Streambox®

AVENIR**Micro**™

AVENIR**Drone**™

Quick Start Guide

Note: This document reflects the current feature-set which may change without notice. We will attempt to keep all users up-to-date on any such changes.

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Contents

Introduction

The Streambox® AvenirMicro™ and AvenirDrone™ are next generation mobile video encoders. They are built on the Qualcomm® Snapdragon™ CPU module with HD-SDI and HDMI video capture. The AvenirMicro and AvenirDrone have a small form factor weighing in at 500gm and 400gm respectively.

The workflow philosophy is an 'as you like it' modular design. To the base unit you can snap on an embedded modem module, a battery module, a breakout cable for four external USB modems, or a USB modem module.

Getting Started

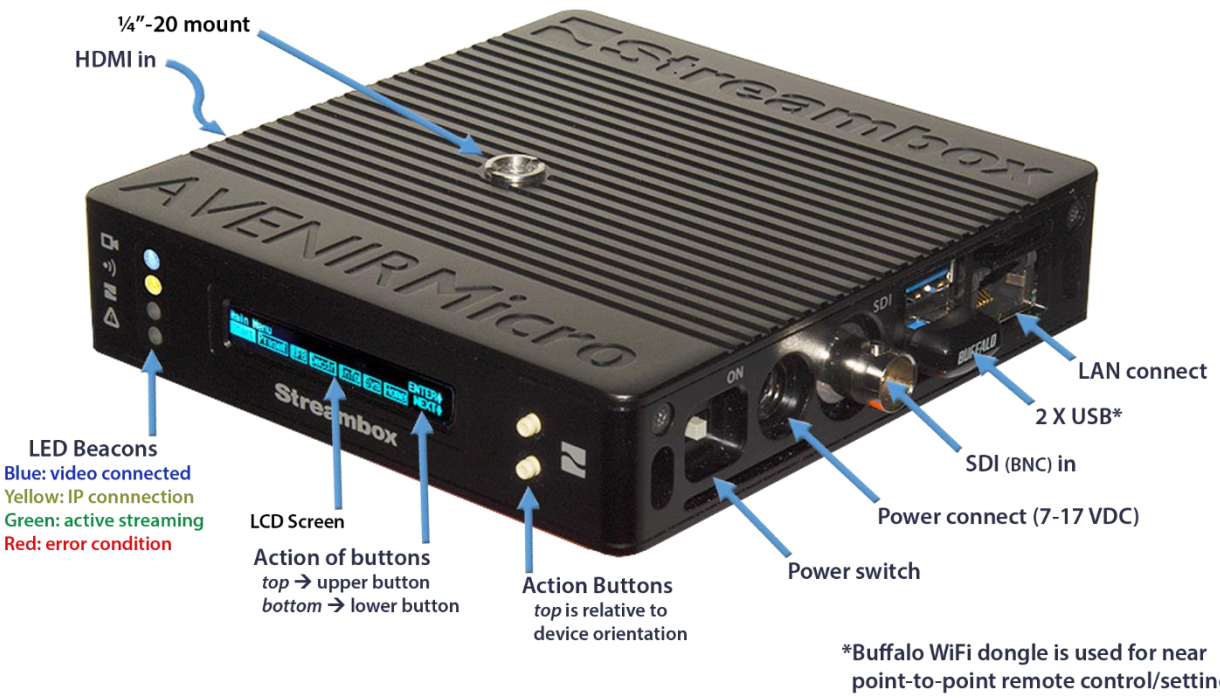
What's Included:

- Streambox Avenir Micro or Drone Encoder base unit
- AC Power Supply with international plug adapters

What's Needed:

- Video source such as a digital video camera (either HDMI and SDI)
- HDMI or SDI video cable to connect the video source
- Ethernet cable connected to an IP network (LAN connection is recommended for initial setup)
- Free trial account for Streambox Cloud Services (if you do not have an account already); http://live.streambox.com/ls/reg.html
  (see *Creating Streambox Cloud Account* on page 15)
- Browser access to Internet

Anatomy of the AVENIRMicro™



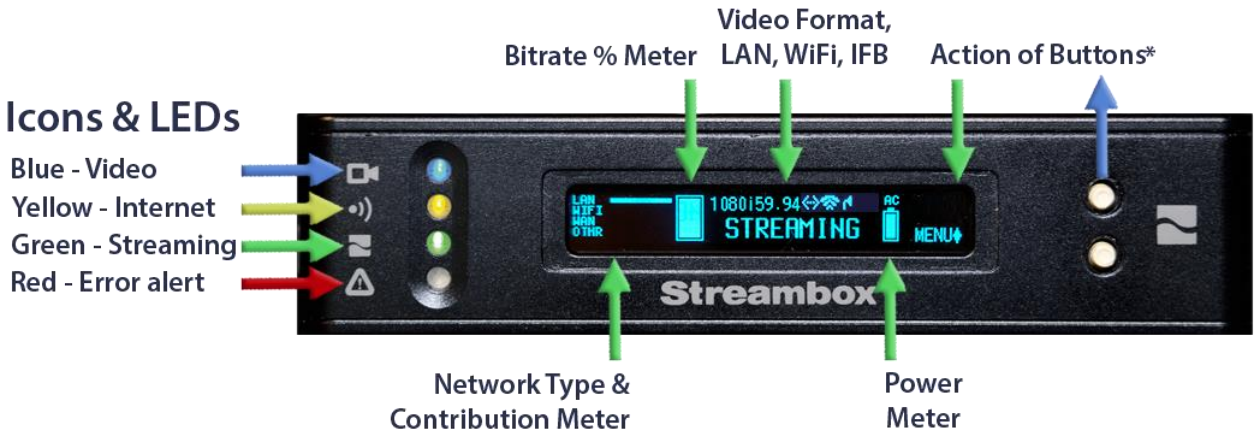
Making the Right Connections

- Connect the power source (1)
- Connect a video source via SDI-in or HDMI-in (2)
- Connect LAN with IP service* (3)
- Turn power switch on (4)
    - Unit will start streaming automatically with a good video source and Internet connection – the Green "streaming" LED beacon will flash (see figure below). This automatic streaming feature is an option and can be turned off (see Settings Page page 23).
    - If either video source or Internet connection is insufficient the Red alert LED beacon will flash with a text explanation on the LCD screen (see figure below)

*Use LAN connection for setup. Subsequent use will support either *LAN*, *WiFi*, and *WWAN* (mobile modems), or *ALL* bonded together.

