

LU300S V9.5

User Guide



DOC00469 RevA01
September 2025

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Introduction

About this Guide

This user guide describes the LU300S family including the LU300S and the LU300SE, and provides basic information for the operation of these units in the field. The user guide describes the different hardware configurations and how to use them to broadcast live streaming video. Specific call outs will be given whenever there are differences in operation of the unit between models. In all other cases, we will be referring to the generic unit as the LU300S.



Advanced operations intended for technical personnel and system administrators are outside of the scope of this user guide.

Intended Audience

This user guide is intended to be used by operators of the LiveU LU300S unit. We assume that operators have basic computer knowledge and are familiar with any video equipment being used (cameras, microphones and so on) and the infrastructure to which the LU300S units are connected.

What's New in Version 9.5

This release includes the following features:

- This is the first version to support the LU300S, the LU610S and the LU810
- Added time code support for the LU300S, the LU610S and the LU810, allowing timecode from a camera to be transferred to the server's SDI output.

Additional Documentation

- LiveU Central User Guide
- LiveU LU2000 Server (MMH) User Guide
- LiveU LU-Smart User Guide
- LiveU LU200 User Guide
- LiveU LU600 User Guide
- LiveU Xtender User's Guide
- IP Pipe User Guide

Introducing the LU300S

LU300S Family Members

The LU300S Family is based on the LU300S, a small-sized, cost-effective and reliable HEVC encoder, enabling broadcasters and other content creators to transmit high-quality video on the go.

With LiveU's professional-grade hardware HEVC technology at its core, the LU300S combines high-quality video performance with extreme bandwidth efficiency. Content creators can provide the same video quality as H.264 while using about half the bandwidth. In cases where original H.264 bitrate is maintained, the LU300S HEVC offers greatly improved video quality.

The LU300S family comes in two variants:

Model	Description	
LU300S	The LU300S supports four 5G / 4G cellular links, (two of them internal), a WiFi link and one Ethernet link. It can connect to most commercially available cameras via HDMI or SDI and comes with an easy-to-use user interface.	
LU300Se	The LU300Se is the most cost-effective contribution HEVC video encoder on the market, enabling streaming for web distribution, point to point, and point to multi-point for a fraction of the cost of other solutions. Physically, the LU300Se is almost identical to the LU300S, the only difference being that it does not contain internal modems, thus saving on cost, weight and physical space.	



The difference between the LU300S and the LU300Se

The main operational difference between the LU300S and the LU300Se is that the LU300Se does not include any internal **cellular** modules and is thus lighter than the LU300S. Beyond this, they are essentially the same, with the same GUI, functionality and method of operation.

LU300S Accessories

LU300S Camera Mount Options



LU300S Camera Mount Configuration

LiveU provides different camera mount options for applications that require the unit to be physically connected to your camera during operation. If you are interested in this sort of configuration then when ordering your LU300S hardware, don't forget to mention the kind of battery interface your camera uses, V-Mount or Anton Bauer.

Tally Light

The LiveU Tally Light provides live cue signaling whenever your feed is on-air, ensuring professionally-produced and smoothly-run live broadcasts from anywhere. Your LU300S supports the Tally Light.

What's in the LU300S Box?

Check that your LU300S box contains the following items:

- LU300S portable video uplink unit
- LU300S carrying pouch with elastic strips
- AC/DC power adapter (16V/4A) 2.1mm RA (1.5m) and power cord
- The following cables:
 - BNC to BNC (1.5m)
 - USB2/M Left-angle to USDB2/F (14cm)
 - USB2/M Right-angle to USDB2/F (14cm)
- LiveU Limited Warranty card

LU300S Hardware Overview



LU300S - Right Side Panel



LU300S - Left Side Panel

The LU300S provides two internal cellular modems, as well as WiFi and Ethernet interfaces. In addition, two external cellular modems can be connected via USB for a total of six network interfaces on the unit.

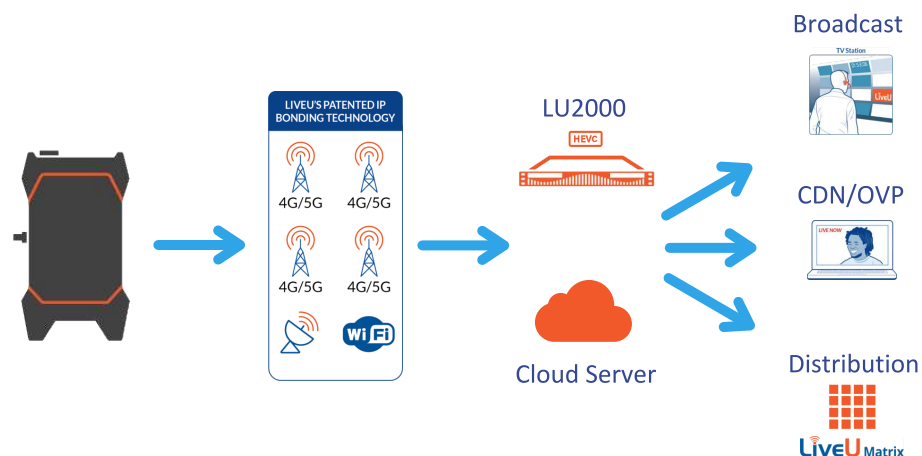


Up to 6 additional network interfaces are available when connecting the LU300S to the LiveU Xtender via the Ethernet connector.

LU300S Operation

Overview

As the LU300S powers up, it dials (connects) its modems, connects the WiFi / Ethernet interfaces to their respective networks and combines all available bandwidth into a single consolidated broadband uplink connection. The LU300S can then encode incoming video into an HEVC stream and transmit this stream over the aggregated bandwidth.

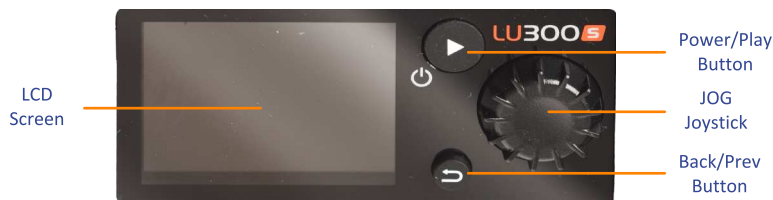


Architecture of LU300S Operation

Your LU300S, as well as any LU2000 that's part of your organization, can be controlled and configured using [LiveU Central \(page 5\)](#).

LU300S Front Panel

The LU300S front panel contains the unit's LCD screen, a JOG joystick, a Back/Prev button and the unit's Power/Play button.



LU300S Menu Navigation and Operation

The LU300S uses a **JOG** joystick, the **Back/Prev** Button and the **Power/Play** button to navigate through the on-screen GUI.

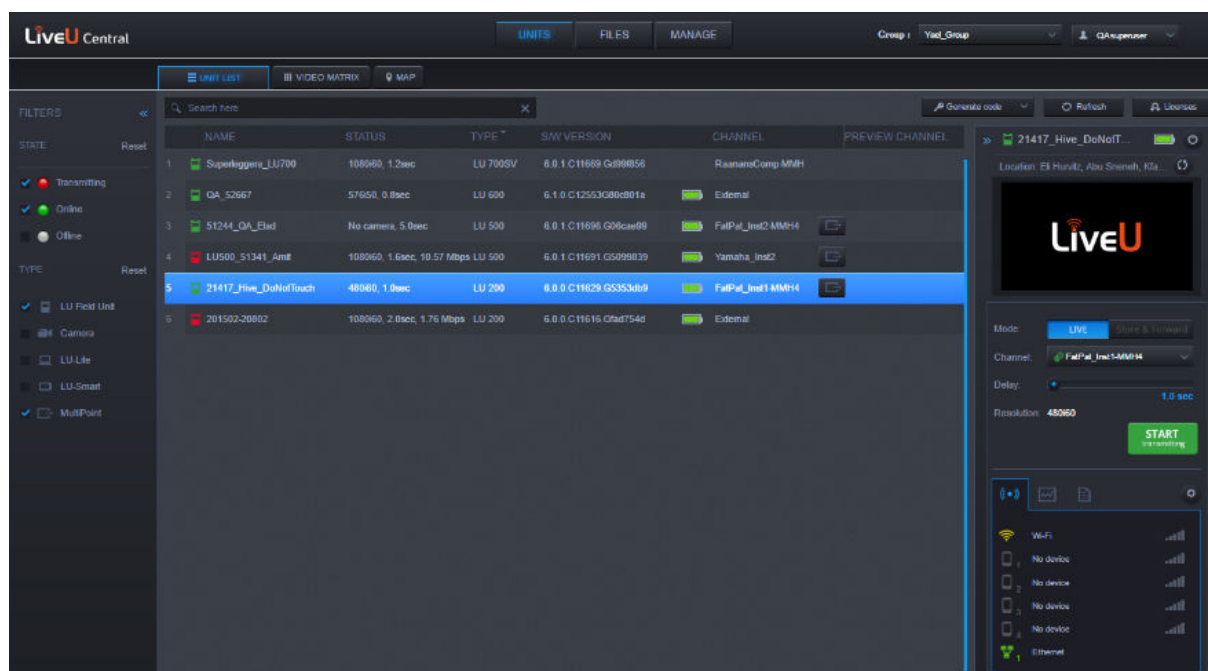
- Pressing the **JOG** button from the *Home* screen will open the *Main* menu.
- Once you have a menu on-screen, move the selection bar up and down by turning the **JOG** to highlight the item of interest, pressing the **JOG** button to confirm your selection.
- Press the **Back/Prev** button to go back a step (to the previous menu etc.)
- The **Power/Play** button is used to toggle between starting and stopping streaming on the unit and is also used to turn the unit on and off.

LiveU Central

Overview: User Interface

LiveU Central is a web interface that lets you access any LU unit you have, including the LU300S. LiveU Central allows you to view an LU300S's status and to remotely configure it as well as any MMH instance (running on the LU2000 server). LiveU Central runs in any modern web browser such as Google Chrome, Internet Explorer or Firefox.

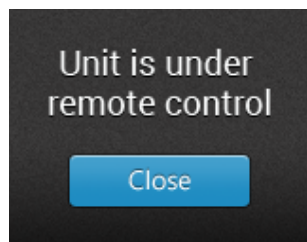
Each LiveU Central user is assigned permission to manage and control a specific group of LiveU units.



