# LiveU LU800

## User Guide V9.5

LiveU

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# Introducing the LU800

## Overview

The LU800 is a compact, lightweight video uplink unit used to transmit high-quality video from diverse locations. The LU800 combines an unparalleled quality of service and resilience based on native 5G support with enhanced broadcast-grade video quality.

The LU800 offers HEVC encoding of up to 4Kp60 resolution at 50 Mbps. The unit includes a 64-GB internal storage capacity and an internal battery providing up to four hours of live transmission.

The LU800 can support multi-camera transmission from up to four, full-HD cameras from the field to the station. In Multi-HQ mode, the unit can transmit up to four feeds to the server, and send audio over a maximum of four channels per camera. In Field / Station Switcher mode, the unit supports a single HQ video transmission. The transmitting camera can be changed on the fly, either from the unit or remotely, from LiveU Central.

Designed from scratch to support high bandwidth 5G technology, the LU800 incorporates modems that utilize LTE and Advanced LTE over 4G and 5G cellular networks. LiveU's Reliable Transport (LRT) technology ensures the transmission of live video over the most unreliable networks. In addition, LiveU's Remote At-Home Production (REMI) enables full IP-based, remote control of cameras in the field.

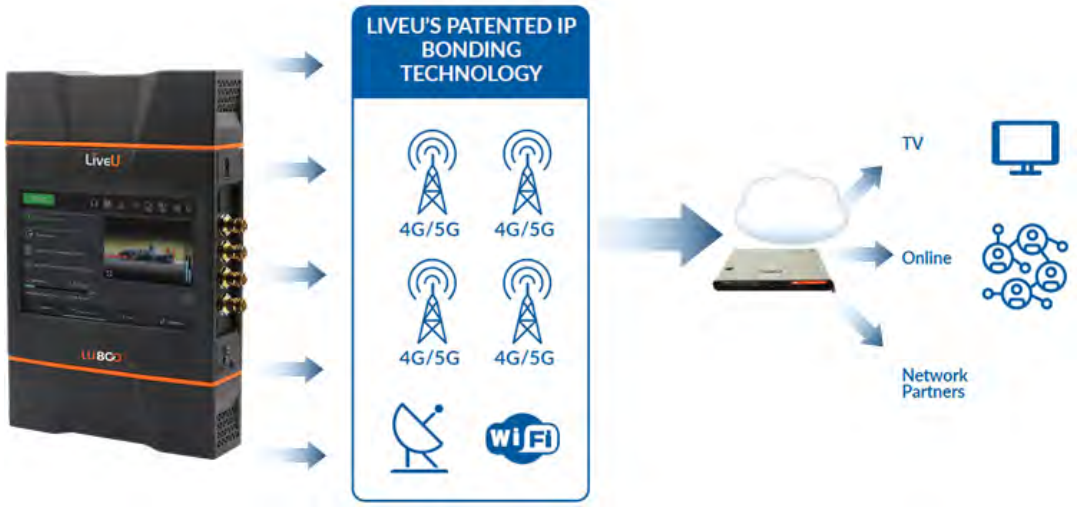
The LU800 is equipped with a seven-inch touch screen, which is used to operate the unit's intuitive user interface (UI) and to display video.

**LU800**

As the LU800 powers up, it can potentially connect to up to eight internal cellular modems, one Wi-Fi and two Ethernet interfaces to various networks, combining their bandwidth into a single, consolidated, broadband uplink connection.

Incoming video is encoded and transmitted over the aggregated bandwidth. The LiveU LU2000 or LU4000 server, running multiple Multi-Media Hub (MMH) instances, receives the video streams via a standard internet connection. Each instance combines LU800 transmissions into a discrete, broadcast-quality video stream that can be played out over an integrated SDI interface on the MMH server or transmitted from the server to an online destination.

The MMH server is typically installed at a studio or broadcasting center. Alternatively, a cloud-server-based MMH instance can be used when SDI output is not required. For multi-camera transmissions, the LU2000 / LU4000 MMH server must support quad server software.




**LU800 flow**

Your LU800 and any LU2000 connected to your organization is controlled and configured using LiveU Central software.

## LU800 Family Models

The LU800 family includes models that support one to four cameras and up to 16 audio channels.

## LU800-HDR / PRO-HD

The following table describes the capabilities of each of the models that comprise the LU800 family.

| Capability | LU800-HDR | LU800-PRO-HD |
|---|---|---|
| Camera inputs | 1 | 1 |
| Audio channels | Up to 4 | Up to 4 |
| 4K enabled | Yes (HDMI only) | No |
| 10-bit HDR | No | No |
| Bit rate (live) | Up to 30Mbps | Up to 30Mbps |
| Video interfaces | SDI-3G or HDMI 2.0 | SDI-12G or 4 X SDI-3G |
| Internal modems | Up to 8 | Up to 8 |

## LU800 PRO-2 / PRO-4 / PRO-4K

The PRO-2, PRO-4 and PRO-4K are software licenses that come on top of the LU800 PRO-HD.

| License Feature | PRO-2 | PRO-4 | PRO-4K |
|---|---|---|---|
| Camera inputs | Up to 2 | Up to 4 | 1 |
| Audio channels | Up to 8 | Up to 16 | Up to 16 |
| 4K enabled | No | No | Yes |
| 10-bit HDR | No | No | Yes |
| Bit rate (live) | Up to 30 Mbps | Up to 60 Mbps | Up to 70 Mbps |

## External Antenna Option

The LU800 contains up to eight internal cellular modems that provide enhanced connectivity in normal operational scenarios.

If you want to connect external antennas to the modems, contact your LiveU sales representative to order the LU800 model that includes the external antenna option.

## What's in the LU800 box?

The LU800 box contains the following items and cables:

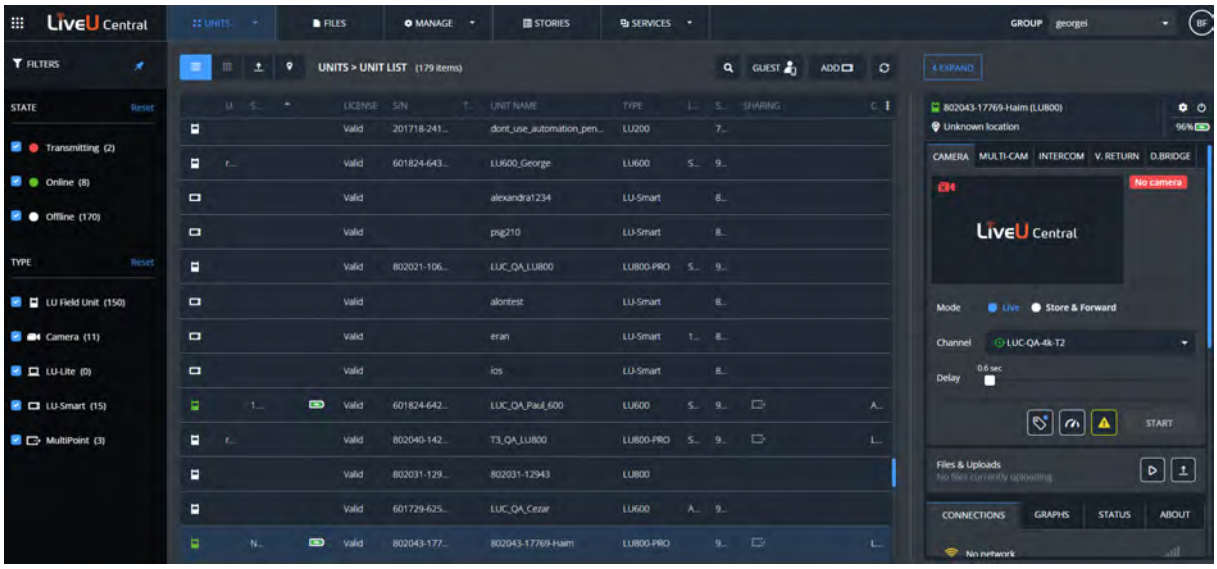
- LU800 portable video uplink unit and LU800 battery
- LU800 backpack
- Wired remote control
- AC/DC Adapter
- External battery cable
- 1 SDI cable (BNC to BNC 2.2 m)
- 2 x external antennas breakout cables (for the external antenna only)
- 1 x GPS antenna breakout cable (for the external antenna only)

Optional accessories:

- D-TAP cable for external Anton / Bauer / V-mount batteries
- LU800 Anton Bauer external battery adaptor
- Car cradle for mounting the LU800 unit
- LU800 V-Mount external battery adaptor

## LiveU Central

LiveU Central is a web interface that enables the station / studio operator to access and configure any connected LiveU field unit. LiveU Central runs in any web browser, including Google Chrome - the recommended option - Internet Explorer, Microsoft Edge and Firefox. LU Central allows station / studio operators to view the unit's status and to remotely configure an MMH instance, running on an LU2000 / LU4000 server.




**LiveU Central**

When LiveU Central takes control of the LU800, the message Unit is under LiveU Central Remote Control is displayed on the unit's LCD screen. Tapping **OK** closes the message.

**Remotely controlled unit**

For information about LiveU Central, see the LiveU Central User Guide, V9.2.

# Getting Started

This chapter describes how to perform basic tasks to get started with the LU800.

**Note** Before beginning the procedures described in this chapter, check that the LU800 was delivered with SIM cards installed. If SIM cards have not been pre-installed, contact LiveU Support.

The following table describes the LU800's basic workflow:

| Step | Reference | Reference |
|---|---|---|
| 1 | Powering on the LU800 | |
| 2 | Connecting the Video Camera | |
| 3 | Selecting an output Channel | |
| 4 | Connecting to a network | |
| 5 | Going Live | |
| 6 | Shutting Down | |

## Powering on the LU800

The entire bootup and modem connection process typically takes less than 30 seconds.

### To power on the LU800 unit:

- Press the **Power** button on the LU800 for approximately two seconds until the unit powers on.

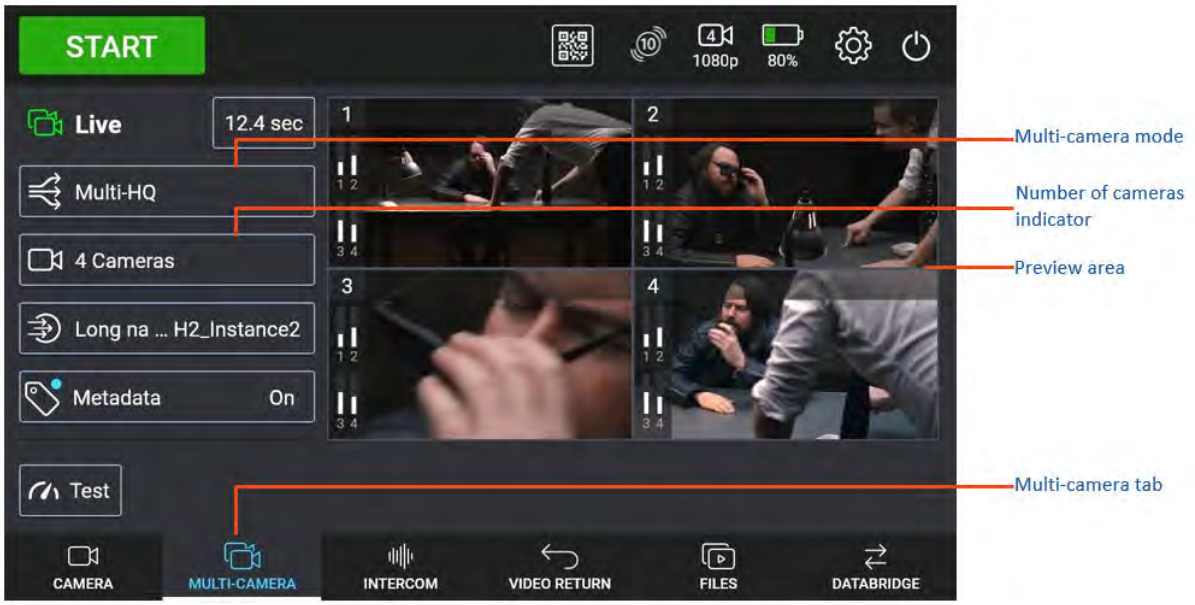
**Power button**

The Home screen appears on the unit's LCD screen. If a camera is connected to the LU800, the video that the camera is capturing is displayed in the preview area.

Here is a preview of the captured video when a single camera is connected:

**Home screen – Single camera video preview**

Here is a preview of incoming video when four cameras are connected and the unit is set to Multi-MQ:




**LU800 Home screen – Multi-camera video preview, Multi-MQ mode**

**Note** Multi-camera can operate in one of two modes: Multi-HQ and Field Switcher. For information on working in multi-camera mode,

## Connecting a video camera

The camera can be connected to the LU800 before or after powering on the device.

**Note** This section describes how to connect a single camera to the LU800.

## To connect the camera:

1. Connect an SDI cable to the video-out port on the video camera.
2. Connect the other end of the cable to SDI port 1.

**Note**

- The LU800-HDR also supports HDMI input.
- SDI port 1 supports an SD to 4K signal.

**SDI ports**

The video is automatically detected by the LU800 and is displayed on the unit's preview area a few seconds after the camera is connected.

At the top of the Home screen, the **Camera** icon

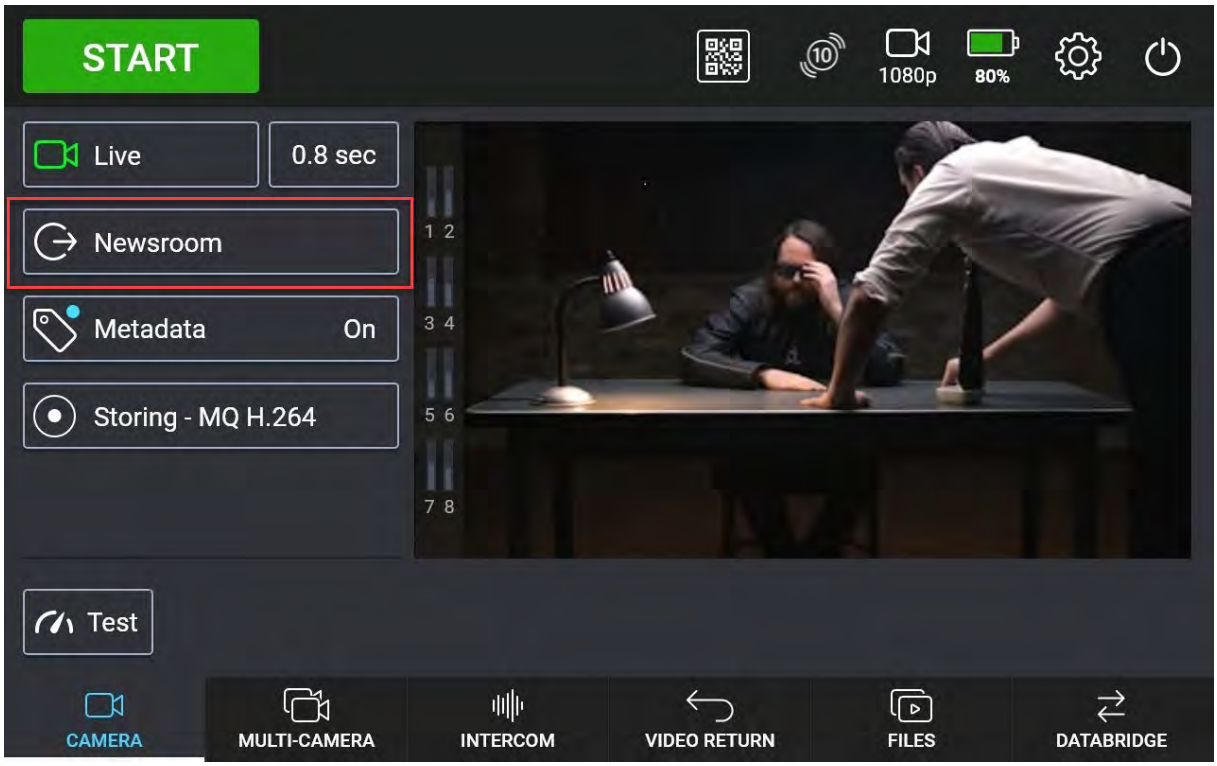
displays the detected resolution.

If the LU800 does not detect any incoming video, N/A

is displayed in place of the resolution and the preview area is black.

## Selecting an output channel

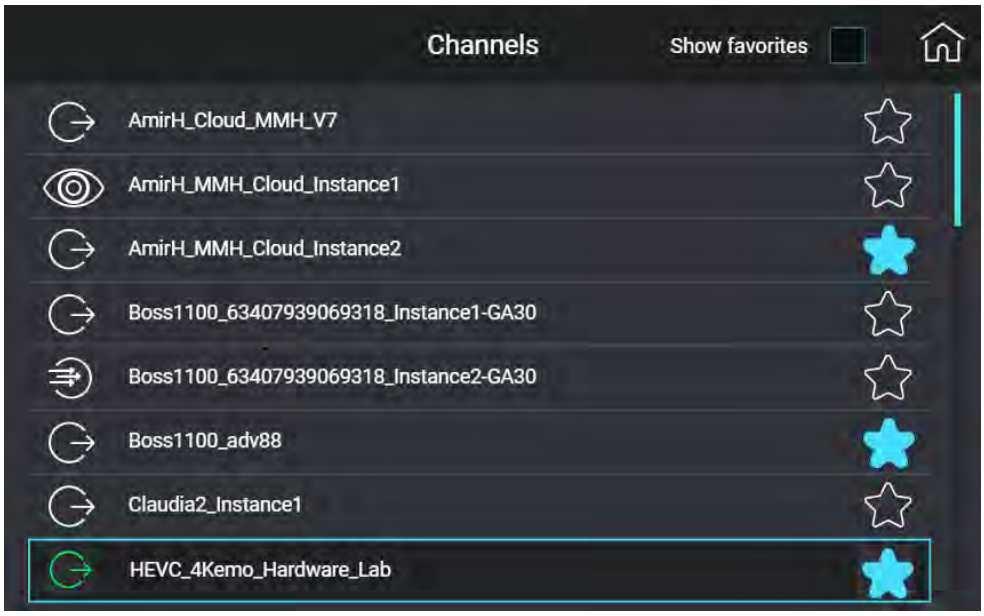
If you are using the LU800 for the first time, you need to set the channel through which to stream LU800 video output to the LU2000 / LU4000 MMH server. The LU800 continues to use the same destination channel by default until you change it.




**Home screen – Channel selection**

## To select a channel:

1. Tap the Channel button on the Home screen.
   The Channels screen is displayed.




**Channels screen**

The following table describes the icons displayed next to the channel names.

| Icon | Description |
|---|---|
| | Contains a single-camera video feed. |

| Icon | Description |
|---|---|
| | Contains multi-camera video feed. This icon appears only in a multi-camera channel selection. |
| | Channel is a virtual group. |
| | Proxy channel used for Station Switcher. |

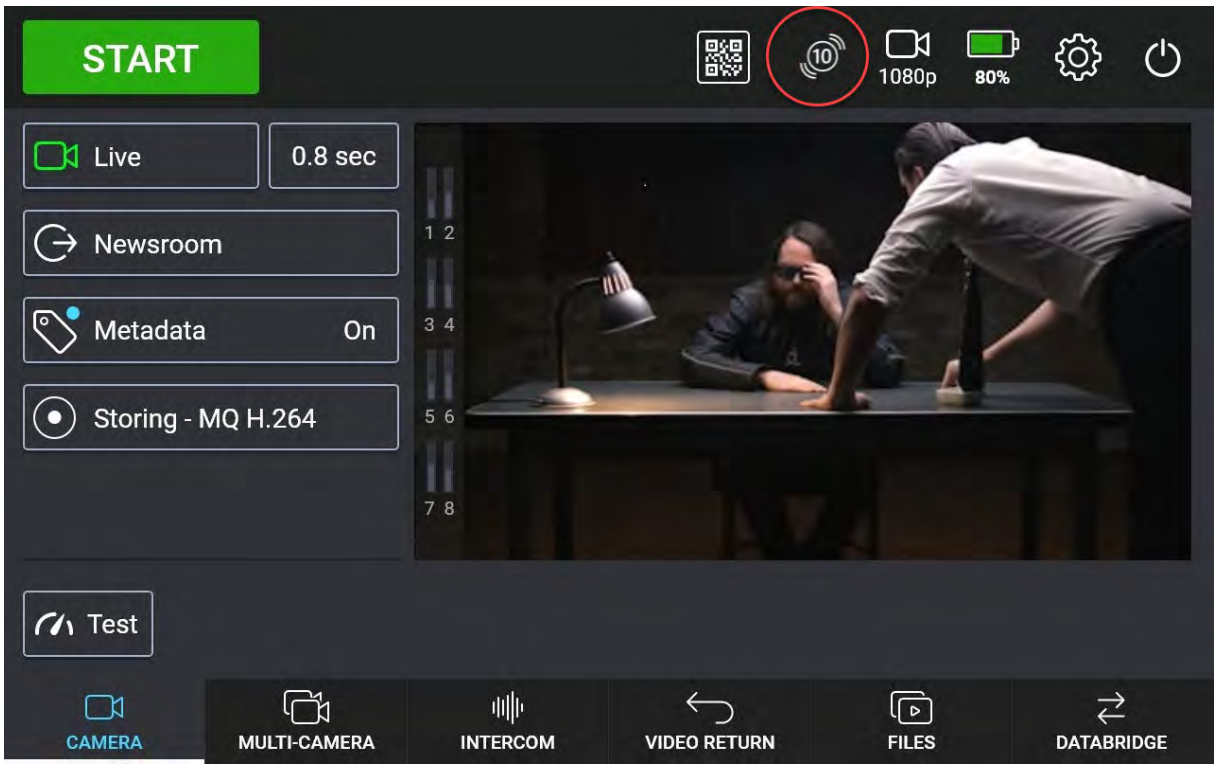
2. Tap the channel you want to connect to.
   The channel you select is displayed on the Home screen.

## Connecting to a network

Network interfaces include cellular networks, and Wi-Fi and Ethernet links.

The **Connections** icon at the top of the Home screen appears in red and displays a zero to indicate that the unit is not connected to any network. When the unit connects to one or more networks, the icon becomes white and displays the number of connected interfaces.

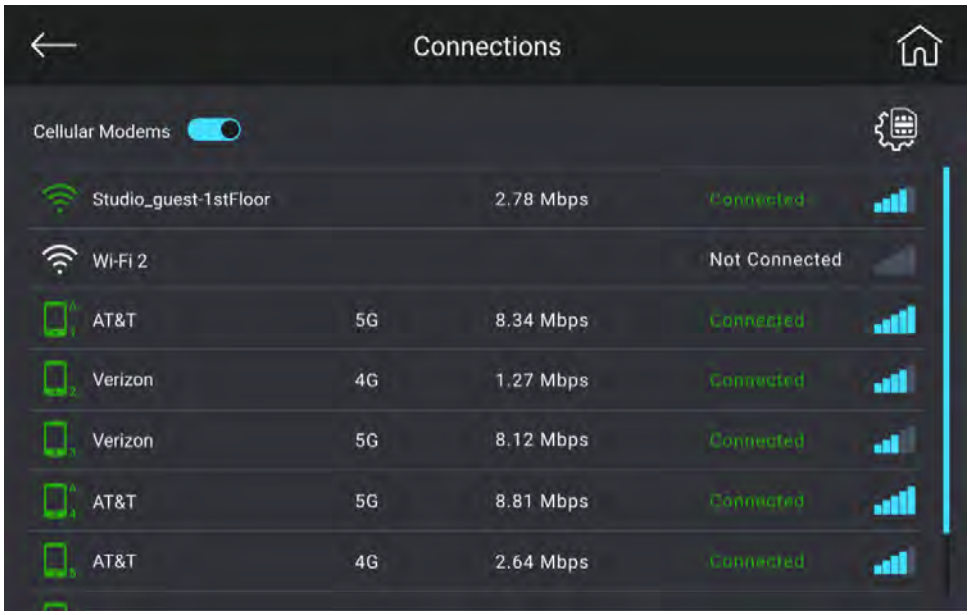
The unit connects automatically to any available network following reboot.




**Home screen - Connections**

### To connect to a network:

1. Tap at the top the Home screen.
   The Connections screen is displayed.




**Connections screen**

2. Tap the network interface you want to connect to.
3. Repeat step 2 for each network you want to connect to.

   At the top of the Home screen, becomes , displaying the number of network interfaces to which the unit is now connected.

   is displayed at the top-right of the Connections screen. Clicking this icon allows you to switch between SIM A and SIM B.

   You are ready to go live.

## Going live

Once the LU800 is set up with a camera, channel and network interface, you can go live.

## Starting transmission

### To start transmission:

- If necessary, tap **Camera** at the bottom of the Home screen, then tap START

  The **Camera** tab at the bottom of the Home screen becomes red to indicate that video is currently transmitting. The preview area is also framed in red.

  The total bit rate of the transmission is displayed at the bottom of the screen.

  During live streaming, incoming video is saved locally on the LU800 while simultaneously transmitting live video.

**Transmitting video**

START becomes STOP

When you tap START the LU800 connects to the preset channel and transmission begins.

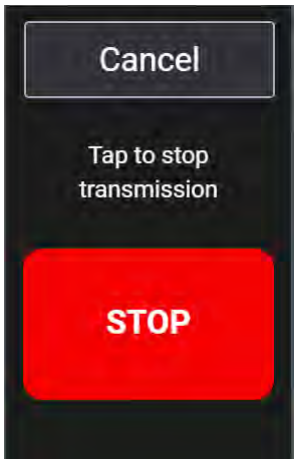
**Note** When enabled in LU Central, timecode information from the camera is transmitted together with the video to the MMH server.

When video is transmitted, the screen displays the recording quality of the file stored under the Live & Store option. The remaining storage space is also displayed in terms of recording time. The higher the quality of the stored video, the lower the available recording time.

## Stopping transmission

### To stop a live transmission:

1. Tap STOP on the Home screen.
   The following confirmation screen is displayed.



**Stop transmission confirmation**

2. Tap **Stop** again.

   Video stops transmitting and

becomes


## Shutting down the LU800

### To shut down the LU800:

1. Tap on the Home screen.
2. Select one of the following:
   - Shut Down
   - Restart

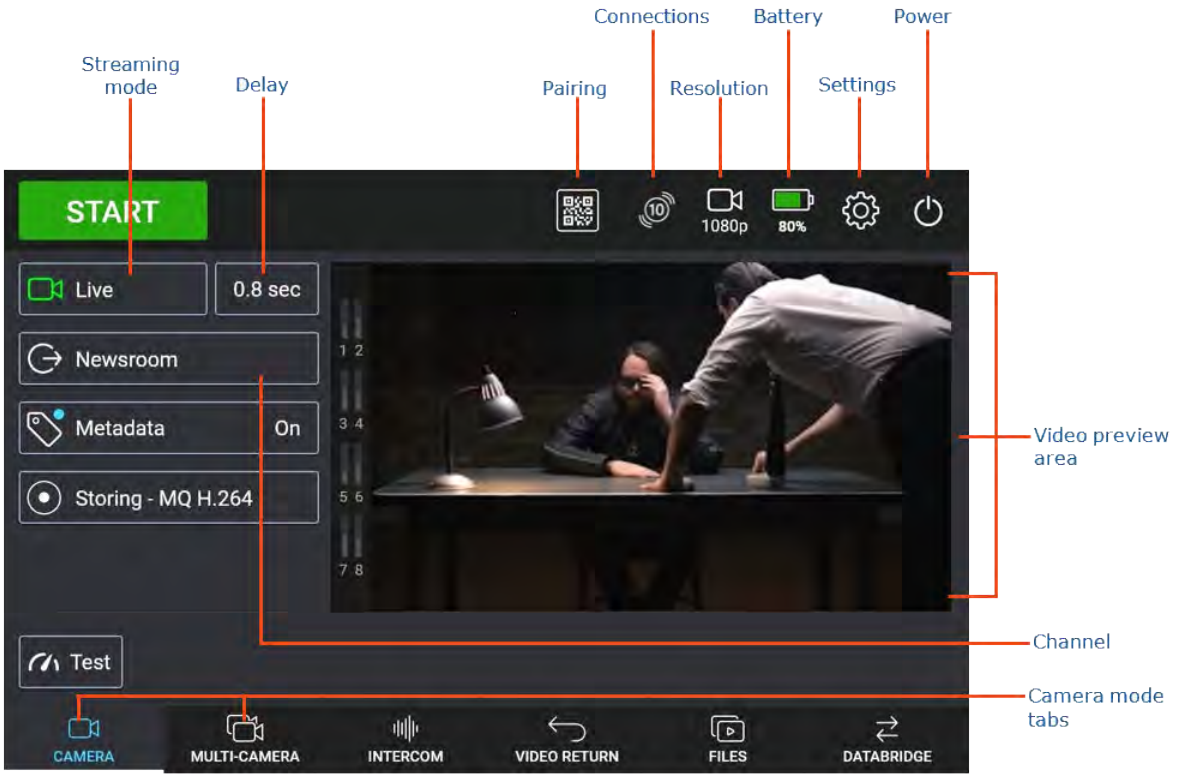
**Power off options**

The LU800 shuts down within a few seconds.

