



# OmniHub 6RFX

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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     | Version | Description                                    | Author |
|----------|---------|--|--------|
| 12/27/18 | 1.0     | First Draft                                    | SW     |
| 04/02/19 | 1.1     | Add new modules and new features               | DA     |
| 05/23/19 | 1.2     | Add new modules                                | RS     |
| 12/06/19 | 1.3     | Add new Modules and new features               | EH     |
| 05/24/20 | 1.4     | Update UI and add new Modules                  | RS     |
| 07/27/20 | 1.5     | Update Descrambling configuration descriptions | SW     |
| 08/17/21 | 1.6     | Add new Modules and new features               | AP     |
| 12/10/21 | 1.7     | Add new Modules and Delete old Modules         | RF     |

This guide contains some symbols to call your attention.

|   |             |  |
|---|-------------|--|
|  | DANGER      | The DANGER symbol calls your attention to a situation that, if ignored, may cause physical harm to the user.         |
|  | CAUTION     | The CAUTION symbol calls your attention to a situation that, if ignored, may cause damage to Our product.            |
|  | NOTE        | The NOTE symbol calls your attention to important information.   |
|  | TIP         | The TIP symbol calls your attention to additional information that, if followed, can make procedures more efficient. |
|  | Red Arrow   | The Red Arrow symbols point to import details mention the context above or below an image.                           |
|  | Blue Arrow  | The Blue Arrow symbol indicates the motion path of an item in an operation step.                                     |
|  | Thick Arrow | The thick Arrow symbol calls your attention to a serial of operation steps mentioned in the context.                 |

This guide also contains the following text conventions.

## 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 the unit 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 product to ensure that it is as safe as possible. However, safe operation depends on you the operator.
- Always be sure your equipment is in good working order. Ensure that all points of connection are secure to the chassis and that protective covers are in place and secured with fasteners.
- Never work alone when working in hazardous conditions. Always have another person close by in case of an accident.
- Always refer to the manual for safe operation. If you have a question about the application or operation email [ProCare@Sencore.com](mailto:ProCare@Sencore.com)
- **WARNING** – To reduce the risk of fire or electrical shock never allow your equipment to be exposed to water, rain or high moisture environments. If it is exposed to a liquid, remove power safely (at the breaker) and send your equipment to be serviced by a qualified technician.
- To reduce the risk of shock the power supply must be connected to a mains socket outlet with a protective earthing connection.
- For the mains plug the main disconnect and should always remain readily accessible and operable.
- When utilizing DC power supply, the power supply **MUST** be used in conjunction with an over-current protective device rated at 50 V, 5 A, type: Slow-blow, as part of battery-supply circuit.
- To reduce the risk of shock and damage to equipment, it is recommended to ground the unit to the installation's rack, the vehicle's chassis, the battery's negative terminal, and/or earth ground.

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

## Package Contents

The following is a list of the items should be contained:

1. OmniHub 6RFX chassis
2. OmniHub 6RFX software
3. AC power cables
4. Breakout or adapter cables depending on option modules

If any of these items were omitted from the packaging please email [ProCare@Sencore.com](mailto:ProCare@Sencore.com) to obtain a replacement.

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# Section 1 Overview



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## 1.1 Product Overview

OmniHub 6RFX is a compact, highly integrated and flexible solutions that focuses on both cost-effective commercial TV market and traditional DTV market. Thanks to the benefits of high-density, strong-performance and large-flexibility, OmniHub 6RFX can meet all the major video delivery requirements of receiving, descrambling, encoding, multiplexing, modulation, and IP processing of signal in one unit.

With optional commercial/broadcast encoder, multi-mode receiver and modulator module, it can be configured flexibly to meet any video delivery requirements. Due to its compact design and powerful function, it can be widely used at hotel, hospital, communities, clubs, campuses and or other places with DTV headend, where massive programs are required to be processed in a cost-effective way. OmniHub 6RFX provides a straight-forward web interface accessible via all major browsers and complete control of the unit. Every OmniHub 6RFX is shipped with the software suite pre-loaded on appropriate hardware. There are optional input and output configurations that will change the physical connectors available on the chassis.

## 1.2 Front Panel Overview

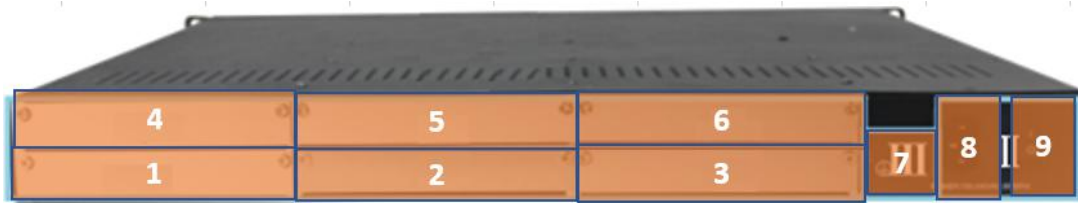
As a 1RU unit, on the front panel, OmniHub 6RFX has exhaust fans, ports for data and management, and LED for the status of the unit. See the image below for the reference of the OmniHub 6RFX front panel.



1. Modulation Status and Modulation Power Indicators, Modulation Output Tuner (Only be embedded in Encoder Modulator, Receiver Modulator)
2. Vent holes for cooling intake
3. Reset button and Power LED indicator
4. Status LED indicator
5. 2 RJ45 Management ports
6. 2 RJ45 Data ports

## 1.3 Rear Panel Overview

The OmniHub 6RFX have exhaust fans at the top of the unit. Please mind not to obstruct the air intake at the front and air exhaust at the top. Device can be ordered with AC3 license (OH-AC3-License) or AAC (OH-AAC-License) which enable AC3/AAC for all HDMI or SDI encoder modules in OmniHub 6RFX.



1. Slot 1 for Option Module
2. Slot 2 for Option Module
3. Slot 3 for Option Module
4. Slot 4 for Option Module
5. Slot 5 for Option Module
6. Slot 6 for Option Module
7. Chassis ground
8. Power Supply
9. On/Off switch

## 1.4 Option Module Overview

This describe the OmniHub 6RFX platform and all available modules that can expand the functionality of the OmniHub 6RFX platform.

| OmniHub 6RFX chassis         | Description  |
|------------------------------|--|
| <b>OmniHub 6RFX</b>          | 1RU chassis, Single PSU, 4xGbE ports, 14 LEDs and six hot swappable slots with 1 Modulator output in front panel |
| <b>OH-AC3-AAC-4CH</b>        | AC3 (2-channel stereo audio) and AAC license per 4 channels encoder module                                       |
| <b>OH-AC3-AAC-8CH</b>        | AC3 (2-channel stereo audio) and AAC license per 8 channels encoder module                                       |
| <b>OH6RFX-OFDM-4-License</b> | OFDM modulation output license (4 consecutive TS)  |
| <b>OH6RFX-OFDM-8-License</b> | OFDM modulation output license (8 consecutive TS)  |
| <b>OH6RFX-QAMA-4-License</b> | QAM Annex A/C modulation output license (4 consecutive TS)   |
| <b>OH6RFX-QAMA-8-License</b> | QAM Annex A/C modulation output license (8 consecutive TS)   |
| <b>OH6RFX-QAMB-4-License</b> | QAMB modulation output license (4 consecutive TS)  |
| <b>OH6RFX-QAMB-8-License</b> | QAMB modulation output license (8 consecutive TS)  |
| <b>OH6RFX-8VSB-4-License</b> | 8VSB modulation output license (4 consecutive TS)  |
| <b>OH6RFX-8VSB-8-License</b> | 8VSB modulation output license (8 consecutive TS)  |

| Receiver Modules          | Description   |
|---------------------------|---|
| <b>OHR6-DVBC-00</b>       | 4 channel DVB-C Annex A/C/DTMB receiving module, 1 RF input connector with 4 tuners and 2 CI slots                                    |
| <b>OHR6-DVBC-ISDBT-01</b> | 4 channel DVB-C Annex B/ISDBT receiving module, 1 RF input connected with 4 tuners and 2 CI slots                                     |
| <b>OHR-DVBS2FTA-01</b>    | 4 channel DVB-S2/S2X receiving module (QPSK, 8PSK, 64APSK), 4 input connectors (LNB1/2/3/4), Independent power supplies for each LNB. |
| <b>OHR6-8VSB-00</b>       | 4 channel 8VSB receiving module, 4 input connectors with 4 tuners.  |
| <b>OHR6-DVBT2CI-00</b>    | 4 channel DVB-T/T2 receiving module, 1 input connected with 4 tuners and 2 CI slots.  |

\*OHR6-DVBC-00, OHR6-DVBC-ISDBT-01, OHR6-DVBT2CI-00, are Different Hardware but share the same Software.

| Encoder Modules      | Description   |
|----------------------|---|
| <b>OHE6-HDMI-00</b>  | 4 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, and optional AC3/AAC.   |
| <b>OHE6-HDMI-R01</b> | 4 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, and optional AC3/AAC. Support OSD subtitle, logo picture and QR code overlay                                      |
| <b>OHE6-HDMI-02</b>  | 2 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC, and supports CC input.  |
| <b>OHE6-HDMI-02C</b> | 2 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC and supports CC and analog audio input.  |
| <b>OHE6-HDMI-05</b>  | 4 channel HDMI encoding module, supports H.264/H.265 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC, and support OSD subtitle, logo picture and QR code overlay.                               |
| <b>OHE6-HDMI-05</b>  | 8 channel HDMI encoding module, supports H.264/H.265 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC, and support OSD subtitle, logo picture and QR code overlay, each module occupies 2 slots, |
| <b>OHE-HDMI-06</b>   | 4-channel HDMI high-definition encoding   |



|                       | board (broadcast level), support H.264 HD/SD, support B frame, MPEG1L2 (support), AAC (optional), AC3 (optional), support superimposed OSD subtitles, logo, two-dimensional Code.   |
|-----------------------|---|
| <b>OHE6-CVBS-00</b>   | H.265 supports up to 4 channels of 1080@p60 input and output; H.264 supports up to 4 channels of 1080@i50/60 input and 4 channels of 1080@p25/30 output<br>6 channel CVBS encoding module, supports H.264/MPEG-2 SD, MPEG1L2. |
| <b>OHE-CVBS-03</b>    | 2-channel CVBS standard definition encoding board, support H.264/MPEG-2 SD, CC, MPEG1L2, AC3 (support), AAC (support)   |
| <b>OHE6-CVBS-R01</b>  | 8 channel CVBS encoding module, supports H.264, MPEG1L2.  |
| <b>OHE6-CVBS-R01A</b> | 16 channel CVBS encoding module, supports H.264, MPEG1L2, the modules occupy 2 slots.   |
| <b>OHE6-SDI-00</b>    | 2 channel SDI encoder bitrate supports H.264/MPEG-2 HD/SD, MPEG1L2, AAC and AC3 are optional, and supports CC and analog audio input.   |
| Modulator Module      | Description   |
| <b>OHM6-QAMA-R00</b>  | 16 channel QAM modulator module, Annex A/C, non-adjacent output, and 1 RF female port for output  |
| <b>OHM6-QAMB-R00</b>  | 16 channel QAM modulator module, Annex B, non-adjacent output, and 1 RF female port for output  |
| <b>OHM6-QAMA-R01</b>  | 4 channel QAM modulator module, Annex A/C, adjacent output, and 1 RF female port for output   |
| <b>OHM6-QAMA-R01A</b> | 8 channel QAM modulation module, Annex A/C, adjacent output, and 1 RF female port for output  |
| <b>OHM6-QAMB-R01</b>  | 4 channel QAM modulation module, Annex B, adjacent output, and 1 RF female port for output  |
| <b>OHM6-QAMB-R01A</b> | 8 channel QAM modulation module, Annex B, adjacent output, and 1 RF female port for output  |

|                        |   |
|------------------------|---|
| <b>OHM6-OFDM-R01</b>   | 4 channel OFDM modulation module, adjacent output, and 1 RF female port for output  |
| <b>OHM6-OFDM-R01A</b>  | 8 channel OFDM modulation module, adjacent output, and 1 RF female port for output.   |
| <b>OHM6-ISDBT-R01</b>  | 4 channel ISDBT modulation module, adjacent output, and 1 RF female port for output.  |
| <b>OHM6-ISDBT-R01A</b> | 8 channel ISDBT modulation module, adjacent output, and 1 RF female port for output   |
| <b>OHM6-8VSB-R01</b>   | 4 channel 8VSB (ATSC) modulation module, adjacent output, and 1 RF female port for output   |
| <b>OHM6-8VSB-R01A</b>  | 8 channel 8VSB 9ATSC) modulation module, adjacent output, and 1 RF female port for output.  |
| <b>OHM-MOD-02</b>      | 32-channel QAM-A modulation module, 2 gigabit IP input electrical ports, each input port supports 256 channels; 1 CAS interface (RJ45), support scrambling function; 1 RF output interface, support 32-channel QAM-A non-advanced frequency Modulation output, independent constellation mode configuration |

\*All -R01 model same the same hardware, and all -R01A models share the same model except for the OFDM Module.

| Function Modules   | Description   |
|--------------------|---|
| <b>OHP-IP-00</b>   | IP protocol conversion module, 3 Gigabit Ethernet ports (1 input and 2 output), 1 HDMI interface, 1 USB interface, support UDP/RTP/HLS/SRT protocol mutual conversion |
| <b>OHP-ASI-00</b>  | 5 channels of ASI module, default 3 channels of ASI input and 2 channels of ASI output (the input and output of each port can be set)                                 |
| <b>OHP6-EAS-00</b> | EAS processing module, supports EAS triggering by analogue EAS input and Digital EAS input.   |
| <b>OHP6-CAM-00</b> | CAM processing module supports 2 independent CI Card slots, support Xcrypt CA scramble, compatible with mainstream CAM cards, and support mainstream CAS decryption   |

**OHP-EIT-00**

EIT processing module, supports up to 16TS per module

## Section 2 Installation

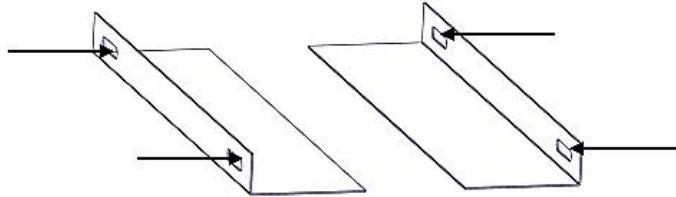


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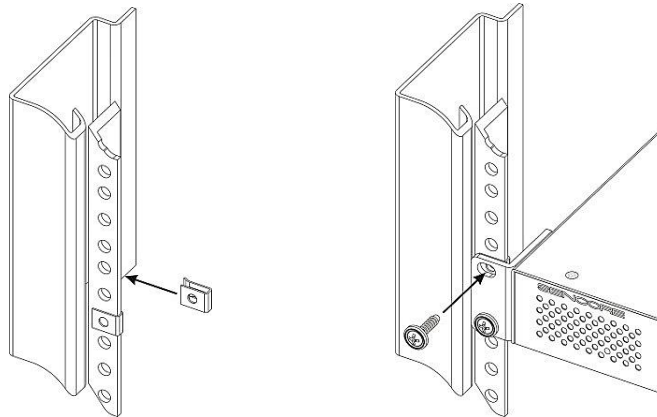
## 2.1 Rack Installation

The OmniHub 6RFX is designed to be mounted in a standard 19" rack. It takes 1RU of rack space. To install it into a rack, please use the following steps:

- Determine the desired position in the rack for the OmniHub 6RFX. Make sure that the air intake on the front of the unit and the exhausts on the back of the unit will not be blocked.
- Install the brackets at the desired position if there's no supporting plate in the rack.



- Insert the rack mount clips into the place over the mounting holes in the rack.
- Slide the OmniHub 6RFX into the position in the rack.
- Secure the chassis to the rack by installing the four supplied screws through the front mounting holes and tightening.



## 2.2 AC Power Connection

The OmniHub 6RFX is to be powered by supplies with operating 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:

- Locate the power cords that are contained. Please only use the supplied 3-prong power connector or one with equal specifications. NEVER tamper with or remove the grounding pin. This could cause damage to OmniHub 6RFX, personnel, or property.
- Plug the female end of the power cords into the front of the unit.
- Locate a protected outlet to plug the male ends of the power cables into.



When you take the equipment from a cold condition into a much warmer and humid condition, the equipment should be acclimated to the warm and humidity condition for at least 30 minutes. Powering up a non-acclimated unit may lead to shortcut or other damage to electronic components.



A professional UPS system is recommended for better performance of your content distribution system.

# Section 3 Web Interface Operation



|  |           |
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## 3.1 OmniHub 6RFX Web Interface Overview

### 3.1.1 Connecting to the Management Port

OmniHub 6RFX has an embedded gigabit switch. The four network ports are respectively used for managing and data reception/streaming over IP network. From left to right, port 1 and port 2 are used for management purposes and, port 3 and port 4 are used for IP reception/streaming.

If an external IP switch needs to be installed between OmniHub 6RFX and other headend devices, this switch should support IGMP V2 and IGMP snooping function.

### 3.1.2 Logging into the OmniHub 6RFX Web Interface

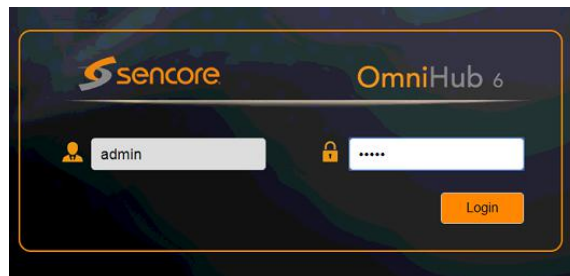
To open the OmniHub 6RFX web interface use one of the following supported browsers and navigate to the unit's IP address:

- Firefox
- Google Chrome

Factory network settings of the Management Port:

- IP address: 192.168.1.10
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.254

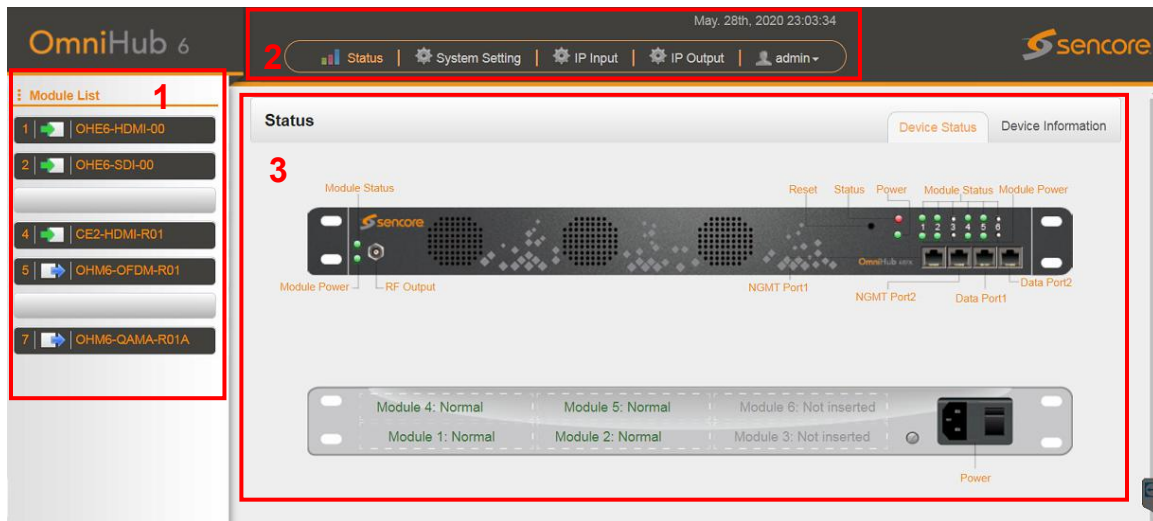
The user will need to login to the web interface. The default **username/ password are admin/admin**. Click the login button to login to the web interface.





## 3.2 Status Overview

After a successful login, a welcome screen is displayed. The welcome screen allows you to navigate to:

1. Module List shows the module (s) installed inside the chassis
2. Settings buttons: status, system settings, IP inputs, IP outputs, admin
3. Device host operation status





You can return to the welcome screen by clicking the button  and then button . Above is the picture displaying Status View for OmniHub 6RFX front view.

### 3.2.1 Status

This Menu allows the user to access the following:

- Device Status
- Device Information

**Device Status** will show once you login to the OmniHub 6RFX web interface as shown in the picture above. It also shows the front and rear-view image of OmniHub 6RFX with friendly label that show the status of each module connected in the 6 slots.

**Device Information** page shows the firmware version, software version, and hardware version of the baseboard and every module physically installed. You can access Device Information **Status** page by clicking the button  and then the button .

| Status           |                  |                  |   |
|------------------|------------------|------------------|---|
|                  |                  |                  | Device Status <b>Device Information</b> |
| Module           | Firmware Version | Software Version | Hardware Version                        |
| Baseboard        | V0.2.586         | V1.4.21          | V0.1.0                                  |
| 1.OHE6-HDMI-00   | V0.0.0           | V1.3.101         | V0.0.1                                  |
| 2.OHE6-SDI-00    | V20.1.60         | V1.4.6           | V0.0.1                                  |
| 5.OHM6-OFDM-R01  | V62.2.258        | V1.4.8           | V0.0.1                                  |
| 7.OHM6-QAMA-R01A | V62.2.258        | V1.4.12          | V0.0.1                                  |

### 3.2.2 System Setting

This menu allows you to configure:

- Network
- Time
- System
- Password

- SNMP

**Network** tab allows you to assign a static IP address to the OmniHub 6RFX mainboard only. IP addresses for boards/modules will be assigned automatically based on the address set for the chassis. To avoid IP address conflicts when you set the baseboard IP address, observe occupied IP sections displayed on this page in the top blue area.


**System Setting**      Network    Time    System    Password    SNMP

| Module Name      | IP Address   | Subnet Mask   | Default Gateway | MAC Address       | DNS Server IP |
|------------------|--------------|---------------|-----------------|-------------------|---------------|
| Baseboard        | 192.168.1.10 | 255.255.255.0 | 192.168.1.254   | A0:69:86:02:90:23 | 0.0.0.0       |
| 1.OHE6-HDMI-00   | 192.168.1.11 | 255.255.255.0 | 192.168.1.254   | A0:69:86:01:FE:A3 |               |
| 2.OHE6-SDI-00    | 192.168.1.12 | 255.255.255.0 | 192.168.1.254   | A0:69:86:02:A1:E9 |               |
| 5.OHM6-OFDM-R01  | 192.168.1.15 | 255.255.255.0 | 192.168.1.254   | A0:69:86:02:80:51 |               |
| 7.OHM6-QAMA-R01A | 192.168.1.17 | 255.255.255.0 | 192.168.1.254   | A0:69:86:02:B2:AC |               |

**Tips**

1. When multiple equipments are connected to the same switch, please make sure to change the default baseboard IP address and internal IP address of baseboard / modules " + "at advanced setting to avoid IP conflict.
2. The IP conflict of baseboard / modules between different equipments will cause loading failure of modules for some equipments.
3. When the subnet of Internal Baseboard IP address is changed, the IP address of modules will follow the subnet change automatically.

Apply

Click the button  on the right side for the changes to take effect.

**Time** tab allows you to check the current system time, change the time zone, choose system time Mode (Manual or Automatic), enable/disable Auto Sync and modify NTP Server Address in Automatic mode and change the current system Time in Manual mode.

Network    **Time**    System    Password    SNMP

**System Time** Jun. 19th, 2019 13:07:41

**Time Zone** UTC +00: 00

**Mode** Manual

**Time** 2019/06/19 13:07:30

Apply

---

Network    **Time**    System    Password    SNMP

**System Time** Jun. 19th, 2019 13:11:07


**Time Zone** UTC +00: 00

**Mode** Automatic


**NTP Server Address** 192.168.1.113

**Auto Sync** Disable


Apply

Click the button  on the right side for the changes to take effect.


**System** tab allows you to do upgrade, import or export configuration, import or export licenses (*only baseboard*), reboot the whole unit, restore to factory default (*only baseboard*) and export logs and clear log (*only baseboard*).

Click the button  on the right side for the changes to take effect.

**Password** tab allows you to change the login password.

Click the button  on the right side for the changes to take effect.

**SNMP** tab is for you to disable or enable the SNMP function.

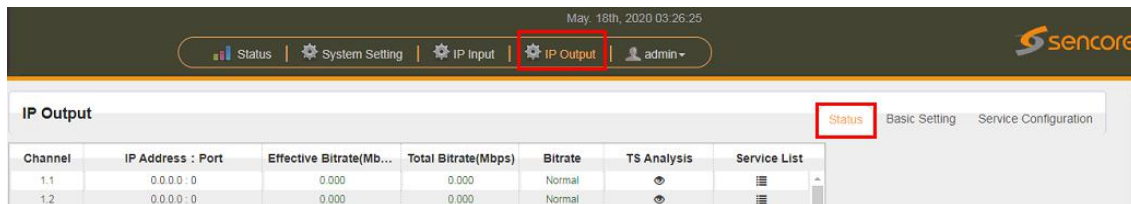
Click the button  on the right side for the changes to take effect.

### 3.2.3 IP Input


This menu allows you to configure and access the IP input:

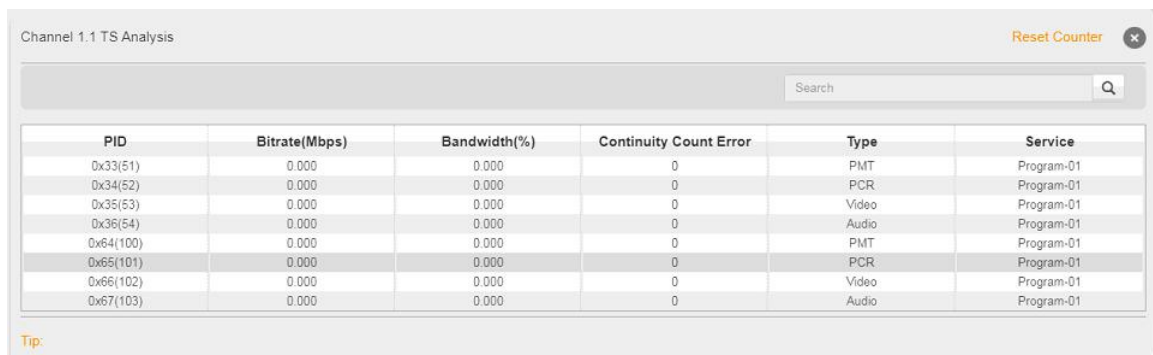
- Status
- Basic Settings
- Service Configuration

**Status** tab displays a table of Channels with IP Address, IP Port, Effective Bitrate, Total Bitrate, TS Analysis and Service List for each IP input stream. OmniHub 6RFX IP input has a total of 120 channels which means it can accommodate 120 IP address multicast. Once a channel is enabled, the IP address and IP port configured for the channel will appear in the table. If the source multicast is good, there will be a value under the total bitrate and effective bitrate showing the actual bitrate of the transport stream.




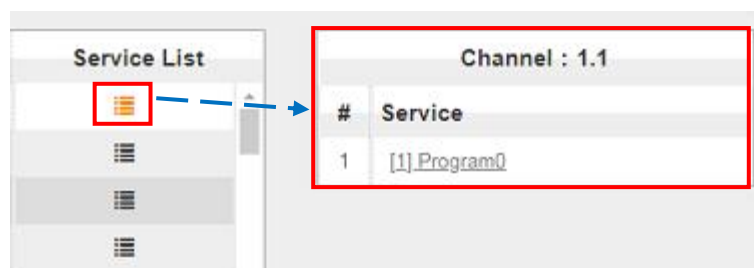
| Channel | IP Address : Port | Effective Bitrate(Mb... | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.2     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |

Clicking  under TS Analysis button will display the information on the structure of the transport stream.



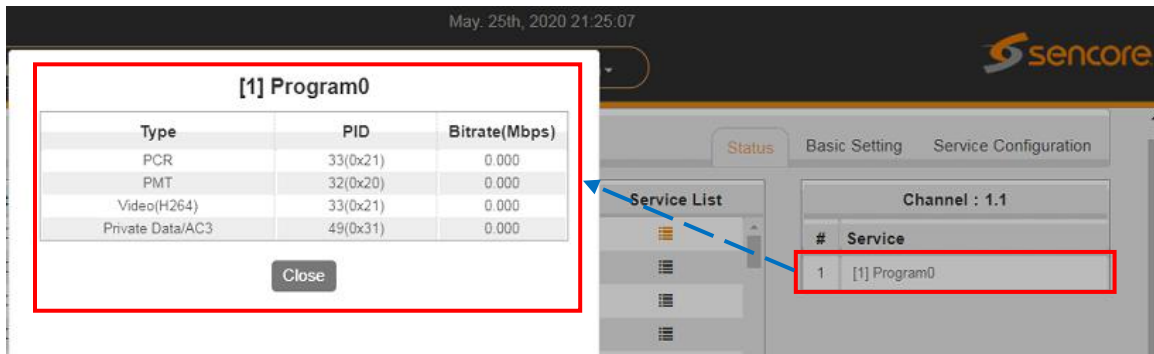
| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type  | Service    |
|-----------|---------------|--------------|------------------------|-------|------------|
| 0x33(51)  | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x34(52)  | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x35(53)  | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x36(54)  | 0.000         | 0.000        | 0                      | Audio | Program-01 |
| 0x64(100) | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x65(101) | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x66(102) | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x67(103) | 0.000         | 0.000        | 0                      | Audio | Program-01 |

Clicking  under Service List will display information on the services included in the transport stream. A list of services in the TS will be shown as the picture below.

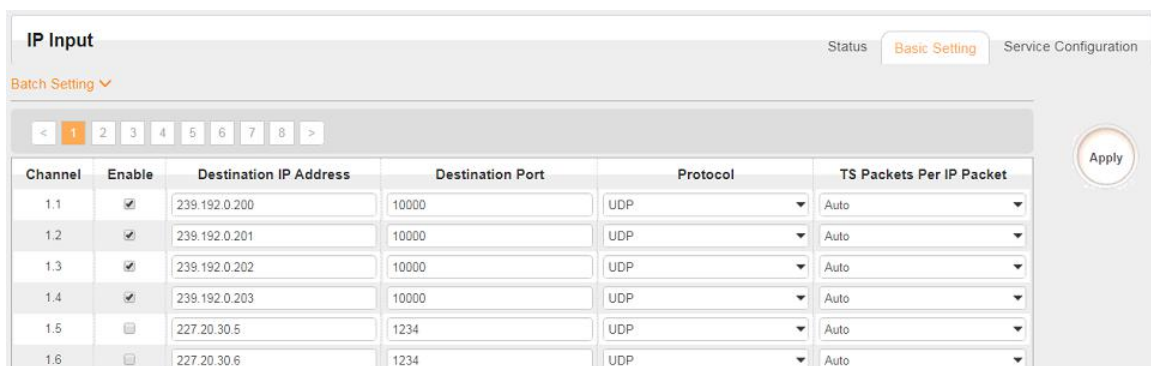


| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

Clicking on the service in the list will display its detailed information: PCR, PMT, Video and Audio PID and Bitrate. See the picture below.




**Basic Settings** tab displays the configuration page of the IP input. You can enable the TS and set the input IP Address, IP port and Protocol of the source multicast.





To enter many IP addresses for the inputs, click the Batch Setting Batch Setting ▾ button and fill in the following fields. You can only set the source when the IP addresses are in a consecutive order.



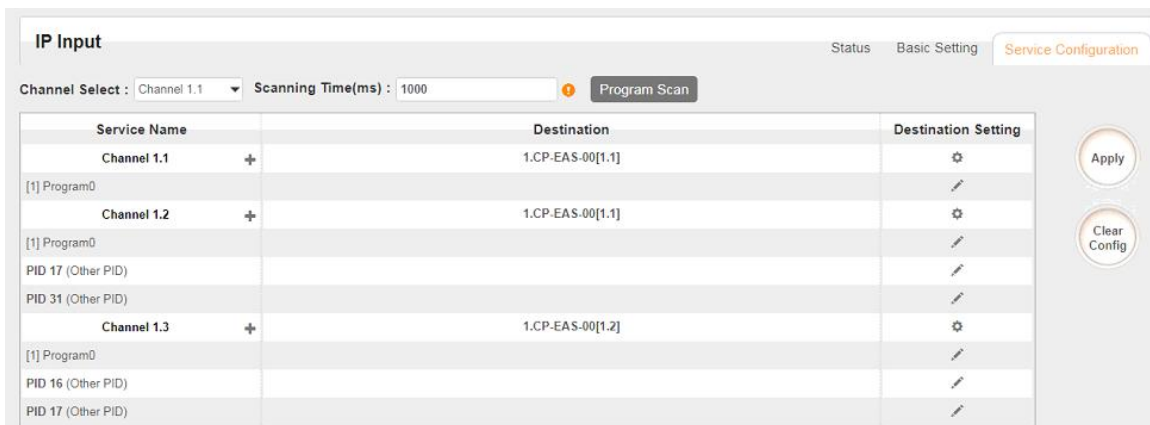
Click the Apply  button on the right side to make the change take effect.

**Service Configuration** tab displays the configuration page where you can manage the received services and output them to their designated interface. Configuration steps for IP input and all receiving and encoding modules in OmniHub 6RFX are mostly the same.

First, you need to Channel Scan the port on each TS with LOCKED signal status. Each port might be scanned automatically or need to be scanned when its source signal is replaced.

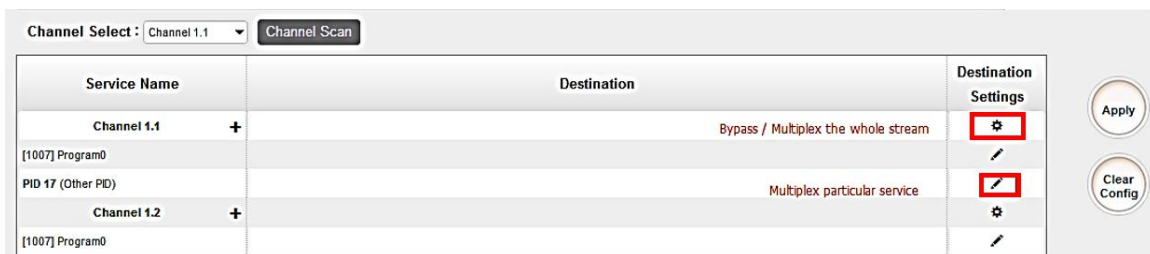
After scanning each channel, you can output each transport stream or service by clicking the icon  and  below “Destination Settings”. You can route the whole stream or a service/s from the input channel toward the available output channel (IP or RF). Two types of routing are possible.

1. **Bypass mode.** In this mode, routes can only be done when outputting a whole input transport stream towards an output TS channel - this cannot be done when outputting a single service only. Bypass mode activation will not allow other services from other input TS to be mixed in the current TS output. Any attempts of routing other stream/services towards this channel will result in *“this channel won’t be available at this time”*.
2. **Multiplex mode** is used to create a new SPTS or MPTS. This mode allows the administrator to perform the following operation:
  - a. Routes a single service towards an output channel to create SPTS.
  - b. Routes services towards a single output channel to create MPTS.
  - c. Route service/s AND stream/s from multiple channels towards a single output channel to create MPTS.




The interface shows the 'Service Configuration' tab. At the top, there are controls for 'Channel Select' (set to Channel 1.1), 'Scanning Time(ms)' (set to 1000), and a 'Program Scan' button. Below this is a table with three columns: 'Service Name', 'Destination', and 'Destination Setting'. The table lists three channels: Channel 1.1, Channel 1.2, and Channel 1.3. Each channel has a '+' icon next to its name. The 'Destination' column shows '1.CP-EAS-00[1.1]' for Channel 1.1 and 1.2, and '1.CP-EAS-00[1.2]' for Channel 1.3. The 'Destination Setting' column has a gear icon for each channel. To the right of the table are 'Apply' and 'Clear Config' buttons.

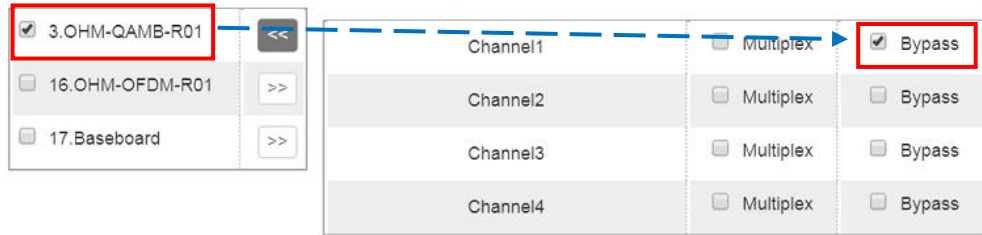
Service Configuration page interface




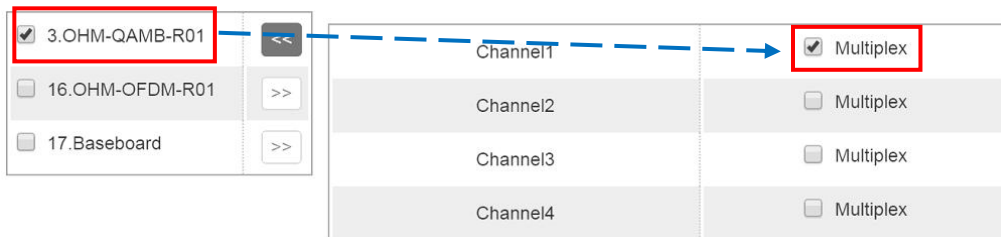
This is a zoomed-in view of the 'Service Configuration' interface. It shows the 'Channel Select' dropdown set to 'Channel 1.1' and a 'Channel Scan' button. The table has columns for 'Service Name', 'Destination', and 'Destination Settings'. For 'Channel 1.1', the 'Destination' is 'Bypass / Multiplex the whole stream' and the 'Destination Settings' column has a gear icon highlighted with a red box. For 'Channel 1.2', the 'Destination' is 'Multiplex particular service' and the 'Destination Settings' column has a pencil icon highlighted with a red box. 'Apply' and 'Clear Config' buttons are on the right.


To use **Bypass** or **multiplex mode on stream level**, click the icon . When a new window appears, select the output stream/channel where the stream will be bypassed or multiplexed.





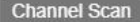


To use **Multiplexing mode on service level** click on pencil icon  on the right side in the line with the proper service. Then select the output stream (channel) where the service will be multiplexed.



Do not forget to click the Apply button  on the right side to make the change take effect.

 To clear the whole routing table click  button.

 There is a channel scan button  Channel Select: Channel 1.1  Channel Scan on the top. Normally the input service list of each channel will be loaded in this page automatically, but when you change the input source, you should refresh the changed channel manually by selecting the channel and clicking **Channel Scan** button.

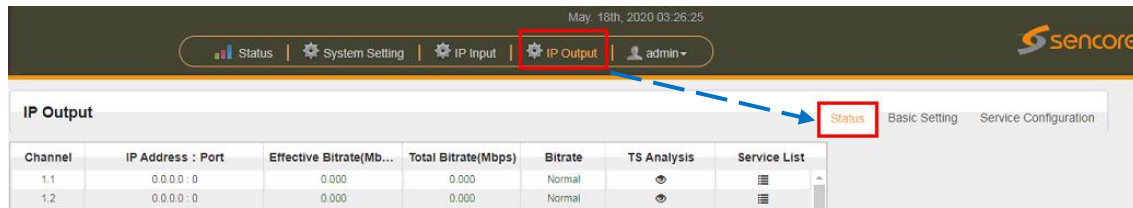
### 3.2.4 IP Output

This menu allows you to configure and access the IP output:

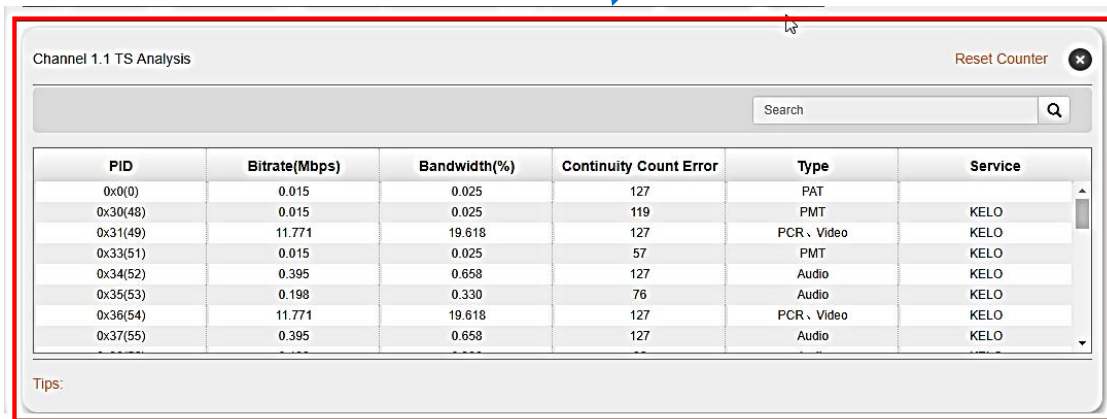
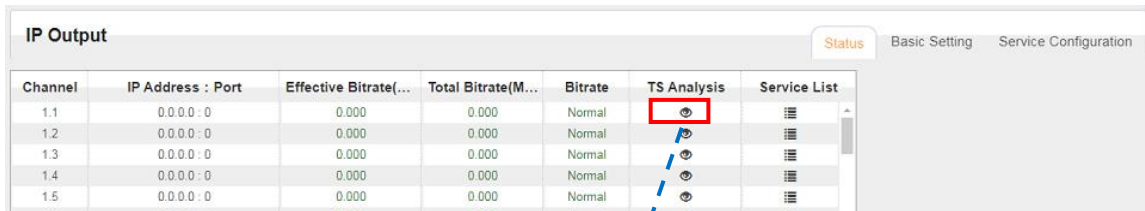
- Status
- Basic Settings
- Service Configuration


**Status** tab displays the table of Channels, IP Address, IP port, Effective Bitrate, Total Bitrate, Bitrate Status (Normal/Overload), TS Analysis and Service List for each IP output stream. OmniHub 6RFX IP output has a total of 120 channels which means it can output 120 multicast IP addresses. Once a channel is enabled, the IP address and IP port configured on the channel will appear in the table. If there are services output in the channel, the status will display the effective and total bitrate. Total bitrate is the set maximum bitrate set and the effective bitrate is the actual bitrate of the service/s. If the actual bitrate is higher than the total bitrate, Bitrate status will display “overload” which indicates some errors in the channel.

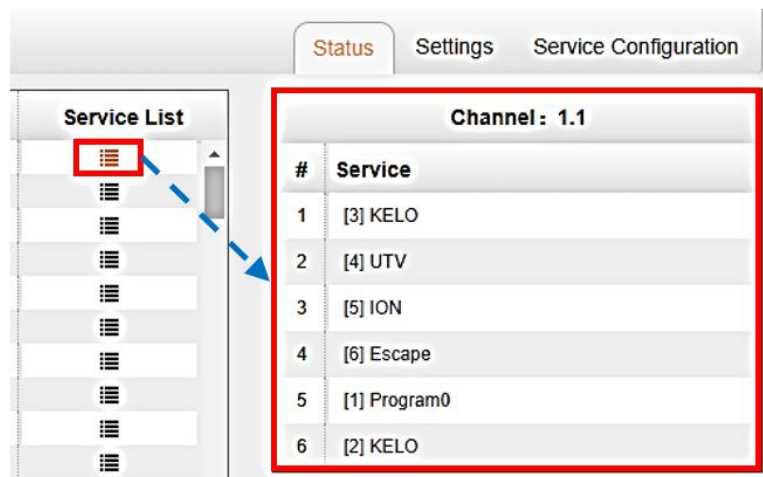




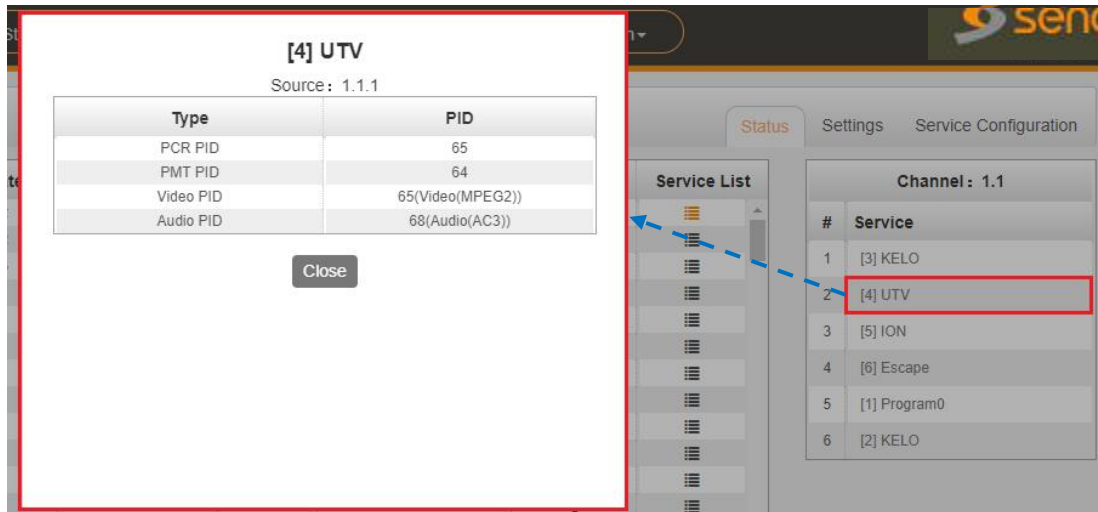
Clicking the icon under the TS Analysis button will display the information on the structure of the transport stream.



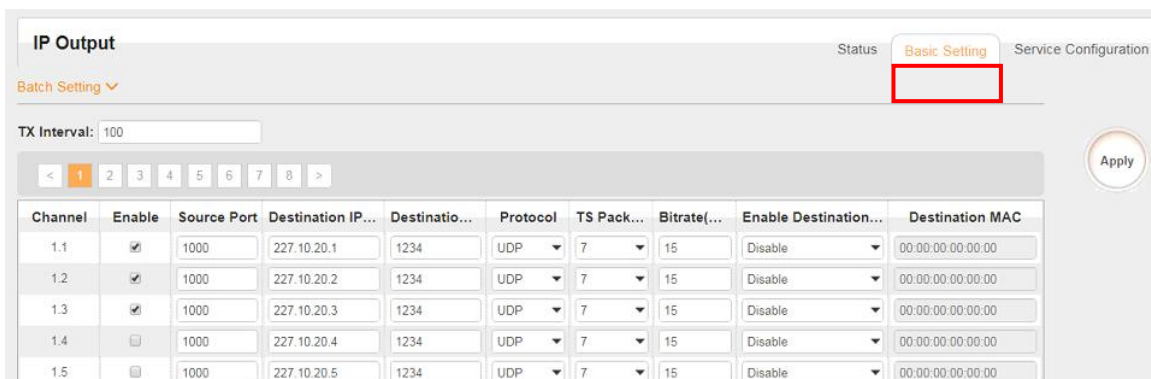
Clicking  under Service List will display information on the services included in the transport stream. This will display the list of services in a TS as shown in the picture below.




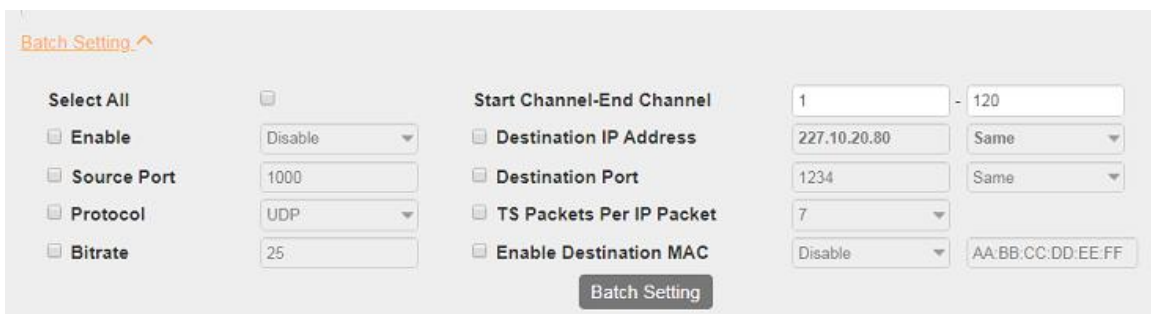
Clicking on the service name in the list will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.



