Impulse 300E
Internet Streaming Encoder

User Manual

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 efficient delivery of high-quality video from the source to the home. For more information, visit www.sencore.com.

Revision History

Date	Version	Description	Author
05/05/2023	1.0	Initial Release	TTH

Safety Instructions

- Read and follow all instructions
- Keep this manual
- Heed all warnings
- 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.
- To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
- 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.
- **Replacement Parts**: When replacement parts are required, be sure the service technician uses replacement parts specified by Sencore, or parts having the same operating characteristics as the original parts. Unauthorized part substitutions made may result in fire, electric shock or other hazards.

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 300E 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 call Sencore for assistance.
- 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 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 300E must be connected to a mains socket outlet with a protective earthing connection.
- For the Impulse 300E the mains plug is the main disconnect and should remain readily accessible and operable at all times.
  The Impulse 300E is equipped with an internal system battery. The Impulse 300E must be sent to Sencore service for replacement of this battery.
- To reduce the risk of shock and damage to equipment, it is recommended that the chassis grounding screw located on the rear of the Impulse 300E – be connected to the installation's rack, the vehicle's chassis, the battery's negative terminal, and/or earth ground.

CAUTION – Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

FCC Class A Information

The Impulse 300E has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Shielded cables must be used with this unit to ensure compliance with the Class A FCC limits.

⚠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.

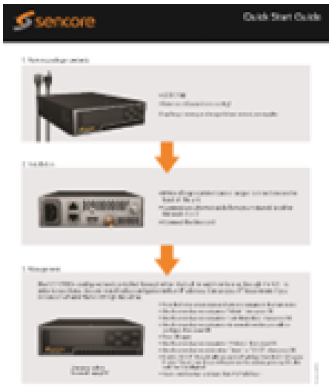
Package Contents

The following is a list of the items that are included along with the Impulse 300E:

1. AC Power Cable
2. Quick Start Guide

If any of these items were omitted from the packaging of the Impulse 300E please call 1-800-SENCORE to obtain a replacement. Manuals for Sencore products can be downloaded at www.sencore.com

1) AC Power Cable



2) Quick Start Guide

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Section 1 Overview

Introduction

This section includes the following topics:

1.1 Product Introduction

The Impulse 300E - Internet Streaming Encoder, is a versatile and easy-to-deploy MPEG2 and H.264/AVC encoder. The Impulse 300E is useful for acquiring, compressing, and delivering video and audio content across local or public IP networks.

The unit is fully controllable through the web interface to perform tasks such as setup, monitoring, and troubleshooting

This manual describes how to install, configure, and operate the Impulse 300E Internet Streaming Encoder. This unit is also backed by Sencore's best-in-class staff of ProCare support engineers.

1.2 Front Panel Overview

The Impulse 300E's physical IP addresses can be configured through the front panel using the LCD screen and buttons that are shown below. A description of using the front panel can found in Section 3.1.

Figure 1: Impulse 300E Front Panel

1. Input Indicator
2. Error Indicator
3. LCD Screen
4. Up, Down, Left and Right Buttons
5. OK and Back Buttons

1.3 Rear Panel Overview

The Impulse 300E is equipped with the hardware interfaces listed below.

Figure 2: Impulse 300E Rear Panel

1. Power Supply
2. RJ45 Network 1 and Network 2 Ports
3. HDMI Input Connector
4. SDI Input Connector

1.4 Cooling

The Impulse 300E is cooled via forced induction through the front of the unit and exhausted through the vents in the rear and sides of the chassis. The Impulse 300E is equipped with a temperature controlled status indicator. If the unit temperature exceeds 70° C the red “Error” text will illuminate on the front panel and a description of the error will appear in the “Error List.”

1.5 Rack Information

The Impulse 300E is versatile and was designed to be deployed as a standalone device for easy installation into locations with limited space. With the optional SDI2X-MOUNT kit, three (3) Impulse 300E units can be deployed in a standard 19”.

Figure 3: Impulse 300E Rack Mount Kit

Section 2 Installation

Introduction

This section includes the following topics:

2.1 Installation

The Impulse 300E unit can easily be deployed almost any place. The size is small enough that the unit can be placed on a desk, in an equipment rack or on a shelf at a test bench.

2.2 Power Connection

Using the proper power connections is vital to the safe operation of the Impulse 300E. Only use the supplied 3-prong power connector or one with equal specifications. NEVER tamper with or remove the 3rd – prong grounding pin. This could cause damage to the Impulse 300E, personnel, or property.

2.3 AC Power Connection

The Impulse 300E is intended for use on either 120V or 240V systems. The power supply will automatically detect the system it is connected to. To hook up the power use the following steps:

1. Locate the AC power cord that was included with the Impulse 300E.
2. Plug the female end of the power cord (end with no prongs) into the back of the unit.
3. Locate a protected outlet to plug the male end of the power cable into.

2.4 Maintenance

The Impulse 300E is virtually a maintenance-free piece of equipment. There are no user serviceable parts on the inside of the unit.

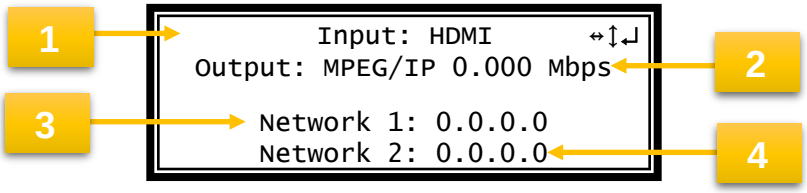
Section 3 Operating the Front Panel

Introduction

This section includes the following topics:

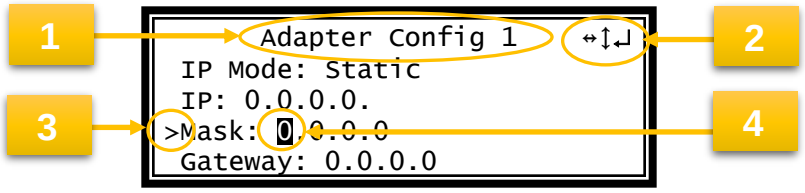
3.1 Impulse 300E Front Panel Overview

The Impulse 300E front panel allows configuration of the network interface settings, application of profiles, and viewing alarm statuses and unit information. The screen below is the idle screen of the Impulse 300E. This idle screen shows the active input type and output type/bitrate, as well as the IP addresses of the unit's network interfaces.



1. Active input
2. Output type and bitrate
3. IP address of "Network 1" interface
4. IP address of "Network 2" interface

The figure on the next page shows a typical screen on the front panel. Several important features have been circled and noted. These features are common to all screens and assist when navigating, viewing, and editing unit information. The button allows the user to return to the home screen, cancel settings and go back a menu. In order to edit a selected parameter the OK button must be pressed. Once a parameter has been changed the OK button must be pressed again before the change takes effect on the unit.



1. Screen title.
2. Icons indicate which control buttons are currently valid for entry.
3. Cursor shows which line is active.
4. When editing, active character or item is highlighted.

3.2 Network Setup via Front Panel

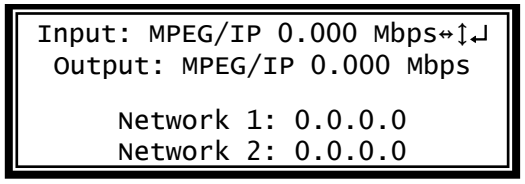
The Impulse 300E can be setup on a network connection to allow remote management and SNMP configuration. For these features to work, the network settings for the Impulse 300E must first be configured properly for the network it is connected to. By default, the Impulse 300E follows this configuration scheme:

- Network 1:
  - Mode: DHCP
- Network 2:
  - Mode: Static
  - IP Address: 10.0.0.72
  - Subnet Mask: 255.255.255.0
  - Gateway: 0.0.0.0

3.2.1 Configuring IP Mode (Static or DHCP)

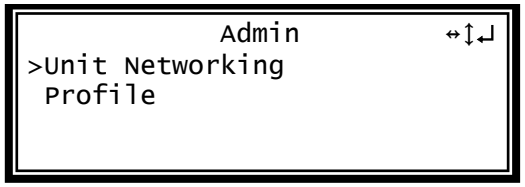
To setup the Impulse 300E with a static IP address, use the following steps:

1. Press the OK button (twice if the front panel is in “Idle” mode).

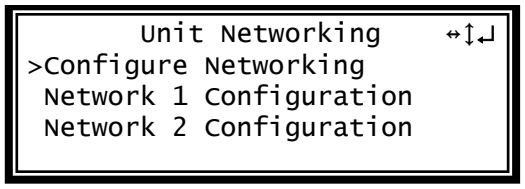


2. Use the ▲ and ▼ buttons to move the cursor to “Admin”, then press the OK button.

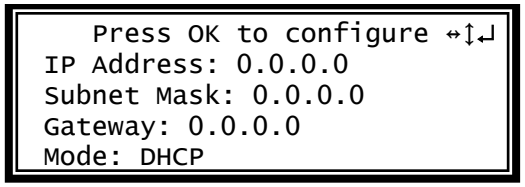
3. Use the ▲ and ▼ buttons to move the cursor to “Unit Networking”, then press the OK button.



4. Use the ▲ and ▼ buttons to move the cursor to “Network 1 Configuration”, then press the OK button.



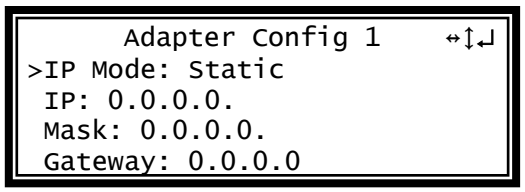
5. If unit is currently set to “DHCP”, it can be set to “Static” by pressing OK to navigate to the “Adapter Config 1” Menu.



6. Press the OK button to select “IP Mode”. Use the ▲ and ▼ buttons to highlight “Static”. Press the OK button to apply the changes.

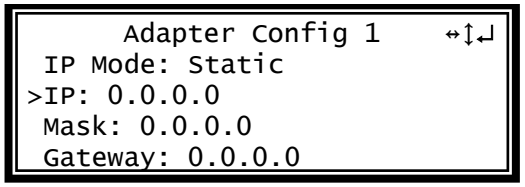
7. Alternatively, if the unit is currently set to “Static”, it can be set to “DHCP” by using the ▲ and ▼ buttons to move the cursor to “IP Mode”. Press the OK button to enter “Adapter Config 1” menu.

8. Use the ▲ and ▼ buttons to change the selection to “DHCP”, then press the OK button to save the selection.

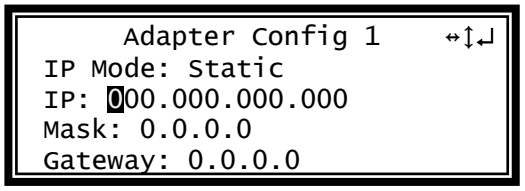


3.2.2 Configuring Static IP Address/Subnet Mask/Gateway

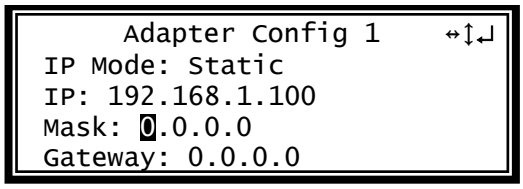
1. If it is not already selected, use the ▲ and ▼ buttons to move the cursor to “IP”, then press the OK button to select it.



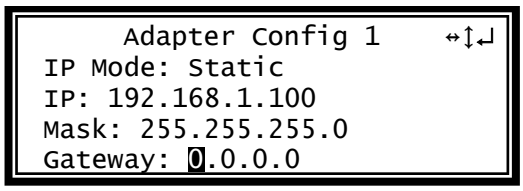
2. Use the ◄ and ► buttons to select the column to edit and use the ▲ and ▼ buttons to change the IP, then press the OK button to save the selection.



3. The cursor will now be on “Mask”.
4. Use the ◄ and ► buttons to select the column to edit and use the ▲ and ▼ buttons to change the Mask, then press the OK button to save the selection.



5. The cursor will now be on “Gateway”.
6. Use the ◄ and ► buttons to select the column to edit and use the ▲ and ▼ buttons to change the Gateway, then press the OK button to save the selection.



Section 4 Operating the Web Interface

Introduction

This section includes the following topics:

4.1 Impulse 300E Web Interface Overview

4.1.1 Logging into the Impulse 300E Web Interface

To access the Impulse 300E web interface use one of the following supported browsers and navigate to the unit's IP address:

- Internet Explorer 11 & above
- Microsoft Edge 42 & above
- Firefox 77 & above
- Google Chrome 83 & above

By default the admin user account is available with "mpeg101" as the password. After entering the password, press enter or click the login button to login to the web interface.

Default Credentials

User: admin

Password: mpeg101

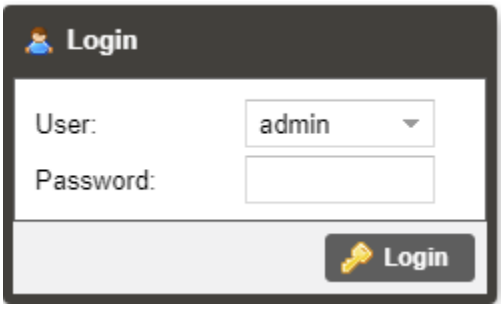


Figure 4: Login Prompt

4.2 Main Tab

The Main tab of the Impulse 300E web interface is used to configure the route of streams in and out of the unit. When configuring the Impulse 300E, begin at the top of the main menu with the inputs, then configure processing, and work down to the output.

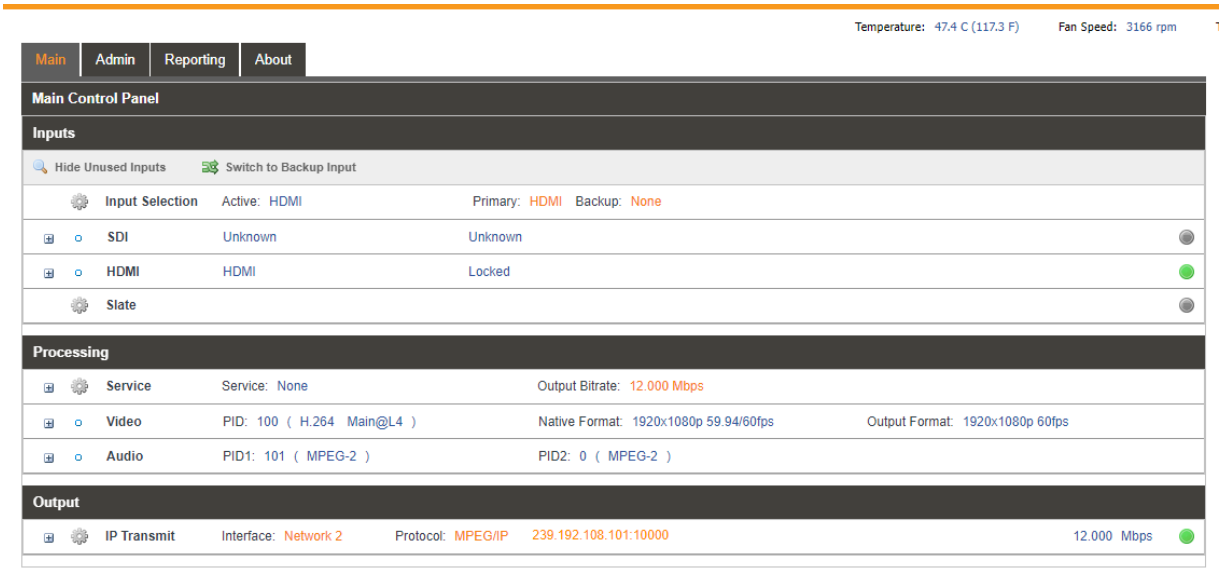


Figure 5: Main Panel Overview

4.2.1 Buttons and Status Indicators

The icon is shown where user configuration is available. Clicking this button will open menus where settings can be changed by the user.