# Using the LU800 UI

## Around the LU800 Home screen

The Home screen is displayed after you power on the unit. All LU800 operations are performed on the LCD touch screen. The Home screen contains buttons, icons and indicators for controlling the unit and transmissions.




**LiveU LU800 Home screen**

Tapping any of the buttons and icons on the Home screen opens the relevant screen where you define settings and configure the LU800, for example select a channel or set an audio codec bit rate. Each screen displays one or both of the following icons at its top.

: Return to the previous screen

: Return to the Home screen

## About streaming operation modes

The LU800 offers two streaming operation modes:

- Live
- Store & Forward

## Live

**Live** is the default mode. In **Live** mode, the LU800 automatically transmits any incoming video as soon as it goes live. Video is transmitted according to the Delay setting.

During a **Live** transmission, the LU800 transmits live video to the MMH server and simultaneously saves video locally.

## Store & Forward

In **Store & Forward** mode, the LU800 stores video on its internal storage or on an installed SD card while simultaneously uploading the stored video to the MMH server at the quality you configure. **Store & Forward** is typically used when you are in an area with limited bandwidth.

**Note** The SD card must have a minimum capacity of 4GB. The card must be Class 10 and from an established manufacturer. The LU800 supports SD cards of up to 2 TB. It is recommended to use the exFAT file system.

When operating in Store & Forward mode, **Delay** is inactive.

For details on configuring **Store & Forward** quality and related parameters.

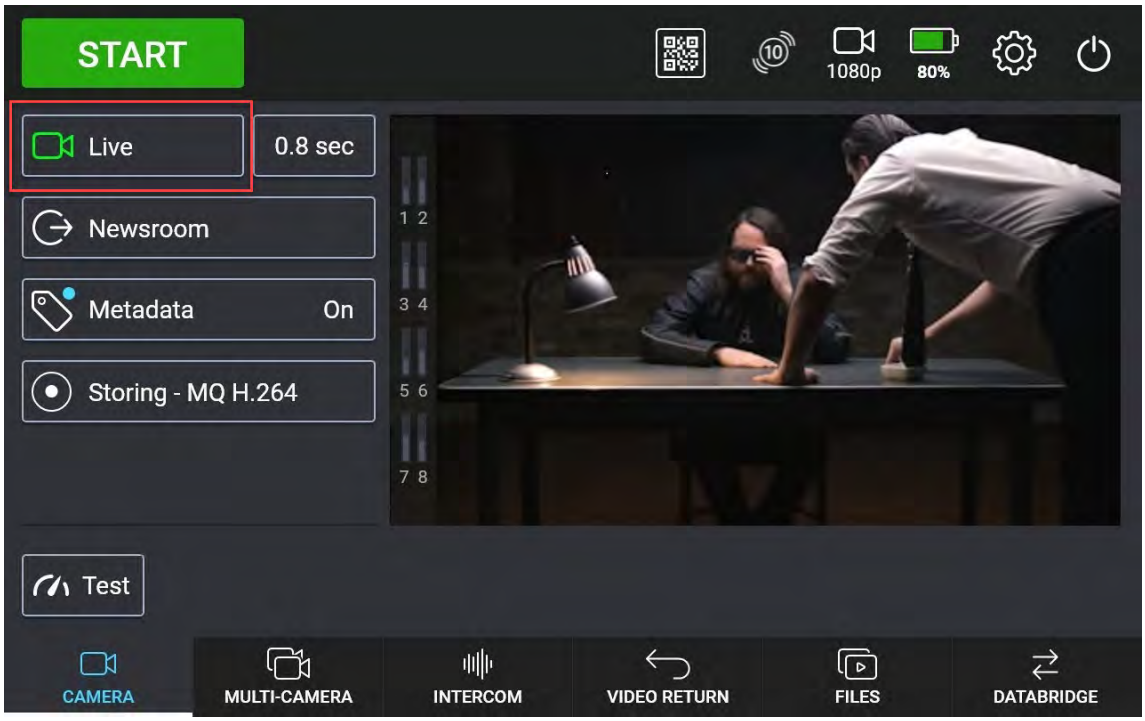
**Note** Store & Forward is available only when working with a single camera. It is not available when working in multi-camera mode.

## Selecting the operation mode

The default operation mode is **Live**.

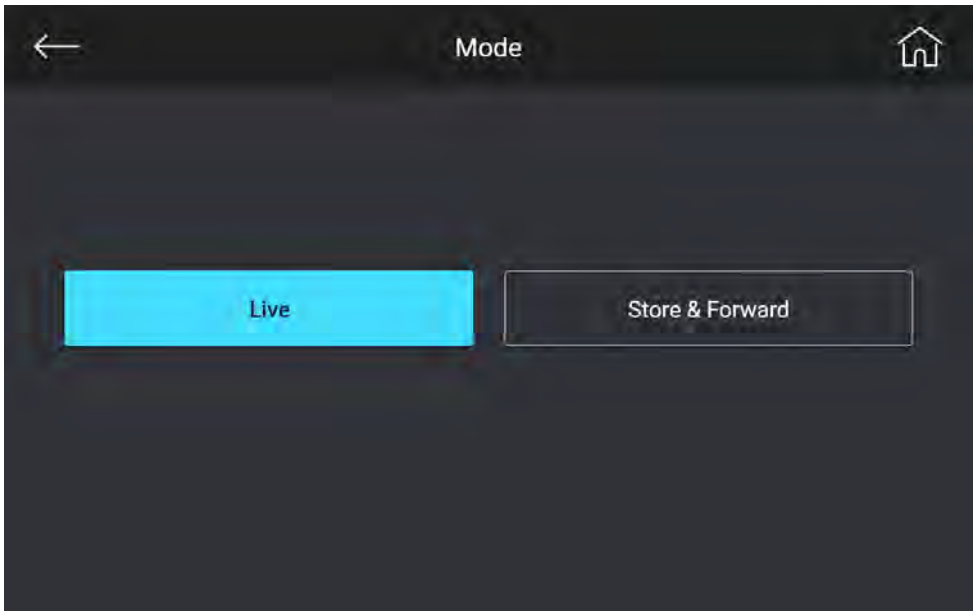
### To select an operation mode:

1. Tap the active operation mode button in the Home screen.




**Operation mode - Live**

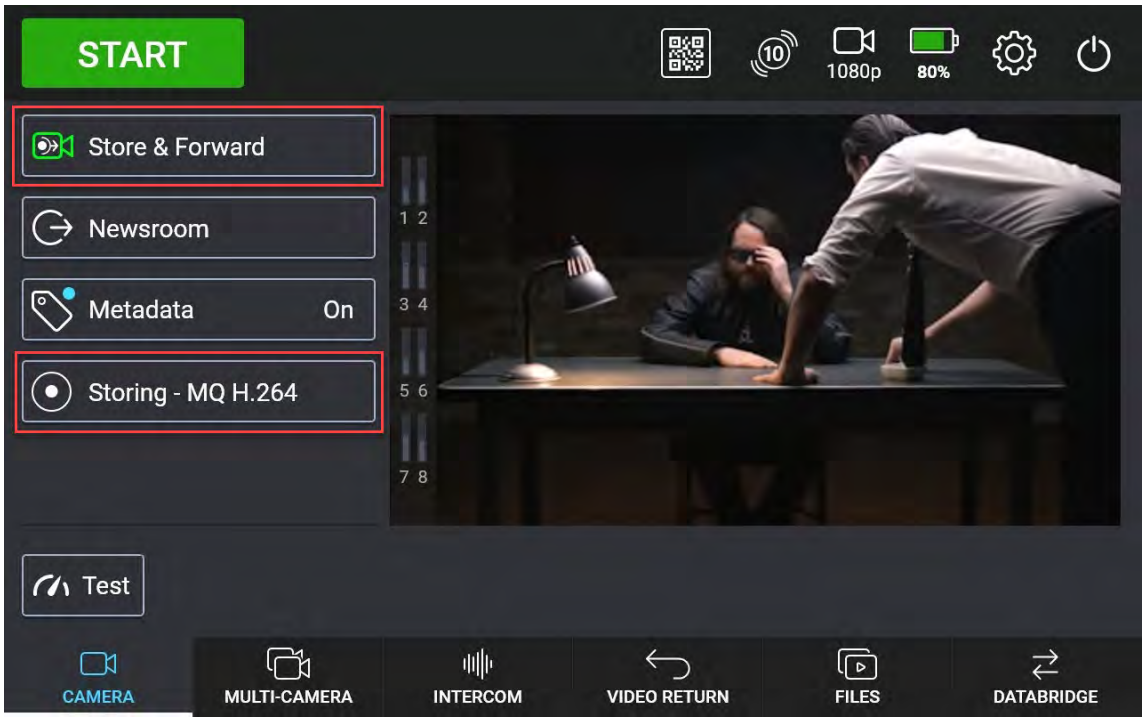
The Mode screen is displayed.




**Operation mode screen – Live is active**

2. Tap the operation mode you want to use.

   The operation mode switches to the selected mode. The following figure shows the operation mode switched to **Store & Forward**.




**Store & Forward is active**

## Configuring Store & Forward recording quality

The Home screen displays the operation mode set to Store & Forward. You can now configure the recording quality of the video file to be stored and then forwarded.

**Note** Store & Forward recording quality settings are also applied to locally saved Live & Store files. Live & Store is enabled by default when going live.

### To specify the storing quality:

1. Tap the storage quality button on the left of the Home screen, for example:

   The File Encoder Settings screen is displayed.

**File Encoder Settings screen**

2. In the File Encoder Settings area, tap one of the following:
   - H.264: 8-bit
   - HEVC: 8-bit
3. In the Recording Quality area, tap one of the following to set the bit rate:
   - LQ Low video bit rate allows fast file uploads to the server. This option is recommended in case of urgency and when network bandwidth is limited.
   - MQ This is the default option. Medium video bit rate provides good video quality with relatively fast file uploads.
   - HQ High video bit rate provides the best video quality with the slowest file upload. This option is recommended when the highest quality is required, network bandwidth is high and there is no urgency for the video's arrival at the studio.

# Optional video channel settings

## Streaming video to a virtual group

You can stream your feed to an unspecified output channel on the LU2000 / LU4000 MMH server by streaming to a virtual group. This allows LiveU Central operators to preview the feed and control the channel destination to which the Live stream is sent.

indicates that the corresponding channel is a virtual group.

Selecting a virtual group streams video to a preview channel shown in LiveU Central at a low bandwidth, resolution and frame rate.

Tapping STOP stops the video and the LU800 returns to **a Live** state.

Only the LiveU Central operator can decide when to switch the preview channel to an output channel. The **Preview** indication then changes to **Live**. When the LiveU Central operator changes a video stream from Preview to Live, the stream stops for a few seconds and then starts again.

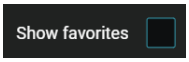
## Setting Favorite channels

indicates that the corresponding channel is a Favorite.

### To mark a channel as a Favorite:

1. Tap the Channel button on the left of the Home screen.
   The Channels screen is displayed.
2. Tap the channel you want to mark as a Favorite.
   changes to .

### To display only Favorite channels:

- At the top of the Channels screen, tap 
  
  Only Favorite channels are displayed.

## Setting adaptive resolution

When Adaptive Resolution is enabled, the LU800 automatically adjusts the internal resolution at which it transmits according to the available bit rate to provide the best available video quality on the server side.

This feature is enabled by default and is the recommended mode. Disabling Adaptive Resolution is required only in advanced scenarios, for example, bypassing transcoding on the server side.

### To disable Adaptive Resolution:

1. Tap at the top of the Home screen.
2. If necessary, tap **Video/Audio** in the Settings pane.
   Video/Audio settings are displayed in the right pane.

**Settings screen – Video / Audio**

3. Tap ON to switch **Adaptive resolution** to OFF.

**Note** It is not recommended to disable Adaptive Resolution.

## Defining audio settings

You can define the number of audio channels and the audio bit rate to be used by the unit. The default is two channels at 96 kbps.

You can set up from four to 16 audio channels, depending on your LU800 model.

Defining audio settings in multi-camera mode is the same as in single camera mode.

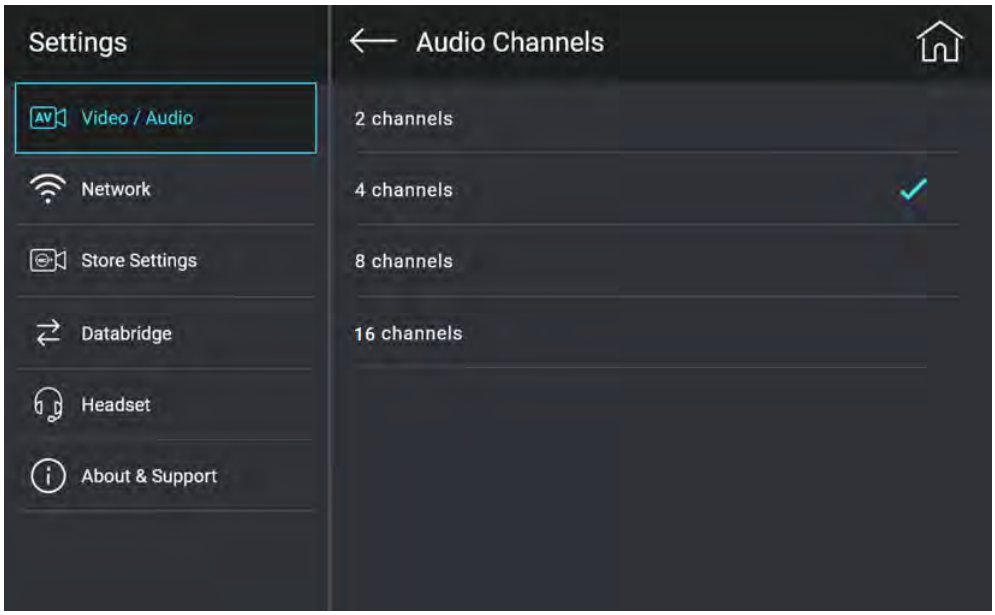
## Setting the number of audio channels

Depending on your LU unit model, you can set audio to be sent via two to 16 audio channels.

The option for 16 audio channels is available only for the LU800 PRO-4K or LU800 PRO-4, transmitting video from a source supporting up to 16 channels.

### To set the number of audio channels:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. If necessary, tap **Video /Audio** in the Settings pane.
3. Tap **Audio channels (per SDI)**.
   The Audio Channels screen is displayed.




**Audio Channels screen**

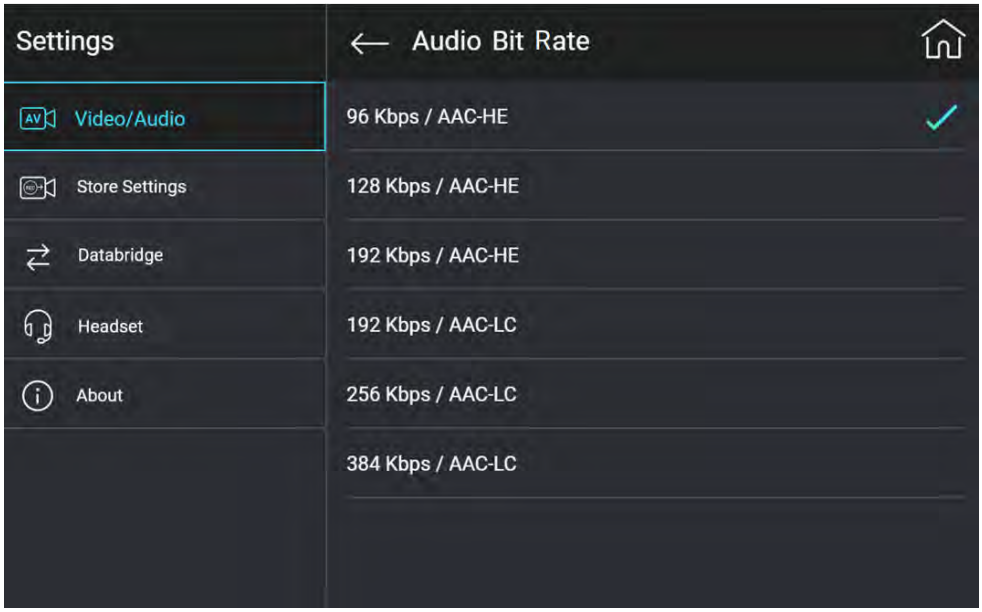
4. In the Audio Channels screen, tap the number of audio channels you want to set.

## Setting audio bit rates

The default bit rate is 96 Kbps. For a standard 2-channel transmission, 64 Kbps / AAC-HE is the recommended configuration.

### To set the audio bitrate:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. If necessary, tap **Video / Audio** in the Settings pane.
3. Tap **Audio bitrate (per SDI).**
   The Audio Bit Rate screen is displayed in the right pane.



**Audio Codec Bitrate screen**

4. Tap the required bit rate.

## Setting the video color depth

10-bit encoding can be used in any standard video transmission. In HDR video transmission, 10-bit encoding is mandatory.

### To set the color depth:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. If necessary, tap **Video** / **Audio** in the Settings pane.
   Video/audio settings are displayed in the right pane.
3. Tap **Color depth**.
4. Select one of the following:
   - 8-bit
   - 10-bit / HDR

## Setting the 4K SDI input mode

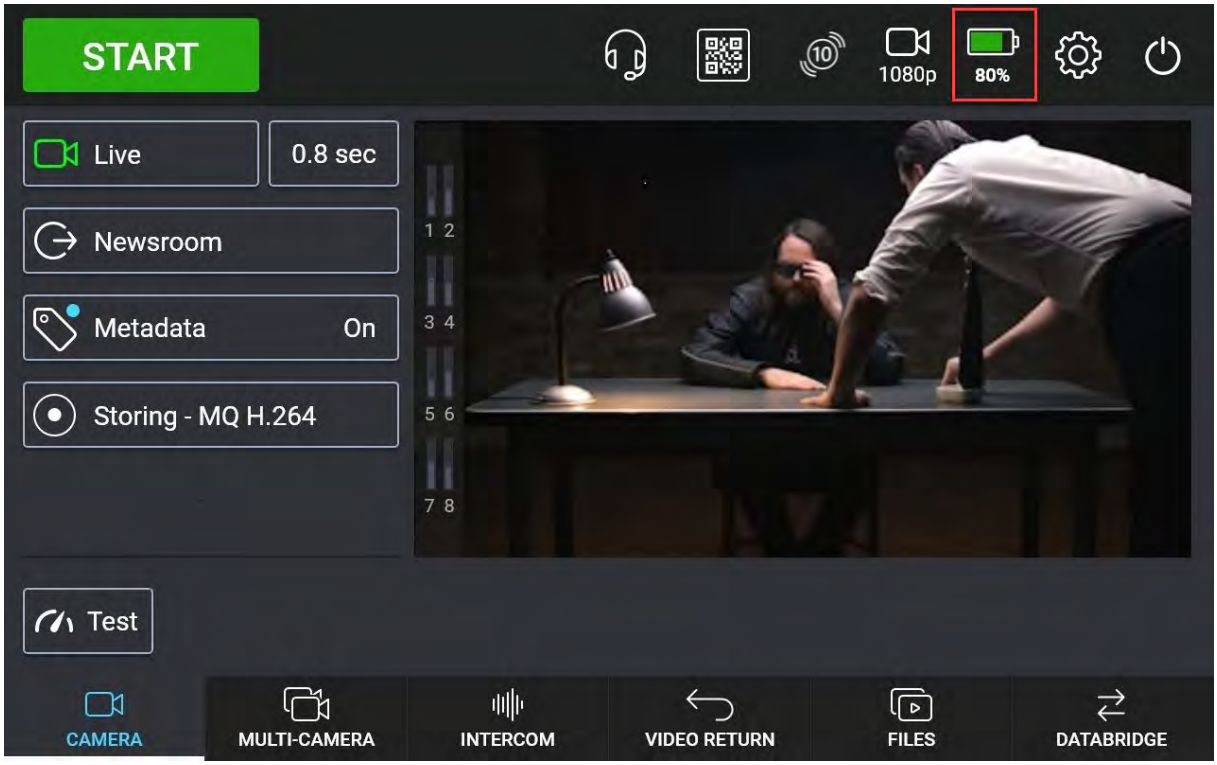
The LU800 PRO supports 4K video transmission over SDI input. The unit supports both 12G-SDI and the Quad-link option, 4 x 3G-SDI.

**Note** A PRO-4K license is required to transmit 4K resolution.

### To set the 4K SDI input mode:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. If necessary, tap **Video** / **Audio** in the Settings pane.
   Video/Audio settings are displayed in the right pane.
3. Select **4K input mode**.
4. Select one of the following:
   - 12G-SDI (default): Supports 4K over a 12G-SDI connection.
   - Quad-Link: Supports 4K over 4 x 3G-SDI connections.
     When the unit is set to Quad-Link mode, the option to switch to multi-camera mode becomes unavailable.

# Battery status




**Home screen – Battery status**

The following figure shows the icons indicating battery status:

**Battery states**

When the battery is charged less than 10%, the following warning appears:

Tapping the battery icon displays an estimate of the remaining operation time, based on your usage pattern of the LU800.

**LU800 battery status screens**

When the unit is connected to an external battery, tapping the Battery icon displays the status of both external and internal batteries.

The remaining capacity of the external battery is indicated by LOW, MEDIUM or HIGH.

**External / internal battery - Status**

**Note** When the LU800 is connected to a power supply, battery status indicators include a lightning icon.

## Viewing resolution and frame rate

The camera icon in the top bar of the Home screen displays the incoming resolution.

**Resolution**

### To view the frame rate and resolution:

- Tap the **Camera** icon

.
  The following panel appears.

**Incoming resolution**

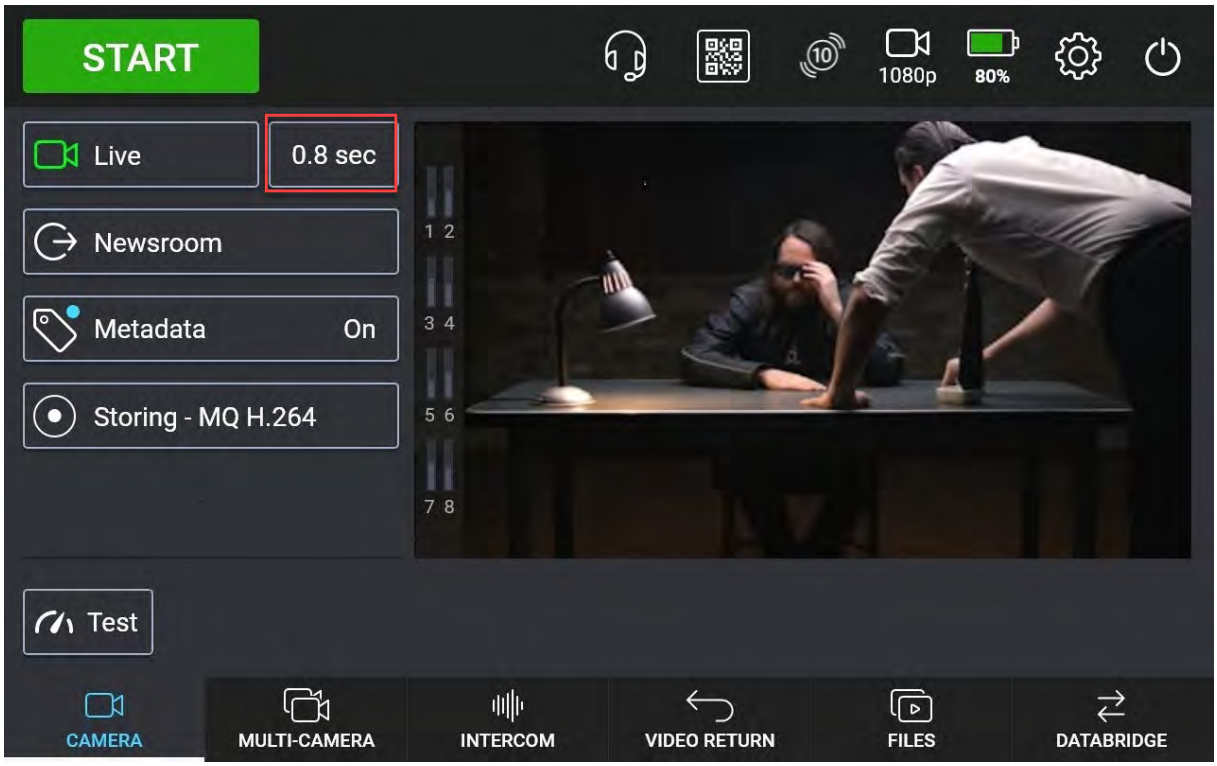
**Note** In multi-camera mode, tapping

displays the status of only the camera connected to SDI 1. All other cameras must be set to the same resolution and frame rate.

# Setting Delay

Live video is transmitted according to the delay value you specify. Delay parameters include:

- Default delay: 5 seconds
- Minimum delay:
  - Single camera mode:
    0.6 seconds over LAN
    0.8 seconds over cellular networks
- Multi-camera mode: 1 second
- Maximum delay: 20 seconds




**Setting Delay**

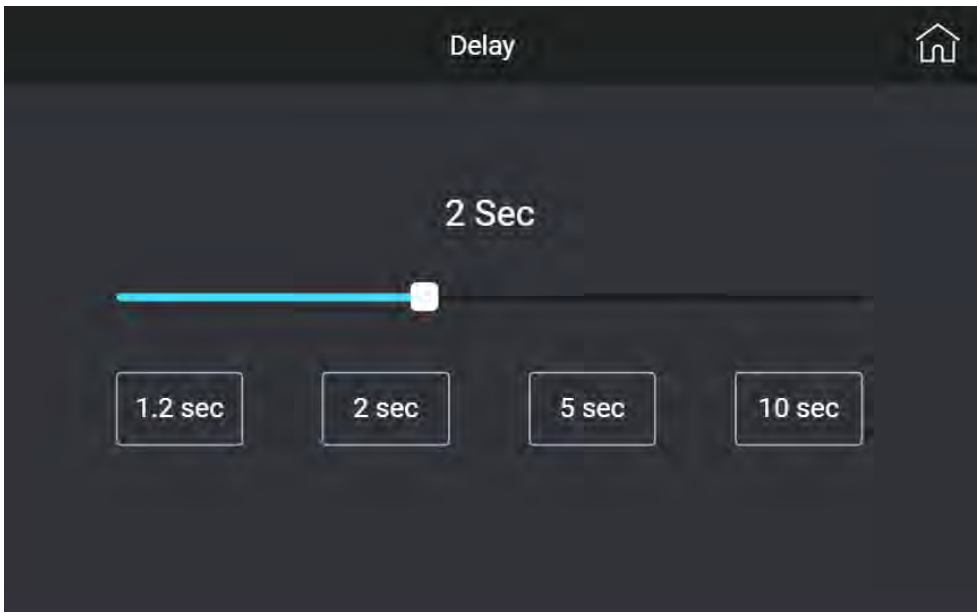
The longer the delay, the higher the quality of the video streamed from the MMH server channel. Select one of the following delay ranges that best suits your current delay-versus-quality requirements:

- Delay of 0.6 – 2 seconds: Provides the maximum quality within the constraints of the shortest delay. This profile is resilient to errors and adapts to bandwidth changes.
- Delay of 2 – 9 seconds: Provides higher-quality video with a higher delay and high-quality resilient video.
- Delay of 10 – 20 seconds: Prioritizes high-quality video over a relatively high delay

Important If you select a delay value of 0.6 – 0.7 seconds, LiveU recommends using a high speed, wired internet connection. Extremely low delay values are not recommended when your unit is connected via cellular networks.

## To set Delay:

1. Tap the Delay selection button on the left side of the Home screen.
   The Delay screen is displayed.




**Delay screen**

2. Do one of the following to adjust the delay value:
   - Move the slider to the required delay value.
   - Tap one of the Delay preset buttons.

   The LU800 continues to use the value you set until you change it.