**Basic Settings** tab displays the configuration page of the IP output. You can enable the TS and set the output IP Address, IP port and Protocol of the Destination IP multicast.



To enter many IP addresses, use the Batch Setting  button and fill in the following fields. You can only set the destination IP address when the IP addresses are in a consecutive order

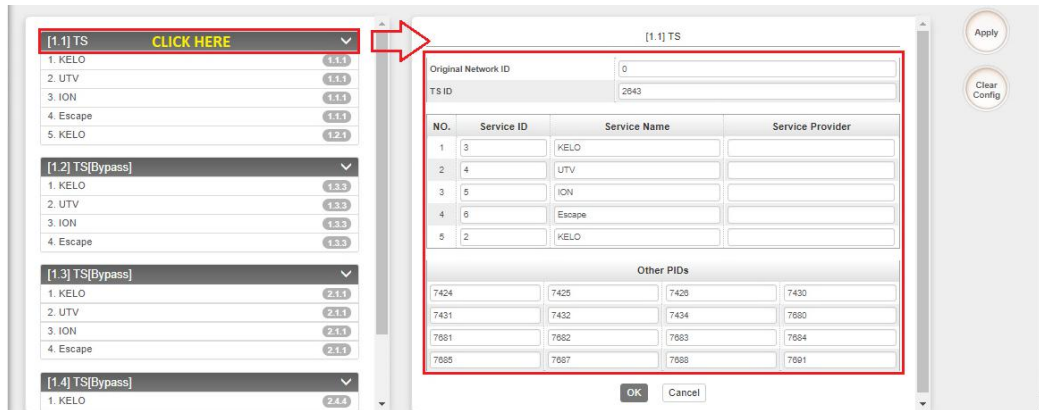


Click the Apply button  on the right side to make the change take effect.

**Service Configuration** tab display the page where you can check/edit output TS or services that are part of output IP streams. Streams can originate either from IP input, receiver modules or encoder modules. In picture below, clicking the area marked as “click here”, you can make changes to the transport stream, i.e.:

- edit Original Network ID
- edit TS ID
- edit Service ID, Service Name and Service Provider
- edit PID ID for other PIDs

Click the Apply button  on the right side to make the change take effect.



| NO. | Service ID | Service Name | Service Provider |
|-----|------------|--------------|------------------|
| 1   | 3          | KELO         |                  |
| 2   | 4          | UTV          |                  |
| 3   | 5          | ION          |                  |
| 4   | 6          | Escape       |                  |
| 5   | 2          | KELO         |                  |

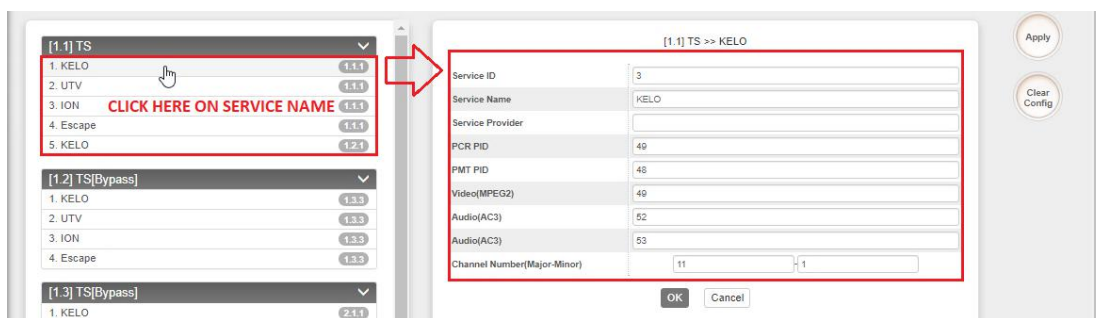
Other PIDs

|      |      |      |      |
|------|------|------|------|
| 7424 | 7425 | 7426 | 7430 |
| 7431 | 7432 | 7434 | 7680 |
| 7681 | 7682 | 7683 | 7684 |
| 7685 | 7687 | 7688 | 7689 |

In picture below, clicking the area marked as “click here”, the user can make changes to particular service(s), i.e.:

- edit Service ID, service name and service provider
- edit PCR, PMT PIDs
- edit Elementary Stream PIDs (video, audio/s)
- edit Logical Channel Number

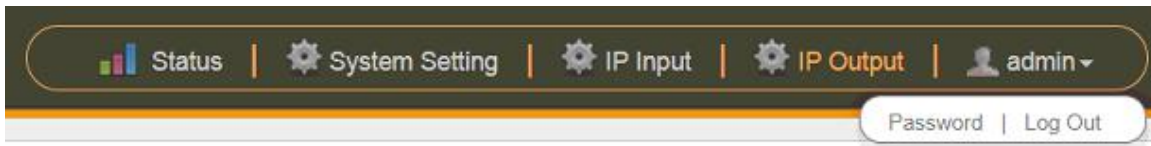
Click the Apply button  on the right side to make the change take effect.



|                             |      |
|-----------------------------|------|
| Service ID                  | 3    |
| Service Name                | KELO |
| Service Provider            |      |
| PCR PID                     | 49   |
| PMT PID                     | 48   |
| Video(MPEG2)                | 49   |
| Audio(AC3)                  | 52   |
| Audio(AC3)                  | 53   |
| Channel Number(Major-Minor) | 11 1 |

### 3.2.5 Admin

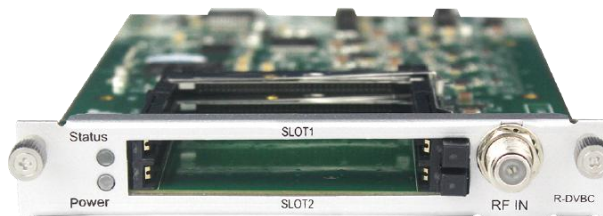
Click **Admin** and you can choose to go into Password setting page or Log Out.



### 3.3 Receiver Modules

#### 3.3.1 OHR6-DVBC-00

OHR6-DVBC-00 is a 4channel DVBC receiving and descrambling module with 1 RF female connector and 2 CI slots. It can receive 4 DVBC signals simultaneously and support 2 CAM cards for descrambling.



##### 3.3.1.1 Module Status

By selecting the OHR6-DVBC-00 on the module list, you will be automatically redirected to the Status page of the module. This will display the channels from 1.1 to 1.4 that represent the 4 input -channels of the module. Once a channel is connected to the source and configured with correct parameters. The status of the channel will display 'locked' and you can see the values of the total bitrate and the actual bitrate.

| OHR-DVBC-00 |               |                     |                         |             |          |               |                       |
|-------------|---------------|---------------------|-------------------------|-------------|----------|---------------|-----------------------|
|             |               |                     |                         | Status      | CI       | Basic Setting | Service Configuration |
|             |               |                     |                         | System      |          |               |                       |
| Channel     | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level | TS Analysis   | Service List          |
| 1.1         | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -        | 👁             | 📋                     |
| 1.2         | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -        | 👁             |                       |
| 1.3         | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -        | 👁             |                       |
| 1.4         | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -        | 👁             |                       |

Total Bitrate in Mbps shows the bitrate of receiving signals of each channel with LOCKED status, while the Effective Bit Rate in Mbps shows its actual bitrate. RF Level of the input signal will show you the level of each locked channel.


Clicking 👁 under TS Analysis will display the information on the structure of the transport stream as shown in the picture below.







Channel 1.1 TS Analysis Reset Counter

Search

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type  | Service    |
|-----------|---------------|--------------|------------------------|-------|------------|
| 0x33(51)  | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x34(52)  | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x35(53)  | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x36(54)  | 0.000         | 0.000        | 0                      | Audio | Program-01 |
| 0x64(100) | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x65(101) | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x66(102) | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x67(103) | 0.000         | 0.000        | 0                      | Audio | Program-01 |

Tip:

Clicking  under Service List will display information on the services included in the transport stream. This will display the list of services in a TS as shown in the picture below.

| Service List   |   |
|--|---|
|   |    |
|   |    |
|  |  |

| Channel : 1.1 |              |
|---------------|--------------|
| #             | Service      |
| 1             | [1] Program0 |

Clicking on the service name in the list will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.

| Channel1.1 |               |
|------------|---------------|
| #          | Service       |
| 1          | [302] CCTV 2  |
| 2          | [303] CCTV 7  |
| 3          | [304] CCTV 10 |
| 4          | [305] CCTV 11 |
| 5          | [306] CCTV 12 |
| 6          | [307] CCTV 15 |

| Channel1.2 |               |
|------------|---------------|
| #          | Service       |
| 1          | [1] CNAI PAL  |
| 2          | [2] CNAI NTSC |
| 3          | [1001] TVB8   |
| 4          | [1003] CETV   |

| Channel1.3 |                       |
|------------|-----------------------|
| #          | Service               |
| 1          | [1] India News HARYAI |
| 2          | [2] India News RAJAS1 |
| 3          | [3] India News        |
| 4          | [4] LTV               |
| 5          | [5] Delhi News        |
| 6          | [6] India News UP/UK  |
| 7          | [7] India News MP     |
| 8          | [8] NEWS X            |


| Channel1.4 |                           |
|------------|---------------------------|
| #          | Service                   |
| 1          | [1] td HD Phx Infonews Ct |
| 2          | [2] td HD Phx Chinese Ch  |
| 3          | [3] td HD Phx HK Channel  |

### [302] CCTV 2

| PID  | Type                      | Bitrate(Mbps) |
|------|---------------------------|---------------|
| 8190 | PCR                       | 0.045         |
| 258  | PMT                       | 0.018         |
| 513  | StreamType:2-Video(MPEG2) | 5.198         |
| 660  | StreamType:4-Audio        | 0.262         |

### 3.3.1.2 Module CI


For the encrypted services received on OHR6-DVBC-00 module receiver, CI slot is needed to decrypt and re-broadcast the services. The OHR6-DVBC-00 has 2 CAM slots and can decrypt services depending on the capability of the CAM module and Smart Card. You can select the CAM Max Bit Rate from 48Mbps to 108Mbps in pull-down list depending on the total effective bitrate of services you want to decrypt at.

Click the Apply button  on the right side to make the change takes effect.

### 3.3.1.3 Module Settings

In this page you can input the parameters of the source signal. For DVBC input, it only needs to have the Frequency and Symbol Rate of the source. The range of the Frequency and Symbol Rate to be input on this page shows on the table below.

| Name                       | Range        |
|----------------------------|--------------|
| <b>Frequency (KHz)</b>     | 48000~862000 |
| <b>Symbol Rate (KBaud)</b> | 3000~7000    |

When the parameters are set, click on  and check in the Status page if the corresponding channel status is LOCKED.



### 3.3.1.4 Module Service Configurations


Service Configuration page is where you can manage the received services and output them to their designated interface. The configuration for all modules in OmniHub 6RFX is mostly same.

First, you need to scan the port on each LOCKED TS. Each port might be scanned automatically or needed to be scanned manually when its source is changed.




After scanning each channel, you can start to configure the services. You need to click **Apply** button after you configure service to CAM for descrambling, otherwise the descrambling configuration will not be saved. Then you can choose the services to be



routed, you can output each service by clicking the icon  and  below “Destination Settings”. You can route a whole stream or a service/s from the input channel toward the available output channels (IP or RF). Two types of routing are possible.



1. **Bypass mode.** In this mode, you can route as whole input transport stream towards an IP or RF output which will be occupied only by this stream. Any attempt of routing other stream/service towards this channel will be an error. This can only be done when you click the icon  on the TS.
2. **Multiplex mode** is the counter part of the bypass mode. This mode allows the administrator to perform the following operations:
  - a. Route a single service towards an output channel to create SPTS.
  - b. Route services towards a single output channel to create MPTS.
  - c. Route service/s AND stream/s from multiple channels towards a single output channel to create MPTS.





Channel Select: Channel 1.3 Channel Scan

| Service Name | Descrambling | Destination | Destination Settings  |
|--------------|--------------|-------------|---|
| Channel 1.1  | +            |             |  |
| Channel 1.2  | +            |             |  |
| Channel 1.3  | +            |             |  |

Apply Clear Config

To use **Bypass** or **Multiplexing mode on stream level**:

1. Click on the (cog) icon . There were always have BaseBoard selection for the IP output and other Output options depending on the modules inserted.
2. Select the correct Output and Channel you want to output the stream to.
3. Check Multiplex or Bypass on the Channel you want to output.
4. Click the Apply button  on the right side to make the change takes effect.

| Destination                | Destination Settings  |
|----------------------------|---|
| Bypass or Multiplex Stream |    |
| Multiplex a service        | <br><br> |

Channel 1.1 ✕

☒ 12.CM-QAMB-R01A <<



☐ 14.CM-QAMB-R01 >>


☐ 17.Baseboard >>

Channel1 Multiplex Bypass

| Channel  | Multiplex                | Bypass                   |
|----------|--------------------------|--------------------------|
| Channel2 | <input type="checkbox"/> | <input type="checkbox"/> |
| Channel3 | <input type="checkbox"/> | <input type="checkbox"/> |
| Channel4 | <input type="checkbox"/> | <input type="checkbox"/> |
| Channel5 | <input type="checkbox"/> | <input type="checkbox"/> |
| Channel6 | <input type="checkbox"/> | <input type="checkbox"/> |

To use **Multiplexing mode on service level**:

1. Click on  (pencil) icon. There will be always a BaseBoard selection for the IP output and other Output options depending on the modules inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check on Multiplex on the channel you want to output. You can output multiple service in one channel or output one service to multiple channels
4. Click the Apply button  on the right side to make the change takes effect.

[1]Program0 

|  |    |          |   |
|--|----|----------|---|
| <input type="checkbox"/> 12.CM-QAMB-R01A           | >> | Channel1 | <input checked="" type="checkbox"/> Multiplex |
| <input checked="" type="checkbox"/> 14.CM-QAMB-R01 | << | Channel2 | <input checked="" type="checkbox"/> Multiplex |
| <input type="checkbox"/> 17.Baseboard              | >> | Channel3 | <input type="checkbox"/> Multiplex            |
|  |    | Channel4 | <input checked="" type="checkbox"/> Multiplex |



To clear the whole routing table click  button.

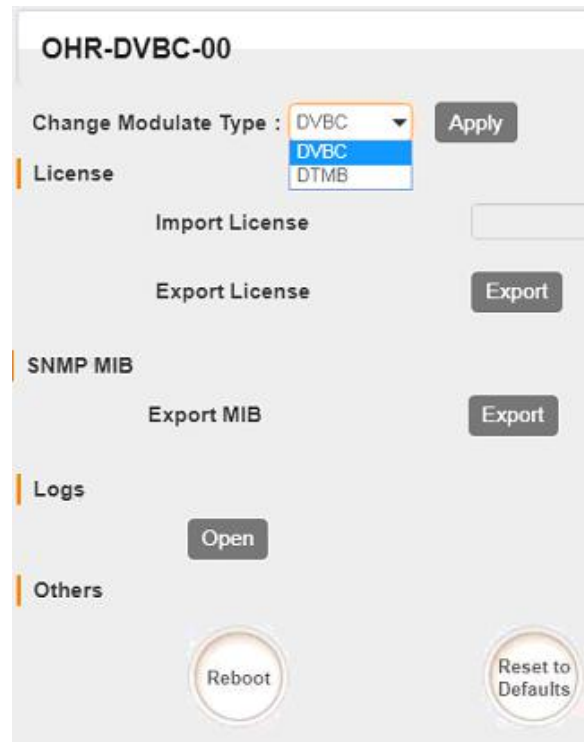


There is a channel scan button  on top,. Normally the input service list of each channel will show on this page, but when you change the input source, you should refresh the changed channels manually by selecting the channel and clicking **Channel Scan** button.

### 3.3.1.5 Module System Operation

In **System Operation** tab, you can choose the modulation type as DVBC Mode or DTMB Mode. Here you can also perform the following tasks:





- Import / Export License
- Log Manage
- Reboot
- Factory Default the unit

### 3.3.2 OHR6-DVBC-ISDBT-01

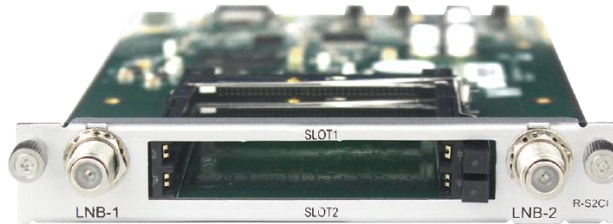
OHR6-DVBC-ISDBT-01 is a 4-channel DVBC Annex B/ISDBT receiving and descrambling module with 1 RF female connector and 2 CI slots. The module can receive signals via 4 RF channels simultaneously and support 2 CAM cards for descrambling. Configuration of the module is very much similar to that of OHR6-DVBC-00. For configuration of this module, please refer to page 30 to 35.

| OHR-DVBC-01 |               |                     |                         |                       |             |               |
|-------------|---------------|---------------------|-------------------------|-----------------------|-------------|---------------|
|             |               |                     |                         | Status                | CI          | Basic Setting |
|             |               |                     |                         | Service Configuration |             |               |
|             |               |                     |                         | System                |             |               |
| Channel     | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | RF Level              | TS Analysis | Service List  |
| 1.1         | Unlocked      | 0.000               | 0.000                   | -                     | 👁           | 📺             |
| 1.2         | Unlocked      | 0.000               | 0.000                   | -                     | 👁           |               |
| 1.3         | Unlocked      | 0.000               | 0.000                   | -                     | 👁           |               |
| 1.4         | Unlocked      | 0.000               | 0.000                   | -                     | 👁           |               |



### 3.3.3 OHR6-DVBS2CI-01

OHR6-DVBS2CI-01 is a 4 channel DVB-S2 receiving descrambling board (Two DVB-S2 signal input interfaces, two CAM slots.)



#### 3.3.3.1 Module Status

The Status page contains status information of Channel, Locked Status, Total Bitrate, Effective Bitrate, PER, RF Level, CNR, Link Margin, FEC Code Rate, Modulation, TS Analysis, Service List.

| Status  |               |                     |                         |             |                 |         |                 |               |            |             |              |  |
|---------|---------------|---------------------|-------------------------|-------------|-----------------|---------|-----------------|---------------|------------|-------------|--------------|--|
| Channel | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level        | CNR(dB) | Link Margin(dB) | FEC Code Rate | Modulation | TS Analysis | Service List |  |
| 1.1     | Locked        | 49.187              | 5.342                   | 0.000000000 | -61dBm (47dBuV) | 22.400  | 15              | 9/10          | QPSK       |             |              |  |
| 1.2     | Locked        | 49.187              | 5.342                   | 0.000000000 | -58dBm (50dBuV) | 21.300  | 14              | 9/10          | QPSK       |             |              |  |
| 2.1     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            |             |              |  |
| 2.2     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            |             |              |  |

Clicking under TS Analysis will display the information on the structure of the transport stream as shown in the picture below.

| Status  |               |                     |                         |             |                 |         |                 |               |            |             |         |  |
|---------|---------------|---------------------|-------------------------|-------------|-----------------|---------|-----------------|---------------|------------|-------------|---------|--|
| Channel | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level        | CNR(dB) | Link Margin(dB) | FEC Code Rate | Modulation | TS Analysis | Service |  |
| 1.1     | Locked        | 49.187              | 5.315                   | 0.000000000 | -61dBm (47dBuV) | 22.400  | 15              | 9/10          | QPSK       |             |         |  |
| 1.2     | Locked        | 49.187              | 5.315                   | 0.000000000 | -58dBm (50dBuV) | 21.000  | 14              | 9/10          | QPSK       |             |         |  |
| 2.1     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            |             |         |  |
| 2.2     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            |             |         |  |

| PID      | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service |
|----------|---------------|--------------|------------------------|------------|---------|
| 0x0(0)   | 0.003         | 0.006        | 0                      | PAT        |         |
| 0x11(17) | 0.001         | 0.002        | 0                      | SDT        |         |
| 0x20(32) | 0.003         | 0.006        | 0                      | PMT        | service |
| 0x21(33) | 5.202         | 10.576       | 0                      | PCR, Video | service |
| 0x31(49) | 0.105         | 0.213        | 0                      | Audio      | service |

Clicking under Service List will display information on the services included in the transport stream. This will display the list of services in a TS as shown in the picture below.

| OHR-DVBS2CI-01  |               |                     |                         |             |                 |         |                 |               |            |             |         |
|---|---------------|---------------------|-------------------------|-------------|-----------------|---------|-----------------|---------------|------------|-------------|---------|
| Status CI Biss Basic Setting Service Configuration IP Output System |               |                     |                         |             |                 |         |                 |               |            |             |         |
| Channel   | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level        | CNR(dB) | Link Margin(dB) | FEC Code Rate | Modulation | TS Analysis | Service |
| 1.1   | Locked        | 49.187              | 11.836                  | 0.000000000 | -62dBm (49dBμV) | 22.200  | 15              | 9/10          | QPSK       | 👁           | 🔍       |
| 1.2   | Locked        | 49.187              | 11.836                  | 0.000000000 | -59dBm (49dBμV) | 21.000  | 14              | 9/10          | QPSK       | 👁           | 🔍       |
| 2.1   | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            | 👁           |         |
| 2.2   | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            | 👁           |         |

Channel : 1.1

# Service  
1 [1] Program-1

Channel : 1.2

# Service  
1 [1] Program-1  
2 [16] TNN24  
3 [22] Nation TV  
4 [23] Workpoint TV  
5 [24] True4U  
6 [25] GMM25  
7 [26] MONO29  
8 [31] ONE HD

Channel : 2.1

# Service  
No Data

Channel : 2.2

# Service  
No Data

Clicking on the service name in the list will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.

| OHR-DVBS2CI-01                                       |               |                     |                         |             |                 |         |                 |               |            |             |         |
|--|---------------|---------------------|-------------------------|-------------|-----------------|---------|-----------------|---------------|------------|-------------|---------|
| Basic Setting Service Configuration IP Output System |               |                     |                         |             |                 |         |                 |               |            |             |         |
| Channel  | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level        | CNR(dB) | Link Margin(dB) | FEC Code Rate | Modulation | TS Analysis | Service |
| 1.1  | Locked        | 49.188              | 11.836                  | 0.000000000 | -62dBm (49dBμV) | 22.200  | 15              | 9/10          | QPSK       | 👁           | 🔍       |
| 1.2  | Locked        | 49.187              | 11.836                  | 0.000000000 | -59dBm (49dBμV) | 21.000  | 14              | 9/10          | QPSK       | 👁           | 🔍       |
| 2.1  | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            | 👁           |         |
| 2.2  | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0               | 1/2           |            | 👁           |         |

Channel : 1.1

# Service  
1 [1] Program-1

Channel : 1.2

# Service  
1 [1] Program-1  
2 [16] TNN24  
3 [22] Nation TV  
4 [23] Workpoint TV  
5 [24] True4U  
6 [25] GMM25  
7 [26] MONO29  
8 [31] ONE HD

Channel : 2.1

# Service  
No Data

Channel : 2.2

# Service  
No Data

[1] Program-1

| Type                      | PID       | Bitrate(Mbps) |
|---------------------------|-----------|---------------|
| PCR                       | 101(0x65) | 0.074         |
| PMT                       | 100(0x64) | 1.227         |
| StreamType:27-Video(H264) | 102(0x66) | 10.271        |
| StreamType:3-Audio        | 103(0x67) | 0.250         |

Close

### 3.3.3.2 Module CI

For the encrypted services received on OHR6-DVBS2CI-01 module receiver, CI slot is needed to decrypt and re-broadcast the services. The OHR6-DVBS2CI-01 has 2 CAM slots and can decrypt services depending on the capability of the CAM module and Smart Card. You can select the CAM Max Bit Rate from 48Mbps to 108Mbps in pull-down list depending on the total effective bitrate of services you want to decrypt at.

OHR-DVBS2CI-01

Status CI Biss Basic Setting Service Configuration IP Output System


CAM Max Bitrate: 72 Mbps CAM1 Auto Reset: Disable CAM2 Auto Reset: Disable

CAM1 (Not inserted)

CAM2 (Not inserted)

MMI Setting

Apply

Click the Apply button  on the right side to make the change takes effect.

### 3.3.3.3 Module Biss



|              |  |
|--------------|--|
| LNB 22KHz    | Off/22KHz                                |
| DiSEqC Level | 1.0/1.0+1.1/1.1/Manually Defined/Disable |
| DiSEqC Port  | 1/2/3/4                                  |

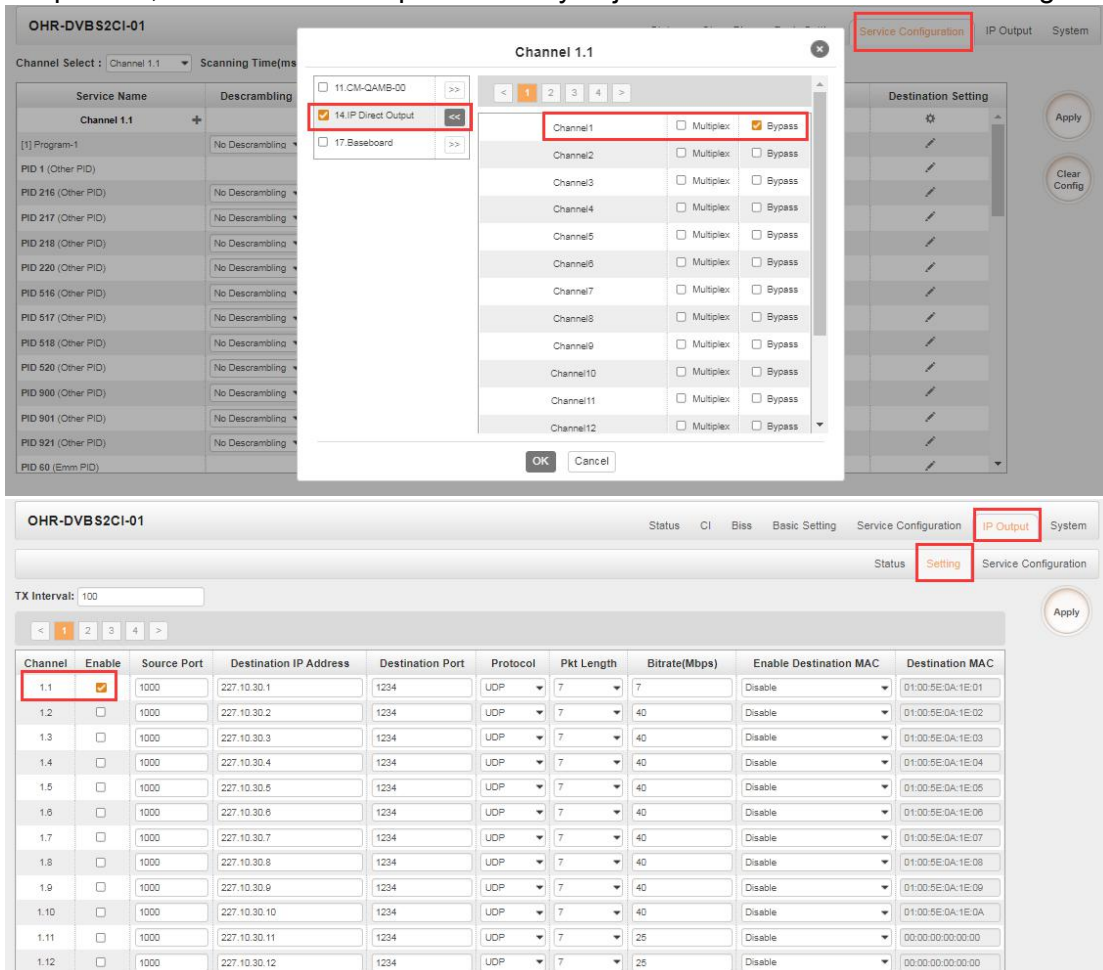



### 3.3.3.5 Service Configuration

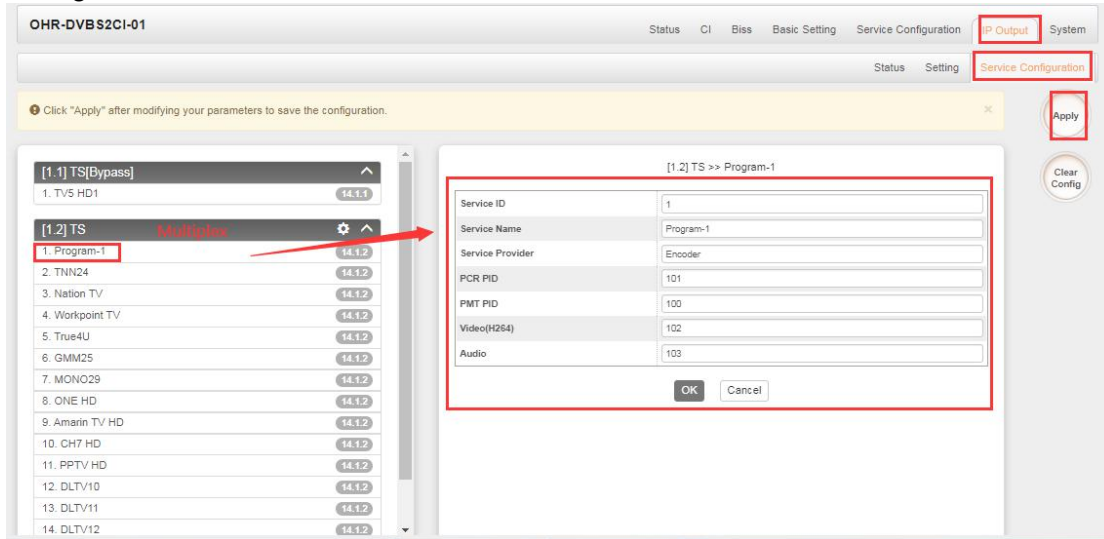
please refer to OHR6-DVBC-00 module section on page 34 to 35.

### 3.3.3.6 IP Output

If you chose IP Direct Output in Service Configuration, you should click Setting in IP Output first, and select the output channel you just selected in the Service Configuration.



Click Service Configuration. If you chose Multiplex in IP Output, you can change the information of TS stream. Click the Apply button  on the right side to make the change takes effect.



OHR-DVB S2CI-01

Status CI Biss Basic Setting Service Configuration **IP Output** System

Status Setting **Service Configuration**

Click "Apply" after modifying your parameters to save the configuration.

[1.1] TS[Bypass]

1. TV5 HD1 14.1.1

[1.2] TS **Multiplex**

1. Program-1 14.1.2

2. TNN24 14.1.2

3. Nation TV 14.1.2

4. Workpoint TV 14.1.2

5. True4U 14.1.2

6. GMM25 14.1.2

7. MONO29 14.1.2

8. ONE HD 14.1.2

9. Amarin TV HD 14.1.2

10. CH7 HD 14.1.2

11. PPTV HD 14.1.2

12. DLT V10 14.1.2

13. DLT V11 14.1.2

14. DLT V12 14.1.2

[1.2] TS >> Program-1

Service ID 1

Service Name Program-1

Service Provider Encoder

PCR PID 101


PMT PID 100

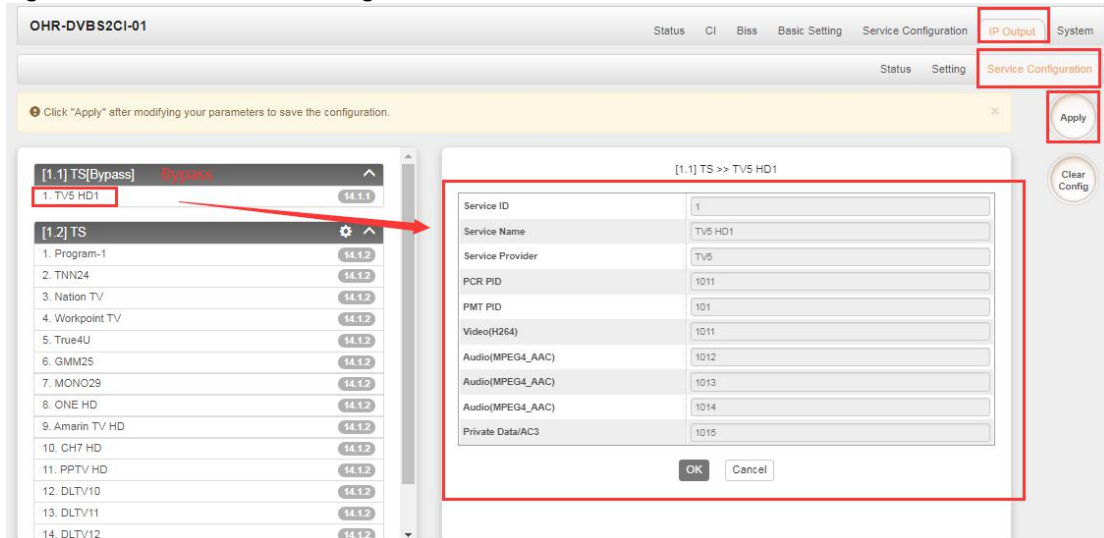
Video(H264) 102

Audio 103

OK Cancel

Apply Clear Config

If you chose Bypass in Output, you can't change it. Click the Apply button  on the right side to make the change takes effect.



OHR-DVB S2CI-01

Status CI Biss Basic Setting Service Configuration **IP Output** System

Status Setting **Service Configuration**

Click "Apply" after modifying your parameters to save the configuration.

[1.1] TS[Bypass] **Bypass**

1. TV5 HD1 14.1.1

[1.2] TS

1. Program-1 14.1.2

2. TNN24 14.1.2

3. Nation TV 14.1.2

4. Workpoint TV 14.1.2

5. True4U 14.1.2

6. GMM25 14.1.2

7. MONO29 14.1.2

8. ONE HD 14.1.2

9. Amarin TV HD 14.1.2

10. CH7 HD 14.1.2

11. PPTV HD 14.1.2

12. DLT V10 14.1.2

13. DLT V11 14.1.2

14. DLT V12 14.1.2

[1.1] TS >> TV5 HD1

Service ID 1

Service Name TV5 HD1

Service Provider TV5

PCR PID 1011

PMT PID 101

Video(H264) 1011

Audio(MPEG4\_AAC) 1012

Audio(MPEG4\_AAC) 1013

Audio(MPEG4\_AAC) 1014

Private Data/AC3 1015

OK Cancel

Apply Clear Config

Then click Status to check it out.



| OHR-DVBS2CI-01  |                    |                         |                     |         |             |              |
|---|--------------------|-------------------------|---------------------|---------|-------------|--------------|
| Status CI Biss Basic Setting Service Configuration IP Output System |                    |                         |                     |         |             |              |
| Status Setting Service Configuration                                |                    |                         |                     |         |             |              |
| Channel   | IP Address : Port  | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
| 1.1   | 227.10.30.1 : 1234 | 44.850                  | 44.186              | Normal  | 👁           | 📺            |
| 1.2   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.3   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.4   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.5   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.6   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.7   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.8   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.9   | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.10  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.11  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.12  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.13  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.14  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |
| 1.15  | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  | 👁           | 📺            |

### 3.3.3.7 System

| OHR-DVBS2CI-01    |  | Status                   | CI                                  | Biss | Basic Setting | Service Configuration | IP Output | System |  |  |  |  |  |  |  |  |  |  |  |
|-------------------|--|--------------------------|-------------------------------------|------|---------------|-----------------------|-----------|--------|--|--|--|--|--|--|--|--|--|--|--|
| Program Auto Scan |  | Enable                   | <input checked="" type="checkbox"/> | Set  |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
| License           |  | Product ID               |                                     |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
|                   |  | Import License           | Browse Upload                       |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
|                   |  | Export License           | Export                              |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
| SNMP MIB          |  | Export MIB               | Export                              |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
| Logs              |  | Open                     |                                     |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |
| Others            |  | Reboot Reset to Defaults |                                     |      |               |                       |           |        |  |  |  |  |  |  |  |  |  |  |  |

### 3.3.4 OHR6-DVBS2FTA-01/01A

OHR-DVBS2FTA-01 is a 4-channel DVB-S/S2 receiving module with 4RF connectors. The module supports internal signal pass through from one tuner to the others, while OHR-DVBS2FTA-01A is the combination of 2 OHR-DVBS2FTA-01 modules, it occupies 2 slots on the OmniHub 16 chassis and has an 8-channel DVBS-S2 receiving module with 8 RF connectors. S2X supports up to 64APSK



OHR-DVBS2FTA-01



OHR-DVBS2FTA-01A

OHR-DVBS2FTA has a similar Status interface to OHR-DVBS2CI. Differences between the 2 modules: 1) the number of received satellite signals (4/8 Satellite). 2) DVBS2CI

can decrypt services using CAM module and Smart Card, while the DVBS2FTA use BISS decryption.

| Channel | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | PER         | RF Level        | CNR(dB) | Link Margin(...) | FEC Code Rate | Modulation | TS Analy... | Service L |
|---------|---------------|---------------------|-------------------------|-------------|-----------------|---------|------------------|---------------|------------|-------------|-----------|
| 1.1     | Locked        | 130.159             | 7.500                   | 0.000000000 | -34dBm (74dBuV) | 24.000  | 5                | 11/15         | 64APSK     |             |           |
| 2.1     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0                | 1/2           |            |             |           |
| 3.1     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0                | 1/2           |            |             |           |
| 4.1     | Unlocked      | 0.000               | 0.000                   | 0.000000000 | -               | 0.000   | 0                | 1/2           |            |             |           |

| Channel | Satellite Frequency(MHz) | SymbolRate(KBaud) | LNB Frequency(MHz) | LNB Power | LNB 22KHz | DiSEqC Level | DiSEqC Port |   |
|---------|--------------------------|-------------------|--------------------|-----------|-----------|--------------|-------------|---|
| 1.1     | 3840                     | 9500              | 5150               | off       | off       | Disable      | 1           | F |
| 2.1     | 12750                    | 25000             | 10600              | off       | off       | Disable      | 1           | F |
| 3.1     | 12750                    | 25000             | 10600              | off       | off       | Disable      | 1           | F |
| 4.1     | 12750                    | 25000             | 10600              | off       | off       | Disable      | 1           | F |

Channel 1.1, 1.2, 1.3 and 1.4, 4 LNBS are powered independently.

| Name                      | Range       |
|---------------------------|-------------|
| Satellite Frequency (MHz) | 950~14500   |
| Symbol Rate (KBaud)       | 1000~45000  |
| LNB Frequency (MHz)       | 0~13550     |
| LNB Power                 | Off/13v/18v |
| LNB 22KHz                 | Off/22KHz   |

### 3.3.5 OHR6-8VSB-00

OHR6-8VSB-00 is a 4-channel 8VSB receiving module with 4 RF connectors. Picture below shows the front plate of the 8VSB module.



Module specification:

- 4 RF female connectors
- Frequency range: 50 – 860MHz
- Bandwidth: 6MHz
- Modulation: 8VSB
- Signal Level: -80dBm ~ -20dBm

#### 3.3.5.1 Module Status



Status page will display when you select the OHR6-8VSB-00 in the channel list. This shows the Channel Number, Locked Status, Total Bit Rate, Effective Bit Rate, TS Analysis and Service List for each 8VSB input stream. Once the channel is connected to the source and is set with the correct parameters. The status of the channel will display 'locked' and you can see the total bitrate and actual bitrate. Total Bit rate in Mbps shows the bitrate of receiving signals of each channel with LOCKED status, while the Effective Bit Rate in Mbps shows the actual bitrate of each receiving Channel. RF Level of the input signal will show you the level of each locked channel.

| Channel | Locked Status | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | RF Level | TS Analysis | Service List |
|---------|---------------|---------------------|-------------------------|----------|-------------|--------------|
| 1.1     | Unlocked      | 0.000               | 0.000                   | -        |             |              |
| 2.1     | Unlocked      | 0.000               | 0.000                   | -        |             |              |
| 3.1     | Unlocked      | 0.000               | 0.000                   | -        |             |              |
| 4.1     | Unlocked      | 0.000               | 0.000                   | -        |             |              |

Clicking the icon under TS Analysis will display the information on the structure of the transport stream as shown in the picture below.

Channel 1.1 TS Analysis Reset Counter

Search

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type  | Service    |
|-----------|---------------|--------------|------------------------|-------|------------|
| 0x33(51)  | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x34(52)  | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x35(53)  | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x36(54)  | 0.000         | 0.000        | 0                      | Audio | Program-01 |
| 0x64(100) | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x65(101) | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x66(102) | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x67(103) | 0.000         | 0.000        | 0                      | Audio | Program-01 |

Tip:

Clicking the icon under Service List will display information on the services included in the transport stream as shown in the picture below.

Service List

Channel : 1.1

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

Clicking on the service name in the list will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.

| Channel1.1 |               | Channel1.2 |               | Channel1.3 |                       | Channel1.4 |                           |
|------------|---------------|------------|---------------|------------|-----------------------|------------|---------------------------|
| #          | Service       | #          | Service       | #          | Service               | #          | Service                   |
| 1          | [302] CCTV 2  | 1          | [1] CNAI PAL  | 1          | [1] India News HARYAI | 1          | [1] td HD Phx Infonews Ct |
| 2          | [303] CCTV 7  | 2          | [2] CNAI NTSC | 2          | [2] India News RAJAS1 | 2          | [2] td HD Phx Chinese Ch  |
| 3          | [304] CCTV 10 | 3          | [1001] TVB8   | 3          | [3] India News        | 3          | [3] td HD Phx HK Channel  |
| 4          | [305] CCTV 11 | 4          | [1003] CETV   | 4          | [4] LTV               |            |                           |
| 5          | [306] CCTV 12 |            |               | 5          | [5] Delhi News        |            |                           |
| 6          | [307] CCTV 15 |            |               | 6          | [6] India News UP/UK  |            |                           |
|            |               |            |               | 7          | [7] India News MP     |            |                           |
|            |               |            |               | 8          | [8] NEWS X            |            |                           |

### 【302】CCTV 2

| PID  | Type                      | Bitrate(Mbps) |
|------|---------------------------|---------------|
| 8190 | PCR                       | 0.045         |
| 258  | PMT                       | 0.018         |
| 513  | StreamType:2-Video(MPEG2) | 5.198         |
| 660  | StreamType:4-Audio        | 0.262         |

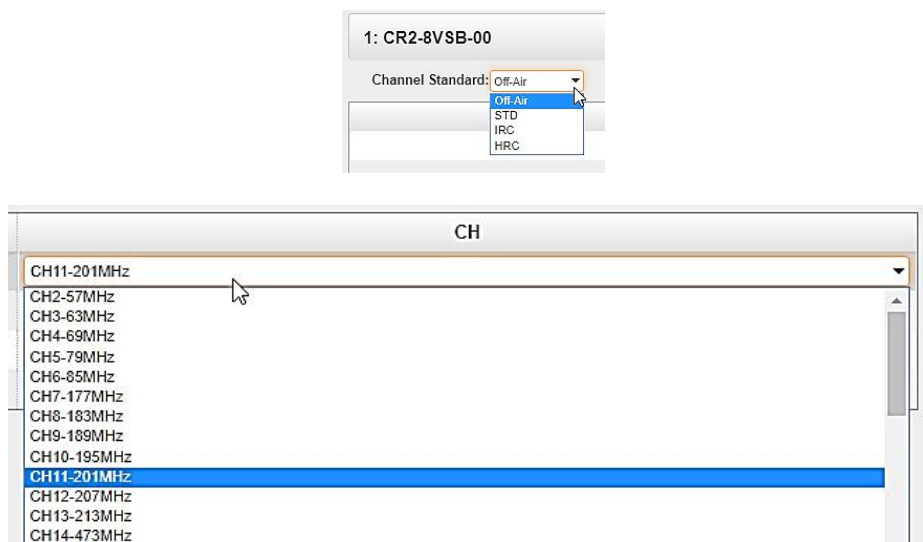
### 3.3.5.2 Module Settings

To make configuration changes in the context of the channel plan and the receiving frequency of a specific RF input, select the appropriate receiving module and then click on the **Settings** tab. The channel plan and frequency of a specific receiver can be selected using drop-down lists.

Table below presents supported channel plans.



| Channel Plan   | Frequency of RF Channels   |
|----------------|--|
| <b>Off-Air</b> | CH2 57MHz, CH3 63MHz, CH4 69MHz~CH67 791MHz, CH68797MHz, CH69 803MHz                       |
| <b>STD</b>     | CH2 57MHz, CH363MHz, CH4 69MHz~ CH133 849MHz,CH134855MHz, CH135 861MHz                     |
| <b>IRC</b>     | CH2 57MHz, CH3 63MHz, CH4 69MHz ~ CH133 849MHz,CH134, 855MHz, CH135 861MHz                 |
| <b>HRC</b>     | CH2 55.75MHz, CH3 61.75MHz, CH4 67.75MHz~ CH133847.75MHz, CH134 853.75MHz, CH135 859.75MHz |

| Channel Standard: Off-Air |             |
|---------------------------|-------------|
| Channel                   | CH          |
| 1.1                       | CH11-201MHz |
| 2.1                       | CH11-201MHz |
| 3.1                       | CH11-201MHz |
| 4.1                       | CH11-201MHz |



### 3.3.5.3 Modules Service Configuration

Service Configuration tab displays the configuration page where you can manage the received services and output them to their designated interface. Configuration steps for IP input and all receiving and encoding modules in OmniHub 6RFX are mostly the same. First, you need to scan the port of each TS with LOCKED signal status. Each port might be scanned automatically or need to be scanned manually one at a time when its source signal is replaced.

After scanning each channel, you can output each transport stream or service by clicking the icon  and  below “Destination Settings”. You can route the whole stream or a service/s from the input channel toward the available output channel (IP or RF). Two types of routing are possible

1. **Bypass mode.** In this mode, routes can only be done when outputting a whole input transport stream towards an output TS channel, this cannot be done when outputting a single service only. Bypass mode activation will not allow other services from other input TS to be mixed in the current TS output. Any attempts of routing other streams/services towards this channel will result in *“this channel won’t be available at this time”*.
2. **Multiplex mode** is used to create a new SPTS or MPTS. This mode allows the administrator to perform the following operations:
  - a. Route a single service towards an output channel to create SPTS.
  - b. Route services towards a single output channel to create MPTS.
  - c. Route service/s AND stream/s from multiple channels towards a single output channel to create MPTS.

Channel Select : Channel 1.1 Scanning Time(ms) : 1000 Program Scan

| Service Name       | Destination      | Destination Setting |
|--------------------|------------------|---------------------|
| Channel 1.1 +      | 1.CP-EAS-00[1.1] |                     |
| [1] Program0       |                  |                     |
| Channel 1.2 +      | 1.CP-EAS-00[1.1] |                     |
| [1] Program0       |                  |                     |
| PID 17 (Other PID) |                  |                     |
| PID 31 (Other PID) |                  |                     |
| Channel 1.3 +      | 1.CP-EAS-00[1.2] |                     |
| [1] Program0       |                  |                     |
| PID 16 (Other PID) |                  |                     |
| PID 17 (Other PID) |                  |                     |
| Channel 1.4 +      | 1.CP-EAS-00[1.2] |                     |
| [1] Program0       |                  |                     |
| PID 17 (Other PID) |                  |                     |

Apply Clear Config

Service Configuration page interface


| Destination                | Destination Settings |
|----------------------------|----------------------|
| Bypass or Multiplex Stream |                      |
|                            |                      |
| Multiplex a service        |                      |
|                            |                      |

To use **Bypass** or **multiplex mode on stream level**, click the icon . When a new window appears, select the output stream/channel where the stream will be bypassed or multiplexed.




|  |  |          |   |  |
|--|--|----------|---|--|
| <input checked="" type="checkbox"/> 3.OHM-QAMB-R01 |  | Channel1 | <input checked="" type="checkbox"/> Multiplex | <input checked="" type="checkbox"/> Bypass |
| <input type="checkbox"/> 16.OHM-OFDM-R01           |  | Channel2 | <input type="checkbox"/> Multiplex            | <input type="checkbox"/> Bypass            |
| <input type="checkbox"/> 17.Baseboard              |  | Channel3 | <input type="checkbox"/> Multiplex            | <input type="checkbox"/> Bypass            |
|  |  | Channel4 | <input type="checkbox"/> Multiplex            | <input type="checkbox"/> Bypass            |

To use **Multiplexing mode on service level** click on the pencil icon on the right side in the line with the proper service. Then select the output stream (channel) where the service will be multiplexed.

|  |  |          |   |
|--|--|----------|---|
| <input checked="" type="checkbox"/> 3.OHM-QAMB-R01 |  | Channel1 | <input checked="" type="checkbox"/> Multiplex |
| <input type="checkbox"/> 16.OHM-OFDM-R01           |  | Channel2 | <input type="checkbox"/> Multiplex            |
| <input type="checkbox"/> 17.Baseboard              |  | Channel3 | <input type="checkbox"/> Multiplex            |
|  |  | Channel4 | <input type="checkbox"/> Multiplex            |

Do not forget to click the Apply button  on the right side to make the change takes effect.

