



# Impulse 300D Network Decoder

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## User Manual



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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 (MM/DD/YYYY)	Version	Description	Author
03/16/2021	1.0	Initial Release	RAG
11/03/2021	1.1	Update for 1.2.0 Release	RAG

## 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.
- 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 300D 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 300D must be connected to a mains socket outlet with a protective earthing connection.
- For the IMPULSE 300D the mains plug is the main disconnect and should remain readily accessible and operable at all times.  
The IMPULSE 300D is equipped with an internal system battery. The IMPULSE 300D must be sent to Sencore service for replacement of this battery.

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

## **FCC Class A Information**

The IMPULSE 300D 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.***

## **Dolby Digital Information**

This product has been manufactured under license from Dolby Laboratories.

“Dolby Digital”, “AC-3”, and “Dolby Digital Plus” are licensed trademarks of Dolby Laboratories.

## Package Contents

The following is a list of the items that are included along with the IMPULSE 300D:

1. AC Power Cable
2. Quick Start Guide

*Note: If any option cables were ordered with the IMPULSE 300D, they will be included in the box as well.*

If any of these items were omitted from the packaging of the IMPULSE 300D please call 1-800-SENCORE to obtain a replacement. Manuals for Sencore products can be downloaded at [www.sencore.com](http://www.sencore.com)



1) AC Power Cable



2) Quick Start Guide

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# Section 1 Overview



## Introduction

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## 1.1 Product Introduction

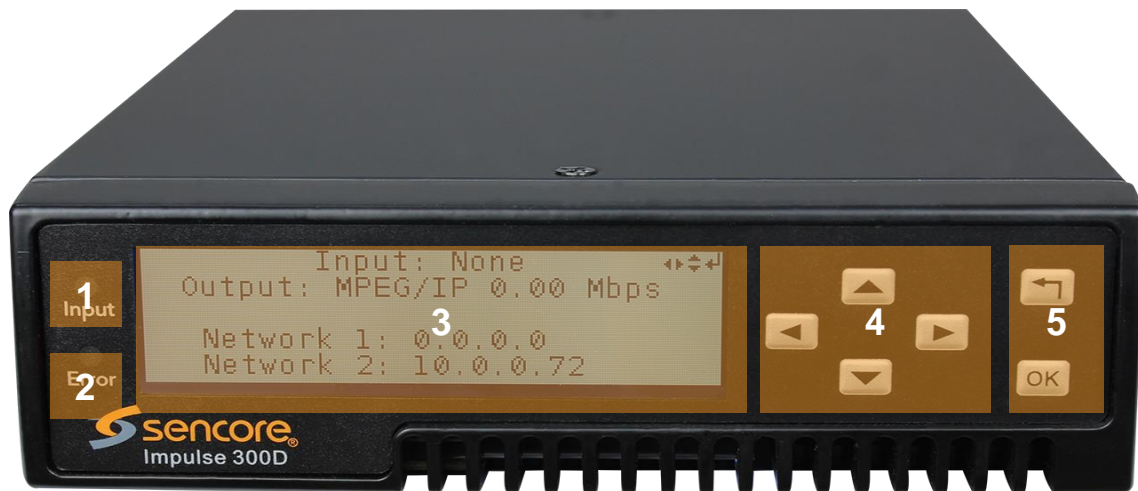
The IMPULSE 300D Network Decoder continues Sencore's long history of leadership in the receiver/decoder space. The product boasts a full complement of cutting-edge features, including 4:2:0 H.265 8bit/10bit decoding, and optional licensing added to include 4k/UHD decoding and downconversion. This feature set makes the IMPULSE 300D the ideal choice for demanding distribution applications which require a future-proof set of specifications.

Every IMPULSE 300D ships with a full complement of inputs and outputs built-in, including IP input and output, a single SD/HD/3G-SDI output (licensable feature), Composite audio/video output and HDMI 2.0 output. The digital video output means that video monitoring is as easy as finding the nearest standard consumer television or PC monitor.

The receiver also maintains Sencore's long tradition of ease of use, with a straight-forward web interface accessible via all major browsers and complete control of the unit via the front panel keypad, and is backed by Sencore's best-in-class staff of ProCare support engineers.

## 1.2 Front Panel Overview

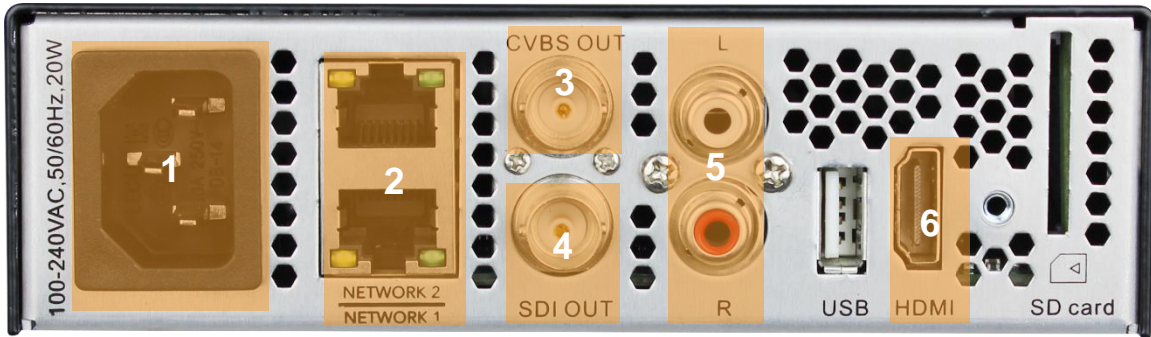
The IMPULSE 300D can be controlled from the front panel using the LCD screen and buttons that are shown below. A detailed description of using the front panel can found in Section 3.1. All hardware listed below comes standard.



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

### 1.3 Rear Panel Overview

The IMPULSE 300D comes standard with all of the hardware listed below.



1. Power Supply
2. RJ45 Network 1/2 Ports
3. CVBS Output Connector
4. SDI Output Connector
5. RCA connection for Analog Audio
6. HDMI Output Connector

### 1.4 Cooling

The IMPULSE 300D is cooled via forced induction through the front of the unit and exhausted through the vents in the rear of the chassis.

### 1.5 Rack Information

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



Figure 1: IMPULSE 300D Rack Mount Kit

# Section 2 Installation



## Introduction

This section includes the following topics:

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2.3	AC Power Connection .....	14
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## 2.1 Rack Installation

The IMPULSE 300D unit can be easily deployed almost anywhere. 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 300D. Only use the supplied 3-prong power connector or one with equal specifications. NEVER tamper with or remove the 3<sup>rd</sup> – prong grounding pin. This could cause damage to the IMPULSE 300D, personnel, or property.

## 2.3 AC Power Connection

The IMPULSE 300D 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 300D.
2. Plug the female end of the power cord (end with no prongs) into the back of the unit.
3. Locate a protected outlet (usually inside of the rack) to plug the male end of the power cable into.

## 2.4 Maintenance

The IMPULSE 300D 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

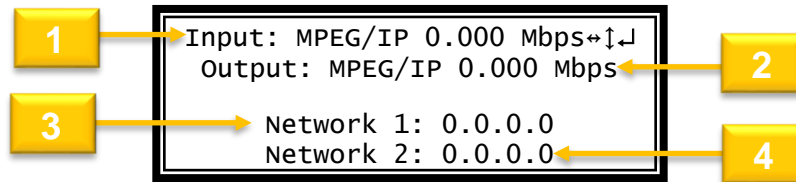
This section includes the following topics:

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

### 3.1 IMPULSE 300D Front Panel Overview



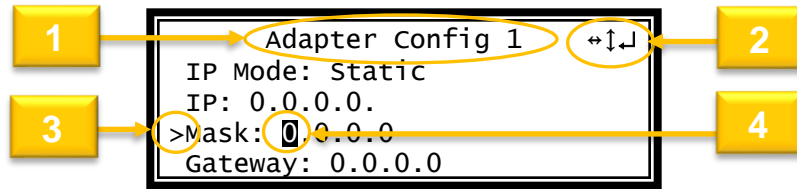
The IMPULSE 300D front panel allows configuration of the network interface settings, application of profiles, and viewing alarm statuses and unit information. The screen below is the idle screen of the IMPULSE 300D. This idle screen shows the incoming bitrate of the active input and output as well as the management IP addresses of the unit.



1. Active input and bitrate of incoming stream
2. Output format 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  button must be pressed. Once a parameter has been changed the  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

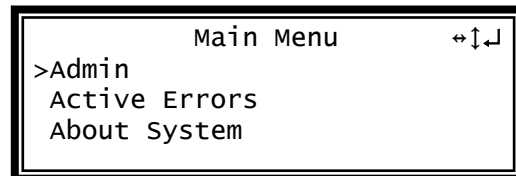
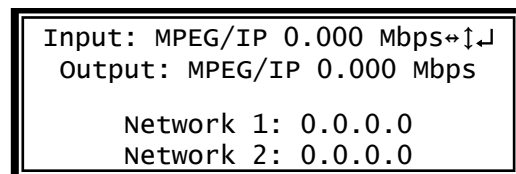
The IMPULSE 300D can be setup on a network connection to allow remote management and SNMP configuration. For these features to work, the network settings for the IMPULSE 300D must first be configured properly for the network it is connected to. By default, the IMPULSE 300D follows this configuration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



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

```

Admin                                     +↓↵
>Unit Networking
Profile
    
```

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

```

Unit Networking                           +↓↵
>Configure Networking
Network 1 Configuration
Network 2 Configuration
    
```

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

```

Press OK to configure +↓↵
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Gateway: 0.0.0.0
Mode: DHCP
    
```

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

```

Adapter Config 1                           +↓↵
>IP Mode: DHCP
    
```



















- 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.

```

Adapter Config 1                           +↓↵
>IP Mode: Static
IP: 0.0.0.0.
Mask: 0.0.0.0.
Gateway: 0.0.0.0
    
```

- 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  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  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  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  button to save the selection.

```
Adapter Config 1  +↵↵
IP Mode: Static
>IP: 0.0.0.0
Mask: 0.0.0.0
Gateway: 0.0.0.0
```

```
Adapter Config 1  +↵↵
IP Mode: Static
IP: 000.000.000.000
Mask: 0.0.0.0
Gateway: 0.0.0.0
```

```
Adapter Config 1  +↵↵
IP Mode: Static
IP: 192.168.1.100
Mask: 0.0.0.0
Gateway: 0.0.0.0
```

```
Adapter Config 1  +↵↵
IP Mode: Static
IP: 192.168.1.100
Mask: 255.255.255.0
Gateway: 0.0.0.0
```

# Section 4 Operating the Web Interface



## Introduction

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## 4.1 IMPULSE 300D Web Interface Overview

### 4.1.1 Logging into the IMPULSE 300D Web Interface

To open the IMPULSE 300D web interface use one of the following supported browsers and navigate to the unit's IP address:

- Internet Explorer
- Firefox
- Google Chrome

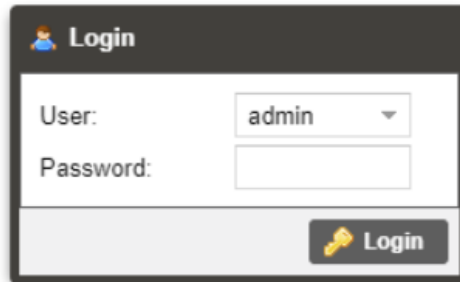
*Note: Some older versions on these browsers may not be supported*

The user will need to login to the web interface. Press the login button in order to login to the web interface.

