ANYWAVE

ANY9300 SD/HD/UHD Encoder

User Manual

Version 24.05a – June 4, 2024

Contents

1. INTRODUCTION

1.1 Safety Instructions

Before using the product, read these Safety Instructions for proper product handling. This guide contains tips on using the product safely while preventing physical harm to you or others or the properties.

Gain a full understanding of the definitions of these instructions before going into the next step.

1. Connecting Power

- This product operates only in the range of AC 100V~240V and 50Hz/60Hz. Please check first your power supply to see if it fits in this range.
- Please be noted that you need to disconnect from the mains before you start any maintenance or installation procedures.
- Make sure that the power cord is placed in a position where it is easy to unplug it from the mains in an emergency.

2. Liquid

- This product is not water-proof and should not be exposed to dripping, splashing, or any type of liquid.
- No objects filled with liquid such as vases shall be placed on the product.
- Please do not clean the product with wet cloth, which may cause a short circuit.
- No wet objects should be placed near the product.

3. Ventilation

- Allow sufficient space between the product and other objects to make sure air ventilation of the product.
- Do not block the side or the rear of the product with an object, which will close the ventilation holes and lead to a high temperature of the system. This may cause a failure of the product.
- Do not insert any kind of pointed objects like screw, gimlet, etc. into the ventilation holes of the product. This will damage the product.

4. Grounding

- The system must be earthed to the system earth.

5. Location

- Place the product indoor.
- Do not expose the product to rain, sun or lightening.
- Do not place the product near any heat appliances such as a radiator.

6. Replacement of Parts

- Unauthorized part replacements, especially by one who is not a qualified technician may result in damage to the product.
- Ensure that when part replacements are necessary qualified technicians perform the task using the components specified by the manufacturer.

1.2 Hint for Correct Handling

- Ensure Product Usage Environment and Storage Location

Tip	Install the product within tolerable limits of the product specifications.

Tip	This product uses a fan. The fan requires periodic replacement. Replacement every three years is recommended. Ask the contact to have the fan replaced.

Tip	Do not leave the product in a possibly hot place, such as a place exposed to direct sunlight, the inside of a closed car, and near a heater. Failures or malfunctions could result.

Tip	Do not subject the product to sharp temperature changes. Dew might be condensed on the product, causing it to fail or malfunction. If dew is condensed on the product, allow it to dry before using it.

Tip	Do not drop or impact the product. Failures or physical injury could result.

Tip	Do not place the product in an unstable place, such as a rickety table or inclined surface. The product could drop or fall down, resulting in physical injury.

Tip	Do not place the product in a place that is subjected to strong vibrations. Failures or malfunctions could result.

Tip	Do not move the product uncovered or mounted in a rack. In moving the product, package it to product against shocks during transit. Shocks could result in failures or erratic operations.

Tip	When you perform cable connection to the connector for alarms, perform the measure against electromagnetic radiation near the equipment of a cable. It becomes the cause of causing an electric wave obstacle.

Tip	Rack Mount Instructions - A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer. B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading. D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. E) Reliable Earthing - Reliable earthing of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

1.3 Registered Trademark

1.4 Packaging Contents

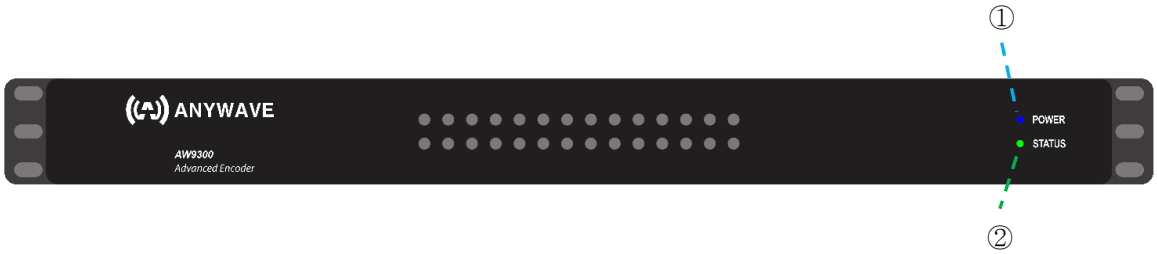
Please check all package contents before using your product.

- AW9300 Encoder
- Operational Manual (accessible from web UI)
- 2 x AC Cable (country dependent)
- 9x or 5x micro BNC M to BNC F Cable

*** The accessories may vary according to area.**

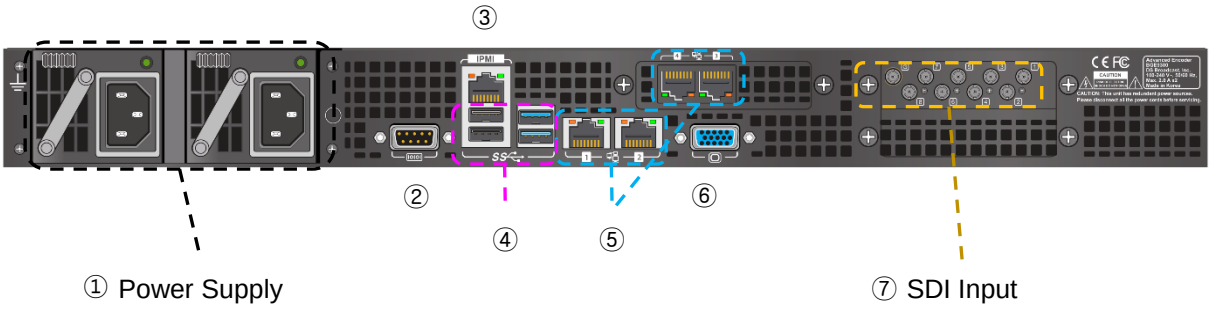
1.5 Product Descriptions

1.5.1 Front



1. Power LED: when powered, turned on (blue).
2. Status LED: red LED is turned on at restart condition, while green LED is turned on at normal operation.

1.5.2 Rear



1. Power Supply: two hot-swappable redundancy power supply modules. 400Watt each
2. COM: RS-232 interface is reserved port (Not used)
3. IPMI: Intelligent Platform Management Interface port
4. USB 3.0: Universal Serial Bus 3.0 port for the future software update
5. Gigabit Ethernet ports: four Gigabit Ethernet ports

   Please be sure each network port number.

   These ports will work properly only in 1Gigabit or 100 Mbps network. Slower speed network does not work.

Link LED  Activity LED

LAN Activity LED (Right) LED State		
Color	**Status**	**Definition**
Green	Flashing	Active

LAN Link LED (Left) LED State (-F SKU)	
LED Color	**Definition**
Off	No Connection
Amber	1 Gbps
Green	100 Mbps

6. Video Output: monitoring VGA port for maintenance
7. SDI Input: Quad 3G-SDI input or Single 12G-SDI input is for UHDTV1 (4K)
   A. Option #1: 4x SD-SDI/HD-SDI/3G-SDI input ports, Quad 3G-SDI input or single 12G-SDI input port (port#1 only)
   B. Option #2: 8x SD-SDI/HD-SDI input ports, 4x 3G-SDI input ports, Quad 3G-SDI input or single 12G-SDI input port (port#1 only)

1.6 Main Features

- Video Encoding: MPEG-2 MP@HL, H.264 Main/High Profile Level 4.2, HEVC Main/Main10 Level 5.1/5/4.1/4
- Audio Encoding: Dolby Digital, MPEG-2 AAC-LC (1ch, 2ch, 4ch, 5.1ch and 6ch), MPEG-4 AAC-LC (2ch, 5.1ch), MPEG-H 3D Audio, Dolby AC-4

1.7 Ordering Information

Please reference model name ENC-AW9300 and consult your Anwave sales representative.

1.8 Technical Data

1.8.1 Product Features

Table 1-1. Product Features

Functions		Description
Physical Dimension	WxDxH (mm)	439 mm x 475 mm x 44 mm 17.28 in x 18.70 in x 1.73 in (1RU, wo Ears)
	Weight (net)	11.0 Kg (24.3 lbs)
Operating Environment	Active Cooling	4x Temperature-controlled fans
	Operating Temperature	0°C to +40°C (32°F to +104°F)
	Storage Temperature	-40°C to +70°C (-40°F to +158°F)
	Operating Humidity	10% ~ 90% (non-condensing)
	Power Supply Unit	1U Redundant Power Supply (400W+400W) 90-264 Vac (100-240 Vac Nominal) Supports Hot Swap
	Power Consumption	Up to 350W
	Electromagnetic Compliance	FCC Part 15, Subparts B Class A CE Class A - EN 55032 - EN 55035
	Safety	CE - EN 62368-1

Functions		Description
Interfaces	SDI Inputs	Option#1: 4x 75-Ω micro BNC F Option#2: 8x 75-Ω micro BNC F 12G-SDI[1], Quad 3G-SDI, 4x independent 3G-SDI, 4x or 8x independent HD-SDI/SD-SDI
	Frame Sync	1x 75-Ω micro BNC F (GenLock In)
	Ethernet	2x RJ45 Gigabit Ethernet LAN ports 1x RJ45 Dedicated IPMI LAN port
	USB	2x USB 2.0 & 2x USB 3.0 ports
	Monitor output	1x VGA port
	COM	1x RS-232 (Not used)
	Front Display	20 x 4 Char LCD panel
	Key Buttons	6 x Push Buttons with LED
Accessories	Power Cord	2 ea Power plugs are dependent on the country.
	Signal Conversion Cable	Option#1: 5x BNC F to micro BNC M Cable Option#2: 9x BNC F to micro BNC M Cable
	User Manual	This book

1.8.2 Basic Functions

Below features may vary from product ordering options. Thus, dependent on your ordering option, some functions will not work.

Table 1-2. Product Functions

Functions		Description
Video Encoder	Input	3840x2160p@59.94Hz, 50Hz, 29.97Hz, 25Hz 1920x1080p@59.94Hz, 50Hz, 29.97Hz, 25Hz 1920x1080i@59.94Hz, 50Hz 1280x720p@59.94Hz, 50Hz 720x480i@59.94Hz 4:2:2 8/10-bit uncompressed input sources
	Codec	H.265 | HEVC Main/Main10, Level 5.1 H.264 Main/High Profile, Level 4.2 MPEG-2 MP@HL
	Resolution	3840x2160p (1 ch) 1920x1080p (up to 4ch) 1920x1080i / 1280x720p (HEVC: up to 8ch, AVC/MPEG-2: up to 4ch) 720x480i (up to 8ch)
	Frame Rate	59.94fps, 50fps
	Pixel Format	4:2:0 8/10-bit, 4:2:2 10-bit
Audio Encoder	Input	SMPTE 299M Embedded audio
	Codecs	MPEG-2 AAC MPEG-H 3D Audio Dolby Digital, AC-4
	Multichannel Encoding	Supports up to 16 channels
	Sampling Rate	48KHz
	Bit Depths	16/24-bit
HDR	HLG	Yes

[1] SDI#1 port is capable of receiving 12G-SDI signal.