LiveU Central

Remote Control Message

When using LiveU Central for configuring the LU300S or to start transmitting from it, the message **Unit is under Remote Control** is displayed on the unit's screen. The unit remains under remote control until it is released by the LiveU Central user.



LU300S Remote Control screen

This screen provides the LU300S user with an indication that the unit is/was controlled remotely (and possibly that its configuration was changed). The user can press the **JOG** button at any time to remove this message without affecting the remote control.

Once LiveU Central releases control of your unit, the remote-control screen continues to remain displayed until you press the **JOG** button.



An LU300S user cannot stop the unit from being remotely controlled.

See the *LiveU Central User Guide* for more detailed information.

Getting Started

Overview

This section describes how to get started using the LU300S, including powering on, connecting the camera, selecting a channel, operational mode and delay and broadcasting (playing). Here is an overview of the workflow:

Step	Reference
1	Connecting the Video Camera (page 7)
2	Turning your unit on (page 7)
3	Selecting a Channel (page 10)
4	Selecting an Operational Mode (page 11)
5	Setting the Delay (page 13)
6	Handling Interfaces (page 14)
7	Going Live (page 17)
8	Shutting Down (page 18)

Connecting the Video Camera

To connect the camera:

1. Cables are provided for each type of camera (SDI or HDMI). Connect one end of the cable to the video out port on the video camera.
2. Connect the other end of the cable to the appropriate port (SDI or HDMI) on the unit.



LU300S Camera Connections

The camera can be connected either before or after turning on the LU300S. If you power the unit on before connecting the camera, then the message **No Camera** will be displayed on the LCD screen. Once you connect the camera, video input will be detected automatically and will be shown on the LCD screen. Only one camera can be connected directly to the LU300S at any time.

Turning your unit on

This section describes the procedure for charging and powering up the LU300S.

Charging the LU300S

The LU300S contains an internal battery that enables up to three hours of standalone operation when fully charged. We recommend charging the battery for at least four hours before first using your unit.

To charge the battery, plug the AC Power Adapter into the DC IN connector on the LU300S.



DC IN Connection



- While charging, the LED near the DC IN connector will be red. When the battery is fully charged, this LED will turn green.
- It is good practice to keep the unit plugged into a power outlet when it is not in use, ensuring it is charged and ready for operation at a moment's notice.
- Note that the battery charges even when the unit is turned off.
- Exact charging indication is provided on the unit's display and can also be seen in LiveU Central

Powering up the LU300S

Press the **Power** button for approximately two seconds to turn the unit on. The battery does not need to be fully charged to use the unit.



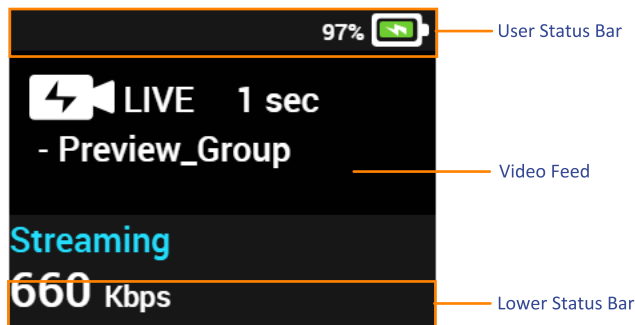
Power Switch

When the unit is powered up:

- The LU300S logo appears on the screen while the unit powers up. The unit will display the Home screen when it is ready for transmission – this can take up to two minutes from power on.

- The LU300S begins in Offline state and moves to Ready state once the unit is connected to at least one network and is registered on LiveU Central.

About the LU300S Display



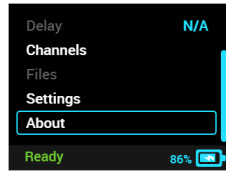
LU300S Home Window

The LU300S *Home* screen displays the following information:

- **Mode:** Shows the operational mode in use, which can be either Live (Live ) or Store & Forward (S&F .
- **Delay:** Shows the configured delay. The delay only displays when the Live operational mode is selected.
- **Channel Name:** Shows the selected channel name. If a channel name is longer than the screen allows, two dots are displayed at the end of the channel name. After a few seconds the channel name will start to scroll so that you can see the rest of the name.
-  **Alert:** Is displayed when an alert is detected. The type of alert is displayed next to the  icon.
- **Battery Status:** Displays battery charge, as follows:
 -  Green: The battery is charged 20% or more.
 -  Yellow: The battery is charged between 10% to 20%.
 -  **Red:** The battery is charged between 5% to 10%.
 -  Flashing Red: The battery is charged less than 5%.
-  **Battery Charging Indication:** Displays when the unit is connected to external power and the battery is charging. The lightning bolt icon appears on the Battery Status icon. The battery color indicates the amount of remaining power (see above).



The Battery Status icon also appears at the bottom of all menu screen screens, as shown below:



Battery Status Icon - Menu Screen

- **Lower Status Bar:** Indicates the status of the unit, as follows:
- **OFFLINE:** The LU300S is not connected to the network or is currently attempting to connect to the network.
- **READY:** The LU300S is connected to the network and registered.
- The *Home* screen automatically *shows* a preview of the video feed during streaming.
- A camera alert appears on the Home screen's upper bar when the camera is disconnected.



Operational Mode, Delay and Channel cannot be changed during streaming.

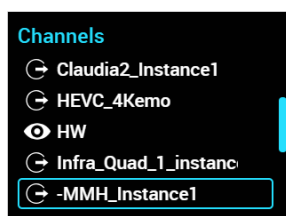
A full description of the user interface is provided in [User Interface](#).

Selecting a Channel

You will need to define where your LU300S is going to send its output to. This is a mandatory step the first time that you use the , after which the LU300S will use the same destination channel until you use the **Channels** option again to change the channel.

To select a channel

1. Navigate to the **Channels** option in the *Main* screen using the **JOG** and press the **JOG** button to select. The **Channels** screen displays, as shown below:



Channels Window

The channel icons next to the channel name reflect the channel type as follows:

-  Preview Channel is part of a Virtual Group (see below)

-  Output Channel is connected to an SDI or IP output on the server side
- 2. Use the **JOG** to navigate to the preferred channel, and then press the **JOG** button to select it.

The selected channel is indicated by a checkmark.



To cancel a selection, press the **Back/Prev** button.

If a channel name is longer than the screen allows, the selected channel name will scroll so that you can see the rest of the name.

Streaming to a Preview Channel (Virtual Group)

You might want to have your stream visible in LiveU Central without worrying about exactly which output it's being routed to. This can be done by streaming to a Virtual Group, which allows LiveU Central operators to preview the channel and then control the destination to which the stream is ultimately directed and sent live.

Virtual Groups are indicated in the *Channels* screen by the  icon before the channel name.

When you select a Virtual Group to stream to, the video will be streamed as a “light stream” (low bandwidth, at lower resolution and frame rate) preview channel to LiveU Central.

Once a LiveU Central operator has allocated a Virtual Channel in Preview mode to a destination (SDI or CDN output), it is streamed at the appropriately defined resolution and frame rate. For more details about handling preview channels, see the *LiveU Central User Guide*.

You cannot define when the Virtual Channel in Preview mode goes live. This can only be performed by a LiveU Central operator. When the LiveU Central operator defines that a Preview channel is live, the **Preview** indication changes to **Live**.

When a LiveU Central operator changes a video stream from Preview to Live, that stream stops for a few seconds and then starts again.

Selecting an Operational Mode

The LU300S provides two operational modes which determine what and how the unit will stream:

- **Live:** When selecting this mode, the LU300S automatically starts streaming any incoming video when it goes live (as described in [Going Live](#)). This is the default mode. Video is streamed according to the delay that is specified in the *Main* screen. Note: Live & Store mode is automatically enabled when going live.

- **Store & Forward:** When this mode is selected, the LU300S stores incoming video on local memory (or on the SD card if installed), while simultaneously uploading the stored video at the highest quality.



LU300S Micro SD Card Slot



The SD card must be at least a 4GB, Class 10  SD card from an established manufacturer. The LU300S supports SD cards of up to 512 GB.

Store & Forward mode is typically used when you are located in an area with limited bandwidth or when there is no urgency to deliver the content as Live. It allows you to store the video on the unit and to transmit it once bandwidth improves. When this option is selected, the **Delay** option is not active and displays N/A for the delay value.

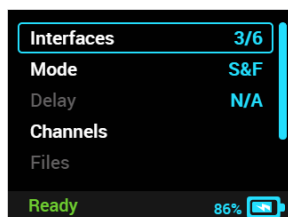
Live & Store

Live & Store is automatically enabled whenever choosing Live mode. This feature means that the unit will save any incoming video locally on your LU300S while simultaneously transmitting live, and ensures that you always have a hi-quality copy of your live stream saved. You may later send the saved file directly to the MCR in case of congested cellular networks during the live event.

Once storage is filled, the unit will automatically delete older files and create new ones instead.

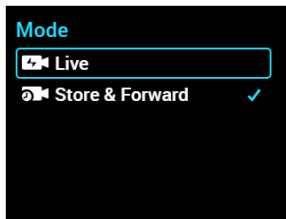
To select a mode:

1. Navigate to the **Mode** option in the *Main* screen using the **JOG**.



Main screen - Mode

2. Press the **JOG** button, the *Mode* screen displays as shown below:



Mode screen

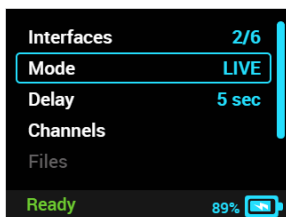
3. Use the **JOG** to navigate to the required mode, and then press the **JOG** button to select it. The selected mode is indicated by a checkmark.

Setting the Delay

Live video is transmitted at the delay defined. The default delay is **5** seconds, which provides the best of both worlds: low delay and high-quality video. The minimum delay is **0.6** second. The maximum delay supported is 20 seconds.

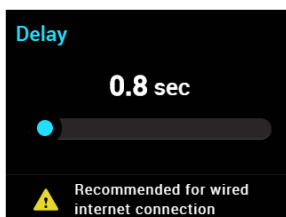
To set the delay:

1. Navigate to the **Delay** option in the *Main* screen using the **JOG**.



Main screen - Delay

2. Press the **JOG** button to select the *Delay* screen, as shown below:



Delay screen

3. Use the **JOG** to specify the required delay, and then press the **JOG** button to select. You can choose from the following delay values, in seconds: 0.6, 0.8, 1, 1.2, 1.4, 1.6, 1.8, 2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 20.