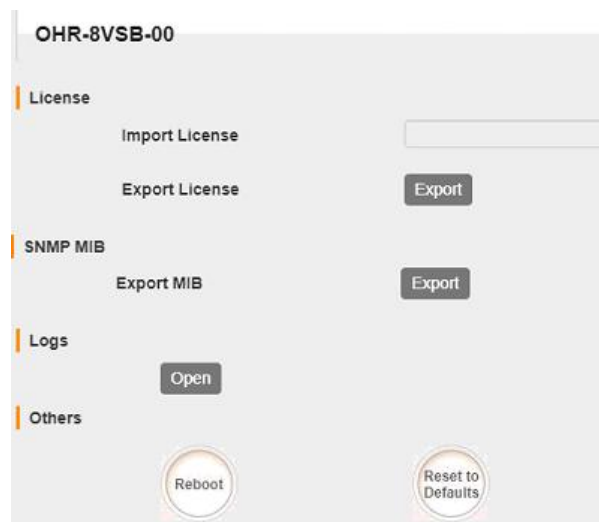
 To clear the whole routing table, click  button.

 There is a channel scan button   on top. Normally the input service list of each channel will show on this page, but when you change the input source, you should refresh the changed channels manually by selecting the channel and clicking **Channel Scan** button.

### 3.3.5.4 Modules System

**System** tab allows you to perform the following tasks:

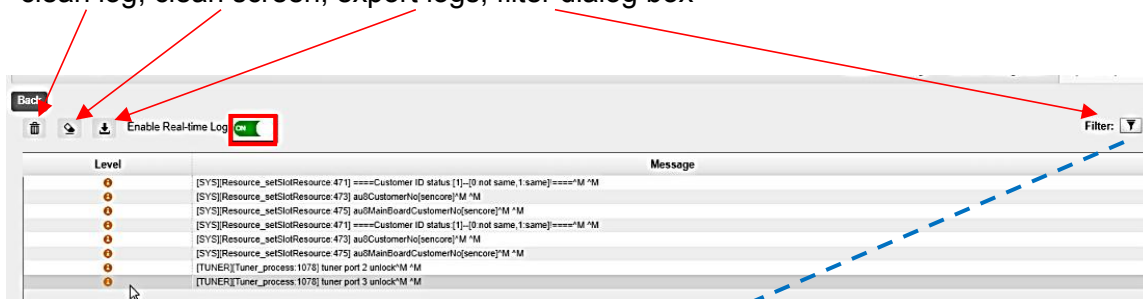
- Import / export license
- Log manages
- Reboot
- Factory Default



To open the log management menu, click on the **Open** button. The newly opened menu allows you to enable / disable logging.

After login is enabled, additional control buttons will be displayed:

- clean log, clean screen, export logs, filter dialog box



**Filter**

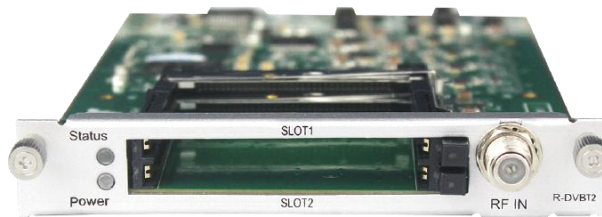
| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

**Module List**

| Module Name | Operation                           |
|-------------|-------------------------------------|
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |

### 3.3.6 OHR6-DVBT2CI-00

OHR6-DVBT2CI-00 is a 4-channel DVBT/T2 receiving and descrambling module with 1 RF female connector and 2 CI slots. It can receive signals via 4 RF channels simultaneously and support 2 CAM cards descrambling.




#### 3.3.6.1 Module Status


By selecting the OHR6-DVBT2CI-00 in the module list, you will be automatically be redirected to the status page of the module. It shows the Channel 1.1 to 1.4 that corresponds for the 4 input channels of the module. Locked Status of each channel shows the signals if these channels are locked or unlocked. If the signal is good, there will be values of Total Bitrate and Effective Bitrate.

| 15: CR-DVBT2-00   |               |                      |                          |                |             |              |
|---|---------------|----------------------|--------------------------|----------------|-------------|--------------|
| <div> <span>Status</span> <span>CI</span> <span>Settings</span> <span>Service Configuration</span> <span>System Operation</span> </div> |               |                      |                          |                |             |              |
| Channel   | Locked Status | Total Bit Rate(Mbps) | Effective Bit Rate(Mbps) | RF Level       | TS Analysis | Service List |
| 1.1   | Unlocked      | 0.000                | 0.000                    | 0dBm (108dBμV) |             |              |
| 1.2   | Unlocked      | 0.000                | 0.000                    | 0dBm (108dBμV) |             |              |
| 1.3   | Unlocked      | 0.000                | 0.000                    | 0dBm (108dBμV) |             |              |
| 1.4   | Unlocked      | 0.000                | 0.000                    | 0dBm (108dBμV) |             |              |

Total Bit rate in Mbps shows the receiving bitrate of each channel with the LOCKED status. Effective Bit Rate in Mbps which shows the actual bitrate of each receiving channel. RF Level of the input signal will show you the level of each locked channel.


Clicking  under the TS Analysis will display the information on the structure of the transport stream as shown in the picture below.

Channel 1.1 TS Analysis Reset Counter





Search 

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type  | Service    |
|-----------|---------------|--------------|------------------------|-------|------------|
| 0x33(51)  | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x34(52)  | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x35(53)  | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x36(54)  | 0.000         | 0.000        | 0                      | Audio | Program-01 |
| 0x64(100) | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x65(101) | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x66(102) | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x67(103) | 0.000         | 0.000        | 0                      | Audio | Program-01 |

Tip:

Clicking  under Service List will display information of the services included in the transport stream as shown in the picture below.

**Service List**

- 
- 
- 
- 

**Channel : 1.1**

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

Clicking on the service name under the service will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.

| Channel1.1 |               |
|------------|---------------|
| #          | Service       |
| 1          | [302] CCTV 2  |
| 2          | [303] CCTV 7  |
| 3          | [304] CCTV 10 |
| 4          | [305] CCTV 11 |
| 5          | [306] CCTV 12 |
| 6          | [307] CCTV 15 |

| Channel1.2 |               |
|------------|---------------|
| #          | Service       |
| 1          | [1] CNAI PAL  |
| 2          | [2] CNAI NTSC |
| 3          | [1001] TVB8   |
| 4          | [1003] CETV   |

| Channel1.3 |                       |
|------------|-----------------------|
| #          | Service               |
| 1          | [1] India News HARYAI |
| 2          | [2] India News RAJAS1 |
| 3          | [3] India News        |
| 4          | [4] LTV               |
| 5          | [5] Delhi News        |
| 6          | [6] India News UP/UK  |
| 7          | [7] India News MP     |
| 8          | [8] NEWS X            |

| Channel1.4 |                           |
|------------|---------------------------|
| #          | Service                   |
| 1          | [1] td HD Phx Infonews Ct |
| 2          | [2] td HD Phx Chinese Ch  |
| 3          | [3] td HD Phx HK Channel  |

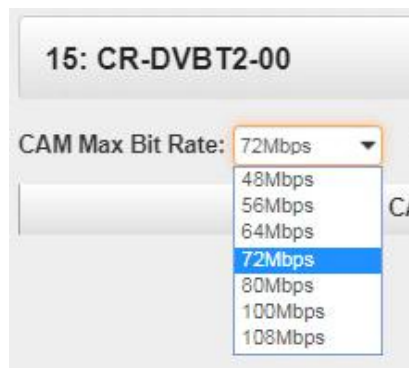




## 【302】 CCTV 2

| PID  | Type                      | Bitrate(Mbps) |
|------|---------------------------|---------------|
| 8190 | PCR                       | 0.045         |
| 258  | PMT                       | 0.018         |
| 513  | StreamType:2-Video(MPEG2) | 5.198         |
| 660  | StreamType:4-Audio        | 0.262         |

CAM Max Bit Rate (48Mbps to 108Mbps) can be chosen in a pull-down list.



### 3.3.6.2 Module Settings

To input parameters of the source you want to receive in OHR6-DVBT2-00, click Settings and input the Frequency and Bandwidth. The tables below show the range of Frequency and Bandwidth for the settings parameters.

| Name                   | Range        |
|------------------------|--------------|
| <b>Frequency (KHz)</b> | 48000~862000 |
| <b>Bandwidth (MHz)</b> | 6, 7, 8      |

| Channel | Frequency(KHz) | Bandwidth(MHz) |
|---------|----------------|----------------|
| 1.1     | 474000         | 8              |
| 1.2     | 482000         | 8              |
| 1.3     | 490000         | 8              |
| 1.4     | 498000         | 8              |

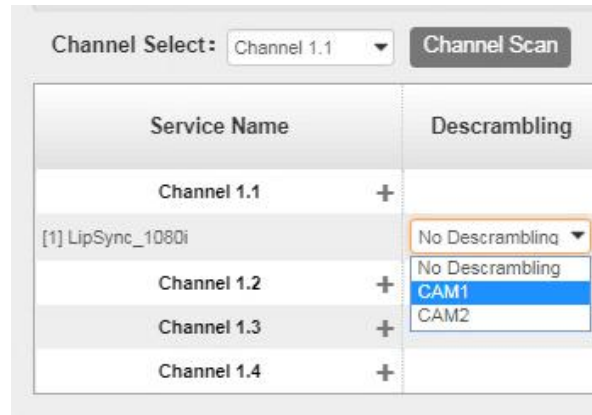
### 3.3.6.3 Module Service Configuration

For Service Configuration and System Operation please refer to OHR6-DVBC-00 module on page 33 to 34.

In Descrambling Settings there are CAM1, CAM2 and No Descrambling options. Select the correct CAM to decrypt the service and click Apply to make the change take effect or Clear Config button on the right side to clear all configuration.

\*You need to click **Apply** button after you configure service to CAM for descrambling, otherwise the descrambling configuration will not be saved.





### 3.4 Encoder Modules

#### 3.4.1 OHE6-HDMI-R01

OHE6-HDMI-R01 is a 4-channel HDMI input encoder which supports H.264 HD/SD or MPEG-2 SD encoding. The module supports MPEG1-L2, AAC and AC3 audio encoding.



##### 3.4.1.1 Module Status

Module Status for HDMI encoder shows the Bitrate of each port when an HDMI source is connected. Video resolution of the source video will also appear in the status. Other details in status are HDCP encryption, Video Bitrate and Audio Bitrate.

OHE-HDMI-R01

HDCCP turned on

| Program | Signal | HDCP Encryption | Input Video Resolution | Output Video Resolution | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | TS Analysis | Prog |
|---------|--------|-----------------|------------------------|-------------------------|---------------------|-------------------------|-------------|------|
| 1       | ✗      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 2       | ✗      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 3       | ✗      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 4       | ✗      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |

Clicking 👁 under the TS Analysis will display the information on the structure of the transport stream as shown in the picture below.

Channel 1.1 TS Analysis Reset Counter

Search

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type  | Service    |
|-----------|---------------|--------------|------------------------|-------|------------|
| 0x33(51)  | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x34(52)  | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x35(53)  | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x36(54)  | 0.000         | 0.000        | 0                      | Audio | Program-01 |
| 0x64(100) | 0.000         | 0.000        | 0                      | PMT   | Program-01 |
| 0x65(101) | 0.000         | 0.000        | 0                      | PCR   | Program-01 |
| 0x66(102) | 0.000         | 0.000        | 0                      | Video | Program-01 |
| 0x67(103) | 0.000         | 0.000        | 0                      | Audio | Program-01 |

Tip:

### 3.4.1.2 Module Basic Settings

Here you can modify the Video, Audio and Service Parameters. Click **Advanced Setting** to see all parameters you can modify and check specific parameters you want to set and see.

| Service Parameter | Range          | Service Parameter | Range   |
|-------------------|----------------|-------------------|---------|
| Program Name      | Length is 1~16 | Audio PID         | 32~8190 |
| Provider Name     | Length is 1~16 | PCR PID           | 32~8190 |
| Video PID         | 32~8190        | PMT PID           | 32~8190 |

OHE-HDMI-R01 Status **Basic Setting** Insertion Output System

⚙️ Advanced Setting >

| Program | Video Encoding Format | Video Bitrate(Kbps) |
|---------|-----------------------|---------------------|
| 1       | H.264                 | 8000                |
| 2       | H.264                 | 8000                |
| 3       | H.264                 | 8000                |
| 4       | H.264                 | 8000                |

Apply

HDCP Test Mode : ON HDCP test mode is for test purposes only. Please make sure that you have rights for the content!

⚙️ Advanced Setting ▾

**Video Parameter**

☒ Video Encoding Format ☐ Video Resolution ☒ Video Bitrate ☐ GOP Size

☐ Profile ☐ Video Aspect Ratio

**Audio Parameter**

☐ Audio Encoding Format ☐ Delay ☐ Audio Bitrate ☐ Volume

**Service Parameter**

☐ Program Name ☐ Video PID ☐ Audio PID ☐ PCR PID ☐ PMT PID

☐ Provider Name

**Shelter Parameter**

☐ X ☐ Y ☐ Width ☐ Height ☐ Color

☐ Shelter


| Video Parameter      | Range  | Video Parameter    | Range                 |
|----------------------|--|--------------------|-----------------------|
| Video Type           | H264   | Profile            | HIGH<br>MAIN          |
| Video Resolution     | Auto, 1920×1080_60i<br>1920×1080_50i<br>1920×1080_30p<br>1920×1080_25p<br>1080×720_60p<br>1080×720_50p<br>720×480_60i<br>720×576_50i | GOP Size           | 1~60                  |
| Video Bitrate (Kbps) | 600~12000  | Video Aspect Ratio | 16x9 (HD)<br>4x3 (SD) |

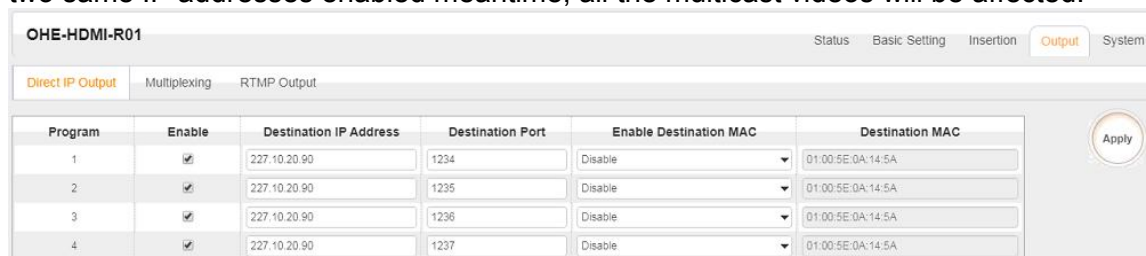
| Audio Encoder Details | Range                      | Audio Encoder Details | Range  |
|-----------------------|----------------------------|-----------------------|--|
| Audio Type            | MPEG1_Layer2<br>AC3<br>AAC | Volume (dB)           | -20~20   |
| Delays (ms)           | -2000~2000                 | Audio Bit rate (Kbps) | 32~192<br>(MPEG1_Layer2 /<br>AAC)<br>96~192<br>(AC3) |

| Shelter Parameters | Range          | Shelter Parameters | Range                          |
|--------------------|----------------|--------------------|--------------------------------|
| Shelter            | Enable/Disable | X                  | 0~1920 (Dual)                  |
| Y                  | 0~1080 (Dual)  | Width              | 2~1920 (Dual)                  |
| Height             | 2~1080 (Dual)  | Color              | White/Black/Blue/<br>Green/Red |

### 3.4.1.3 Output

OHE6-HDMI-R01 has RTMP output settings. Direct IP output is specifically for encoding a single program and outputting it directly to IP. This setting will not occupy multicast bandwidth baseboard.

 If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.




| Program | Enable                              | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1234             | Disable                | 01:00:5E:0A:14:5A |
| 2       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1235             | Disable                | 01:00:5E:0A:14:5A |
| 3       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1236             | Disable                | 01:00:5E:0A:14:5A |
| 4       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1237             | Disable                | 01:00:5E:0A:14:5A |

- **Destination IP Address and Destination Port:** for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC:** Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received

with the unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

To use **Multiplexing mode on service level**

1. Click on  (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output option depending on the modules inserted.
2. Select the correct Output and Channel you want to output the Service.
3. Check Multiplex for the Channel you want to output,. You can output multiple services in same channel or output same service in multiple channels.

Direct IP Output   Multiplexing   **RTMP Output**

| Program | Enable                   | FMS URL                  | Stream Name  | Port | Encrypt   | User Name | Password | Status          |
|---------|--------------------------|--------------------------|--------------|------|-----------|-----------|----------|-----------------|
| 1       | <input type="checkbox"/> | rtmp://172.16.1.254/live | live_stream0 | 1935 | Disable ▾ | admin     | admin    | Connection Fail |
| 2       | <input type="checkbox"/> | rtmp://172.16.1.254/live | live_stream1 | 1935 | Disable ▾ | admin     | admin    | Connection Fail |
| 3       | <input type="checkbox"/> | rtmp://172.16.1.254/live | live_stream2 | 1935 | Disable ▾ | admin     | admin    | Connection Fail |
| 4       | <input type="checkbox"/> | rtmp://172.16.1.254/live | live_stream3 | 1935 | Disable ▾ | admin     | admin    | Connection Fail |

To use RTMP output to configure streaming to any website capable of receiving RTMP, it is necessary to create a new stream instance on the intended receiving platform and enter the corresponding URL and port.

### 3.4.1.4 Insertion

You should choose a channel first before you set Insertion.

OHE-HDMI-R01

Status Basic Setting **Insertion** Output System

Program1

2

3

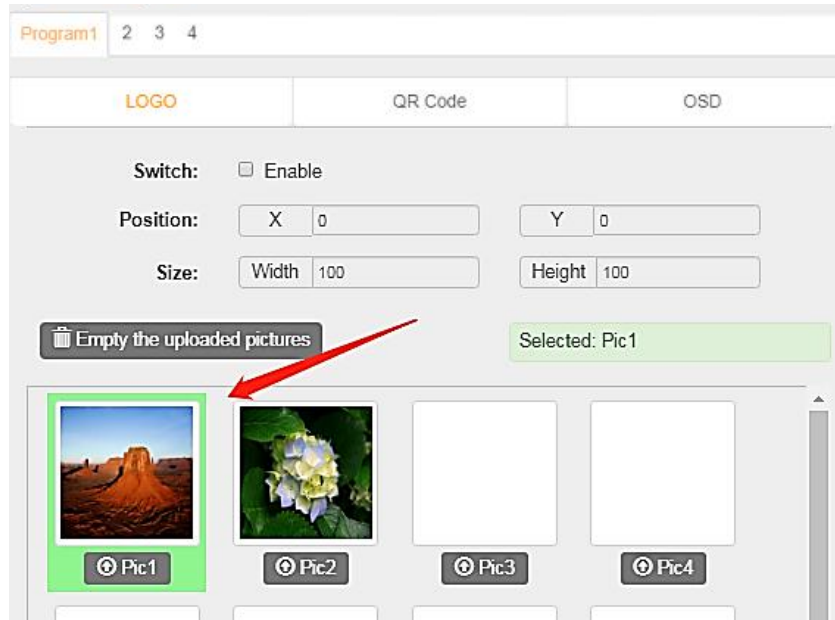
4

LOGO

QR Code

OSD

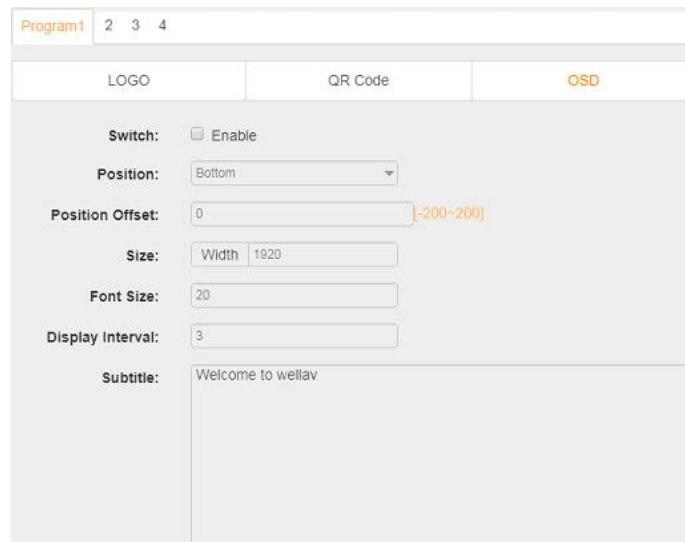
- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.



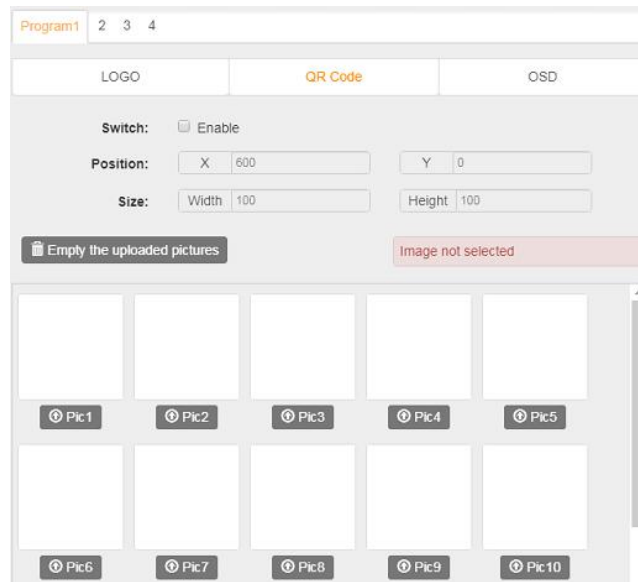
| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1920 (Dual) | Position Y     | 0~1080 (Dual) |
| Size width     | 0~1920 (Dual) | Size Height    | 0~1080 (Dual) |

- Subtitle setting:

| Subtitle Parameter | Range             | LOGO Parameter | Range         |
|--------------------|-------------------|----------------|---------------|
| Position           | Bottom/Top/Middle | Size width     | 0~1920 (Dual) |
| Size Height        | 0~1080 (Dual)     | Front          | 0~100         |



- **QR Code setting:** QR Code picture selection is same with LOGO setting.



| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1920 (Dual) | Position Y     | 0~1080 (Dual) |
| Size width     | 0~1920 (Dual) | Size Height    | 0~1080 (Dual) |

### 3.4.1.5 System

**System** tab allows you to perform the following tasks:

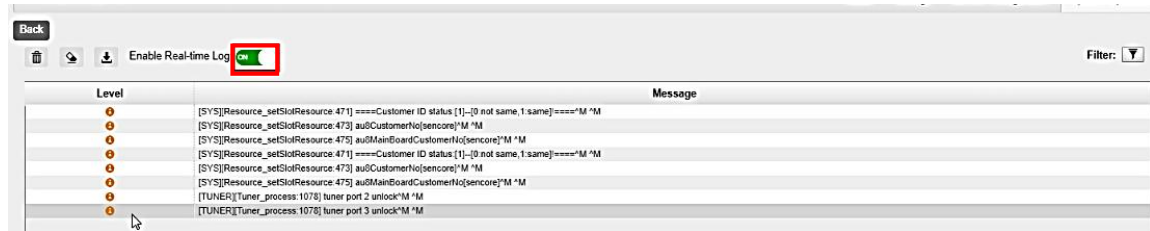
- Import / export license
- Log manages
- Reboot
- Factory Default



To open the log management menu, click on the **Open** button. The newly opened menu allows you to enable / disable logging.

After login is enabled, additional control buttons will be displayed:

- clean log, clean screen, export logs, filter dialog box



### Filter

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

| Module List |                                     |
|-------------|-------------------------------------|
| Module Name | Operation                           |
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |

## 3.4.2 OHE6-HDMI-02

OHE6-HDMI-02 is a 2-channel HDMI encoder which supports H.264 HD/SD or MPEG-2 HD/SD encoding with 2-channel RCA for CC input. The module supports MPEG1-L2, AAC and AC3 audio encoding.



### 3.4.2.1 Module Status

Module Status for the HDMI encoder shows the Bitrate of each port when an HDMI source is connected. The Status for OHE6-HDMI-02 is the same with OHE6-HDMI-00. The differences are the number of channels shown in the status and some other parameters for example, OHE6-HDMI-00 doesn't have Audio2 Bitrate and the input/output video resolution.

| OHE-HDMI-02     |        |                 |                        |                         |                     |                      |                      |
|-----------------|--------|-----------------|------------------------|-------------------------|---------------------|----------------------|----------------------|
|                 |        |                 |                        | Status                  | Basic Setting       | Output               | EAS Setting          |
| HDCP turned off |        |                 |                        |                         |                     |                      |                      |
| Program         | Signal | HDCP Encryption | Input Video Resolution | Output Video Resolution | Video Bitrate(Mbps) | Audio1 Bitrate(Mbps) | Audio2 Bitrate(Mbps) |
| 1               | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                | off                  |
| 2               | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                | off                  |

### 3.4.2.2 Module Basic Settings

Click **Advanced Setting** to see all parameters you can modify and check specific parameters you want to set and see. Click the **Apply** button on the right side to make the change take effect.

OHE-HDMI-02

Status Basic Setting Output EAS Setting System

Basic Parameters Advance Parameters

Advanced Setting >

| Program | Input Source Type | Video Encoding Format | Video Bitrate(Kbps) |
|---------|-------------------|-----------------------|---------------------|
| 1       | HDMI              | MPEG2                 | 10000               |
| 2       | HDMI              | MPEG2                 | 10000               |

HDCP Test Mode : ☒ ON ⓘ HDCP test mode is for test purposes only. Please make sure that you have rights for the content!

Apply

Advanced Setting ▾

Apply

**Video Parameter** ☐

☒ Video Encoding Format ☐ Video Resolution ☒ Video Bitrate ☐ Video Mode

☐ GOP Structure ☐ GOP Size ☐ Closed Caption ☐ Profile

☐ Level ☐ Video Aspect Ratio

**Audio Parameter** ☐

☐ Audio Source ☐ Audio Encoding Format ☐ AAC Format ☐ Audio Bitrate

☐ Volume

**Service Parameter** ☐

☐ Video PID ☐ Audio PID ☐ PCR PID ☐ PMT PID

☐ Program Name ☐ Provider Name

| Video Parameter       | Range  | Video Parameter | Range  |
|-----------------------|--|-----------------|--|
| Video Encoding Format | H264, MPEG2  | GOP Size        | 12~48  |
| Video Resolution      | Auto,<br>1920×1080_60i ,<br>1920×1080_50i ,<br>1920×1080_30p ,<br>1920×1080_25p ,<br>1080×720_60p ,<br>1080×720_50p ,<br>720×480_60i , | Level           | Level_3.0<br>Level_3.1<br>Level_3.2<br>Level_4.0<br>Level_4.1<br>Level_4.2 |



|                             |                 |                           |                      |
|-----------------------------|-----------------|---------------------------|----------------------|
|                             | 720×576_50i     |                           |                      |
| <b>Video Bitrate (Kbps)</b> | 100 and 18000   | <b>Profile</b>            | High, Main, Baseline |
| <b>Video Mode</b>           | CBR             | <b>Closed Caption</b>     | Enable, Disable      |
| <b>GOP Structure</b>        | IBBP, IPPP, IBP | <b>Video Aspect Ratio</b> | Auto<br>16x9<br>4x3  |

| Audio Encoder Details        | Range   | Audio Encoder Details       | Range  |
|------------------------------|---|-----------------------------|--|
| <b>Audio Encoding Format</b> | AC3<br>AC3_Passthrough<br>MPEG1_Layer2<br>MPEG2_AAC<br>MPEG4_AAC<br>AAC_HE_V2 | <b>Audio Bitrate (Kbps)</b> | 128~384 (AC3)<br>64~384 (MPEG1_Layer2)<br>64~384 (MPEG2_AAC/<br>MPEG4_AAC)<br>32~384 (AAC_HE_V2) |
| <b>Audio Source</b>          | HDMI  | <b>Volume (dB)</b>          | 0~8  |
| <b>AAC Format</b>            | ADTS, LATM  |                             |  |

| Service Parameter | Range               | Service Parameter | Range   |
|-------------------|---------------------|-------------------|---------|
| Program Name      | String between 1~31 | Audio PID         | 32~8190 |
| Provider Name     | String between 0~31 | PCR PID           | 32~8190 |
| Video PID         | 32~8190             | PMT PID           | 32~8190 |

The OHE6-HDMI-02 module supports two sets of audio and video input. Each set includes 1 HDMI port/1 component port and 1 analog port. It supports dual audio encoding per channel. Dual audio all come from HDMI input with the same content and the encoding format can be the same or different.

### 3.4.2.3 Module Output

Direct IP output is specifically for encoding a single program and outputting it directly to IP. This setting will not occupy multicast bandwidth of the baseboard.



If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.

OHE-HDMI-02

Status Basic Setting **Output** EAS Setting System

Direct IP Output

Multiplexing


| Program | Enable                              | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1234             | Disable                | 00:00:00:00:00:00 |
| 2       | <input type="checkbox"/>            | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |

Apply

| Program | Enable                   | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|--------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input type="checkbox"/> | 227.10.20.90           | 1234             | Disable                | 00:00:00:00:00:00 |
| 2       | <input type="checkbox"/> | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |

- **Destination IP Address** and **Destination Port**: for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC**: Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received by with the unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

To use **Multiplexing mode on service level**

1. Click on  (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

### 3.4.2.4 EAS Settings

When the EAS source is triggered, the Audio and Video from the encoder will be replaced by the Audio and Video from the EAS module.

On this page, you need to input the EAS Source Multicast Address, Command port and Data port. This information can be seen on the EAS page.

|                               |              |              |               |   |            |      |
|-------------------------------|--------------|--------------|---------------|---|------------|------|
| EAS Source Multicast Address: |              | 227.10.50.60 | Command Port: | 1235  | Data Port: | 1234 |
| Program                       | Program Name |              | Status        | EAS Override: <input checked="" type="checkbox"/> |            |      |
| 1                             | Program-1    |              | Not Paved     | <input checked="" type="checkbox"/>               |            |      |
| 2                             | Program-2    |              | Not Paved     | <input checked="" type="checkbox"/>               |            |      |

### 3.4.2.5 System

**System** tab allows you to perform the following tasks:

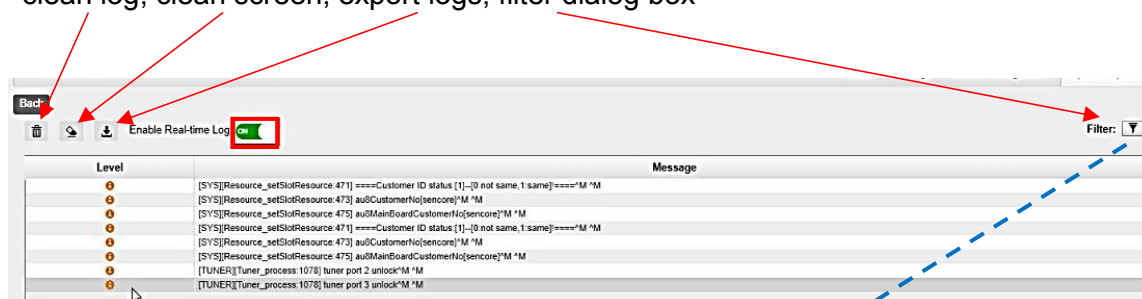
- Import / export license
- Log manages
- Reboot
- Factory Default



To open the log management menu, click on the **Open** button. The newly opened menu allows you to enable / disable logging.

After login is enabled, additional control buttons will be displayed:

- clean log, clean screen, export logs, filter dialog box



Filter

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

| Module List |                                     |
|-------------|-------------------------------------|
| Module Name | Operation                           |
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |

### 3.4.3 OHE6-HDMI-02C


OHE6-HDMI-02C is a 2-channel HDMI or component HD encoder. It supports H.264 / MPEG-2 HD/SD, MPEG1L2, AAC (optional), AC3 (optional) audio, CC subtitle and analog audio input.



#### 3.4.3.1 Module Status

Module Status for HDMI-02C encoder shows the Bitrate of each port when an HDMI source is connected. Video resolution of the source video will also appear on the status.



Clicking on the  button will display information on the structure of the transport stream. This will show more details about the Service in the channel depending on the parameters you set on the Module Setting.

| HDCP turned off |        |                 |                        |                         |                     |                      |                      |
|-----------------|--------|-----------------|------------------------|-------------------------|---------------------|----------------------|----------------------|
| Program         | Signal | HDCP Encryption | Input Video Resolution | Output Video Resolution | Video Bitrate(Mbps) | Audio1 Bitrate(Mbps) | Audio2 Bitrate(Mbps) |
| 1               | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                | off                  |
| 2               | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                | off                  |

### 3.4.3.2 Module Basic Settings

In module Setting, there are Basic and Advanced parameters.

In Basic Parameters, here you can edit or modify Video parameters (resolution, GOP, etc.), audio parameters (bitrate, volume, etc.) and service parameters (PID of Video, audio, PMT etc.)

Click **Advanced Setting** to see all parameters you can modify and check specific parameters you want to set and see. Click the Apply button on the right side to make the changes take effect.

The screenshot shows the 'Advanced Setting' tab selected. It contains three main sections:

- Video Parameter**: Includes Video Encoding Format (checked), Video Resolution, Video Bitrate (checked), Video Mode, GOP Structure, GOP Size, Closed Caption, Profile, Level, and Video Aspect Ratio.
- Audio Parameter**: Includes Audio Source, Audio Encoding Format, AAC Format, Audio Bitrate, and Volume.
- Service Parameter**: Includes Video PID, Audio PID, PCR PID, PMT PID, Program Name, and Provider Name.

Click **Advanced Setting** in the line to set encoding parameters.

| Video Parameter       | Range   | Video Parameter | Range  |
|-----------------------|---|-----------------|--|
| Video Encoding Format | H264, MPEG2   | GOP Size        | 12~48  |
| Video Resolution      | Auto,<br>1920×1080_60i ,<br>1920×1080_50i ,<br>1920×1080_30p ,<br>1920×1080_25p ,<br>1080×720_60p ,<br>1080×720_50p ,<br>720×480_60i ,<br>720×576_50i | Level           | Level_3.0<br>Level_3.1<br>Level_3.2<br>Level_4.0<br>Level_4.1<br>Level_4.2 |
| Video Bitrate (Kbps)  | 100 and 18000   | Profile         | High, Main, Baseline   |

|                      |                 |                           |                     |
|----------------------|-----------------|---------------------------|---------------------|
| <b>Video Mode</b>    | CBR             | <b>Closed Caption</b>     | Enable, Disable     |
| <b>GOP Structure</b> | IBBP, IPPP, IBP | <b>Video Aspect Ratio</b> | Auto<br>16x9<br>4x3 |

| <b>Audio Encoder Details</b> | <b>Range</b>  | <b>Audio Encoder Details</b> | <b>Range</b>  |
|------------------------------|---|------------------------------|---|
| <b>Audio Encoding Format</b> | AC3<br>AC3_Passthrough<br>MPEG1_Layer2<br>MPEG2_AAC<br>MPEG4_AAC<br>AAC_HE_V2 | <b>Audio Bitrate (Kbps)</b>  | 128~384 (AC3)<br>64~384<br>(MPEG1_Layer2)<br>64~384<br>(MPEG2_AAC/<br>MPEG4_AAC)<br>32~384<br>(AAC_HE_V2) |
| <b>Audio Source</b>          | HDMI, Analog  | <b>Volume (dB)</b>           | 0~8   |
| <b>AAC Format</b>            | ADTS, LATM  |                              |   |

| <b>Service Parameter</b> | <b>Range</b>        | <b>Service Parameter</b> | <b>Range</b> |
|--------------------------|---------------------|--------------------------|--------------|
| Program Name             | String between 1~31 | Audio PID                | 32~8190      |
| Provider Name            | String between 0~31 | PCR PID                  | 32~8190      |
| Video PID                | 32~8190             | PMT PID                  | 32~8190      |

The OHE6-HDMI-02C module supports two sets of audio and video input in total. Each set includes 1 HDMI port/1 component port and 1 analog port.

**If the video comes from HDMI, there are three options for encoding dual audio:**

1. One audio comes from HDMI and the other comes from analog; the encoding format can be the same or different.
2. Dual audio all come from HDMI with the same content and the encoding format can be the same or different.
3. Dual audio all come from the analog input with the same content and the encoding format can be the same or different.

**If the video comes from the component, there is only one choice for encoding dual audio:**

Dual audio all come from the analog input with the same content and the encoding format can be the same or different.

### 3.4.3.3 IP Output

This feature is specifically for encoding a single program and outputting it directly to IP. It will not occupy multicast bandwidth of the baseboard.




If you want to use IP output channel on the encoder module and the baseboard IP module at the same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.





- **Destination IP Address** and **Destination Port**: for multicast IP addresses or unicast IP addresses and ports.

- **Enable Destination MAC:** Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received using unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

| Direct IP Output |                          | Multiplexing           |                  |                        |                   |
|------------------|--------------------------|------------------------|------------------|------------------------|-------------------|
| Program          | Enable                   | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
| 1                | <input type="checkbox"/> | 227.10.20.90           | 1234             | Disable                | 00:00:00:00:00:00 |
| 2                | <input type="checkbox"/> | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |

To use **Multiplexing mode on service level**:

1. Click on  (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

| Direct IP Output |                | Multiplexing |   |
|------------------|----------------|--------------|---|
| #                | Service Name   | Destination  | Destination Setting   |
| 1                | [1] Program-01 |              |    |
| 2                | [1] Program-02 |              |    |
| 3                | [1] Program-03 |              |   |
| 4                | [1] Program-04 |              |  |

### 3.4.3.4 EAS Settings

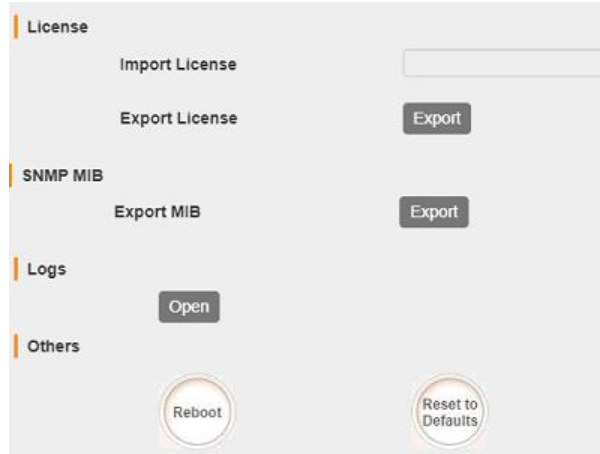
When the EAS source is triggered, the Audio and Video from the encoder will be replaced by the Audio and Video from the EAS module.

| EAS Source Multicast Address: 235.1.1.100 |              | Command Port: 10000 | Data Port: 10001                                  |
|---|--------------|---------------------|---|
| Program                                   | Program Name | Status              | EAS Override: <input checked="" type="checkbox"/> |
| 1   | Program-1    | Not Paved           | <input checked="" type="checkbox"/>               |
| 2   | Program-2    | Not Paved           | <input checked="" type="checkbox"/>               |

### 3.4.3.5 System Operation

**System** tab allows you to perform the following tasks:

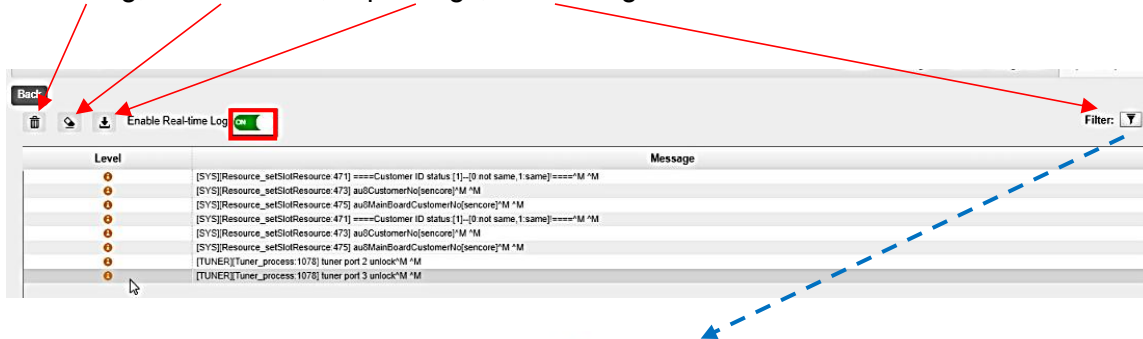
- Import / export license
- Log manages
- Reboot
- Factory Default



To open the log management menu, click on the **Open** button. The newly opened menu allows you to enable / disable logging.

After login is enabled, additional control buttons will be displayed:

- clean log, clean screen, export logs, filter dialog box



Filter

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

| Module List |                                     |
|-------------|-------------------------------------|
| Module Name | Operation                           |
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |

### 3.4.4 OHE6-HDMI-05/05A

OHE6-HDMI-05/05A module is a 4/8-channel HDMI encoding module that supports H.264. This supports AC3 and AAC via license and supports OSD Subtitle, logo picture

and QR code overlay. OHE6-HDMI-05 occupies 1 slot in the chassis and OHE6-HDMI-05A occupies 2 slots in OmniHub 6RFX chassis.



### 3.4.4.1 Module Status

Like other Hdmi encoder module. The Status of OHE6-HDMI-05/05A shows the Bitrate, input and output Resolution, TS analysis and Service List on each channel as shown in the image below.

| OHE-HDMI-05A   |        |                 |                        |                         |                     |                         |             |      |
|--|--------|-----------------|------------------------|-------------------------|---------------------|-------------------------|-------------|------|
| <div> <div>Status</div> <div>Basic Setting</div> <div>Insertion</div> <div>Output</div> <div>System</div> </div> |        |                 |                        |                         |                     |                         |             |      |
| HDCP turned on   |        |                 |                        |                         |                     |                         |             |      |
| Program  | Signal | HDCP Encryption | Input Video Resolution | Output Video Resolution | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | TS Analysis | Prog |
| 1  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 2  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 3  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 4  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 5  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 6  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 7  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |
| 8  | ✖      | Unencrypted     | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Pro  |

### 3.4.4.2 Module Basic Settings

This page allows you to modify the Video, Audio and Service Parameters. Click **Advanced Settings** to see all parameters you can modify and check specific parameters you want to set and see. Click **Apply** on the right side to make the change take effect.



OHE-HDMI-05A

Status Basic Setting Insertion Output System

Advanced Setting >

| Program | Video Encoding Format | Video Bitrate(Kbps) |
|---------|-----------------------|---------------------|
| 1       | H.264                 | 8000                |
| 2       | H.264                 | 8000                |
| 3       | H.264                 | 8000                |
| 4       | H.265                 | 5000                |
| 5       | H.264                 | 8000                |
| 6       | H.264                 | 8000                |
| 7       | H.264                 | 8000                |
| 8       | H.264                 | 8000                |

Apply

HDCP Test Mode : ☒ ON HDCP test mode is for test purposes only. Please make sure that you have rights for the content!

### 3.4.4.3 Module Insertion Settings

You should choose a channel first before you set Insertion.

OHE-HDMI-05A

Status Basic Setting **Insertion** Output System

Program1 2 3 4 5 6 7 8

LOGO QR Code OSD

- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.

Program1 2 3 4

LOGO QR Code OSD

Switch: ☐ Enable

Position: X 0 Y 0

Size: Width 100 Height 100

Empty the uploaded pictures

Selected: Pic1

Pic1 Pic2 Pic3 Pic4

| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1920 (Dual) | Position Y     | 0~1080 (Dual) |
| Size width     | 0~1920 (Dual) | Size Height    | 0~1080 (Dual) |

- Subtitle setting:

| Subtitle Parameter | Range             | LOGO Parameter | Range         |
|--------------------|-------------------|----------------|---------------|
| Position           | Bottom/Top/Middle | Size width     | 0~1920 (Dual) |
| Size Height        | 0~1080 (Dual)     | Front          | 0~100         |

- QR Code setting: QR Code picture selection is same to LOGO setting.

| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1920 (Dual) | Position Y     | 0~1080 (Dual) |
| Size width     | 0~1920 (Dual) | Size Height    | 0~1080 (Dual) |

### 3.4.4.4 Module IP Output

This feature is specifically for encoding a single program and outputting directly to IP. It will not occupy multicast bandwidth of baseboard.



If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.

OHE-HDMI-05A Status Basic Setting Insertion **Output** System

**Direct IP Output** Multiplexing

| Program | Enable                              | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input type="checkbox"/>            | 227.20.20.95           | 1234             | Disable                | 01:00:5E:14:14:5F |
| 2       | <input type="checkbox"/>            | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |
| 3       | <input type="checkbox"/>            | 227.10.20.90           | 1236             | Disable                | 00:00:00:00:00:00 |
| 4       | <input checked="" type="checkbox"/> | 227.10.20.90           | 1237             | Disable                | 01:00:5E:0A:14:5A |
| 5       | <input type="checkbox"/>            | 227.10.20.90           | 1238             | Disable                | 00:00:00:00:00:00 |
| 6       | <input type="checkbox"/>            | 227.10.20.90           | 1239             | Disable                | 00:00:00:00:00:00 |
| 7       | <input type="checkbox"/>            | 227.10.20.90           | 1240             | Disable                | 00:00:00:00:00:00 |
| 8       | <input type="checkbox"/>            | 227.10.20.90           | 1241             | Disable                | 00:00:00:00:00:00 |

Apply

- **Destination IP Address and Destination Port:** for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC:** Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received with using unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

Direct IP Output **Multiplexing**

ⓘ There are unapplied settings, please click the apply button to apply your settings!

| Program | Program Name | Destination         | Destination Setting |
|---------|--------------|---------------------|---------------------|
| 1       | Program-01   | 3.OHM-OFDM-R01[1.1] |                     |
| 2       | Program-02   |                     |                     |
| 3       | Program-03   |                     |                     |
| 4       | Program-04   |                     |                     |

Apply

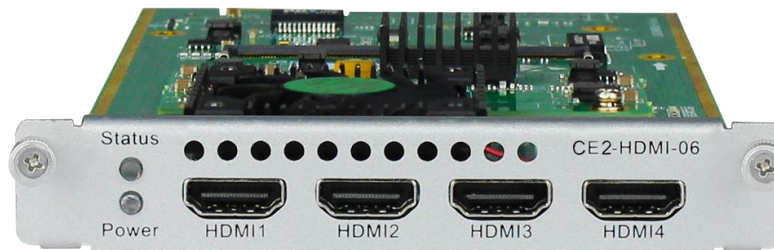
Clear Config

To use **Multiplexing mode on service level:**

1. Click on (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

### 3.4.5 OHE-HDMI-06

OHE-HDMI-06 module is a 4-channel HDMI high-definition encoding board, support H.264 HD/SD, support B frame, MPEG1L2 (support), AAC (optional), AC3 (optional), support superimposed OSD subtitles, logo, two-dimensional Code. H.265 supports up to 4 channels of 1080@p60 input and output; H.264 supports up to 4 channels of 1080@i50/60 input and 4 channels of 1080@p25/30 output. OHE-HDMI-06 occupies 1 slot in OmniHub 16 chassis.