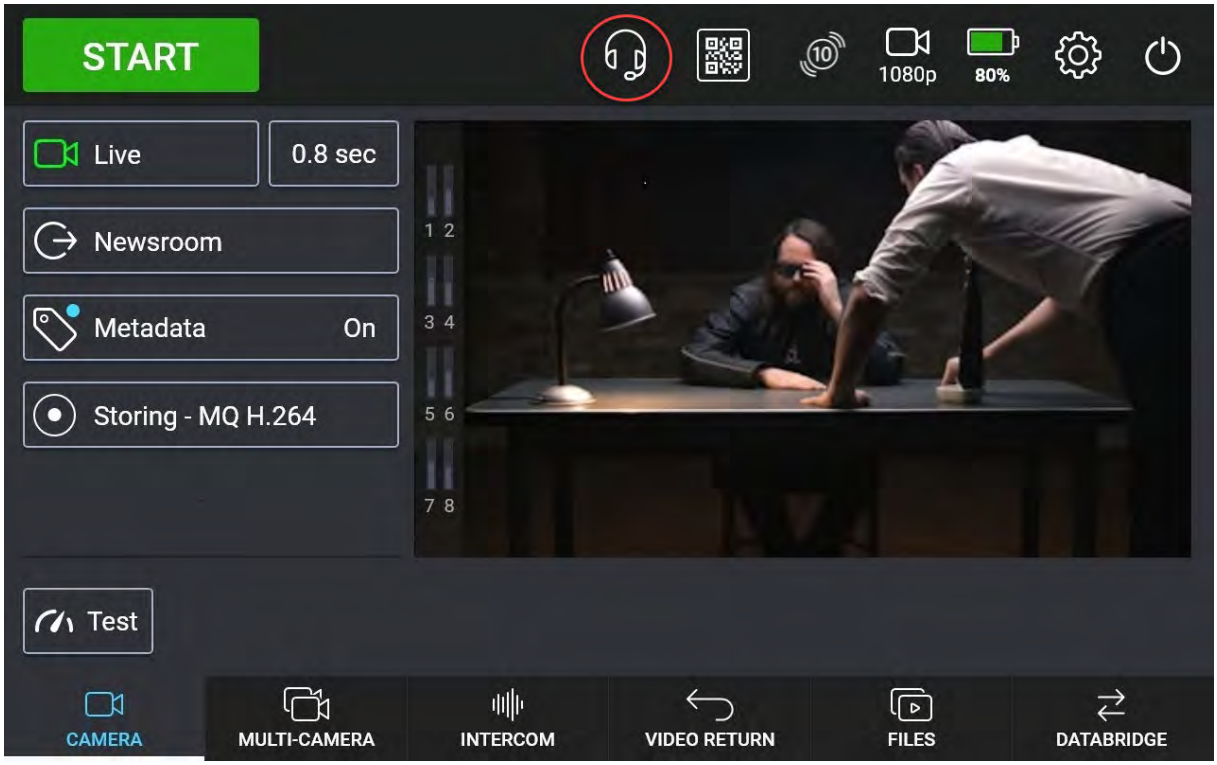
**Note** You can change the Delay value while the video is transmitting. Changing Delay during transmission can only be performed in single camera mode.

Changing Delay can also be performed from LU Central.

# Headset volume control

When a headset is plugged into the unit's audio connector, a headset icon appears at the top of the Home screen. When IFB or Intercom is enabled, tapping the icon allows you to adjust the loudspeaker / microphone volume settings.

For details of IFB and Intercom, see **Audio Connect**.




**Home screen**

## To manage headset settings:

1. Plug a headset into the unit's audio connector 1.

   appears at the top of the Home screen.

2. Tap .

   The headset panel opens.

> **Note** The microphone is available only if your license includes the Intercom service. The microphone is not available for IFB.

**IFB speaker volume control**

3. Do any of the following:
   - Slide the counter to set the volume.
   - Tap to mute or unmute the loudspeaker.
   - Tap to mute or unmute the microphone.
4. Tap to close the panel or remove the headset from the device.

## Working in Multi-HQ mode

When working in Multi-HQ mode, bandwidth can be allocated per camera according to the priority set up in Central. For details, see the **Central User Guide** V9.5.

## Configuring audio channels in Multi-HQ mode

In Multi-HQ mode, the LU800 transmits video from all connected cameras simultaneously. In this mode, you can configure audio to be sent only from SDI-1 (up to 16 audio channels) or sent from each camera (up to four audio channels per camera).

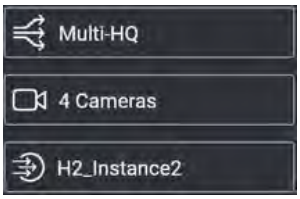
If the unit is an LU800 PRO-4K or LU800 PRO-4, you can configure audio to be sent as follows:

- Up to 16 channels from SDI 1
- Up to four channels per camera

### To set up audio channels in Multi-HQ mode:

1. Tap the **Multi-camera** tab at the bottom of the screen.

   Multi-HQ is the default mode. The Multi-HQ button is displayed on the left side of the screen. The number of connected cameras and channel are also displayed.




**Multi-HQ button**

2. Tap at the top of the screen.
   The following screen is displayed.

**Video/Audio screen**

3. Tap **Audio channels (per SDI)** and select 2, 4, 8 or 16 channels.
   If the LU unit is an LU800 PRO-4K or PRO-4, you can configure audio to be sent over 16 channels from SDI 1 or over four channels per camera.
4. Tap **Audio Bit Rate (per SDI)** and select the required bit rate.
5. Tap **Audio Source** and select one of the following:
   - Only from SDI 1
   - Audio from each camera

   The audio source can also be controlled from LU Central.

The audio source can also be controlled from LU Central.

## Using Multi-HQ mode

### To set the LU800 to Multi-HQ mode:

1. Tap the **Multi-camera** tab at the bottom of the Home screen.
   The Changing Video Mode message appears. After a few seconds, you are returned to the Home screen.

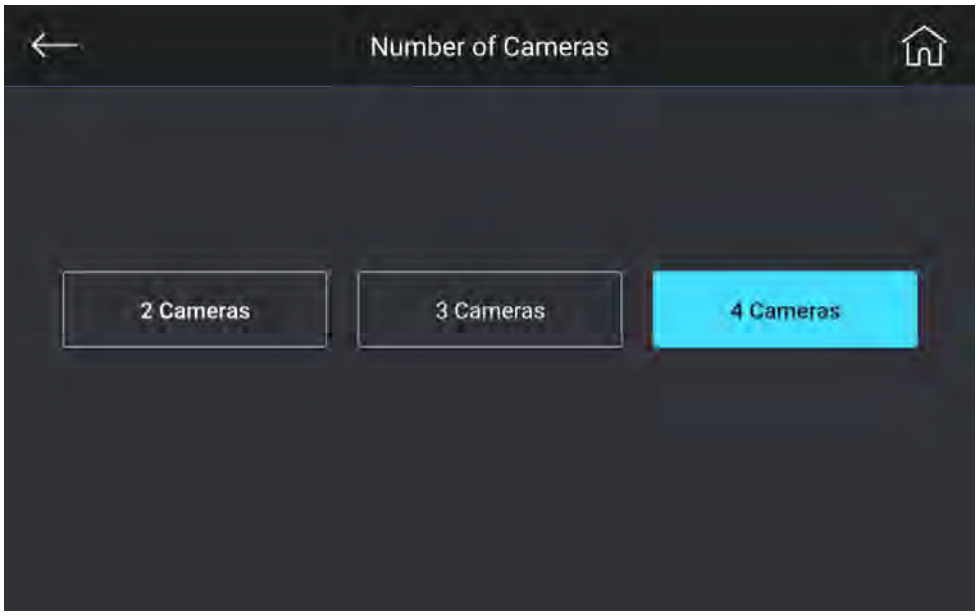
Multi-HQ is the default mode.

is displayed on the left side of the screen. The channel and number of connected cameras are also displayed.

2. To change the number of cameras you want to work with, tap

on the left side of the Home screen.

   The Number of Cameras screen is displayed.




**Number of Cameras screen**

3. Tap the number of cameras connected to the unit.

   If you tap, for example, **4 Cameras** but only three cameras are physically connected, the system consumes bandwidth as if for four cameras are transmitting. The video view of the missing camera feed transmits black video. You can connect the fourth camera during transmission.

   You are returned to the Home screen and video from the connected cameras is captured in the preview area.

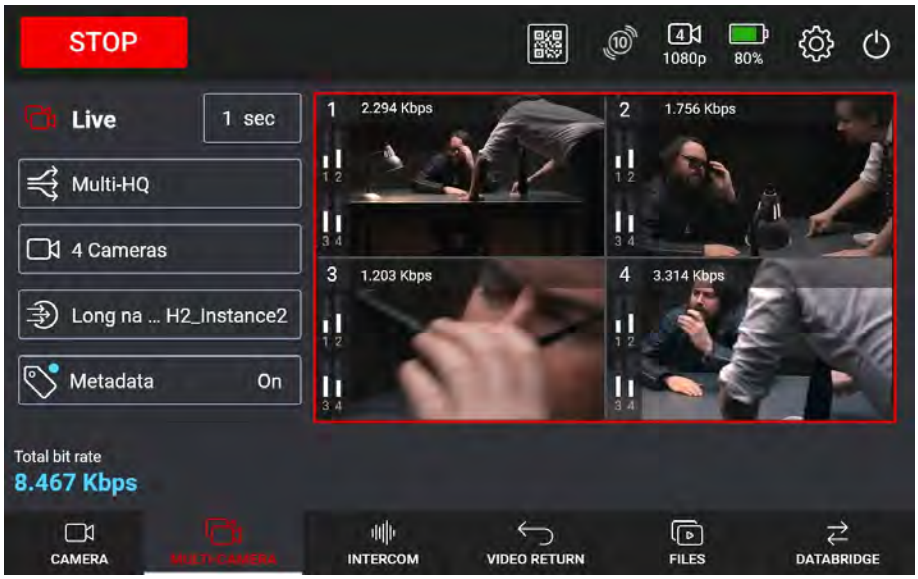
4. Select a channel on a quad server with up to four SDI outputs.

   The Quad-Link server is represented by the icon

5. Click


   The unit transmits video and audio from all connected cameras simultaneously according to your settings.

   In the preview area, the respective bitrate for each camera is displayed. The total bit rate is displayed at the bottom left of the screen.

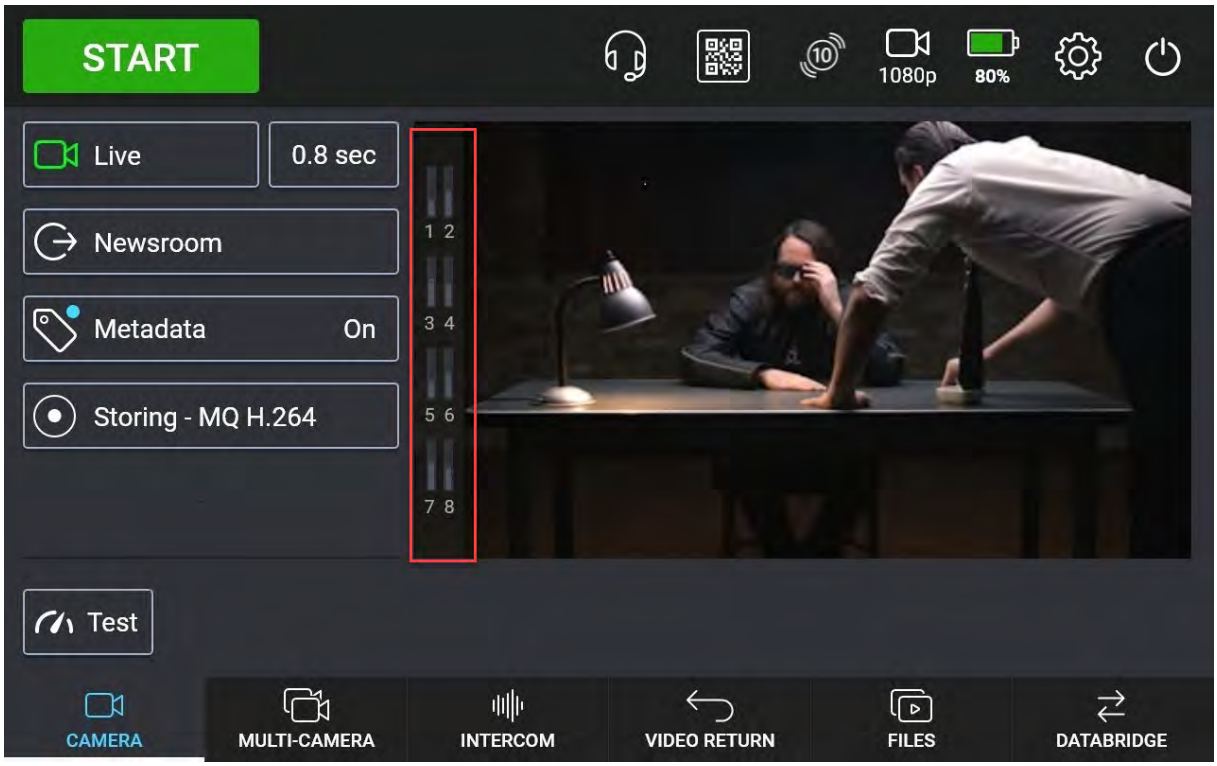



**Multi-HQ mode**

## Video preview and audio bars

This Home screen shows a preview of the incoming video feed after the camera is connected and powered on. The audio bars on the left side of the video preview area indicate the volume levels of the audio input on each of the channels.

Figure 34 shows four audio bars, reflecting the number of channels supporting audio inputs when working in single camera mode.




**Video preview area - Audio bars in single camera mode**

**Note** When working with multiple cameras in Multi-HQ mode, the audio bars appear on each of the video inputs in the video preview area. When working in Field Switcher mode, the audio bars appear only on camera feed 1.

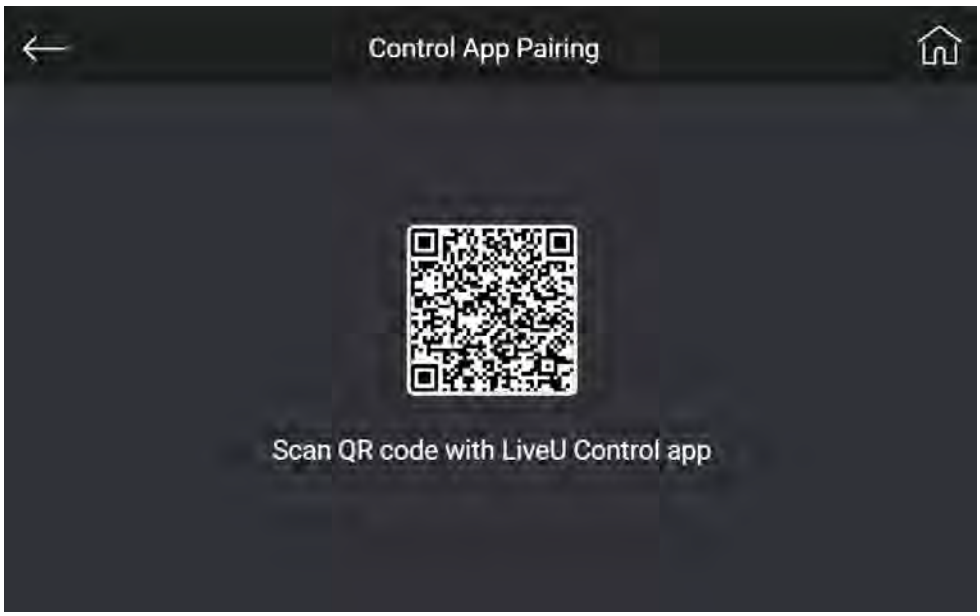
## Pairing the unit with the Control app

You can control your LU800 locally using the LiveU Control app installed on an iOS or Android smartphone.

### To pair with the Control app:

Install the LiveU Control application from Google Play Store (Android) or the Apple App Store (iOS) on your smartphone.

1. Tap at the top of the Home screen.
   The Control App Pairing screen is displayed.




**Control App Pairing screen**

2. Open the LiveU Control app on your smartphone and tap **Sign In with QR code** at the bottom of the screen.
3. Point the smartphone at the LU800 screen to synchronize the app with the unit.
   This can take a few seconds.
   You can now control your LU800 using the different functions of the LiveU Control application.

## Running a speed test

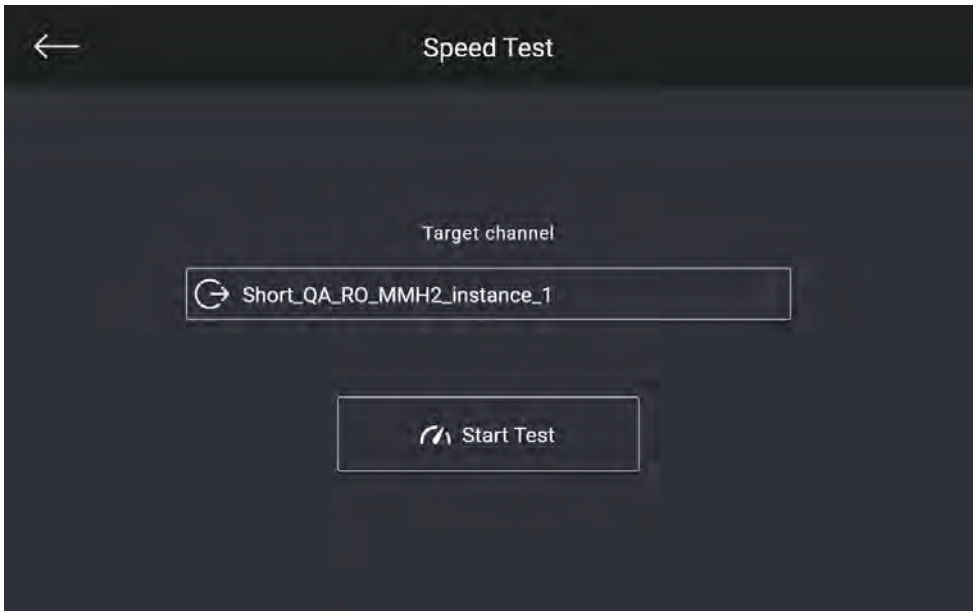
The Speed Test function allows you to measure the effective connection speed from your unit to the selected output channel. This is useful when setting up your Live session. There is no need for a camera to be connected to the unit during the test.

**Note** You can run a speed test only when working in single camera mode.

## To run a speed test:

1. Tap

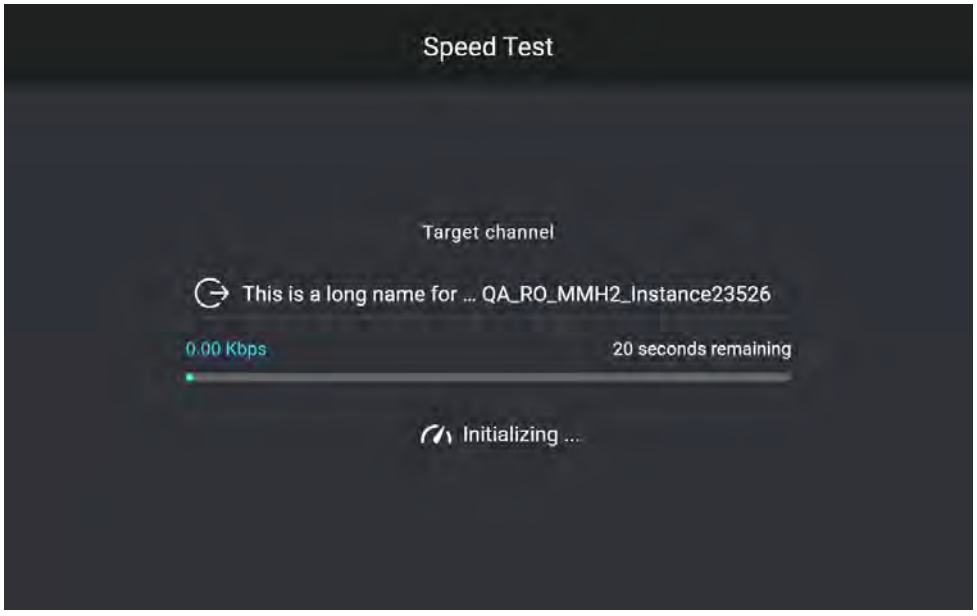
on your Home screen.
The Speed Test screen is displayed.




**Speed Test screen**

The selected target channel is displayed.

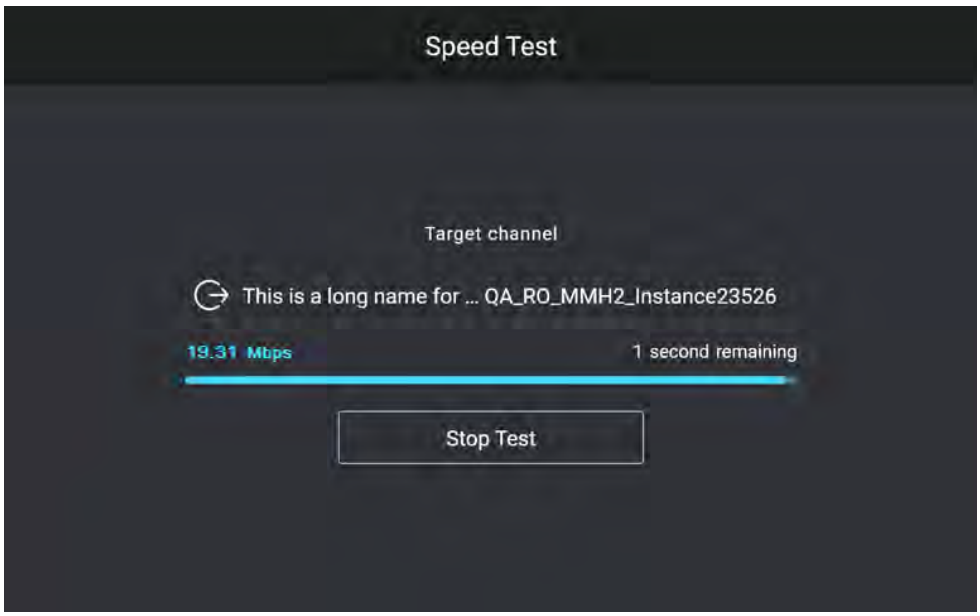
2. Tap **Start Test**.
Data is sent from your unit to the LU2000 / LU4000 MMH server.




**Speed Test in progress**

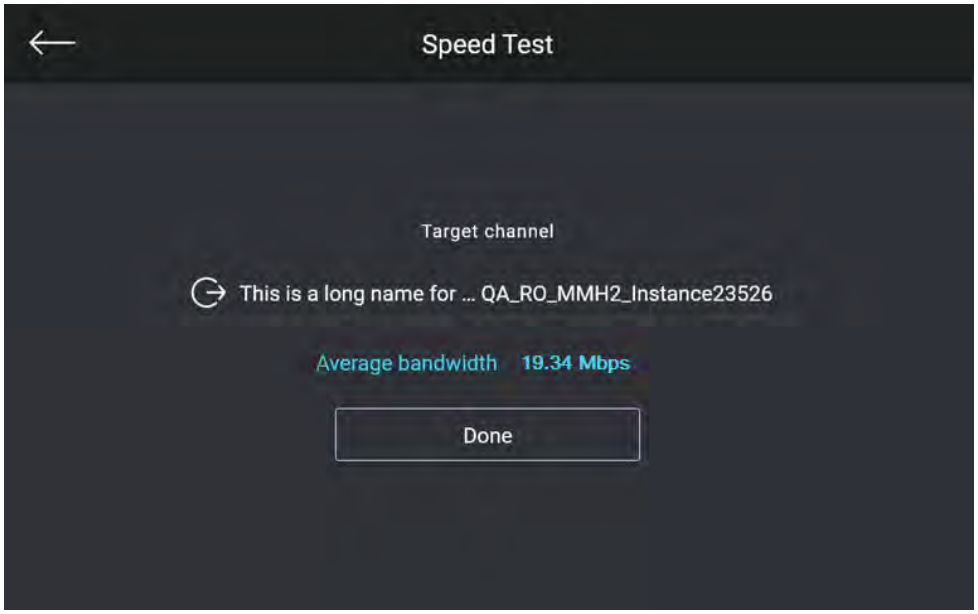
Once initialization is complete, **Start Test** becomes **Stop Test**, allowing you to stop the test at any time.

The counter indicates the bit rate and the remaining time.




**Speed Test counter**

When the test is complete, the screen displays the average LU800 bandwidth for sending packets to the designated channel on the LU2000 / LU4000 MMH server.




**Speed Test is complete**

3. Tap **Done**.

## About

The About screen displays the following information about the LU800:

- Unit's name
- Product ID
- Serial number

- Software version
- All enabled services associated with the unit
- ETH1 and ETH2 MAC address
- Wi-Fi MAC address

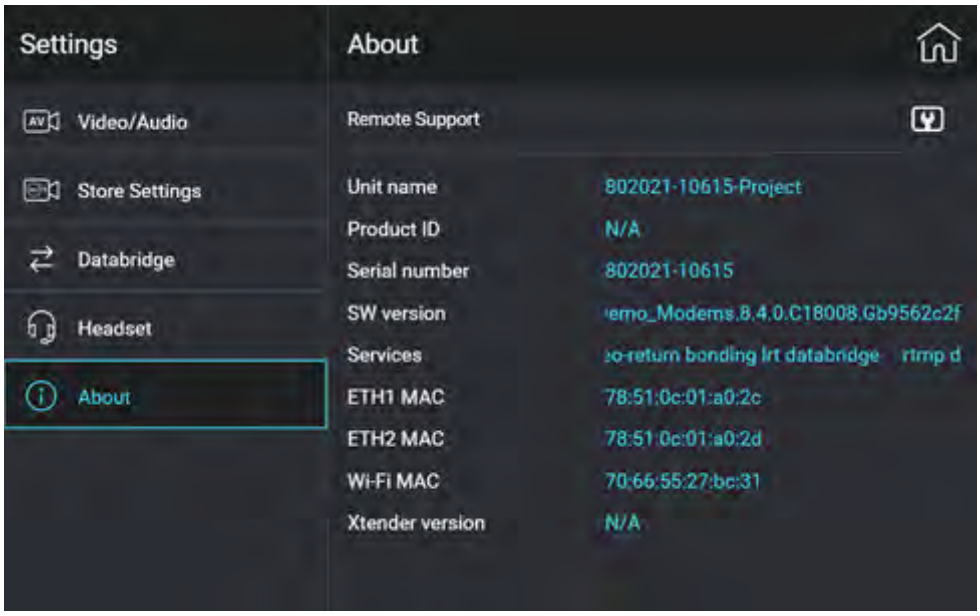
**Note** Information about Xtender is also displayed in the About screen if Xtender is connected to the LU800.

You can also remotely access a LiveU support representative in the event of a problem (see **Approving LiveU support remote access** .

## Software version

### To display information about the software version:

1. Tap at the top of the Home screen.
   The Settings pane is displayed.
2. In the Settings screen, tap **About**.
   Information is displayed in the right pane.




**About & Support screen**

## Approving LiveU support remote access

If you encounter a problem with the unit, contact your local LiveU support representative for help. With your approval, the support representative can connect to your unit, assess the problem and resolve it.

The connection remains open for up to eight hours. At any time during this period, you can disable the connection and end the session.

Remote access to the unit is available on a onetime basis only. If you want to resume or initiate a new support session, you must approve the remote connection once again. A log of each remote communication is generated in LU Central.

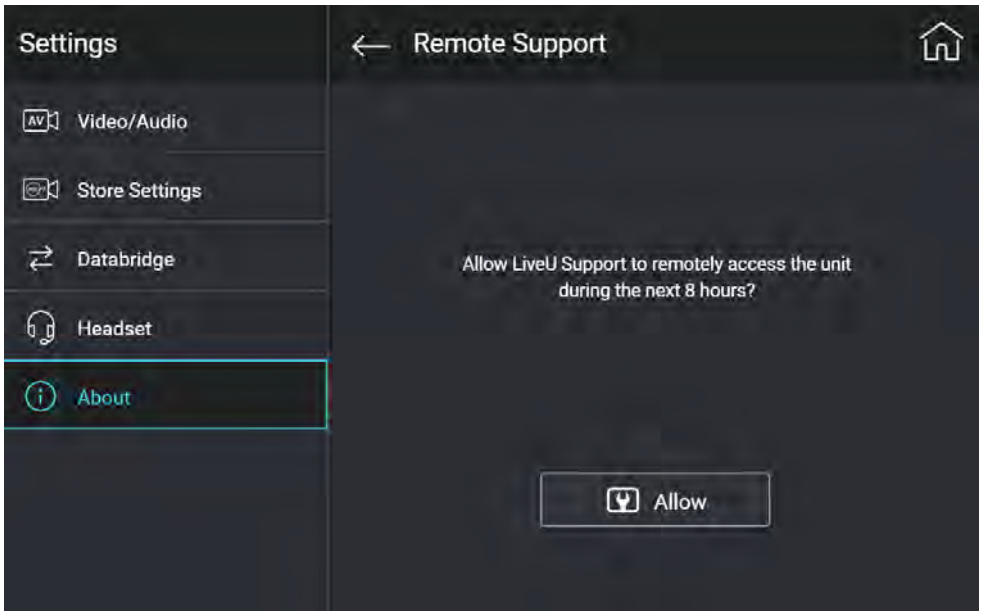
When contacting a LiveU support representative, you need to quote the last five digits of the LU800 unit's serial number displayed on the screen. In the example figure above, the last five digits are **10615**.