#### **Default Credentials**

Username: admin

Password: mpeg101

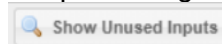


### 4.1.2 Hiding Unused Inputs

The IMPULSE 300D web interface allows the user to hide inactive inputs using the




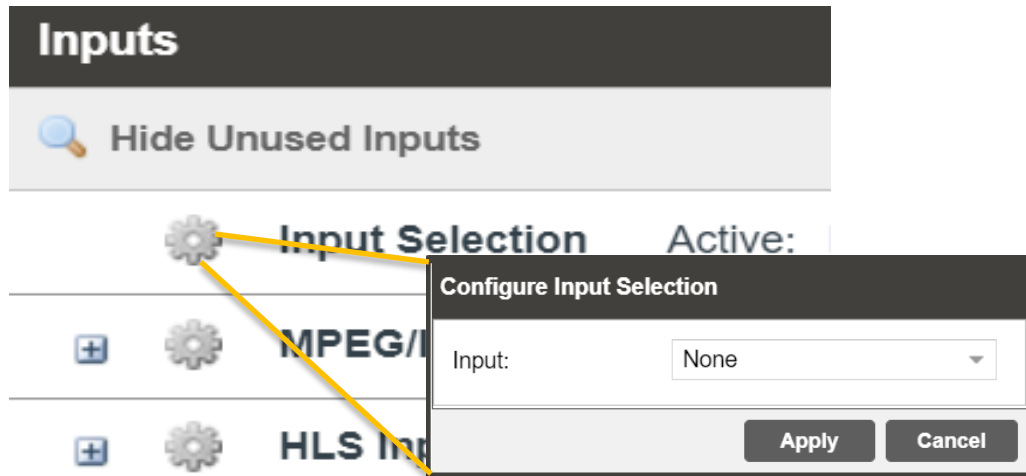
button or show all available inputs by click the





button. Only the inputs configured as the Primary Input and Backup Input (see Section 4.2.1) will be displayed when unused inputs are hidden.




### 4.1.3 Buttons and Status Indicators

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



When the  icon is shown additional status information can be viewed. Click this button will expand the menu to display the additional status information. All text in status menus shown in **ORANGE** are user configurable settings. Text shown in **BLUE** is not user configurable and is strictly a status or value. To minimize the status windows again click the  icon.

Status in the IMPULSE 300D 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 Alarms panel to view Active Errors.
Grey LED		Status is inactive. Function is currently disabled or unavailable.


## 4.2 Main Panel

The Main panel of the IMPULSE 300D web interface is used to configure the unit to decode and de-encapsulate. When configuring the IMPULSE 300D the user begins at the top of the menu and works down. The inputs are configured, then decoding, baseband processing, then outputs are configured. Pictured below is a fully populated unit with all options licensed.

Main	Admin	Reporting	About
<b>Main Control Panel</b>			
<b>Inputs</b>			
Show Unused Inputs			
<input type="checkbox"/> <b>Input Selection</b> Active: MPEG/IP			
<input checked="" type="checkbox"/> <b>MPEG/IP</b> Interface: Network 2    239.110.0.89:1050    15.003 Mbps <span style="color: green;">●</span>			
<b>Decoding</b>			
<input type="checkbox"/> <b>Service</b> Service: 1 ( Service1 )			
<input type="checkbox"/> <b>Video</b> PID: 100 ( H.264 MP@L4 4:2:0 8 Bit )    Native Format: 1920x1080i 16x9 29.97fps			
<input type="checkbox"/> <b>Audio 1</b> PID: 101 ( MPEG-2 )    Format: 0 kbps 0.0 kHz 2/0    DialNorm: 0			
<b>Baseband Processing</b>			
<input checked="" type="checkbox"/> <b>Video</b> Format Mode: Auto    Output Format: 1920x1080i 16x9 29.97fps			
<input checked="" type="checkbox"/> <b>Composite</b>			
<b>Output</b>			
<input checked="" type="checkbox"/> <b>IP Transmit</b> Interface: Network 2    Protocol: MPEG/IP    239.192.0.200:10000    0.000 Mbps <span style="color: grey;">●</span>			

### 4.2.1 Configuring Active Inputs

This menu allows the user to configure a input selection. Even though other inputs may receive a signal, the active input will be the only information shown in the decoding menu.

To change the active input click the  icon next to Input Selection:

Inputs			
 Hide Unused Inputs			
	<b>Input Selection</b>	Active: <b>HLS</b>	
	 <b>MPEG/IP</b>	Interface: <b>Network 2</b>	<b>239.192.1.25:1025</b>
	 <b>HLS Input</b>	Interface: <b>Network 1</b>	Reading from <b>https://www.</b> <span style="float: right;">HLS Mode: <b>Pull</b></span>
	 <b>SRT</b>	Interface: <b>Network 1</b>	<b>255.255.255.255:65535</b> <span style="float: right;">Call Mode: <b>Caller</b></span>

Active Input Indicator

**Configure Input Selection**

Input:

Active Input Configuration Menu

Setting	Range	Description
<b>Input</b>	MPEG/IP, HLS, SRT, Zixi or None (dependent upon unit configuration)	Used for normal operation. During normal operation, this input will be the active input.



## 4.2.2 Configuring IP Receive/Input

This menu allows the user to configure the IP receive for the input of MPEG/IP, SRT and HLS streams. Zixi input may also be added with additional licensing. The available options are dependent upon whether the “Input Type” field is set for MPEG/IP, SRT, Zixi or HLS.

### 4.2.2.1 Configuring RTMP(S) Input

This menu configures the reception of a RTMP or RTMPS input. The RTMP(S) input can be configured to specify a source URL from the transmitting device.

Setting	Range	Description
<b>Receive</b>	Enabled Disabled	This setting allows the user to enable or disable these input stream settings.
<b>Interface</b>	Network 1 Network 2	The physical connector on which to receive the RTMP(S) traffic
<b>Source URL</b>		Defines the ‘handshake’ mechanism to be used when establishing connection

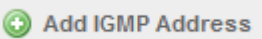
### 4.2.2.2 Configuring MPEG/IP Input

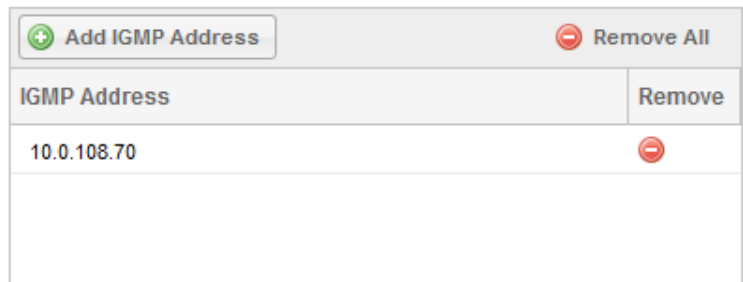
This menu configures the MPEG/IP input for reception of unicast or multicast transport streams. The version of IGMP the IMPULSE 300D uses is automatically determined when it connects to the network. IGMP Filter Mode can be entered for use when the unit is connected to an IGMPv3 network.

General Options for MPEG/IP Input


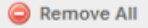
Setting	Range	Description
<b>Receive</b>	Enabled Disabled	This setting allows the user to enable or disable these input stream settings.
<b>Interface</b>	Network 1 Network 2	The physical connector on which to receive the MPEG/IP traffic.
<b>Mode</b>	Multicast Unicast	<i>Multicast</i> setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. <i>Unicast</i> allows the unit to receive unicast streams. Unicast streams originate directly from a source device.
<b>Destination IP</b>	224.0.0.0 – 239.255.255.255	This setting is only available when receiving a multicast stream. This address



		is the IP address the source device is sending to.
<b>Destination Port</b>	0 - 65535	This is the UDP port the source device is sending to. This is the only setting required to receive a unicast stream.
<b>IGMP Filter Mode</b>	Exclude Include	Used on networks supporting IGMPv3. If this setting is set to <i>Exclude</i> any streams originating from the user defined IP addresses will be rejected. If this setting is set to <i>Include</i> any streams originating from the user defined IP addresses will be received.

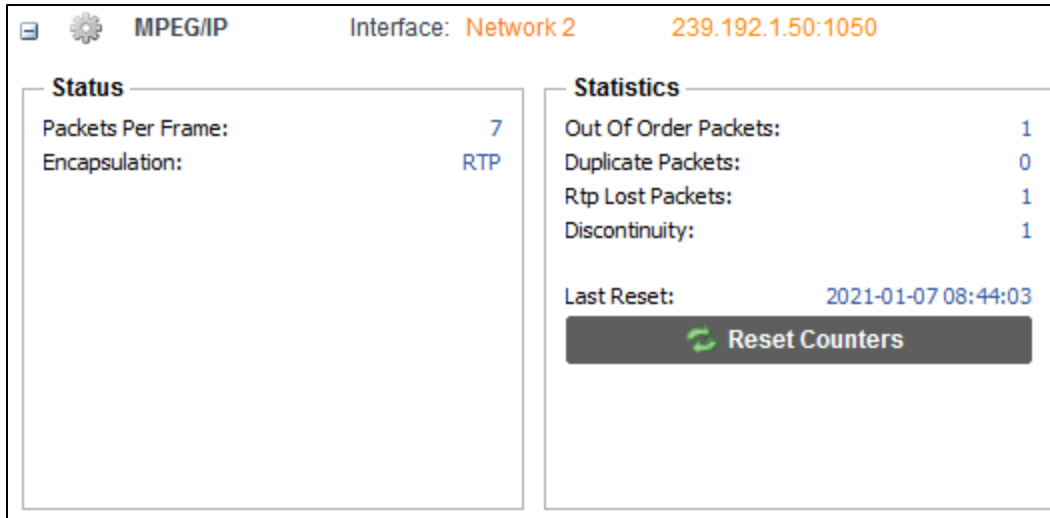
To add an IP address to the IGMP filter list, click the  button. Enter a valid IPV4 address and click OK. The filter list will show the newly entered address.



IGMP Filter List

To remove any IP from the filter list, click the  icon in the corresponding row. All addresses can be removed from the IGMP filter list by clicking the  button.

Click the  icon by the MPEG/IP input to view information about the incoming IP stream. Clicking the  icon will hide the IP statistics.



MPEG/IP Input Statistics Menu

The **Reset Counters** button is used to reset all the statistics for incoming IP packets and establish a new point of reference.



### 4.2.2.3 Configuring HLS Input



This menu configures the HLS input for reception of HTTP streams. The HLS input may be configured to receive through a local or network location through the HLS mode settings.

General options for HLS input

Setting	Range	Description
<b>Receive</b>	Enabled Disabled	This setting allows the user to enable or disable these input stream settings.
<b>Interface</b>	Network 1 Network 2	The physical connector on on which to receive the HLS traffic.
<b>HLS Mode</b>	Pull Push	Determines if the HLS receives through a local or network location.
<b>HLS Network Location</b>	224.0.0.0 – 239.255.255.255	Defines address of the HLS stream to be received.
<b>Decryption Mode</b>	Disabled AES128	Defines if a decryption of the received signal is needed, AES 128 standard

<b>Decryption Key</b>	User Entry	Provides the key to allow signal processing if decryption is to be done
<b>Discovery Timeout</b>	0 (infinite) 1 – 100 (seconds)	Defines the length of time to wait for the stream to be discovered

Click the  icon by the HLS input to view information about the incoming IP stream. Clicking the  icon will hide the IP statistics.



**HLS Input**

Interface: Network 1

Reading from <https://www>

**Status**

Encryption State: Disabled

**Configuration**

Profile: ht  
tol  
vic

Discovery Timeout (seconds): 10



HLS Input Statistics Menu



### 4.2.2.4 Configuring SRT Input

This menu configures the reception of a SRT input. The SRT input can be configured to specify a caller, listener or rendezvous within the Call Mode selection drop down.