Functions		Description
	HDR10	Yes
Ancillary Data	Closed caption	IMSC1 (ATSC3.0) / CEA-708 (ATSC1.0)
Multiplex	MPEG-2 TS	Yes (PSIP included)
	ATSC 3.0 ROUTE	Yes
	ATSC 3.0 MMTP	Yes
	WebDAV	Yes
Control I/F	Front keypad	6Keys – Menu, OK, Up, Down, Left, Right
	Web UI	Yes
Monitoring I/F	SNMP	Yes
	System Health Status	Through IPMI LAN port

2. INSTALLATION

This chapter will guide you through the whole installation process of AW9300. Please read each section carefully to make sure that the system runs properly.

2.1 Connecting Cables

AW9300 receives A/V signal from SDI (up to 12G-SDI) cables where audio is embedded. Please carefully connect BNC cables for 2160p UHD encoder operation. For BNC cable connection of source input, refer 1.5.2.

AW9300 outputs multiplexed streaming data through 10GbE ports.

10GbE ports are IP streaming and control. Lower left port is for the system control via external web browser from the same network domain. Upper left port is for the streaming of either MPEG-2 TS (TS over IP) or ATSC3.0. Dependent upon product option, ATSC3.0 will not be supported.

2.2 Connecting Power

AW9300 provides dual power connection in case of any single power supply module failure. If single power or only single power supply is working, you shall hear beep sound periodically. Please confirm you connected both AC cables securely connected.

NOTE: AC input condition

- Nominal Voltage Range: 100 - 240 VAC
- Maximum Voltage Range: 90 - 264 VAC
- Nominal Frequency: 50 / 60 Hz
- Maximum Frequency Range: 47 - 63 Hz

2.3 Power Off

There is no power on/off switch in this equipment. In order to power off, please remove both AC cables from the system.

3. OPERATIONS

This chapter includes detail descriptions for the system settings and monitoring.

If you are firstly setting up the encoder system, follow below steps.

1. **Open browser and go to the encoder web page. See 3.2 subsection.**
2. **Under SYSTEM page, change time zone and stream network. See 3.2.3 subsection.**
3. **Under SERVICES page, set up detail parameters and apply. See 3.2.1 subsection.**

3.1 IP Address Setup

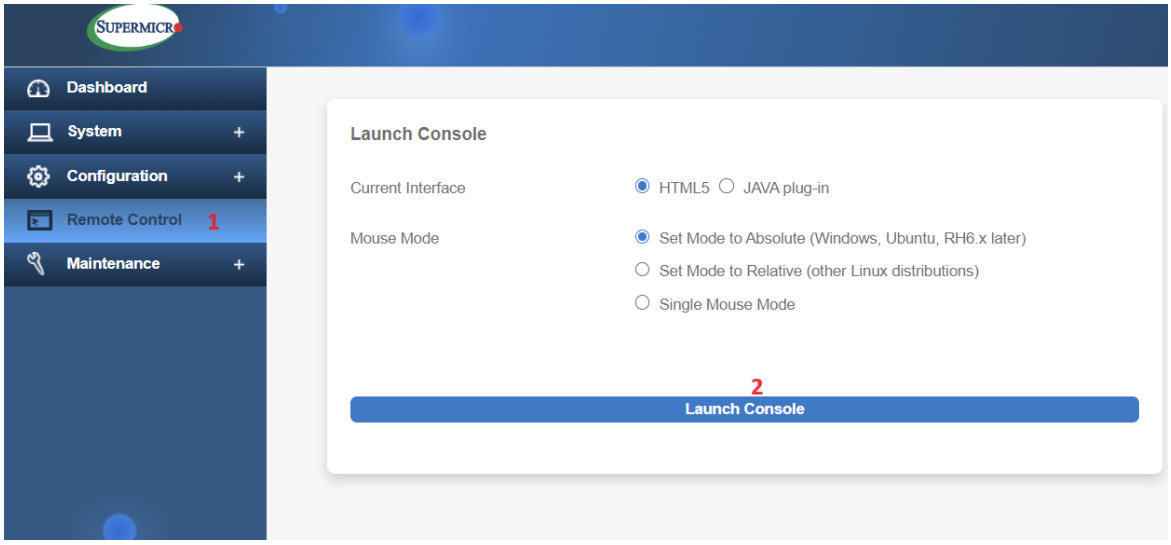
3.1.1 Factory Default IP

There are five Ethernet ports in the encoder system.

Number/Name	IP Address	Usage
IPMI	10.10.10.1	Management only
ETH 1	10.10.101.101	Intranet (Internal use)
ETH 2	192.168.102.102	Stream output
ETH 3	10.10.103.103	Internet Access
ETH 4	192.168.104.104	Stream input

User can change IP addresses for four Ethernet ports 1~4. However, IPMI port should not be changed and it should be unconnected in normal operation.

If user forgets IP addresses, user can check IP addresses of ETH1~ETH4 through IPMI management page. First, open web browser and enter 10.10.10.1. Then, user name & password window will be popped up. Enter ADMIN both for user name and password (all characters are with upper-case). Then, below page will be popped up. Click ‘Remote Control’ and then ‘Launch Console’. Then, enter user name and password.



Once user enters user name and password successfully, Linux console page will be shown. Now, IP address can be checked here by ‘ifconfig’ command.

3.2 Browser-based System Control

Browser-based system control provides easier system control. For this, control port shall be correctly set up.

To open web UI, enter http://your_encoder_ip_address. If your encoder IP address for control is 192.168.1.101 for example, then you can open web page as in the below:

http://192.168.1.101 or http://192.168.1.101/index.html

Encoder webUI provides 5 sub-category pages.

- **STATUS** page: presents current encoding status & system status, such as input status, bitrate status and others.

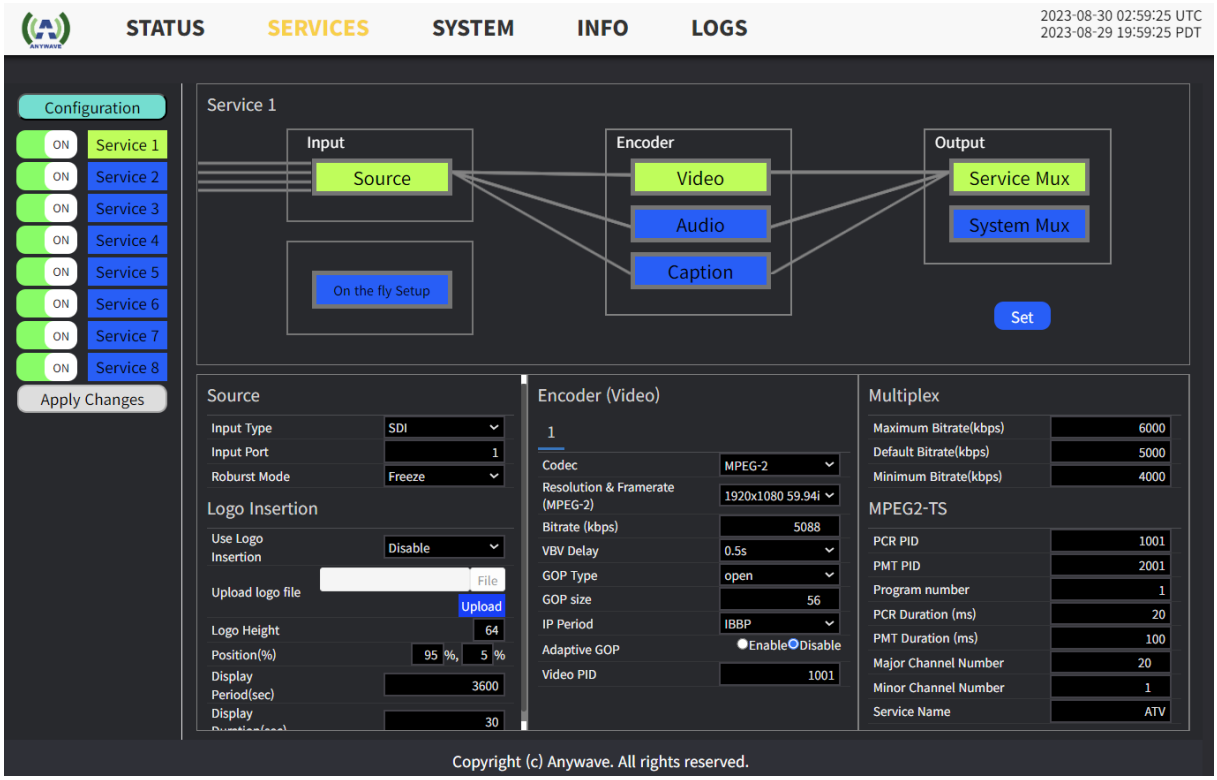
- **SERVICES** page: provides user with setting up service channels including UHD/Multi-channel HD switching, enabling/disabling each service channel and detail settings.

- **SYSTEM** page: provides time & network settings.

- **INFO** page: provides various module versions.

- **LOGS** page: provides system logs.