**Note** Remote access can also be approved from LU Central.

## To approve access to LiveU support:

1. Tap in the Remote Support area.

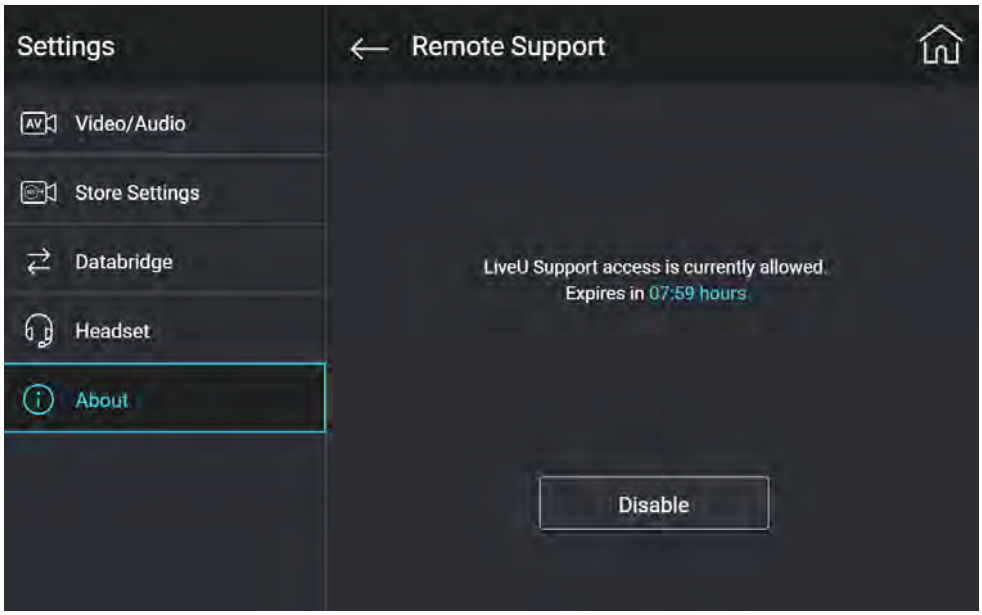
   A message is displayed asking you to allow LiveU Support to remotely access the unit for the next eight hours.




**Settings - Remote support approval**

2. Tap **Allow**.

   The elapsed time is displayed on the screen. Tapping **Disable** disconnects the connection.




**Settings - Remote support**

## Shutting down the LU800

There are three ways to shut down the LU800:

- Software (UI)
- Hard shutdown
- Remote control unit

For details on connecting and disconnecting using the remote control unit.

## Shutting down from the UI

Shutting down the LU800 from the UI is the recommended method.

### To shut down from the UI:

1. Tap at the top of the Home screen.
2. Tap one of the following:
   - Shut Down
   - Restart

When the LU800 powers up following shut down or restart, unit settings remain the same as before shutdown.

## Performing a hard shutdown

It is recommended that you perform a hard shutdown only if shutting down from the UI is not possible.

## To perform a hard shutdown:

- Hold down the power button for eight seconds.

**Power Button**

# Working in multi-camera mode

## Connecting multiple cameras

The LU800 unit can work in either single camera mode or multi-camera mode.

A single camera, connected to SDI port 1, supports an SD / HD / 3D 12G-SDI signal. In multi-camera mode, you can connect up to four HD / 3G-SDI cameras, using up to four SDI cables.

Whichever video standard and resolution you choose, a camera must be connected to SDI port 1. Make sure to connect the remaining cameras in sequential order.

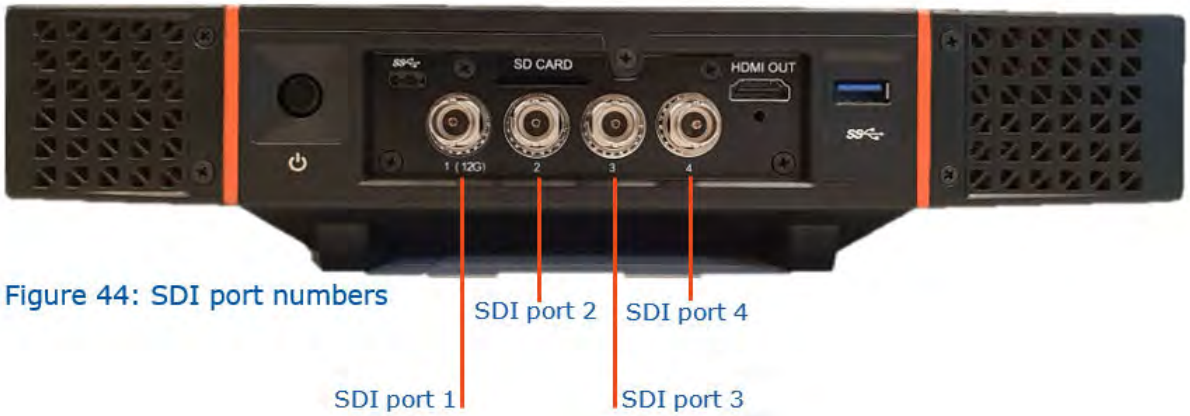


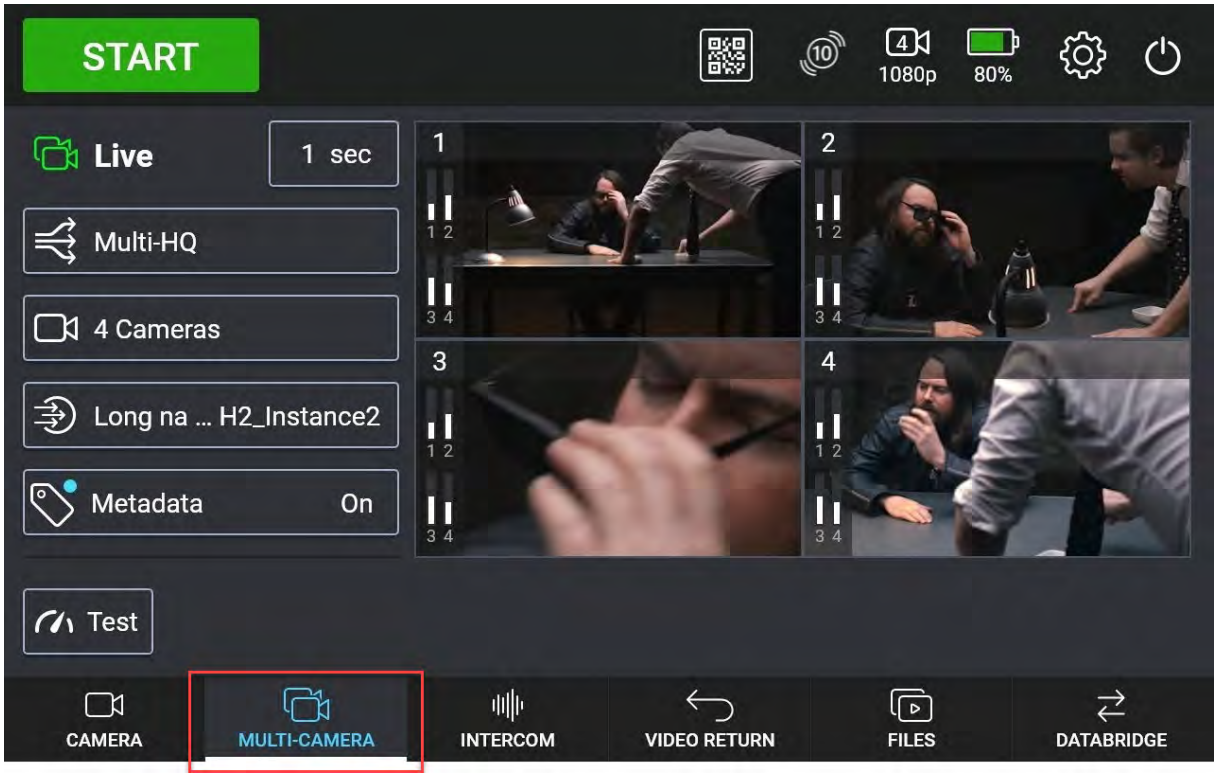

Figure 44: SDI port numbers

**SDI port numbers**

SDI video signal options are shown in the following table.

| | SDI port 1 12G / 3G | SDI port 2 3G | SDI port 3 3G | SDI port 4 3G |
|---|---|---|---|---|
| Single camera SD / HD /4K | Yes | No | No | No |
| Multi-camera HD only: 720/1080i/ 1080p | Yes | Yes | Yes | Yes |

# Using multi-camera mode




**Video preview in multi-camera mode**

When setting up the LU800 to work with multiple cameras, note the following:

- All the cameras must be set to the same resolution. Only HD resolutions 720p/1080i/1080p are supported, in various frame rates.

  Feed from cameras with different resolutions or frame rates is ignored.
- When two or more cameras are connected to the unit, the preview area displays a quad view of the video input from each camera. If fewer than four cameras are connected, the view not receiving video input is a black screen.

**Note** In multi-camera mode, Live & Store and Store & Forward are not supported. Changing the Delay value on the fly is also not supported in this mode.

## Setting the LU800 to multi-camera mode

When working with multiple cameras, you can select one of three modes:

- Multi-HQ (High Quality): Video from all connected cameras is transmitted to the MMH server. This mode is recommended for remote productions where a high bandwidth connection is available.
- Field Switcher: Video from only one camera is transmitted to the MMH server, allowing you to switch to a different camera from the unit side. This mode is recommended when there is limited bandwidth.

- Station Switcher: Video from only one camera is transmitted to the MMH server and to an additional quad proxy feed. In this mode, the Central operator can remotely switch to a different camera on the fly.

**Note** The active mode is displayed on the left side of the Home screen. To switch mode at any time, tap the active mode button to display the Multi-Camera Live Modes screen, from where you can select the required mode.

## Working in Multi-HQ mode

When working in Multi-HQ mode, bandwidth can be allocated per camera according to the priority set up in Central. For details, see the **Central User Guide** V9.5.

### Configuring audio channels in Multi-HQ mode

In Multi-HQ mode, the LU800 transmits video from all connected cameras simultaneously. In this mode, you can configure audio to be sent only from SDI-1 (up to 16 audio channels) or sent from each camera (up to four audio channels per camera).

If the unit is an LU800 PRO-4K or LU800 PRO-4, you can configure audio to be sent as follows:

- Up to 16 channels from SDI 1
- Up to four channels per camera

### To set up audio channels in Multi-HQ mode:

1. Tap the **Multi-camera** tab at the bottom of the screen.

   Multi-HQ is the default mode. The Multi-HQ button is displayed on the left side of the screen. The number of connected cameras and channel are also displayed.

**Multi-HQ button**

2. Tap at the top of the screen.

   The following screen is displayed.

**Video/Audio screen**

3. Tap **Audio channels (per SDI)** and select 2, 4, 8 or 16 channels.

   If the LU unit is an LU800 PRO-4K or PRO-4, you can configure audio to be sent over 16 channels from SDI 1 or over four channels per camera.

4. Tap **Audio Bit Rate (per SDI)** and select the required bit rate.
5. Tap **Audio Source** and select one of the following:
   - Only from SDI 1
   - Audio from each camera

   The audio source can also be controlled from LU Central.

The audio source can also be controlled from LU Central.

## Using Multi-HQ mode

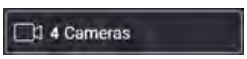
## To set the LU800 to Multi-HQ mode:

1. Tap the **Multi-camera** tab at the bottom of the Home screen.

   The Changing Video Mode message appears. After a few seconds, you are returned to the Home screen.

   Multi-HQ is the default mode.

is displayed on the left side of the screen. The channel and number of connected cameras are also displayed.

2. To change the number of cameras you want to work with, tap 

on the left side of the Home screen.

   The Number of Cameras screen is displayed.

**Number of Cameras screen**

3. Tap the number of cameras connected to the unit.

   If you tap, for example, **4 Cameras** but only three cameras are physically connected, the system consumes bandwidth as if for four cameras are transmitting. The video view of the missing camera feed transmits black video. You can connect the fourth camera during transmission.

   You are returned to the Home screen and video from the connected cameras is captured in the preview area.

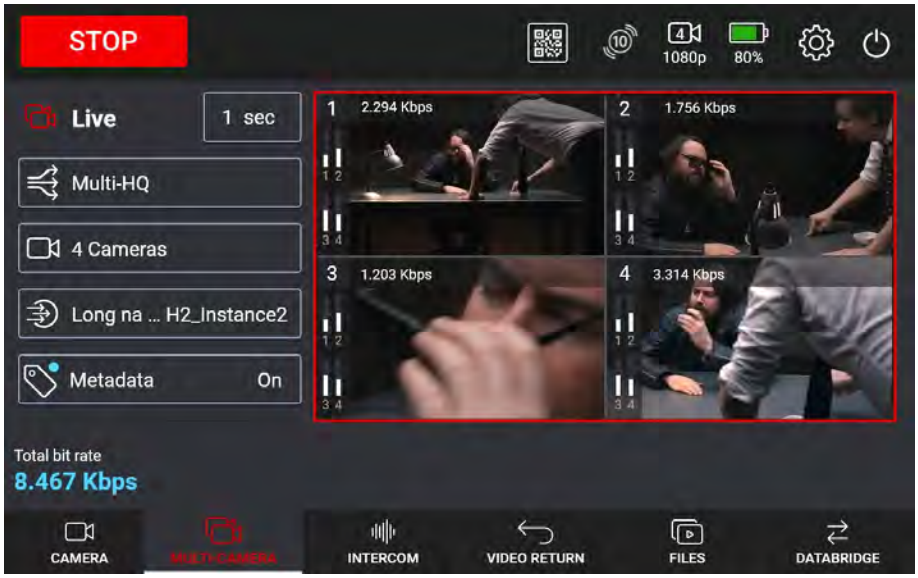
4. Select a channel on a quad server with up to four SDI outputs.

   The Quad-Link server is represented by the icon

5. Click START

   The unit transmits video and audio from all connected cameras simultaneously according to your settings.

   In the preview area, the respective bitrate for each camera is displayed. The total bit rate is displayed at the bottom left of the screen.



**Multi-HQ mode**

# Working in Switcher mode

There are two Switcher modes:

- Field Switcher: Feed from one camera only is transmitted to the server. While transmitting, you can select to transmit feed from a different camera from the preview screen.
- Station Switcher: An extension of Field Switcher that enables the studio operator to switch cameras remotely.

Audio is transmitted through SDI 1 regardless of which camera is currently transmitting. If the camera on SDI 1 is disconnected, audio is sent from SDI 2, at a slightly lower quality. Audio bars continue to be displayed in SDI 1 and the preview screen is black.

## Using Field Switcher mode

## To set the LU800 to Field Switcher mode:

1. Tap the **Multi-camera** tab at the bottom of the Home screen.

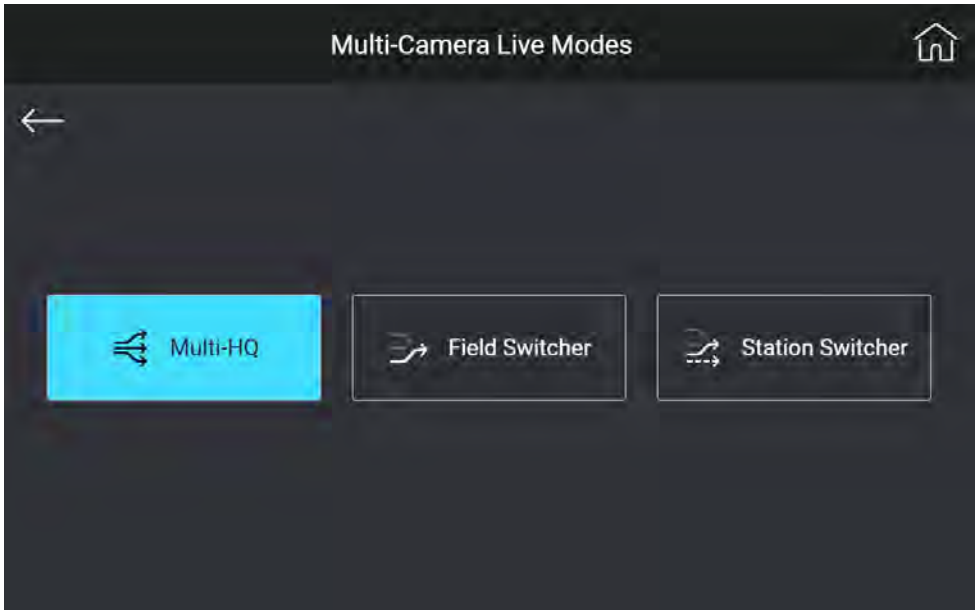
   The Changing Video Mode message appears. After a few seconds, you are returned to the Home screen.

   Multi-HQ is active by default. The number of connected cameras is displayed on the left side of the Home screen.

2. Tap

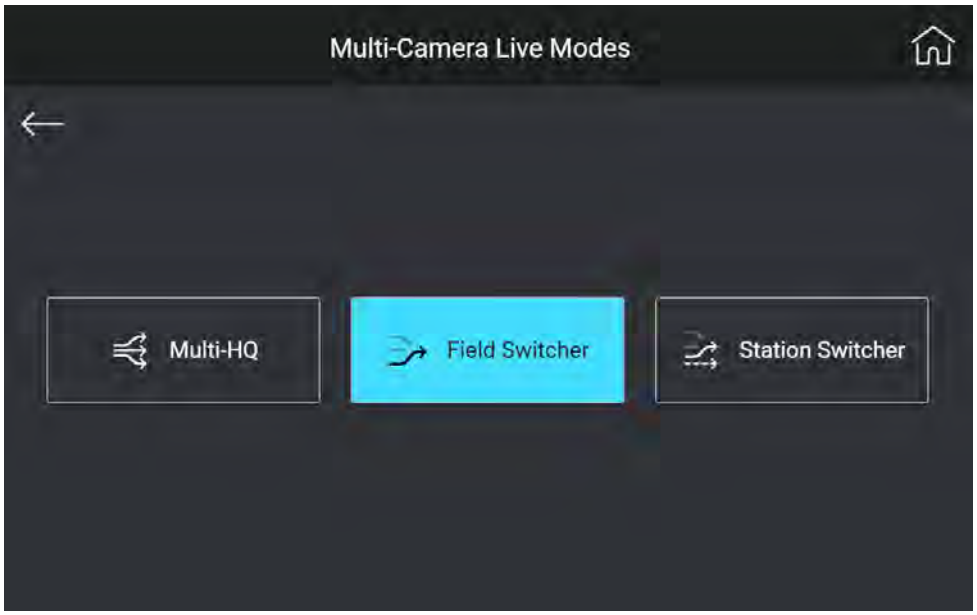
on the left of the Home screen.

   The Multi-Camera Live Modes screen is displayed.




**Multi-camera Live Modes - Multi-HQ**

3. Tap




**Multi-Camera Live Modes - Field Switcher**

You are returned to the Home screen.

Field Switcher is now displayed on the left side of the screen and video from the connected cameras is captured in the preview area.

The following figure shows the preview area where Camera 1 is framed in blue, indicating it's the selected camera.

**Multi-camera - Field Switcher**

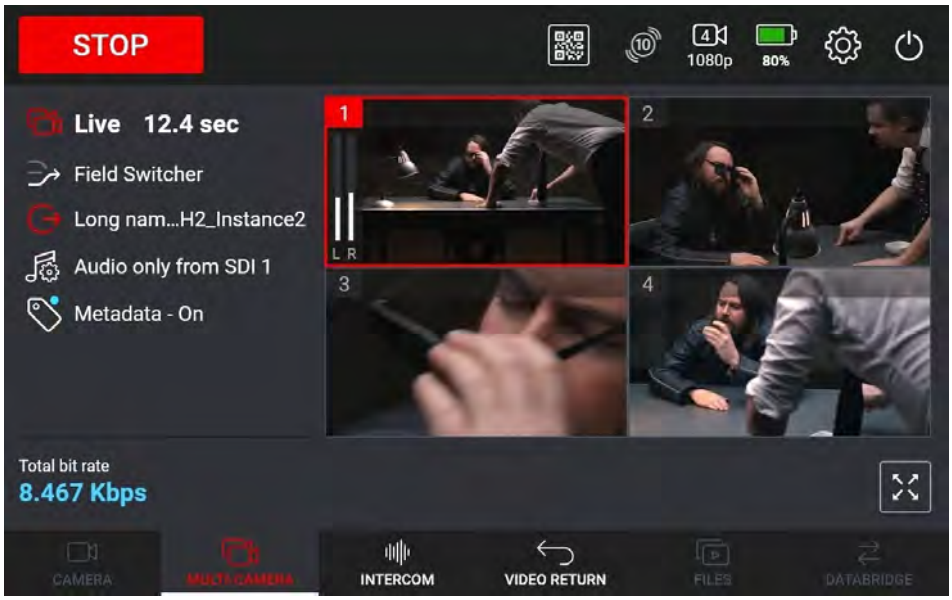
4. Select any single video channel.

   In Field Switcher mode, you can transmit video through a standard single channel.

5. Tap START

   The transmitting camera is framed in red.

   Audio is transmitted only from Camera 1, regardless of which camera is transmitting.



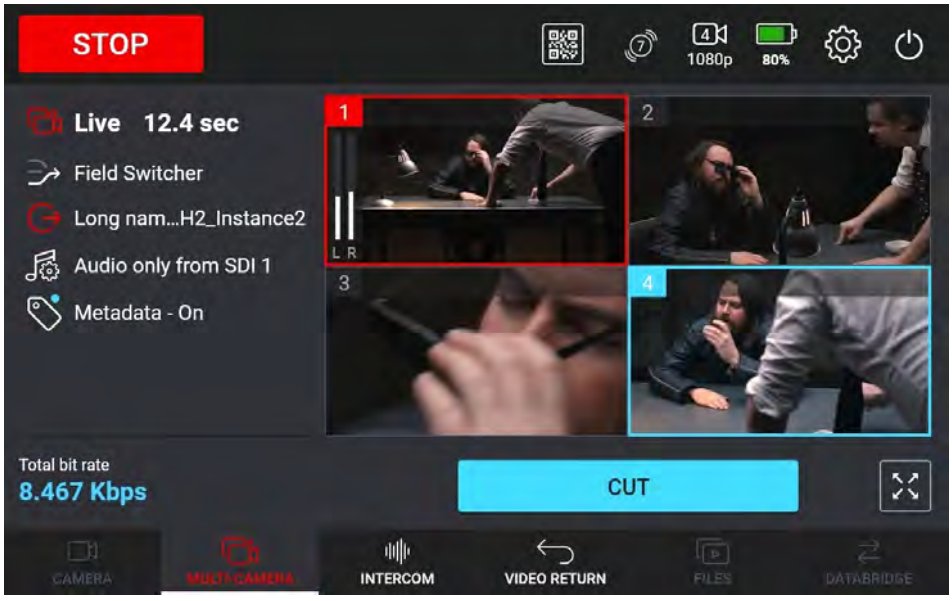

**Field Switcher mode**

**Note** At any time, you can switch to a different Multi-Camera mode by tapping the active mode on the left side of the screen.

## To switch feed in Field Switcher mode:

1. In the Home screen, optionally tap to enlarge the preview screen.
2. Tap the camera whose feed you want to transmit.

   The selected camera is framed in blue and appears at the bottom of the screen.




**Field Switcher - Selecting a new feed**

3. Tap CUT

   The camera switches to the selected camera feed without interrupting the transmission.

4. If necessary, tap to return the preview screen to its regular size.

   Audio continues to transmit from the camera connected to SDI 1.

## Using Station Switcher mode

Station Switcher mode enables the studio operator to switch cameras remotely. The LU800 transmits a high quality stream to the studio while simultaneously transmitting a low bandwidth proxy stream on a separate SDI channel.

The Central user can also select Station Switcher and control which camera to select for transmission.

The quality of the transmitted video is not compromised by activating the proxy stream.

## To set the LU800 to work in Station Switcher mode:

1. Tap the **Multi-camera** tab at the bottom of the Home screen.

   The Changing Video Mode message appears. After a few seconds, you are returned to the Home screen.

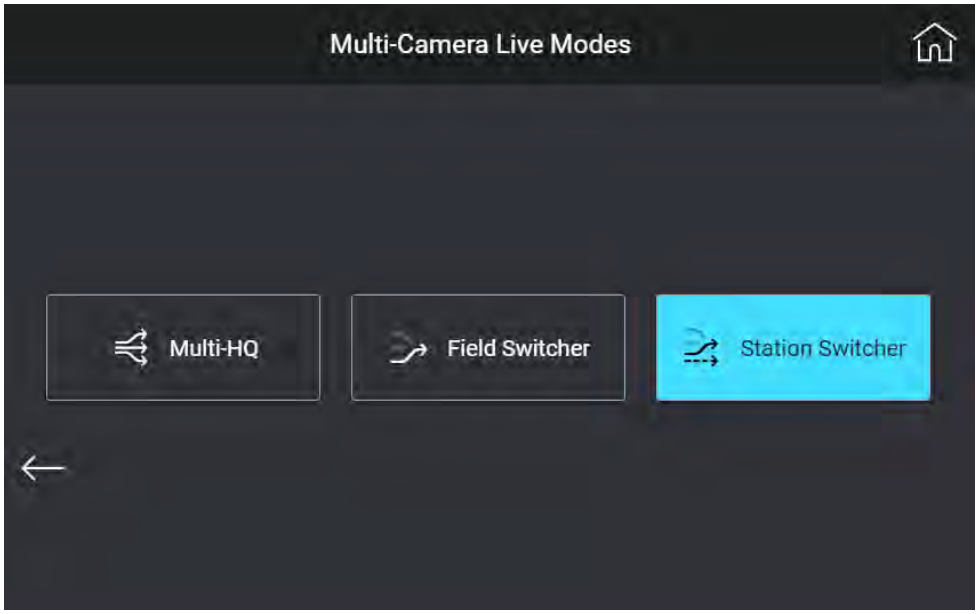
   Multi-HQ is active by default and is displayed on the left of the Home screen.

   The number of connected cameras is also displayed on the left side of the Home screen.

2. Tap Multi-HQ

   The Multi-Camera Live Modes screen is displayed.

3. Tap **Station Switcher**.




**Multi-camera Live Modes screen - Station Switcher**

You are returned to the Home screen.

is now displayed on the left side of the screen.

4. In the Home screen, tap and select a proxy channel from the Channels screen.
   The video feed can now be controlled by the Central operator.

## Adding / removing cameras in multi-camera mode

In Multi-HQ mode, you can add / remove cameras during transmission only if the number of connected cameras complies with the number you selected in the Number of Cameras screen.

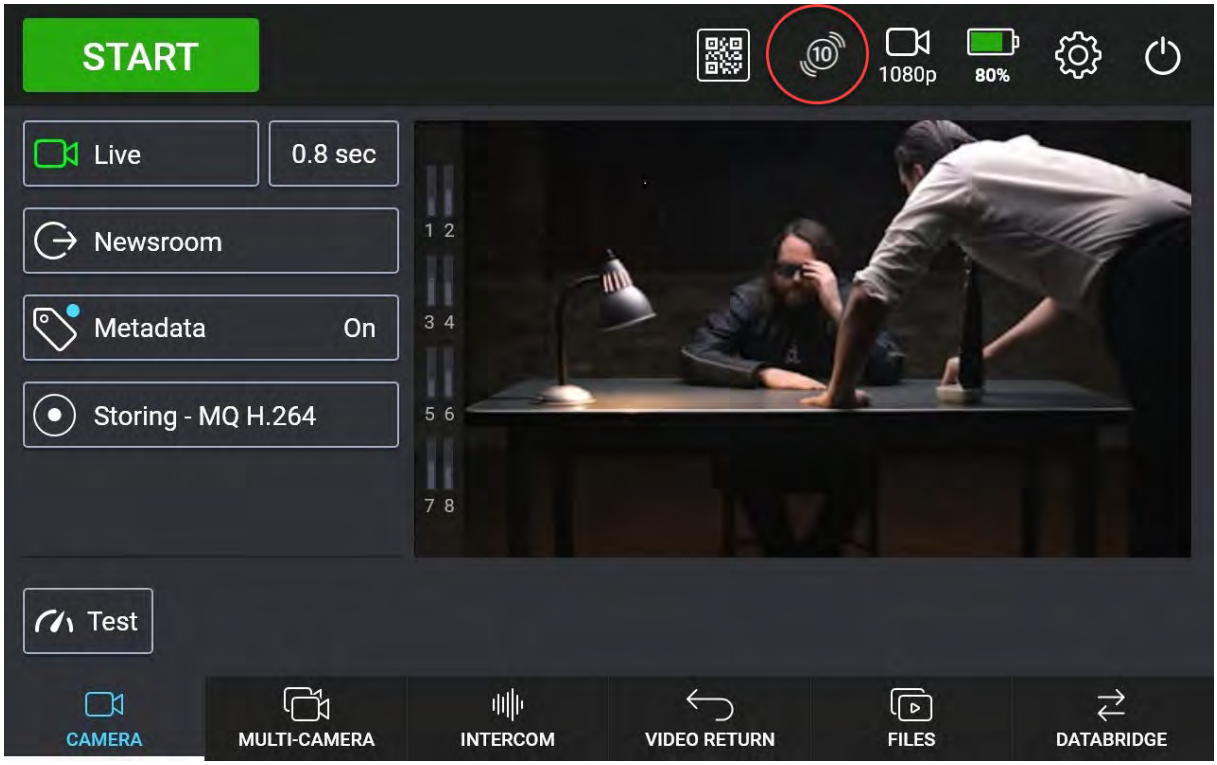
In Field / Station Switcher mode, you can add / remove cameras on the fly.