Setting	Range	Description
<b>Receive</b>	Enabled Disabled	This setting allows the user to enable or disable these input stream settings.
<b>Interface</b>	Network 1 Network 2	The physical connector on which to receive the SRT traffic
<b>Call Mode</b>	Caller Listener Rendezvous	Defines the 'handshake' mechanism to be used when establishing connection
<b>Remote IP</b>	224.0.0.0 – 239.255.255.255	Defines the IP address of the stream on the remote device
<b>Remote Port</b>	0 - 65535	Defines the port of the stream on the remote device

<b>Local Port Mode</b>	Exclude Include	In Auto Mode the local port number will be assigned In Manual Mode the local port number will be defined by the user
<b>Local Port</b>	1 - 65535	Defines local port number
<b>Discovery Timeout</b>	0 (infinite) 1 – 100 (seconds)	Defines the length of time to wait for the stream to be discovered
<b>Latency</b>	1 – 8000 (ms)	Defines buffer size in milliseconds
<b>Passphrase</b>	10 – 79 (characters)	Defines encryption passphrase

Click the  icon by the SRT input to view information about the incoming IP stream. Clicking the  icon will hide the IP statistics.

  **SRT Receive 1**
Interface: **eth1**

**Status**

Connection State: Connected

Up Time: 00:00:00:14

Local Port: 10000

Encryption Mode: Disabled

Decryption State: Unsecured

Round Trip Time (ms): 0

Buffer Size (ms): 121

Latency (ms): 125

Link Bandwidth: 37.677 Mbps

TS Packets Per SRT Packet: 7

**Statistics**

Reconnections: 0

Received Packets: 25,858

Received Bytes: 33.538 MB


Lost Packets: 0

Lost Bytes: 0 Bytes

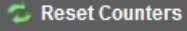
Skipped Packets: 0

Skipped Bytes: 0 Bytes

Last Reset: 2021-03-23 21:19:55



SRT Input Statistics Menu

The  button is used to reset all the statistics for incoming IP packets and establish a new point of reference.







### 4.2.2.5 Configuring Zixi Input

This menu configures the reception of Zixi input. The Zixi input can be configured via a remote host.

Setting	Range	Description
<b>Receive</b>	Enabled Disabled	Enable/Disable the Zixi Input
<b>Interface</b>	Network 1 Network 2	The physical Ethernet connector on which to receive the Zixi traffic
<b>Remote Host</b>	xxx.xxx.xxx.xxx or url	The IP address or domain name of the remote host broadcaster
<b>Alternate Remote Host</b>	xxx.xxx.xxx.xxx or url	The alternate IP address or domain name of the remote host broadcaster
<b>Remote Port</b>	1 – 65535	Defines the port of the stream on the remote device
<b>Stream ID</b>	Specified by Zixi broadcaster	Zixi stream ID
<b>Remote ID</b>	Specified by Zixi broadcaster	Receiver ID

<b>Password</b>	1 – 128 characters	Password to protect the stream.
<b>Ignore TLS Certificate Error</b>	Ignore Do Not Ignore	Zixi Ignore TLS Certificate Error
<b>Maximum Latency</b>	30 – 10000 ms	Maximum latency or buffer size in milliseconds
<b>Decryption Mode</b>	Disabled AES-128 AES-192 AES-256 Automatic	Select the type of Decryption Mode
<b>Decryption Key</b>	User entry *AES-128 = 32 characters *AES-192 = 48 characters *AES-256 = 64 characters	Provides the key to allow signal processing if decryption is to be done.

Click the  icon by the Zixi input to view information about the incoming IP stream. Clicking the  icon will hide the IP statistics.

  Zixi Receive 1
Interface: eth1

**Status**

Connection State: Connected

Up Time: 00:00:00:17

Decryption State: Unsecured

Round Trip Time (ms): 5

Jitter (ms): 2

TS Packets Per Zixi Packet: 7

**Statistics**

Reconnections: 0

Received Packets: 30,421

Received Bytes: 36.947 MB

Dropped Packets: 0

Not Recovered Packets: 0

FEC Packets: 0

FEC Recovered Packets: 0


ARQ Packets: 0

ARQ Recovered Packets: 0

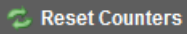
ARQ Duplicate Packets: 0

ARQ Requests: 0

Last Reset: 2021-03-23 21:38:25



Zixi Input Statistics Men

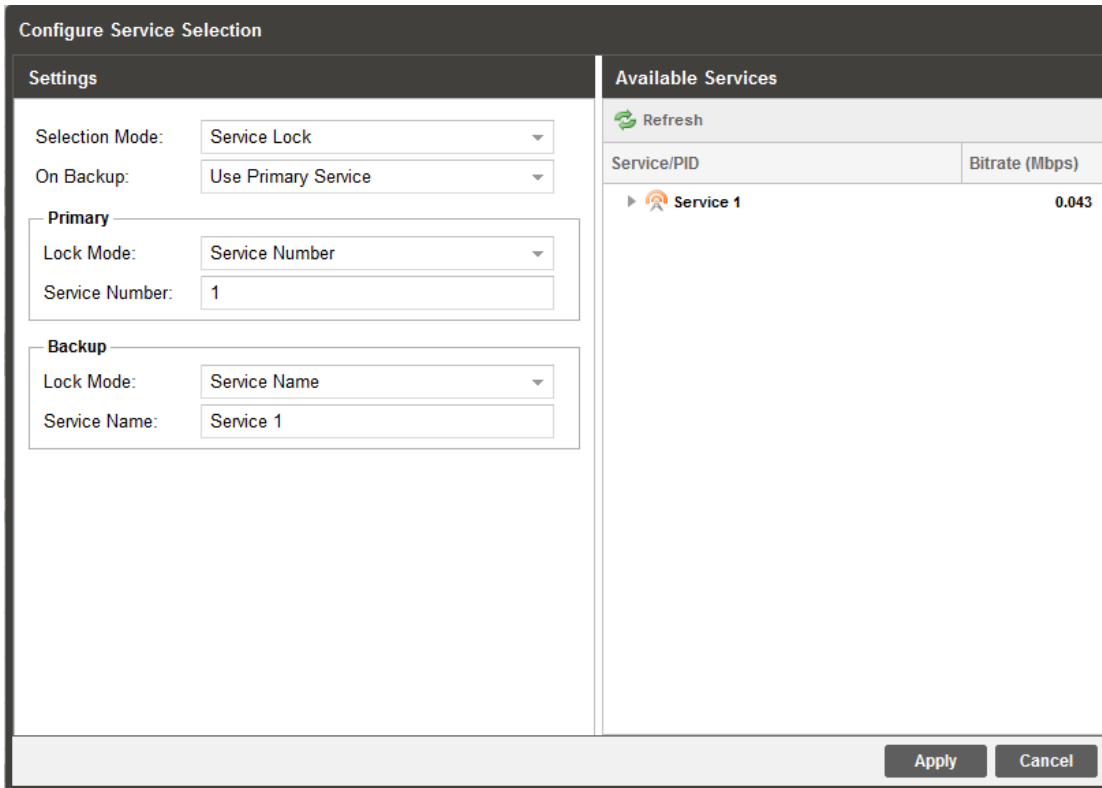
The  button is used to reset all the statistics for incoming IP packets and establish a new point of reference.

### 4.2.3 Configuring Service Selection

This menu allows the user to configure the PIDs or Service the IMPULSE 300D will decode. Depending on the Selection Mode that is set, the menu will change to reflect the applicable settings.

#### Service Lock

In Service Lock mode the 300D is set to decode a specified service number or service name. If the PIDs within the service change at any time, the 300D will continue to decode the service. The drag and drop method can be used to populate the Service Name or Service Number dialog boxes.

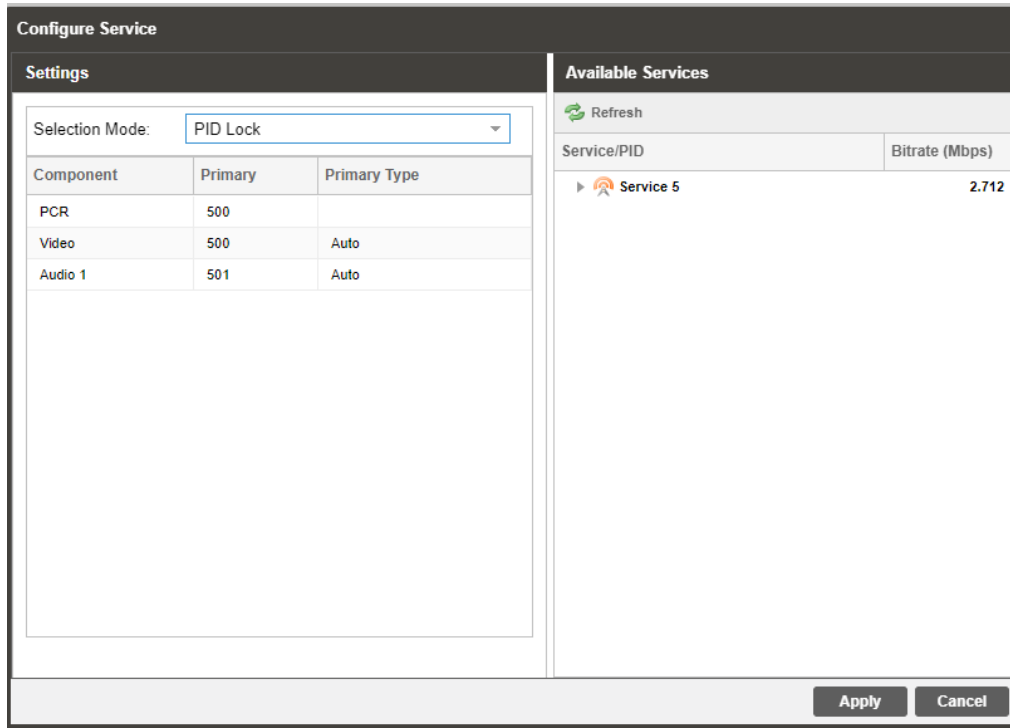


Service Lock Selection Menu

Setting	Range	Description
<b>Selection Mode</b>	Service Lock PID Lock Auto Seek	Setting to <i>Service Lock</i> sets the unit to decode any PIDs associated with a service number or service name. Setting to <i>PID Lock</i> sets the unit to decode only the PIDs specified in the PID Lock Configuration matrix. <i>Auto Seek</i> mode will tune the unit to the first service listed in the PAT if a transport stream is present.

### PID Lock Mode

In PID Lock mode the 300D will only decode the PIDs specified by the user in the PID Lock Configuration matrix. The drag and drop method can be used to auto-populate the cells in the matrix.



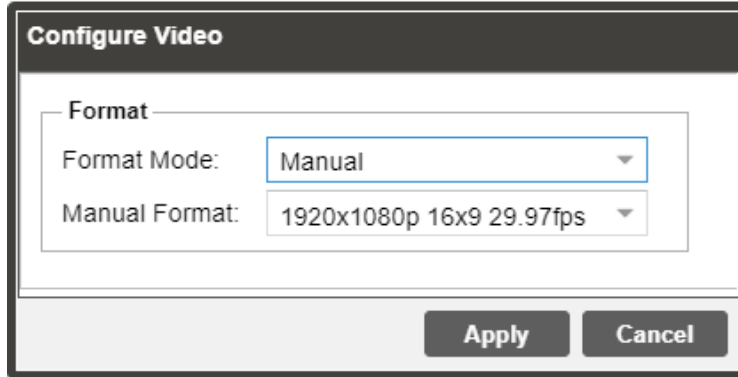
PID Lock Selection Menu

### Auto Seek Mode

In Auto Seek mode the 300D will decode first service listed in the PAT. All PIDs will automatically be assigned and decoded. No other configurations are available in this mode. This mode should only be used to verify the 300D is receiving a valid signal and it able to decode. This mode is not recommended for a professional environment.

