livestream studio HD500

All-in-one Portable Live Production Switcher

User Manual

For Livestream Studio version 1.0

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1. Getting started

In a few steps you'll be producing on the worlds most portable all-in-one HD multi camera production switcher. Combine 5 HD sources, 2 media players and 2 graphic overlays into a broadcast quality production, whether for large format screens or streamed to your audience online using the built-in encoder. All this, packed into an ultra-portable rugged form factor and seamlessly integrated with Livestream.com.

The Livestream Studio HD500 is an all in one live production switcher. Its compact size makes it perfect for anyone needing a portable switcher with professional capabilities. With your Livestream Studio HD500, you'll be able to:

- **Mix up to 5 simultaneous video inputs with 2 channels of internal Media Player, and 2 channels of GFX overlays.**

- **Stream HD video to the Livestream platform via the Livestream Studio's built in encoder.**

- **Output a broadcast quality PGM line cut on a variety of digital and analog connectors.**

In the box you'll find:

(1) Livestream Studio HD500 with Windows 7 installed

(1) Blackmagic breakout cable

(1) Carrying Case

(1) Mouse and Keyboard

(1) IEC Power Cable

(1) Livestream Studio USB dongle (shown below)

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Before getting started, you'll want to make sure you have enough space for your entire setup, cameras, monitors, etc.

1 **Remove screws and cover to reveal monitor.**

2 **Attach USB dongle.**

Note: *The Livestream Studio software WILL NOT RUN without the USB dongle attached. Always keep the dongle attached to any one of the Livestream Studio's USB connectors. The software will prompt you if a dongle is not detected.*

3 **Plug-in power cable and switch on the power.**

4 **Press the power button.**

Once the Livestream Studio HD500 is up and running, the Livestream Studio software will launch automatically.
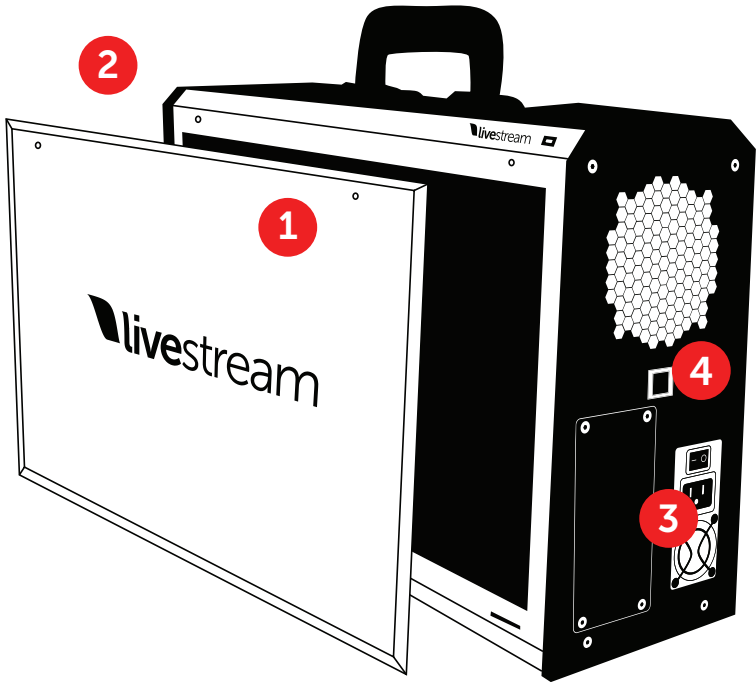
2. User Interface Overview

The Livestream Studio software will launch to the main operating UI.

1   Stream Button

2   Streaming info Pane

3   Record Button

4   CPU Usage Monitor

5   Preview Window

6   Program Window

7   Main Mix Window

8   GFX Overlay WIndow

9   Multiview

10   Audio Mixer

11   Modules (Input Settings, Streaming, Media Editor, Graphics)

Note: *Audio mixer, Input Settings, GFX, Media, and Streaming modules can be moved freely between left and right side windows by dragging and dropping tabs to the desired window.*

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3. Physical Connections

The Livestream Studio HD500 has multiple digital and analog inputs via the BlackMagic Decklink Studio Card and the BlackMagic Decklink Quad Card.

BlackMagic Design® DeckLink Studio Breakout Cable
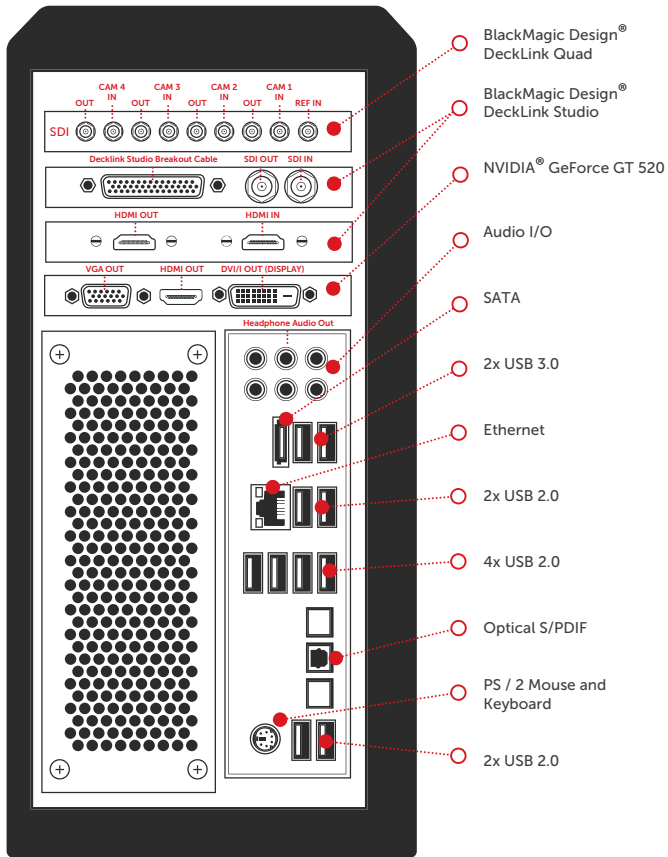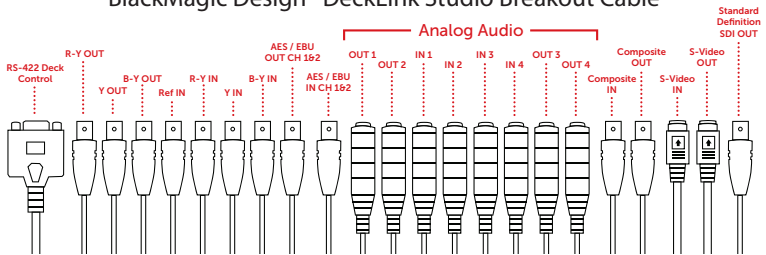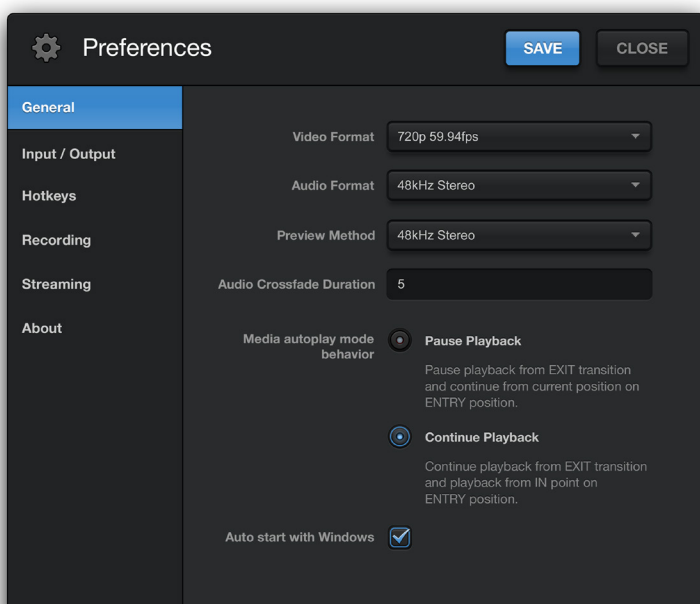

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4. Preferences

Before you begin using the Livestream Studio, you will need to configure your project settings. To begin configuration, click the gear icon in the top righthand corner of the UI.