Initial, Home Screen

Home Page – Streaming Video



* Micro is orientation responsive so the Top Button is always the button on the top

Home Page – Ready to Stream Video

Notice that the green LED beacon is off since the unit is on standby and not streaming. Also notice that the Network Contribution and Bitrate Meters are off since there is no active stream.

Action Items & Navigation

Right-Side-Up View

Action items are designated by a diamond (◆). There can be 1 or 2 action items on a page; each corresponds to its respective top or bottom button. On the Home page, MENU is the only action item and is here associated with the bottom button (see green arrow).

Upside-Down View

If you rotate the device upside-down, the screen will rotate its orientation to remain upward and the buttons will flip so that the bottom button (see red circle below) remains on bottom relative to the screen orientation. Right-side-up or upside-down, the MENU item on the Home page is always activated by pressing the on bottom button.

Two Action Items

In the example below, there are 2 Action Items, HOME (associated with the top button) and NEXT (associated with the bottom button). In most cases the top button executes an action and the bottom button navigates within a screen. So in this example, the top button executes the command to open the HOME page and the bottom button navigates along the bottom row of tabs (notice that LAN is highlighted).

Main Menu

The Main Menu page is displayed when you press the MENU button (top) on the Home page. On the Main Menu page there are two Action Items; ENTER and NEXT. NEXT cycles through the seven menu items, and ENTER executes the highlighted item; [Start] in this case.

Main Menu Items

- **Start/STOP** — Start or Stop, respectively, the video stream and return to Home page
- **Preset** — Open the Presets selection page
- **IFB** — Open the IFB page
- **Decdr** — Open the Decoder page
- **Info** — Open the Info page
- **Sys** — Open the System page
- **Home** — Open the Home page

Start/Stop Video Stream

The **Start** and **STOP** action items start and stop the video stream, respectively. If video is streaming, Stop will be the item. If in standby, Start will be the item.

Presets Selector

Presets are predefined video streaming profiles. The Micro/Drone comes with a number of presets; some optimized for LAN & WiFi connections, some optimized for 3G/4G/LTE connections, some optimized for satellite connections, etc. You can create your own Presets via the advanced web interface (discussed in a separate document).

To move up the list of Presets, you select the [+] item, and to move down the list you select the [-] item. Remember, pressing ENTER executes your selection. Once you see the desired Preset displayed in the top row (*Talk* in this example), you NEXT over to the [Apply] item to apply the Preset or you can NEXT over to the [Stream] item to apply your selection and start streaming with that Preset (see image below).

Smart Presets

There are 3 Smart Presets that are included in the Preset list. They employ ABN (see next section) to determine the optimal bandwidth settings based on your Internet connection.

1) **Talk** — Talking Head is optimized for in-person interviews with little action
2) **Action** — Action is optimized for action or high-motion shots
3) **Reliable** – Reliable is optimized for highest quality at the expense of a longer latency

Automatic Bandwidth Negotiations (ABN)

Automatic Bandwidth Negotiation or ABN is an automated process to determine the best bandwidth. ABN is activated when using Smart Presets (see previous section). Once ABN is activated, you can press ACCEPT (lower button) when an acceptable bandwidth has been reached or you may allow ABN the full time to determine the best bandwidth available. In this example (see figure below), the bitrate is 5.43 Mbps with a 1.2 second latency and there are 13 seconds remaining in the ABN process for determining the optimal settings.

IFB Manager

Streambox Micro/Drone encoders support IFB audio. IFB is an abbreviation for Interruptible foldback or feedback. This is used by news agencies to communicate to field reporters during live interviews. IFB

requires a Streambox IFB server and access to the web interface to set parameters (covered in a separate document).

From the IFB page you can change the audio volume up or down (**[VOL+]** or **[VOL-]**), or change the channel up or down (**[CH+]** or **[CH-]**), and/or **[START]** an IFB connection. If the 'Offline' status is displayed on the top line, then there is no IFB connection and the [START] action item is displayed (see upper image below). If an IFB connection is already started, as indicated by a 'Receiving data…' status on the top line, [STOP] will be displayed to terminate the IFB channel connection (see lower image below).

Decoder selector

The Micro/Drone is by default setup to stream directly to the Streambox Cloud servers that are stationed throughout the world (e.g., LiveUS (US West), LiveUSEst (US East), LiveAU (Australia), LiveDE (Germany), LiveEU (Europe), LiveJP (Japan), LiveSG (Singapore), LiveIN (India), and others. You can also set the Micro/Drone encoder to stream directly to a Streambox decoder (software, rackmount, NODE™) or Streambox Enterprise Server via the web interface (discussed in a separate document). Use the up [+] or down [-] action items to select the desired decoder (closest to your location). Then NEXT to the [Set] action item to set the decoder. Remember, use the ENTER, top, button to execute the selected item.

Info Page

The **Info** page provides system information. NEXT to the desired item and the respective status is displayed on the top line (in the example below, [**LAN**] is selected and the LAN IP address is displayed, indicating a LAN IP connection). At any time, you can return to the Home page by pressing the HOME (top) button.

- **LAN** — LAN IP address

- **WiFi** — WiFi IP address (in this case, since the device was not connected to WiFi, no IP is displayed.

- **Temperature** — This is CPU temperature in degrees centigrade. Temperature is provided for diagnostic information. As a general rule, CPU temperature should stay below 100°C.

- **Power** — Power provides info about the connected power supply. In this case, the attached power is 12.0 VDC. The functional power range is 7 to 17VDC.

- **Date** — System date and time are displayed (for product support purposes).

- **S/N** — Serial number is displayed. Also, LCD version is displayed (for product support purposes only)

System Menu

The System menu is similar to the Info menu but with items less often accessed by the user.