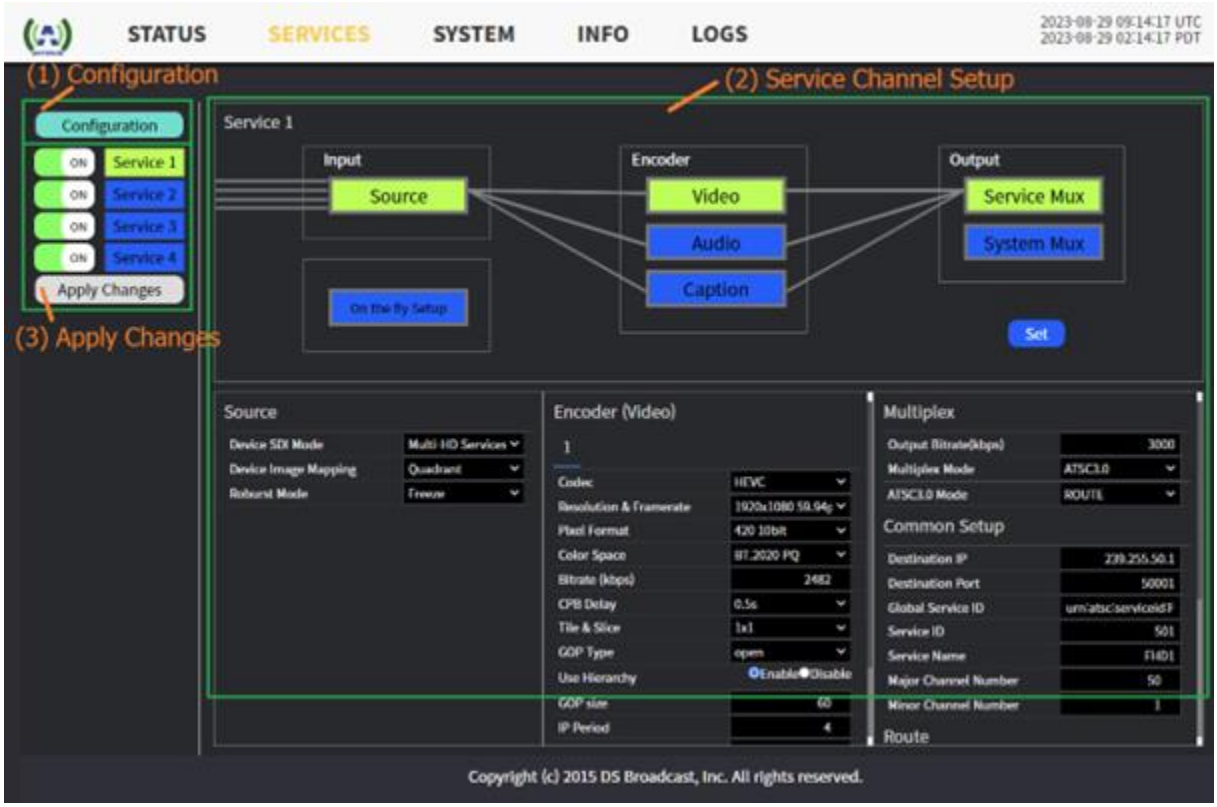
Default web page is SERVICES page.



3.2.1 SERVICES Page

In this menu, you can setup details of encoding such as mux mode, bit rate for video, video input mode and audio channel configuration. Dependent on the options, AW9300 may support single service channel or 4 service channels or 8 service channels.

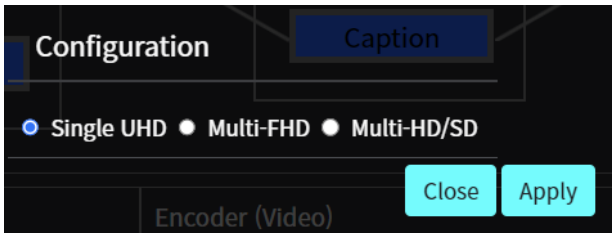
Normally, you can follow 3 steps to complete service channel settings – **(1) configuration settings**, **(2) detail encoding parameter settings** for each service, and **(3) applying changes** to take effect.



3.2.1.1 Configuration

AW9300 can encode single UHD or multiple FHD/HD channels. There are three modes in **Configuration** menu, where single UHD is for encoding a 3840x2160p or lower resolution video, multi-FHD is for encoding up to 4 different 1920x1080p or lower resolution videos, and multi-HD/SD is for encoding up to 8 different 1920x1080i / 1280x720p or lower resolution videos.

Press **Configuration** button to select encoding mode, then pop up box will appear. Select the operation mode you want and press **Apply** button to take effect.



3.2.1.2 Setting-up Service Channels

As the service channel setup web interfaces for single UHD, multi-FHD and multi-HD/SD are basically the same each other, this manual describes for multi-FHD service setup.

To set up service channels efficiently, following steps would be recommended:

(1) Setting up System Multiplex

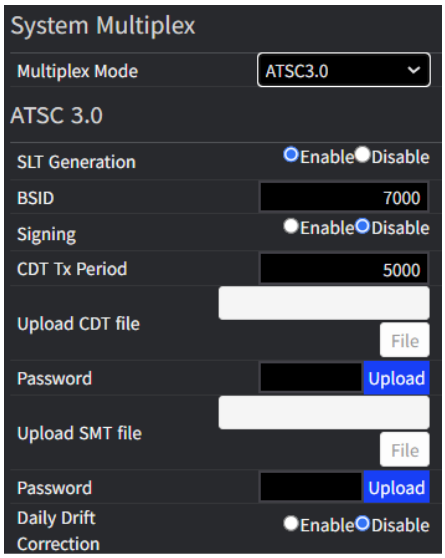
(2) Setting up Service Multiplex

(3) Setting up Video/Audio/Caption Encoder Setup
(4) Setting up the Source
(5) Pressing 'Set' button.

3.2.1.2.1 System Multiplex

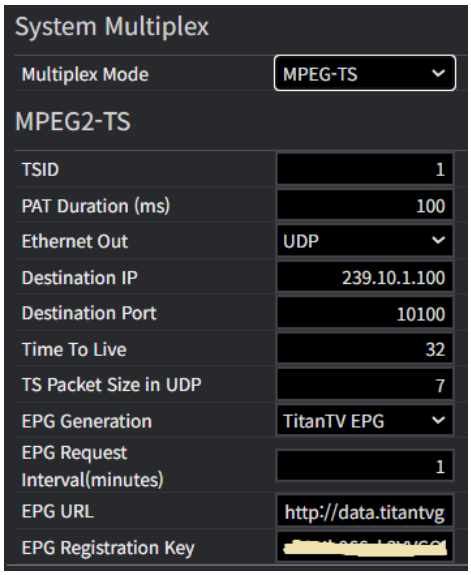
System Multiplex is mainly for system-wide multiplex settings. Even though this menu is under SERVICES page, you can set this only once regardless of service channel.

For ATSC3.0 operation mode, you can change details of LLS parameters. Press **System Multiplex** button and click **ATSC3.0** to change settings.



- SLT Generation: If enabled, basic LLS data such as SLT, SystemTime will be generated.
- Signing: If enabled, CDT and SMT will also be generated.
- Daily Drift Correction: ATSC 3.0 Systems are based on wall-clock timing model. However, some incoming video/audio may not be synchronized with wall-clock. If this option is enabled(recommended), timing difference between wall-clock and input video is corrected every 2AM. If disabled, the system corrects AST (availabilityStartTime) or MPU Presentation Time whenever the difference between incoming Audio/Video timing and wall-clock time is pretty big.

For ATSC1.0 operation mode, you can change details of TS output parameters. Press **System Multiplex** button and click **MPEG-2TS** to change settings.

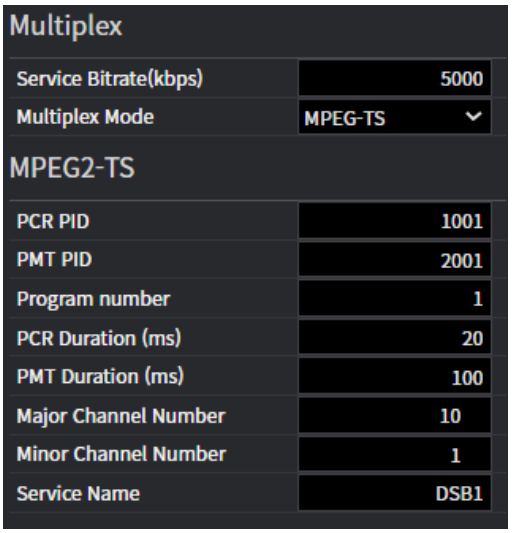


3.2.1.2.2 Service Multiplex

Service Multiplex page provides various service mux parameter settings such as each service bitrate, and MPEG-2TS/ATSC3.0 ROUTE/MMTP selections.

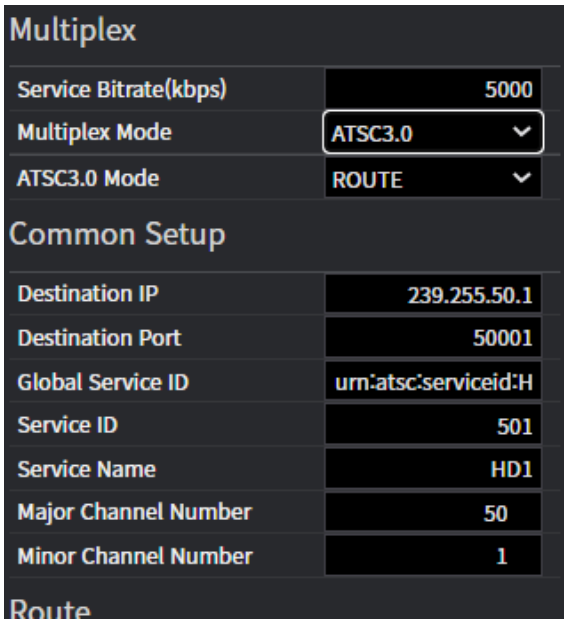
3.2.1.2.2.1 MPEG-2 TS

If MPEG-2TS mode has been selected as Multiplex Mode, below menu is shown.

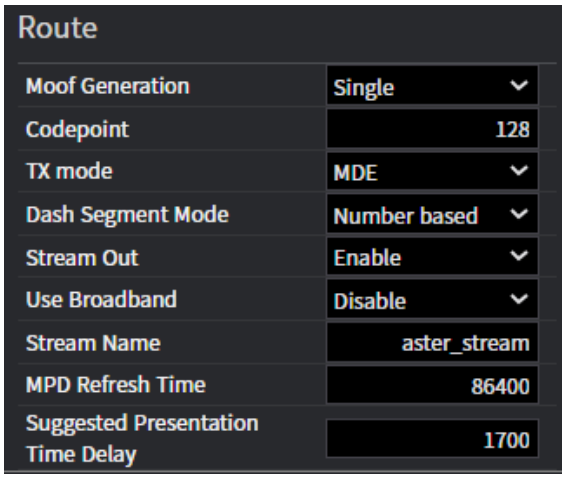


3.2.1.2.2.2 ATSC 3.0 ROUTE/MMTP

If ATSC3.0 mode has been selected as Multiplex Mode, you can further select ROUTE or MMTP as in the next example.

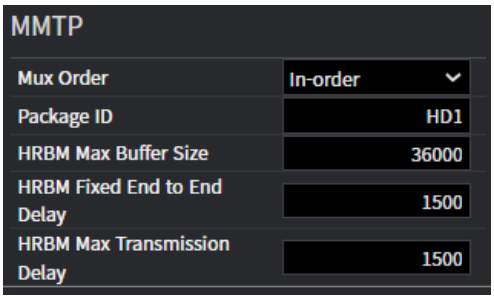


If ROUTE mode has been selected, below menu follows.