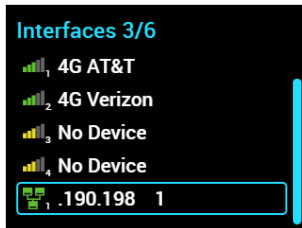


- Whenever a delay value of under 1 second is selected, the LU300S will show a warning message, recommending to only select values under 1 second when connected to a high-speed internet network.
- **Delay values of 0.7 seconds or lower are not recommended when your unit is only connected via cellular networks.**

Handling Interfaces

Overview

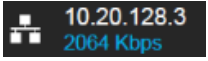
The **Interfaces** screen shows a list of all the interfaces that the unit can connect to. The figure below shows a conceptual view of the interfaces that can exist on the LU300S.



Interfaces screen

- Internal cellular modems are shown in ports 1 and 2. External USB-connected modems are shown in ports 3 and 4. A WiFi interface is identified by the  icon.
- A LAN interface is identified by the  icon.
- Xtender interfaces are supported for LAN interfaces only. Xtender interfaces are shown after the cellular interfaces. Their cellular modems are the same as those for internal interfaces, except that they are labeled x1, x2, x3, x4, x5 and x6.

The following information is shown for each interface in the list based on interface type:

-  **Cellular interfaces** show the port number, RSSI signal strength bars, the dialed cellular network name and the used uplink bandwidth, in Kbps. In addition, each cellular interface shows the cellular operator's technology currently in use (5G, 4G or 3G) before the cellular network name.
- A WiFi client interface shows the selected WiFi network SSID, RSSI signal strength bars and the used uplink bandwidth, in Kbps.
- A secured WiFi network displays the  icon and an unsecured WiFi network displays the  icon.
-  A LAN interface shows the static IP configured when DHCP is OFF or the DHCP-received IP address when DHCP is ON. In addition, it shows the used uplink throughput, in Kbps.



- The LAN interface DHCP default value is ON.
- LAN interfaces are only configurable using LiveU Central. The default value is DHCP On.

Before you begin streaming, you may want to check the quality of the connected interfaces. The following table describes interface connectivity indicators.

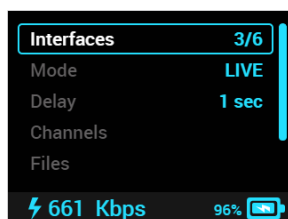
Interface Type	Enabled			Disabled
	Connected	Not Connected / Not Inserted	Dialing	
Cellular Modem 	RSSI bars are green. Shows the operator name.	RSSI bars are gray.	RSSI bars are yellow. Shows the operator name.	RSSI bars are gray. Shows Disabled in red.
WiFi  / 	RSSI bars are green. Shows the SSID of the access point.	RSSI bars are yellow. The network is not detected.	RSSI bars are yellow. The network is not selected.	RSSI bars are gray. Shows Disabled in red.
LAN 	Icon is green. Shows the IP address.	Icon is yellow. Shows an empty field if there is no IP address when DHCP is ON, or the IP address for a static IP (when DHCP is OFF).	Not applicable.	Icon is gray. Shows Disabled in red.

Enabling/Disabling an Interface

You can enable or disable one or all LU300S interfaces, including cellular modems, WiFi and LAN interfaces. The examples below describe how to enable/disable cellular modem interfaces. These procedures are the same for all interface types (cellular modems, WiFi and LAN interfaces). Each interface must be enabled/disabled separately.

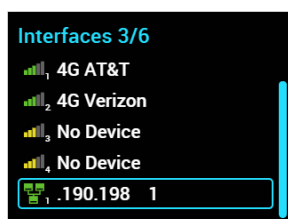
To disable an interface (or enable a previous-disabled interface):

1. Navigate to the **Interfaces** option in the *Main* screen using the **JOG**.



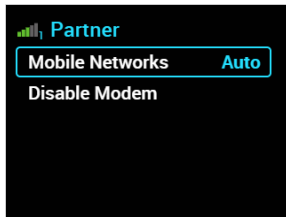
Main screen - Interfaces

2. Press the **JOG** button to display the *Interfaces* screen, as shown below:



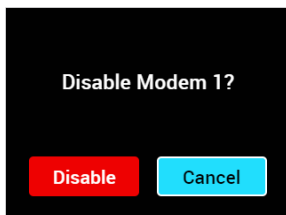
Interfaces screen

3. Navigate to an interface using the **JOG** and press the **JOG** button to display the following screen:



Disable Interface - 1

4. Press the **JOG** button to disable the selected interface. The following screen displays:



Disable Interface - 2

5. Select **Disable** and press the **JOG** button to disable the interface.

To enable an interface:

1. Follow the above until step 3.
2. Choose the Enable option using the **JOG** button.

Configuring WiFi

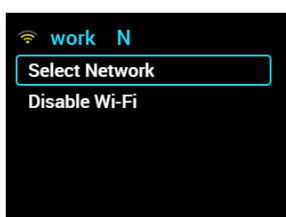
WiFi configuration can be performed directly on the unit itself or via LiveU Central.

The status of a WiFi network is indicated, as follows:

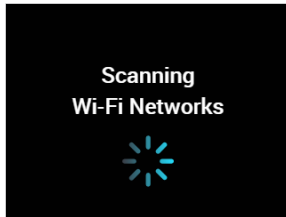
- **Gray** : WiFi is disabled.
- **Yellow** : WiFi enabled, but is not connected.
- **Green** : WiFi is enabled and connected to the active network.

To configure the LU300S using the user interface:

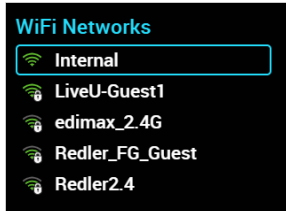
1. Navigate to the **Interfaces** option in the *Main* screen using the **JOG**.
2. Select **WiFi Select Network**.



The unit scans and displays the available networks.



3. Choose a network:

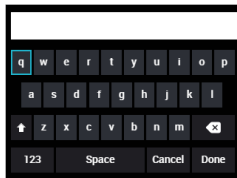


To rescan, press **Scan**.

4. Press the JOG button to connect.



For encrypted networks, select the network, press **Connect**, enter the network password using the virtual keyboard, as shown below, and then press **Done**.



Disconnecting a WiFi Network

To disconnect a WiFi network, either disable WiFi or select a different network.

Configuring LAN Interfaces

Configuration of the LAN Static IP is done in LiveU Central. The unit's default value is DHCP.

Going Live

You are now ready to start transmitting video to the channel that you selected.

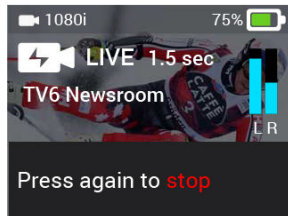
To go live:

- Short-press the **Power** button to start streaming.

When streaming begins, the **Home** screen displays to show the streaming preview on the unit's screen.

To stop live transmission:

1. Double-short-press the **Power** button when you want to stop streaming.
2. A popup message appears between these two short presses. If the second short press is not performed within two seconds of the first one, the popup disappears, and streaming continues.

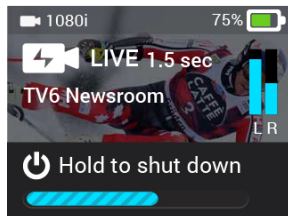


Stop Streaming Popup

Shutting Down

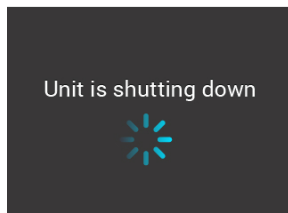
To shut down the LU300S:

1. Hold down the **Power** button for 5 seconds until the LU300S shuts down. This action shuts down the unit's software and then turns off the unit.
A popup message displays a progress bar for approximately four to five seconds while the unit is shutting down:



Shutdown - 1

2. As soon as the progress bar shows 100%, a popup message displays, as shown below. You can then stop pressing the power button.



Shutdown - 2

LU300S User Interface

This section describes the main LU300S screen and the options that it provides.

LU300S Interface

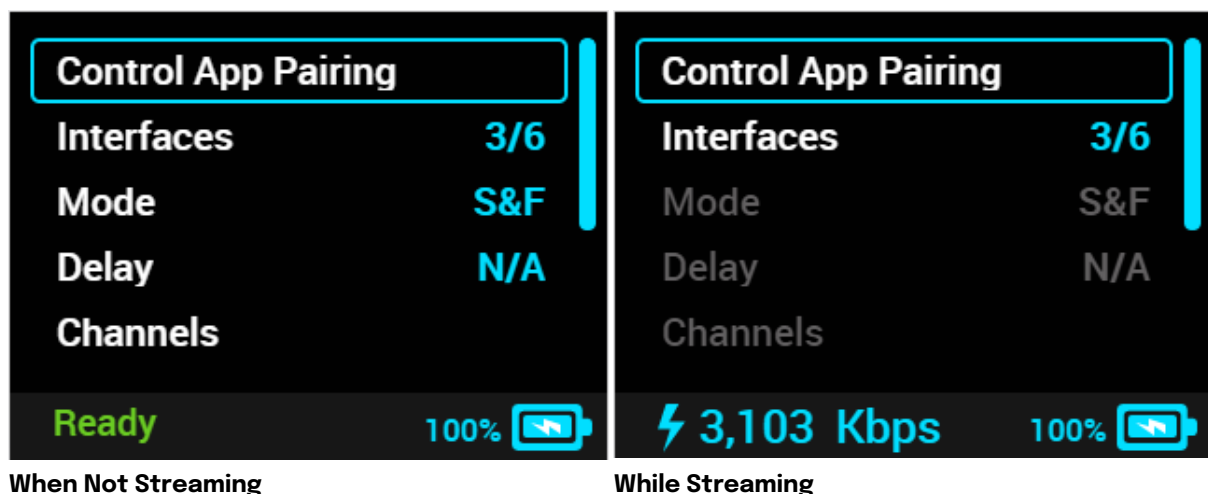
The LU300S user interface is displayed on the internal LCD screen. When the LU300S is powered on, the *Home* screen displays.

The *Main* screen provides access to the various configuration options for the LU300S.

To go from the *Home* screen to the *Main* screen:

- Press the **JOG** button.