System Menu Items

- **Main Menu** — Return to Main menu
- **Net** —Network Mode selector
- **Encoder** — Restart encoder page
- **LCD** — Screen settings page
- **BATT** — Battery type selector
- **OTHR** — Reset LAN for Auto IP assignment (DHCP), Enable OTG Net

Network Mode Selector

Network mode selector sets which network connection the Micro/Drone uses; by default, **ALL** is selected so the Micro/Drone will bond all available networks together to improve bandwidth. You can also select LAN (for LAN only – as in this example), WiFi (for WiFi only), and WWAN (for mobile modems only). Use the [**Mod+**] and [**Mod-**] to change mode and then [**SET**] to make it so.

Encoder

From time to time it may be necessary to restart the encoder. Press the bottom, RESTART, button to initiate a restart and the top, HOME, button to return to the Home page. Often, powering the unit off and then on again is a more practical approach.

Screen Settings

The LCD (or OLED) page allows you to adjust contrast (**[Cnt+]** and **[Cnt-]**), invert the display from white-on-black to black-on-white (**[Inverse]**), or lock auto screen rotation (**[Rotation]**).

Battery Type Selector

It is necessary to know what type of batteries are being used for the power meter on the Home page to properly report the state of the battery condition. You can simply move up **[+]** the list or down **[-]** the list until you find the battery type that best matches the ones in use.

System Access (Other)

This is provided for product support access to system files via OTG Net. Also, LAN->DHCP may be used if the unit is locked out of a local area network due to IP conflicts.

Connecting to the Cloud

Setup

See setup image:

1. Plug in camera (SDI or HDMI)
2. Plug in LAN (with IP access)
3. Plug in power
4. Turn on (wait for Home screen)
5. Select LAN on Info Page for LAN IP address (see details below)
6. Open web browser
7. Use LAN IP address to open the Advanced Settings web page;
   for example, 10.0.3.145/avenir/ (if LAN IP was 10.0.3.145 – see details below)
8. On the web Home page, press the 'Metadata' button (not shown in image, see details below)
9. Enter metadata (see details below)

Get LAN IP

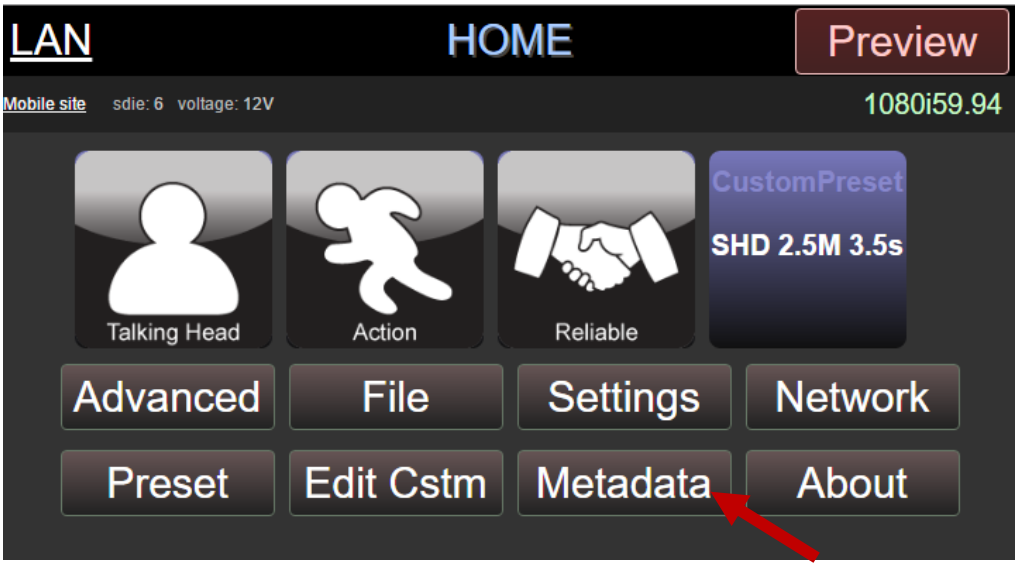
Find the LAN IP address:

1. Select MENU on the Home page
2. Then select [Info] for the Info page
3. Then make sure [LAN] is selected (use the NEXT button is necessary; see image below).
   - The LAN IP address is listed on the top line; 10.0.3.145 in this example.

Use LAN IP for Web address

Make sure the web browser is on the same network as is the Micro/Done you are setting up. Use the IP address of the Micro/Drone for the address on the web browser: <IP Address>/avenir/

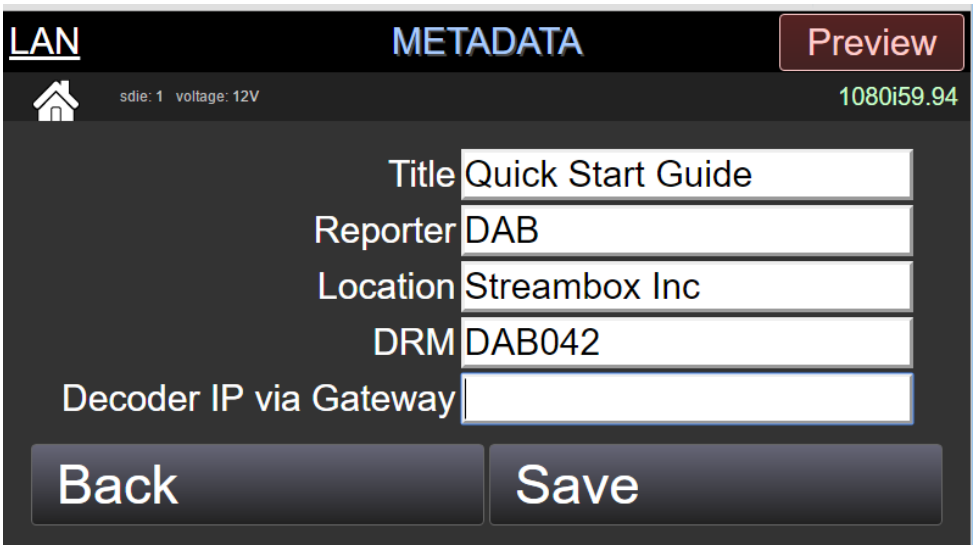
For example, if the IP address was 10.0.3.145 the browser address would be: 10.0.3.145/avenir/
This should open the Advanced web interface for the Micro/Drone (see image below). From here, click the Metadata button to edit the metadata (arrow).