- Moof Generation: Please keep this as ‘Single’ always.
- Stream Out: If the encoder should have ROUTE or MMTP packet output, this option shall be set as ‘Enable’.
- Use Broadband: AW9300 Encoder supports DASH segment upload with AWS, FTP, and HTTP PUT and WebDAV method. If not used, make this option as ‘Disable’. Following sub-sections describe detail settings. HTTP_GET method is not actively handled by the Encoder but other devices such as ATSC3.0 ROUTE/MMTP packetizer may actively get the DASH segment streams.

If MMTP mode has been selected, below menu follows.



- Mux Order: In-order or Out-of-order selectable.

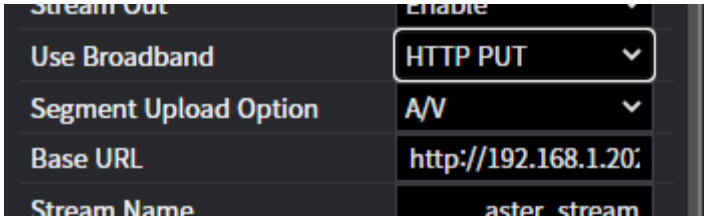
3.2.1.2.2.3 HTTP_GET

Our encoder system provides DASH stream generation and access from the remote. If the system is configured to ROUTE output mode, you can access DASH stream. In case of MMTP output mode, MPU files are generated.

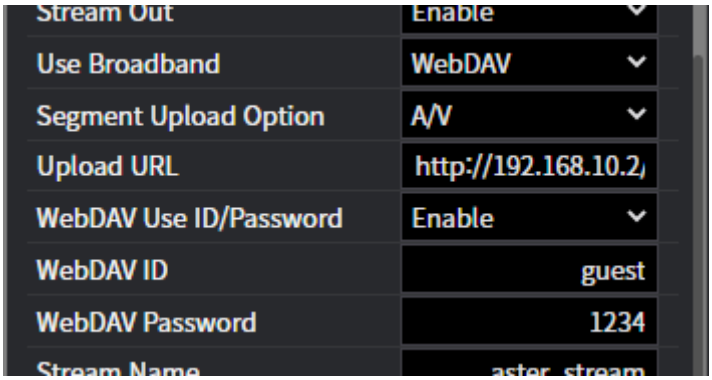
Please test with IP address and port with your web browser. IP address can be control IP address or stream(media) IP address.

http://ip_address:8000/

3.2.1.2.2.4 HTTP_PUT



3.2.1.2.2.5 WebDAV

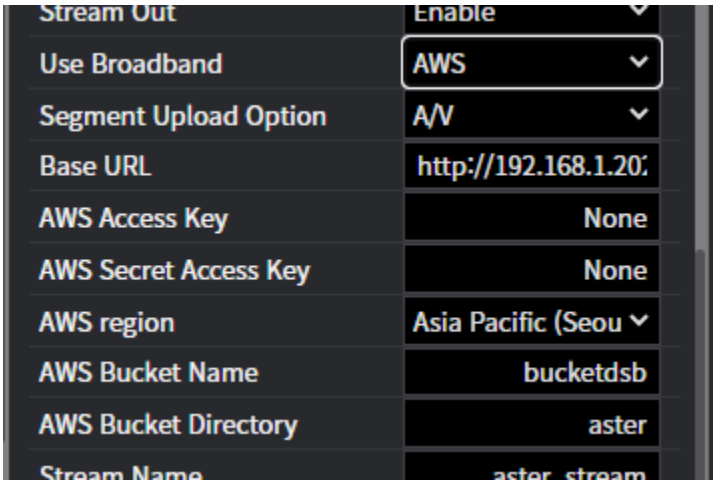


- Segment Upload Option: Mostly user should set as ‘A/V’.

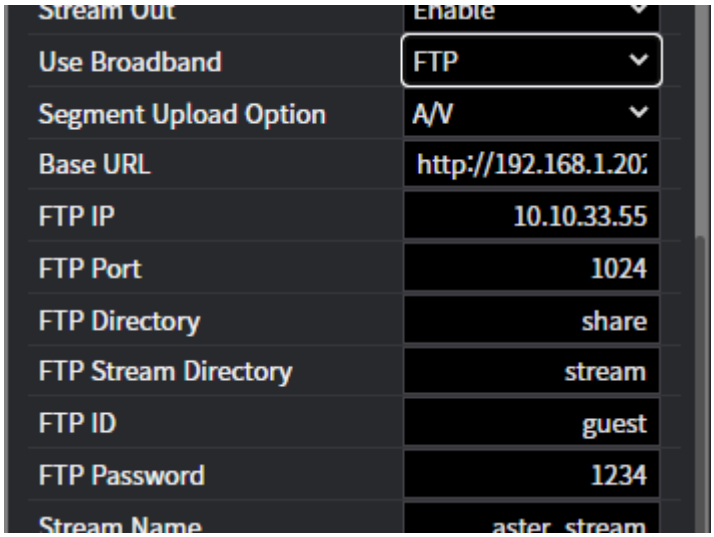
3.2.1.2.2.6 AWS or FTP

You can alo upload DASH stream with either AWS or FTP method from ROUTE setup page.

If AWS has been selected, below items will be shown. Enter correct value.

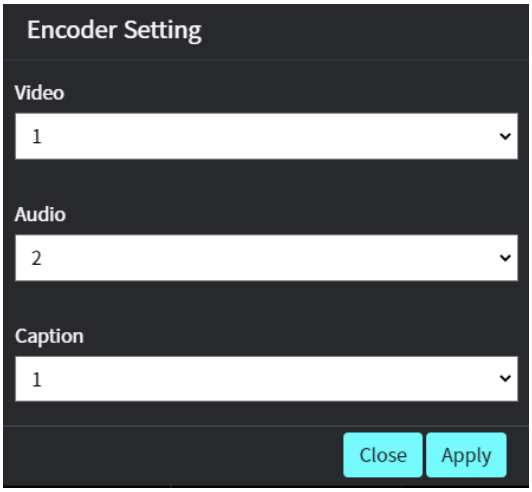


If FTP selected, below items shown. Enter correct value.



3.2.1.2.3 Encoder Components Setup

Before setting up each encoding component, you need to set the number of each encoder components by pressing **Encoder** text. Encoder components setup page will be poped up. Mostly, you need to check the number of audio encoder components.



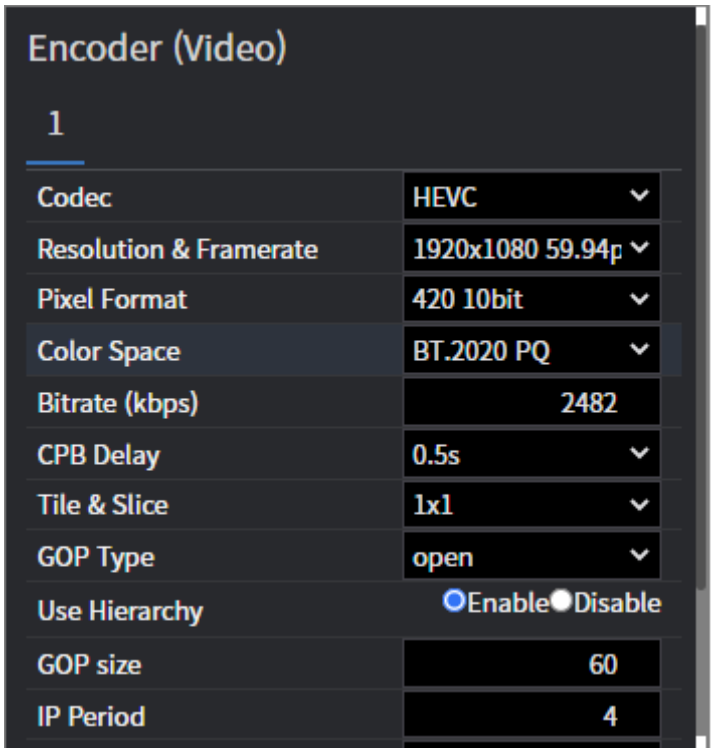
Once the number of encoder components is determined, you need to verify the detail values of each

codec components.

3.2.1.2.3.1 Video Encoder Setup

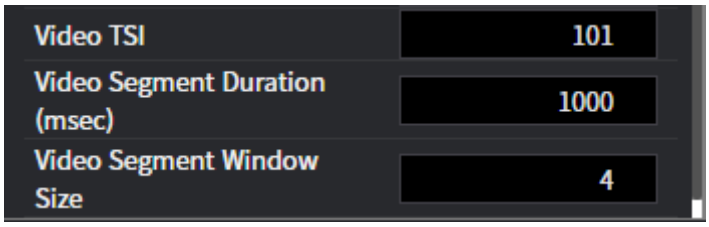
For the video compression, HEVC is supported for ATSC3.0 system. AW9300 supports two HDR technologies – PQ (Colour Primaries = ITU-R BT.2020, Transfer characteristics = SMPTE ST.2084) or HLG (Transfer characteristics = ITU-R BT.2100 a.k.a. ARIB STD-B67). To select one of these HDR technologies, you can choose in 'Color Space' item. This value can also be changed while encoding is under way. For more information, see 3.2.1.4.1 section.

Below page shows list of common video encoder setup items regardless of multiplex mode.



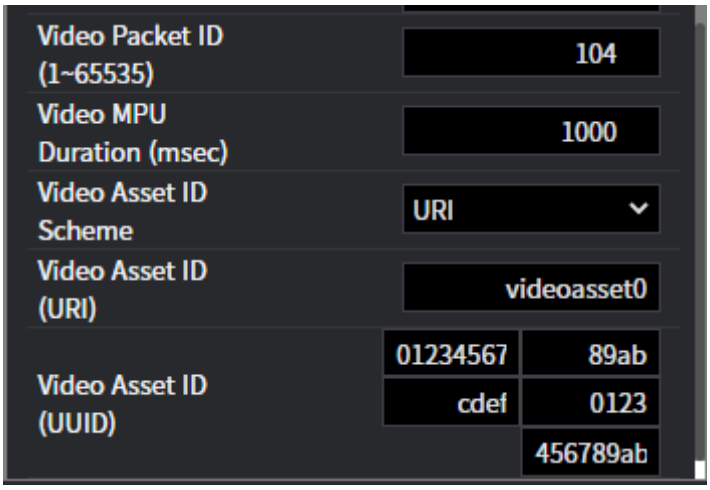
- Bitrate: To maximize bit use in the encoder, this value is automatically calculated. So, audio encoder and service multiplex output bitrate affect this video bitrate.
- CPB Delay: For the reasonable channel zapping speed, 0.5s is recommended.
- Tile & Slice: 1x1 is recommended.
- GOP Type: Open and Close types are supported. For DASH segment manipulation, closed type is better. Open type is for better video quality.
- GOP size & IP Period: For 59.94 system, 60 & 4 are recommended.

