OmniHub 16

User Manual

Copyright

© 2019 Sencore, Inc. All rights reserved.
3200 Sencore Drive, Sioux Falls, SD USA
www.sencore.com
This publication includes confidential, proprietary, and trade secret information. No part of this document may be copied, photocopied, reproduced, translated, or reduced to any machine-readable or electronic format without prior written permission from Sencore. Information in this document is subject to change without notice and Sencore Inc. assumes no responsibility or liability for any errors or inaccuracies. Sencore, SencoreInc., and the Sencore logo are trademarks or registered trademarks in the United States and other countries. All other products or services mentioned in this document are identified by the trademarks, service marks, or product names as designated by the companies who market those products. Inquiries should be made directly to those companies. This document may also have links to third-party web pages that are beyond the control of Sencore. The presence of such links does not imply that Sencore endorses or recommends the content on those pages. Sencore acknowledges the use of third-party open source software and licenses in some Sencore products. This freely available source code can be obtained by contacting Sencore Inc.

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, test and measurement equipment, all designed to support system interoperability and backed by bestin-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.

Revision History

Date	Version	Description	Author
08/24/17	1.0	First Version	ZM
06/06/18	1.1	Add New Modules, New Features and Adjust Management Page	ZM
11/15/18	1.2	Modify the Product Picture	DA
02/15/19	1.3	Add New Modules, New Features and Adjust Management Page	DA
04/02/19	1.4	Add New Modules and New Features	DA
05/23/19	1.5	Add New Modules	RS
12/06/19	1.6	Add New Modules and Features	EH
05/-25/20	1.7	Update UI and add new modules	NB
07/27/20	1.8	Update Descrambling configuration descriptions	SW
08/17/2021	1.9	Add New Modules	ACP
12/10/2021	2.0	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
- 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 remain readily accessible and operable at all times.
- 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 16 chassis
2. OmniHub 16 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 to obtain a replacement.

Table of Contents

COPYRIGHT **2**

ABOUT SENCORE **2**

REVISION HISTORY **3**

TABLE OF CONTENTS **7**

SECTION 1 OVERVIEW **9**

1.1 PRODUCT INTRODUCTION 10
1.2 FRONT PANEL OVERVIEW 10
1.3 REAR PANEL OVERVIEW 11
1.4 OPTION MODULE OVERVIEW 11

SECTION 2 INSTALLATION **15**

2.1 RACK INSTALLATION 16
2.2 AC POWER CONNECTION 16

SECTION 3 WEB INTERFACE OPERATION **18**

3.1 OMNIHUB 16 WEB INTERFACE OVERVIEW 20
3.1.1 Connecting to the Management Port 20
3.1.2 LOGGING INTO THE OMNIHUB 16 WEB INTERFACE 20
3.2 STATUS OVERVIEW 20
3.2.1 STATUS 21
3.2.2 SYSTEM SETTINGS 21
3.2.3 IP INPUT 24
3.2.4 IP OUTPUT 27
3.3 MODULE CONFIGURATION 31
RECEIVER MODULES 31
3.3.1 OHR-DVBC-00 31
3.3.2 OHR-DVBC-ISDBT-01 36
3.3.3 OHR-DVBS2CI-01 37
3.3.4 OHR-DVBS2FTA-01/01A 42
3.3.5 OHR-8VSB-00 43
3.3.6.1 Module Status 43
3.3.6.2 Module Settings 45
3.3.6 OHR-DVBT2CI-00 49
ENCODER MODULES 52
3.3.7 OHE-HDMI-R01 52
3.3.8 OHE-HDMI-02 58
3.3.9 OHE-HDMI-02C 62
3.3.10 OHE-HDMI-05/05A 66
3.3.11 OHE-HDMI-06 70
3.3.12 OHE-SDI-01 75
3.3.13 OHE-CVBS-00/R01/R01A 79
MODULATION MODULES 84
3.3.14 OHM-QAMA-00/R00 84
3.3.15 OHM-QAMA-R01/R01A 89
3.3.16 OHM-QAMB-00/R00 89
3.3.17 OHM-QAMB-R01/R01A 90
3.3.18 OHM-8VSB-R01/R01A 90

3.3.19 OHM-OFDM-R01/R01A *91*
3.3.20 OHM-ISDBT-R01/R01A *93*
3.3.21 OHM-QAMA-02/02A、*OHM-QAMB-02/02A* *95*
FUNCTION MODULES 121
3.3.22 OHP-ASI *121*
3.3.23 OHP-EAS *126*
3.3.24 OHP-CAM-00 ..... *129*
3.3.25 OHP-EIT-00 ..... *131*
3.3.26 OHP-IP-00 ..... *133*
Adding a Channel *133*

SECTION 4 APPENDICES 168

APPENDIX A - ACRONYMS AND GLOSSARY 169
APPENDIX B - AMONROE ONENETSE CONFIGURATION AND TESTING 170
APPENDIX C - SPECIFICATION 173
APPENDIX D - WARRANTY 187
APPENDIX E - SUPPORT AND CONTACT INFORMATION 187
4.4.1 Returning for Service or Calibration *187*
4.4.2 RMA Number *187*
4.4.3 Shipping the Product *188*

Section 1 Overview

SECTION 1 OVERVIEW.....9

1.1 PRODUCT INTRODUCTION.....10
1.2 FRONT PANEL OVERVIEW.....10
1.3 REAR PANEL OVERVIEW.....11
1.4 OPTION MODULE OVERVIEW.....11

1.1 Product Introduction

OmniHub 16 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 16 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 or other places with DTV headend, where massive programs are required to be processed in a cost-effective way. OmniHub 16 provides a straight-forward web interface accessible via all major browsers and complete control of the unit. Every OmniHub 16 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

1. Power Status, Baseboard Status and Reset button
2. Four 1GbE RJ45 ports: two for management and two for transport stream
3. Vent holes for cooling intake
4. 16 hot-swappable modules, each module have assigned IP address depending on the Slot number.
5. Dual redundant power supplies

1.3 Rear Panel Overview

The OmniHub 16 has 3 exhaust fans at the back of the unit. Please mind not to obstruct the air intake at the front and air exhaust at the back. Device can be ordered with AC3 and AAC which enable AC3 and AAC for HDMI or SDI encoder modules in OmniHub 16.

1.4 Option Module Overview

This describe the OmniHub 16 platform and all available modules that can expand the functionality of the OmniHub 16 chassis.

OmniHub 16 chassis	Description
OmniHub 16	4RU chassis, Dual PSU, 4xGbE ports (2 for management and 2 port IP stream in/out)
OH-AC3-AAC-4CH	AC3 (2-channel stereo audio) and AAC license per 4 channels encoder module
OH-AC3-AAC-8CH	AC3 (2-channel stereo audio) and AAC license per 8 channels encoder module
OH16-OPT-00	Rear attachment bracket for OmniHub 16, including 2pcs telescoping side metal strip, 2pcs rear metal strip and screws

Receiver Modules	Description
OHR-DVBC-00	4 channel DVB-C Annex A/C/DTMB receiving module, 1 RF input connector with 4 tuners and 2 CI slots
OHR-DVBC-ISDBT-01	4 channel DVB-C Annex B/ISDBT receiving module, 1 RF input connected with 4 tuners and 2 CI slots
OHR-8VSB-00	4 channel 8VSB receiving module, 4 input connectors with 4 tuners.
OHR-DVBT2CI-00	4 channel DVB-T/T2 receiving module, 1 input connected with 4 tuners and 2 CI slots. Support internal signal
OHR-DVBS2CI-01	4 channel DVB-S2 receiving descrambling board (Two DVB-S2 signal input interfaces, two CAM slots.)
OHR-DVBS2FTA-01	4 channel DVB-S2/S2X receiving module (QPSK, 8PSK, 64APSK), 4 input

	connectors (LNB1/2/3/4), Independent power supplies for each LNB.

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

Encoder Modules	Description
OHEA-HDMI-00	4 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, and AC3/AAC (professional chip)
OHE-HDMI-05	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 (commercial chip).
OHE-HDMI-05A	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 (commercial chip)
OHE-HDMI-02	2 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC, and supports CC input.
OHE-HDMI-02C	2 channel HDMI encoding module, supports H.264 HD/SD, MPEG-2 SD, MPEG1L2, optional AC3/AAC and supports CC and analog audio input.
OHE-HDMI-06	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. 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-CVBS-00	6 channel CVBS encoding module, supports H.264/MPEG-2 SD, MPEG1L2

	(professional ship).
OHE-CVBS-03	2-channel CVBS standard definition encoding board, support H.264/MPEG-2 SD, CC, MPEG1L2, AC3 (support), AAC (support), support CC subtitles
OHE-CVBS-R01	8 channel CVBS encoding module, supports H.264, MPEG1L2.
OHE-CVBS-R01A	16 channel CVBS encoding module, supports H.264, MPEG1L2, the modules occupy 2 slots.
OHE-SDI-01	2-channel SDI HD encoding board, support H.264/MPEG-2 HD/SD, MPEG1L2 (support), AAC (support), AC3 (support), support CC subtitles

Modulator Module	**Description**
OHM-QAMA-R00	16 channel QAM modulator module, Annex A/C, non-adjacent output, and 1 RF female port for output
OHM-QAMB-R00	16 channel QAM modulator module, Annex B, non-adjacent output, and 1 RF female port for output
OHM-QAMA-R01	4 channel QAM modulator module, Annex A/C, adjacent output, and 1 RF female port for output
OHM-QAMA-R01A	8 channel QAM modulation module, Annex A/C, adjacent output, and 1 RF female port for output
OHM-QAMB-R01	4 channel QAM modulation module, Annex B, adjacent output, and 1 RF female port for output
OHM-QAMB-R01A	8 channel QAM modulation module, Annex B, adjacent output, and 1 RF female port for output
OHM-OFDM-R01	4 channel OFDM modulation module, adjacent output, and 1 RF female port for output
OHM-OFDM-R01A	8 channel OFDM modulation module, adjacent output, and 1 RF female port for output.

OHM-ISDBT-R01	4 channel ISDBT modulation module, adjacent output, and 1 RF female port for output.
OHM-ISDBT-R01A	8 channel ISDBT modulation module, adjacent output, and 1 RF female port for output
OHM-8VSB-R01	4 channel 8VSB (ATSC) modulation module, adjacent output, and 1 RF female port for output
OHM-8VSB-R01A	8 channel 8VSB (ATSC) modulation module, adjacent output, and 1 RF female port for output.

*All -R01 model share the same hardware, and all -R01A models share the same hardware.

Function Modules	Description
OHP-IP-00	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
OHP-ASI-00	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)
OHP-EAS-00	EAS processing module, supports EAS triggering by analogue EAS input and Digital EAS input.
OHS-CAM-00	Xcrypt scrambler
OHP-EIT-00	EIT processing module, supports up to 16TS per module

Section 2 Installation

CONTENTS

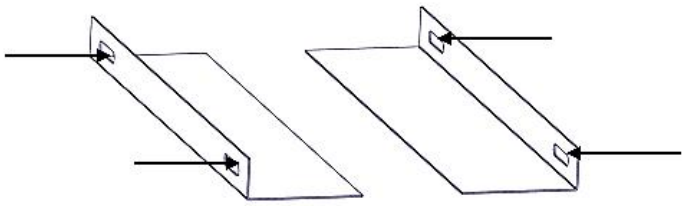
SECTION 2 INSTALLATION.....15

2.1 RACK INSTALLATION..... 16
2.2 AC POWER CONNECTION.....16

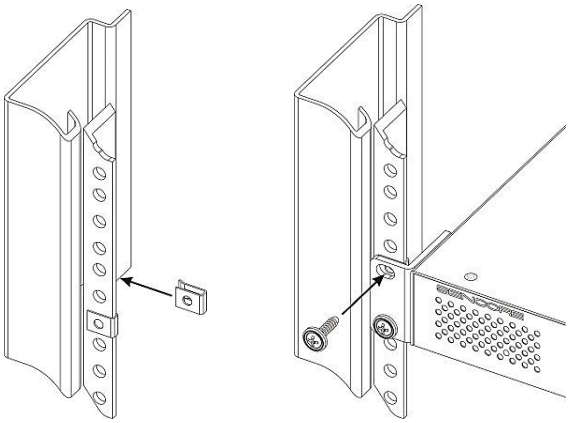
2.1 Rack Installation

The OmniHub 16 is designed to be mounted in a standard 19" rack. It takes 445mm x 177mm x 428mm (W x H x D) or 4RU of rack space. To install it into a rack, please use the following steps:

- Determine the desired position in the rack for the OmniHub 16. Make sure that the air intake on the top 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 is no supporting plate in the rack.



- Insert the rack mount clips into the place over the mounting holes in the rack.
- Slide the OmniHub 16 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 Dual Redundant option allows the OmniHub 16 to be powered by two separate supplies either operating 110V or 220V 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 16, 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

SECTION 3 WEB INTERFACE OPERATION 18

3.1 OMNIHUB 16 WEB INTERFACE OVERVIEW 20
3.1.1 Connecting to the Management Port 20
3.1.2 LOGGING INTO THE OMNIHUB 16 WEB INTERFACE 20
3.2 STATUS OVERVIEW 20
3.2.1 STATUS 21
3.2.2 SYSTEM SETTINGS 21
3.2.3 IP INPUT 24
3.2.4 IP OUTPUT 27
3.3 MODULE CONFIGURATION 31
RECEIVER MODULES 31
3.3.1 OHR-DVBC-00 31
3.3.2 OHR-DVBC-ISDBT-01 36
3.3.3 OHR-DVBS2CI-01 37
3.3.4 OHR-DVBS2FTA-01/01A 42
3.3.5 OHR-8VSB-00 43
3.3.6.1 Module Status 43
3.3.6.2 Module Settings 45
3.3.6 OHR-DVBT2CI-00 49
ENCODER MODULES 52
3.3.7 OHE-HDMI-R01 52
3.3.8 OHE-HDMI-02 58
3.3.9 OHE-HDMI-02C 62
3.3.10 OHE-HDMI-05/05A 66
3.3.11 OHE-HDMI-06 70
3.3.12 OHE-SDI-01 75
3.3.13 OHE-CVBS-00/R01/R01A 79
MODULATION MODULES 84
3.3.14 OHM-QAMA-00/R00 84
3.3.15 OHM-QAMA-R01/R01A 89
3.3.16 OHM-QAMB-00/R00 89
3.3.17 OHM-QAMB-R01/R01A 90
3.3.18 OHM-8VSB-R01/R01A 90
3.3.19 OHM-OFDM-R01/R01A 91
3.3.20 OHM-ISDBT-R01/R01A 93

3.3.21 OHM-QAMA-02/02A、OHM-QAMB-02/02A 95
FUNCTION MODULES 121
3.3.22 OHP-ASI 121
3.3.23 OHP-EAS 126
3.3.24 OHP-CAM-00 129
3.3.25 OHP-EIT-00 131
3.3.26 OHP-IP-00 133
Adding a Channel *133*

SECTION 4 APPENDICES 168

APPENDIX A - ACRONYMS AND GLOSSARY 169
APPENDIX B - AMONROE ONENETSE CONFIGURATION AND TESTING 170
APPENDIX C - SPECIFICATION 173
APPENDIX D - WARRANTY 187
APPENDIX E - SUPPORT AND CONTACT INFORMATION 187
4.4.1 Returning for Service or Calibration 187
4.4.2 RMA Number 187
4.4.3 Shipping the Product 188

3.1 OmniHub 16 Web Interface Overview

3.1.1 Connecting to the Management Port

OmniHub 16 has an embedded 4 ports gigabit switch. The four network ports are respectively used for managing and data reception/streaming. From left to right, port 1 and 2 are used for management and, port 3 and 4 are used for IP reception or streaming.

If an external IP switch needs to be installed between OmniHub 16 and other headend devices, this switch should support IGMP V2 and IGMP snooping function.

3.1.2 Logging into the OmniHub 16 Web Interface

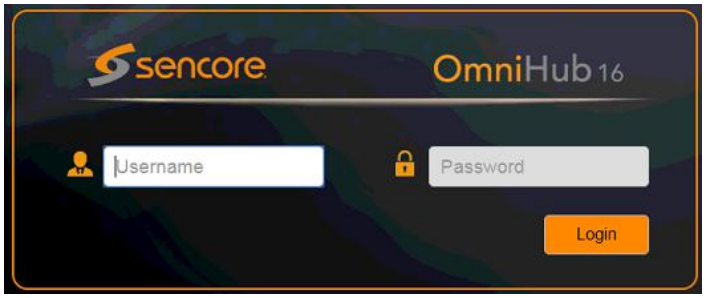
To open the OmniHub 16 web interface use one of the following supported browsers and navigate to the unit's IP address:

- 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

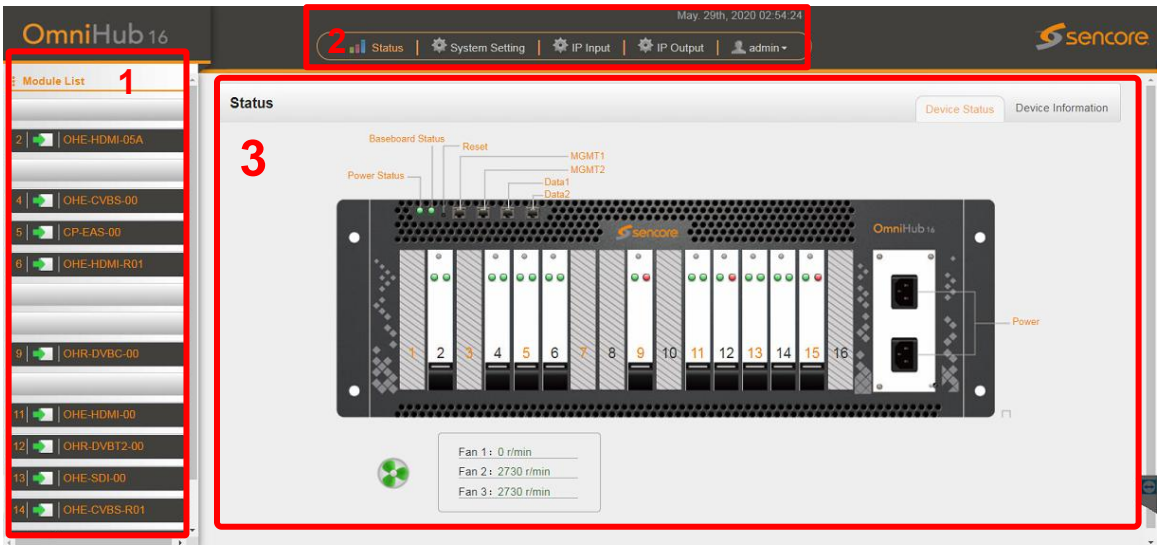
The user will need to login to the web interface. The default **username**/**password** are **admin/admin.** Click the login button to login to the web interface.



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 shows status, system settings, IP inputs, IP outputs, admin
3. Device host operation status



You can return to the welcome screen by clicking the button Status and then button Device Status | Device Information. Above is the picture displaying Status View for OmniHub 16 front view.

3.2.1 Status

Device Status will show once you login to the OmniHub 16 web interface as shown in the picture above. It also shows the front and rear-view image of OmniHub 16 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 Status and then the button Device Status | Device Information.

Status — Device Status | Device Information

Module	Firmware Version	Software Version	Hardware Version
Baseboard	V0.2.586	V1.4.23	V1.0.1
2.OHR-DVBC-01	V46.3.256	V1.4.15	V0.1.0
3.OHM-QAMB-R01	V65.2.258	V1.4.7	V0.0.1
4.OHE-CVBS-00	V0.0.565	V1.4.4	V0.1.0
5.OHE-HDMI-01	V0.0.574	V1.4.4	V0.0.1
6.OHE-HDMI-R01	V0.0.574	V1.4.4	V1.1.1
9.OHR-DVBC-00	V46.3.256	V1.4.15	V0.0.1
11.OHE-HDMI-00	V0.0.565	V1.4.7	V0.0.1
12.OHR-DVBT2-00	V46.3.256	V1.4.15	V0.1.0
13.OHE-SDI-00	V20.1.60	V1.4.9	V0.1.0
14.OHE-CVBS-R01	V0.0.574	V1.4.6	V0.0.0
15.OHE-CVBS-01	V0.0.574	V1.4.5	V0.0.0
16.OHM-OFDM-R01	V113.1.258	V1.3.2	V1.0.0

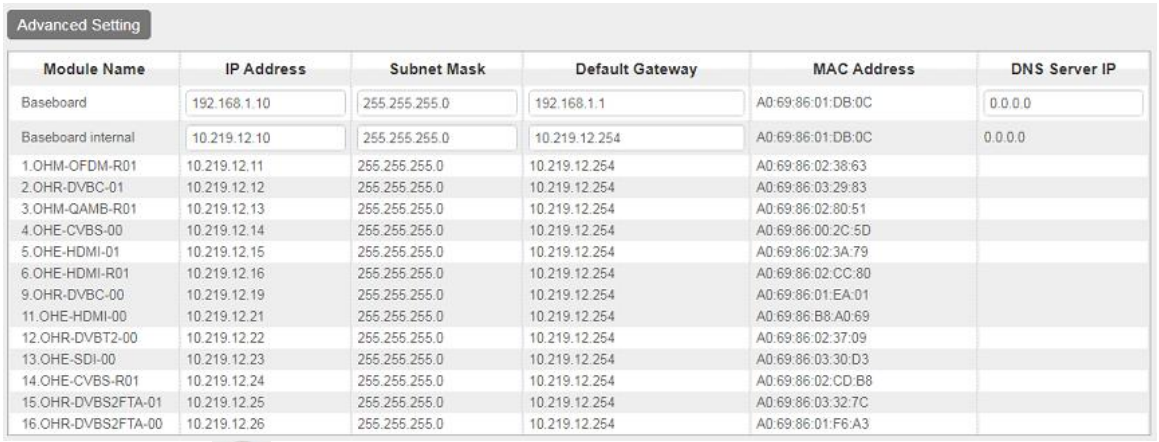
3.2.2 System Settings

This menu allows you to configure the following:

- Network
- Time

- System
- Password
- SNMP

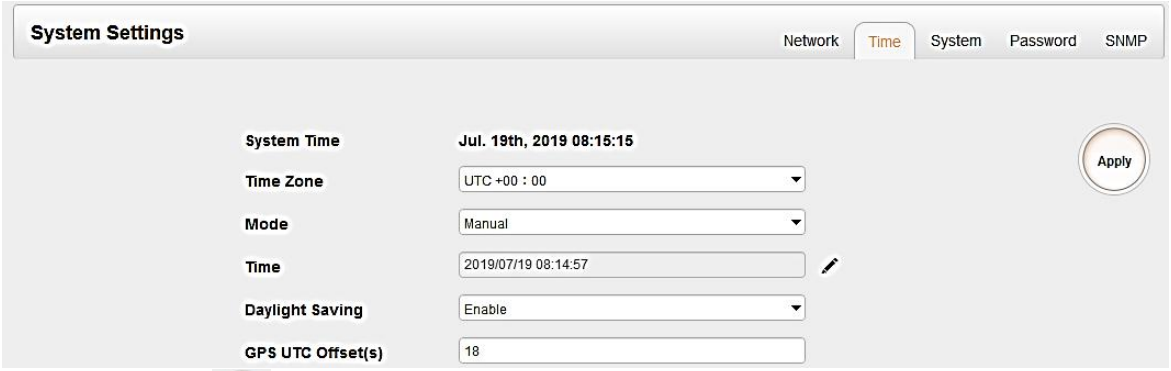
Network tab allows user to assign a static IP address to OmniHub 16 mainboard. There will be a separate internal IP for the Baseboard and sub-board which user can find in 'Advance Setting" as shown in the picture below.



Click the button 

on the right side for the changes to take effect.

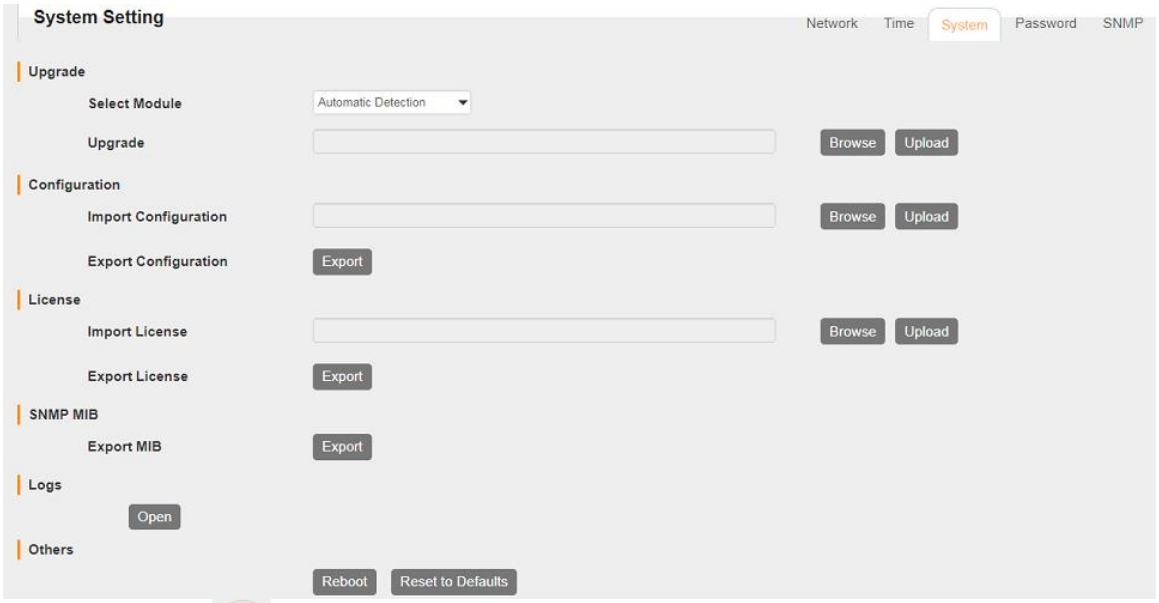
Time tab allows you to check the current system time, change the time zone, choose system time Mode (Manual or Automatic), enable/disable Auto Sync and modify NTP Server Address in Automatic mode and change the current system Time in Manual mode.



Click the button 

on the right side for the changes to take effect.

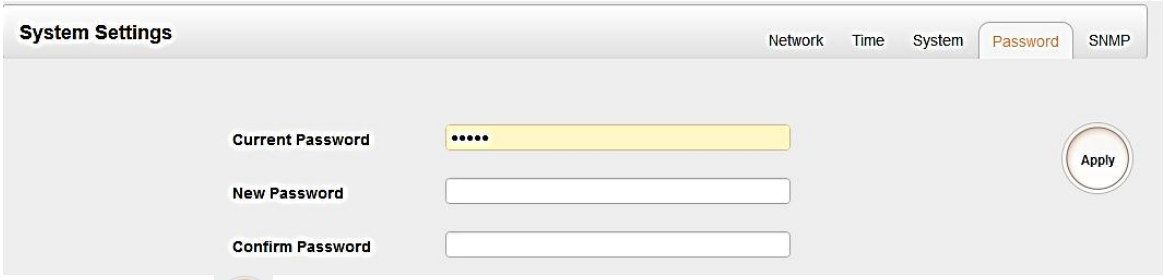
System tab allows you to do upgrade, import or export configuration, import or export licenses *(only baseboard)*, reboot the whole unit, restore to factory default *(only baseboard)* and export logs and clear log (only baseboard).



Click the button 

on the right side for the changes to take effect.

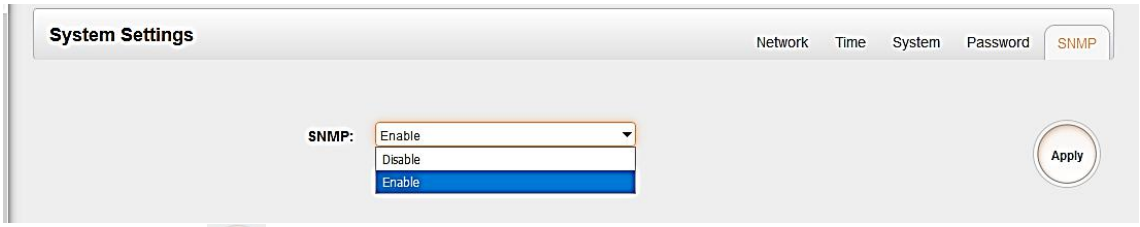
Password tab allows you to change the login password.



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.



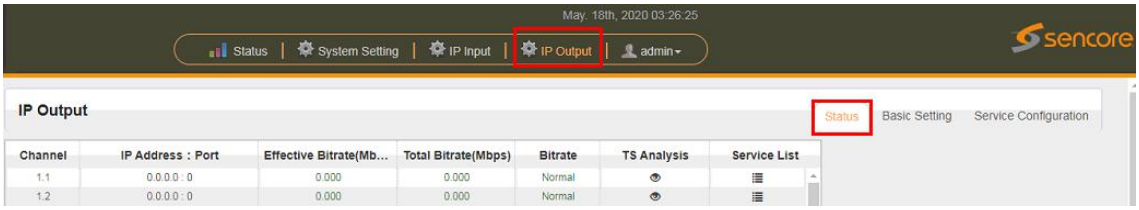
Click the button  on the right side for the changes to take effect.

3.2.3 IP Input

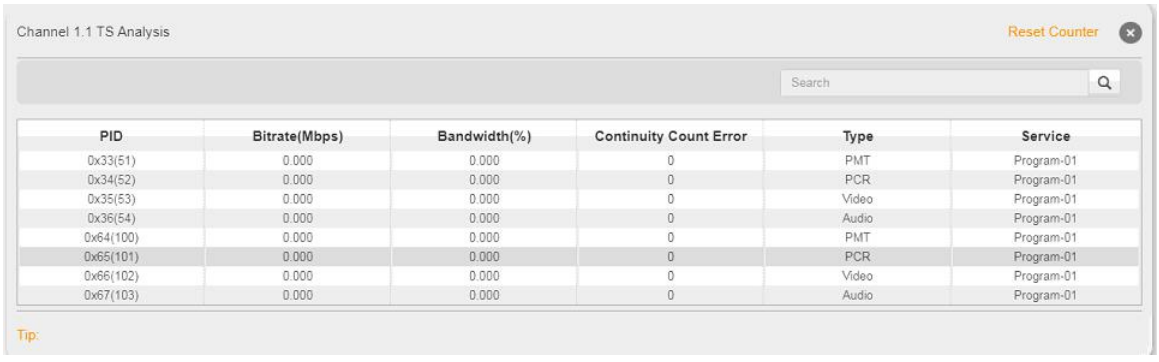
This menu allows you to configure and access the IP input:

- 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 16 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.

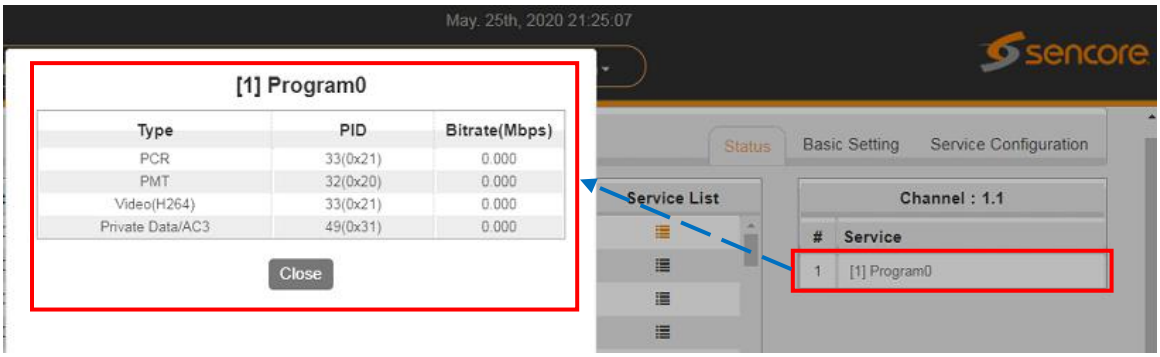


Clicking  under TS Analysis button will display the information on the structure of the transport stream.

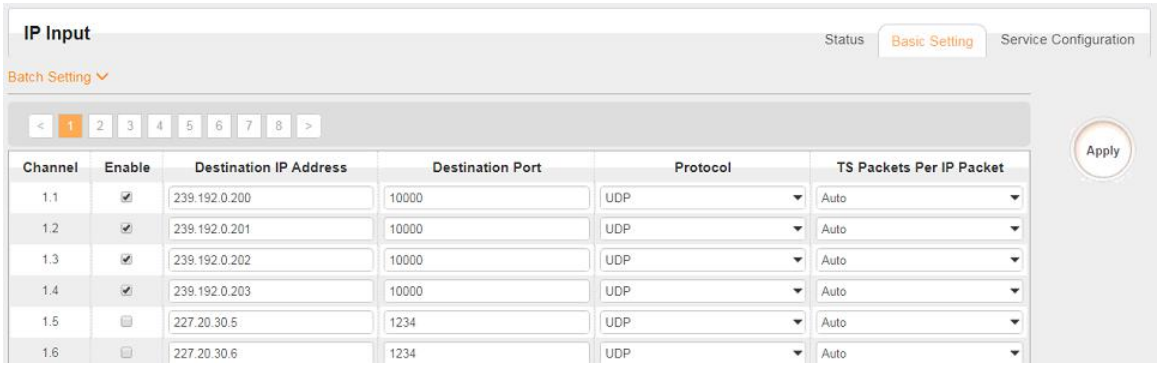


Clicking  under Service List will display information on the services included in the transport stream. A list of services in the TS will be shown as the picture below.

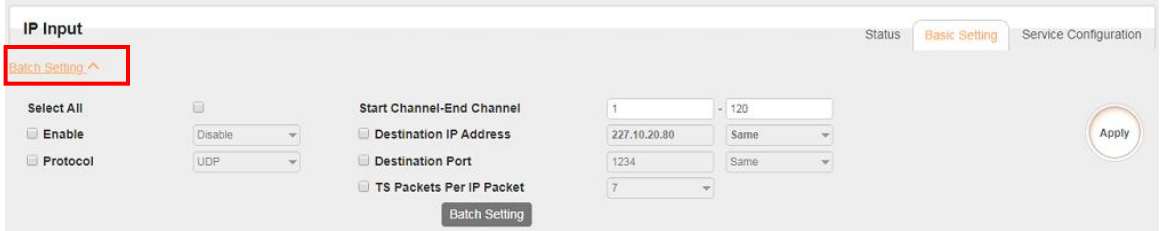
Clicking on the service in the list will display its detailed information: PCR, PMT, Video and Audio PID and Bitrate. See the picture below



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 addressed 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.

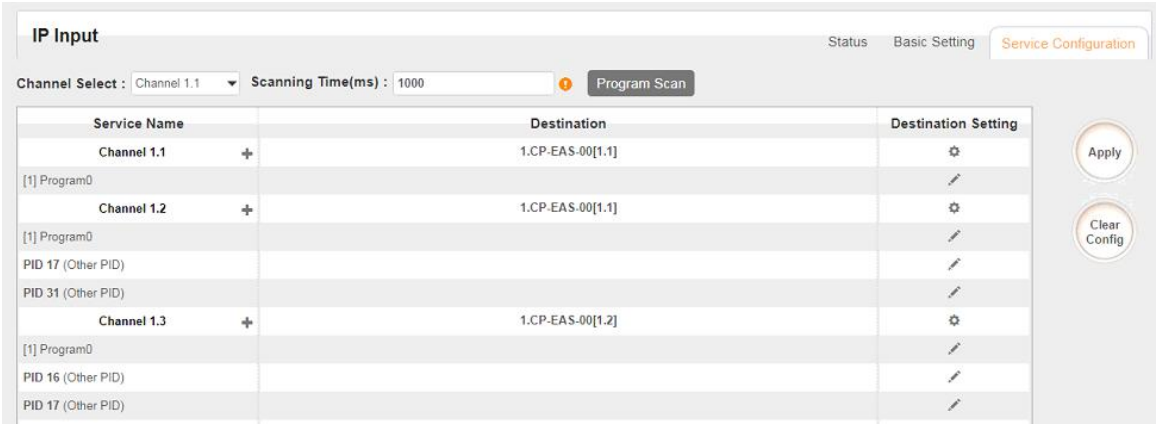


Click the Apply  button on the right side to make the change takes effect.