Metadata

You need to enter the appropriate metadata just once to get started (see image below).

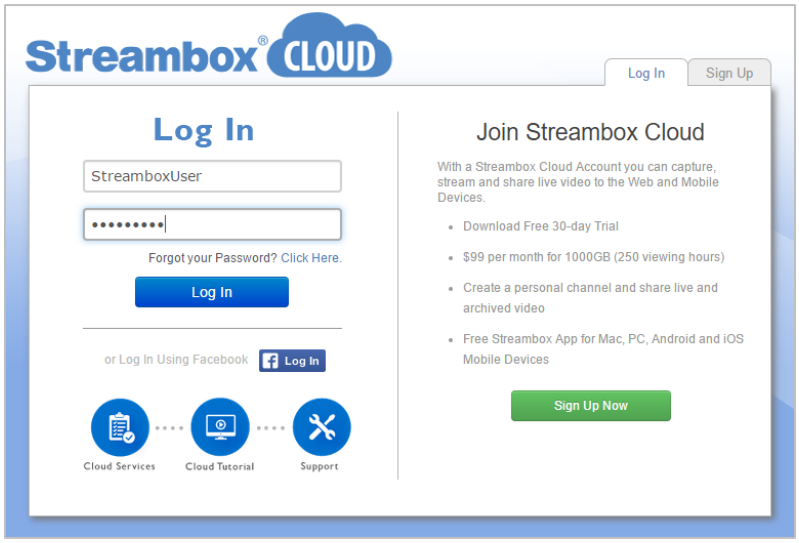
1. Enter Title (any title for a video is fine)
2. Enter Reporter (any Reporter/Contributor name for a video is fine)
3. Enter Location (any Location for a video is fine)
4. Enter your Streambox Cloud or Enterprise Server “Group” name for the DRM. If you do not have a Group name, try your Streambox Cloud Username.
5. Click the ‘Save’ button (now your streams will be received by your Streambox account)



Streambox Cloud Account

You need a Streambox Cloud account for setting up and testing your Avenir Micro or Drone. If you have a Streambox Cloud account you are set, if you don't or want to create a test account follow the steps below.

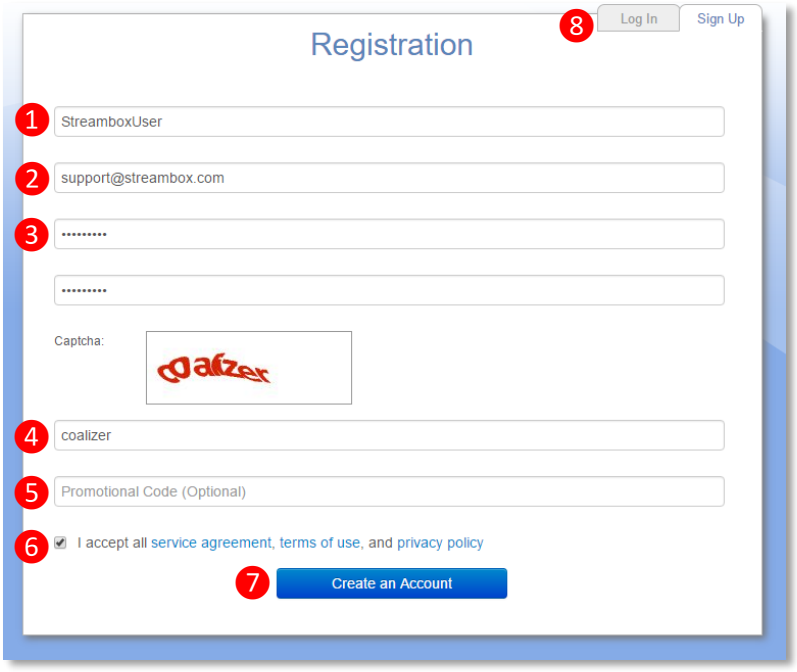
1. Enter http://live.streambox.com in your Internet browser
2. Login if you have an account or click the 'Sign Up' tab or 'Sign Up Now' button if you do not (see below). You may choose to create a separate trial account for testing.



Creating Streambox Cloud Account

It is easy to create a Streambox Cloud Account if you do not already have one.

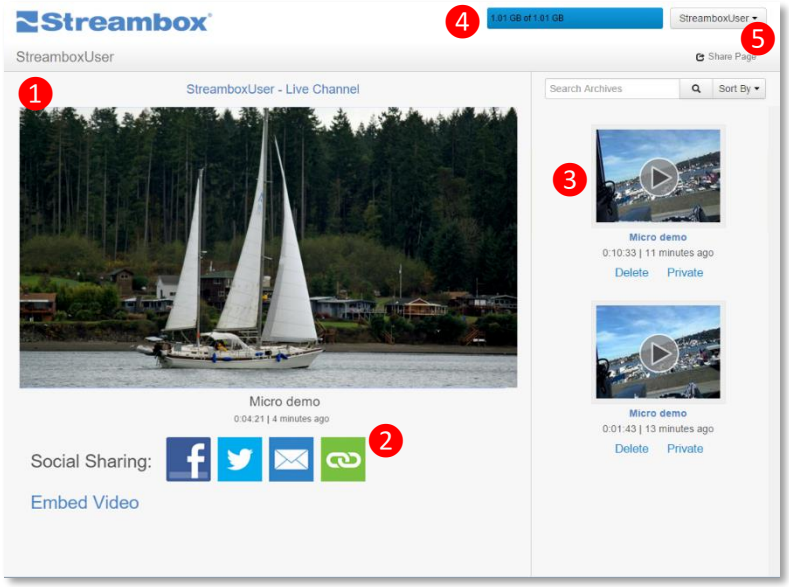
1. Enter a User Name
2. Enter your email
3. Enter a Password
   - Re-enter a Password
4. Enter Captcha string
5. Enter Promotional Code (if any)
6. Check if you accept terms
7. Click 'Create an Account' button
8. Select 'Log In' tab (see prior page)



Personal Live Channel

Streambox Cloud Live Channel Page

1. Live video playback
2. Social media sharing (share live stream via social media or embed in your own website)
3. List of archived videos
4. Space remaining on your account
5. Account Menu