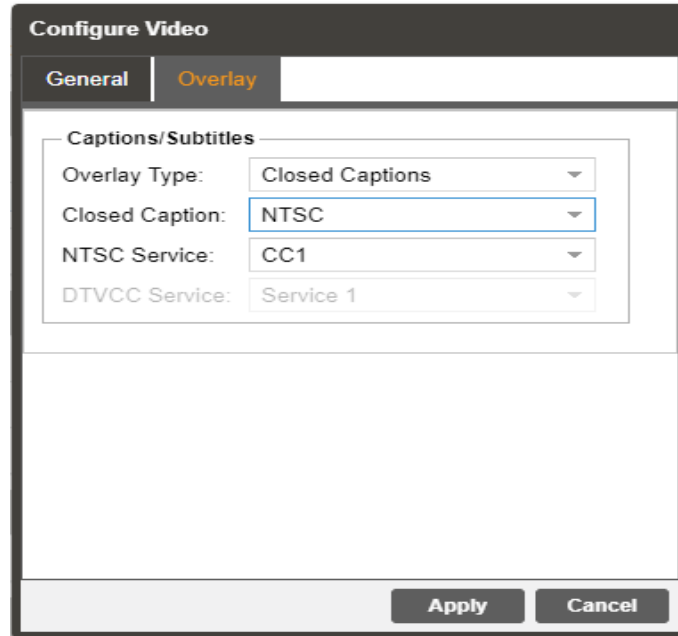
## 4.2.4 Configuring Video Services

The menu allows the user to configure both HDMI and SDI output formats of the IMPULSE 300D. The Auto setting may be used to match the native video format.



General and Overlay Options

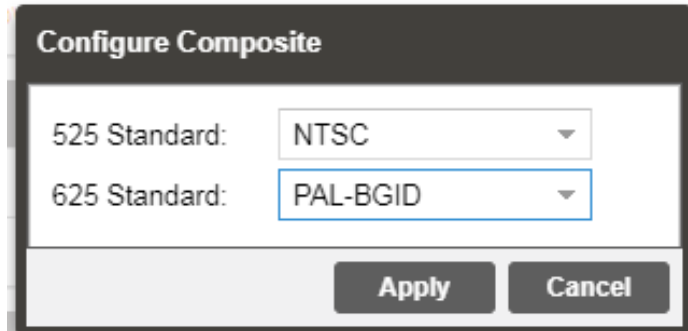
Setti	Range	Description
<b>Format Mode</b>	Auto Manual	Setting to <i>Auto</i> the IMPULSE 300D will output video to match the incoming native video format. Setting to <i>Manual</i> the user can define the video format the IMPULSE 300D will output.
<b>Manual Format</b>	Refer to Appendix C for supported formats.	This setting is the video format the IMPULSE 300D will output.



Setting	Range	Description
<b>Overlay Type</b>	None Closed Captions	<i>Closed Captions</i> overlays burns closed captioning in the video output.
<b>Closed Caption</b>	NTSC DTVCC	Sets the type of closed captions that will be in the overlay.
<b>NTSC Service</b>	CC1 – CC4	Sets the NTSC closed caption service that will be displayed in the overlay. This setting is only available if the Closed Caption option is set to NTSC.
<b>DTVCC Service</b>	Service 1-6	Sets the DTVCC closed caption service that will be displayed in the overlay. This setting is only available if the Closed Caption option is set to DTVCC.

## 4.2.5 Configuring Composite Output

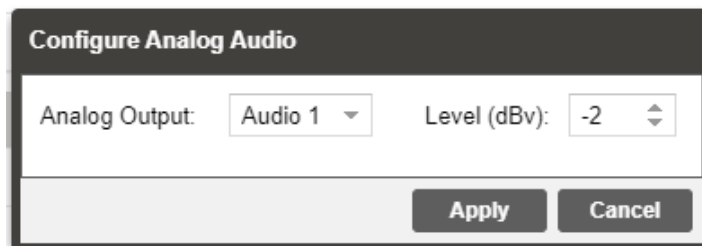
This menu allows the user to configure the composite video output of the Impulse 300D. Color subcarriers and VBI embedding are configured in this menu. Please note that the composite video output is only active if the output video format is SD.



Setting	Range	Description
<b>525 Standard</b>	NTSC PAL-M	Select the color subcarrier used for 525 line video formats.
<b>625 Standard</b>	PAL-BGID PAL-N	Select the color subcarrier used for 625 line video formats.

## 4.2.6 Configuring Analog Audio Output

This menu allows the user to configure the analog output outputs of the IMPULSE 300D. One analog audio outputs are available. The dBu level of the outputs can be adjusted for each of the four audio outputs.



Setting	Range	Description
<b>Analog Output 1</b>	Off Audio 1	Assign <i>Audio 1</i> to an analog audio output for output. Select <i>Off</i> to disable the analog output completely.
<b>Level</b>	-10-4	Level of the analog audio output in dBu.

### 4.2.7 Configuring the MPEG/IP Transmit

This menu allows the user to configure the MPEG/IP output. The two network ports can be set to either receive or transmit MPEG/IP. This menu is for setting up the transmission of MPEG/IP unicast or multicast transport streams.

**Configure**

Transmit Type: MPEG/IP

Transmit: Disabled

Interface: Network 2

Destination IP: 239.192.1.52

Destination Port: 1052

Source IP Mode: Auto

Source IP: 0.0.0.0

Source Port: 1052

Source MAC Mode: Auto

Source MAC: 00:00:00:00:00:00

TS Packets Mode: Auto

TS Packets Per IP Packet: 7

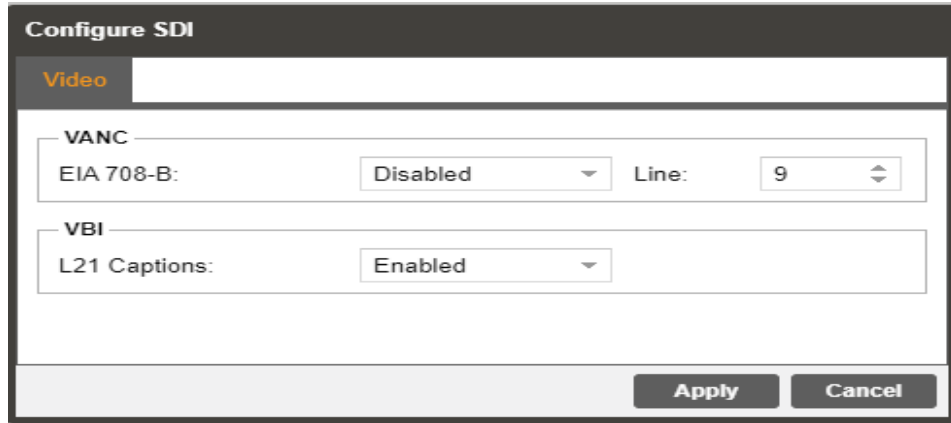
Encapsulation: UDP



Setting	Range	Description
<b>Transmit Type</b>	MPEG/IP	The selection of which protocol to transmit from the device
<b>Transmit</b>	Enabled Disabled	Enable or disable the MPEG/IP transmit group.
<b>Interface</b>	Network 1 Network 2	The physical connector on the MPEG/IP card that will be used to transmit the output.
<b>Destination IP</b>	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.
<b>Destination Port</b>	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
<b>Source IP Mode</b>	Auto Manual	Enables automatic or manual source IP address
<b>Source IP</b>	0.0.0.0 – 255.255.255.255	Source IP for stream
<b>Source Port</b>	0 - 65535	This is the port used by the IMPULSE 300D to transmit the MPEG/IP stream.
<b>Source MAC Mode</b>	Auto Manual	Enables automatic or manual source MAC address input
<b>Source MAC</b>	00:00:00:00:00:00 – FF:FF:FF:FF:FF:FF	Source MAC address for the stream
<b>TS Packets Mode</b>	Auto Manual	Enables automatic or manual TS packet per IP packet selection
<b>TS Packets Per IP Packet</b>	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.
<b>Differentiated Services</b>	Default Assured Forwarding 1-1 to 4-3 Expedited Forwarding	Define the quality of service (QoS) classification the packets carry when transmitted.
<b>Encapsulation</b>	UDP RTP	Sets the Encapsulation to UDP or RTP.

## 4.2.8 Configuring SDI Outputs

The following menus allow the user to configure the embedded audio and auxillary data in the SDI video output. All VANC embedding Line settings contain the values 4 through 19.



### VANC Embedding

Setting	Range	Description
<b>EIA 708-B</b>	Enabled Disabled	Enable/Disable EIA 708-B Closed Caption embedding in the VANC. Choose one line between lines 4-19 to embed data.

### SD SDI VBI Embedding

When the IMPULSE 300D is configured to output SD video the VBI data can be encoded into the vertical blanking as a VBI waveform. The options below allow the user to enable or disable these waveforms.

Setting	Range	Description
<b>L21 Captions</b>	Enabled Disabled	Enable/Disable Line 21 Closed Caption embedding in the VBI. Closed Captions are output on line 21 in the VBI.

## 4.3 Admin Panel

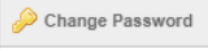
The screenshot displays the Admin Control Panel with the following sections and details:

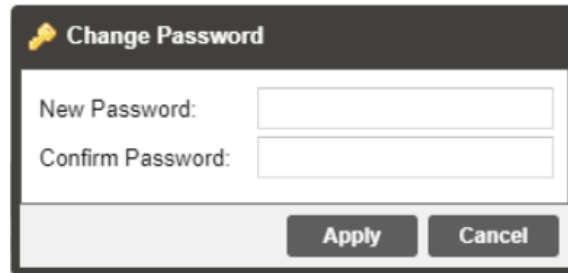
- Navigation:** Main, Admin, Reporting, About
- Admin Control Panel:** Change Password, Profiles, SNMP MIBs, Diagnostics, Update Unit, Reboot, Reset to Defaults
- General Settings:** Configure General Settings, Unit Alias: (No Alias)
- Network:**
  - Configure Networks: Hostname: fritzimpulse, Default Gateway: Network 1, Primary Nameserver: 8.8.8.8, Secondary Nameserver: 172.16.0.153
  - Table:
- Date / Time:** Configure Date / Time, Update Mode: Manual, Current Date: 1970-01-05, Current Time: 22:59:54, NTP Server: 0.0.0.0, Time Zone: GMT
- SNMP Communities:** Configure SNMP Communities, Read-Only Community: public, Read-Write Community: private
- SNMP Trap Managers:** Configure SNMP Managers, SNMP Managers (empty list)
- Syslog:** Configure Syslog, State: Disabled, Network Protocol: UDP

To access the Admin Control Panel, click on the **Admin** tab. This menu allows the user to control many aspects of the IMPULSE 300D.