**Note** A camera must be connected to the unit's SDI 1 before transmission begins. If the camera becomes disconnected during transmission, transmission is resumed without delay from the camera connected to SDI 2. However, audio quality is slightly lower.

# Connecting to the network

## Connecting to a network

The Connections screen displays the network interfaces the LU800 can connect to. The LU800 automatically connects to defined networks when powered on.




**Home screen – Connections icon**

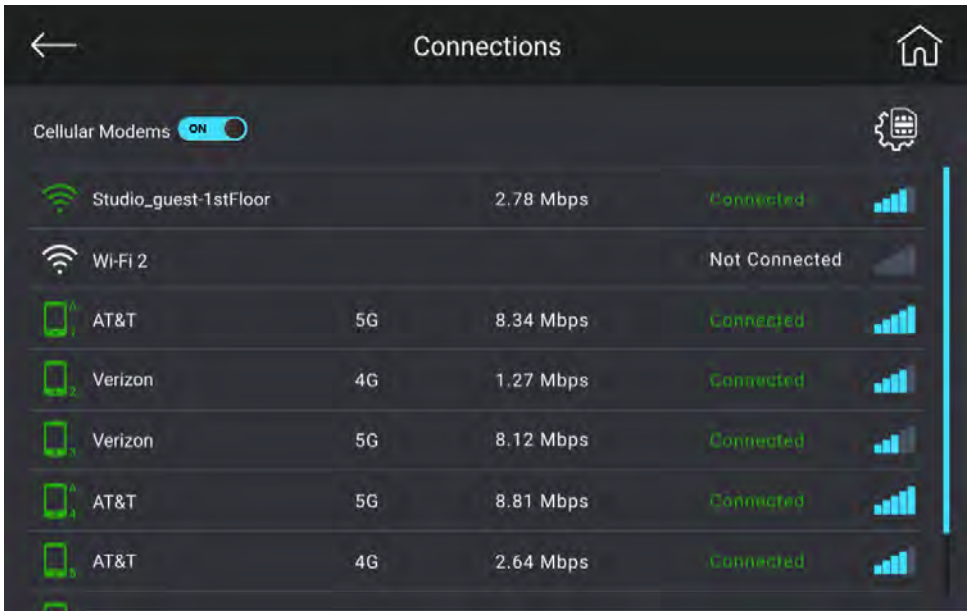
When the unit is connected to one or more interface, the **Connections** icon changes from red to white and displays the number of interfaces the unit is connected to.

### To connect to a network:

- Tap at the top the Home screen.

  If you are already connected to one or more interface, the **Connections** icon is white and displays the number of interfaces the unit is currently connected to.

  The Connections screen is displayed.




**Connections screen**

Each row represents a different interface. The following table shows the icons corresponding to the available interface types.

| Icon | Description |
|---|---|
| | Wi-Fi. |
| | Cellular Module: Indicates if SIM slot **A** or SIM slot **B** is currently active. The digit indicates the number of the slot in which the module is located. |
| | Ethernet. |

The next table describes the connection status indicated by the icon color:

| Color | Description |
|---|---|
| Green | Indicates that the interface is connected. The streaming bandwidth and signal strength is also displayed, where relevant. |
| Yellow | Indicates that the connection is in progress. |
| Gray | Indicates that the connection is disabled. |

# Configuring cellular networks

## Enabling / disabling cellular modems

### To enable / disable cellular modems:

1. Tap at the top of the Home screen.

   If you are already connected to one or more interface, the **Connections** icon is white and displays the number of current connections.

   The Connections screen is displayed.

2. Toggle **Cellular Modems** by tapping ON / OFF to enable / disable all cellular interfaces on the LU800.

   When set to ON, all interface types in the Connections screen are enabled. When set to OFF, all cellular connections are turned off and only Wi-Fi and Ethernet interfaces are enabled.

   Each active interface on the Connections screen displays 0 Kbps when the LU800 is not streaming. Actual bandwidth is displayed only when the unit starts streaming.

**Note** Xtender interfaces appear in the Connections screen only when an Xtender is connected to the unit. See the LiveU Xtender User Guide for a description of the **AP and Client** interfaces connected to the Xtender.

## Defining cellular settings

Tapping a cellular connection in the Connections screen displays the settings of the selected cellular interface in the right pane.

**Cellular connections - Modem settings**

The following information is displayed under the **General** tab:

- Cellular interface connection status and connection strength
- Cellular operator and connection technology: 3G / 4G / 5G
- Active SIM slot.
  In the previous figure, SIM slot A is highlighted, indicating that it is the active slot.
- Modem and SIM information

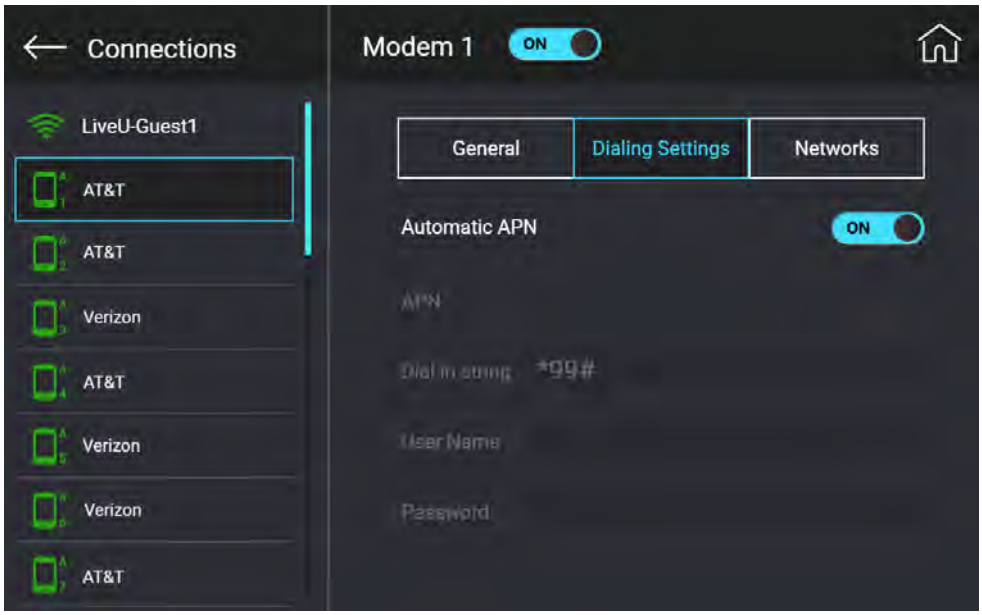
# Configuring APN parameters manually

The APN specifies details for the service provider and is typically set up and configured by default. Before you configure these settings manually, contact your service provider for the recommended APN settings.

In the Dialing Settings screen, you must also provide dial-up information

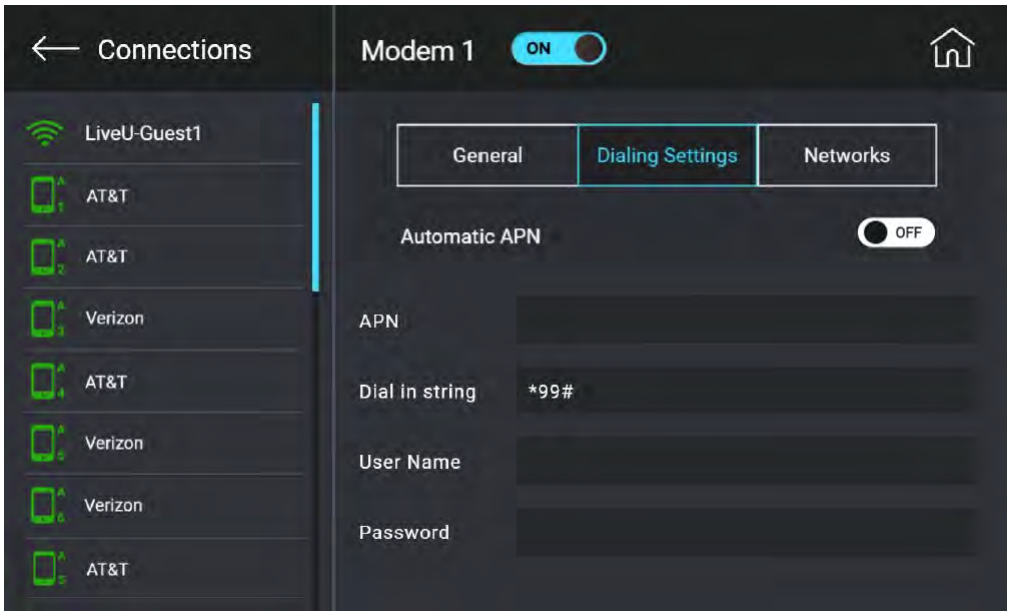
## To change APN configuration:

1. In the Connections screen, tap a cellular connection to display the settings of the selected cellular interface in the right pane.
2. Tap **Dialing Settings**.
   The automatic APN setting for the selected modem is displayed.




**Dialing Settings - Automatic APN**

3. Tap to switch **Automatic APN** to .
   APN fields become available.




**APN settings**

4. Tap the **APN** field to display the keyboard.
5. In the keyboard, tap the setting recommended by your service provider, then click **Accept**.
6. Tap the **Dial in string** field to display the keyboard.

**Keyboard**

7. In the keyboard, tap the dial-in information recommended by your service provider, then click **Accept**.
8. Tap the **User Name** field to display the keyboard.
9. In the keyboard, tap a name, then click **Accept**.
10. Tap the **Password** field to display the keyboard.
11. In the keyboard, tap a name, then click **Accept**.

The LU800 reconnects the selected cellular interface using the new APN settings.

## Manually selecting a network

When roaming with the unit, the unit automatically connects to available cellular operators. Roaming must be supported by the SIM card. You can also manually scan for available networks and force each modem to connect to a specific one.

### To manually select a cellular operator:

1. Tap at the top of the Home screen.

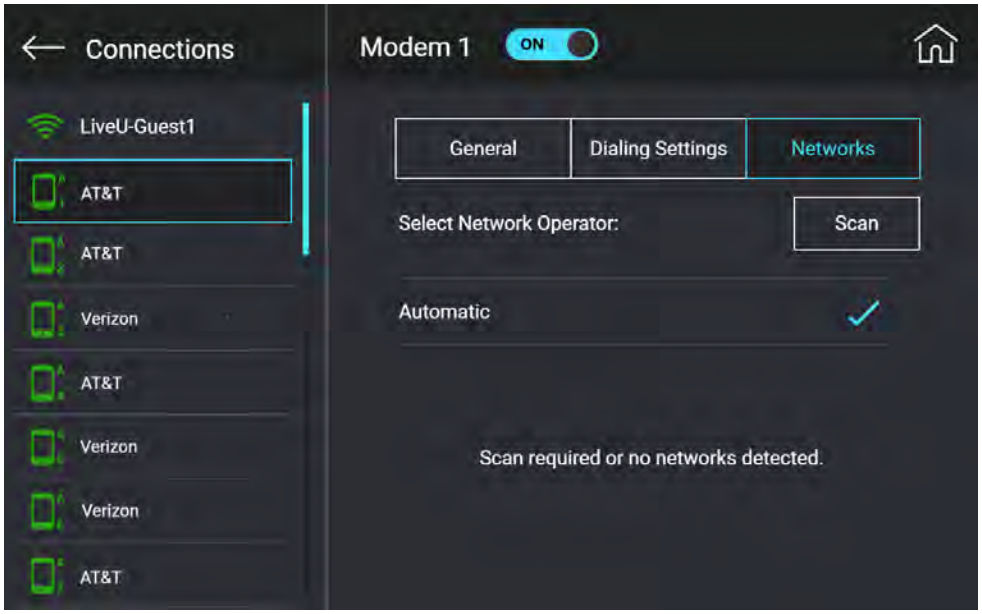
   If you are already connected to one or more interface, the Connections icon is white and displays the number of current connections.

   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.

2. Tap a cellular connection to display the settings of the selected cellular interface in the right pane.

3. Tap **Networks**.

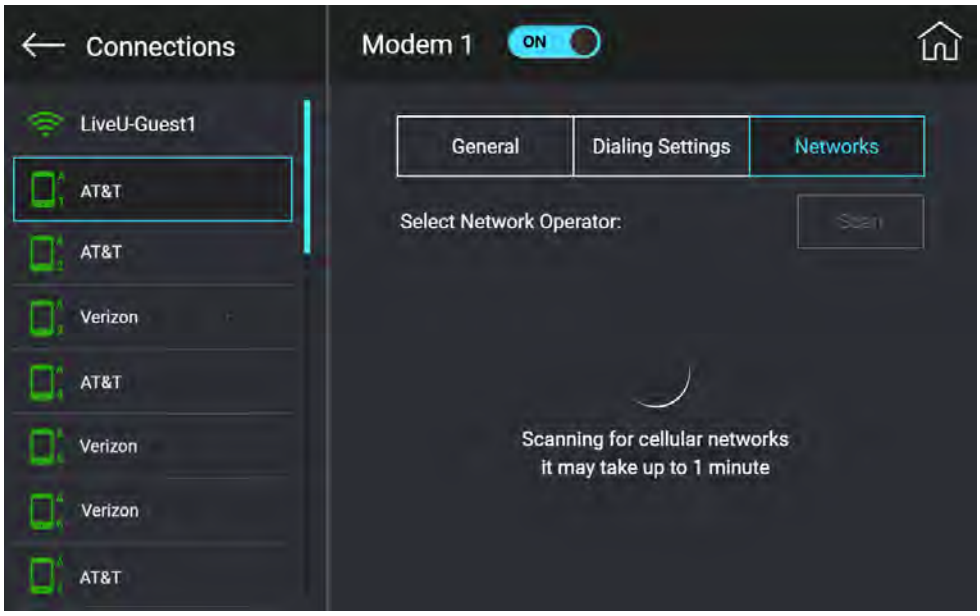
   The Networks screen for the selected modem is displayed.




**Connections - Automatic operator**

4. Tap **Scan**.

   The unit scans the area and then displays a list of all the cellular networks belonging to the installed SIM.




**Connections screen - Scanning for an operator**

This can take up to two minutes.

5. Select an operator.

   The selected operator is now the default operator for the selected SIM.

## Optimized Roaming Pairing (ORP)

The LU800 supports Optimized Roaming Pairing (ORP). This service provides optimized network operator pairing on roaming SIMs based on LiveU's field experience in different territories worldwide. By default, the LU800's roaming SIMs pair to the same operator based on either signal strength or commercial preference. ORP guarantees that the modems pair to the two, three or four available operators in any area / country in which you are located and prevents the modems from connecting to the same operator.

## Switching between SIM slots

The LU800 supports advanced SIM selection functionality.

### To switch from one SIM slot to the other:

1. Tap at the top of the Home screen.

   If you are already connected to one or more interface, the Connections icon is white and displays the number of current connections.

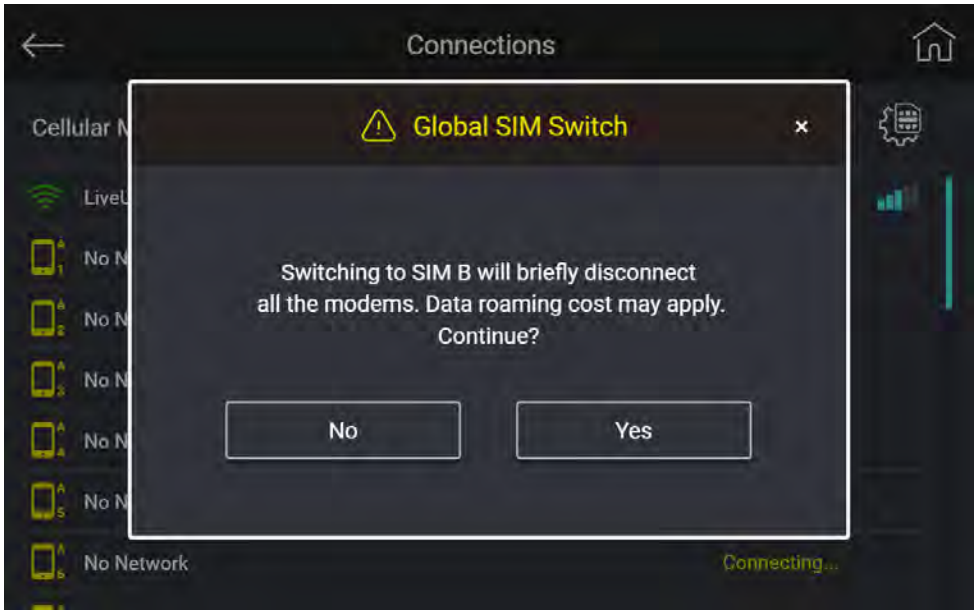
   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.

2. Select a cellular network.

   The active SIM slot of the selected cellular interface is displayed. The following figure shows that SIM slot A is highlighted to indicate it is currently active.

**Connections screen - Dual-SIM modules**

3. Tap the SIM slot you want to switch to.
   The Switch SIM slot confirmation screen is displayed.




**Switch SIM slot confirmation**

4. Tap **Yes** to switch to the alternative SIM.
   The system connects the selected network to the specified SIM slot.

## Configuring Ethernet interface parameters

By default, the IP address of an Ethernet interface is obtained automatically from the DHCP server. You can manually configure the IP address and other standard network parameters.

## To configure IP settings:

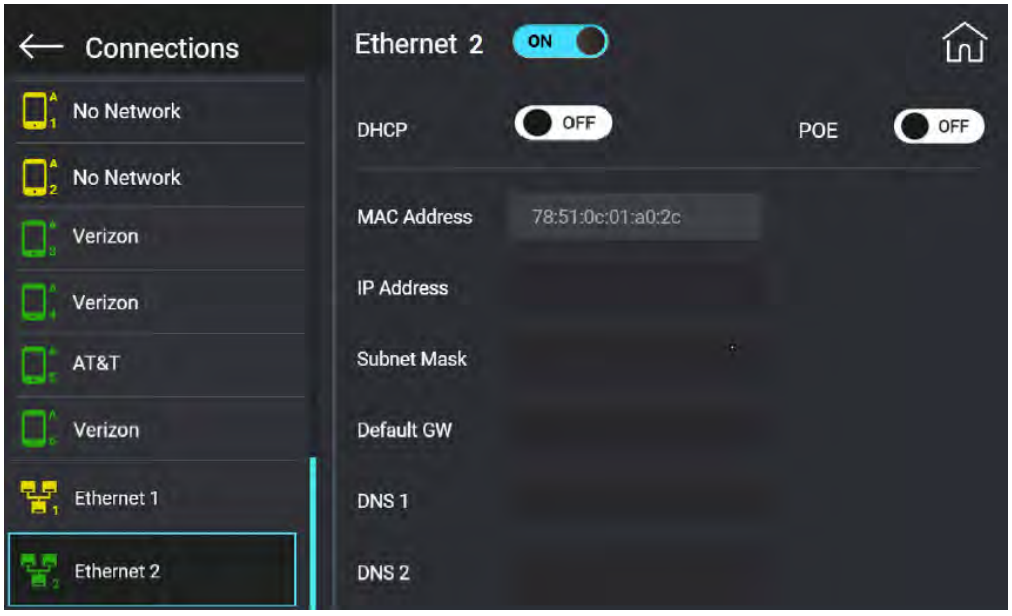
1. Tap on the Home screen.

   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.

2. Tap an Ethernet connection to display its configuration in the right pane.

   When DHCP is , the Ethernet configuration is automatically received from the network

3. To manually configure the Ethernet network parameters, switch **DHCP** to .




**Ethernet interface screen - DHCP disabled**

4. Configure the following parameters:
   - IP Address
   - Subnet Mask
   - Default GW
   - DNS 1
   - DNS 2

## Enabling Power over Ethernet (PoE) settings

The LU800 supports a Power over Ethernet (PoE) feature to provide power to a Wi-Fi client, such as the UBIQUITI client used with the Xtender. This replaces the need for the Wi-Fi client to be connected to an external power source. This option is available only on the Ethernet 2 interface. PoE is not available on Ethernet 1.

**Note** Use PoE only for powering up the LiveU wireless kit for Xtender and not for any other purpose.

For more details about PoE and the Xtender, see the LiveU Xtender User Guide.

### To enable PoE on an interface:

1. Tap at the top of the Home screen.

   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.
2. Tap an Ethernet connection to display its settings in the pane on the right of the screen.
3. Switch PoE at the top of the screen to

.

## Configuring Wi-Fi network parameters

The LU800 automatically connects to the Wi-Fi network to which it was most recently connected. The following describes how to connect to a different Wi-Fi network or connect to a Wi-Fi network for the first time.

Selecting a Wi-Fi connection displays a list of all the Wi-Fi networks in the vicinity.

**Wi-Fi networks**

The following describes the Wi-Fi Connections pane:

- Wi-Fi

/ Wi-Fi

- Refresh: Tap to rescan the Wi-Fi networks in the vicinity.
- Wi-Fi Network Name
- Network Status: Indicates the status of the network, as follows:
  - Connected: The Wi-Fi network is currently connected.

  - Known: The LU800 has previously connected to this network and knows its password. The unit automatically connects to known networks if they are within range.
  - Unknown: The LU800 has not previously connected to this network and does not know its password.

- Lock / Not locked : Indicates the password-protection status of the corresponding Wi-Fi network.
- Signal Strength Indicator (RSSI)
- Forget password

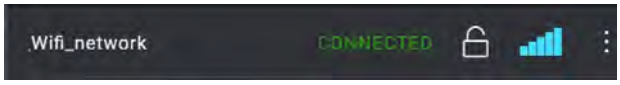
## Connecting to a Wi-Fi network

## To connect to a Wi-Fi network:

1. Tap at the top of the Home screen.

   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.
2. Tap a Wi-Fi connection to display available networks in the right pane.
3. Tap a Wi-Fi network in the list, as follows:
   - Unknown: If the network is password protected, a keyboard is displayed. Continue to step 4.
   - Known: The LU800 connects to the selected Wi-Fi network.
4. Type the Wi-Fi password into the field and tap **Accept**.

   The LU800 connects to the selected Wi-Fi network.




**WiFi Network connected**

**Note** When connecting to a public WiFi system, a login page is automatically displayed on the unit. Fill in the login page to connect in the usual way.

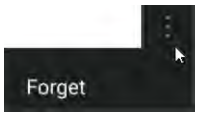
## Changing a known network to unknown

## To change a known network to unknown:

1. Tap at the top of the Home screen.

   The Connections screen is displayed with a list of all the interfaces the LU800 can connect to.

2. Tap ⋮ in the row of a known network and then tap **Forget** in the panel that is displayed.




**Forget panel**

The network is erased from the LU800 and appears as an Unknown Wi-Fi network.

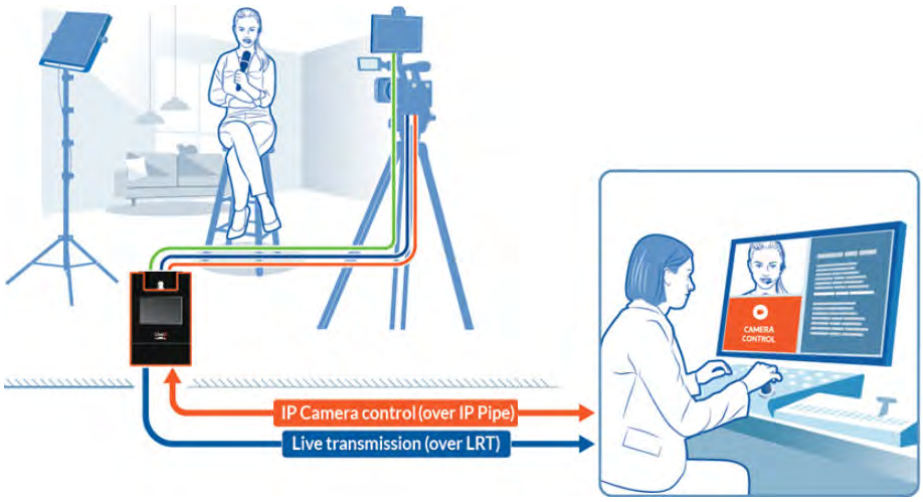
# IP Pipe

The LU800 supports IP Pipe, a data channel that enables the station / studio to remotely control the unit's PTZ camera.

IP Pipe enables station / studio operators to remotely control any IP equipment in the field by generating a dedicated Ethernet pipe from the unit to the selected LU2000 / LU4000 MMH server. The MMH server, which is connected to the organization's corporate network, connects to the LU800's Ethernet port over the same network. The unit's camera then appears to be on the same corporate network.

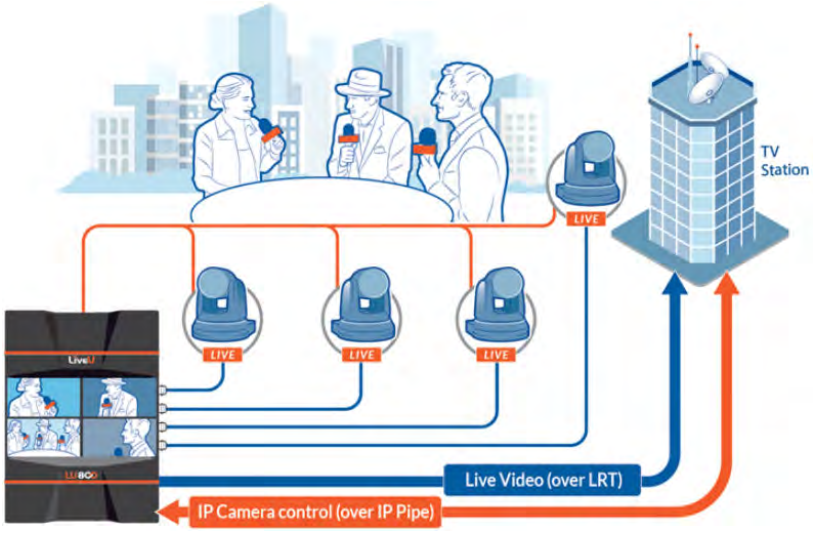
Only one camera can be connected directly to the unit's Ethernet port – ETH 1 or ETH 2.

The following figure shows a station operator remotely controlling a single camera over IP Pipe.




**Remote control of a single camera**

The following figure shows a station operator remotely controlling multiple cameras over IP Pipe.



**Remote control of multiple cameras**

**Note** To enable the control of additional cameras using the IP Pipe, you can connect a switch to one of the Ethernet ports and then connect multiple cameras to the ports on the switch.

All configuration tasks are performed in the LiveU Central management platform. For more information on IP Pipe, see the IP Pipe User's Guide.

Ethernet ports

**Note** IP Pipe is limited to 1 Mbps of bandwidth. Therefore, it is recommended that you avoid connecting high-bandwidth consuming devices.

# Storing, forwarding and uploading files

The LU800 supports storing and uploading files to the LU2000 / LU4000 server.

