



# Impulse 200E Network Encoder and Streamer

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## User Manual



## Copyright

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## About Sencore

Sencore is an engineering leader in the development of high-quality signal transmission solutions for the broadcast, cable, satellite, IPTV, telecommunications, and professional audio/video markets. The company's world-class portfolio includes video delivery products, system monitoring and analysis solutions, and test and measurement equipment, all designed to support system interoperability and backed by best-in-class customer support. Sencore meets the rapidly changing needs of modern media by ensuring the efficient delivery of high-quality video from the source to the home. For more information, visit [www.sencore.com](http://www.sencore.com).

## Revision History

| Date       | Version | Description  | Author |
|------------|---------|--|--------|
| 10/10/2018 | 1.0     | Initial Release  | WAV    |
| 07/11/2019 | 1.1     | Update for RTMPS Feature                                 | BCR    |
| 04/06/2020 | 1.2     | Rework for YouTube/Facebook Update                       | BCR    |
| 04/30/2020 | 1.3     | Proof-reading/Changing pictures/Updating Unit Model Name | ACP    |

## Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
- The mains plug of the power supply cord shall remain readily operable.
- **Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - When the power-supply cord or plug is damaged.
  - If liquid has been spilled, or objects have fallen into the product.
  - If the product has been exposed to rain or water.
  - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of the controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
  - If the product has been dropped or damaged in any way.
  - The product exhibits a distinct change in performance.

## SAFETY PRECAUTIONS

**There is always a danger present when using electronic equipment.**

*Unexpected high voltages can be present at unusual locations in defective equipment and signal distribution systems. Become familiar with the equipment that you are working with and observe the following safety precautions.*

- Every precaution has been taken in the design of your Impulse 200E to ensure that it is as safe as possible. However, safe operation depends on you the operator.
- Always be sure your equipment is in good working order. Ensure that all points of connection are secure to the chassis and that protective covers are in place and secured with fasteners.
- Never work alone when working in hazardous conditions. Always have another person close by in case of an accident.
- Always refer to the manual for safe operation. If you have a question about the application or operation, email [ProCare@Sencore.com](mailto:ProCare@Sencore.com).
- **WARNING** – To reduce the risk of fire or electrical shock, never allow your equipment to be exposed to water, rain or high moisture environments. If it is exposed to a liquid, remove power safely (at the breaker) and send your equipment to be serviced by a qualified technician.
- To reduce the risk of shock, the Impulse 200E must be connected to a mains socket outlet with a protective earthing connection.
- For the Impulse 200E, the mains plug is the main disconnect and should remain readily accessible and operable at all times.

**⚠ Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

## Package Contents

The following is a list of the items that are included along with the Impulse 200E:

1. Quick Start Guide
2. AC Power Supply
3. A/V Adapter Cable

*Note: If any option cables were ordered with the Impulse 200E, they will be included in the box as well.*

If any of these items were omitted from the packaging of the Impulse 200E, please call 1-800-SENCORE to obtain a replacement. Manuals for Sencore products can be downloaded at [www.sencore.com](http://www.sencore.com)

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# Section 1 Overview



## Introduction

This section includes the following topics:

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| 1.1 | Product Introduction.....  | 9  |
| 1.2 | Front Panel Overview ..... | 9  |
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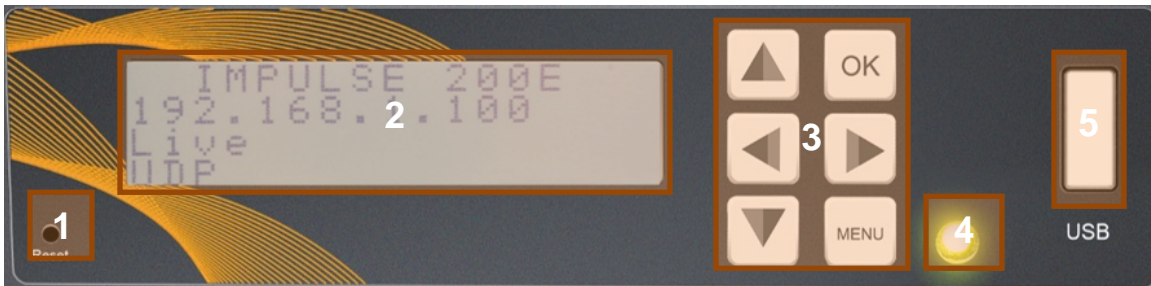


## 1.1 Product Introduction

The Impulse 200E is a cost-effective single-channel encoder and streamer for audio and video processing and transport. It supports professional encoding and IP streaming for live encoding, uploading, and playback.

## 1.2 Front Panel Overview

The Impulse 200E can be controlled from the front panel with the LCD screen and buttons that are shown below in Figure 1. A detailed description of using the front panel can be found in Section 3.



**Figure 1: Impulse 200E Unit Front Panel**

1. Reset Button: pressing this will reboot the Impulse 200E.
2. LCD Screen: shows menus for user status and unit control
3. Up, Down, Left, Right, OK and Menu Buttons: provides navigation and entry within LCD screen menus
4. Status Indicator: light indicates input signal presence (green) or absence (red)
5. USB Port: purposed for storage while using the record and playback features.

**Note:** the Impulse 200E is only compatible with the FAT32 USB/SD format.

### 1.3 Rear Panel Overview

The Impulse 200E comes standard with all of the hardware back panel features shown and listed below except where noted as an Impulse 200E-01 exclusive option. Refer to the Figure 2 at the top of the next page.



**Figure 2: IMPULSE 200E Unit Back Panel**

1. DC Input: power input (12V – 2A)
2. RJ45: management and UDP output port (10/100)
3. Digital Video Output Connector (HDMI): HDMI pass-through port
4. RS232 Port: future use
5. SD Card Slot: purposed for storage while using the record and playback features  
**Note:** the Impulse 200E is only compatible with the FAT32 SD Card format.
6. Audio In: for use with external audio source
7. Digital Video Input Connector (HDMI)
8. CVBS/CCIN: closed caption input
9. SDI In (exclusive to the Impulse 200E-01)

## Section 2 Installation



### Introduction

This section includes the following topics:

|     |                                       |    |
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| 2.4 | Network Setup via Front Panel .....   | 12 |

## 2.1 Installation Preparation

This chapter contains information for the technicians installing the equipment.

Before starting, confirm the device is in good condition and the necessary cabling is present to complete the installation.

When unpacking the unit, inspect it for shipping damage. If any damage is found, contact Sencore customer service.

## 2.2 Equipment Wiring and Connection

Only use the supplied power connector or a 12V, 2A equivalent.

Connect to the RJ45 port with a CAT5 cable. Access the Impulse 200E management interface with a PC on the same network or directly connected to the Impulse.

## 2.3 Maintenance

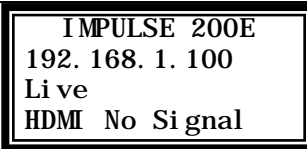
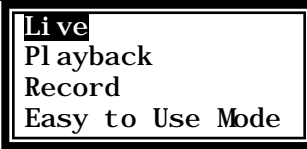


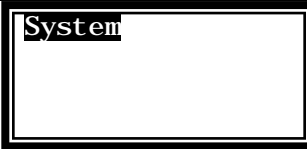


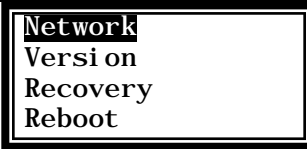
The Impulse 200E is a maintenance-free piece of equipment. There are no user serviceable parts on the inside of the unit.

## 2.4 Network Setup via Front Panel

The Impulse 200E can be accessed on a network connection to allow remote management. For these features to work, the network settings for the Impulse 200E must first be configured properly for the network it is connected to.

### 2.4.1 Static IP Address/Subnet Mask/Gateway

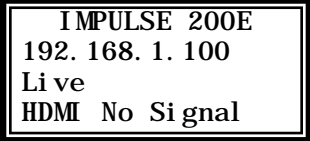
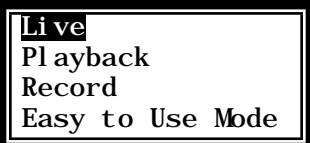


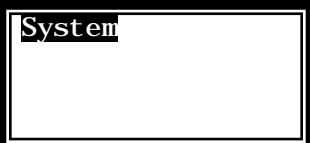


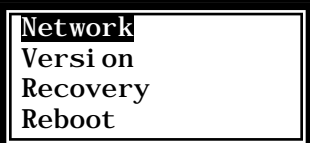


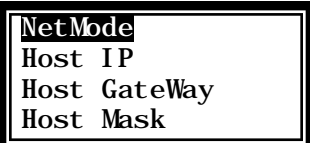

To setup the Impulse 200E with a static IP address, use the following steps:

|  |   |
|--|---|
| 1. The native screen on the Impulse 200E is the “Status” page. This will report the name of the unit, its current IP as well as the status of the input (used in tandem with the red/green LED light on the front panel).  |  |
| 2. Press the <b>MENU</b> button to enter the page where settings can be viewed and configured.   |  |
| 3. Use the  and  buttons to move the cursor to “System”, and then press the <b>OK</b> button to enter the system menu. |  |
| 4. Use the  and  buttons to move the cursor to “Network”, then press the <b>OK</b> button to enter the network menu.   |  |

|  |  |
|--|--|
| 5. Use the ▲ and ▼ buttons to move the cursor to “NetMode”, then press the OK button.  | <div> NetMode<br/> Host IP<br/> Host GateWay<br/> Host Mask </div> |
| 6. Confirm that the unit is currently set to “DHCP: Disable”. If it is, press the MENU button to return to the network menu. If it is not, press the OK button to disable DHCP and repeat Step 1~4.  | <div> DHCP: Disable<br/> DNS: Static </div>                        |
| 7. Use the ▲ and ▼ buttons to move the cursor to “Host IP”, then press the OK button to enter the menu where Host IP can be viewed and configured.   | <div> NetMode<br/> Host IP<br/> Host GateWay<br/> Host Mask </div> |
| 8. Press the OK button to initiate changing the IP. Use the ▲ and ▼ buttons to change the value of the digit and the ◀ and ▶ buttons to change the location. Press OK to finish and apply, and then repeat Step 1~4 to return to the network menu.           | <div> 192. 168. 1. 100 </div>                                      |
| 9. Use the ▲ and ▼ buttons to move the cursor to “Host GateWay”, then press the OK button to enter the menu where Host Gateway can be viewed and configured.   | <div> NetMode<br/> Host IP<br/> Host GateWay<br/> Host Mask </div> |
| 10. Press the OK button to initiate changing the GateWay. Use the ▲ and ▼ buttons to change the value of the digit and the ◀ and ▶ buttons to change the location. Press OK when finished to apply, and then repeat steps 1~4 to return to the network menu. | <div> 192. 168. 1. 1 </div>  |
| 11. Use the ▲ and ▼ buttons to move the cursor to “Host Mask”, then press the OK button to enter the menu where Host Mask can be viewed and configured.  | <div> NetMode<br/> Host IP<br/> Host GateWay<br/> Host Mask </div> |
| 12. Press the OK button to initiate changing the Mask. Use the ▲ and ▼ buttons to change the value of the digit and the ◀ and ▶ buttons to change the location.  | <div> 255. 255. 255. 0 </div>                                      |
| 13. Press OK to finish and apply. The IP will now be accessible on the network it was configured to!   |  |

## 2.4.2 DHCP

The Impulse 200E can be configured to use DHCP to obtain an IP address/Subnet Mask/Gateway.

|  |   |
|--|---|
| 1. The default screen on the Impulse 200E is the “Status” page. This will report the name of the unit, its current IP as well as the status of the input (used in tandem with the red/green LED light on the front panel).   |    |
| 2. Press the <b>MENU</b> button to enter the page where settings can be viewed and configured.   |    |
| 3. Use the  and  buttons to move the cursor to “System”, and then press the <b>OK</b> button to enter the system menu. |    |
| 4. Use the  and  buttons to move the cursor to “Network”, then press the <b>OK</b> button to enter the network menu.   |    |
| 5. Use the  and  buttons to move the cursor to “NetMode”, then press the <b>OK</b> button.                         |  |
| 6. If the DHCP setting is currently set to “Disable”, press the <b>OK</b> button to enable DHCP.   |  |

*Note: It may take up to a minute for the Impulse 200E to obtain an IP address.*

## Section 3 Operating the Front Panel



### Introduction

This section includes the following topics:

|     |   |    |
|-----|---|----|
| 3.1 | Impulse 200E Front Panel Overview ..... | 16 |
|-----|---|----|



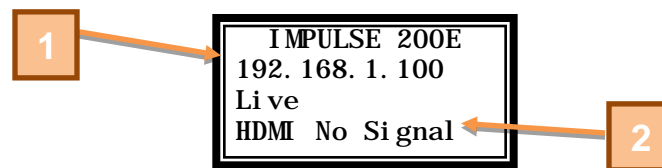
### 3.1 Impulse 200E Front Panel Overview

The Impulse 200E front panel allows the user to configure all settings that are present in the web interface using the buttons indicated in Figure 3.



**Figure 3: Front Panel Navigation Keys**

The screen below is the idle screen of the Impulse 200E. This idle screen shown in Figure 4 displays the management IP address of the unit as well as the status of the input/output.



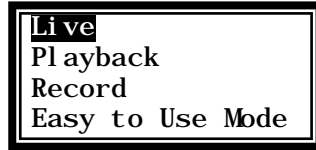
**Figure 4: Idle LCD Screen**

1. IP address of RJ45 port
2. Status of input/output

Press the button **MENU** in order to view and change additional configuration or exit from additional menus. Use the arrow keys to cycle through the options and **OK** to enter additional menus and toggle settings. Figure 5 on the next page shows the first front panel menu after the idle screen.



The highlighted line indicates the cursor, which can be moved with the ▲ and ▼ arrow keys. The button **OK** will select the highlighted line and proceed to the next menu. Pressing the **MENU** will go back to the previous menu, in this case returning to the idle screen.



