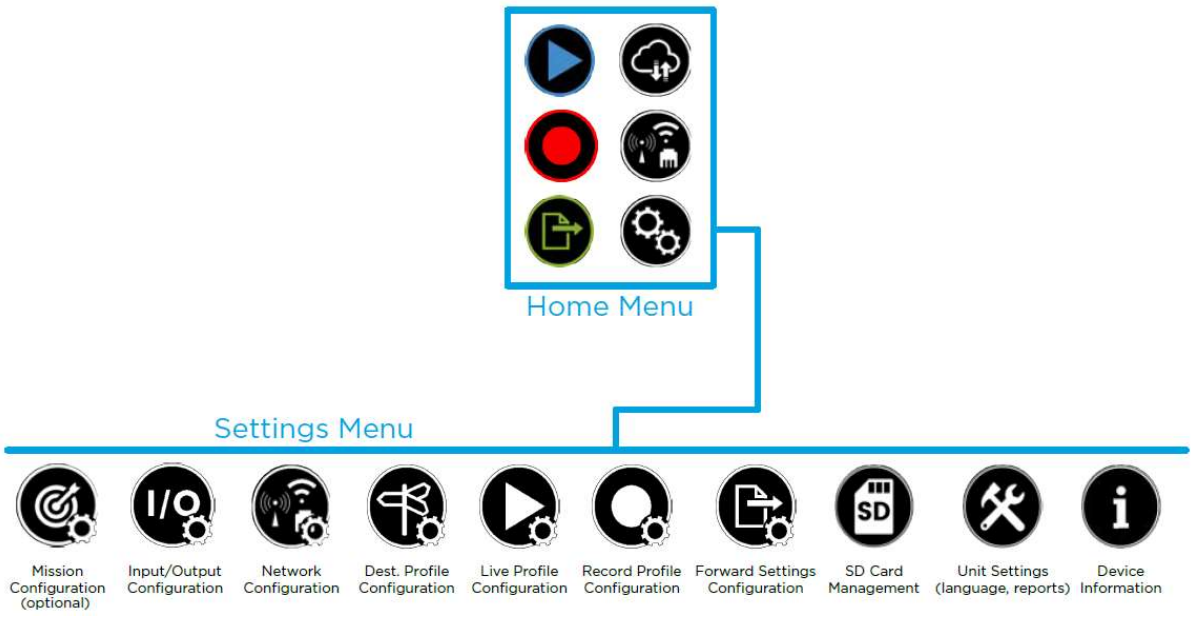
Unit Front Panel

The unit front panel allows you to:

- Configure the unit
- Start / stop live
- Start / stop record
- Forward stored files

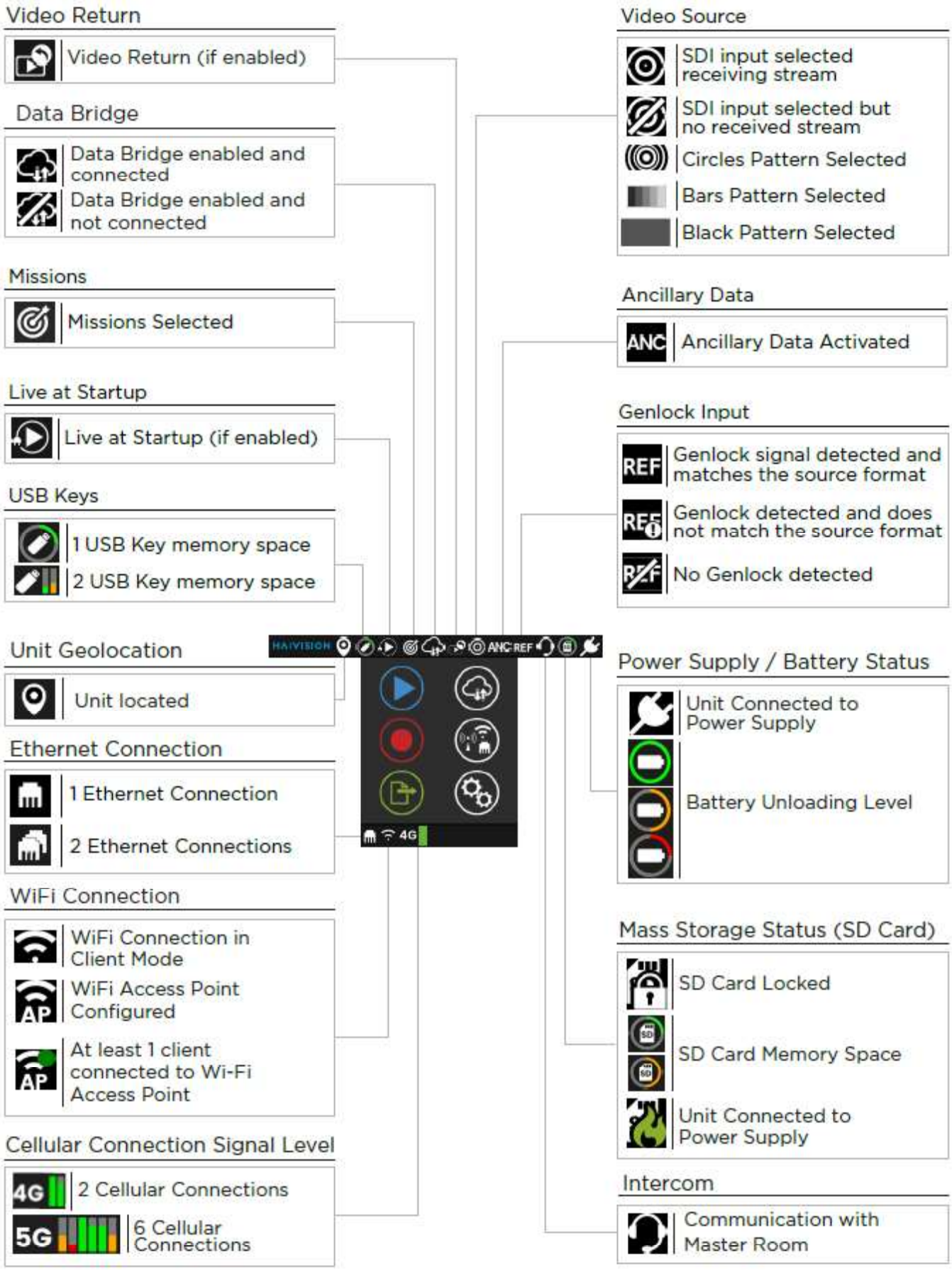
Menus

The diagram below shows the different options accessible from the **Home** and **Settings** menus.



Icons

On the front panel screen, some icons indicate the unit state.


Video Return
Video Return (if enabled)
Data Bridge
Data Bridge enabled and connected
Data Bridge enabled and not connected
Missions
Missions Selected
Live at Startup
Live at Startup (if enabled)
USB Keys
1 USB Key memory space
2 USB Key memory space
Unit Geolocation
Unit located
Ethernet Connection
1 Ethernet Connection
2 Ethernet Connections
WiFi Connection
WiFi Connection in Client Mode
WiFi Access Point Configured
At least 1 client connected to Wi-Fi Access Point
Cellular Connection Signal Level
2 Cellular Connections
6 Cellular Connections
Video Source
SDI input selected receiving stream
SDI input selected but no received stream
Circles Pattern Selected
Bars Pattern Selected
Black Pattern Selected
Ancillary Data
Ancillary Data Activated
Genlock Input
Genlock signal detected and matches the source format
Genlock detected and does not match the source format
No Genlock detected
Power Supply / Battery Status
Unit Connected to Power Supply
Battery Unloading Level
Mass Storage Status (SD Card)
SD Card Locked
SD Card Memory Space
Unit Connected to Power Supply
Intercom
Communication with Master Room

Error Icons

 Error with Modem Connection

 Error with Ethernet connection

Launching the Web Interface

The web interface allows you to:

- Configure the unit
- Start / stop live
- Start / stop record
- Forward stored files

To access the Web interface, use an Ethernet connection or a Wi-Fi connection.

Ethernet Connection

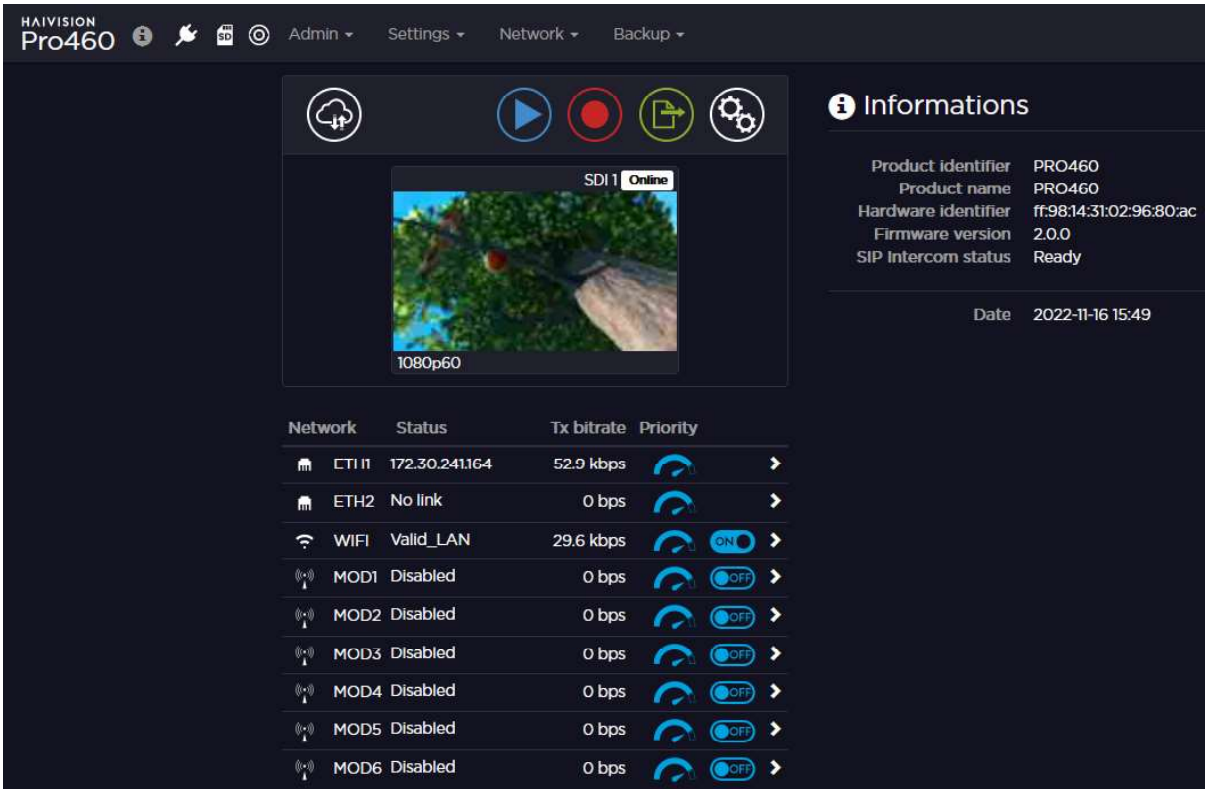
1. From the unit panel **Home** menu, select  . The screen displays the IP address assigned to the unit (by default in DHCP mode).
2. Launch a web browser on your computer and enter the unit IP address and append " `:8888` " to it. Example: `10.50.1.139:8888`
   The login screen opens:

3. Enter the login and password.

> **Note**
>
> See Important Notice Card shipped with the field unit or available through the Download Center on the Haivision Support Portal.

> **Important**
>
> It is highly recommended to modify the default password.