#### 3.4.5.1 Module Status

Like other Hdmi encoder module. The Status of OHE-HDMI-06 shows the Bitrate, input and output Resolution, TS analysis and Service List and Program Name on each channel as shown in the image below.

| OHE-HDMI-06 |        |  |                        |                         |                     |                         |             |              |
|-------------|--------|--|------------------------|-------------------------|---------------------|-------------------------|-------------|--------------|
|             |        | <a href="#">Status</a> <a href="#">Basic Setting</a> <a href="#">Insertion</a> <a href="#">Output</a> <a href="#">System</a> |                        |                         |                     |                         |             |              |
| Program     | Signal | HDCP Encryption  | Input Video Resolution | Output Video Resolution | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | TS Analysis | Program Name |
| 1           | ✓      | Unencrypted  | 1920x1080_60p          | 1920x1080_30p           | 0.000               | 0.000                   | 👁           | Sencore      |
| 2           | ✗      | Unencrypted  | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Program-02   |
| 3           | ✗      | Unencrypted  | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Program-03   |
| 4           | ✗      | Unencrypted  | No_Video               | No_Video                | 0.000               | 0.000                   | 👁           | Program-04   |

#### 3.4.5.2 Module Basic Settings

This page allows you to modify the Video, Audio and Service Parameters. Click **Advanced Settings** to see all parameters you can modify and check specific parameters you want to set and see. Click the **Apply** button on the right side to make the change take effect.

| Program | Video Encoding Format | Video Bitrate(Kbps) | Program Name |
|---------|-----------------------|---------------------|--------------|
| 1       | H.264                 | 8000                | Sencore      |
| 2       | H.264                 | 8000                | Program-02   |
| 3       | H.264                 | 8000                | Program-03   |
| 4       | H.264                 | 8000                | Program-04   |

| Video Encode Settings |   | Range | Video Encode Settings |                | Range |
|-----------------------|---|-------|-----------------------|----------------|-------|
| Video Type            | H.264 , H.265   |       | Video PID             | 32~8190        |       |
| Video Bitrate (Kbps)  | 600~12000   |       | PCR PID               | 32~8190        |       |
| GOP Structure         | IPPP/IBBP   |       | PMT PID               | 32~8190        |       |
| Video Resolution      | Auto ,<br><br>Manual ( <b>Horizontal Pixels:</b> 160~1920, <b>Vertical Pixels:</b> 120~1080, <b>Framerate:</b> 24~60, <b>Scan Type:</b> Progressive ) |       | Program Name          | Length is 1~31 |       |
| Video Aspect Ratio    | Automatic , 16×9 (SD) , 4×3 (SD)  |       | Provider Name         | Length is 0~31 |       |
| Profile               | MAIN , HIGH   |       |                       |                |       |

### 3.4.5.3 Module Insertion Settings

You should choose a channel first before you set Insertion.

- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.

Program1 2 3 4

LOGO QR Code OSD

Enable: ☒ Yes ☐ No

Position: X 28 Y 522

Size: Width 186 Height 174

Logo Selection: Pic1

Upload Delete Selected Pictures Delete All Pictures

Pic1

| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1092 (Dual) | Position Y     | 0~546 (Dual)  |
| Size width     | 0~1080 (Dual) | Size Height    | 0~1080 (Dual) |

- Subtitle setting:

| Subtitle Parameter | Range         | LOGO Parameter | Range                                     |
|--------------------|---------------|----------------|---|
| Position X         | 0~1080(Dual)  | Size width     | 0~1920 (Dual)                             |
| Position Y         | 0~1080(Dual)  | Front          | 0~100                                     |
| Size Height        | 0~1080 (Dual) | Front Color    | White/Black/<br>Blue/Green/<br>Red/Yellow |

Program1 2 3 4

LOGO QR Code **OSD**

Enable: ☒ Yes ☐ No

Position: X 240 Y 10

Horizontal Pixel: 836 [0-960]

Font Color: Green

Font Size: 100

Subtitle: Welcome to Sencore!  
[0~1024]

- **QR Code setting:** QR Code picture selection is same to LOGO setting.

Program1 2 3 4


LOGO **QR Code** OSD

Enable: ☒ Yes ☐ No

Position: X 1096 Y 546

Size: Width 156 Height 134

QR Code Selection: Pic1

  
Pic1

| LOGO Parameter | Range         | LOGO Parameter | Range         |
|----------------|---------------|----------------|---------------|
| Position X     | 0~1096 (Dual) | Position Y     | 0~546(Dual)   |
| Size width     | 0~1080 (Dual) | Size Height    | 0~1080 (Dual) |

### 3.4.5.4 Module IP Output

This feature is specifically for encoding a single program and outputting directly to IP. It will not occupy multicast bandwidth of baseboard.



If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.

| Program | Enable                              | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input checked="" type="checkbox"/> | 227.10.20.34           | 1234             | Disable                | 01:00:5E:04:14:22 |
| 2       | <input type="checkbox"/>            | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |
| 3       | <input type="checkbox"/>            | 227.10.20.90           | 1236             | Disable                | 00:00:00:00:00:00 |
| 4       | <input type="checkbox"/>            | 227.10.20.90           | 1237             | Disable                | 00:00:00:00:00:00 |

- **Destination IP Address and Destination Port:** for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC:** Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received with using unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

| Program | Program Name | Destination         | Destination Setting |
|---------|--------------|---------------------|---------------------|
| 1       | Program-01   | 3.OHM-OFDM-R01[1.1] |                     |
| 2       | Program-02   |                     |                     |
| 3       | Program-03   |                     |                     |
| 4       | Program-04   |                     |                     |

To use **Multiplexing mode on service level:**

1. Click on (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

### 3.4.6 OHE6-SDI-01

OHE-SDI-01 module supports 2 CH of H.264/AVC HD/SD (up to 1080p60) or MPEG-2 HD/SD (up to 1080i60) encoding via SDI/CVBS input, audio via phoenix connector. MPEG1-L2, AAC and AC3 audio encoding are available with optional licenses, 2×BNC. Supports CC Subtitles.





OHE-SDI-01

### 3.4.6.1 Module Status

Status page for OHE-SDI-01 shows the following parameters: Signal Status, Input Video Resolution, Output Video Resolution, Video Bitrate, Audio Bitrate, Audio2 Bitrate, Total Bitrate, Effective Bitrate, TS analysis and Program Name. The following parameters will display values once a good SDI source is connected.

| OHE-SDI-01  |        |                        |                         |                     |                      |                      |                     |                   |  |
|---|--------|------------------------|-------------------------|---------------------|----------------------|----------------------|---------------------|-------------------|--|
| <div>Status Basic Setting Output EAS Setting System</div> |        |                        |                         |                     |                      |                      |                     |                   |  |
| Program   | Signal | Input Video Resolution | Output Video Resolution | Video Bitrate(Mbps) | Audio1 Bitrate(Mbps) | Audio2 Bitrate(Mbps) | Total Bitrate(Mbps) | Effective Bitrate |  |
| 1   | ✖      | No_Video               | No_Video                | 0.000               | 0.000                | off                  | 0.000               | 0.000             |  |
| 2   | ✖      | No_Video               | No_Video                | 0.000               | 0.000                | off                  | 0.000               | 0.000             |  |

### 3.4.6.2 Module Basic Settings

The Setting for SDI/CVBS has Basic and Advanced Parameters. Basic Parameters are the same with the other Encoder Parameters where we can modify the Video, Audio and Service Parameters as shown in the picture below.

| OHE-SDI-01  |                   |                       |                     |
|---|-------------------|-----------------------|---------------------|
| <div>Status <b>Basic Setting</b> Output System</div>            |                   |                       |                     |
| <div>Basic Parameters</div> <div>⚙️ Advanced Setting &gt;</div> |                   |                       |                     |
| Program   | Input Source Type | Video Encoding Format | Video Bitrate(Kbps) |
| 1   | SDI               | MPEG2                 | 10000               |
| 2   | SDI               | MPEG2                 | 10000               |

Apply

Advanced parameters will display the list of parameters that you can enable and modify.

Basic Parameters

Advanced Setting ▾

**Video Parameter** ☐

☒ Video Encoding Format ☐ Video Resolution ☒ Video Bitrate ☐ Video Mode

☐ GOP Structure ☐ GOP Size ☐ Closed Caption ☐ Profile

☐ Level ☐ Video Aspect Ratio

**Audio Parameter** ☐

☐ Audio Source ☐ Audio Encoding Format ☐ AAC Format ☐ Audio Bitrate

☐ Volume

**Service Parameter** ☐

☒ Video PID ☒ Audio PID ☐ PCR PID ☐ PMT PID

☒ Program Name ☐ Provider Name

Apply

| Program | Input Source Type | Video Encoding Format | Video Bitrate(Kbps) | Audio1:PID | Audio2:PID | Video PID | Program Name |
|---------|-------------------|-----------------------|---------------------|------------|------------|-----------|--------------|
| 1       | SDI               | MPEG2                 | 10000               | 103        | 104        | 101       | Program-1    |
| 2       | SDI               | MPEG2                 | 10000               | 203        | 204        | 201       | Program-2    |

| Video Parameter              | Range   | Video Parameter           | Range   |
|------------------------------|---|---------------------------|---|
| <b>Video Encoding Format</b> | H264, MPEG2   | <b>GOP Size</b>           | 12~48   |
| <b>Video Resolution</b>      | Auto,<br>1920×1080_60i ,<br>1920×1080_50i ,<br>1920×1080_30p ,<br>1920×1080_25p ,<br>1080×720_60p ,<br>1080×720_50p ,<br>720×480_60i ,<br>720×576_50i | <b>Level</b>              | Level_1,0<br>Level_1B<br>Level_1.1<br>Level_1.2<br>Level_1.3<br>Level_2.0<br>Level_2.1<br>Level_2.2<br>Level_3.0<br>Level_3.1<br>Level_3.2<br>Level_4.0<br>Level_4.1<br>Level_4.2 |
| <b>Video Bitrate (Kbps)</b>  | 100 ~18000  | <b>Profile</b>            | High, Main,<br>Baseline   |
| <b>Video Mode</b>            | CBR   | <b>Closed Caption</b>     | Enable, Disable   |
| <b>GOP Structure</b>         | IBBP, IPPP, IBP, I  | <b>Video Aspect Ratio</b> | Auto<br>16x9<br>4x3   |

| Audio Encoder Details        | Range  | Audio Encoder Details       | Range  |
|------------------------------|--|-----------------------------|--|
| <b>Audio Encoding Format</b> | AC3<br>AC3_Passthrough<br>MPEG1_Layer2<br>MPEG2_AAC<br>MPEG4_AAC | <b>Audio Bitrate (Kbps)</b> | 128~384 (AC3)<br>64~384<br>(MPEG1_Layer2)<br>64~384<br>(MPEG2_AAC/<br>MPEG4_AAC) |

|                     |  |                    |        |
|---------------------|--|--------------------|--------|
| <b>Audio Source</b> | SDI1<br>SDI2<br>SDI3<br>SDI4<br>Analog | <b>Volume (dB)</b> | -20~20 |
| <b>AAC Format</b>   | ADTS, LATM                             |                    |        |

| Service Parameter | Range               | Service Parameter | Range   |
|-------------------|---------------------|-------------------|---------|
| Program Name      | String between 1~31 | Audio PID         | 32~8190 |
| Provider Name     | String between 0~31 | PCR PID           | 32~8190 |

### 3.4.6.3 IP Output

This feature is specifically for encoding single program and outputting directly to IP. It will not occupy multicast bandwidth of the baseboard.



If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.


| Program | Enable                   | Destination IP Address | Destination Port | Enable Destination MAC | Destination MAC   |
|---------|--------------------------|------------------------|------------------|------------------------|-------------------|
| 1       | <input type="checkbox"/> | 227.10.20.90           | 1234             | Disable                | 00:00:00:00:00:00 |
| 2       | <input type="checkbox"/> | 227.10.20.90           | 1235             | Disable                | 00:00:00:00:00:00 |

- **Destination IP Address and Destination Port:** for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC:** Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received by with the unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

The second eth is reserved to output IP streams in an another different VLAN. Enabling the second eth and set **IP Address**, **Subnet Mask**, **Default Gateway** in the same segment of the Unicast IP (the another different VLAN), you can output the Unicast stream to the another VLAN.

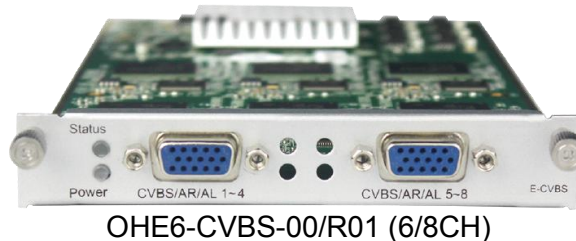
| Program | Program Name | Destination | Destination Setting |
|---------|--------------|-------------|---------------------|
| 1       | Program-1    |             |                     |
| 2       | Program-2    |             |                     |

To use **Multiplexing mode on service level:**

1. Click on  (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

### 3.4.7 OHE6-CVBS-00/03/R01/R01A

**OHE6-CVBS-00/03/R01/R01A** is a 2/6/8/16-channel CVBS encoder with 2/2/4 DB15 connectors (for 3/4/4-channel respectively). It supports H.264/MPEG-2 SD encoding and MPEG1-L2, AAC (optional) and AC3 (optional) audio. One difference of the two modules is, OHE6-CVBS-R01 has insertion features while OHE6-CVBS-00 doesn't have.









OHE6-CVBS-00/R01 (6/8CH)



OHE6-CVBS-R01A (16CH)

Like all other modules. OHE6-CVBS Status shows the bitrate of each channel and you can check the TS Analysis and Service List here. See picture below.

| OHE-CVBS-00 |                  |                     |                     |                     |                         |   |                             |
|-------------|------------------|---------------------|---------------------|---------------------|-------------------------|---|-----------------------------|
|             |                  |                     |                     |                     |                         | Status  | Basic Setting Output System |
| Program     | Video Resolution | Video Bitrate(Mbps) | Audio Bitrate(Mbps) | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | TS Analysis   | Program Name                |
| 1           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-1 ⓘ                 |
| 2           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-2 ⓘ                 |
| 3           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-3 ⓘ                 |
| 4           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-4 ⓘ                 |
| 5           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-5 ⓘ                 |
| 6           | No_Video         | 0.000               | 0.000               | 0.000               | 0.000                   |  | Program-6 ⓘ                 |

| OHE-CVBS-R01 |                  |                     |                         |             |               |
|--------------|------------------|---------------------|-------------------------|-------------|---------------|
|              |                  | Status              | Basic Setting           | Insertion   | Output System |
| Program      | Video Resolution | Total Bitrate(Mbps) | Effective Bitrate(Mbps) | TS Analysis | Program Name  |
| 1            | No_Video         | 0.000               | 0.000                   | 👁           | Program-01 ⓘ  |
| 2            | No_Video         | 0.000               | 0.000                   | 👁           | Program-02 ⓘ  |
| 3            | No_Video         | 0.000               | 0.000                   | 👁           | Program-03 ⓘ  |
| 4            | No_Video         | 0.000               | 0.000                   | 👁           | Program-04 ⓘ  |
| 5            | No_Video         | 0.000               | 0.000                   | 👁           | Program-05 ⓘ  |
| 6            | No_Video         | 0.000               | 0.000                   | 👁           | Program-06 ⓘ  |
| 7            | No_Video         | 0.000               | 0.000                   | 👁           | Program-07 ⓘ  |
| 8            | No_Video         | 0.000               | 0.000                   | 👁           | Program-08 ⓘ  |

### 3.4.7.1 Module Basic Settings

OHE-CVBS-R01

StatusBasic SettingInsertionOutputSystem

⚙️ Advanced Setting >

| Program | Video Encoding Format | Video Bitrate(Kbps) |
|---------|-----------------------|---------------------|
| 1       | H.264                 | 4000                |
| 2       | H.264                 | 4000                |
| 3       | H.264                 | 4000                |
| 4       | H.264                 | 4000                |
| 5       | H.264                 | 4000                |
| 6       | H.264                 | 4000                |
| 7       | H.264                 | 4000                |
| 8       | H.264                 | 4000                |

Apply

Click **Advanced Setting** to see all parameters you can modify and check specific parameters you want to set and see. Click the **Apply** button on the right side to make the change take effect.

⚙️ Advanced Setting

Video Parameter

☒ Video Encoding Format
 ☐ GOP Size
 ☐ Brightness

☒ Video Bitrate
 ☐ Profile
 ☐ Contrast

☐ Video Input Format
 ☐ Saturation
 ☐ Chrominance

Audio Parameter

☐ Audio Encoding Format
 ☐ Delay
 ☐ Audio Bitrate
 ☐ Audio Sampling Rate
 ☐ Volume

Service Parameter

☐ Program Name
 ☐ Video PID
 ☐ Audio PID
 ☐ PCR PID
 ☐ PMT PID
 ☐ Provider Name

Apply

Click **Advanced Setting** in the line to set encoding parameters.

| Video Parameter       | Range     | Video Parameter | Range |
|-----------------------|-----------|-----------------|-------|
| Video Input Format    | NTSC, PAL | Brightness      | 0~100 |
| Video Encoding Format | H264      | Contrast        | 0~100 |
| Video Bitrate (Kbps)  | 600~6000  | Saturation      | 0~100 |
| GOP Size              | 1~60      | Chrominance     | 0~100 |

|                |              |  |  |
|----------------|--------------|--|--|
| <b>Profile</b> | HIGH<br>MAIN |  |  |
|----------------|--------------|--|--|

| Audio Parameter           | Range        | Audio Parameter      | Range  |
|---------------------------|--------------|----------------------|--------|
| Audio Encoding Format     | MPEG1_Layer2 | Audio Bitrate (Kbps) | 32~192 |
| Audio Sampling Rate (KHz) | 48           | Volume (dB)          | -20~20 |
| Delay (ms)                | -2000~2000   |                      |        |

| Service Parameter | Range               | Service Parameter | Range   |
|-------------------|---------------------|-------------------|---------|
| Program Name      | String between 1~31 | Audio PID         | 32~8190 |
| Provider Name     | String between 0~31 | PCR PID           | 32~8190 |
| Video PID         | 32~8190             | PMT PID           | 32~8190 |

### OHE6-CVBS-R01/R01A>Settings

OHE6-CVBS-R01 module has 8 channels with 2 DB15 connectors and OHE6-CVBS-R01A module has 16 channels with 4 DB15 connectors. Their configuration is almost the same as OHE6-CVBS-00, except a few differences on parameter setting range.

Advanced Setting

Video Parameter

☒ Video Encoding Format
 ☐ GOP Size
 ☐ Brightness

☒ Video Bitrate
 ☐ Profile
 ☐ Contrast

☐ Video Input Format
 ☐ Saturation
 ☐ Chrominance

Audio Parameter

☐ Audio Encoding Format
 ☐ Delay
 ☐ Audio Bitrate
 ☐ Audio Sampling Rate
 ☐ Volume

Service Parameter

☐ Program Name
 ☐ Video PID
 ☐ Audio PID
 ☐ PCR PID
 ☐ PMT PID

☐ Provider Name

Shelter Parameter

☐ X
 ☐ Y
 ☐ Width
 ☐ Height
 ☐ Color

☐ Shelter

Apply

| Video Parameter       | Range        | Video Parameter | Range |
|-----------------------|--------------|-----------------|-------|
| Video Input Format    | NTSC, PAL    | Brightness      | 0~100 |
| Video Encoding Format | H264         | Contrast        | 0~100 |
| Video Bitrate (Kbps)  | 600~6000     | Saturation      | 0~100 |
| GOP Size              | 1~60         | Chrominance     | 0~100 |
| Profile               | HIGH<br>MAIN |                 |       |

| Audio Parameter       | Range        | Audio Parameter      | Range  |
|-----------------------|--------------|----------------------|--------|
| Audio Encoding Format | MPEG1_Layer2 | Audio Bitrate (Kbps) | 32~192 |
| Audio Sampling        | 48           | Volume (dB)          | -20~20 |

|                   |            |  |  |
|-------------------|------------|--|--|
| <b>Rate (KHz)</b> |            |  |  |
| <b>Delay (ms)</b> | -2000~2000 |  |  |

| <b>Service Parameter</b> | <b>Range</b>        | <b>Service Parameter</b> | <b>Range</b> |
|--------------------------|---------------------|--------------------------|--------------|
| Program Name             | String between 1~31 | Audio PID                | 32~8190      |
| Provider Name            | String between 0~31 | PCR PID                  | 32~8190      |
| Video PID                | 32~8190             | PMT PID                  | 32~8190      |

| <b>Shelter Parameters</b> | <b>Range</b>   | <b>Shelter Parameters</b> | <b>Range</b>               |
|---------------------------|----------------|---------------------------|----------------------------|
| <b>Shelter</b>            | Enable/Disable | <b>X</b>                  | 0~800 (Dual)               |
| <b>Y</b>                  | 0~600 (Dual)   | <b>Width</b>              | 10~800 (Dual)              |
| <b>Height</b>             | 10~800 (Dual)  | <b>Color</b>              | White/Black/Blue/Green/Red |

### 3.4.7.2 Module Output

Direct IP output is specifically for encoding single program and outputting directly to IP. It will not occupy multicast bandwidth of the baseboard.



If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.

- **Destination IP Address** and **Destination Port**: for multicast IP addresses or unicast IP addresses and ports.
- **Enable Destination MAC**: Generally, you do not need to enable this option. This is reserved for exceptional cases when the unicast stream cannot be received by with the unicast IP addresses. You can enable destination MAC and streaming out by setting Destination MAC.

The second eth is reserved to output IP streams in another different VLAN. Enabling the second eth and set **IP Address**, **Subnet Mask**, **Default Gateway** in the same segment of the Unicast IP (the another different VLAN), you can output the Unicast stream to the another VLAN.

| Direct IP Output <b>Multiplexing</b> RTMP Output |                |             |                     |
|--|----------------|-------------|---------------------|
| #  | Service Name   | Destination | Destination Setting |
| 1  | [1] Program-01 |             |                     |
| 2  | [1] Program-02 |             |                     |
| 3  | [1] Program-03 |             |                     |
| 4  | [1] Program-04 |             |                     |

To use **Multiplexing mode on service level**:

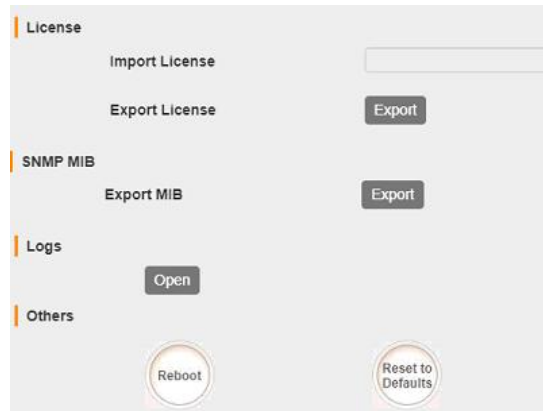
1. Click on (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.

3. Check Multiplex on the channel you want to output. You can output multiple services to one channel or output one service to multiple channels.

### 3.4.7.3 System Operation

**System** tab allows you to perform the following tasks:

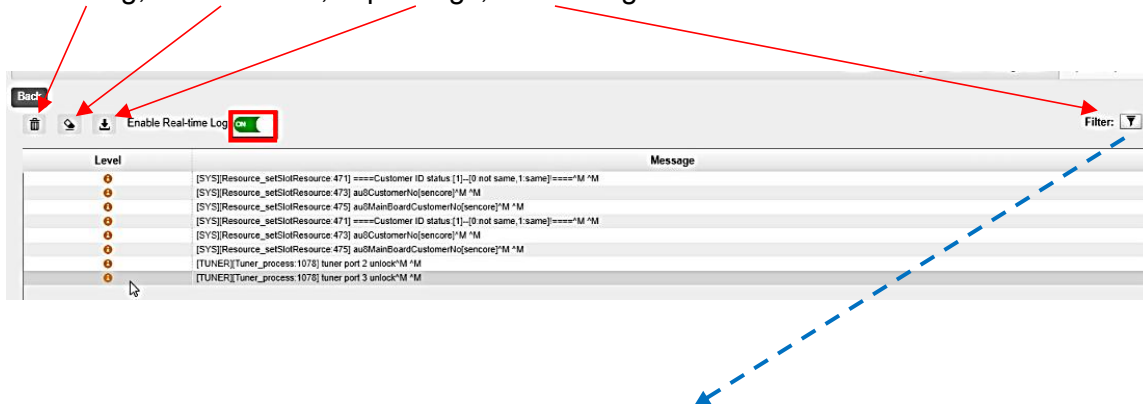
- Import / export license
- Log manages
- Reboot
- Factory Default



To open the log management menu, click on the **Open** button. The newly opened menu allows you to enable / disable logging.

After login is enabled, additional control buttons will be displayed:

- clean log, clean screen, export logs, filter dialog box





**Filter**

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

**Module List**

| Module Name | Operation                           |
|-------------|-------------------------------------|
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |

## 3.5 Modulation Modules

### 3.5.1 OHM6-QAMA-00/R00

OHM6-QAM-00 / R00 / R01 / R01A module supports modulating 16 non-adjacent channels with 1 RF port and 1 RJ45 network port that is reserved for future use. QAM A and B share the same Hardware but Different Software. If you need to change the Module from A to B, please contact your local support for assistance.



#### 3.5.1.1 Module Status

Status of QAMA6-00 shows the Total Bitrate of a TS and the Effective bitrate, with which you can monitor if the output programs will overflow in a certain TS. Since the Modulator produces a lot of heat, the Module is also designed to automatically powered off when the temperature is higher than 74 degrees Celsius (165.2-degrees Fahrenheit). The status page for all Output modules of OmniHub 6RFX are mostly the same with each other and with all other modules. You will notice there is not much difference in every link on the status page. See OHR6-DVBC-00 on page 30 for reference.

| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 0.000                   | 0.000               | Normal  |             |              |
| 1.2     | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.000                   | 0.000               | Normal  |             |              |
| 1.15    | 0.000                   | 0.000               | Normal  |             |              |

### 3.5.1.2 Module Basic Settings

This page is where you can modify or set the frequency for the RF modulation. OHM6-QAMA-R00 has 16 non-adjacent channels while OHM6-QAMA-R01 has 4 adjacent channels both at single port.

RF Level:  (dBmV ☒ dBuV ☐)    PSI/SI Interval(ms):

| Channel | Enable                   | Frequency(KHz)                      | Bandwidth(MHz)                 | Constellation                      | SymbolRate(KBaud)                 |
|---------|--------------------------|-------------------------------------|--------------------------------|------------------------------------|-----------------------------------|
| 1.1     | <input type="checkbox"/> | <input type="text" value="200000"/> | <input type="text" value="8"/> | <input type="text" value="QAM64"/> | <input type="text" value="6875"/> |
| 1.2     | <input type="checkbox"/> | <input type="text" value="208000"/> | <input type="text" value="8"/> | <input type="text" value="QAM64"/> | <input type="text" value="6875"/> |
| 1.3     | <input type="checkbox"/> | <input type="text" value="216000"/> | <input type="text" value="8"/> | <input type="text" value="QAM64"/> | <input type="text" value="6875"/> |
| 1.4     | <input type="checkbox"/> | <input type="text" value="224000"/> | <input type="text" value="8"/> | <input type="text" value="QAM64"/> | <input type="text" value="6875"/> |



Click the Apply button on the right side for the changes to take effect.

| Name                        | Range            | Name                   | Range               |
|-----------------------------|------------------|------------------------|---------------------|
| <b>QAM Mode</b>             | ANNEX A/ ANNEX B | <b>RF level</b>        | 0~63                |
| <b>Bandwidth</b>            | 6M, 7M, 8M       | <b>Frequency (KHz)</b> | 48000~858000        |
| <b>Symbol Rate (KBaud)</b>  | 4400~6956        | <b>Constellation</b>   | QAM16/32/64/128/256 |
| <b>PSI/SI Interval (ms)</b> | 50~10000         |                        |                     |

### 3.5.1.3 Module Output

QAM Output will be different from the Receiver and Encoder module. Since the QAM module is an output module like IP output, all service configured in receiver, encoder and IP input will be seen here.

Every Channel in QAM output has Original Network ID and TS ID. It is important to identify the TS ID properly. Labeling the TS will help you to monitor your output services. It is also important for creating NIT for LCN and Cable Descriptors. When you click on the Service Settings, this is the screen you will see first.

The left panel shows a list of TS (Transport Streams) with settings icons and version numbers (17.1.1). The right panel shows the configuration for [1.1] TS:

|                     |               |
|---------------------|---------------|
| Original Network ID | 0             |
| TS ID               | 0             |
| Modulation Mode     | ATSC ( 8 VSB) |

| NO. | Service ID | Service Name | Service Provider |
|-----|------------|--------------|------------------|
| 1   | 1          | Program0     | Program0         |

Buttons: OK, Cancel

On the Left side, you will see the list of TS where there are output services. If the TS or Channels are enabled but no Service Output, it will not be listed here.

You will also see the Original Network ID and TS ID where you can modify the details and below will be the list of the service in the Selected TS. Initially, TS 1 is selected when you first select the Service Configuration tab.

Clicking on the Program name under the TS will show the Programs Basic Parameter where you can modify each detail.

The left panel shows the list of TS with '1. Program0' highlighted. The right panel shows the configuration for [1.1] TS >> Program0:

|                  |          |
|------------------|----------|
| Service ID       | 1        |
| Service Name     | Program0 |
| Service Provider | Program0 |
| Service Type     | 2        |
| PCR PID          | 4097     |
| PMT PID          | 4096     |
| Video(H264)      | 4113     |
| Audio            | 4352     |

Buttons: OK, Cancel

Clicking on the icon  will show you the NIT setting where you can create and add NIT Network and NIT Stream.

The left panel shows the list of TS with the settings icon for [1.1] TS highlighted. The right panel shows the NIT configuration for [1.1]:

NIT Network NIT Stream

|           |    |
|-----------|----|
| Tag(Hex)  | 40 |
| Data(Hex) |    |

Buttons: Add

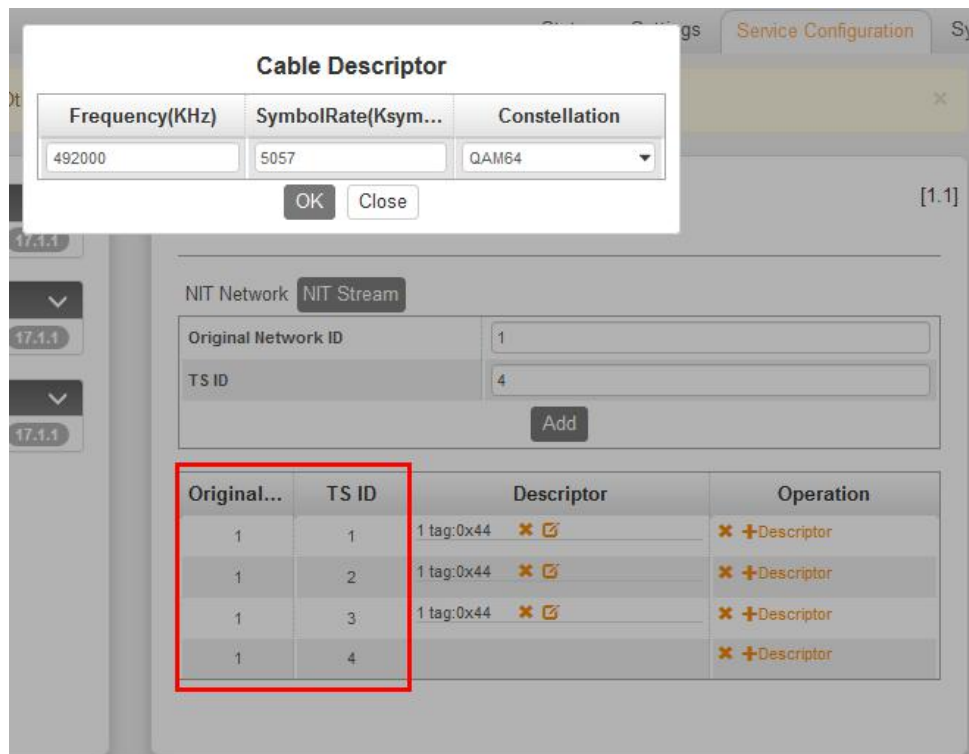
| Tag(Hex) | Data(Hex) | Length | Operation |
|----------|-----------|--------|-----------|
| 40       | 313233    | 3      | ✗         |

For NIT Stream, you can create Cable Descriptor and Logical Channel Number LCN. You need to Add and Input first the correct Original Network ID and TS ID. Once it is done, click on the plus icon “+” under Operation and select the Descriptor you want to add



For Cable Descriptor, this is used for the STB to scan all configured frequencies on the network given that the STB triggering Frequency is set where the NIT frequency is created. e.g., If the NIT is created in TS ID 10 with frequency 539MHz and 5057Kbaud Symbol rate, the STB “Autosearch Setup” or setting should have the same parameters for Frequency and Symbol rate.

One important information is to know in what frequency and TS you want to create the Cable Descriptor. Once you know the frequency, you need to create the TSID currently used. If you have 4 frequency outputs on the Network, you need to create 4 TSID as shown below. Just input the correct Frequency on each TS and add. Repeat the procedure until all the Frequencies are added.



LCN or Logical Channel Number are created in the same way with Cable Descriptor. On 1 frequency, you will add NIT Stream and create multiple TSID. Here you will add the LCN on each TSID.

To add the LCN:

1. Click LCN Descriptor and see a small window appear.
2. Click Select Service on the upper right corner and select the program name. Make sure that the name is on the correct TS where you are adding the LCN to.
3. Input the Channel number you want that program to appear. Note that the STB sorting settings should be also in LCN. STB has other sorting settings like By Name, By Frequency, By Service ID, By LCN, etc.

The first screenshot shows a window titled "LCN" with a "Select Service" button in the top right corner. Below the title bar, there are three columns: "Service ID", "LCN", and "Visible Service Flag".

The second screenshot shows a "Service List" table with the following data:

| TS  | Service ID | Service Name |                                     |
|-----|------------|--------------|-------------------------------------|
| 1.1 | 1          | Program0     | <input checked="" type="checkbox"/> |
| 1.2 | 1          | Program0     | <input type="checkbox"/>            |
| 1.3 | 1          | Program0     | <input type="checkbox"/>            |

The third screenshot shows the "LCN" window with the "LCN" field highlighted in red. The "Service ID" is 1, the "LCN" is 100, and the "Visible Service Flag" is set to "Visible". There is a "Select Service" button in the top right corner.

### 3.5.2 OHM6-QAMA-R01/R01A

OHM6-QAMA-R01 and OHM6-QAMA-R01A are 4 channel and 8 channel modulators. They share the same hardware but have different software. For the Status, Settings, Service Configuration and System Operation, please refer to previous module OHM6-QAMA-00/R00 at page 74 to 77.

### 3.5.3 OHM6-QAMB-00/R00

OHM6-QAMB-00 / R00 module supports up to 16 non-adjacent frequencies modulating with 1 RF female connector for output.



### 3.5.3.1 Module Status

Please see OHR6-DVBC-00 on page 30 for reference. See also the image for QAMB Status.

| Channel | Total Bit Rate(Mbps) | Effective Bit Rate(Mbps) | Bit Rate | TS Analysis | Service List |
|---------|----------------------|--------------------------|----------|-------------|--------------|
| 1.1     | 38.810               | 0.073                    | Normal   | 👁           | ⋮            |
| 1.2     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.3     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.4     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.5     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.6     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.7     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |
| 1.8     | 0.000                | 0.000                    | Normal   | 👁           | ⋮            |

### 3.5.3.2 Module Basic Settings

This page allows you to type in the output parameter for the QAM required by the network.

| RF Level (dBmV): 42 |                                     | PSI/SI Interval(ms): 100 |                | Channel Standard: STD |                   |
|---------------------|-------------------------------------|--------------------------|----------------|-----------------------|-------------------|
| Channel             | Enable                              | Channel No.              | Bandwidth(MHz) | Constellation         | SymbolRate(KBaud) |
| 1.1                 | <input checked="" type="checkbox"/> | CH2-57MHz                | 6              | QAM256                | 5361              |
| 1.2                 | <input type="checkbox"/>            | CH3-63MHz                | 6              | QAM256                | 5361              |
| 1.3                 | <input type="checkbox"/>            | CH4-69MHz                | 6              | QAM256                | 5361              |
| 1.4                 | <input type="checkbox"/>            | CH5-79MHz                | 6              | QAM256                | 5361              |
| 1.5                 | <input type="checkbox"/>            | CH6-85MHz                | 6              | QAM256                | 5361              |

Click the **Apply** button on the right side to make the change take effect.

| Name                 | Range                                   | Name             | Range                 |
|----------------------|---|------------------|-----------------------|
| Bandwidth (MHz)      | 6                                       | Channel Standard | US cable/STD/IRC/ HRC |
| Symbol Rate (KBaud)  | 5056.941 (QAM 64)<br>5360.537 (QAM 256) | RF level         | 15~48 (dBmV)          |
| PSI/SI Interval (ms) | 50~10000                                | Constellation    | QAM 64/256            |
| Channel No.          | Up to Channel Standard                  |                  |                       |

### 3.5.3.3 Module Output

Service Configuration for QAMB are very simple compared to QAMA. You can edit the Original network ID and TSID to the correct label. You can also edit the Service parameter like Service ID, Name, Provider, PID, etc.,

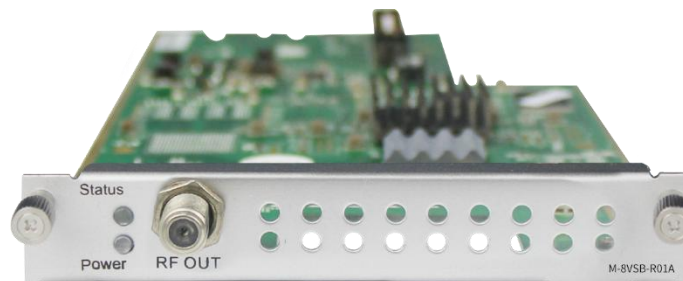
System operation of OHM6-QAMB are same with other modules. See page 74 to 77 for reference.

### 3.5.4 OHM6-QAMB-R01/R01A

OHM6-QAMB-R01 is a 4 channel QAM B Modulator module while OHM6-QAMB-R01A is an 8 channel QAM B modulator. The Status, Setting Service Configuration and System Operation for these two modules are same with the OHM6-QAM-00/R00. See page 74 to 77 for reference.

### 3.5.5 OHM6-8VSB-R01/R01A

OHM6-8VSB-R01A module supports up to 4/8 adjacent frequencies modulating with 1 RF connector for output.



Please see QAM configuration on page 74 for reference

#### 3.5.5.1 Module Basic Settings

| RF Level: 30 (dBmV <input checked="" type="radio"/> dBuV <input type="radio"/> ) |                                     | PSI/SI Interval(ms): 100 | Channel Standard: OFF-AIR <input type="button" value="v"/> |
|--|-------------------------------------|--------------------------|--|
| Channel  | Enable                              | Frequency                |  |
| 1.1  | <input checked="" type="checkbox"/> | CH2-57MHz                |  |
| 1.2  | <input checked="" type="checkbox"/> | CH2-57MHz                |  |
| 1.3  | <input checked="" type="checkbox"/> | CH2-57MHz                |  |
| 1.4  | <input checked="" type="checkbox"/> | CH2-57MHz                |  |

Click the **Apply** button on the right side to make the change take effect.

| Name             | Range                  | Name                 | Range                        |
|------------------|------------------------|----------------------|------------------------------|
| RF level (dBmV)  | 28~48                  | PSI/SI Interval (ms) | 50~10000                     |
| Channel Standard | OFF-AIR, STD, IRC, HRC | Channel - Frequency  | CH2 - 57MHz ~ CH 69 – 803MHz |



### 3.5.5.2 Module Output

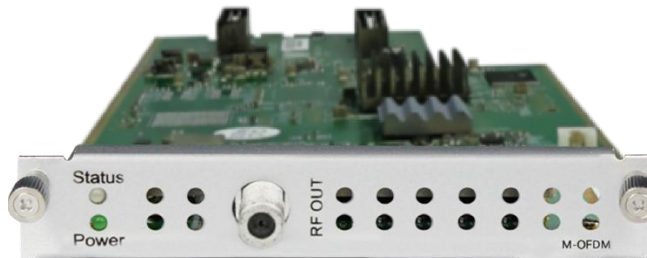
TS setting: Please refer to IP output service configuration on page 26 for reference.  
Select the modulation mode: Analog, SCTE\_Mode 1, SCTE\_Mode 2, or ATSC (8VSB)

[1.1] TS

|                     |   |            |                                      |
|---------------------|---|------------|--------------------------------------|
| Original Network ID | <input type="text" value="0"/>  |            |                                      |
| TS ID               | <input type="text" value="0"/>  |            |                                      |
| Modulation Mode     | <div> <div>ATSC ( 8 VSB)</div> <div> Analog<br/> SCTE_Mode 1<br/> SCTE_Mode 2<br/> <b>ATSC ( 8 VSB)</b> </div> </div> |            |                                      |
| NO.                 | Service ID  | Se         | Encoder                              |
| 1                   | <input type="text" value="1"/>  | Program-02 | <input type="text" value="Encoder"/> |

### 3.5.6 OHM6-OFDM-R01/R01A

OHM6-OFDM-R01 / R01A module supports up to 4/8 adjacent frequencies modulating with 1 RF female connector for output. The status for the OHM6-OFDM is like in OHM6-QAMA and another modulator module. It will show Lock Status of each channel when the signal is stable.



| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 0.001                   | 23.751              | Normal  |             |              |
| 1.2     | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.000                   | 0.000               | Normal  |             |              |

#### 3.5.6.1 Module Basic Settings

For the Settings of OHM6-OFDM-R01

| Channel | Enable                              | Frequency(KHz)                      | Bandwidth(MHz)                 | FFT Mode                        | GI Mode                           | QAM Mode                           | Convolutional Coding             |
|---------|-------------------------------------|-------------------------------------|--------------------------------|---------------------------------|-----------------------------------|------------------------------------|----------------------------------|
| 1.1     | <input checked="" type="checkbox"/> | <input type="text" value="755143"/> | <input type="text" value="6"/> | <input type="text" value="2K"/> | <input type="text" value="1/32"/> | <input type="text" value="64QAM"/> | <input type="text" value="7/8"/> |
| 1.2     | <input checked="" type="checkbox"/> | <input type="text" value="761143"/> | <input type="text" value="6"/> | <input type="text" value="2K"/> | <input type="text" value="1/32"/> | <input type="text" value="64QAM"/> | <input type="text" value="7/8"/> |
| 1.3     | <input checked="" type="checkbox"/> | <input type="text" value="767143"/> | <input type="text" value="6"/> | <input type="text" value="2K"/> | <input type="text" value="1/32"/> | <input type="text" value="64QAM"/> | <input type="text" value="7/8"/> |
| 1.4     | <input checked="" type="checkbox"/> | <input type="text" value="773143"/> | <input type="text" value="6"/> | <input type="text" value="2K"/> | <input type="text" value="1/32"/> | <input type="text" value="64QAM"/> | <input type="text" value="7/8"/> |



Module Settings is where you can input the source parameters. Once it's done, click on Apply for the changes to take effect and check on the Status of the channel that the signal is Locked.

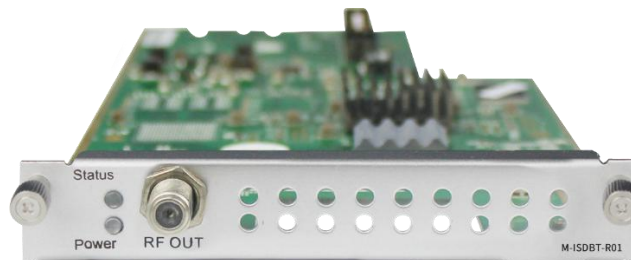
| Name            | Range        | Name     | Range                           |
|-----------------|--------------|----------|---------------------------------|
| Bandwidth       | 6M, 7M, 8M   | RF level | 0~31.5 (dBmV)<br>60~91.5 (dBuV) |
| Frequency (KHz) | 48000~862000 |          |                                 |

### 3.5.6.2 Module Output

Configuration of the OFDM module is like the configuration of OHM6-QAMA-00/R00. You can also change the Original Network ID, TSID, Service Name, PID and create LCN Descriptor and Cable Descriptor. For more details, please check OHM6-QAMA-00 on page 74 for reference.

## 3.5.7 OHM6-ISDBT-R01/R01A

OHM6-ISDBT-R01/R01A module supports up to 4/8 adjacent frequencies modulating with 1 RF female connector for output.



### 3.5.7.1 Module Basic Settings

After inputting the parameters in the Modules Settings, always click the **Apply** button on the right side to make the change take effect. Make sure the Signal is locked on the Module Status page.

RF Level: 40 (dBmV ● dBuV ○)

| Channel | Enable                              | Frequency(KHz) | Bandwidth(MHz) | FFT Mode | GI Mode | QAM Mode | Convolutional ... | Segment Mode |
|---------|-------------------------------------|----------------|----------------|----------|---------|----------|-------------------|--------------|
| 1.1     | <input checked="" type="checkbox"/> | 474000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.2     | <input type="checkbox"/>            | 480000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.3     | <input type="checkbox"/>            | 486000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.4     | <input type="checkbox"/>            | 492000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |

| Name            | Range                  | Name                 | Range                   |
|-----------------|------------------------|----------------------|-------------------------|
| Bandwidth (MHZ) | 6M                     | RF level             | 90~110                  |
| Frequency (KHz) | 48000~862000           | FFT Mode             | 2K                      |
| GI Mode         | 1/4, 1/8, 1/16, 1/32   | RF Level Gain (dB)   | 45~55                   |
| QAM Mode        | QPSK<br>16QAM<br>64QAM | Convolutional Coding | 1/2, 2/3, 3/4, 5/6, 7/8 |

### 3.5.7.2 Module Output

RF Level: 40 (dBmV ● dBuV ○)

| Channel | Enable                              | Frequency(KHz) | Bandwidth(MHz) | FFT Mode | GI Mode | QAM Mode | Convolutional ... | Segment Mode |
|---------|-------------------------------------|----------------|----------------|----------|---------|----------|-------------------|--------------|
| 1.1     | <input checked="" type="checkbox"/> | 474000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.2     | <input type="checkbox"/>            | 480000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.3     | <input type="checkbox"/>            | 486000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |
| 1.4     | <input type="checkbox"/>            | 492000         | 6              | 2K       | 1/4     | 64QAM    | 7/8               | Full Seq     |

- TS setting: Please refer to IP output service configuration on page 30.
- LCN setting: You need to add NIT stream of all frequencies in the base TS (frequency). It is used for your STB to automatically search and identify all the TS (frequencies) LCN information.
- Check or reset each TS (frequency) Original Network ID and TS ID, which should be different in each TS.
- Fill the Original Network ID and TS ID of each TS (frequency) in the field of the base TS (frequency) and then click Add to create a NIT stream of this TS (frequency).
- Click the “+” icon of Descriptor and add the TS Information Descriptor in. Then fill in the correct parameters and click OK. (This operation should be set on Modulator module only)

#### TS Information Descriptor

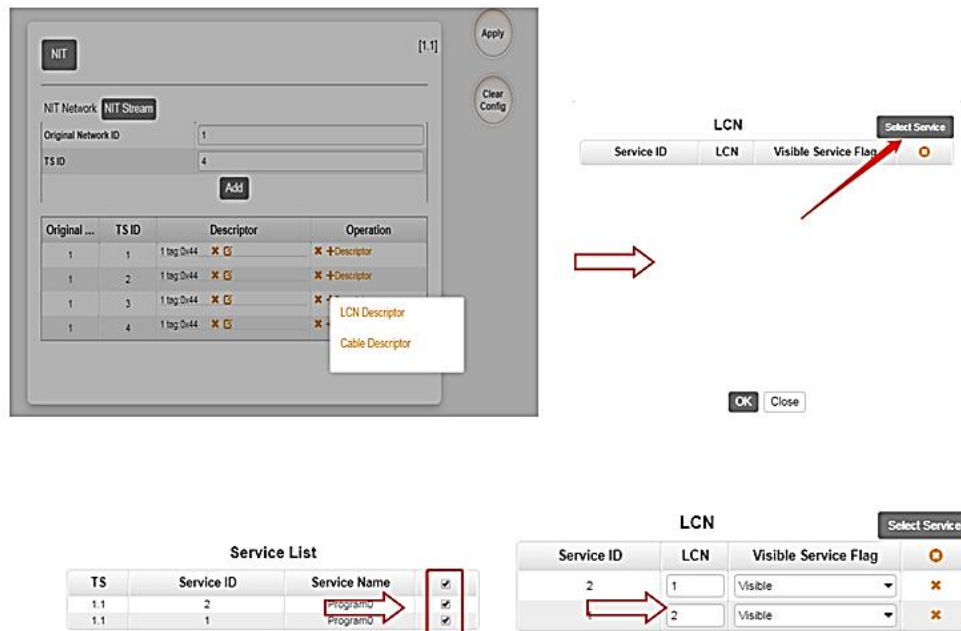
Remote Key ID [0, 255]

TS Name

Trans Info Type [0, 255]

OK Close

- Click the “+” icon of Descriptor and add the LCN Descriptor. Then check all the programs which are contained in this frequency. Then set program LCN.