**Figure 5: Menu Selection Screen**

## Section 4 Operating the Web Interface



### Introduction

This section includes the following topics:

|     |  |    |
|-----|--|----|
| 4.1 | Impulse 200E Web Interface Overview .....  | 19 |
| 4.2 | Live Service/Streaming Settings Menu ..... | 22 |
| 4.3 | Record Settings Menu .....                 | 29 |
| 4.4 | Playback Settings Menu .....               | 33 |
| 4.5 | Overlay Settings Menu .....                | 38 |
| 4.6 | System Settings Menu .....                 | 42 |

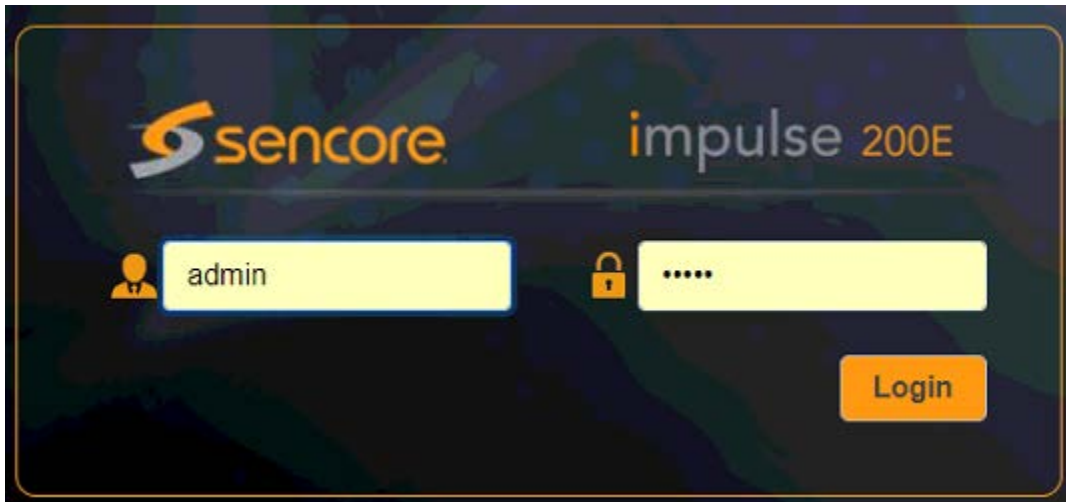
## 4.1 Impulse 200E Web Interface Overview

### 4.1.1 Logging into the Impulse 200E Web Interface

To open the Impulse 200E web interface, use one of the following supported browsers and navigate to the unit's IP address:

- Firefox 3.5 & above
- Google Chrome

The user will need to login to the web interface. The default login credentials (username/password): admin/admin. After entering “admin” into both fields shown in Figure 6, click the login button or press the enter key.



**Figure 6: User Login Prompt**

If this menu does not appear when navigating to the IP address on the front panel of the unit, confirm the PC is configured with an IP address in the same range.

### 4.1.2 Status Page

After logging into the web interface of the Impulse 200E, the user will be taken to the Status page as seen in Figure 7 below. This screen can be used to view the information about the HDMI or SDI input, the current progress on a recording and also the status of the encoder or playback output.

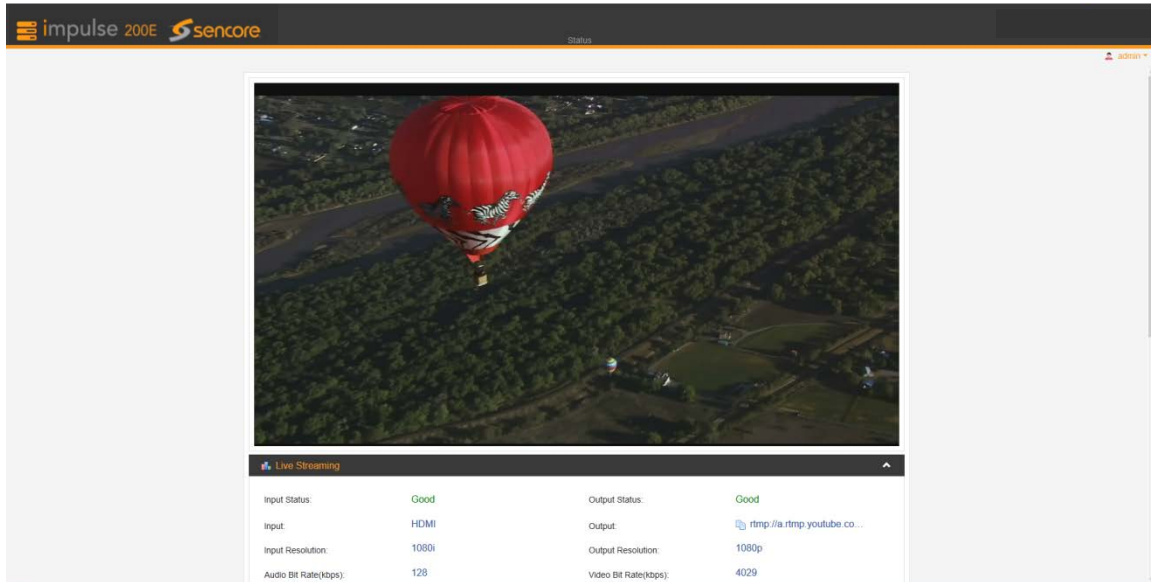


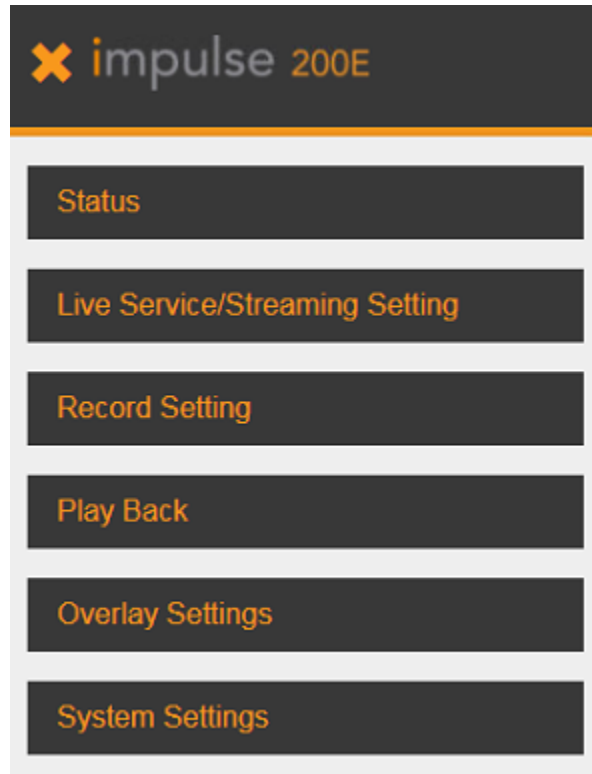
Figure 7: Status Page

The thumbnail shows a preview of what the user is viewing and will update every few seconds. This is not a real-time view of the incoming baseband source or the outgoing stream.

The input and output status will display **Good** or **Bad** indicators to ensure the device is operating properly and quickly identifies issues with incoming and outgoing content.

### 4.1.3 Menu Navigation Tab

To access additional menus, click the icon  in the upper left corner. A dropdown menu will appear, displaying the menu options shown in Figure 8.



**Figure 8: Menu Navigation Tab**

Clicking any of these options will direct the user to different pages for viewing and changing configuration.

## 4.2 Live Service/Streaming Settings Menu

The Live Service/Streaming Setting page in Figure 9 is used to configure the encoding and streaming settings for the Impulse 200E. It is divided into two categories: Basic Settings and Advanced Settings. The Basic Settings are primarily used for quick setup using preset configuration, while the Advanced Settings are able to control low level encoder settings.

The screenshot shows the 'Basic Settings' tab selected. It contains the following fields:

- Input:** HDMI
- Mode:** Youtube
- Video Profile:** 1080p-4000Kbps-128Kbps

Below these fields is a button labeled 'Authorize Your Device'. At the bottom of the page are three buttons: 'Apply', 'Start Streaming', and 'Easy to use mode'.

**Figure 9: Live Service/Streaming Setting Page**

### Apply button and Start Streaming/Stop Streaming

Navigate through the dropdown tabs and change the values, and then click “Apply” to finalize the changes made to the Impulse 200E. After applying the settings, click “Start Streaming” to begin encoding and streaming through the selected output. Returning to the “Status” page (section 4.1.2) will show details about the input and output during the live streaming; refer to Figure 10 as an example.

| Live Streaming        |        |                       |                               |
|-----------------------|--------|-----------------------|-------------------------------|
| Input Status:         | Good   | Output Status:        | Good                          |
| Input:                | HDMI   | Output:               | rtmps://live-api-s.faceboo... |
| Input Resolution:     | 1080i  | Output Resolution:    | 1080p                         |
| Audio Bit Rate(kbps): | 129    | Video Bit Rate(kbps): | 3746                          |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                   |

**Figure 10: Status Page – Live Streaming**

Before changing the settings again, it is recommended to “Stop Streaming” first.

### Easy to Use Mode

The “Easy to use mode” button is used in junction with the front panel of the device. Enabling this will log the user out of the Web GUI and set the LCD on the front panel to match Figure 11 on the next page. This makes it so the user can easily start and stop a pre-configured stream by pressing the button. “Easy to use mode” can be enabled and disabled on both the Web GUI and the front panel at any time, allowing the user to log back in to the Impulse 200E.

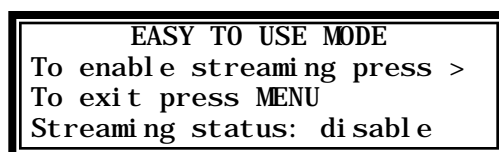


Figure 11: Easy to use Mode LCD Display

### 4.2.1 Basic Settings Tab

The “Basic Settings” tab in Figure 12 (described in Figure 13) below contains settings for the input, output type/mode as well as preset video profiles. By default, the Impulse 200E is set to output RTMP(S) in automatic YouTube streaming mode. For more information on how to set up manual and automatic RTMP(S) streaming, refer to the Appendices.

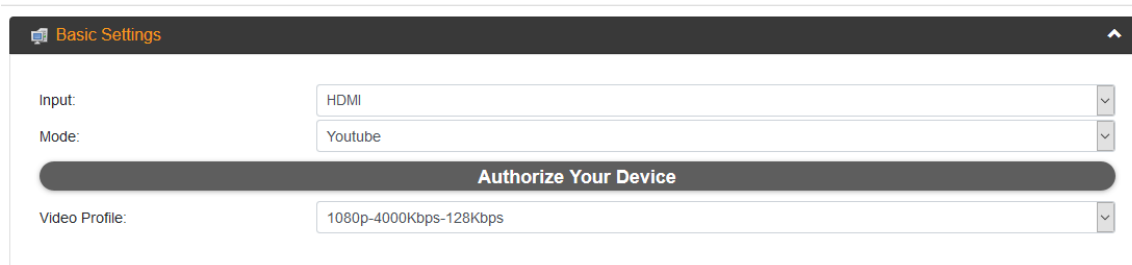


Figure 12: Basic Settings Tab – Automatic RTMP(S)

| Setting              | Range   | Description  |
|----------------------|---|--|
| <b>Input</b>         | HDMI  | Used to specify which baseband output is to be encoded   |
|                      | SDI (only available on Impulse 200E-01)                             |  |
| <b>Mode</b>          | Manual  | Which type of RTMP(S) streaming to perform. Selecting Manual will add more settings to the Basic Settings tab.   |
|                      | YouTube   |  |
|                      | Facebook  |  |
| <b>Video Profile</b> | Video Resolution: 1080p, 720p, 576p and 480p                        | This option will choose a preset video resolution, video bitrate and audio bitrate.<br><br>*User Defined: for more options, refer to the Advanced Settings tab in section 4.2.2. |
|                      | Video Bitrate: 2000Kbps, 4000Kbps, 6000Kbps, 8000Kbps and 12000Kbps |  |
|                      | Audio Bitrate: 192Kbps, 128Kbps and 92Kbps                          |  |

Figure 13: Basic Settings – Automatic RTMP(S)

When “Mode” is set to “Manual”, the options under Basic Settings will change in likeness to Figure 14 (description in Figure 15).

| Basic Settings  |                                 |
|-----------------|---------------------------------|
| Input:          | HDMI                            |
| Mode:           | Manual                          |
| Output:         | RTMP/RTMPS                      |
| URL:            | rtmp://a.rtmp.youtube.com/live2 |
| Port:           | 1935                            |
| Uploading node: | jz41-lds3-85ge-4vre             |
| Authentication: | Disable                         |
| Video Profile:  | 1080p-4000Kbps-128Kbps          |

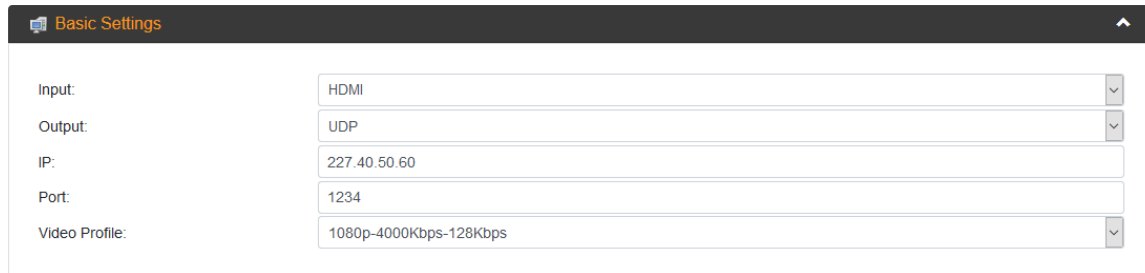
Figure 14: Basic Settings Tab – Manual RTMP(S)

| Setting               | Range   | Description  |
|-----------------------|---|--|
| <b>Input</b>          | HDMI<br>SDI (only available on Impulse 200E-01)   | Used to specify which baseband output is to be encoded   |
| <b>Output</b>         | UDP<br>RTMP/RTMPS<br>HLS<br>RTSP  | Determines what streaming type the Impulse 200E will output  |
| <b>URL</b>            | N/A   | The destination URL for the RTMP(S) Stream. Refer to Appendices D & E for details.   |
| <b>Port</b>           | 1935 for RTMP streaming (YouTube)<br>443 for RTMPS streaming (Facebook)   | Configures the network port to send the RTMP(S) stream through   |
| <b>Uploading Node</b> | N/A   | The Stream Key for the RTMP(S) stream. Refer to Appendices D & E for details.  |
| <b>Authentication</b> | Enable/Disable  | For use with encrypted websites  |
| <b>Video Profile</b>  | Video Resolution: 1080p, 720p, 576p and 480p<br>Video Bitrate: 2000Kbps, 4000Kbps, 6000Kbps, 8000Kbps and 12000Kbps<br>Audio Bitrate: 192Kbps, 128Kbps and 92Kbps | This option will choose a preset video resolution, video bitrate and audio bitrate.<br><br>*User Defined: for more options, refer to the Advanced Settings tab in section 4.2.2. |

Figure 15: Basic Settings – Manual RTMP(S)

When the “Output” option is set away from RTMP/RTMP(S), the options under Basic Settings will change. Figure 16 shows the options available under the Basic Settings tab when “Output” is set to “UDP” (description in Figure 17).