The web interface opens:



Wi-Fi Connection (Access Point Mode)

1. From the Unit Panel, configure the unit as a Wi-Fi Access Point (see Configuring a Wi-Fi Interface for details).
2. On your Wi-Fi client device (computer, notebook, smartphone), go to the Wi-Fi settings menu, and select the Wi-Fi access point that you configured.
3. Enter the password that you defined.
4. In a Web Browser, enter the unit URL: http://192.168.30.10:8888 (default IP address if it has not been changed).
   The login screen opens:

5. Enter the login and password.

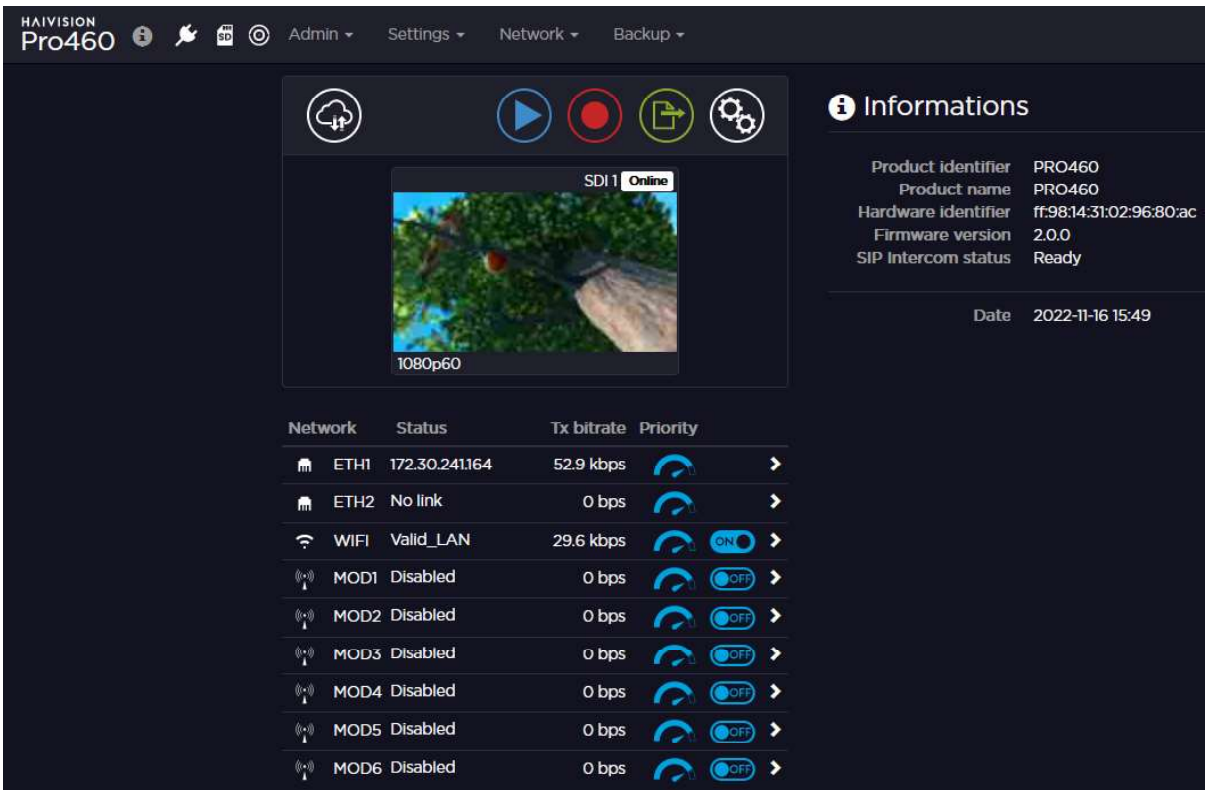
Note

See Important Notice Card shipped with the field unit or available through the Download Center on the Haivision Support Portal.

Important

It is highly recommended to modify the default password.

The unit's web interface opens.



Configuring an Ethernet Interface

Devices connected to a local LAN transmitter are remotely controllable from the Media Control Room.

The unit can operate in different Ethernet modes:

- **DHCP –** Use the unit in a domain that has a DHCP server. The DHCP server assigns the IP address, subnet mask, and default gateway to the equipment. *DHCP is the default configuration mode for Ethernet.*
- **STATIC –** Connect the unit to a domain without using a DHCP server. In this mode, the network administrator must set the Ethernet interface's IP settings (IP address, netmask, and gateway).
- **GATEWAY** – Connect a host to the unit (for instance, a laptop). The unit acts as a DHCP server and assigns an IP address to the connected host. The unit automatically detects from the netmask the range of IP addresses that it can use for assigning an IP address to the host connected.

Factory Settings According to Selected Mode

Interface	MODE	IP Address	Netmask	Gateway
Ethernet 1	DHCP *	Assigned by DHCP server		
	STATIC	192.168.1.10	255.255.255.0	192.168.1.1
Ethernet 2	DHCP *	Assigned by DHCP server		
	STATIC	192.168.20.10	255.255.255.0	192.168.20.1
	GATEWAY	192.168.20.10	255.255.255.0	
	OFF	N/A	N/A	N/A

* Default configuration.

Note

When the OFF option is selected, Ethernet mode is disabled. Configuring an Ethernet interface may disconnect the unit.

See the sections below to configure the Ethernet Interface.

Unit Panel

1. From the **Home** menu, tap  **> ETH > Mode.**
2. Tap on a new mode.
3. The selected mode appears:

- When selecting DHCP mode, settings are automatically retrieved.
- When selecting STATIC mode, you need to enter network settings.
- When selecting GATEWAY mode, you need to enter the IP Address, the netmask, and the DNS server address.

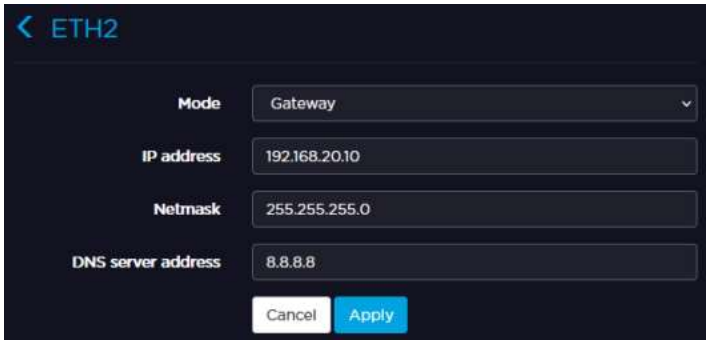
a. Tap .
b. Tap on settings fields to be modified.
c. Use the keyboard to enter new settings and tap to confirm.
d. Tap to scroll down and tap to save new settings.

Note

Configuring Ethernet interface may disconnect the unit.

Web Interface

1. On the Web Interface, click on the desired Ethernet line.



2. In the **Mode** field, select the configuration mode according to the Ethernet connection used:
   - DHCP
   - STATIC
   - GATEWAY (only for Ethernet 2)
   - OFF (only for Ethernet 2)
3. According to the Ethernet connection, modify the settings if required:
   - If Static mode is selected, IP Address, Netmask and Gateway.
   - if Gateway mode is selected, IP Address and Netmask.
4. Click **Apply** to save these settings.

Note

Applying new Ethernet settings will disconnect the unit from the web interface.

Configuring a Wi-Fi Interface

The unit can operate either as a Wi-Fi Access Point, or a Wi-Fi Client.

Enabling/Disabling the Wi-Fi Interface

> **Note**
>
> By default, the Wi-Fi network is disabled.

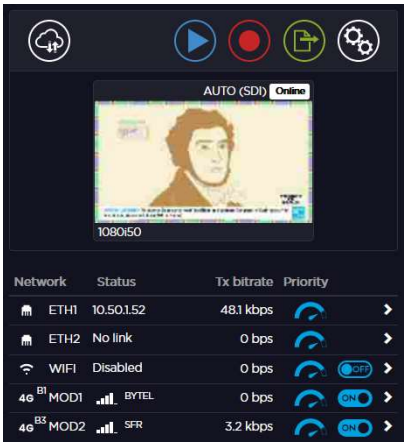
See the sections below to configure the Wi-Fi Interface.

Unit Panel

1. From the **Home** menu, tap  **> WiFi**.
2. Tap the Wi-Fi line to access the settings menu.
3. Tap  to enable the Wi-Fi.
   The button turns into  , and the Wi-Fi network is enabled.

Web Interface

- Click  or  on the Wi-Fi line to enable or disable the Wi-Fi network.



> **Note**
>
> If you disable Wi-Fi you may lose the web interface connection.

Configuring a Wi-Fi Access Point

By default, the Wi-Fi network is disabled. Enable it first as described in Enabling/Disabling the Wi-Fi Interface.

When configured in Wi-Fi access point mode, the unit can be controlled remotely from a smartphone, tablet or laptop.

See the sections below to configure the Wi-Fi access point.

Unit Panel

1. From the **Home** menu, tap  .
2. Tap the Wi-Fi line to access the Wi-Fi settings menu.
3. Tap the **Mode** field.
4. Select the **Access Point** mode.
5. Tap  to scroll down.
6. Tap  .
7. Define the Wi-Fi settings:
   - **Network Name**: (automatically formatted as follows: "ProductSeries_" followed by the unit hardware ID.)
   - **Frequency Band**: 2.4GHz or 5.0GHz.
   - **Channel**: Select the channel used (dynamic list according to the frequency band).
     - 2.4GHz: channel 1 to 11.
     - 5.0GHz: channel 36, 40, 44 and 48.

     > **Note**
     >
     > In Access Point mode, 5GHz band is not available for Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia.
   - **Password**: By default: Password.
8. Tap  and select **ADVANCED+**.
9. Define IP settings (**IP Address**, **Netmask** and **DNS server address**).
10. Tap  .

An icon indicates that the Wi-Fi Access Point is configured:

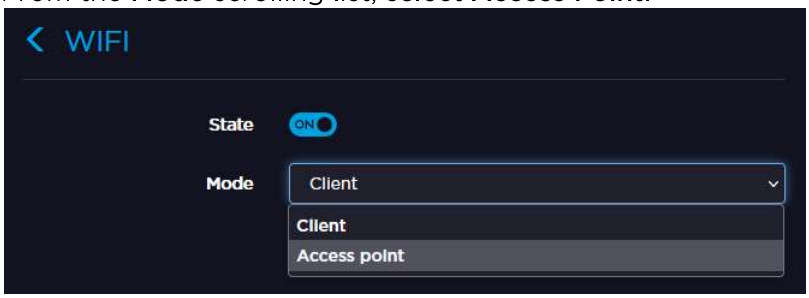
 A Wi-Fi Access Point is configured.

 At least one client is connected to the Access Point.

Web Interface

1. Click on the Wi-Fi line to open the Wi-Fi interface.

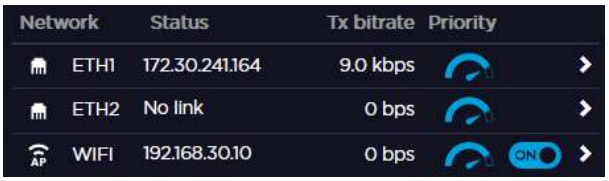
2. From the **Mode** scrolling list, select **Access Point**.



3. Define the Wi-Fi settings.
   - **Network name**: (automatically formatted as follows: "ProductSeries_" followed by the unit hardware ID.)
   - **Frequency Band**: 2.4GHz or 5.0GHz.
   - **Channel**: Select the channel used (dynamic list according to the frequency band).
     - 2.4GHz: channel 1 to 11.
       5.0GHz: channel 36, 40, 44 and 48.

       Note

       In Access Point mode, 5GHz band is not available for Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia.
   - **Password**: By default: Password. Click on to reset it.
   - Enter the **IP Address**, the **Netmask** and the **DNS Server Address**.
4. Click **Apply**.



Configuring a Wi-Fi Client Interface

By default, the Wi-Fi network is disabled. Enable it first as described in Enabling/Disabling the Wi-Fi Interface.

To configure a Wi-Fi Client interface, refer to the following:

- Scanning for a Wireless Network
- Manually Adding a Network

Scanning for a Wireless Network

To scan for a wireless network from the Unit Panel, or from the Web Interface, see the sections below.