### 4.3.1 Changing Unit Password

The IMPULSE 300D can be assigned an access password and the current access password can be changed. In order to make changes to passwords, click the

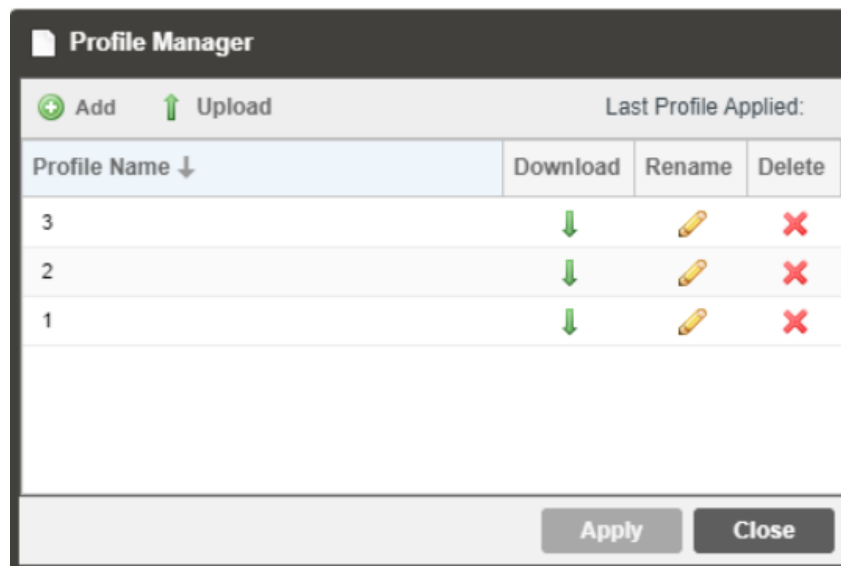
 button. A window will appear to enter the current password and new password.



The dialog box titled "Change Password" contains two input fields: "New Password:" and "Confirm Password:". Below the fields are two buttons: "Apply" and "Cancel".








### 4.3.2 Profiles

The IMPULSE 300D has the ability to save all configured settings to multiple profiles. Profiles can be saved locally, renamed and saved to external storage to be used on other IMPULSE 300Ds. Profiles can be used to quickly and easily change the configuration of an IMPULSE 300D to suit different inputs and decoding requirements.

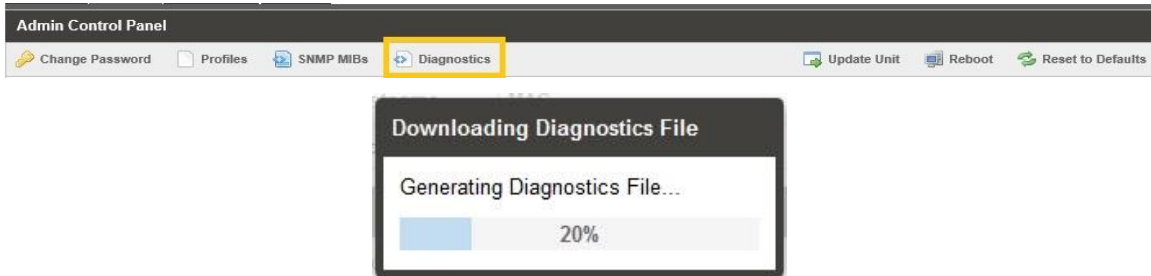


The Profile Manager window shows a table of profiles with columns for Profile Name, Download, Rename, and Delete. The table lists three profiles with IDs 3, 2, and 1. Each row has a green download arrow, a yellow pencil icon for rename, and a red X icon for delete. The window also includes "Add" and "Upload" buttons at the top left, "Last Profile Applied:" text at the top right, and "Apply" and "Close" buttons at the bottom right.

Profile Name ↓	Download	Rename	Delete
3	↓	✎	✖
2	↓	✎	✖
1	↓	✎	✖

Action	Button	Description
<b>Add New Profile</b>	 Add	Adds a new profile from current settings. User must name profile before creation is complete.
<b>Upload Profile</b>	 Upload	Allows the user to browse to external storage or workstation to upload profile to IMPULSE 300D.
<b>Apply Profile</b>	 Apply	Select a profile from the drop down menu and click this button. The IMPULSE 300D will apply all settings contained in the profile selected.
<b>Rename Profile</b>	 	Select a profile from the drop down menu and click this button. The user will be prompted for a new name for the profile.
<b>Delete Profile</b>		Select a profile from the drop down menu and click this button. The user will be prompted to confirm deletion of the profile.
<b>Download Profile</b>		Select a profile from the drop down menu and click this button. The user will be prompted to select a directory to download the profile.

### 4.3.3 Diagnostics



The IMPULSE 300D provides the user the ability to take a snapshot of ALL current unit settings, reported values, active alarms, and the alarm and log file history. This snapshot will be downloaded as a .XML format file that can be sent to Procure at Sencore for analysis.

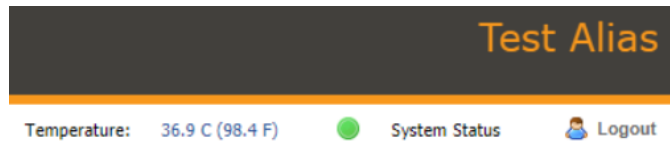
Click the ‘Diagnostics’ button and a window will open showing the diagnostic file creation progress.

This window is replaced with a download file window when file creation is complete.



The user will be asked to ‘Open’ or ‘Save’ the file.

### 4.3.4 General Settings

The IMPULSE 300D can be assigned an alias which is displayed in the upper right hand corner of the web interface. The alias can help define which IMPULSE 300D the operator is currently logged into.



### 4.3.5 Unit Network Configuration

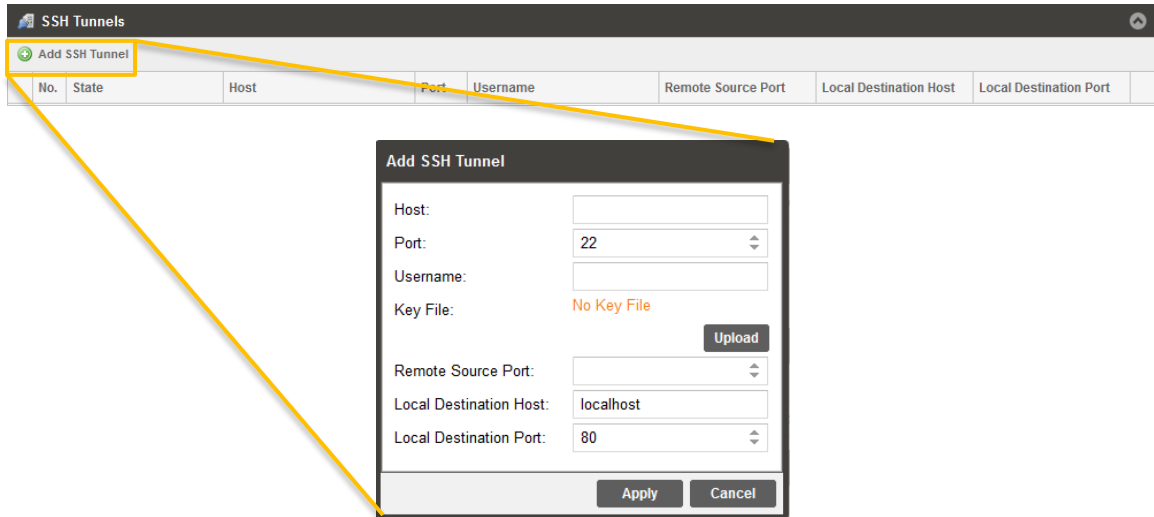
The management of the IMPULSE 300D can be configured from the web interface. To make changes to the management port click, the  button under the Unit Network Configuration section. Domain name servers can be configured on the IMPULSE clicking the  **Configure Networks** button. IP address and web address entries are accepted as Nameserver addresses. The hostname and default gateway may also be configured under this menu.

**NOTE: Exercise extreme caution when performing changes to this menu as network communication can be lost with the IMPULSE 300D.**

Setting	Range	Description
<b>Interface Name</b>	Valid characters: A through Z 0 through 9 - (hyphen)	This setting allows the user to define an optional unit Hostname.
<b>Mode</b>	DHCP Static	Setting to <i>DHCP</i> will allow the network assign an IP address automatically to the IMPULSE 300D (if supported). Setting to <i>Static</i> allows the user to manually define all TCP/IP settings for the management port.
<b>IP</b>	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 management port.
<b>Subnet Mask</b>	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 management port.
<b>Gateway</b>	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 management port.

### 4.3.6 SSH Tunnels

The IMPULSE 300D can be remotely managed by using an SSH tunnel. In applications where Zixi ZEN Master is being used, an SSH tunnel is established to provide remote access to the web GUI of the IMPULSE 300D.



**Figure 2: Adding SSH Tunnels**

The SSH tunnel configuration window will allow the user to define the connection to Zixi ZEN Master by providing the required details in the Add SSH Tunnel window. Most of the values for these settings can be found in your ZEN Master instance.

Setting	Range	Description
<b>Host</b>	IPv4 Address Valid Doman Name	The IP address or web link of the Zixi (ZEN Master) server
<b>Port</b>	0 – 65535	The IP port of the Zixi (ZEN Master) server
<b>Username</b>	User Entry	Account credential to log into Zixi (ZEN Master) server
<b>Key File</b>	N/A	Browse the local computer to select and upload a hashed key file used to open the secure connection to the Zixi (ZEN Master) server
<b>Remote Source Port</b>	0 – 65535	Remote port number the Zixi (ZEN Master) server is using for SSH communication

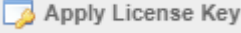


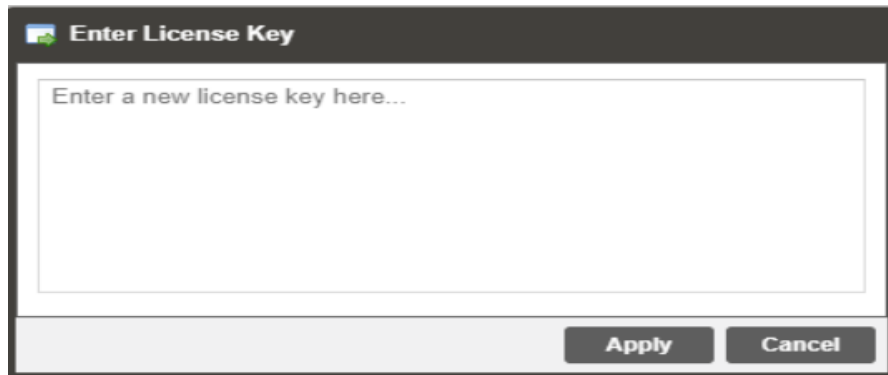
<b>Local Destination Host</b>	IPv4 Address Valid Domain Name	Address reporting to Zixi (ZEN Master) server. Localhost is the default.
<b>Local Destination Port</b>	0 – 65535	The port that is accessible to the Zixi (ZEN Master) server. Port 80 (IMPULSE 300D web client) is the default.

### 4.3.7 Licensing


Certain features of the IMPULSE 300D require licenses in order to be functional. The interface displays all licenses available as well as the following status:

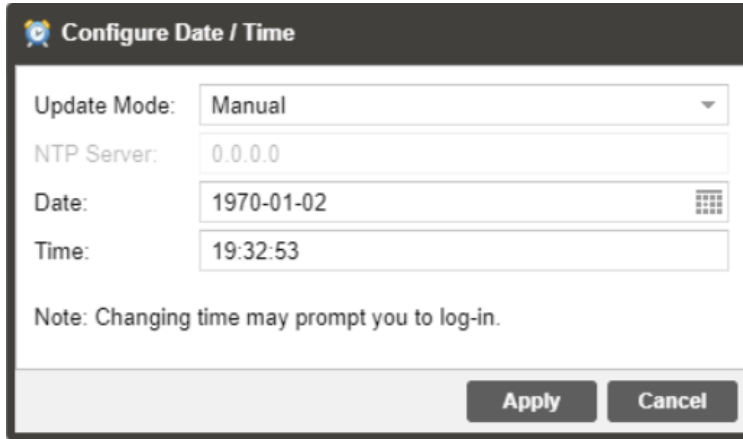
- License Locked or Unlocked
- License is Supported or Unsupported by the installed hardware


If licenses need to be applied to the IMPULSE 300D click  button. The menu below will appear where the user can copy and paste the provided license key from Sencore.