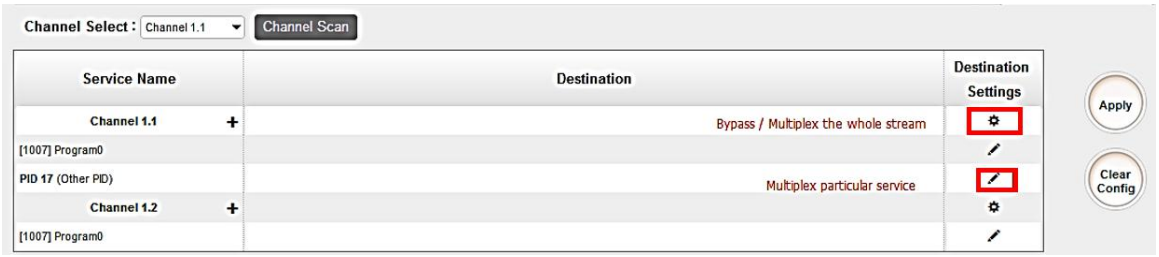
Service Configuration tab displays the configuration page where you can manage the received services and output them to their designated interface. Configuration steps for IP input and all receiving and encoding modules in OmniHub 16 are mostly the same.

First, you need to  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.

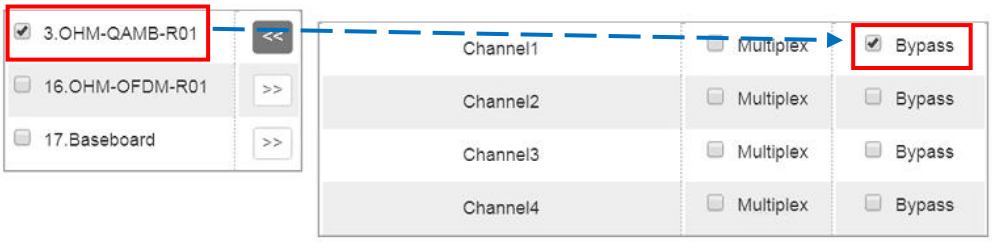
1. **Bypass mode. In this mode,** routes can only be done when outputting a whole input transport stream towards an output TS channel - this cannot be done when outputting a single service only. Bypass mode activation will not allow other services from other input TS to be mixed in the current TS output. 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.



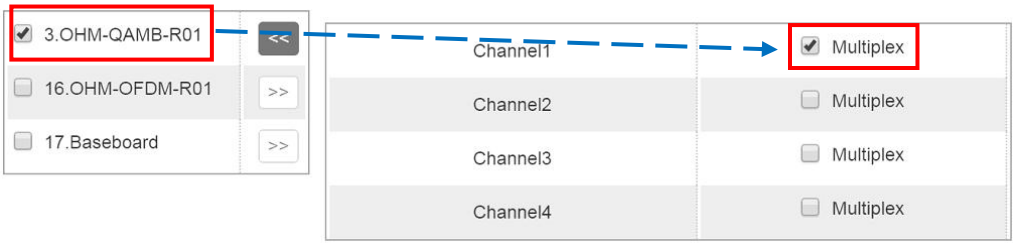
Service Configuration page interface



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 

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.

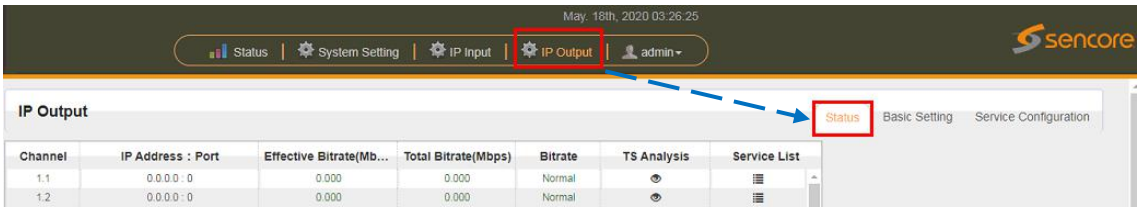
3.2.4 IP Output

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

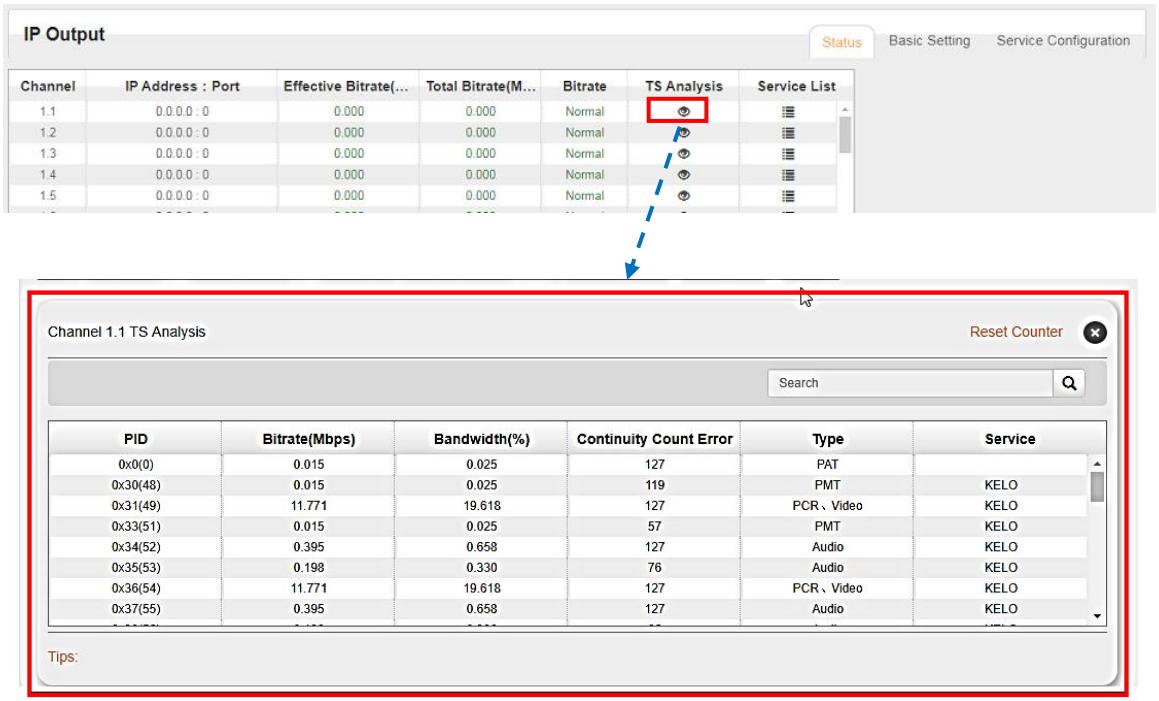
- Status
- Basic Settings
- Service Configuration

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 16 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.

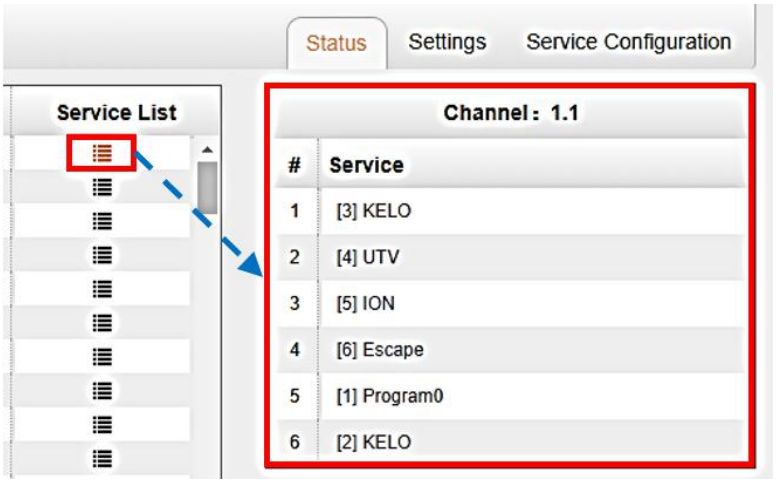


Clicking the icon under the TS Analysis button will display the information on the structure of the transport stream.

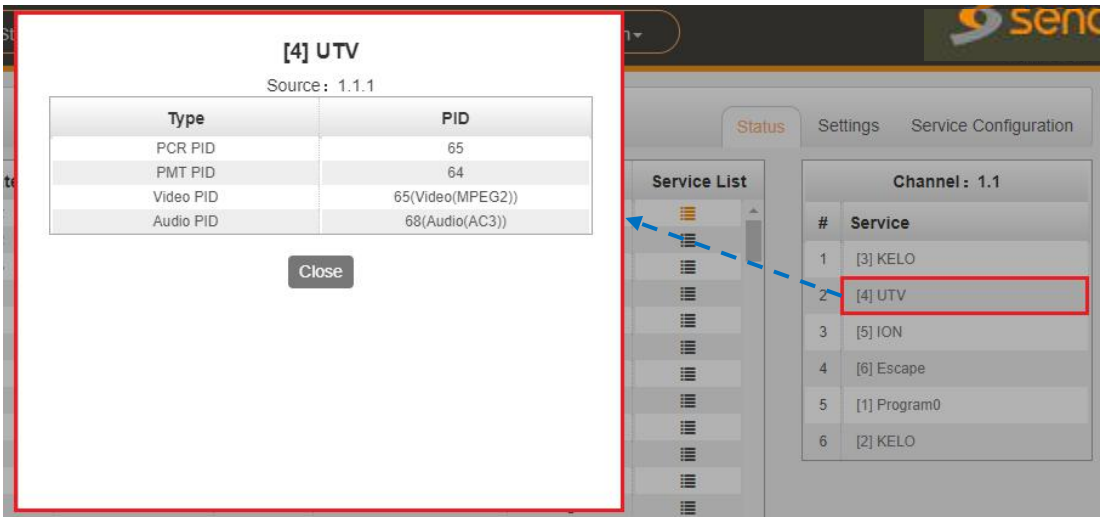


Clicking  under Service List will display information on the services included in the transport stream. This will display the list of services in a TS as shown in the picture below.

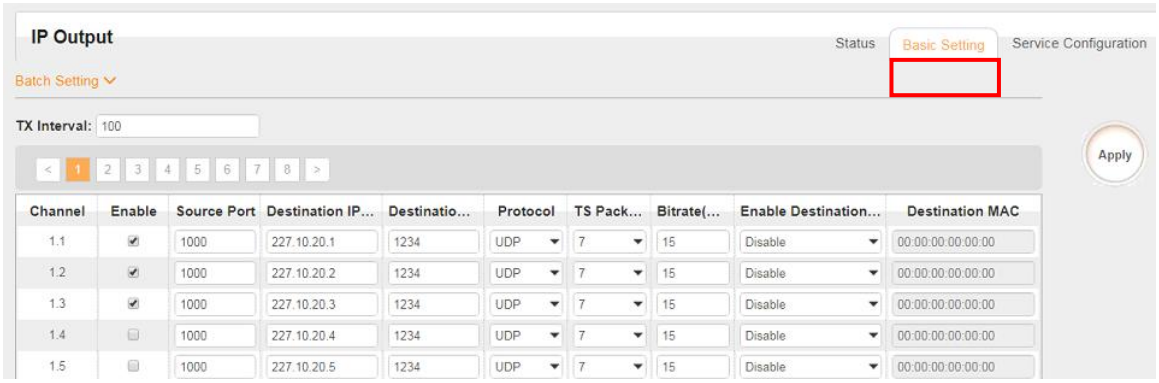
.



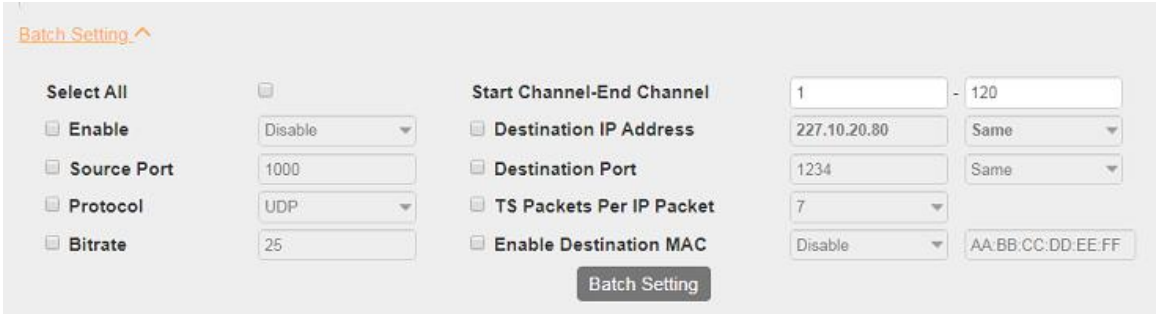
Clicking on the service name in the list will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.



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

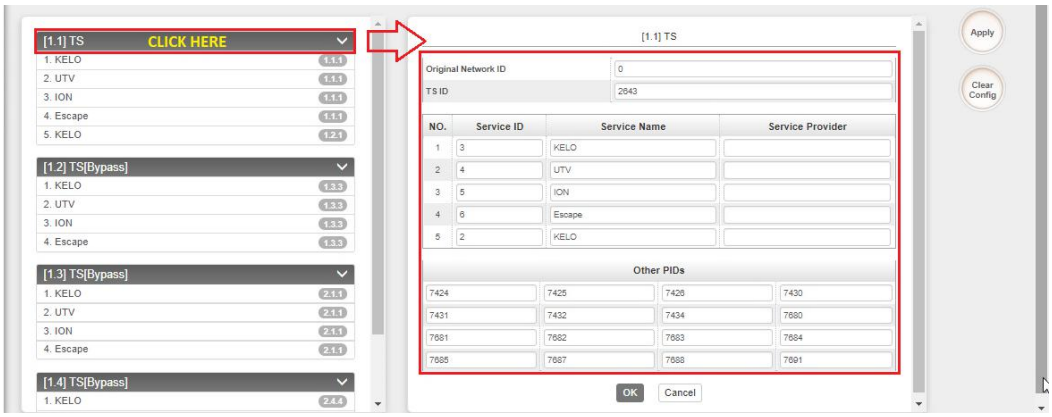


Click the Apply button  on the right side to make the change take effect.

Service Configuration tab display the page where you can check/edit output TS or services that are part of output IP streams. Streams can originates 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

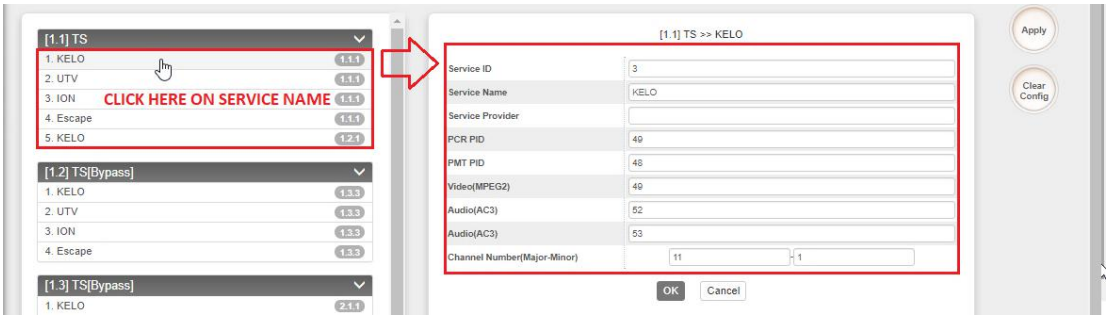
Click the Apply button  on the right side to make the change take effect.



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.



3.2.5 Admin

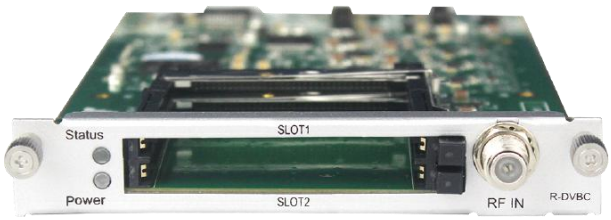
Click **Admin** and you can choose to go into Password setting page or Log Out.

3.3 Module Configuration

Receiver Modules

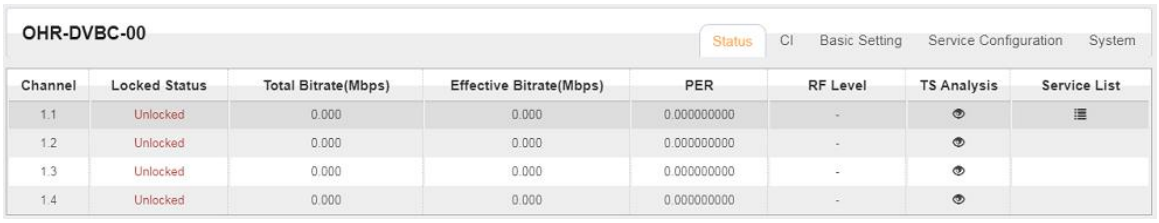
3.3.1 OHR-DVBC-00

OHR-DVBC-00 is a 4-channel 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

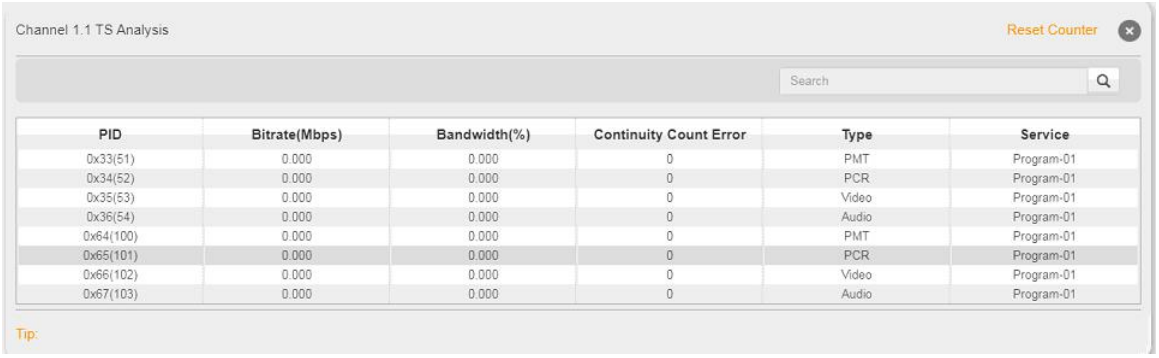
By selecting the OHR-DVBC-00 on the module list, you will be automatically redirected to the Status page of the module. This will display the channels from 1.1 to 1.4 that represent the 4 input -channels of the module. Once a channel is connected to the source and configured with correct parameters.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



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	-		

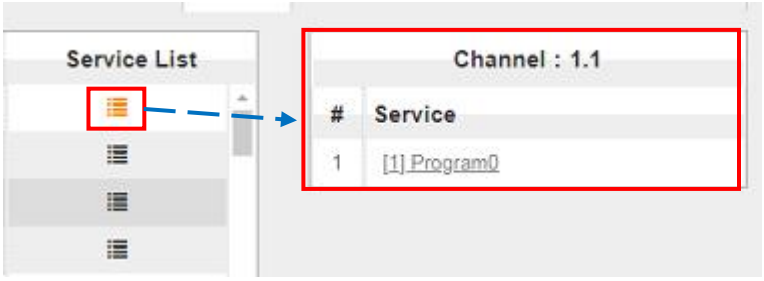
Total Bit rate in Mbps shows the bitrate of receiving signals of each channel with LOCKED status, while the Effective Bit Rate in Mbps shows its actual bitrate. RF Level of the input signal will show you the level of each locked channel.

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

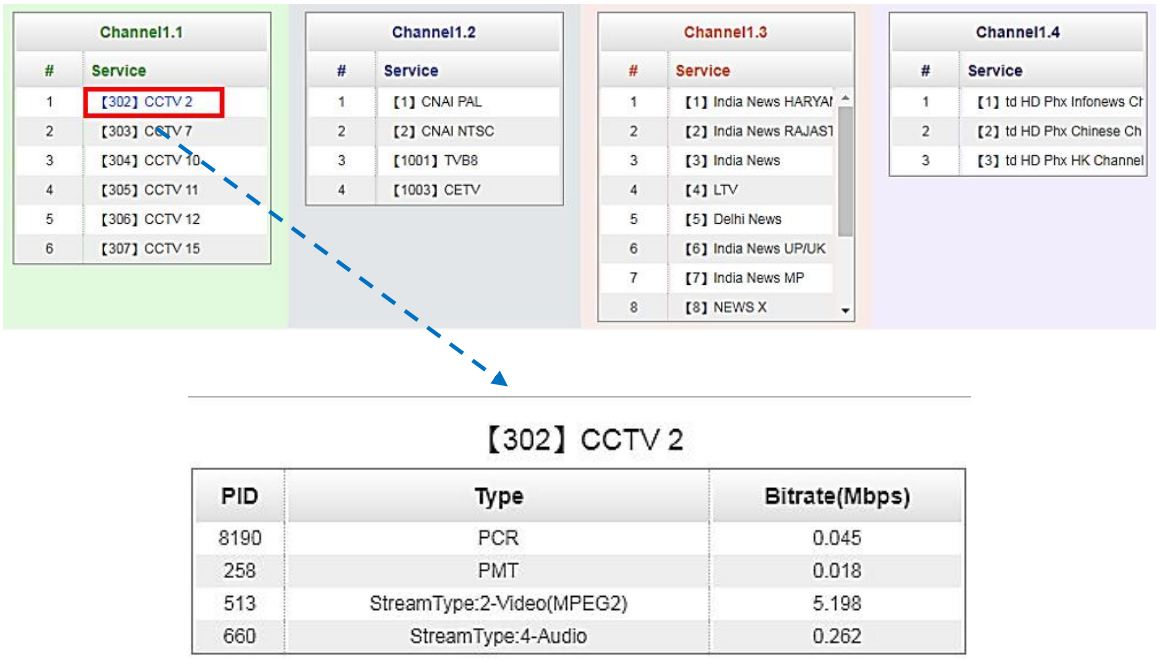


PID	Bitrate(Mbps)	Bandwidth(%)	Continuity Count Error	Type	Service
0x33(51)	0.000	0.000	0	PMT	Program-01
0x34(52)	0.000	0.000	0	PCR	Program-01
0x35(53)	0.000	0.000	0	Video	Program-01
0x36(54)	0.000	0.000	0	Audio	Program-01
0x64(100)	0.000	0.000	0	PMT	Program-01
0x65(101)	0.000	0.000	0	PCR	Program-01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

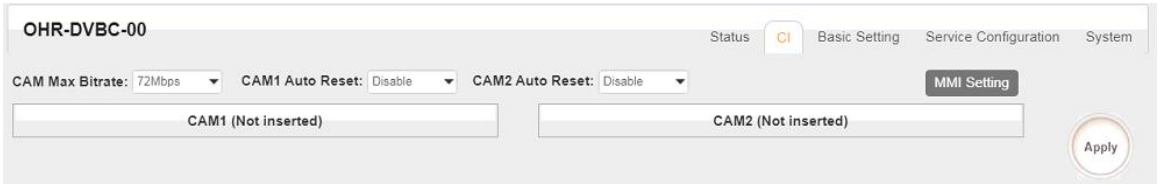


【302】CCTV 2

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 OHR-DVBC-00 module receiver, CI slot is needed to decrypt and re-broadcast the services. The OHR-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 

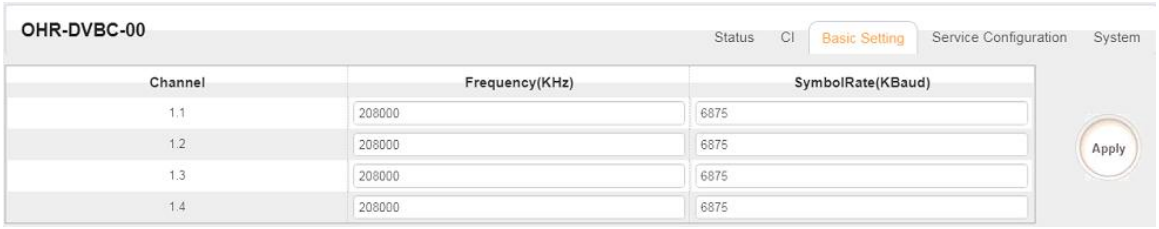
on the right side to make the change takes effect.

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
Frequency (KHz)	48000~862000
Symbol Rate (KBaud)	3000~7000

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



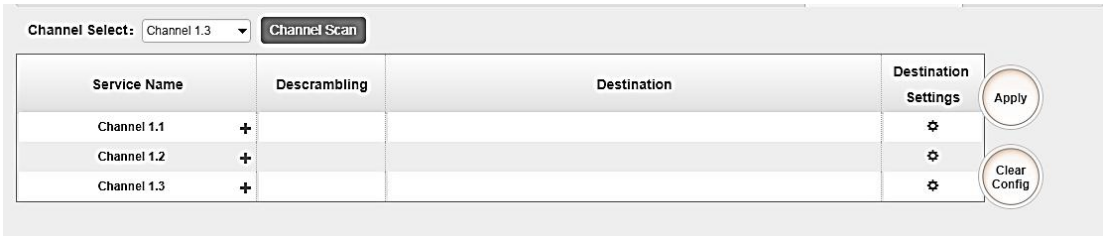
3.3.1.4 Module Service Configurations

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 16 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.

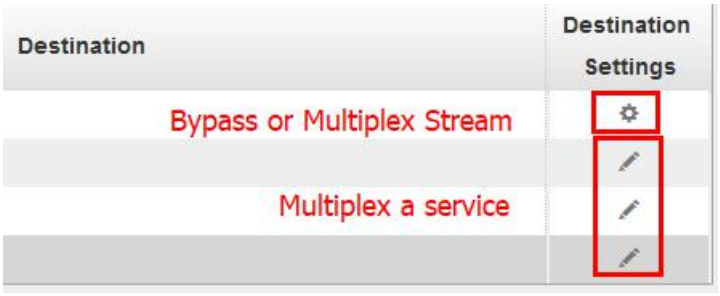


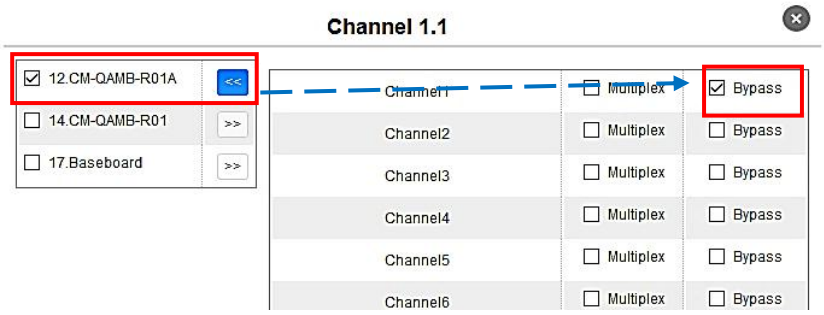
To use **Bypass** or **Multiplexing mode on stream level:**

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.

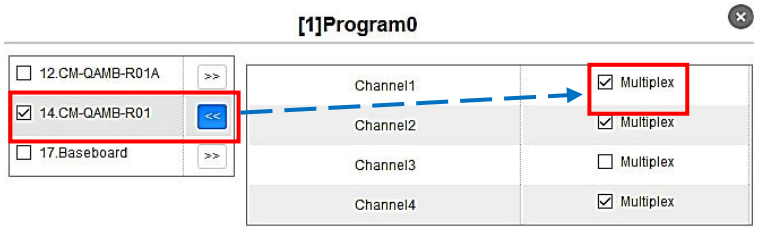




To use **Multiplexing mode on service level,**

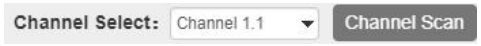
1. Click on (pencil) icon. There will be always a BaseBoard selection for the IP output and other Output options depending on the modules inserted.
2. Select the correct Output and Channel you want to output the service to.
3. Check on Multiplex on the channel you want to output. You can output multiple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



To clear the whole routing table click 

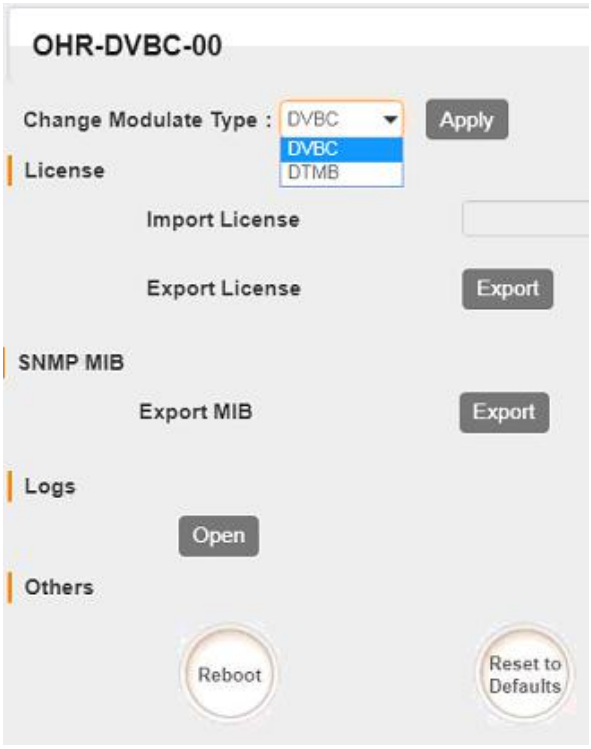
button.

There is a channel scan button 

on top,. Normally the input service list of each channel will lshow 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

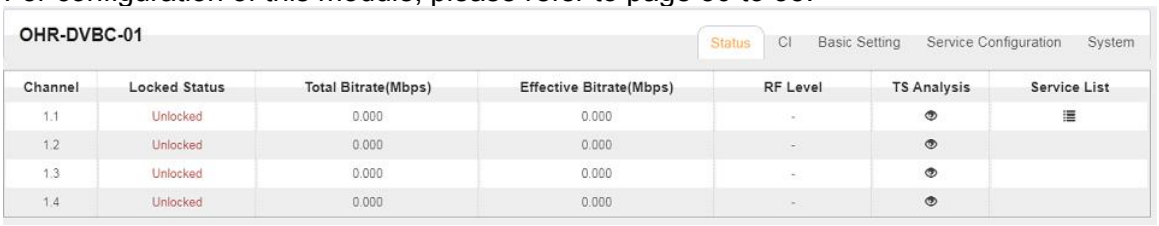
In **System Operation** tab, you can choose the modulation type as DVBC Mode or DTMB Mode. Here you can also perform the following tasks:



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

3.3.2 OHR-DVBC-ISDBT-01

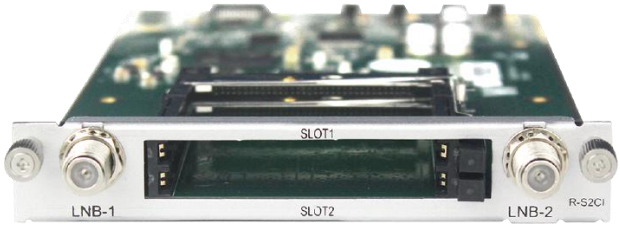
OHR-DVBC-ISDBT-01 is a 4-channel DVBC Annex B/ISDBT receiving and descrambling module with 1 RF female connector and 2 CI slots. The module can receive signals via 4 RF channels simultaneously and support 2 CAM cards for descrambling. Configuration of the module is very much similar to that of OHR-DVBC-00.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



3.3.3 OHR-DVBS2CI-01

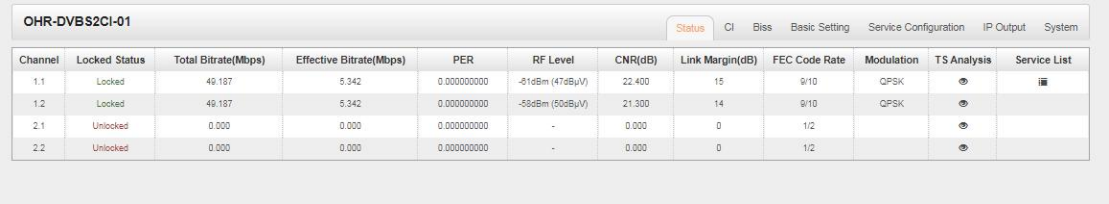
OHR-DVBS2CI-01 is a 4 channel DVB-S2 receiving descrambling board (Two DVB-S2 signal input interfaces, two CAM slots.)

.

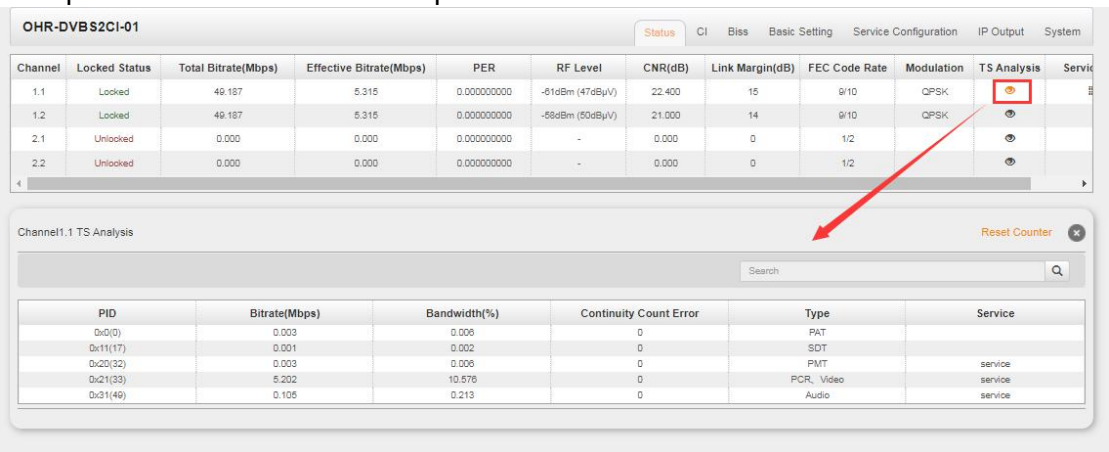


3.3.3.1 Module Status

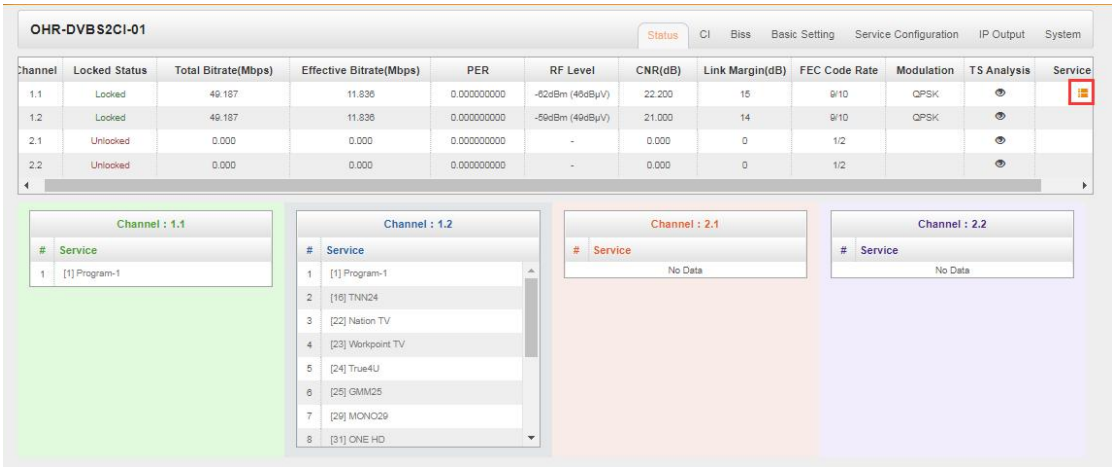
The Status page contains status information of Channel、Locked Status、Total Bitrate、Effective Bitrate、PER、RF Level、CNR、Link Margin、FEC Code Rate、Modulation、TS Analysis、Service List.



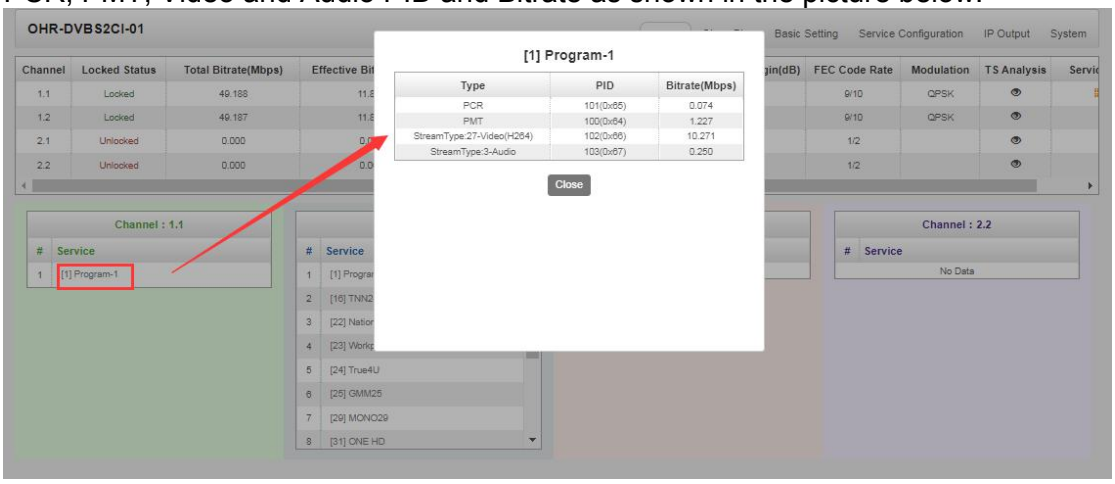
Clicking  under TS Analysis will display the information on the structure of the transport stream as shown in the picture below.