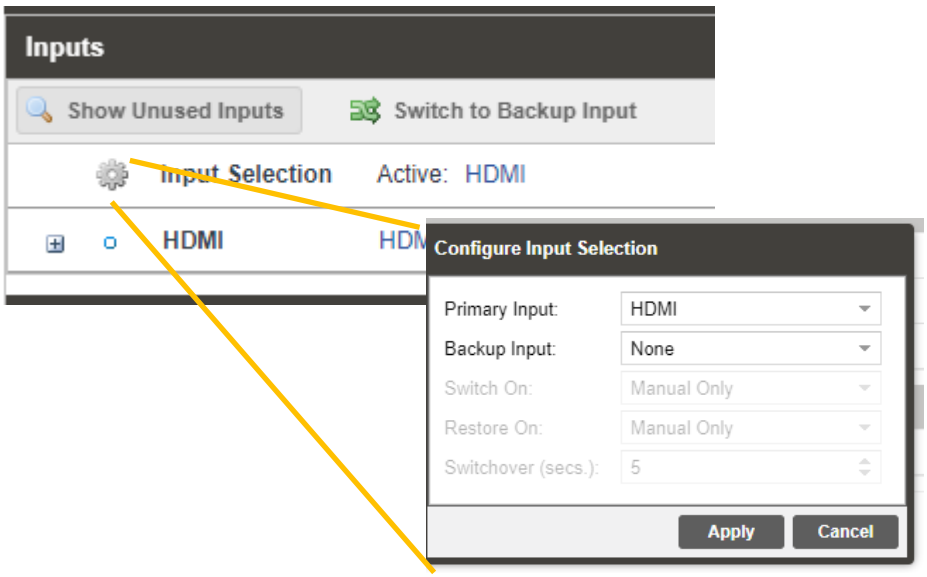


Figure 6: Configuration Menus

When the icon is shown, additional status information can be viewed. Clicking this button will expand the menu to display the additional status information. All text in status menus shown in **ORANGE** are statuses of user configurable settings.

Text shown in **BLUE** is not user configurable and is strictly a status or value. To collapse the status windows again click the icon.

Status in the Impulse 300E web interface is shown with LED status indicators:

Green LED		Status is good. No errors are present and function is operating normally.
Red LED		Status indicates function is affected by active error. To view the errors, navigate to Reporting tab to view Active Errors.
Grey LED		Status is inactive. Function is currently disabled or unavailable.

4.2.2 Configuring Active Inputs

This menu is used to select the input that will be routed to the IP transmit. This menu allows for configuration of a primary and backup slate (still image) input for manual switching and automatic failover settings. If a baseband input is selected, then no secondary input can be added.

In case there is a TS sync loss on the primary input, the Impulse 300E is capable of detecting the failed state and switching to a backup (slate) input in order to provide a continuous output. Input switch conditions, restore conditions and switchover timing is user configurable. To force the Impulse 300E to switch between the Primary and Backup Inputs, click the Switch to Backup Input button.

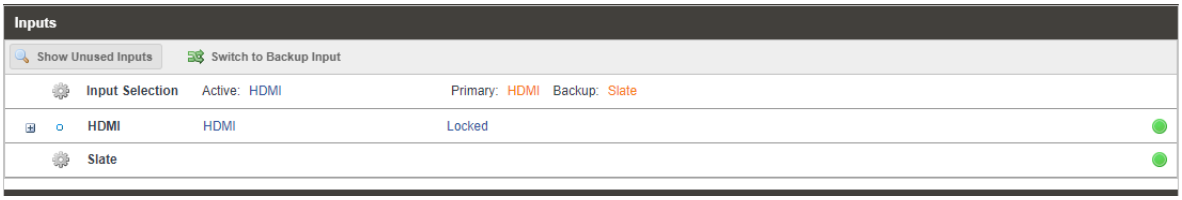


Figure 7: Active Input Indicator

The Impulse 300E web interface hides inactive inputs by default. Inputs that are not configured as the Primary Input or Backup Input can be shown and configured or hidden again by clicking the Show Unused Inputs and Show Unused Inputs icons.

To change the active input and failover settings click the icon next to Input Selection, and the following menu will be shown.

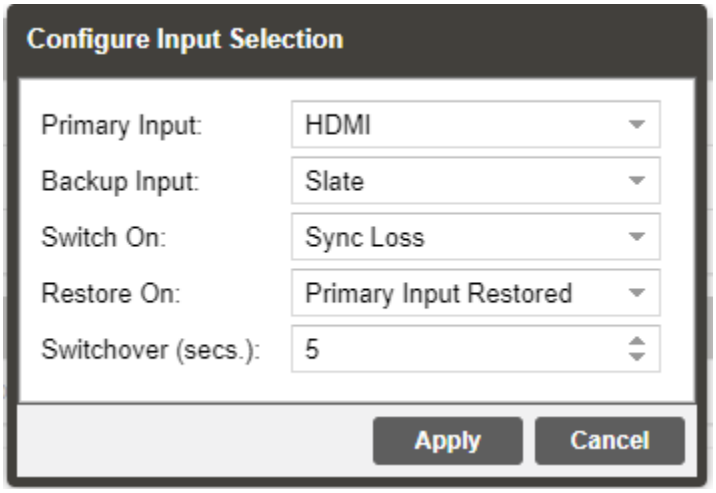


Figure 8: Input and Failover Configuration Menu

Setting	Range	Description
Primary Input	HDMI, SDI, HDMI or None	Used for both normal operation and input failover settings. During normal operation, this input will be the active input.
Backup Input	Slate or None	During failover operation this input will become the active input. The trigger for the unit to switch to this input is configured in the following setting.
Switch On	Manual Only Sync Loss Process Failure	*Manual Only*: the unit will not switch inputs automatically. The user must manually switch inputs. *Sync Loss*: the Impulse 300E will switch from the primary to the backup input if the primary stream loses synchronization for the duration of the Switchover Interval. *Process Failure:* the Impulse 300E will switch from the primary to the backup input if the primary encode process fails for the duration of the Switchover Interval
Restore On	Manual Only Primary Input Restored Backup Input Sync Loss Process Failure	*Manual Only*: the unit will not restore to the primary input automatically. The user must manually switch inputs. *Primary Input Restored*: the Impulse 300E restores to primary when the Primary input regains transport stream synchronization. *Backup Input Sync Loss*: the unit will switch from backup to primary when the backup stream loses synchronization for the duration of the Switchover interval. *Process Failure:* the Impulse 300E will switch from the backup to primary input if the backup encode process fails for the duration of the Switchover Interval
Switchover	1-20 seconds	The time in seconds which *Switch On* or *Restore On* value must remain in the configured state before the Impulse 300E switches between the Primary Input and Backup Input or vice versa.

4.2.3 Configuring Processing

This section involves configuration for transcoding and encoding settings.

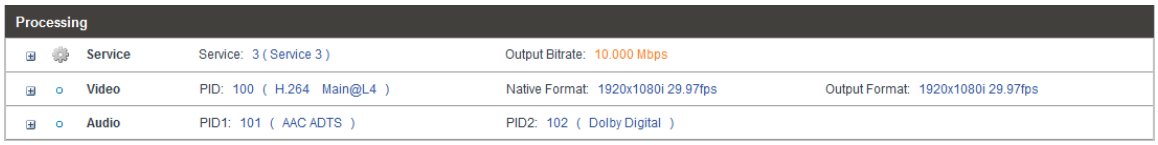


Figure 9: Processing Overview

4.2.3.1 Service Menu

In this menu the primary and backup active inputs can be assigned to the service selection menu for processing.

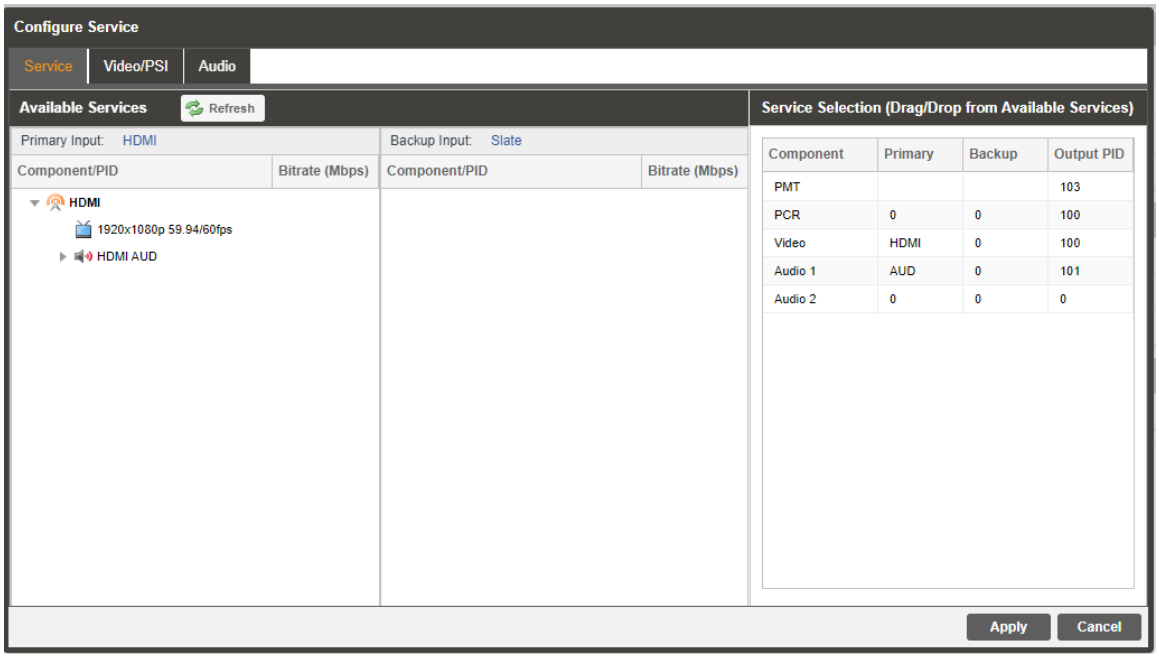


Figure 10: Service Menu

The leftmost column under “Available Services” shows the available services for the primary input, while the middle column indicates services available for the backup input.

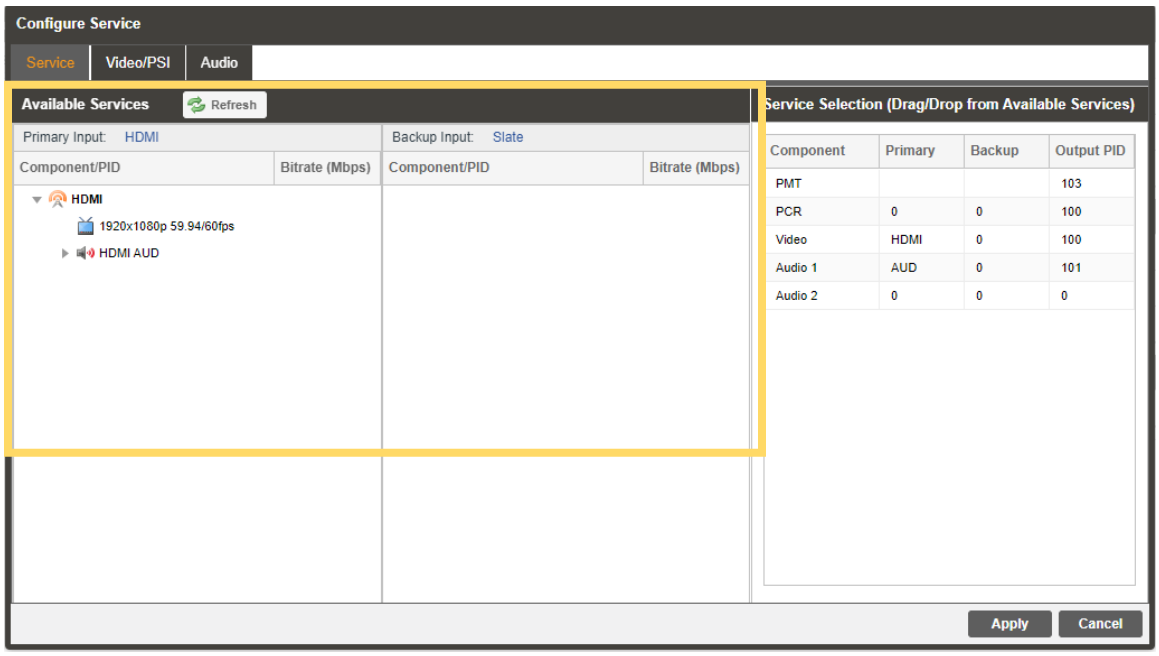


Figure 11: Primary and Backup Services

The rightmost column is the Service Selection table. Populate the “Primary” and “Backup” columns of this table with the available services to indicate which input will be processed by the unit.

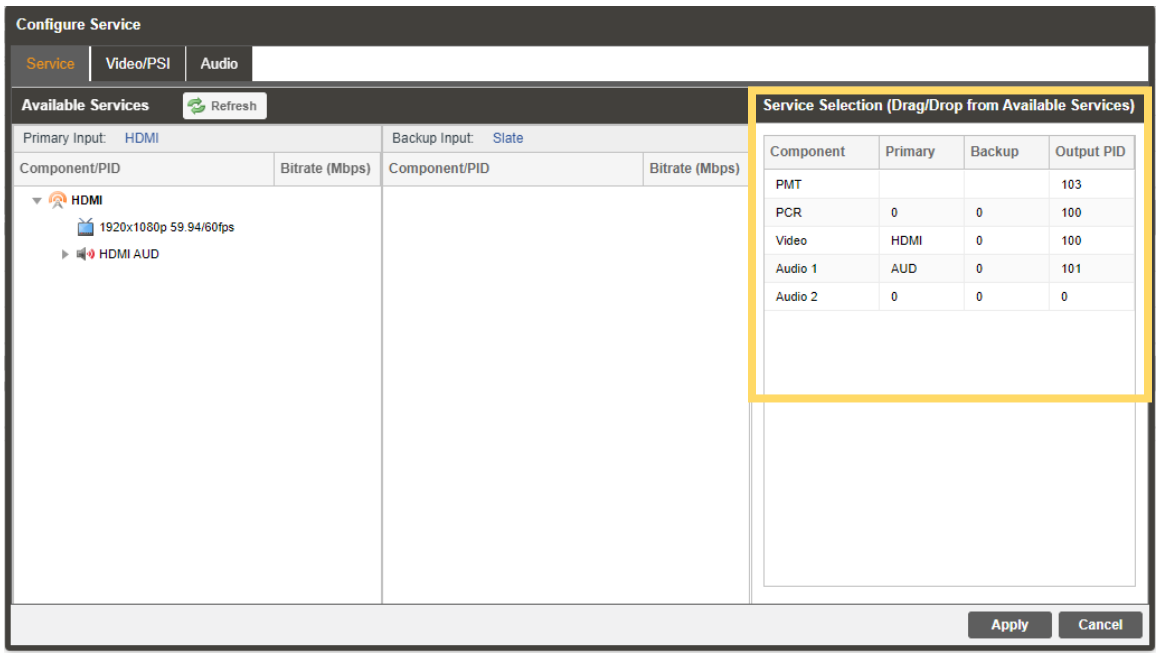


Figure 12: Service Selection Table

The active input will be processed and mapped to the corresponding PIDs chosen in the "Output PID" column. PID numbers can be entered manually into each field of the Output PID section of the service selection table.

When the primary input is the active input, the unit will process the sources specified in the primary column. When the backup input is the current active input, the unit will process sources from the backup column. For additional information on configuring active inputs, please refer to Section 4.2.2.

The input source can be mapped quickly and easily to the primary and backup columns by dragging and dropping the service from the available services to the service selection table as shown in Figure 22.