### 4.3.8 Date/Time

The IMPULSE 300D can be set to synchronize with an NTP server or a manual date and time can be defined by the user. Click the  button to configure the date and time. These values are used to timestamp entries in the Alarm and Event logs under the Reporting tab.

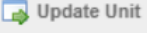


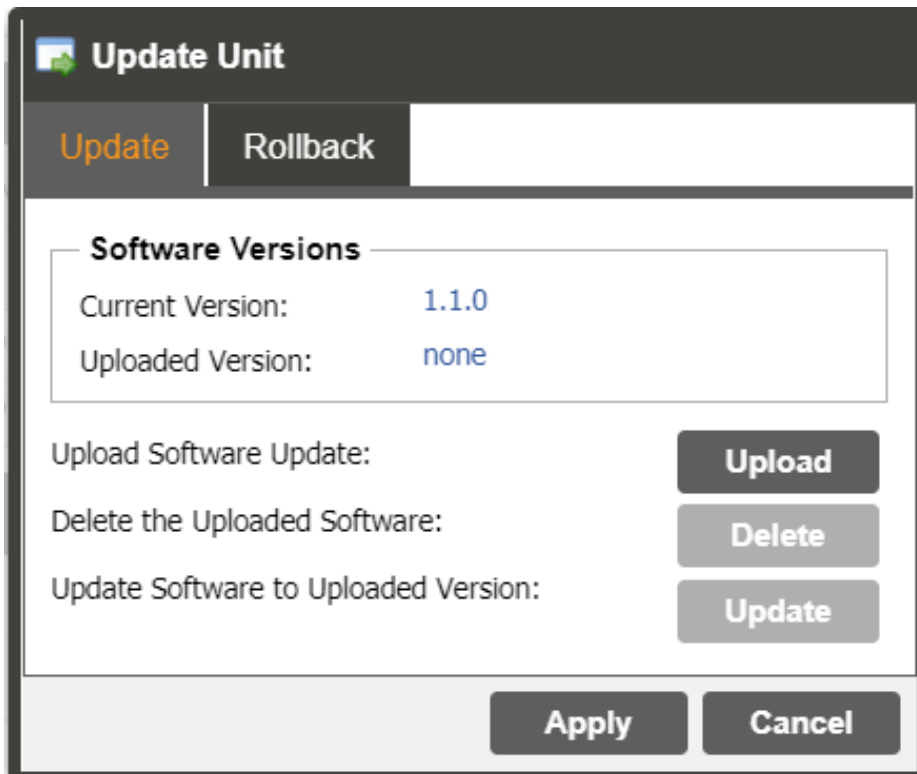
Setting	Range	Description
<b>Update Mode</b>	NTP Manual	Setting to <i>NTP</i> uses the local network's NTP server to synchronize date and time. <i>Manual</i> allows the user to define a date and time.
<b>NTP Server</b>	Four decimal octets: XXX.XXX.XXX.XXX Domain Name	This is the IP Address or Domain Name of the local NTP Server on the network. This setting is only available if Update Mode is set to NTP.
<b>Date</b>	MM/DD/YYYY	This setting is the user 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.
<b>Time</b>	00:00:00 – 24:00:00	This setting is the user defined time. The time is based on a 24 hour clock. This setting is only available if the Update Mode is set to Manual.


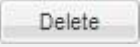
### 4.3.9 Updating the IMPULSE 300D


#### 4.3.9.1 Applying Software Updates

Updates to the IMPULSE 300D are performed through the web interface. A software update file is provided by Sencore and then uploaded to the unit. Once uploaded, the software update is applied to the unit. To upload software updates to the unit click on the

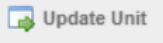

 button. The current version and uploaded version is displayed in the Software Versions section. The IMPULSE 300D will reboot after a software update is complete.

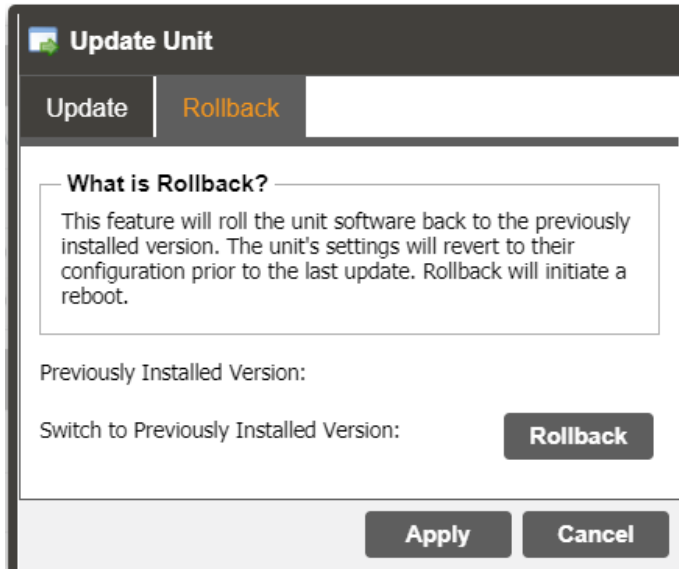



Action	Button	Description
<b>Upload Software Update</b>		To upload software updates to the IMPULSE 300D click this button. The user will be prompted to navigate to an update file. The file will then upload to the IMPULSE 300D. When complete the IMPULSE 300D will prompt the user to either apply the update or cancel
<b>Delete the Uploaded Software</b>		Clicking this button prompts the user to confirm the deletion of the software update from the

<p><b>Update Software to Uploaded Version</b></p>		<p>IMPULSE 300D. This will also clear the Uploaded Version status of the Software Versions section.</p> <p>Clicking the button starts the software update process. The IMPULSE 300D will prompt the user to confirm the update. Click Yes to continue or No to cancel.</p>
---	---	--


### 4.3.9.2 Rollback Software Updates

The IMPULSE 300D is capable of reverting back to a previous version of software using the Rollback feature. The IMPULSE 300D 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 settings. To perform a rollback, click the  button and then click the  tab. The IMPULSE 300D will reboot after the rollback process is complete.




Action	Button	Description
Rollback Software		Clicking this button starts the Rollback process. The IMPULSE 300D will prompt the user to confirm the rollback or click cancel to stop the process.

### 4.3.10 Reboot Unit

The IMPULSE 300D can be rebooted from the web interface. In order to perform a reboot click the  Reboot button. The IMPULSE 300D will prompt the user to confirm the reboot. Once the reboot is complete the login screen will appear allowing the web interface to be logged into.

### 4.3.11 Reset Defaults

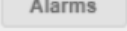
The IMPULSE 300D settings can be reset to factory defaults. All settings will be returned to the factory defaults except the network management ports TCP/IP settings. All event logs will be cleared. To reset all settings to default click the  Reset to Defaults button. The IMPULSE 300D will prompt the user to confirm the reset.


## 4.4 Reporting Panel



Reporting Control Panel			
Alarms		Logs	
State	Name	Location	Last Changed
!	Transport Stream Not Present	Unit	1970-01-02 01:01:46

The **Reporting** tab in the IMPULSE 300D contains logs for active alarms currently affecting the unit and 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 alarm and event history. Both the active alarm and event logs can be configured to hide or change the behavior of alarms and events.

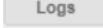


### 4.4.1 Active Alarms

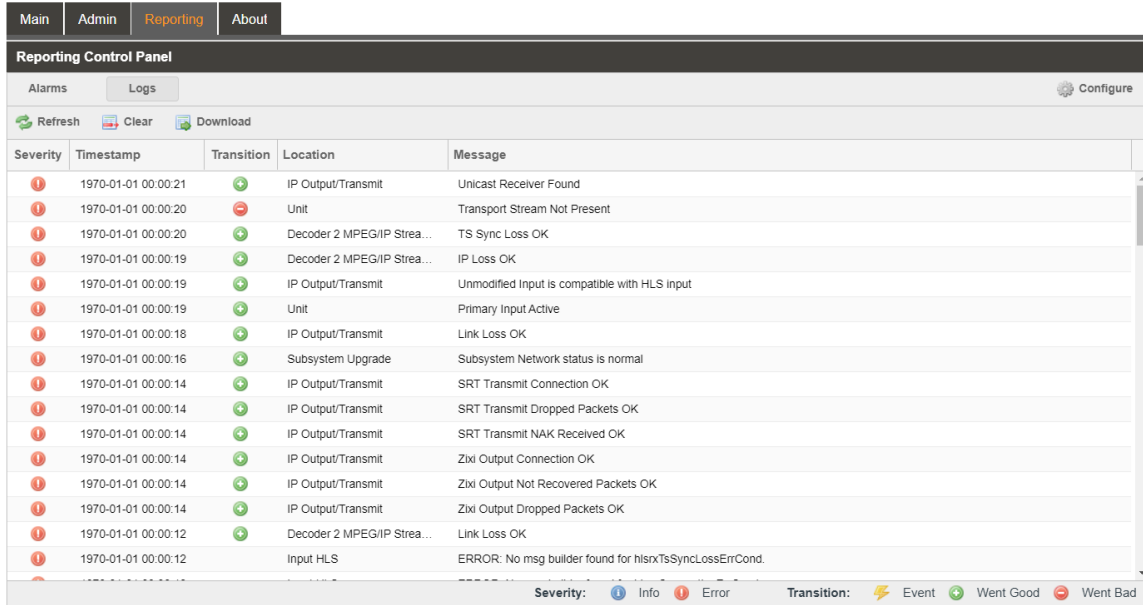
Clicking on the  button displays the Active Alarms menu. This list displays all of the active alarms currently affecting the unit. There are four columns in the log that display different types of information.
































Reporting Control Panel			
Alarms		Logs	
State	Name	Location	Last Changed
	Transport Stream Not Present	Unit	1970-01-02 01:01:46






Title	Description
<b>State</b>	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.
<b>Name</b>	This column displays the description of the error. The function that is experiencing an error condition is described here.
<b>Location</b>	This column displays the hardware or function that is experiencing the active error.
<b>Last Changed</b>	This column displays the date and time the error was raised. This date and time correlates with the Date and Time settings configured in <a href="#">Section 4.3.8</a> .

## 4.4.2 Event Logs

Clicking on the  button displays the Event Log menu. This list displays all of the events and alarms that have affected the unit. The IMPULSE 300D stores up to 2000 events worth of logs. The logs can be cleared manually by clicking the  button. The logs can be downloaded as a .tsv file and saved to an external location by clicking the  button. There are five columns in the log that display different types of information.