Note: *Preferences are locked when streaming is in progress. Be sure to set all of your preferences before taking a stream live.*

4.1 General Preferences

Video Format: Defines the project format for Livestream Studio operation. All video input sources must match this selected format. Output format will also match this selection unless downconversion is necessary.
Audio Format: Allows selection of mono or stereo audio operation.
Preview Method: Allows selection of multiview interlaced field viewing. This selection is unavailable when a progressive video format is selected.
**Audio Cross fade duration:** Sets the speed (in frames) for audio cross fades following CUT functionality only. Audio cross fades associated with video cross fades (follow) will follow the 'Speed' setting in the 'Main Mix' window (see 'Preview/Program Switching' section below).

![livestream]

Media Autoplay Mode Behavior: Defines the method for Media Player playback as 'Pause Playback' or 'Continue Playback'.
**Auto Start with Windows:** When selected, Livestream Studio software will launch with Windows.

4.2 Input/Output Preferences

The Livestream Studio will launch with default settings for (4) HD-SDI inputs (via Decklink Quad card) and (1) HD-SDI output (via Decklink Studio card). This configuration can be changed to allow for (5) simultaneous inputs with no live output (streaming or internal recording assumed in this configuration).
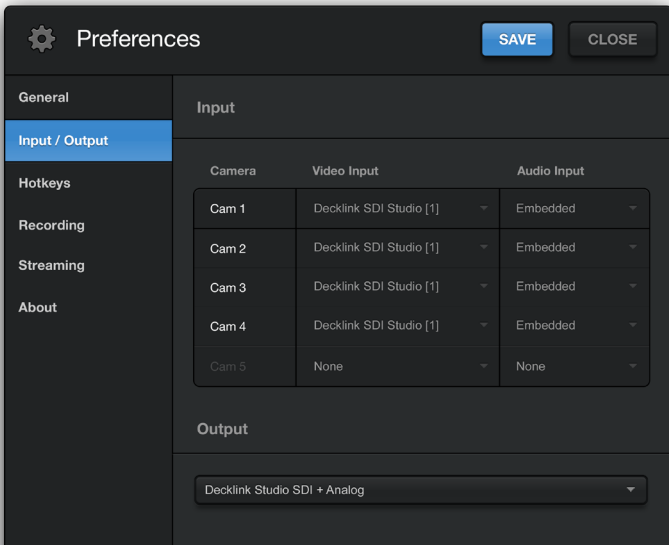
Output Selection: You'll want to select your output source first, as this will lock/unlock the fifth video input accordingly.

![livestream logo]
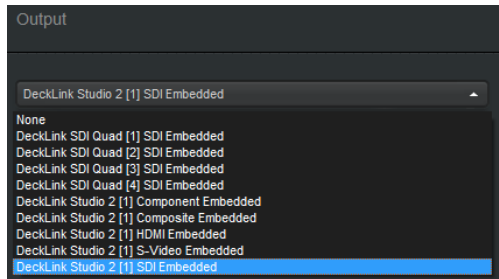
Input Selection: Once your output source is set, you will want to make sure the proper input sources are selected.

Select the desired source from the 'Video input' dropdown for each associated input channel. Then select the desired audio input method from the 'Audio input' dropdown for each associated input channel (Decklink Quad inputs will only support SDI embedded audio. Decklink Studio inputs will support embedded, analog or AES/EBU Audio via the Blackmagic breakout cable).

Note: *Blackmagic analog audio input MUST be accompanied by a video input source to be active. When using analog audio input, be sure to use the Decklink Studio card as one of your video inputs.*
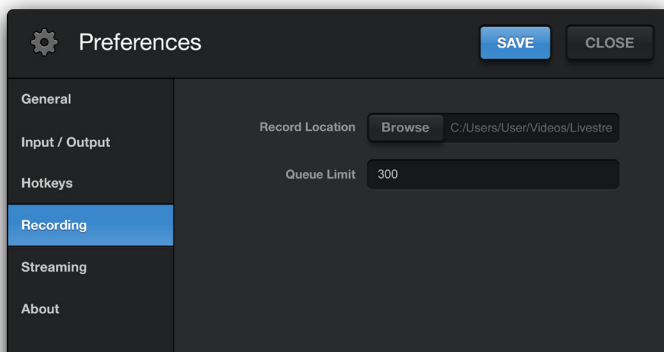
You can also rename each input channel as it will appear in your multiview by changing the associated name under the 'Camera' column of the input selection menu.

4.3 Hotkey Preferences

Allows you to set user defined hotkeys for Livestream Studio operation.
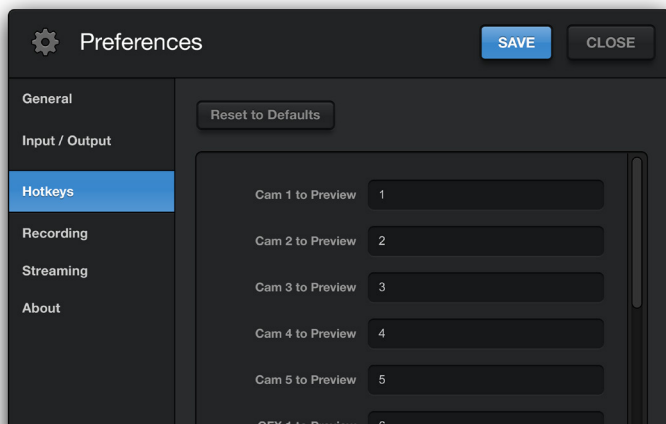
4.4 Recording Preferences

Record Location: Selects the location where Livestream Studio recordings will be saved. Click the 'Browse' button to select your recording location.
Queue Limit: Defines the frame buffer queue limit (in frames) for recording. Once the queue limit is reached, recording will be terminated.