By default, when moving from the *Home* screen to the *Main* screen, the **Interfaces** option is initially selected, as shown below. The selected option is highlighted in gray on the screen.

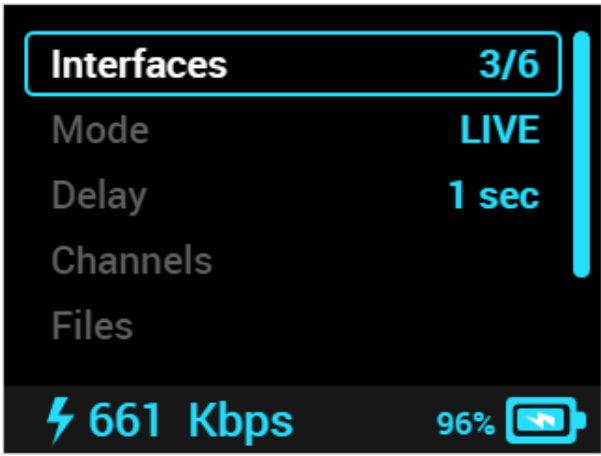
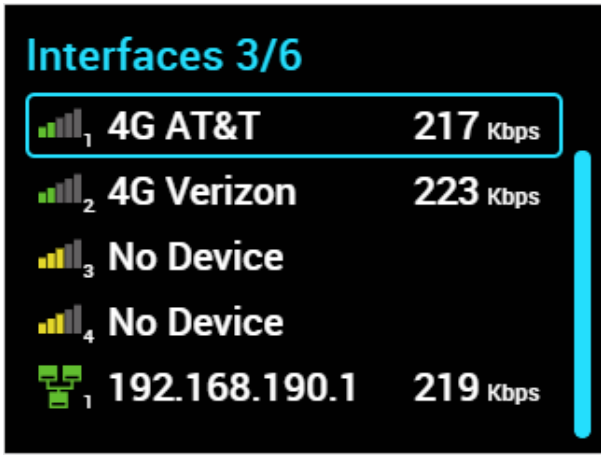


The LU300S Main Window

To select an option on the *Main* screen, use the **JOG** to navigate to the applicable option.

Then, press the **JOG** button to access that option's configuration screen. A white arrow  next to an option on the *Main* screen indicates that the option has a sub-menu and that you need to press the **JOG** button to access the sub-menu screen.

The example below shows how to access the *Interfaces* screen from the *Main* screen.

	
Navigate to here to select the Interfaces option. Press the Right or OK button	The Interfaces screen opens

Accessing a Configuration screen



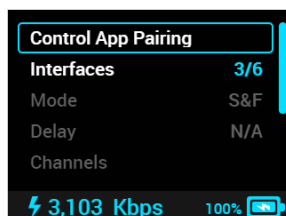
- Pressing the **Prev/Back** button returns to the previous screen.
- Pressing the **JOG** button moves to the next screen. From the *Home* screen, the next screen is the *Main* screen.

Control App Pairing

You can control your LU300S locally using the LiveU Control app installed on an iOS or Android smartphone using the follow steps:

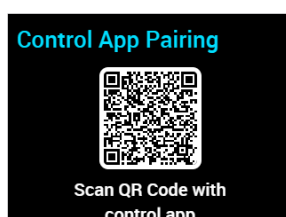
To locally control your LU300S:

- Install the LiveU Control application from either the Play Store (Android), or iTunes (on iOS)
- On your LU300S, select the Control App Pairing function from the Main menu using the **JOG**.



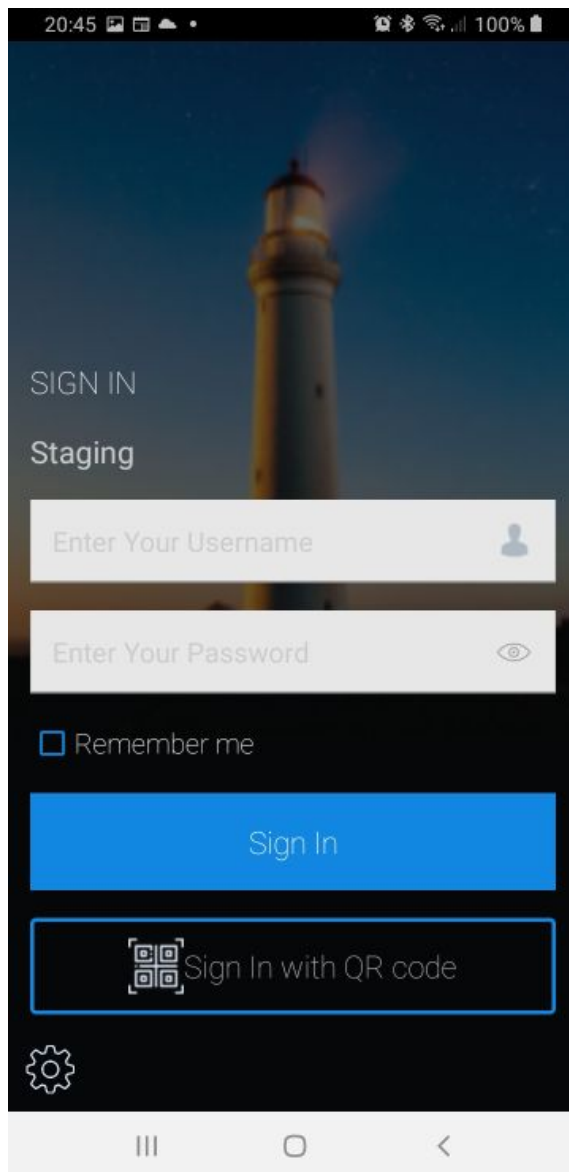
Control App Pairing

A large QR Code graphic will appear on the screen.



Control App QRCode

3. Open the LiveU Control app on your smartphone and click on the **Sign In with QR code** button at the bottom of the screen:



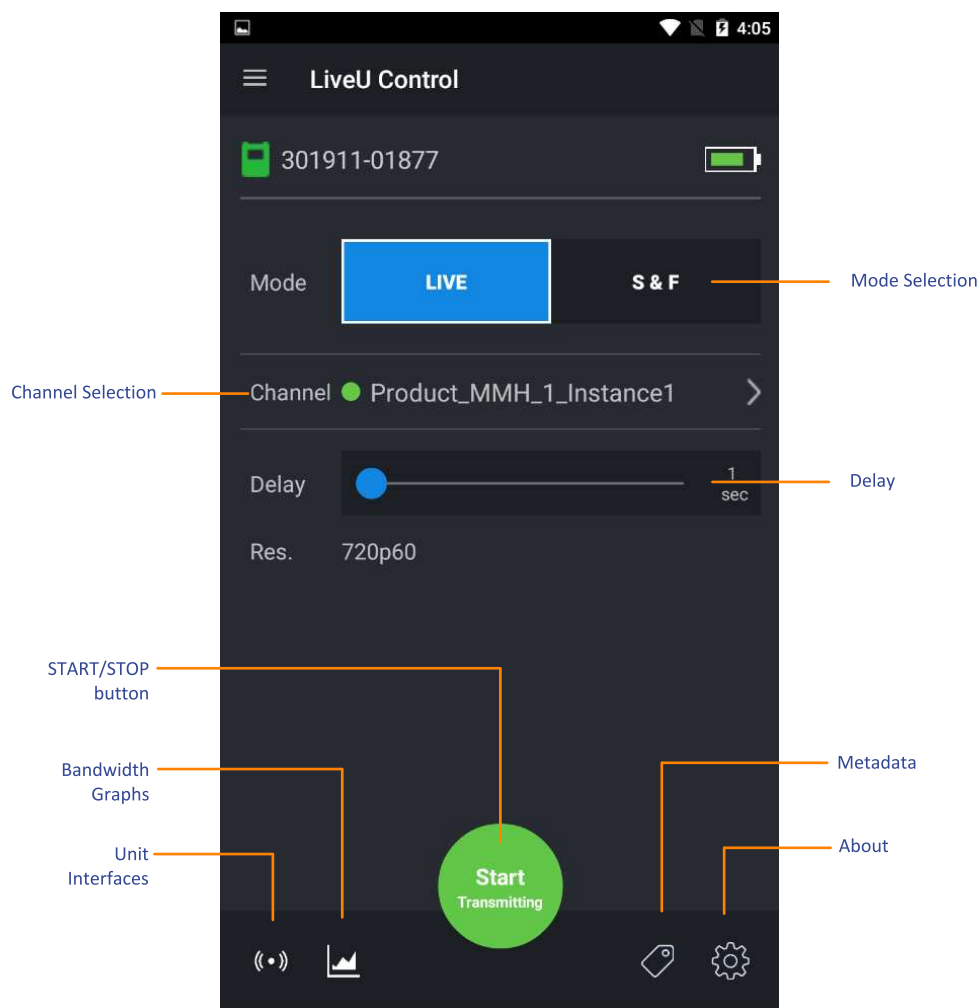
LiveU Control App Login screen

4. Point the smartphone camera at the LU300S screen and LiveU Control should synchronize with the unit in a matter of seconds.

You should now be able to control your LU300S locally, using the different functions of the LiveU Control application.