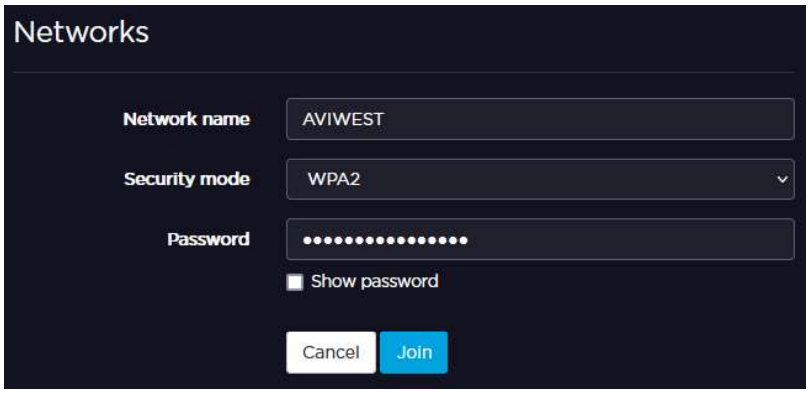
Unit Panel

1. From the **Home** menu, click on **> WiFi > Mode > Client**.

2. Click on to scroll down and click on to scan surrounding networks.
3. Click on or to select a network.
4. Click on the network name to select it.
5. Enter the password and click on to confirm.
6. Click on .

Web Interface

1. From the Web Interface, click on the Wi-Fi line.
2. From the **Mode** scrolling list, select **Client** mode.
3. Click on **Apply**.
   Surrounded networks are scanned and listed.
4. Select the network among the list.
5. Enter the **Password**.
6. Click on **Join**.



Manually Adding a Network

To manually add a network from the Unit Panel, or from the Web Interface, see the sections below.

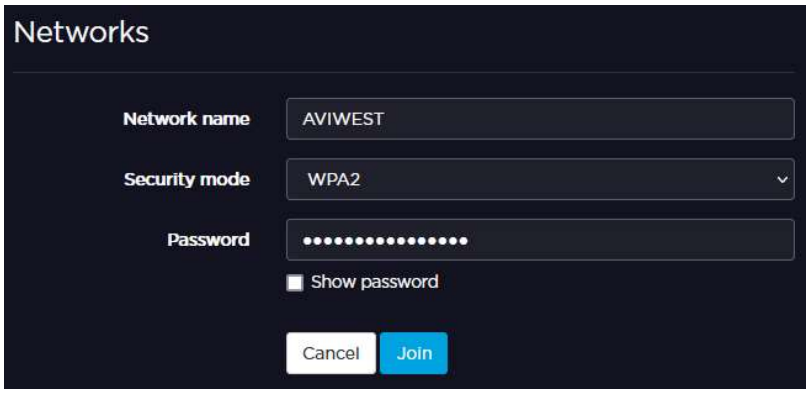
Unit Panel

1. From the **Home** menu, click on **> WiFi > Mode > Client >** .
2. Click on to add a new network.
3. Enter a **Network name**, select a **Security Mode** and enter a **Password**.
4. Enter the network password.
   - Click on to connect the network.
   - Click on to save the new network.

Web Interface

1. From the Web Interface, click on the Wi-Fi line.
2. From the **Mode** scrolling list, select **Client** mode.

3. Click on **Apply**.
4. Click on **Add**.
5. Enter the **Network name**, select a **Security Mode** and enter a **Password.**
6. Click on **Join.**



Configuring a Cellular Interface

Topics Include

Inserting a SIM Card

To insert a SIM card:

1. Ensure that your SIM card is unlocked.

   > **Note**
   >
   > In some cases, you may need to identify the unit IMEI (International Mobile Equipment Identity). To access this information, please refer to Getting IMEI, IMSI, and ICCID Numbers.

2. Insert the SIM card into a slot in the unit rear panel.

Pro460

- A Pro460 unit is equipped with 6x 3G/4G/5G modems.
- Slots 1 to 6 can be used.

Connecting a Quad CellLink to the Unit

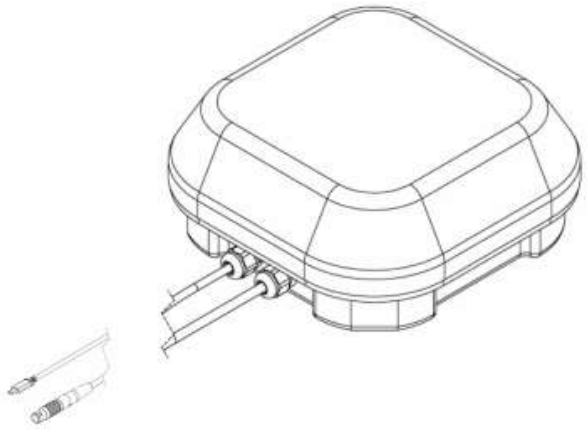
To connect a Quad CellLink to the unit:

1. On the Quad CellLink, remove the SIM card cover and insert the SIM cards into slots according to indications written on the cover.

   > **Note**
   >
   > Ensure the SIM cards are already unlocked.

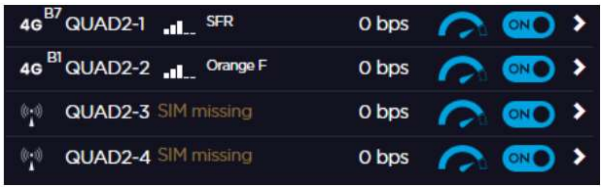
2. Replace the SIM card cover.
3. Connect the AC/DC adapter and the power cable.
4. Connect the USB cable to the unit.

> **Note**
>
> Choose a weather-protected area for this connection to avoid any damage due to ambient humidity or rain.



5. Open the transmitter Web Interface.

> **Important**
>
> The Quad CellLink is automatically detected:
> - QUAD-1 means modem #1 from Quad CellLink.
> - QUAD-2 means modem #2 from Quad CellLink.
> - ...



> **Note**
>
> You can connect up to two Quad CellLinks to the transmitter.

Enabling / Disabling a Cellular Modem

To enable or disable a cellular modem from the Unit Panel, or from the Web Interface, see the sections below.

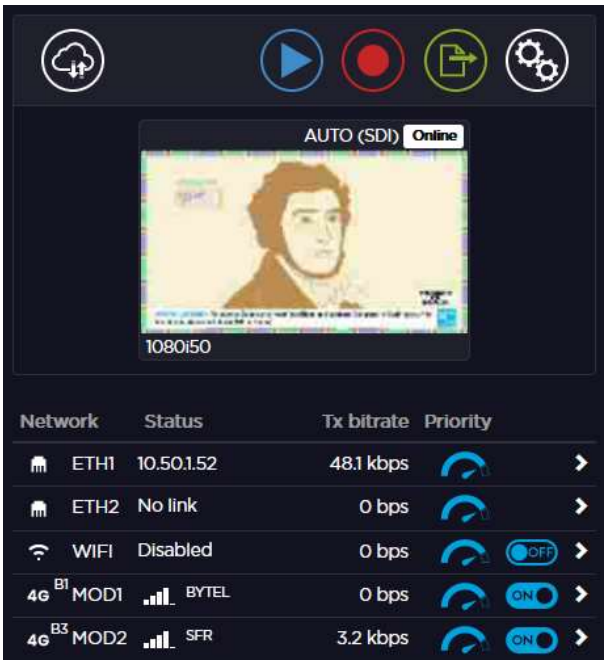
Unit Panel

1. From the **Home** menu, click on .
2. Click to select the modem that you want to enable or disable.
3. Click on the modem to be enabled or disabled.

4. Click OFF to enable the modem or on ON to disable it.

Web Interface

- From the web homescreen, click OFF or ON to enable or disable a modem.



Enabling / Disabling All Internal Cellular Modems

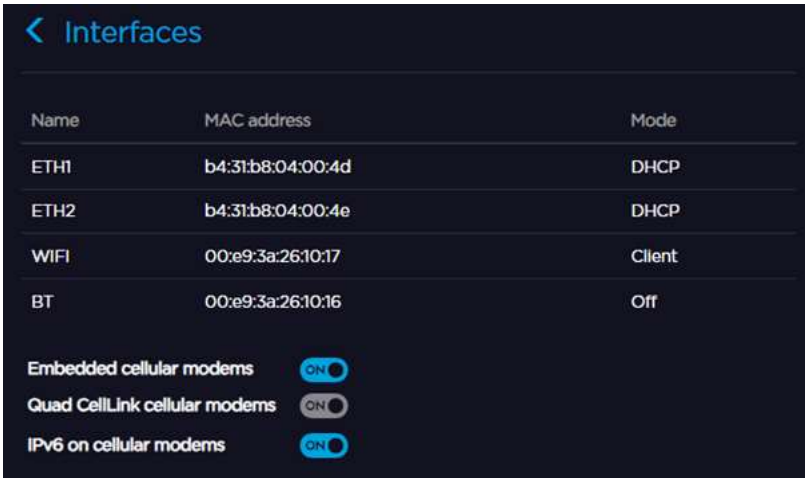
You can enable and disable all internal cellular modems either from the Unit Panel or from the Web Interface.

Unit Panel

1. From the **Home** menu, click on .
2. Click on and on .
3. In the **Embedded cellular modems** field, click on OFF an ON to enable or disable all internal modems.

Web Interface

1. From the Web Interface, click **Network** > **Interfaces**.
2. In the **Embedded cellular modems** field, click OFF or ON to enable or disable embedded modems.



Enabling / Disabling all Quad CellLink Cellular Modems

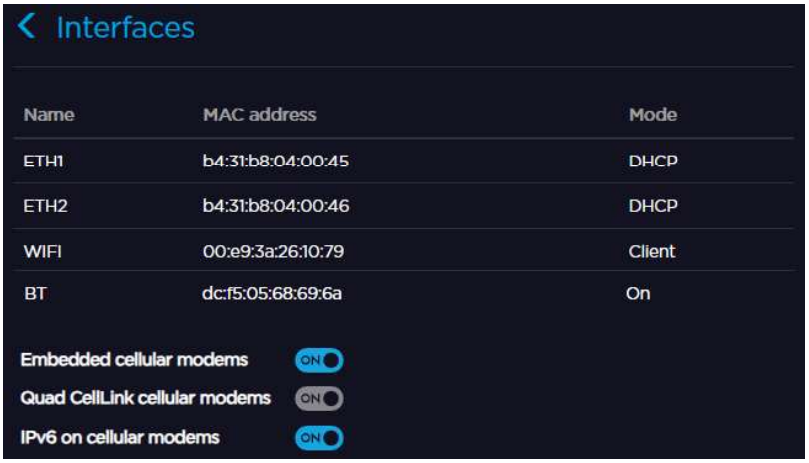
To disable all QUAD CellLink modems, see the sections below.

Unit Panel

1. From the **Home** menu, click on > .
2. In the **QUAD CellLink cellular modems** field, click on OFF or ON to enable or disable all Quad CellLink modems.

Web Interface

1. From the Web Interface, click **Network** > **Interfaces**.
2. In the **QUAD CellLink cellular modems** field, click OFF or ON to enable or disable embedded modems.



Enabling / Disabling IPv6 on Cellular Modems

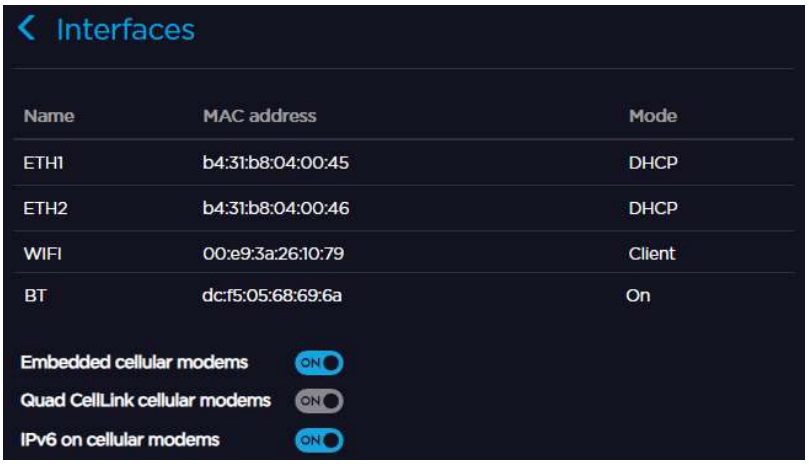
You can enable and disable IPv6 on cellular modems either from the Unit Panel or from the Web Interface.