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.



3.3.3.2 **Module CI**

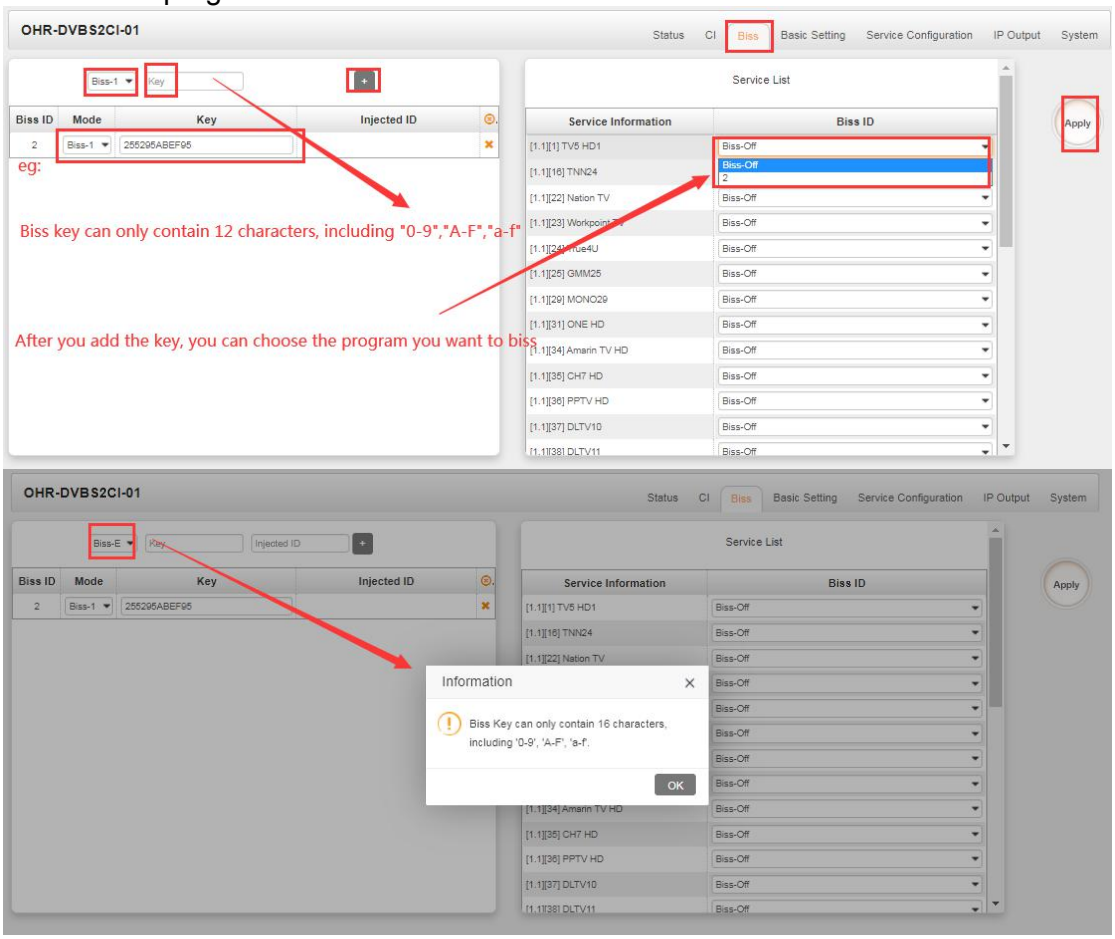
For the encrypted services received on OHR-DVBS2CI-01 module receiver, CI slot is needed to decrypt and re-broadcast the services. The OHR-DVBS2CI-01 has 2 CAM slots and can decrypt services depending on the capability of the CAM module and Smart Card. You can select the CAM Max Bit Rate from 48Mbps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

Click the Apply button 

on the right side to make the change takes effect.

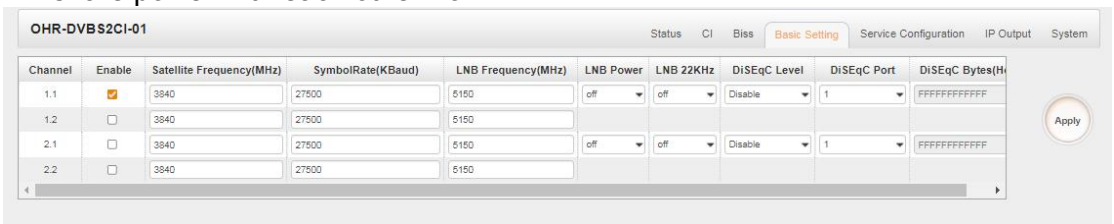
3.3.3.3 **Module Biss**

When receive a scrambling multi-program stream, you need to enter its key, and add it, then select the program you want to biss. When you have completed these steps, you can see the program.



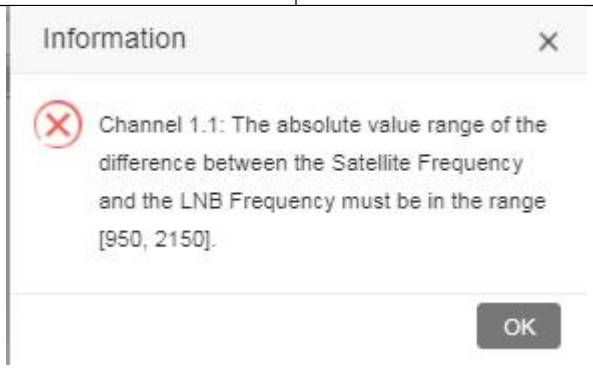
3.3.3.4 **Module Setting**

On the Parameter Settings page of OHR-DVBS2CI-01 you can input information of the source signal. The table below show the parameter range of each field. For the LNB power, Channel 1.1 and 1.2 share power with each other from LNB-1, Channel 2.1 and 2.2 share power with each other from LNB-2.



Name	Range
Satellite Frequency (MHz)	950~14500
Symbol Rate (KBaud)	1000~45000
LNB Frequency (KHz)	950000~21500000
LNB Power	Off/13V/18V

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

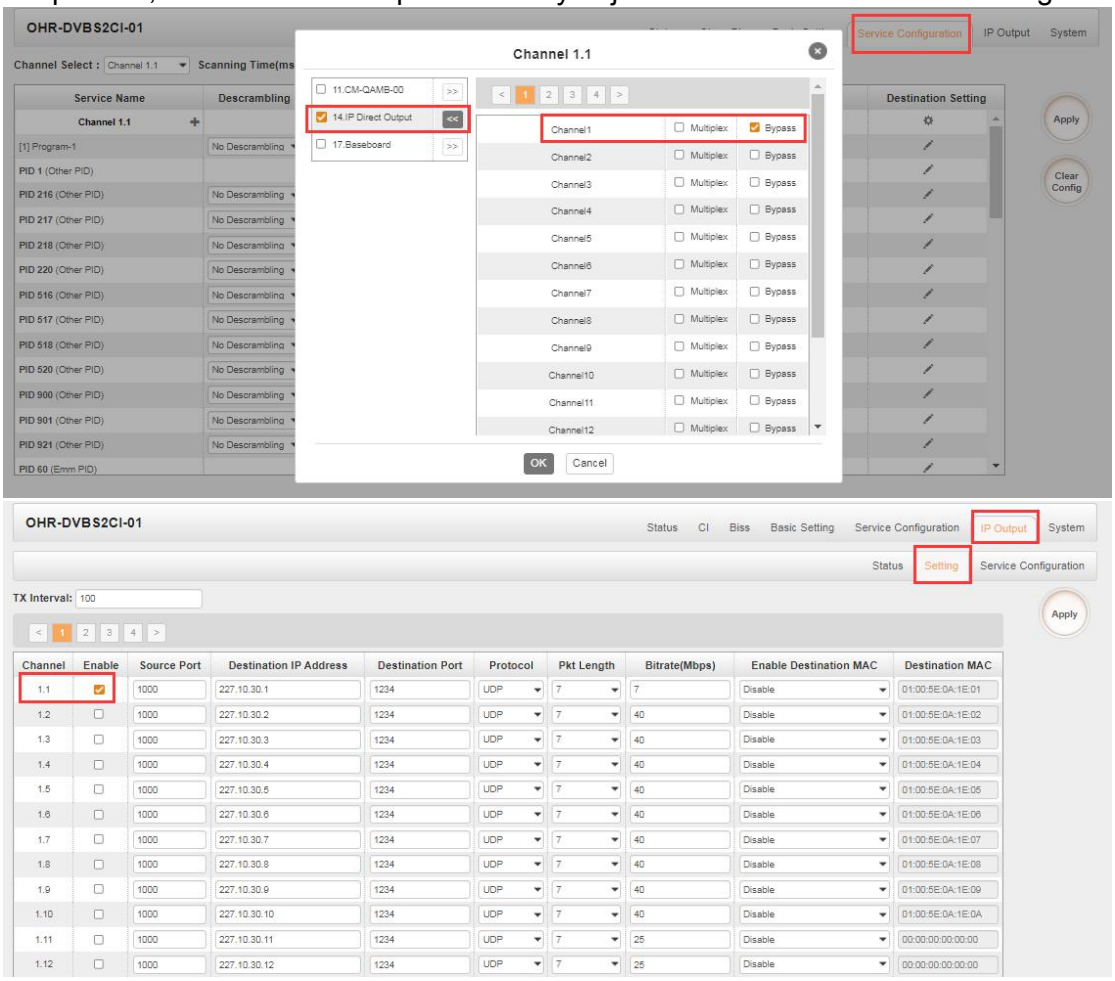


3.3.3.5 Service Configuration

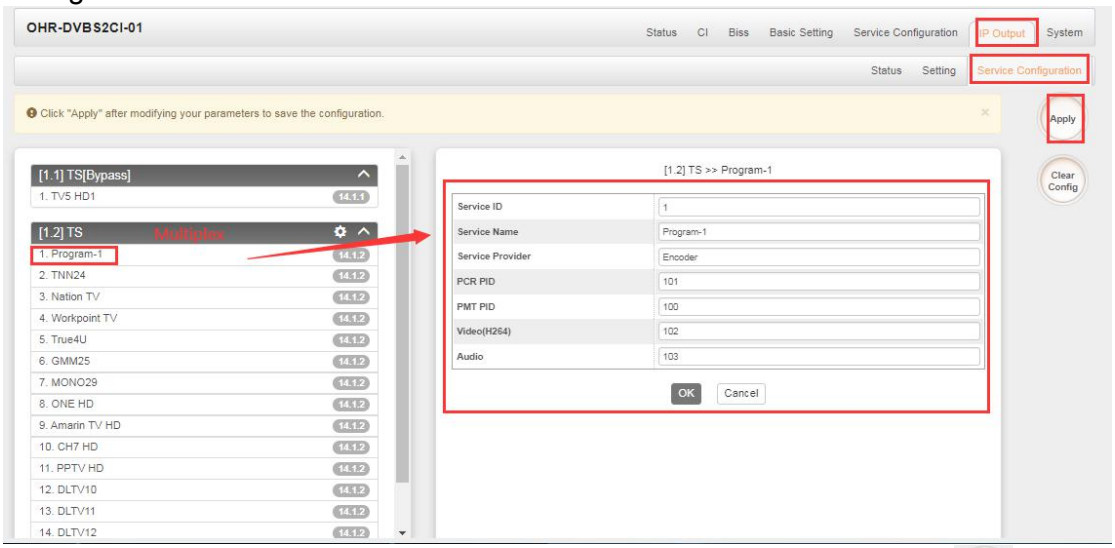
please refer to OHR-DVBC-00 module section on page 34 to 35.

3.3.3.6 IP Output

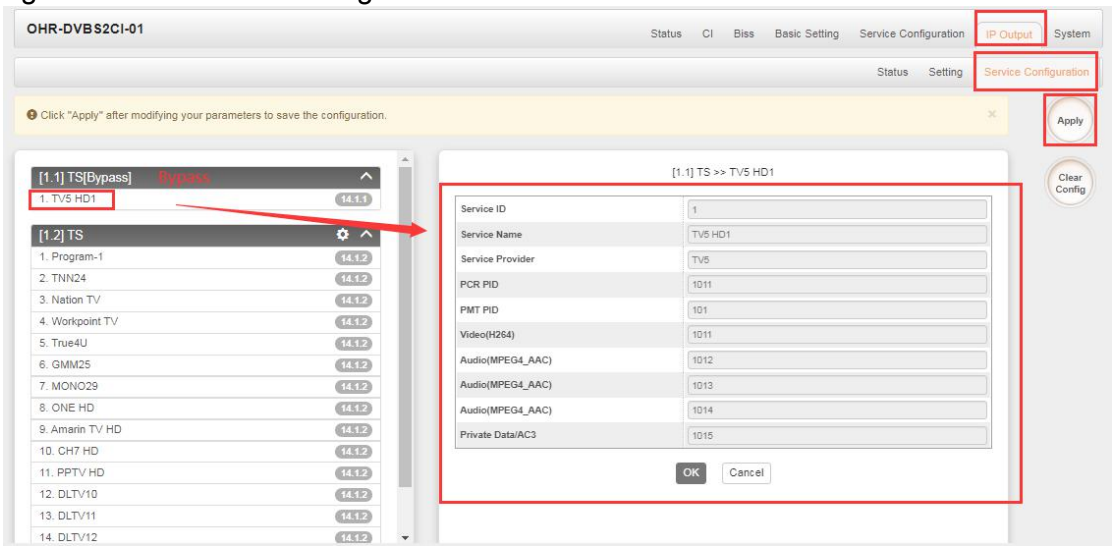
If you chose IP Direct Output in Service Configuration, you should click Setting in IP Output first, and select the output channel you just selected in the Service Configuration.



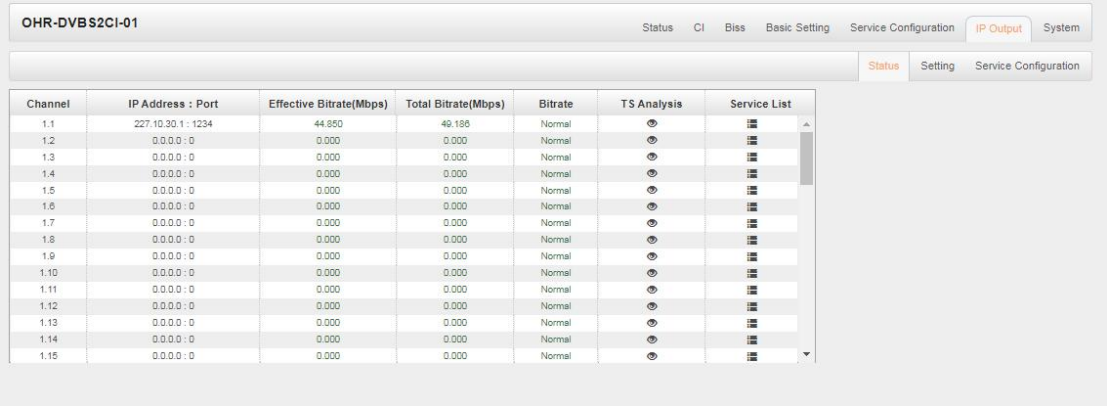
Click Service Configuration. If you chose Multiplex in IP Output, you can change the information of TS stream. Click the Apply button  on the right side to make the change takes effect.



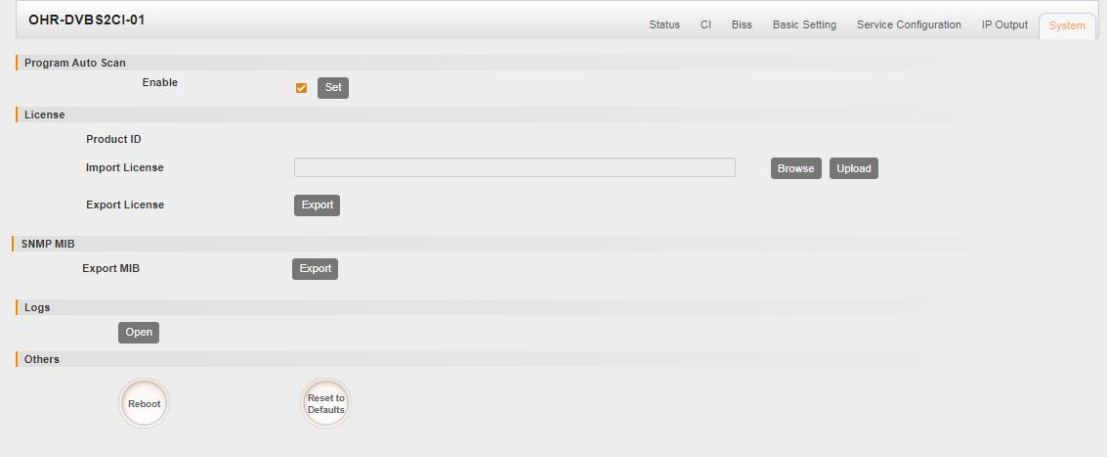
If you chose Bypass in Output, you can't change it. Click the Apply button  on the right side to make the change takes effect.



Then click Status to check it out.



3.3.3.7 **System**



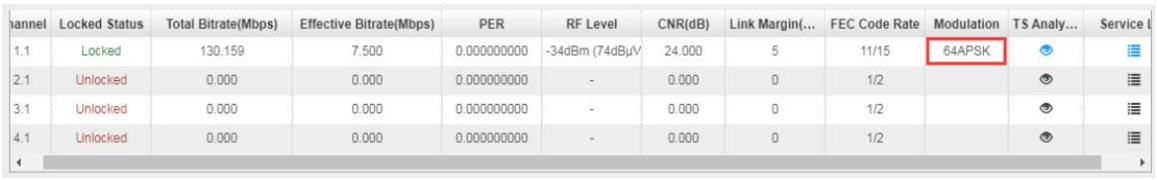
3.3.4 OHR-DVBS2FTA-01/01A

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

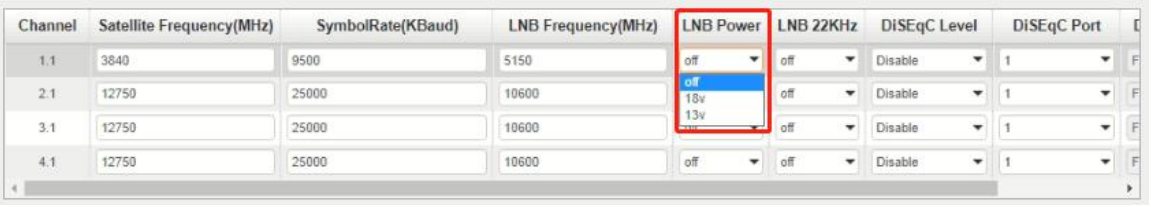
OHR-DVBS2FTA-01A

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.



hannel	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 (74dBµV	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			

The main difference between OHR-DVBS2FTA-01/01A is the LNB power supple. OHR-DVBS2FTA-01/01A has 4 different power supply.



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
2.1	12750	25000	10600	off	off	Disable	1
3.1	12750	25000	10600		off	Disable	1
4.1	12750	25000	10600	off	off	Disable	1

LNB Power dropdown: off, 18v, 13v

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 OHR-8VSB-00

OHR-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:

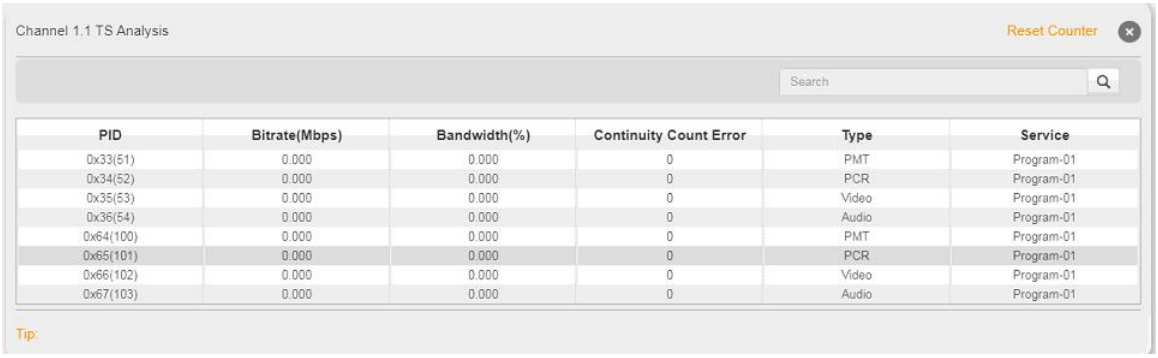
- 4 RF female connectors
- Frequency range: 50 – 860MHz
- Bandwidth: 6MHz
- Modulation: 8VSB
- Signal Level: -80dBm ~ -20dBm

3.3.6.1 Module Status

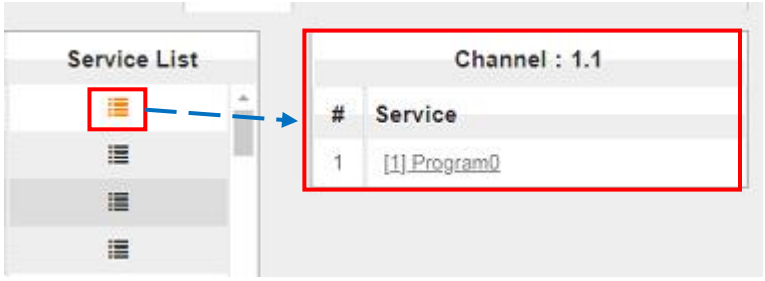
Status page will display when you select the OHR-8VSB-00 in the channel list. This shows the Channel Number, Locked Status, Total Bit Rate, Effective Bit Rate, TS Analysis and Service List for each 8VSB input stream. Once the channel is connected to the source and is set with the correct parameters. 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	-		

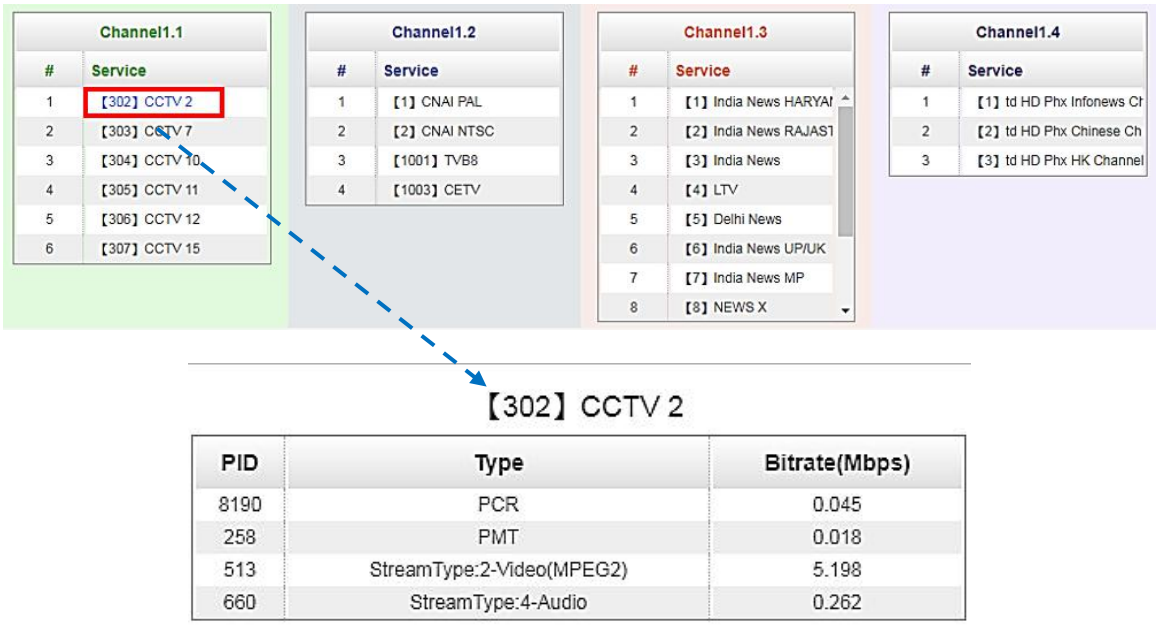
Clicking the icon  under TS Analysis will display the information on the structure of the transport stream as shown in the picture below.



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



【302】CCTV 2

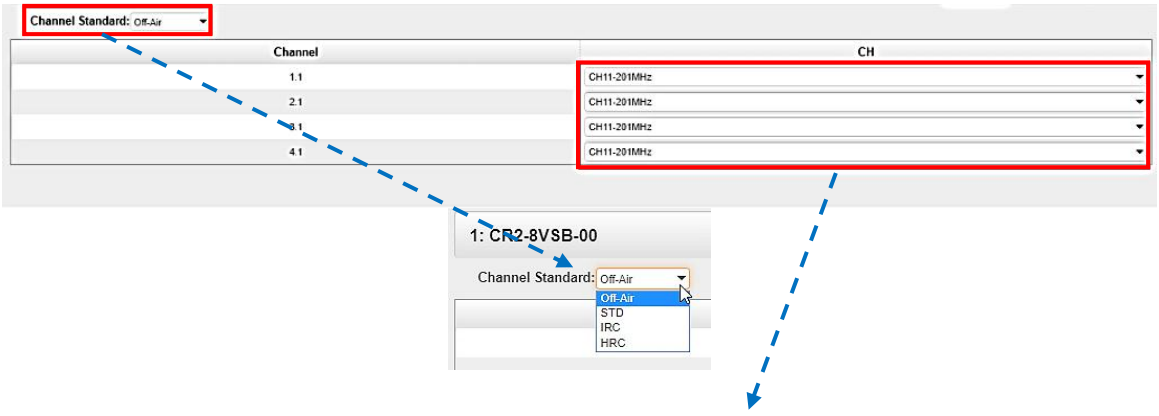
PID	Type	Bitrate(Mbps)
8190	PCR	0.045
258	PMT	0.018
513	StreamType:2-Video(MPEG2)	5.198
660	StreamType:4-Audio	0.262

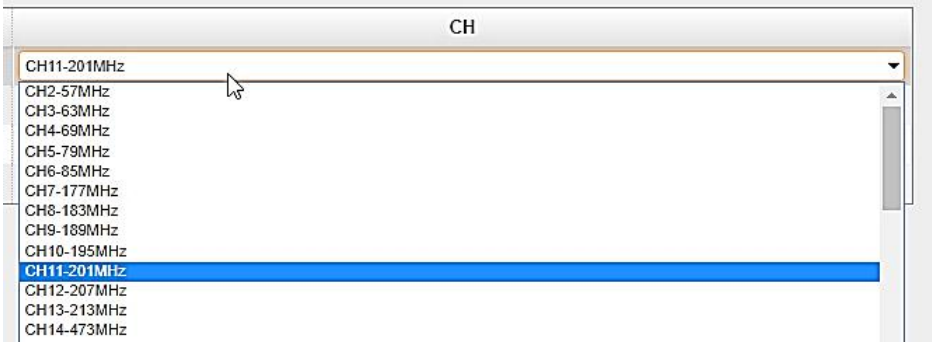
3.3.6.2 Module Settings

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
Off-Air	CH2 57MHz, CH3 63MHz, CH4 69MHz~CH67 791MHz, CH68797MHz, CH69 803MHz
STD	CH2 57MHz, CH363MHz, CH4 69MHz~ CH133 849MHz,CH134855MHz, CH135 861MHz
IRC	CH2 57MHz, CH3 63MHz, CH4 69MHz ~ CH133 849MHz,CH134, 855MHz, CH135 861MHz
HRC	CH2 55.75MHz, CH3 61.75MHz, CH4 67.75MHz~ CH133847.75MHz, CH134 853.75MHz, CH135 859.75MHz



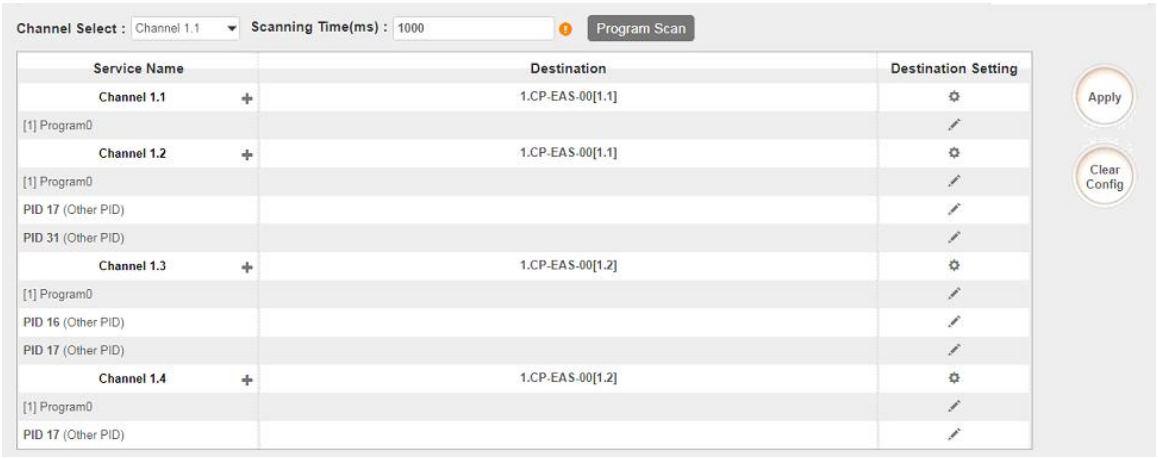


3.3.6.3 Modules Service Configuration

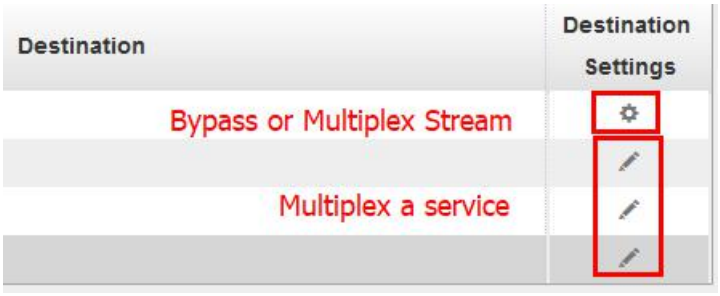
Service Configuration tab displays the configuration page where you can manage the received services and output them to their designated interface. Configuration steps for IP input and all receiving and encoding modules in OmniHub 16 are mostly the same. First, you need to scan the port of each TS with 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

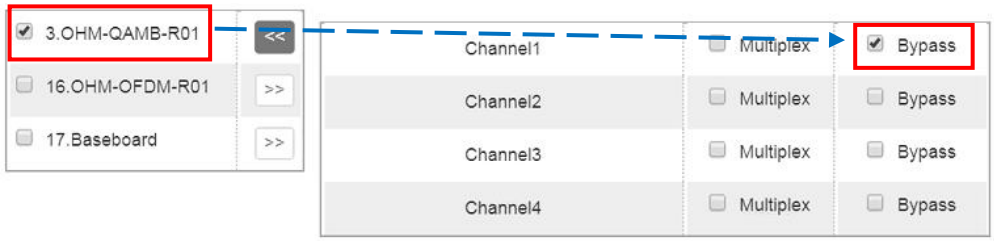
1. **Bypass mode.** In this mode, routes can only be done when outputting a whole input transport stream towards an output TS channel, this cannot be done when outputting a single service only. Bypass mode activation will not allow other services from other input TS to be mixed in the current TS output. 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.



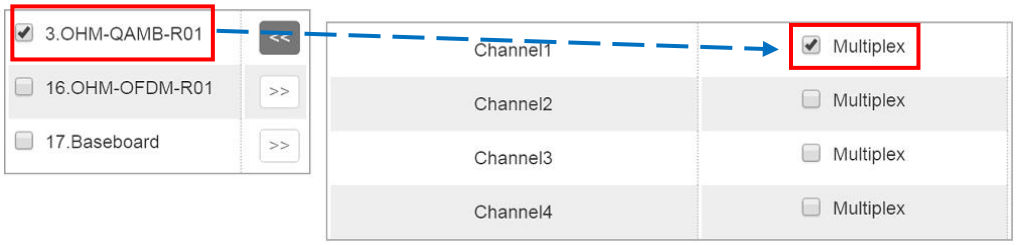
Service Configuration page interface



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 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.



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.

3.3.6.4 Modules System

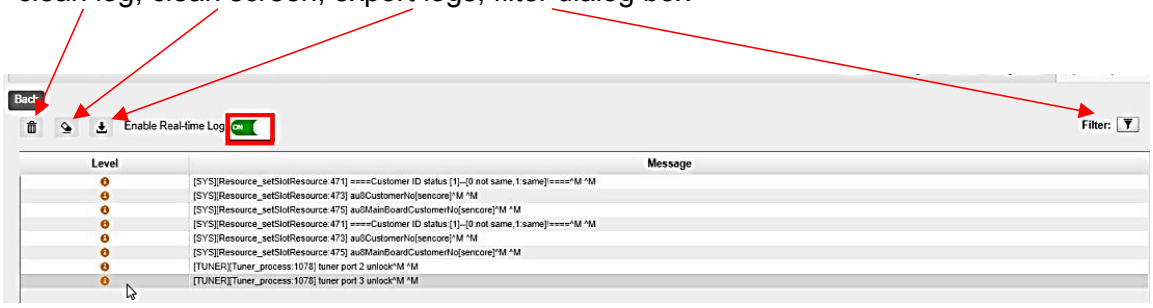
System tab allows you to perform the following tasks:

- 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

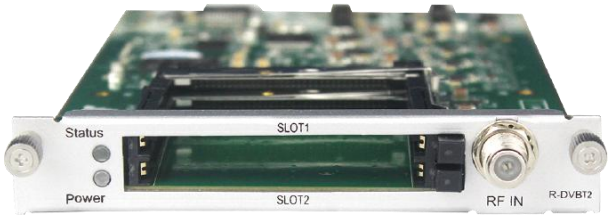
Level	
Level	**Operation**
Error	☑
Warning	☑
Information	☑
Debug	☐

Module List	
Module Name	**Operation**
SYS	☑
PARAMS	☑
UPGRADE	☑
TSPROCESS	☑
SIPROCESS	☑
LICENSE	☑

3.3.6 OHR-DVBT2CI-00

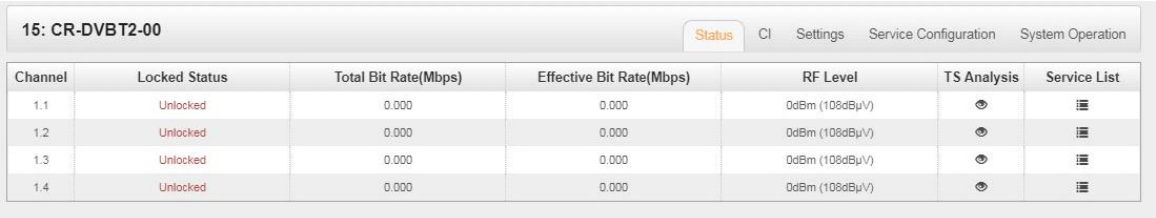
OHR-DVBT2CI-00 is a 4-channel DVBT/T2 receiving and descrambling module with 1 RF female connector and 2 CI slots. It can receive signals via 4 RF channels simultaneously and support 2 CAM cards descrambling.

.