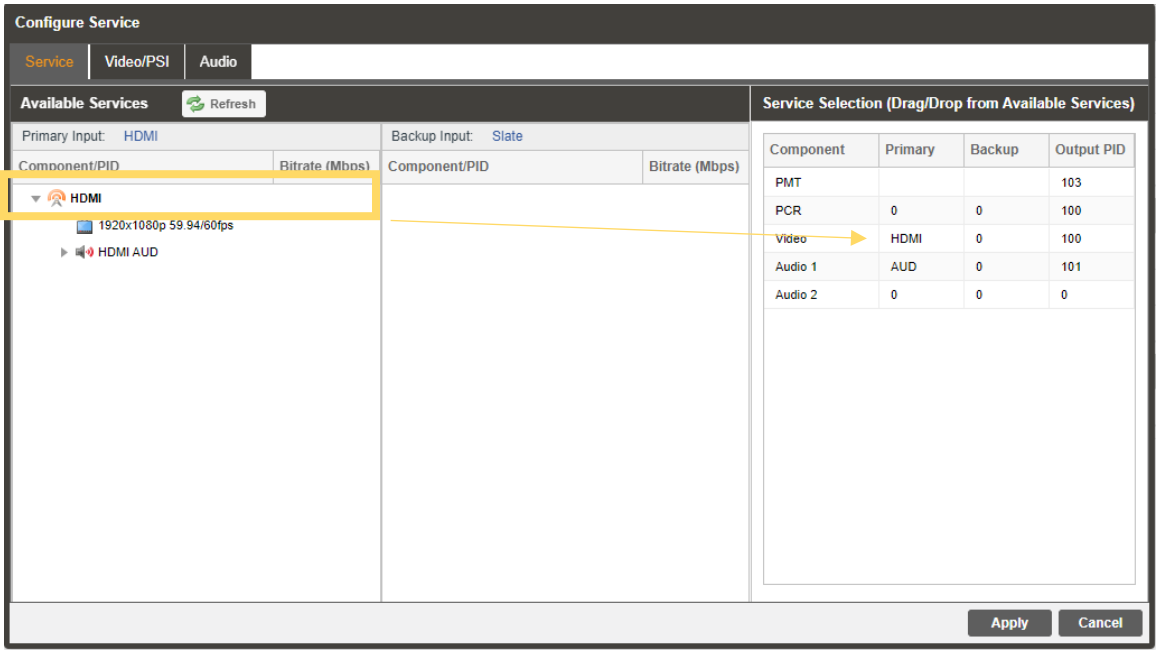


Figure 13: Mapping Services for Processing

When holding the intended service, valid locations to place it will be highlighted in yellow. When hovering over a valid location, the icon on the cursor will change from to and the source can be dropped there.

When dropping a source in the service selection table, all new entries in the service selection table are denoted by small, red arrows in the top left of the box as shown in Figure 23. New entries will not take effect until after clicking the “Apply” button.

Component	Primary	Backup	Output PID
PMT			103
PCR	0	0	100
Video	HDMI	0	100
Audio 1	AUD	0	101
Audio 2	0	0	0

Figure 14: New Selection Entries

The drag and drop method can also be used for individual source components. Clicking the icon by each of the input services will reveal individual components. Each of these components can be selected and moved over to the service selection table the same way as the full service.

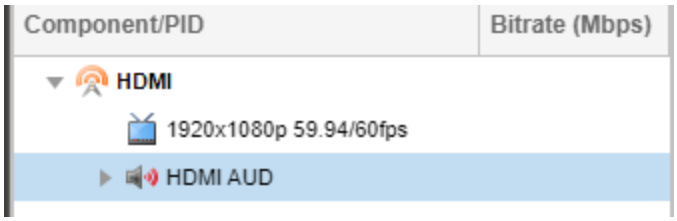


Figure 15: Service Expansion

4.2.3.2 Configuring Video/PSI Settings

This menu is used to configure Video and PSI settings for the encoding process.

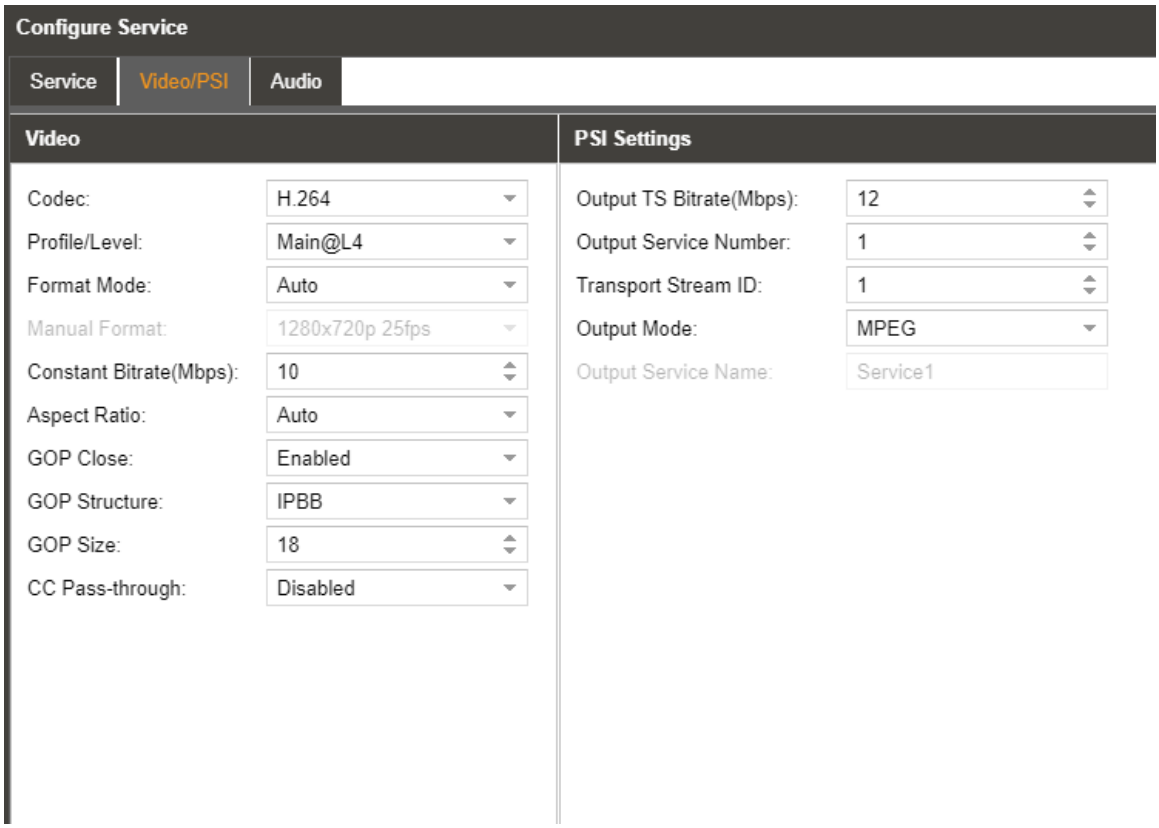


Figure 16: Video/PSI Menu

Video Settings

Setting	Range	Description
Profile/Level	Base, Main, High L2 to L5.1	Defines video profile and level to encode as Review specifications in Appendix C for recommended settings
Format Mode	Auto Manual	*Auto:* the Impulse 300E will output video to match the incoming native video format *Manual:* the user defines the video format the Impulse 300E will output
Manual Format	Review Appendix C for supported formats	Video format the Impulse 300E will output
Constant Bitrate (Mbps)	0.5Mbps to 18Mbps	Defines video bitrate of the encoded service
Aspect Ratio	Auto 4x3 16x9	Defines aspect ratio of the video the encoder will output. When set to *Auto*, the Impulse 300E will output aspect ratio to match the incoming native video format
GOP Close	Enabled Disabled	When enabled, B and P frames inside the GOP will be able to reference frames outside of the GOP
GOP Structure	I IP IPB IPBB IPBBB	Defines encoded sequence of I-Frames, P-Frames and B-Frames
GOP Size	12 ~ 48 Must be multiple of GOP Structure	Specifies the size of the GOP, or the number of B-Frames and P-Frames between I-Frames.
CC Pass-through	Enabled Disabled	When enabled, the Impulse 300E will pass existing CEA-708 Closed Captions from the input to the output.

PSI Settings

Setting	Range	Description
Output TS Bitrate (Mbps)	1Mbps to 18Mbps Must be greater than combined video, audio and ancillary bitrate	Defines the overall bitrate of the TS output
Output Service Number	1 – 65535	The service number of the encoded output service

Transport Stream ID	1 – 65535	Manually specifies the TS ID Number
Output Mode	MPEG DVB ATSC	The output standard of the TS. Selecting *MPEG* will add PAT/PMT tables to describe the outbound service. *DVB* will add PAT/PMT/SDT tables, and *ATSC* will add PAT/PMT/MGT tables.
Output Service Name	User Defined	When Output Mode is DVB/ATSC, the service will have a name associated with it.

4.2.3.3 Configuring Audio Settings

This menu configures the audio encode and transcode settings for the output TS.

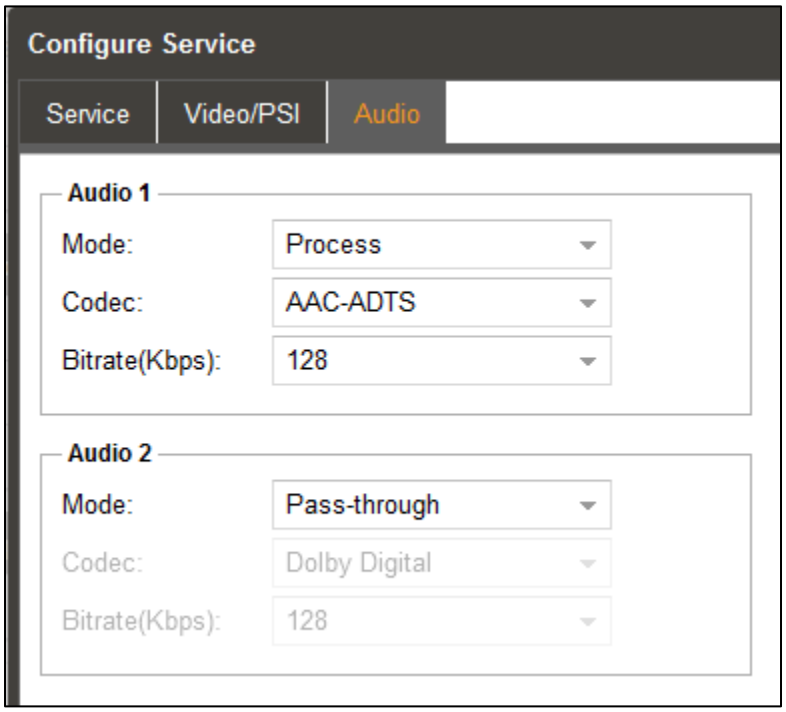


Figure 17: Audio Menu

Audio 1 and Audio 2 settings are the same and indicated in the table below.

Setting	Range	Description
Mode	Process Pass-through	Defines whether or not to process the PID assigned to the Audio. CODEC and Transport Stream ID are only available when set for *Process*
CODEC	MPEG-2 Dolby Digital AAC-ADTS	Specifies the audio CODEC the Impulse 300E will encode to
Bitrate(Kbps)	16 – 448, N/A	The bitrate of the encoded audio pair

4.2.4 Configuring IP Transmit

This menu allows the user to configure the IP transmit for the output of MPEG/IP unicast or multicast, SRT and RIST streams. The available options are dependent upon whether the “Transmit Type” field is set for “MPEG/IP”, “SRT” or “RIST”.

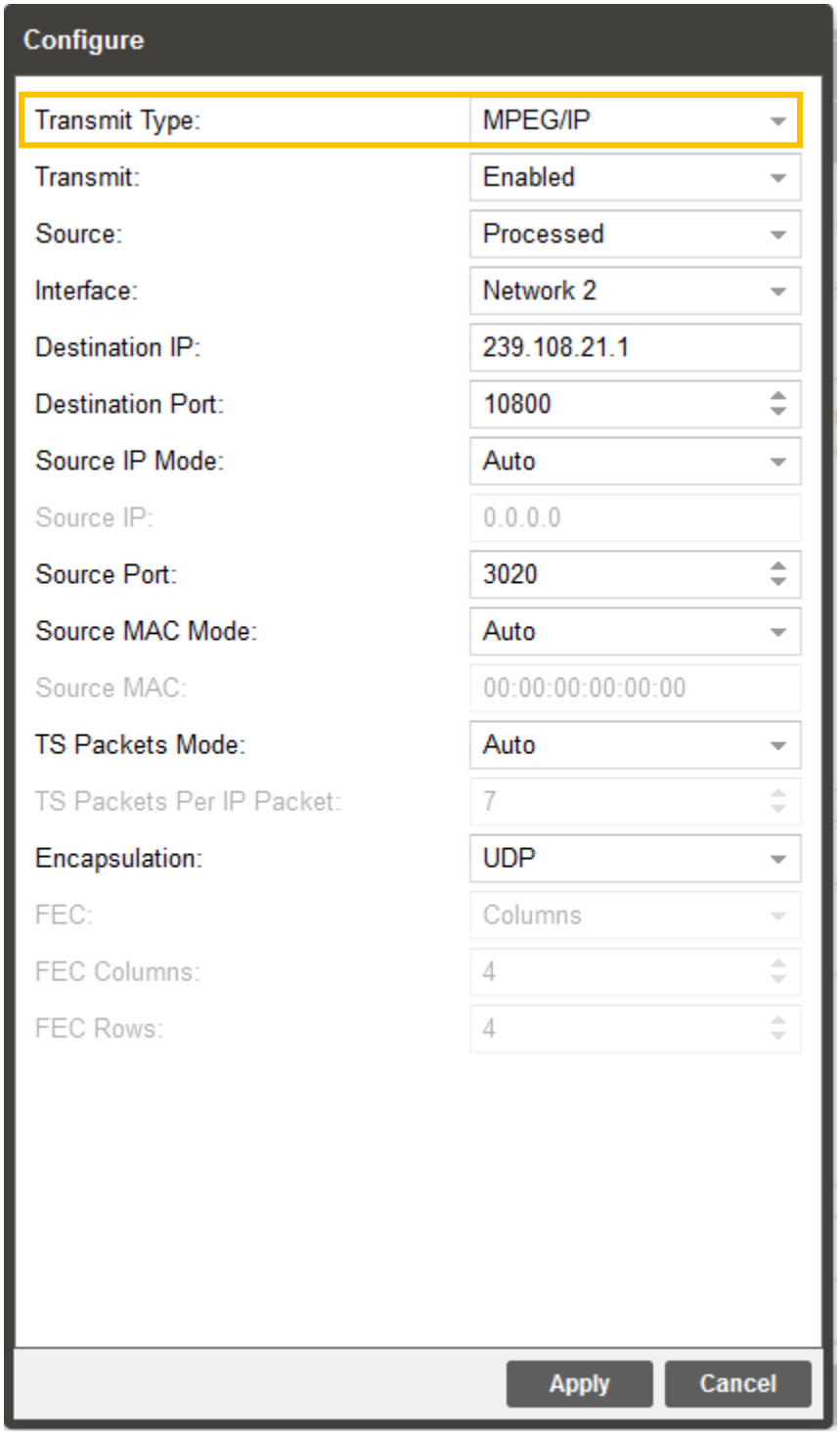


Figure 18: IP Transmit Options – Transmit Type

4.2.4.1 Configuring MPEG/IP Transmit

The figure below shows the options available when the “Transmit Type” is set to MPEG/IP.