Unit Panel

1. From the **Home** menu, click on > .
2. In the **IPv6 cellular modems** field, click on OFF an ON to enable or disable IPv6.

Web Interface

1. From the Web Interface, click **Network** > **Interfaces**.
2. In the **IPv6 cellular modems** field, click OFF or ON to enable or disable IPv6.



Enabling / Disabling Bluetooth

External audio inputs can be added via Bluetooth to be used with the intercom. For more information on the intercom, see Using the Intercom.

To enable or disable a cellular modem from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

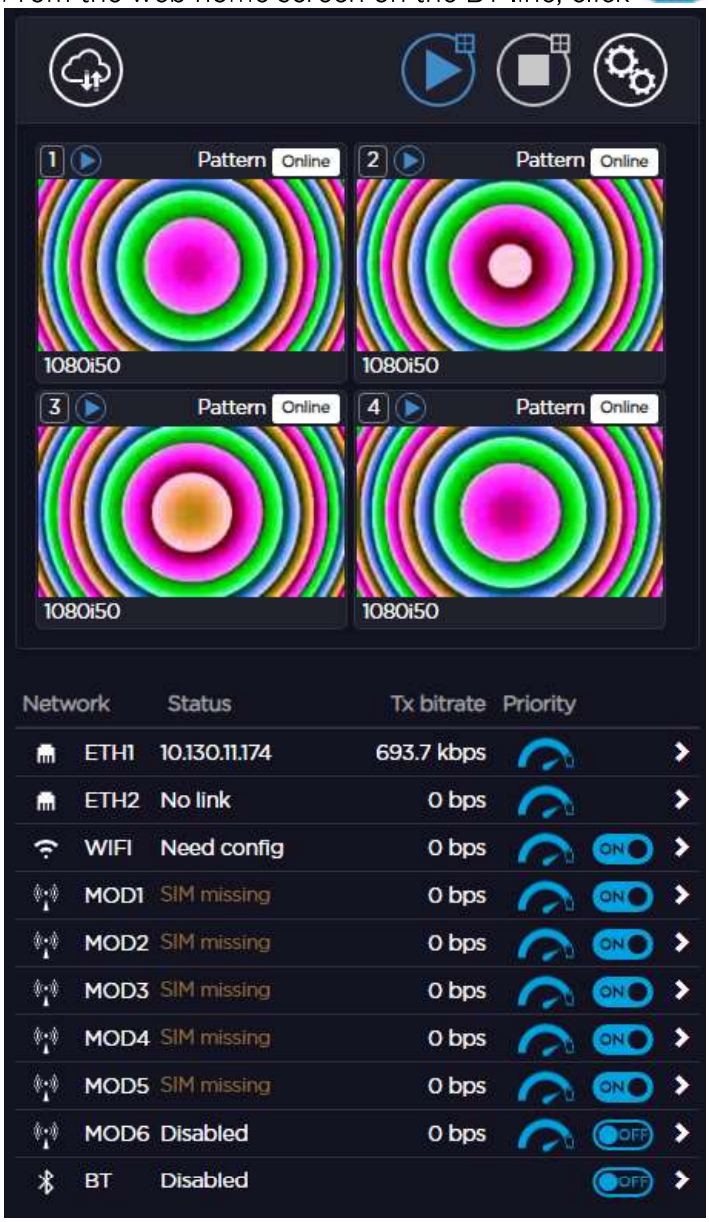
1. From the **Home** menu, tap  > BT.
2. Tap the BT line to access the setting menu.
3. Tap  to enable Bluetooth.

   Once Bluetooth is enabled, you can:

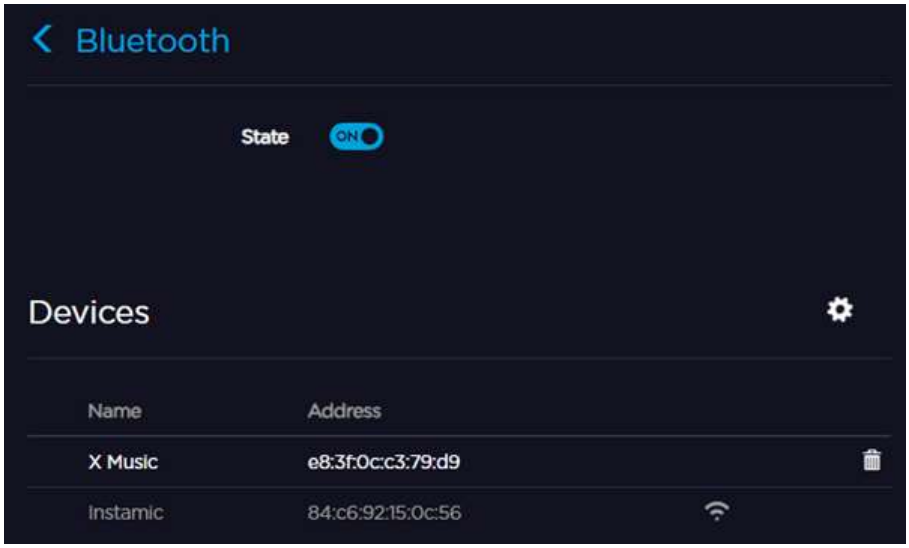
   - Tap  to display all nearby devices and tap on the device to be paired.
   - Tap  to display previously paired devices and tap on the device you wish to pair with.

Web Interface

1. From the web home screen on the BT line, click  to enable Bluetooth.



2. Click the BT line to view discovered Bluetooth devices.



3. Click a device to connect to it. Or, click the  icon to forget a device.

Managing the APN Database

The unit is delivered with a pre-defined Access Point Name (APN) database. You can modify the database from the Web Interface.

Topics include:

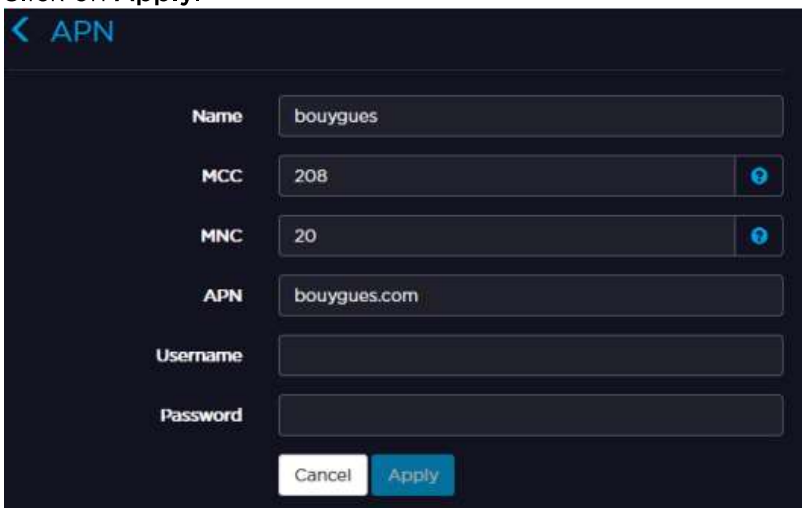
Adding an APN to the Database

Add and configure new APN settings to suit your requirements, so that they can be easily selected from the list.

1. From the web interface, click **Network > APN**.
2. Click **Add**.
3. Enter a **Name**.
4. Fill in the parameters fields (**MCC, MNC,** and **APN**).

   > **Note**
   >
   > Click on ? to get help if required.

5. Enter a **Username** and a **Password** if required.
6. Click on **Apply**.



The new APN appears in the APN database, and you can select it from the scrolling list when configuring a cellular interface operating within the same network.

Configuring a New APN

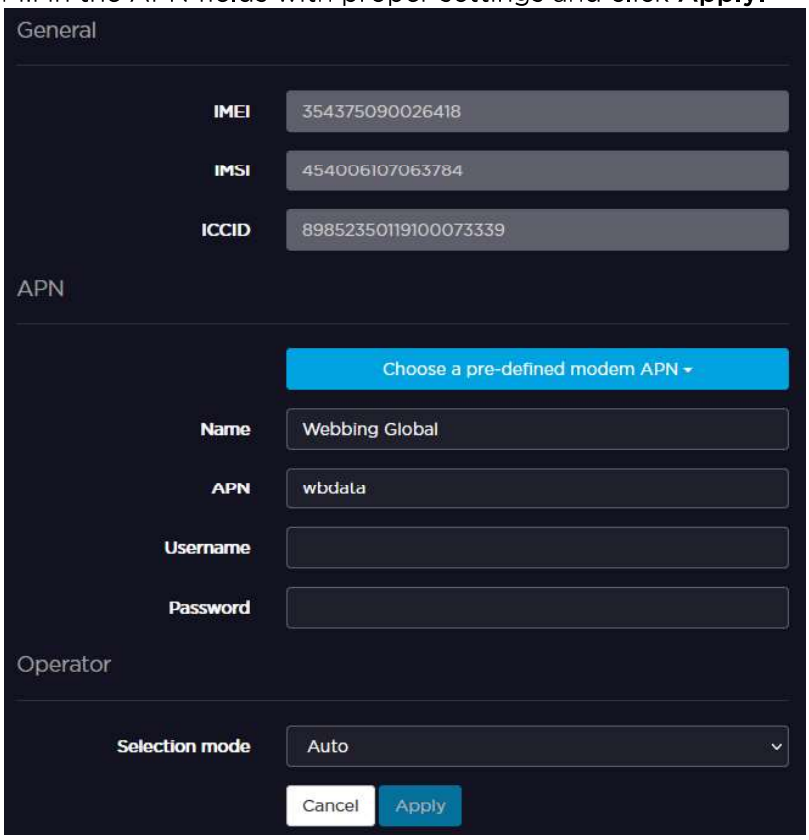
To configure a new APN from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, click on > **MOD** > APN.
2. Enter a name for the new APN, a username and a password if required.
3. Click on to save.

Web Interface

1. From the Home menu, click on an active modem.
2. Fill in the APN fields with proper settings and click **Apply.**



Selecting a Predefined APN

If the SIM card operator is registered in the unit's database, the unit automatically assigns a name and an APN.

If the APN assigned is not relevant, you can select another one within a predefined list, or configure a new one.

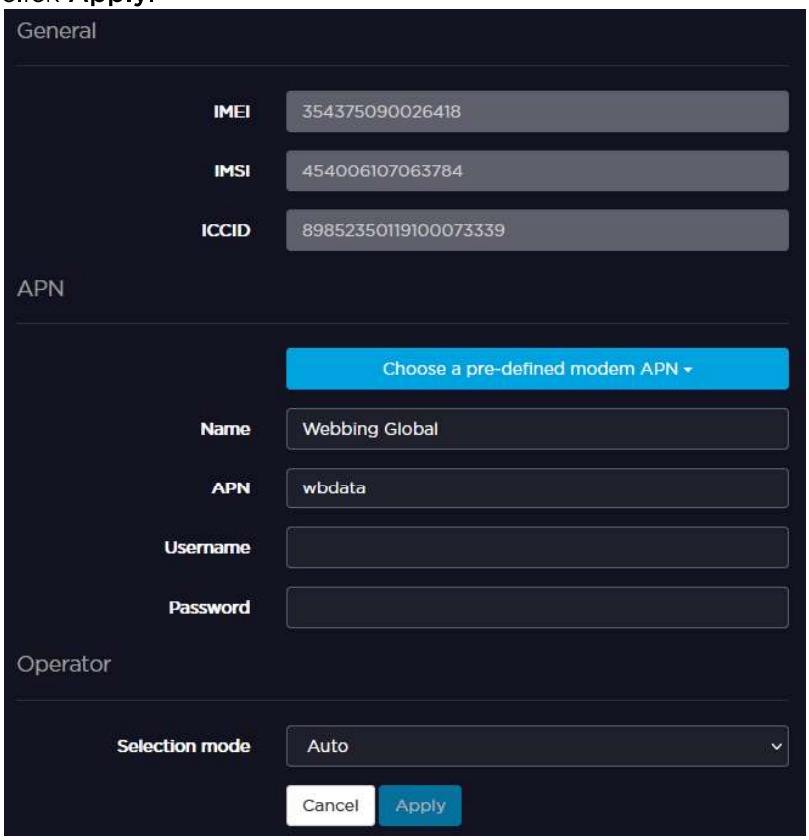
See the sections below.