3.3.6.1 Module Status

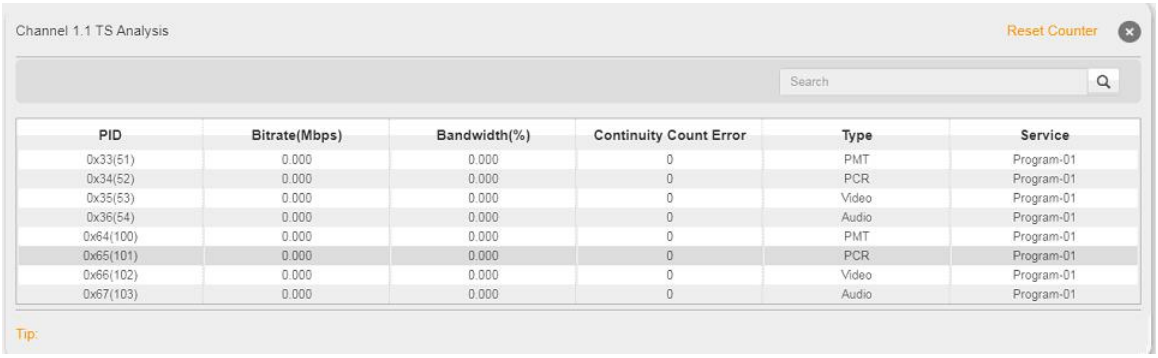
By selecting the OHR-DVBT2CI-00 in the module list, you will be automatically be redirected to the status page of the module. It shows the Chanel 1.1 to 1.4 that corresponds for the 4 input channels of the module. Locked Status of each channel shows the signals if these channels are locked or unlocked.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



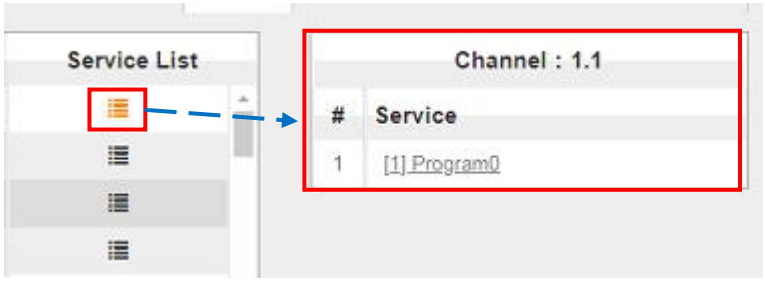
Channel	Locked Status	Total Bit Rate(Mbps)	Effective Bit Rate(Mbps)	RF Level	TS Analysis	Service List
1.1	Unlocked	0.000	0.000	0dBm (108dBµV)		
1.2	Unlocked	0.000	0.000	0dBm (108dBµV)		
1.3	Unlocked	0.000	0.000	0dBm (108dBµV)		
1.4	Unlocked	0.000	0.000	0dBm (108dBµV)		

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.

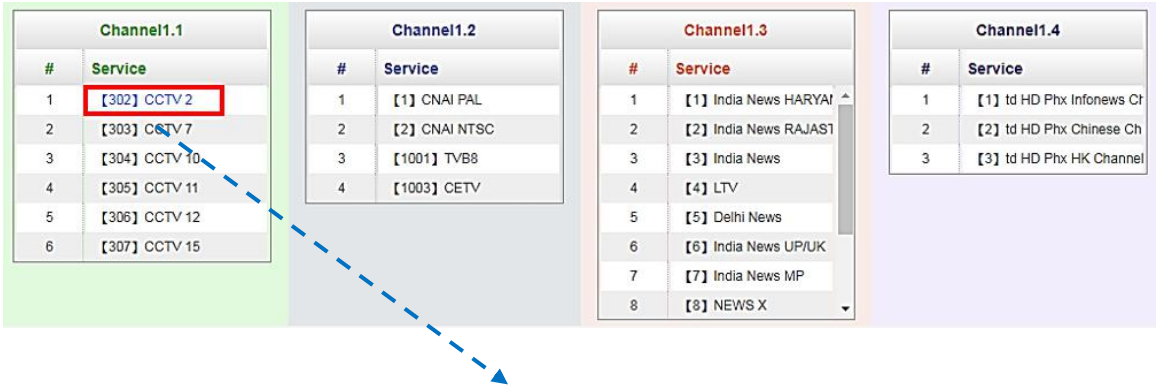
Clicking under the TS Analysis will display the information on the structure of the transport stream as shown in the picture below.



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



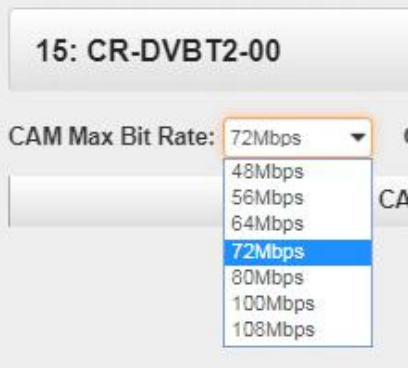
Clicking on the service name under the service will display the detailed information of the service: PCR, PMT, Video and Audio PID and Bitrate as shown in the picture below.



【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

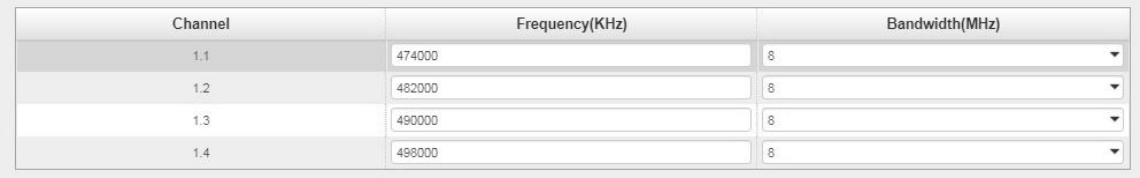
CAM Max Bit Rate (48Mbps to 108Mbps) can be chosen in a pull-down list.



3.3.6.2 Module Settings

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

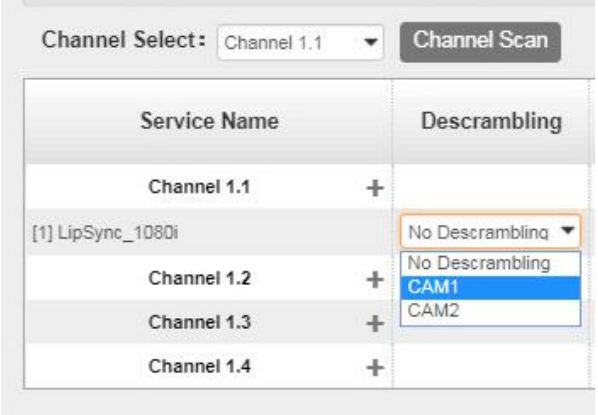
Name	Range
Frequency (KHz)	48000~862000
Bandwidth (MHz)	6, 7, 8



3.3.6.3 Module Service Configuration

For Service Configuration and System Operation please refer to OHR-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.



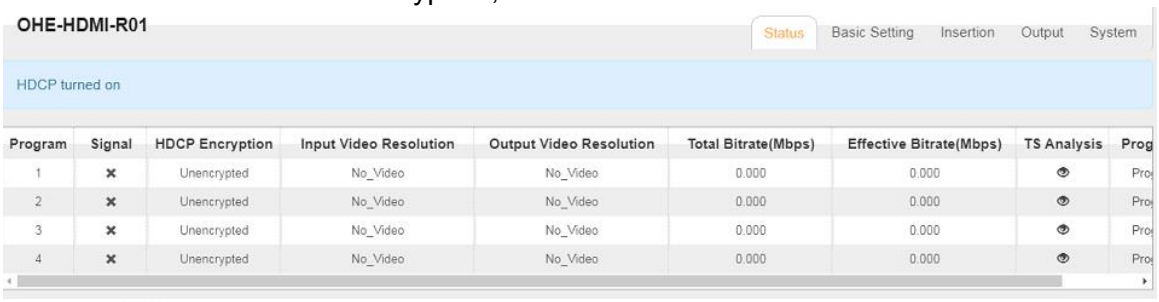
Encoder Modules

3.3.7 OHE-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.

3.3.7.1 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.

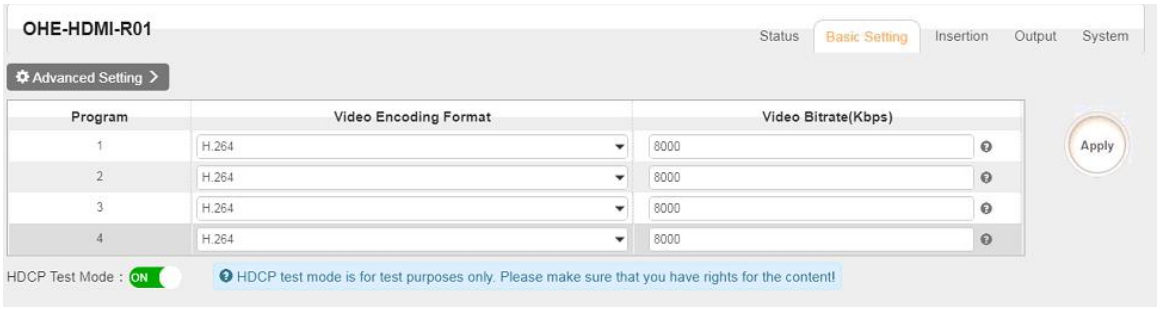


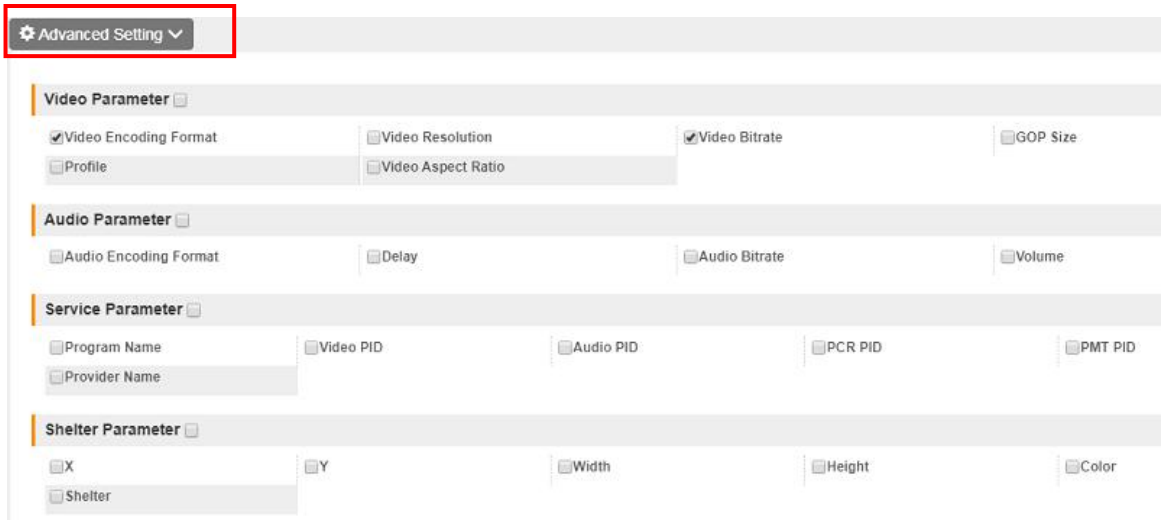
Clicking  under the TS Analysis will display the information on the structure of the transport stream as shown in the picture below.

3.3.7.2 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





Video Parameter	Range	Video Parameter	Range
Video Type	H264	**Profile**	HIGH MAIN
Video Resolution	Auto, 1920×1080_60i 1920×1080_50i 1920×1080_30p 1920×1080_25p 1080×720_60p 1080×720_50p 720×480_60i 720×576_50i	**GOP Size**	1~60

Video Bitrate (Kbps)	600~12000	**Video Aspect Ratio**	16x9 (HD) 4x3 (SD)

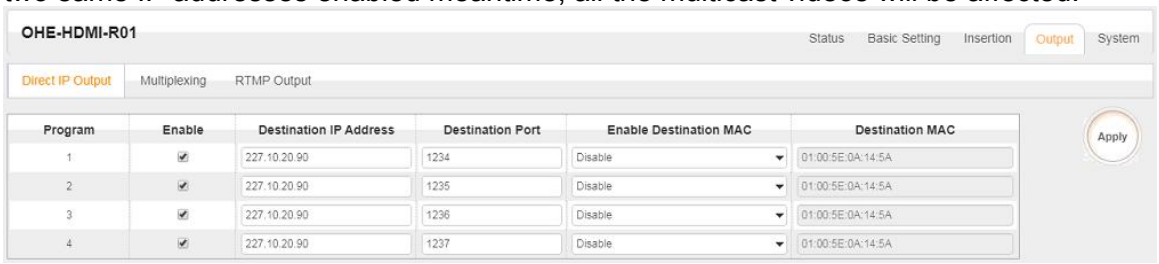
Audio Encoder Details	**Range**	**Audio Encoder Details**	**Range**
Audio Type	MPEG1_Layer2 AC3 AAC	**Volume (dB)**	-20~20
Delays (ms)	-2000~2000	**Audio Bit rate (Kbps)**	32~192 (MPEG1_Layer2 / AAC) 96~192 (AC3)

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/ Green/Red

3.3.7.3 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.



- **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.

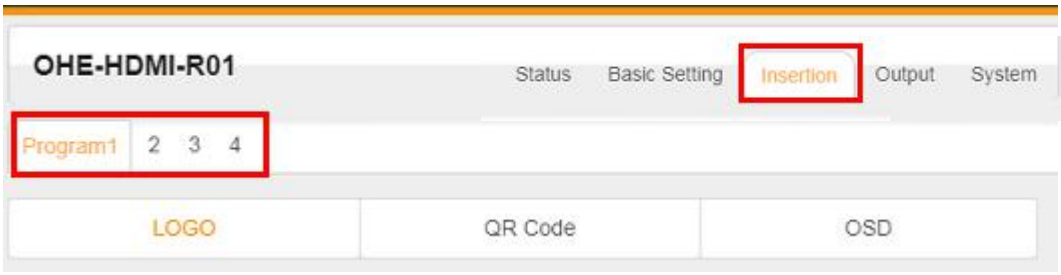
To use **Multiplexing mode on service level**

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.

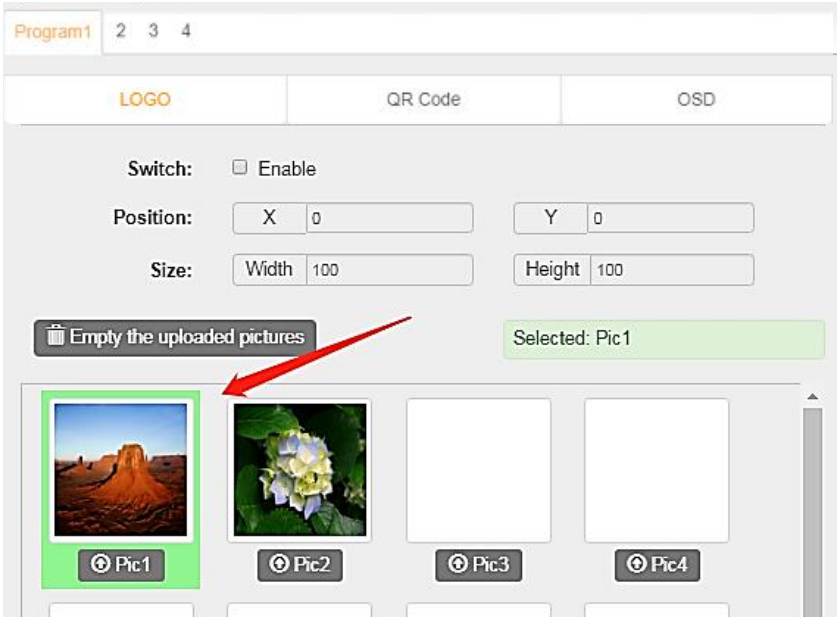
To use RTMP output to configure streaming to any website capable of receiving RTMP, it is necessary to create a new stream instance on the intended receiving platform and enter the corresponding URL and port.

3.3.7.4 Insertion

You should choose a channel first before you set Insertion.



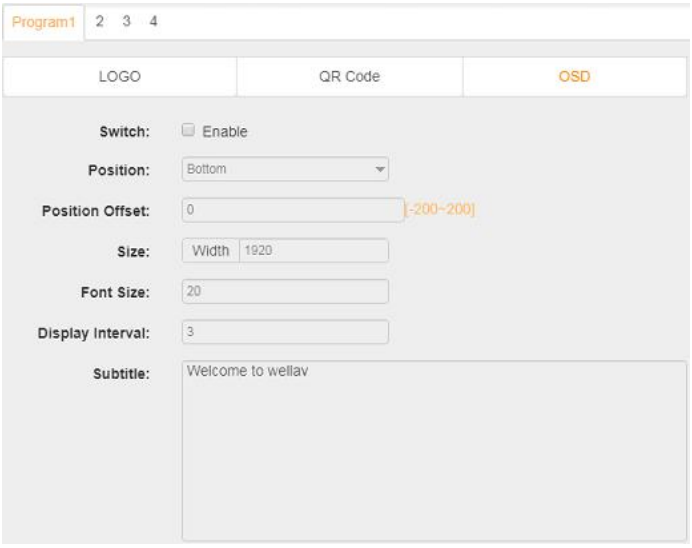
- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.



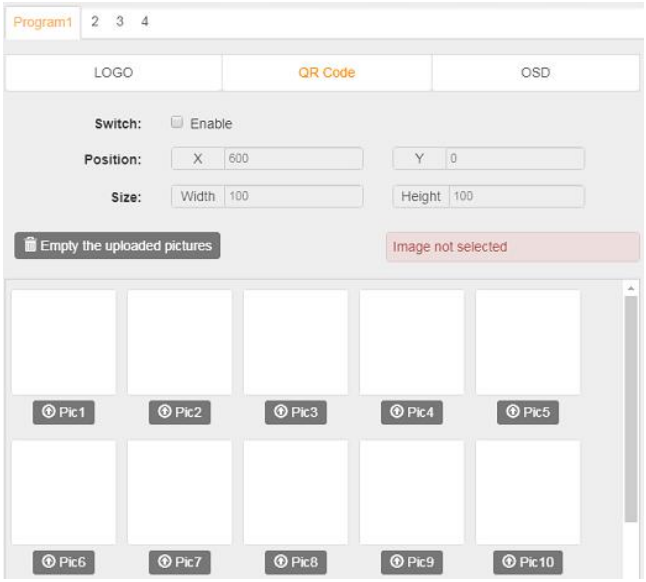
LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1920 (Dual)	**Position Y**	0~1080 (Dual)
Size width	0~1920 (Dual)	**Size Height**	0~1080 (Dual)

- **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.

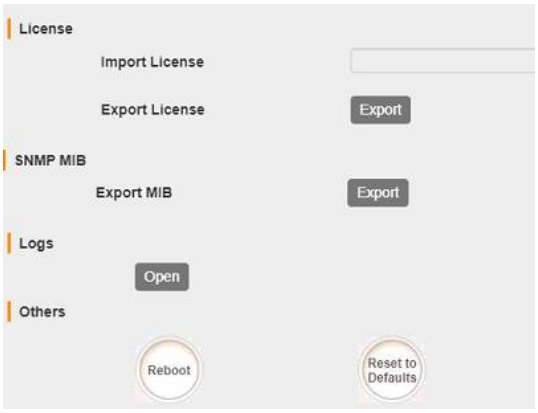


LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1920 (Dual)	**Position Y**	0~1080 (Dual)
Size width	0~1920 (Dual)	**Size Height**	0~1080 (Dual)

3.3.7.5 System

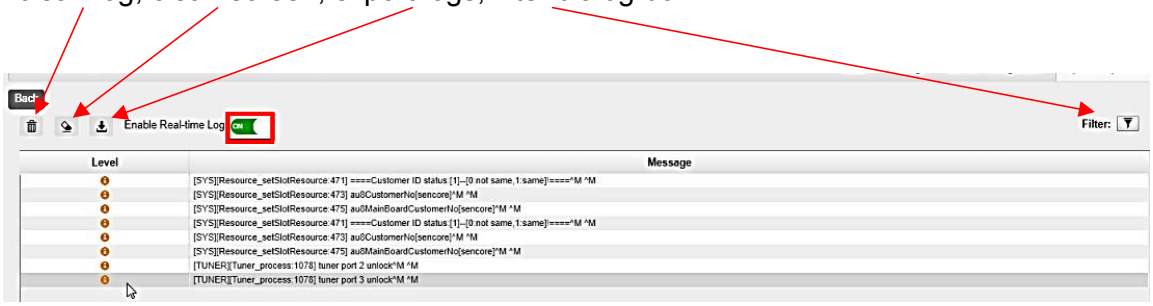
System tab allows you to perform the following tasks:

- 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



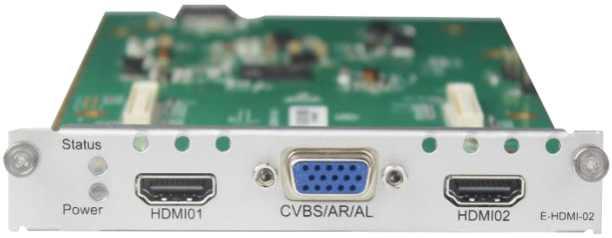
Filter

Level	
Level	**Operation**
Error	☑
Warning	☑
Information	☑
Debug	☐

Module List	
Module Name	**Operation**
SYS	☑
PARAMS	☑
UPGRADE	☑
TSPROCESS	☑
SIPROCESS	☑
LICENSE	☑

3.3.8 OHE-HDMI-02

OHE-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.

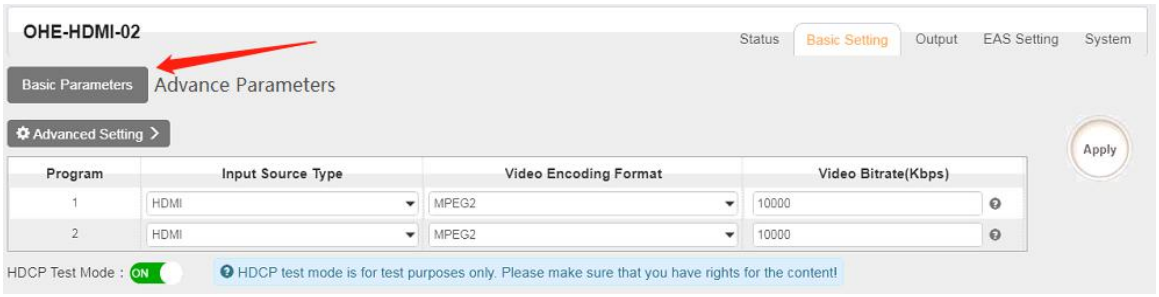


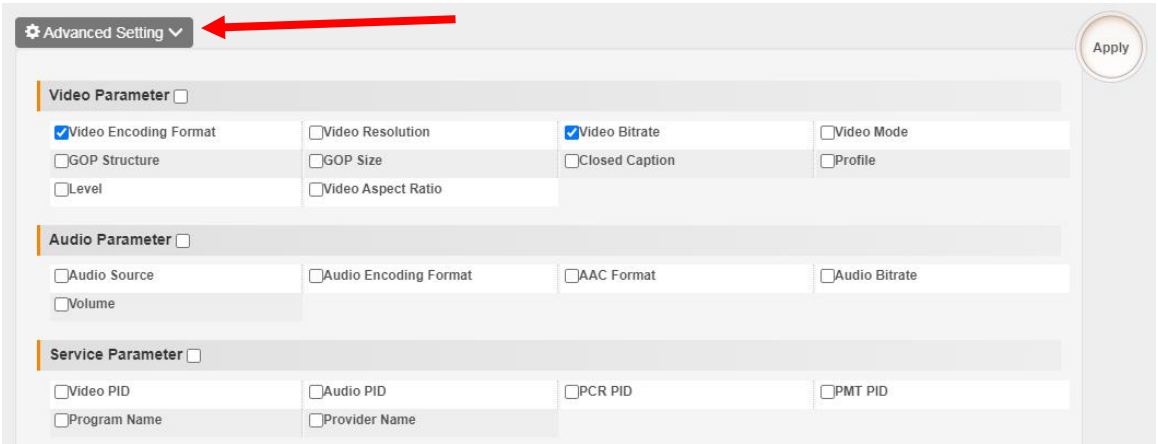
3.3.8.1 Module Status

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

3.3.9.2 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.





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

Video Mode	CBR	**Closed Caption**	Enable, Disable
GOP Structure	IBBP, IPPP, IBP	**Video Aspect Ratio**	Auto 16x9 4x3

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

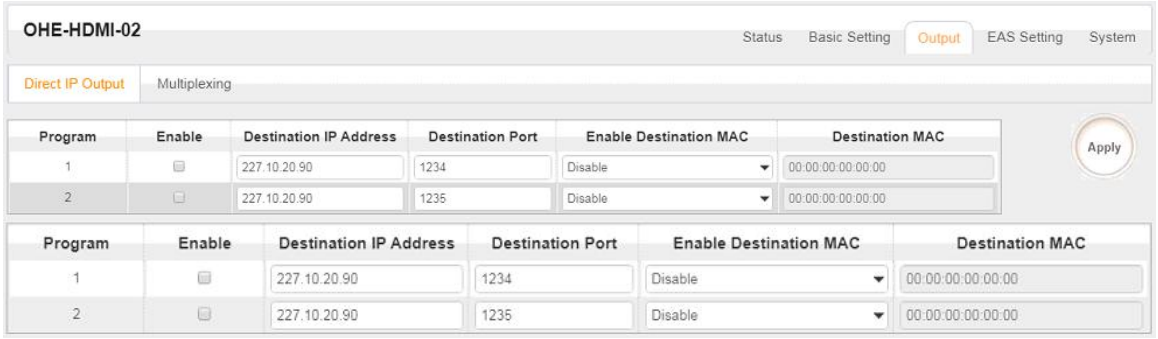
Service Parameter	**Range**	**Service Parameter**	**Range**
Program Name	String between 1~31	Audio PID	32~8190
Provider Name	String between 0~31	PCR PID	32~8190
Video PID	32~8190	PMT PID	32~8190

The OHE-HDMI-02 module supports two sets of audio and video input. Each set includes 1 HDMI port/1 component portand1 analog port. It supports dual audio encoding per channel. Dual audio all come from HDM Iinput with the same content and the encoding format can be the same or different.

3.3.9.3 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.



- **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 outputt. You can output multiple services to one channel or output one service to multiple channels.

3.3.9.4 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.

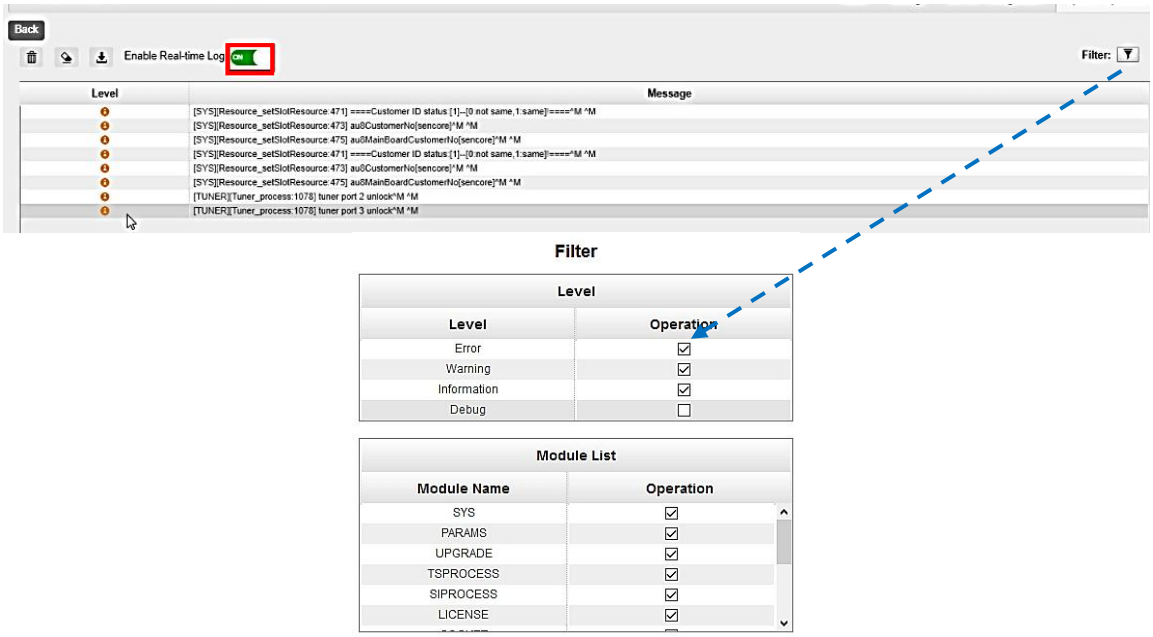
On this page, you need to input the EAS Source Multicast Address, Command port and Data port. This information can be seen on the EAS page.

3.3.9.5 System

System tab allows you to perform the following tasks:

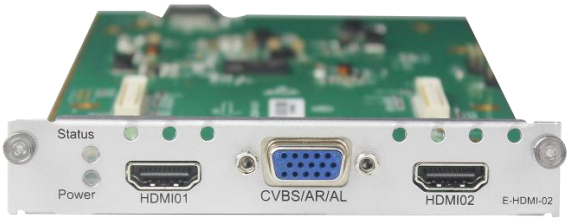
- Import / export license
- Log manages
- Reboot
- Factory Default

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



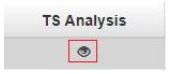
3.3.9 OHE-HDMI-02C

OHE-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.



3.3.10.1 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.

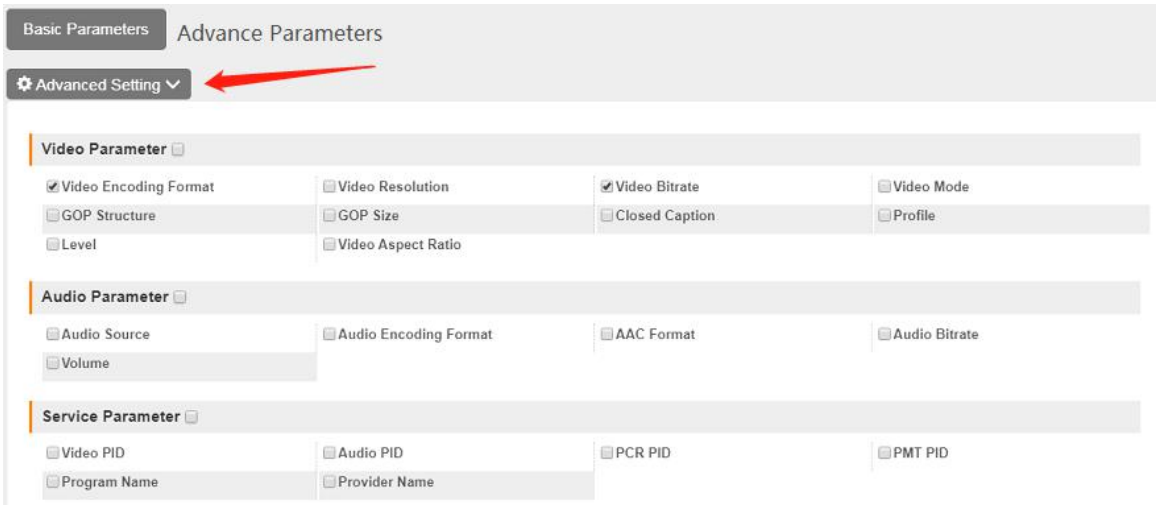
Clicking on the 

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.

3.3.10.2 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, et c.), 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.



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, 1920×1080_60i , 1920×1080_50i , 1920×1080_30p , 1920×1080_25p , 1080×720_60p , 1080×720_50p , 720×480_60i , 720×576_50i	**Level**	Level_3.0 Level_3.1 Level_3.2 Level_4.0 Level_4.1 Level_4.2
Video Bitrate (Kbps)	100 and 18000	**Profile**	High, Main, Baseline
Video Mode	CBR	**Closed Caption**	Enable, Disable
GOP Structure	IBBP, IPPP, IBP	**Video Aspect Ratio**	Auto 16x9 4x3

Audio Encoder Details	Range	Audio Encoder Details	Range
Audio Encoding Format	AC3 AC3_Passthrough MPEG1_Layer2	**Audio Bitrate (Kbps)**	128~384 (AC3) 64~384 (MPEG1_Layer2)

	MPEG2_AAC MPEG4_AAC AAC_HE_V2		64~384 (MPEG2_AAC/ MPEG4_AAC) 32~384 (AAC_HE_V2)
Audio Source	HDMI, Analog	**Volume (dB)**	0~8
AAC Format	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 OHE-HDMI-02C module supports two sets of audio and video input in total. Each set includes 1 HDMI port/1 component portand1 analog port.

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

1. One audiocomes 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:

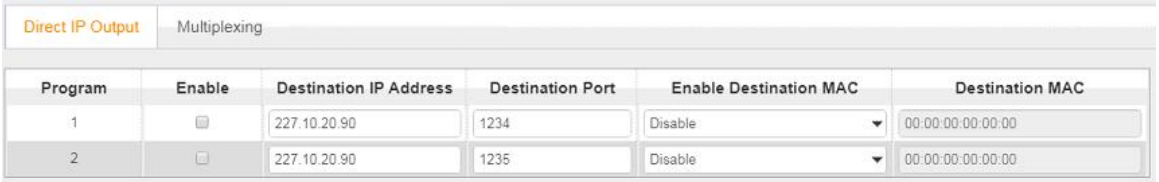
Dual audio all come from the analog input with the same content and the encoding format can be the same or different.

3.3.10.3 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.

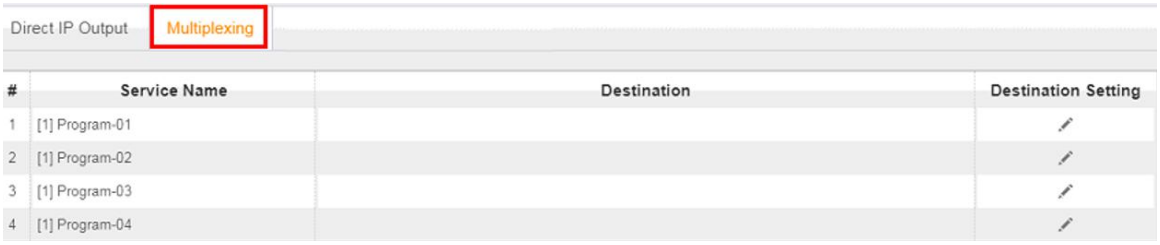
If you want to use IP output channel on the encoder module and the baseboard IP module at same time, you should avoid the multicast IP addresses conflicts. If there are two same IP addresses enabled meantime, all the multicast videos will be affected.

- **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.



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 outputt. You can output multiple services to one channel or output one service to multiple channels.



3.3.10.4 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.

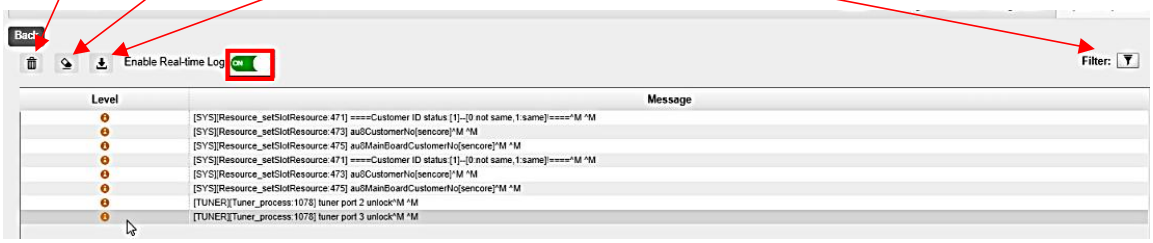
3.3.10.5 System Operation

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



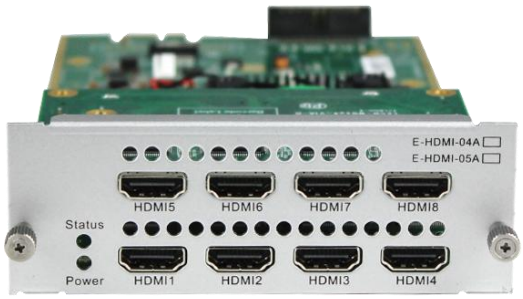
Filter

Level	
Level	**Operation**
Error	☑
Warning	☑
Information	☑
Debug	☐

Module List	
Module Name	**Operation**
SYS	☑
PARAMS	☑
UPGRADE	☑
TSPROCESS	☑
SIPROCESS	☑
LICENSE	☑

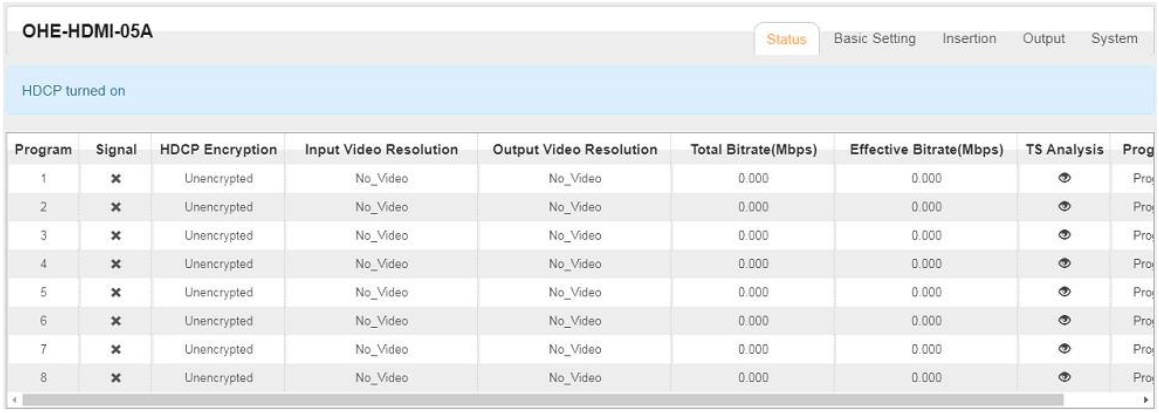
3.3.10 OHE-HDMI-05/05A

OHE-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. OHE-HDMI-05 occupies 1 slot in the chassis and OHE-HDMI-05A occupies 2 slots in OmniHub 16 chassis.