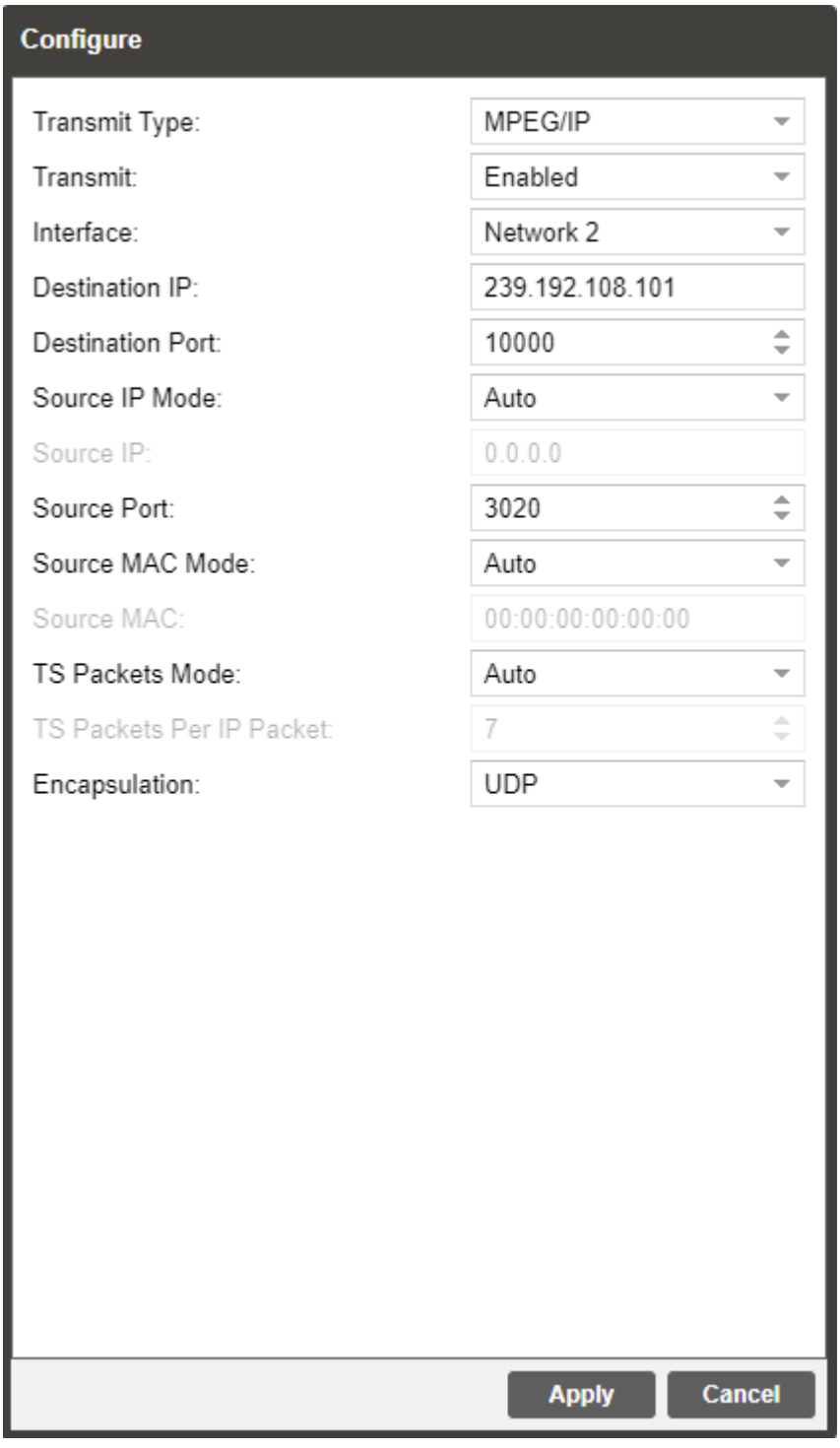


Figure 19: IP Transmit Options - MPEG/IP

Setting	Range	Description
Transmit	Enabled Disabled	Enable or disable the MPEG/IP transmit
Interface	Network 1 (eth0) Network 2 (eth1)	Defines which physical port to use for the MPEG/IP transmission.
Destination IP	Multicast - 224.0.0.0 - 239.255.255.255	When sending to a unicast address the destination IP address must match the receiving device's IP address. When sending a multicast the address must be sent within the multicast IP range.
Destination Port	0 - 65535	When sending to a unicast address, the destination port must match the receiving device's port. When sending a multicast, any port within the accepted range can be used, but it is good practice to always choose a port >1030 and an even number
Source IP Mode	Auto Manual	When set to *Auto*, the source IP address on the output stream will match the corresponding local interface. When set to *Manual*, a user entered address can be assigned to the output stream.
Source Port	0 - 65535	Defines the source IP port to be assigned to the output stream.
Source MAC Mode	Auto Manual	When set to *Auto*, the source MAC address of the output stream will match the corresponding local interface. When set to *Manual*, a user entered address can be assigned to the output stream.
TS Packets Mode	Auto Manual	In *Auto* mode, the source will define the number of TS packets per IP packet. In *Manual* mode, the user will define the number of TS packets per IP packet.
TS Packets Per IP Packet	1-7	The number of TS packets that are contained with a single IP packet. Default is 7. Lowering this value below default increases network overhead.
Encapsulation	UDP RTP	Sets the Encapsulation to UDP or RTP

Click the ⊞ icon by the MPEG/IP transmit to view information about the outbound signal. Clicking the ⊟ icon will hide the MPEG/IP statistics.

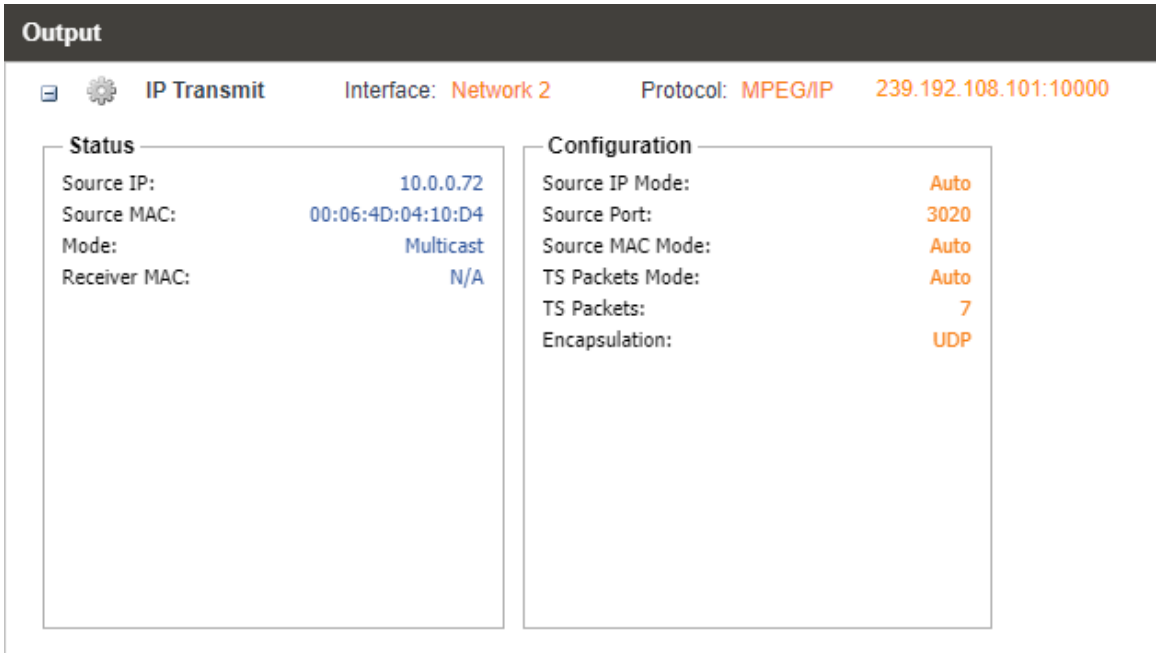


Figure 20: MPEG/IP Transmit Statistics

4.2.4.2 Configuring SRT Transmit

The figure below shows the options available when the “Transmit Type” is set to SRT

Figure 21: IP Transmit Options – SRT

Setting	Range	Description
Transmit	Enabled Disabled	Enable or disable the SRT transmit
Source	Unmodified Input Processed	*Unmodified Input:* routes the input directly to the output without transcoding *Processed:* routes the input through the encode or transcode process before transmitting
Interface	Network 1 (eth0) Network 2 (eth1)	Defines which physical port to use for the SRT transmission
Call mode	Caller Listener Rendezvous	Defines the 'handshake' mechanism to be used when establishing connection
Remote IP	xxx.xxx.xxx.xxx	Defines the IP address of the stream on the remote device
Remote Port	1 – 65535	Defines the port of the stream on the remote device
Local Port Mode	Auto, Manual	*Auto:* the local port number will be assigned automatically *Manual:* the local port number will be defined by the user
Local Port	1 – 65535	Defines the local port number
Discovery Timeout (seconds)	1 – 100, use 0 for infinite	Defines the length of time to wait for the stream to be discovered
Latency (ms)	1 – 8000	Defines buffer size in milliseconds
Bandwidth Overhead (%)	0 – 50	Defines the amount of bandwidth overhead to allow for
TS Packets Mode	Auto, Manual	In *Auto* mode, the source will define the number of TS packets per SRT packet. In *Manual* mode, the user will define the number of TS packets per SRT packet
TS Packets Per SRT Packet	1 – 7	Defines the number of TS packets per SRT packet when mode is *Manual*
Time To Live (hops)	1 – 254	Defines the number of network devices the transmission is allowed to pass through
Type of Service (ToS)	0 – 255	Specifies the desired Quality of Service (QoS). This value will be assigned to the Type of Service field of the IP Header for the outgoing stream.
Encryption Mode	Disabled, AES-128, AES-256	Defines a decryption of the received signal is needed and which decryption standard to use.

Passphrase	User Entry	Password used in conjunction with encryption settings

Click the ⊞ icon by the SRT transmit to view information about the outbound signal. Clicking the ⊟ icon will hide the SRT statistics.

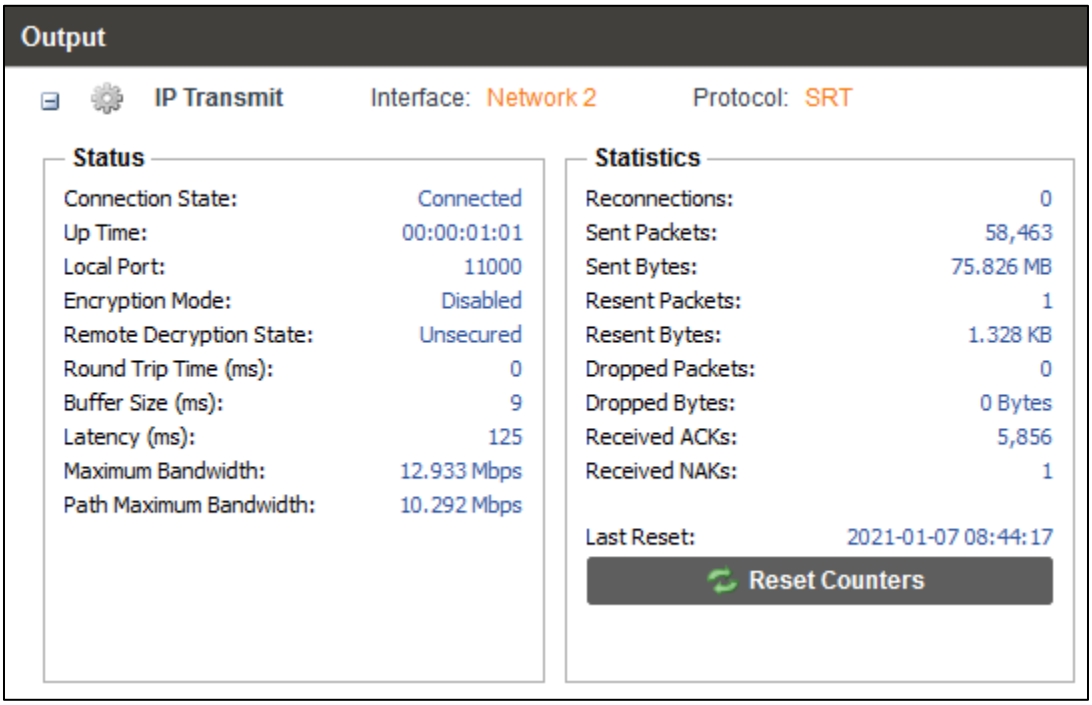


Figure 22: SRT Transmit Statistics

4.2.4.3 Configuring RIST Transmit

The figure below shows the options available when the “Transmit Type” is set to “RIST”.

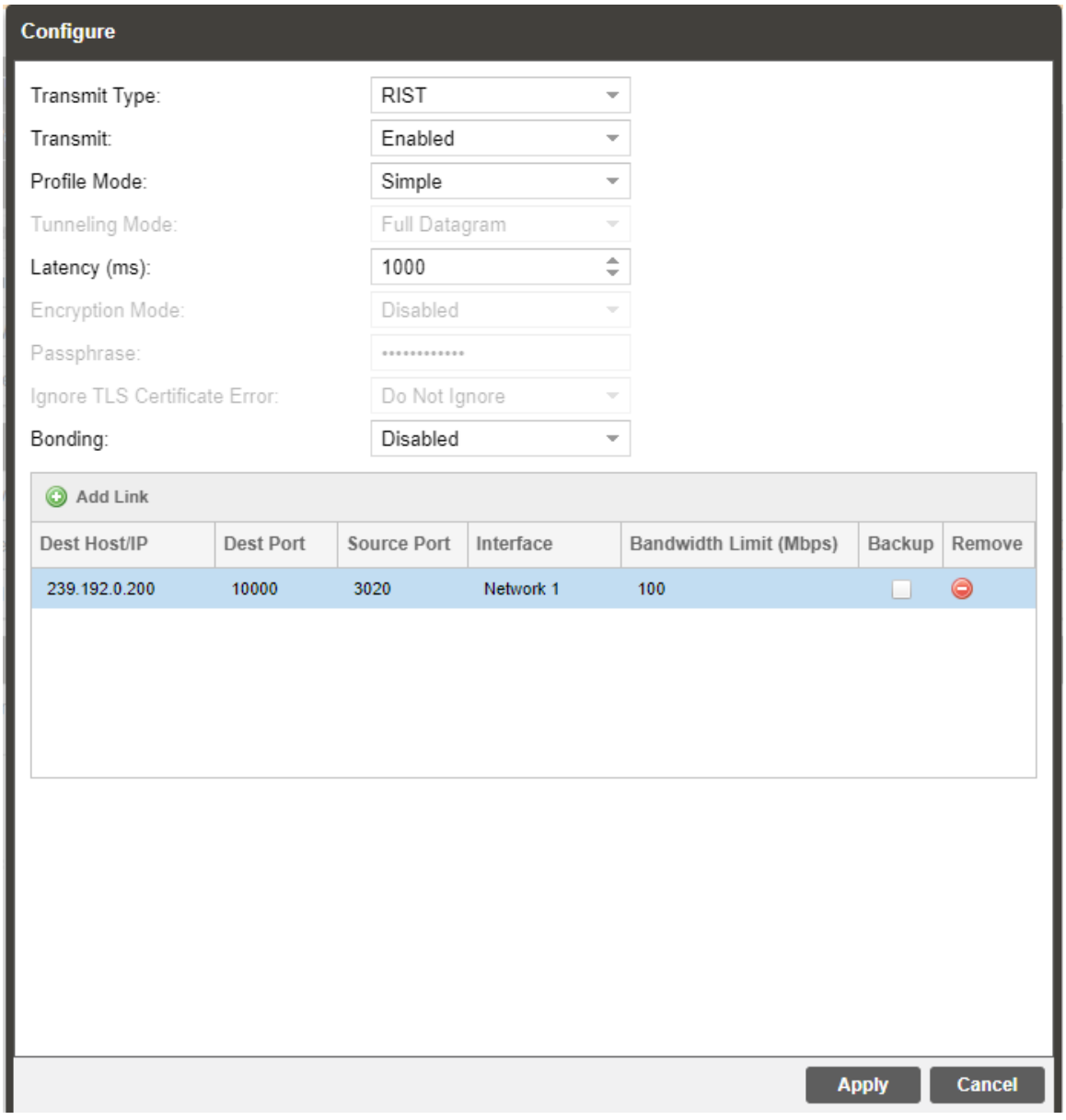


Figure 23: IP Transmit Options: RIST

Setting	Range	Description
Transmit	Enabled Disabled	Enable or disable the RIST transmit
Profile Mode	Simple Main	Specifies the RIST profile mode for the transmit instance. The *Simple* profile mode will output with the same packet structure as an RTP packet. The *Main* profile mode will add more header information for use with the tunnel function
Tunneling Mode	Full Datagram Reduced Overhead	When set to *Full Datagram*, the IP header and UDP header will be re-added to each packet to help identify the channel. When set for *Reduced Overhead*, the source port and destination port will be added to the header to help identify the channel. Exclusive to *Main* Profile Mode.
Latency (ms)	1 – 8000	Specifies buffer size in milliseconds
Encryption Mode	Disabled DTLS PSK	Defines which encryption standard the RIST transmit instance will use. Exclusive to *Main* Profile Mode. DTLS encryption will require uploading public and private keys as configured in the Security menu.
Passphrase	User entry	The encryption passphrase. Exclusive to *PSK* Encryption Mode.
Ignore TLS Certificate Error	Do Not Ignore Ignore	Defines whether to cease or continue processing if TLS Certificate Error is signaled
Bonding	Disabled Enabled	Allows user to enable bonding mode

RIST transmissions can be configured to use multiple interfaces simultaneously (Port Bonding). By defining the maximum bitrate for that interface, the unit will only send up to that rate on that interface. A Primary and Backup interface may also be chosen if redundant links should be used.