**Basic Settings**

Input: HDMI

Output: UDP

IP: 227.40.50.60

Port: 1234

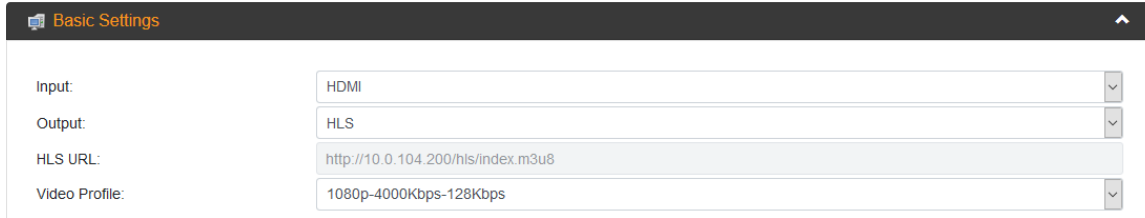
Video Profile: 1080p-4000Kbps-128Kbps

**Figure 16: Basic Settings Tab – UDP**

| Setting              | Range   | Description   |
|----------------------|---|---|
| <b>Input</b>         | HDMI<br>SDI (only available on Impulse 200E-01)   | Used to specify which baseband output is to be encoded  |
| <b>Output</b>        | UDP<br>RTMP/RTMPS<br>HLS<br>RTSP  | Determines what streaming type the Impulse 200E will output   |
| <b>IP</b>            | xxx.xxx.xxx.xxx   | Destination address of the multicast  |
| <b>Port</b>          | 1 ~ 65535   | Destination port of the multicast   |
| <b>Video Profile</b> | Video Resolution: 1080p, 720p, 576p and 480p<br>Video Bitrate: 12000Kbps, 8000Kbps, 6000Kbps, 4000Kbps and 2000Kbps<br>Audio Bitrate: 192Kbps, 128Kbps and 92Kbps | This option will choose a preset video resolution, video bitrate and audio bitrate.<br>User Defined: for more options, refer to the Advanced Settings tab in section 4.2.2. |

**Figure 17: Basic Settings – UDP**

When “Output” is set to “HLS”, the options under the Basic Settings tab will change to match Figure 18 as shown on the next page (description in Figure 19):



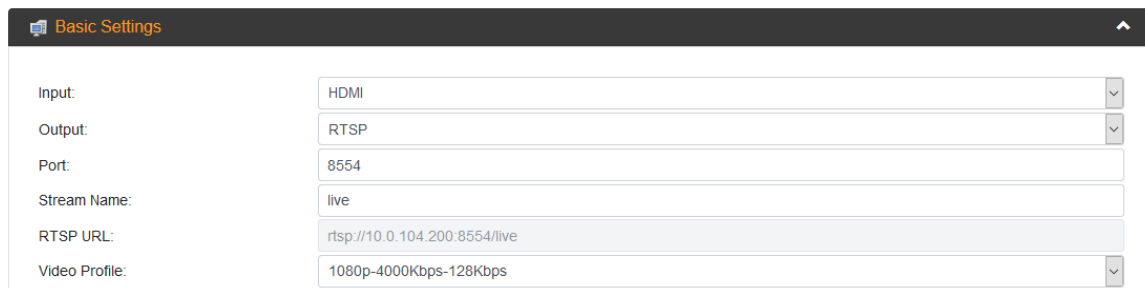
The screenshot shows the 'Basic Settings' tab for HLS configuration. It includes four dropdown menus: 'Input' set to 'HDMI', 'Output' set to 'HLS', 'HLS URL' set to 'http://10.0.104.200/hls/index.m3u8', and 'Video Profile' set to '1080p-4000Kbps-128Kbps'.

**Figure 18: Basic Settings Tab – HLS**

| Setting              | Range   | Description  |
|----------------------|---|--|
| <b>Input</b>         | HDMI<br>SDI (only available on Impulse 200E-01)   | Used to specify which baseband output is to be encoded   |
| <b>Output</b>        | UDP<br>RTMP/RTMPS<br>HLS<br>RTSP  | Determines what streaming type the Impulse 200E will output  |
| <b>HLS URL</b>       | N/A   | Destination address for the HLS output. Address will be influenced by management IP of the Impulse 200E.   |
| <b>Video Profile</b> | Video Resolution: 1080p, 720p, 576p and 480p<br>Video Bitrate: 12000Kbps, 8000Kbps, 6000Kbps, 4000Kbps and 2000Kbps<br>Audio Bitrate: 192Kbps, 128Kbps and 92Kbps | This option will choose a preset video resolution, video bitrate and audio bitrate.<br>*User Defined: for more options, refer to the Advanced Settings tab in section 4.2.2. |

**Figure 19: Basic Settings –HLS**

When “Output” is set to “RTSP”, the options present in the Basic Settings tab will change as seen in Figure 20 below (description in Figure 21 on the next page):



The screenshot shows the 'Basic Settings' tab for RTSP configuration. It includes six dropdown menus: 'Input' set to 'HDMI', 'Output' set to 'RTSP', 'Port' set to '8554', 'Stream Name' set to 'live', 'RTSP URL' set to 'rtsp://10.0.104.200:8554/live', and 'Video Profile' set to '1080p-4000Kbps-128Kbps'.

**Figure 20: Basic Settings Tab – RTSP**

| Setting              | Range   | Description  |
|----------------------|---|--|
| <b>Input</b>         | HDMI<br>SDI (only available on Impulse 200E-01)   | Used to specify which baseband output is to be encoded   |
| <b>Output</b>        | UDP<br>RTMP/RTMPS<br>HLS<br>RTSP  | Determines what streaming type the Impulse 200E will output  |
| <b>Port</b>          | 0~65535   | Specifies which port the Impulse 200E will send the RTSP data over. 8554 is the recommended default.   |
| <b>Stream Name</b>   | N/A   | User defined name for the stream   |
| <b>RTSP URL</b>      | N/A   | Destination address for the RTSP output. Address will be influenced by management IP of the Impulse 200E and “Stream Name” (row above).                                      |
| <b>Video Profile</b> | Video Resolution: 1080p, 720p, 576p and 480p<br>Video Bitrate: 12000Kbps, 8000Kbps, 6000Kbps, 4000Kbps and 2000Kbps<br>Audio Bitrate: 192Kbps, 128Kbps and 92Kbps | This option will choose a preset video resolution, video bitrate and audio bitrate.<br>*User Defined: for more options, refer to the Advanced Settings tab in section 4.2.2. |

**Figure 21: Basic Settings –RTSP**

## 4.2.2 Advanced Settings Tab

The “Advanced Settings” tab in Figure 22 below contains more granular settings that can influence options including the embedding, de-encryption and low-level A/V output options. Each setting is described in Figure 23 through to the next page.

**Advance Settings**

**Input**

Audio Source: HDMI/SDI Audio

CC: Disable

HDCP Test Mode: Disable

**Video**

Video Type: H264

Video Aspect Ratio: Automatic

Profile: Main

Video Resolution: 1280x720

GOP Size: 30

Frame Rate(FPS/Hz): 30

Video Bit Rate(kbps): 4500

Video Mode: CBR

**Audio**

Audio Type: AAC

Audio Sampling Rate(KHz): 48

Audio Bit Rate(kbps): 128

**Figure 22: Advanced Settings Tab**

| Setting               | Range                      | Description   |
|-----------------------|----------------------------|---|
| <b>Audio Source</b>   | HDMI/SDI Audio<br>Audio IN | Choosing HDMI/SDI Audio will use the audio embedded in HDMI/SDI input. Choosing Audio IN will use an external audio source routed through the “Audio IN” port on the back panel (see section 1.3).  |
| <b>CC</b>             | Enable / Disable           | Impulse 200E-00: enabling this will add Line 21 captions from an external composite source routed through the “CC IN” port on the back panel (see section 1.3).<br><br>Impulse 200E-01: enabling this will add SDI embedded captions to the output. |
| <b>HDCP Test Mode</b> | Enable / Disable           | Enabling this will de-encrypt incoming  |

|                            |   |  |
|----------------------------|---|--|
|                            |   | HDMI sources.  |
| <b>Video Type</b>          | H.264, H.265  | Video CODEC the Impulse 200E will encode with.   |
| <b>Video Aspect Ratio</b>  | Automatic, 16x9, 4x3  | Aspect Ratio the Impulse 200E will encode to. “Automatic” will match the incoming source. Specific to SD output.   |
| <b>Profile</b>             | High, Main, Baseline  | Profile the Impulse 200E will encode to.   |
| <b>Video Resolution</b>    | Automatic, 1080x768, 1920x1080, 1024x576, 1680x1200, 960x540, 1600x900, 850x480, 1440x1050, 800x600, 1440x900, 720x576, 1360x768, 720x540, 1280x1024, 720x480, 1280x720, 720x404, 1280x800, 1280x768, | <p>*Note: in order to use, “Video Profile” in the Basic settings tab must be set to “User-Defined” (see section 4.2.1).</p> <p>Resolution the Impulse 200E will encode to. “Automatic” will match the incoming source.</p> |
| <b>GOP Size</b>            | 1~61  | Number of frames between I-Frames the Impulse 200E will encode.  |
| <b>Video Frame Bitrate</b> | 20~60 (FPS)   | Frame rate of encoded video.   |
| <b>Video Bit Rate</b>      | 600~20000 (kbps)  | <p>*Note: in order to use, “Video Profile” in the Basic settings tab must be set to “User-Defined” (see section 4.2.1).</p> <p>Specifies outgoing video bitrate for the Impulse 200E.</p>                                  |
| <b>Video Mode</b>          | CBR, VBR  | Specifies whether the Impulse 200E will output constant or variable bitrate.   |
| <b>Audio Type</b>          | MPEG1_Layer2, AAC, AC3, EAC   | <p>Audio CODEC the Impulse 200E will encode with.</p> <p>*Note: RTMP(S) output only supports the AAC CODEC.</p>  |
| <b>Audio Sampling Rate</b> | Automatic, 48, 44.1, 32 (kHz)   | Specifies audio sampling rate the Impulse 200E will encode to.   |
| <b>Audio Bit Rate</b>      | 384, 320, 256, 224, 192, 160, 128, 112, 96, 80, 64, 48, 32 (kbps)   | <p>*Note: in order to use, “Video Profile” in the Basic settings tab must be set to “User-Defined” (see section 4.2.1).</p> <p>Specifies outgoing audio bitrate for the Impulse 200E.</p>                                  |

**Figure 23: Advanced Settings**

### 4.3 Record Settings Menu

This Record Setting page in Figure 24 is used to configure the recording settings for the Impulse 200E. Here the user can specify options such as the storage device to hold the recording as well as the size, name and format of the file.

\*Note: The Impulse 200E only supports FAT32 file systems for USB and SD cards. For exFAT and other file systems that cannot be reformatted through conventional means, use the AOMEI executable found at this link: <https://www.diskpart.com/articles/format-128gb-usb-fat32-0310.html>

**Basic Settings**

|                     |                   |       |                      |
|---------------------|-------------------|-------|----------------------|
| USB:                | 2.95 MB/488.45 MB | 0.60% | <b>Safely Remove</b> |
| SD:                 | SD Not Inserted   |       |                      |
| USB File System:    | FAT32             |       |                      |
| Storage Device:     | USB               |       |                      |
| Record File Format: | *.ts              |       |                      |
| Record Name:        | record            |       |                      |
| Record Mode:        | Loop              |       |                      |

**Apply** **▶ Start Recording** **Easy to use mode**

**Figure 24: Record Settings Page**

### Apply button and Start Streaming/Stop Streaming

Navigate through the dropdown tabs and change the values, and then click “Apply” to finalize the changes made to the Impulse 200E. After applying the settings, click “Start Recording” to begin encoding using the settings specified in section 4.2 and recording to a file to be stored on either a USB or SD card. Returning to the “Status” page (section 4.1.2) will show details about the input and output during the recording; refer to Figure 25 as an example.

**Record**

|                       |                   |                       |                  |
|-----------------------|-------------------|-----------------------|------------------|
| Input Status:         | Good              | Output Status:        | Good             |
| Input:                | HDMI              | Output File:          | SencoreRecording |
| Input Resolution:     | 1080i             | Output Resolution:    | 720p             |
| Audio Bit Rate(kbps): | 128               | Video Bit Rate(kbps): | 3952             |
| Audio Sampling Rate:  | 48 kHz            | Encryption:           | Unencrypted      |
| Record Time:          | 00:00:15/00:01:00 |                       |                  |
| Record Size:          | 8 M               |                       |                  |

**Figure 25: Record Status (Status Page)**

Before changing the settings again, it is recommended to “Stop Recording” first.

### Easy to Use Mode

The “Easy to use mode” button is used in junction with the front panel of the device. Enabling this will log the user out of the Web GUI and set the LCD on the front panel to match Figure 26 below. This makes it so the user can easily start and stop recording with pre-configured settings by pressing the button . “Easy to use mode” can be

enabled and disabled on both the Web GUI and the front panel at any time, allowing the user to log back in to the Impulse 200E.

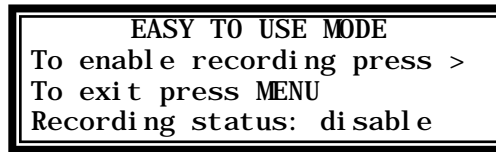


Figure 26: Easy to use Mode LCD Display

### 4.3.1 Basic Settings Tab

The “Basic Settings” tab, as shown in Figure 27, is where to choose configurations for recording. By default, the Impulse 200E is set to record in “Loop” mode, which creates a series of 2~3 minute recordings until reaching the maximum USB or SD storage space. The table in Figure 28 describes the dropdown options available with these settings.