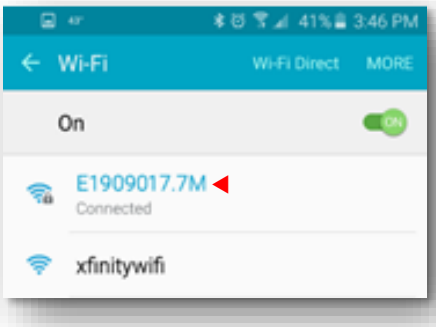


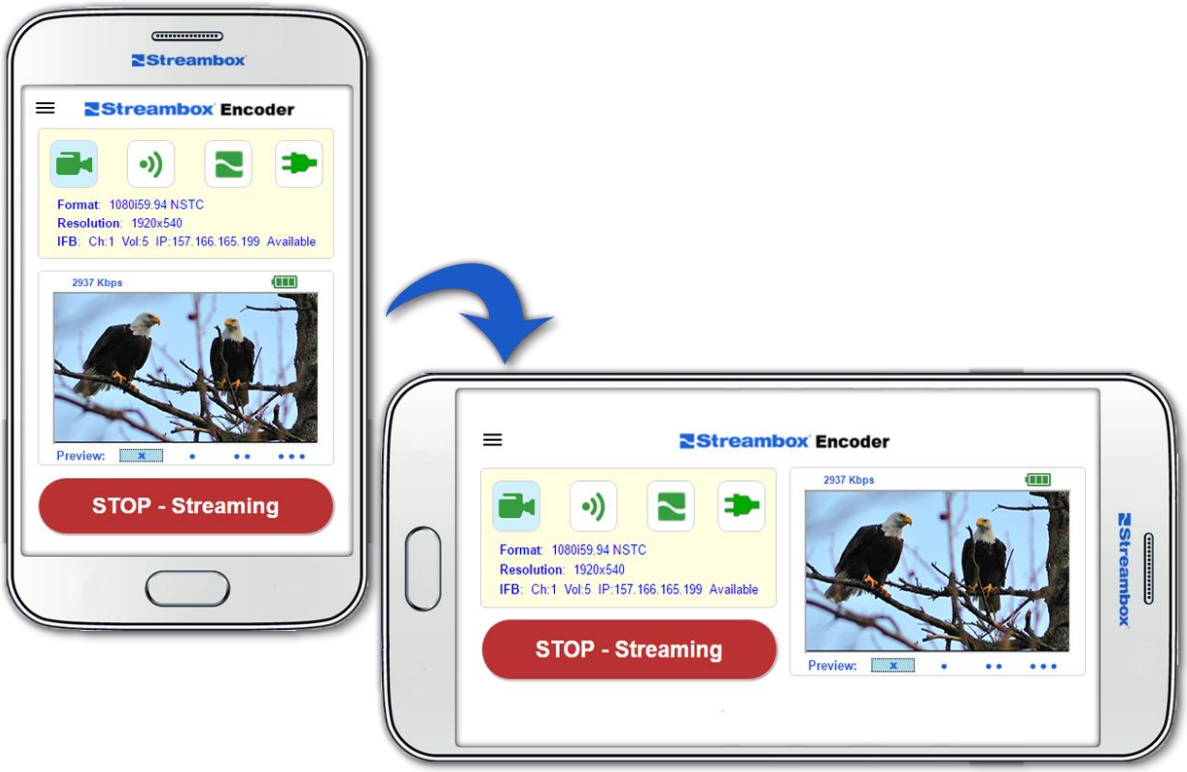
Local Access Point Login

Local AP Remote Control

You can connect directly to a Micro or Drone encoder via a peer-to-peer WiFi connection for remote control. Using a mobile device (iPhone/Android) or a computer with WiFi:

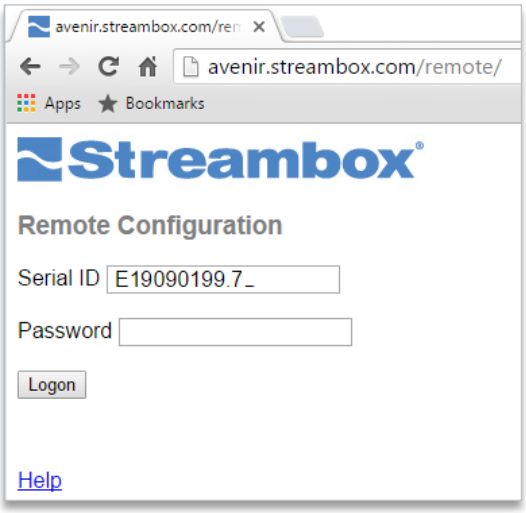
1. From your smart-phone or other WiFi device, scan available WiFi networks (see image on right) for the Micro device name (this will be the same as the serial number). Then connect to that device using 10 ones (1111111111) for a password.
2. From the web browser, enter the URL http://*10.111.111.1 to access* the Micro device's web interface (see image below)
3. Remember to return the remote device (phone or laptop) to the original WiFi connection when you are done.





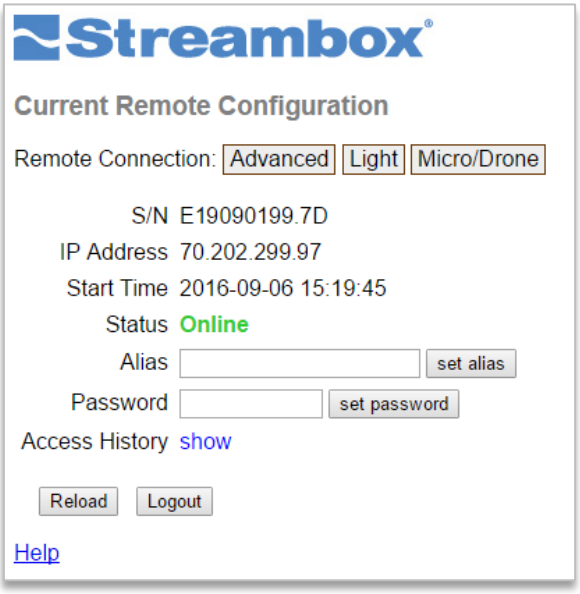
Remote Configuration Access

This page is accessed via the Remote Configuration landing page: http://avenir.streambox.com/remote/ and provides access to the web interface presented below (see image to right). You need to enter the device's serial number and password (omit password if no password was set). Then click the 'Logon' button to open the Current Remote Configuration page (lower image).



