



SAFARI MONTAGE® HLS UNICAST ENCODER™

INSTALLATION AND SETUP GUIDE



HLS Unicast Encoder | G1609 Single Stream Encoder

SAFETY PRECAUTIONS

The presence of this symbol is to alert the installer and user to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to produce a risk of electric shock.



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE, AND DO NOT OPEN THE DEVICE. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

- DO NOT apply power to the unit until all connections have been made, all components have been installed and all wiring has been properly terminated.
- DO NOT terminate, change or uninstall any wiring without first disconnecting power from the device.
- This device is supplied with the appropriately rated power cord. The use of any other power cord could cause damage and invalidate the manufacturer's warranty.
- DO NOT connect the power cord to the device if the power cord is damaged.
- DO NOT cut the power cord.
- DO NOT plug the power cord into an AC outlet until all cables and connections to the device have been properly connected.
- The device should be installed in an environment consistent with its operating temperature specifications. Placement next to heating devices and ducts is to be avoided as doing so may cause damage. The device should not be placed in areas of high humidity.
- DO NOT cover any of the device's ventilation openings.
- DO NOT cover or obstruct the device's fan or fan openings.
- If the device has been in a cold environment allow it to warm to room temperature for at least 2 hours before connecting to an AC outlet.



Product Description

SAFARI Montage® HLS Unicast Encoders™ provide a powerful and ultra-reliable, “out of the box” solution for your entire IP Television, digital signage and digital media encoding and distribution requirements.



G1609 HLS Unicast Encoder

SAFARI Montage® HLS Unicast Encoder encode incoming digital or analog video to deliver an HLS Adaptive Bitrate H.264 unicast stream over the IP network to any SAFARI Montage® user, SAFARI Montage® Digital Signage or Classroom Endpoint and provide efficient remote management via an integrated, password-protected, embedded web server.

The SAFARI Montage® HLS Unicast Encoder offers flexible video input options, supporting HDMI, component and composite inputs, and SD through HD resolutions ranging from 480i to 1080p and allows for the selection of three (3) resolutions to output a dynamic, Adaptive Bitrate (ABR) HLS output stream.

Unpacking and Inspection

Ensure that all items are removed and inspected prior to discarding any packing material.

Thoroughly inspect the unit and all contents to make certain all components are present and no damage has occurred in shipping, paying particular attention to connectors. If there is any sign of damage to the unit or items are missing, please contact SAFARI Montage Technical Support. SAFARI Montage Technical Support is available Monday – Friday from 8 a.m. to 6 p.m. Eastern Time, and they may be contacted by telephone at 800-782-7230 or online via <http://www.safarimontage.com/support/>.

Package Contents

- G1609 Standalone HLS Unicast Encoder with:
 - (1) Power Cord
 - (1) 6' RJ45 Cat-5E Patch Cable
 - (1) 6' YPbPr Component Video Cable
 - (1) 6' Video + Stereo Audio Composite Cable
 - (1) 6' HDMI Cable

SAFARI Montage® HLS Unicast Encoder™ Specifications

Video Input	HDMI 1.4 Digital – 480i to 1080p Component YPbPr – 480i to 1080i Composite CVBS – 480i
Video Encoding	H.264; HTTP Unicast, HLS ABR with 3 selectable streams from the following resolutions: 288p/360p/480p/720p/1080p
Audio Input	HDMI, Digital Stereo Audio Dual RCA, Analog Stereo Audio
Audio Encoding	MPEG-4 ACC; 64, 96, 128, or 160 Kbps
Management	Configuration/Remote Status Monitoring Via On-Board Web Server
Software Updates	Remotely Upgradeable Via Web Interface
Network	10/100/1000 Base-T Ethernet
Power	120/220VAC at 1.8 amps
Dimensions	17.44" (W) x 9.5" (D) x 1.81" (H)
Included	6' RJ45 Cat-5e Patch Cable 6' YPbPr Component Video Cable 6' Dual RCA Audio Cable 6' HDMI Cable
Warranty	3 Years