4.5 Streaming Preferences
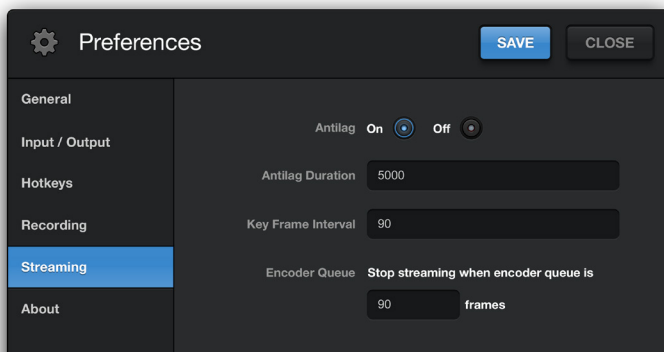
Antilag: When enabled, the antilag feature will work to reduce latency on the viewing end of the stream; if delay on the encoding side builds up past the user selected 'Antilag Duration', the frame buffer will be cleared. In general, this option should remain off unless low latency is a critical component of the broadcast. It should only be used when a solid internet connection is available for streaming.
Antilag Duration: Defines the antilag duration (in frames) for use with the antilag streaming feature (see above).
Key Frame Interval: Set the keyframe interval.
Stop streaming when encoder queue size is: The Livestream Studio will terminate streaming if the queue limit (set in frames) is reached.
Bitrate (Varialbe vs Constant): Variable bitrate selection will optimize the

encoder's bitrate when possible. Constant bitrate selection will maintain outgoing bitrate, regardless of incoming video bitrate.

5. The Audio Mixer

The Livestream Studio accepts up to 8ch of embedded audio on all digital (SDI and HDMI) inputs. When the Decklink Studio card is configured as an input, the or audio mixer or select the desired source from the Input Settings dropdown menu. can also ingest up to 4ch of analog audio via 1/4", or 6ch AES/EBU audio (analog inputs 3-6 can be used as additional AES inputs when analog audio is not in use) via the Blackmagic breakout cable.

Audio mixer control is broken down into two modules: 'Input Settings' and 'Audio Mixer'.

5.1 Input Settings

The input settings module allows you to select 2 audio channels per input source in stereo mode, or a single audio channel per input in mono mode, for use in the master audio mix. By default, channels 1&2 are selected for all input sources in stereo mode. Channel 1 is selected for all input sources in mono mode.

To open the input settings module for a given source, click the gear wheel next to the source's display name in the multiview or audio mixer or select the desired source from the Input Settings dropdown menu.

Available audio channels will be displayed for the selected source. Use the 'L' and 'R' buttons along the bottom of the module to assign left and right audio channels to the input source fader. Each input channel has an individual level meter with gain control.

5.2 Audio Mixer

Once audio channels have been configured for all input sources, the audio mixer can be used to optimize the mix for webcast, recording, or output.


Level Meters and faders: Each input source has a level meter with fader and gain stage control.

Peak Hold: To enable peak hold for a particular level meter, click the lock icon associated with the desired input or master output source.

Air: Pushes the selected input source audio to the master fader.

Follow: Audio transitions will follow video transitions. When selected, the Livestream Studio will fade between sources based on the 'Audio cross fade duration' setting in 'General Preferences'.
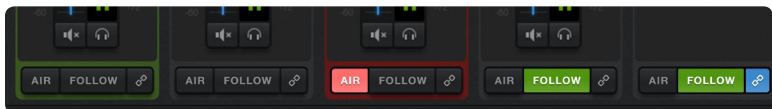
Link (input source fader): Works in conjunction with the 'follow' setting to group multiple video inputs to a single audio input. Click the link icon to select the audio source you would like to use with each video source.

Link (stream out/record out fader): When selected, streaming and recording audio will follow the same fader. Deselecting this option gives the user control over stream out and record out audio faders individually.

Mute: Source faders, as well as master stream and record out faders can be muted individually via the mute button.

Audio Monitoring: Audio monitoring is supported through the Livestream Studio's 1/8" headphone jack. Individual sources can be solo'd or master audio can be monitored. To add a source to the audio monitor, click the headphone icon below the desired audio level meter. Master audio monitor levels can be adjusted via the volume control in the top right hand corner of the UI.

Note: *When connecting headphones to the Livestream Studio, Windows will prompt you to select an audio output device. Select 'Headphones' and close the dialogue. Then reboot the Livestream Studio software.*


6. Preview/Program Switching

The Livestream Studio is designed for traditional preview/program switching, with control available via mouse or user defined keyboard shortcuts. When a source is selected for preview, it is highlighted in green. When a source is selected for program, it is highlighted in red.

6.1 Mouse Control

To preview a source, left click on it. To take a source to program, right click on it. The mouse can also control switching via the 'Main Mix' window. Click the 'Cut' button to cut between preview and program sources. Click the 'Fade' button to fade between preview and program sources; fade time is defined by the 'Speed' (in frames) setting in the Main Mix window. The T-bar can also be used to manually fade between preview and program sources.
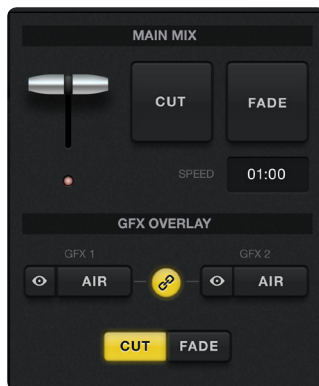
6.2 Keyboard Control

Keyboard controls are defined by user selected hotkeys (see 'Hotkey Preferences' above).

7. Streaming

The Livestream Studio comes with Livestream's proprietary encoder built in, allowing for multibitrate streaming to the New Livestream platform with the click of a mouse. Before starting a stream, you will need to setup a New Livestream account and create an event associated with the stream.

7.1. Livestream Account Creation

The easiest way to stream to the web is via the Livestream Platform. In order to stream through Livestream you must first make an account. Go to www.livestream.com. Click log in located in the top right corner, and choose create an account.

You can either join via your Facebook account or with an email address.
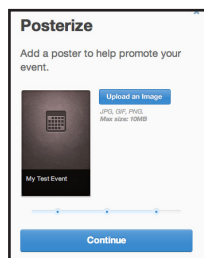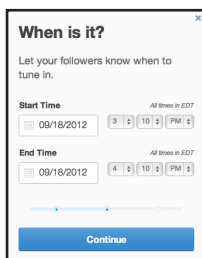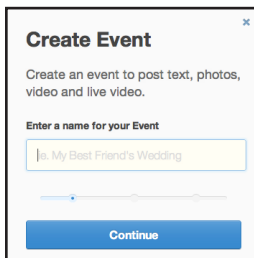Once you have an account you can create events and broadcast live.
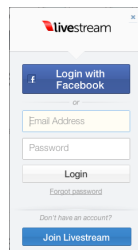
7.2. Creating and Managing Events

To create an event, click on your account name in the top right corner of the plan and select "Create an Event" from the drop down menu.
You will be prompted to set the event title (by default the current date) as well as a start and end time for the event.

Draft Events - By default new event will be in draft mode until you Publish & Announce them. Draft events are not displayed publicly on your account page, but you can broadcast to them to test and view them when logged into your New Livestream Producer Account.

7.3. Log into Livestream

Click on the 'Stream' tab to launch the streaming control module. Enter your username and password to login.
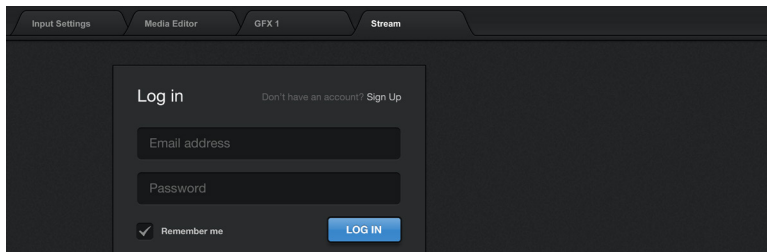
You can create an event within the streaming module or via a web browser. Once the event has been created, select it from the event dropdown menu. Give the stream a title and select your streaming quality from the 'Quality' dropdown menu.