Multiplex-specific page follows common video encoder setup page. Below is for ROUTE-specific video encoder parameter setting.



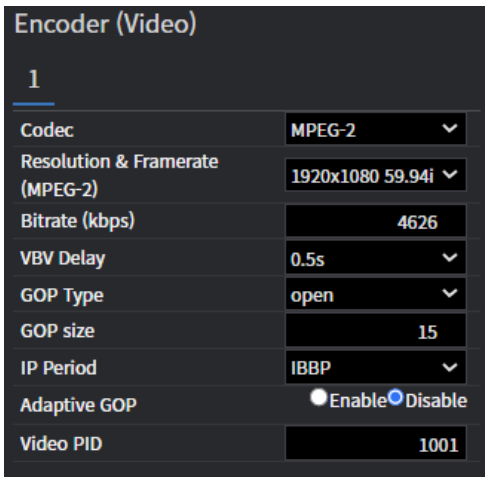
- TSI: Similar to PID (packet identifier). Use non-overlapped value for each encoding elements (video/audio/caption).
- Video Segment Duration: 1000 or 1001 is recommend value.
- Video Sement Window Size: Generated DASH segments are continually generated and removed in the encoder system. 4 means maximum 4 DASH segment files are maintained in the system. In case you use HTTP_GET, 4 would not be enough value. Use bigger one – less than or equal to 10 would be recommended.

Below is for MMTP-specific video encoder parameter setting.



- Asset ID Scheme: You can use URI or UUID as asset ID scheme.

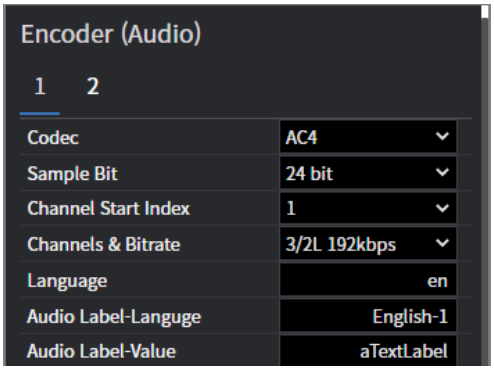
Below is for MPEG-2TS-specific video encoder parameter setting.



3.2.1.2.3.2 Audio Encoder Setup

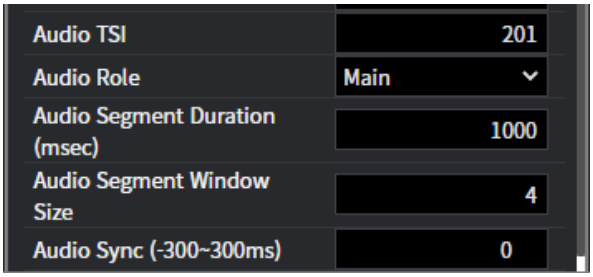
Dependent on the option, one or more audio codecs can be supported. Since the encoder supports AAC, Dolby Digital, AC-4, MPEG-H 3D Audio, please consult with the local supplier which model supports your audio codec requirement.

Similar to video encoder setup page, audio encoder setup page is divided into common part and multiplex-specific part.

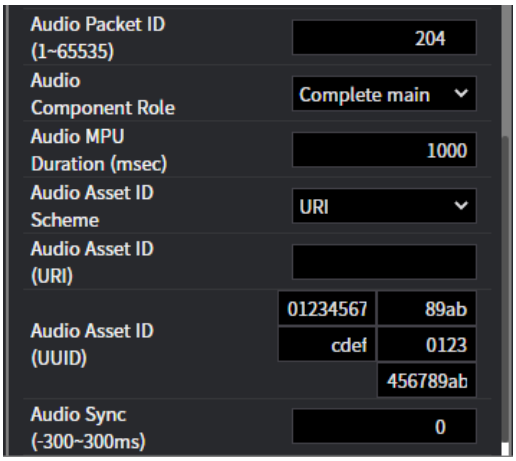


- Channel Start Index: Maximum number of input audio channels is 16, and this value identifies start index of audio channels. If this value is set to 1 at 3/2L (5.1) channel encoding mode, PCM audio capture will be 1~6 audio channels.
- Channels & Bitrate: Select audio channel mode and bitrate.

Below is for ROUTE-specific audio encoder parameter setting. For more information, please check 'Video Encoder Setup' section.

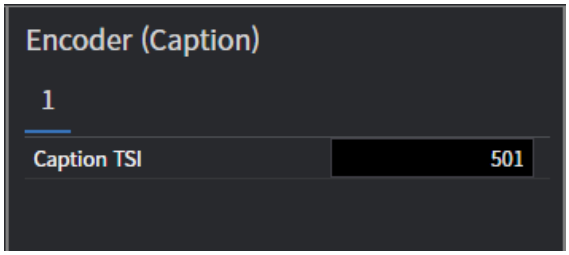


Below is for MMTP-specific audio encoder parameter setting. For more information, please check 'Video Encoder Setup' section.

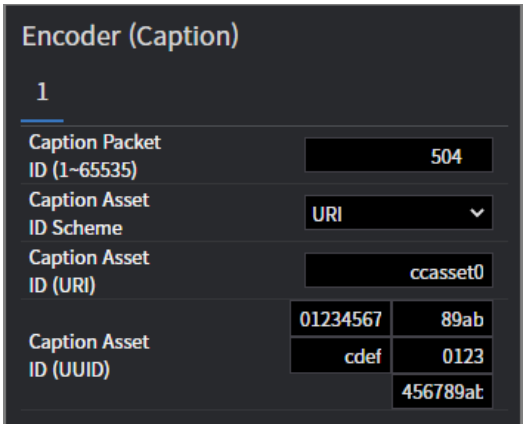


3.2.1.2.3.3 Caption Encoder Setup

If ROUTE has been selected as ATSC3.0 Mux, you can set TSI value.



If MMTP has been selected as ATSC3.0 Mux, you can set Paket ID and other MMTP-specific parameters.



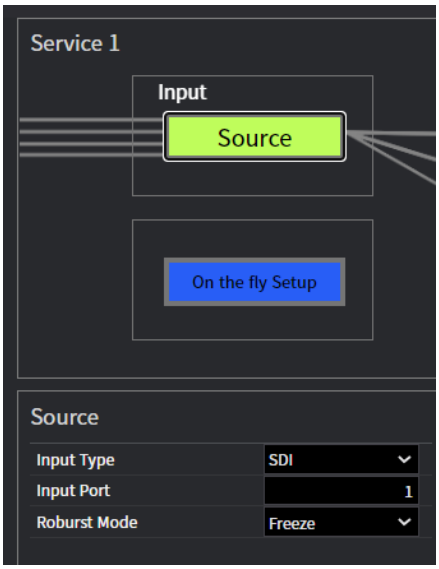
If MPEG-2TS has been selected as Multiplex Mode, there is nothing to set up for caption service.

3.2.1.2.4 Source Setup

AW9300 supports SDI input or IP input.

3.2.1.2.4.1 SDI Input

Select SDI as ‘Input Type’ as corresponding number for ‘Input Port’.



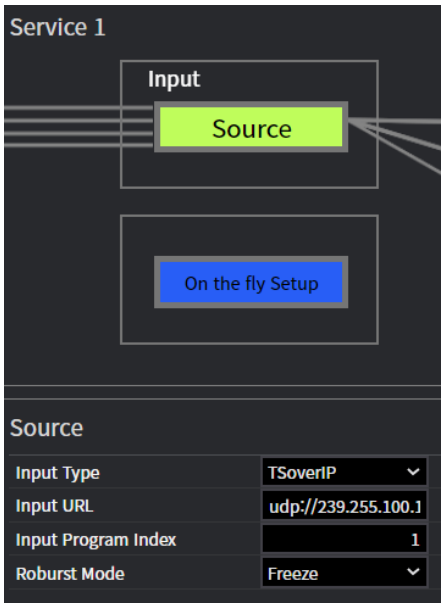
3.2.1.2.4.2 IP Input

AW9300 supports various types of IP inputs: UDP, RTP, SRT, RTMP and HLS. In this case, 'Input Type' shall be 'TSoverIP', and 'Input URL' is required.

In case of UDP, example URL is udp://239.25.100.1:8001, where 239.255.100.1 is multicast IP address and 8001 is UDP port. For the case of RTP, example URL is rtp:// 239.25.100.1:8001. Similar rules for SRT and RTMP can be applied. An example URL for SRT is srt://1.2.3.4:5000, whereas an example URL for RTMP is rtmp://1.2.3.4:5000.

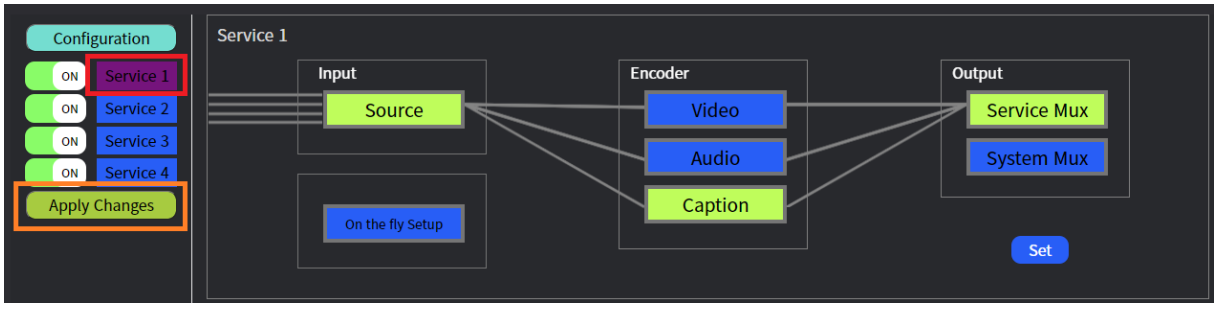
Please be sure that, for the stream which needs internet access, LAN port#3 shall be used. For the multicast stream inputs, LAN port#4 shall be used.