Click the ⊞ icon by the RIST transmit to view information about the outbound signal. Clicking the ⊟ icon will hide the RIST statistics.

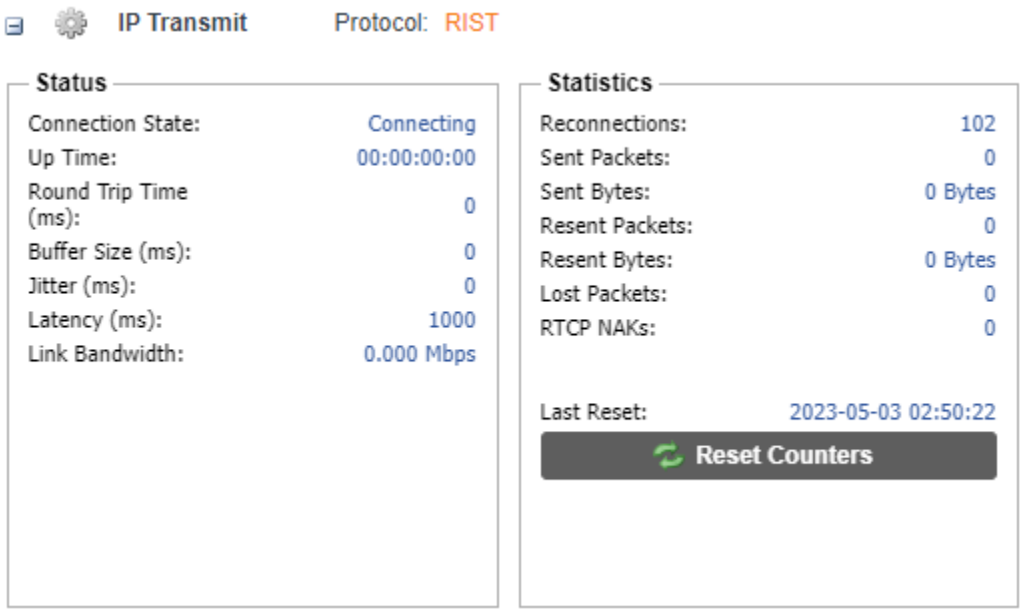
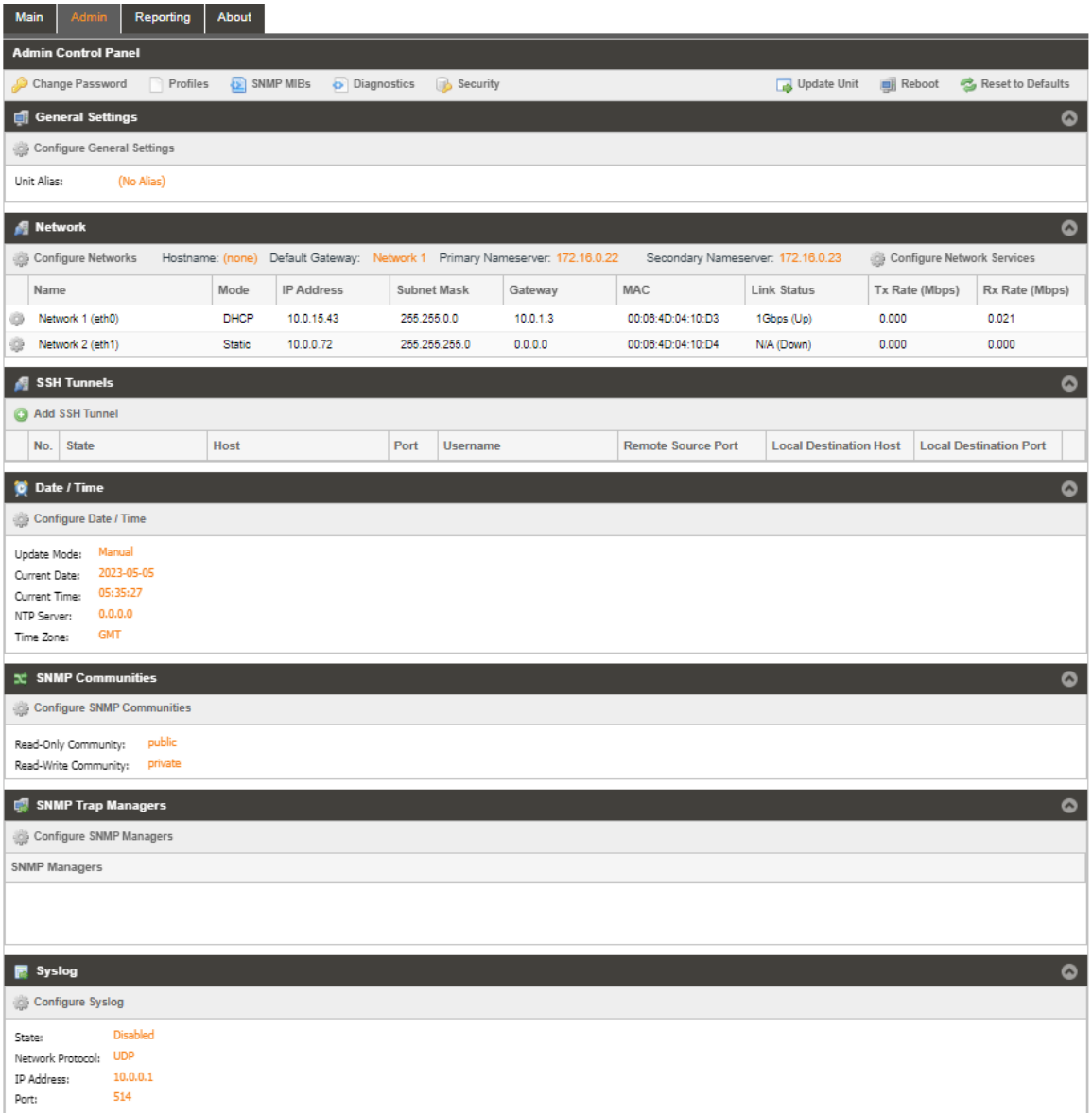


Figure 24: RIST Transmit Statistics

4.3 Admin Tab



To access the Admin Control Panel, click on the Admin tab. This menu allows the user to control many system aspects of the Impulse 300E.

4.3.1 Changing Unit Password

The current admin password “mpeg101” on the Impulse 300E can be changed by clicking the Change Password button. A window will appear to enter the new password and re-enter the new password to confirm it.

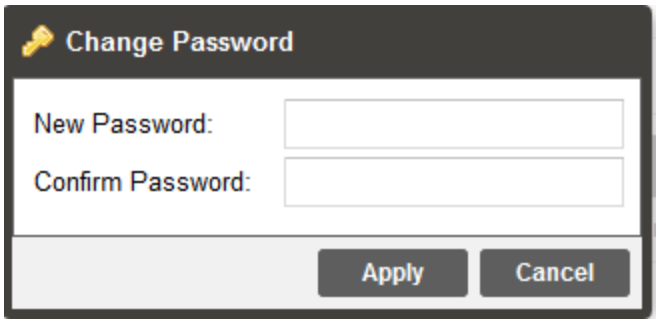


Figure 25: Password Change Dialog

4.3.2 Profiles

The Impulse 300E can save all configured settings to multiple profiles. Profiles can be saved locally, renamed, or saved to external storage to be used on other Impulse 300Es with the same hardware, licensing, and software version. Profiles can be used to quickly and easily change the configuration of an Impulse 300E to suit different input and output requirements. Click the Profiles icon to display the Profile Manager.

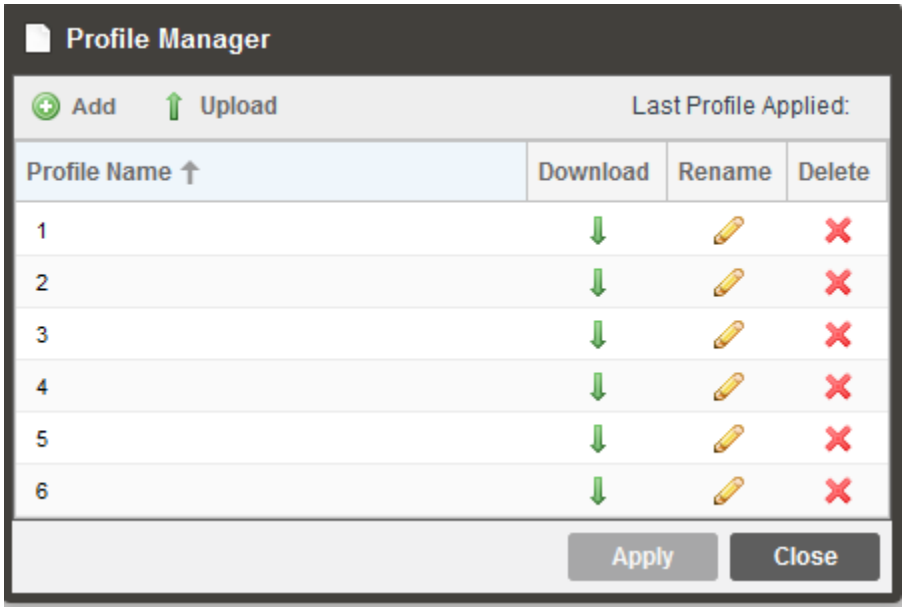


Figure 26: Profile Manager Dialog

Action	Button	Description
Add New Profile	Add	Adds a new profile from current settings.
Upload Profile	Upload	Browse the local computer to upload a profile to the Impulse 300E.
Apply Profile	Apply	Select a profile from the drop-down menu and click this button. The Impulse 300E will apply all settings contained in the selected profile.
Rename Profile		Select a profile from the drop-down menu and click this button where the profile can then be renamed.
Delete Profile		Select a profile from the drop-down menu and click this button to delete the selected profile.
Download Profile		Select a profile from the drop-down menu and click this button To download the selected profile to the local computer.

4.3.3 General Settings

Clicking the Configure General Settings icon opens a menu to assign an alias to the Impulse 300E. The alias appears in the upper right-hand corner of the web interface and can help clarify which Impulse 300E is being configured.

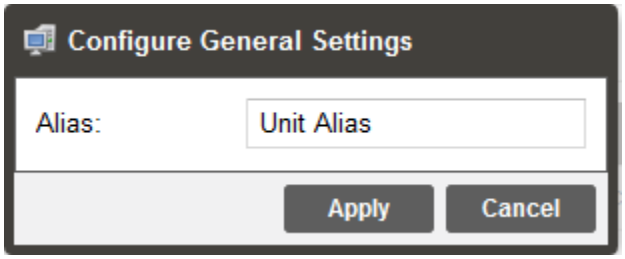


Figure 27: Alias Settings Menu

Figure 28: Web Interface (Applied Alias Circled)

4.3.4 Unit Network Configuration

The management port of the Impulse 300E can be configured from the web interface (as well as the front panel). To make changes to the management port, click the ⚙ button under the Unit Network Configuration section. The hostname, default gateway and domain name servers can be configured on the Impulse 300E by clicking the ⚙ Configure Networks button. IP address and web address entries are accepted as Nameserver addresses.

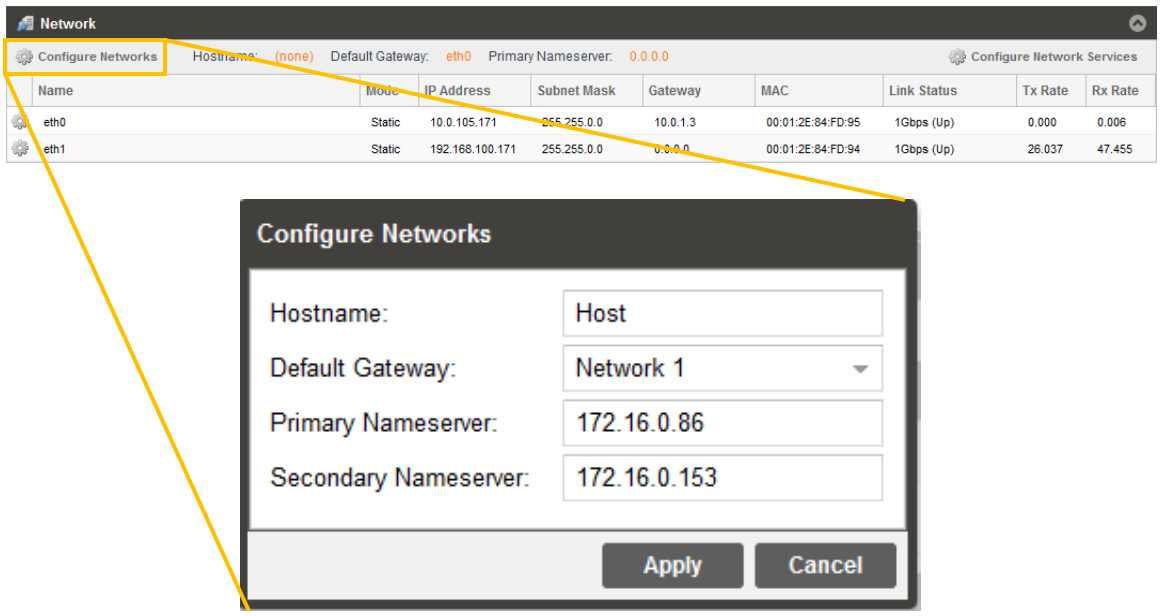


Figure 29: Network Configuration Menu

Clicking the ⚙ icon by Network 1 (eth0) or Network 2 (eth1) allows for configuration of the IP and interface name of each physical RJ45 interface. Each of these menus are identical as the ports are interchangeable.

NOTE: Exercise extreme caution when performing changes to these menus as network communication can be lost with the Impulse 300E.

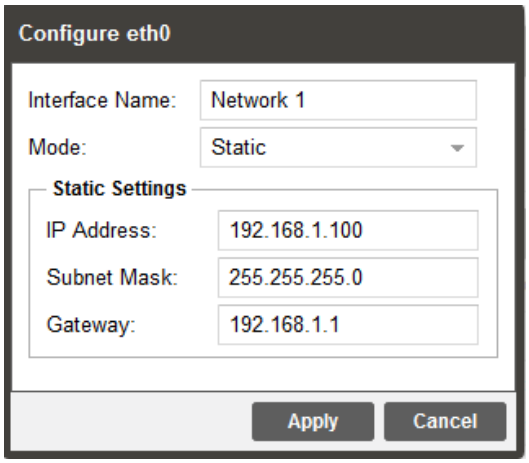


Figure 30: Interface Configuration Menu

Setting	Range	Description
Interface Name	User Entry	A name to be associated with the interface; eth0 is named “Network 1” and eth1 is named “Network 2” by default.
Mode	DHCP Static	Setting to *DHCP* will allow the network to assign an IP address automatically to the Impulse 300E (if supported). Setting to *Static* allows the user to manually define all TCP/IP settings for the management port.
IP	Four decimal octets: XXX.XXX.XXX.XXX	This option is only available if Static Mode is set. This is the IP address assigned to the corresponding network interface.
Subnet Mask	255.0.0.0 – 255.255.255.254	This option is only available if Static Mode is set. This is the Subnet Mask assigned to the corresponding network interface.
Gateway	Four decimal octets: XXX.XXX.XXX.XXX	This option is only available if Static Mode is set. This is the Gateway address assigned to the corresponding network interface.