Unit Panel

1. From the **Home** menu, click on  **> MOD >**  **>**  .
2. Use the arrows to browse APNs and press the screen to select one.
3. Enter the password and click on  .

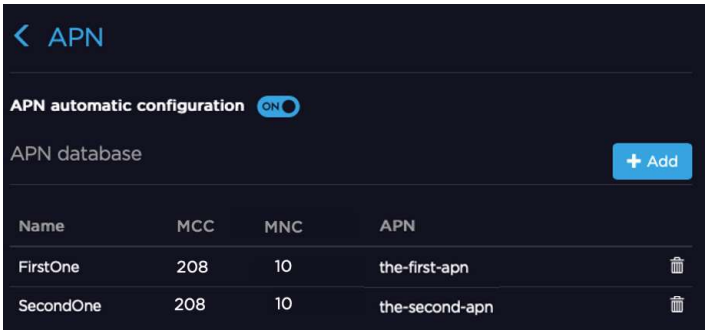
Web Interface

1. From the **Home** menu, click on an active modem.
2. Click on **Choose a pre-defined modem APN** and select the expected APN from the list, then click **Apply**.



Deleting an APN

1. In the web interface, click on **Network** > **APN**.
2. Double click on the trash button  .



Enabling / Disabling the Automatic APN Configuration

When **APN Automatic Configuration** is enabled, an APN is automatically assigned when a new SIM card is inserted.

1. From the Web Interface, click on **Network > APN**.

   > **Note**
   >
   > By default, the **APN Automatic Configuration** is enabled.

2. Click  /  to toggle between enable/disable.

Managing Cellular Operators

For each SIM card, you can decide how to manage the selection of the cellular operator. You have three possibilities:

- **Automatic mode**: The unit selects the operator by itself.
- **Manual Selection**: This mode is selected from the Web Interface. It allows manually entering the MCC and the MNC of the operator that you want to use.
- **Scan and Select**: You select among a list of operators detected by scanning available networks.

> **Note**
>
> From the Web Interface, click on **Network > SIM** to have an overview of your SIM Cards. Sort the SIM Cards by clicking on the column heading.

Topics Include

Selecting Automatic Mode

> **Note**
>
> **Automatic Mode is the default setting.**

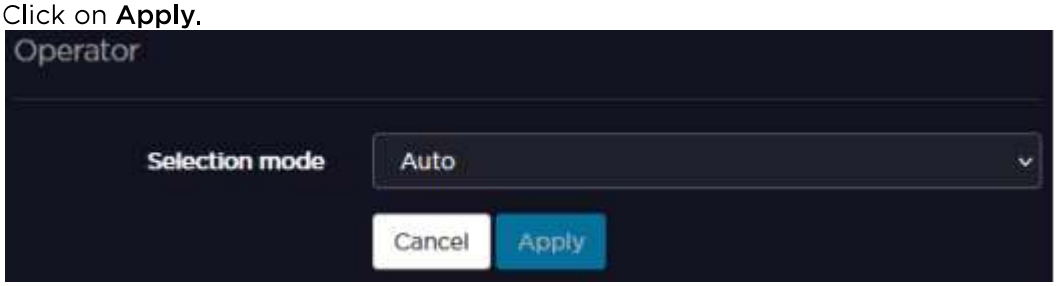
To select automatic mode from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, click .
2. Click to scroll down to the modem to be configured.
3. Click the modem line to enter the **MOD. CONFIG** menu.
4. Click .
5. Click the **Operator** field.
6. Click to enable Automatic Mode.

Web Interface

1. From the **Home** screen, click on a modem line.
2. In the **Selection mode** scrolling list, select **Auto**.
3. Click on **Apply**.



Selecting a Cellular Operator

To select a cellular operator from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, click on > **MOD** > > **Operator.**
2. Set the toggle button to to disable Automatic mode. A scan for available operators starts. It may take a few minutes.
3. Click on the desired operator.

> **Note**
>
> Only white operators in the list can be selected.

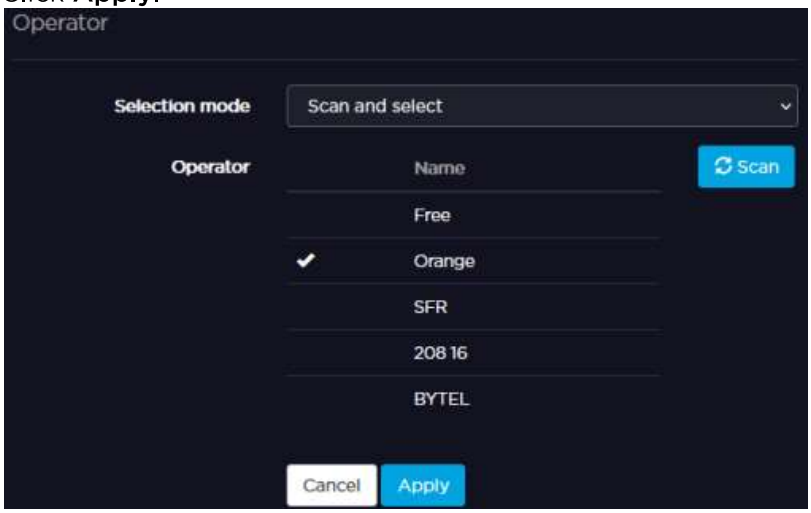
4. Click on to save.

Web Interface

1. From the **Home** screen, click on a modem line.
2. In the **Selection mode** scrolling list, select **Scan and select.**
3. Select the desired operator from the list.

> **Note**
>
> Only white operators in the list can be selected.

4. Click **Apply**.



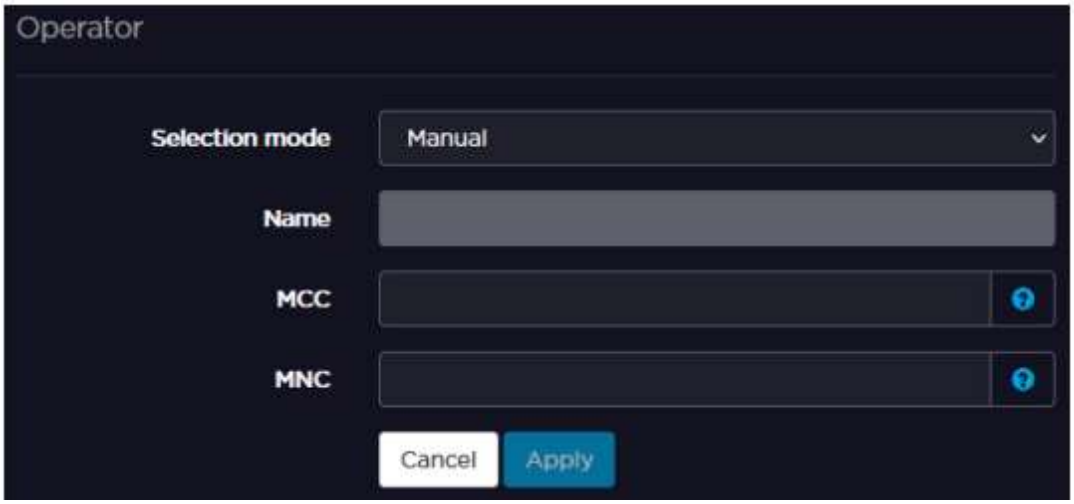
Manually Selecting a Cellular Operator

The option to set the MCC (Mobile Country Code) and MNC (Mobile Network Code) manually is only available on the Web Interface.

1. From the **Home** screen, click on the modem line.
2. Select **Manual** in the **Selection mode** scrolling list.
3. Fill the **MCC** and **MNC** fields.

> **Note**
>
> You can click on to access the lists of MCC and MNC.

4. Click on **Apply**.



Configuring Modem Bands

Important

If modem bands are not set in automatic mode or if they are not all selected, a star is displayed on the modem line.

You can configure modem bands using:

- **Standard Mode –** keeps it simple by limiting required fields to Network Mode and Preset.
- **Expert Mode –** gives you access to all bands.

Depending on whether you are working locally from the unit panel, or remotely from the web interface, choose from the following tabs.

Using Standard Mode

Unit Panel

1. From the **Home** menu, click on > **MOD** > > **Frequency Bands.**
2. Choose one of the following for the **Network Mode**:
   - Auto
   - 5G/4G
   - 5G Only
   - 4G Only
   - 3G Only

   Note

   For 5G networks operating in Non-Standalone mode (NSA), select 5G/4G settings.
3. Click on the Preset field and choose either:
   - All Bands
   - Low Frequency

   Note

   Low Frequency bands are useful for indoor operations.
4. Click on the **Carrier** field to select an image in the list.

Using Expert Mode

Unit Panel

1. From the **Home** menu, click on > **MOD** > > **Frequency Bands.**
2. Click on to enable the **Expert Mode.** All bands are displayed on the screen.
3. Click on to unselect the different cellular bands. The green dots turn to grey.
4. Click on to save.

Web Interface

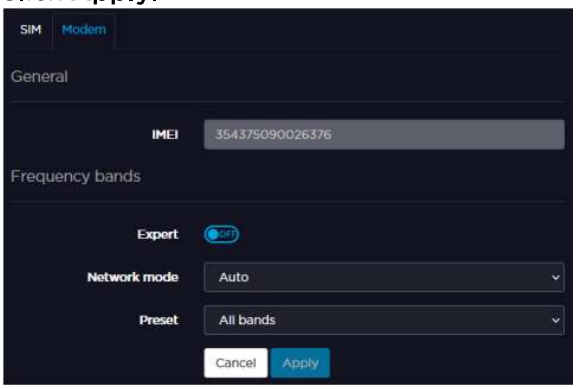
1. From the main screen, click on an active modem line.
2. Click on the **Modem** tab.
3. Click to enable **Expert Mode.** All the cellular bands appear on the screen.
4. Click to unselect the different cellular bands. The green dots turn to grey ( ).
5. Click **Apply.**

> **Note**
>
> Selecting the carrier-specific firmware may be mandatory to comply with some local regulations (e.g. Japan). In common cases, you should always keep the generic firmware selected. Should you have any doubt, please contact our support team.

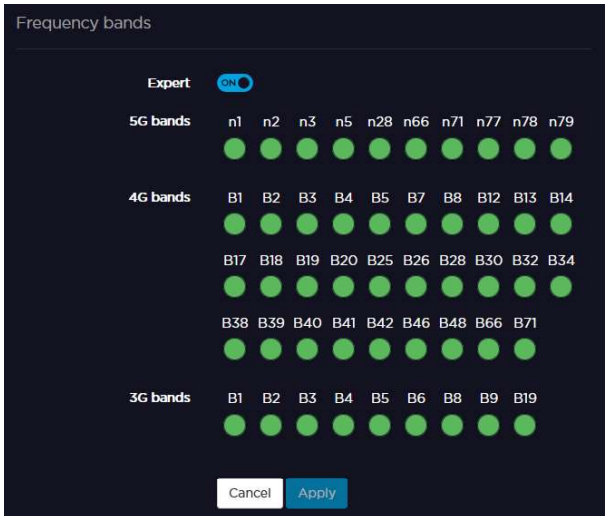
Web Interface

1. From the main screen, click on an active modem line.
2. Click on the **Modem** tab.
3. Choose one of the following from the **Network Mode** menu:
   - Auto
   - 4G Only
   - 3G Only
4. Click on the **Preset** field and choose either:
   - All Bands
   - Low Frequency

   > **Note**
   >
   > Low Frequency bands are useful for indoor operations.
5. Click **Apply**.