- Do same operations to add next TS (frequency) until NIT streams of all the frequencies have been included. Lastly click Apply button to let all configuration take effect. Then searching programs in your STB, you will get all programs in order of LCN which you set.

### 3.5.8 OHM-QAMA-02/02A、OHM-QAMB-02/02A

**OHM-QAMA-02** is a 16-channel QAM-A modulation module, 2 gigabit IP input electrical ports, each input port supports 512 channels; 1 CAS interface (RJ45), support scrambling function; 1 RF output interface, support 16-channel QAM-A non-advanced frequency Modulation output, independent constellation mode configuration.

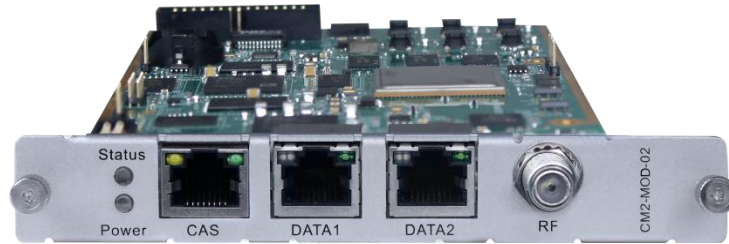
**OHM-QAMA-02A** is a 32-channel QAM-A modulation module, support 32-channel QAM-A non-advanced frequency Modulation output, other function descriptions are the same as OHM-QAMA-02.

***OHM-QAMA-02 and OHM-QAMA-02A have the same HW but different license.***

**OHM-QAMB-02** is a 16-channel QAM-B modulation module, 2 gigabit IP input electrical ports, each input port supports 512 channels; 1 CAS interface (RJ45), support scrambling function; 1 RF output interface, support 16-channel QAM-B non-advanced frequency Modulation output, independent constellation mode configuration.

**OHM-QAMB-02A** is a 32-channel QAM-B modulation module, support 32-channel QAM-B non-advanced frequency Modulation output, other function descriptions are the same as OHM-QAMB-02.

***OHM-QAMB-02 and OHM-QAMB-02A have the same HW but different license.***



### 3.5.8.1 OHM-QAMA-02

#### 3.5.8.1.1 Module Status

The Status page contains status information of IP Input, Modulation Output and IP Output.

**IP Input** > OHM-QAMA-02 has 1024 IP input channels. Those channels are divided into two RJ45 ports, each of which has 512 IP input channels. Clicking **Port 1**, you can obtain status information of the 512 channels, such as input source IP address and port number, total bitrate (Mbps) and effective bitrate (Mbps). The TS analysis and Service List button of each channel allow you to check their individual detailed information. See the image below for reference.

OHM-QAMA-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 5.990 Mbps

| Channel | IP Address : Port     | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|-----------------------|-------------------------|---------------------|-------------|--------------|
| 1.1     | 239.192.0.209 : 10000 | 5.322                   | 5.990               |             |              |
| 1.2     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.3     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.4     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.5     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.6     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.7     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.8     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.9     | 0.0.0.0               | 0.000                   | 0.000               |             |              |
| 1.10    | 0.0.0.0               | 0.000                   | 0.000               |             |              |

OHM-QAMA-02


Status Basic Setting Multiplexing System

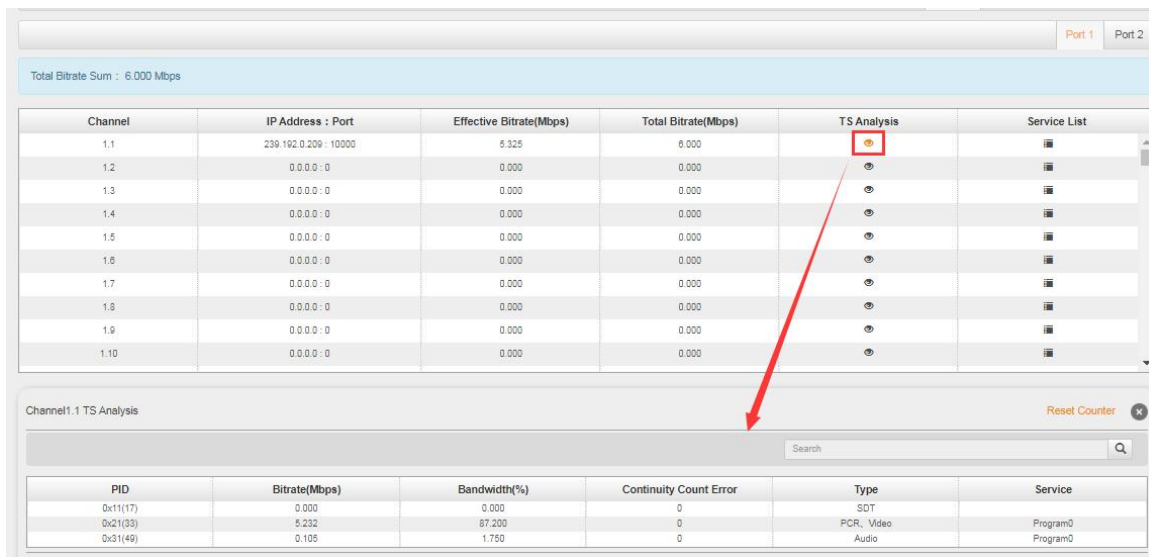
IP Input Modulation Output IP Output

Port 1 Port 2





















Total Bitrate Sum : 6.000 Mbps

| Channel | IP Address : Port | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|-------------------|-------------------------|---------------------|-------------|--------------|
| 1.503   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.504   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.505   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.506   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.507   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.508   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.509   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.510   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.511   | 0.0.0.0           | 0.000                   | 0.000               |             |              |
| 1.512   | 0.0.0.0           | 0.000                   | 0.000               |             |              |

Clicking the eye icon , you can know all the PIDs of this TS, such as PAT, CAT, PCR, Video Audio and PCR PID. See the image below for reference.



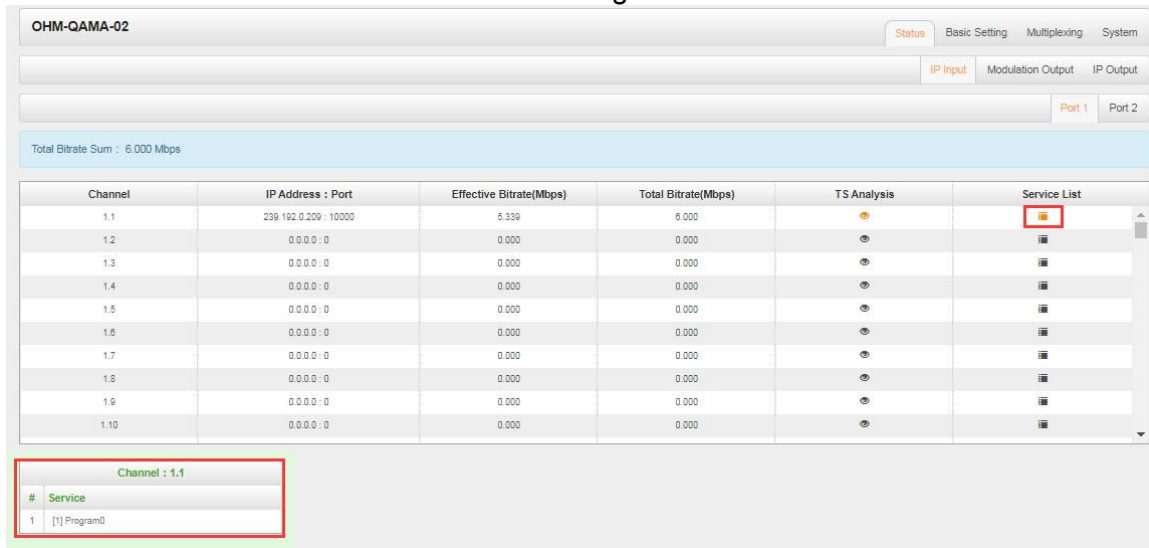
Total Bitrate Sum : 6.000 Mbps

| Channel | IP Address : Port     | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis   | Service List  |
|---------|-----------------------|-------------------------|---------------------|---|---|
| 1.1     | 239.192.0.209 : 10000 | 5.325                   | 6.000               |  |  |
| 1.2     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.3     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.4     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.5     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.6     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.7     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.8     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.9     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.10    | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |

Channel 1.1 TS Analysis Reset Counter

| PID      | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service  |
|----------|---------------|--------------|------------------------|------------|----------|
| 0x11(17) | 0.000         | 0.000        | 0                      | SDT        |          |
| 0x21(33) | 5.232         | 87.200       | 0                      | PCR, Video | Program0 |
| 0x31(49) | 0.105         | 1.750        | 0                      | Audio      | Program0 |

If the input stream has multiple programs, you can click the icon below “Service List” to see all the services in this stream. See the image below for reference.























OHM-QAMA-02 Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 6.000 Mbps

| Channel | IP Address : Port     | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis   | Service List  |
|---------|-----------------------|-------------------------|---------------------|---|---|
| 1.1     | 239.192.0.209 : 10000 | 5.339                   | 6.000               |  |  |
| 1.2     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.3     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.4     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.5     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.6     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.7     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.8     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.9     | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |
| 1.10    | 0.0.0.0 : 0           | 0.000                   | 0.000               |  |  |

Channel : 1.1

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

You can also check details of a service by clicking the Service Name.

**[1] Program0**

| Type        | PID      | Bitrate(Mbps) |
|-------------|----------|---------------|
| PCR         | 33(0x21) | 5.199         |
| PMT         | 32(0x20) | 0.005         |
| Video(H264) | 33(0x21) | 5.199         |
| Audio       | 49(0x31) | 0.105         |

Close

Channel : 1.1

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

**Modulation Output** > OHM-QAMA-02 status shows the Modulation output. Just like the IP Input, this shows the total bitrate and effective bitrate of the 16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. The Status also shows the current temperature of the unit on the upper left corner. See image below for reference.

**OHM-QAMA-02**

Status Basic Setting Multiplexing System

IP Input **Modulation Output** IP Output

Total Bitrate Sum : 25.342 Mbps

Temperature: 44°C (111.2°F)

Tip: The module will stop RF output when the temperature reaches or exceeds 74 degrees Celsius(165.2 degrees Fahrenheit!)

| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 5.375                   | 25.342              | Normal  | ●           | ■            |
| 1.2     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.3     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.4     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.5     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.6     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.7     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.8     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.9     | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.10    | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.11    | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.12    | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.13    | 0.000                   | 0.000               | Normal  | ●           | ■            |
| 1.14    | 0.000                   | 0.000               | Normal  | ●           | ■            |

Temperature: 44°C (111.2°F) Tip: The module will stop RF output when the temperature reaches or exceeds 74 degrees Celsius(165.2 degrees Fahrenheit)!

| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.3     | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.000                   | 0.000               | Normal  |             |              |
| 1.15    | 0.000                   | 0.000               | Normal  |             |              |
| 1.16    | 0.000                   | 0.000               | Normal  |             |              |

Channel : 1.1

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |

Channel 1.1 TS Analysis Reset Counter

| PID      | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service  |
|----------|---------------|--------------|------------------------|------------|----------|
| 0x0(0)   | 0.015         | 0.059        | 1                      | PAT        |          |
| 0x11(17) | 0.015         | 0.059        | 4                      | SDT, BAT   |          |
| 0x20(32) | 0.015         | 0.059        | 11                     | PMT        | Program0 |
| 0x21(33) | 5.212         | 20.586       | 11                     | PCR, Video | Program0 |
| 0x31(49) | 0.102         | 0.402        | 0                      | Audio      | Program0 |

**IP Output > OHM-QAMA-02** status also shows the IP output. Just like the IP Input, this shows the total bitrate and effective bitrate of the 16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. See image below for reference.

OHM-QAMA-02 Status Basic Setting Multiplexing System

IP Input Modulation Output **IP Output**

**Port 1**

Total Bitrate Sum : 25.351 Mbps

| Channel | IP Address : Port  | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|--------------------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 224.20.20.1 : 1234 | 5.369                   | 25.351              | Normal  |             |              |
| 1.2     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |

IP Input Modulation Output **IP Output**

**Port 1**

Total Bitrate Sum : 25.340 Mbps

| Channel | IP Address : Port | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------|-------------------------|---------------------|---------|-------------|--------------|
| 1.3     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.15    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.16    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |



### 3.5.8.1.2 Module Basic Setting

OHM-QAMA-02 Basic Setting is where you can input the parameters for IP Input, Modulation Output and IP Output.

**IP Input-Parameter Setting**> On this page, there are three tabs where you can modify the multicast IP, port and parameter of IP Input. There are **Port 1**, **Port 2**, and **Batch Setting**. The input can accept Multicast or Unicast and support MPTS and SPTS.

Port 1 and Port 2 have same interface. It shows the 512 channels. Check the box under **Enable** to enable a channel. Input the correct Multicast/Unicast IP address and IP port, and select the correct Protocol for the source IP. Once done, click **Apply** for the changes to take effect. See the image below for reference.

The screenshot shows the OHM-QAMA-02 Basic Setting interface. The 'Basic Setting' tab is selected. Under the 'IP Input' section, the 'Batch Setting' sub-tab is active. The interface displays a table with 15 channels (1.1 to 1.15). Each channel has an 'Enable' checkbox, 'Destination IP Address', 'Destination Port', 'Protocol', 'VLAN Enable', and 'VLAN ID' fields. Channel 1.1 is enabled with IP 239.192.0.209 and port 10000. A red box highlights the 'Batch Setting' section, which includes a 'Select All' dropdown (set to 'Enable'), 'Start Channel-End Channel' (1 to 512), and checkboxes for 'Destination IP Address', 'Destination Port', and 'VLAN ID'. An 'Apply' button is visible on the right.

| Channel | Enable                              | Destination IP Address | Destination Port | Protocol | VLAN Enable | VLAN ID |
|---------|-------------------------------------|------------------------|------------------|----------|-------------|---------|
| 1.1     | <input checked="" type="checkbox"/> | 239.192.0.209          | 10000            | UDP      | Disable     | 1       |
| 1.2     | <input type="checkbox"/>            | 227.10.20.2            | 1234             | UDP      | Disable     | 1       |
| 1.3     | <input type="checkbox"/>            | 227.10.20.3            | 1234             | UDP      | Disable     | 1       |
| 1.4     | <input type="checkbox"/>            | 227.10.20.4            | 1234             | UDP      | Disable     | 1       |
| 1.5     | <input type="checkbox"/>            | 227.10.20.5            | 1234             | UDP      | Disable     | 1       |
| 1.6     | <input type="checkbox"/>            | 227.10.20.6            | 1234             | UDP      | Disable     | 1       |
| 1.7     | <input type="checkbox"/>            | 227.10.20.7            | 1234             | UDP      | Disable     | 1       |
| 1.8     | <input type="checkbox"/>            | 227.10.20.8            | 1234             | UDP      | Disable     | 1       |
| 1.9     | <input type="checkbox"/>            | 227.10.20.9            | 1234             | UDP      | Disable     | 1       |
| 1.10    | <input type="checkbox"/>            | 227.10.20.10           | 1234             | UDP      | Disable     | 1       |
| 1.11    | <input type="checkbox"/>            | 227.10.20.11           | 1234             | UDP      | Disable     | 1       |
| 1.12    | <input type="checkbox"/>            | 227.10.20.12           | 1234             | UDP      | Disable     | 1       |
| 1.13    | <input type="checkbox"/>            | 227.10.20.13           | 1234             | UDP      | Disable     | 1       |
| 1.14    | <input type="checkbox"/>            | 227.10.20.14           | 1234             | UDP      | Disable     | 1       |
| 1.15    | <input type="checkbox"/>            | 227.10.20.15           | 1234             | UDP      | Disable     | 1       |

Batch Setting is where users can input the IP input parameters in batch. See the image below for reference.

This screenshot provides a closer view of the 'Batch Setting' section. It includes a 'Select All' dropdown menu (set to 'Enable'), a 'Start Channel-End Channel' range (1 to 512), and checkboxes for 'Destination IP Address', 'Destination Port', and 'VLAN ID'. Below these are input fields for the specific values. A red box highlights this entire section. The 'Apply' button is also visible.

| Channel | Enable                              | Destination IP Address | Destination Port | Protocol | VLAN Enable | VLAN ID |
|---------|-------------------------------------|------------------------|------------------|----------|-------------|---------|
| 1.1     | <input checked="" type="checkbox"/> | 239.192.0.209          | 10000            | UDP      | Disable     | 1       |
| 1.2     | <input type="checkbox"/>            | 227.10.20.2            | 1234             | UDP      | Disable     | 1       |
| 1.3     | <input type="checkbox"/>            | 227.10.20.3            | 1234             | UDP      | Disable     | 1       |
| 1.4     | <input type="checkbox"/>            | 227.10.20.4            | 1234             | UDP      | Disable     | 1       |
| 1.5     | <input type="checkbox"/>            | 227.10.20.5            | 1234             | UDP      | Disable     | 1       |
| 1.6     | <input type="checkbox"/>            | 227.10.20.6            | 1234             | UDP      | Disable     | 1       |
| 1.7     | <input type="checkbox"/>            | 227.10.20.7            | 1234             | UDP      | Disable     | 1       |
| 1.8     | <input type="checkbox"/>            | 227.10.20.8            | 1234             | UDP      | Disable     | 1       |
| 1.9     | <input type="checkbox"/>            | 227.10.20.9            | 1234             | UDP      | Disable     | 1       |



**Modulation Output-Parameter Setting** On this page, you can enable channels as you need and input the Frequency (KHz), QAM Mode, Symbol Rate (KBaud) and RF Level Gain (dBmV) to have an output.

Here are the range parameters of the above info.

| Parameter            | Range   |
|----------------------|---|
| Frequency (KHz)      | 47000 ~ 999000  |
| QAM Mode             | QAM16, QAM32, QAM64, QAM128, QAM256                     |
| Symbol Rate (KBaud)  | 3600 ~ 6956   |
| RF Level Gain (dBmV) | -10 ~ 0<br>(The value must be a number multiple of 0.5) |
| RF Level (dBuV)      | 90~120  |
| PSI/SI Interval (ms) | 50 ~ 10000  |

You can also set the RF level in a range of 90 to 120 as shown in the image below.



Batch Setting is where you can input the modulation parameters in batch. See the image below for reference.

OHM-QAMA-02

Status **Basic Setting** Multiplexing System

IP Input Modulation Output IP Output

Batch Setting ^

Select All ☐ Enable ☐ Bandwidth ☐ SymbolRate

Start Channel-End Channel ☐ Start Frequency ☐ QAM Mode

1 - 16  
48000  
QAM32

Batch Setting

RF Level(dBuV): 121 PSI/SI Interval(ms): 100

| Channel | Enable                              | Frequency(KHz) | QAM Mode | SymbolRate(KBaud) | RF Level Gain (dBmV) |
|---------|-------------------------------------|----------------|----------|-------------------|----------------------|
| 1.1     | <input checked="" type="checkbox"/> | 200000         | QAM16    | 8875              | 0                    |
| 1.2     | <input type="checkbox"/>            | 208000         | QAM64    | 8875              | 0                    |
| 1.3     | <input type="checkbox"/>            | 216000         | QAM64    | 8875              | 0                    |
| 1.4     | <input type="checkbox"/>            | 224000         | QAM64    | 8875              | 0                    |
| 1.5     | <input type="checkbox"/>            | 232000         | QAM64    | 8875              | 0                    |
| 1.6     | <input type="checkbox"/>            | 240000         | QAM64    | 8875              | 0                    |
| 1.7     | <input type="checkbox"/>            | 248000         | QAM64    | 8875              | 0                    |
| 1.8     | <input type="checkbox"/>            | 256000         | QAM64    | 8875              | 0                    |
| 1.9     | <input type="checkbox"/>            | 264000         | QAM64    | 8875              | 0                    |
| 1.10    | <input type="checkbox"/>            | 272000         | QAM64    | 8875              | 0                    |

**IP Output-Parameter Setting** On this page, there are three tabs where you can modify the multicast IP, port and parameter of IP Output. There are **Port 1** and **Batch Setting**. The output can accept Multicast or Unicast and support MPTS and SPTS. Port 1 shows the 16 channels. Check the box under Enable to enable a channel. Input the correct Multicast/Unicast IP address, IP port and appropriate output bitrate, and select the correct Protocol for the output IP. Once done, click **Apply** for the changes to take effect. See the image below for reference.

OHM-QAMA-02

Status **Basic Setting** Multiplexing System

IP Input Modulation Output **IP Output**

Port 1

Batch Setting v

1

| Channel | Enable                              | Source Port | Destination IP Address | Destination Port | Protocol | Pkt Length | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|-------------|------------------------|------------------|----------|------------|------------------------|-------------------|
| 1.1     | <input checked="" type="checkbox"/> | 1000        | 224.20.20.1            | 1234             | UDP      | 7          | Disable                | 01:00:5E:14:14:01 |
| 1.2     | <input type="checkbox"/>            | 1000        | 224.20.20.2            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.3     | <input type="checkbox"/>            | 1000        | 224.20.20.3            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.4     | <input type="checkbox"/>            | 1000        | 224.20.20.4            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.5     | <input type="checkbox"/>            | 1000        | 224.20.20.5            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.6     | <input type="checkbox"/>            | 1000        | 224.20.20.6            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.7     | <input type="checkbox"/>            | 1000        | 224.20.20.7            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.8     | <input type="checkbox"/>            | 1000        | 224.20.20.8            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.9     | <input type="checkbox"/>            | 1000        | 224.20.20.9            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.10    | <input type="checkbox"/>            | 1000        | 224.20.20.10           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.11    | <input type="checkbox"/>            | 1000        | 224.20.20.11           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.12    | <input type="checkbox"/>            | 1000        | 224.20.20.12           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.13    | <input type="checkbox"/>            | 1000        | 224.20.20.13           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.14    | <input type="checkbox"/>            | 1000        | 224.20.20.14           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.15    | <input type="checkbox"/>            | 1000        | 224.20.20.15           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.16    | <input type="checkbox"/>            | 1000        | 224.20.20.16           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |

Batch Setting is where you can input the IP output parameters in batch. See the image below for reference.

OHM-QAMA-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1

Batch Setting ^

Select All ☐

☐ Enable ☐ Destination IP Address ☐ Destination Port ☐ Pkt Length ☐ Enable Destination MAC

Start Channel-End Channel 1 - 16

227.10.20.80 Same

1234 Same

7

Disable AA-BB-CC-DD-EE-FI

Batch Setting

| Channel | Enable                              | Source Port | Destination IP Address | Destination Port | Protocol | Pkt Length | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|-------------|------------------------|------------------|----------|------------|------------------------|-------------------|
| 1.1     | <input checked="" type="checkbox"/> | 1000        | 224.20.20.1            | 1234             | UDP      | 7          | Disable                | 01:00:5E:14:14:01 |
| 1.2     | <input type="checkbox"/>            | 1000        | 224.20.20.2            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.3     | <input type="checkbox"/>            | 1000        | 224.20.20.3            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.4     | <input type="checkbox"/>            | 1000        | 224.20.20.4            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.5     | <input type="checkbox"/>            | 1000        | 224.20.20.5            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.6     | <input type="checkbox"/>            | 1000        | 224.20.20.6            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.7     | <input type="checkbox"/>            | 1000        | 224.20.20.7            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |

### 3.5.8.1.3 Multiplexing

Multiplexing has four tabs: **Source**, **Service Configuration**, **SI Table Setting** and **PID Transmission**. Here you can set to output services from IP Input to Modulation Output. Click **Multiplexing** to see 32 modulation output channels. Select a channel you want to configure and you will see **Source** setting of this channel.

OHM-QAMA-02

Status Basic Setting Multiplexing System

Output Channel

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Source Service Configuration SI Table Setting PID Transmission

Port 1 Port 2

1 - 32 33 - 64 65 - 96 97 - 128 129 - 160 161 - 192 193 - 224 225 - 256 257 - 288 289 - 320 321 - 352 353 - 384 385 - 416 417 - 448 449 - 480 481 - 512

Please tick the input channel to get the source of the program ☐ Select All

☐ 1.1 ☒ 1.2 ☐ 1.3 ☐ 1.4 ☐ 1.5 ☐ 1.6 ☐ 1.7 ☐ 1.8 ☐ 1.9 ☐ 1.10 ☐ 1.11 ☐ 1.12 ☐ 1.13 ☐ 1.14 ☐ 1.15 ☐ 1.16 ☐ 1.17 ☐ 1.18 ☐ 1.19 ☐ 1.20 ☐ 1.21 ☐ 1.22 ☐ 1.23 ☐ 1.24 ☐ 1.25 ☐ 1.26 ☐ 1.27 ☐ 1.28 ☐ 1.29 ☐ 1.30 ☐ 1.31 ☐ 1.32

Scanning Time(ms): 1000 Set

Source ☐ ECM/EMM Filter

☒ [1-2] 238 192.0.200-10000 ☐ [3] Program0 ☐ [4] Program1 ☐ [5] Program2 ☐ Bypass

RF Output[1] 200000KHz 6875KBaud

| Source  | Service Name |
|---------|--------------|
| No Data |              |

**Multiplexing-Source>** Source is where you select a source for output. You can chose **Port 1** or **Port 2** for the source. Each port is divided into 16 groups to complete 512 channels. Select a Port and you can see service lists of Group and Channel as shown below.

OHM-QAMA-02

Status Basic Setting **Multiplexing** System

Output Channel

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Source Service Configuration SI Table Setting PID Transmission

Port 1 Port 2

1-32 33-64 65-96 97-128 129-160 161-192 193-224 225-256 257-288 289-320 321-352 353-384 385-416 417-448 449-480 481-512

Please tick the input channel to get the source of the program ☐ Select All

☐ 1.1 ☒ 1.2 ☐ 1.3 ☐ 1.4 ☐ 1.5 ☐ 1.6 ☐ 1.7 ☐ 1.8 ☐ 1.9 ☐ 1.10 ☐ 1.11 ☐ 1.12 ☐ 1.13 ☐ 1.14 ☐ 1.15 ☐ 1.16  
☐ 1.17 ☐ 1.18 ☐ 1.19 ☐ 1.20 ☐ 1.21 ☐ 1.22 ☐ 1.23 ☐ 1.24 ☐ 1.25 ☐ 1.26 ☐ 1.27 ☐ 1.28 ☐ 1.29 ☐ 1.30 ☐ 1.31 ☐ 1.32

Scanning Time(ms) : 1000

Source ☐ ECM/EMM Filter ☐ Bypass

[1, 2] 239.192.0.200:10000  
[3] Program0  
[4] Program1  
[5] Program2

RF Output[1] 200000KHz 6875Kbaud

| Source  | Service Name |
|---------|--------------|
| No Data |              |

To output the service on the Modulation Output, you can simply put a tick in the box beside the service you want to output. You can output multiple Service from different Source channels or bypass the TS to Modulation output.

Please tick the input channel to get the source of the program ☐ Select All

☒ 1.1 ☒ 1.2 ☐ 1.3 ☐ 1.4 ☐ 1.5 ☐ 1.6 ☐ 1.7 ☐ 1.8 ☐ 1.9 ☐ 1.10 ☐ 1.11 ☐ 1.12 ☐ 1.13 ☐ 1.14 ☐ 1.15 ☐ 1.16  
☐ 1.17 ☐ 1.18 ☐ 1.19 ☐ 1.20 ☐ 1.21 ☐ 1.22 ☐ 1.23 ☐ 1.24 ☐ 1.25 ☐ 1.26 ☐ 1.27 ☐ 1.28 ☐ 1.29 ☐ 1.30 ☐ 1.31 ☐ 1.32

Scanning Time(ms) : 1000

Source ☐ ECM/EMM Filter ☐ Bypass

[1, 2] 239.192.0.209:10000  
[1] service  
[1, 2] 239.192.0.200:10000  
[3] Program0  
[4] Program1  
[5] Program2

RF Output[1] 200000KHz 6875Kbaud

| Source | Service Name |
|--------|--------------|
| 1      | [1] service  |
| 2      | [3] Program0 |
| 3      | [4] Program1 |
| 4      | [5] Program2 |

To Output the TS by Bypass mode, you can simply check the **Bypass** box of the TS. You can only bypass 1 TS and cannot output other services from different channel sources. Bypass mode allows you to keep the input signal automatically be redirected to Modulation output without re-scanning the input or transferring it to output.

Scanning Time(ms) : 1000

Source ☐ ECM/EMM Filter ☒ Bypass

[1, 2] 239.192.0.200:10000  
[218] HBO FAMILY HD  
[1, 1] 239.192.0.207:10000  
[1]

RF Output[4] 224000KHz 6875Kbaud

| [Bypass] Source            |
|----------------------------|
| [1, 2] 239.192.0.200:10000 |

**Multiplexing-Service Configuration**> After output the services from IP input to Modulation output, you can now edit the Service ID and other PID on the output. Click on the Service Configuration to see this page, it shows the output service on this channel only.

OHM-QAMA-02

Status Basic Setting **Multiplexing** System

Output Channel

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Source **Service Configuration** SI Table Setting PID Transmission

Click "Apply" after modifying your parameters to save the configuration.

Output **EditTS**

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.2    | [3]Program0  |
| 2 | 1.2    | [4]Program1  |
| 3 | 1.2    | [5]Program2  |
| 4 | 1.1    | [1]service   |

Apply

Clear Config

You can click the Name of the service and it will show a table where you can modify some information of the service like Service ID, Service Name, Service Provider, PCR PMT AUDIO and Video PID. Click **OK** for the changes to take effect.

Source **Service Configuration** SI Table Setting PID Transmission

Click "Apply" after modifying your parameters to save the configuration.

Output **EditTS**

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.2    | [3]Program0  |
| 2 | 1.2    | [4]Program1  |
| 3 | 1.2    | [5]Program2  |
| 4 | 1.1    | [1]service   |

[1.1] TS >> Program0

|                  | Original Value | Value    |
|------------------|----------------|----------|
| Service ID       | 3              | 3        |
| Service Name     |                | Program0 |
| Service Provider |                | Program0 |
| Service Type     |                | 1        |
| PCR PID          | 49             | 49       |
| PMT PID          | 48             | 48       |
| Video(MPEG2)     | 49             | 49       |
| Audio(AC3)       | 52             | 52       |
| Audio(AC3)       | 53             | 53       |

OK Cancel

Here you can also edit the Original Network ID, TS ID and Modulation Mode of the Modulation Output.

Output **EditTS**

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.2    | [3]Program0  |
| 2 | 1.2    | [4]Program1  |
| 3 | 1.2    | [5]Program2  |
| 4 | 1.1    | [1]service   |

[1.1] TS

|                     |               |
|---------------------|---------------|
| Original Network ID | 0             |
| TS ID               | 0             |
| Modulation Mode     | ATSC ( 8 VSB) |

| NO. | Service ID | Service Name | Service Provider |
|-----|------------|--------------|------------------|
| 1   | 3          | Program0     | Program0         |
| 2   | 4          | Program1     | Program1         |
| 3   | 5          | Program2     | Program2         |
| 4   | 1          | service      | provider         |

OK Cancel

**Multiplexing-SI Table Setting**> This page is to choose whether to insert/generate the SI tables or Copy the SI tables from the input streams.

| Source   | PID                                 |
|--|-------------------------------------|
| <input checked="" type="checkbox"/> PAT Insert | <input type="checkbox"/> EIT Shared |
| <input checked="" type="checkbox"/> CAT Insert | <input type="checkbox"/> CAT Shared |
| <input checked="" type="checkbox"/> SDT Insert | <input type="checkbox"/> SDT Shared |
| <input checked="" type="checkbox"/> TDT Insert | <input type="checkbox"/> TDT Shared |
| <input type="checkbox"/> TOT Insert            | <input type="checkbox"/> TOT Shared |
| <input type="checkbox"/> BAT Insert            | <input type="checkbox"/> BAT Shared |
| <input type="checkbox"/> NIT Insert            | <input type="checkbox"/> NIT Shared |
| <input checked="" type="checkbox"/> PMT Insert |                                     |

Source: [1.1]:239.192.0.209 : 10000

OK

**Multiplexing-PID Transmission**> This page is to transmit the input PID to Output on the PID required by the system.

OHM-QAMA-02

Status Basic Setting **Multiplexing** System

Output Channel

| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |

Source Service Configuration SI Table Setting **PID Transmission**

| Input   | Input PID | Output PID | Delete |
|---------|-----------|------------|--------|
| No Data |           |            |        |

Input: 1.1  
Input PID: 32  
Output PID: 32

Add Delete All

Apply Clear Config

### 3.5.8.1.4 Scrambling

OHM-QAMA-02 Scramble is where you can encrypt a service on the Modulation Output. Scrambler can be connected 6 different CAS simultaneously. There are seven tabs on this page namely Service Scrambling and CAS1 to CAS6. 6 CAS tabs have the same interface.

Input the correct CA parameters on this page and make sure the ECMG and EMMG are connected GREEN. Some CA will provide a Super CAS ID with 8 digits. This is a combination of the 4-digit CAS System ID and 4-digit of ECMG Sub System ID.

**Service Scrambling**> On this page, you can encrypt a service in the Modulation Output. Select a channel for output and you will see a service list. If you simulcrypt 6 different CA, select one of them for encryption as you need, then select the CA ID of the service. Click **Apply** to finish setting.

| NO. | SERVICE              | CAS1 | CAS2 | CAS3 | CAS4 | CAS5 | CAS6 |
|-----|----------------------|------|------|------|------|------|------|
| 1   | [CH-1] > [3]Program0 | None | None | None | None | None | None |
| 2   | [CH-1] > [4]Program1 | None | None | None | None | None | None |
| 3   | [CH-1] > [8]Program2 | None | None | None | None | None | None |
| 4   | [CH-1] > [1]Service  | None | None | None | None | None | None |

The Modulation Output Channel will only list the enabled channels but not all 32 channels. If the channels and CA ID to be used are arranged in a chronological order, you can use **Batch Setting** for faster encryption. This is advisable if you have 10 or more services in a single channel for output. See the image below for reference.



Output Channel Scrambled service: 0 Apply

**1** All

**Service Scrambling Setting** Batch Setting ^

When the number of programs exceeds the number of CASs that can be allocated, the CAS setting will repeat.

| Select Batch Setting Parameter                                      | Auto Assign              | Start Service Number ~ End Service Number   |
|---|--------------------------|---|
| <input type="checkbox"/> Scrambling <input type="checkbox"/> Enable |                          |   |
| <input type="checkbox"/> CAS1 <span>None</span>                     | <input type="checkbox"/> | Start Service Number <input type="text"/> End Service Number <input type="text"/> <span>OK</span> |
| <input type="checkbox"/> CAS2 <span>None</span>                     | <input type="checkbox"/> |   |
| <input type="checkbox"/> CAS3 <span>None</span>                     | <input type="checkbox"/> |   |
| <input type="checkbox"/> CAS4 <span>None</span>                     | <input type="checkbox"/> |   |
| <input type="checkbox"/> CAS5 <span>None</span>                     | <input type="checkbox"/> |   |
| <input type="checkbox"/> CAS6 <span>None</span>                     | <input type="checkbox"/> |   |

### 3.5.8.1.5 System

OHM-QAMA-02 System is composed of two sub menus namely **Network** and **License**.

**Network>** Here you can modify the IP Address, Subnet Mask and Gateway for each port of the module, except for the address of the module itself. This also shows the MAC Address of each port of the module. See the image below for reference.

CM-QAMA-02 Status Basic Setting Multiplexing Scrambling **System**

Network License

| Port  | IP Address   | Subnet Mask   | Gateway       | MAC Address       | Link Speed | Link Status |
|-------|--------------|---------------|---------------|-------------------|------------|-------------|
| NMS   | 10.83.183.26 | 255.255.255.0 | 10.83.183.254 | A0:50:56:03:FA:AC |            |             |
| CAS   | 192.168.2.10 | 255.255.255.0 | 192.168.2.254 | A0:50:56:03:FA:AD | auto       | link down   |
| DATA1 | 192.168.3.10 | 255.255.255.0 | 192.168.3.254 | A0:50:56:03:FA:AE | auto       | 100full     |
| DATA2 | 192.168.4.10 | 255.255.255.0 | 192.168.4.254 | A0:50:56:03:FA:AF | auto       | link down   |

Apply

**License>** Here you can import/export **license**, reboot module, **restore factory default settings** and **manage logs**.

CM-QAMA-02 Status Basic Setting Multiplexing Scrambling **System**

Network License

**Program Auto Scan** Enable ☐ Set

**License**

Product ID

Import License  Browse Upload

Export License Export

**Logs** Open

**SNMP MIB** Export MIB Export

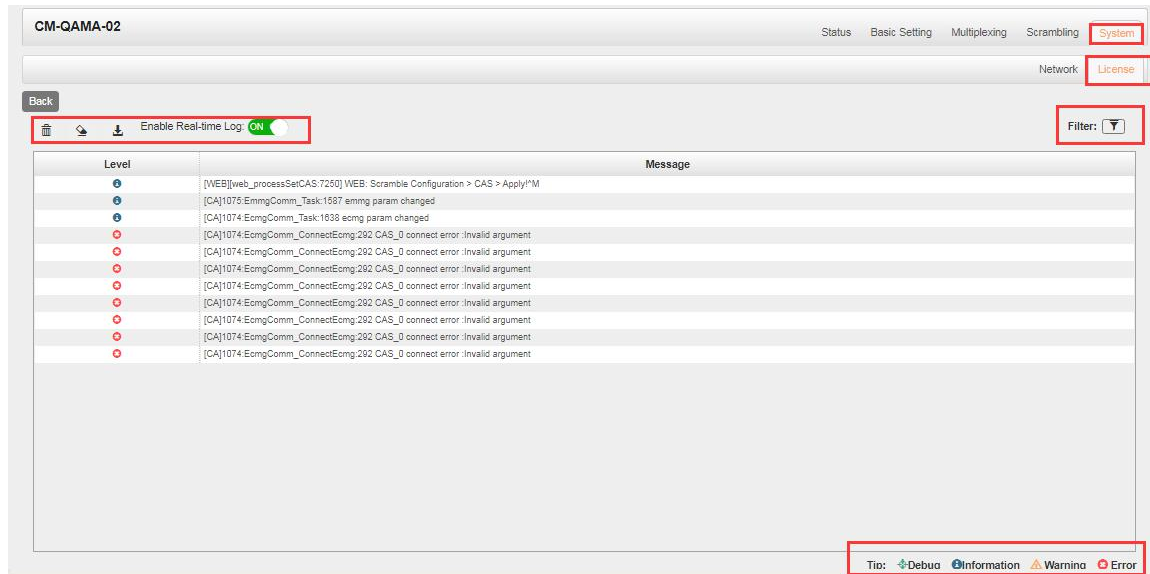
**Others**





Reboot Reset to Defaults

**Log Manage>** This page shows the logs of the module. If there are issues encountered on this module, exporting the logs will help R&D team to analyze and fix them.



Turn on **Enable Real-time Log** switch to see the real time log messages and the severity level of each message below.



- Click  to clear all log messages on the screen.
  - Click  to delete all log information.
  - Click  to export log information.
  - Click  to filter desired log messages.
- Clicking the filter icon, you can simply select what logs to be included.

### Log Filter

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

| Module List |                                     |
|-------------|-------------------------------------|
| Module Name | Operation                           |
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |
| SOCKET      | <input checked="" type="checkbox"/> |

OK Cancel

### 3.5.8.2 OHM-QAMB-02

#### 3.5.8.2.1 Module Status

The Status page contains status information of IP Input, Modulation Output and IP Output.

**Input** > OHM-QAMB-02 has 1024 IP input channels. Those channels are divided into two RJ45 ports, each of which has 512 IP input channels. Clicking **Port 1**, you can obtain status information of the 512 channels, such as input source IP address and port number, total bitrate (Mbps) and effective bitrate (Mbps). The TS analysis and Service List button of each channel allow you to check their individual detailed information. See the image below for reference.

OHM-QAMB-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 22.097 Mbps

| Channel | IP Address : Port   | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|---------------------|-------------------------|---------------------|-------------|--------------|
| 1.1     | 227.10.20.77 : 1111 | 9.230                   | 9.759               | 👁           | 📋            |
| 1.2     | 227.10.20.78 : 1111 | 11.182                  | 12.338              | 👁           | 📋            |
| 1.3     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.4     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.5     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.6     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.7     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.8     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.9     | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |
| 1.10    | 0.0.0.0             | 0.000                   | 0.000               | 👁           | 📋            |

OHM-QAMB-02


Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 21.370 Mbps

| Channel | IP Address : Port | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|-------------------|-------------------------|---------------------|-------------|--------------|
| 1.503   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.504   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.505   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.506   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.507   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.508   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.509   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.510   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.511   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |
| 1.512   | 0.0.0.0           | 0.000                   | 0.000               | 👁           | 📋            |

Clicking the eye icon , you can know all the PIDs of this TS, such as PAT, CAT, PCR, Video Audio and PCR PID. See the image below for reference.

| Channel | IP Address : Port   | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|---------------------|-------------------------|---------------------|-------------|--------------|
| 1.1     | 227.10.20.77 : 1111 | 9.887                   | 9.401               |             |              |
| 1.2     | 227.10.20.78 : 1111 | 10.085                  | 11.107              |             |              |
| 1.3     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.4     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.5     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.6     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.7     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.8     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.9     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.10    | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |

Channel 1.2 TS Analysis

Search

Reset Counter

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service  |
|-----------|---------------|--------------|------------------------|------------|----------|
| 0x0(0)    | 0.005         | 0.054        | 0                      | PAT        |          |
| 0x12(18)  | 0.216         | 1.954        | 0                      | Other      |          |
| 0x05(001) | 0.013         | 0.119        | 0                      | PMT        | Program0 |
| 0x06(002) | 1.857         | 14.990       | 0                      | PCR, Video | Program0 |
| 0x07(003) | 0.073         | 0.705        | 0                      | Audio      | Program0 |
| 0x08(004) | 0.117         | 1.058        | 0                      | Audio      | Program0 |
| 0x09(005) | 0.100         | 0.905        | 0                      | Audio      | Program0 |
| 0x0a(006) | 0.045         | 0.407        | 0                      | Audio      | Program0 |

If the input stream has multiple programs, you can click the icon below “Service List” to see all the services in this stream. See the image below for reference.

OHM-QAMB-02

Status

Basic Setting

Multiplexing

System

IP Input

Modulation Output

IP Output

Port 1

Port 2

Total Bitrate Sum : 21.613 Mbps

| Channel | IP Address : Port   | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|---------------------|-------------------------|---------------------|-------------|--------------|
| 1.1     | 227.10.20.77 : 1111 | 9.891                   | 9.201               |             |              |
| 1.2     | 227.10.20.78 : 1111 | 11.259                  | 12.412              |             |              |
| 1.3     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.4     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.5     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.6     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.7     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.8     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.9     | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |
| 1.10    | 0.0.0.0 : 0         | 0.000                   | 0.000               |             |              |

Channel : 1.1

# Service

1 [1] Program0

You can also check details of a service by clicking the Service Name.

OHM-QAMB-02

Status

Basic Setting

Multiplexing

System

IP Input

Modulation Output

IP Output

Port 1

Port 2

Total Bitrate Sum : 21.055 Mbps

| Channel | IP Address : Port   | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | TS Analysis | Service List |
|---------|---------------------|-------------------------|---------------------|-------------|--------------|
| 1.1     | 227.10.20.77 : 1111 |                         |                     |             |              |
| 1.2     | 227.10.20.78 : 1111 |                         |                     |             |              |
| 1.3     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.4     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.5     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.6     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.7     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.8     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.9     | 0.0.0.0 : 0         |                         |                     |             |              |
| 1.10    | 0.0.0.0 : 0         |                         |                     |             |              |

Channel : 1.1

# Service

1 [1] Program0

[1] Program0

| Type              | PID          | Bitrate(Mbps) |
|-------------------|--------------|---------------|
| PCR               | 612(0x200)   | 0.038         |
| PMT               | 256(0x100)   | 0.002         |
| Video(H264)       | 513(0x201)   | 7.803         |
| Audio             | 4112(0x1010) | 0.173         |
| Private Data(AC3) | 4114(0x1012) | 0.173         |

Close

**Modulation Output** > OHM-QAMB-02 status shows the Modulation output. Just like the IP Input, this shows the total bitrate and effective bitrate of the 16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. The Status also shows the current temperature of the unit on the upper left corner. See image below for reference.

OHM-QAMB-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Total Bitrate Sum : 26.969 Mbps

Temperature: 48°C (120.2°F)

Tip: The module will stop RF output when the temperature reaches or exceeds 74 degrees Celsius(165.2 degrees Fahrenheit)

| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 11.707                  | 26.969              | Normal  |             |              |
| 1.2     | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.000                   | 0.000               | Normal  |             |              |

| Channel | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 11.713                  | 26.969              | Normal  |             |              |
| 1.2     | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.000                   | 0.000               | Normal  |             |              |

Channel : 1.1

| # | Service      |
|---|--------------|
| 1 | [1] Program0 |
| 2 | [2] Program1 |
| 3 | [2] Program2 |
| 4 | [3] Program3 |
| 5 | [3] Program4 |
| 6 | [3] Program5 |

Channel 1.1 TS Analysis

Reset Counter

| PID       | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service  |
|-----------|---------------|--------------|------------------------|------------|----------|
| 0x0(0)    | 0.015         | 0.056        | 82                     | PAT        |          |
| 0x11(17)  | 0.001         | 0.004        | 81                     | SDT, BAT   |          |
| 0x12(18)  | 0.282         | 1.046        | 11                     | EIT        |          |
| 0x15(21)  | 0.000         | 0.000        | 27                     | Other      |          |
| 0x05(101) | 0.030         | 0.111        | 4                      | PMT        | Program0 |
| 0x06(102) | 2.412         | 8.944        | 13                     | PCR, Video | Program0 |
| 0x07(103) | 0.090         | 0.334        | 27                     | Audio      | Program0 |
| 0x08(104) | 0.135         | 0.501        | 17                     | Audio      | Program0 |

**IP Output** > OHM-QAMB-02 status also shows the IP output. Just like the IP Input, this shows the total bitrate and effective bitrate of the 16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. See image below for reference.

OHM-QAMB-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 38.027 Mbps

| Channel | IP Address : Port  | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|--------------------|-------------------------|---------------------|---------|-------------|--------------|
| 1.1     | 224.20.20.1 : 1234 | 11.668                  | 38.027              | Normal  |             |              |
| 1.2     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.3     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.0.0.0 : 0        | 0.000                   | 0.000               | Normal  |             |              |

OHM-QAMB-02

Status Basic Setting Multiplexing System

IP Input Modulation Output IP Output

Port 1 Port 2

Total Bitrate Sum : 38.027 Mbps

| Channel | IP Address : Port | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service List |
|---------|-------------------|-------------------------|---------------------|---------|-------------|--------------|
| 1.3     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.4     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.5     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.6     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.7     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.8     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.9     | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.10    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.11    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.12    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.13    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.14    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.15    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |
| 1.16    | 0.0.0.0 : 0       | 0.000                   | 0.000               | Normal  |             |              |

### 3.5.8.2.2 Module Basic Setting

OHM-QAMB-02 Basic Setting is where you can input the parameters for IP Input, Modulation Output and IP Output.

**IP Input-Parameter Setting**> On this page, there are three tabs where you can modify the multicast IP, port and parameter of IP Input. There are **Port 1**, **Port 2**, and **Batch Setting**. The input can accept Multicast or Unicast and support MPTS and SPTS.

Port 1 and Port 2 have same interface. It shows the 512 channels. Check the box under **Enable** to enable a channel. Input the correct Multicast/Unicast IP address and IP port, and select the correct Protocol for the source IP. Once done, click **Apply** for the changes to take effect. See the image below for reference.