4.3.5 SSH Tunnels

The Impulse 300E can be remotely managed by using an SSH tunnel. An SSH tunnel is established to provide remote access to the web GUI of the Impulse 300E.

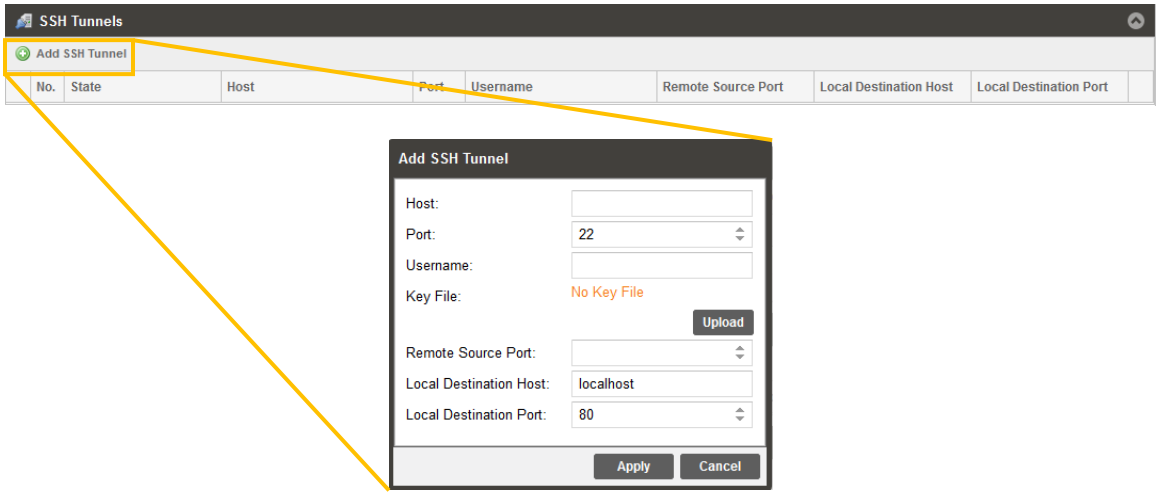


Figure 31: Adding SSH Tunnels

The SSH tunnel configuration window will allow the user to define the connection to the remote server by providing the required details in the Add SSH Tunnel window. Most of the values for these settings can be found in the remote server interface.

Setting	Range	Description
Host	IPv4 Address Valid Doman Name	The IP address or web link of the remote server
Port	0 – 65535	The IP port of the remote server
Username	User Entry	Account credential to log into remote server
Key File	N/A	Browse the local computer to select and upload a hashed key file used to open the secure connection to the remote server
Remote Source Port	0 – 65535	Remote port number the remote server is using for SSH communication
Local Destination Host	IPv4 Address Valid Domain Name	Address reporting to remote server. Localhost is the default.
Local Destination Port	0 – 65535	The port that is accessible to the remote server. Port 80 (Impulse 300E web client) is the default.

4.3.6 Security Manager

The Security Manager is used to configure self-signed certificate information.

Additionally, using public and private keys, this menu is used to enable DTLS encryption and decryption on RIST receive and transmit instances.

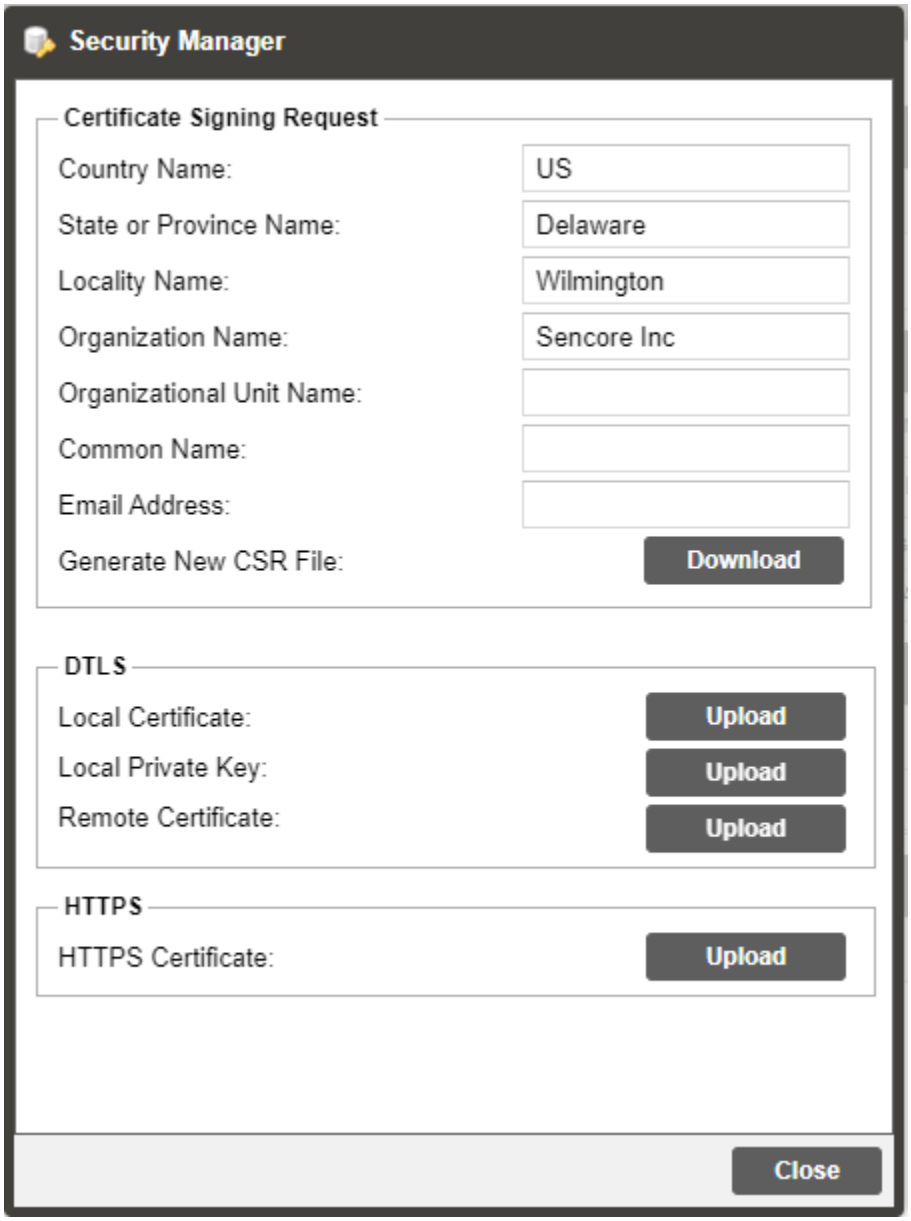


Figure 32: Security Manager Menu

Setting	Range	Description
Country Name	User entry	Country Name for generated CSR file
State or Province Name	User entry	State/Province Name for generated CSR file
Locality Name	User entry	Locality Name for generated CSR file
Organization Name	User entry	Organization Name for the generated CSR file
Organizational Unit Name	User entry	Organizational Unit Name for the generated CSR file
Common Name	User entry	Common Name for the generated CSR file
Email Address	User entry	Email Address for reference on the generated CSR file
Generate New CSR File	Download	This icon will generate a new Certificate Signing Request file (CSR) using the configured IP from eth0 for the CSR file name. The CSR file will also download
Local Certificate File	Upload	Use this icon to upload the local certificate file used for the RIST DTLS encryption mode
Local Private Key File	Upload	Use this icon to upload the local private key file used for the RIST DTLS encryption mode
Remote Certificate File	Upload	Use this file to upload the remote certificate file used for the RIST DTLS encryption mode

Upon clicking Generate, the system will generate a new CSR file and local private key for use with the downstream receiver. Clicking the ⊖ icon will remove the current local private key.

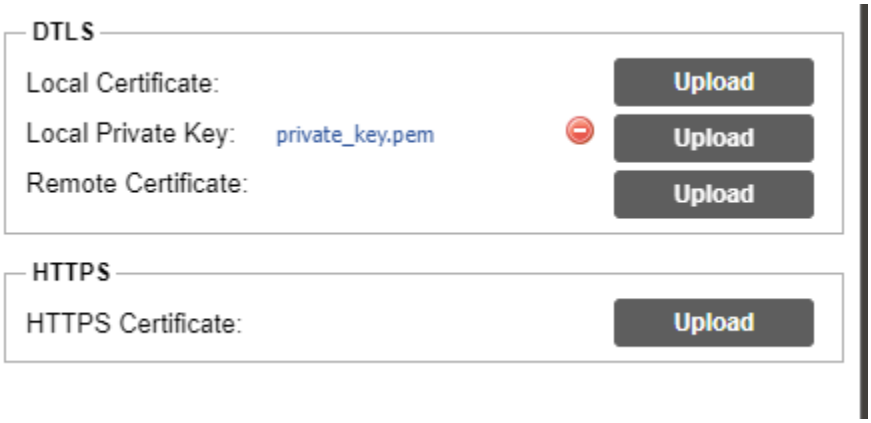


Figure 33: Generated Private Key and CSR Files

4.3.6.1 Enabling DTLS

In order to make a successful DTLS connection when enabling encryption and decryption on RIST receive and transmit instances, a “Local Certificate File”, “Local Private Key File” and “Remote Certificate File” must be uploaded to the Security Manager (Section 4.3.6).

As shown in the figure, the same Certificate File may be uploaded to both the Local and Remote Certificate File fields.

Figure 34: Uploaded Key and Certificate Files

When making a DTLS connection between a DMG 7000 that is transmitting RIST and a DMG 7000 that is receiving RIST, these same files must be uploaded to both units. Additionally, both the transmit and receive instance on each unit must have *Profile Mode* configured for “Main” and *Encryption Mode* configured for “DTLS” as described in Section 4.2.4.3.

4.3.7 Configuring Date / Time

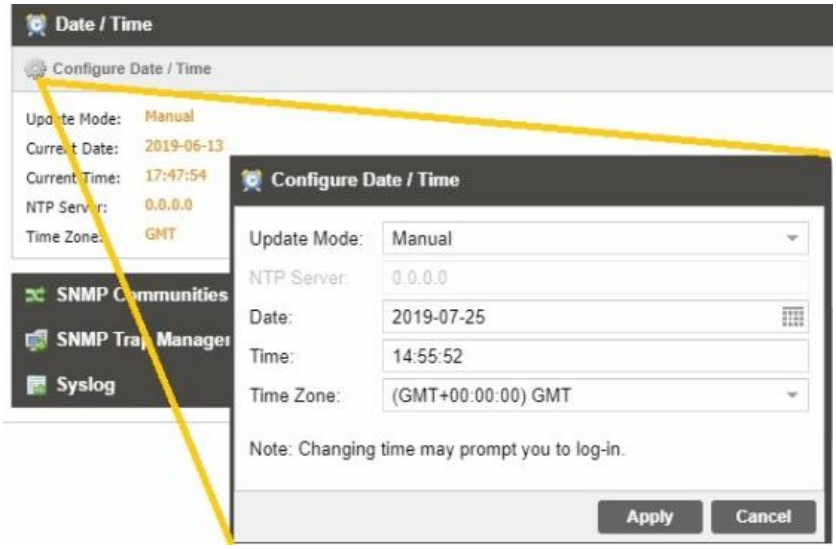


Figure 35: Date and Time Menu

The Impulse 300E can be set to synchronize with an NTP server or manually set the date and time. Click the Configure Date / Time icon to begin. These values are used to timestamp entries in the Alarm and Event logs under the Reporting tab.

Setting	Range	Description
Update Mode	NTP Manual	Setting to *NTP* uses an NTP server to set and synchronize the date and time. *Manual* allows the user to define a date and time.
NTP Server	Four decimal octets: XXX.XXX.XXX.XXX Domain Name	This is the IP Address or Domain Name of the NTP Server. This setting is only available if Update Mode is set to NTP.
Date	YYYY/MM/DD	This setting is the manually defined date. A calendar widget can be used to select the data by clicking the button. This setting is only available if Update Mode is set to Manual.
Time	00:00:00 – 24:00:00	This setting is the manually defined time. The time is based on a 24 hour clock. This setting is only available if the Update Mode is set to Manual.
Time Zone	-12:00:00 ~ +13:00:00	Applies a time offset to the value obtained from the NTP server

4.3.8 Configuring SNMP

4.3.8.1 SNMP Communities

SNMP Communities define whether users have read-only or read-write SNMP rights. These two communities are given unique names. The default names for these communities are:

- Read – Only Community: public
- Read – Write Community: private

It is recommended to change the names of these communities to increase unit security. To modify the names of these communities, click on the Configure SNMP Communities button.

Figure 36: SNMP Community Menu

4.3.8.2 SNMP Trap Managers

The SNMP trap managers are recipients of SNMP traps sent from the Impulse 300E. The following menu allows the user to configure the recipient's IP address(es). To add or remove recipients of the SNMP traps click the Configure SNMP Managers button to display the menu shown in Figure 44.

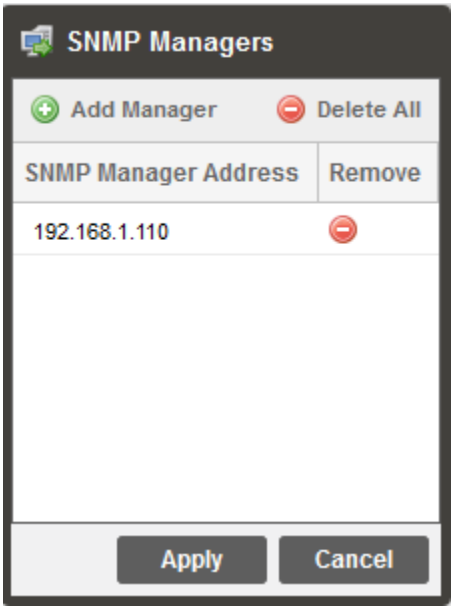
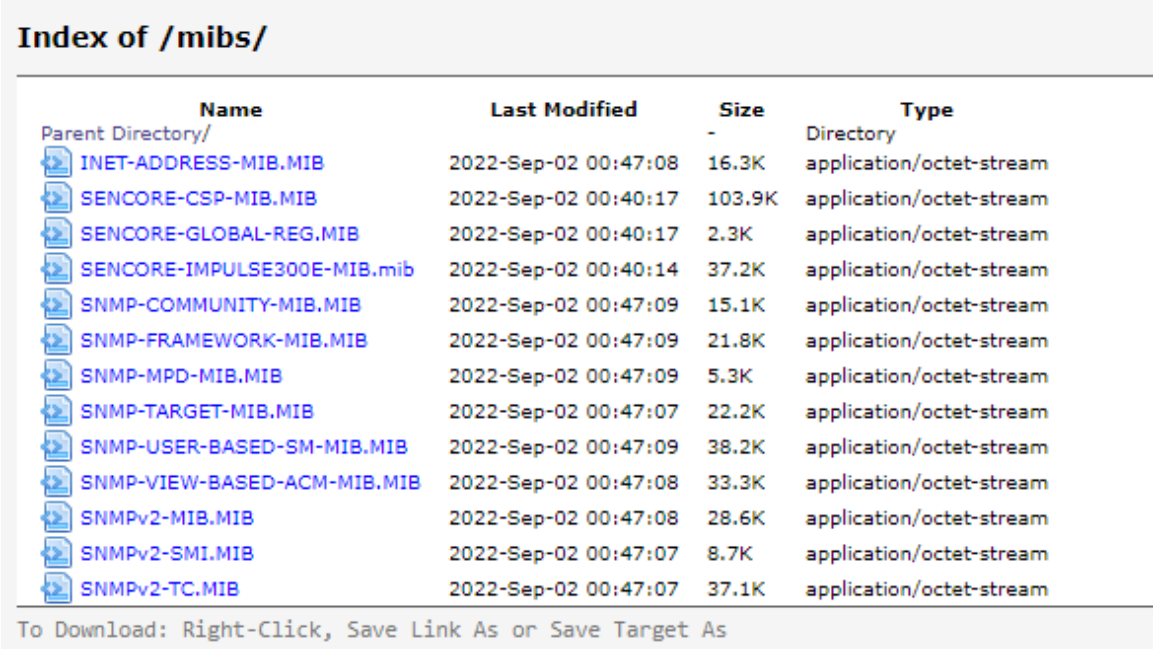


Figure 37: SNMP Trap Manager Menu

Action	Button	Description
Add Manager	Add Manager	Click this button to add the IP address of a new SNMP trap manager.
Delete All	Delete All	Click this button delete all SNMP trap manager IP addresses.
Delete Single Entry		Click to highlight a single SNMP trap manager IP address and then click this button to delete the entry.