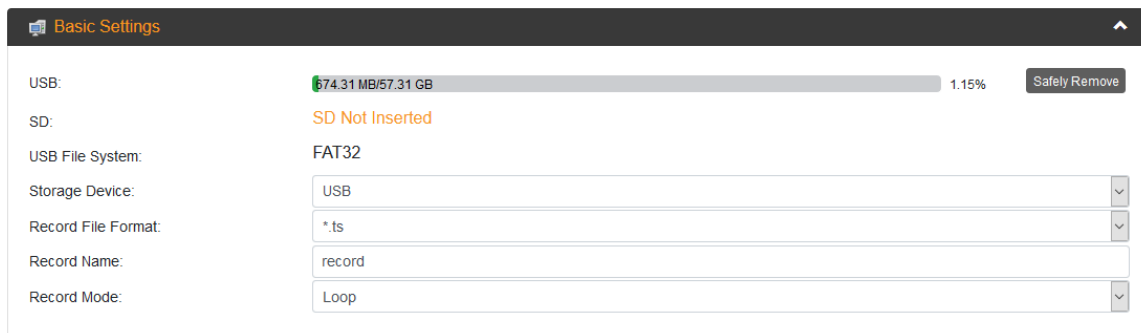


Figure 27: Basic Settings Tab - Loop

| Setting            | Range              | Description   |
|--------------------|--------------------|---|
| USB                | N/A                | Reports presence and status of USB storage device.  |
| SD                 | N/A                | Reports presence and status of SD card storage device.  |
| USB File System    | N/A                | Reports current file system of the storage device.  |
| Storage Device     | USB, SD            | Specifies which storage device the Impulse 200E will save the recording to.   |
| Record File Format | *.ts, *.mp4, *.mov | Assigns a file format to the destination file.  |
| Record Name        | N/A                | Assigns a name to the destination file.   |
| Record Mode        | Loop, Size, Time   | Loop will create a series of two to three minute captures until the storage device is full. Size will specify a stop point for recording based on size of the file. Time will specify a stop point for recording based on length of time. |

Figure 28: Record Settings - Loop

For “Record Mode”, choosing “Size” will add new dropdown options, “Record Size” and “Loop”, as seen in Figure 29 below. A description of each new option can be found in Figure 30.

**Basic Settings**

USB: 636.19 MB/57.31 GB 1.08% **Safely Remove**

SD: SD Not Inserted

USB File System: FAT32

Storage Device: USB

Record File Format: \*.ts

Record Name: record

Record Mode: Size

Record Size (KB): 10240

Loop: Disable

**Figure 29: Record Settings Page - Size**

| Setting                 | Range            | Description   |
|-------------------------|------------------|---|
| <b>Record Size (kb)</b> | 0~2097152        | Size of the destination file  |
| <b>Loop</b>             | Enable / Disable | Enabling “Loop” here will create a series of files of the size specified in the “Record Size” option above. |

**Figure 30: Record Settings - Size**

In the “Record Mode” option, choosing “Time” will add new dropdown options for “Record Time” and “Loop” as seen in Figure 31 on the next page. Figure 32 describes the new options.

**Basic Settings**

USB: 636.19 MB/57.31 GB 1.08% **Safely Remove**

SD: SD Not Inserted

USB File System: FAT32

Storage Device: USB

Record File Format: \*.ts

Record Name: record

Record Mode: Time

Record Time (S): 00:01:00

Loop: Disable

**Figure 31: Record Settings Page - Time**

| Setting                | Range             | Description   |
|------------------------|-------------------|---|
| <b>Record Time (s)</b> | 00:00:00~23:59:59 | Length of time of the destination file  |
| <b>Loop</b>            | Enable / Disable  | Enabling “Loop” here will create a series of files of the time specified in the “Record Time” option above. |

**Figure 32: Record Settings – Time**



## 4.4 Playback Settings Menu

The Playback Settings menu, in Figure 33 below, is for configuring settings to stream captures recorded by the Impulse 200E (see section 4.3) from a USB or SD storage device over RTMP, UDP, RTSP and HLS. There are two sub-menus: “Playlist” for choosing files to playback and “Output Settings” for choosing the output mode and destination.

The screenshot shows the 'Playback Settings' interface. At the top, there's a 'Play List' tab. Below it, 'Current Play List' is set to 'Default'. There's an 'Add Files' button with a folder icon. A table with a 'Name' header and a checkbox is shown, currently containing 'No Data'. To the right, 'Play Mode' is set to a globe icon. Below the table, a legend indicates 'Font Color: [Red] Nonexistent file' and '[Yellow] Invalid file'. The 'Output Settings' tab is selected below. It shows 'Mode' set to 'Youtube', a 'Title' field with 'youtube\_web', and 'Privacy Status' set to 'public'. A large dark button labeled 'Authorize Your Device' is in the center. At the bottom, there are three buttons: 'Apply', 'Start Play Back' (with a play icon), and 'Easy to use mode'.

**Figure 33: Playback Settings Page**

### Apply button and Start Streaming/Stop Streaming


Navigate through the dropdown tabs and change the values, and then click “Apply” to finalize the changes made to the Impulse 200E. After applying the settings, click “Start Streaming” to begin streaming through the selected output. Returning to the “Status” page (section 4.1.2) will show details about the input and output during the playback, with Figure 34 as an example.

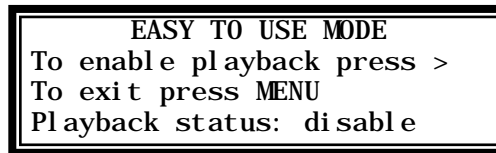
The screenshot shows the 'Status Page – Playback' interface. It displays various playback details in a two-column layout. The 'Play Status' is 'Playing' (green). The 'List Name' is 'Default.list'. The 'File Name' is 'SencoreRecording\_1970011...'. The 'Audio Type' is 'aac'. The 'Audio Sampling Rate' is '48 k'. The 'Output Status' is 'Good' (green). The 'Output' is 'rtmp://a.rtmp.youtube.co...'. The 'Video Resolution' is '1280x720'. The 'Video Type' is 'h264'. The 'Video Bit Rate' is '4141'.

**Figure 34: Status Page – Playback**

Before changing the settings again, it is recommended to “Stop Streaming” first.

### Easy to Use Mode

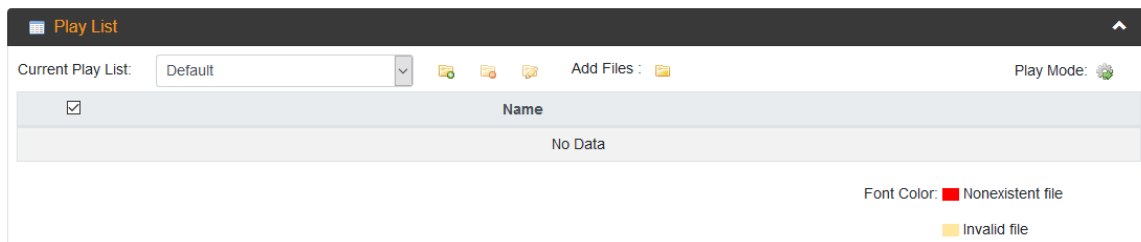
The “Easy to use mode” button is used in junction with the front panel of the device. Enabling this will log the user out of the Web GUI and set the LCD on the front panel to match Figure 35 below. This makes it so the user can easily start and stop a pre-configured playlist by pressing the  button. “Easy to use mode” can be enabled and disabled on both the Web GUI and the front panel at any time, allowing the user to log back in to the Impulse 200E.






**Figure 35: Easy to use Mode LCD Display**

#### 4.4.1 Playlist Settings

The “Playlist” Settings tab, shown in Figure 36, is used to select which files will be played. Multiple files can be played consecutively, and a play list can be created with different combinations of files.



**Figure 36: Easy to use Mode LCD Display**

To create a new playlist, click the icon . Enter a name for the playlist into the prompt and then click “OK”. The newly created playlist can then be selected with the “Current Play List” dropdown tab. When the newly created playlist is selected, the icon  is used to delete it, and the icon  can change the playlist name.


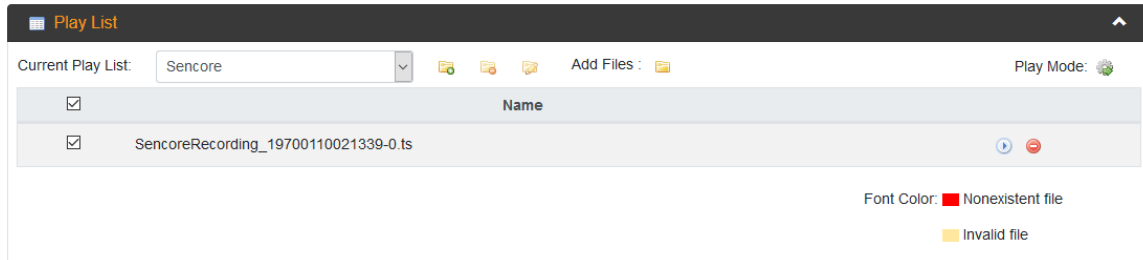


To add files to a playlist, click the icon  next to “Add Files”. This will prompt with a list of captures saved on the USB or SD storage device; selecting a capture and clicking “OK” will add it to the playlist.

Figure 37 on the next page is an example of a newly created playlist, named “Sencore” with a file named “SencoreRecording”,

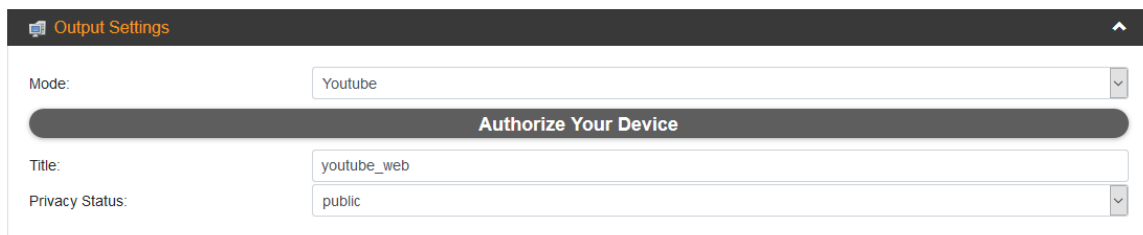


**Figure 37: Playlist Settings Tab**

Clicking the icon  will begin playback of the file, and clicking the icon  will remove the file from the playlist.

## 4.4.2 Output Settings

The Output Settings tab as seen in Figure 38 is used to configure the streaming type and destination for the recorded file. By default, the Impulse 200E is configured for Automatic RTMP streaming through YouTube. The table in Figure 39 describes these settings.



**Figure 38: Output Settings - YouTube**

| Setting               | Range                     | Description   |
|-----------------------|---------------------------|---|
| <b>Mode</b>           | Manual / YouTube          | YouTube is for Automatic RTMP streaming to YouTube (see Appendix B). Manual is for configuring the stream to an alternative RTMP receiver (see Appendix D). |
| <b>Title</b>          | N/A                       | The name of the YouTube stream  |
| <b>Privacy Status</b> | Public, private, unlisted | Privacy settings for the stream   |

**Figure 39: Output Settings –Automatic RTMP (YouTube)**

Changing “Mode” from “YouTube” to “Manual” will change the list of dropdown options available in the Output settings. Figure 40 at the top of the next page shows the dropdown tabs when “Mode” is set to “Manual” and “Output” is set to “RTMP”. A description of each new option is present in Figure 41.



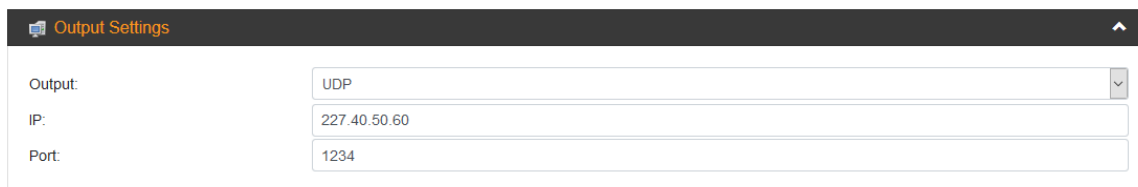
|                 |                                 |
|-----------------|---------------------------------|
| Mode:           | Manual                          |
| Output:         | RTMP                            |
| URL:            | rtmp://a.rtmp.youtube.com/live2 |
| Port:           | 1935                            |
| Uploading node: | kawp-fda6-b13k-74sc             |
| Authentication: | Disabled                        |

Figure 40: Output Settings Tab – Manual RTMP

| Setting               | Range                             | Description   |
|-----------------------|-----------------------------------|---|
| <b>Mode</b>           | Manual / YouTube                  | YouTube is for Automatic RTMP streaming to YouTube (see Appendix B). Manual is for configuring the stream to an alternative RTMP receiver (see Appendix D). |
| <b>Output</b>         | UDP                               | Determines what streaming type the Impulse 200E will output.  |
|                       | RTMP                              |   |
|                       | HLS                               |   |
|                       | RTSP                              |   |
| <b>URL</b>            | N/A                               | The destination URL for the RTMP Stream. Refer to Appendix D for details.   |
| <b>Port</b>           | 1935 for RTMP streaming (YouTube) | Configures the network port to send the RTMP(S) stream through.   |
| <b>Uploading Node</b> | N/A                               | The Stream Key for the RTMP(S) stream. Refer to Appendix D for details.   |
| <b>Authentication</b> | Enabled / Disabled                | For use with encrypted websites.  |

Figure 41: Output Settings Description – Manual RTMP

Modifying the “Output” option will change the dropdown options under “Output Settings”. Figure 42 below shows the options that appear when “Output” is set to “UDP”. A description of the new options can be found in Figure 43 on the next page.



|         |              |
|---------|--------------|
| Output: | UDP          |
| IP:     | 227.40.50.60 |
| Port:   | 1234         |

Figure 42: Output Settings Tab – UDP

| Setting       | Range | Description   |
|---------------|-------|---|
| <b>Output</b> | UDP   | Determines what streaming type the Impulse 200E will output |
|               | RTMP  |   |

|             |                 |                                      |
|-------------|-----------------|--------------------------------------|
|             | HLS             |                                      |
|             | RTSP            |                                      |
| <b>IP</b>   | xxx.xxx.xxx.xxx | Destination address of the multicast |
| <b>Port</b> | 1 ~ 65535       | Destination port of the multicast    |

**Figure 43: Output Settings Description – UDP**

Figure 44 below shows which dropdown options change under “Output Settings” when “Output” is set to “HLS”, and Figure 45 describes the new options.

Output Settings

Output: HLS

HLS URL: http://10.0.104.200/hls/index.m3u8

**Figure 44: Output Settings Tab – HLS**

| Setting        | Range                      | Description  |
|----------------|----------------------------|--|
| <b>Output</b>  | UDP<br>RTMP<br>HLS<br>RTSP | Determines what streaming type the Impulse 200E will output.   |
| <b>HLS URL</b> | N/A                        | Destination address for the HLS output. Address will be influenced by management IP of the Impulse 200E. |

**Figure 45: Output Settings Description – HLS**

When the output settings are changed to RTSP, the dropdown options will change to match Figure 46. A description of the new options can be viewed in Figure 47 on the next page.