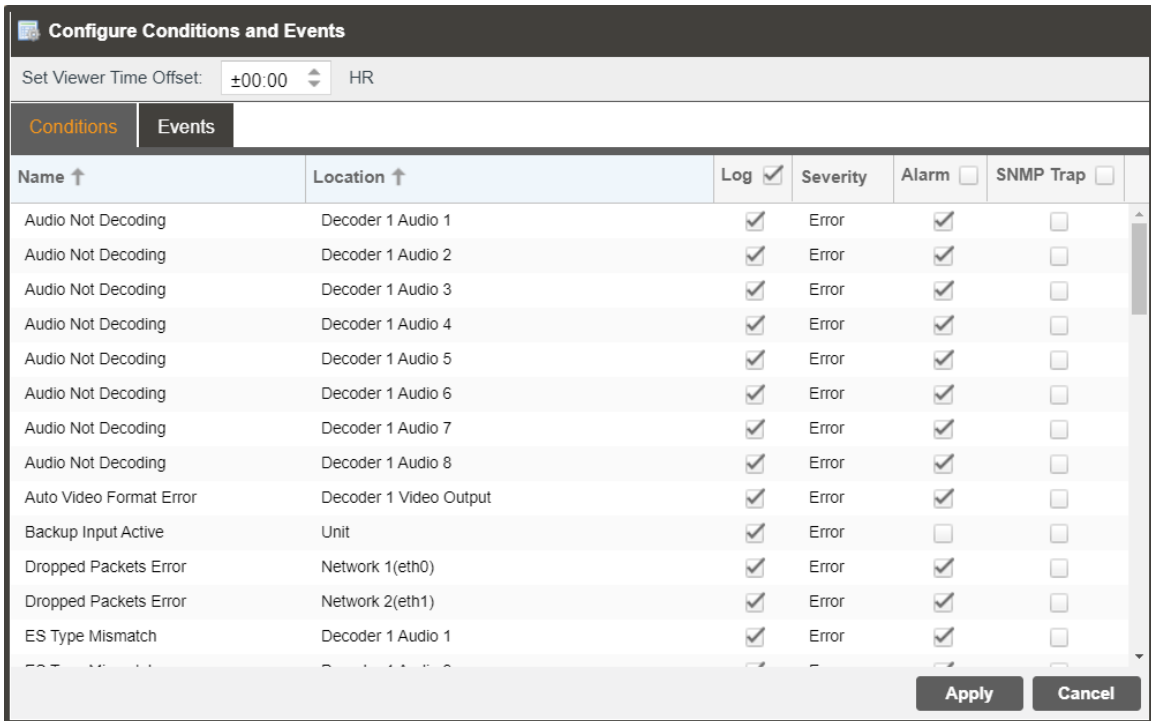
Severity	Timestamp	Transition	Location	Message
	1970-01-01 00:00:21		IP Output/Transmit	Unicast Receiver Found
	1970-01-01 00:00:20		Unit	Transport Stream Not Present
	1970-01-01 00:00:20		Decoder 2 MPEG/IP Strea...	TS Sync Loss OK
	1970-01-01 00:00:19		Decoder 2 MPEG/IP Strea...	IP Loss OK
	1970-01-01 00:00:19		IP Output/Transmit	Unmodified Input is compatible with HLS input
	1970-01-01 00:00:19		Unit	Primary Input Active
	1970-01-01 00:00:18		IP Output/Transmit	Link Loss OK
	1970-01-01 00:00:16		Subsystem Upgrade	Subsystem Network status is normal
	1970-01-01 00:00:14		IP Output/Transmit	SRT Transmit Connection OK
	1970-01-01 00:00:14		IP Output/Transmit	SRT Transmit Dropped Packets OK
	1970-01-01 00:00:14		IP Output/Transmit	SRT Transmit NAK Received OK
	1970-01-01 00:00:14		IP Output/Transmit	Zixi Output Connection OK
	1970-01-01 00:00:14		IP Output/Transmit	Zixi Output Not Recovered Packets OK
	1970-01-01 00:00:14		IP Output/Transmit	Zixi Output Dropped Packets OK
	1970-01-01 00:00:12		Decoder 2 MPEG/IP Strea...	Link Loss OK
	1970-01-01 00:00:12		Input HLS	ERROR: No msg builder found for hlsrxTSSyncLossErrCond.

Title	Description
<b>Severity</b>	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.
<b>Timestamp</b>	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 <a href="#">Section 4.3.8</a> .
<b>Transition</b>	This column displays when an alarm transition from a bad to good state. 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.
<b>Message</b>	This column displays the description of the error or event. The function or hardware that experienced the event or error is described here.
<b>Location</b>	This column displays the hardware or function that experienced the alarm or event.





### 4.4.3 Configuring the Logs

The IMPULSE 300D allows the user to configure alarms and events. Events and alarms can be hidden, set to send SNMP traps or close a relay when active. In order to configure these options click the **Configure** button while in the **Logs** section of the **Reporting** tab. The **Conditions** tab allows the user to configure the alarms reported by the IMPULSE 300D. The **Events** tab allows the user to configure the events reported by the IMPULSE 300D. 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.



Title	Description
<b>Name</b>	This column displays the name of the error or condition. This is informational data: no options can be set here.
<b>Location</b>	This column displays the hardware or function that the alarm or event applies to. This is informational data; no options can be set here.
<b>Log</b>	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.
<b>Log Severity</b>	This column is only available in the <b>Conditions</b> tab This option allows the user to set the severity of the error to Info or Error. If Info is selected in

the drop down box the  icon will 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 allows the user to enable or disable this alarm in the Active Alarms log. If checked the alarm will be displayed in the Active Alarms log if raised. If this box is unchecked this error will be hidden.

## 4.5 About Panel

The screenshot displays the 'About' panel of the Impulse 300D interface. At the top, there are navigation tabs: 'Main', 'Admin', 'Reporting', and 'About' (which is highlighted). Below the tabs is the 'About Control Panel' header. The main content area is divided into several sections:

- System Information:** Displays 'Software Version: 1.1.0' and 'Unit Serial Number: 7236301'.
- Options:** A list of installed licenses, each with a plus icon to its left:
  - IMPULSE 300D (Impulse Decoder)
  - IMPULSE 30100 (SDI Output License)
  - IMPULSE 30200 (IP Output License)
  - IMPULSE 30300 (AC3 Decoding License)
  - IMPULSE 30400 (Playback/Recording License)
  - IMPULSE 30500 (ZIXI Input License)
  - IMPULSE 30600 (UHD License (HDMI output only))
- Contact Information:** Features the Sencore logo and the following text:
 

3200 W Sencore Dr  
Sioux Falls, SD 57107  
United States  
605-978-4600  
<http://www.sencore.com>
- Third-Party Software Information:** A section at the bottom that is currently collapsed, indicated by a downward arrow icon.

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

# Section 5 Appendices



## Introduction

This section includes the following appendices:

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<b>Appendix B</b>	<b>– Error and Event List</b> .....	<b>64</b>
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<b>Appendix D</b>	<b>– Open Source Software</b> .....	<b>69</b>
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## Appendix A – Acronyms and Glossary

- 8VSB:** Vestigial sideband modulation with 8 discrete amplitude levels.
- 16VSB:** Vestigial sideband modulation with 16 discrete amplitude levels.
- AAC:** Advanced Audio Coding
- AC-3:** Also known as Dolby Digital
- AES:** Audio Engineering Society
- AFD:** Active Format Descriptor
- 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.
- CAM:** Conditional Access Module
- CAT:** Conditional Access Table
- CAT6:** Category 6 – Cable standard for gigabit Ethernet
- CC:** Closed Caption
- CI:** Common Interface
- CoP:** Code of Practice
- CRC:** Cyclic Redundancy Check
- CVCT:** Cable Virtual Channel Table
- dB:** Decibel
- DDPlus:** Dolby Digital Plus
- DHCP:** Dynamic Host Configuration Protocol
- DPI:** Digital Program Insertion
- DTVCC:** Digital Television Closed Captioning
- DVB:** Digital Video Broadcasting
- EBU:** European Broadcasting Union
- EIA:** Electronic Industries Alliance
- EIT:** Event Information Table
- EPG:** Electronic Program Guide
- ETM:** Extended Text Message
- ETT:** Extended Text Table
- Event:** An event is defined as a collection of elementary streams with a common time base, an associated start time, and an associated end time.
- FCC:** Federal Communications Commission
- FEC:** Forward Error Correction
- Field:** For an interlaced video signal, a “field” is the assembly of alternate lines of a frame. Therefore, an interlaced frame is composed of two fields, a top field and a bottom field.
- 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.
- HANC:** Horizontal Ancillary
- 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.

**I/O:** Input/Output

**IP:** Internet Protocol

**Kbps:** 1000 bit per second

**LED:** Light Emitting Diode

**LNB:** Low-Noise Block

**MAC:** Medium Access Control

**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.

**MER:** Modulation Error Ratio

**MGT:** Master Guide Table

**MIB:** Management Information Base

**MP@HL:** Main profile at high level.

**MP@ML:** Main profile at main level.

**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

**MPTS:** Multiprogram Transport Stream

**MRD:** Modular Receiver Decoder

**NTP:** Networking Time Protocol

**NTSC:** National Television System Committee

**OSD:** On Screen Display

**PAL:** Phase-Alternating Line

**PAT:** Program Association Table

**PCM:** Pulse-Code Modulation

**PCR:** Program Clock Reference

**PCM:** Pulse-code Modulation

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

**PMT:** Program Map Table

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

**Program specific information (PSI):** PSI consists of normative data which is necessary for the demultiplexing of transport streams and the successful regeneration of programs.

**Program:** A program is a collection of program elements. Program elements may be elementary streams. Program elements need not have any defined time base; those that do have a common time base and are intended for synchronized presentation.

**PTS:** Presentation Time Stamp

**QAM:** Quadrature Amplitude Modulation

**QPSK:** Quadrature Phase-Shift Keying

**RDS:** Receiver Decoder System

**RF:** Radio Frequency

**RGBHV:** Red, Green, Blue, Horizontal, Vertical  
**RO:** Read Only  
**RPM:** Revolutions Per Minute  
**RRT:** Rating Region Table  
**RS-232:** Recommended Standard. A standard for serial binary data interconnection.  
**RU:** Rack Unit  
**RW:** Read/Write  
**SD:** Standard Definition  
**SDI:** Serial Digital Interface  
**SFP:** Small Form-Factor Pluggable  
**SI:** System Information  
**SMPTE:** Society of Motion Pictures and Television Engineers  
**SNMP:** Simple Network Management Protocol  
**SPTS:** Single Program Transport Stream  
**SSRC:** Synchronization Source  
**STD input buffer:** A first-in, first-out buffer at the input of a system target decoder for storage of compressed data from elementary streams before decoding.  
**STD:** System Target Decoder. A hypothetical reference model of a decoding process used to describe the semantics of the Digital Television Standard multiplexed bit stream.  
**STT:** System Time Table  
**TS:** Transport Stream  
**TVCT:** Terrestrial Virtual Channel Table  
**UTC:** Coordinated Universal Time  
**VANC:** Vertical Ancillary  
**VBI:** Video Blanking Interval  
**VCT:** Virtual Channel Table. Used in reference to either TVCT or CVCT.  
**XLR:** Cannon “X” series connector, with a Latch, and Rubber around the contacts.  
**YPbPr:** Component Red, Green, Blue

## Appendix B – Error and Event List

Error	Description
<b>Ac3 Audio Unsupported</b>	Without AC3 license and audio type is AC3.
<b>Audio Not Decoding</b>	Audio is corrupted in incoming stream or format is not supported.
<b>Date/Time Chaned</b>	The Date/Time setting of the system was changed.
<b>Dropped Packet Error</b>	The system has detected an instance of packets being dropped.
<b>HLS Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 20 Mbps.
<b>HLS Receive Connection Error</b>	The system encountered a connection error when receiving HLS transmission.
<b>Input Audio Unsupported</b>	Native format of incoming video is not a supported audio format.
<b>Input Video Unsupported</b>	Native format of incoming video is not a supported video format.
<b>Mpeg/IP Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 60Mbps.
<b>Mpeg/IP Transmit Unicast Reciever Not Found</b>	The system was unable to detect the configured unicast receiver.
<b>No Services Detected</b>	Service Lock service selection mode is enabled but no services are present in the active input transport stream.
<b>NTP Server Unreachable</b>	The system cannot connect to the configured NTP server.
<b>NTP Updated</b>	The NTP Date/Time was updated.
<b>RIST Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 30 Mbps.
<b>RIST Receive Connection Error</b>	The system encountered a connection error when receiving RIST connection.
<b>RIST Receive Lost Packets Error</b>	The system has detected lost packets in the received RIST signal.
<b>RIST Transmit Connection Error</b>	The system has detected a connection error when transmitting SRT signal.
<b>RIST Transmit Lost Packets Error</b>	The system has detected lost packets in the transmitted SRT signal.
<b>RTMP Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 30 Mbps.
<b>RTP Reception Error</b>	The system has detected an error in RTP reception.
<b>SRT Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 30 Mbps.
<b>SRT Receive Connection Error</b>	The system encountered a connection error when receiving SRT transmission.