OHM-QAMB-02

Status **Basic Setting** Multiplexing System

**IP Input** Modulation Output IP Output

Port 1 Port 2

Batch Setting ▾

| Channel | Enable                              | Destination IP Address | Destination Port | Protocol | VLAN Enable | VLAN ID |
|---------|-------------------------------------|------------------------|------------------|----------|-------------|---------|
| 1.1     | <input checked="" type="checkbox"/> | 227.10.20.77           | 1111             | UDP      | Disable     | 1       |
| 1.2     | <input checked="" type="checkbox"/> | 227.10.20.78           | 1111             | UDP      | Disable     | 1       |
| 1.3     | <input type="checkbox"/>            | 239.192.0.202          | 10000            | UDP      | Disable     | 1       |
| 1.4     | <input type="checkbox"/>            | 239.192.0.208          | 10000            | UDP      | Disable     | 1       |
| 1.5     | <input type="checkbox"/>            | 227.10.20.30           | 1234             | UDP      | Disable     | 1       |
| 1.6     | <input type="checkbox"/>            | 227.10.20.6            | 1234             | UDP      | Disable     | 1       |
| 1.7     | <input type="checkbox"/>            | 227.10.20.7            | 1234             | UDP      | Disable     | 1       |
| 1.8     | <input type="checkbox"/>            | 227.10.20.8            | 1234             | UDP      | Disable     | 1       |
| 1.9     | <input type="checkbox"/>            | 227.10.20.9            | 1234             | UDP      | Disable     | 1       |
| 1.10    | <input type="checkbox"/>            | 227.10.20.10           | 1234             | UDP      | Disable     | 1       |
| 1.11    | <input type="checkbox"/>            | 227.10.20.11           | 1234             | UDP      | Disable     | 1       |
| 1.12    | <input type="checkbox"/>            | 227.10.20.12           | 1234             | UDP      | Disable     | 1       |
| 1.13    | <input type="checkbox"/>            | 227.10.20.13           | 1234             | UDP      | Disable     | 1       |
| 1.14    | <input type="checkbox"/>            | 227.10.20.14           | 1234             | UDP      | Disable     | 1       |
| 1.15    | <input type="checkbox"/>            | 227.10.20.15           | 1234             | UDP      | Disable     | 1       |

Apply

Batch Setting is where users can input the IP input parameters in batch. See the image below for reference.

OHM-QAMB-02

Status **Basic Setting** Multiplexing System

**IP Input** Modulation Output IP Output

Port 1 Port 2

Batch Setting ^

Select All ☐ Enable ☐ Protocol ☐ Enable VLAN ☐

Start Channel-End Channel 1 - 512

☐ Destination IP Address 227.10.20.80 Same

☐ Destination Port 1234 Same

☐ VLAN ID 1

Batch Setting

| Channel | Enable                              | Destination IP Address | Destination Port | Protocol | VLAN Enable | VLAN ID |
|---------|-------------------------------------|------------------------|------------------|----------|-------------|---------|
| 1.1     | <input checked="" type="checkbox"/> | 227.10.20.77           | 1111             | UDP      | Disable     | 1       |
| 1.2     | <input checked="" type="checkbox"/> | 227.10.20.78           | 1111             | UDP      | Disable     | 1       |
| 1.3     | <input type="checkbox"/>            | 239.192.0.202          | 10000            | UDP      | Disable     | 1       |
| 1.4     | <input type="checkbox"/>            | 239.192.0.208          | 10000            | UDP      | Disable     | 1       |
| 1.5     | <input type="checkbox"/>            | 227.10.20.30           | 1234             | UDP      | Disable     | 1       |
| 1.6     | <input type="checkbox"/>            | 227.10.20.6            | 1234             | UDP      | Disable     | 1       |
| 1.7     | <input type="checkbox"/>            | 227.10.20.7            | 1234             | UDP      | Disable     | 1       |
| 1.8     | <input type="checkbox"/>            | 227.10.20.8            | 1234             | UDP      | Disable     | 1       |

Apply

**Modulation Output-Parameter Setting** On this page, you can enable channels as you need and input the Channel No., QAM Mode, Symbol Rate (KBaud) and RF Level Gain (dBmV) to have an output.



OHM-QAMB-02

Status **Basic Setting** Multiplexing System

IP Input **Modulation Output** IP Output

Batch Setting ▾

RF Level(dBuV): 85 PS/SI Interval(ms): 100 Channel Standard: STD

Apply

| Channel | Enable                              | Channel No. | QAM Mode | SymbolRate(KBaud) | RF Level Gain (dBmV) |
|---------|-------------------------------------|-------------|----------|-------------------|----------------------|
| 1.1     | <input checked="" type="checkbox"/> | CH2-57MHz   | QAM64    | 8875              | 0                    |
| 1.2     | <input type="checkbox"/>            | CH3-63MHz   | QAM64    | 8875              | 0                    |
| 1.3     | <input type="checkbox"/>            | CH4-69MHz   | QAM64    | 8875              | 0                    |
| 1.4     | <input type="checkbox"/>            | CH5-75MHz   | QAM64    | 8875              | 0                    |
| 1.5     | <input type="checkbox"/>            | CH6-81MHz   | QAM64    | 8875              | 0                    |
| 1.6     | <input type="checkbox"/>            | CH7-177MHz  | QAM64    | 8875              | 0                    |
| 1.7     | <input type="checkbox"/>            | CH8-183MHz  | QAM64    | 8875              | 0                    |
| 1.8     | <input type="checkbox"/>            | CH9-190MHz  | QAM64    | 8875              | 0                    |
| 1.9     | <input type="checkbox"/>            | CH10-195MHz | QAM64    | 8875              | 0                    |
| 1.10    | <input type="checkbox"/>            | CH11-201MHz | QAM64    | 8875              | 0                    |
| 1.11    | <input type="checkbox"/>            | CH12-207MHz | QAM64    | 8875              | 0                    |
| 1.12    | <input type="checkbox"/>            | CH13-213MHz | QAM64    | 8875              | 0                    |
| 1.13    | <input type="checkbox"/>            | CH14-123MHz | QAM64    | 8875              | 0                    |
| 1.14    | <input type="checkbox"/>            | CH15-129MHz | QAM64    | 8875              | 0                    |
| 1.15    | <input type="checkbox"/>            | CH16-135MHz | QAM64    | 8875              | 0                    |
| 1.16    | <input type="checkbox"/>            | CH17-141MHz | QAM64    | 8875              | 0                    |

**IP Output-Parameter Setting** On this page, there are three tabs where you can modify the multicast IP, port and parameter of IP Output. There are **Port 1**, **Port 2** and **Batch Setting**. The output can accept Multicast or Unicast and support MPTS and SPTS.

Port 1 shows the 16 channels. Check the box under Enable to enable a channel. Input the correct Multicast/Unicast IP address, IP port and appropriate output bitrate, and select the correct Protocol for the output IP. Once done, click **Apply** for the changes to take effect. See the image below for reference.

OHM-QAMB-02

Status **Basic Setting** Multiplexing System

IP Input Modulation Output **IP Output**

Port 1 Port 2

Batch Setting ▾

< 1 >

| Channel | Enable                              | Source Port | Destination IP Address | Destination Port | Protocol | Pkt Length | Enable Destination MAC | Destination MAC   |
|---------|-------------------------------------|-------------|------------------------|------------------|----------|------------|------------------------|-------------------|
| 1.1     | <input checked="" type="checkbox"/> | 1000        | 224.20.20.1            | 1234             | UDP      | 7          | Disable                | 01:00:5E:14:14:01 |
| 1.2     | <input type="checkbox"/>            | 1000        | 224.20.20.2            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.3     | <input type="checkbox"/>            | 1000        | 224.20.20.3            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.4     | <input type="checkbox"/>            | 1000        | 224.20.20.4            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.5     | <input type="checkbox"/>            | 1000        | 224.20.20.5            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.6     | <input type="checkbox"/>            | 1000        | 224.20.20.6            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.7     | <input type="checkbox"/>            | 1000        | 224.20.20.7            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.8     | <input type="checkbox"/>            | 1000        | 224.20.20.8            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.9     | <input type="checkbox"/>            | 1000        | 224.20.20.9            | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.10    | <input type="checkbox"/>            | 1000        | 224.20.20.10           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.11    | <input type="checkbox"/>            | 1000        | 224.20.20.11           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.12    | <input type="checkbox"/>            | 1000        | 224.20.20.12           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.13    | <input type="checkbox"/>            | 1000        | 224.20.20.13           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.14    | <input type="checkbox"/>            | 1000        | 224.20.20.14           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |
| 1.15    | <input type="checkbox"/>            | 1000        | 224.20.20.15           | 1234             | UDP      | 7          | Disable                | 00:00:00:00:00:00 |

Apply

### 3.5.8.2.3 Multiplexing

Multiplexing has four tabs: **Source**, **Service Configuration**, **PSIP** and **PID Transmission**. Here you can set to output services from IP Input to Modulation Output. Click **Multiplexing** to see 32 modulation output channels. Select a channel you want to configure and you will see **Source** setting of this channel.

**Multiplexing-Source**> Source is where you select a source for output. You can choose **Port 1** or **Port 2** for the source. Each port is divided into 16 groups to complete 512 channels. Select a Port and you can see service lists of Group and Channel as shown below.

OHM-QAMB-02

Status Basic Setting **Multiplexing** System

Output Channel

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16  
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Source Service Configuration PSIP PID Transmission

Port 1 Port 2

1-32 33-64 65-96 97-128 129-160 161-192 193-224 225-256 257-288 289-320 321-352 353-384 385-416 417-448 449-480 481-512

Please tick the input channel to get the source of the program ☐ Select All

☐ 1.1 ☒ 1.2 ☐ 1.3 ☐ 1.4 ☐ 1.5 ☐ 1.6 ☐ 1.7 ☐ 1.8 ☐ 1.9 ☐ 1.10 ☐ 1.11 ☐ 1.12 ☐ 1.13 ☐ 1.14 ☐ 1.15 ☐ 1.16  
☐ 1.17 ☐ 1.18 ☐ 1.19 ☐ 1.20 ☐ 1.21 ☐ 1.22 ☐ 1.23 ☐ 1.24 ☐ 1.25 ☐ 1.26 ☐ 1.27 ☐ 1.28 ☐ 1.29 ☐ 1.30 ☐ 1.31 ☐ 1.32

Scanning Time(ms) : 5000 Set

Source ☐ ECM/EMM Filter ☐ Bypass

☒ [1, 2] 227.10.20.78:1111  
☒ [1] Program0  
☒ [2] Program1  
☒ [22] Program2  
☒ [32] Program3  
☒ [35] Program4  
☒ [33] Program5

RF Output[1] 57000KHz 6875KBaud

|   | Source | Service Name  |   |
|---|--------|---------------|---|
| 1 | 1.2    | [1] Program0  | ✖ |
| 2 | 1.2    | [2] Program1  | ✖ |
| 3 | 1.2    | [22] Program2 | ✖ |
| 4 | 1.2    | [32] Program3 | ✖ |
| 5 | 1.2    | [35] Program4 | ✖ |
| 6 | 1.2    | [33] Program5 | ✖ |

Apply

Clear Config

To output the service on the Modulation Output, you can simply put a tick in the box beside the service you want to output. You can output multiple Service from different Source channels or bypass the TS to Modulation output.

Scanning Time(ms) : 5000 Set

Source ☐ ECM/EMM Filter ☒ Bypass

☒ [1, 2] 227.10.20.78:1111  
☒ [1] Program0  
☒ [2] Program1  
☒ [22] Program2  
☒ [32] Program3  
☒ [35] Program4  
☒ [33] Program5

RF Output[1] 57000KHz 6875KBaud

|   | Source | Service Name  |   |
|---|--------|---------------|---|
| 1 | 1.2    | [1] Program0  | ✖ |
| 2 | 1.2    | [2] Program1  | ✖ |
| 3 | 1.2    | [22] Program2 | ✖ |
| 4 | 1.2    | [32] Program3 | ✖ |
| 5 | 1.2    | [35] Program4 | ✖ |
| 6 | 1.2    | [33] Program5 | ✖ |
| 7 | 1.1    | [1] Program0  | ✖ |

To Output the TS by Bypass mode, you can simply check the **Bypass** box of the TS. You can only bypass 1 TS and cannot output other services from different channel sources. Bypass mode allows you to keep the input signal automatically be redirected to Modulation output without re-scanning the input or transferring it to output.

Scanning Time(ms) : 5000 Set

Source ☐ ECM/EMM Filter ☒ Bypass

☒ [1, 2] 227.10.20.78:1111  
☒ [1] Program0  
☒ [2] Program1  
☒ [22] Program2  
☒ [32] Program3  
☒ [35] Program4  
☒ [33] Program5

RF Output[1] 57000KHz 6875KBaud

|                          | Source | Service Name |   |
|--------------------------|--------|--------------|---|
| [Bypass] Source          |        |              | ✖ |
| [1, 2] 227.10.20.78:1111 |        |              | ✖ |

**Multiplexing-Service Configuration**> After output the services from IP input to Modulation output, you can now edit the Service ID and other PID on the output. Click on the Service Configuration to see this page, it shows the output service on this channel only.



Source Service Configuration PSIP PID Transmission

Click "Apply" after modifying your parameters to save the configuration.

Output EditTS

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.1    | [1]Program0  |
| 2 | 1.2    | [2]Program0  |
| 3 | 1.2    | [3]Program1  |
| 4 | 1.2    | [22]Program2 |
| 5 | 1.2    | [32]Program3 |
| 6 | 1.2    | [35]Program4 |
| 7 | 1.2    | [33]Program5 |

You can click the Name of the service and it will show a table where you can modify some information of the service like Service ID, Service Name, Service Provider, PCR PMT AUDIO and Video PID. Click **OK** for the changes to take effect.

Source Service Configuration PSIP PID Transmission

Click "Apply" after modifying your parameters to save the configuration.

Output EditTS

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.1    | [1]Program0  |
| 2 | 1.2    | [2]Program0  |
| 3 | 1.2    | [3]Program1  |
| 4 | 1.2    | [22]Program2 |
| 5 | 1.2    | [32]Program3 |
| 6 | 1.2    | [35]Program4 |
| 7 | 1.2    | [33]Program5 |

[1.1] TS >> Program0

☐ single-part mode

|                             | Original Value | Value    |
|-----------------------------|----------------|----------|
| Service ID                  | 1              | 1        |
| Service Name                |                | Program0 |
| Service Provider            |                | Program0 |
| Service Type                |                | 2        |
| PCR PID                     | 512            | 512      |
| PMT PID                     | 256            | 256      |
| Video(H264)                 | 513            | 513      |
| Audio                       | 4112           | 4112     |
| Private Data/AC3            | 4114           | 4114     |
| Channel Number(Major-Minor) | 1              | 1        |

Here you can also edit the Original Network ID, TS ID and Modulation Mode of the Modulation Output.

Click "Apply" after modifying your parameters to save the configuration.

Output EditTS

|   | Source | Service Name |
|---|--------|--------------|
| 1 | 1.1    | [1]Program0  |
| 2 | 1.2    | [1]Program0  |
| 3 | 1.2    | [2]Program1  |
| 4 | 1.2    | [22]Program2 |
| 5 | 1.2    | [32]Program3 |
| 6 | 1.2    | [35]Program4 |
| 7 | 1.2    | [33]Program5 |

[1.1] TS

Original Network ID 0

TS ID 0

Modulation Mode ATSC ( 8 VSB)

| NO. | Service ID | Service Name | Service Provider |
|-----|------------|--------------|------------------|
| 1   |            | Program0     | Program0         |
| 2   | 1          | Program0     | Program0         |
| 3   | 2          | Program1     | Program1         |
| 4   | 22         | Program2     | Program2         |
| 5   | 32         | Program3     | Program3         |
| 6   | 35         | Program4     | Program4         |
| 7   | 33         | Program5     | Program5         |

OK Cancel

Apply

Clear Config

**Multiplexing-PSIP>** This page is to choose whether to insert/generate the PSIP or Copy the PSIP from the input streams.

**Multiplexing-PID Transmission**> This page is to transmit the input PID to Output on the PID required by the system.

### 3.5.8.2.4 Scrambling

OHM-QAMB-02 Scramble is where you can encrypt a service on the Modulation Output. Scrambler can be connected 6 different CAS simultaneously. There are seven tabs on this page namely Service Scrambling and CAS1 to CAS6. 6 CAS tabs have the same interface.

Input the correct CA parameters on this page and make sure the ECMG and EMMG are connected GREEN. Some CA will provide a Super CAS ID with 8 digits. This is a combination of the 4-digit CAS System ID and 4-digit of ECMG Sub System ID.

**Service Scrambling**> On this page, you can encrypt a service in the Modulation Output. Select a channel for output and you will see a service list. If you simulcrypt 6 different CA, select one of them for encryption as you need, then select the CA ID of the service. Click **Apply** to finish setting.

OHM-QAMB-02

Status Basic Setting Multiplexing **Scrambling** System

Service Scrambling CAS 1 CAS 2 CAS 3 CAS 4 CAS 5 CAS 6

Output Channel

1 All

Scrambled service: 0

Apply

Service Scrambling Setting

| NO. | SERVICE(7)            | CAS1 | CAS2 | CAS3 | CAS4 | CAS5 | CAS6 |
|-----|-----------------------|------|------|------|------|------|------|
| 1   | [CH-1] > [1]Program0  | None | None | None | None | None | None |
| 2   | [CH-1] > [2]Program0  | None | None | None | None | None | None |
| 3   | [CH-1] > [3]Program1  | None | None | None | None | None | None |
| 4   | [CH-1] > [22]Program2 | None | None | None | None | None | None |
| 5   | [CH-1] > [32]Program3 | None | None | None | None | None | None |
| 6   | [CH-1] > [35]Program4 | None | None | None | None | None | None |
| 7   | [CH-1] > [33]Program5 | None | None | None | None | None | None |

Batch Setting

The Modulation Output Channel will only list the enabled channels but not all 16 channels. If the channels and CA ID to be used are arranged in a chronological order, you can use **Batch Setting** for faster encryption. This is advisable if you have 10 or more services in a single channel for output. See the image below for reference.

OHM-QAMB-02

Status Basic Setting Multiplexing **Scrambling** System

Service Scrambling CAS 1 CAS 2 CAS 3 CAS 4 CAS 5 CAS 6

Output Channel

1 All

Scrambled service: 0

Apply

Service Scrambling Setting

When the number of programs exceeds the number of CASs that can be allocated, the CAS setting will repeat.

Select Batch Setting Parameter

Scrambling ☐ Enable

CAS1 ☐ None

CAS2 ☐ None

CAS3 ☐ None

CAS4 ☐ None

CAS5 ☐ None

CAS6 ☐ None

Auto Assign

Start Service Number ~ End Service Number

Start Service Number End Service Number OK

Batch Setting

### 3.5.8.2.5 System

OHM-QAMB-02 System is composed of two sub menus namely **Network** and **License**.

**Network**> Here you can modify the IP Address, Subnet Mask and Gateway for each port of the module, except for the address of the module itself. This also shows the MAC Address of each port of the module. See the image below for reference.

OHM-QAMB-02

Status Basic Setting Multiplexing **System**

Network License

| Port  | IP Address   | Subnet Mask   | Gateway       | MAC Address       | Link Speed | Link Status |
|-------|--------------|---------------|---------------|-------------------|------------|-------------|
| NMS   | 10.83.163.26 | 255.255.255.0 | 10.83.163.254 | A0:69:86:03:FA:AC | auto       | link down   |
| CAS   | 192.168.2.10 | 255.255.255.0 | 192.168.2.254 | A0:69:86:03:FA:AD | auto       | link down   |
| DATA1 | 192.168.3.10 | 255.255.255.0 | 192.168.3.254 | A0:69:86:03:FA:AE | auto       | 100full     |
| DATA2 | 192.168.4.10 | 255.255.255.0 | 192.168.4.254 | A0:69:86:03:FA:AF | auto       | link down   |

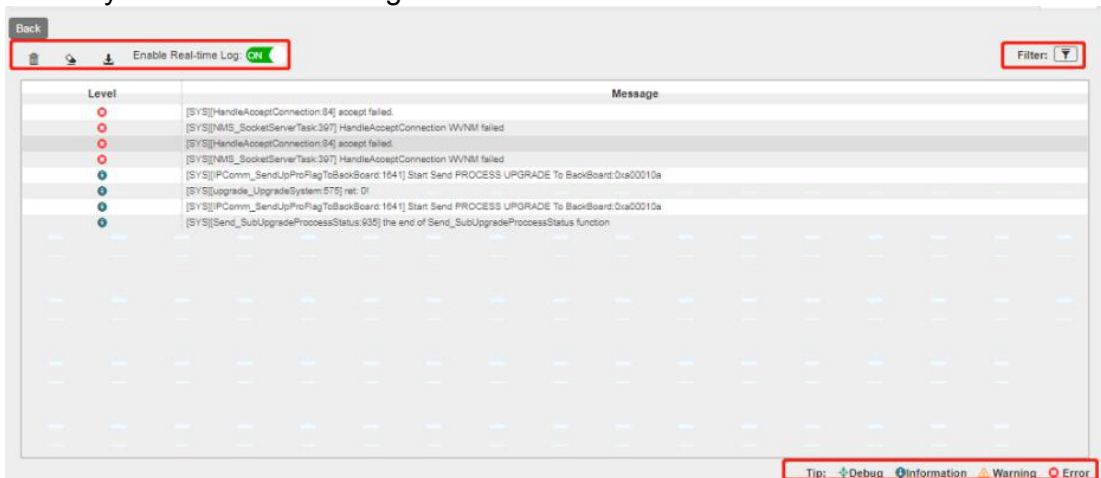
Apply





**License>** Here you can import/export *license*, reboot module, *restore factory defaultsettings* and *manage logs*.



**Log Manage>** This page shows the logs of the module. If there are issues encountered on this module, exporting the logs will help R&D team to analyze and fix them.

Turn on **Enable Real-time Log** switch to see the real time log messages and the severity level of each message below.



- Click  to clear all log messages on the screen.
  - Click  to delete all log information.
  - Click  to export log information.
  - Click  to filter desired log messages.
- Clicking the filter icon, you can simply select what logs to be included.

**Log Filter**

| Level       |                                     |
|-------------|-------------------------------------|
| Level       | Operation                           |
| Error       | <input checked="" type="checkbox"/> |
| Warning     | <input checked="" type="checkbox"/> |
| Information | <input checked="" type="checkbox"/> |
| Debug       | <input type="checkbox"/>            |

| Module List |                                     |
|-------------|-------------------------------------|
| Module Name | Operation                           |
| SYS         | <input checked="" type="checkbox"/> |
| PARAMS      | <input checked="" type="checkbox"/> |
| UPGRADE     | <input checked="" type="checkbox"/> |
| TSPROCESS   | <input checked="" type="checkbox"/> |
| SIPROCESS   | <input checked="" type="checkbox"/> |
| LICENSE     | <input checked="" type="checkbox"/> |
| SOCKET      | <input checked="" type="checkbox"/> |

## Function Modules

### 3.5.9 OHP-ASI

CP-ASI-00 module is an ASI module that has 5 bidirectional ASI ports. Each port can be defined as either ASI input port or ASI output port. It supports different TS stream formats of 188/204 bytes packet length and Byte/Packet stream mode with up to 150Mbps TS stream bitrate.



Click **OHP-ASI-00** in the Module List to reach OHP-ASI-00 module page.

### 3.5.9.1 Module Status

| OHP-ASI-00 |              |               |                         |                     |         |             | Status     | Basic Setting | ASI Input | ASI Output | System |
|------------|--------------|---------------|-------------------------|---------------------|---------|-------------|------------|---------------|-----------|------------|--------|
| Channel    | Input/Output | Locked Status | Effective Bitrate(Mbps) | Total Bitrate(Mbps) | Bitrate | TS Analysis | Service Li |               |           |            |        |
| 1.1        | Input        | Locked        | 0.000                   | 35.968              | --      |             |            |               |           |            |        |
| 1.2        | Input        | Unlocked      | 0.000                   | 0.000               | --      |             |            |               |           |            |        |
| 1.3        | Output       | --            | 0.000                   | 36.001              | Normal  |             |            |               |           |            |        |
| 1.4        | Output       | --            | 0.000                   | 36.000              | Normal  |             |            |               |           |            |        |
| 1.5        | Output       | --            | 0.000                   | 36.000              | Normal  |             |            |               |           |            |        |

Click **TS Analysis** of each channel, you can see TS bitrate Analysis. Click **Reset Counter** to reset the Continuity Count Error counter. In the Search bar, you can input key words or numbers, such as PIDs, Type or Service, for a quick search.

| Channel1.5 TS Analysis |               |              |                        |            |         | Reset Counter |
|------------------------|---------------|--------------|------------------------|------------|---------|---------------|
| Search                 |               |              |                        |            |         |               |
| PID                    | Bitrate(Mbps) | Bandwidth(%) | Continuity Count Error | Type       | Service |               |
| 0x0(0)                 | 0.015         | 0.042        | 6                      | PAT        |         |               |
| 0x33(51)               | 0.045         | 0.125        | 127                    | Other      |         |               |
| 0x100(256)             | 8.852         | 24.611       | 127                    | PCR, Video |         |               |
| 0x101(257)             | 0.175         | 0.467        | 127                    | Audio      |         |               |
| 0x1000(4096)           | 0.015         | 0.042        | 6                      | PMT        |         |               |
| 0x1fb(5187)            | 0.033         | 0.092        | 39                     | Other      |         |               |

Click the icon to check service information of all the inputs.

| Channel : 1.5 |         |
|---------------|---------|
| #             | Service |
| 1             |         |

You can check program details by clicking the program item.

| [1]                       |              |               |
|---------------------------|--------------|---------------|
| Type                      | PID          | Bitrate(Mbps) |
| PCR                       | 256(0x100)   | 8.210         |
| PMT                       | 4096(0x1000) | 0.015         |
| StreamType:27-Video(H264) | 256(0x100)   | 8.210         |
| StreamType:3-Audio        | 257(0x101)   | 0.077         |
| Close                     |              |               |

### 3.5.9.2 Module Setting

OHP-ASI-00 Status Basic Setting ASI Input ASI Output System

| Channel | Input/Output | Total Bitrate(Mbps) |
|---------|--------------|---------------------|
| 1.1     | Output       | 36                  |
| 1.2     | Output       | 36                  |
| 1.3     | Input        | --                  |
| 1.4     | Output       | 10                  |
| 1.5     | Input        | --                  |

Apply

| Name                 | Range     |
|----------------------|-----------|
| Total Bitrate (Mbps) | 4.1 - 180 |

Click the **Apply** button on the right side to make the change take effect.

### 3.5.9.3 ASI Input

OHP-ASI-00 Status Basic Setting ASI Input ASI Output System

Channel Select : Channel 1.3 Scanning Time(ms) : 1000 Program Scan


| Service Name         | Destination | Destination Setting |
|----------------------|-------------|---------------------|
| Channel 1.5 +        |             | ⚙                   |
| [1]                  |             | ✍                   |
| PID 51 (Other PID)   |             | ✍                   |
| PID 8187 (Other PID) |             | ✍                   |

Apply

Clear Config

You can route a whole stream or a service(s) from the input channel toward the available output channels (IP or RF). Two types of routing are available.

#### To use **Bypass mode**

In this mode, you can route a whole input transport stream towards an IP or RF output which will be occupied only by this stream. Any attempt of routing other stream/service towards this channel will be an error. This mode can only be set by clicking the icon  on the TS.

#### To use **Multiplex mode**

This mode allows the administrator to perform the following operations:

1. Route a single service towards an output channel to create SPTS.
2. Route services towards a single output channel to create MPTS.
3. Route service(s) AND stream/s from multiple channels towards a single output channel to create MPTS.

### 3.5.9.4 ASI Output

OHP-ASI-00

Status Basic Setting ASI Input **ASI Output** System

Click "Apply" after modifying your parameters to save the configuration.

**[1.1] TS**

1. Program1 15.1.5

**[1.2] TS**

1. Program2 16.1.5

**[1.4] TS**

1. Program3 15.1.5

**[1.1] TS**

Original Network ID 0

TS ID 0

| NO. | Service ID | Service Name | Service Provider |
|-----|------------|--------------|------------------|
| 1   | 1          | Program1     |                  |

Other PIDs

51 8187

OK Cancel

Apply

Clear Config

- TS setting: Please refer to IP Output service configuration on baseboard IP output.
- LCN setting: You need to add NIT streams of all frequencies to the base TS (frequency), which is for your STB to automatically search and identify all the TS (frequencies) LCN information.
- Check or reset Original Network ID and TS ID of each TS (frequency). Each TS should have different IDs.
- Fill the Original Network ID and TS ID of each TS (frequency) in the field of the base TS (frequency) and then click **Add** to create a NIT stream for this TS (frequency).
- Click **+Descriptor** then **LCN Descriptor** to check all the programs which are contained in this frequency. Then set programs LCN.



The screenshot shows the NIT configuration interface. On the left, the 'NIT Network' section has tabs for 'NIT Stream' and 'NIT Actual'. Below these, there are input fields for 'Original Network ID' (0) and 'TS ID' (0), with an 'Add' button. A table below shows 'Original Ne...', 'TS ID', 'Descriptor', and 'Operation'. A red arrow points from the 'Add' button to the 'Logical Channel Number' dialog box. The dialog box has a title 'Logical Channel Number' and a table with columns: 'TS', 'Service ID', 'LCN [0, 1023]', 'Visible Service Flag', and a checkbox. The table contains three rows: (1.1, 1, 1, Visible, checkbox), (1.2, 1, 2, Visible, checkbox), and (1.4, 1, 3, Visible, checkbox). A red arrow points from the checkbox column to the 'Logical Channel Number' dialog box. The dialog box has 'OK' and 'Close' buttons.

| TS  | Service ID | LCN [0, 1023] | Visible Service Flag |                          |
|-----|------------|---------------|----------------------|--------------------------|
| 1.1 | 1          | 1             | Visible              | <input type="checkbox"/> |
| 1.2 | 1          | 2             | Visible              | <input type="checkbox"/> |
| 1.4 | 1          | 3             | Visible              | <input type="checkbox"/> |

Logical Channel Number V1 ☒ V2 ☐

OK Close

- Repeat the operations to add next TS (frequency) until NIT streams of all the frequencies have been included. Finally click **Apply** to let all configuration take effect. Then searching programs in your STB, you will get all programs in the order of LCN you set.

### 3.5.9.5 System

The screenshot shows the 'System' configuration page. The top navigation bar includes 'Status', 'Basic Setting', 'ASI Input', 'ASI Output', and 'System' (highlighted). The main content area has a sidebar with 'License', 'SNMP MIB', 'Logs', and 'Others'. The 'License' section has fields for 'Product ID', 'Import License', and 'Export License', with 'Browse' and 'Upload' buttons. The 'SNMP MIB' section has an 'Export MIB' field with an 'Export' button. The 'Logs' section has an 'Open' button. The 'Others' section has 'Reboot' and 'Reset to Defaults' buttons.

OHP-ASI-00

Status Basic Setting ASI Input ASI Output **System**

License

Product ID

Import License

Export License

Export

SNMP MIB

Export MIB

Export

Logs

Open

Others

Reboot

Reset to Defaults

On **System** page you can choose to:

Import/Export license  
 Export SNMP/MIB  
 Manage logs  
 Reboot the unit  
 Restore the unit to factory defaults

### 3.5.10 OHP6-EAS

The OHP6-EAS-00 module provides the ability to interrupt Encoder playback and switch to an external transport stream. This feature is for the US market and requires the OmniHub chassis to be set for ATSC standard. A common application of Emergency Alert Systems is for Broadcast and Audio Muting.

The trigger switched video content on the Encoders can be sensed using a DC contact closure or the SCTE-18 EAS standard over ASI/IP when the EAS is “Paved” or actively replacing the encoder outputs



#### 3.5.10.1 Module Settings

Below is an example of the EAS module configuration settings with some additional descriptions. Click the **Apply** button on the right side of the EAS settings page to make the change take effect.

| EAS Source Setting |               |
|--------------------|---------------|
| EAS Signal Input:  | Digital(IP)   |
| EAS Program Input: | AV            |
| Trigger Mode:      | Normally Open |

*EAS Signal Input* is where you select how the module senses the trigger:

- Digital – Trigger is provided via IP (SCTE-18 Broadcast Standard)
- Analog – Trigger is provided as DC voltage to the EAS Control connector

*EAS Program Input.* Here you can select where the content originates from.

- AV – Content is provided as RCA/Analog AV inputs to EAS built in the encoder
- ASI – Content is provided as ASI with MPEG Transport Stream.

| Command Input Setting |             |
|-----------------------|-------------|
| PID:                  | 1           |
| IP Address:           | 192.1.1.100 |
| IP Port :             | 5050        |

**Command Input Settings.** You specify the incoming PID, IP, and Port of the SCTE-18 triggers over the Ethernet cable. The **IP EAS IN** RJ45 Ethernet port on the module is where this information must be received.

| Encoder Setting       |           |
|-----------------------|-----------|
| Video Type:           | Mpeg-2    |
| Audio Type:           | Mpeg4-AAC |
| Video Bitrate (Kbps): | 5000      |
| Audio Bitrate (Kbps): | 320       |
| Volume:               | 10        |

**Encoder Settings.** This section is for the RCA / Analog-AV inputs. When the takeover content is provided in this fashion it must be encoded to MPEG “.TS” Transport Stream data. The Video, Audio, and Bitrate settings are used to configure the format.

| IP Output Setting   |              |
|---|--------------|
| <p><b>Note:</b> Don't take up the UDP multicast address, avoid the IP conflict. If you want to modify them, you need to modify other subboards synchronously.</p> |              |
| Editable:   | Enable       |
| IP Address:   | 227.10.50.60 |
| Command Port:   | 1235         |
| Data Port:  | 1234         |

**IP Output Settings.** You configure the command sent from the EAS module to the encoders. The settings applied here must match in the EAS tab of each Encoder Module.

Table of all parameters in the EAS module:

| Name                    | Range                                  | Name                     | Range       |
|-------------------------|--|--------------------------|-------------|
| Command Input Setting   |  |                          |             |
| <b>EAS Signal Input</b> | Digital (IP)<br>Analogue (Dry Contact) | <b>EAS Program Input</b> | ASI<br>AV   |
| <b>Trigger Mode</b>     | Normally Open<br>Normally Closed       |                          |             |
| Encoder Setting         |  |                          |             |
| <b>Video Type</b>       | H.264, MPEG-2                          | Audio Type               | AC3, Mpeg-1 |

|                              |            |                         |                                    |
|------------------------------|------------|-------------------------|------------------------------------|
|                              |            |                         | Layer 2<br>Mpeg2-AAC,<br>Mpeg4-AAC |
| <b>Video Bit rate (Kbps)</b> | 1500~20000 | Audio Bitrate<br>(Kbps) | 128, 192, 256, 384                 |
| <b>Volume</b>                | -10~10     |                         |                                    |

Example of the EAS module Status Page:

| EAS Status           |                |
|----------------------|----------------|
| EAS Status:          | Digital Locked |
| AV Input             |                |
| Video Resolution:    | 720x576_50i    |
| Encoder Status       |                |
| Total Bit Rate:      | 8.190 Mbps     |
| Effective Bit Rate:  | 7.709 Mbps     |
| Video Resolution:    | 720x576_50i    |
| ASI Input            |                |
| Signal Lock:         | Locked         |
| Total Bit Rate:      | 8.578 Mbps     |
| Effective Bit Rate:  | 8.441 Mbps     |
| Program Scan Status: | Normal         |
| IP Output            |                |
| Total Bit Rate:      | 8.655 Mbps     |
| Video Bit Rate:      | 6.172 Mbps     |
| Audio Bit Rate:      | 0.251 Mbps     |
| Effective Bit Rate:  | 7.726 Mbps     |
| Version Info         |                |
| Firmware Version:    | V0.2.0         |
| Software Version:    | V0.0.32        |
| Hardware Version:    | V0.0.0         |

### 3.5.11 OHP6-CAM-00

OHP6-CAM-00 is used to decrypt and encrypt services. It has 2 independent CI card slots that are compatible with mainstream CAM cards but support only Xcrypt CAM CAS for encryption and supports mainstream CAS decryption.



### 3.5.11.1 Module Status

Click the name of OHP6-CAM-00 in the module list to view its Status page. This page will show you the status of each channel and the bitrate of each service. See OHR6-DVBC-00 on page 30 to 35 for reference.

| 13: CP-CAM-00 |                     |  |             |              |
|---------------|---------------------|--|-------------|--------------|
|               |                     | <a href="#">Status</a> <a href="#">CI</a> <a href="#">Service Configuration</a> <a href="#">System Operation</a> |             |              |
| Channel       | Total Bitrate(Mbps) | Effective Bitrate(Mbps)  | TS Analysis | Service List |
| 1.1           | 5.443               | 5.443  |             |              |
| 1.2           | 5.443               | 5.443  |             |              |

Note that this module has scrambling and descrambling functions. To choose which function you want to use, go to System Operation and select the CAM mode.

13: CP-CAM-00

Change CAM Mode

Descrambling  
Scrambling  
Descrambling

Apply

License

### 3.5.11.2 CI

You can output the received encrypted services in DVBS2, DVBC, ISDT, etc. to OHP6-CAM-00 to decrypt the service and rebroadcast it to QAM, OFDM, IP, etc. The CI page will show you the list of the successfully-decrypted services in the channel.

13: CP-CAM-00

CAM Max Bitrate: 72Mbps

CAM1 (Initialize Success)

Reset

CAM Card NameCAMCAS-XCRYPT  
CA System ID19152

PID

Service Information

Descrambling Status

13: CP-CAM-00

[Status](#)
[CI](#)
[Service Configuration](#)
[System Operation](#)

CAM Max Bitrate: 72Mbps

CAM1 (Initialize Success)

Reset

CAM Card NameCAMCAS-XCRYPT  
CA System ID19152

PID

Service Information

Descrambling Status

CAM2 (Not inserted)

MMI Settings

Apply

### 3.5.11.3 Service Configuration

For the Service Configuration, you can select Descrambling or No Descrambling for a service before output. To configure the service to output, please refer to service configuration procedures of other modules.

\*You need to click **Apply** button after you configure service to Descrambling, otherwise the descrambling configuration will not be saved.

| Service Name  | Descrambling    | Destination | Destination Settings |
|---------------|-----------------|-------------|----------------------|
| Channel 1.1   |                 |             |                      |
| [1] Program-1 | No Descrambling |             |                      |

### 3.5.12 OHP6-EIT-00

OHP6-EIT-00 is a function enabled by default on the modulator and disabled in all IP output channels of the baseboard. This is only used when a certain service has wrong EIT information or the total output TS with EIT enabled exceeds the maximum limit of the 16 for each EIT module or an IP output channel that requires an EIT output.

#### 3.5.12.1 Module Status

Status display the EIT enabled module and the list of service that enabled EIT.

| Channel | Service Name | Service ID | Source             |
|---------|--------------|------------|--------------------|
| CH1     | ● Program    | 1→1        | Slot 11:OHP-EIT-00 |
|         | ● Program    | 2→2        | Slot 11:OHP-EIT-00 |

#### 3.5.12.2 Module Setting

You just need to click the checkbox to enable or disable EIT function of relative TS streams or services.

**EIT Enable/Disable Control**

☐ [CH1]

**Tips**

1. EIT function is enabled by default on modulator module and disabled on all IP output channels of baseboard.
2. EIT Enable/Disable Control is only used when certain service has wrong EIT information or the total output TS with EIT enabled exceed the maximum limit of 16 for each EIT module or an IP output channel requires an EIT output.
3. Click checkbox to enable or disable EIT function of relative TS stream or service.

**Apply**

### 3.5.12.3 Module System

System is for you to upgrade license of the board when needed. Here you can also check logs, reboot and reset the unit to factory default.

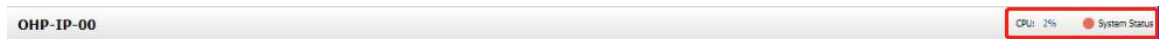


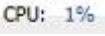



### 3.5.13 OHP-IP-00

OHP-IP-00 is an IP module that supports multiple network protocols such as UDP/RTP/HLS/SRT/Zixi. The module has 1 internal GbE port, 3 external GbE ports, 1 USB port and 1 Mini-HDMI port. The GbE ports will be used for IP stream input and output while USB ports and Mini-HDMI port will be used for OS installation. With OHP-IP-00 module, you are able to output any program streams via different network protocols or receive any network streams and convert to RF signal for further transmission.

#### 3.5.13.1 Module Status



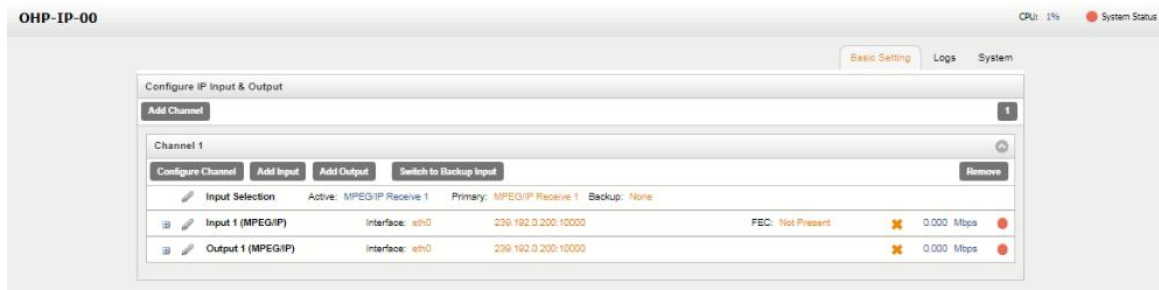
The CPU status (  ) is shown as a percentage. It reflects the amount of processing capacity that is currently being used.

The System Status (  ) which reports the current status of the system. Green indicates the system operation is good while Red indicates there is some detail about the system that is currently in Alarm condition. A Red condition prompts the user to seek further information about the Alarm condition by viewing the Logs tab.

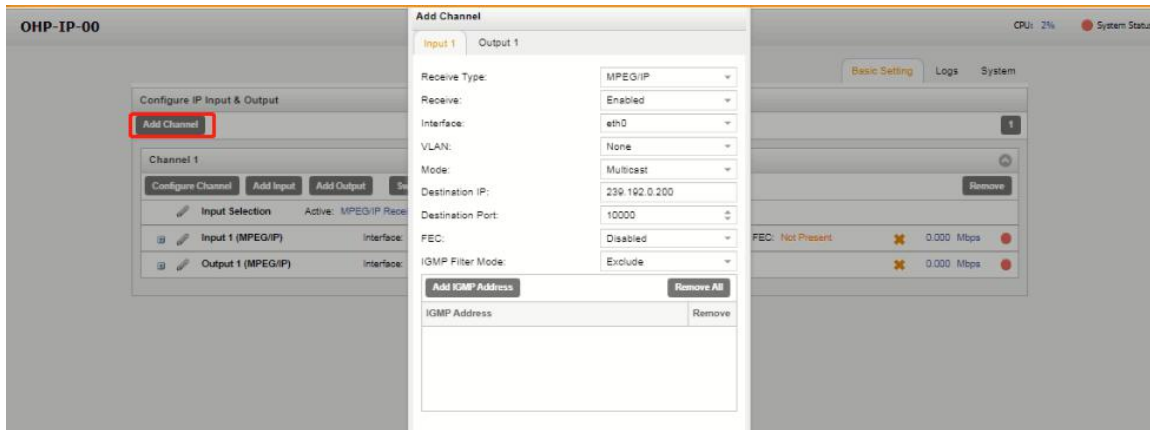
#### 3.5.13.2 Module Settings

The Basic Settings Tab is used to configure the video processing details. This will include signal direction (transmit, receive or both), addresses to be received or delivered to and labeling of the gateways to help the user distinguish gateways from one another.

The number of available gateways will depend upon the license key that is applied.



#### Adding a Channel



Click on the **Add Channel** button in the upper left area of the page to create a new or additional gateway. This will open a configuration window and allow the user to define the 'Alias' or label for the gateway; the receive and/or transmit addresses. The configuration window that opens will provide the user with two tabs: Input and Output. The Input tab(s) is where the user will define the details for the stream to be received and any IGMP filtering. The Output tab(s) will define the details for the stream(s) to be sent out of this gateway.

## Input Settings

This menu is used to configure IP receive settings for MPEG/IP, SRT, Zixi, HLS, Seamless RTP (SMPTE 2022-7 for Hitless Switching) and RIST inputs. Based upon the type of protocol the user selects, the available configuration settings will adapt to provide the best fit.

Three settings that are common to all protocols are "Receive", which can be set to Enabled or Disabled, "Interface", which can be set to eth0, eth1, eth2 or Internal (options may change depending on the number of interfaces and user defined interface name) and "VLAN", which will filter incoming streams for VLAN tags.

**Add Channel**

**Input 1**    Output 1

Receive Type: MPEG/IP

Receive: Enabled

Interface: eth0

VLAN: None

Mode: Multicast

Destination IP: 239.192.0.200

Destination Port: 10000

FEC: Disabled

IGMP Filter Mode: Exclude

**Add IGMP Address**    **Remove All**

| IGMP Address | Remove |
|--------------|--------|
|              |        |

### Universal Input Settings

*Note: when the “Receive” option is enabled for a given protocol (MPEG/IP, SRT, Zixi, HLS, Seamless RTP or RIST), the gateway will be capable of receiving incoming bitrate for that protocol. When using multiple receive instances on the same gateway, the “Receive” setting will not engage the newly configured receive instance as the active input by itself. To configure the additional receive as the active input, please review “**Configuring Active Inputs and Failover**”*

### MPEG/IP Receive Settings

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

Add Channel

Input 1

Output 1

Receive Type:

MPEG/IP

Receive:

Enabled

Interface:

eth0

VLAN:

None

Mode:

Multicast

Destination IP:

239.192.0.200

Destination Port:

10000

FEC:

Disabled

IGMP Filter Mode:

Exclude

Add IGMP Address



Remove All

| IGMP Address | Remove |
|--------------|--------|
|              |        |

### MPEG/IP Receive Settings


| Settings                | Range                       | Description   |
|-------------------------|-----------------------------|---|
| <b>Mode</b>             | Multicast<br>Unicast        | Multicast setting allows the unit to receive multicast streams. Multicast streams originate from the IP range 224.0.0.0 – 239.255.255.255. Unicast 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 is the address the unit will attempt to join.  |
| <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 but is also   |

|                         |          |  |
|-------------------------|----------|--|
| <b>FEC</b>              | Enabled  | required for multicast.  |
|                         | Disabled | Sets the port to accept FEC on the incoming MPEG/IP stream   |
| <b>IGMP Filter Mode</b> | Exclude  | Used on networks supporting IGMPv3. If this setting is set to Exclude, any streams originating from the user defined IP addresses will be included in the IGMP messages and the network will not forward these streams to the device. If this setting is set to Include, any streams originating from the user defined IP addresses will be included in the IGMP messages and the network will only forward these streams to the device. |
|                         | Include  |  |

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



**MPEG/IP Receive Statistics**

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

### SRT Receive Settings

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

**Add Channel**

Input 1 Output 1

Receive Type: SRT

Receive: Enabled

Interface: eth0

VLAN: None

Call Mode: Caller

Remote Host: 1.0.0.2

Remote Port: 10000

Local Port Mode: Auto

Local Port: 10000

Discovery Timeout (seconds): 3



Latency (ms): 20

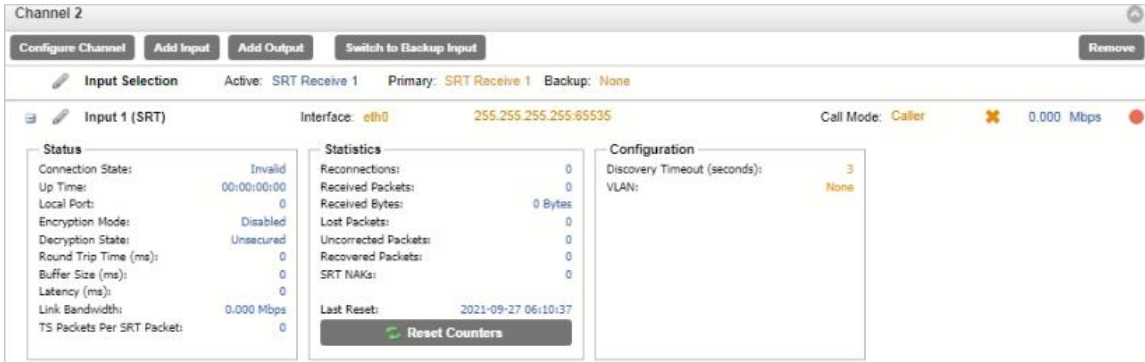
Passphrase: \*\*\*\*\*

### SRT Receive Settings


| Settings                           | Range                            | Description   |
|------------------------------------|----------------------------------|---|
| <b>Call Mode</b>                   | Caller<br>Listener<br>Rendezvous | Defines the 'handshake' mechanism to be used when establishing connection.  |
| <b>Remote Host</b>                 | xxx.xxx.xxx.xxx                  | 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 devices  |
| <b>Local Port Mode</b>             | Auto<br>Manual                   | In Auto mode, the local port number will be assigned automatically<br>In Manual mode, the local port number will be defined by the user |
| <b>Local Port</b>                  | 1-65535                          | Defines the local port number   |
| <b>Discovery Timeout (seconds)</b> | 1 – 100, use 0 for infinite      | Defines the length of time to wait for the stream to be discovered  |
| <b>Latency (ms)</b>                | 1-8000                           | Defines buffer size in milliseconds   |

|                   |                    |                                   |
|-------------------|--------------------|-----------------------------------|
| <b>Passphrase</b> | 10 – 79 characters | Defines the encryption passphrase |
|-------------------|--------------------|-----------------------------------|

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



### SRT Receive Statistics

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

### Zixi Receive Settings

The figure below shows the options available when the “Receive Type” is set to “Zixi”.