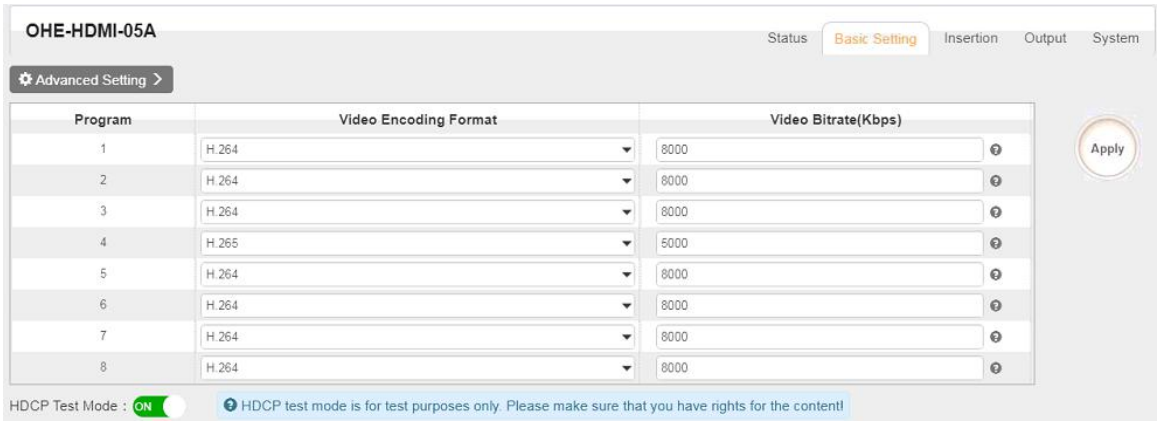
3.3.11.1 Module Status

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



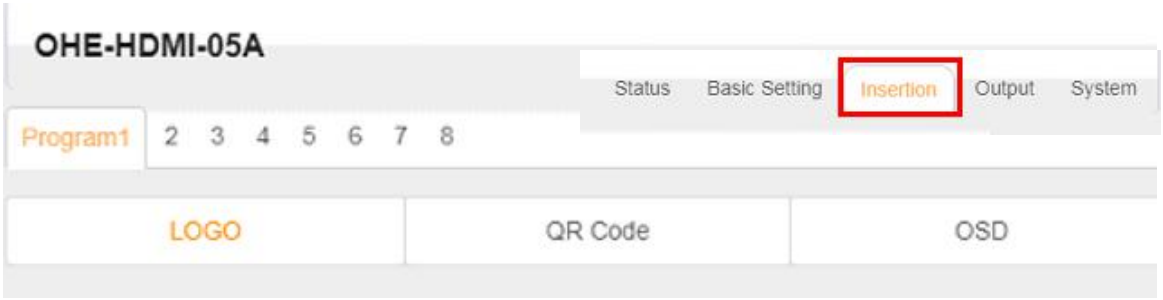
3.3.11.2 Module Basic Settings

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.

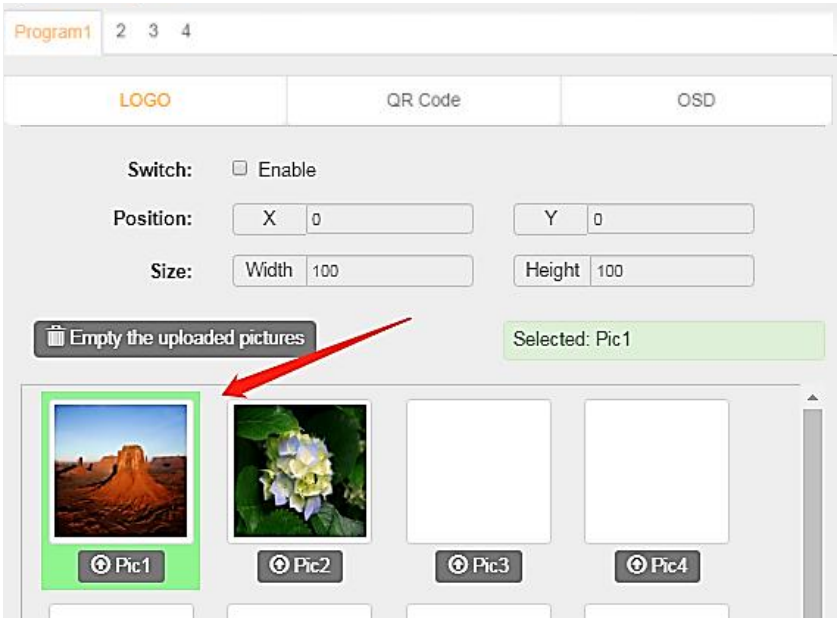


3.3.11.3 Module Insertion Settings

You should choose a channel first before you set Insertion.



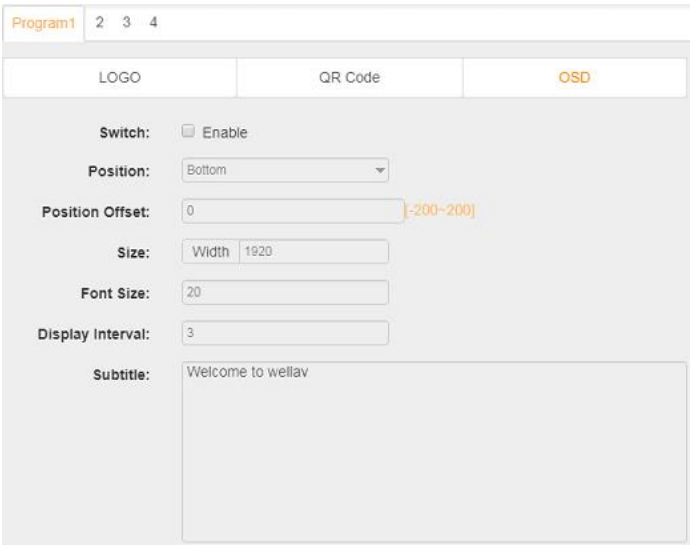
- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.



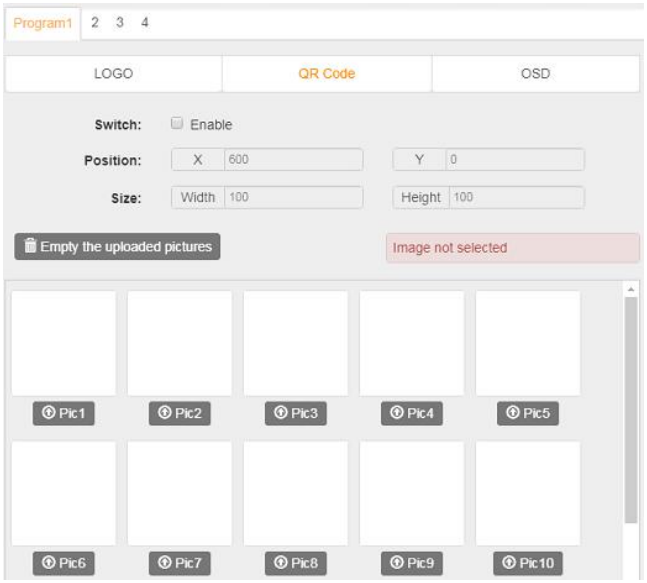
LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1920 (Dual)	**Position Y**	0~1080 (Dual)
Size width	0~1920 (Dual)	**Size Height**	0~1080 (Dual)

- **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.

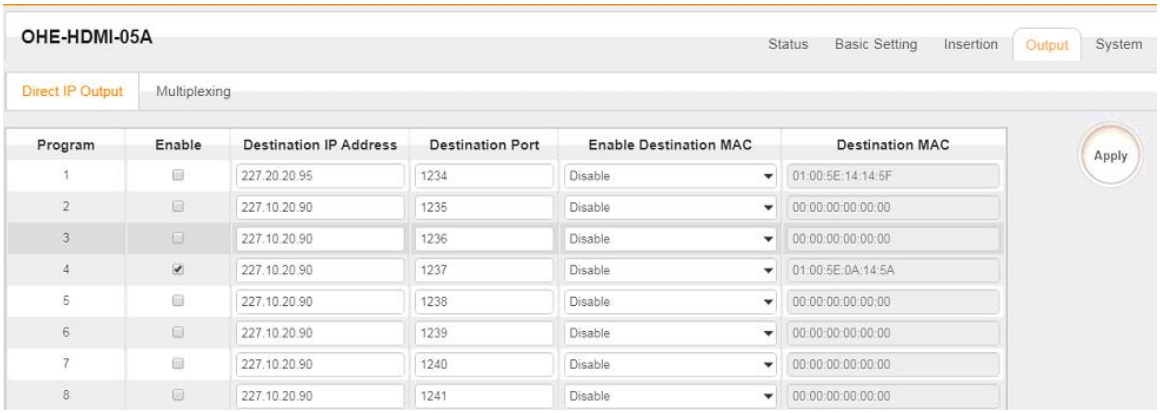


LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1920 (Dual)	**Position Y**	0~1080 (Dual)
Size width	0~1920 (Dual)	**Size Height**	0~1080 (Dual)

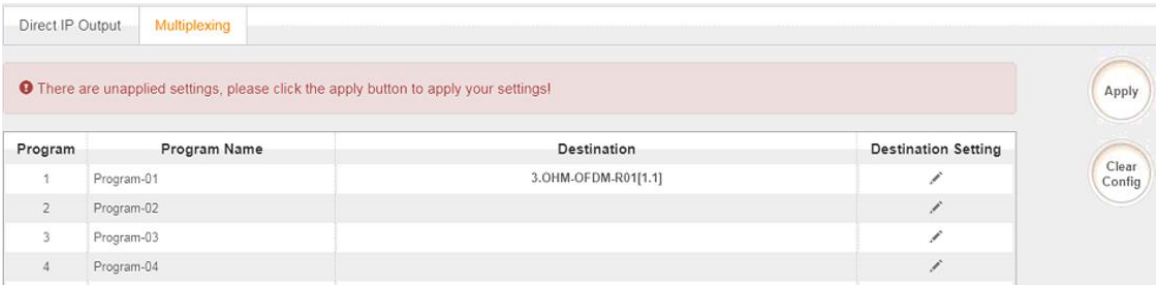
3.3.11.4 Module IP Output

This feature is specifically for encoding a single programand 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.



- **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.

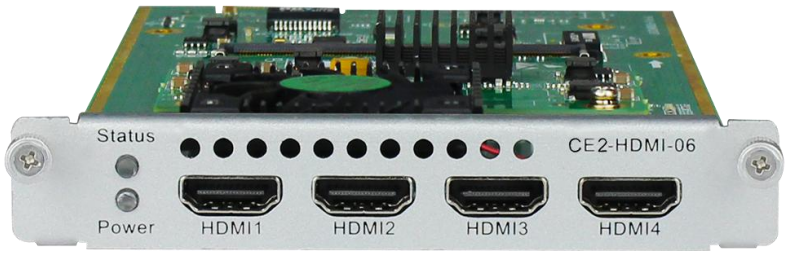


To use **Multiplexing mode on service level**:

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 outputt. You can output multiple services to one channel or output one service to multiple channels.

3.3.11 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.

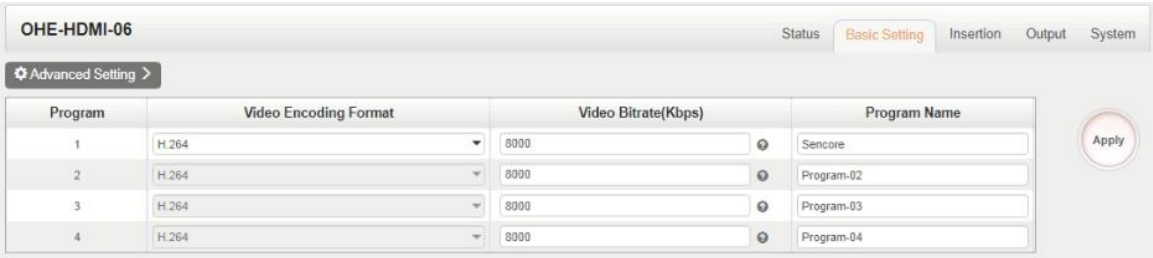


3.3.12.1 Module Status

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.

3.3.12.2 Module Basic Settings

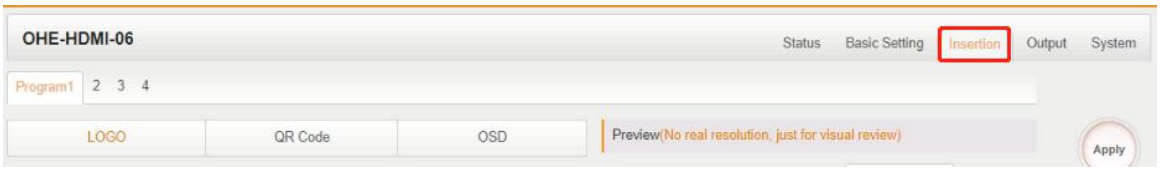
This page allows you to modify the Video, Audio and Service Parameters. Click **Advanced Settings** to see all parameters you can modify and check specific parameters you want to set and see. Click the **Apply** button on the right side to make the change take effect.



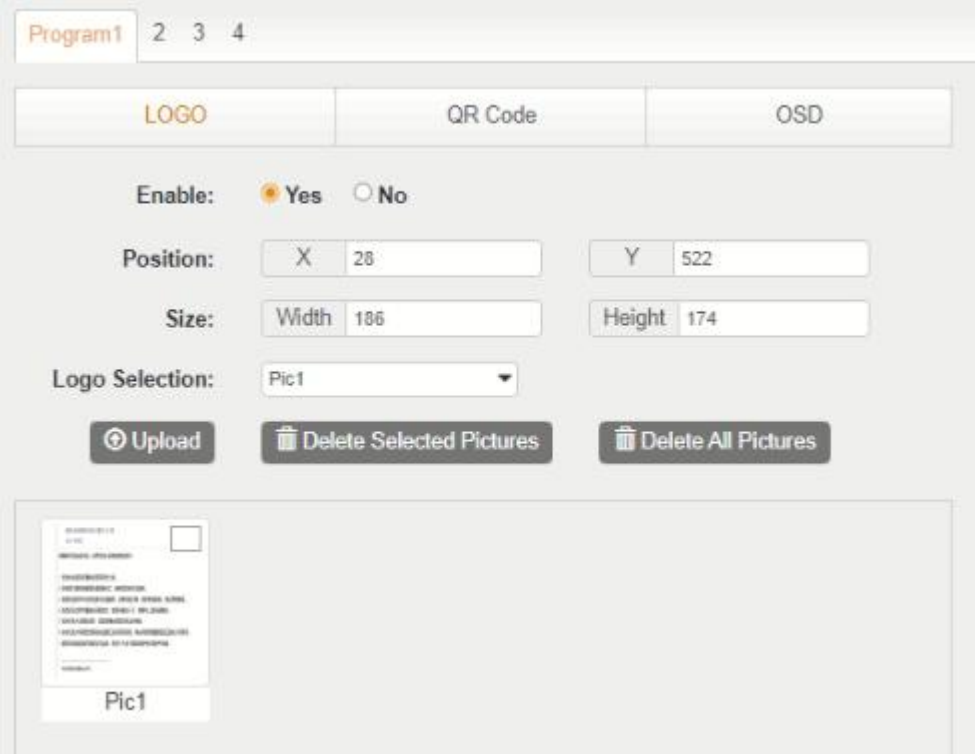
Video Encode Settings	Range	Video Encode Settings	Range
Video Type	H.264 , H.265	**Video PID**	32~8190
Video Bitrate (Kbps)	600~12000	**PCR PID**	32~8190
GOP Structure	IPPP/IBBP	**PMT PID**	32~8190
Video Resolution	Auto , Manual（**Horizontal Pixels**：160~1920, **Vertical Pixels**：120~1080, **Framerate**：24~60, **Scan Type**：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		

3.3.12.3 Module Insertion Settings

You should choose a channel first before you set Insertion.



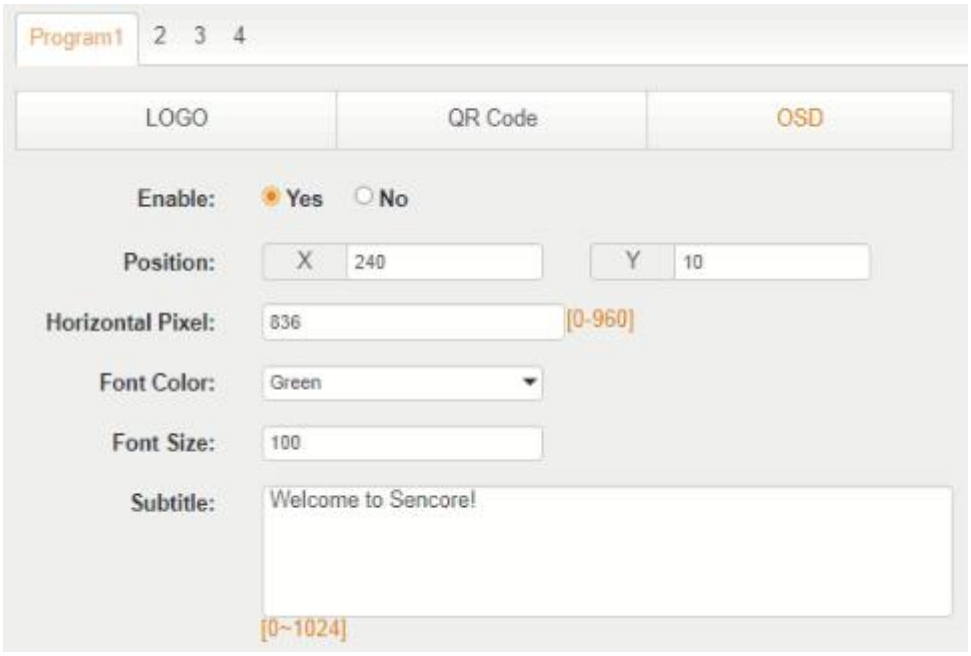
- **LOGO setting:** you can upload several pictures at the same time, and pick one to show on the screen. When you click the one you want to show that picture field will turn green.



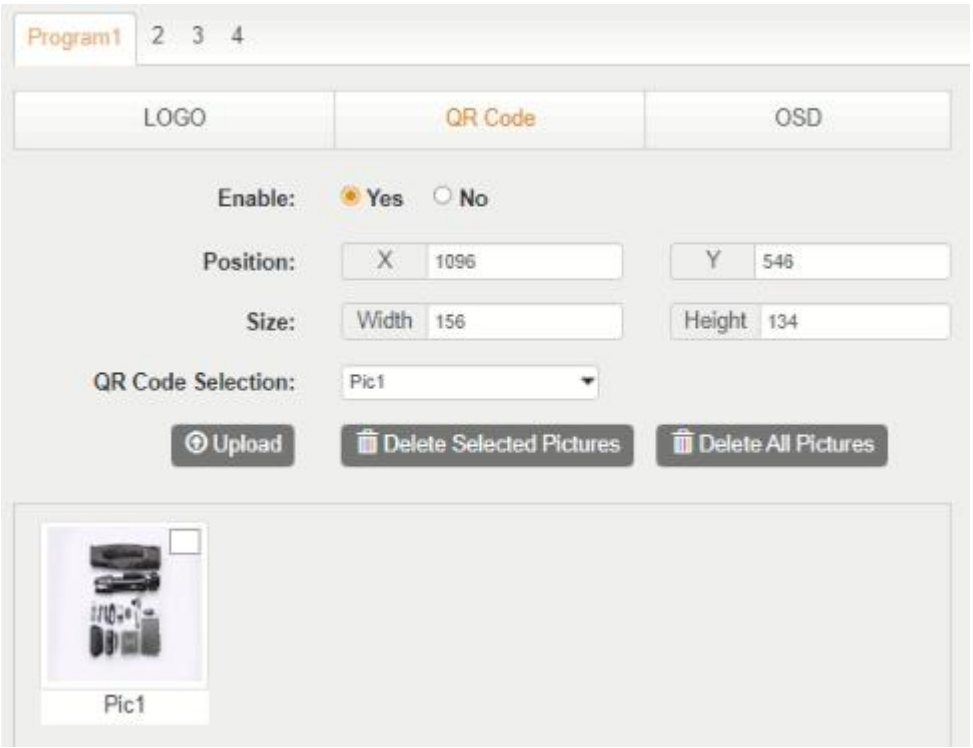
LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1092 (Dual)	**Position Y**	0~546 (Dual)
Size width	0~1080 (Dual)	**Size Height**	0~1080 (Dual)

- **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/ Blue/Green/ Red/Yellow



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

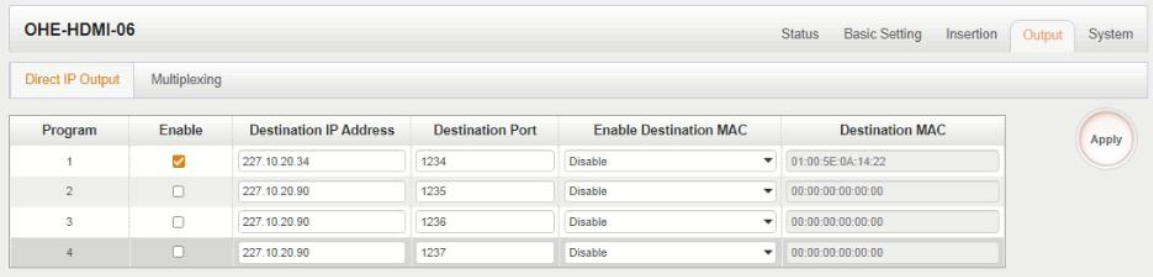


LOGO Parameter	Range	LOGO Parameter	Range
Position X	0~1096 (Dual)	**Position Y**	0~546(Dual)
Size width	0~1080 (Dual)	**Size Height**	0~1080 (Dual)

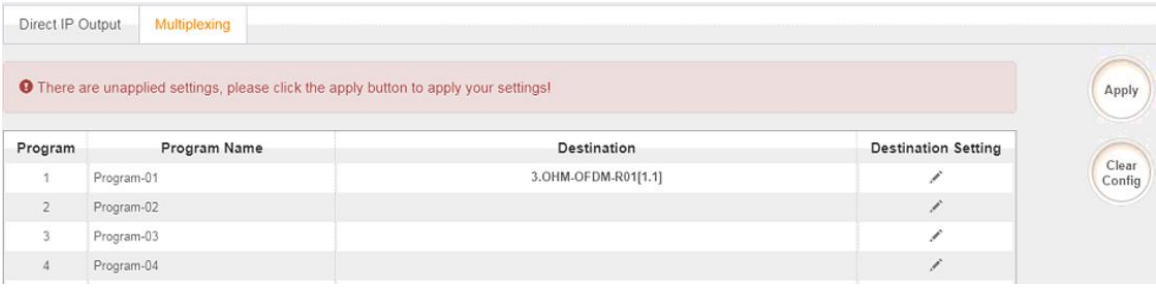
3.3.12.4 Module IP Output

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.



- **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.



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

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

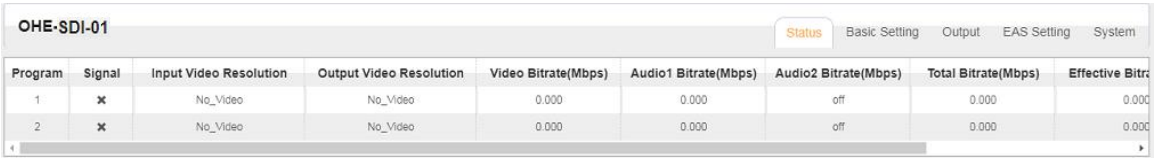
3.3.12 OHE-SDI-01

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

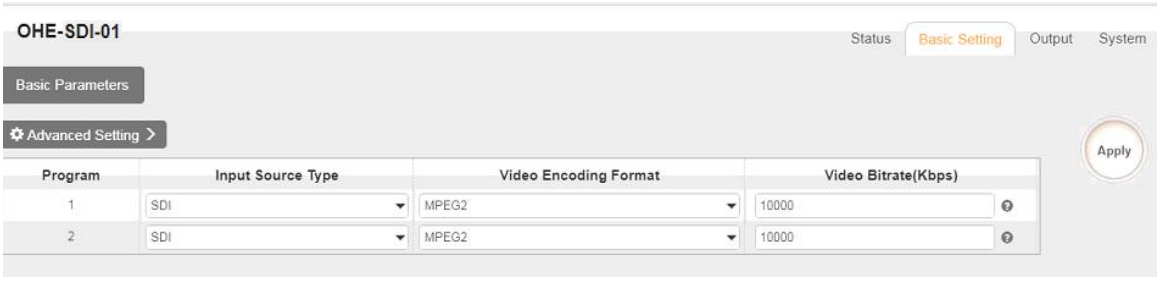
3.3.13.1 Module Status

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 anaylsis and Program Name. The following parameters will display values once a good SDI source is connected.

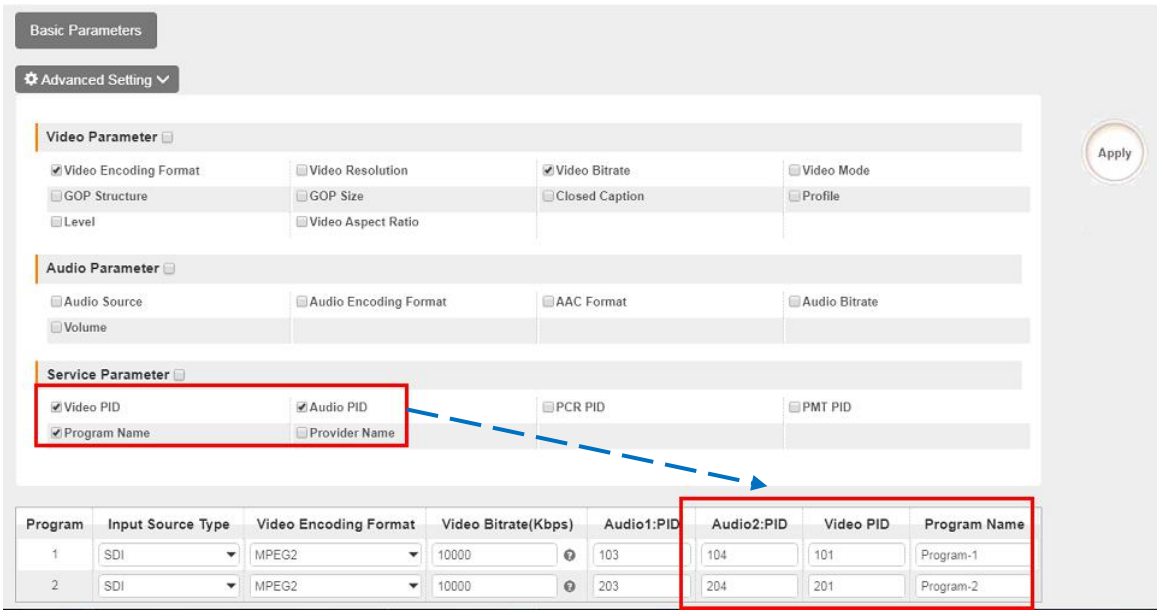


3.3.13.2 Module Basic Settings

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.



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



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

Audio Encoder Details	Range	Audio Encoder Details	Range
Audio Encoding Format	AC3 AC3_Passthrough MPEG1_Layer2 MPEG2_AAC MPEG4_AAC	**Audio Bitrate (Kbps)**	128~384 (AC3) 64~384 (MPEG1_Layer2) 64~384 (MPEG2_AAC/ MPEG4_AAC)

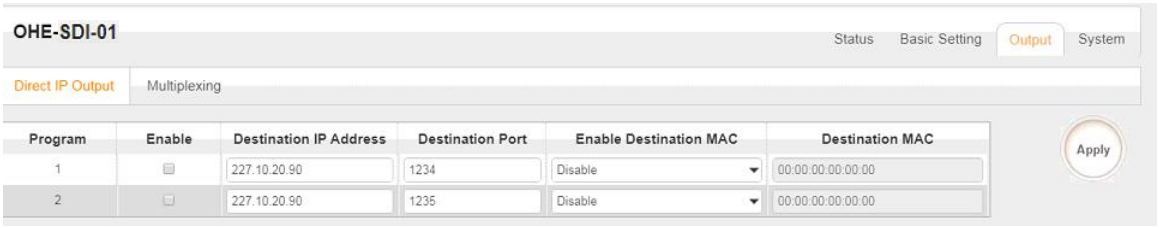
Audio Source	SDI1 SDI2 SDI3 SDI4 Analog	**Volume (dB)**	-20~20
AAC Format	ADTS, LATM		

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

3.3.13.3 IP Output

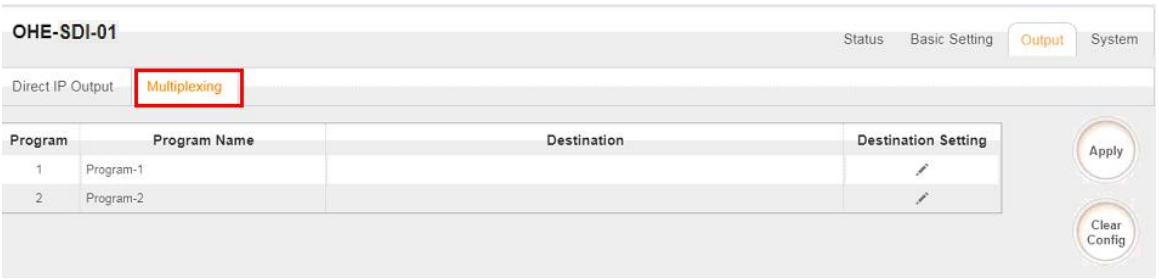
This feature is specifically for encoding single program and outputting directly to IP. It will not occupy multicast bandwidth of the baseboard.

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.



- **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.



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 outputt. You can output multiple services to one channel or output one service to multiple channels.

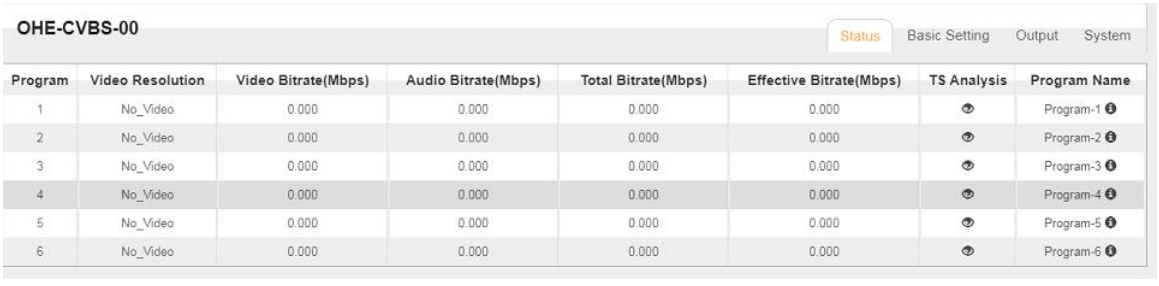
3.3.13 OHE-CVBS-00/R01/R01A

OHE-CVBS-00/R01/R01A is a 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, OHE-CVBS-R01 has insertion features while OHE-CVBS-00 doesn't have.

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

OHE-CVBS-R01A (16 CH)

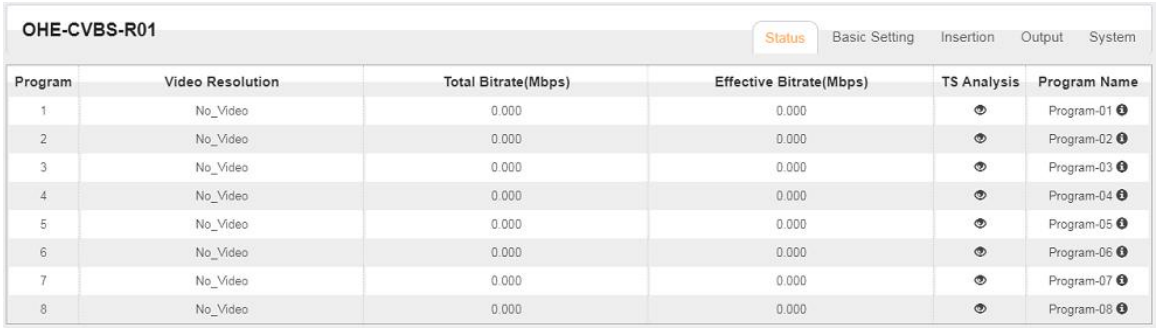
Like all other modules. OHE-CVBS Status shows the bitrate of each channel and you can check the TS Analysis and Service List here. See picture below.



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

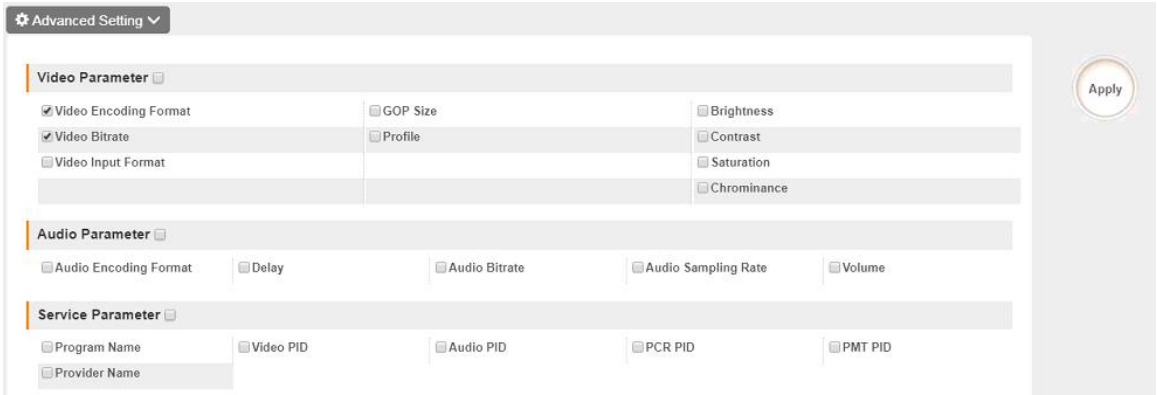


Program	Video Resolution	Total Bitrate(Mbps)	Effective Bitrate(Mbps)	TS Analysis	Program Name
1	No_Video	0.000	0.000		Program-01
2	No_Video	0.000	0.000		Program-02
3	No_Video	0.000	0.000		Program-03
4	No_Video	0.000	0.000		Program-04
5	No_Video	0.000	0.000		Program-05
6	No_Video	0.000	0.000		Program-06
7	No_Video	0.000	0.000		Program-07
8	No_Video	0.000	0.000		Program-08

3.3.14.1 Module Basic Settings

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

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.