SAFARI Montage® HLS Unicast Encoder™ Front Panel

Buttons/LEDs	Description
Reboot button	Reboots the Device (Unsaved Settings Will be Lost)
RST / UPG button	<p>To Reset All the Settings of the Device to Factory Default:</p> <ol style="list-style-type: none"> 1. Disconnect Power. 2. Press and Hold the RST/UPG Button, then Connect Power. 3. Hold the Button Until CFG LED Flashes 10 Times (about 10 seconds). 4. After the CFG LED Stops Flashing, Release the RST/UPG Button. <p>To Upgrade Firmware Using the USB Port (G1609 Only):</p> <ol style="list-style-type: none"> 1. Disconnect Power. 2. Plug in the USB Drive Containing the Firmware Upgrade. 3. Press and Hold the RST/UPG Button, then Connect Power to Boot-Up the Encoder. 4. The USB LED Will Flash While Copying the Firmware Image from USB Drive (About 3-5 Seconds). 5. Wait Until the CFG LED Stops Flashing. 6. Release the RST/CFG Button, and Wait for the Device to Reboot and Upgrade the Firmware (About 1 Minute). 7. Reset the Cache on your Browser After Upgrading the Firmware. <p>NOTE: The Firmware May Also be Upgraded by Uploading the Firmware Image Via the Web UI Administration Page.</p>
PWR	Indicates that the Device is Powered
CFG	Indicates that the Device is in Configuration Mode
USB	Indicates that a USB Drive is Mounted
1080p	Indicates that the Device is Encoding a 1080p Stream
720p	Indicates that the Device is Encoding a 720p Stream
480p	Indicates that the Device is Encoding a 480p Stream
360p	Indicates that the Device is Encoding a 360p Stream
288p	Indicates that the Device is Encoding a 288p Stream

Installation and Configuration

Please read these instructions in their entirety before you begin:

- Review any questions with Technical Support in advance. Please note that SAFARI Montage Technical Support is available Monday – Friday from 8 a.m. to 6 p.m. Eastern Time, and they may be contacted by telephone at 800-782-7230 or online via <http://www.safarimontage.com/support/>.

SAFARI Montage® System Requirements:

- SAFARI Montage® v7.3.x
- SAFARI Montage® Selective Video Streaming software module
- Clients must meet the System Requirements found at: <http://www.safarimontage.com/support/releases/sm-7.3.x.aspx#system>

Before You Begin:

- Make all connections before powering the encoder.
- Note that all HLS Unicast Encoders ship with a default:
 - Static IP address: 191.53.51.211
 - Gateway: 191.53.51.1
 - Netmask: 255.255.0.0
- SAFARI Montage strongly recommends that video sources be connected directly to the HLS Unicast Encoder with the supplied cabling. SAFARI Montage cannot provide support for third-party distribution and/or switching equipment placed in-line between the video source and the encoder.
- The encoder is designed to work with input sources set to 30 or 60 FPS. Please make certain your video source equipment is set for 30 or 60 frames per second.

Initial Network Configuration:

1. Connect the encoder to an isolated network switch for configuration.
2. Connect a PC to the network switch, and configure the PC with an IP address in the 191.53.51.xxx subnet, e.g., 191.53.51.100.
 - o Be certain to avoid assigning the PC the default encoder IP or gateway addresses (191.53.51.211 and 191.53.51.1).
3. Power the encoder via the supplied power adapter or cord.
4. Configure the network settings as required to conform to the local network addressing scheme.
 - a. All encoders ship with a default static IP address of 191.53.51.211.
 - b. Open a web browser and navigate to <http://191.53.51.211/> to view the encoder Overview page.