If the input stream contains multiple programs (for example, MPTS-multi-program transport stream), 'Input Program Index' starting from 1 is important. 1 means the first program of incoming stream.



3.2.1.2.5 Completion of Service Setup Changes

Once you correctly set up all service parameter settings, press **Set** button. Then, color for corresponding service channel box on the left side of the web page will be changed to purple as in the blow (see red colored box).



3.2.1.3 Apply Changes

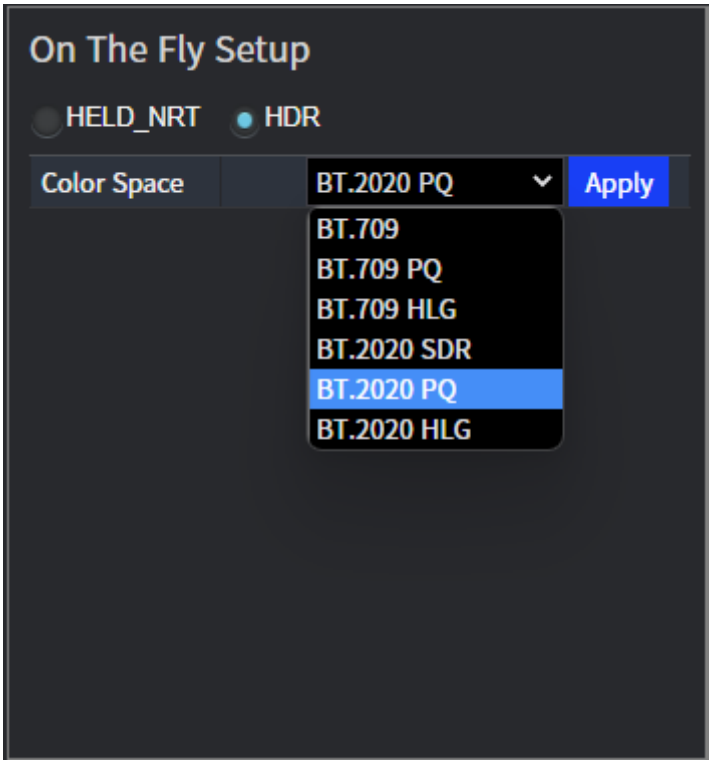
Once one or more service channel setup has been completed, '**Apply Changes**' button will be activated. Regardless of setting up each service channel, you can also enable or disable each service channel from the left '**On/Off**' button. Press '**Apply Changes**' button to take effect.

3.2.1.4 On-the-fly Changes

AW9300 provides the function to change some parameters/data without encoder restart. This on-the-fly feature is important to NRT data transmission or HDR support.

3.2.1.4.1 HDR

BGD9300 supports seamless HDR/SDR change mode. Select one of **color space** options you want and then press **Apply** button to take effect.

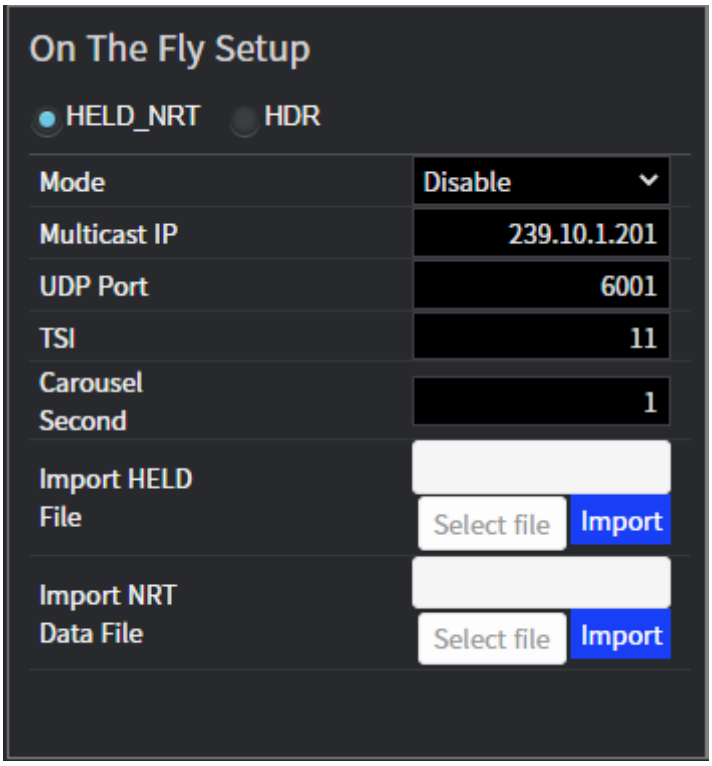


3.2.1.4.2 NRT data transmission

NRT data transmission feature, where two options are available – HELD xml signaling only mode or HELD & multipart file transmission mode.

3.2.1.4.2.1 Overall Operation

If you want to setup HELD only transmission, you need to upload HELD file only in the below interface, while HELD+NRT data transmission mode requires both HELD file and NRT data file, where NRT data file is multipart formatted file.



3.2.1.4.2.2 HELD only transmission mode

1. In '**Import HELD file**' interface, press '**Browse…**' button and select HELD file you want to upload. Once HELD file is selected, press '**Import**' button to actually upload to the encoder system.
2. Select the mode as '**HELD**' in '**HELD/NRT data on the fly setup**' interface and press '**set**' button to take effect.

Once the procedure has been done, the encoder system generates the bundled SLS with HELD xml data.

3.2.1.4.2.3 HELD+NRT data transmission mode

1. In '**Import HELD file**' interface, press '**Browse…**' button and select HELD file you want to upload. Once HELD file is selected, press '**Import**' button to actually upload to the encoder system.
2. In '**Import NRT data file**' interface, press '**Browse…**' button and select a **multipart file** you want to upload. Once NRT data file is selected, press '**Import**' button to actually upload to the encoder system.
3. Select the mode as '**HELD+NRT data**' in '**HELD/NRT data on the fly setup**' interface and setup **Multicast IP**, **UDP Port**, **TSI** and **Carousel Second**. Once ready, press '**set**' button to take effect.

Once the procedure has been done, the encoder system generates the bundled SLS with HELD xml data and NRT data periodically.

3.2.1.4.2.4 Disabling HELD/NRT data transmission

Select the mode as '**Disable**' in '**HELD/NRT data on the fly setup**' interface and press '**set**' button to take effect.

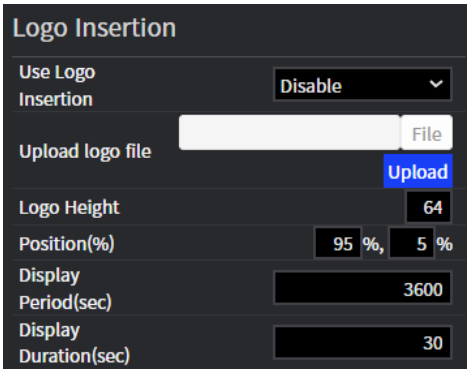
Then, the encoder system stops HELD/NRT data transmission.

3.2.1.5 Other Features

3.2.1.5.1 Logo Insertion

AW9300 supports logo insertion feature. For the transparency control, PNG file shall be used.

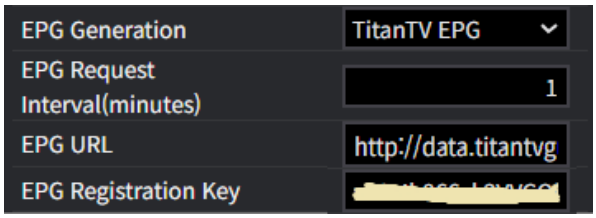
- Logo size: by changing logo height, the encoder automatically resizes its size. In the below example, 64 is 64-pixel height.
- Logo position: logo can be added anywhere you want. The first percentage value is horizontally spaced percentage while the second is vertically spaced percentage. Thus, 95%, 5% means that logo will be placed at the right top corner.
- Logo display period & duration: If display period is 3600sec and duration is 30sec, then every hour logo will be displayed in about 30 seconds long.



3.2.1.5.2 EPG Generation

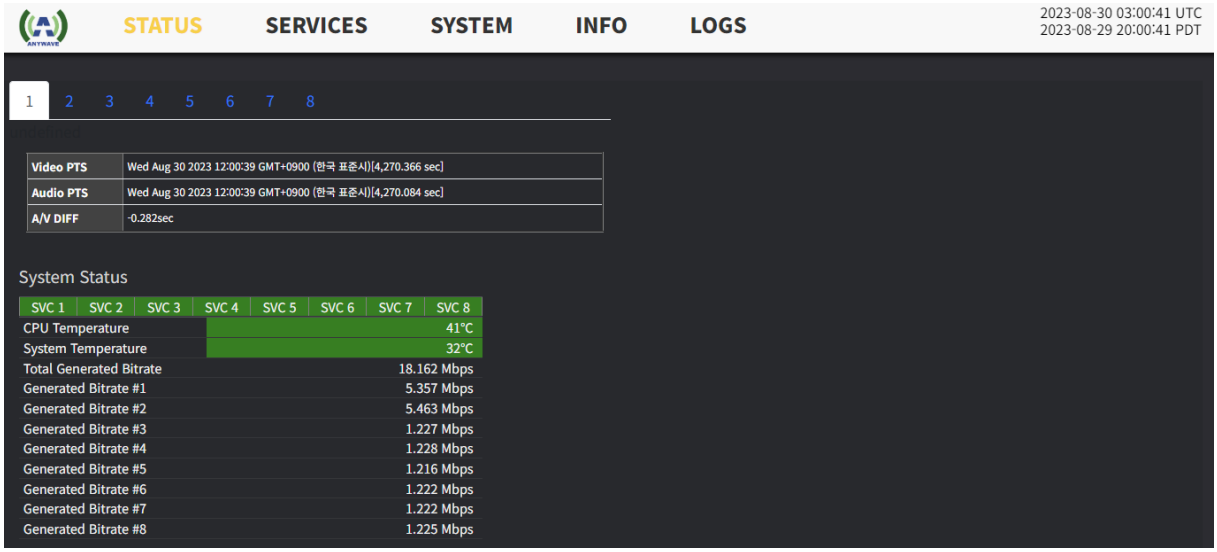
3.2.1.5.2.1 ATSC1 PSIP

If the encoder operates as MPEG-2 TS mode, it can support dynamic PSIP. Currently, Titan EPG is supported. For the EPG generation, the 'EPG URL' and 'Registration Key' is required.