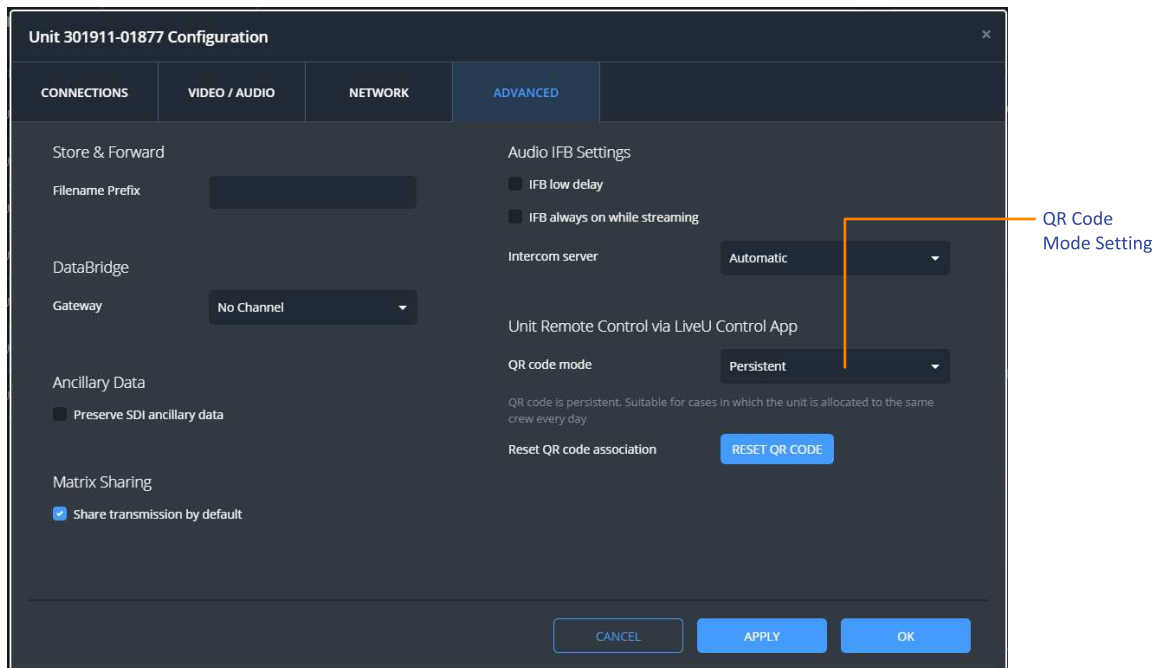
LiveU Control – Basic Functionality

LiveU Control acts as an alternative interface to LiveU Central, allowing you to use your smartphone to control your unit remotely via the simple interface.

**LiveU Control User Interface**

Pairing Duration

By default, you will need to rescan the QR Code every time you restart the LU300S. If you wish the pairing between your LiveU Control and this unit to be fixed, this can be done by setting QR Code mode to Persistent in the advanced unit settings in LiveU Central.



LiveU Central Advanced configuration – QR code mode

Main Window Options

Interfaces

The **Interfaces** option in the *Main* indicates the number of active interfaces out of the total number of interfaces on the LU300S. For example, **3 / 4** means that there are three active interfaces and total of four interfaces on the unit, and that one of them is not active.

For more details about configuring interfaces, see [Handling Interfaces \(page 14\)](#).

Mode

The **Mode** option in the *Main* screen shows the selected operational mode to use during streaming.

For more details about setting the operational mode, see [Selecting an Operational Mode \(page 11\)](#).

Delay

The **Delay** option in the *Main* screen shows the delay that will be used when streaming live video.

For more details about configuring the delay, see [Setting the Delay \(page 13\)](#).

Channels

The **Channels** option in the *Main* screen shows the channel to be used for streaming, or for transferring files.

For more details about setting the channel, see [Selecting a Channel \(page 10\)](#).

Files

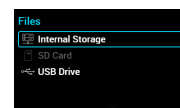
The **Files** option in the *Main* screen will allow you to select a file locally on your unit, and transfer that file to the MMH.

To work with a local file:

1. Navigate to the **Files** option in the *Main* screen using the **JOG**

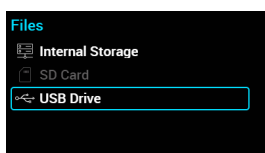


Main screen - Files

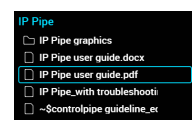


Files screen

2. Select the file you'd like to work on by navigating through the file system using the **JOG**.

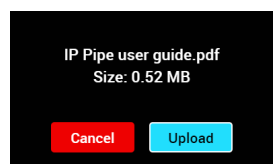


File system Navigation

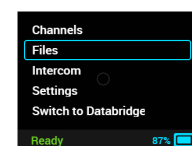


File Selection

3. To select the operation you'd like to perform on the file, press on the **JOG** once and move the wheel left or right. Press on the **JOG** once again once finished.

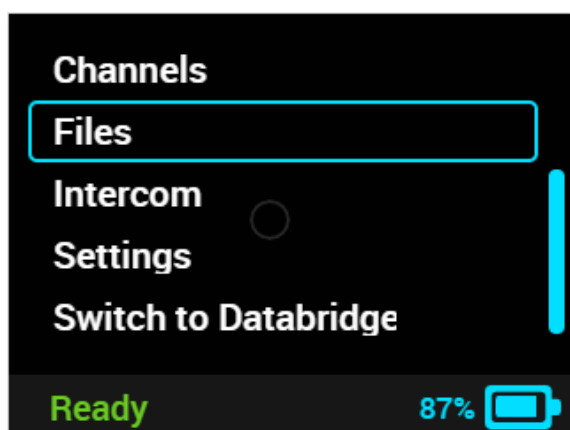


Selecting the File Operation



File During Upload

4. If you have selected **Upload**, you will be sent back to the main menu, with the text "Forwarding..." displayed on the status line at the bottom of the screen.



Home screen while File Transfer is active

- This status will change to the normal “Ready” once the file has been successfully transferred.

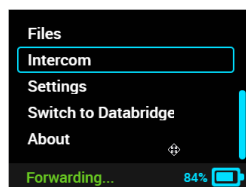
Changing Intercom Volume

When working with Intercom in the LU300S, you can mute your microphone, and change the volume of your headphones and / or microphone.

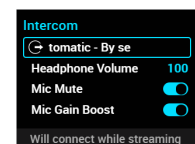
For a more detailed explanation of the Intercom functionality, see Interrupted Feedback (Intercom).

To change Intercom settings:

- Navigate to the **Intercom** option in the *Main* screen using the **JOG**.

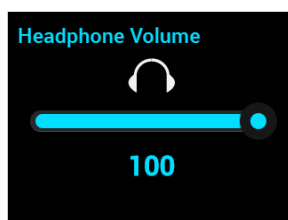


Main screen - Intercom



Intercom screen

- If you have been asked to do so by LiveU Support, choose the Audio Room that you expect to receive Intercom over using the **JOG**.
The default setting automatically connects your unit to the Audio Room associated to the output channel that is currently selected for your unit.
- Select the volume setting you'd like to change using the **JOG**.



Headphone Volume

- To change the value, press on the **JOG** once and move the wheel left and right. Press on the **JOG** once again once finished.
- Mute your microphone by moving to the **Mic Mute** setting and pressing on the **JOG**, if required.



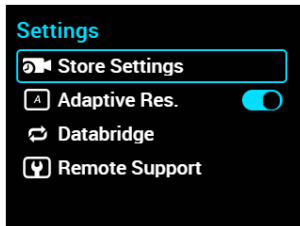
You can also mute / unmute the microphone by quickly pressing the **START** button on the front of your unit.

- Optionally, turn your Mic Gain Boost on or off by toggling the setting using the JOG.

Configuration

The **Configuration** option enables you to perform the following operations:

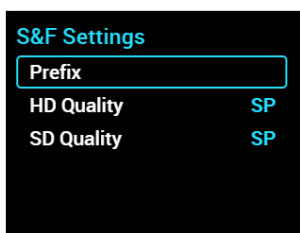
- **Configure S&F Settings**
- **Enable Adaptive Resolution**
- **DataBridge**



Configuration Options

Configuring S&F Settings

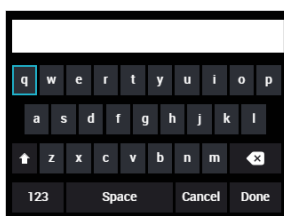
The LU300S enables you to configure Store & Forward (S&F) settings for Store & Forward sessions.



S&F Settings

To configure the Store & Forward prefix:

- Navigate to the **S&F Settings** option in the *Configuration* using the **JOG**.
- Navigate to the **Prefix** option in the *S&F Settings* screen and press the **JOG** button to select. The following screen displays:



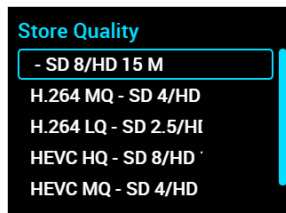
Prefix screen

- Using the **JOG**, move the cursor to each letter, pressing the **JOG** button to add that letter to the prefix. This prefix will be appended to the filename for the files streamed from the unit. Once you are happy with the prefix, move the cursor to **Done** and press

the **JOG** button. The prefix enables you to differentiate between files that were stored and forwarded.

To configure quality of Store and Forward files:

1. Navigate to the **S&F Settings** option in the **Configuration** screen using the **JOG**.
2. Navigate to the **Store Quality** option in the **S&F Settings** screen and press the **JOG** button. The following screen displays:

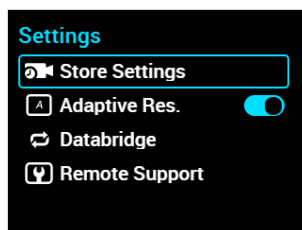


Store Quality screen

3. Select the requested video quality for the stored file by scrolling up and down the list, and pressing the **JOG** button to set the value.

Enabling Adaptive Resolution

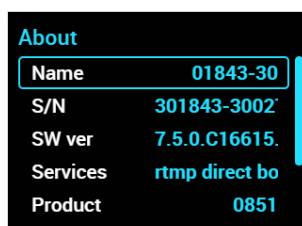
When Adaptive Resolution is enabled, the LU00S automatically and dynamically adjusts the resolution at which it transmits based on the bit rate that is currently available to provide the best available video quality on the server side. To enable this feature, navigate to the **Adaptive Res.** option in the **Configuration** screen and then press the **JOG** button to enable or disable, as required. This feature is enabled by default.



Auto Res. Setting

About

The **About** option displays the LU300S unit's name, serial number, software version and activated services. Contact [LiveU support](#) for more details.



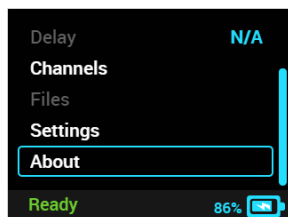
About screen

If any of the information on this screen is longer than the screen permits, two dots (..) are displayed at the end of the relevant line. After a few seconds, the currently selected information line starts to scroll so that you can see the rest of the information.

When contacting a support representative, make sure to have the last five digits of the LU300S unit's serial number available.

To view unit information:

1. In the *Main* screen, use the **JOG** to navigate to the **About** option.



Main screen

2. In the *Main* screen, use the **JOG** to navigate to the **About** option.



About screen

DataBridge Operation

LiveU DataBridge Solution

LiveU's DataBridge service enables transmission and reception of any kind of data from diverse locations, while adapting to dynamic network conditions. This service can be used for a variety of data connectivity solutions, such as for connecting a laptop in the field to a control station.