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

Video Parameter	Range	Video Parameter	Range
Video Iput 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

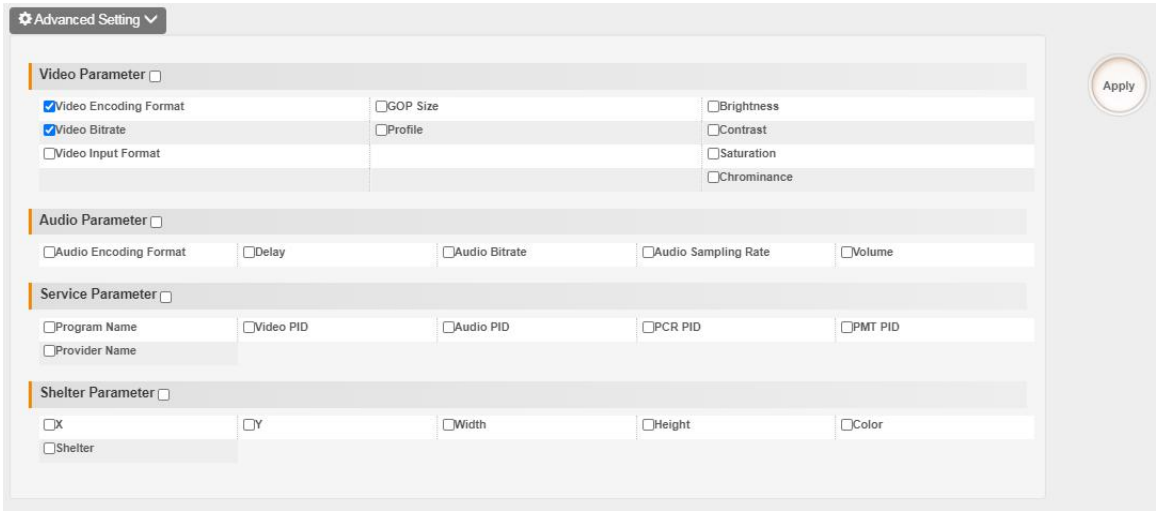
Profile	HIGH MAIN		

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.



Video Parameter	Range	Video Parameter	Range
Video Iput 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 MAIN		

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

Rate (KHz)			
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

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

3.3.14.2 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.

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

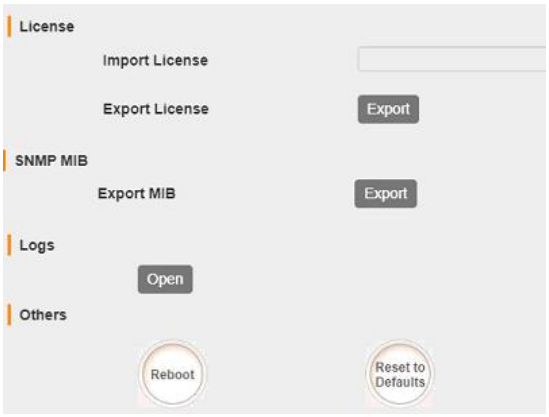
1. Click on (pencil) icon. There will always be a BaseBoard selection for the IP output and other Output options depending on the module inserted.
2. Select the correct Output and Channel you want to output the service to.

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

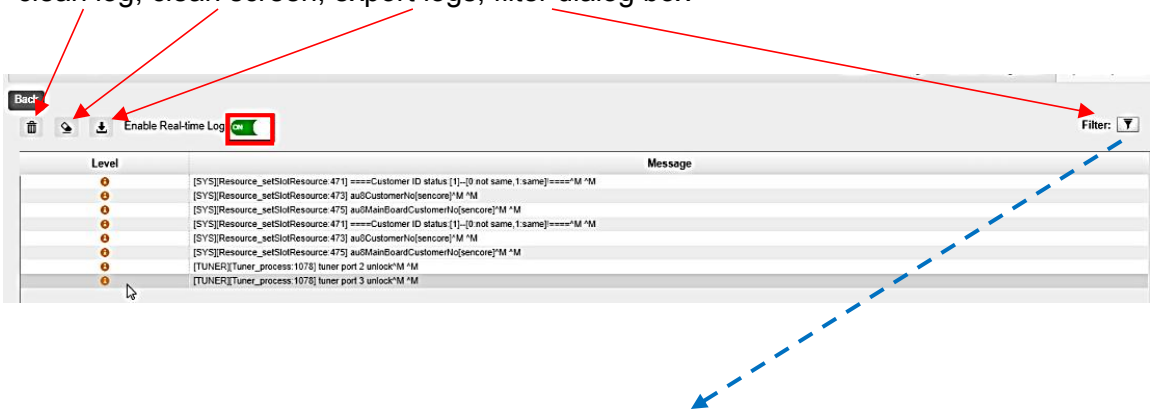
3.3.14.3 System Operation

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	☑
Warning	☑
Information	☑
Debug	☐

Module List	
Module Name	**Operation**
SYS	☑
PARAMS	☑
UPGRADE	☑
TSPROCESS	☑
SIPROCESS	☑
LICENSE	☑

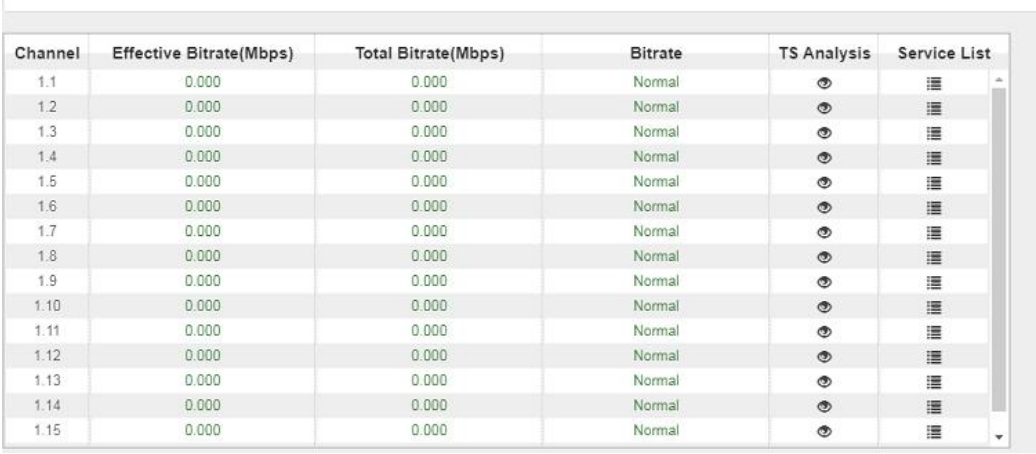
Modulation Modules

3.3.14 OHM-QAMA-00/R00

OHM-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.

3.3.15.1 Module Status

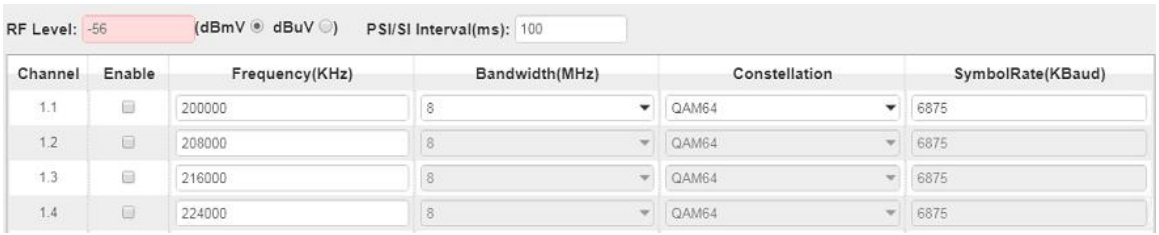
Status of QAMA6-00 shows the Total Bitrate of a TS and the Effective bitrate, with which you can monitor if the output programs will overflow in a certain TS. Since the Modulator produces a lot of heat, the Module is also designed to automatically powered off when the temperature is higher than 74 degrees Celsius (165.2-degrees Fahrenheit). The status page for all Output modules of OmniHub 16 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 OHR-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		

3.3.15.2 Module Basic Settings

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



Click the Apply button 

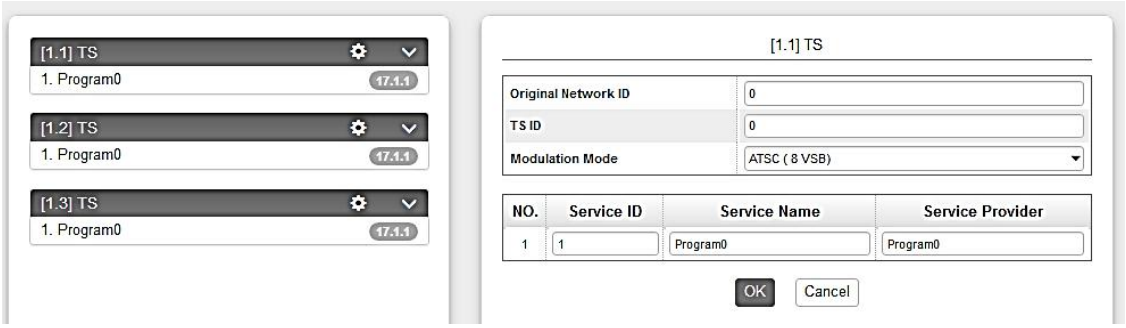
on the right side for the changes to take effect.

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

3.3.15.3 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.

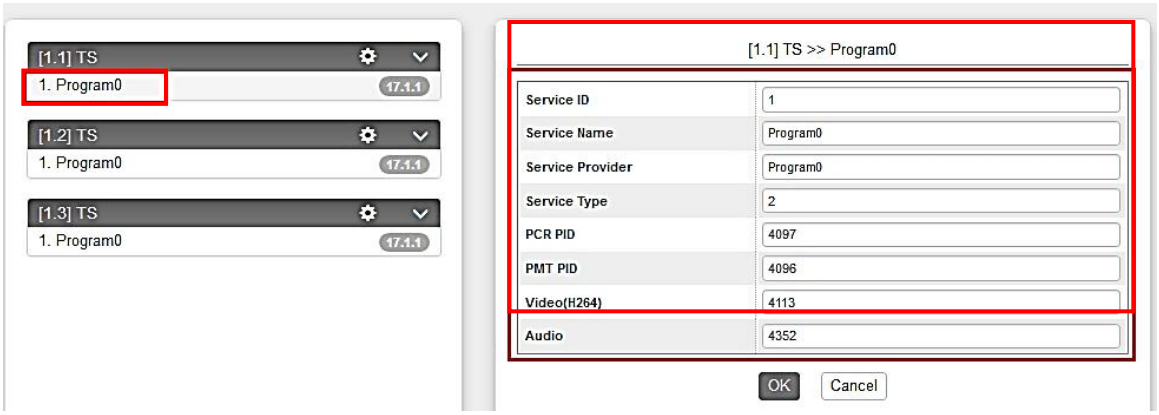
Every Channel in QAM output has Original Network ID and TS ID. It is important to identify the TS ID properly. Labeling the TS will help you to monitor your output services. It is also important for creating NIT for LCN and Cable Descriptors. When you click on the Service Settings, this is the screen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



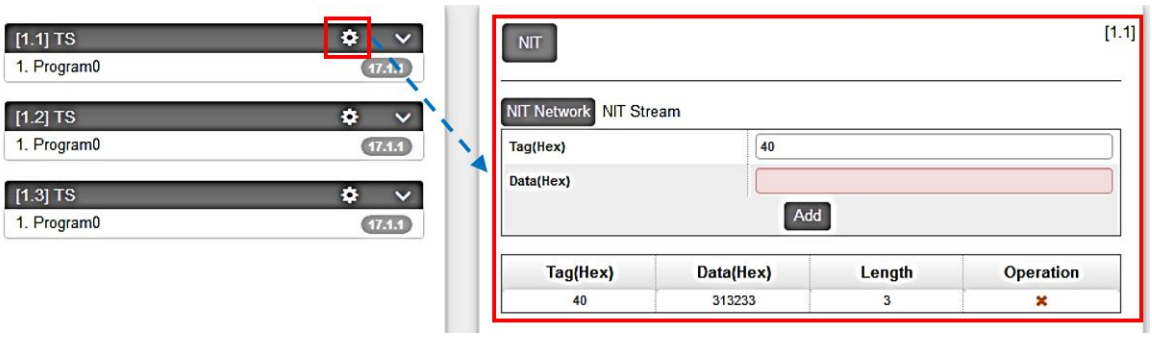
On the Left side, you will see the list of TS where there are output services. If the TS or Channels are enabled but no Service Output, It will not be listed here.

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.



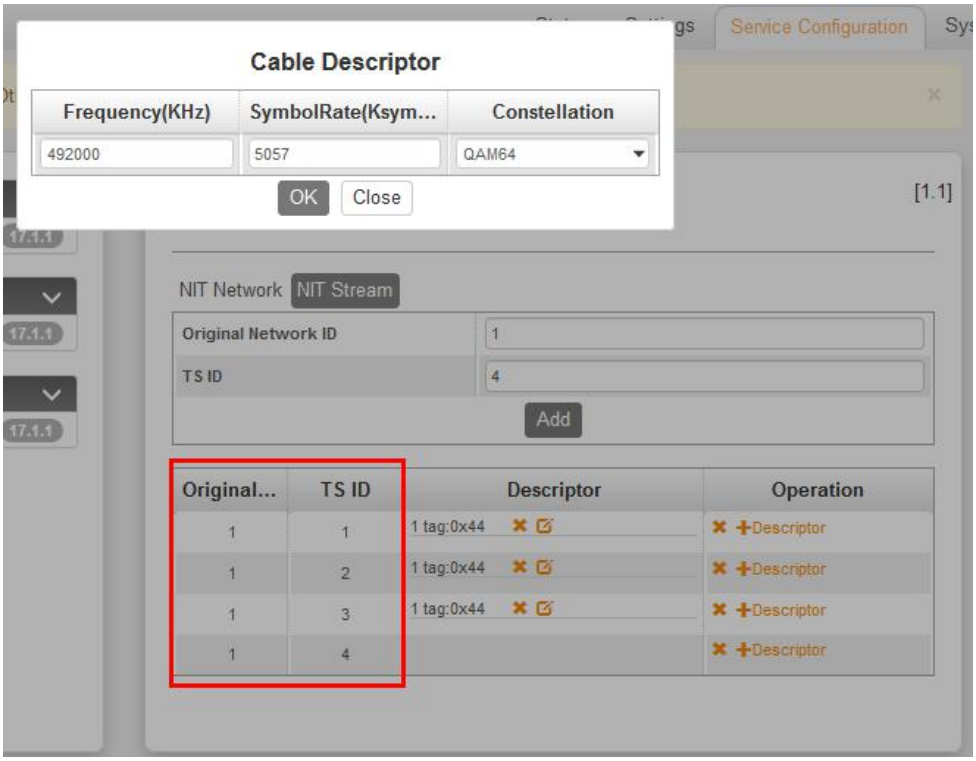
Clicking on the icon  will show you the NIT setting where you can create and add NIT Network and NIT Stream.



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 has the same parameters for Frequency and Symbol rate.

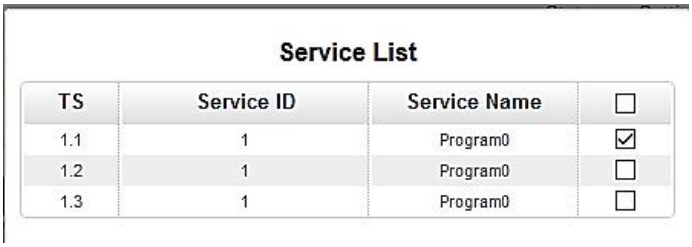
One important information is to know in what frequency and TS you want to create the Cable Descriptor. Once you know the frequency, you need to create the TSID currently used. If you have 4 frequency outputs on the Network, you need to create 4 TSID as shown below. Just input the correct Frequency on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

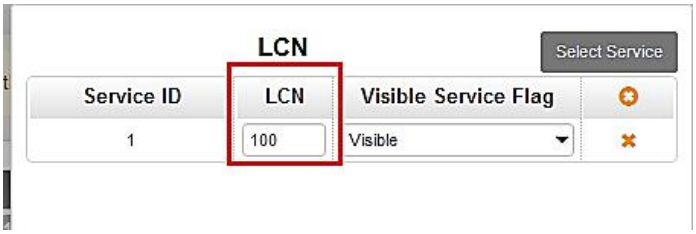


LCN or Logical Channel Number are created in the same way with Cable Descriptor. On 1 frequency, you will add NIT Stream and create multiple TSID. Here you will add the LCN on each TSID.

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.



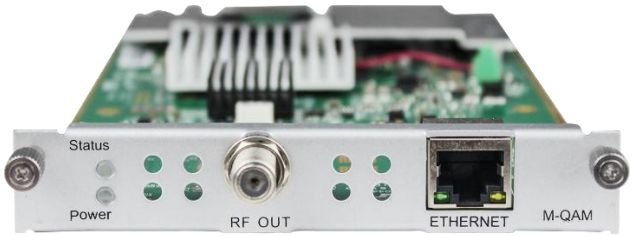


3.3.15 OHM-QAMA-R01/R01A

OHM-QAMA-R01 and OHM-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 OHM-QAMA-00/R00 at page 74 to 77.

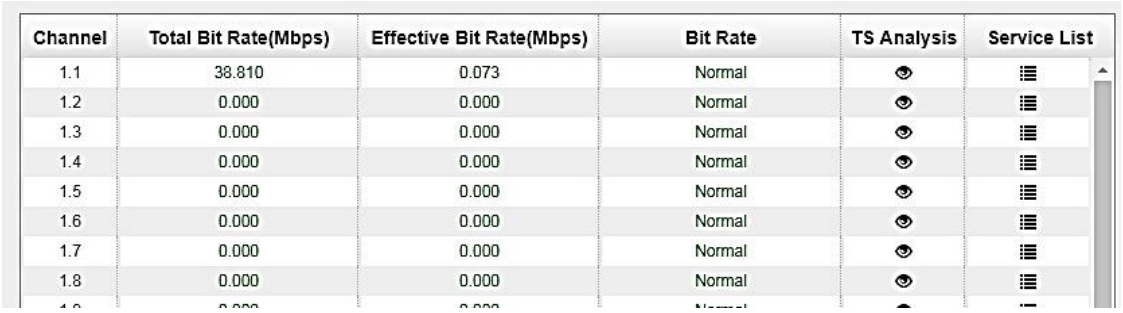
3.3.16 OHM-QAMB-00/R00

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



3.3.17.1 Module Status

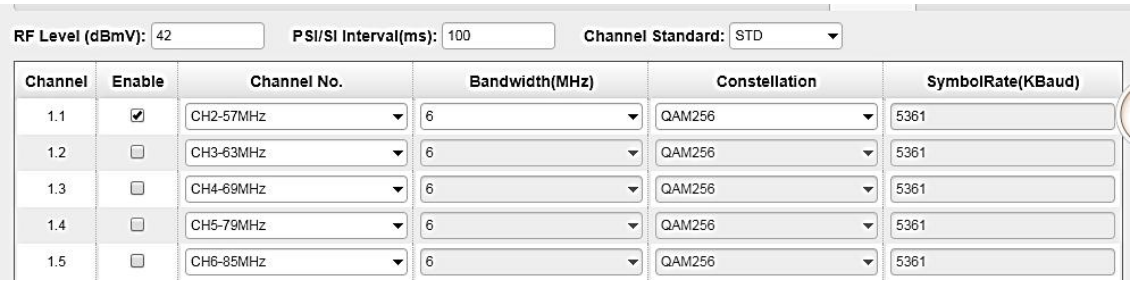
Please see OHR-DVBC-00 on page 30 for reference. See also image for QAMB Status.



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		

3.3.17.2 Module Basic Settings

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



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 (KB aud)	5056.941 (QAM 64) 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		

3.3.17.3 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.,

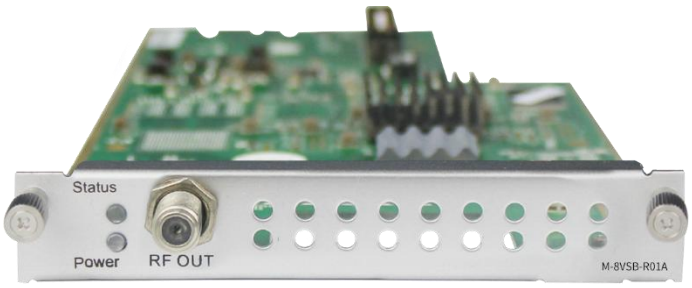
System operation of OHM-QAMB is same with other modules. See page 74 to 77 for reference.

3.3.17 OHM-QAMB-R01/R01A

OHM-QAMB-R01 is a 4 channel QAM B Modulator module while OHM-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 OHM-QAM-00/R00. See page 74 to 77 for reference.

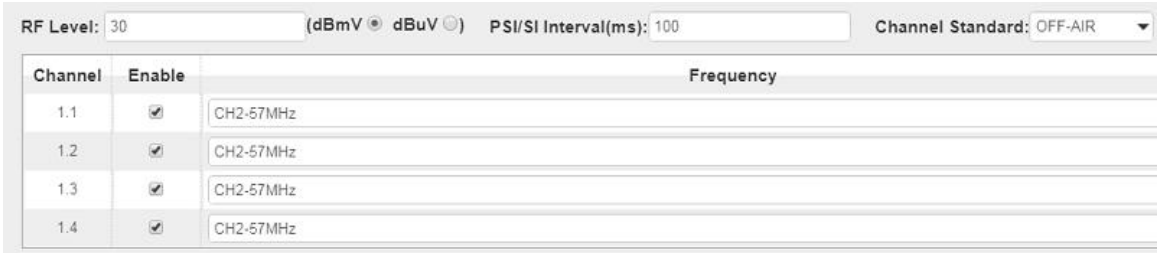
3.3.18 OHM-8VSB-R01/R01A

OHM-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

3.3.19.1 Module Basic Settings

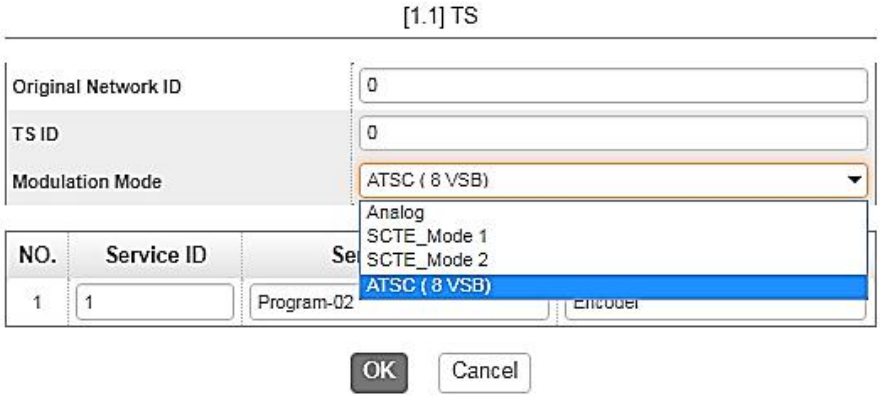


Click the **Apply** button on the right side to make the change take effect.

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

3.3.19.2 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)



3.3.19 OHM-OFDM-R01/R01A

OHM-OFDM-R01 / R01A module supports up to 4/8 adjacent frequencies modulating with 1 RF female connector for output. The status for the OHM-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		

3.3.20.1 Module Basic Settings

For the Settings of OHM-OFDM-R01

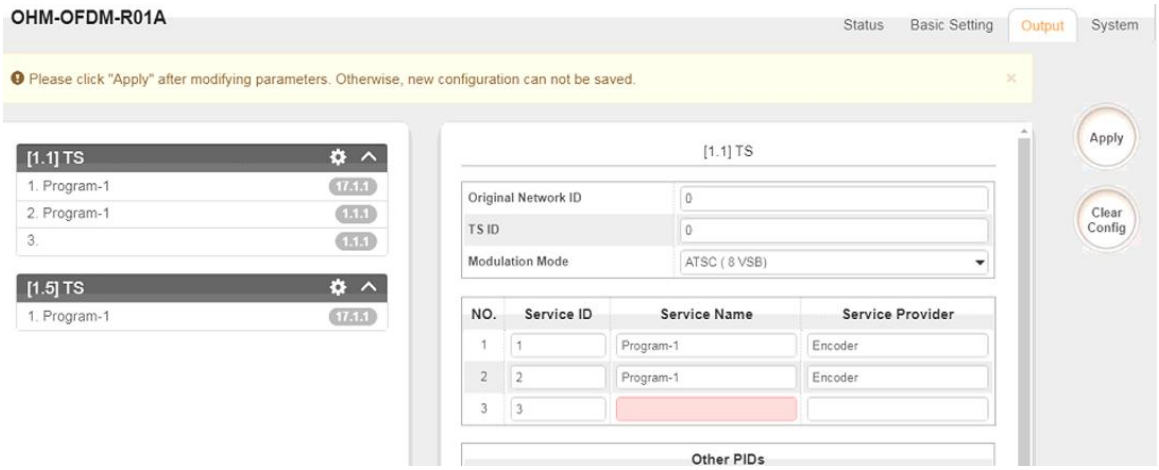
Channel	Enable	Frequency(KHz)	Bandwidth(MHz)	FFT Mode	GI Mode	QAM Mode	Convolutional Coding
1.1	☑	755143	6	2K	1/32	64QAM	7/8
1.2	☑	761143	6	2K	1/32	64QAM	7/8
1.3	☑	767143	6	2K	1/32	64QAM	7/8
1.4	☑	773143	6	2K	1/32	64QAM	7/8

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) 60~91.5 (dBuV)
Frequency (KHz)	48000~862000		

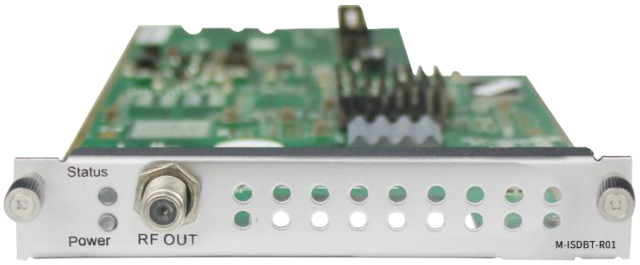
3.3.20.2 Module Output

Configuration of the OFDM module is like the configuration of OHM-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 OHM-QAMA-00 on page 74 for reference.



3.3.20 OHM-ISDBT-R01/R01A

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



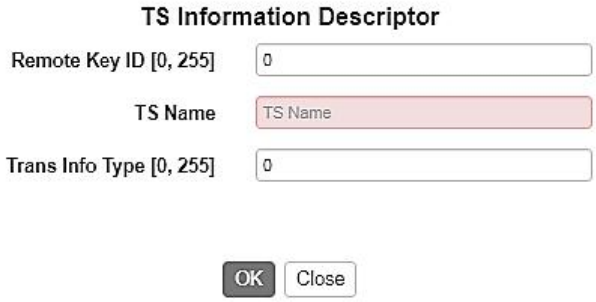
3.3.21.1 Module Basic Settings

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.

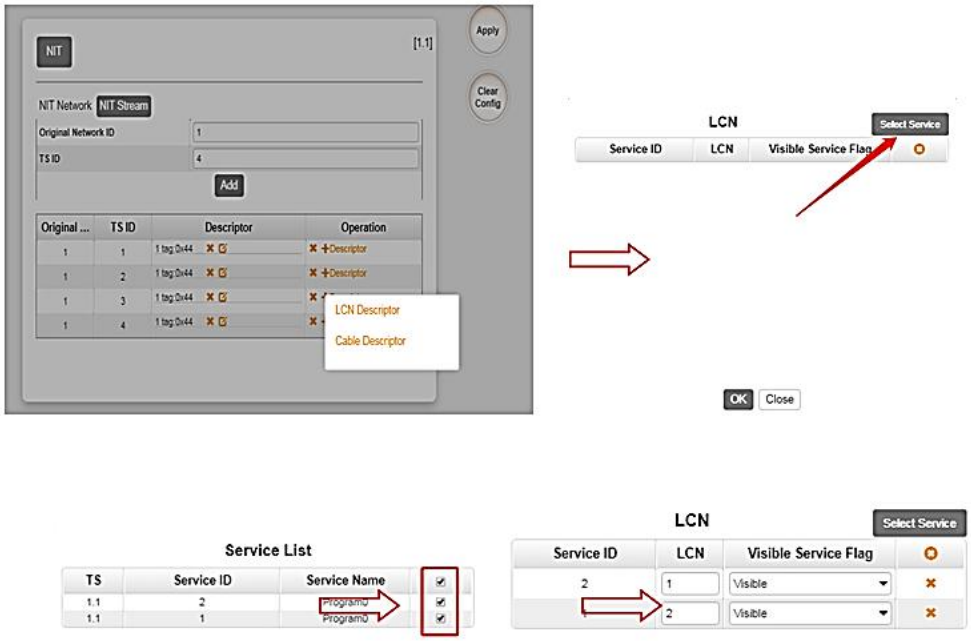
Name	Range	Name	Range
Bandwidth (MHZ)	6M	**RF level**	90~110
Frequency (KHz)	48000~862000	**FFT Mode**	2K
GI Mode	1/4, 1/8, 1/16, 1/32	**RF Level Gain (dB)**	45~55
QAM Mode	QPSK 16QAM 64QAM	**Convolutional Coding**	1/2, 2/3, 3/4, 5/6, 7/8

3.3.21.2 Module Output

- 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)



- 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.

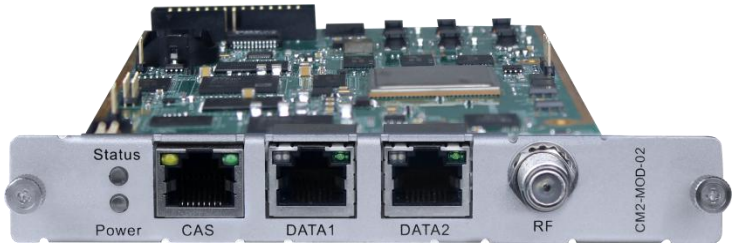
3.3.21 OHM-QAMA-02/02A、OHM-QAMB-02/02A

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.

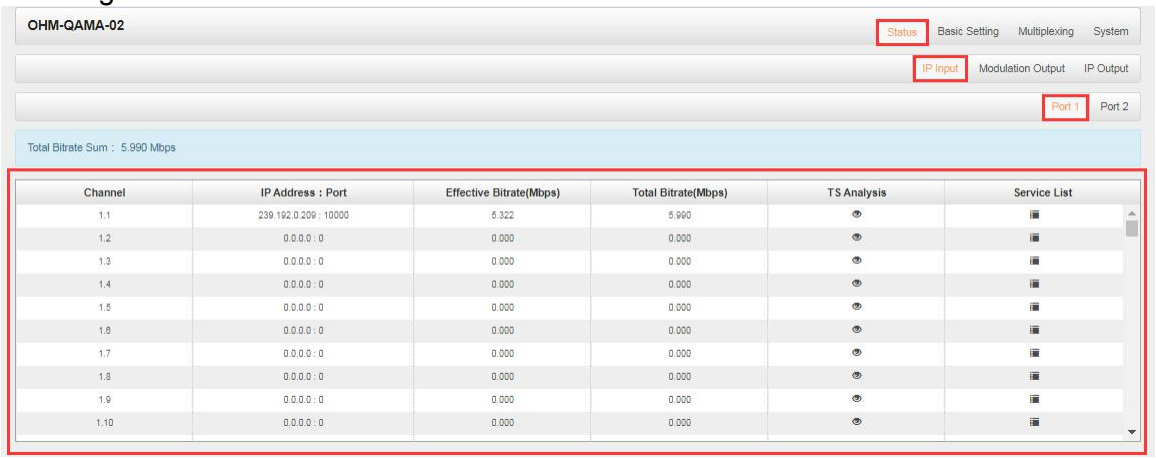


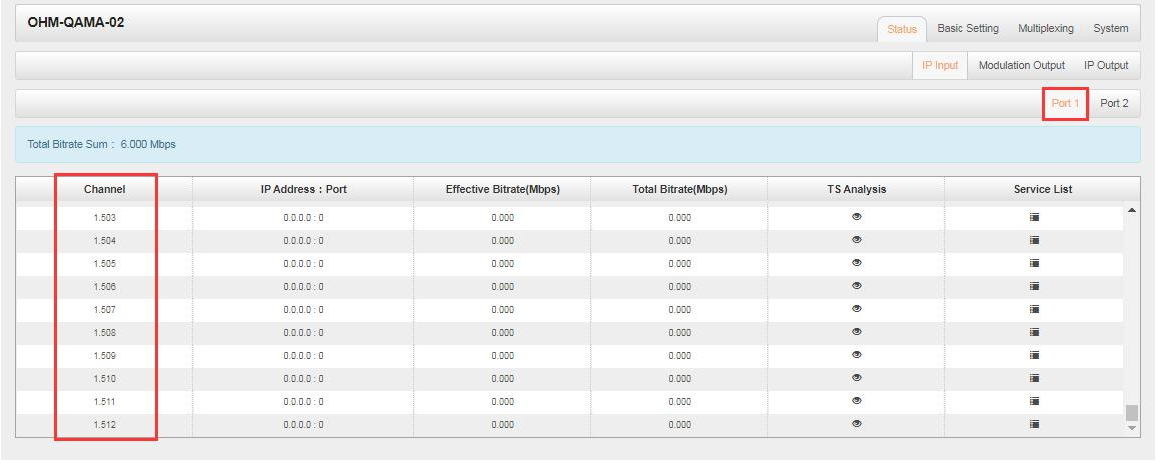
3.3.21.1 **OHM-QAMA-02**

3.3.21.1.1 **Module Status**

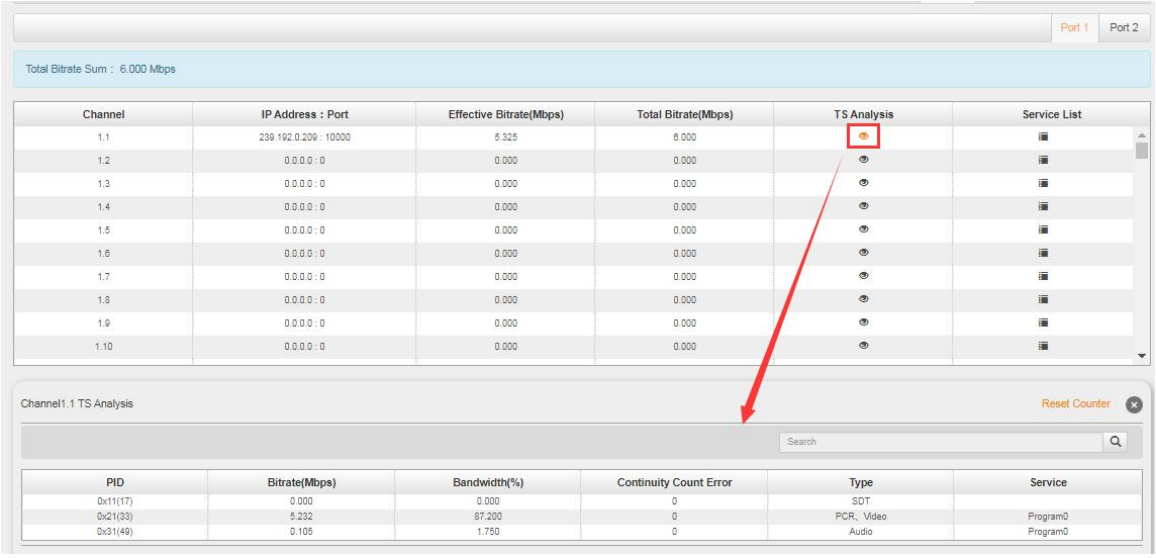
The Status page contains status information of IP Input, Modulation Output and IP Output.

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.