The screenshot displays the Safari Montage web interface. At the top left is the logo, and at the top right is the timestamp: 2017-09-16 06:03:29 GMT-0400 (EDT) Up 1 day 6 hours. A navigation bar contains tabs for Overview, Streaming Setup, Network Setup, and Administration. The main content area starts with a 'Welcome' message and a list of device details:

- Device Name: SMG1609_224842
- Model Number: G1609
- Serial Number: 1738 224842
- MAC Address: F8:0D:EA:73:6E:4A
- Firmware Version: 2018061214
- Streaming: HLS

There is a 'Preview On' button and a dropdown menu currently set to 'HLS'. Below this is a table with columns for Video and Audio settings:

	Video		Audio
Input Source	HDMI ??		Analog
Output Format	1080p	720p	480p
Output Bitrate	5Mbps	2.5Mbps	1Mbps
Encoder Status	Freerun		

At the bottom, it says 'Copyright © 2018 SAFARI Montage'.

- c. Click on Network Setup to configure the network settings and login with the default credentials:

Username: **admin**

Password: **Admin123**

Note: To change the password for the GUI go to the Administration Tab.

- d. Set the encoder Hostname, IP address and network configuration as required to unique values that conform to the local network address scheme.

- e. Click the Save and Confirm button to apply the network changes. At this time the encoder will reboot and connect to the network with the new settings.

The screenshot shows the Safari Montage web interface for Network Configuration. The top navigation bar includes 'Overview', 'Streaming Setup', 'Network Setup', and 'Administration'. The main heading is 'Network Configuration', with a sub-note: 'This page allows the user to configure the encoder's network settings.' A red 'CAUTION' banner states: 'Incorrect settings may cause the encoder to lose network connectivity. Recovery options will be provided on the next page.'

The 'Device Network' section contains the following fields:

- Hostname: SMG1609_224842
- MAC Address: f8:0d:ea:73:6e:4a
- IP Address Mode: DHCP Static IP
- IP Address: 172.21.230.225
- Subnet Mask: 255.255.255.0
- Default Gateway: 172.21.230.1
- DNS Server: 172.20.1.55
- NTP Server: (empty)
- Time Zone: (GMT-05:00) Eastern Time (US, Canada)

At the bottom of the form are two buttons: 'Save and Confirm' and 'Cancel'. The footer of the page reads 'Copyright © 2018 SAFARI Montage'.

5. If configuring multiple encoders, repeat the process for each unit, assigning a unique IP address and hostname to each encoder.
6. Once networking configuration is complete, reconfigure the client PC to the local network addressing scheme, confirm the encoder(s) may be reached via the new IP address or hostname and continue configuration.

Encoder Configuration:

Once the encoder(s) have been configured for your network, you may proceed to configure the remaining settings.

1. Power off the encoder.
2. Connect the media source (cable tuner or other device) to the encoder by using the HDMI, component (YPbPr) or composite (CVBS) cables included.
3. Power on the encoder and continue encoder configuration.

Encoder Overview:

The encoder Overview page provides an overview of the current encoder settings and preview of the encoder output. The Overview page is accessible without a username and password.

Directly to the right of the “Welcome!” label is the unit identification link. Clicking on this link allows administrators to easily identify a specific encoder by flashing the CFG LED on the encoder front panel. To disable, simply click on the unit identification link again.

To the right of the device specifications is the output preview player which can be turned on and off as needed to show the current output of the encoder.

SAFARI MONTAGE 2017-09-17 00:47:39 GMT-0400 (EDT) Up 2 days

Overview Streaming Setup Network Setup Administration

Welcome [Unit Identification Link](#)

Device Name: SMG1609_224842
Model Number: G1609
Serial Number: 1738 224842
MAC Address: F8:0D:EA:73:6E:4A
Firmware Version: 2018061214
Streaming: HLS

Preview Off
HLS

Preview Button

	Video			Audio
Input Source	HDMI ??			Analog
Output Format	1080p	720p	480p	MPEG-4 AAC
Output Bitrate	5Mbps	2.5Mbps	1Mbps	128kbps
Encoder Status	Freerun			

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Streaming Setup:

The Streaming Setup page allows users to configure the encoder's settings. After changes are made use the Save and Confirm button. The encoder will reboot and apply the new settings.