3.2.2 STATUS Page

STATUS page provides encoding status such as PTS(Presentation Time Stamp) for audio/video, SLS information. This page also provides system status such as input status, temperature of some main components and output bitrate.



3.2.2.1 System Status

3.2.2.1.1 SDI Input and Service Stutus

Status in the System Status is show with Input status indicators:

Green Box Input status is good.

No errors are present and function is operationg normally

- Input video is locked
- Active Input

Red Box Status indicates function is affected by the following errors:

- Input video is unlocked
- Function is currently disabled

Gray Box Status is inactive.

3.2.2.1.2 Main block Temerature of Encoder

- CPU Temperature
- System Temperature

Note) Indicator of Encoder tempeature status

- Green Box Normal operating temperature condition
- Red Box Critical operating temperature condition

3.2.2.1.3 A/V PTS and SLS

3.2.2.1.3.1 A/V PTS and DIFF

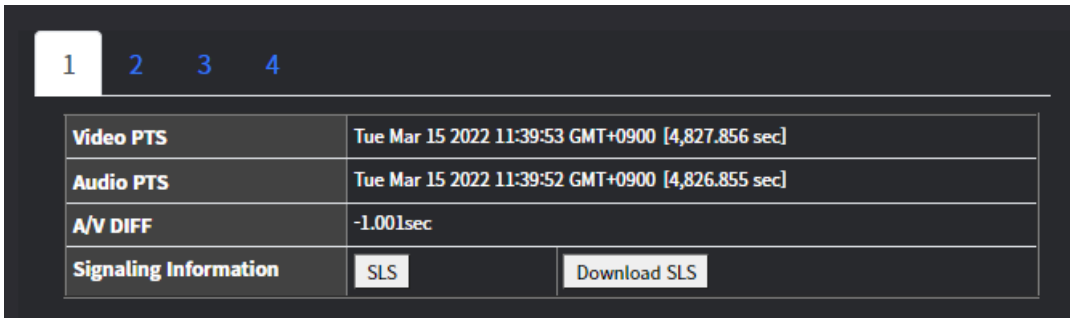
In this sub-menu, user can check the time information of Video and Audio PTS of the currently encoded channel.

And you can see the differernce between Audio and Video of MUX

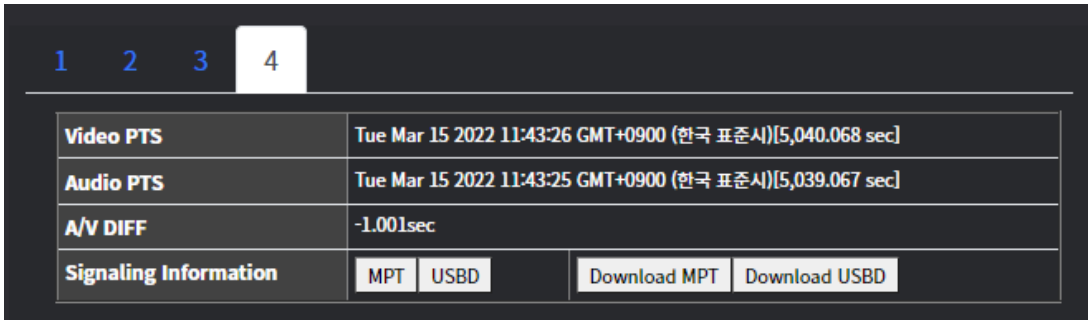
3.2.2.1.3.2 SLS

Depending on the ATSC3.0 mux mode (MMTP or ROUTE), the system provides SLS (USBD, MPD, STSID) for the reference.

In ROUTE-based service channel, click the '**SLS**' button to view the SLS information or clilck the '**Download SLS**' button to download.



In MMTP-based service channel, click the '**MPT**' or '**USBD**' button to view the SLS information or clilck the '**Download MPT**' or '**Download USBD**' button to download.



3.2.2.1.4 TxRate

In this sub-menu, the use can check the transmission bitrate and encoding status of each channel currently in service.

Note) Text based

Total Transmission Bitrate	12.128 Mbps
Transmission Bitrate #1	3.058 Mbps
Transmission Bitrate #2	3.112 Mbps
Transmission Bitrate #3	3.019 Mbps
Transmission Bitrate #4	2.938 Mbps

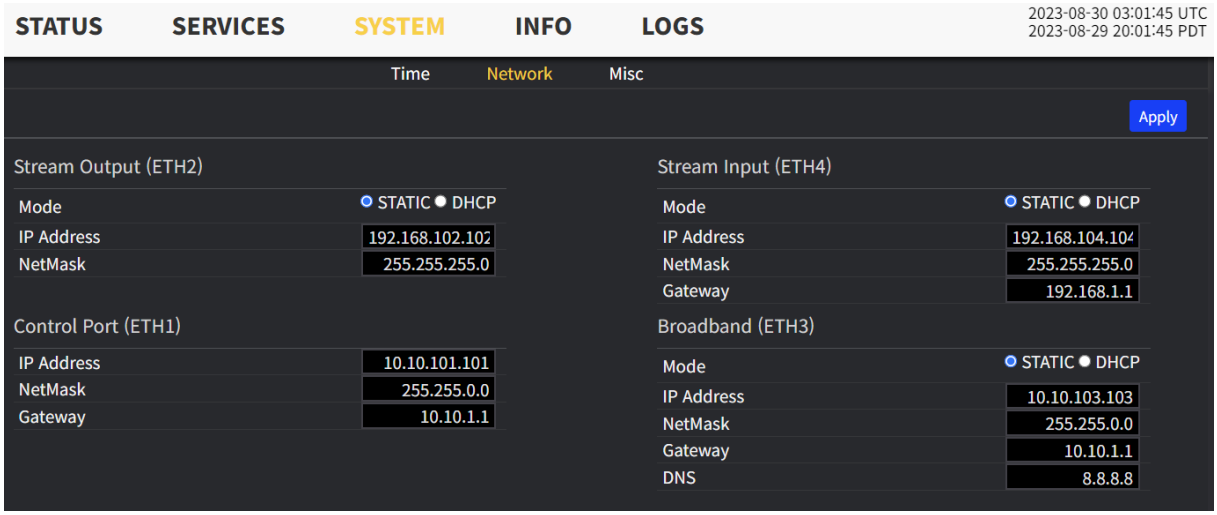
3.2.3 SYSTEM Page

In this menu, you can change stream port for the streaming. For the ATSC3.0 system, time setup is very important. In order to support network time, the system supports NTP or PTP, where PTP is strongly recommended.

3.2.3.1 Network Ports

There are four network ports – ETH1 ~ ETH4. ETH1 is control port only, ETH2 is for multicast stream output, ETH3 is for broadband access, and ETH4 is for multicast stream input.

If internet access is required regardless of input or output (examples are unicast input from the internet, unicast output to the internet, WebDAV output to internet, and so on), ETH3 port shall be used.



3.2.3.2 Time Protocol

For the ATSC3.0 system, time setup is very important since audio/video presentation time is based on wall clock. If it is not sync'ed, TV may display with dropped video.

For the wall clock synchronization, encoder supports either NTP or PTP.

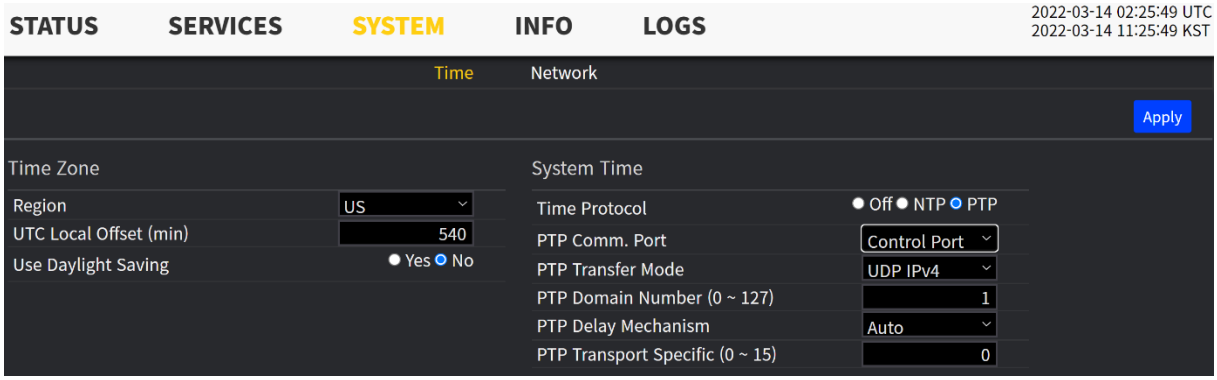
3.2.3.2.1 PTP Setup

[PTP Communication Port] For the PTP synchronization, you can use either control port or media (stream) output port depending on your network environment. Control port is recommended.

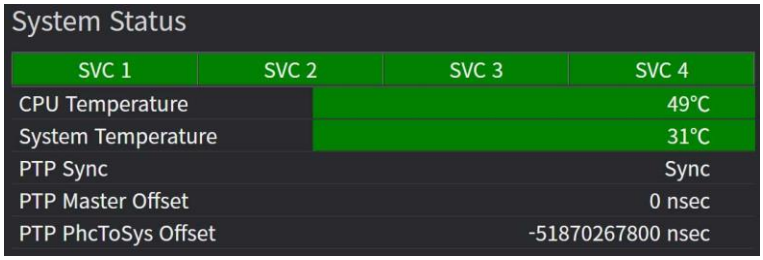
[PTP Transfer Mode] Our system provides two options for the transfer mode – IEEE 802.3 and **UDP Ipv4**. Select appropriate mode.

[PTP Delay Mechanism] AUTO, E2E, P2P options are provided.

For the other options, use appropriate value provided by PTP server.



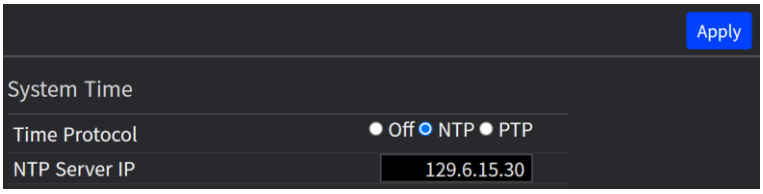
The locked PTP Sync status can be checked in STATUS / System Status.