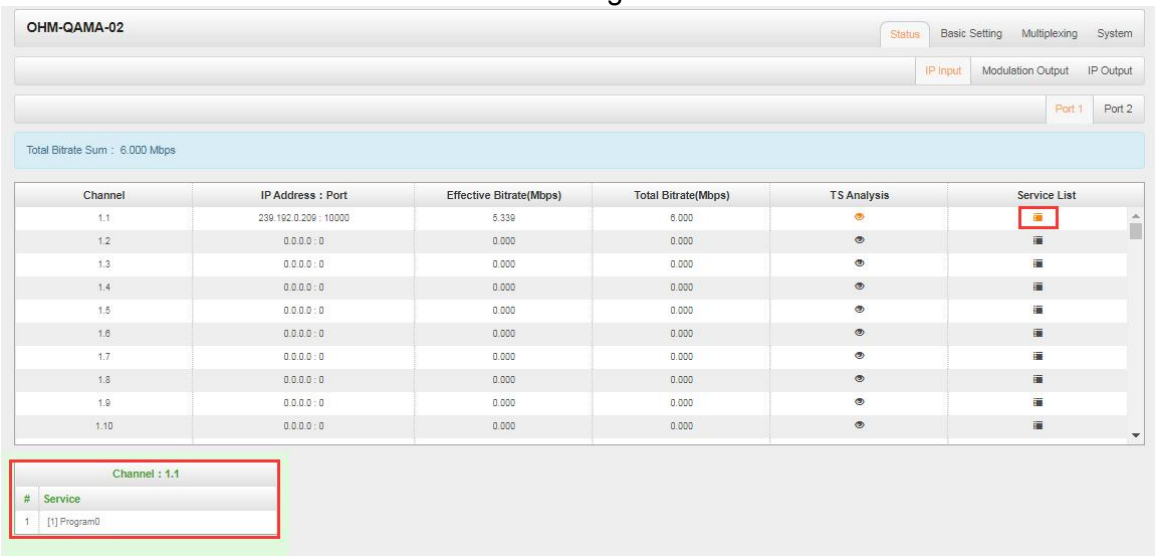




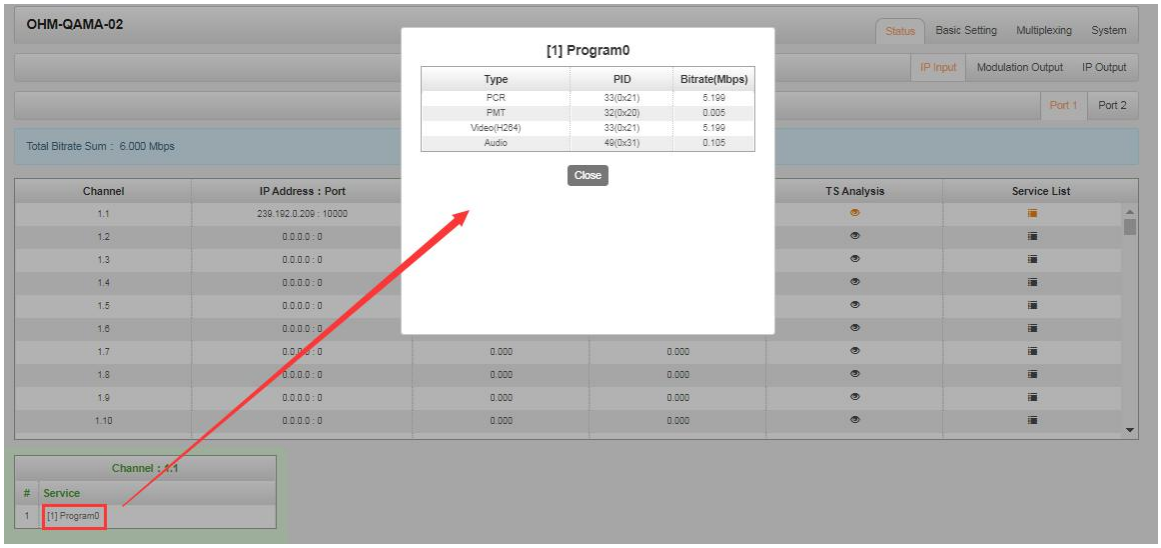
Clicking the eye icon  , you can know all the PIDs of this TS, such as PAT, CAT, PCR, Video Audio and PCR PID. See the image below for reference.



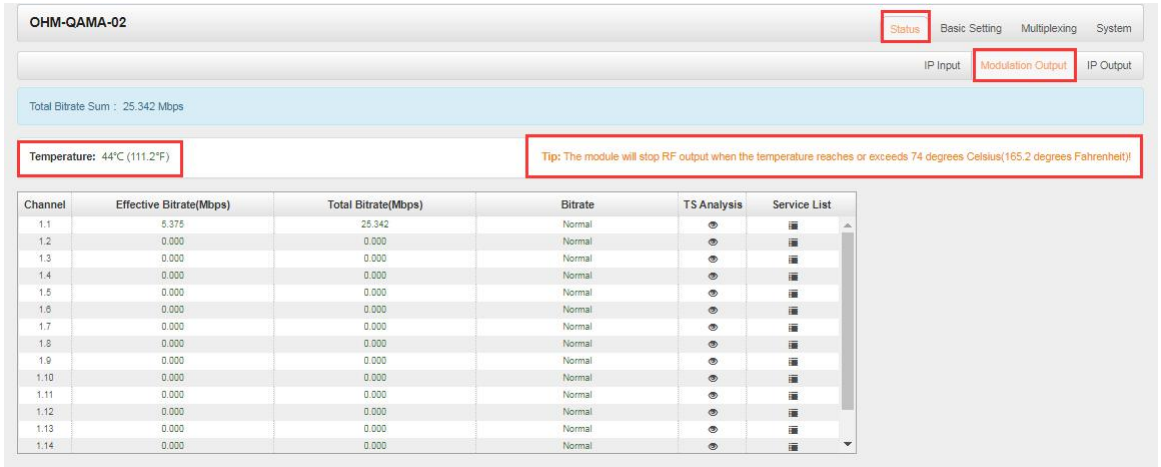
If the input stream has multiple programs, you can click the icon below “Service List” to see all the services in this stream. See the image below for reference.

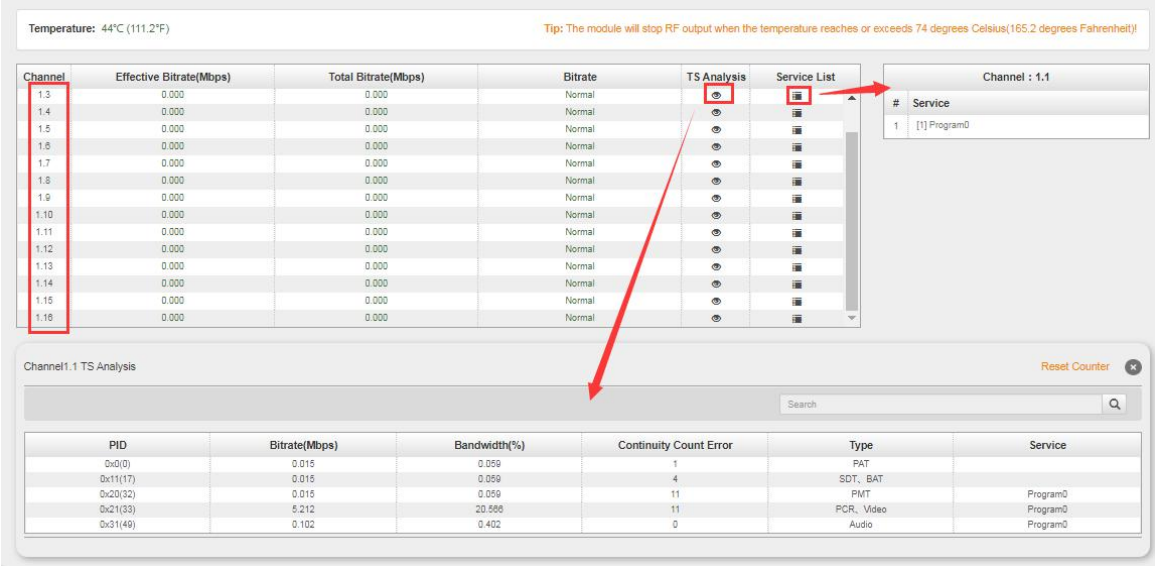


You can also check details of a service by clicking the Service Name.

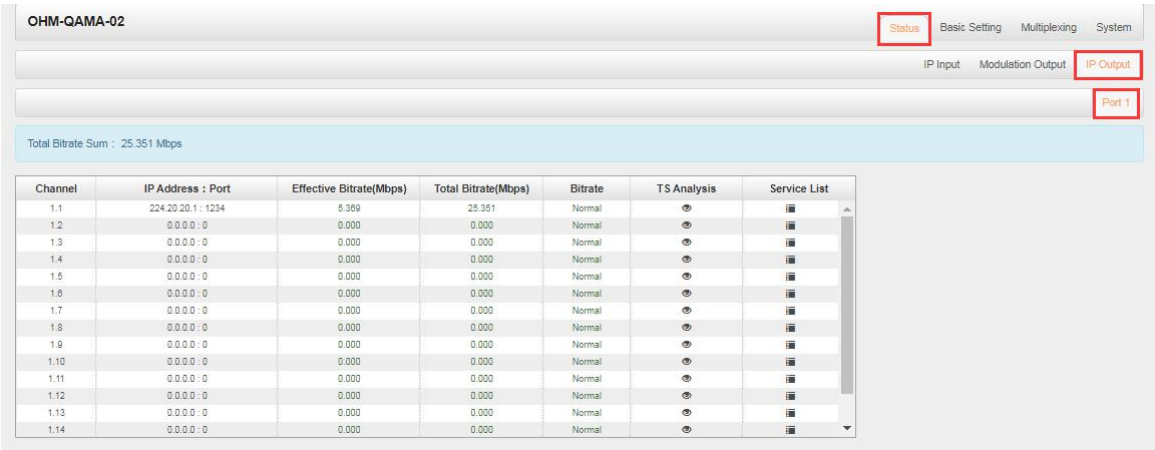


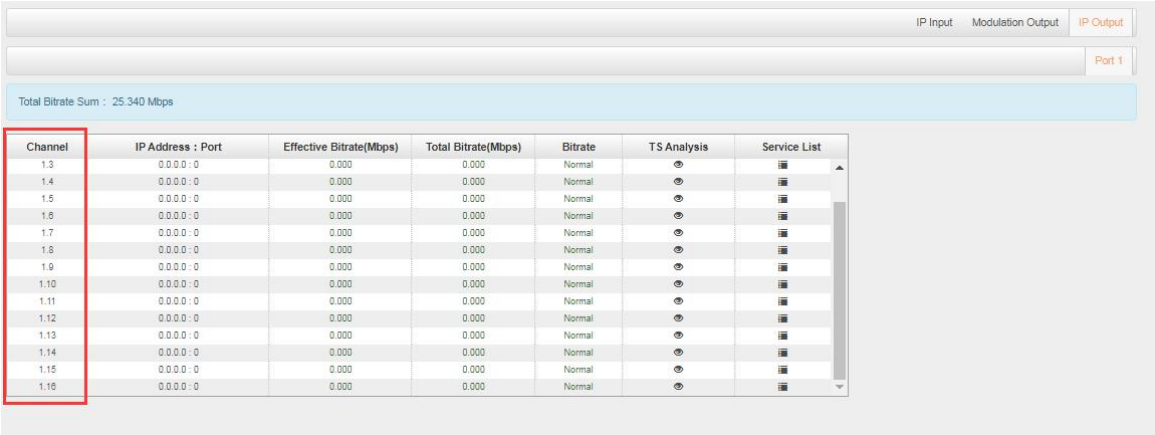
Modulation Output > OHM-QAMA-02 status shows the Modulation output. Just like the IP Input, this shows the total bitrate and effective bitrate of the16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. The Status also shows the current temperature of the unit on the upper left corner. See image below for reference.





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.

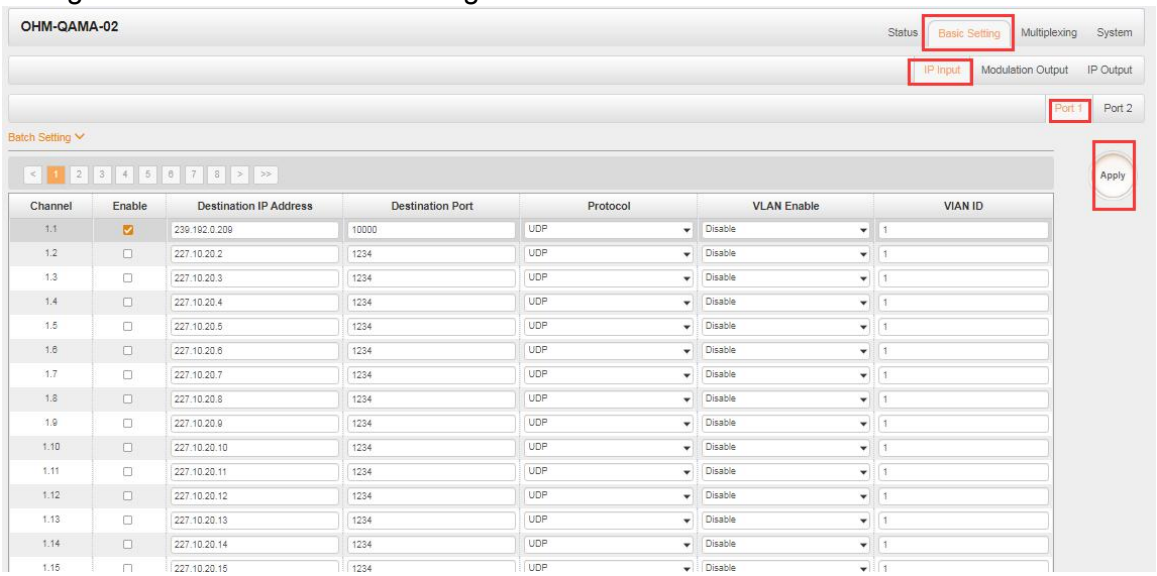




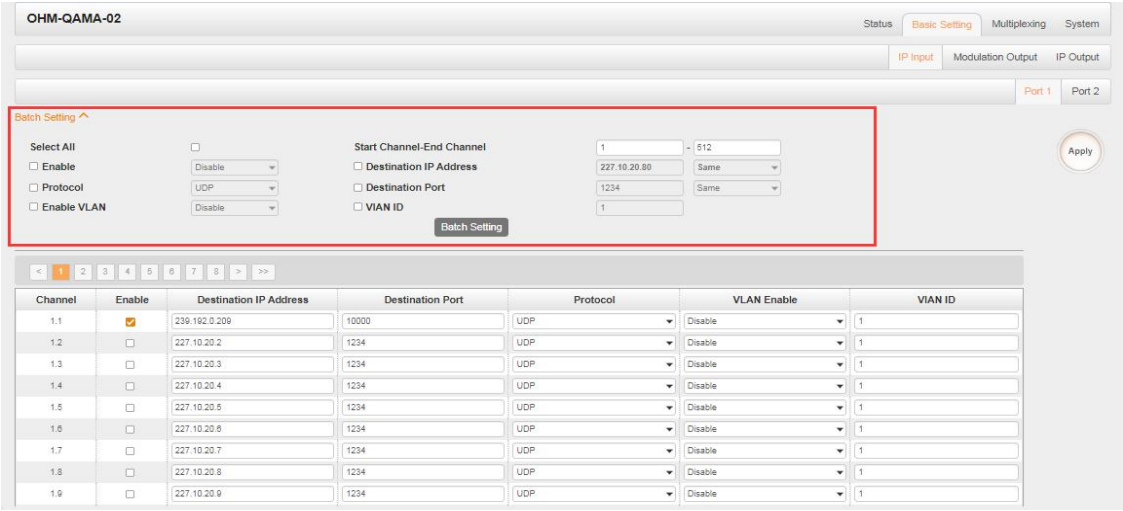
3.3.21.1.2 Module Basic Setting

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

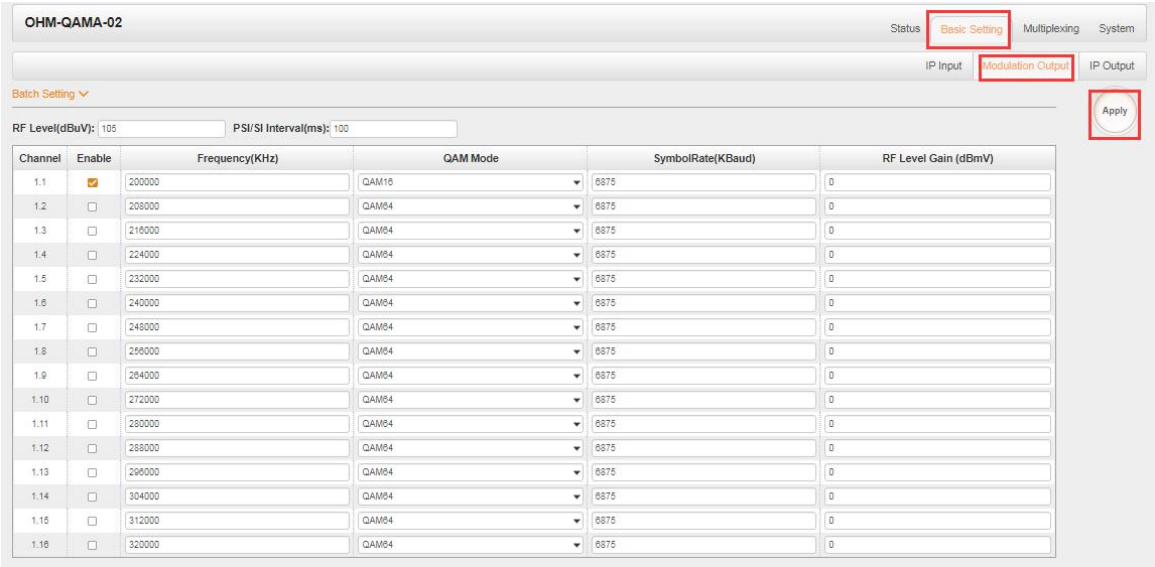
IP Input-Parameter Setting> On this page, there are three tabs where you can modify the multicast IP, port and parameter of IP Input. There are ***Port 1***, ***Port 2***, and ***Batch Setting***. The input can accept Multicast or Unicast and support MPTS and SPTS.
Port 1 and Port 2 have same interface.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



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



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.

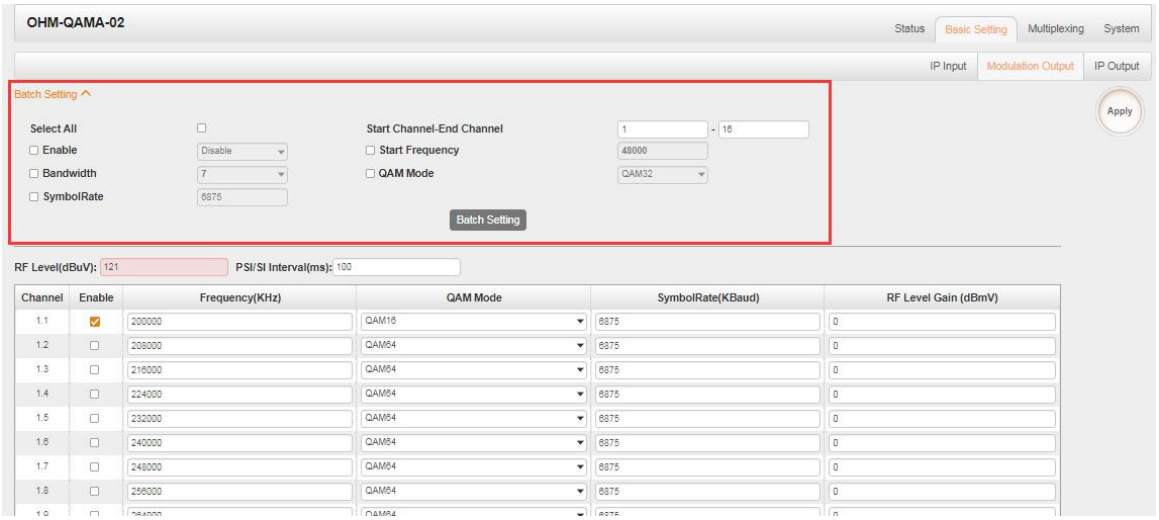


Here are the range parameters of the above info.

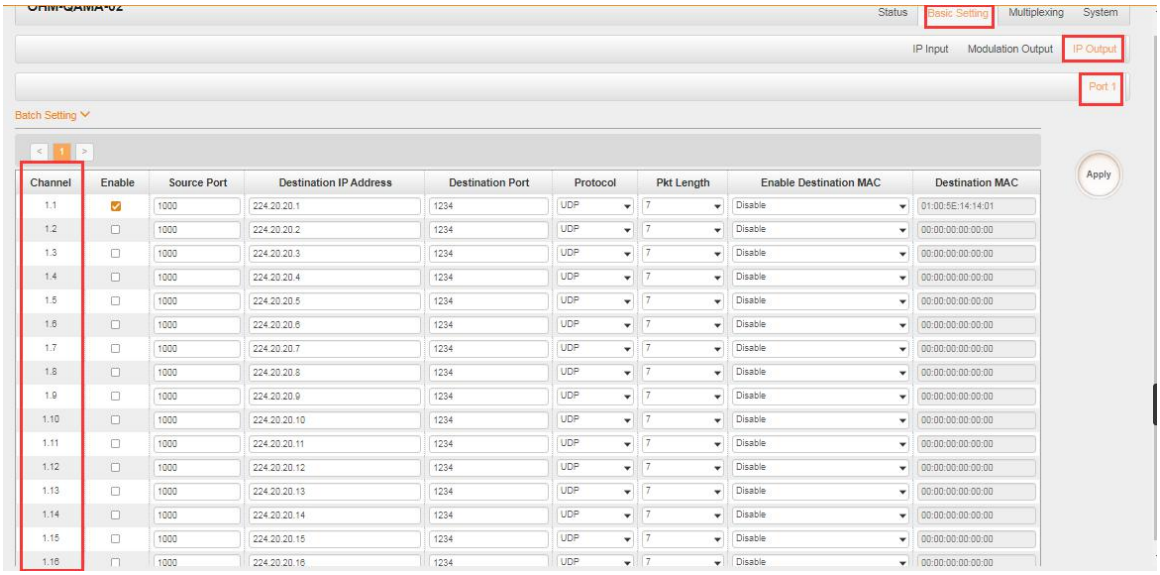
Parameter	Range
Frequency (KHz)	47000 ~ 999000
QAM Mode	QAM16, QAM32, QAM64, QAM128, QAM256
Symbol Rate (KBaud)	3600 ~ 6956
RF Level Gain (dBmV)	-10 ~ 0 (The value must be a number multiple of 0.5)
RF Level (dBuV)	90~120
PSI/SI Interval (ms)	50 ~ 10000

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

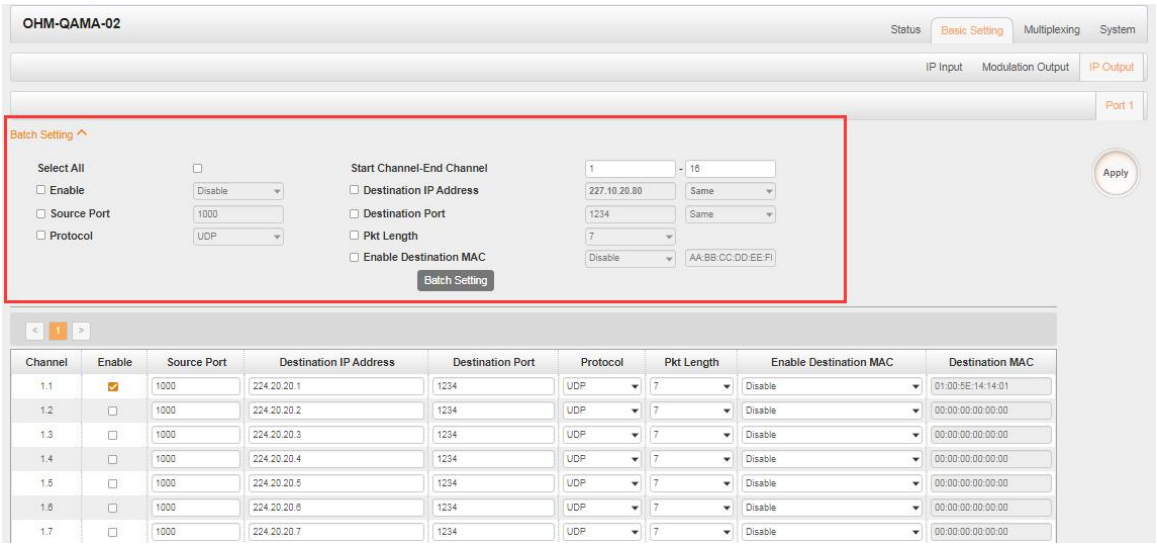
Batch Setting is where you can input the modulation parameters in batch. See the image below for reference.



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.

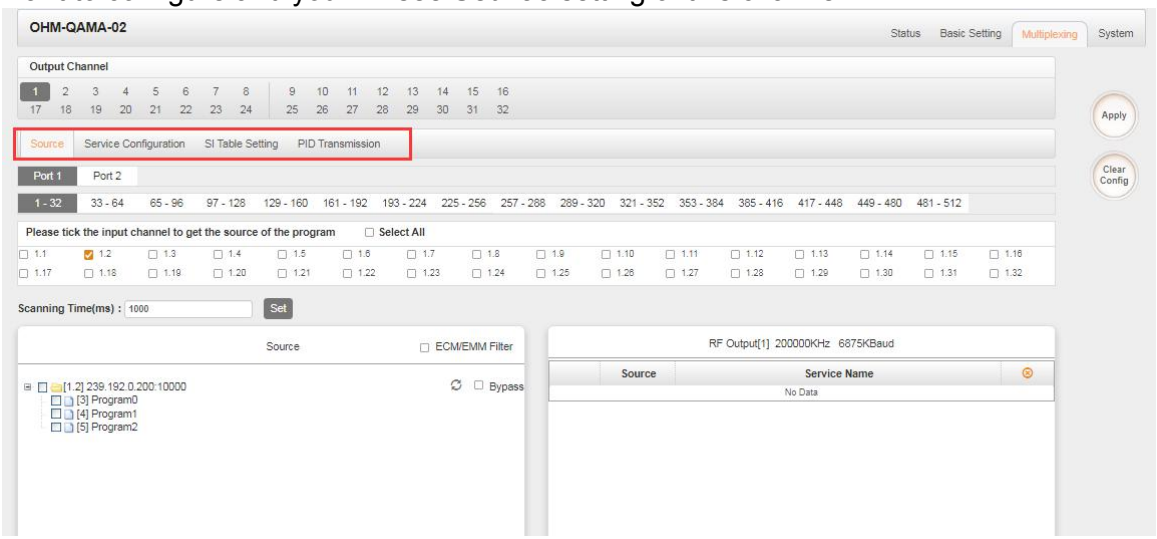


Batch Setting is where you can input the IP output parameters in batch. See the image below for reference.

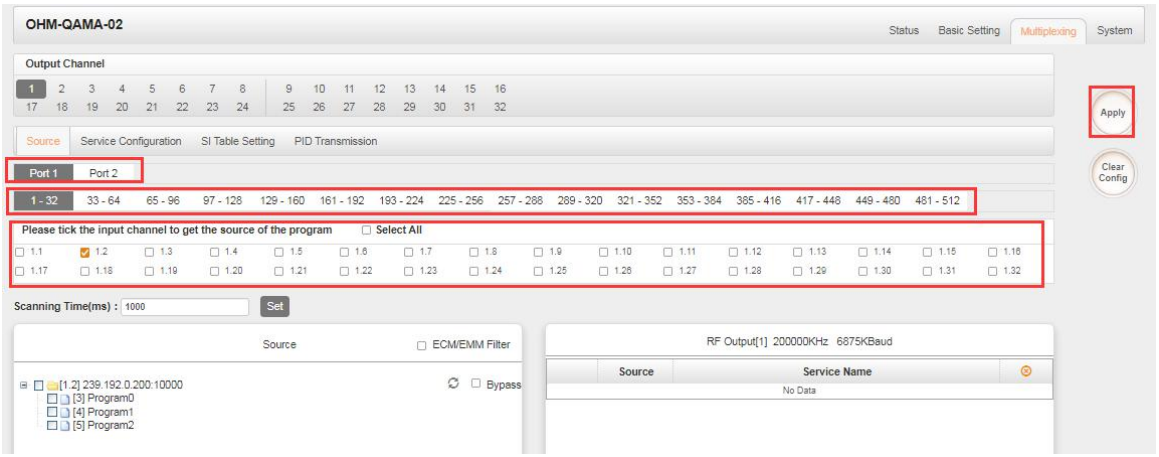


3.3.21.1.3 **Multiplexing**

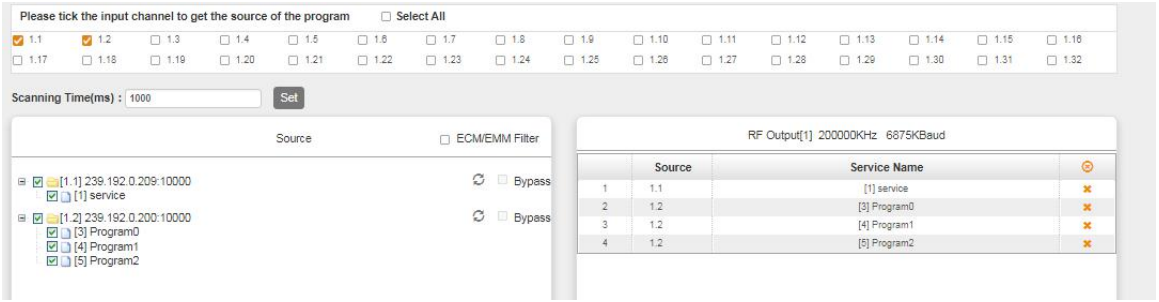
Multiplexing has four tabs: ***Source***, ***Service Configuration***, ***SI Table Setting*** and ***PID Transmission***. Here you are can set to output services from IP Input to Modulation Output. Click ***Multiplexing*** to see 32 modulation output channels. Select a channel you want to configure and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



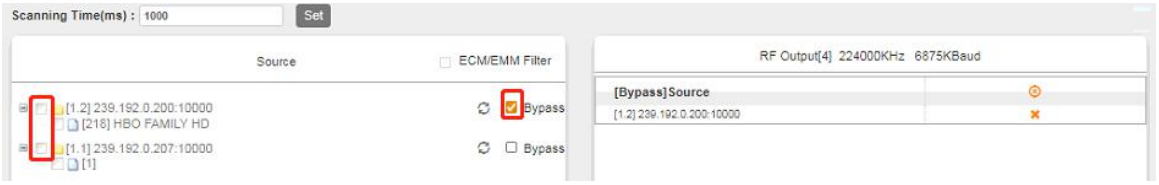
Multiplexing-Source> Source is where you select a source for output. You can chose ***Port 1*** or ***Port 2*** for the source. Each port is divided into 16 groups to complete 512 channels. Select a Port and you can see service lists of Group and Channel as shown below.



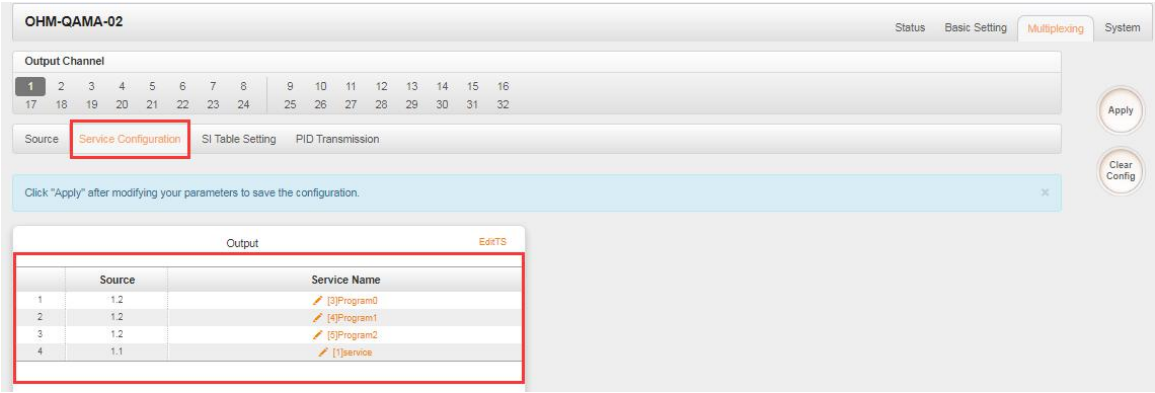
To output the service on the Modulation Output, you can simply put a tick in the box beside the service you want to output. You can output multiple Service from different Source channels or bypass the TS to Modulation output.



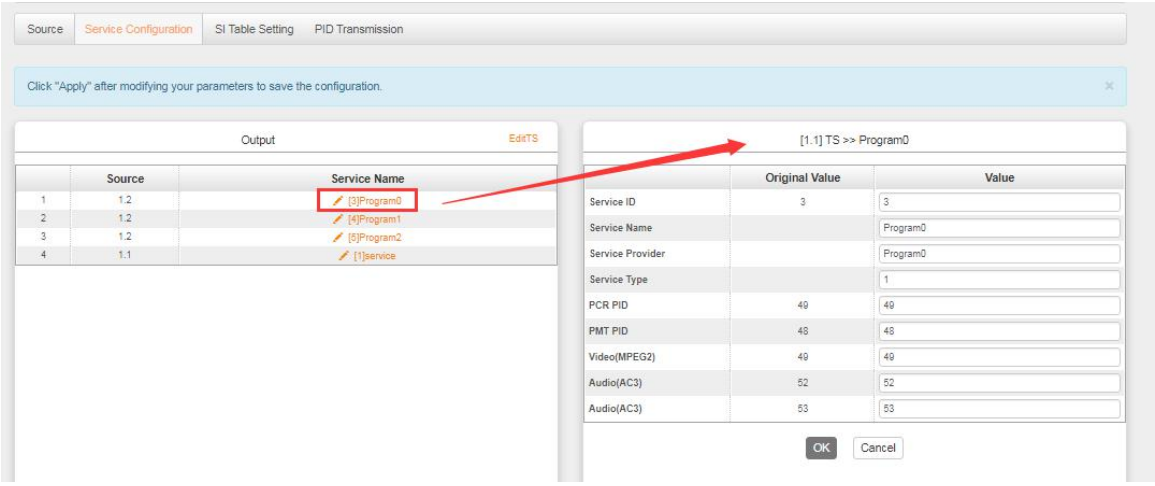
To Output the TS by Bypass mode, you can simply check the ***Bypass*** box of the TS. You can only bypass 1 TS and cannot output other services from different channel sources. Bypass mode allows you to keep the input signal automatically be redirected to Modulation output without re-scanning the input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



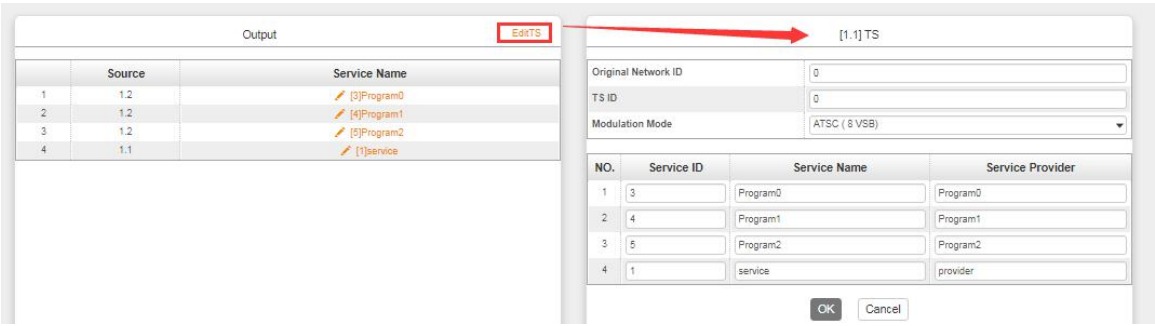
Multiplexing-Service Configuration> After output the services from IP input to Modulation output, you can now edit the Service ID and other PID on the output. Click on the Service Configuration to see this page, it shows the output service on this channel only.



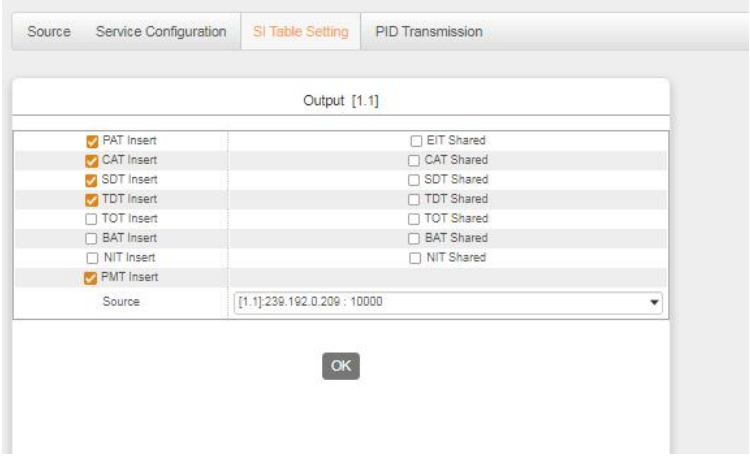
You can click the Name of the service and it will show a table where you can modify some information of the service like Service ID, Service Name, Service Provider, PCR PMT AUDIO and Video PID. Click ***OK*** for the changes to take effect.