7.4 Quality Selection

Each quality setting has a locked audio and video bitrate associated with it. Quality selection should be based on available upload bandwidth for streaming. To check the speed of your connection, go to speedtest.net and run a speed test. Choose the appropriate streaming profile based on upload bandwidth results.
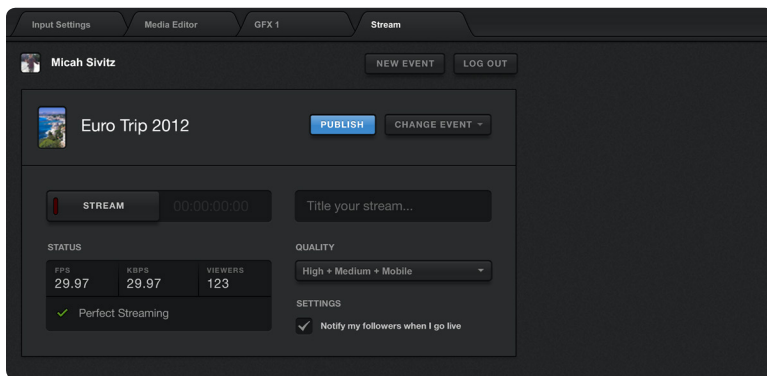
Mobile Quality:

•   Video Bitrate = 130-170Kbps, Audio Bitrate=46-48Kbps

•   Total A/V Bitrate = 190-200Kbps

•   Recommended Upload Bandwidth = 0.5Mbps

Normal Quality:

• Video Bitrate = 300-420Kbps, Audio Bitrate=94-96Kbps

• Total A/V Bitrate = 435-455Kbps

• Recommended Upload Bandwidth = 1.0Mbps

Medium Quality:

• Video Bitrate = 470-620Kbps, Audio Bitrate=127-128Kbps

• Total A/V Bitrate = 650-678Kbps

• Recommended Upload Bandwidth = 1.2Mbps

High Quality:

• Video Bitrate = 1400-1600Kbps, Audio Bitrate=256Kbps

• Total A/V Bitrate = 1750Kbps

• Recommended Upload Bandwidth = 2.2Mbps

Medium + Mobile Quality:

• Video Bitrate = 600-800, Audio Bitrate=176Kbps

• Total A/V Bitrate = 850-880Kbps

• Recommended Upload Bandwidth = 1.3Mbps

High + Medium + Mobile Quality:

• Video Bitrate = 1900-2400Kbps, Audio Bitrate=432Kbps

• Total A/V Bitrate = 2570-2610Kbps

• Recommended Upload Bandwidth = 3.0Mbps

HD + Medium + Mobile Quality:

• Video Bitrate = 2500-2900Kbps, Audio Bitrate=430-448Kbps

• Total A/V Bitrate = 3050-3100Kbps

• Recommended Upload Bandwidth = 3.5Mbps

Once quality selection is complete, click the 'Stream' button to begin the stream.

7.5. Active Stream

When streaming is active, the stream info window and Streaming Log provide live updates on streaming status.

Streaming Info Window: Displays live streaming status info.
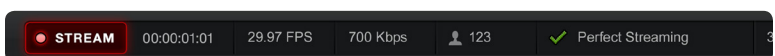
Duration: Displays the current streaming duration.
FPS: Displays the current outgoing fps.

KBPS: Displays the current outgoing Kbps.
Viewers: Displays the number of concurrent viewers connected to the stream.
Stream Status: Displays the current status of the stream.
**Perfect Streaming:** The stream is going out with no issues.
Internet Too Slow for Quality: Upload
bandwidth does not support selected quality.
This is generally an on site IT issue and should
be escalated to the IT department. Changing
quality requires the stream to be stopped and
restarted.
Lost Internet Connection: Internet connection
has been lost. Again, check with onsite IT if this
happens.
CPU Warning: CPU is above 95%.
Streaming Log: Displays live streaming updates.
Antilag Feature Triggered: Antilag has been
triggered based on user selected queue limit
(see 'Streaming preferences above).
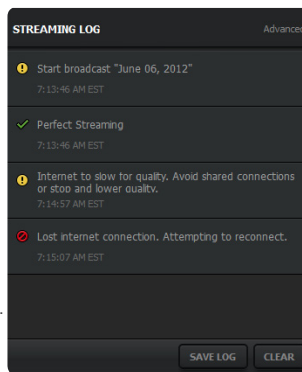
Press the 'Stream' button again to end the stream. When a stream is
terminated, you will be prompted to post the clip live to the event feed, save
the clip as a draft on the event page or delete the server recording.

8. Recording

The Livestream Studio records local files as Motion JPEG .avi at the selected
project format spec. Recordings are saved in a user selected destination
folder (see 'Recording Preferences' above). Click the 'Record' button to begin
recording. Click again to end the recording.

Clips recorded locally on the Livestream Studio are available for immediate
use in Media Players once recording is terminated. Additionally, clips recorded
locally on the Livestream Studio are available for immediate use with
Blackmagic media express, as well as editing software (Adobe Premiere, Fcp,
etc.) with the Blackmagic codec pack installed.

Recording Media: Available recording time is
dictated by available internal disk space. If
necessary, an optional SSD expansion bay
is available. Visit Store.Livestream.com for more info. Additionally, external
devices with transfer speeds of at least 50MB/sec may be used for recording,
though performance may vary with external devices.
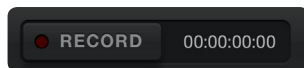
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Note: *When multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/destinations be used.*

9. GFX Channels

The Livestream Studio has two built in GFX overlay channels. When both GFX channels are active, GFX 2 is overlaid on top of GFX1. Click the 'GFX 1' or 'GFX 2' tab to access the corresponding GFX module.

9.1 GFX Templates

To add a template, click the + button at the bottom left of the GFX module. Templates will always be added to both GFX modules. To rename a template, double click on the display name.
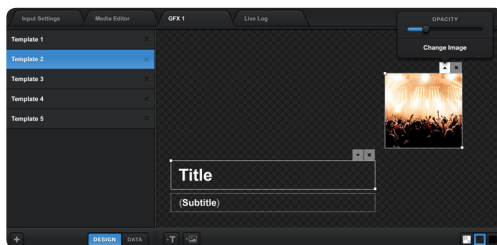
Template Design: Launches template design layout preview window.
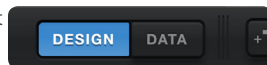
Template Data: Launches dynamic text data window.

Template Background Selection: While working on a template design, you can choose the background to work against. Alpha transparency will be maintained regardless of background selection.

Importing Assets: Once a template has been created, you can add components to it via the text or asset addition buttons.


Text: Text can be added to a template in one of two styles: static or dynamic. Once text has been added, click the arrow in the top right hand corner of the asset within the template to adjust font sytle, size, and color.

Static Text: Single line of text that never changes.