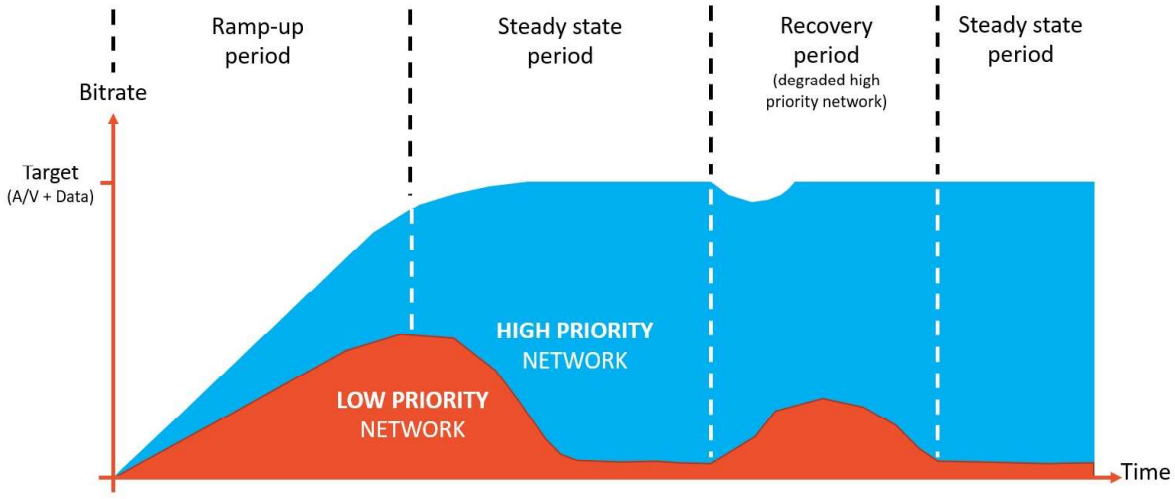
Please refer to the Notes in the **Unit Panel** section.



Managing Priorities of Network Links

You can choose a priority level (High or Low) for each network link used for Live or Forward operations.

These priorities are managed as shown in the diagram below:



For Live

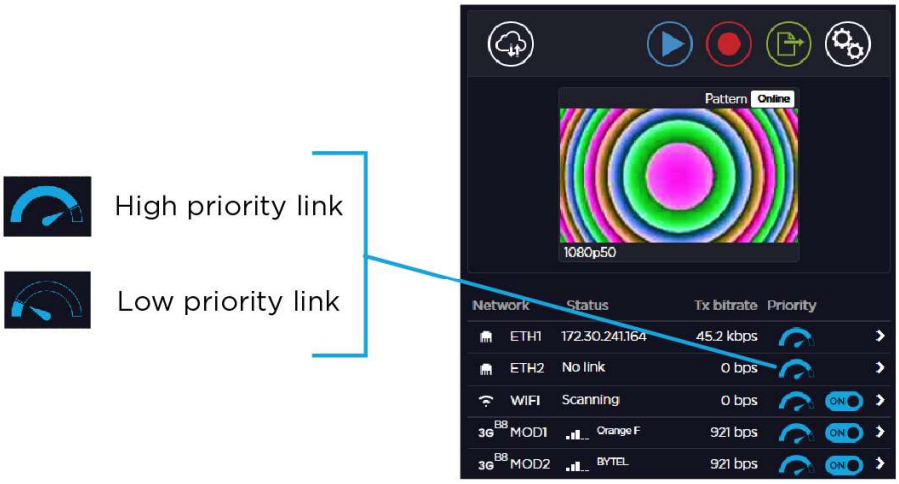
- Both high and low priority links are used as long as the bitrate target set in the Live profile has not been reached.
- When the bitrate target is reached, high priority links are mainly used.

For Forward

- Both high and low priority links are used as long as the bitrate target is lower than 1Mbps.
- When the bitrate target is lower than, low priority links are mainly used.

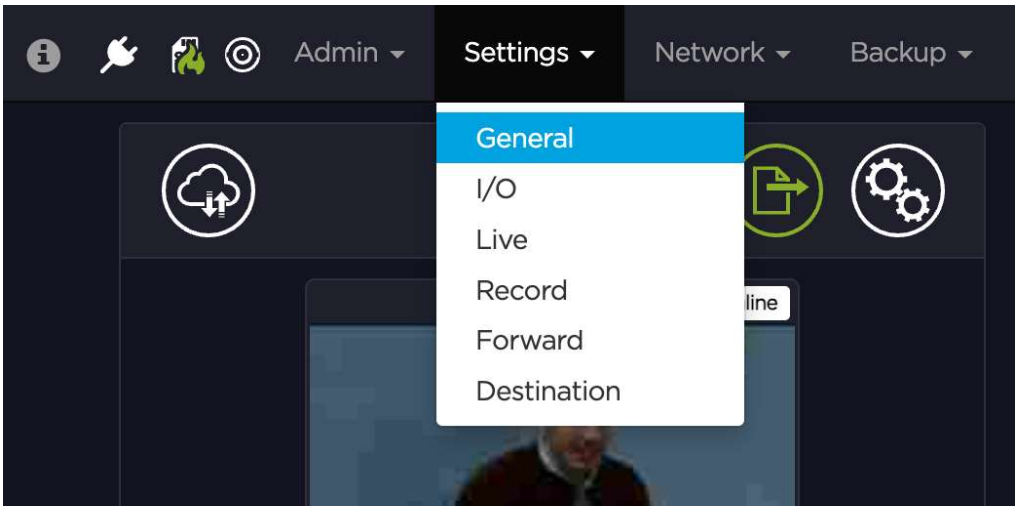
By default, each network link is set as a high priority link. This setting can be changed, either from the unit panel or from the Web Interface, before starting an operation or while the operation is in progress:

- **Unit panel:** Select the priority level when configuring network links (see Configuring an Ethernet Interface).
- **Web interface:** Click on the gauge icon to select High () or Low () priority.


High priority link
Low priority link
Pattern
Online
1080p50
Network
Status
Tx bitrate
Priority
ETH1
172.30.241.164
45.2 kbps
ETH2
No link
0 bps
WIFI
Scanning
0 bps
ON
3G B8 MOD1
Orange F
921 bps
ON
3G B8 MOD2
BYTEL
921 bps
ON

Configuration

The following topics are related to the various pages in the Settings menu.



Topics Include

Configuring the Unit Name

Giving a significant name to the unit allows you to identify it easily on a StreamHub interface.

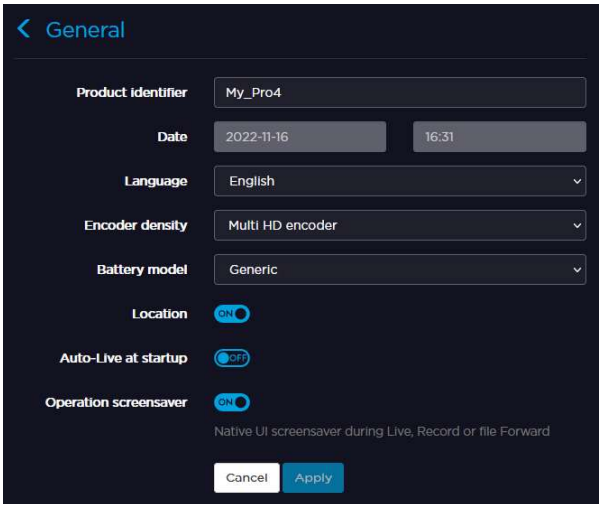
To configure the unit name from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > **General** > **Product Identifier**.
2. Use the keyboard to enter an ID and tap to confirm.

Web Interface

1. From the main screen, click **Settings** > **General**.
2. In the **Product Identifier** field, enter an ID (up to 15 characters).
3. Click **Apply**.



Configuring the Time and Date

To configure the time and date from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > **General** > **Date**.
2. (Optional) Enable the **Use NTP** toggle and enter an **NTP Server** address in the field below.

   Tip

   After entering the address of the NTP server you wish to use, click the **Test** button to ensure you can connect to it.

3. Set the date and time and tap to confirm.

   Note

   The Date and Time format is set to: YYYY-MM-DD HH:MM,

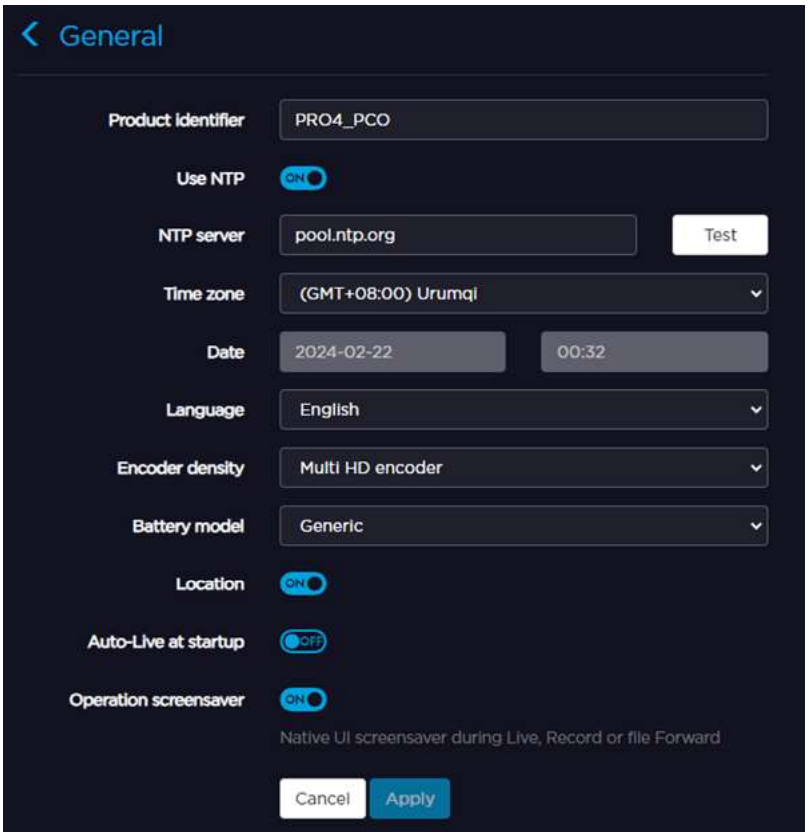
Web Interface

1. From the main screen, click **Settings** > **General**.
2. Click the **Date** and/or **Time** field to change it as required.
3. (Optional) Enable the **Use NTP** toggle and enter an **NTP Server** address in the field below.

   Tip

   After entering the address of the NTP server you wish to use, click the **Test** button to ensure you can connect to it.

4. Select the desired **Time Zone** from the drop-down list.
5. Click **Apply**.



Selecting the Language

Supported languages are English, French, Spanish, Portuguese, and Chinese.