The DataBridge provides WiFi hotspot or Ethernet-based internet access to any connected device such as laptops, phones, or tablets, providing a high capacity, resilient internet link, at up to 100Mbps.

DataBridge is available as a dedicated hotspot unit based on the LU600 or as part of the LU600, the LU610S, the LU810 and the LU300S video uplink units; enabling users to work with the existing Video and File modes, or with one of the two DataBridge operational modes. The service supports three levels of connection: Cloud-based gateway, On-premise gateway, and direct connection (when working in **Multipath** mode only).

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

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

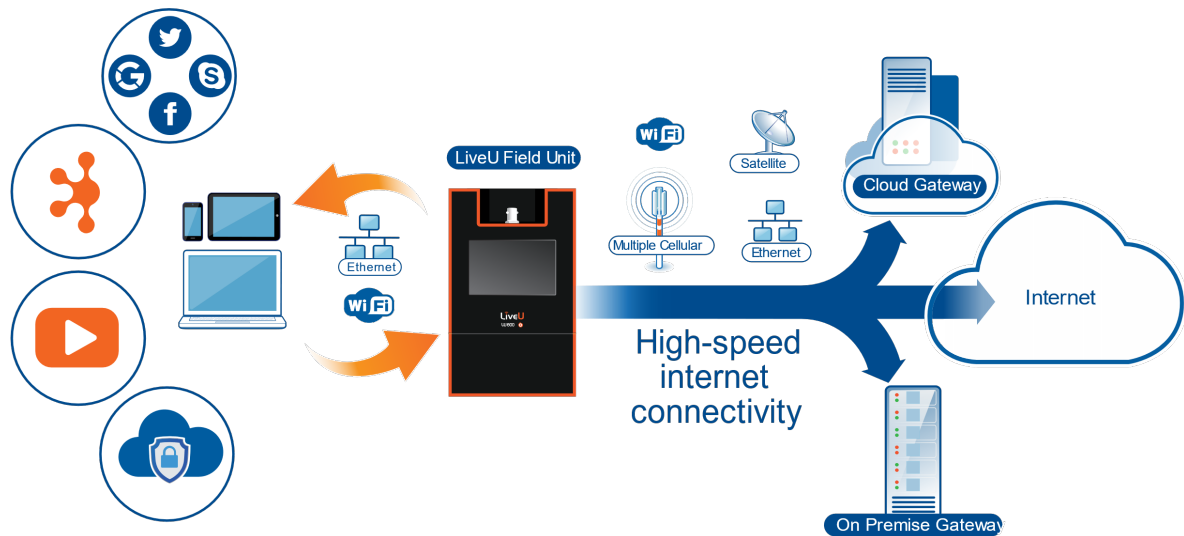
In **Multipath** operational mode, the DataBridge unit functions without any specialized Gateway and:

- Dynamically assigns any available network connection to the incoming requested service
- Can potentially provide higher throughput per service

Gateway

Use this mode when most of your traffic is planned for IP Video applications, when you intend working with a VPN service or want to use standard FTP applications.

In **Gateway** operational mode, the DataBridge unit 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 Mode

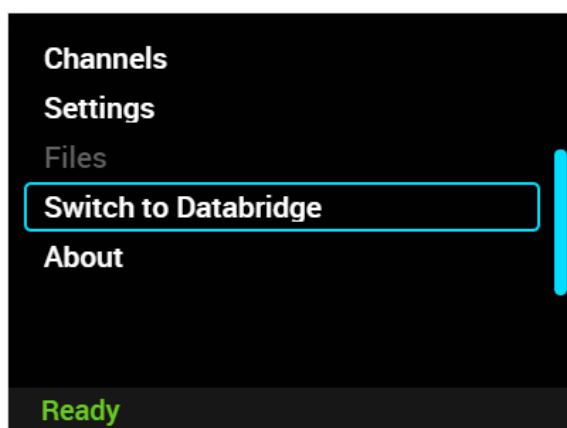


DataBridge mode will only be available on a specific LU300S unit that has the DataBridge service enabled by LiveU Support.

Your unit should be switched from Video mode to DataBridge mode to operate as a DataBridge. The LU300S will continue to operate in DataBridge mode until it is switched back to Video mode. Switching modes between Video and DataBridge does not require a unit reboot.

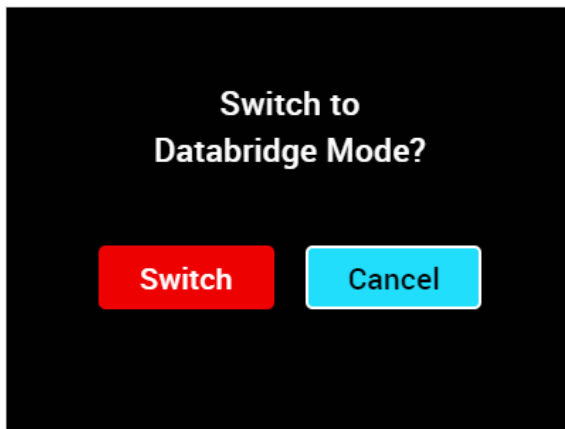
To switch to DataBridge mode:

1. From the Home screen, press the **JOG** button to enter the Main menu
2. Use the **JOG** to navigate to the **Switch to DataBridge** option. Then, press the **JOG** button once again to switch your unit to DataBridge mode.



Main Menu – Switching to DataBridge

3. You will be asked if you really want to switch to DataBridge mode. Move the cursor to the Switch button and press the **JOG** button to actually enable the switch.



Main Menu – Switching to DataBridge

Operating in DataBridge Mode

For the LU300S to operate as a DataBridge in **Gateway** operational mode, the unit must be associated with a DataBridge Gateway instance in LiveU Central. To make sure that the Gateway has been correctly set up, contact LiveU Support and request that a DataBridge Gateway instance be assigned to the LU300S unit for this purpose.

When using Multipath operational mode, there is no need to worry about having a DataBridge Gateway available.

To start operating in DataBridge mode

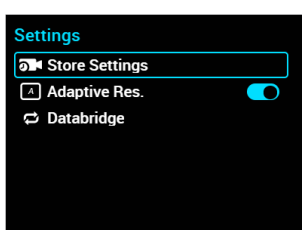
1. Short-press the **Play** button to connect to the DataBridge. The unit will automatically connect to the gateway (if in Gateway operational mode).
2. Once connected, the DataBridge Home screen will display the current downlink/uplink rate.

When you are ready to disconnect from the gateway, Double-press the **Play** button.

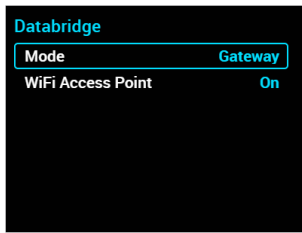
DataBridge Settings

You can use the **DataBridge** settings screen to configure the DataBridge operational mode as well as the WiFi Hotspot settings.

Go to the **Settings** option in the Home screen and select the DataBridge item.



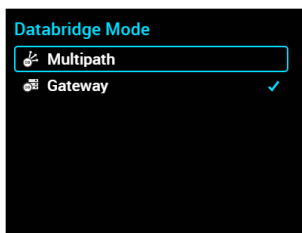
Settings screen



DataBridge Settings screen

Selecting DataBridge Operational Modes

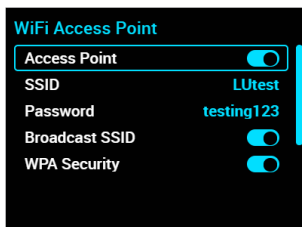
Using the **JOG**, select the Mode menu item in the DataBridge setting screen and select the mode required (either **Multipath**, or **Gateway**).



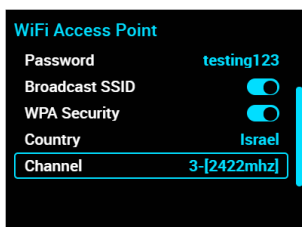
DataBridge Operational Mode screen

Configuring DataBridge WiFi Hotspot Parameters

To configure DataBridge WiFi Hotspot Parameters, select the WiFi Access-point menu item using the **JOG**.



DataBridge Hotspot screen (Part 1)



DataBridge Hotspot screen (Part 2)

Turning the Hotspot On / Off

To turn the Hotspot feature on or off, simply toggle the ON/OFF switch by selecting the **Access Point** option with the **JOG**. The access point will only be activated once the DataBridge has been started.

Setting the SSID (station ID)

Using the **JOG** to navigate the on-screen keyboard. Type in the name of the Hotspot WiFi station that will appear on any clients list of WiFi stations when performing a WiFi scan.

Setting the WiFi Hotspot Password

Enter the password for accessing the Hotspot WiFi station. Note that the password needs to be at least 8 characters long (as required for WPA2 keys). If you enter a password shorter than this, the field will be highlighted in red and your entry won't be accepted.

Toggling Hotspot Station Broadcast Status

You can tell the LU300S to open the Hotspot, yet not broadcast its SSID by toggling the ON/OFF switch next to **Broadcast**. When set to **OFF**, the WiFi hotspot will be active however any clients that wish to connect to it will need to explicitly configure their WiFi to find and connect. Note that clients that have already connected to this SSID / password combination in the past, should be able to connect automatically.

Setting WiFi Hotspot Security

Use the **Security** field setting to choose either WPA2 security or no security for this Hotspot. WPA2 is the recommended setting for this field.

Setting the Country

Set the country where the LU300S hotspot is being used to configure the Hotspot with supported frequencies / channels.

Setting the WiFi Channel

The Channel field will allow you to set the WiFi channel that the hotspot will use. Change the existing channel if you experience poor reception of the hotspot, which may happen when other (more powerful) stations are broadcasting on the same channel.

Audio services

Overview

LiveU supports the following audio services:

- **Interruptible Foldback (IFB):** One-way communication from the station to the field. The unit operator can receive audio from the studio but cannot send audio.
- **Audio Connect:** Two-way communication between the station and the field, as follows:
 - **Intercom:** The unit operator can receive audio from the studio and can also send audio to the studio.
 - **Party line:** Multiple unit operators and studio personnel can participate in audio conferencing.

Audio services can work in two different modes:

- **Automatic:** Applies to IFB and Intercom
The studio communicates with a single unit operator as soon as the unit begins transmitting via an automatically selected video channel.
- **Audio Room:** Applies to party line
The studio communicates with multiple unit operators by connecting to a virtual audio location in which all participants can receive and send audio.
Audio can be sent and received 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.