Dynamic Text: Single line of text that can be altered live without changing templates. To edit a dynamic text asset once it has been added:

![livestream logo]

1. Switch to template 'data' view.
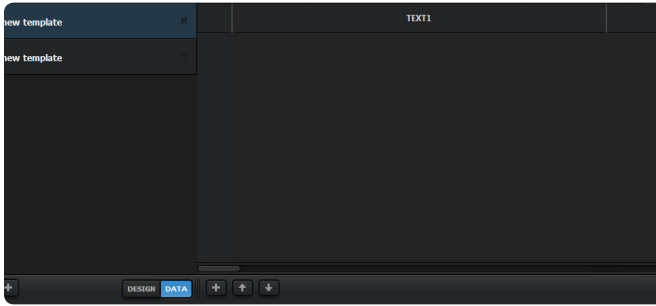
2. Click the '+' button at the bottom of the template to add a dynamic text line. Rename each line by double clicking on the existing name

3. To preview a template with dynamic text, click the 'eye' icon associated with the desired text line. Click the 'Air' button to take it to the template to PGM. Taking a different text line to air will cross fade between the two lines of text.
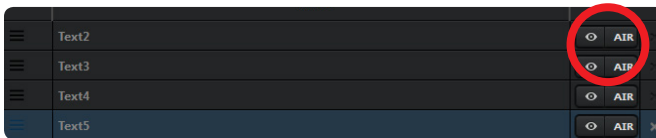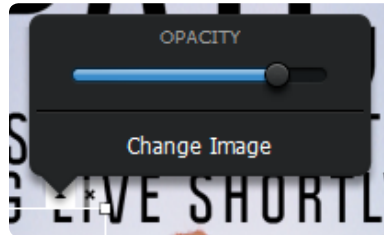

Image Assets: Locally hosted PNG (with alpha support) or JPEG image assets can be added to a template via the Asset Addition button below the template preview. Once added, images can be scaled and positioned with the mouse. Image opacity can also be adjusted by clicking on the arrow in the top right hand corner of the asset within the template.

Note: *When multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/destinations be used.*

GFX Template Layering: A single GFX template can support an infinite number of text or image layers. As assets are imported, they are added to the top layer of the template. Right click on the desired image to move it to another layering position.
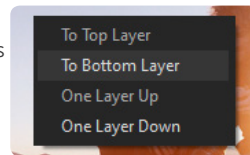
9.2 GFX Mixing and Overlays

GFX mixing is controlled by the 'GFX Overlay' window.

GFX Preview: To preview a GFX channel, click the eye icon for the associated channel.

**GFX Air:** To air a GFX channel, click the 'Air' button for the associated channel.

Link GFX Channels: When selected, both GFX channels will preview or air together.

Cut/Fade Selection: Assigns cut or fade insert method to GFX channels. Fade time is defined by the 'Speed' (in frames) setting in the Main Mix window.

10. Media Player Channels

The Livestream Studio has two built in Media Player channels. Click the 'Media 1' or 'Media 2' tab to access the corresponding Media Player module.
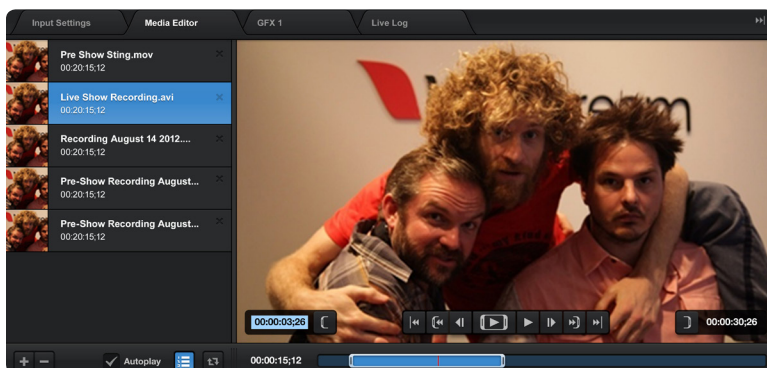
Importing Clips: To add a clip to the selected Media Player channel, click the + button at the bottom left of the Media Player module and select the locally hosted file. You can add as many clips to a Media Player playlist as you want. Once added, you can rename clips by double clicking on their displayed name within the playlist.

Note: *When multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/destinations be used.*

Removing Clips: To remove a clip from the Media Player playlist, click the 'x' next to the clip name.
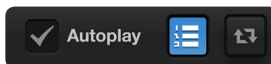
![livestream logo]

Clip Playback Control: To control playback on a clip, use the playback tools at the bottom of the clip preview window.

Setting Clip In and Out Points: To set an in or out point on an imported clip, navigate to the desired timecode and click the In or Out point set button.

Autoplay: When selected, clips will automatically play when a transition to the associated Media Player channel is triggered. Autoplay behavior is defined by the 'Media Autoplay Mode Behavior' setting in general preferences. (see 'General Preferences' above). When a clip is 20 seconds or less from its endpoint, the Media Player preview window will highlight yellow. When a clip is 10 seconds or less from its endpoint, the Media Player preview window will highlight red.

Playlist Mode: When selected, the associated media bin will act as a playlist.

Loop Play: When selected, clips or playlists will loop play until the option is deselected.

Accepted File Types: For compatibility with the Livestream Studio, clips must be Motion JPEG .avi files (same as Livestream Studio recording codec) in the selected project format. If necessary, clips can be transcoded to proper spec via Adobe After Effects.

Clips recorded locally on the Livestream Studio are available for immediate use in Media Players once recording is terminated.

11. Importing video clips into Media Player

In order for video clips to work in Livestream Studio, they must be AVI files with MJPEG Video Codec and uncompressed PCM audio (48Khz).

The video clip resolution and frame rate must match the Livestream Studio's user selected Video Format (Preferences >> General Preferences >> Video Format).

In a future update we will provide a video clip converter built into the Studio software, but for now here is the recommended process for converting video files from external sources using **Adobe Premiere Pro CS6.**

Please note that while we have not tested it, this process should also work with Final Cut Pro on OSX (assuming you also installed the BlackMagic codec and drivers).

11.1 Installing Adobe Premiere Pro

You can choose to install Adobe Premiere Pro on either the Livestream Studio HD500 or another computer. Depending on your need, you can either use the Premiere Pro 30-day trial (functions without restrictions or watermarks), buy a license for $799, or get a subscription license via Adobe Creative Cloud for $75/month or $49/month annually. http://www.adobe.com/products/creativecloud/buying-guide.html

- Downloading and installing Adobe Premiere Pro CS6
    1. Download Installer http://www.adobe.com/cfusion/tdrc/index.cfm?product=premiere_pro
    2. Sign in with a your Adobe ID. If you do not have one, registration is free.

- Once the download is complete, the installer should automatically launch. Follow the steps to complete installation.

- Once Adobe Premiere Pro is installed you will have to install the latest version of the Blackmagic Design Driver.