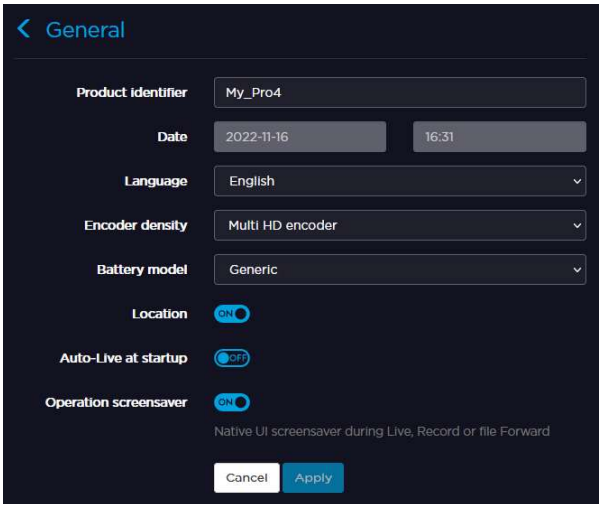
To select the language from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > **General** > **Language**.
2. Tap the desired language.

Web Interface

1. From the main screen, click **Settings** > **General**.
2. In the **Language** drop down list, select the desired language.
3. Click **Apply**.



Selecting the Battery Model

To select the battery model from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

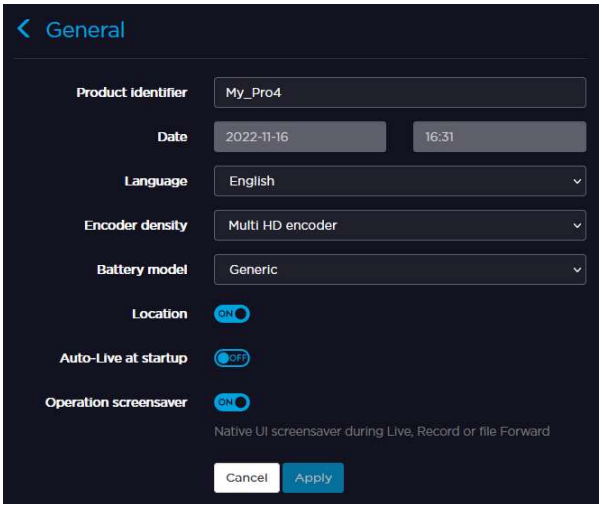
1. From the **Home** menu, tap  >  > **General** > **Battery model**.
2. Select your battery from the list.

> **Note**
>
> If the battery used is not listed, select **Generic**.

Web Interface

1. From the main screen, click **Settings** > **General**.
2. In the **Battery model** dropdown list, select your battery.

> **Note**
>
> If the battery used is not listed, select **Generic**.



Enabling / Disabling the Unit Location

You can enable or disable the unit location to allow, or prevent, the Manager application to locate the unit.

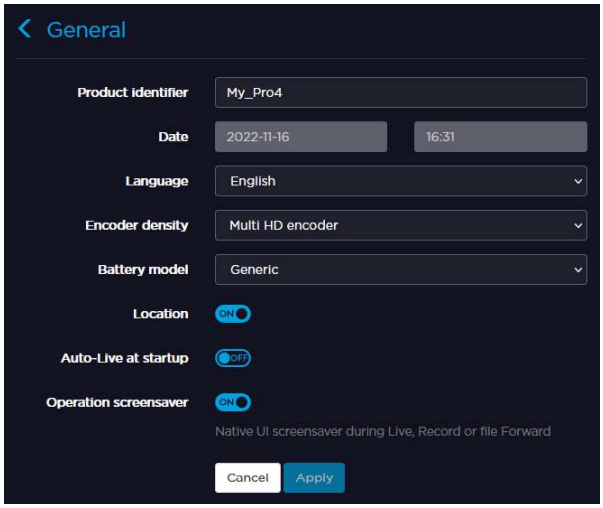
To enable or disable unit location from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap  >  > **General** > **Location**.
2. Tap  or  to enable or disable the unit location.

Web Interface

1. From the main screen, click **Settings** > **General**.
2. Click the **Location** toggle button to enable or disable the unit location.



Note

You can access this menu by clicking the Location icon on the top bar of the screen.

Enabling / Disabling Auto-Live at Startup

This option allows you to start a Live automatically once the unit is connected to a StreamHub or a Manager and once there is a video source.

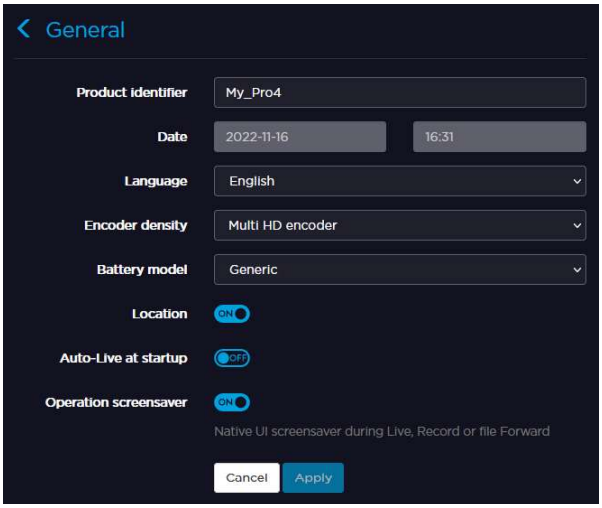
To enable or disable Auto-Live at startup from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, click on > > **General > Auto-Live at Startup.**
2. Click on or to enable or disable Auto-Live at Startup.

Web Interface

1. From the main screen, click on **Settings** > **General.**
2. Click the **Auto-Live at Startup** toggle button to enable or disable Auto-Live at Startup.



Enabling / Disabling Screensaver

This option allows to display a screensaver during a Live, a Record or a Forward.

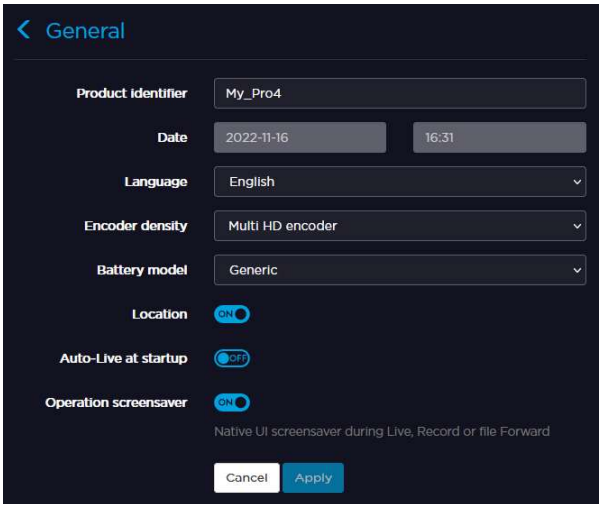
To enable or disable a screensaver from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > **General > Operation Screensaver.**
2. Tap or to enable or disable the screensaver.

Web Interface

1. From the main screen, click **Settings** > **General**.
2. Click the **Operation Screensaver** toggle button to enable or disable the screensaver.



Configuring Live Profiles

A **Live Profile** is a set of audio and video settings configured to fit within specific broadcasting requirements. Live Profiles can be configured from either the Web Interface or on the Unit Front Panel.

The unit is delivered with three (3) default Live Profiles:

- DEFAULT
- LOW DELAY
- HQUALITY 10s

Recommendations when configuring a Live Profile:

<table>
<tr><td rowspan="4">End-to-End Latency (by Application type)</td><td>Broadcast over SST</td><td colspan="2" rowspan="3">For CBR, enter a value within 500ms - 10s range.
For VBR, enter a value within 800ms - 10s range.</td></tr>
<tr><td>Broadcast over SRT</td></tr>
<tr><td>Video Return</td></tr>
<tr><td>Broadcast
(low latency) mode</td><td colspan="2">For CBR, enter a value within 80ms - 10s range.
VBR mode is not available.</td></tr>
<tr><td>Bitrate Control Mode</td><td colspan="3">CBR mode for streaming over managed networks.
VBR mode for streaming over unmanaged networks.</td></tr>
<tr><td>Resolution</td><td colspan="3">As source for encoding in the same resolution as source.
Dynamic when the resolution is adapted to available bitrate.</td></tr>
<tr><td rowspan="3">Live Bitrate (static resolution as source)</td><td rowspan="2">Video Resolution</td><td colspan="2">Bitrate Range</td></tr>
<tr><td>H.265/HEVC</td><td>H.264/AVC</td></tr>
<tr><td>2160p 50/59.94/60</td><td>3 Mbps - 80 Mbps</td><td>-</td></tr>
</table>

	2160p 23.98/24/25/29.97/30	2 Mbps - 80 Mbps	-
	1080p 50/59.94/60	800 kbps - 20 Mbps	3 Mbps - 20 Mbps
	1080p 23.98/24/25/29.97/30	800 kbps - 20 Mbps	1.8 Mbps- 20 Mbps
	1080i 50/59.94/60	500 kbps - 20 Mbps	1.8 Mbps - 20 Mbps
	720p 50/59.94/60	500 kbps - 20 Mbps	1.4 Mbps - 20 Mbps
Live Bitrate (dynamic resolution)	2160p 50/59.94/60	200 kbps - 80 Mbps	-
	2160p 23.98/24/25/29.97/30	200 kbps - 80 Mbps	-
	1080p 50/59.94/60	200 kbps - 20 Mbps	300 kbps - 20 Mbps
	1080p 23.98/24/25/29.97/30		
	1080i 50/59.94/60		
	720p 50/59.94/60		
Manual Resolution	1080p 50/59.94/60	0.8 Mbps - 20 Mbps	3 Mbps - 20 Mbps
	1080p 23.98/24/25/29.97/30	0.8 Mbps - 20 Mbps	1.8 Mbps - 20 Mbps
	1080i 50/59.94/60	0.8 Mbps - 20 Mbps	1.8 Mbps - 20 Mbps
	720p 23.98/24/50/59.94/60	0.5 Mbps - 20 Mbps	1.4 Mbps - 20 Mbps
	854 x 480p 23.98/24	0.2 Mbps - 20 Mbps	0.5 Mbps - 20 Mbps
	640 x 360p 23.98/24	0.2 Mbps - 20 Mbps	0.4 Mbps - 20 Mbps
Audio Settings	**Channel Layout**	**Bitrate Range**	
	1 x MONO	64 kbps - 256 kbps	
	1 x STEREO	64 kbps - 256 kbps	
	2 x MONO	128 kbps - 512 kbps	
	2 x STEREO	128 kbps - 512 kbps	
	4 x MONO	256 kbps - 1024 kbps	
	4 x STEREO	256 kbps - 1024 kbps	
	8 x MONO (single encoding only)	256 kbps - 1024 kbps	

The following Transport Stream settings are available if the Application type is set to Broadcast SRT:

Bitrate Control	VBR CBR
TS ID	1 - 1023
Program Number	1 - 1023

PMT PID	32 - 8183
PCR PID	32 - 8183
Video PID	32 - 8183
Audio PID	32 - 8183

Note

When starting a live in multi-encoding mode, the minimum bitrate is 4Mbps over cellular network.

Configuring a Broadcast Live Profile

To configure a broadcast Live Profile from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > .
2. Tap the **Profile Name** field and enter a new profile name.
3. Tap to confirm the new profile name.
4. Tap the **Application** field and and choose between **Bcast (SRT)** or **Bcast (SST)**.
5. Tap the **End-to-End Latency** field to adjust the latency.
6. Tap and tap the **BGAN profile** field to select a BGAN profile if required.
7. Tap the **Encoder Type** field and choose between H.264/AVC and H.265/HEVC.
8. (SST Live Profiles only) Tap the **Bitrate Control** field and choose between VBR and CBR.
9. Tap the **Capped Bitrate** field to enter a new bitrate.
10. In the Audio settings, tap the **Channel Layout** field and choose between: 1x Mono, 1x Stereo, 2x Mono, 2x Stereo, 4x Mono, 4x Stereo, 8x Mono, and No audio.
11. Tap the **Bitrate** field to adjust bitrate.
12. Tap and select **ADVANCED +**.
13. Tap to enable **I and P frames only**.
14. Tap to enable **Manual Resolution**.
15. Tap the **Resolution** field to display the resolution list.