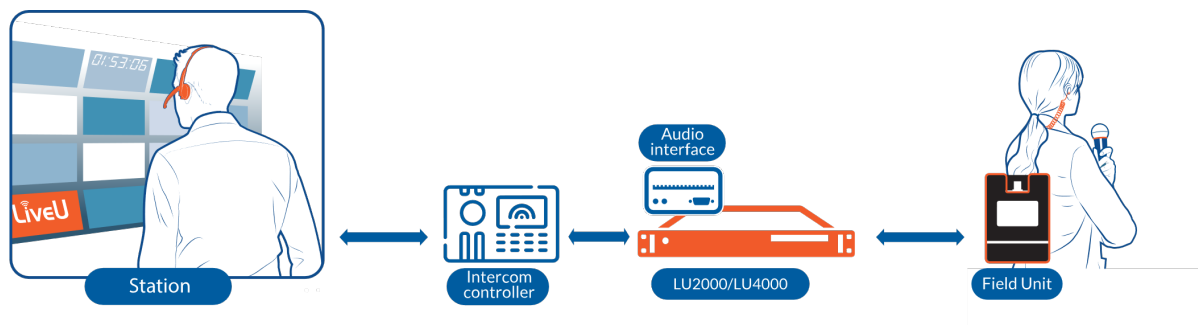
All audio communication modes support low delay and resilient communication, regardless of network fluctuations.

IFB is supported on all LiveU units. Audio Connect (Intercom / audio conferencing) is a premium service that is compatible with LU300S, LU600-HEVC, LU610S, LU810 and LU800 field units and with LU-Smart.



IFB and Audio Connect cannot coexist on the same server.

Audio Connect is managed from the LiveU Central management platform.



Audio Connect flow

Connecting audio services

Setting up LiveU's audio services is a one-time operation and applies to both IFB and Audio Connect.

The setup involves routing audio signals from the station to a LiveU server, using an audio interface unit. Once set up, the studio can immediately begin communicating with unit operators, according to the selected mode.

For more information on installing LiveU Audio Connect, see the **LiveU Central User's Guide**.

Your LU300S supports both IFB and Audio Connect.

IFB/Intercom Setup on your LU300S

To set up IFB / Intercom:

- Plug a set of earphones / headphones into the audio connector on the LU300S.



Earphones/Headphones Connector



The LU300S audio interface works with any CTIA standard headphone plug



During streaming, IFB has an ~700 ms delay. Low delay mode is available via LiveU Central and supports ~350 ms delay.

If the IFB always on while streaming feature is enabled in LiveU Central, the unit operator can connect the headset to the unit at any time during the IFB session and be able to hear audio from the station. If the headset is not connected before the IFB session begins and this feature is not enabled, the LU300S operator will not be able to hear the audio from the station.

The low delay IFB mode is slightly less resilient and is not supported when using IP satellite connections such as KA/BGAN. Audio services LU300S.

For more information on setting IFB volume levels and muting the microphone, see [Changing Intercom Volume \(page 25\)](#)

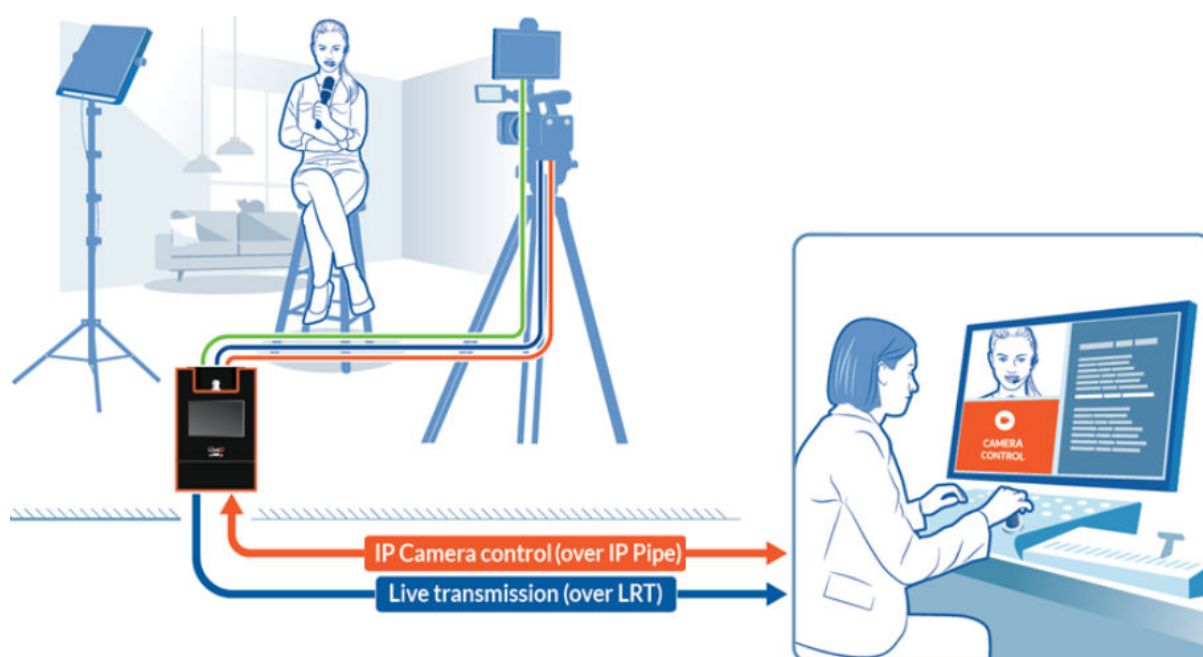
IP Pipe

LiveU's new IP pipe feature gives you remote control over a wide variety of network-based equipment directly through your LiveU unit. This includes robotic and PTZ camera control, camera control units. IP-based Intercom and more. This solution will take your remote productions to a whole new level, increasing operational efficiency, dramatically reducing onsite crew and expenses as well as enhancing field to studio communication.

IP pipe is available for all HEVC based LiveU products including your LU300S. For more information on how to enable this service, contact your LiveU representative.

Note that when enabled, the IP Pipe service will use up to 1Mbps of bandwidth. It is, therefore, recommended to avoid connecting high-bandwidth consuming devices.

The next figure shows a station operator remotely controlling a single camera over IP Pipe, using an LU600.



Remote control of a single camera

Metadata Support

This section describes how Metadata is treated within the LiveU ecosystem. For more information on how Metadata is handled by LiveU Central, see the appropriate chapter in the LiveU Central User Guide.

LiveU supports the IPCT's NewsML-G2 format for Metadata, from the field unit through to the MMH. From the IPCT's website: "NewsML-G2 is the cost-effective way of managing news, whether for a news provider, web site, news aggregator, newspaper or television station". When properly integrated, NRCS (News Room Control Systems) like ENPS and iNews can use this XML Metadata as part of their workflow.

When Metadata is enabled for the LU300S, every Live session, Store & Forward session, or file transfer is accompanied by an XML file that contains information pertinent to the session. This XML file consists of static (locally or remotely edited fields) data, and dynamic (time, location, video format etc.) data. The XML file is sent from the LU300S as part of the session and is saved for later referral and use on the MMH.



Note that all metadata fields and functional parameters for your LU300S can only be configured remotely on LiveU Central by the LiveU Central operator.

Handling the LU300S

Inserting SIM Cards (LU300S only)

Your LU300S unit comes complete with 2 internal Dual-SIM modules. These modules allow you to install 2 sets of SIMs (A and B), where the option to switch between these SIMs on a specific module or on all modules at once is given via LiveU Central.

Dual-SIM modules support several real-life situations, for example:

- Roaming: install a local SIM in one slot, and a roaming SIM in the other
- Pre-Paid Extension: in certain scenarios where it would be more practical to switch an expended pre-paid SIM with a fresh one

To insert module SIM cards:

- Insert your SIM cards in the 1A and 2A slots. The unit can be turned on or off during this procedure.



SIMs Installed in the LU300S “A” Slots



- After inserting a module and/or SIM card, the LU300S will automatically discover the operator's name and the Access Point Number (APN), and display them in the *Interfaces* screen within 15 to 30 seconds. If necessary the APN can also be configured remotely via LiveU Central.
- This procedure should also be performed when inserting or replacing a SIM card.

Connecting Extra (3rd and 4th) Modems

Your LU300S has the option to add an additional 2 external modems. These additional modems will be automatically dialed and combined into the consolidated broadband uplink connection in the same way as the other modems installed inside the LU300S chassis.

To connect external modems:

1. Using the supplied USB cable extenders, connect one end to the extender to the USB connection on the side of the LU300S, and the other end to your USB modem
2. If you wish to add a second external modem, repeat the above, connecting to the other side of the LU300S



Left side USB connector

Once the unit is powered on, these additional modems will appear in the list in the Interfaces screen, designated as interfaces 3 and 4.

For your convenience, the included carrying pouch has elastic bands designed to hold external modems when connected using the supplied USB cable extenders.

LU300S Pouch Installation

Your LU300S should have arrived with a separate carrying pouch specifically designed for use while operating the unit. This pouch can be worn as cross-body strap (“bandolier”) during operation and will serve to protect your device from mechanical wear and tear and from damage that may be incurred in typical drop scenarios.

Please make sure to orient the unit such that the LCD screen is facing upwards and can be seen easily by the operator as shown in the following photo.



Correct Placement of the LU300S Cross-body Pouch

Following are two examples of wearing the pouch. The first one shows incorrect positioning while the second one show correct usage and placement of the pouch.



Incorrect LU300S pouch placement (to the left) and correct LU300S pouch placement (to the right)

To install your unit in the pouch:

1. Orient the LU300S pouch and LU300S unit as shown in Pouch installation, Initial Position.



Pouch installation, Initial Position

2. Before installation, make sure to open the clip situated on right side of the pouch.
3. Gently slide the unit into the right side of the pouch as shown in Pouch installation, Interim Position, turning it to an upright position while inserting.



Pouch installation, Interim Position

4. Make sure to stretch the elastic holders at the bottom of the pouch to allow the two “legs” to move into position.
5. Check to see that the SDI cover cap is in position – see Pouch installation, SDI Cover strap.



Pouch installation, SDI Cover strap

6. Stretch the elastic holders at the top to allow the unit to move completely into position inside the pouch.
7. Close the clip on the right side of the pouch as shown in Pouch installation, Side Clip.