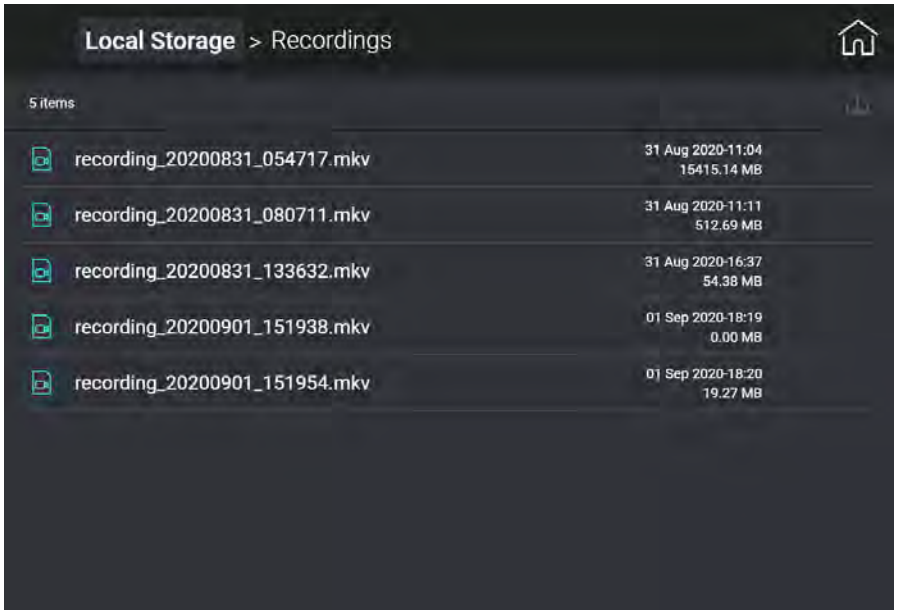
There are three methods of storing and uploading stored files.

## Live & Store

In Live & Store mode, files are recorded at a high quality and constant bitrate while simultaneously transmitting live video adaptively. The recorded files serve as a backup of the Live transmission and can be uploaded to the station / studio after the live transmission ends.

The files are stored on the unit's internal storage in a folder named **Recordings**. The folder is named by default and cannot be changed. The following figure shows five files and their default file names saved to the **Recordings** folder.

**Note** Live & Store is available only in single camera mode. It does not apply when working in multi-camera mode.




**Live & Store - Recordings folder**

The Live & Store feature saves a high quality copy of transmitted live video, which can be manually uploaded to an LU2000 / LU4000 MMH server at a later time.

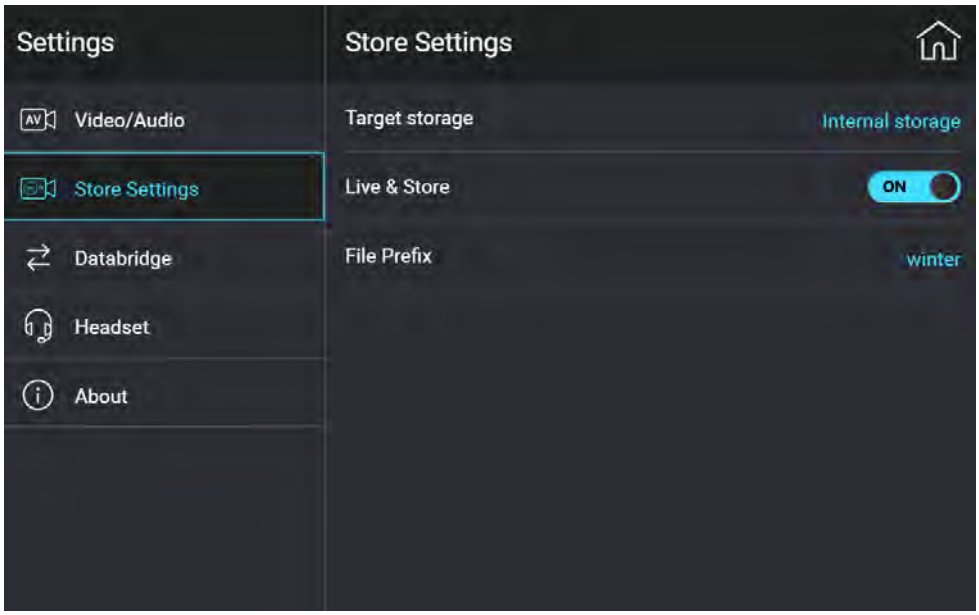
Live & Store files uploaded to the server remain on the unit after they are uploaded. Older files are deleted automatically as new recordings replace them.

## Enabling / disabling Live & Store

Live & Store is enabled by default. The LU800 allows you to disable this feature.

## To enable / disable Live & Store:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. Tap **Store Settings**.
   The Store Settings pane is displayed on the right of the screen.




**Store Settings screen - Live & Store**

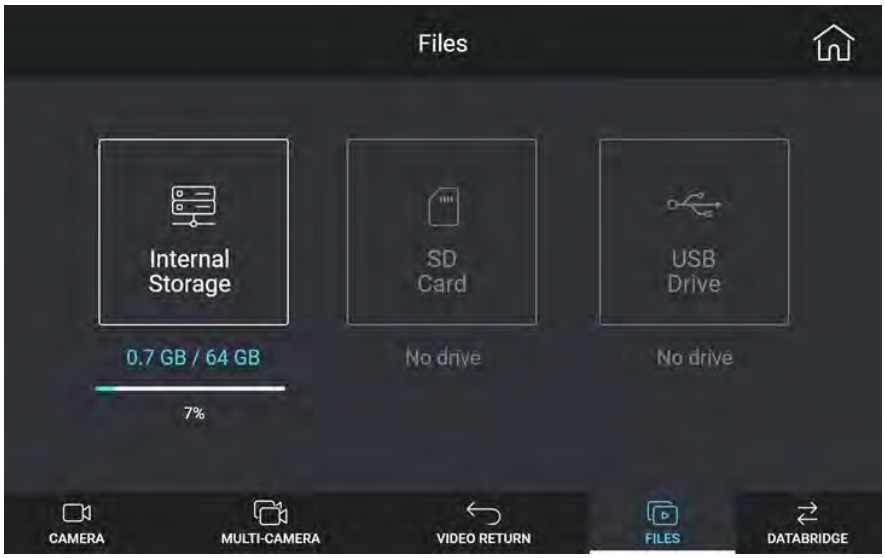
3. Enable / disable **Live & Store** by tapping / .

## Viewing Live & Store files

You can view the files stored in the **recordings** folder.

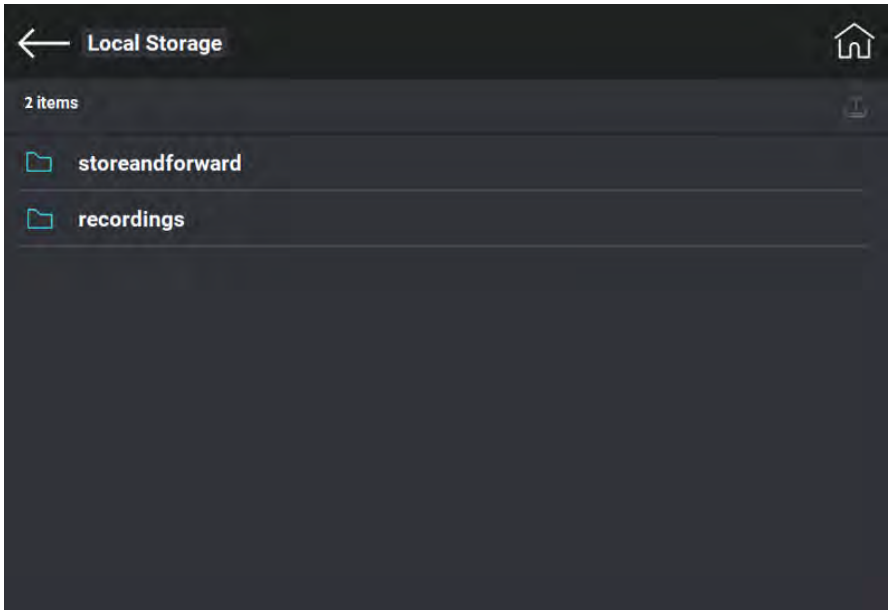
## To view Live & Store files:

1. Tap **Files** at the bottom of the Home screen.
   The Files screen is displayed.



**Files screen**

2. Tap **Internal Storage**.
   The Local Storage screen is displayed.
   Live & Store files are saved to the **recordings** folder in the unit's internal storage.




**Local Storage screen - Folders**

3. Tap **recordings**.
   The contents of the **Local Storage** > **recordings** folder are displayed.

# Store & Forward

## Overview

In Store & Forward (S&F) mode, high-quality video is saved to the unit's internal storage, providing a guaranteed quality, regardless of network performance. The video is uploaded to the MMH server under the following circumstances:

- Online: Simultaneously stores and uploads live video to the LU2000 / LU4000 server or to a cloud server.
- Offline: Stores a high quality video, which can be manually uploaded at a later time.

The file is transmitted to the LU2000 / LU4000 MMH server, from where it can be downloaded or played to SDI, even while the video is streaming and uploading.

The LU800 encodes S&F HD files at up to 15 Mbps video rate and at 4K up to 35 Mbps. The LU800 forwards the files at a maximum bitrate of 100 Mbps, based on available bandwidth.

During an S&F session, the unit can store the file on one of the following storage device types:

- Internal Storage: The LU800 has an internal storage capacity of 64GB, of which approximately 50GB can be used for S&F sessions.
- External SD Card: The LU800 accepts SD cards of 4GB to 2 TB capacity. The SD card must be a Class 10/UHS-I/II or higher from an established manufacturer.

You can configure the recording quality of the video file. The quality you define is also applied to Live & Store files.

You can also set the video's target storage and the prefix of the file name that is stored and uploaded.

After a file is uploaded to the server, it is automatically deleted from the unit's internal storage and from the SD card.

**Note** Store & Forward can be used only in single-camera mode.

## Store & Forward settings

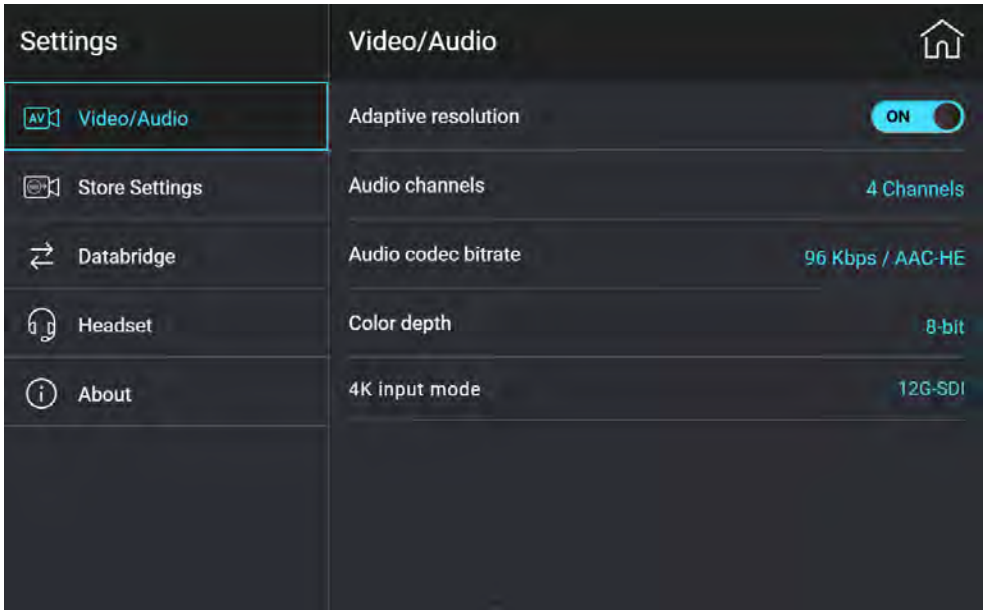
The following section applies only to Store & Forward and is not applicable to Live & Store.

### Setting storage destination

Store & Forward sessions can be saved to the LU800's internal storage or on an SD card.

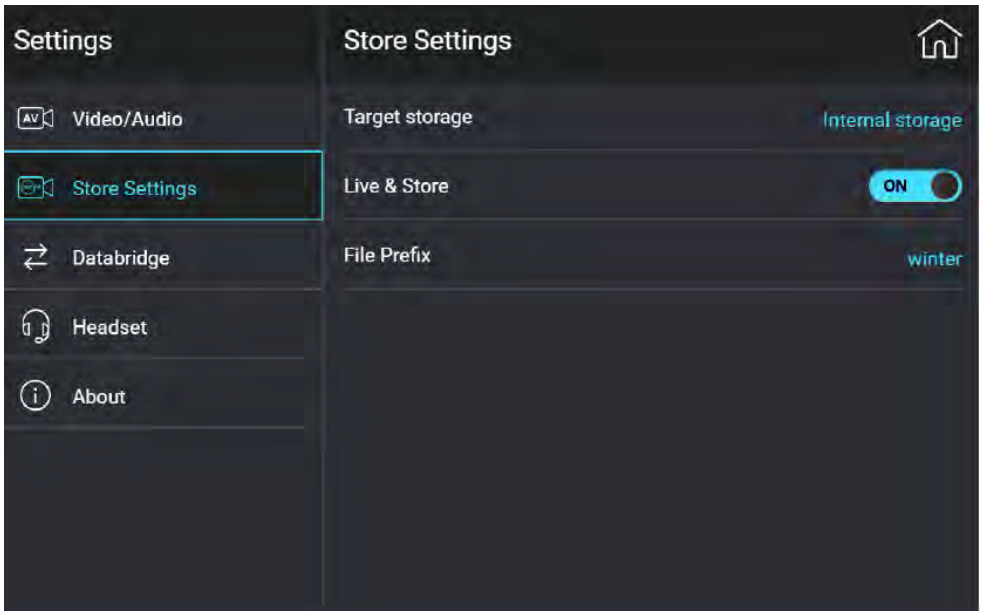
### To set storage destination:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.



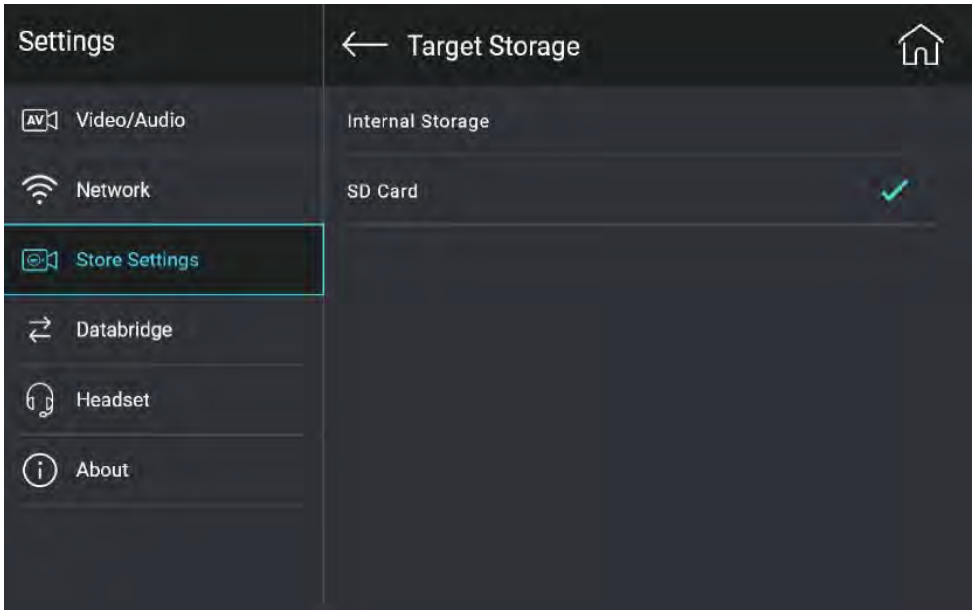

**Settings screen**

2. Tap **Store Settings**.
   The Store Settings pane is displayed on the right of the screen.




**Store Settings screen**

3. Tap **Target storage**.
   The Target Storage screen is displayed.




**Target Storage screen**

4. Tap a target storage option.
   The video is stored on the selected storage option.

## Setting the file prefix

File Prefix allows you to specify the prefix to be appended to the filename of the files streamed from the LU800 and saved locally on the unit.

**Note** Do not use special characters or spaces in the prefix.

## To set the file prefix:

1. Tap at the top of the Home screen.
   The Settings screen is displayed.
2. Tap **Store Settings**.
   The Store Settings pane is displayed on the right of the screen.
3. Tap **File prefix**.
   The keyboard is displayed.
4. Type the prefix for the stored file and then tap **Accept**.
   You are returned to the Settings screen and the file prefix you defined appears in the Store Settings pane and on the Home screen.

## Starting a Store & Forward session

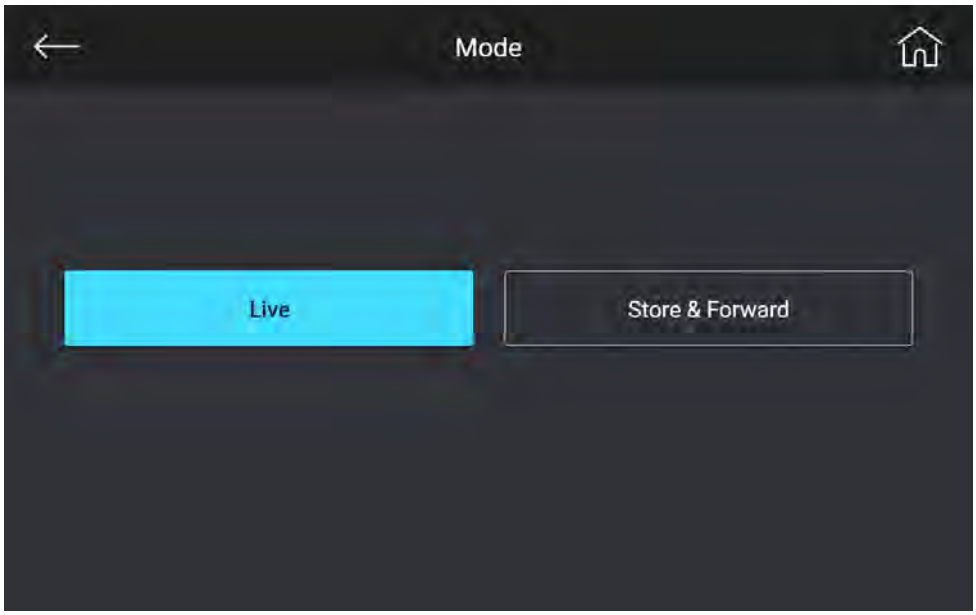
Store & Forward files are simultaneously stored and uploaded to the server only when online. When offline, the files are saved to the designated storage device and can be manually uploaded at a later time.

## To start a Store & Forward session:

1. Tap **Live** on the left side of the Home screen.

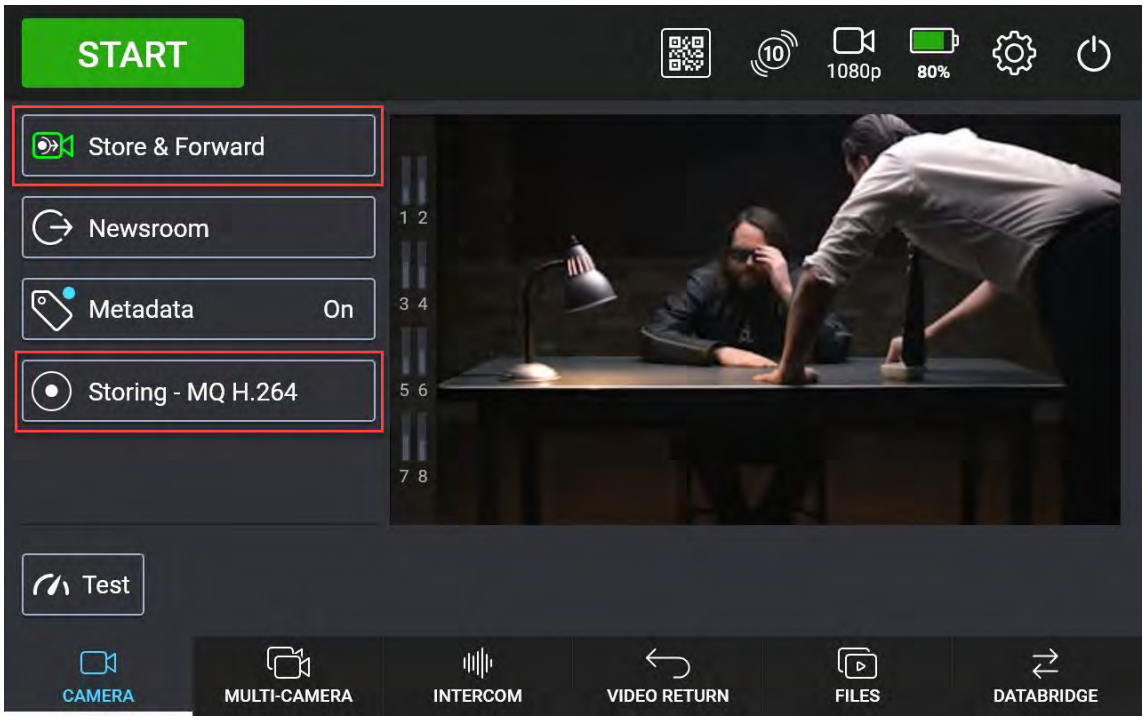
**Home screen - Live mode button**

   The Mode screen is displayed.




**Mode screen**

2. Tap **Store & Forward**.
   In the Home screen, **Live** becomes **Store & Forward**.




**Home screen - Store & Forward mode**

3. Tap START on the Home screen.
   The process of uploading live video to the designated storage device begins. The following information is displayed on the Home screen during the S&F session:
   - Progress bar indicating the percentage of the uploaded file.
   - Number of MBs sent and remaining to be sent
   - Total bit rate

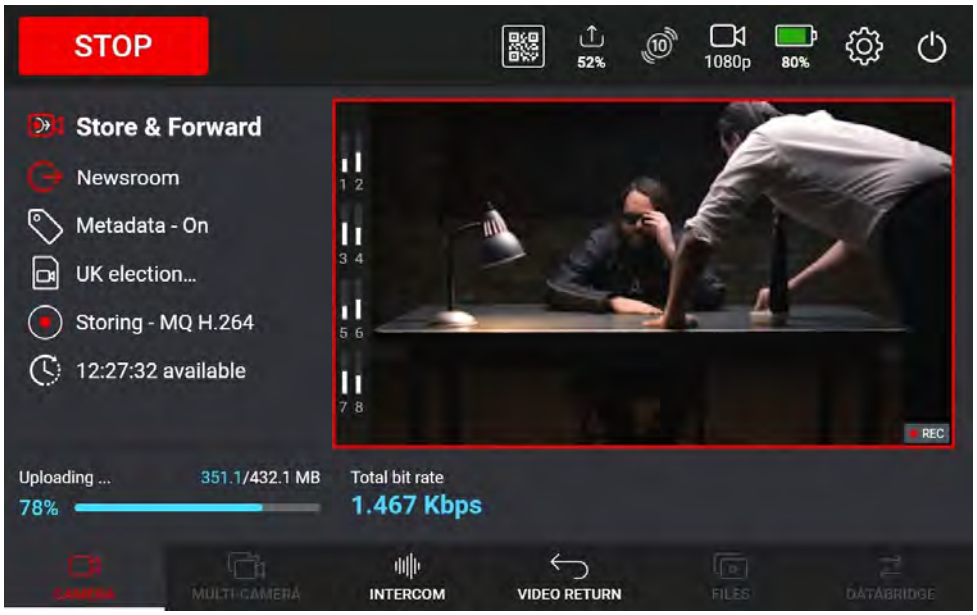



**Figure 83: S&F session in progress**

During S&F streaming, at the top of the Home screen displays the percentage of the file that has been uploaded. When the uploading of the file is completed, the file is deleted from the unit.

## Manually uploading stored files

You can manually upload the following:

- Files created during a Live & Store session and were saved to the unit's internal storage.
- Files created during an offline Store & Forward session and were saved to the unit's internal storage or to an inserted SD card.

**Note** Store & Forward files cannot be transferred from a USB drive.

- Files stored on external devices, such as an SD card or a USB device. You can transfer any type of file, such as text files, on the SD card or USB flash drive.

**Note** When formatting external media, note that the LU800 unit supports the following file systems: FAT32, NTFS, exFAT and ext3 / ext4. Also note that FAT32 supports a file size of up to 4GB and therefore is not recommended.

At the LU2000 / LU4000 MMH server side, files are stored on the server in the designated directory and are organized in folders named according to the LU800 unit that sent them. See the **LiveU Central** User Guide for more information.

If you are transferring a file from an SD card, note the location of the SD card drive on the LU800.

If you are transferring a file from a USB flash drive, connect the drive to the USB-SS port on the LU800.

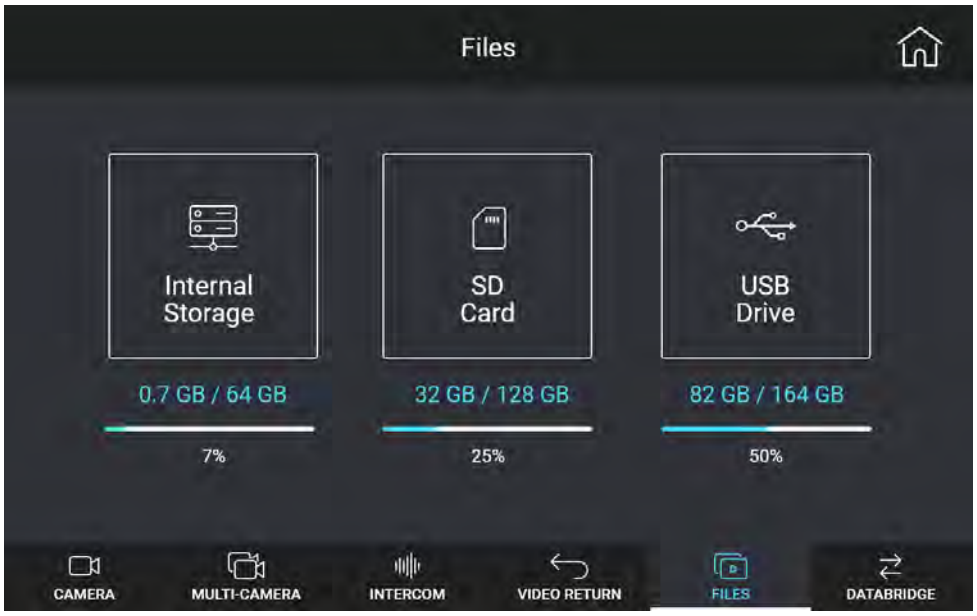
**LU800 – SD card drive and USB port**

## To transfer files:

1. In the Home screen, select the channel through which you want to transfer the file.
2. Tap **Files** at the bottom of the Home screen.

**Home screen – Files**

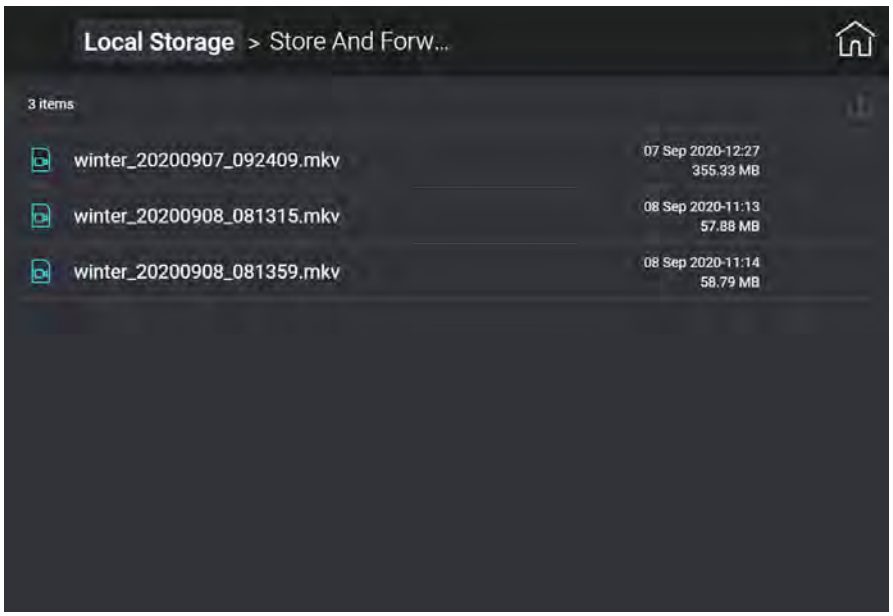
The Files screen is displayed.




**Files screen**

3. Tap one of the following:
   - Internal Storage: Displays the Local Storage screen. Tap one of the default folders to display a list of the files that were stored during Live & Store and Store & Forward sessions
   - SD Card: Displays a list of the files that were stored during a Store & Forward session and a list of files that were uploaded to the SD card manually. This option is active only when a card is inserted into the LU800.
   - USB Drive: Displays a list of files on the USB drive. This option is active only when a USB flash drive is connected to the LU800.

   The next figure shows a list of recordings stored during Store & Forward sessions.