**Add Channel**

**Input 1**    Output 1

Receive Type: Zixi

Receive: Enabled

Interface: eth0

VLAN: None

Remote Host:

Alternate Remote Host:

Remote Port: 2077

Stream ID:

Remote ID:

Password:

Ignore TLS Certificate Error: Do Not Ignore

Maximum Latency (ms): 4000

Decryption Mode: Disabled

Decryption Key:



FEC Overhead (%): 30

### Zixi Receive Settings


| Settings                            | Range                          | Description  |
|-------------------------------------|--------------------------------|--|
| <b>Remote Host</b>                  | xxx.xxx.xxx.xxx<br>Domain Name | Defines the host of the remote broadcast using IP address or domain name             |
| <b>Alternate Remote Host</b>        | xxx.xxx.xxx.xxx<br>Domain Name | Defines the alternate host of the remote broadcast using IP address or domain name   |
| <b>Remote Port</b>                  | 0 – 65535                      | Defines the port of the stream on the remote device                                  |
| <b>Stream ID</b>                    | User entry                     | Defines the Zixi stream ID to be received  |
| <b>Remote ID</b>                    | User entry                     | Specify the Zixi Broadcaster or Feeder ID that will push the stream                  |
| <b>Password</b>                     | User entry                     | Provides the password to allow specific Stream ID entered to be received             |
| <b>Ignore TSL certificate Error</b> | Do Not Ignore<br>Ignore        | Defines whether to cease or continue processing if TLS Certificate Error is signaled |
| <b>Maximum Latency (ms)</b>         | 30 – 10,000                    | Defines the maximum latency or buffer size (in                                       |



|                         |  |  |
|-------------------------|--|--|
|                         |  | milliseconds)  |
| <b>Decryption Mode</b>  | Disabled<br>AES-128<br>AES-192<br>AES-256<br>Automatic | Defines if a decryption of the received signal is needed, which decryption standard to use, or if the DMG 7000 will automatically detect these |
| <b>Decryption Key</b>   | User entry   | Provides the key to allow signal processing if decryption is to be done  |
| <b>FEC Overhead (%)</b> | 0 – 50   | Defines the amount of static overhead to be used to accommodate FEC  |

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

### Zixi Receive Statistics

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

### HLS Receive Settings

The figure below shows the options available when the “Receive Type” is set to “HLS”

Add Channel

Input 1

Output 1

Receive Type:

HLS

Receive:

Enabled

Interface:

eth0

VLAN:

None

HLS Mode:

Pull

HLS Network Location:

Apply and Refresh

Profile Name

Bandwidth

Decryption Mode:

Disabled

Decryption Key:

\*\*\*\*\*

Discovery Timeout (seconds):

3

### HLS Receive Settings

| Settings                           | Range                       | Description   |
|------------------------------------|-----------------------------|---|
| <b>HLS Mode</b>                    | Push<br>Pull                | Determines if the HLS receives through a local or network location  |
| <b>HLS Network Location</b>        | User Entry                  | Defines address of the HLS stream to be received  |
| <b>Profile / Bandwidth</b>         | User Selected               | After entering an HLS network location and clicking “Apply and Refresh”, a list of available profiles will be displayed |
| <b>Decryption Mode</b>             | Disabled<br>AES 128         | 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 (seconds)</b> | 1 – 100, use 0 for infinite | Defines the length of time to wait for the stream to be discovered  |

## Seamless RTP Receive Settings

The figure below shows the options available when the “Receive Type” is set to “Seamless RTP”.

The screenshot displays the 'Add Channel' configuration window. It has two tabs: 'Input 1' (selected) and 'Output 1'. Under the 'Input 1' tab, there are two sections for Path 1 and Path 2. Each section contains a list of settings: 'Receive Type' (set to 'Seamless RTP'), 'Receive' (set to 'Enabled'), 'Path 1 Interface' (set to 'eth0'), 'VLAN' (set to 'None'), 'Path 1 Destination IP' (set to '239.192.0.200'), 'Path 1 Destination Port' (set to '10000'), and 'Path 1 IGMP Filter Mode' (set to 'Exclude'). Below these settings are two buttons: 'Add IGMP Address' and 'Remove All'. A table below the buttons has two columns: 'IGMP Address' and 'Remove'. The table is currently empty. The same settings and buttons are repeated for Path 2.

| Path   | Receive Type | Receive | Interface | VLAN | Destination IP | Destination Port | IGMP Filter Mode |
|--------|--------------|---------|-----------|------|----------------|------------------|------------------|
| Path 1 | Seamless RTP | Enabled | eth0      | None | 239.192.0.200  | 10000            | Exclude          |
| Path 2 |              |         | eth0      | None | 239.192.0.200  | 10000            | Exclude          |

## MPEG/IP Output Settings

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

Configure Channel 1

Input 1 Output 1

Transmit Type: MPEG/IP

Transmit: Enabled

Interface: eth0

VLAN: None

Destination IP: 239.192.0.200

Destination Port: 10000

Source IP Mode: Auto

Source IP: 0.0.0.0

Source Port: 3020

Source MAC Mode: Auto

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

TS Packets Mode: Auto

TS Packets Per IP Packet: 7

Encapsulation: UDP

**MPEG/IP Output Settings**

| Settings                | Range                       | Description  |
|-------------------------|-----------------------------|--|
| <b>Destination IP</b>   | 224.0.0.0 – 239.255.255.255 | This setting is only available when receiving a multicast stream. This is the address the unit will attempt to join  |
| <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 but is also required for multicast   |
| <b>Source IP Mode</b>   | Auto<br>Manual              | When set to <i>Auto</i> , the source IP address on the output stream will match the corresponding local interface. When set to <i>Manual</i> , a user entered address can be assigned to the output stream |
| <b>Source IP</b>        | xxx.xxx.xxx.xxx             | Defines the Source IP address to be assigned to the output stream  |
| <b>Source Port</b>      | 0 – 65535                   | Defines the source IP port to be assigned to   |

|                                 |                   |   |
|---------------------------------|-------------------|---|
|                                 |                   | the output stream   |
| <b>Source MAC Mode</b>          | Auto<br>Manual    | When set to <i>Auto</i> , the source MAC address of the output stream will match the corresponding local interface. When set to <i>Manual</i> , a user entered address can be assigned to the output stream |
| <b>Source MAC</b>               | xx:xx:xx:xx:xx:xx | The user defined MAC for when using Manual MAC Mode   |
| <b>TS Packets Mode</b>          | Auto<br>Manual    | In <i>Auto</i> mode, the source will define the number of TS packets per IP packet. In <i>Manual</i> mode, the user will define the number of TS packets per IP packet                                      |
| <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>Encapsulation</b>            | UDP<br>RTP        | Sets the Encapsulation to UDP or RTP  |

## SRT Output Settings

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

**Configure Channel 1**

Input 1 **Output 1**

Transmit Type: SRT

Transmit: Enabled

Interface: eth0

VLAN: None

Call Mode: Caller

Remote Host: 1.0.0.1

Remote Port: 10000

Local Port Mode: Auto

Local Port: 10000

Discovery Timeout (seconds): 3

Latency (ms): 125

Bandwidth Overhead (%): 25

TS Packets Mode: Auto

TS Packets Per SRT Packet: 7

Time To Live (hops): 64

Type Of Service: 0



Encryption Mode: Disabled

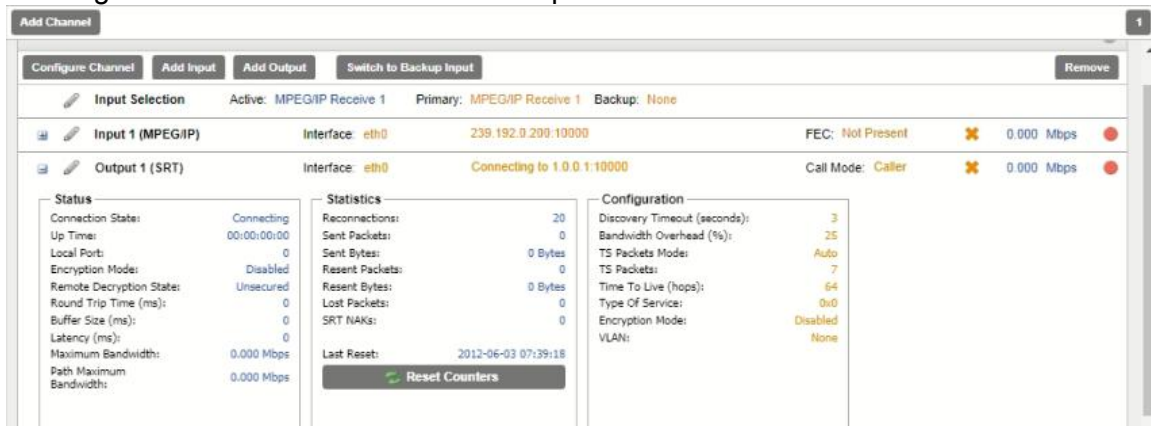
Passphrase: \*\*\*\*\*

### SRT Output Settings

| Settings               | Range                            | Description   |
|------------------------|----------------------------------|---|
| <b>Call Mode</b>       | Caller<br>Listener<br>Rendezvous | Defines the ‘handshake’ mechanism to be used when establishing connection.  |
| <b>Remote Host</b>     | xxx.xxx.xxx.xxx                  | 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 devices  |
| <b>Local Port Mode</b> | Auto<br>Manual                   | In <i>Auto</i> mode, the local port number will be assigned automatically<br>In <i>Manual</i> mode, the local port number will be defined by the user |


|                                  |                                |  |
|----------------------------------|--------------------------------|--|
| <b>Local Port</b>                | 1 – 65535                      | Defines the local port number  |
| <b>Discovery Time (seconds)</b>  | 1 – 100, use 0 for infinite    | Defines the length of time to wait for the stream to be discovered   |
| <b>Latency (ms)</b>              | 1 – 8000                       | Defines buffer size in milliseconds  |
| <b>Bandwidth Overhead (%)</b>    | 0 – 50                         | Defines the amount of bandwidth overhead to allow for  |
| <b>TS Packets Mode</b>           | Auto<br>Manual                 | In <i>Auto</i> mode, the source will define the number of TS packets per SRT packet. In <i>Manual</i> mode, the user will define the number of TS packets per SRT packet |
| <b>TS Packets per SRT Packet</b> | 1 – 7                          | Defines the number of TS packets per SRT packet when mode is <i>Manual</i>   |
| <b>Time To Live (hops)</b>       | 1 – 254                        | Defines the number of network devices the transmission is allowed to pass through  |
| <b>Type of Service</b>           | 0 – 255                        | Specifies the desired Quality of Service (QoS). This value will be assigned to the Type of Service field of the IP Header for the outgoing stream.                       |
| <b>Encryption Mode</b>           | Disabled<br>AES-128<br>AES-256 | Defines which encryption standard to use or if the DMG 7000 will automatically detect this.  |
| <b>Passphrase</b>                | 10 – 79 characters             | Defines the encryption passphrase  |

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



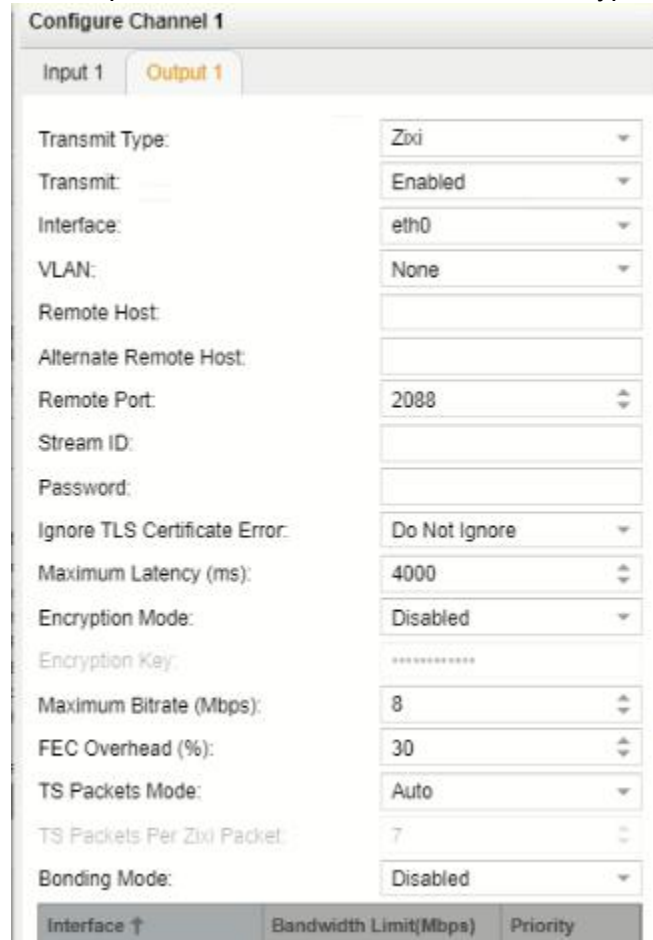
The screenshot displays the SRT Output Statistics window. At the top, there are tabs for 'Configure Channel', 'Add Input', 'Add Output', and 'Switch to Backup Input'. Below these, the 'Input Selection' section shows 'Active: MPEG/IP Receive 1', 'Primary: MPEG/IP Receive 1', and 'Backup: None'. The 'Input 1 (MPEG/IP)' section shows 'Interface: eth0', '239.192.9.209:10000', 'FEC: Not Present', and '0.000 Mbps'. The 'Output 1 (SRT)' section shows 'Interface: eth0', 'Connecting to 1.0.0.1:10000', 'Call Mode: Caller', and '0.000 Mbps'. The 'Status' section on the left shows 'Connection State: Connecting', 'Up Time: 00:00:00:00', 'Local Port: 0', 'Encryption Mode: Disabled', 'Remote Decryption State: Unsecured', 'Round Trip Time (ms): 0', 'Buffer Size (ms): 0', 'Latency (ms): 0', 'Maximum Bandwidth: 0.000 Mbps', and 'Path Maximum Bandwidth: 0.000 Mbps'. The 'Statistics' section in the middle shows 'Reconnections: 20', 'Sent Packets: 0', 'Sent Bytes: 0 Bytes', 'Resent Packets: 0', 'Resent Bytes: 0 Bytes', 'Lost Packets: 0', 'SRT NAKs: 0', and 'Last Reset: 2012-06-03 07:39:18'. The 'Configuration' section on the right shows 'Discovery Timeout (seconds): 3', 'Bandwidth Overhead (%): 25', 'TS Packets Mode: Auto', 'TS Packets: 7', 'Time To Live (hops): 64', 'Type Of Service: 0x0', 'Encryption Mode: Disabled', and 'VLAN: None'. A 'Reset Counters' button is located at the bottom of the statistics section.

SRT Output Statistics

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

## Zixi Output Settings

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



### Zixi Output Settings

| Settings                     | Range                          | Description   |
|------------------------------|--------------------------------|---|
| <b>Remote Host</b>           | xxx.xxx.xxx.xxx<br>Domain Name | Defines the host of the remote broadcast using an IP address or domain name           |
| <b>Alternate Remote Host</b> | xxx.xxx.xxx.xxx<br>Domain Name | Defines the alternate host of the remote broadcast using an IP address or domain name |
| <b>Remote Port</b>           | 0 – 65535                      | Defines the port of the stream on the remote device                                   |
| <b>Stream ID</b>             | User entry                     | Defines the Zixi stream ID to be transmitted  |
| <b>Password</b>              | User entry                     | Provides the password to allow specific Stream ID entered to be received              |





|                                     |  |   |
|-------------------------------------|--|---|
| <b>Ignore TLS Certificate Error</b> | Do Not Ignore<br>Ignore                                      | Defines whether to cease or continue processing if TLS Certificate Error is signaled  |
| <b>Maximum Latency (ms)</b>         | 30 – 10,000  | Defines the maximum latency or buffer size (in milliseconds)  |
| <b>Encryption Mode</b>              | Disabled<br>AES-128<br>AES-192<br>AES-256<br>Automatic       | Defines which encryption standard to use or if the OHP-IP-00 will automatically detect this   |
| <b>Encryption Key</b>               | User entry   | The key to be used by downstream decryption devices   |
| <b>FEC Overhead (%)</b>             | 0 – 50   | Defines the amount of static overhead to be used to accommodate FEC   |
| <b>TS Packets Mode</b>              | Auto<br>Manual   | In <i>Auto</i> mode, the source will define the number of TS packets per Zixi packet. In <i>Manual</i> mode, the user will define the number of TS packets per Zixi packet. |
| <b>TS Packets per Zixi Packet</b>   | 1 – 7  | User defined value for when <i>Manual</i> mode is enabled.  |
| <b>Bonding Mode</b>                 | Disabled<br>All interfaces<br>One Interface<br>Any Interface | Specifies which interfaces, if any, are to be set to bonding mode.  |
| <b>Interface Bonding Box</b>        | Available for One Interface Mode<br>Any Interface Mode       | Allows user to define parameters and details about the port(s) when bonding   |

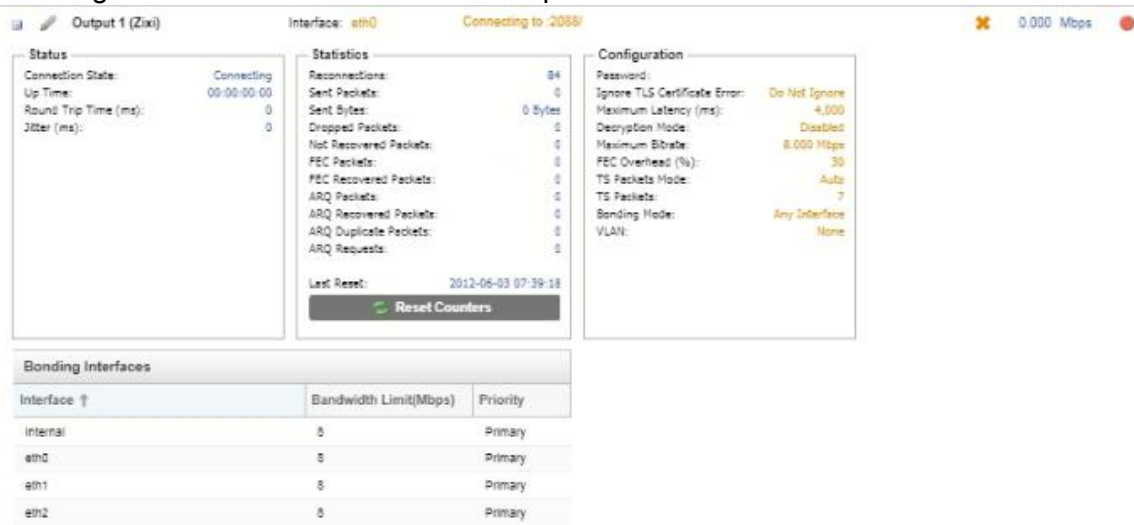
Zixi transmissions can be configured to use multiple interfaces simultaneously (Port Bonding). By defining the maximum bitrate for that interface, the unit will only send up to that rate on that interface. A Primary and Backup interface may also be chosen if redundant links should be used.

| Interface ↑ | Bandwidth Limit(Mbps) | Priority |
|-------------|-----------------------|----------|
| Internal    | 8                     | Primary  |
| eth0        | 8                     | Primary  |
| eth1        | 8                     | Primary  |
| eth2        | 8                     | Primary  |

| Interface ↑ | Bandwidth Limit(Mbps) | Priority |
|-------------|-----------------------|----------|
| Internal    | 8                     | Primary  |
| eth0        | 8                     | Primary  |
| eth1        | 8                     | Backup   |
| eth2        | 8                     | Primary  |


### Interface Bonding Boxes

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






| Interface ↑ | Bandwidth Limit(Mbps) | Priority |
|-------------|-----------------------|----------|
| Internal    | 8                     | Primary  |
| eth0        | 8                     | Primary  |
| eth1        | 8                     | Primary  |
| eth2        | 8                     | Primary  |

### Zixi Output Statistics

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

### Additional Receive Instances

Each gateway can be configured for multiple input instances. To add an additional receive instance, click on the  button in the top left corner of the gateway section. The gateway configuration window will open with a new “Input 2” tab, offering the same settings as the initial input tab.

Removing a channel from the configuration can be done by clicking on the  button located at the right side of the channel ribbon. Any configured input instance can also be removed by clicking on the  button located within the input row. When either of the icons is clicked, the system will prompt the user with confirmation of intent to remove the item from the configuration.

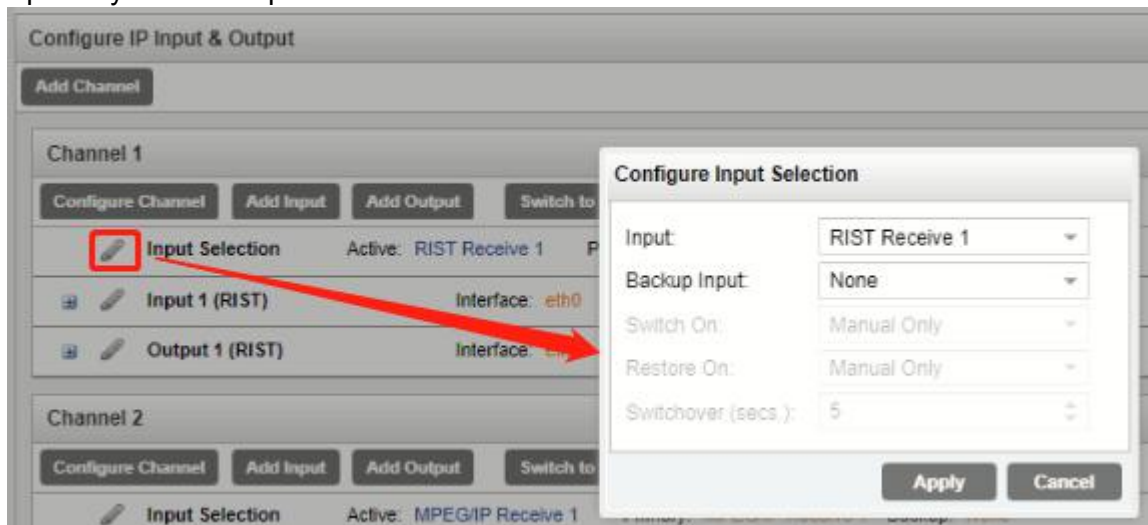
Only one additional input instance can be added, so the option becomes gray as shown below after the second path is added.



### Multiple Input Instances

### Configuring Active Inputs and Failover

When two input instances are configured, only one of them can be assigned to the output instances. The Input Selection menu is used to determine which receive instance is the primary and backup.



| Settings                 | Range   | Description  |
|--------------------------|---|--|
| <b>Input</b>             | Input 1<br>Input 2  | Used for both normal operation and input failover settings. During normal operation, this input will be the active input                                     |
| <b>Backup Input</b>      | Input 1<br>Input 2  | During failover operation this input will become the active input. The catalyst for the unit to switch to this input is configured in the following setting. |
| <b>Switch On</b>         | Manual Only<br>TS Sync Loss   | Choose the event that triggers the switch from the primary to the backup input   |
| <b>Restore On</b>        | Manual Only<br>Primary Input TS Restored<br>Backup Input TS Sync Loss | Choose the event that triggers a switch back to the primary input  |
| <b>Switchover (secs)</b> | 1 – 20  | The amount of time the gateway must remain in the “Switch On” or “Restore On” state before   |

|  |  |   |
|--|--|---|
|  |  | automatic failover or switchback occurs |
|--|--|---|

Clicking the **Switch to Backup Input** option under the channel will prompt the user for confirmation of intent to change the input instance assigning the output instances to source from input instance 2. Clicking **Switch to Primary Input** will assign the output instances to return to sourcing from input instance 1.

|  |                 |   |   |            |   |
|--|-----------------|---|---|------------|---|
| Channel 1  |                 |   |   |            |   |
| <div> <span>Configure Channel</span> <span>Add Input</span> <span>Add Output</span> <span>Switch to Backup Input</span> <span>Remove</span> </div> |                 |   |   |            |   |
| Input Selection  |                 | Active: RIST Receive 1 Primary: RIST Receive 1 Backup: None |   |            |   |
| Input 1 (RIST)   | Interface: eth0 | 255.255.255.255:65535                                       | ✖ | 0.000 Mbps | ● |
| Output 1 (RIST)  | Interface: eth0 | Connecting to 1.0.0.1:10000 on port 3020                    | ✖ | 0.000 Mbps | ● |

### Active Backup Input

#### Additional Transmit Instance

The OHP-IP-00 will allow the user to configure a single channel for multiple output paths. To add an additional output path, click on the **Add Output** button in the top left corner of the Channel section. The channel configuration window will open with an additional “Output 2” tab. The new tab will offer the same settings as the initial output tab.





Removing a channel from the configuration can be done by clicking on the **Remove** button located at the right side of the Channel ribbon. Any configured output path can also be removed by clicking on the ✖ button located within the output row that the user wishes to remove. When either of the icons is clicked, the system will prompt the user with confirmation of intent to remove the item from the configuration.

Which input instance the output instances will source from is dependent on the settings.

|   |                 |   |                  |            |            |
|---|-----------------|---|------------------|------------|------------|
| Channel 1   |                 |   |                  |            |            |
| <div> <span>Configure Channel</span> <span>Add Input</span> <span>Add Output</span> <span>Switch to Primary Input</span> <span>Remove</span> </div> |                 |   |                  |            |            |
| Input Selection   |                 | Active: MPEG/IP Receive 2 Primary: RIST Receive 1 Backup: MPEG/IP Receive 2 |                  |            |            |
| Input 1 (RIST)  | Interface: eth0 | 255.255.255.255:65535   | ✖                | 0.000 Mbps | ●          |
| Output 1 (RIST)   | Interface: eth0 | Connecting to 1.0.0.1:10000 on port 3020                                    | ✖                | 0.000 Mbps | ●          |
| Input 2 (MPEG/IP)   | Interface: eth0 | 239.192.0.200:10000   | FEC: Not Present | ✖          | 0.000 Mbps |
| Output 2 (MPEG/IP)  | Interface: eth0 | 239.192.0.202:10000   |                  | ✖          | 0.000 Mbps |

### 3.5.13.3 Logs



Clicking the Logs tab will redirect the user in the Reporting Control Panel. The Reporting control panel in the OHP-IP-00 module will provide the user with a list of active alarms, as well as a means to log the detected events. Active alarms are constantly updated to reflect the real-time state of the unit. Once an error is no longer detected, it will be cleared from the active alarms window. The log files can be used to view alarm and event history. Both the active alarm and event logs can be configured for specific behavior based upon the user's needs.

| Reporting Control Panel   |                                |                                |                     |
|---|--------------------------------|--------------------------------|---------------------|
| Alarms  |                                | Logs                           | Configure           |
| State   | Name                           | Location                       | Last Changed        |
|  | Transport Stream Not Present   | Gateway Receive 1 (Gateway 1)  | 2012-05-03 07:39:18 |
|  | Transport Stream Not Present   | Gateway Receive 2 (Gateway 2)  | 2021-09-27 07:13:27 |
|  | RIST Receive Connection Error  | Gateway Receive 1 (Gateway 1)  | 2021-09-27 07:10:28 |
|  | RIST Transmit Connection Error | Gateway Transmit 1 (Gateway 1) | 2021-09-27 07:10:28 |

## Alarms

| Reporting Control Panel   |                                |                                |                     |
|---|--------------------------------|--------------------------------|---------------------|
| Alarms  |                                | Logs                           | Configure           |
| State   | Name                           | Location                       | Last Changed        |
|  | Transport Stream Not Present   | Gateway Receive 1 (Gateway 1)  | 2012-05-03 07:39:18 |
|  | Transport Stream Not Present   | Gateway Receive 2 (Gateway 2)  | 2021-09-27 07:13:27 |
|  | RIST Receive Connection Error  | Gateway Receive 1 (Gateway 1)  | 2021-09-27 07:10:28 |
|  | RIST Transmit Connection Error | Gateway Transmit 1 (Gateway 1) | 2021-09-27 07:10:28 |

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

| Alarms      |  |
|-------------|--|
| Column Name | Description  |
| State       | <p>This area displays an icon that will signify the importance of the event</p> <p>The  icon means the message is Informational and no error has been detected.</p> <p>The  icon means the message is an Alarm and the unit status has been set to 'Error'</p> |
| Name        | This column displays the description of the detected instance.   |
| Location    | This column displays the hardware or function that is experiencing the active error.   |

|                     |  |
|---------------------|--|
| <b>Last Changed</b> | This column displays the data and time the error was raised. Timestamps here are determined with the Date and Time settings configured in the Time tab under System Setting of the CMP baseboard |
|---------------------|--|

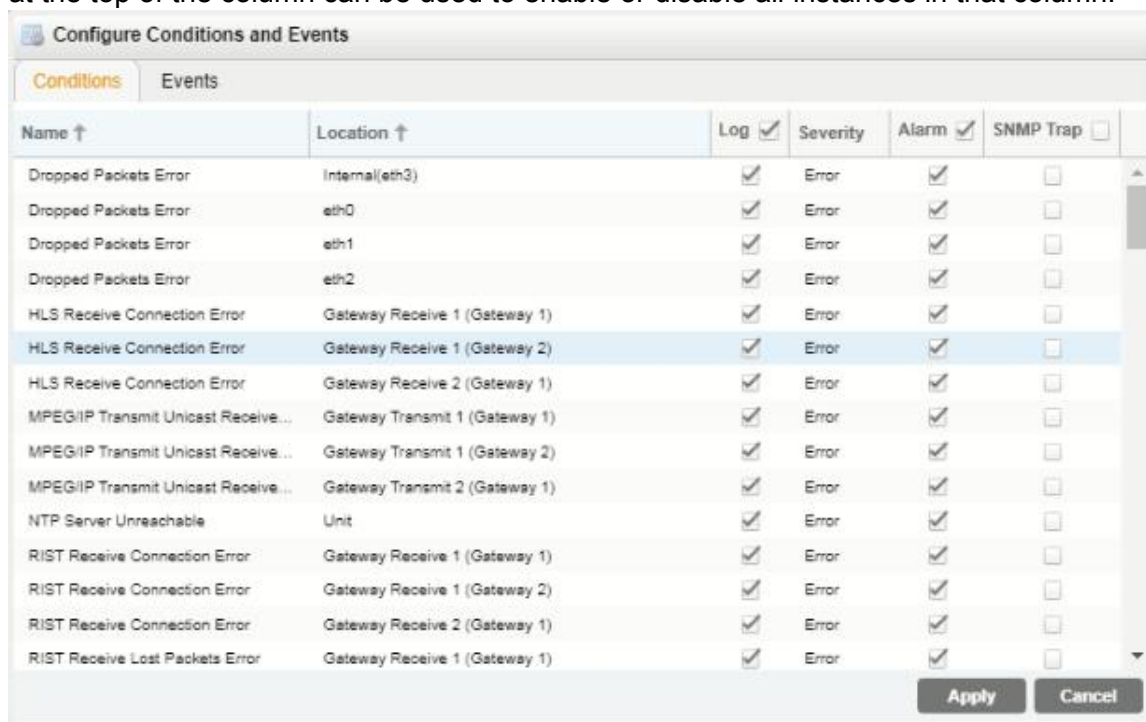
## Configuring the Alarms

The OHP-IP-00 module monitoring points are divided into Conditions and Events and are managed separately. Configuration of these is done by clicking on the configuration cog in either the Alarms or Logs window.



## Conditions

These instances are monitored within specific hardware and stream processing paths. How the OHP-IP-00 module responds to the detection of the instance can be configured. Three 'checkbox' columns allow the user to define the system response. The checkbox at the top of the column can be used to enable or disable all instances in that column.



## Logs

| Column Name | Description  |
|-------------|--|
| <b>Name</b> | Defines the error message that will be provided if the instance is detected. |

|                  |  |
|------------------|--|
| <b>Location</b>  | This shows the user the specific hardware or stream processing path where the instance is detected.  |
| <b>Log</b>       | A checked box defines which instances will be recorded to the log file   |
| <b>Severity</b>  | A dropdown box within the row allows the user to define the instance as an Error or Information event.   |
| <b>Alarm</b>     | A checked box defines which instances will raise an Alarm condition on the unit. This will cause the Error LED on the front of the unit and in the web client to illuminate. |
| <b>SNMP Trap</b> | A checked box defines which instances will trigger the OHP-IP-00 to send trap messages.  |

The APPLY button at the bottom of the window will commit the settings changes to the system, while the CANCEL button will ignore any settings changes and close the configuration window.

### Events

These instances are global to the system because they will have an impact on all hardware and stream processing areas of the OHP-IP-00 module. These instances can only be configured to be recorded in the log file and/or to be sent as SNMP Trap messages.

| Name ↑                    | Location ↑ | Log <input checked="" type="checkbox"/> | SNMP Trap <input type="checkbox"/> |
|---------------------------|------------|---|------------------------------------|
| Date/Time Changed         | Unit       | <input checked="" type="checkbox"/>     | <input type="checkbox"/>           |
| NTP Updated               | Unit       | <input checked="" type="checkbox"/>     | <input type="checkbox"/>           |
| Software Update Failed    | Unit       | <input checked="" type="checkbox"/>     | <input type="checkbox"/>           |
| Software Update Succeeded | Unit       | <input checked="" type="checkbox"/>     | <input type="checkbox"/>           |
| Unit Booted               | Unit       | <input checked="" type="checkbox"/>     | <input type="checkbox"/>           |

### Events



| Column Name      | Description   |
|------------------|---|
| <b>Name</b>      | Defines the error message that will be provided if the instance is detected.                    |
| <b>Location</b>  | This will always be “Unit” since these instances are global                                     |
| <b>Log</b>       | A checked box defines which instances will be recorded to the log file.                         |
| <b>SNMP Trap</b> | A checked box defines which instances will trigger the OHP-IP-00 module to send a trap message. |

## Event Logs






| Reporting Control Panel  |                     |            |                             |  |
|--|---------------------|------------|-----------------------------|--|
| <div> <div>Alarms</div> <div>Logs</div> <div>Configure</div> </div>  |                     |            |                             |  |
| <div> <div>Refresh</div> <div>Clear</div> <div>Download</div> </div> |                     |            |                             |  |
| Severity   | Timestamp           | Transition | Location                    | Message                                |
| 1  | 2021-09-27 07:24:42 | +          | Gateway Transmit 2 (Gate... | Unicast Receiver Not Found - Cleared   |
| 1  | 2021-09-27 07:24:42 | +          | Gateway Transmit 2 (Gate... | RIST Transmit Connection OK            |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | RIST Transmit Lost Packets OK          |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | Zixi Transmit Connection OK            |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | Zixi Transmit Not Recovered Packets OK |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | Zixi Transmit Dropped Packets OK       |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | SRT Transmit Connection OK             |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | SRT Transmit Lost Packets OK           |
| 1  | 2021-09-27 07:24:41 | +          | Gateway Transmit 2 (Gate... | SRT Transmit NAK Received OK           |
| 1  | 2021-09-27 07:24:19 | +          | Gateway Receive 2 (Gatew... | Seamless RTP Reception OK              |
| 1  | 2021-09-27 07:24:19 | +          | Gateway Receive 1 (Gatew... | Seamless RTP Reception OK              |
| 1  | 2021-09-27 07:24:18 | +          | Gateway Receive 2 (Gatew... | TS Sync Loss OK                        |
| 1  | 2021-09-27 07:24:18 | +          | Gateway Receive 2 (Gatew... | RIST Receive Connection OK             |
| 1  | 2021-09-27 07:24:18 | +          | Gateway Receive 2 (Gatew... | RIST Receive Lost Packets OK           |
| 1  | 2021-09-27 07:24:18 | +          | Gateway Receive 2 (Gatew... | TS Sync Loss OK                        |
| 1  | 2021-09-27 07:24:18 | +          | Gateway Receive 2 (Gatew... | HLS Receive Connection OK              |

The Logs window provides the user a display of the log file and management tools to streamline the data returned. There are three buttons that will manage the log file.

|                 |  |  |
|-----------------|--|--|
| <b>Refresh</b>  |  | Prompts the OHP-IP-00 to update the displayed logs.        |
| <b>Clear</b>    |  | Clears the log file.                                       |
| <b>Download</b> |  | Exports the log file as a “.csv” extension file to the pc. |



The log file itself is made up of five columns that explain each event, when it occurred, and the area of the system where the event was detected.

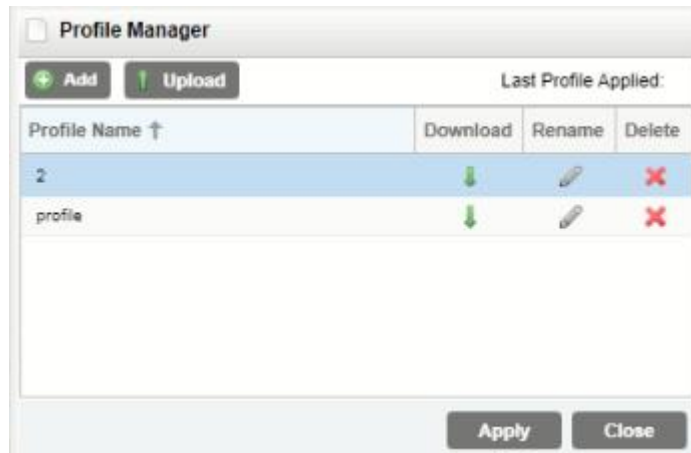
| Column Name       | Description  |
|-------------------|--|
| <b>Severity</b>   | <p>The  Info icon means the message is Informational and no error has been detected.</p> <p>The  Error icon means the message is an Alarm and the unit status has been set to 'Error'.</p>   |
| <b>Timestamp</b>  | This is the OHP-IP-00 module associated date and time of the instance.   |
| <b>Transition</b> | <p>The  Went Bad icon means the instance entered into an Error state.</p> <p>The  Went Good icon means the instance entered into a Clear state.</p> <p>The  Event icon means a single point instance (such as NTP Time was updated) took place.</p> |
| <b>Location</b>   | Defines the hardware or function that experienced the alarm or event.  |
| <b>Message</b>    | This displays the description of the specific path that experienced the instance.  |

### Configuring the Logs







Configuration of the logs will provide the user with the same configuration options as covered in **the Configuration of the Alarms**.

#### 3.5.13.4 System Settings





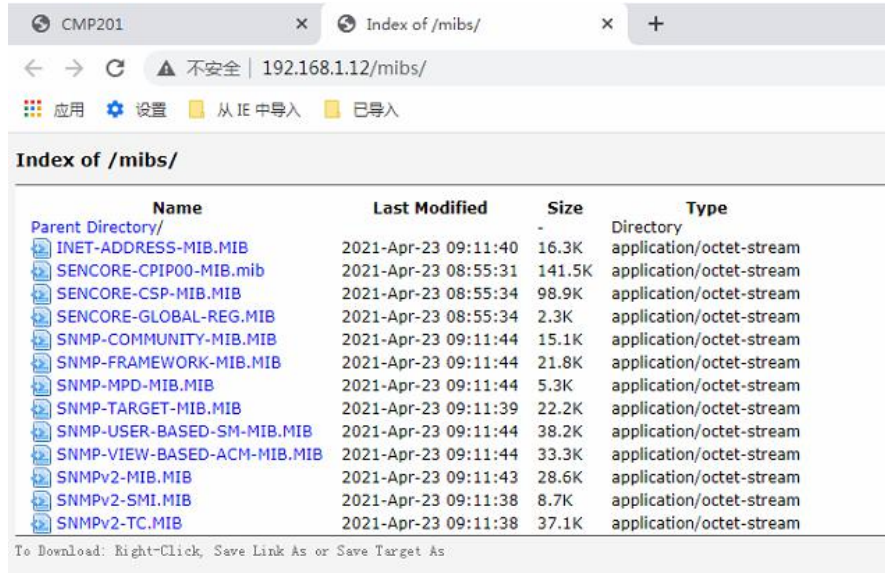
The OHP-IP-00 has the ability to save all configured settings to multiple profiles. Profiles can be saved locally, renamed and saved to external storage to be used on other OHP-IP-00 modules. Profiles can be used to quickly and easily change the configuration of the module to suit different inputs and decoding requirements.

|                         |   |  |
|-------------------------|---|--|
| <b>Add New Profile</b>  |    | Used to create or add a new profile to the profile list          |
| <b>Upload Profile</b>   |    | Used to upload a profile to the module from the user pc          |
| <b>Apply Profile</b>    |  | Used to apply a profile selected from profile list               |
| <b>Rename Profile</b>   |  | Used to edit the selected profile name                           |
| <b>Delete Profile</b>   |  | Used to delete a profile from the profiles list                  |
| <b>Download Profile</b> |  | Used to download a profile selected from the list to the user pc |

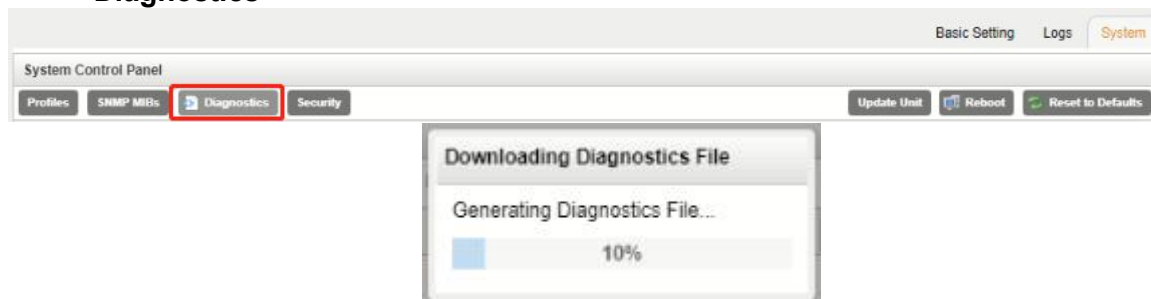
## SNMP MIB files



The SNMP MIB files for the OHP-IP-00 can be obtained by clicking on the SNMP MIBs button at the top of the page. This will open a new tab within the current web browser and give the user a list of all available MIB files. Directions on how to save them to an external storage location are provided at the bottom of the list.



## Diagnostics



The OHP-IP-00 provides the user the ability to take a snapshot of the ALL current unit settings, reported values, active alarms, and the alarm and log file history. This snapshot will be downloaded as an .XML format file that can be attached in an email or opened for viewing.

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. Selecting the Save option will download the .XML file to the pc 'downloads' location.

## Security



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

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

**Security Manager**

**Certificate Signing Request**

Country Name:

State or Province Name:

Locality Name:

Organization Name:

Organizational Unit Name:

Common Name:

Email Address:

Certificate Signing Request File Name:

Generate New CSR File:

Download Generate CSR File:

Delete Old CSR File:

Delete Old Local Private Key File:







Local Certificate File:


Local Private Key File:





Remote Certificate File:


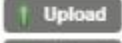
### Security Manager Menu

| Settings                        | Range                                   | Description   |
|---------------------------------|---|---|
| <b>Name</b>                     | User entry                              | Country Name for generated CSR file   |
| <b>State or Province Name</b>   | User entry                              | State/Province Name for generated CSR file  |
| <b>Locality Name</b>            | User entry                              | Locality Name for generated CSR file  |
| <b>Organization Name</b>        | User entry                              | Organization Name for the generated CSR file  |
| <b>Organizational Unit Name</b> | User entry                              | Organizational Unit Name for the generated CSR file   |
| <b>Common Name</b>              | User entry                              | Common Name for the generated CSR file  |
| <b>Email Address</b>            | User entry                              | Email Address for reference on the generated CSR file   |
| <b>Generate New CSR File</b>    | <input type="button" value="Generate"/> | This icon will generate a new Certificate Signing Request file (CSR) using the configured IP from eth0 for the CSR file name. Additionally, the Security Manager will generate a local private key file to be |

|  |   |  |
|--|---|--|
|  |   | used with the downstream   |
| <b>Download Generate CSR File</b>        |  | This icon will download the locally generated CSR file onto a remote machine |
| <b>Delete Old CSR File</b>               |  | This icon will delete the locally generated CSR file                         |
| <b>Delete Old Local Private Key File</b> |  | This icon will delete the locally generated private key file                 |
| <b>Local Certificate File</b>            |  | Use this icon to upload the local certificate file                           |
| <b>Local Private Key File</b>            |  | Use this icon to upload the local private key file                           |
| <b>Remote Certificate File</b>           |  | Use this file to upload the remote certificate file                          |

Upon clicking , the system will generate a new CSR file and local private key for use with the downstream receiver.

Certificate Signing Request File Name:  
Generate New CSR File:   
Download Generate CSR File:   
Delete Old CSR File:   
Delete Old Local Private Key File: 

Local Certificate Files:   
Local Private Key Files:   
Remote Certificate Files: 

### Generated Private Key and CSR Files

#### Enabling DTLS

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

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

Local Certificate Files:   
Local Private Key Files:   
Remote Certificate Files: 

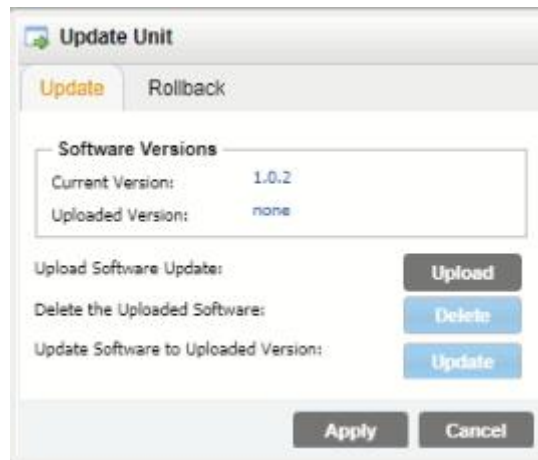
### Uploaded Key and Certificate Files

When making a DTLS connection between a OHP-IP-00 that is transmitting RIST and a OHP-IP-00 that is receiving RIST, these same files must be uploaded to both units. Additionally, both the output and input instance on each unit must have Profile Mode configured for “Main” and Encryption Mode configured for “DTLS”.

### Updating the System Software

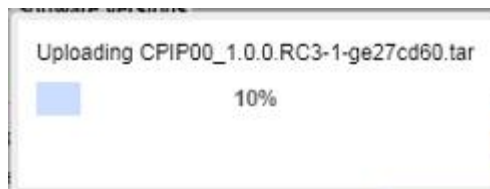


Updates to the OHP-IP-00 are performed through the web interface. A software update file is provided by Wellav and then uploaded to the unit. To request the latest software version or a copy of the release notes please contact our after-sales technical support team. The ‘Update Unit’ button is in the top right corner of the System Control Panel. When opened this feature will allow the user to advance the software version the OHP-IP-00 operates on, or rollback the software version that the module operates on.






#### Applying software updates

1. Click Upload button and browse to the appropriate software file
2. A progress bar will show uploading status
3. Once the file is uploaded click on Yes when prompted to update
4. The module will reboot after a software update is complete.