SAFARI MONTAGE

2017-09-17 01:02:59
GMT-0400 (EDT)
Up 2 days 1 hour

Overview Streaming Setup Network Setup Administration

Streaming Setup

This page allows the user to configure the encoder's settings. After changes are made use the Save and Confirm button. The encoder will reboot and apply the new settings.

Video Control

Input: Auto detect

Stream Control

	Resolution(H)	Resolution(V)	Bitrate	
Stream 1	1920	1080p	5	Mbps
Stream 2	1280	720p	2.5	Mbps
Stream 3	852	480p	1	Mbps

Audio Control

Input: Auto detect

Bitrate: 128 Kbps

Color Control

Brightness: 128

Contrast: 128

Saturation: 128

Hue: 128

Others

HDCP(Test Mode):

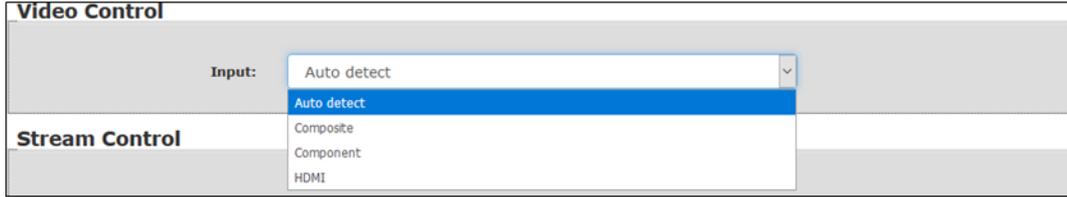
Closed Caption:

Save and Confirm Cancel

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Video Control:

Set the **Input** connection type as needed. By default, **Auto detect** is set to allow the encoder to locate the active input type.



The screenshot shows a control panel with two sections: "Video Control" and "Stream Control". In the "Video Control" section, there is an "Input:" label followed by a dropdown menu. The dropdown menu is open, showing "Auto detect" as the selected option, with other options "Composite", "Component", and "HDMI" listed below it.

Stream Control:

The SAFARI Montage® HLS Unicast Encoder™ provides an Adaptive Bitrate (ABR) HLS stream with three resolution and bitrate sub-stream steps. Clients accessing the ABR stream will play the highest quality sub-stream based on real-time conditions.

Each step is configured as Stream 1 through 3 and resolution and bitrate may be customized to tailor the configuration for various requirements.

The SAFARI Montage® HLS Unicast Encoder™ is capable of downscaling the video input resolution.

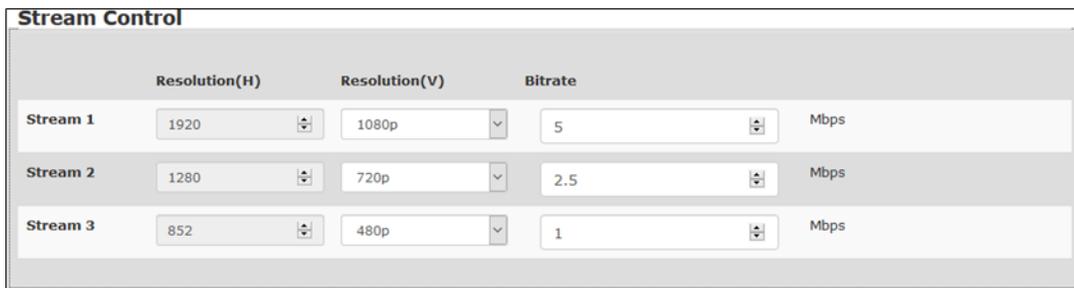
Available Output Resolutions:

1080p / 720p / 576p / 480p / 360p / 288p / 144p

Stream 1 Available Resolutions:

1080p / 720p / 576p / 480p

Setting the three (3) sub-stream video resolutions and bitrates:



The screenshot shows a "Stream Control" interface with a table for configuring three streams. Each stream has fields for Resolution(H), Resolution(V), and Bitrate, with a unit indicator (Mbps) on the right.