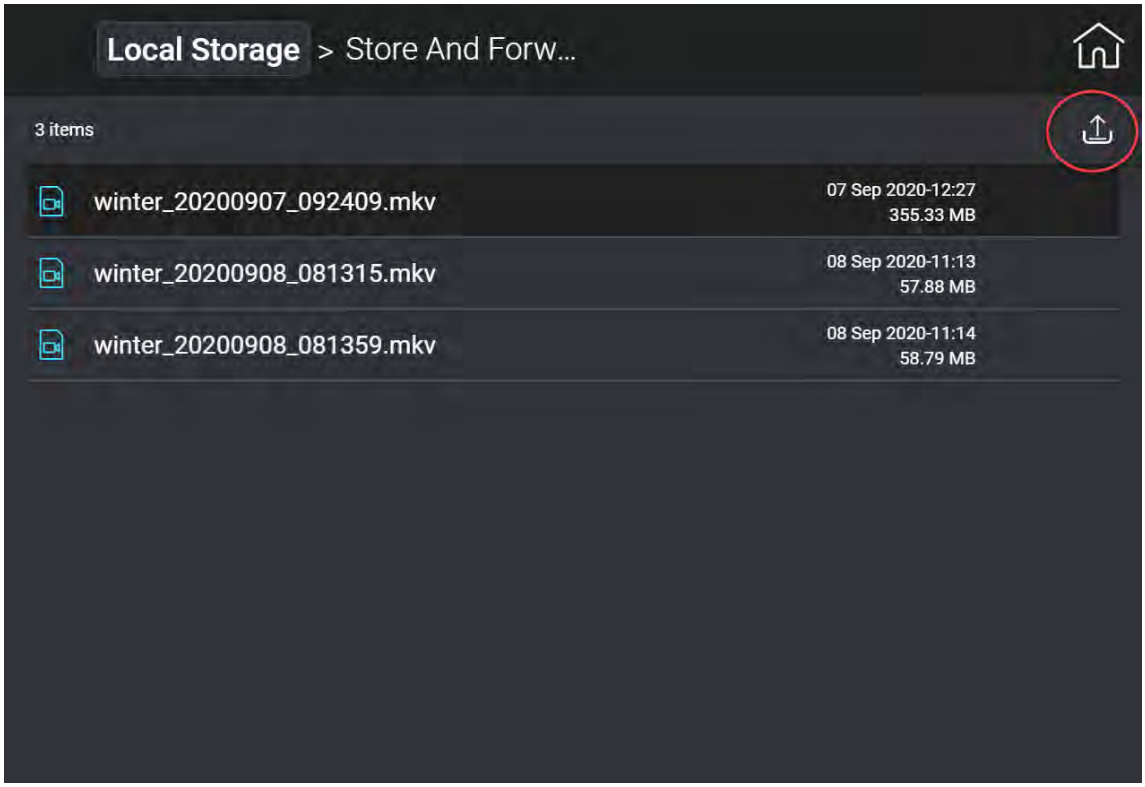



**Sore And Forward folder – Stored files**

4. Select the file you want to upload.

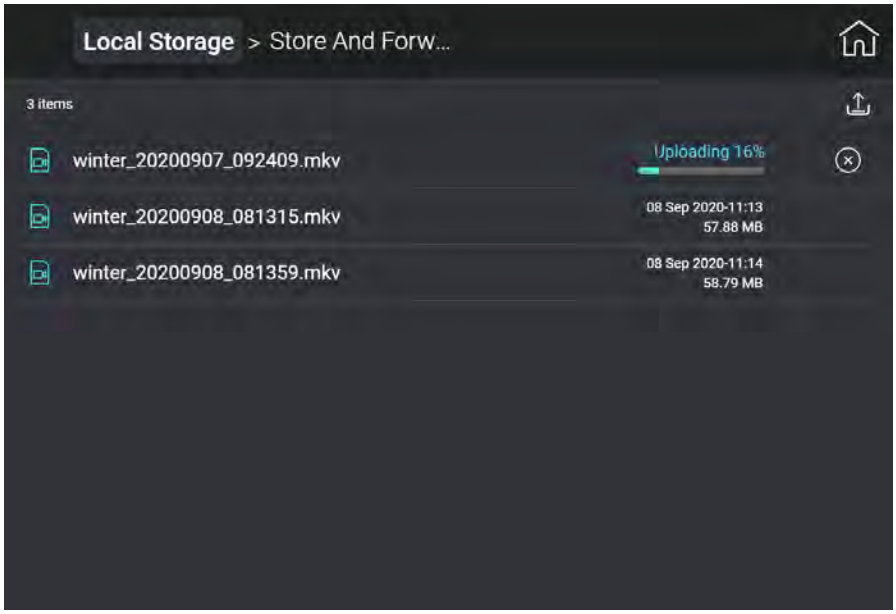
Only one file can be uploaded at a time.

at the top of the screen becomes available.




**File upload**

5. Tap to upload the file to the server.
   A counter indicating the progress of the uploaded file is displayed.




**Store & Forward - Uploading a file**

You can cancel the upload at any time during the uploading process by tapping
If you want to resume uploading the same file, the process starts again from the beginning.

After the file is successfully uploaded, the message **Upload Completed** is displayed.

# Audio Connect and Tally Light

## Overview

Audio Connect enables studio personnel to communicate with one or multiple unit operators in the field. It supports the following:

- **Interruptible Foldback** (IFB) provides unidirectional communication. The unit operator can receive audio from the studio but cannot send audio.
- **Intercom** provides bidirectional communication. The unit operator can receive audio from the studio and can also send audio.
- **Audio conferencing**. Unit operators and studio personnel can participate in audio conferencing calls.

Audio Connect can work in two different modes:

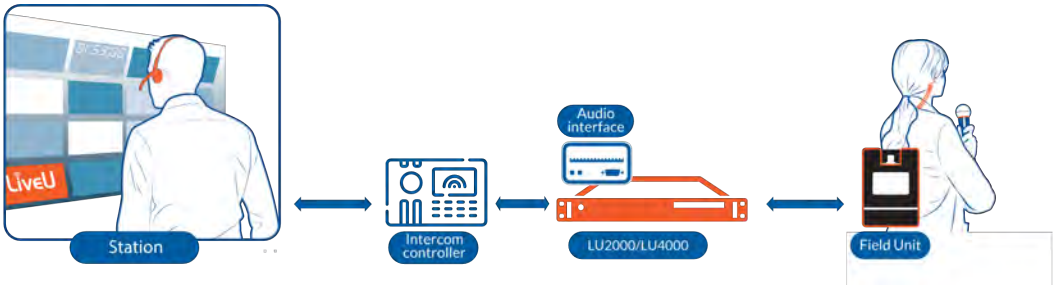
- **Automatic** – applies to IFB and Intercom: Enables the studio to communicate with a field operator as soon as the unit begins transmitting via an automatically selected video channel.
- **Audio Room** – applies to audio conferencing: Enables multiple unit operators to participate in audio conferencing by connecting to a virtual audio location in which all participants, including the studio, can communicate bidirectionally.

In the Audio Room, each unit can receive and send audio regardless of whether or not the unit is transmitting live video. Transmission of live video can be started / stopped during an Audio Room session without interrupting the session.

All Audio Connect modes support low delay and resilient audio communication, regardless of network fluctuations.

IFB is supported on all LiveU units.

Intercom and audio conferencing is a premium service that is compatible with LU300, LU600-HEVC, LU610 and LU800 field units and with LU-Smart.




**Audio Connect flow**

## Setting up IFB / Intercom

IFB / Intercom settings are configured in the LiveU Central. The Central user controls the association of the audio interfaces of the physical audio interfaces unit connected to the LU2000 / LU4000 MMH server to specific video channels.

The LU800 operator in the field can hear instructions from the station / studio by plugging earphones / headset into the audio connector on the unit.

The LU800 currently supports only Audio Connector 1.

**Headset connector**

When earphones / headphones are connected to the unit, appears on the top of the Home screen.

Tapping allows you to control loudspeaker / microphone volume settings.

## Using Audio Connect on the unit

Ensure that the LU800 is set to IFB / Intercom before beginning an IFB / Intercom session.

### To set up the LU800 for IFB / Intercom:

1. From the Home screen, tap
2. From the Settings pane, tap **Audio Interfaces**.
   The Audio Interfaces pane is displayed on the right side of the screen. There are two options: IFB / Intercom 1 and Video Return.
3. Select **IFB / Intercom 1**.

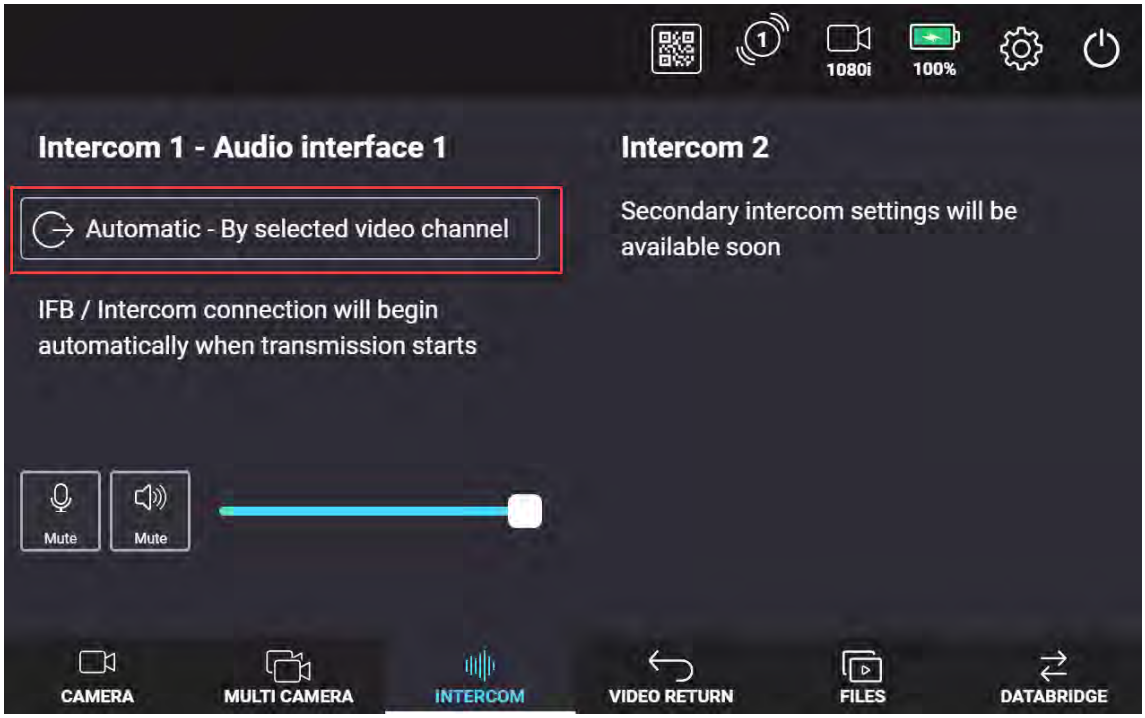
## Initiating an IFB session from the unit

If an IFB session is initiated by the station / studio, you need only to connect the headset and begin transmitting video for the session to begin.

If you want to initiate an IFB session from the unit, you need to select the channel over which the session can connect.

## To initiate an IFB session from the LU800:

1. Connect the headset to audio connector 1 on the unit.
   It is recommended that you connect the headset before you begin the IFB session.
2. Tap the **Intercom** tab at the bottom of the Home screen.
3. In the Intercom screen, tap **Automatic** - **By selected video channel**.




**Automatic video channel selection for IFB / Intercom**

Important Intercom 1 and Intercom 2 refer to the audio connectors on the LU800 device. Only Intercom 1 is currently available.

4. To begin transmitting, tap the **Camera** or **Multi Camera** tab and then click START

## Initiating an Intercom session from the unit

The Intercom tab on the LU800 becomes red to indicate that an Intercom session has been initiated by the station / studio. You need only to connect the headset and begin transmitting video for the session to begin.

If you want to initiate an Intercom session from the unit, you can select one of two options:

- Automatic: Participate in a two-way audio communication with the station / studio.
  The unit connects automatically to an audio interface based on the selected video channel. Communication begins as soon as the unit starts transmitting. In this mode, communication continues only when the unit is transmitting.
- Join an Audio Room and communicate with the station / studio and multiple unit operators.

You can join an Audio Room regardless of whether or not the unit is transmitting. Transmission can be started / stopped during an Audio Room session without interrupting the session.

## To initiate an Intercom session from the LU800:

1. Connect the headset to audio connector 1 on the unit.

   It is recommended that you connect the headset before you begin the Intercom session.

2. Tap the **Intercom** tab at the bottom of the Home screen.

3. In the Intercom screen, tap **Automatic** - **By selected video channel**.

   **Automatic – By selected video channel** is displayed by default when Intercom is used for the first time. If Intercom had been accessed previously, a different channel name or an Audio Room used in the previous session becomes the default option.

   Tapping the channel button displays the video channel(s) and a list of Audio Rooms your unit was associated with in LU Central.

**Selecting an Audio Room**

4. Do one of the following:

   - Tap **Automatic – By selected video channel** for a one-to-one bidirectional audio session.
   - Tap an Audio Room for a many-to-many audio session.

     Tapping marks the Audio Room as a Favorite

   The selection you make before exiting Intercom is displayed as the default option when Intercom is next accessed.

5. To begin transmitting, tap the **Camera** or **Multi-Camera** tab and then click


   Transmission in an Audio Room can begin and end at any time during the session.

   When both the Camera and Audio Room are active, the **Camera** and **Intercom** tabs become red.

## Tally Light

Tally Light provides live cue signaling whenever your feed is on-air.

**Tally Light**

The Tally Light solution consists of two parts:

- Tally Controller in the station / studio
- Tally Light Field Device

## Tally Controller

The Tally Controller is installed in the station / studio where it is connected to the LU2000 / LU4000 server with USB and to the station / studio production mixer, using a customized GPIO cable.

**Tally Controller**

## Tally Light field device

The Tally Light field device is connected to the LU800 with a USB-C cable.

**Tally Light field device**

When the production mixer switches a LiveU SDI output channel to On Air, a GPIO signal is generated. This signal is then mapped via the LiveU Tally Controller, which instructs the LU2000 / LU4000 server to send a LiveU Tally On Air signal to the LU800 that is currently transmitting to the On Air channel. When the LU800 in the field receives this signal, the Tally Light device switches from green to red. When the LU800 stops transmitting, the light turns off.

The Tally Light indicator lights are as follows:

| Light | Description |
|---|---|
| Green | The LU800 is transmitting |
| Red | The LU800 is on air |
| No light | The LU800 is not transmitting |

## Installing the Tally Light field device

### To install the Tally Light field device:

1. Attach the Tally Light field unit to your camera, using the cold shoe adapter. Alternatively, use the Velcro band to attach it to your backpack.

mallRig

**Tally Light cold shoe adapter**

2. Make sure that the Tally Light is positioned with the larger light facing the talent and the smaller light facing the camera man.

**Tally Light field device - Facing the talent**

3. Using the USB cable, connect the Type-C connector to the Tally Light and the other end to an available USB port on the LU800 unit.

   You can also connect the USB connector on the underside of the remote control unit on the LU800 backpack or to the USB port on the LU800.

**Remote control unit - USB connector**

When you go live from your local field unit, the Tally Light turns green.

# Video Return

## Overview

Video Return provides a unidirectional video channel between the station / studio and the LU800 unit in the field.

A Video Return server is typically installed in the station / studio and is connected to one or two video sources to send video feed back to the LU800.

You can view video streamed from the station / studio by connecting to a VR channel either on the unit and / or on a monitor, connected to the unit via its HDMI port. The monitor can also serve as a teleprompter on which the station / studio can convey information, video or textual, to the field.

Using Video Return ensures that the station / studio is receiving your live feed as intended, allowing you to adjust camera angle, focus, etc., if necessary.

NOTE

LiveU offers a PRO service in which Video Return can stream to a maximum of 20 units simultaneously per channel. LU Central displays the number of units receiving the Video Return stream.

The following Video Return functionality is controlled from LiveU Central:

- Displays a list of units currently consuming each Video Return feed.
- Shows channels defined on Video Return servers associated with your inventory.
- Updates the description in the video preview.
- Displays the number of units receiving the Video Return service.

The following functionality can be controlled from LiveU Central or the LU800:

- Select one of the two Video Return sources connected to the Video Return server.
- Start / stop the video stream.

## External video output

You can view video output and listen to the audio that accompanies it through either the LU800 and / or a connected monitor. The monitor is connected to the HDMI OUT port on the LU800.

You can also hear Video Return audio through earphones connected to the LU800.

### To connect a monitor:

- Connect a monitor to the LU800's HDMI OUT port.

**HDMI OUT port**

## Streaming live video with Video Return

Before streaming live video, you must make sure that the unit is set to Video Return.

### To set up the LU800 for Video Return:

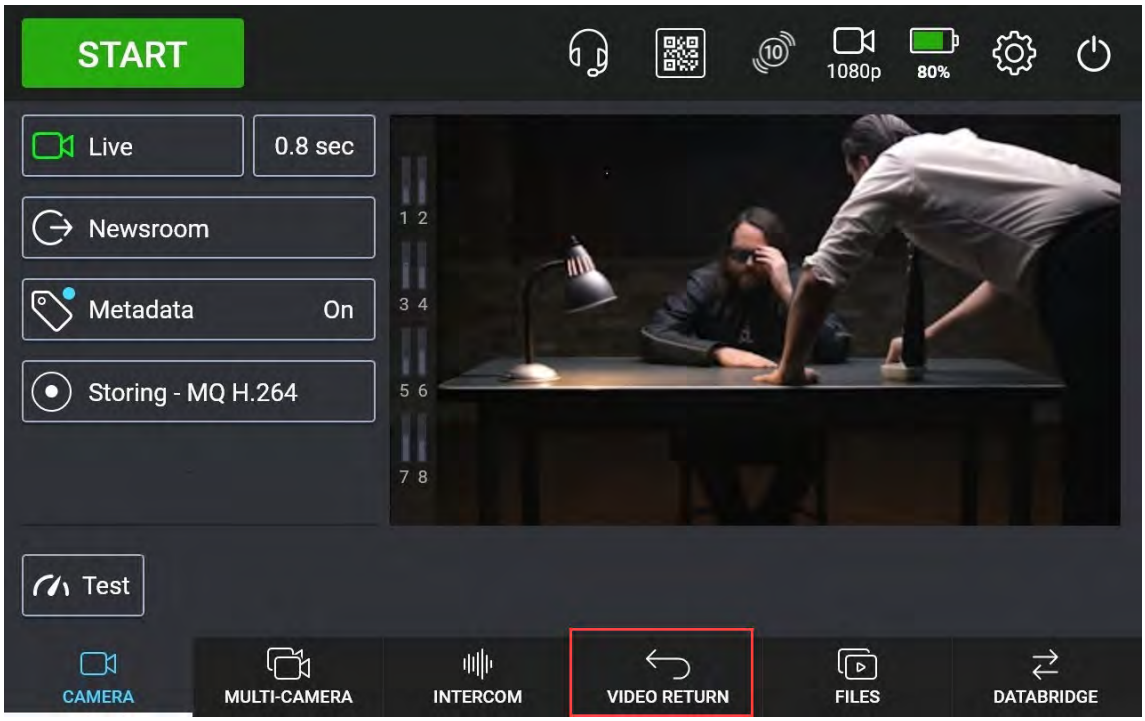
1. From the Home screen, tap
2. From the Settings pane, tap **Audio Interfaces**.

   The Audio Interfaces pane is displayed on the right side of the screen. There are two options: IFB / Intercom 1 and Video Return.
3. Select **Video Return**.

### To stream live video with Video Return:

1. Tap **Video Return** at the bottom of the Home screen.

   The Video Return feature is available only if the Video Return server is installed and set up in the station / studio.




**Home screen - Video Return button**

If no VR channel has been specified for the unit, the following screen is displayed.

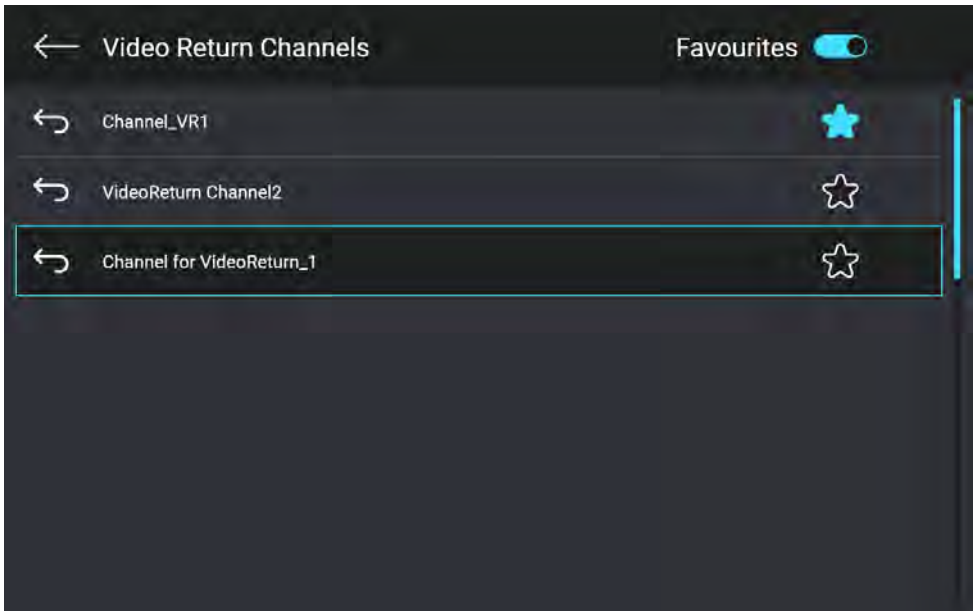
**Video Return – No channel selected**

2. Do one of the following:

   - If a channel has not been selected, tap

   - If a channel has been selected but you want to change it to a different VR channel, tap it, for example


   A list of available video channels is displayed. The channels were previously set up on the Video Return server. Each server supports up to two channels.




**Video Return channels**

3. Tap a channel to select it.
4. Tap

on the Home screen.

becomes

and video begins to transmit.

After a slight delay of one to two seconds, the video is displayed on the monitor.

**Note** Stopping a live stream during a Video Return session also stops the Video Return.

# DataBridge operation

## LiveU's DataBridge solution

LiveU's DataBridge solution enables standard internet connectivity from diverse locations, while adapting to dynamic network conditions. This is a licensed solution that can be used for a variety of data connectivity scenarios, such as connecting a laptop in the field to a station / studio.

DataBridge includes a Wi-Fi access point or Ethernet-based access to connect devices in the field, such as laptops, phones or tablets, providing a high capacity, resilient internet link.

The DataBridge can be used in one of two different operational modes, **Multipath** and **Gateway**. These modes define connectivity and service strategies and are optimized to ensure the best connectivity with minimal delay across different internet scenarios.

## MultiPath

MultiPath is the default mode and is used for more general internet applications, such as browsing the Web, talking on Skype etc.

In **Multipath** operational mode, the LU800 functions without any specialized gateway. It dynamically assigns any available network connection to the incoming requested service

## Gateway

Use the Gateway mode when most of your traffic is for IP Video applications and when working with a VPN service or standard FTP applications.

In the Gateway operational mode, the LU800 requires a corresponding DataBridge Gateway. It employs proprietary algorithms to simultaneously break down and transmit data over multiple modems and to bond the data received over its multiple modems.

**DataBridge solution architecture**

## DataBridge Gateway

When working in the Gateway operational mode, the unit connects to a cloud-based or on-premise DataBridge Gateway server, which receives various streams of data from the LU800 unit through its Internet network connections. The DataBridge Gateway server runs multiple remote connection instances. Each remote connection instance recombines the streams received from a specific LiveU unit operating as DataBridge into a discrete data stream

## Switching to DataBridge mode

To operate the LU800 as a DataBridge, you need to switch it from Video mode to DataBridge mode.

### To switch to DataBridge mode:

- Tap **DataBridge** at the bottom of the Home screen.

  The DataBridge screen is displayed.

**DataBridge mode**

**Note** DataBridge is available on an LU800 unit only if the DataBridge service was purchased for the same unit and was subsequently enabled by LiveU support.

The LU800 continues to operate in DataBridge mode until you switch it back to Video mode. Switching modes between Video and DataBridge does not require a unit reboot.

## Operating in DataBridge mode

For the LU800 to operate as a DataBridge in Gateway operational mode, the unit must be associated to a DataBridge Gateway instance in LiveU Central.

When using Multipath operational mode, there is no requirement for a DataBridge Gateway.

### To operate in DataBridge mode:

1. Tap START DATABRIDGE.
   The unit automatically connects and displays the current downlink / uplink rate.
   START DATABRIDGE becomes STOP DATABRIDGE.

**DataBridge operation mode**

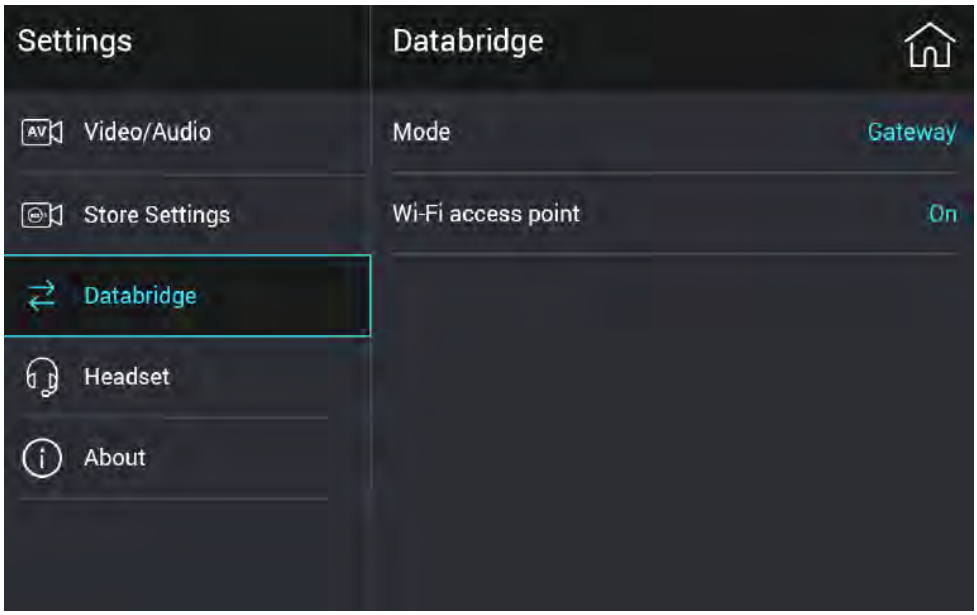
2. Tap the Connections button at the top of the Home screen, for example
   The Connections screen is displayed, showing the specific bitrate used per interface.

## DataBridge settings

You can configure the DataBridge operational mode and hotspot Wi-Fi settings.

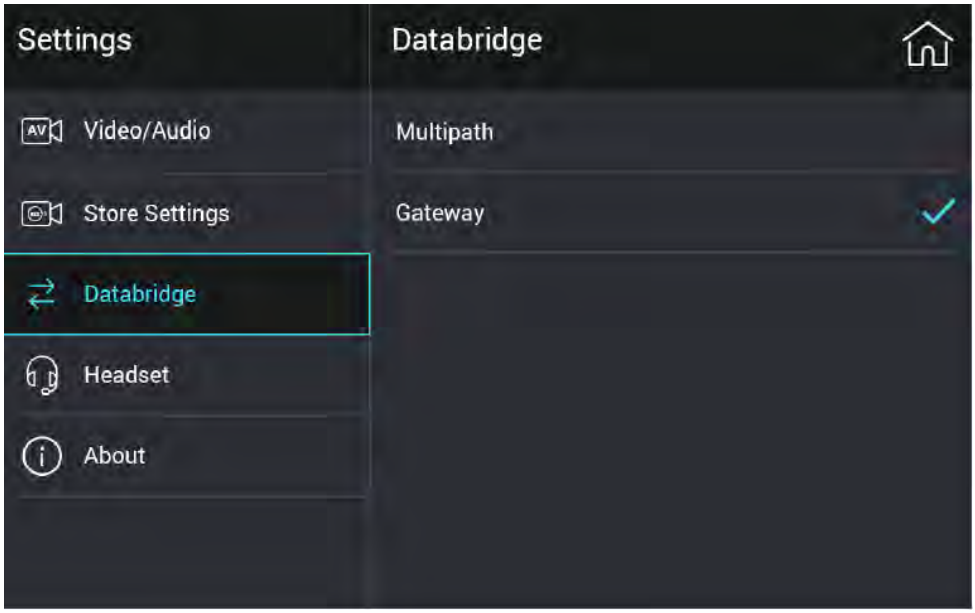
### To set DataBridge parameters:

1. Tap at the top the Home screen.
   The Settings screen is displayed.
2. Tap **DataBridge**.
   DateBridge settings are displayed in the right pane.