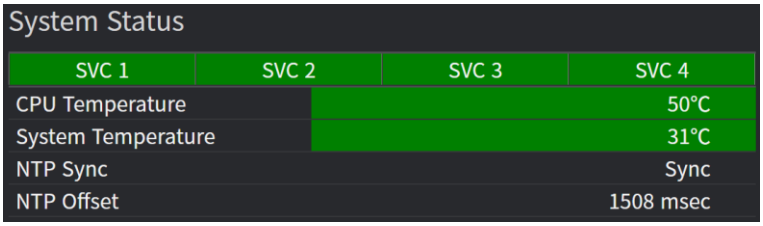
3.2.3.2.2 NTP Setup

Navigate to the SYSTEM / Time / System Time, and click on NTP

Yon can put the desired NTP Server IP (i.e. NIST Internet Time Servers https://tf.nist.gov/tf-cgi/servers.cgi) and click the 'Apply' button

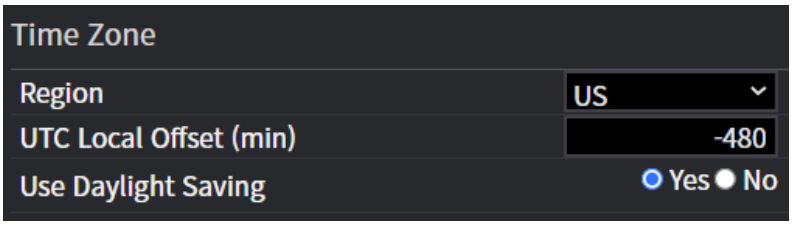


If you wait a few minutes (i.e. usually about 5 minutes) after applying the NTP setting, the locked NTP Sync status can be checked in STATUS / System Status.



3.2.3.3 Time Zone setup

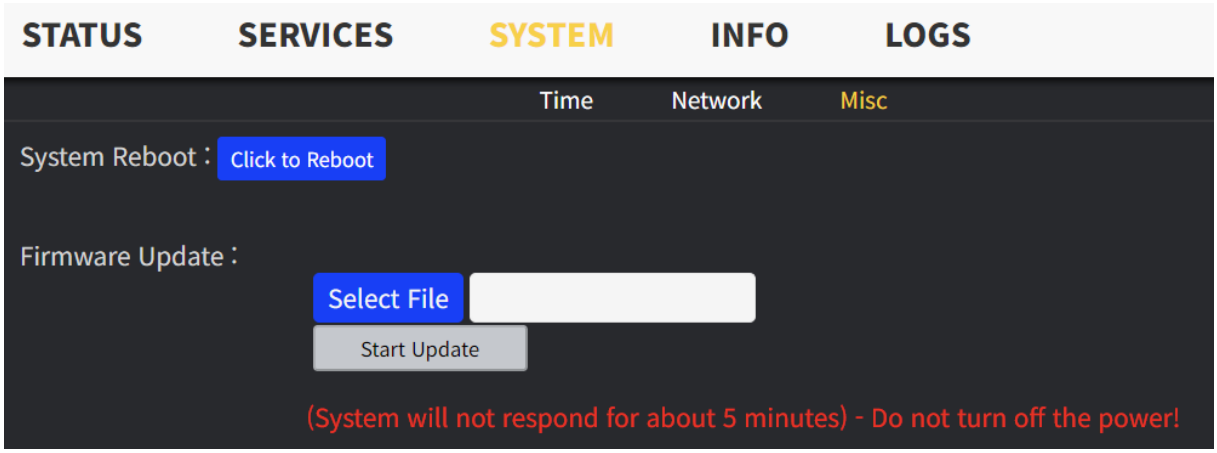
Encoder is designed for use in Korea and US. In case of the operation in US, time zone setup is also important. Below menu items are for setting up region, UTC local offset in minutes and use of daylight-saving time.



3.2.3.4 Miscellaneous setup

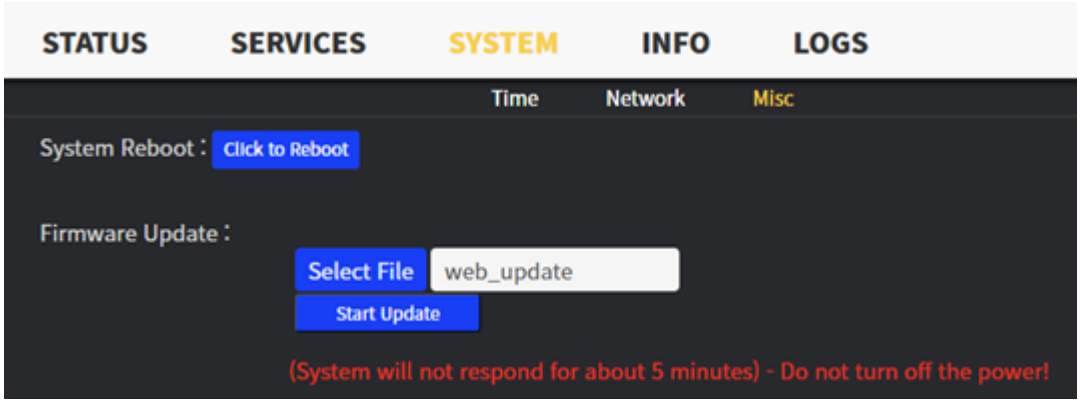
3.2.3.4.1 System Reboot

The encoder system provides system reboot in **Misc** page.



3.2.3.4.2 Firmware Update

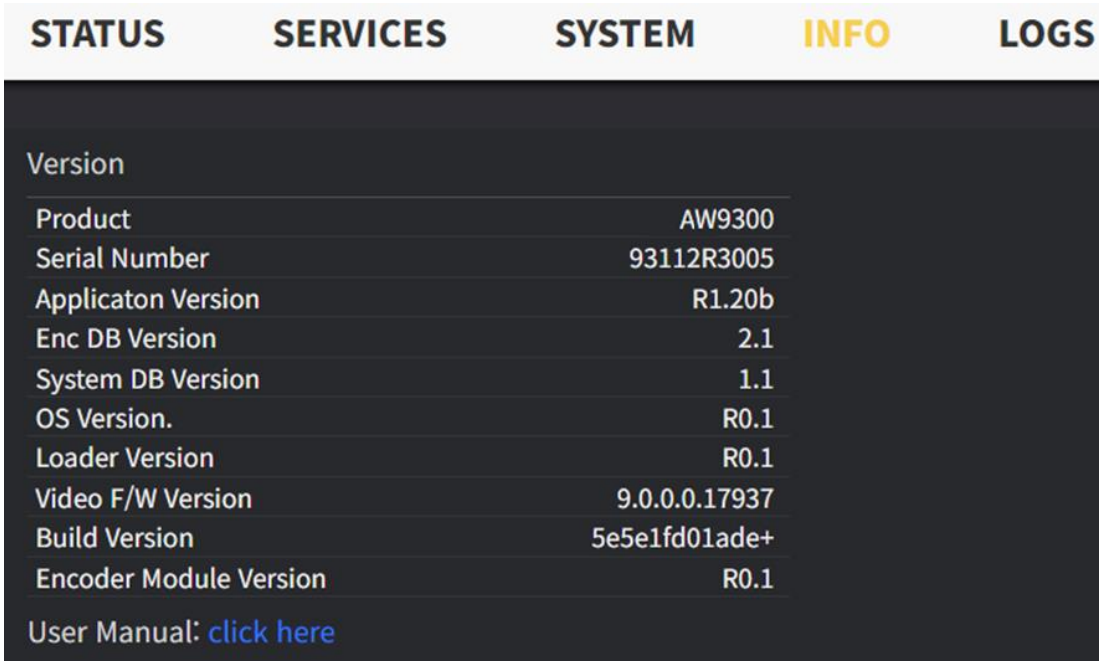
The encoder system provides quick firmware update feature. Click ‘Select File’ to upload the new firmware file to select the new firmware update file, web_update[2]. Once file is verified, ‘Start Update’ button will be activated. Click ‘Start Update’ to start update. Once update has been completed, the encoder system will automatically reboot.



3.2.4 INFO Page

In this menu, you can check the System information.

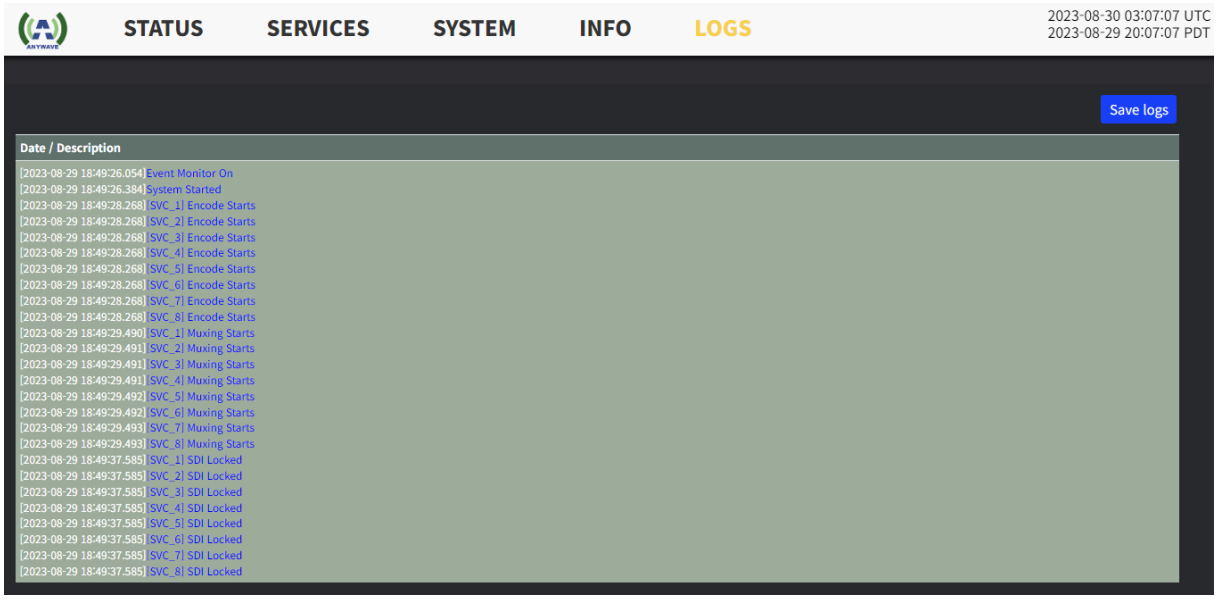
[2] File name shall not be changed.



- Product Information Product name, Serial Number and Encoder module Version
- SW Version Enc DB/System DB Version, Loader/Video FW/Build Version etc

3.2.5 LOGS Page

For the checking of system error(s), you can download error log file by pressing ‘Save logs’ button.



- Blue text Normal operation status of Encoder.
- Red text Error or alarm events of Encoder

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