If the device is online (see 'Status' line), 3 buttons will appear on the top 'Remote Connection' line:

- **Advanced** (full featured page for advanced users or product support)
- **Light** (a simpler version of the full featured page)
- **Micro/Drone** or **Mobile Site** page (this is the primary user interface and is presented below).



If you want to logon with an alias in place of the serial number, you can set the Alias here. Once set, a 'ud' will be prepended to the base name. That is, if the alias entered was 'Demo,' then the new alias name would be 'udDemo' – which is what would be used for the 'Serial ID' (as in the upper image). Note: you can always log on with the serial number.

You can also enter a remote configuration password which is recommended to restrict unauthorized accesses. If you set a password, do write it down for future use. If you forget the password, you will have to contact Streambox Support to have it reset.

Additional information about 'Remote Configuration' can be found here.[1]

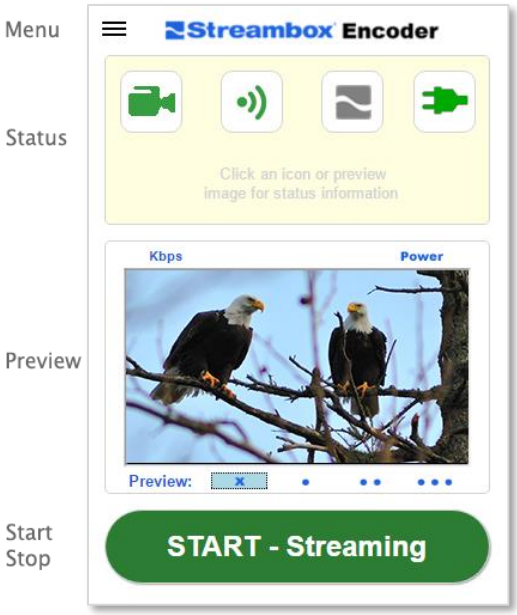
Troubleshoot LCD Issues

The LCD has few known issues. The ones we have observed are listed below.

- LCD Blanks. From time-to-time the LCD can go blank while the Micro/Drone is functioning and indeed can be streaming. To remedy this, hold the upper button down for 15 seconds. This will reset the LCD. Should this fail, the unit will need to be turned off and then turned on again.

[1] http://avenir.streambox.com/remote/RemotePW_1.0.pdf

Mobile Web Interface



Streambox introduces a new simplified Mobile Web Application for remote command and control of AVENIR Micro and AVENIR Drone encoders. The application is web-based so it will work on any Internet browser.

From your Internet browser, go to the remote configuration page (http://avenir.streambox.com/remote/) and enter the device's serial number (and password if previously set). In the dialog window that opens, select the Micro/Drone button on the 'Remote Connection' line. You can refer to *Remote Configuration Access* on page 18. You can also connect directly to the device via WiFi; see *Local AP Remote Control* on page 17.

Home Page

The Home page of the Streambox mobile Web application for Micro and Drone is divided into three segments (see upper image on right):

- **Status Panel** – gives constant feedback about the state of the device; e.g., Camera/Format, IFB, Network, Stream, Power, and metadata information
- **Preview Panel** – displays a preview video (with bitrate and power status display, and preview framerate control). Once calculated, Kbps and Power will be replaced with respective values/icons.
- **START/STOP Button** – starts and stops the video stream

Dropdown Menu

A dropdown menu (upper left corner) offers access to other pages (see image on right):

- **Settings** – allows you to change metadata (Title, Location, and Contributor), select settings presets, select decoder (destination), select networks to be bonded, and select a bitrate
- **IFB** – allows you to turn on/off IFB audio reception, change channels, change volume, set IP for IFB server, audio buffer size, and audio codec
- **Pair Device** – allow you to pair this device with a Streambox Cloud account
- **About** – provides information about the device and how to contact support
- **Advanced** – takes you to the complete user interface for command and control (this is for advanced users or when directed by Streambox Support)

Display Status

Most operations do not require any status display but sometimes it is helpful. There are two levels of status display.

General Condition

At the top of the Home page are 4 status icons: Camera, Network, Streaming, and Power (see figure on right). If the icon is green, then that component is ready for streaming. If the icon is gray, then that component is not yet active (e.g., if streaming is stopped, the Streaming icon will be gray; see lower image). If an icon is red, then there is something preventing the component from working correctly (see network icon in image below). For example, if you do not have Internet connection, the network icon will turn red.

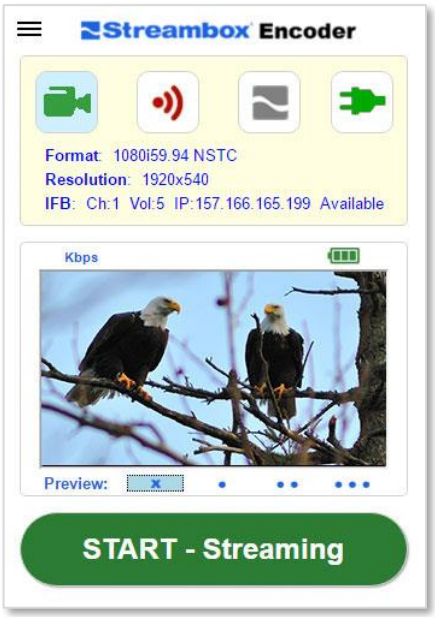
Specific Status

For each status icon and the preview image, there is additional information that is displayed when you click/touch that icon and/or preview image (see image below). When an icon or preview image is selected its background color will change to blue. Pressing the same icon again will turn off the specific status display.