Pouch installation, Side Clip

Correct bag placement

1. Connect the straps to the LU300S Pouch
2. Place straps over head and shoulder, bag should hang on the opposite side
3. Please ensure that the unit's orientation should be such that the LCD is facing the user and not the ground

Tally Light Overview

- **The Tally Controller**, which is installed in the MCR, connecting to the MMH server (LU2000 or LU4000) using a USB cable, and connecting to the MCR production mixer using a customized GPIO cable, depending on the make and model of the mixer.



- **The Tally Light Field Device**, which connects to the LiveU field unit (LU300S, LU600, LU610, LU610S or LU810) using a USB-C cable. Once correctly connected, whenever the field unit is transmitting, the Tally Light will show a GREEN light.



Whenever the production mixer switches a LiveU SDI output channel to be On Air, a GPIO signal is generated. This signal is then mapped via the LiveU Tally Controller, which will tell the MMH to send a LiveU Tally “On Air” signal to the field unit that is currently transmitting to the channel that is now On Air. Once the field unit receives this signal, it will switch the Tally Light Field device’s light from GREEN to RED. Whenever the field unit stops transmitting, the light will be turned off.

Tally Light Field Device Installation

To install the Tally Light on your LU300S:

1. Remove the Tally Light field unit from the box and attach it to your camera using the cold shoe adapter or use the Velcro band to attach it to your backpack.



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



3. Use the included USB cable to connect the Type—C connector on the field unit to any available USB slot on the LiveU field unit. On the LU600, you can also use the USB connector on the LU600 remote control. Make sure that your field unit has version 8.0 or later installed.



4. Testing your local connection: If all is connected correctly, the tally light will turn to GREEN whenever you go live from your local field unit. Once transmission stops, the light should turn off.

Safety and Maintenance

This section describes Safety and Maintenance information for the different members of the LU300S family.

Safety Information – LU300S and LU300SE



- 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.
- The LU300S and LU300SE both contain an internal battery that is not designed to be removed by users. As such, you should treat the unit accordingly. 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 LU300S / LU300SE 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 belt pouch. The product is not designed to be used under water.
- Only use the original LiveU pouch. 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 LU300S 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 LU300S 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 LU300S 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 LU300S 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 LU300S 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 LU300S 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.

Limitation of Liability and Warranty

This LiveU product is provided “as is” without warranty of any kind. The company disclaims all other warranties, either express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose and non-infringement.

Under no circumstances shall the company be liable for any damages whatsoever (including, without limitation, consequential, special, or incidental damages, or damages for loss of business profits, business interruptions, loss of business information or other pecuniary loss) arising out of the use of or inability to use the LiveU product, even if the company has been advised of the possibility of such damages.

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Regulatory Compliance

This section provides regulatory compliance information including FCC 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:

- 1 This device may not cause harmful interference, and
.
- 2 This device must accept any interference received, including interference that may cause
.



This equipment must be installed and operated within the dedicated LU300S pouch supplied with this equipment.

FCC ID:

- **Cellular Modems:**
 - 2AVDZEM75 (grant date 04/21/2022) [Sierra EM7565]
 - 2AVDZEM91 (grant date 07/27/2022) [Sierra EM9191]
- **WiFi Module:** 2AVDZCM27 (grant date 04/21/2022) [Azurawave AW-CM276MA]

SAR



The LU300S is used within 20cm from the human body as shown in the image above. It is therefore an object for BodySAR. After performing BodySAR, it was found to satisfy the limitation.

There is a separation distance of 1cm from the antenna to the human body when LU300S is set in the pouch.

Standards Compliance

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

Third Party Technical Specifications

RF Specifications

RF Module Specifications

Freq Tx ranges of each RF module

Sierra
EM9191

Band#	5G ^a (n<band#)	LTE (B<band#>)	3G (Band<band#)	Frequency (Tx)	Frequency (Rx)
1	Y	Y	Y	1920–1980 MHz	2110–2170 MHz
2	Y	Y	Y	1850–1910 MHz	1930–1990 MHz
3	Y	Y		1710–1785 MHz	1805–1880 MHz
4		Y	Y	1710–1755 MHz	2110–2155 MHz
5	Y	Y	Y	824–849 MHz	869–894 MHz
6			Y	830–840 MHz	875–885 MHz
7	Y ^b	Y		2500–2570 MHz	2620–2690 MHz
8	Y ^b	Y	Y	880–915 MHz	925–960 MHz
9			Y	1749.9–1784.9 MHz	1844.9–1879.9 MHz
12	Y ^b	Y		699–716 MHz	729–746 MHz
13		Y		777–787 MHz	746–756 MHz
14		Y		788–798 MHz	758–768 MHz
17		Y		704–716 MHz	734–746 MHz
18		Y		815–830 MHz	860–875 MHz
19		Y	Y	830–845 MHz	875–890 MHz
20	Y ^b	Y		832–862 MHz	791–821 MHz
25	Y ^b	Y		1850–1915 MHz	1930–1995 MHz
26		Y		814–849 MHz	859–894 MHz
28	Y	Y		703–748 MHz	758–803 MHz
29		Y		n/a	717–728 MHz
30		Y		2305–2315 MHz <i>Note: B30 Tx is disabled^c</i>	2350–2360 MHz
32		Y		n/a	1452–1496 MHz
34		Y		2010–2025 MHz (TDD)	
38	Y ^b	Y		2570–2620 MHz (TDD)	
39		Y		1880–1920 MHz (TDD)	
40	Y ^b	Y		2300–2400 MHz (TDD)	
41	Y	Y		2496–2690 MHz (TDD)	
42		Y		3400–3600 MHz (TDD)	
43		Y ^b		3600–3800 MHz (TDD)	
46 ^d		Y		n/a	5150–5925 MHz (TDD)
48	Y ^b	Y		3550–3700 MHz (TDD)	
66	Y	Y		1710–1780 MHz	2110–2200 MHz
71	Y	Y		663–698	617–652
77	Y			3300–4200 MHz (TDD)	
78	Y			3300–3800 MHz (TDD)	
79	Y			4400–5000 MHz (TDD)	

a. EM919x only

b. Band support is firmware and SKU dependent.

c. To assist OEMs to meet FCC and PTCRB rules, LTE band 30 is set to downlink only by default.

d. LTE-LAA B46 (downlink only)

RF Module Specifications

Sierra
EM7565

RAT	Bands																											
	1	2	3	4	5	6	7	8	9	12	13	18	19	20	26	28	29	30	32	41	42	43	46	48	66			
LTE ^a	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F ^b	F ^b	F ^b	T	T	T	T ^b	T	F			
UMTS ^c	Y	Y		Y	Y	Y		Y	Y				Y			N/A			N/A									
GNSS	GPS: 1575.42 MHz GLONASS: 1602 MHz BeiDou: 1561.098 MHz Galileo: 1575.42 MHz QZSS: 1575.42 MHz																											

a.

(LTE) Downlink MIMO support (2x2; 4x2)
F=FDD; T=TDD
Data rates: Downlink (Cat 12 with 3CA, 256QAM=600 Mbps; Cat 9 with 3CA, 64QAM=450 Mbps), Uplink (Cat 13 with 2CA contiguous, 64QAM=150 Mbps)

b.

Downlink only

c.

UMTS (DC-HSPA+, HSPA+, HSPA, UMTS)
Diversity support
Data rates: Downlink (Cat 24, up to 42 Mbps), Uplink (Cat 6, up to 5.76 Mbps)

WIFI AW-
CM276MA

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

Maximum power per frequency range (RF modules)

Sierra
EM9191

Bands	Conducted Tx Power	Notes
5G		
FR1 Sub-6G Bands	n2, n5, n48, n66, n77	+23.7 dBm +0.8/-2.2 dB
	All other bands	+23 dBm ± 1.5 dB
LTE		
LTE B3, B7, B41, B42	+23 dBm +1.8/-1.0 dB	Power Class 3
B41 HPUE	+25 dBm ± 1 dB	Power Class 2 for B41 LTE mode only
LTE all other bands	+23 dBm ± 1 dB	Power Class 3
UMTS		
All bands (12.2 kbps)	+23.5 dBm ± 1 dB	Connectorized (Power Class 3)

a.

Tx Power is based on no maximum power reduction (MPR) configuration as 3GPP defined. For configurations that require MPR or additional MPR, refer to 3GPP for the power reduction.

RF Module Specifications			
Sierra EM7565	Bands	Conducted Tx power	Notes
	LTE		
	LTE bands 1,2,3,4,5,8,9,12,13,18,19,20,26,28,66	+23 dBm ± 1 dB	
	LTE bands 7,41	Single cell: +22 dBm ± 1 dB UL CA: +22.8 dBm ± 1 dB	0.8 dB offset for UL CA hardcoded by chipset manufacturer
	LTE bands 42,43,48	+22 dBm ± 1 dB	
	UMTS		
	Band 1 (IMT 2100 12.2 kbps) Band 2 (UMTS 1900 12.2 kbps) Band 4 (AWS 1700/2100 12.2 kbps) Band 5 (UMTS 850 12.2 kbps) Band 6 (UMTS 800 12.2 kbps) Band 8 (UMTS 900 12.2 kbps) Band 9 (UMTS 1700 12.2 kbps) Band 19 (UMTS 800 12.2 kbps)	+23 dBm ± 1 dB	Connectorized (Class 3)
WIFI AW- CM276MA	16.125dBm for all bands		
Modulation types per RF module			
Sierra EM7565 / Sierra EM9191	GSM – GMSK / 8PSK LTE – QPSK/16QAM/64QAM & 256QAM (in EM9191 only)		
WIFI AW- CM276MA	DSSS, OFDM and CCK		
TAC Number			
Sierra EM9191	35589034		
Sierra EM7565	35926008		
RF modules included in one LU Product (GMS and WiFi)			
2 cellular modems [Sierra EM7565 or EM9191] and 1 WiFi module [AW-CM276MA]			

Safety certification



HERMON LABORATORIES

Manufacturer

LiveU Ltd, 5 HaGavish Street

Kfar Saba

4442211, Israel

Support and Contact Information

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Latin America Phone line: +1 (609) 359-0910

International: support@liveu.tv

International Phone Line: 1-(609)-997-0600

When contacting a support representative, please make sure to have the last five digits of your unit's serial number available.