Output Settings

Output: RTSP

Port: 8554

Stream Name: live

RTSP URL: rtsp://10.0.104.200:8554/live

**Figure 46: Output Settings Tab – RTSP**

| Setting       | Range              | Description  |
|---------------|--------------------|--|
| <b>Output</b> | UDP<br>RTMP<br>HLS | Determines what streaming type the Impulse 200E will output. |

| RTSP               |         |   |
|--------------------|---------|---|
| <b>Port</b>        | 0~65535 | Specifies which port the Impulse 200E will send the RTSP data over. 8554 is the recommended default.                                    |
| <b>Stream Name</b> | N/A     | User defined name for the stream  |
| <b>RTSP URL</b>    | N/A     | Destination address for the RTSP output. Address will be influenced by management IP of the Impulse 200E and “Stream Name” (row above). |

Figure 47: Output Settings Description – RTSP

## 4.5 Overlay Settings Menu

The “Overlay Settings” page, seen in Figure 48, is where settings for burnt-in overlays can be configured. This menu is divided into two categories: “Text Overlay”, for adding a line of text over the stream, and “Picture Overlay”, which will add an uploaded logo or picture over the top of the stream output.

The screenshot shows the 'Overlay Settings' page. It has two main sections: 'Text Overlay' and 'Picture Overlay'. In the 'Text Overlay' section, there is a dropdown menu for 'Overlay Mode' currently set to 'off'. In the 'Picture Overlay' section, there is a dropdown menu for 'Picture Switch' currently set to 'Disable'. At the bottom of the page, there are two buttons: 'Apply' and 'Cancel'.

Figure 48: Overlay Settings Page

Enabling either of the options will prompt with new fields to configure. After adding intended settings, click “Apply”, and the stream will append the settings to the output.

### 4.5.1 Text Overlay

The “Text Overlay” is used to configure and superimpose a line of text over the stream output. Changing the “Overlay Mode” from “off” to “Title Only” will change the fields available under “Text Overlay” to match Figure 49 on the next page. A description of each item can be found in Figure 50.

The screenshot shows the 'Text Overlay' tab. The 'Overlay Mode' dropdown is set to 'Title Only'. Below it, there are several input fields: 'Text' with the value 'Sencore Testing', 'Color' with the value 'White', 'Font Size' with the value '32', 'Location X' with the value '30', and 'Location Y' with the value '30'.

Figure 49: Text Overlay Tab

| Setting             | Range                | Description                                    |
|---------------------|----------------------|--|
| <b>Overlay Mode</b> | Off<br>Title Only    | Enables the text overlay feature               |
| <b>Text</b>         | N/A                  | User defined text to superimpose on the output |
| <b>Color</b>        | White, Yellow, Green | Color of the text                              |
| <b>Font Size</b>    | 20~100               | Size of the text                               |
| <b>Location X</b>   | 20~100               | X-coordinate of the text                       |
| <b>Location Y</b>   | 20~100               | Y-coordinate of the text                       |

**Figure 50: Text Overlay Descriptions**

The text overlay settings applied from Figure 49 will appear on the output shown in Figure 51.

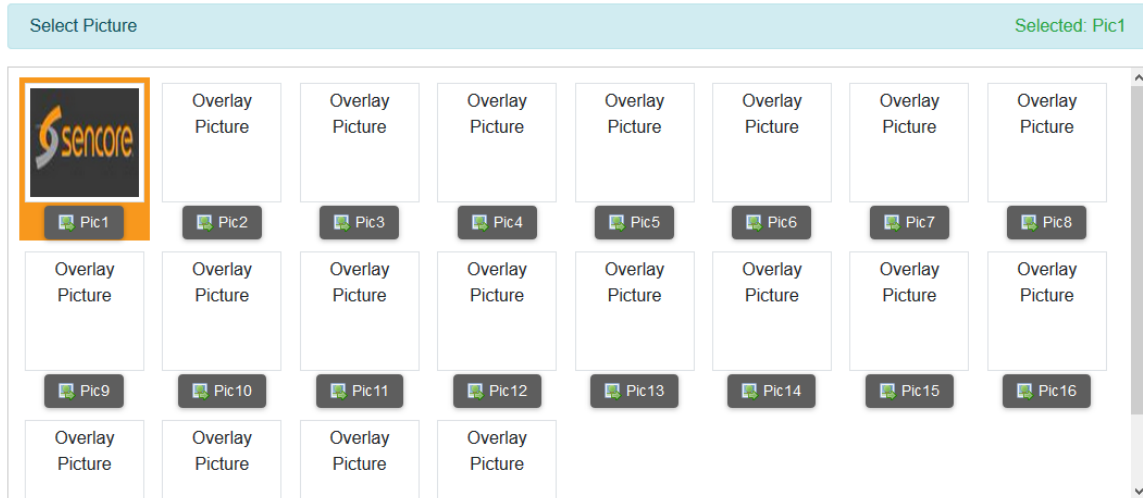
**Figure 51: Text Overlay Example**

### 4.5.2 Picture Overlay

The “Picture Overlay” is used to configure and superimpose a saved picture over the stream output, most commonly used for logos. Changing the “Picture Switch” field from “Disable” to “Enable” will add necessary fields for configuring the picture overlay as seen in Figure 52. A description of each item can be found in Figure 53.







**Figure 54: Uploaded Image**

Select the uploaded picture, then click “Apply”, and the uploaded image will overlay the stream output as seen in Figure 54 below. This example uses the settings from Figure 52.



**Figure 55: Picture Overlay Example**

## 4.6 System Settings Menu

The system settings page, as seen in Figure 56, contains information and operations regarding the Impulse 200E's base system. On this page, the software version and licensing can be viewed and upgraded, network settings can be configured and the Impulse 200E can be defaulted or rebooted remotely. The language can also be changed between English and Chinese.

The screenshot displays the 'System Settings Overview' page with four main sections:

- Version:** Shows 'Software Version: 1.0.43' and 'Hardware Version: V2A'.
- License Information:** Shows 'H265: Authorized', 'CC: Authorized', 'SDI: Authorized', and 'AC3: Authorized'.
- Network:** Contains fields for 'Network Mode' (Static), 'IP Address' (10.0.104.200), 'Subnet Mask' (255.255.0.0), 'Default Gateway' (10.0.1.3), 'Dynamic DNS' (Disable), 'Primary DNS' (8.8.8.8), and 'Secondary DNS' (8.8.8.8). It includes 'Apply' and 'Cancel' buttons.
- Language:** Shows 'Language : English' with an 'Apply' button.

**Figure 56: System Settings Overview**

Scrolling down this page reveals the Impulse 200E's "System Operation" menus, shown in Figure 57 at the top of the next page. In these tabs, the software and licenses can be upgraded, and preset configurations can be saved and applied. The unit can also be rebooted or reset to factory settings. In addition, logs of the Impulse 200E's activities can be exported for troubleshooting and viewing of overall performance.

System Operation

Upgrade

Upgrade:

Upload

License

Import License:

Upload

Export License:

Export

Configuration

Import Config:

Upload

Export Config:

Export

Other Operation

Reboot

Factory Settings

Log Export

Log Clear

Figure 57: System Operations

## Section 5 Appendices



### Introduction

This section includes the following appendices:

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| Appendix B – Using Automatic YouTube Streaming .....  | 47 |
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| Appendix D – Using Manual RTMP Streaming .....        | 57 |
| Appendix E – Using Manual RTMPS Streaming .....       | 63 |

## Appendix A – Acronyms and Glossary

**AAC:** Advanced Audio Coding

**AC-3:** Also known as Dolby Digital

**AV:** Audio Video

**Bit Rate:** The rate at which the compressed bit stream is delivered from the channel to the input of a decoder

**BNC:** British Naval Connector

**BPS:** Bits per second

**CC:** Closed Caption

**DHCP:** Dynamic Host Configuration Protocol

**Frame:** A frame contains lines of spatial information of a video signal. For progressive video, these lines contain samples starting from one time instant and continuing through successive lines to the bottom of the frame. For interlaced video a frame consists of two fields, a top field and a bottom field. One of these fields will commence one field later than the other.

**GOP:** Group of Pictures, a collection of I, P and B frames in a coded video stream

**GUI:** Graphical User Interface

**HD:** High Definition

**High level:** A range of allowed picture parameters defined by the MPEG-2 video coding specification which corresponds to high definition television

**HLS:** HTTP Live Streaming

**I/O:** Input / Output

**IP:** Internet Protocol

**Kbps:** 1000 bit per second

**LED:** Light Emitting Diode

**Main level:** A range of allowed picture parameters defined by the MPEG-2 video coding specification with maximum resolution equivalent to ITU-R Recommendation 601

**Main profile:** A subset of the syntax of the MPEG-2 video coding specification that is expected to be supported over a large range of applications

**Mbps:** 1,000,000 bits per second

**MPEG:** Refers to standards developed by the ISO/IEC JTC1/SC29 WG11, *Moving Picture Experts Group*. MPEG may also refer to the Group.

**MPEG-2:** Refers to ISO/IEC standards 13818-1 (Systems), 13818-2 (Video), 13818-3 (Audio), 13818-4

**NTSC:** National Television System Committee

**PCR:** Program Clock Reference

**PID:** Packet Identifier. A unique integer value used to associate elementary streams of a program in a single or multi-program transport stream.

**Profile:** A defined subset of the syntax specified in the MPEG-2 video coding specification.

**RS-232:** Recommended Standard. A standard for serial binary data interconnection.

**RTMP(S):** Real-Time Messaging Protocol (Secure)

**RTSP:** Real-Time Streaming Protocol

**RW:** Read/Write

**SD:** Standard Definition

**SDI:** Serial Digital Interface

**SMPTE:** Society of Motion Pictures and Television Engineers

**SPTS:** Single Program Transport Stream

**TS:** Transport Stream

**UDP:** User Datagram Protocol

## Appendix B – Using Automatic YouTube Streaming

The Impulse 200E can interface with YouTube and set up an RTMP stream automatically, creating a new stream instance with YouTube and bypassing the need for manual entry of the URL or Stream Key on the Impulse 200E. It is necessary to authorize the device with YouTube before streaming (note: the “Automatic YouTube” setup for “Playback Streaming” [section 4.4] is nearly identical to these steps).

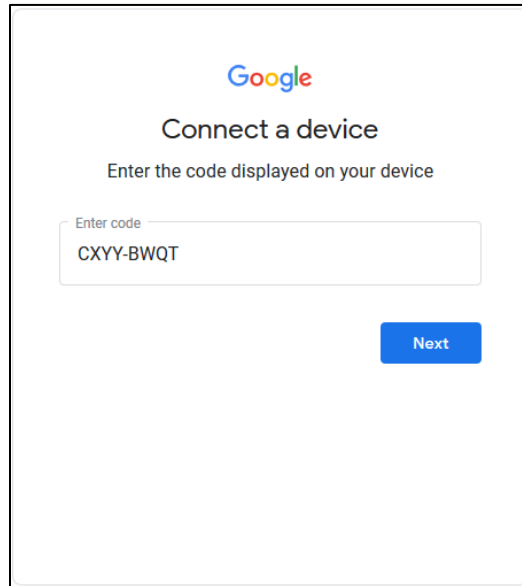
- 1) Confirm the Impulse 200E is connected to the public internet
- 2) Connect a baseband source (HDMI or SDI), and then confirm that the Impulse 200E detects the input using the “Status” page in the Web GUI (refer to section 4.1.2)
- 3) Navigate to the “Live Service/Streaming Settings” menu (Figure 58 below, see section 4.2 for more information)

**Figure 58: Live Service/Streaming Settings Page**

- 4) Confirm that the “Mode” option is set to “YouTube” (may need to set “Output” option to “RTMP/RTMPS” first).
- 5) Click the “Authorize Your Device” icon, as seen in Figure 58 above. This initiates an authorization process, starting with the prompt shown below in Figure 59.

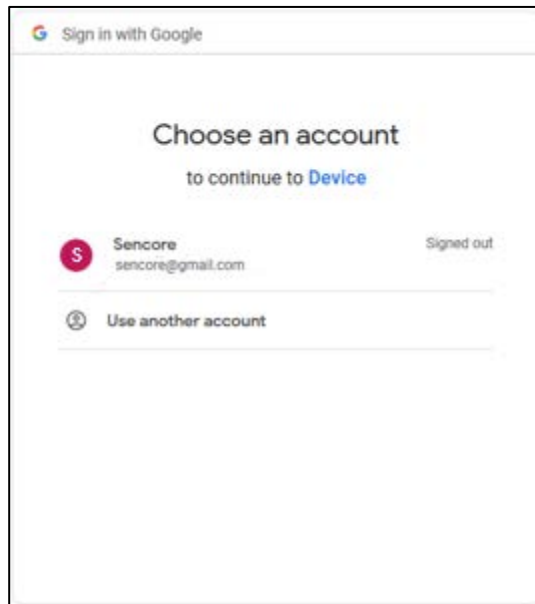
**Figure 59: Authorization Prompt**

- 6) Copy the randomly generated code from Figure 59 on the previous page (the code shown in this manual is only an example and should not be used).
- 7) Click on the URL shown in Step 2 in Figure 59, and paste the randomly generated code in resemblance to Figure 60 below.




**Figure 60: Device Connection Prompt**

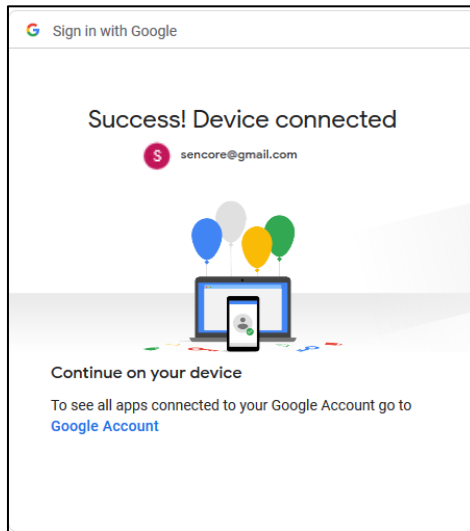
- 8) Click “Next”, and then choose an account from the prompt as seen in Figure 61 below (if no accounts are present, create or add an account to continue).