Note: *if you already have the most updated version of Blackmagic design driver you will have to remove it and reinstall the driver.*

11.2 Downloading and Installing the Blackmagic Design Driver

Note: *Please ensure that Adobe Premiere is installed before performing this step.*

- Go to: http://www.blackmagicdesign.com/support/detail?sid=3945&pid=4012&leg=false&os=win

- Download Desktop Video

- If you have Desktop Video already on your computer, you will have to remove it, then reinstall the driver. If you do not have Desktop video skip to Step 3

- Open the Desktop Video file downloaded
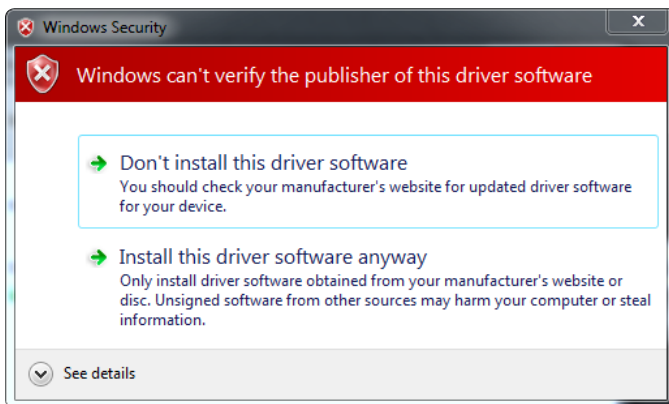   1. Once open, select remove all files

![livestream logo]
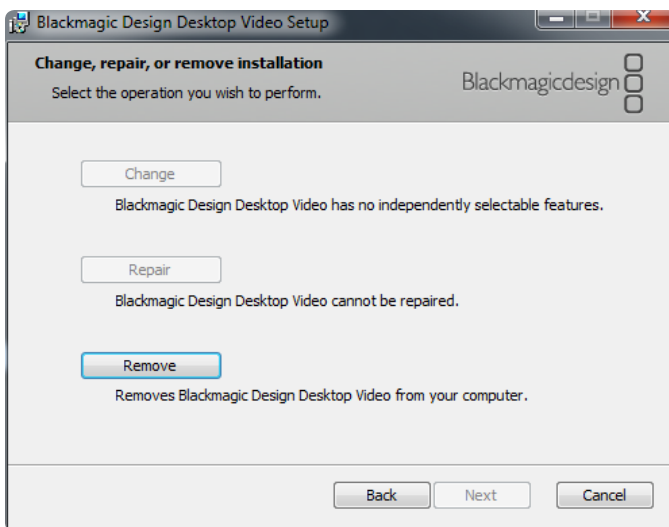
2. Select remove, then follow the steps to complete the uninstall
3. Restart the computer

- **Installing DesktopVideo**
    1. Open the saved Desktop Video file
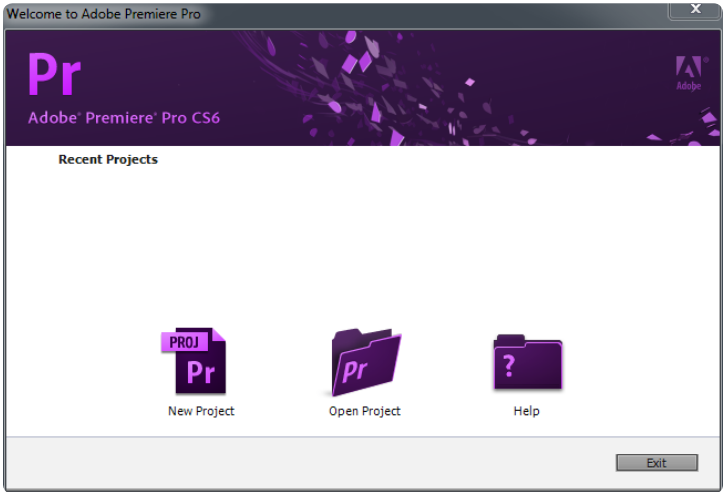   2. Follow the steps to complete installation
       Note: *Windows Security might prompt you to verify the publisher:*
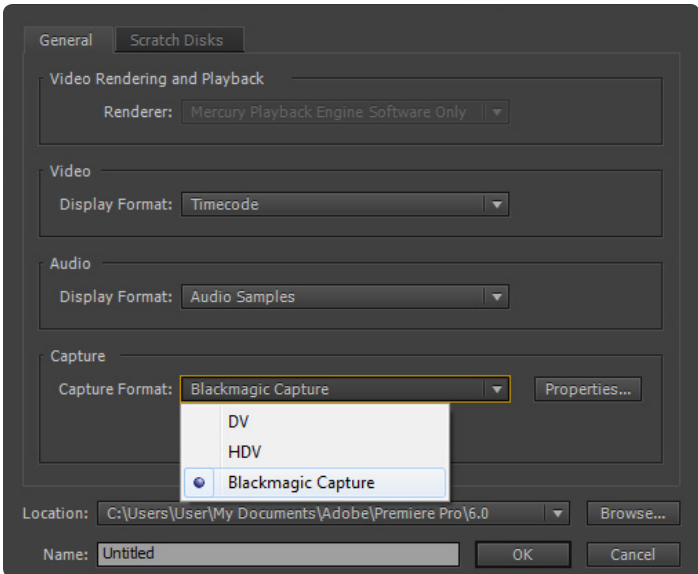

    3. Select "Install this driver software anyway".
    4. When the driver completes installation, restart the computer

11.3 Converting Video Files using Adobe Premiere Pro
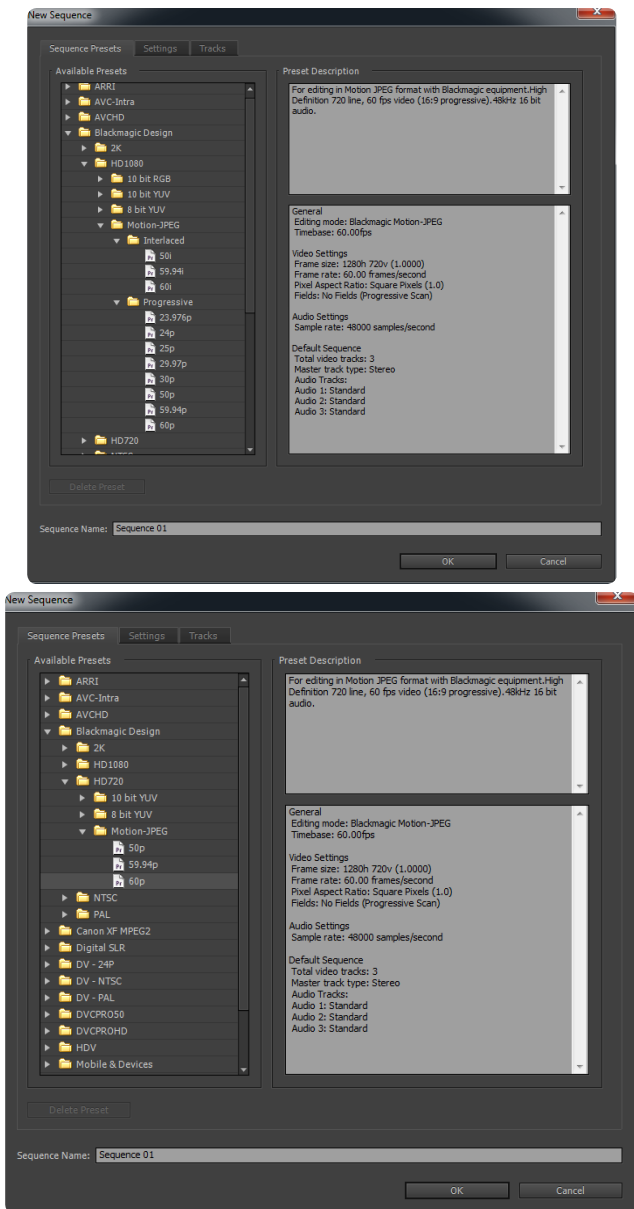
- Open Adobe Premiere Pro and Choose a new project:

- Select your capture format:

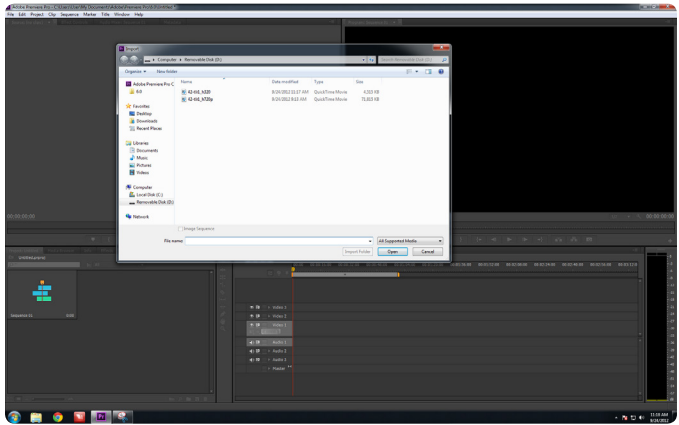- Select your sequence settings.
Important: *These should match the Video Format setting of your Livestream Studio Project.*

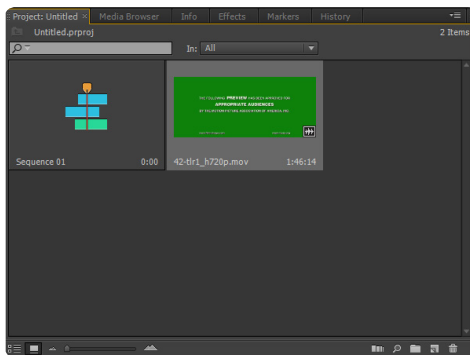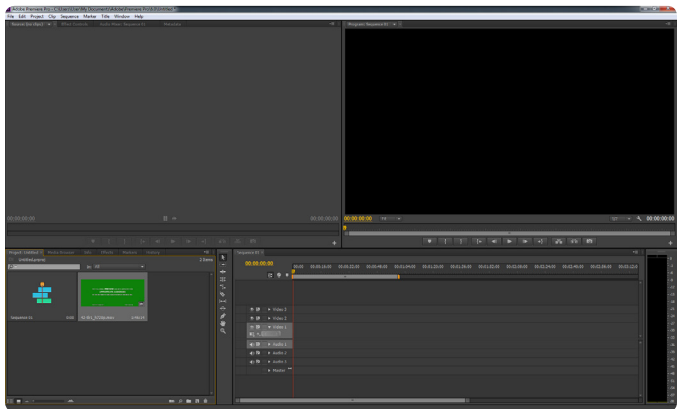Here are two examples:

- **Import your video clip.**
  1. Go to: File>Import

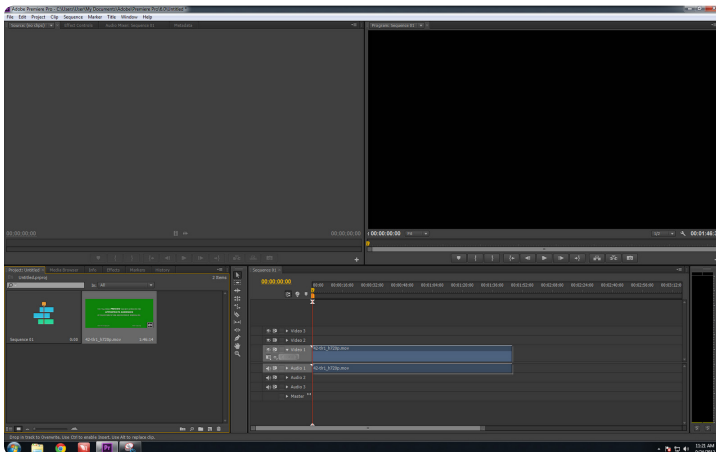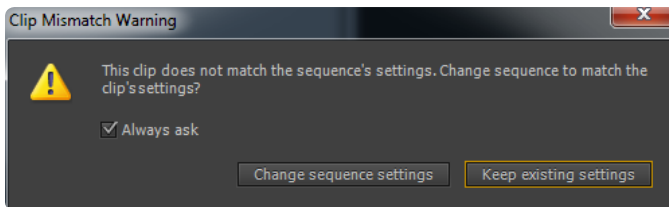2. Select your video file and select open

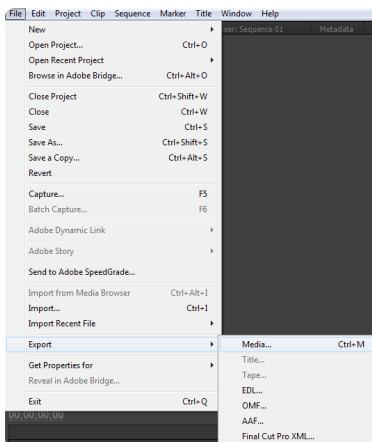The imported file should appear in your clip bin:

• Drag your clip into the timeline.
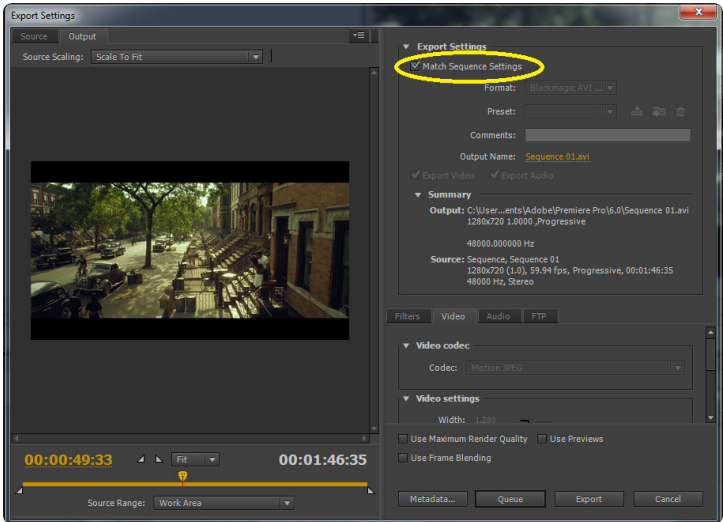
1.   You will be prompted to either Change or Keep Sequence Settings
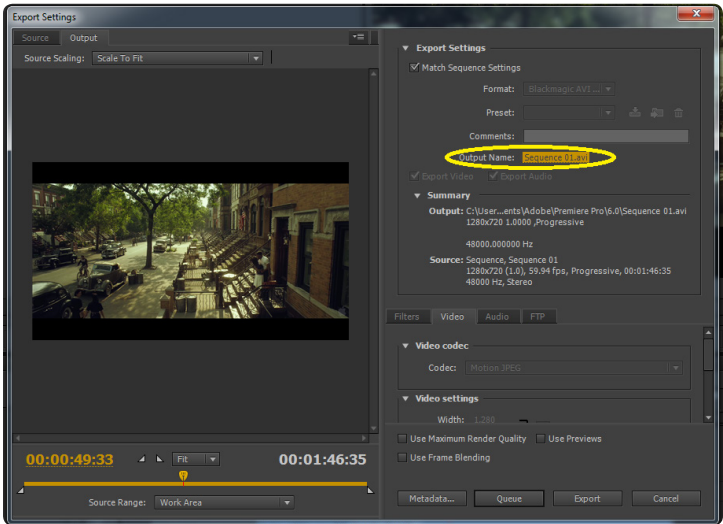2.   Choose "Keep Sequence Settings"