Camera Status

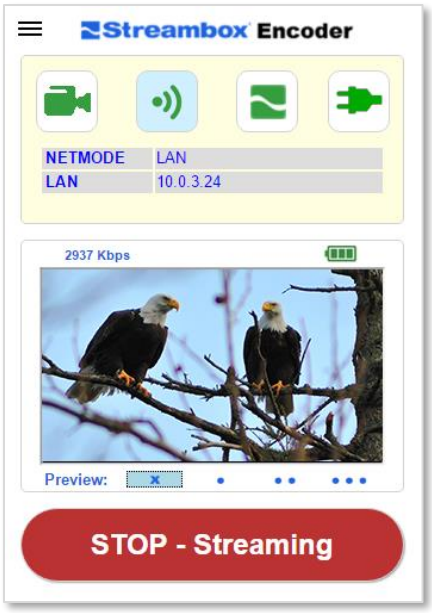
The Camera Status displays the incoming video format (e.g., 1080i59.94), standard (e.g., NTSC or PAL), and outgoing resolution setting (e.g., 1920x540 in the example here).

In addition, Camera Status displays the IFB (interruptible feedback) status. Most news agencies use an IFB channel to remotely communicate with the correspondent or photographer. IFB audio requires a special Streambox server. IFB settings can be modified by selecting IFB on the dropdown menu (see below). Here channel number (1-12), volume (0-10), server IP address, and server status (Available, ~ (for not available), and ON).



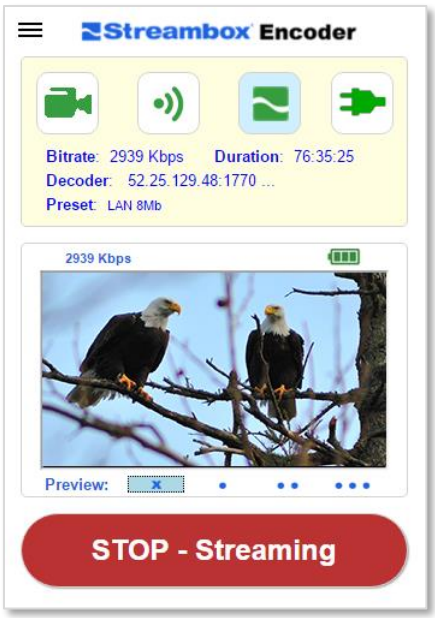
Network Status

The Network Status displays a table of available networks. The top row displays the NETMODE; i.e., which networks are being used to stream (LAN, WWAN, WiFi, and ALL; LAN in this case). Each network row starts with the type (e.g., LAN) or the provider (e.g., T-Mobile, Verizon, AT&T, etc.), followed by its IP address.



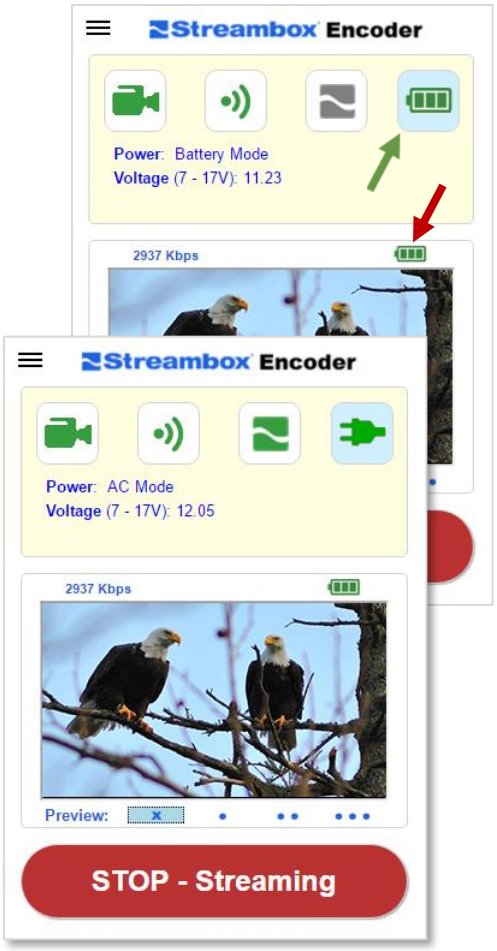
Steaming Status

The Steaming status displays current bitrate, streaming duration, decoder (destination IP), and the selected Preset.



Power Status

The Power status displays the power type (e.g., Battery or Adapter Mode) and the voltage. The voltage must range between 7 and 17 volts DC. In the case shown here, the power type is battery (11.23 volts) in the top example and power adapter (12.05 volts) in the bottom example. If you are on battery power, as you approach 7 volts (say 9 volts) you should replace the battery. If you are using a 2-battery system, in most cases, you can swap one battery at a time without interrupting a stream.



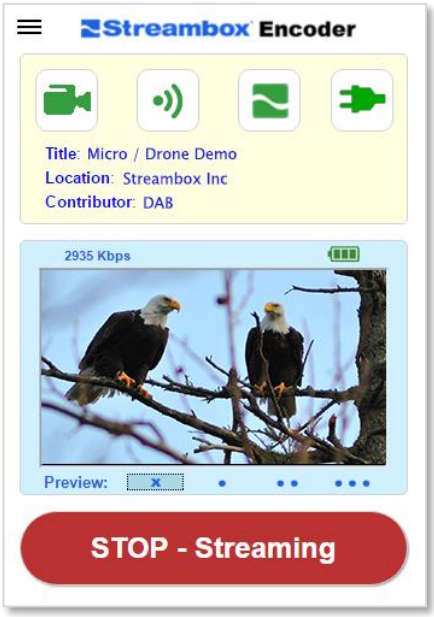
A quick view meter is displayed above the upper-right corner of the Preview (see red arrow). When on battery power, the status icon is a battery (see green arrow), and when using a power adaptor the status icon is a wall plug (see lower image).

Battery Quick Meter:

- 11+ to 17 Volts (green icon, *good*)
- 8+ to 11 Volts (yellow icon, *good*)
- 7 – 8 Volts (red icon, *low - replace battery*)
- < 7 Volts (red-X icon, *under powered*)
- > 17 Volts (green-red icon, *over powered*)

Preview Status

On the Home page is a video preview. The preview framerate is dependent on device and network capacity. Initially, it is always set to Off (x) to limit network burden. In the Off mode, the preview image is updated about once every 5 minutes. You can always update the image by clicking the X button. In addition, three framerates are available for preview: Low (1 dot), Medium (2 dots), and High (3 dots). Note, the higher the preview framerate, the higher the load on your network connection which could impact streaming over networks with low bandwidth.



Additionally, the streaming bitrate is displayed in the upper-left corner and is presented in kilobits per second (Kbps).