    Note

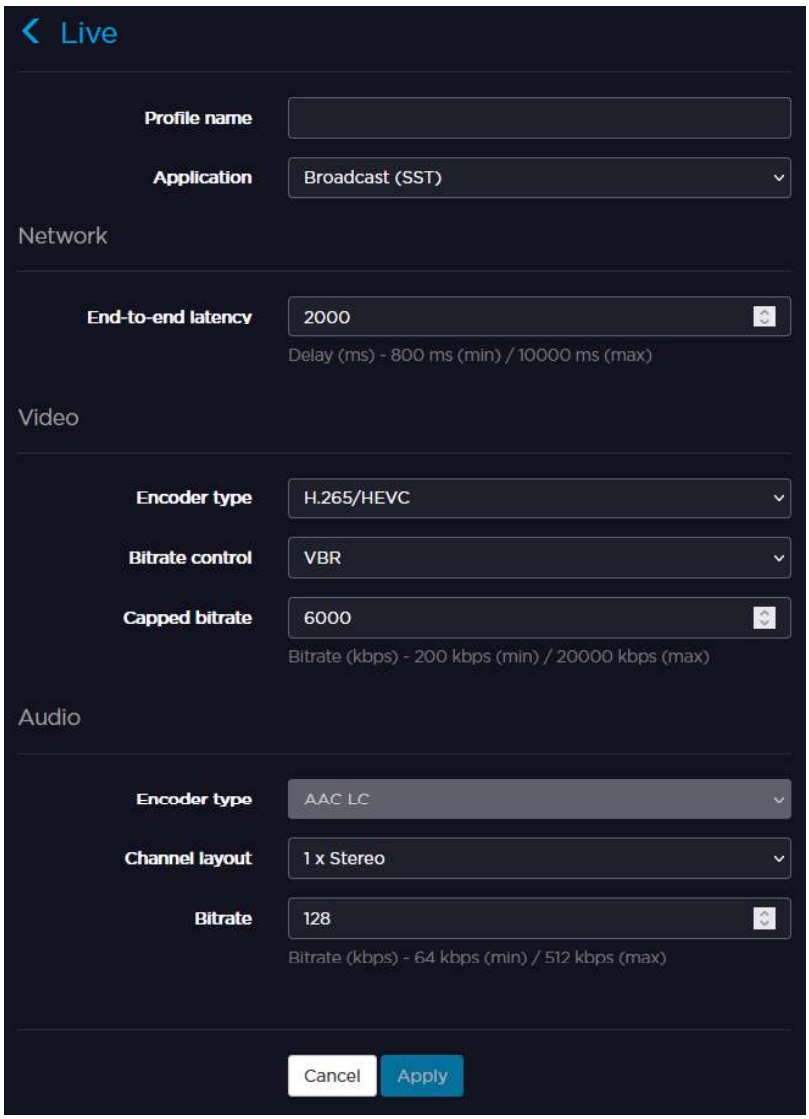
    Only downscaling or same resolution are supported.

16. Select the resolution you want to apply.
17. Tap to save the new Broadcast Live Profile settings.

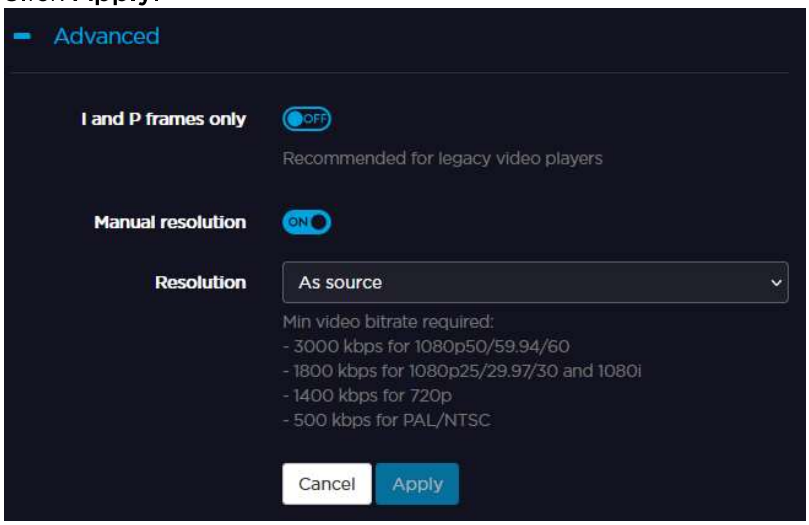
Web Interface

1. Click **Settings > Live**.

2. Click the + Add button.
3. Enter a profile name in the **Profile Name** field.
4. Fill in all parameters. For details on Broadcast Live Profile parameters, see Configuring Live Profiles.



5. Click **Apply**.



Configuring a Video Return Live Profile

To configure a video return Live Profile from the Unit Panel, or from the Web Interface, see the sections below.

Unit Panel

1. From the **Home** menu, tap > > .
2. Tap the **Profile Name** field and enter the new profile name.
3. Tap to confirm the new profile name.
4. Tap the **Application** field and choose **Video Return**.
5. Tap the **End-to-End Latency** field to adjust the latency.
6. Tap the **Bitrate** field to enter a new bitrate.
7. In the Audio settings, tap the **Channel Layout** field and choose between:
   - 1x Mono
   - 1x Stereo
8. Tap and select **ADVANCED +**.
9. Tap to enable **Optimization for LiveGuest**.
10. Tap to enable **Manual Resolution**.
11. Tap the **Resolution** field to display the resolution list.
12. Select the resolution you want to apply.
13. Tap to save the new Video Return Live Profile settings.

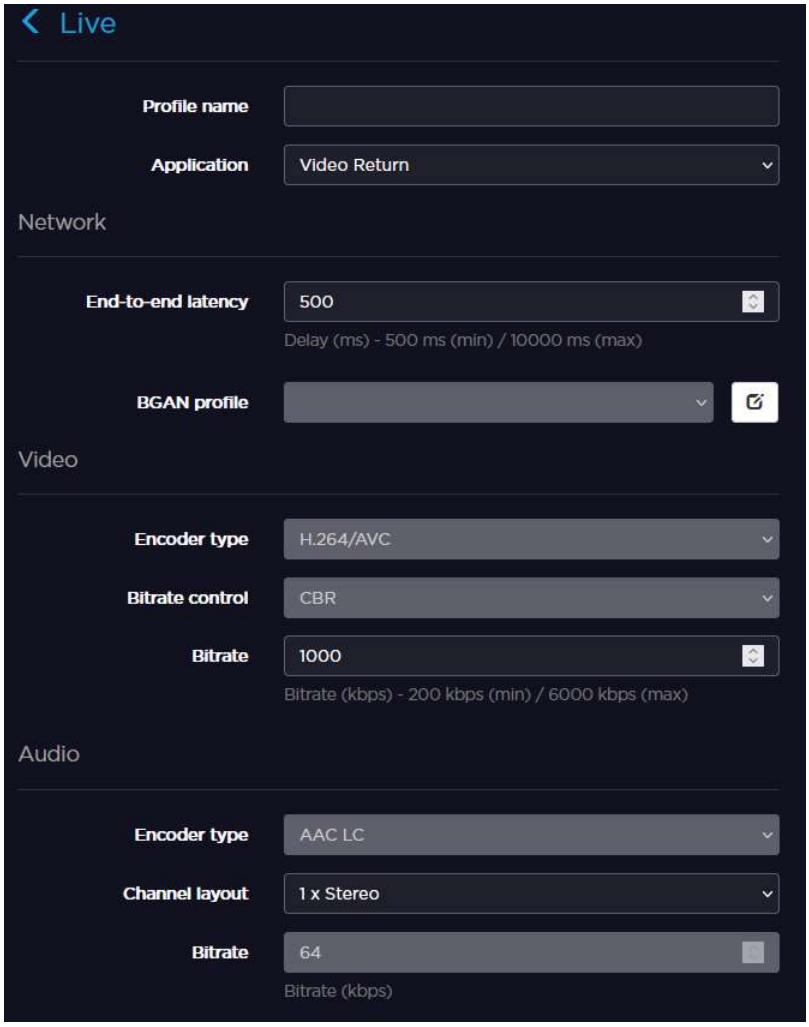
Note

When configured in multi-encoding mode, up to two interlaced video sources can be encoded.

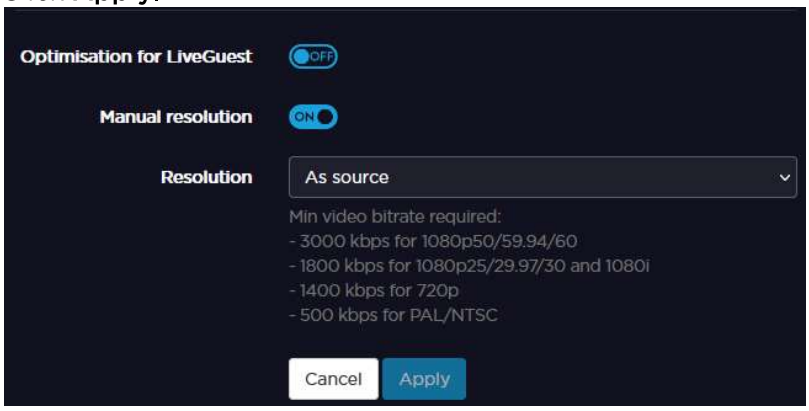
Web Interface

1. Click on **Settings > Live**.
2. Click on  .
3. Enter a profile name in the **Profile Name** field.
4. Set the **Application** to Video Return.
5. In the **Network** settings, enter an **End-to-End Latency**.
6. In the **Video** settings, set a bitrate.
7. In the **Audio** settings, select a **Channel Layout** between:
   - 1x Mono
   - 1x Stereo
8. Click on **Advanced**.
9. Click on  to enable **Optimization for LiveGuest**.
10. Click on  to enable **Manual Resolution**.
11. Click on the **Resolution** field to select the resolution to apply.

> **Note**
>
> When configured in multi-encoding mode, up to two interlaced video sources can be encoded.



12. Click **Apply**.



Deleting a Live Profile

To delete a Live Profile from the Unit Panel, or from the Web Interface, see the sections below.

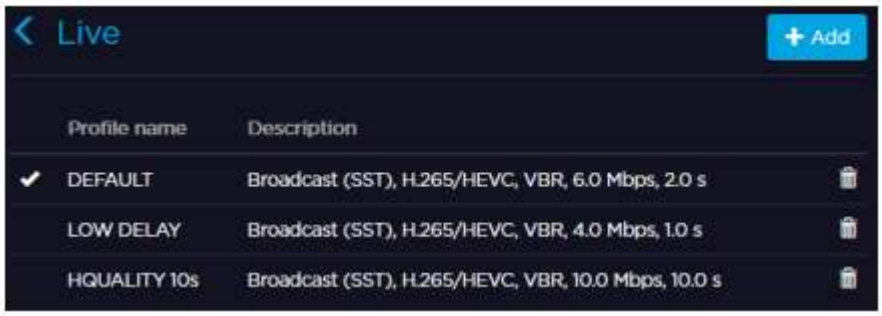
Unit Panel

1. From the **Home** menu, click .

2. Click and select .
3. Click to display the profile to delete.
4. Click and hold the profile to delete.
5. Click **YES** to confirm the profile deletion.

Web Interface

1. Click **Settings > Live**.
2. Double click the trash button ( ).



Note

To reorder the profiles, drag and drop them.

Selecting a Live Profile

To select a Live Profile from the Unit Panel, or from the Web Interface, choose from the following tabs.

Unit Panel

You can select a Live Profile from the Unit Panel when you are starting a Live. For instructions, see Starting a Live.

Web Interface

1. Click the icon. The encoder's current settings are displayed.
2. Select a pre-defined **Live Profile**.
3. Activate **Auto-record** if required.

Note

- The feature Live + Auto-record is available in Single Encoding mode for HD video source only.
- When this option is enabled, a Record starts automatically when a Live is started.
- The record profile used for the **Auto-record** can be different than the one used for a Record.