4.3.8.3 Download SNMP MIB Files

The Impulse 300E stores the SNMP MIB files for the currently installed version of software on the unit. These files can be downloaded directly from the Impulse 300E by clicking on the SNMP MIBs button. This will open a new tab in the browser containing download links for each MIB as shown below.



Index of /mibs/

Name	Last Modified	Size	Type
Parent Directory/		-	Directory
INET-ADDRESS-MIB.MIB	2022-Sep-02 00:47:08	16.3K	application/octet-stream
SENCORE-CSP-MIB.MIB	2022-Sep-02 00:40:17	103.9K	application/octet-stream
SENCORE-GLOBAL-REG.MIB	2022-Sep-02 00:40:17	2.3K	application/octet-stream
SENCORE-IMPULSE300E-MIB.mib	2022-Sep-02 00:40:14	37.2K	application/octet-stream
SNMP-COMMUNITY-MIB.MIB	2022-Sep-02 00:47:09	15.1K	application/octet-stream
SNMP-FRAMEWORK-MIB.MIB	2022-Sep-02 00:47:09	21.8K	application/octet-stream
SNMP-MPD-MIB.MIB	2022-Sep-02 00:47:09	5.3K	application/octet-stream
SNMP-TARGET-MIB.MIB	2022-Sep-02 00:47:07	22.2K	application/octet-stream
SNMP-USER-BASED-SM-MIB.MIB	2022-Sep-02 00:47:09	38.2K	application/octet-stream
SNMP-VIEW-BASED-ACM-MIB.MIB	2022-Sep-02 00:47:08	33.3K	application/octet-stream
SNMPv2-MIB.MIB	2022-Sep-02 00:47:08	28.6K	application/octet-stream
SNMPv2-SMI.MIB	2022-Sep-02 00:47:07	8.7K	application/octet-stream
SNMPv2-TC.MIB	2022-Sep-02 00:47:07	37.1K	application/octet-stream

To Download: Right-Click, Save Link As or Save Target As

Figure 38: MIBs Download Page

4.3.9 Syslog

The Impulse 300E can be configured to send error and event logs formatted in the syslog protocol to a user specified Syslog server. Clicking the Configure Syslog button will open a menu for a protocol, address and port to be specified as seen below.

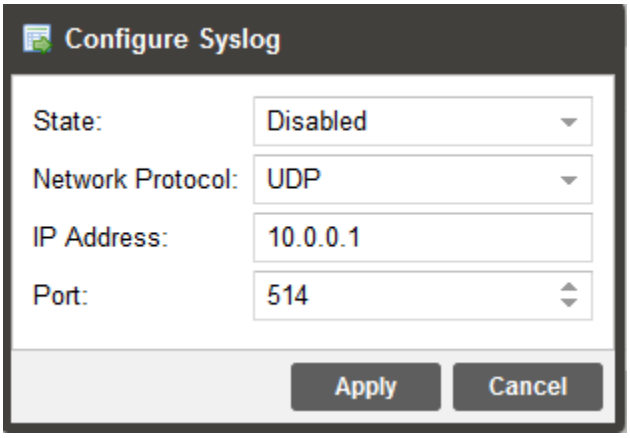


Figure 39: Syslog Configuration Menu

Action	Range	Description
State	Enabled Disabled	Enable or Disable sending messages to a Syslog server.
Network Protocol	UDP TCP	Select which network protocol used to transmit to the Syslog server
IP Address	Four decimal octets: XXX.XXX.XXX.XXX	IP of the Syslog server. 0.0.0.0 and 255.255.255.255 are not permitted
Port	0 – 65535	Destination port of the Syslog server

4.3.10 Updating the Impulse 300E

4.3.10.1 Applying Software Updates

Updates to the Impulse 300E are performed through the web interface. Software update files can be obtained by contacting the Sencore ProCare department. Once the update file is downloaded, it then needs to be uploaded and applied to the unit. To upload software updates to the unit click on the Update Unit button. The current version and uploaded version are displayed in the Software Versions section. The Impulse 300E will reboot after a software update is complete.

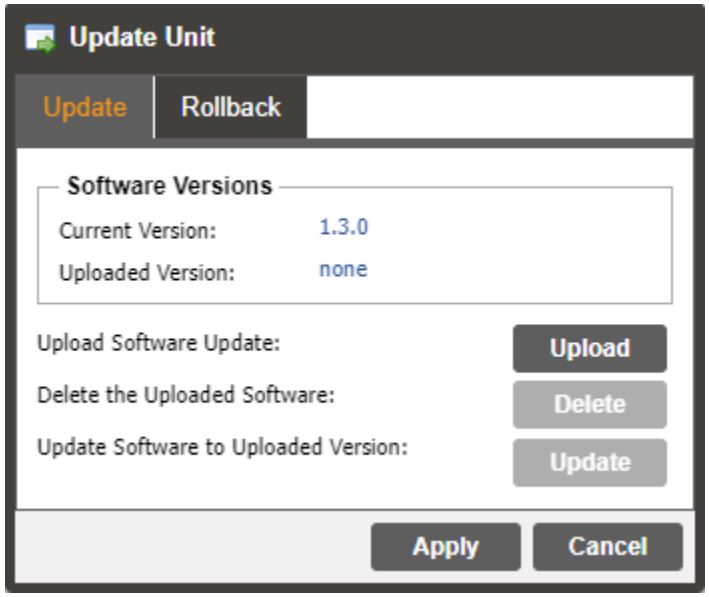


Figure 40: Unit Update Menu

Action	Button	Description
Upload Software Update	Upload	Click this button to browse to the update file. The file will then upload to the Impulse 300E. When the upload is complete, the Impulse 300E will prompt to either apply the update or cancel
Delete the Uploaded Software	Delete	Click this button to delete a previously uploaded update file.
Update Software to Uploaded Version	Update	Click this button to start the update process.

4.3.10.2 Rollback Software Updates

The Impulse 300E is capable of reverting back to a previous version of software using the Rollback feature. The unit maintains two separate software images; one is the most current version of software with all current settings and the other is the previous version of software with all previous settings. To perform a rollback click the Update Unit button and then click the Rollback tab. The Impulse 300E will reboot after the rollback process is complete.

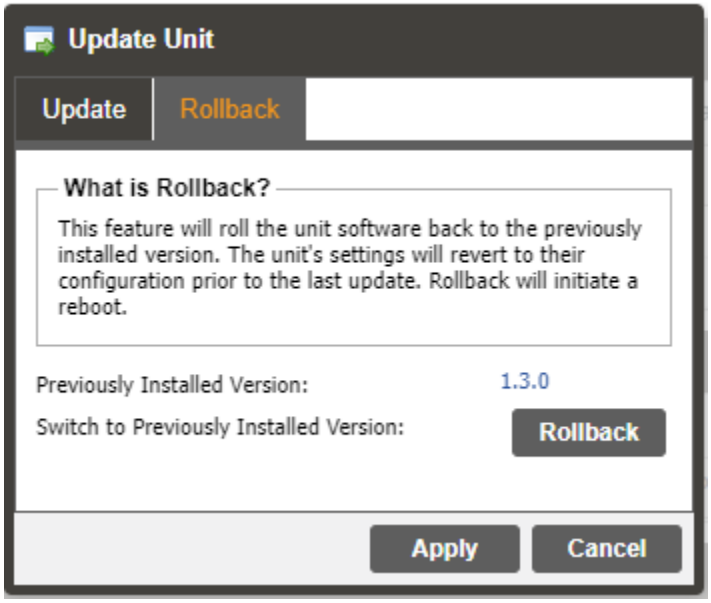


Figure 41: Rollback Menu

Action	Button	Description
Rollback Software	Rollback	Click this button to rollback to the previously installed software version.

4.3.11 Reboot Unit

The Impulse 300E can be rebooted from the web interface. In order to perform a reboot click the Reboot button. Once the reboot is complete the login screen will appear to log back into the unit.

4.3.12 Reset Defaults

The Impulse 300E settings can be reset to factory defaults. All settings will be returned to the factory defaults except the network management ports TCP/IP settings. All event logs will be cleared. To reset all settings to default, click the Reset to Defaults button. The Impulse 300E will prompt the user to confirm the reset. The unit will reboot once the reset is confirmed.

4.4 Reporting Tab

The Reporting tab in the Impulse 300E contains logs for active alarms currently affecting the unit as well as an event log. The active alarms are updated periodically in order to reflect the real-time state of the unit. Once an error is cleared it will be cleared from the active alarms window. The event log can be used to view alarms and event history. Both the active alarms and event logs can be configured to hide or change the behavior of alarms and events.

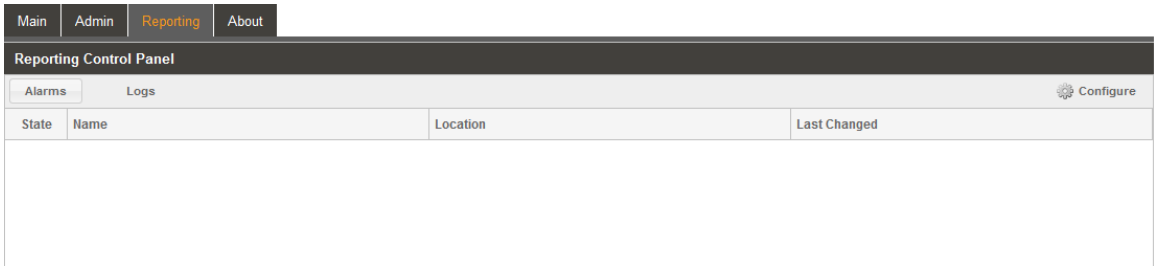


Figure 42: Reporting Tab

4.4.1 Active Alarms

Clicking on the Alarms button displays the Active Alarms menu. This list displays all the active alarms currently affecting the unit. There are four columns in the log that display different types of information.

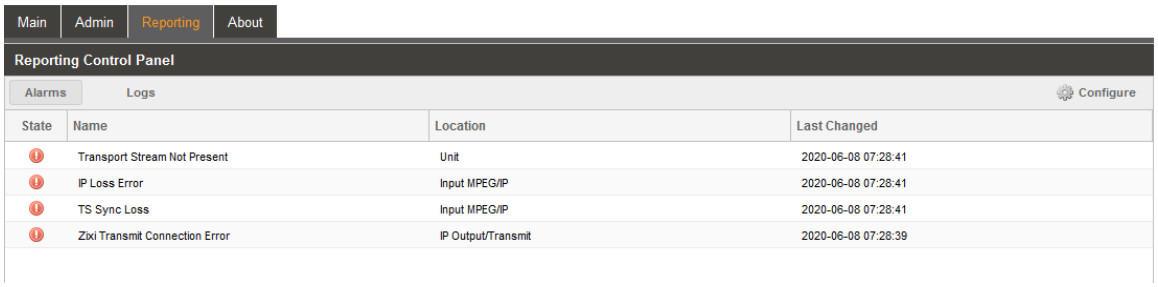


Figure 43: Active Alarms Tab

Title	Description
State	This column displays the nature of the alarm. The icon means the log entry is informational and is not an error. The icon means the log entry is an active alarm.
Name	This column displays the description of the error.
Location	This column displays the hardware or function that is experiencing the active error.
Last Changed	This column displays the date and time the error was raised. This date and time correlates with the Date and Time settings configured in Section 4.3.6.

4.4.2 Event Logs

Clicking on the Logs button displays the Event Log menu. This list displays all the events and alarms that have affected the unit since it was last booted. The Impulse 300E stores up to four days' worth of logs. The logs can be cleared manually by clicking the Clear button. The logs can be downloaded as a .csv file and saved to an external location by clicking the Download button. There are five columns in the log that display different types of information.

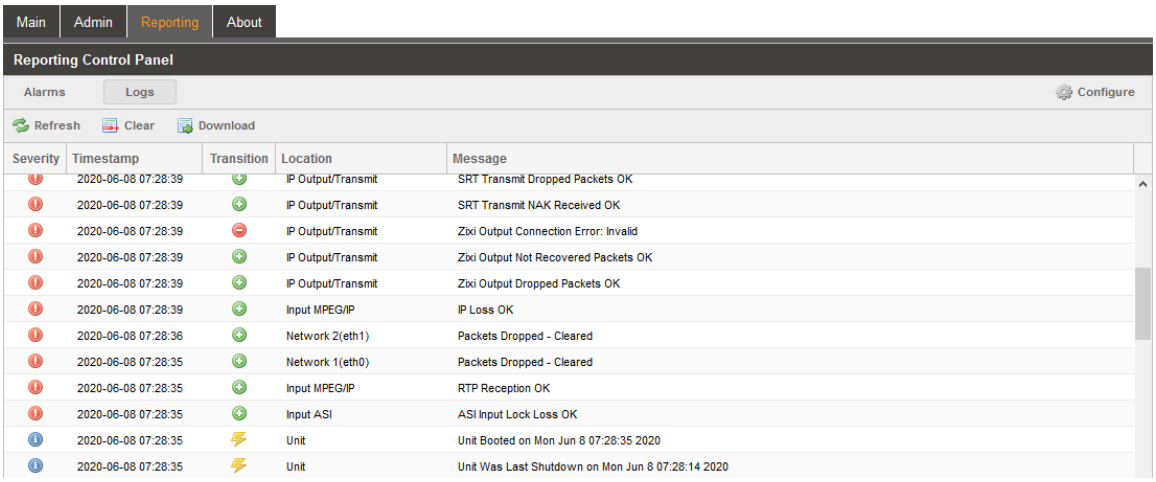


Figure 44: Event Logs Tab

Title	Description
Severity	This column displays the nature of the alarm. The icon means the log entry is informational and is not an error. The icon means the log entry is an active alarm.
Timestamp	This column displays the date and time the error was raised or cleared. This date and time correlates with the Date and Time settings configured in Section 4.3.6.
Transition	This column indicates the type of alarm transition that took place. When an error is raised the icon is displayed. When an error is cleared the icon is displayed. When an event takes place the icon is displayed.
Message	This column displays the description of the error or event.
Location	This column displays the hardware or function that experienced the alarm or event.

4.4.3 Configuring the Logs

The Impulse 300E allows the user to configure how alarms and events are shown and behave. Events and alarms can be hidden or set to send SNMP traps when active. In order to configure these options click the Configure button while in the Reporting tab, as seen in the Figure 52.

The Conditions tab allows the user to configure the alarms reported by the Impulse 300E.

The Events tab allows the user to configure the events reported by the Impulse 300E.

Each column and its function are described below. A user configured time offset can also be applied to allow viewing the logs in a local time zone.