	Resolution(H)	Resolution(V)	Bitrate	
Stream 1	1920	1080p	5	Mbps
Stream 2	1280	720p	2.5	Mbps
Stream 3	852	480p	1	Mbps

Note: Bitrates can be set between 0.5 and 8 mbps.

1. Select **Stream 1** output **Resolution (V)** and **Bitrate**. Stream 1 is the highest resolution sub-stream.

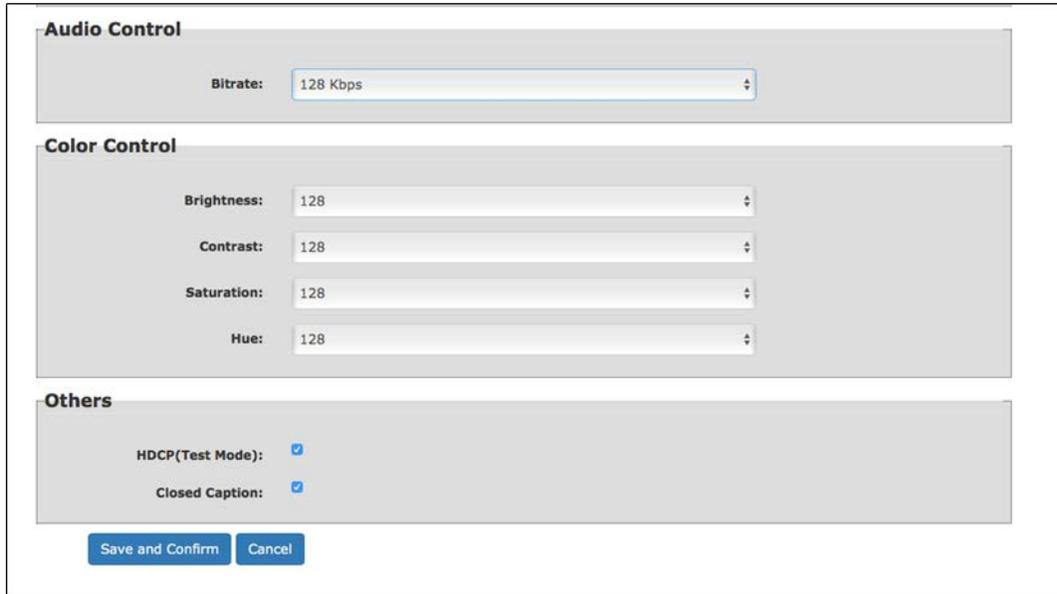
Note: **Stream 1** can be set no higher than the maximum resolution of the input.

2. Select Stream 2 output Resolution (V) and Bitrate. Stream 2 is the middle resolution sub-stream.
3. Select **Stream 3 Resolution (V)** and **Bitrate**. Stream 3 is the lowest resolution sub-stream.

Audio Control:

Use the drop down control to select the Audio Output Bitrate required.

Available Options: 64, 96, 128, 160 Kbps



The screenshot displays a settings interface with three main sections: Audio Control, Color Control, and Others. The Audio Control section features a dropdown menu for Bitrate, currently set to 128 Kbps. The Color Control section includes four dropdown menus for Brightness, Contrast, Saturation, and Hue, all set to 128. The Others section contains two checked checkboxes for HDCP (Test Mode) and Closed Caption. At the bottom, there are two buttons: 'Save and Confirm' and 'Cancel'.

Section	Parameter	Value
Audio Control	Bitrate	128 Kbps
Color Control	Brightness	128
	Contrast	128
	Saturation	128
	Hue	128
Others	HDCP (Test Mode)	<input checked="" type="checkbox"/>
	Closed Caption	<input checked="" type="checkbox"/>

Once all parameters are set remember to **Save and Confirm** all changes.