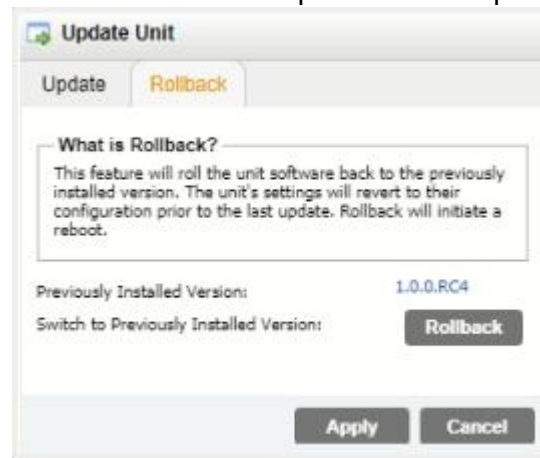


|                 |  |  |
|-----------------|--|--|
| Upload Software |  | To upload software updates to OHP-IP-00 module, click this button. The user will be prompted to navigate to an |
|-----------------|--|--|

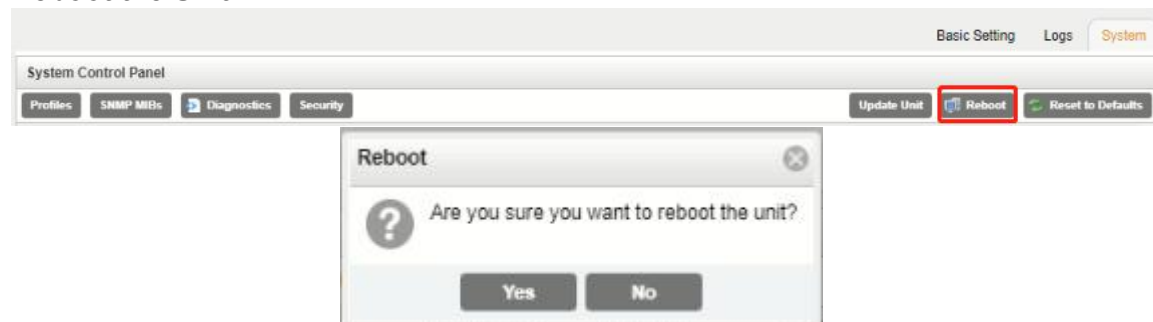
|                                     |   |  |
|-------------------------------------|---|--|
| Update                              |  | update file. The file will then upload to the module. When completed, the module will prompt the user to either apply the update or cancel   |
| Delete the Uploaded Software        |  | Clicking this button prompts the user to confirm the deletion of the software update from the OHP-IP-00 module. This will also clear the Uploaded Version status of the Software Versions section. |
| Update Software to Uploaded Version |  | Clicking the button starts the software update process. The OHP-IP-00 module will prompt the user to confirm the update. Click Yes to continue or No to cancel.                                    |

### Rollback Software Updates

The OHP-IP-00 module is capable of reverting back to a previous version of software using the Rollback feature. The OHP-IP-00 accomplishes this by maintaining 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 of the previous settings. To perform a rollback, click the Update Unit button and then click the Rollback tab. The module will reboot after the rollback process is complete.



### Reboot the Unit

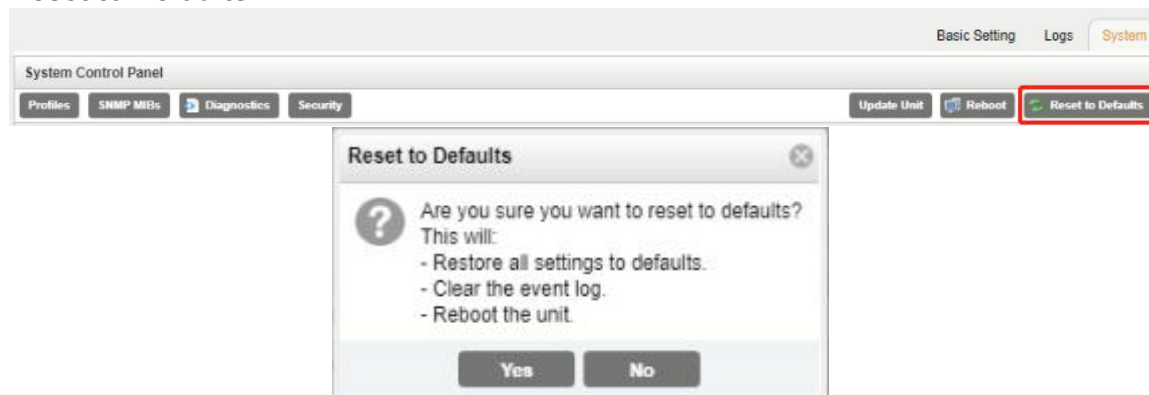


The OHP-IP-00 module can be rebooted from the web interface System page. The 'Reboot' button is located in the top right corner of the System Control Panel.



To perform a reboot, click the reboot button. The system will prompt the user to confirm the reboot request. Once confirmed, a status window with a progress bar will open be visible until the reboot is complete and the login window displayed.

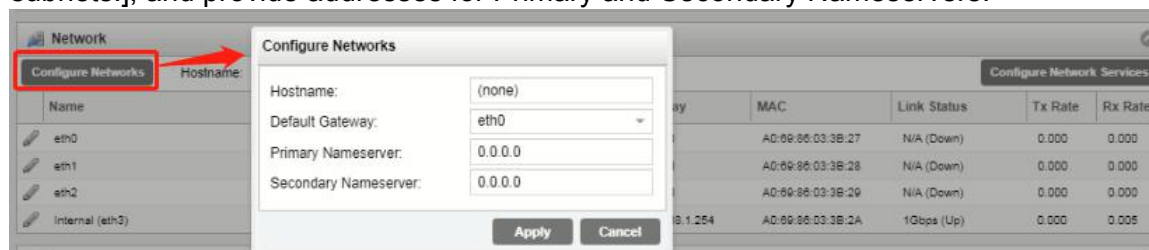
## Reset to Defaults



The OHP-IP-00 module 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 on the System page. The module will prompt the user to confirm the reset.

## Configuring the Unit Networks and VLANs

The OHP-IP-00 module can be assigned a Hostname and DNS servers. To access this menu, click on the Configure Networks gear icon. Within the window that opens, the user can assign a Hostname to the module, define which physical port (Eth0, Eth1, Eth2, Internal) the Default Gateway will use [The web-interface is accessible from the IP address of either Ethernet port; however, be sure to configure the two ports for separate subnets.], and provide addresses for Primary and Secondary Nameservers.



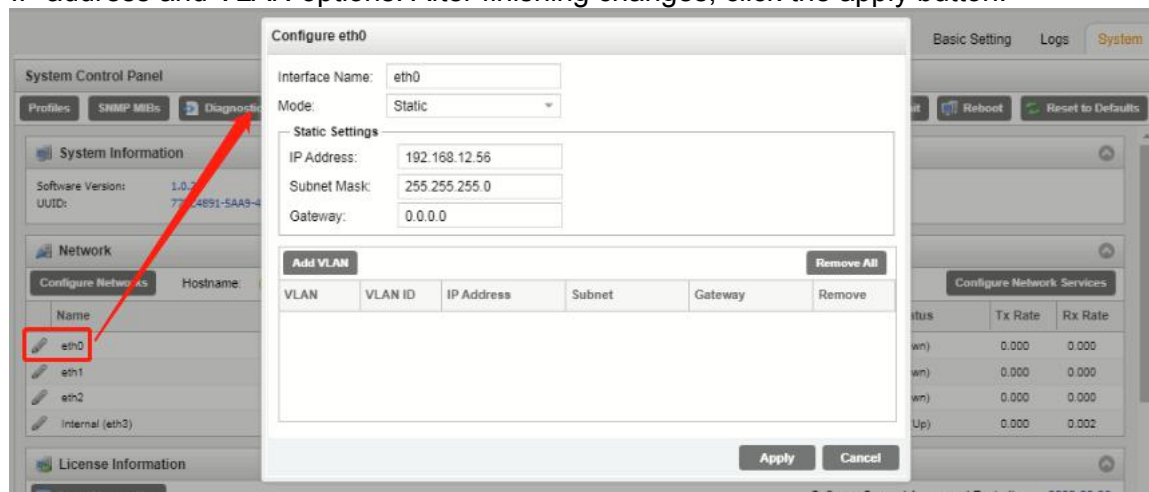
| Setting            | Available Selections            | Descriptions  |
|--------------------|---------------------------------|---|
| Hostname           | Alphanumeric, no spaces allowed | Defines optional system name                              |
| Default Gateway    | Eth0, Eth1, Eth2, Internal      | Defines which physical port gateway address is to be used |
| Primary Nameserver | xxx.xxx.xxx.xxx                 | IP address of Primary (DNS)                               |



|                             |                 |  |
|-----------------------------|-----------------|--|
|                             |                 | nameserver                               |
| <b>Secondary Nameserver</b> | xxx.xxx.xxx.xxx | IP address of Secondary (DNS) nameserver |

### Management and Video/IP Ports

Each of the three physical NICs and one internal NIC are identical in every way; either one can be configured for the management or Video/IP networks. As shown below, clicking the gear icon will open the settings for each NIC, including the name of the port, IP address and VLAN options. After finishing changes, click the apply button.



| Setting               | Available Selections                      | Descriptions   |
|-----------------------|---|--|
| <b>Interface Name</b> | User Entered<br>(eth0/eth1/eth2/Internal) | User defined port names  |
| <b>Mode</b>           | DHCP, Static                              | DHCP allows network server to provide IP address<br>Static requires the user to define the IP address to be used |
| <b>IP Address</b>     | xxx.xxx.xxx.xxx                           | Static mode IP address entry   |
| <b>Subnet Mask</b>    | xxx.xxx.xxx.xxx                           | Static Mode subnet mask entry  |
| <b>Gateway</b>        | xxx.xxx.xxx.xxx                           | Static Mode gateway entry  |

To add a VLAN to the NIC, click the  icon to bring up the “Add VLAN” menu as shown on the next page.



**Add VLAN**

VLAN Name:


VLAN Tag ID:

IP Address:

Subnet Mask:

Gateway:

| Setting            | Available Selections | Descriptions  |
|--------------------|----------------------|---|
| <b>VLAN Name</b>   | User Entered         | User defined VLAN names   |
| <b>VLAN Tag ID</b> | 1 - 4094             | The VLAN tag to be assigned to outgoing streams and filtered for incoming streams |
| <b>IP Address</b>  | xxx.xxx.xxx.xxx      | Static mode IP address entry  |
| <b>Subnet Mask</b> | xxx.xxx.xxx.xxx      | Static Mode subnet mask entry   |
| <b>Gateway</b>     | xxx.xxx.xxx.xxx      | Static Mode gateway entry   |

After clicking “OK” to finish configuring the newly created VLAN, it will appear on the VLAN list as seen in the figure below. To remove individual VLANs, click the blue  icon in the corresponding row. To remove all created VLANs, click the  button.

### Configuring Network Services

Both Physical NICs can have specific features enabled for functionality or disabled for security. To configure these settings, click on  the as indicated in the figure below.



The “Configure Network Services” menu will then be shown. These are the default settings that allow for web access, ICMP contact through pinging and general stream input and output traffic. To enable or disable further settings, click to check the leftmost box as well as the box corresponding to the physical NIC (eth0, eth1, eth2, eth3) in the row of the intended service.

| Configure Network Services          |            |          |      |                                     |                                     |                                     |                                     |  |
|-------------------------------------|------------|----------|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | Service ↑  | Protocol | Port | eth0 <input type="checkbox"/>       | eth1 <input type="checkbox"/>       | eth2 <input type="checkbox"/>       | eth3 <input type="checkbox"/>       |  |
| <input checked="" type="checkbox"/> | HTTP       | TCP      | 80   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| <input checked="" type="checkbox"/> | ICMP       | ICMP     | N/A  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| <input type="checkbox"/>            | SNMP       | UDP      | 161  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| <input type="checkbox"/>            | SNMP Traps | UDP      | 162  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |
| <input checked="" type="checkbox"/> | SSH        | TCP      | 22   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| <input checked="" type="checkbox"/> | Stream I/O | N/A      | N/A  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |
| <input type="checkbox"/>            | Syslog     | UDP      | 514  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |  |

| Service    | Protocol | Port | Descriptions   |
|------------|----------|------|--|
| HTTP       | TCP      | 80   | Allows access to the web interface via browser   |
| ICMP       | ICMP     | N/A  | Allows access to ICMP responses (such as pinging)  |
| SNMP       | UDP      | 161  | Allows SNMP GET/SET commands   |
| SNMP Traps | UDP      | 162  | Enables SNMP traps to send upon system change  |
| SSH        | TCP      | 22   | Allows for SSH access through port 22  |
| Stream I/O | Unknown  | N/A  | Enables and disables all stream traffic for the physical interface (Zixi, MPEG/IP, SRT, HLS) |
| Syslog     | UDP      | 514  | Allows configuration of a syslog server for state triggered messages.                        |

### License Information

Certain features of the OHP-IP-00 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 module, click Apply License Key button. The menu below will appear where the user can copy and paste the provided license key from Sencore.

## Section 4 Appendices



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## APPENDIX A - Acronyms and Glossary

|                 |  |
|-----------------|--|
| <b>AAC</b>      | Advanced Audio Coding  |
| <b>AC-3</b>     | Also known as Dolby Digital  |
| <b>AES</b>      | Audio Engineering Society  |
| <b>ATSC</b>     | Advanced Television Systems Committee  |
| <b>AV</b>       | Audio Video  |
| <b>BAT</b>      | Bouquet Association Table  |
| <b>BER</b>      | Bit Error Ratio  |
| <b>Bit Rate</b> | The rate at which the compressed bit stream is delivered   |
| <b>BNC</b>      | British Naval Connector  |
| <b>CAM</b>      | Conditional Access Module  |
| <b>CAT</b>      | Conditional Access Table   |
| <b>CBR</b>      | Constant Bitrate   |
| <b>CI</b>       | Common Interface   |
| <b>CVBS</b>     | Composite Video Broadcast Signal   |
| <b>dB</b>       | Decibel  |
| <b>DVB</b>      | Digital Video Broadcasting   |
| <b>EAS</b>      | Emergency Alert System   |
| <b>EIT</b>      | Event Information Table  |
| <b>EPG</b>      | Electronic Program Guide   |
| <b>FEC</b>      | Forward Error Correction   |
| <b>GOP</b>      | Group of Pictures  |
| <b>HD</b>       | High Definition  |
| <b>HDCP</b>     | High-bandwidth Digital Content Protection  |
| <b>HDMI</b>     | High Definition Multimedia Interface   |
| <b>Kbps</b>     | 1000 bit per second  |
| <b>LED</b>      | Light Emitting Diode   |
| <b>LNB</b>      | Low-Noise Block  |
| <b>Mbps</b>     | 1,000,000 bits per second  |
| <b>MER</b>      | Modulation Error Ratio   |
| <b>MPEG</b>     | Refers to standards developed by the ISO/IEC JTC1/SC29 WG11, Moving Picture Experts Group. MPEG may also refer to the Group. |
| <b>MPEG-2</b>   | Refers to ISO/IEC standards 13818-1 (Systems), 13818-2 (Video), 13818-3 (Audio), 13818-4                                     |
| <b>MPTS</b>     | Multi-program Transport Stream   |
| <b>NIT</b>      | Network Information Table  |
| <b>OFDM</b>     | Orthogonal Frequency-Division Multiplexing   |
| <b>PAT</b>      | Program Association Table  |
| <b>PCR</b>      | Program Clock Reference  |
| <b>PID</b>      | Packet Identifier  |
| <b>PMT</b>      | Program Map Table  |
| <b>PSI</b>      | Program Specific Information   |
| <b>PSU</b>      | Power Supply Unit  |

|             |                                    |
|-------------|------------------------------------|
| <b>QAM</b>  | Quadrature Amplitude Modulation    |
| <b>QPSK</b> | Quadrature Phase-Shift Keying      |
| <b>SD</b>   | Standard Definition                |
| <b>SDT</b>  | Service Description Table          |
| <b>SI</b>   | Service Information                |
| <b>SNMP</b> | Simple Network Management Protocol |
| <b>SNR</b>  | Signal Noise Ratio                 |
| <b>SPTS</b> | Single Program Transport Stream    |
| <b>TDT</b>  | Time and Date Table                |
| <b>TS</b>   | Transport Stream                   |
| <b>VBR</b>  | Variable Bitrate                   |

## APPENDIX B - A Monroe OneNetSE Configuration and Testing

For development and testing purposes, the Monroe OneNetSE will be used to supply the SCTE18 messages and the EAS substitution audio and video. The Monroe box will need to be configured in a very specific way in order to work with the proposed OmniHub 6RFX EAS features.

### External Configuration

1. The first step is to connect an Ethernet cable to the unit and supply power. Turn on the unit using the switch on the back. The unit is configured for DHCP on the management port. If a static IP needs to be assigned, this will need to be done according to the Monroe manual.
2. Connect the CVBS video and analog-unbalanced audio to an encoder module. These outputs will be where the video and audio that needs to be used for substitution will come out.



3. Once the unit boots, the front panel display will show the DHCP IP address of the Monroe box. Use this IP address to access the unit using a web browser.



## Webpage Configuration

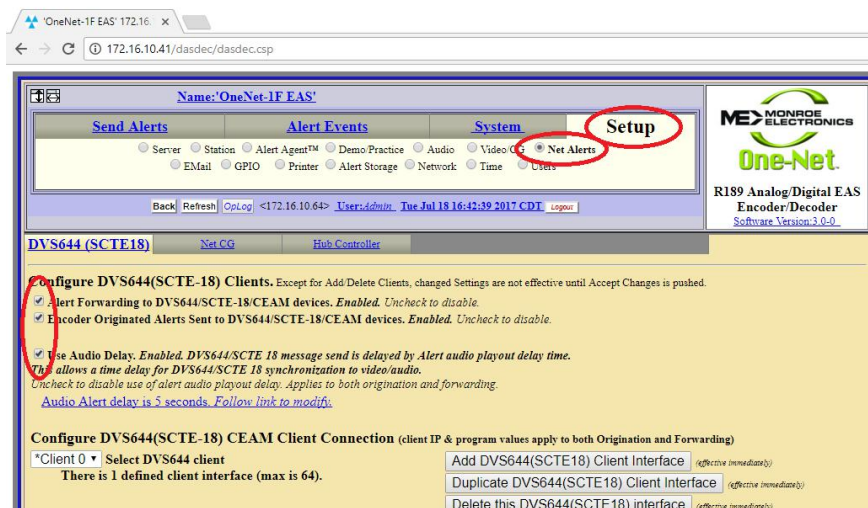
1. The webpage for the Monroe box requires login. The Monroe box has been configured with this login information (The capital “A” in the username is required):

User: Admin

Password: sencore12



2. Once logged into the unit, browse to the Setup tab and select Net Alerts.
3. Configure the DVS644 (SCTE18) settings in the Monroe exactly like are shown in this document. Enable Alert Forwarding and Encoder Originated Alerts to be sent to DVS644/SCTE18 devices.



4. A DVS644 (SCTE-18) CEAM Client Connection should already be configured. If not, click the **Add DVS644 (SCTE18) Client Interface** button.
5. Make sure Client 0 is enabled and then input the unicast of multicast address into the “Remote Host Unicast or Multicast IP Address” text box. It is suggested the unicast normally be used, so what should be put in this box is the management



IP address of the OmniHub 6RFX. It is also possible to input a multicast address (224.x.x.x – 239.x.x.x).

Client 0 Client Interface Name

☒ **ENABLE Client Interface.** *Enabled. Uncheck to disable client.*

172.16.10.64 Remote Host Unicast or Multicast IP Address 0 Details Video OOB ID

5050 Remote Host Port 0 Details Audio OOB ID

0 Multicast TTL (0..200) 0 Details InBand Major Channel

☐ **Advanced DSG Delivery.** *Disabled.* 0 Details InBand Minor Channel

Using **Standard MPEG2 Transport Stream Delivery.**

Check to enable **Advanced DSG Delivery.**

☐ **In-Band.** *Disabled. Using Out-Of-Band PID=1FFC.*

Check to enable **In-Band PID=1FFC.**

☒ **Send internal EAT control event at EAT,NPT End of Message.** *Enabled.NOTE! This may be REQUIRED for ending force tune during EAT and NPT National alerts by some downstream STBs and other SCTE18 receiving devices!.*

☐ **Exception Channel List.** *Disabled. Check to enable Exception Channels.*

☐ **In-Band Details Channel Descriptor (Tag=0x00).** *Disabled. Check to enable In-Band Details Channel Descriptor.*

☐ **In-Band Exception Channels Descriptor (Tag=0x01).** *Disabled. Check to enable In-Band Exception Channels Descriptor.*

☐ **Audio File Descriptor (Tag=0x02).** *Disabled. Check to enable Audio File Descriptor.*

☐ **MPEG Audio Sync Private Descriptor (Tag=0xE1).** *Disabled. Check to enable MPEG Audio Sync Private Descriptor.*

☐ **NDS Tune Private Descriptor (Tag=0xE8).** *Disabled. Check to enable NDS Tune Private Descriptor.*

☐ **Generic Private Descriptor.** *Disabled. Check to enable Generic Private Descriptor.*

6. Make sure the “Remote Host Port” is configured to be 5050 as this is the default port for SCTE18 messages and it is not planned to have the OmniHub 6RFX listen for SCTE18 messages on any other port.
7. Also make sure the **In-Band** checkbox is disabled. The OmniHub 6RFX will be using the Out-Of-Band PID = 0x1FFC.
8. Another very important configuration is that the **Alert Repeat Control** must be set to “Always repeat alert send” and the **Alert Message Repeat Period** should be set to 6 seconds.



**DVS644 (SCTE18)**    [Net.CG](#)    [Hub Controller](#)

☐ **Generic Private Descriptor.** *Disabled. Check to enable Generic Private Descriptor.*

**Set Alert type priority selection**  
*(NOTE: EAN are always 15)*  
 Low:3    **Advisories**  
 Low:3    **Tests**  
 Low:3    **Watches**  
 Medium:7    **Warnings**  
 High:11    **Emergencies**  
 High:11    **National Test**

☐ **NPT initial duration 120 secs.** *Disabled. Will be 0 like EAN.*

☐ **Immediate Start.** *Disabled. Alert Start Time on Receiving Device based on Encoder Clock Time. Check to set immediate start time.*

☐ **Multiple Language Alert Text.** *Disabled.*

Send Alert Text at all priority levels    **Alert Text Control**  
 Always repeat alert send    **Alert Repeat Control**  
 6    **Alert Message Repeat Period(6-60 seconds)**  
☒ **Decrement SCTE18 Time remaining with each repeat period**  
*(incrs sequence num). Enabled. Does not apply to EAN or 0 duration NPT.*  
 2    **Alert Message Transmission Duplication Count (1-20)**  
 0    **Additional Start Delay Time (seconds).**  
*Start Delay == (Audio Delay if enabled) + Additional Time*  
*DVS644/SCTE 18 message send delay time = 5 seconds.*  
 0    **Duration Extension Time (seconds).**  
*Alert Duration == Audio Duration + Extension Time*  
*(max total is 120 seconds)*

☒ **All FIPS codes trigger.** *Enabled.* All FIPS locations will trigger DVS644/SCTE-18/CEAM device. *Uncheck to choose specific triggering FIPS.*

☒ **All EAS codes trigger.** *Enabled.* Alerts with any EAS code will trigger DVS644/SCTE18 send. *Uncheck to choose specific triggering EAS Codes.*

9. Click the Accept Changes button and that should be the last of the configuration.

## EAS Testing with Monroe Box

1. To force the Monroe box to do a test and send an SCTE18 message, press the **Select** button on the front panel of the unit **TWO TIMES**.

This will cause the unit to:

- a. Display an EAS screen on the CVBS video output
  - b. Send two SCTE18 messages
  - c. Start playing the alert audio
2. The SCTE18 messages will continue to be sent during the playing of the EAS audio message every 6 seconds. When the EAS audio message is finished playing, the SCTE18 messages will no longer be sent.

When the OmniHub 6RFX receives the first SCTE18 message on the management port, it should trigger it to replace all services on the output with an encoded version of the Monroe video and audio outputs. 15 seconds after the last SCTE18 is received, the OmniHub 6RFX should return all services to their original content.

## APPENDIX C - Specification

OmniHub 6RFX- Base unit

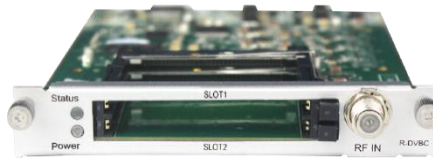
Includes -

4RU chassis/case, power supply/line cord

Systems -

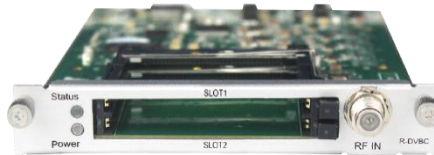
|   |  |
|---|--|
| Chassis Dimension                           | 445mm x 177mm x 428mm<br>(W x H x D), 4RU  |
| Front Panel                                 | 16 Hot swappable Slots<br>Dual Redundant Power Supplies<br>4 Gigabit Ethernet port |
| Remote Operation/Update Interface -<br>Type | Ethernet, 10/100   |
| Front Panel Indicators                      | Link (Green LED). Activity (Amber LED)   |
| Connector                                   | RJ45   |
| Operating Temperature -                     | 0 to 50-degree Celsius   |
| Storage Temperature -                       | -10 to 70-degree Celsius   |
| Operating Humidity -                        | <95%   |
| AC Power -                                  |  |
| Operating Voltage                           | 90 - 240VAC  |
| PSU Max Power                               | 350W   |
| Line Cord                                   | Detachable, 3-prong  |

#### Receiver Module Specification



|                 |   |
|-----------------|---|
| DVB-C Receiver  |   |
| Input           | 4 channels via 1 RF Female connector  |
| CI              | 2 x PCMCIA CI slots   |
| CAM             | Descrambled channel quantity<br>depends on CAM capability, 2 CAMs<br>could be different |
| QAM mode        | Annex A/C   |
| Frequency Range | 47 ~ 862MHz   |
| Bandwidth       | 6/7/8MHz  |
| Constellation   | 16QAM / 32QAM / 64QAM / 128QAM /<br>256QAM  |
| Symbol Rate     | 3.6 ~ 6.952Ms/s   |
| Signal Level    | 40~80dBuV   |
| CA system       | Supports mainstream CAS   |
| DTMB Receiver   |   |
| Input           | 4 channels via 1 RF female connector  |
| CI              | 2 x PCMCIA CI slots   |

|                 |   |
|-----------------|---|
| CAM             | Descrambled channel quantity depends on CAM capability, 2 CAMs could be different |
| Modulation Mode | TDS-OFDM  |
| Frequency Range | 47~862MHz   |
| Constellation   | 4QAM-NR / 4QAM / 16QAM / 32QAM / 64QAM  |
| Signal Level    | -65~-25dm   |
| CA System       | Supports mainstream CAS   |



#### DVB-C Annex B Receiver

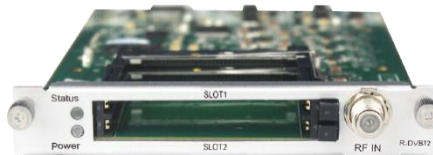
|                 |   |
|-----------------|---|
| Input           | 4 channels via 1 RF Female connector  |
| CI              | 2 x PCMCIA CI slots   |
| CAM             | Descrambled channel quantity depends on CAM capability, 2 CAMs could be different |
| QAM mode        | Annex B   |
| Frequency Range | 47 ~ 862MHz   |
| Bandwidth       | 6MHz  |
| Constellation   | 64QAM, 256QAM   |
| Symbol Rate     | 5.057Ms/s (64QAM)<br>5.360Ms/s (256QAM)   |
| Signal Level    | 40~80dBuV   |
| CA system       | Supports mainstream CAS   |

#### ISDB-T Receiver

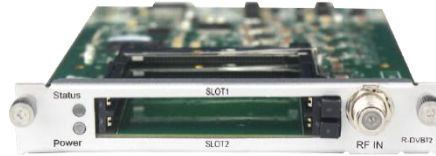
|                 |   |
|-----------------|---|
| Input           | 4 channels via 1 RF Female connector  |
| CI              | 2 x PCMCIA CI slots   |
| CAM             | Descrambled channel quantity depends on CAM capability, 2 CAMs could be different |
| Frequency Range | 177.143~863.143 MHz   |
| Bandwidth       | 6/7/8MHz  |
| Constellation   | DQPSK, QPSK, 16QAM, 64QAM   |
| FEC             | 51/2, 2/3, 3/4, 5/6, 7/8, Automatic   |
| Signal Level    | -80~-20dBm  |
| CA system       | Supports mainstream CAS   |

**DVB-S/S2 FTA Receiver**

|                 |  |
|-----------------|--|
| Input           | C/Ku Bank, 4 channels via 4 RF female connectors                                 |
| LNB Power       | Independent power supplies for LNB-1 & LNB-3                                     |
| LNB Current     | Max. 400mA   |
| LNB Voltage     | 13V / 18V  |
| Constellation   | QPSK, 8PSK   |
| Frequency Range | 950 - 2150MHz  |
| Signal Level    | -70~-20dBm   |
| Roll-off Factor | 0.15, 0.20, 0.25, 0.35   |
| Symbol Rate     | DVB-S: 1~45Msps<br>DVB-S2: 1~45Msps  |
| FEC             | DV-S: 1/2, 2/3, 3/4, 5/6, 7/8<br>DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 |

**DVB-T/T2 with CI Receiver**

|                 |  |
|-----------------|--|
| Input           | 4 channels via 4 RF Female connectors  |
| CI              | 2 x PCMCIA CI slots  |
| CAM             | Descrambled channel quantity depends on CAM capability, 2 CAMs could be different  |
| Frequency Range | 47 ~ 862MHz  |
| Bandwidth       | 6/7/8MHz   |
| Constellation   | DVB-T: QPSK / 16QAM / 64QAM<br>DVB-T2: QPSK / 16QAM / 64QAM / 256QAM               |
| Guard Interval  | DVB-T: 1/4, 1/8, 1/16, 1/32<br>DVB-T2: 1/4, 1/8, 1/16, 1/32, 1/128, 19/256, 19/128 |
| FFT Size        | DVB-T: 2K, 8K<br>DVB-T2: 1K, 2k, 4K, 8K, 16k, 32K                                  |
| Signal Level    | -80~-20dBm   |
| CA system       | Supports mainstream CAS  |



#### DVB-S/S2 with CI Receiver

|                 |  |
|-----------------|--|
| Input           | C/Ku Band, 4 channels via 2 RF Female connectors<br>CH1 & CH2 via LNB-1<br>CH3 & CH4 via LNB-2 |
| LNB Power       | Independent power supplies for each LNB  |
| LNB Voltage     | 13V / 18V  |
| LNB Current     | Max. 400mB   |
| CI              | 2 x PCMCIA CI slots  |
| CAM             | Descrambled channel quantity depends on CAM capability, 2 CAMs could be different              |
| Constellation   | QPSK, 8PSK   |
| Frequency Range | 950 - 2150MHz  |
| Signal Level    | -70~-20dBm   |
| Roll-off Factor | 0.15, 0.20, 0.25, 0.35   |
| Symbol Rate     | DVB-S: 1~45Msps<br>DVB-S2: 1~45Msps  |
| FEC             | DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8<br>DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10              |
| CA System       | Supports mainstream CAS  |



#### DVB-S/S2 FTA Receiver

|                 |   |
|-----------------|---|
| Input           | C/Ku Band, 8 channels via 8 RF female connectors        |
| LNB Power       | Independent power supplies for LNB-1 & 3, LNB-5 & LNB-7 |
| LNB Current     | 13V / 18V   |
| LNB Current     | Max. 400mA  |
| Constellation   | QPSK, 8PSK  |
| Frequency Range | 950 - 2150MHz   |
| Signal Level    | -70~-20dBm  |
| Roll-off Factor | 0.15, 0.20, 0.25, 0.35                                  |

|             |   |
|-------------|---|
| Symbol Rate | DVB-S: 1~45Msps<br>DVB-S2: 1~45Msps   |
| FEC         | DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8<br>DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 |

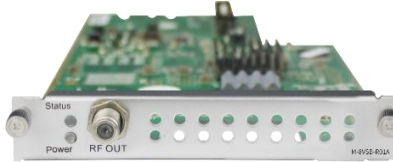


|                 |                                       |
|-----------------|---------------------------------------|
| 8VSB Receiver   |                                       |
| Input           | 4 channels via 4 RF Female connectors |
| Frequency Range | 50 - 860MHz                           |
| Bandwidth       | 6MHz                                  |
| Modulation      | 8VSB                                  |
| Signal Level    | -80~-20dBm                            |

#### Modulator Module Specification



|                 |   |
|-----------------|---|
| OFDM Modulation |   |
| Output          | 4/8 frequencies via 1 RF female connector 75Ω |
| Standard        | ETSI EN 300744                                |
| Frequency Range | 47 ~ 862MHz                                   |
| Bandwidth       | 8MHz  |
| Constellation   | QPSK / 16QAM / 64QAM                          |
| Guard Intervals | 1/4, 1/8, 1/16, 1/32                          |
| FFT Size        | 2K, 8K  |
| Code Rates      | 1/2, 2/3, 3/4, 5/6, 7/8                       |
| Output Level    | Max. 105dBuV                                  |
| MER             | ≥32dB   |



#### 8VSB Modulation

|                 |   |
|-----------------|---|
| Output          | 4/8 frequencies via 1 RF female connector 75Ω |
| Standard        | ATSC A/35                                     |
| Frequency Range | 50 ~ 860MHz                                   |
| Bandwidth       | 6MHz  |
| Constellation   | 8VSB  |
| Output Level    | Max. 105dBμV                                  |
| MER             | ≥40dB   |



#### DTMB Modulation

|                 |   |
|-----------------|---|
| Output          | 4/8 frequencies via 1 RF female connector 75Ω |
| Standard        | DTMB GB20600-2006                             |
| Frequency Range | 47 ~ 862MHz                                   |
| Constellation   | 4QAM-NR / 4QAM / 16QAM / 32QAM / 64QAM        |
| Output Level    | Max. 105dBμV                                  |
| MER             | >32dB   |



#### QAMA Modulation

|                 |   |
|-----------------|---|
| Output          | 4/8 frequencies via 1 RF female connector 75Ω |
| Standard        | ITU-T J.83 Annex A/C                          |
| Frequency Range | 47 ~ 862MHz                                   |
| Bandwidth       | 6/7/8MHz                                      |
| Constellation   | 16QAM / 32QAM / 64QAM / 128QAM / 256QAM       |
| Symbol Rate     | 3.6~6.9Ms/s                                   |
| Output Level    | Max. 105dBμV                                  |
| MER             | ≥32dB   |



#### QAMB Modulation

##### Output

4/8 frequencies via 1 RF female connector 75 $\Omega$

##### Standard

ITU-T J.83 Annex B

##### Frequency Range

47 ~ 862MHz

##### Bandwidth

6/7/8MHz

##### Constellation

64QAM / 256QAM

##### Symbol Rate

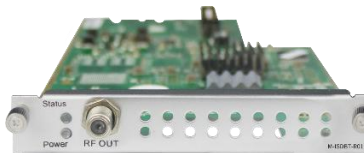
3.6~6.9Ms/s

##### Output Level

Max. 105dB $\mu$ V

##### MER

$\geq 32$ dB



#### ISDB-T Modulation

##### Output

4/8 frequencies via 1 RF female connector, 75 $\Omega$

##### Standard

ARIB STD-B31

##### Frequency Range

57 - 860MHz

##### Bandwidth

6MHz

##### Constellation

QPSK, 16QAM / 64QAM

##### Transmission Mode

2K

##### RS Code

RS (204.188)

##### FEC

1/2, 2/3, 3/4, 5/6, 7/8

##### Guard Interval

1/4, 1/8, 1/16, 1/32

##### Hierarchy Mode

Layer A

##### Segment Mode

Full Seg

##### Output Level

Max. 104dB $\mu$ V

##### MER

$\geq 40$ dB



## Encoder Module Specification



## HDMI Encoder (Commercial)

|                       |   |
|-----------------------|---|
| Input                 | 4 channels via 4 HDMI female connectors (HDMI 1.4)  |
| Video                 | H.264/AVC HD: MP/HP@L4.0/4.1/4.2<br>SD: MP/HP@L3.0/3.1/3.2  |
| Resolution            | SD: 576i50,<br>480i59.94<br>HD: 1080p@25/30,<br>1080i@50/59.94/60,<br>720p@50/60<br>*Output supports progressive format only, and resolution support up to 1920*1080p30 |
| Bitrate Control       | CBR   |
| Video Bitrate         | 600 ~ 12,000Kbps  |
| GOP Structure         | IPPP  |
| GOP Size              | 1~99  |
| Aspect Ratio          | Automatic or Manual   |
| Audio                 | MPEG-1 Layer II, AAC (Optional), AC3 (Optional)   |
| Audio Bitrate         | 32~384Kbps  |
| Audio Mode            | Stereo (2.0, including downmix)   |
| Audio Sampling Rate   | 48KHz   |
| Audio Volume Leveling | -20dB~20dB  |
| OSD Overlay           | Text, Image, QR Code  |



## HDMI Encoder (Professional)

|            |  |
|------------|--|
| Input      | 4 channels via 4 HDMI female connectors (HDMI 1.4)               |
| Video      | H.264 / AVC HD: MP/HP@L4.0<br>SD: MP/HP@L3.0<br>MPEG-2 SD: MP@ML |
| Resolution | SD: 576i50,<br>480i59.94<br>HD: 1080p@25/30/50/59.94/60,         |

|                       |   |
|-----------------------|---|
|                       | 1080i@50/59.94/60,<br>720p@50/60                |
| Bitrate Control       | CBR / VBR                                       |
| Video Bitrate         | 1,000 ~ 14,000Kbps                              |
| GOP Structure         | IBBP, IPPP, IBP                                 |
| GOP Size              | 6~63  |
| Aspect Ratio          | Automatic or Manual                             |
| Audio                 | MPEG-1 Layer II, AAC (Optional), AC3 (Optional) |
| Audio Bitrate         | 32~384Kbps                                      |
| Audio Mode            | Stereo (2.0, including downmix)                 |
| Audio Sampling Rate   | 48KHz   |
| Audio Volume Leveling | -20dB~20dB                                      |



#### HDMI Encoder 02

|                 |   |
|-----------------|---|
| Input           | 2 channels via 2 HDMI or 2 component female connectors (HDMI 1.4)<br>CC/Component input via DB15 port                             |
| Video           | H.264/AVC HD: MP/HP@L4.0,<br>SD: MP/HP@L3.0 MPEG-2<br>SD: MP@ML HD: MP@HL   |
| Resolution      | SD: 576i50,<br>480i59.94f<br>HD: 1080p25/30/50/59.94/60,<br>1080i50/60,<br>720p50/60<br>*The maximum output resolution is 1080i60 |
| Bitrate Control | CBR   |
| Video Bitrate   | 1000 ~ 18,000Kbps   |
| GOP Structure   | IBBP, IPPP, IBP   |
| GOP Size        | 6~63  |
| Audio           | MPEG-1 Layer II, AAC (Optional), AC3 (Optional). Support AC2 pass-through and dual audio encoding.                                |
| Audio Mode      | Stereo (2.0, including downmix)   |
| Sampling Rate   | 48KHz   |



## HDMI Encoder with CC

|                     |   |
|---------------------|---|
| Input               | 2 channels via 2 HDMI female connectors (HDMI 1.4)  |
| Video               | CC via RCA connector<br>H.264/AVC HD: MP/HP@L4.0<br>SD: MP/HP@L3.0 MPEG-2 SD: MP@ML HD: MP@HL                                       |
| Resolution          | SD: 576i50,<br>480i59.94<br>HD: 1080p@25/30/50/59.94/60,<br>1080i@50/60,<br>720p@50/60<br>*The maximum output resolution is 1080i60 |
| Bitrate Control     | CBR   |
| Video Bitrate       | 1000 ~ 18,000Kbps   |
| GOP Structure       | IBBP, IPPP, IBP   |
| GOP Size            | 6~63  |
| Audio               | MPEG-1 Layer II, AAC (Optional), AC3 (Optional). Support AC3 pass-through and dual audio encoding                                   |
| Audio Mode          | Stereo (2.0, including downmix)   |
| Audio Sampling Rate | 48KHz   |



## SDI Encoder

|            |   |
|------------|---|
| Input      | 2 channels via 2 SDI or CVBS<br>SDI or CVBS via BNC connector   |
| Video      | Audio via phoenix connector<br>H.264/AVC HD: MP/HP@L4.0,<br>SD: MP/HP@L3.0 MPEG-2 SD: MP@ML HD: MP@HL                               |
| Resolution | SD: 576i50,<br>480i59.94<br>HD: 1080p@25/30/50/59.94/60,<br>1080i@50/60,<br>720p@50/60<br>*The maximum output resolution is 1080i60 |

|                     |   |
|---------------------|---|
| Bitrate Control     | CBR   |
| Video Bitrate       | 1000 ~ 18,000Kbps   |
| GOP Structure       | IBBP, IPPP, IBP   |
| GOP Size            | 6~63  |
| Audio               | MPEG-1 Layer II, AAC (optional), AC3 (optional). Support AC3 pass-through and dual encoding |
| Audio Mode          | Stereo (2.0, including downmix)   |
| Audio Sampling Rate | 48KHz   |



#### HEVC HDMI Encoder (8-CH)

|                       |   |
|-----------------------|---|
| Input                 | 8 channels via 8 HDMI female connectors (HDMI 1.4)  |
| Video                 | H.264 / AVC MP/HP@L4.2<br>H.265 / HEVC MP@L4.1  |
| Resolution            | HD: 1080p-29.97 / 30 / 50 / 59.94 / 60<br>1080i-29.97 / 30 / 50 / 59.94 / 60<br>720p-50 / 59.94 / 60<br>SD: 576i-50<br>576p-50<br>460i-59.84 / 60<br>460p-59.84 / 60<br>*Output supports progressive only, and resolution support up to 1080p30 |
| Bitrate Control       | CBR   |
| Video Bitrate         | 600 ~ 20,000Kbps  |
| GOP Structure         | IPPP  |
| GOP Size              | 1~60  |
| Aspect Ratio          | Automatic or Manual   |
| Audio                 | MPEG-1 Layer II, AAC, AC3   |
| Audio Bitrate         | 32~192Kbps  |
| Audio Mode            | Stereo 2.0  |
| Audio Sampling Rate   | 48KHz   |
| Audio Volume Leveling | -20dB~20dB  |
| OSD overlay           | Text, Image, QR Code  |



### HEVC HDMI Encoder (4-CH)

|                       |   |
|-----------------------|---|
| Input                 | 4 channels via 4 HDMI female connectors (HDMI 1.4)  |
| Video                 | H.264 / AVC MP/HP@L4.2<br>H.265 / HEVC MP@L4.1  |
| Resolution            | HD: 1080p-29.97 / 30 / 50 / 59.94 / 60<br>1080i-29.97 / 30 / 50 / 59.94 / 60<br>720p-50 / 59.94 / 60<br>SD: 576i-50<br>576p-50<br>460i-59.84 / 60<br>460p-59.84 / 60<br>*Output supports progressive only, and resolution support up to 1080p30 |
| Bitrate Control       | CBR   |
| Video Bitrate         | 600 ~ 20,000Kbps  |
| GOP Structure         | IPPP  |
| GOP Size              | 1~60  |
| Aspect Ratio          | Automatic or Manual   |
| Audio                 | MPEG-1 Layer II, AAC, AC3   |
| Audio Bitrate         | 32~192Kbps  |
| Audio Mode            | Stereo 2.0  |
| Audio Sampling Rate   | 48KHz   |
| Audio Volume Leveling | -20dB~20dB  |
| OSD overlay           | Text, Image, QR Code  |



### CVBS Encoder (Commercial)

|                 |   |
|-----------------|---|
| Input           | 8 channels via 2 DB15 connectors, each DB15 for 4 channels<br>2 x RCA-DB15 adaptor cables come along with the module. |
| Video           | H.264/AVC SD: MP/HP@L3.0/3.1/3.2  |
| Resolution      | SD: 576i50, 480i59.94   |
| Bitrate Control | CBR   |
| Video Bitrate   | 600 ~ 6,000Kbps   |
| GOP Structure   | IPPP  |
| GOP Size        | 1~99  |
| Aspect Ratio    | Automatic or Manual   |

|                       |                                 |
|-----------------------|---------------------------------|
| Audio                 | MPEG-1 Layer II                 |
| Audio Bitrate         | 32~384Kbps                      |
| Audio Mode            | Stereo (2.0, including downmix) |
| Audio Sampling Rate   | 48KHz                           |
| Audio Volume Leveling | -20dB~20dB                      |
| OSD Overlay           | Text, Image, QR Code            |



#### CVBS Encoder (Professional)

|                       |  |
|-----------------------|--|
| Input                 | 6 channels via 2 DB15 connector,<br>each DB15 for 3 channels<br>2 x RCA-DB15 adaptor cables come<br>along with the module. |
| Video                 | H.264/AVC SD: MP/HP@L3<br>MPEG-2 SD: MP@ML   |
| Resolution            | SD: 576i50, 480i59.94  |
| Bitrate Control       | CBR  |
| Video Bitrate         | 1000 ~ 6,000Kbps   |
| GOP Structure         | IBBP, IPPP IBP   |
| GOP Size              | 6~63   |
| Aspect Ratio          | Automatic or Manual  |
| Audio                 | MPEG-1 Layer II  |
| Audio Bitrate         | 32~384Kbps   |
| Audio Mode            | Stereo (2.0, including downmix)  |
| Audio Sampling Rate   | 48KHz  |
| Audio Volume Leveling | -20dB~20dB   |



#### CVBS Encoder (Professional)

|                 |   |
|-----------------|---|
| Input           | 16 channels via 4 DB15 connector,<br>each DB15 for 4 channels<br>4 x RCA-DB15 adaptor cables come<br>along with the module. |
| Video           | H.264/AVC SD: MP/HP@L3.0/3.1/3.2  |
| Resolution      | SD: 576i50, 480i59.94   |
| Bitrate Control | CBR   |
| Video Bitrate   | 1000 ~ 8,000Kbps  |
| GOP Structure   | IPPP  |

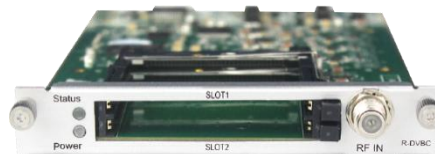
|                       |                                 |
|-----------------------|---------------------------------|
| GOP Size              | 1~99                            |
| Aspect Ratio          | Automatic or Manual             |
| Audio                 | MPEG-1 Layer II                 |
| Audio Bitrate         | 32~384Kbps                      |
| Audio Mode            | Stereo (2.0, including downmix) |
| Audio Sampling Rate   | 48KHz                           |
| Audio Volume Leveling | -20dB~20dB                      |

## Function Module Specification



### EAS Processing Module

|                 |   |
|-----------------|---|
| Input           | Digital EAS input (SCTE-18) via 1*RJ45 port<br>Analogue EAS input via 3pin contact closure<br>CVBS input via 1*RCA connector<br>Audio L/R input via 2*RCA connector<br>TS input via 1*BNC connector |
| Video           | H.264 SD: MP/HP@L3.0<br>MPEG-2 SD: MP @ML (by default)  |
| Resolution      | SD: 480i/59.94fps   |
| ASI             | 500Kbps to 100Mbps  |
| Contact Closure | 3PIN Connector with dry Contact or 5~12V DC input for EAS trigger   |
| RJ45            | 10/100M Ethernet for SCTED-18 digital EAS input   |
| Bitrate Control | CBR   |
| Bitrate         | 500~8,000Kbps   |
| GOP Structure   | IBBP, IPPP, IBP   |
| GOP Size        | 6~63  |
| Audio           | MPEG-1 Layer II, AAC-LC/HE, AC3   |
| Audio Mode      | Stereo (2.0, including downmix)   |
| Sampling Rate   | 48KHz   |



### CI Scrambler/Descrambler

Standard EN 50221

|                  |  |
|------------------|--|
| Interface        | 2 x PCMCIA CI Slots                                    |
| CAM Scrambling   | Support Xcrypt CAS                                     |
| CAM Descrambling | Supports mainstream CAS                                |
|                  | Descrambled channel quantity depends on CAM capability |
|                  | 2 CAMs could be different                              |

## APPENDIX D - 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 E - Support and Contact information

### 1 Returning for Service or Calibration

The OmniHub 6RFX 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.

### 2 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:
  - i. First & Last Name
  - ii. Company
  - iii. Email
  - iv. Phone Number
  - v. Ship and Bill to Address
  - vi. Unit Model and Serial Numbers
4. A RMA number will be emailed to you with return instruction shortly after the form is completed.

### 3 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 these are 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.