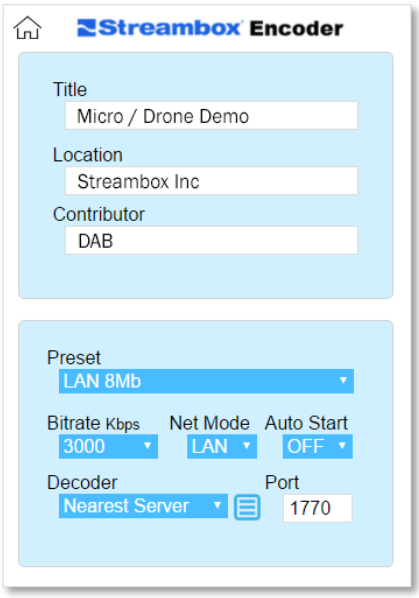
Touching/Clicking on the Preview image displays the Preview status. Here - Title, Location, and Contributor metadata are displayed.

Settings Page

The Settings page offers a place to change basic settings – those used most often (see top image). If, in the rare occasion you require a greater degree of command and control you can select 'Advanced' from the dropdown menu.

Settings Page

You can change the Title, Location, and Contributor in the upper panel of the Settings page. This is metadata that is passed with your video stream and helps identify one stream from another.



Preset: On the lower panel, you can change the Preset from a list of predefined settings that are used to characterize the video stream; e.g., bitrate, format, latency, etc. There are Presets for LAN and WiFi connections, and for Mobile (WWAN) connections, and some for Satellite connections. In the 'Advanced' interface, you can create new presets or modify existing ones.

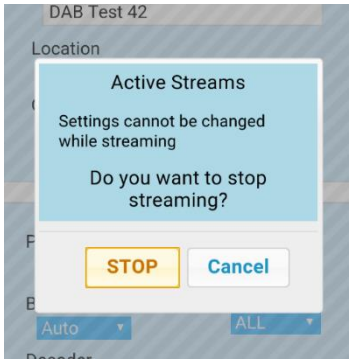
Bitrate: Even though the bitrate is defined in the Preset, you can override that by setting a new maximum bitrate here.

Net Mode: Net mode allows you to define which connected networks will be bonded for stream transmission; LAN, WiFi, WWAN, or ALL (ALL is recommended).

Auto Start: When Auto Start is ON, then streaming starts automatically when the unit is turned on.

Decoder: The decoder sets the destination of your stream. You can choose from one of the Streambox Cloud servers (see image to right) or you can add/delete your own server, decoder, or media player address (using the edit menu). You can also provide a port number where needed.

Active Streams warning: If you select the Settings page while streaming, you will be greeted with a message telling you that changes are not allowed while streaming – do you want to stop streaming (see lower image on right). Click STOP to stop streaming so you can make changes or Cancel to view the page without making changes.



IFB Page

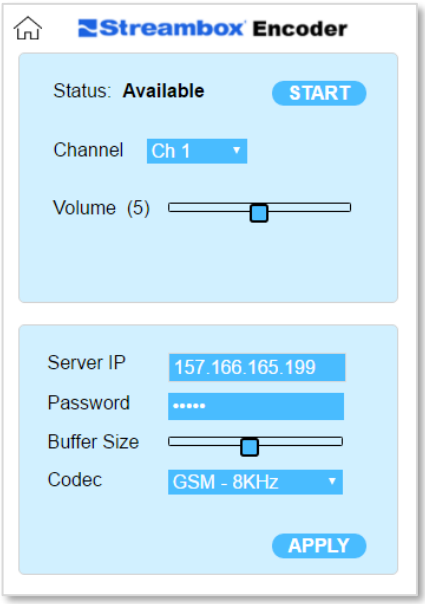
The IFB page provides access to an interruptible foldback/feedback (IFB) server. Additional information can be found above; see *IFB Manager* on page 8.

IFB Settings

The top panel of the IFB page allows the user to **START** and **STOP** IFB transmission, change IFB channels, and adjust IFB volume.

The IFB **Status** reports if the IFB server is “Available” or “Off”, or “ON” and streaming data.

The bottom panel is used to log onto the IFB server and adjusting the buffer size and audio codec. Changes in this panel must be applied (see Apply button).

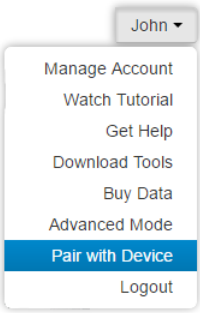


Pair Device Page

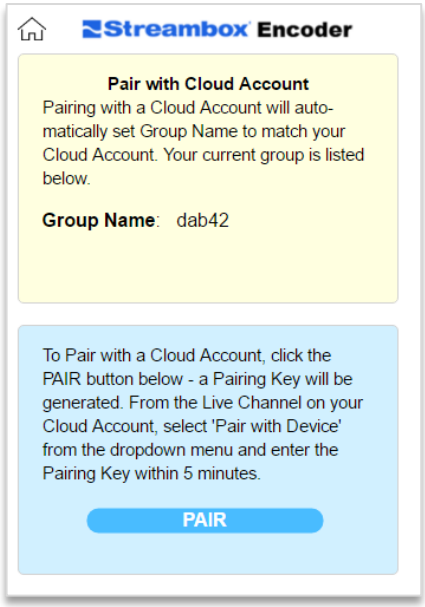
Pair Device allows you to easily pair your Micro or Drone device with your Streambox Cloud account. This allows you to pair your device and start streaming in minutes.

Pair with Cloud Account Page

The top panel lists the current Group Name (DRM). Once pairing is initiated, it usually takes a couple of minutes to view an update on this page. Once that occurs, you are set and ready to stream.



To pair, simply click the ‘PAIR’ button in the lower panel. Within a few seconds you will be provided with a pairing key. Log on to your Streambox Cloud account (see page 14), select ‘Pair with Device’ from the right-hand menu (see image on left). On the ‘Pair with Device’ page enter the pairing key and press the ‘Pair Now’ button. In a few minutes, your device will be paired with your Streambox Cloud account.



About Page

The About page is provided for support information (see figure below). It contains the contact information to call or email Streambox support and information about your device.