•   Exporting video clip.
   1.   Go to File>Export>Media

livestream

- Select "Match Sequence Settings"

- Enter an output name

- Click Export
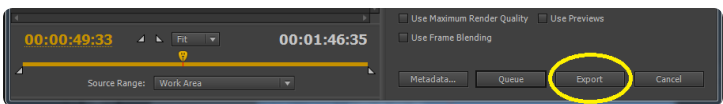
- Once exporting you should see this window:
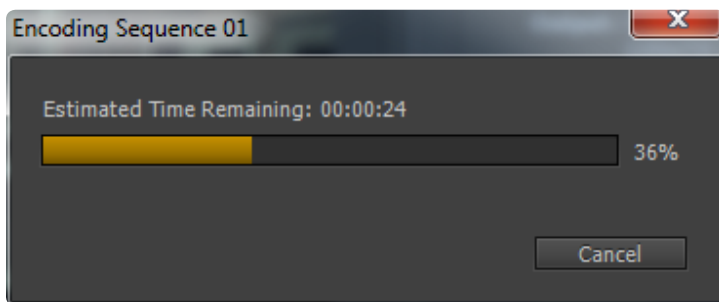
See section 10 about adding clips to the media player.

12. Tech Specs

Live Video Input

- 5 simultaneous HD/SD SDI live video sources when configured for streaming or recording (no live video output)
- Or 4 simultaneous HD/SD SDI live video sources when live video out is enabled

Media Sources

- 4 integrated digital media sources for video & graphics playback
- 2 Media Players (video clip playback)
- 2 GFX (graphics)

Live Video Output

- 5 live outputs
- 1 x HD/SD SDI (Program)
- 1x HDMI (Program)
- 1 x Composite (Program)
- 1 x Component (Program)
- 1 x S-Video (Program)

Built-in Multiview

- On-screen full field rate multiview of all live inputs, Preview, Program Out, 2 GFX and 2 Media Player
- Audio PPM overlay with peak hold feature on all inputs and outputs

- Resizable layout allowing hiding of all controls to maximize multiview screens
- Latency from SDI input to multiview : 5 Frames

Video Switcher/Mixer

- 1 x Mixer & Effects Bank (M/E) with no upstream keyer
- Transitions
- Fade (Auto transition with adjustable duration in frames, manual via on-screen T-BAR or keyboard shortcuts)
- Cut
- SMPTE Wipes**

Graphics Downstream Key

- 2 x Graphics DSK (downstream key) channels, one channel for GFX1 and one channel for GFX2
- Independent or locked transition controls (fade/cut), positioning**, scaling**, cropping**
- Preview on multiview

Graphics & Titling (GFX 1 & 2)

- Load JPG or PNG files (full transparency support with PNG files)
- Add text (set position/font/size/color) over any loaded image file within the GFX1 or GFX2

Video Clip Playback (Media Player 1 & 2)

2 x Media Player sources with :
- Eject/Load clip
- Play
- Pause/stop
- Audio/Video Scrubber
- Timecode indicator
- Seek to timecode
- Mark In/Mark Out (set and type in option)
- Loop
- Auto-play on transition

Recording

- AVI MJPEG with uncompressed audio
- Configurable bitrate
- Interlacing and timecode support

Recording Capacity

- ~10 hours at 1080i (Using 500Gb built in Hard Drive with recorder set to record at 100Mbps MJPEG AVI).

Live Streaming

HD live streaming via Gigabit/100/10 built-in Ethernet
- Presets in up to HD 720p
- Multiple Adaptive Bit-Rates including mobile quality for playback over 3G on mobile devices (iPhone/Android)
- Simultaneous MP4/AAC file archive of all bitrates renditions

Audio Inputs

- Up to 5 stereo inputs from SDI Embedded inputs with user selectable left/right channel from any of the 8 SDI embedded audio channels
- 4 Channels of professional balanced analog audio via 1/4" jack connectors

Audio Outputs

- Stereo out from mixer embedded in the SDI output
- 1 Stereo 1/8" for live headphone monitoring (Ability to select master output mix or individual inputs)

Audio Mixing

- Integrated multi-channel audio mixer for internal and external audio sources, outputs, stream and headphones
- Incorporated video switcher follow feature with audio crossfade support when fading two video source

Supported Formats

- HD: 720p50, 720p59.94, 720p60, 1080PsF23.98, 1080p23.98, 1080PsF24, 1080p24, 1080PsF25, 1080p25, 1080PsF29.97, 1080p29.97, 1080PsF30, 1080p30, 1080i50, 1080i59.94 and 1080i60
- SD: 625/25 PAL, 525/29.97 NTSC, 525/23.98 NTSC

Playback Media Formats

- GFX: JPEG, PNG image files with transparency support
- Media Player: AVI MJPEG with uncompressed audio, MP4 (AAC/H264)**

Record Media Formats

• AVI MJPEG with uncompressed audio

Operating System

• Windows 7 Professional (64 bit)

Built-in Display

• Integrated 17" WUXGA+ (1920X1200) HD Display

CPU

Intel "Sandy Bridge-E" Core i7 3930K 3.2 GHz Six-Core processor, 12MB L3 cache, 130W, Socket LGA 2011

Graphics Card

• Nvidia GeForce GT 520 Commercial Series PCI Express graphics card

RAM

• 8GB4 total Media Player3 1333 MHz RAM (non-ECC) (2GB x 4 DIMM triple-channel configuration)

Processing

• Video: 4:2:2, 10 bit Color (REC 601, REC 709)
• Audio: 48 kHz, 24-bit
• REF IN/Genlock (Requires genlocking the two Blackmagic cards via two separate connectors)

System Physical

• 5.8" (D) x 12.40" (H) x 16.75" (W)
• ~ 15 lbs

Built-in Video Input/Output Cards

• Blackmagic Design DeckLink Quad (PCI)
• Blackmagic Design DeckLink Studio (PCI)
Included in the box

** Feature not yet available but will be made available via free online software update.

Warranty

Livestream provides a limited one (1) year warranty for the Studio HD500 and a thirty (30) day limited warranty for the carrying case and any peripherals. The limited warranty covers defects in components and workmanship as well as functionality of the Livestream Studio software. The warranty start date begins on the day the unit is shipped.

The limited warranty does not cover the following:

•   **Software, including the operating system and any third party software**

•   **Failure due to viruses, bugs, or any type of malicious software**

•   **Hardware or components not included in the original assembly**

•   **External computer hardware products and peripherals**

•   **Problems that result from:**
    1.   Accident, abuse, or misuse
    2.   Servicing not authorized by Livestream
    3.   Usage that is not in accordance with product instructions
    4.   Failure to follow the product instructions or failure to perform preventive maintenance
    5.   Failure to follow Livestream's technical support or RMA instructions including improper packaging

•   **Product that has been damaged by actions that are beyond Livestream's control, including for example, impacts, fluids, fire, flood, wind, earthquake, lightning or similar disaster, war, strike, lockout, epidemic, destruction of production facilities, riot, insurrection, or material unavailability**

Livestream will replace or repair any component or system free of charge. Livestream will ship free of charge any item covered by warranty back to the customer in the continental United States via ground delivery. Any other shipping fees will be covered by the customer. Customer must insure both ways if insurance is desired. Livestream does not insure RMA shipments. To request an RMA, go to help.livestream.com and fill out a support claim.