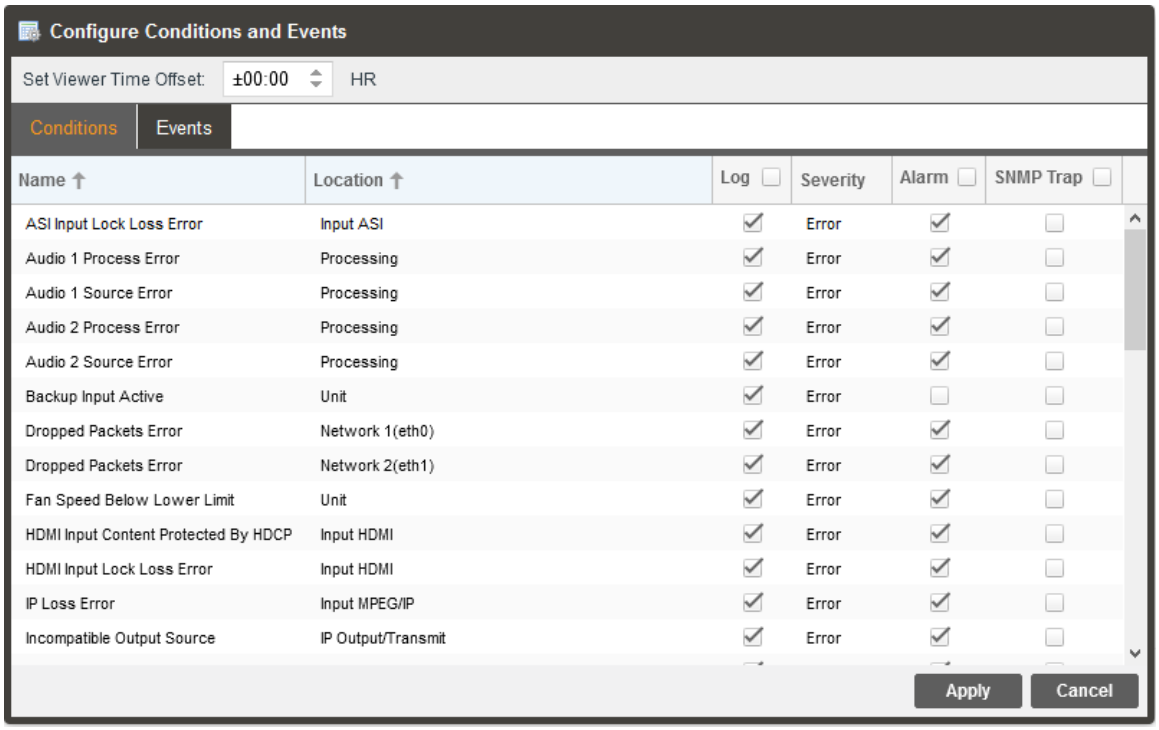


Figure 45: Conditions and Events Configuration Menu

Title	Description
Name	The name of the error or condition. This is informational data; no options can be set here.
Location	The hardware or function that the alarm or event applies to. This is informational data; no options can be set here.
Log	Checking the box in this column creates an entry in the event log in the case this error or event is raised. If this box is unchecked this error or event will be hidden and not logged if raised.
Severity	This column is only available in the Conditions tab. This option sets the severity of the error, to Info or Error. If Info is selected in the drop-down box the icon will be displayed in the event log. If Error is selected the icon will be displayed in the event log.
Alarm	This column is only available in the Conditions tab. This option enables or disables this alarm in the Active Alarms log. If checked the alarm will be displayed in the Active Alarms log when raised. If this box is unchecked this error will be hidden.
SNMP Trap	This column sets whether an SNMP Trap sent when this alarm is raised. If this box is checked an SNMP Trap is sent when this alarm is raised. If this box is unchecked an SNMP Trap is not sent.

4.5 About Panel

Under the About tab, there are no user definable parameters but there is information about software versions currently installed, how to contact Sencore, and third-party software information.

Figure 46: About Tab

Section 5 Appendices

Introduction

This section includes the following appendices:

Appendix A – Acronyms and Glossary

8VSB: Vestigial sideband modulation with 8 discrete amplitude levels.
AAC: Advanced Audio Coding
AC3: Audio Coding Three
ADTS: Audio Data Transport Stream
ASI: Asynchronous Serial Interface
ATSC: Advanced Television Systems Committee
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.
CAT6: Category 6 – Cable standard for gigabit Ethernet
CC: Closed Captions
DHCP: Dynamic Host Configuration Protocol
DVB: Digital Video Broadcasting
FEC: Forward Error Correction
GOP: Group of Pictures
HD: High Definition
HDMI: High Definition Multimedia Interface
I/O: Input/Output
IP: Internet Protocol
LED: Light Emitting Diode
MAC: Medium Access Control
MER: Modulation Error Ratio
MIB: Management Information Base
MPEG: Moving Picture Experts Group
MPTS: Multiprogram Transport Stream
Impulse 300E: Internet Streaming Encoder
NTP: Networking Time Protocol
QAM: Quadrature Amplitude Modulation
RF: Radio Frequency
RIST: Reliable Internet Stream Transport
RU: Rack Unit
SD: Standard Definition
SDI: Serial Digital Interface
SMPTE: Society of Motion Pictures and Television Engineers
SNMP: Simple Network Management Protocol
SPTS: Single Program Transport Stream
SRT: Secure Reliable Transport
TS: Transport Stream

Appendix B – Error and Event List

Error	Description
Audio X Process Error	Failure to transcode/encode received audio channels configured on Audio X
Audio X Source Error	Failure to receive audio channels configured on Audio X
Backup Input Active	Primary input is currently in a failed condition and the Impulse 300E has failed over to the Backup input.
Dropped Packets Error	The system has detected an instance of packets being dropped
Fan Speed Below Lower Limit	Cooling fan in the Impulse 300E has failed.
HDMI Input Content Protected by HDCP	HDMI input is encrypted and cannot be encoded
HDMI Input Lock Loss Error	HDMI input is not present
Incompatible Output Source	IP Transmit is configured for an output source that is incompatible with the current active input.
Input Not Present	Current active input is not being received by the unit
Invalid Output Audio X Mode Setting	Configured Audio X output mode is not compatible with the current active input
Invalid Output PID Setting	The output PID selected for the processed source is not valid
Invalid Output Profile/Level Setting	The configured output profile and level processing combination is not compatible with the source
Invalid PID or PID not from same Service	The PID selected for processing is not present on the current active input
Link Loss Error	Physical IP link is not present on the network interface.
MPEG/IP Transmit Unicast Receiver Not Found	The Impulse 300E cannot discover the destination for the unicast IP stream within 10 seconds after the initial ARP is sent.
NTP Server Unreachable	The configured NTP server is inaccessible to the network interface
SDI Input Group 1 Audio Error	The incoming SDI does not have audio present in Group 1
SDI Input Lock Loss Error	SDI input is not present
SRT Transmit Connection Error	The system encountered a connection error when transmitting SRT signal
SRT Transmit Dropped Packets Error	The System has detected lost packets in the transmitted SRT Signal
SRT Transmit NAK Received Error	The receiving device has sent an ARQ request for missed packet(s)
Temperature Error	The Impulse 300E has detected the internal temperature is 70 degrees Celsius or above.
Video Process Error	The Impulse 300E has failed to encode or transcode video

Video Source Error	The video to be encoded or transcoded is not present
Zixi Transmit Connection Error	The Zixi transmit has received no acknowledge message from the receiving server.
Zixi Transmit Dropped Packets Error	The Zixi has dropped packets
Zixi Transmit Not Recovered Packets Error	The Zixi transmit has failed to recover packets that were dropped

Event	Description
Date/Time Changed	The date or time was manually changed by a user
NTP Updated	The Impulse 300E has a newly obtained time from the NTP server
Software Update Failed	The unit failed to upgrade software
Software Update Succeeded	A software upgrade was made to the unit
Unit Booted	The Impulse 300E server was booted
Unit Shutdown	The Impulse 300E server shut down (power cycle, reboot)

Appendix C – Specifications

Impulse 300E – Base Unit

Includes –	Display, keypad, embedded controller, chassis/case, power supply/line cord
System –	
Display Type:	LCD
Keypad:	Snap-dome Membrane
Configurations Allows:	Single Media Gateway
Rear Panel:	Fixed inputs and outputs
Remote Operation/Update Interface –	
Type:	Ethernet, 10/100/1000 Auto Negotiating
Rear Panels indicators:	Link (Green LED), Activity (Amber LED)
Connector:	RJ45
Front Panel Indicators –	
Error LED:	Red indicates error is occurring Off indicates no errors detected
Input LED:	Green indicates valid input is present Off indicates no valid input
Monitor and Control Interfaces –	
Web server GUI:	HTTP via web browsing for control & monitoring Web API full control and monitoring
Front Panel:	System monitoring; limited control
Operating Altitudes	0 to 10000 feet
AC Power –	
Operating Voltage:	100-240VAC
Max Power Draw:	35W
Frequency:	50/60Hz
Connector:	IEC 320 C14
Line Cord:	Detachable, 3-prong
Environmental Conditions –	
Operating Temperature:	32 °F to 122 °F (0 °C to 50 °C)
Cooling:	Software regulated fan
Storage Temperature:	-40 °F to 149 °F (-40 °C to 65 °C)
Relative Operating Humidity:	<95% (non-condensing)

MPEG/IP Transmit

General –	
Connector:	2x 10/100/1000 auto negotiate Base-T RJ-45 Ethernet Ports
Transmit –	
Output Format:	UDP and RTP
Bitrate Range:	0.25 – 50 Mb/s
Packets/IP Frame:	1-7 MPEG Packets/IP Frame
Number of Outputs:	1 – Unicast or Multicast

SRT Transmit

General –	
Connector:	10/100/1000 auto negotiate Base-T RJ-45 Ethernet Port
Transmit –	
Protocol and IP Range:	UDP, Unicast

Negotiation Modes:	Caller, Listener, Rendezvous
Latency:	20-8000ms, user configurable
Bandwidth Overhead:	0 – 50% of content bitrate
Bitrate Range:	0.25 – 50 Mbps
Encryption:	AES-128, AES-256 10-79 UTF-8 characters
Packets/IP Frame:	1-7 MPEG Packets/IP Frame

Zixi Transmit

General –

Connector:	10/100/1000 auto negotiate Base-T RJ-45 Ethernet Port

Transmit –

Protocol and IP Range:	UDP, Unicast
Mode:	Feeder to Broadcaster
Latency:	30-10000ms, user configurable
Bandwidth Overhead:	0 – 50% of content bitrate
Bitrate Range:	0.25 – 50 Mbps
Encryption:	AES-128, AES-256 10-79 UTF-8 characters
Packets/IP Frame:	1-7 MPEG Packets/IP Frame

SDI Input

General –

Connector:	1x BNC, Female (shared with ASI)
Impedance:	75Ω

SDI Input –

Number of SDI Inputs:	1 (shared with ASI)
Standard:	SMPTE 259M, SMPTE292M

HDMI Input

General –

Connector:	1x HDMI Type A Connector with positive screw retention

HDMI Input –

Number of HDMI Inputs:	1
Supported Version:	1.4b
Copy Protection:	HDCP Compliant

Video Processing

Input –

CODEC/Profile:	MPEG-2 up to MP@HL H.264 up to HP@L4.1
Resolutions:	1080p@25, 29.97, 30 1080i@25, 29.97, 30 720p@50, 59.94, 60 576i@25 480i@29.97

Output –

CODEC/Profile	H.264 up to HP@L4.1
Resolutions:	1080p@23.98, 24, 25, 29.97, 30, 50, 59.94, 60

	1080i@25, 29.97, 30 720p@23.98, 24, 25, 29.97, 30, 50, 59.94, 60 576p@50 576i@25 480p@30, 60 480i@29.97, 30
Bitrate:	0.5Mbps to 15Mbps

Audio Processing

Input –

CODEC:	Dolby Digital (AC-3) Dolby Digital Plus (E-AC-3) AAC HE-AAC MPEG-1 L2
Number of Services	2x audio services/PIDs (4 channels)

Output –

CODEC:	Dolby Digital AAC-ADTS MPEG-2 Pass-through
Bitrate:	16Kbps to 448Kbps

Ancillary Data

Pass-through:	Closed Captions (CEA-708)

Appendix D – Open Source Software

The Impulse 300E includes:

Package	Version	License	Copyright
amibios_dmi	75dce7b	GPL Version 2, June 1991	Claudio Matsuoka
BusyBox	1.24.2	GPL Version 2, June 1991	Erik Anderson, et. al.
Dropbear	2016.74	MIT-like	2002-2015 Matt Johnston, et. al (see license)
e2fsprogs	1.43.4	GPL Version 2, June 1991	Theodore Ts'o
ethtool	4.13	GPL Version 2, June 1991	David Miller, et. al.
FamFamFam Silk Icons	013	Creative Commons Attribution 2.5	Mark James
FastDB	3.71	MIT-like	Konstantin Knizhnik
FCGI	2.4.6	FastCGI	Open Market, Inc
FFmpeg	3.4	LGPL Version 2.1, February 1999	Fabrice Bellard
gptfdisk	1.0.3	GPL Version 2, June 1991	Roderick W. Smith
grub	2.00	GPL Version3, 29 June 2007	1994-2011 Free Software Foundation, Inc.
Lighttpd	1.4.30	BSD	2004, Jan Kneschke
libpcap	1.8.1	BSD	1993, 1994, 1995, 1996 The Regents of the University of California.
Linux	5.3.5	GPL Version 2, June 1991	Linus Torvalds, et. Al.
Log4cpp	1.0	LGPL Version 2.1, Feb 1999	Bastiaan Bakker
Monit	5.1.1	GPL Version 3, 29 June 07	2010 Tildeslash Ltd.
Net-SNMP	5.7.1	BSD	1989, 1991, 1992 by Carnegie Mellon University, et. al. (see license)
NTP	4.2.4p7	NTP License	1992-2009 David L. Mills
OpenSSL	1.0.1c	BSD-Like	1998-2008 The OpenSSL Project, 1995-1998 Eric Young

PCRE	8.30	BSD	1997-2012 University of Cambridge, 2007-2008
POPT	1.16	MIT	1998 Red Hat Software
pureftpd	1.0.46	BSD	Frank Denis
qDecoder	12.0.4	BSD	2000-2012 Seungyoung Kim
Samba	4.7.0	GPL Version 3, 29 June 2007	Andrew Tridgell, et. al.
Spawn-FCGI	1.6.3	BSD	Jan Kneschke, Stefan Bahler
srt	1.3.2	MPLv2.0 License	2018 Haivision Systems Inc.
TCLAP	1.2.0	MIT	2003 Michael E Smoot
Tzdata	2017b	Public domain, BSD 3-clause	Arthur David Olson
Zlib	1.2.7	Zlib/libpno License	1995-2005 Jean-loup Gailly and Mark Adler

Appendix E – Warranty

Sencore One-Year Warranty

Sencore warrants this product against defects from any cause, except acts of God and abusive use, for a period of 1 (one) year from date of purchase. During this warranty period, Sencore will correct any covered defects without charge for parts, labor, or recalibration.

Appendix F – Support and Contact Information

Returning Products for Service or Calibration

The Impulse 300E is a delicate piece of equipment and needs to be serviced and repaired by Sencore. Periodically it is necessary to return a product for repair or calibration. In order to expedite this process please carefully read the instructions below.

RMA Number

Before any product can be returned for service or calibration, an RMA number must be obtained. In order to obtain an RMA number, use the following steps:

- Go to www.sencore.com/company/contact-us/
- Click on the “Service, Support & Training
- Click on “Return equipment for service”
- Fill out the required information and click “Submit”

A customer service representative will be in contact regarding the RMA number and instructions for shipment.

Sencore Inc.
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Sioux Falls, SD 57107 USA
www.sencore.com
1.605.978.4600