**Figure 61: Account Selection Prompt**

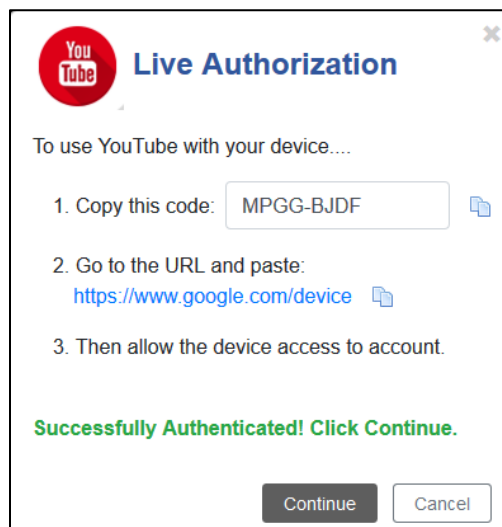


- 9) If a disclaimer with an icon  appears and the app is not verified after Step 7, follow these steps to finish verifying the device.
  - a. Click “Advanced” on the page with the disclaimer.
  - b. Click “Go to Device (unsafe)”.
  - c. A prompt will display stating that a device wants to access the Google account. Click “Allow”.
- 10) The confirmation shown in Figure 62 will appear, stating that the device is connected. This tab is no longer needed and can be closed.



**Figure 62: Successful Device Connection**

- 11) Return to the Impulse 200E “Live Service/Streaming Settings” page, and confirmation of authentication will display as seen in Figure 63.



**Figure 63: Successful Authentication**

- 12) Click “Continue” on the prompt from Figure 63; the newly authorized Impulse 200E will display information about the status of the stream as well as new

options for stream configuration (Figure 64 below, see section 4.2.1 for details on the new options).

**Basic Settings**

Input: HDMI

Mode: Youtube

Live Status:

YouTube Account: [Logout](#)

Title: youtube\_web

Privacy Status: public

Video Profile: 720p-4000Kbps-128Kbps

**Advance Settings**

[Apply](#) [Start Streaming](#) [Easy to use mode](#)

**Figure 64: Impulse 200E after Authorization**

13) Click “Start Streaming”. The “Live Status” icon will indicate progress:

- a. Grey: the device is not streaming
- b. Red: the device is preparing stream
- c. Green: the device is streaming

\*Note: the device may take up to five minutes to finish preparing stream. When it finishes, it will resemble Figure 65 below.

**Basic Settings**

Input: HDMI

Mode: Youtube

[Enter to watch live](#)

Live Status:

YouTube Account: [Logout](#)

Title: youtube\_web

Privacy Status: public

Video Profile: 720p-4000Kbps-128Kbps

**Advance Settings**

[Apply](#) [Stop Streaming](#) [Easy to use mode](#)

**Figure 65: Impulse 200E Streaming to YouTube**

14) The Impulse 200E is now streaming to YouTube. Clicking the [Enter to watch live](#) icon from Figure 65 on the previous page will navigate to the newly created RTMP stream on YouTube.

| Live Streaming        |        |                       |                             |
|-----------------------|--------|-----------------------|-----------------------------|
| Input Status:         | Good   | Output Status:        | Good                        |
| Input:                | HDMI   | Output:               | rtmp://a.rtmp.youtube.co... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                        |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4001                        |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                 |

**Figure 66: Output Status**

- 15) Navigate to the “Status Page” (section 4.1.2) and confirm the “Output Status” is now “Good” as seen above in Figure 66.

## Appendix C – Using Automatic Facebook Streaming

The Impulse 200E can interface with Facebook and set up an RTMPS stream automatically, creating a new stream instance with Facebook and bypassing the need for manual entry of the URL or Stream Key on the Impulse 200E. It is necessary to authorize the device with Facebook before streaming.

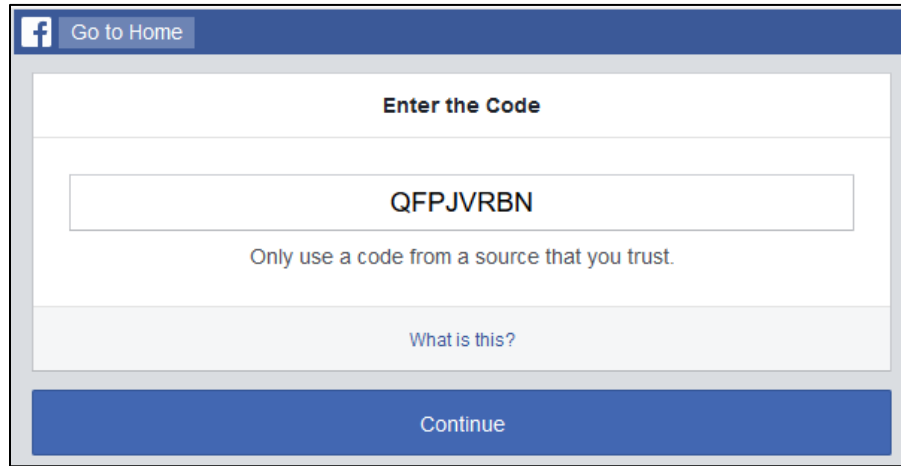
- 1) Confirm the Impulse 200E is connected to the public internet.
- 2) Connect a baseband source (HDMI or SDI), and then confirm that the Impulse 200E detects the input using the “Status” page in the Web GUI (refer to section 4.1.2).
- 3) Navigate to the “Live Service/Streaming Settings” menu (Figure 67 below, see section 4.2 for more information).

**Figure 67: Live Service/Streaming Settings Page**

- 4) Confirm that the “Mode” option is set to “Facebook” (may need to set “Output” to “RTMP/RTMPS” first).
- 5) Click the “Authorize Your Device” icon as seen in Figure 67 above. This initiates an authorization process, starting with the prompt shown below in Figure 68.

**Figure 68: Authorization Prompt**

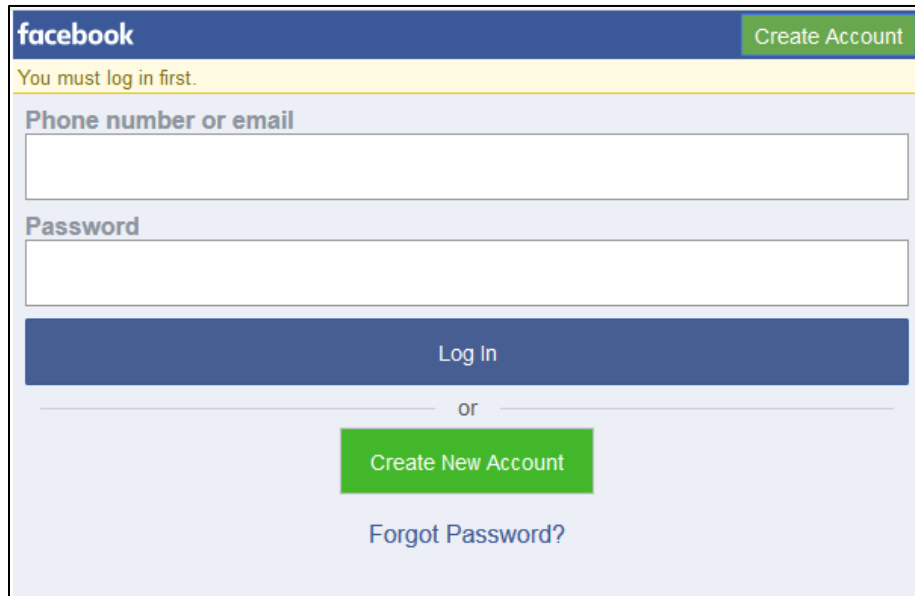
- 6) Copy the randomly generated code from Figure 68 on the previous page (the code shown in this manual is only an example and should not be used).
- 7) Click on the URL in Step 2 in Figure 68 and paste the randomly generated code similarly to Figure 69 below.



The image shows a Facebook interface for entering a code. At the top, there is a blue bar with the Facebook logo and a 'Go to Home' button. Below this, a white box contains the text 'Enter the Code'. Inside this box is a text input field containing the code 'QFPJVRBN'. Below the input field, it says 'Only use a code from a source that you trust.' and a link 'What is this?'. At the bottom of the white box is a blue button labeled 'Continue'.

**Figure 69: Device Connection Prompt**

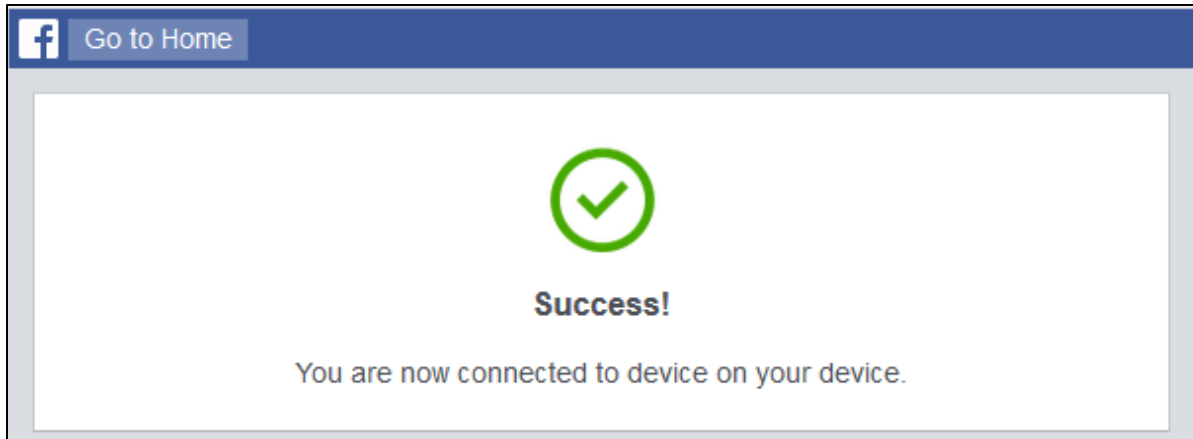
- 8) Click “Next”, and then log into Facebook through the prompt displayed in Figure 70 below.



The image shows the Facebook login page. At the top, there is a blue bar with the Facebook logo and a 'Create Account' button. Below this, a yellow banner says 'You must log in first.' The main form has two input fields: 'Phone number or email' and 'Password'. Below these fields is a blue 'Log In' button. Underneath the 'Log In' button is the word 'or' and a green 'Create New Account' button. At the bottom, there is a link 'Forgot Password?'.

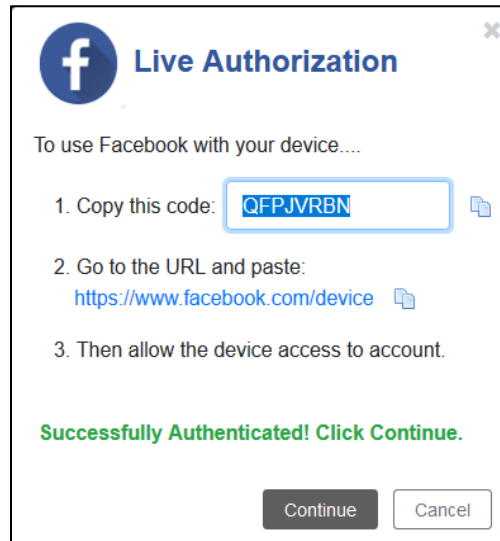
**Figure 70: Account Selection Prompt**

- 9) The confirmation shown in Figure 71 will follow, stating that the device is connected. This tab is no longer needed and can be closed.



**Figure 71: Successful Device Connection**

- 10) Return to the Impulse 200E “Live Service/Streaming Settings” page and confirmation of authentication will display as seen in Figure 72.



**Figure 72: Successful Authentication**

- 11) Click “Continue” on the prompt from Figure 72; the newly authorized Impulse 200E will display information about the status of the stream as well as new options for stream configuration (Figure 73 on the next page, see section 4.2.1 for details on the new options).

**Basic Settings**

Input: HDMI

Mode: Facebook

[Enter to watch live](#)

Stream To: Timeline

Title: facebook\_web

Description:

Privacy: Public

Video Profile: 720p-4000Kbps-128Kbps

Facebook Account: Stream Cast [Logout](#)

**Advance Settings**

[Apply](#) [Start Streaming](#) [Easy to use mode](#)

**Figure 73: Impulse 200E after Authorization**

12) Click “Start Streaming”. The stream may take up to five minutes to prepare. When finished, it will resemble Figure 74 below.

**Basic Settings**

Input: HDMI

Mode: Facebook

[Enter to watch live](#)

Stream To: Timeline

Title: facebook\_web

Description:

Privacy: Public

Video Profile: 720p-4000Kbps-128Kbps

Facebook Account: Stream Cast [Logout](#)

**Advance Settings**

[Apply](#) [Stop Streaming](#) [Easy to use mode](#)

**Figure 74: Impulse 200E Streaming to Facebook**

13) The Impulse 200E is now streaming to Facebook. Clicking the icon [Enter to watch live](#) from Figure 74 above will navigate to the newly created RTMPS stream on Facebook.

**Live Streaming**

|                       |        |                       |                               |
|-----------------------|--------|-----------------------|-------------------------------|
| Input Status:         | Good   | Output Status:        | Good                          |
| Input:                | HDMI   | Output:               | rtmps://live-api-s.faceboo... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                          |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4158                          |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                   |

**Figure 75: Output Status**

- 14) Navigate to the “Status Page” (section 4.1.2) and confirm the “Output Status” is now “Good” as shown above in Figure 75.



## Appendix D – Using Manual RTMP Streaming

The Impulse 200E can be configured for streaming to any website capable of receiving RTMP. It is necessary to create a new stream instance on the intended receiving platform and enter the corresponding URL and stream key on the Impulse 200E (note: the “Manual RTMP” setup for “Playback Streaming” [section 4.4] is nearly identical to these steps).

### General RTMP Streaming

- 1) Confirm the Impulse 200E is connected to the public internet.
- 2) Connect a baseband source (HDMI or SDI), and then confirm that the Impulse 200E detects the input using the “Status” page in the Web GUI (refer to section 4.1.2).
- 3) Navigate to the “Live Service/Streaming Settings” menu (Figure 76 below, see section 4.2 for more information on the new options).

The screenshot shows the 'Basic Settings' tab of the Live Service/Streaming Settings page. The settings are as follows:

| Setting         | Value                 |
|-----------------|-----------------------|
| Input:          | HDMI                  |
| Mode:           | Manual                |
| Output:         | RTMP/RTMPS            |
| URL:            |                       |
| Port:           | 1935                  |
| Uploading node: |                       |
| Authentication: | Disable               |
| Video Profile:  | 720p-4000Kbps-128Kbps |

At the bottom of the page, there are three buttons: 'Apply', 'Start Streaming', and 'Easy to use mode'.