Administration:

The Administration page allows authorized users to:

- Reboot the encoder remotely
- Reset the encoder to factory defaults (use with caution)
- Upgrade the encoder firmware by uploading a new firmware image
- Change the password used to secure the encoder

SAFARI MONTAGE 2017-09-17 02:18:52 GMT-0400 (EDT) Up 2 days 2 hours

Overview Streaming Setup Network Setup Administration

Administration

Reboot Device

Reset to default
Reset configuration to factory default.

Firmware Upgrade

Model Number:	G1609
Serial No.:	1738 224842
Firmware Ver.:	2018061214

Firmware Image:

Choose file

Upload image
To upgrade the device's firmware, select the required firmware image file then upload it to the device.

Change Password

CAUTION: The new password must contain:

- 6~8 characters
- At least one digit
- At least one uppercase character
- At least one lowercase character

Old Password:
New Password:
Retype New Password:

Save and Confirm

After changing the password use the Save and Confirm button. The encoder will reopen to the Welcome page allowing the user to use the new password.

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Using With SAFARI Montage Products:

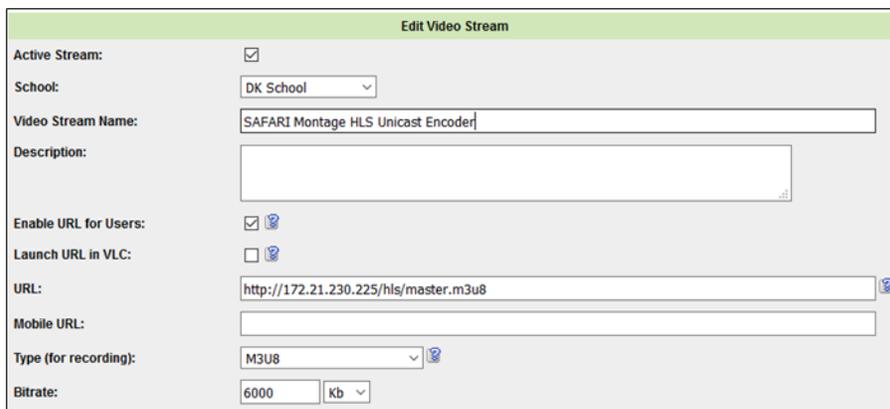
To configure in SAFARI Montage® Selective Video Streaming:

1. Login to SAFARI Montage as an administrator.
2. Navigate to Admin > Selective Video Streaming > Video Streaming.
3. Click on the New Stream link.
4. Select a school, enter a descriptive name and enter the streaming URL in the following format:

http://[Encoder IP Address]/hls/master.m3u8

Ex. http://192.168.1.100/hls/master.m3u8

5. Set Type (for recording) to M3U8.



The screenshot shows the 'Edit Video Stream' form with the following fields and values:

- Active Stream:
- School: DK School
- Video Stream Name: SAFARI Montage HLS Unicast Encoder
- Description: (empty text area)
- Enable URL for Users:
- Launch URL in VLC:
- URL: http://172.21.230.225/hls/master.m3u8
- Mobile URL: (empty text area)
- Type (for recording): M3U8
- Bitrate: 6000 Kb

6. Configure additional stream settings as desired, and click on Add to save the new stream.
7. Click on the stream name to navigate to the stream detail page.

8. Click on the Play icon  to verify playback.

SAFARI Montage HLS Unicast Encoder Configuration Record

Use the table below to record key information regarding your encoder and configuration.

SERIAL NUMBER: _____

PURCHASE DATE: _____

INSTALLATION DATE: _____

DEVICE NAME: _____

USER NAME/PASSWORD: _____

FIRMWARE VERSION: _____

STREAMING CONFIGURATION: _____