<b>SRT Receive Decryption Error</b>	The system has errors when trying to decrypt SRT signal.
<b>SRT Receive Lost Packets Error</b>	The system has detected lost packets in the received SRT signal.
<b>SRT Skipped Packets Error</b>	The system has detected skipped packets in the received SRT signal.
<b>SRT Transmit Connection Error</b>	The system has detected a connection error when transmitting SRT signal.
<b>SRT Transmit Dropped Packets Error</b>	The system has detected lost packets in the transmitted SRT signal.
<b>SRT Transmit NAK Received Error</b>	The system has received a loss report from the receiver during the ARQ exchange and will retransmit packets.
<b>Service Not Found</b>	Service Lock service selection mode is enabled but service defined by user is not present in the incoming stream.
<b>Software Update Failed</b>	An attempted software update was unsuccessful.
<b>Software Update Succeeded</b>	An attempted software update succeeded.
<b>TS Sync Loss Error</b>	The system has detected the loss of sync in the transport stream.
<b>Transport Stream Not Present</b>	The IMPULSE 300D has detected that the transport stream from the active input is no longer present.
<b>UHD Video Unsupported</b>	Without UHD4K decoding license and video type is UHD4K.
<b>Video Not Decoding</b>	The configured service or video PID to be decoded is not being successfully decoded by the IMPULSE 300D.
<b>Zixi Bitrate Exceeded Error</b>	Total incoming transport stream bitrate has exceeded 30 Mbps.
<b>Zixi Receive Connection Error</b>	The system encountered a connection error when receiving Zixi transmission.
<b>Zixi Receive Decryption Error</b>	The system has errors when trying to decrypt Zixi signal.
<b>Zixi Receive Dropped Packets Error</b>	The system has detected dropped packets in the received Zixi signal.
<b>Zixi Receive Not rRecovered Packets Error</b>	The system is reporting that retransmitted packets were not recovered in the received Zixi signal.
<b>Zixi Transmit Connection Error</b>	The system has detected an error when connecting to server to begin transmission.
<b>Zixi Transmit Dropped Packets Error</b>	The receiving system is reporting that packets were dropped in the transmitted Zixi signal.
<b>Zixi Transmit Not Recovered Packets Error</b>	The receiving system is reporting that retransmitted packets were not recovered in the transmitted Zixi signals.

## Appendix C – Specifications

### IMPULSE 300D – Output Interfaces

Interfaces –

SD/HD-SDI/3G-SDI:	1x 75Ω BNC SDI SMPTE 259M SMPTE 292M SMPTE 424M
Digital Video:	1x HDMI Type A Connector with positive screw retention
Supported Version:	2.0
Composite Video Output:	1x 75Ω BNC NTSC, PAL
Analog Audio:	2x RCA (L/R)

IP –

Physical Interface:	1x RJ45, 10/100/1000 auto-negotiating
Output Format:	UDP or RTP

Constant Bitrate –

IP Encapsulation:	1 to 7 TS Packets per IP Packet
Protocols:	Unicast and Multicast
IGMP Compatibility:	Version 1, 2 and 3
TS Bitrate:	250 Kbps to 60 Mbps

### Input Interfaces

IP –

Physical Interfaces:	1x RJ45, 10/100/1000 auto-negotiate
Output Format:	UDP or RTP

Constant Bitrate -

IP Encapsulation:	to 7 TS Packets per IP Packet
Protocols:	Unicast & Multicast HLS SRT RIST* Zixi RTMP
IGMP Compatibility:	Version 1, 2 and 3
TS Bitrate:	250 Kbps to 60 Mbps
Max Bitrate:	HLS @ 20mbps MPEG/IP @ 60mbps RTMP @ 12mbps SRT @ 30mbps ZIXI @ 30mbps

*Input Redundancy\**  
Descrambling:

AES 128/256

## Video Processing

Codec/Profile:	MPEG-2 up to MP@HL H.264 up to HP@L4.2 HEVC up to MP@5.1 AVS-P16 (AVS+) AVS2 Main-10bit Profile@ L 8.2.6
Resolutions:	2160p@23.98, 24, 25, 29.97, 30, 50, 60 1080p@23.98,24,25, 29.97, 30, 50, 59.94, 60 1080i@25, 29.97, 30 720p@ 50, 59.94, 60 576i@25 480i@ 29.97
Aspect Ratio:	Automatic or manual (4:3 or 16:9) Bitrate: up to 60 Mbps

## Audio Processing

Audio Codecs Supported:	Dolby Digital (AC-3) Dolby Digital Plus (E-AC-3) AAC HE-AAC MPEG-1 L2 MPEG-2 up to MP@HL H.264 up to HP@L4.2 HEVC up to MP@5.1 AVS-P16 (AVS+) AVS2 Main-10bit Profile@ L 8.2.
Output Formats:	Linear PCM Dolby Digital pass-through* PCM (down mixed for 5.1 Sources) Analog (down mixed for 5.1 Sources)
Audio Sampling Rate:	48 KHz
Ancillary Data Pass-through:	AFD (SMPTE 2016)* Closed Captions (EIA-608, EIA-708)

## Operation Modes

Live:	Decoding to HDMI/SDI or CVBS
Playback*:	Local: USB Flash, SD Card, In order HDMI/SDI/CVBS or IP outputs
Recording*:	Local: USB flash, SD Card Format: TS, MOV, MP4 Circling recording (by time or size of file)
Connector:	1x RJ-45 10/100/1000 Auto Negotiating
Protocols:	HTTP(S), SNMP* and Web API*
User Interfaces:	Full control via web GUI Full control via intuitive front panel
Automation Interfaces:	Full status and control via SNMP* Configurable SNMP traps * Web services API* Syslog message logging

Firmware Updates:	Via Web Gui
Other I/O:	1 x USB 2.0 1 x SD Card Standard Interface LCD x 1, Front button x 6

### Operation Modes

Height:	1 RU, 1.72" (44mm)
Width:	1/3 RU, 5.69" (144.5mm)
Depth:	7.5" (190.5mm)
Weight:	1.3 lbs (0.6kg)
Power:	100-240 VAC 50/60 Hz
Power Consumption:	Max. 9W
Supplies:	1x AC Internal
Connector:	IEC 320 C14

### Operation Modes

Operating Temperature:	32° to 122° F (0° to 50° C)
Cooling:	Software regulated fan
Storage Temperature:	-40° to 149° F (-40° to 65° C)
Relative Operating Humidity:	< 95% (non-condensing)

### Operation Modes

Impulse 300D:	Impulse Decoder HDMI/CVBS output,UDP/RTMP/HLS/SRT/RIST inputs, Mpeg2/H.264/H.265 video and MPEG1L2/ AAC audio decoding
Impulse 30100	SDI Output License
Impulse 30200	IP Output License
Impulse 30300	AC3 License
Impulse 30400	Playback/Recording License
Impulse 30500	ZIXI License
Impulse 30600	UHD decoding license (downconversion and HDMI output)

## Appendix D – Open Source Software

The IMPULSE 300D includes:

Package	Version	License	Copyright
<b>amibios_dmi</b>	75dce7b	GPL Version 2, June 1991	Claudio Matsuoka
<b>BusyBox</b>	1.20.1	GPL Version 2, June 1991	Erik Anderson, et. al.
<b>Dropbear</b>	2016.74	MIT-like	2002-2015 Matt Johnston, et. al (see license)
<b>e2fsprogs</b>	1.41.9	GPL Version 2, June 1991	Theodore Ts'o
<b>ethtool</b>	2.6.34	GPL Version 2, June 1991	David Miller, et. al.
<b>FamFamFam Silk Icons</b>	013	Creative Commons Attribution 2.5	Mark James
<b>FastDB</b>	3.71	MIT-like	Konstantin Knizhnik
<b>FCGI</b>	2.4.6	FastCGI	Open Market, Inc
<b>FFmpeg</b>	3.4	LGPL Version 2.1, February 1999	Fabrice Bellard
<b>gptfdisk</b>	1.0.3	GPL Version 2.1, June 1991	Roderick W. Smith
<b>Grub</b>	2.00	GPL Version 3, 29 June 2007	1994-201 Free Software Foundation
<b>Lighttpd</b>	1.4.30	BSD	2004, Jan Kneschke
<b>Libpcap</b>	1.8.1	BSD	1993, 1994, 1995, 1996 The Regents of the University of California
<b>Linux</b>	2.6.30	GPL Version 2, June 1991	Linus Torvalds, et. Al.
<b>Log4cpp</b>	1.0	LGPL Version 2.1, Feb 1999	Bastiaan Bakker
<b>Monit</b>	5.1.1	GPL Version 3, 29 June 07	2010 Tildeslash Ltd.
<b>Net-SNMP</b>	5.7.1	BSD	1989, 1991, 1992 by Carnegie Mellon Univsty.
<b>NTP</b>	4.2.4p7	NTP License	1992-2009 David L. Mills
<b>OpenSSL</b>	1.0.1c	BSD-Like	1998-2008 The OpenSSL Project, 1995-1998 Eric Young

<b>PCRE</b>	8.30	BSD	1997-2012 University of Cambridge, 2007-2008
<b>POPT</b>	1.14	MIT	1998 Red Hat Software
<b>Pureftpd</b>	1.0.46	BSD	Frank Denis
<b>gDecoder</b>	12.0.4	BSD	2000-2012 Seungyoung Kim
<b>samba</b>	4.7.0	GPL Version 3, 29 June 07	Andrew Tridgekk, et al.
<b>Spawn-FCGI</b>	1.6.3	BSD	Jan Kneschke, Stefan Bahler
<b>Srt</b>	1.3.2	MPLv2 License	2018 Haivision Systems Inc.
<b>TCLAP</b>	1.2.0	MIT	2003 Michael E Smoot
<b>tzdata</b>	2017b	Public domain, BSD 3-clause	Arthur David Olden
<b>Zlib</b>	1.2.7	zlib/libpng License	1995-2005, Jean-loup Gailly and Mark Adler

## Appendix E – Warranty

### Sencore One-Year Warranty

Sencore warrants this instrument 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 300D 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 a RMA number, use the following steps:

1. Contact the Sencore service department by going online to [www.sencore.com](http://www.sencore.com) and select Support.
2. Select Service and Repair from the options given.
3. Fill in the following required information:
  - a. First & Last Name
  - b. Company
  - c. Email
  - d. Phone Number
  - e. Ship and Bill to Address
  - f. Unit Model and Serial Numbers
4. A RMA number will be emailed you shortly after completing the form with return instructions.

### Shipping the Product

Once an RMA number has been issued, the unit needs to be packaged and shipped back to Sencore. It's best to use the original box and packaging for the product but if this not available, check with the customer service representative for the proper packaging instructions.

*Note: DO NOT return any power cables or accessories unless instructed to do so by the customer service representative*