**Figure 76: Live Service/Streaming Settings Page**

- 4) Confirm that the “Output” option is set to “RTMP/RTMPS”.
- 5) Confirm that “Mode” is set to “Manual”.
- 6) Confirm that the “Port” is set to 1935.
- 7) Enter the URL from the receiving website into the “URL” field.
- 8) Enter the stream key from the receiving website into the “Uploading Node” field.
- 9) Click “Start Streaming”. The Impulse 200E may take up to five minutes to prepare the stream.
- 10) Navigate to the “Status Page” (section 4.1.2) and confirm the “Output Status” is now “Good” as seen in Figure 77 at the top of the next page.

| Live Streaming        |        |                       |                             |
|-----------------------|--------|-----------------------|-----------------------------|
| Input Status:         | Good   | Output Status:        | Good                        |
| Input:                | HDMI   | Output:               | rtmp://a.rtmp.youtube.co... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                        |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4001                        |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                 |

**Figure 77: Output Status**

- 11) The Impulse 200E is now streaming to the receiving website and is ready for viewing.

## Manual YouTube RTMP Streaming

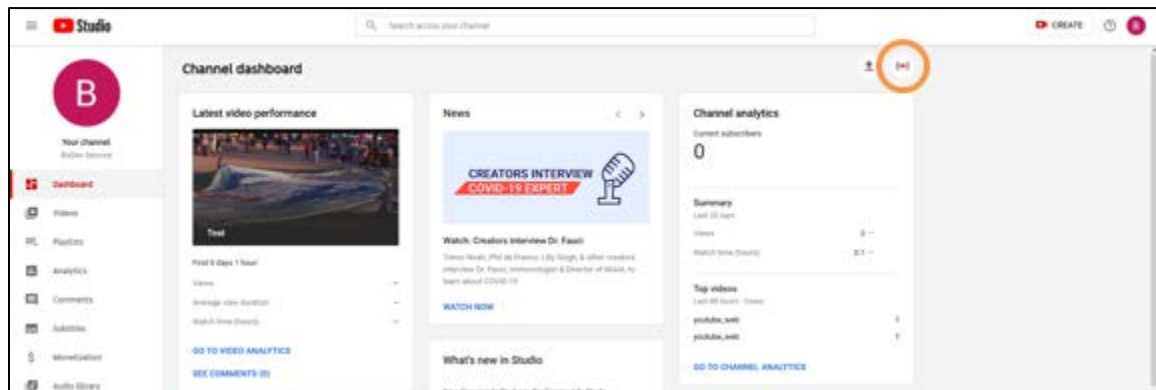
This procedure outlines the steps from “General RTMP Streaming”, using YouTube as the receiving website with emphasis on collecting the “Uploading Node” and “URL” fields for the Impulse 200E.

- 1) Perform Step 1~6 from the “General RTMP Streaming” procedure.
- 2) Navigate to [www.youtube.com](http://www.youtube.com) and log in.
- 3) Click on the “User Profile” icon in the top-right corner of the screen as indicated in Figure 78 below.





**Figure 78: User Profile Icon**

- 4) In the dropdown tab that appears under the “User Profile” icon, click “YouTube Studio”. The YouTube Studio Dashboard, seen in Figure 79, allows for creating and managing live content as well as the monitoring and analyzing streams.



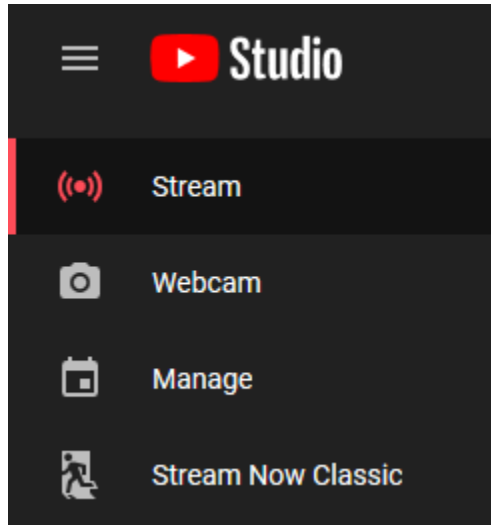
**Figure 79: YouTube Studio Dashboard Overview**

- 5) Click the “Go Live” icon  as indicated in Figure 79 above.
- 6) The YouTube Studio “Go Live” menu has options for managing all current streams as well as scheduling upcoming streams. Click the icon  in the upper-left corner as indicated in Figure 80 to expand the navigation pane.



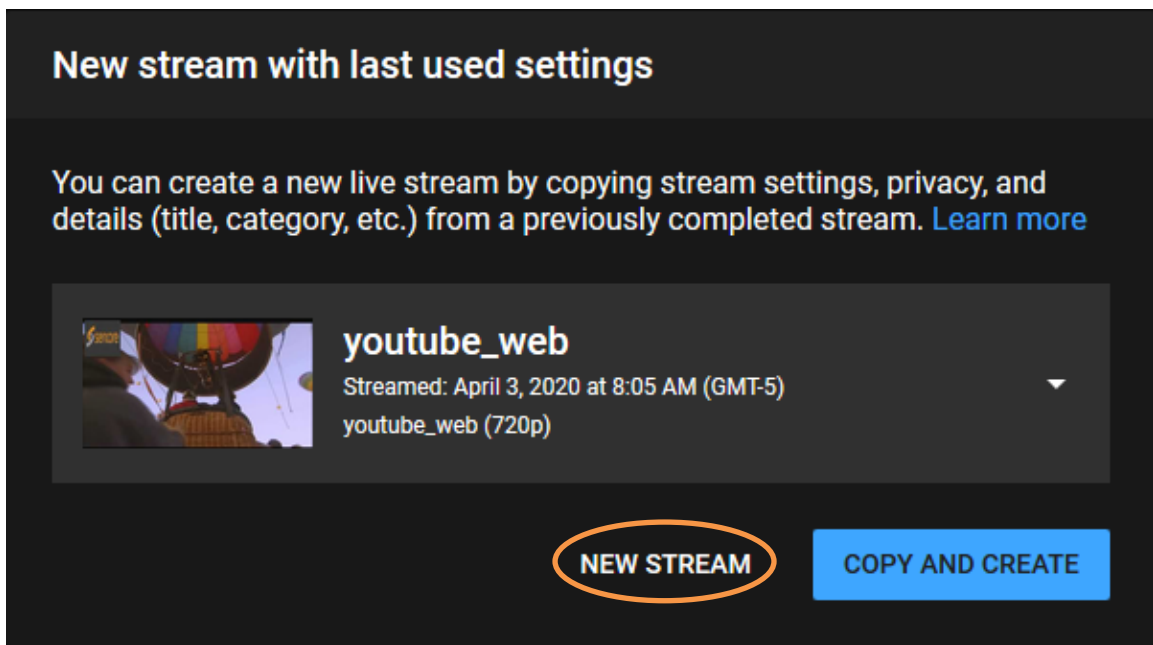
**Figure 80: Navigation Pane Icon**

- 7) On the dropdown tab, confirm that “Stream” is selected (see Figure 81 below).



**Figure 81: Stream Option**

- 8) On the prompt that follows, displayed in Figure 82, click “New Stream”.



**Figure 82: Stream Creation Prompt**

- 9) Enter a title in the “Create a title” field and choose an “Audience” similarly to Figure 83, and then click “Create Stream”.

**New stream**

SencoreTesting

Public

Add a description

Entertainment

Schedule for later

UPLOAD CUSTOM THUMBNAIL

**Audience**

**Is this video made for kids? (required)**

Regardless of your location, you're legally required to comply with the Children's Online Privacy Protection Act (COPPA) and/or other laws. You're required to tell us whether your videos are made for kids. [What's content made for kids?](#)

☒ Yes, it's made for kids

Features like personalized ads and live chat won't be available on live streams made for kids. [Learn more](#)

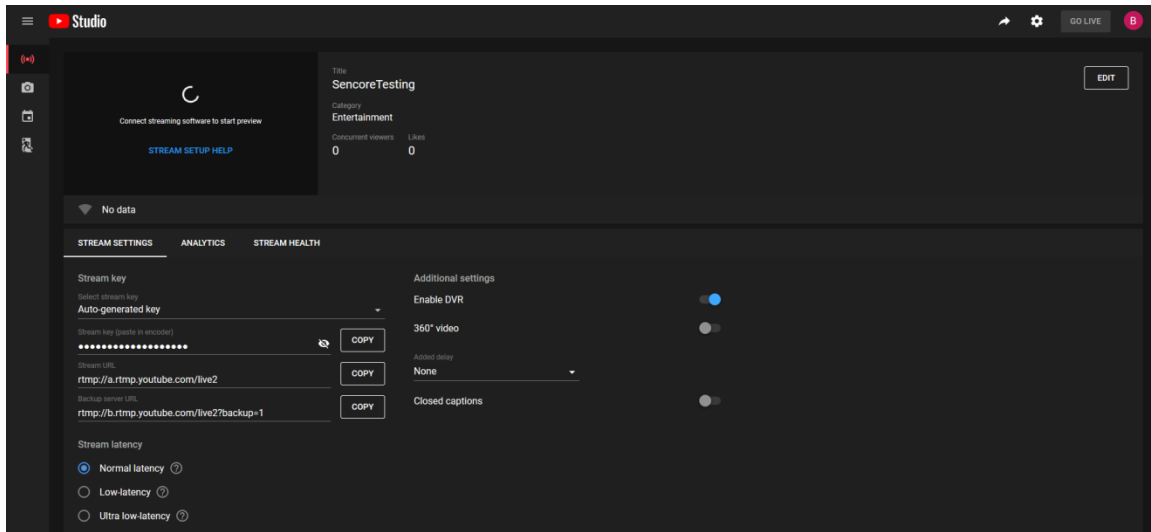
☐ No, it's not made for kids

▼ Age restriction (advanced)

**CREATE STREAM**

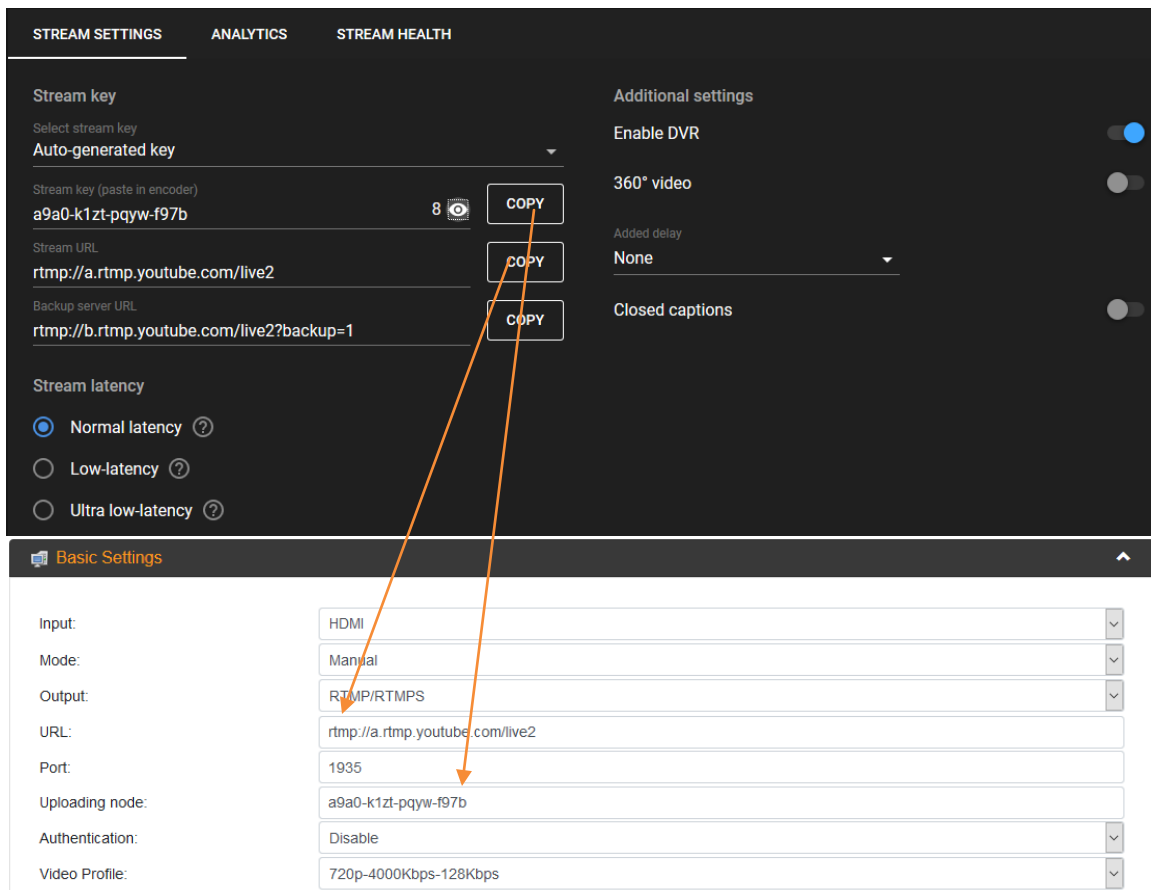
**Figure 83: New Stream Prompt**

- 10) The “Stream Menu” that follows, displayed in Figure 84 on the next page, contains analytics about the incoming stream as well as necessary information to link the Impulse 200E encoder to the YouTube stream instance. Click to select the “Stream Settings” option, underneath the icon No data to display the “Stream Key”.



**Figure 84: Stream Menu Overview**

- 11) As shown in Figure 85, copy and paste the randomly generated “Stream key” from YouTube to the “Uploading Node” on the Impulse 200E, then copy and paste the “Stream URL” from YouTube to the “URL” on the Impulse 200E. Click “Apply”.