**DataBridge Settings screen**

3. In the DataBridge pane, tap **Mode**.
   The Mode screen is displayed.




**DataBridge operation mode screen**

4. Tap one of the following:
   - MultiPath
   - Gateway

   You return to the DataBridge pane.
5. Tap **Wi-Fi access point**.
   The Wi-Fi Access Point screen is displayed.

**DataBridge hotspot screen**

6. Set Wi-Fi hotspot parameters as follows:

   - **Access point**: Tap to toggle the switch to ON / OFF to enable / disable a Wi-Fi access point. The access point is activated only when DataBridge is started.
   - **SSID**: Tap to type the name of the Wi-Fi access point. The SSID of the access point appears on the clients list of Wi-Fi clients following a Wi-Fi scan.
   - **Password**: Tap to type the password required to access the Wi-Fi access point. The password must be at least eight characters long, as required for WPA2 keys.
   - **Show SSID and password on home screen**: Tap to toggle the switch to ON / OFF to show / hide SSID on the Home screen.
   - **Broadcast SSID**: Tap to toggle the switch to ON / OFF to enable / disable the broadcast of the access point SSID. When set to Off, clients wanting to connect to it will need to explicitly configure their Wi-Fi to locate it and connect. Clients that have connected to the SSID / password combination in the past can connect automatically.
   - **WPA security**: Tap to toggle the switch to On ON / OFF to enable / disable the security for the active access point. WPA2 is the recommended setting.
   - **WPA security (country)**: Tap to set the country where the LU800 is used to enable the configuration of the access point with supported frequencies / channels.
   - **Channel**: Tap to set the access point Wi-Fi channel. Change the existing channel if you experience poor reception of the Wi-Fi signal, which can happen when other, more powerful Wi-Fi devices are broadcasting on the same channel.

# Working with Metadata

This chapter describes how Metadata is handled within the LiveU ecosystem and explains how to set up your LU800 to support metadata transfer from field to studio.

For more information on how Metadata is handled by LiveU Central, see the LiveU Central User Guide.

## Overview

LiveU supports the IPCT's NewsML-G2 format for metadata, from the field unit to the LU2000 / LU4000 MMH server.

When Metadata is enabled on the LU800, all file transfers, Live transmissions and Store & Forward sessions are accompanied by an XML file that contains information pertinent to the session. The XML file contains user data - locally or remotely edited fields - and automatic data - time, location, video format, etc. The XML file is sent from the LU800 as part of the session and is saved for later referral and use on the LU2000 / LU4000 MMH server.

**Note** The creation of an XML file is currently unavailable in multi-camera mode.

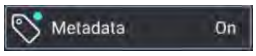
**Home screen - Metadata**

## Metadata operations on the LU800

## Turning Metadata ON / OFF

By default, Metadata is set to OFF.

### To turn Metadata ON / OFF:

1. Tap 

on the Home screen.
The Metadata screen is displayed.

**Metadata screen**

2. Tap to toggle Metadata to

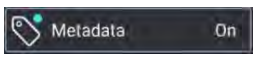
or

.
When Metadata is enabled, each transmission is accompanied by its XML file.

## Turning Metadata prompts ON / OFF

You can set the LU800 to remind you to fill in Metadata fields whenever you begin to transmit video or start a Store & Forward session.

### To turn Metadata prompts ON / OFF:

1. Tap 

to display the Metadata screen.
2. Tap to toggle Metadata prompts to

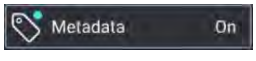
or

in the **Prompt for Metadata on session start** area.
3. Tap

to go live with the current field values.
Each time you tap **Start** to begin transmitting, the Metadata Prompt screen is displayed. To transmit using the current field values, tap **Start**. Alternatively, you can change any of the values in the fields and then tap **Start**.

## Editing Metadata field values

### To edit Metadata field values:

1. Tap 

to display the Metadata screen.

2. Tap a field to display the keyboard and type the new data into the field.
3. Tap **Accept** to return to the Metadata screen.
   The field displays the updated data.
   To remove data from a field, tap next to the field.

**Note** Field values are constantly synchronized with LiveU Central and can be changed by the LiveU Central operator at any time.

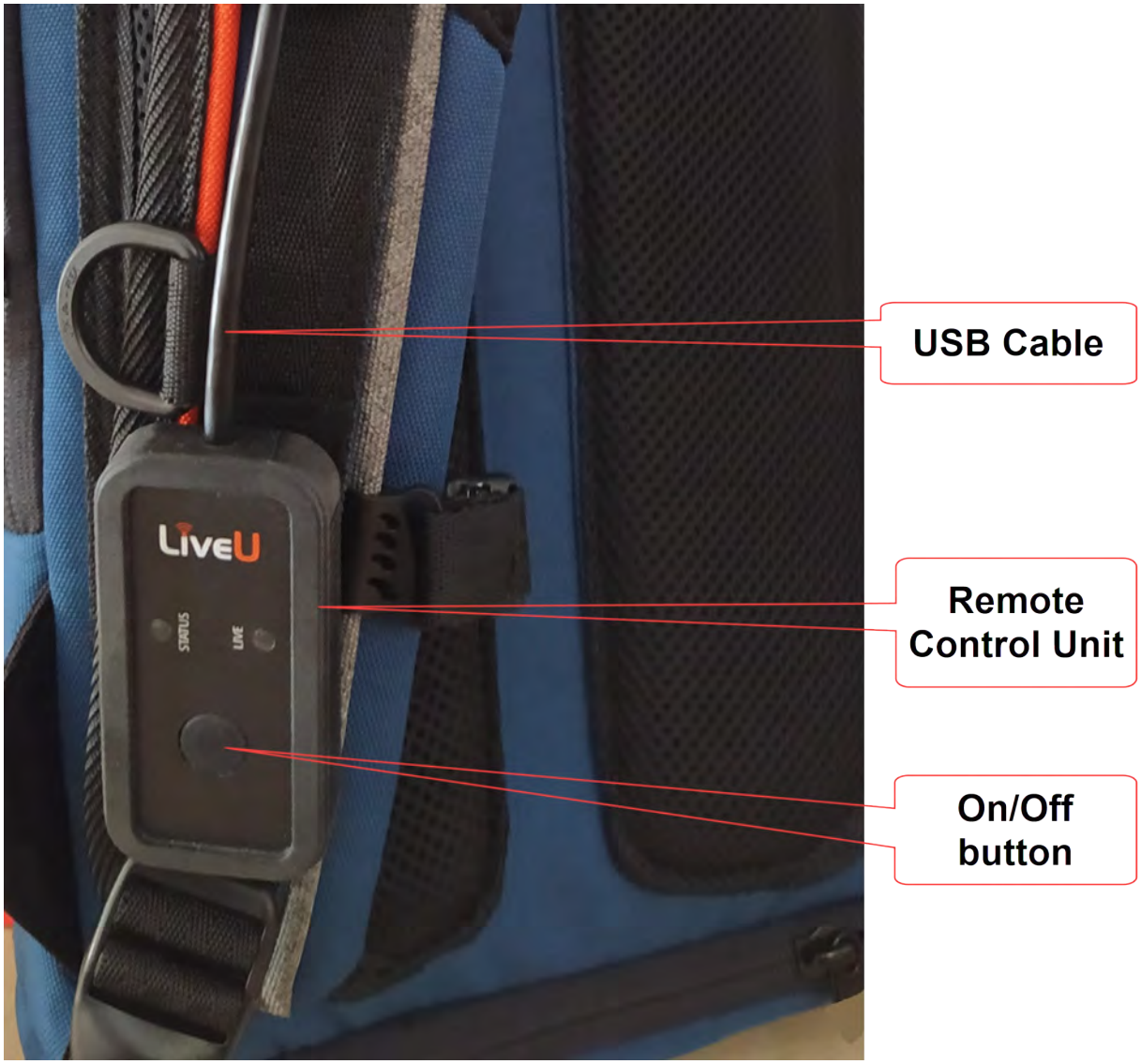
# Using the remote control

## About the remote control

A wired remote control unit is attached to one of the straps on the LU800's backpack. The remote control precludes the need to access the unit's UI to do the following:

- Turn the unit ON
- Turn the unit OFF
- Start / Stop live streaming

The remote control also indicates the unit's status.




**LU800 Remote Control – Unit is Off**

## Connecting the remote control to the LU800

**LU800 – USB RC port**

The remote control cable threads along the backpack's strap and connects to the LU800's USB RC port.

**Note** The remote control does not work if it is connected to the USB SS port.

The remote control also includes a USB port, which can be used to connect an additional modem or USB device for file upload.

**Remote control – USB port**

**Note** The remote control unit is designed to work only with the LU800. Plugging it into other LiveU products or any other device, such as a PC, could cause damage to the remote control or to the device.

## Turning the unit On/Off

## Turning on the remote control

### To turn the remote control unit on:

- Press the **On** button for one to two seconds.
  After the unit is turned on, the status LED becomes red.

When the LU800 is powered up, connected to the internet and a valid video input is detected, the **Status** LED on the remote control becomes green, indicating that the unit is ready to stream.

## Turning off the remote control

### To turn the remote control unit Off:

- Hold down the remote button as follows:
  - Soft Reset (Recommended): Press and hold the remote button for approximately four seconds. When the status LED blinks, the device starts its shutdown process, which can take approximately 15 seconds to complete. After the device shuts down, the status LED turns off.
  - Hard Reset: Press and hold the remote button for approximately eight seconds. Both the device and the status LED turn off immediately.

## Starting / Stopping Live, Store & Forward Streaming

When the LU800 is ready for streaming, the Status LED on the remote control is green.

### To start streaming:

- Short-press the button on the remote control.

The **Live** LED blinks for about five seconds during the connecting phase. After the unit is streaming, both the **Status** and the **Live** LEDs are green.

**LU800 is streaming**

## To stop streaming:

- Rapidly double-press the button on the remote control.

This method is designed to prevent sporadic stop-streaming events. Once the unit stops streaming, the **Live** LED turns off and the **Status** LED remains illuminated.

# Handling the LU800

## Inserting SIM cards

The LU800 is delivered with eight dual-SIM modems. Each SIM in a SIM pair is designated A and B. Using the LU800 UI, you can switch between SIM A and SIM B per modem.

The dual-SIM modems transform the LU800 into a dual-purpose local / roaming unit that supports several situations, for example:

- Roaming: A local SIM in one slot and a roaming SIM in the other
- Alternative SIM set for different operators

This section describes how to insert SIM cards in cases when SIM cards were not installed on delivery of the unit or when a SIM card needs to be replaced.

## Installing a SIM card

### To install a SIM card:

1. Loosen the screws on the side of the LU800.

**SIM flap screw location**

2. Gently pull the flap down to expose the SIM slots.

**Exposed SIM slots**

The slots are numbered from 1 to 8, left to right. The bottom row contains slots for SIM cards **A**. The top row contains slots for SIM cards **B**.

3. Insert the SIM cards into the slots.

   SIM cards can be inserted into the slots in any order.

   The next figure shows the open flaps, indicating how to hold the SIM card when inserting it into an A or B slot.

**Inserting SIM cards into the modems**

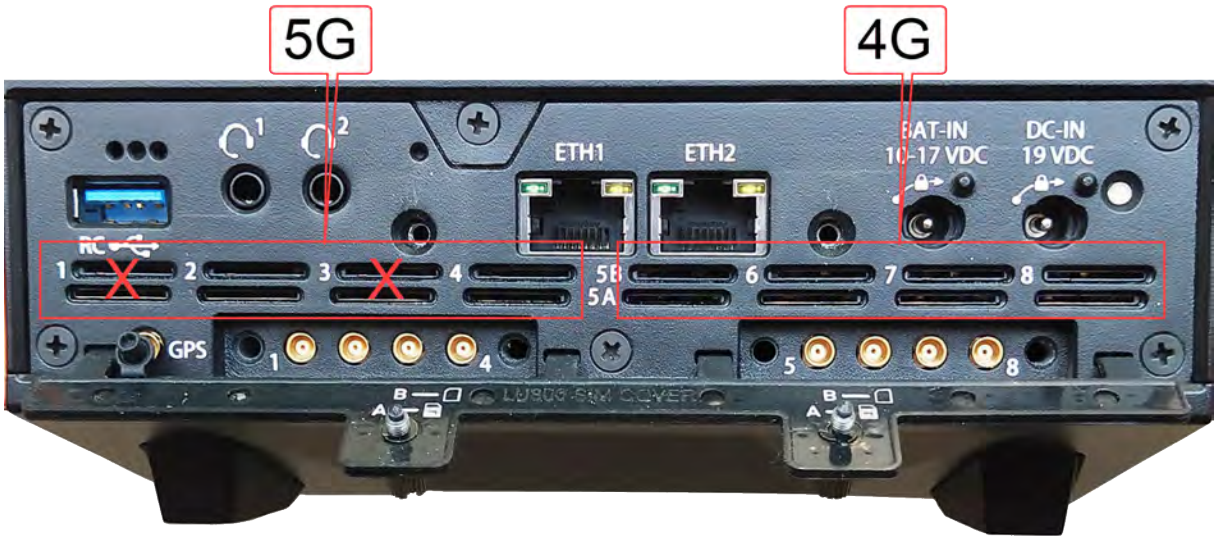
4. Close the flaps and tighten the screws.

After you have inserted the SIM cards, the LU800 automatically detects the operator's name and the Access Point Number (APN) and displays them on the Connections screen within 15 to 30 seconds. If necessary, the APN can also be configured remotely via LiveU Central.

## Modem configurations

In some configurations, fewer than eight modems are installed and some SIM slots remain empty. The modem configuration depends on the ratio of 5G to 4G SIMs.

SIM configurations can vary between different regions. The next shows an example of a two-5G / four-4G modem configuration. 5G SIM cards are inserted into slot 2 and slot 4 and slots 1 and 3 are blocked. 4G SIM cards are inserted into slots 5, 6, 7 and 8.




**LU800 with 5G and 4G modems**

**Note** The modem setup in your LU800 is configured according to order and preset on delivery. See the Modem Configuration sheet you received with your unit for precise instructions on the locations of 4G / 5G modems and which SIM slots are available for use.

## Connecting additional modems

The LU800 has the option to add up to two additional USB-stick modems. The new modems are automatically dialed and combined into the consolidated broadband uplink connection in the same way as the other modems installed inside the LU800 unit.

To connect an additional modem:

- Connect the modem to one of the two USB ports on the unit.

**USB ports**

The connected modem is displayed in the list in the Connections screen.

## External Cellular Antenna Connections

If your LU800 includes support for external cellular antennas, you can connect external antennas to the cellular antenna connectors. Off-the-shelf cellular antennas can be used as long as they support the local cellular bands and regulations in the region in which you are using the LU800. Each connector on the back of the LU800 corresponds to one of the internal cellular modems.

**Note** This section describes only LU800 models that are configured for external cellular antennas.

**External antenna connectors**

As part of the accessories available for the LU800 LiveU offers external cellular antennas (part number ANT0026) that were tested and found to be highly compatible with the LU800.

**External Cellular Antenna (ANT00026)**

These antennae have the following advantages:

- Hi-Performance Antennas (-3dBi)
- Each antenna has 2 internal cellular antennas and can be connected to two different cellular modules on the LU800
- When connecting these antennas to the LU800:
  - We recommend placing the antennas at least 20cm from each other
  - The antenna has a 3-meter cable with an SMA connector that can extended, however we do not recommend extension as this may affect antenna performance.

**Note** When an external antenna is connected to any internal cellular interface, that interface will no longer use the internal antenna but will instead use the newly connected external antenna.

## Connecting the unit in a vehicle

You can mount the LU800 unit on to a cradle on your vehicle and connect external antennas to the unit. The cradle powers the unit.

For information, see the **Connecting the LU800 to a Car Cradle** user guide.

**Note** The car cradle is sold separately as an accessory.

## Connecting an external battery

The LU800 is provided with a standard internal battery that provides up to four hours of standalone operation when fully charged. You can recharge the battery by connecting the unit's power cable to the DC-IN VDC 19 power supply input.

It is recommended to keep the unit plugged into a power input when not in use. Doing so ensures that the unit is always charged and ready for operation at a moment's notice.

For expanded battery life, you can connect an external battery to the unit. The external battery port supports direct connection to any AntonBauer or V-mount batteries without the need for power converters.

When an external battery is connected, the unit automatically draws power from it, even if the internal battery is fully charged. If both an external battery and power supply are connected, the unit draws its power from the power supply and not from either of the batteries.

To improve the performance of the internal battery for longer periods, the battery is not charged to 100% if a power supply is connected when battery status is 96% or higher.

To connect an external battery:

- Plug the battery cable into the BAT-IN 10-17 VDC battery input on the LU800.

**DC-IN connectors**

Any standard external battery in this voltage range and can provide 3A current can be used.

For standard, off-the-shelf batteries, use the cable shown in the following figure. This cable is part of the unit package.

**Battery cable provided with the LU800**

For Anton Bauer / V-mount batteries, use the D-TAP cable shown below.

**Note** This cable is sold separately.

**D-TAP cable for Anton Bauer / V-mount batteries**

## Connecting to the LiveU Xtender

The LiveU Xtender can be connected to the LU800 either by an Ethernet cable or with a remote wireless kit. The kit is sold separately as an accessory.

For more details about the Xtender and connecting the Xtender to the LU800, see the **LiveU Xtender** User Guide.

## LU800 backpack

The LU800 is provided together with a backpack that allows you to operate the unit from inside the backpack itself.

The LCD screen is visible when you lift the large flap in the front of the bag. The flap can be propped open and serves as a sunshade protecting the screen.

Unzipping the side flaps allows access to both sides of unit's physical interface.

The bottom compartment is used to store cables and other peripherals.

On the underside of the backpack, a zippered pocket contains the backpack's rain cover.

**LU800 backpack**

# Safety and maintenance

## Safety Information - LU800

- Do not disassemble this product.
- Do not remove its cover or its back. There are no user-serviceable parts inside.
- Refer servicing to qualified service personnel only.
- The use of controls, adjustments or procedures other than those specified in the guide may result in exposure to shock and/or electrical or mechanical hazards.
- Note the following guidelines:
  - Required operation rated temperatures:
    - Charging: -5 to +35 degrees C
    - Discharging mode operation: -5 to +45 degrees C
  - 10.5-17 VDC input powered operation: -5 to +45 degrees C
  - Avoid shorting the battery.
  - Do not immerse the unit in water.
  - Do not disassemble or deform the battery.
  - Do not expose the unit to fire and do not dispose of the unit and its internal battery in fire.
  - Avoid excessive physical shock or vibration of the unit.
  - Never use a unit that contains a battery that appears to have suffered abuse.

- Store the LU800 in an environment with low humidity that is free from corrosive gas, and in temperatures from -20°C to 60°C, < 80% RH.
- Only use the originally approved power supply adapter.
- Only use the supplied accessories. Accessories (including cables) must not be replaced.
- Do not use the product if there is any physical damage to the enclosure.
- Keep all air inlets and outlets free of any objects that may interfere with the air flow for at least 10 cm.
- It is normal for the product to become slightly hot during use. However, if the enclosure's temperature becomes unbearable to touch, turn the product off and contact support.
- Avoid leaving the product unprotected in direct sunlight for more than five minutes.
- Do not let the product come into contact with corrosive materials.

- Do not let the product come into contact with explosive or corrosive gas.
- Do not let the product come into contact with fire.
- To prevent fire or shock hazard, do not expose the product to rain, liquid or moisture. The product can be used in light rain while it is protected by the LU800 backpack and using the attached rain hood. The product is not designed to be used under water.
- Only use the original LiveU backpack. Do not place the product in a non-LiveU bag.
- If the LCD screen breaks for any reason, do not touch the glass.

## Potential Hazards

The LU800 unit contains cellular devices that should be operated according to the same rules and limitations as expected from normal cellular devices. Do not operate the unit in an environment that may be susceptible to radio interference resulting in danger, specifically:

- **Areas where prohibited by the law**

  Follow any special rules and regulations and obey all signs and notices. Always ensure that the enclosure is turned off (the power switch is not lit) when instructed to do so, or whenever it may cause interference or danger.

- **Where explosive atmospheres may be present**

  Do not operate the LU800 in any area where a potentially explosive atmosphere may exist. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death. Be aware and comply with all signs and instructions.

- **It is not advisable to operate the LU800 while at a refueling point or service station**

  Users are reminded to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.

- **Areas with a potentially explosive atmosphere are often, but not always, clearly marked**

  Potential locations can include gas stations, below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), areas where the air contains chemicals or particles, such as grain, dust or metal powders, and any other area where it would normally be advisable to turn off a vehicle's engine.

- **Near medical and life support equipment**

  Do not operate the LU800 in any area where medical equipment or life support equipment exist, or near any equipment that may be susceptible to any form of radio interference. In such areas, the host communications device must be turned off. The LU800 may transmit signals that could interfere with this equipment.

- **On an aircraft, either on the ground or airborne**

  In addition to FAA requirements, many airline regulations state that wireless operations must be suspended before boarding an airplane. Ensure that the LU800 is turned off prior to boarding aircraft to comply with these regulations. The enclosure can transmit signals that could interfere with various onboard systems and controls.

- **While operating a vehicle**

  The driver or operator of any vehicle should not operate a wireless data device while in control of a vehicle. Doing so detracts the driver or operator's control and operation of

that vehicle. In some countries, operating such communications devices while in control of a vehicle is an offense.

For more information, visit www.liveu.tv.

# Regulatory Compliance

This section provides regulatory compliance information including FFC compliance details.

**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.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

FCC ID:

- **Cellular Module**: FCC ID – 2AVDZEM75 / FCC ID – 2AVDZTC4N
- **Wi-Fi Module**: FCC ID - 2AVDZCM27

  This LU800 has been tested and meets applicable limits for Radio Frequency (RF) exposure.

  This equipment must be installed and operated within the dedicated LU800 backpack supplied with this equipment.

# Standards Compliance

| | |
|---|---|
| CE | |
| EMC | ETSI EN 301 489-1 V2.1.1<br>ETSI EN 301 489-7 V1.3.1<br>ETSI EN 301 489-17 V3.1.1 |
| Safety | IEC/EN 60950-1 A2:2013<br>CB Scheme |
| Radio | EN 300 328 V2.1.1<br>EN 301893 V2.1.1<br>EN 301 908-2 V11.1.1<br>EN 301 908-13 V11.1.1 |
| FCC/Canada | |
| EMC | FCC p15 subpart B<br>ICES-003 Issue6 ClassB |
| Radio | FCC part15.247<br>FCC part15.407<br>FCC rules part 22H//24E/27/90 |

# Third Party Technical Specifications

## Enabling / disabling cellular modems

### To enable / disable cellular modems:

1. Tap at the top of the Home screen.

   If you are already connected to one or more interface, the **Connections** icon is white and displays the number of current connections.

   The Connections screen is displayed.

2. Toggle **Cellular Modems** by tapping / to enable / disable all cellular interfaces on the LU800.

   When set to ON, all interface types in the Connections screen are enabled. When set to OFF, all cellular connections are turned off and only Wi-Fi and Ethernet interfaces are enabled.

   Each active interface on the Connections screen displays 0 Kbps when the LU800 is not streaming. Actual bandwidth is displayed only when the unit starts streaming.

> **Note** Xtender interfaces appear in the Connections screen only when an Xtender is connected to the unit. See the LiveU Xtender User Guide for a description of the **AP and Client** interfaces connected to the Xtender.

# RF Specs

**Freq Tx ranges of each RF module**

Sierra MC7455

| Technology | Bands | | | | | | | | | | | | | | | Data Rates / Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 12 | 13 | 20 | 25 | 26 | 29 | 30 | 41 | |
| **LTE** | F | F | F | F | F | F | F | F | F | F | F | F | F | F | T | Data rates:<br>• Downlink (Cat 6): FDD: 300 Mbps TDD: 222 Mbps<br>• Uplink (Cat 6): FDD: 50 Mbps TDD: 26 Mbps<br>Notes:<br>• Downlink MIMO support (2x2; 4x2)<br>• F=FDD; T= TDD |
| **DC-HSPA+ HSPA+ HSPA UMTS** | Y | Y | Y | Y | Y | | Y | | | | | N/A | | | | Data rates:<br>• Downlink (Cat 24): Up to 42 Mbps<br>• Uplink (Cat 6): Up to 5.76 Mbps<br>Notes:<br>• Diversity support |
| **GNSS** | • GPS: 1575.42 MHz<br>• GLONASS: 1602 MHz<br>• BeiDou: 1561.098 MHz<br>• Galileo: 1575.42 MHz | | | | | | | | | | | | | | | |

WIFI AW-CM389MA

| Channel | Band |
|---|---|
| 1-14 | 0 (2.4GHz) |
| 8(J8), 12(J12), 16(J16),<br>36, 40, 44, 48, 34(J34),<br>38(J38), 42(J42), 46(J46),<br>52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124,128, 132, 136, 140, 149,<br>153, 157, 161, 165 | 1 (5GHz) |
| 16(J1), 12(J2), 8(J3), 4(J4) | 2 (4.9GHz) |

**Maximum power per frequency range (RF modules)**

<table>
<tr><th>Freq Tx ranges of each RF module</th><td></td></tr>
<tr><td>Sierra EM7455</td><td>
<table>
<tr><th>Parameter</th><th>Conducted transmit power</th><th>Notes</th></tr>
<tr><td colspan="3">LTE</td></tr>
<tr><td>LTE Band 1,2,3,4,5,8,12,13,20,25,26</td><td>+23 dBm ± 1 dB</td><td></td></tr>
<tr><td>LTE Band 7,30,41</td><td>+22 dBm ± 1 dB</td><td></td></tr>
<tr><td colspan="3">UMTS</td></tr>
<tr><td>Band 1 (IMT 2100 12.2 kbps)<br>Band 2 (UMTS 1900 12.2 kbps)<br>Band 3 (UMTS 1800 12.2 kbps)<br>Band 4 (AWS 1700/2100 12.2 kbps)<br>Band 5 (UMTS 850 12.2 kbps)<br>Band 8 (UMTS 900 12.2 kbps)</td><td>+23 dBm ± 1 dB</td><td>Connectorized (Class 3)</td></tr>
</table>
</td></tr>
<tr><td>Sierra EM7565</td><td>
<table>
<tr><th>Bands</th><th>Conducted Tx power</th><th>Notes</th></tr>
<tr><td colspan="3">LTE</td></tr>
<tr><td>LTE bands 1,2,3,4,5,8,9,12,13,18,19,20,26,28,66</td><td>+23 dBm ± 1 dB</td><td></td></tr>
<tr><td>LTE bands 7,41</td><td>Single cell: +22 dBm ± 1 dB<br>UL CA: +22.8 dBm ± 1 dB</td><td>0.8 dB offset for UL CA hardcoded by chipset manufacturer</td></tr>
<tr><td>LTE bands 42,43,48</td><td>+22 dBm ± 1 dB</td><td></td></tr>
<tr><td colspan="3">UMTS</td></tr>
<tr><td>Band 1 (IMT 2100 12.2 kbps)<br>Band 2 (UMTS 1900 12.2 kbps)<br>Band 4 (AWS 1700/2100 12.2 kbps)<br>Band 5 (UMTS 850 12.2 kbps)<br>Band 6 (UMTS 800 12.2 kbps)<br>Band 8 (UMTS 900 12.2 kbps)<br>Band 9 (UMTS 1700 12.2 kbps)<br>Band 19 (UMTS 800 12.2 kbps)</td><td>+23 dBm ± 1 dB</td><td>Connectorized (Class 3)</td></tr>
</table>
</td></tr>
<tr><td>WIFI AW-CM389MA</td><td>16.125dBm for all bands</td></tr>
<tr><td>Modulation types per RF module</td><td></td></tr>
<tr><td>Sierra EM7565 / Sierra EM7455</td><td>GSM – GMSK / 8PSK<br><br>LTE – QPSK/16QAM/64QAM</td></tr>
<tr><td>WIFI AW-CM389MA</td><td>DSSS, OFDM and CCK</td></tr>
<tr><td>TAC Number</td><td></td></tr>
<tr><td>Sierra EM7455</td><td>35907306</td></tr>
<tr><td>Sierra EM7565</td><td>35926008</td></tr>
</table>

| Freq Tx ranges of each RF module | |
|---|---|
| RF modules included in one LU Product (GMS and WiFi) | |
| | 8 cellular modems [Sierra EM7565 or MC7455] and 1 WiFi module [AW-CM389MA] |

## Safety certification

MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE ● BALTIMORE, MARYLAND 21230-3432 ● PHONE (410) 354-3300 ● FAX (410) 354-3313
33439 WESTERN AVENUE ● UNION CITY, CALIFORNIA 94587 ● PHONE (510) 489-6300 ● FAX (510) 489-6372
3162 BELICK STREET ● SANTA CLARA, CALIFORNIA 95054 ● PHONE (408 748-3585 ● FAX (510) 489-6372

**Dosimetric Assessment**
**Test Report**

## Manufacturer

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