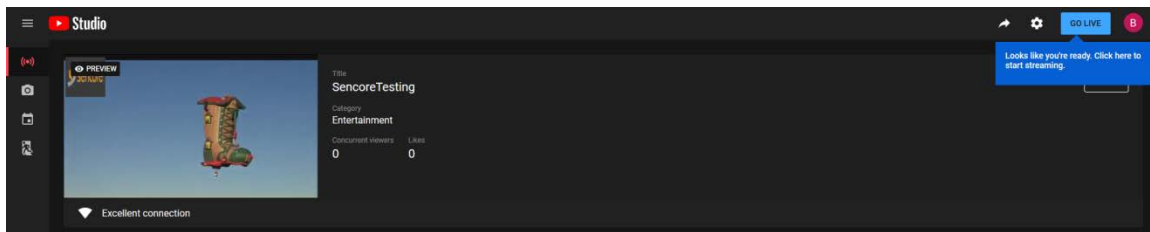
**Figure 85: Stream Key and Stream URL Locations**

- 12) On the Impulse 200E, click “Start Streaming”. The Impulse 200E may take up to five minutes to prepare the stream.
- 13) Navigate to the “Status Page” (section 4.1.2) and confirm the “Output Status” is now “Good” similarly to Figure 86.

| Live Streaming        |        |                       |                             |
|-----------------------|--------|-----------------------|-----------------------------|
| Input Status:         | Good   | Output Status:        | Good                        |
| Input:                | HDMI   | Output:               | rtmp://a.rtmp.youtube.co... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                        |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4001                        |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                 |

**Figure 86: Output Status**

- 14) Return to the “Stream Menu” on YouTube. With likeness to Figure 87 below, the connection status will indicate “Excellent Connection”, and a thumbnail of the stream will appear in the upper-left corner. Click “Go Live” in the top-right corner to begin streaming to YouTube.



**Figure 87: Stream Menu Receiving RTMP**

## Appendix E – Using Manual RTMPS Streaming

The Impulse 200E can be configured for streaming to any website capable of receiving RTMPS. It is necessary to create a new stream instance on the intended website and enter the corresponding URL and stream key on the Impulse 200E.

### General RTMPS Streaming

- 1) Confirm the Impulse 200E is connected to the public internet.
- 2) Connect a baseband source (HDMI or SDI), and then confirm that the Impulse 200E detects the input using the “Status” page in the Web GUI (refer to section 4.1.2).
- 3) Navigate to the “Live Service/Streaming Settings” menu (Figure 88 below, see section 4.2 for more information on the new options).

| Basic Settings  |                       |
|-----------------|-----------------------|
| Input:          | HDMI                  |
| Mode:           | Manual                |
| Output:         | RTMP/RTMPS            |
| URL:            |                       |
| Port:           | 443                   |
| Uploading node: |                       |
| Authentication: | Disable               |
| Video Profile:  | 720p-4000Kbps-128Kbps |

Advance Settings

Apply Start Streaming Easy to use mode

**Figure 88: Live Service/Streaming Settings Page**

- 4) Confirm that the “Output” option is set to “RTMP/RTMPS”.
- 5) Confirm that the “Mode” option is set to “Manual”.
- 6) Confirm that the “Port” is set to 443.
- 7) Enter the URL from the receiving website into the “URL” field.
- 8) Enter the stream key from the receiving website into the “Uploading Node” field.
- 9) Click “Start Streaming”. The Impulse 200E may take up to five minutes to prepare the stream.
- 10) Navigate to the “Status Page” (section 4.1.2) and confirm the “Output Status” is now “Good” as seen in Figure 89.


| Live Streaming        |        |                       |                               |
|-----------------------|--------|-----------------------|-------------------------------|
| Input Status:         | Good   | Output Status:        | Good                          |
| Input:                | HDMI   | Output:               | rtmps://live-api-s.faceboo... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                          |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4316                          |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                   |

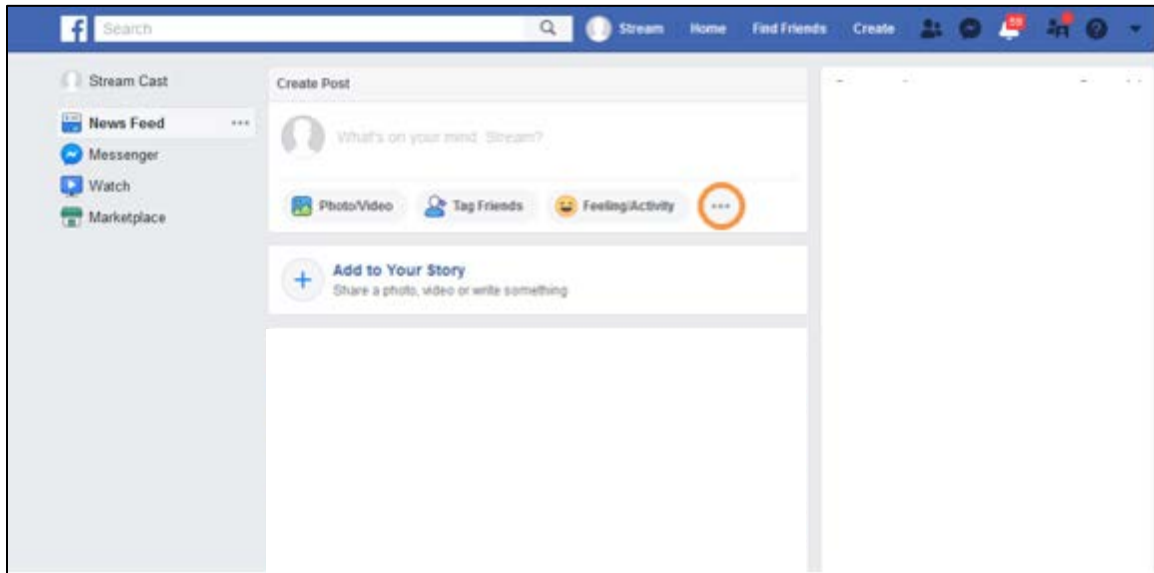
**Figure 89: Output Status**

- 11) The Impulse 200E is now streaming to the receiving website and is ready for viewing.

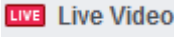
### Manual Facebook RTMPS Streaming

This procedure outlines the steps from “General RTMPS Streaming”, using Facebook as the receiving website with emphasis on collecting the “Uploading Node” and “URL” fields for the Impulse 200E.

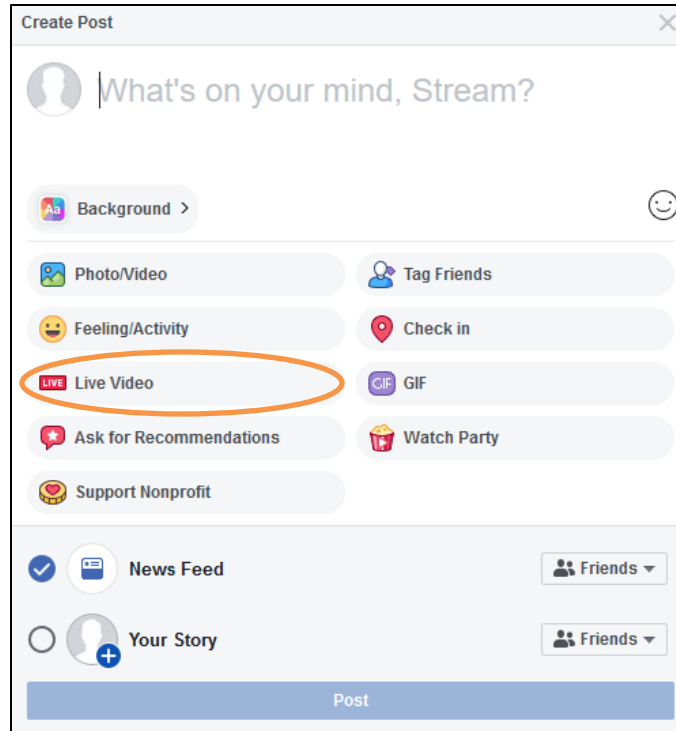
- 1) Perform steps 1~6 from the “General RTMPS Streaming” procedure.
- 2) Navigate to [www.facebook.com](http://www.facebook.com) and log in.
- 3) Expand the additional option icon  circled in Figure 90 below.



**Figure 90: Additional Options Icon**

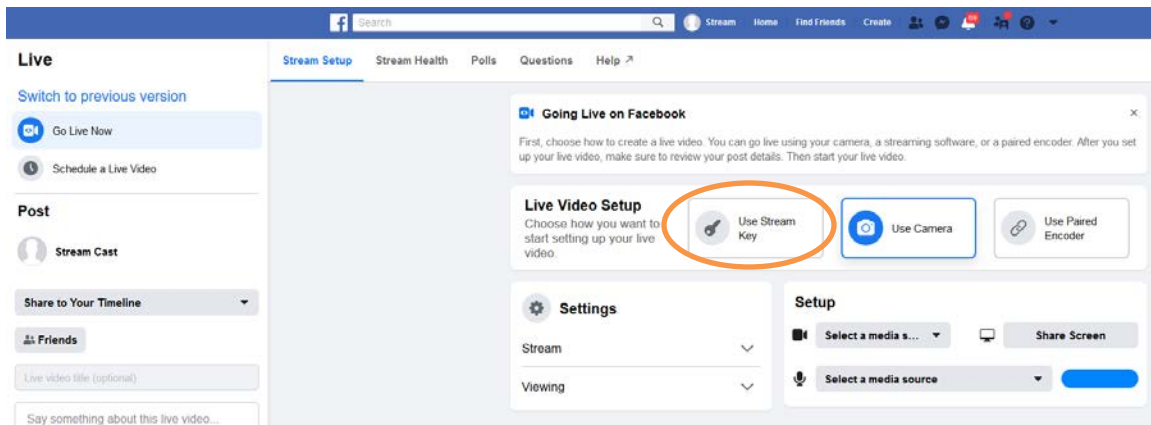
- 4) In the resulting window, click the icon  as indicated in Figure 91 on the next page to navigate to the Stream Setup page.





**Figure 91: “Live Video” Icon**

- 5) As circled on the Stream Setup page in Figure 92, click the “Use Stream Key” icon to configure Facebook for receiving RTMPS streaming from the Impulse 200E.



**Figure 92: Stream Setup Page**

- 6) Under “Live API”, the Server URL corresponds to the “URL” field on the Impulse 200E and the “Stream Key” corresponds to the “Uploading Node”. Copy and paste the items from Facebook to the fields on the Impulse 200E as shown in Figure 93 below.

**Going Live on Facebook**

First, choose how to create a live video. You can go live using your camera, a streaming software, or a paired encoder. After you set up your live video, make sure to review your post details. Then start your live video.

**Live Video Setup**

Choose how you want to start setting up your live video.

Use Stream Key

Use Camera

Use Paired Encoder

**Get Started**

Use a Persistent Stream Key ☒

This can be reused every time you go live. You can only broadcast one live video at a time with your persistent stream key.

Use a Backup Stream ☐

Once a backup stream is added to your live video, it cannot be removed. It will not affect your stream if you choose not to use it.

**Settings**

Stream

Viewing

**Live API**

Copy and paste these settings into your streaming software.

**Server URL**

rtmps://live-api-s.facebook.com:443/rtmp/

Copy

This may be referred to as "URL" or "Address" in your streaming software.

**Stream Key**

466367570982831?s\_bl=1&s\_ps=1&s\_sw=0&

Copy

Reset

Once you start to preview the broadcast you have up to 5 hours to go live.

Event Logs

**Basic Settings**

Input:

HDMI

Mode:

Manual

Output:

RTMP/RTMPS

URL:

rtmps://live-api-s.facebook.com:443/rtmp/

Port:

443

Uploading node:

466367570982831?s\_bl=1&s\_ps=1&s\_sw=0&s\_vt=api-s&a=AbxDDs0dAfOM3FDdb

Authentication:

Disable

Video Profile:

720p-4000Kbps-128Kbps

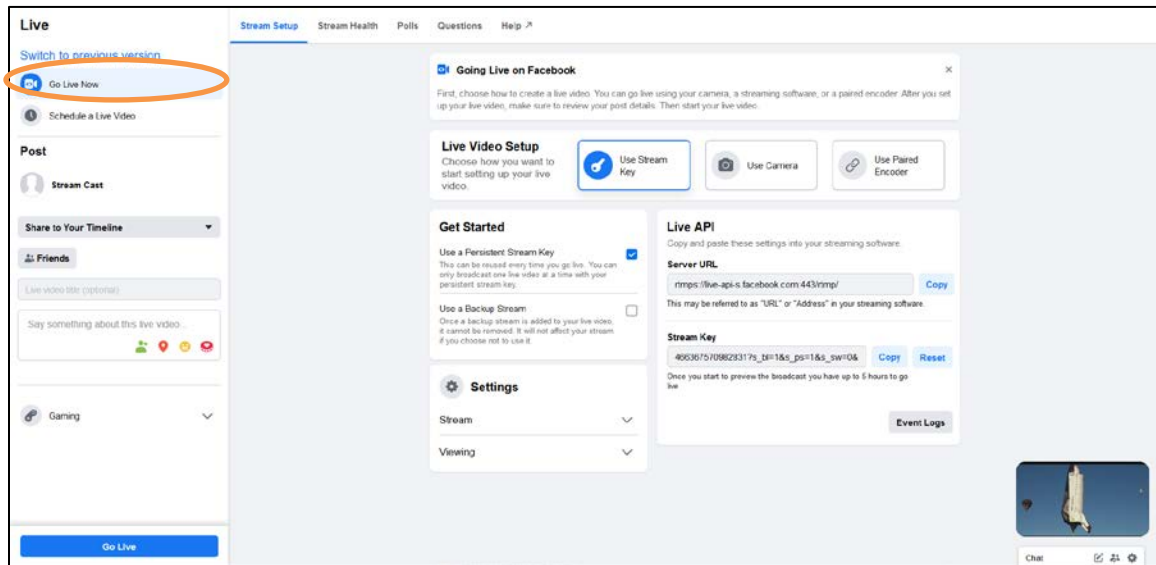
**Figure 93: Server URL and Stream Key Locations**

- 7) On the Impulse 200E, click "Start Streaming". The Impulse 200E may take up to five minutes to prepare the stream.
- 8) Navigate to the "Status Page" (section 4.1.2) and confirm the "Output Status" is now "Good" as seen in Figure 94 at the top of the next page.

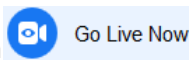
| Live Streaming        |        |                       |                                 |
|-----------------------|--------|-----------------------|---------------------------------|
| Input Status:         | Good   | Output Status:        | Good                            |
| Input:                | HDMI   | Output:               | rtmps://live-api-s.facebooko... |
| Input Resolution:     | 1080i  | Output Resolution:    | 720p                            |
| Audio Bit Rate(kbps): | 127    | Video Bit Rate(kbps): | 4316                            |
| Audio Sampling Rate:  | 48 kHz | Encryption:           | Unencrypted                     |

**Figure 94: Output Status**

- 9) Return to the “Stream Setup Page” on Facebook. Similarly to Figure 95 below, a thumbnail of the stream appears on the bottom right to indicate good connection.



**Figure 95: Stream Setup Page Receiving RTMPS**

- 10) As indicated in Figure 95 above, click the icon  to begin RTMPS streaming to Facebook.