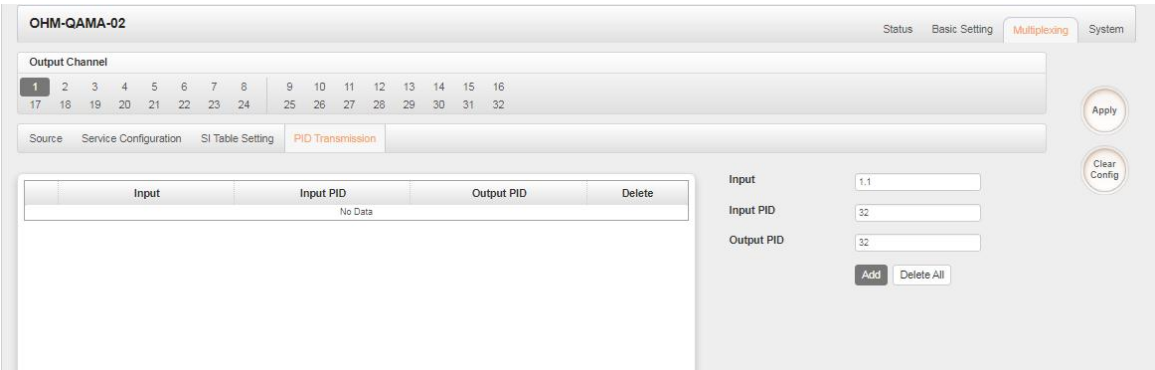
Here you can also edit the Original Network ID,TS ID and Modulation Mode of the Modulation Output.



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.



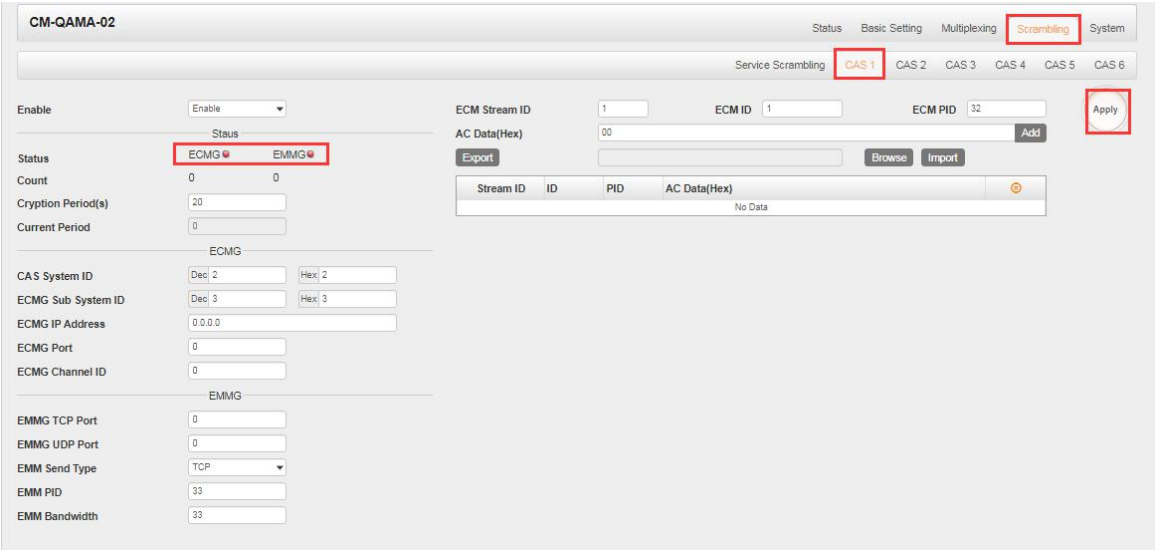
Multiplexing-PID Transmission> This page is to transmit the input PID to Output on the PID required by the system.



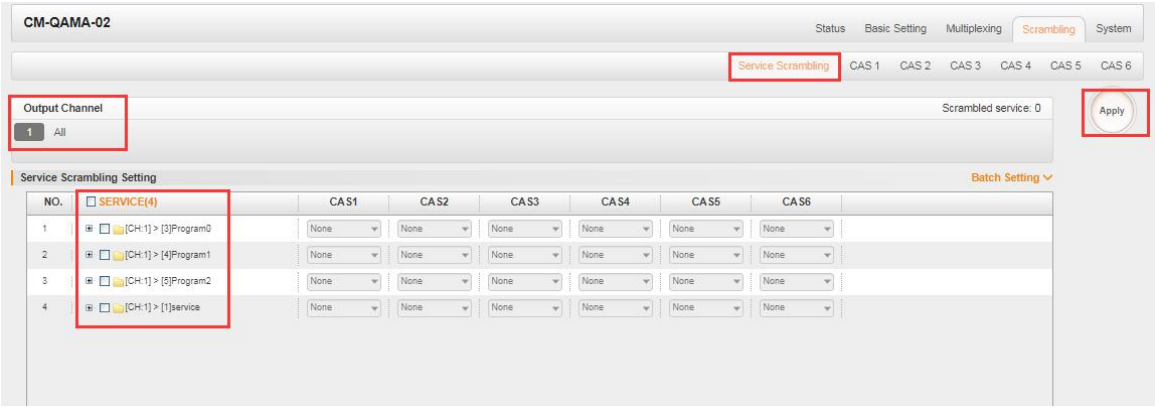
3.3.21.1.4 **Scrambling**

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.

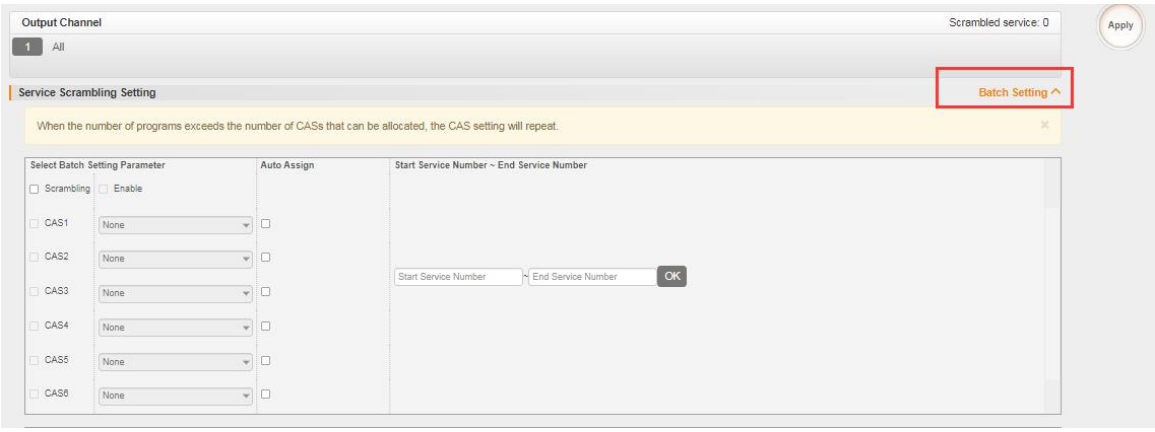
Input the correct CA parameters on this page and make sure the ECMG and EMMG are connected GREEN. Some CA will provide a Super CAS ID with 8 digits. This is a combination of the 4-digit CAS System ID and 4-digit of ECMG Sub System ID.



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.



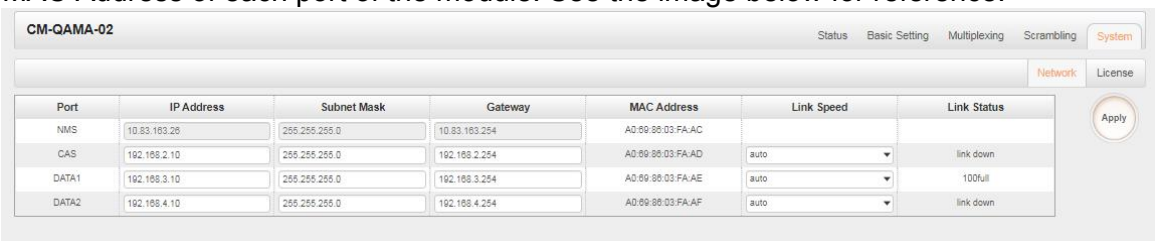
The Modulation Output Channel will only list the enabled channels but not all 32 channels. If the channels and CA ID to be used are arranged in a chronological order, you can use ***Batch Setting*** for faster encryption. This is advisable if you have 10 or more services in a single channel for output.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



3.3.21.1.5 System

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

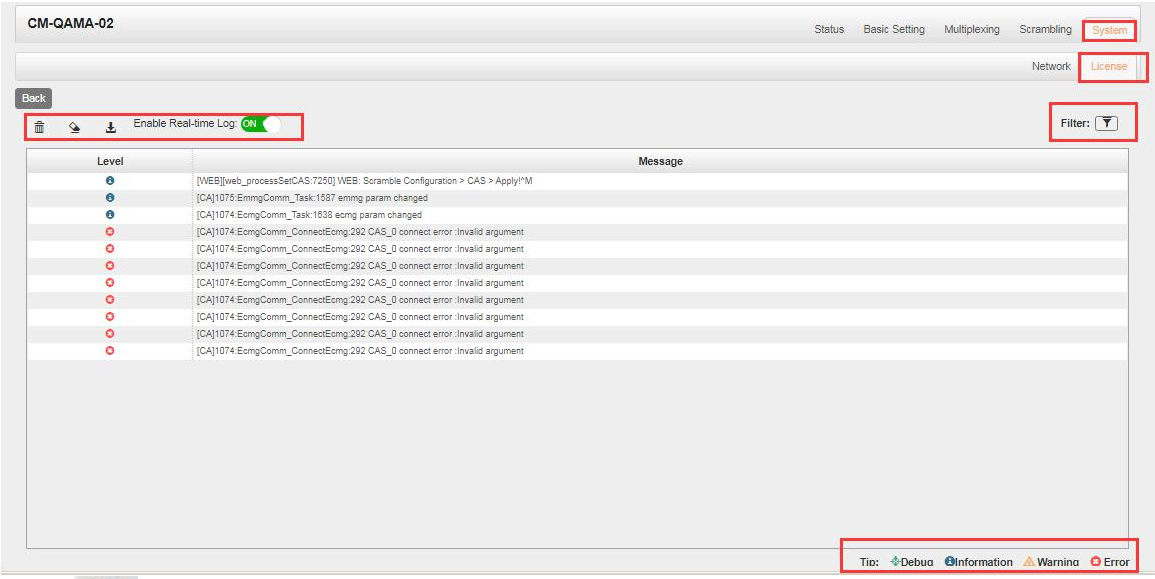
Network> Here you can modify the IP Address, Subnet Mask and Gateway for each port of the module, except for the address of the module itself. This also shows the MAC Address of each port of the module. See the image below for reference.



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.

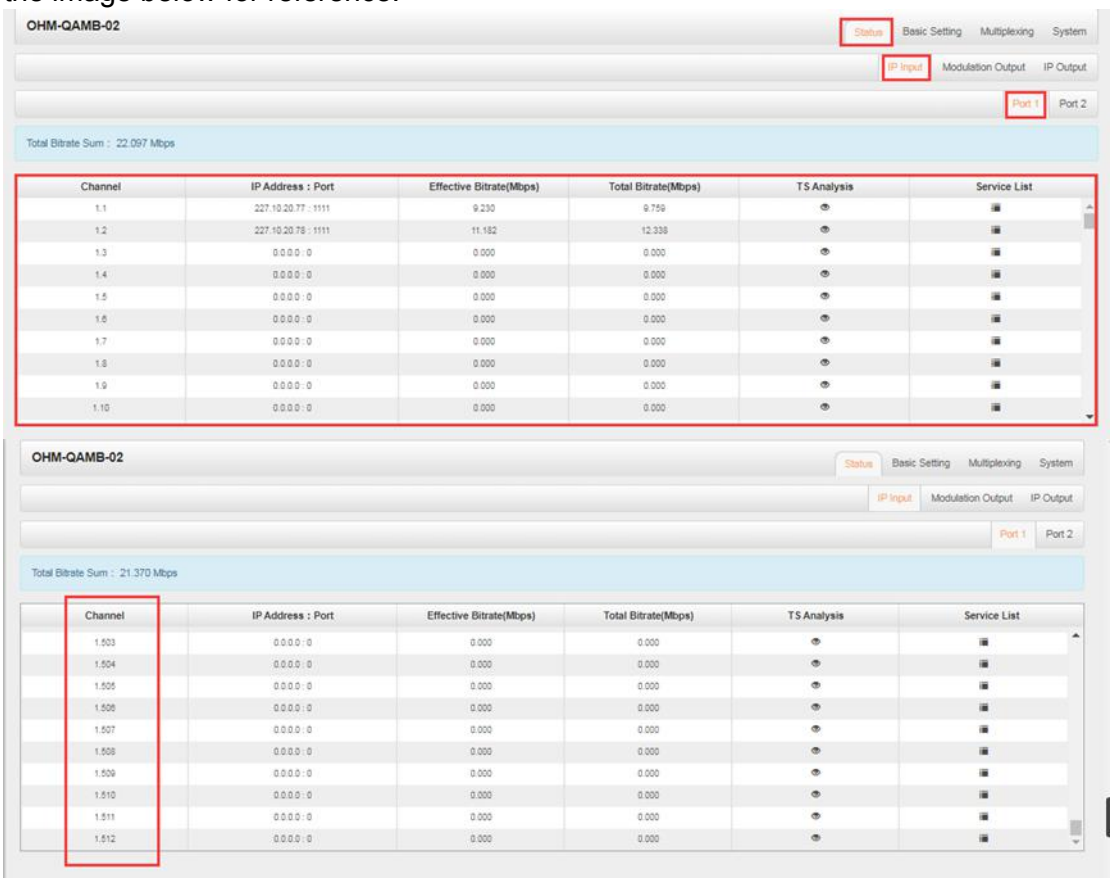
Clicking the filter icon, you can simply select what logs to be included.

3.3.21.2 OHM-QAMB-02

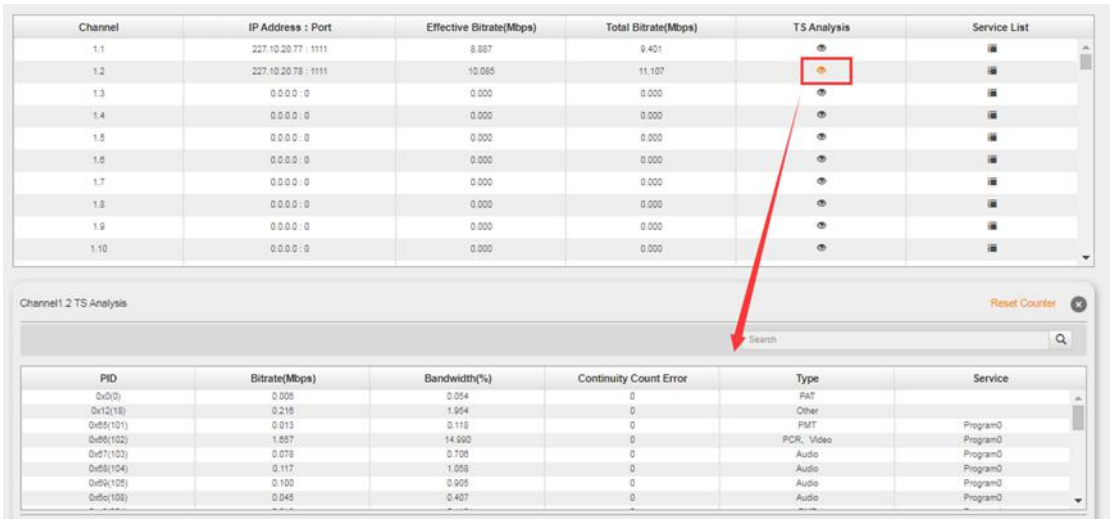
3.3.21.2.1 Module Status

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

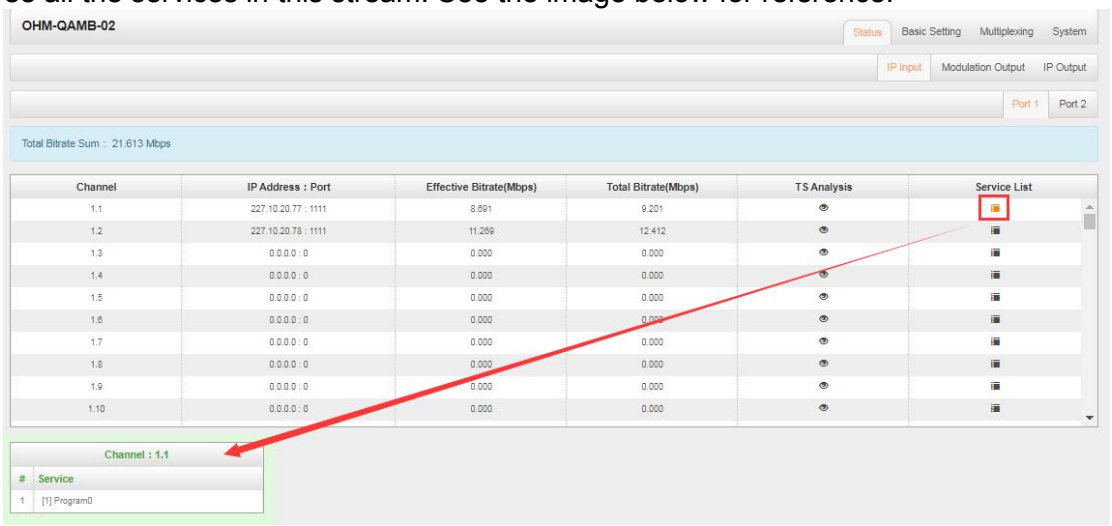
Input > OHM-QAMB-02 has 1024 IP input channels. Those channels are divided into two RJ45 ports, each of which has 512 IP input channels. Clicking ***Port 1***, you can obtain status information of the 512 channels, such as input source IP address and port number, total bitrate (Mbps) and effective bitrate (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.



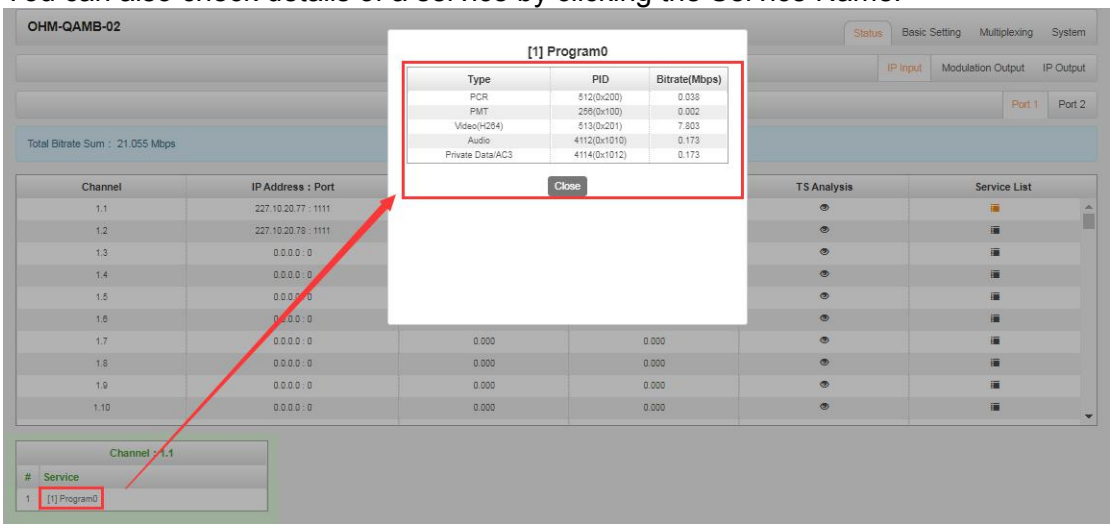
Clicking the eye icon  , you can know all the PIDs of this TS, such as PAT, CAT, PCR, Video Audio and PCR PID. See the image below for reference.



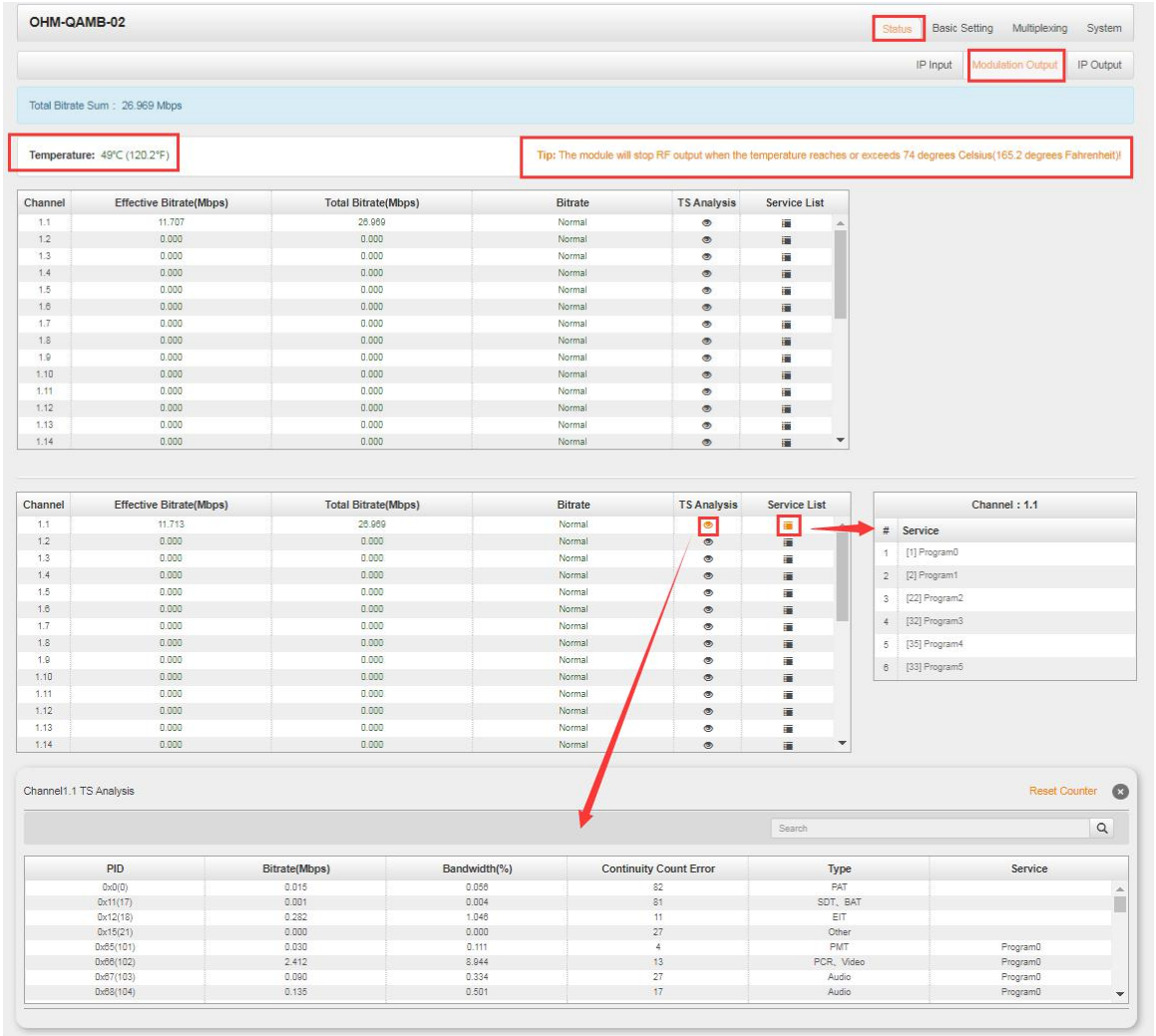
If the input stream has multiple programs, you can click the icon below “Service List” to s ee all the services in this stream. See the image below for reference.



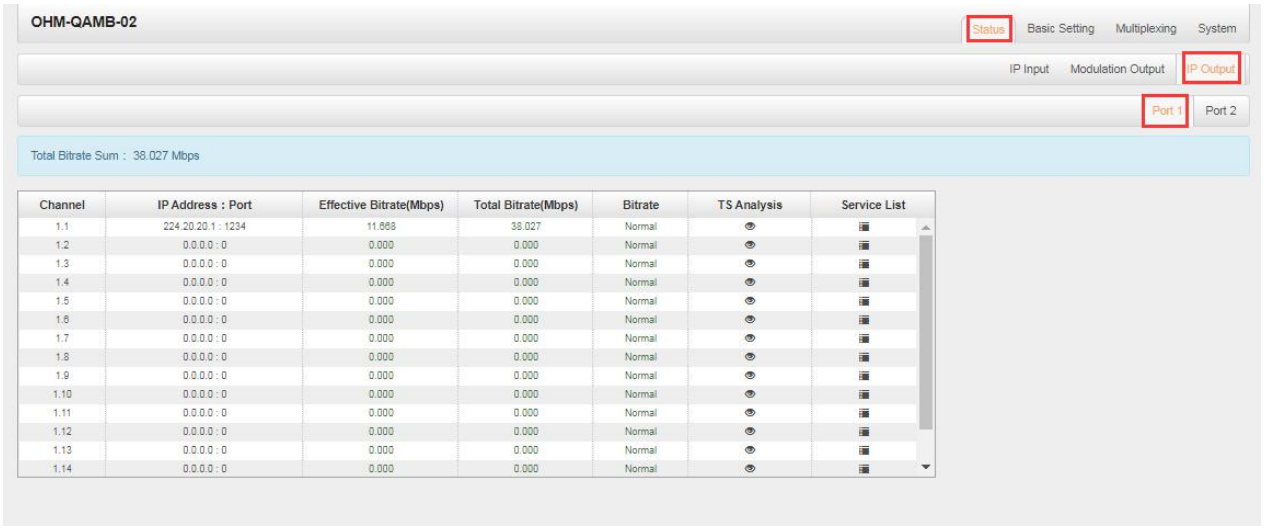
You can also check details of a service by clicking the Service Name.

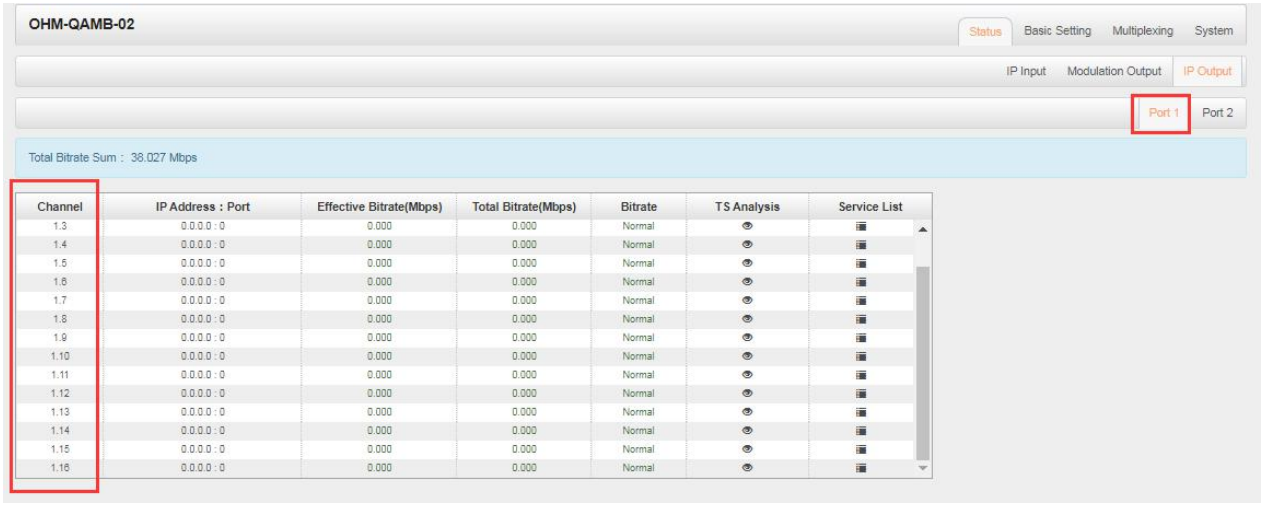


Modulation Output > OHM-QAMB-02 status shows the Modulation output. Just like the IP Input, this shows the total bitrate and effective bitrate of the 16 channels respectively. The TS Analysis and Service List have the same function as in the IP input. The Status also shows the current temperature of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



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.



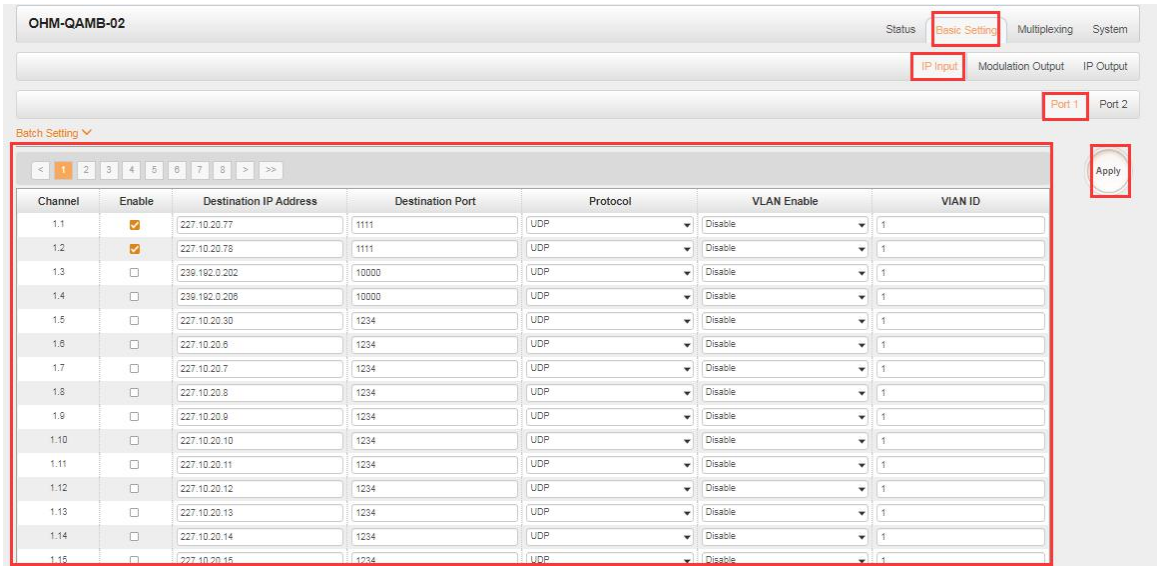


3.3.21.2.2 Module Basic Setting

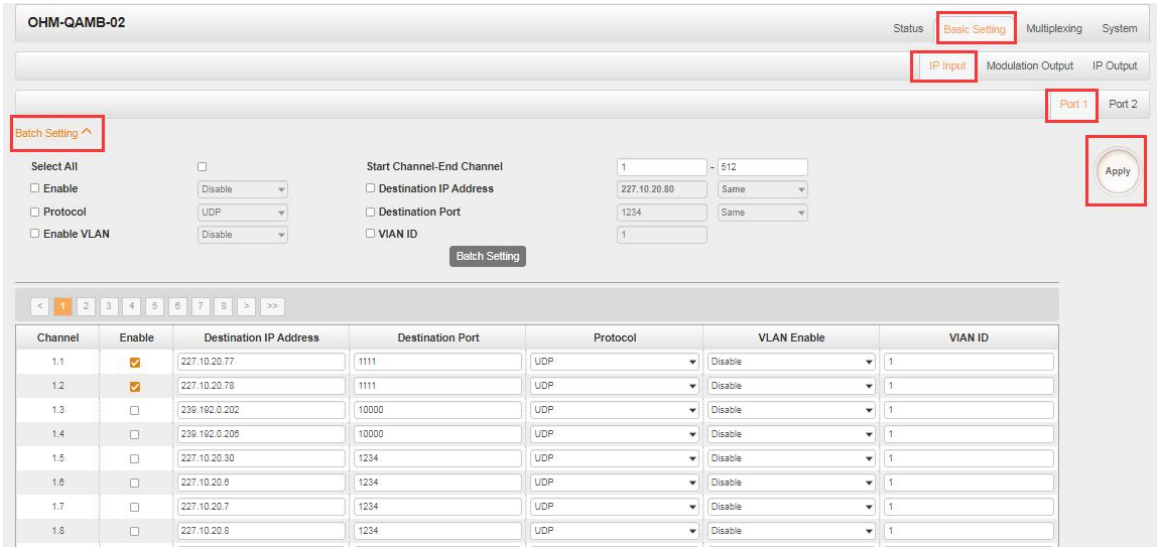
OHM-QAMB-02 Basic Setting is where you can input the parameters for IP Input, Modulation Output and IP Output.

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.

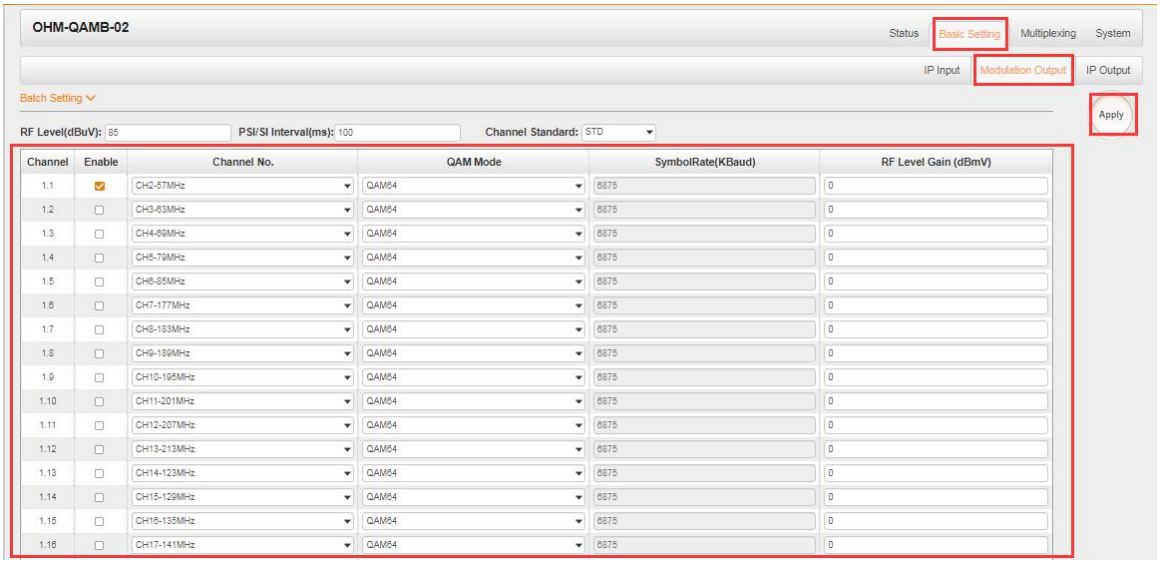
Port 1 and Port 2 have same interface. It shows the 512 channels. Check the box under ***Enable*** to enable a channel. Input the correct Multicast/Unicast IP address and IP port, and select the correct Protocol for the source IP. Once done, click ***Apply*** for the changes to take effect. See the image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



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

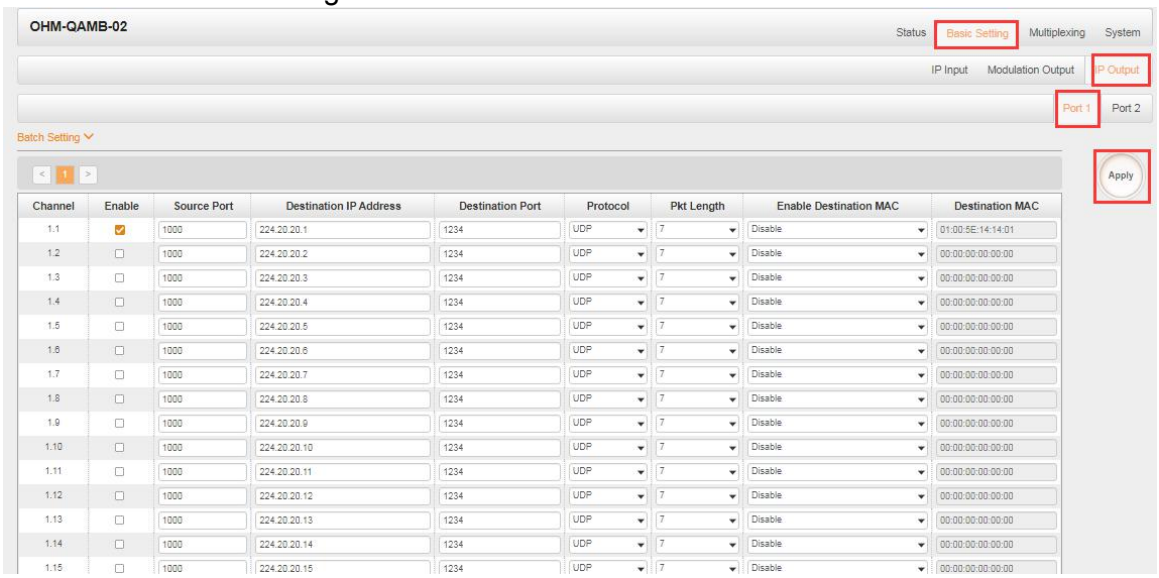


Modulation Output-Parameter Setting> On this page, you can enable channels as you need and input the Channel No., QAM Mode, Symbol Rate (KBaud) and RF Level Gain (dBmV) to have an output.



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.

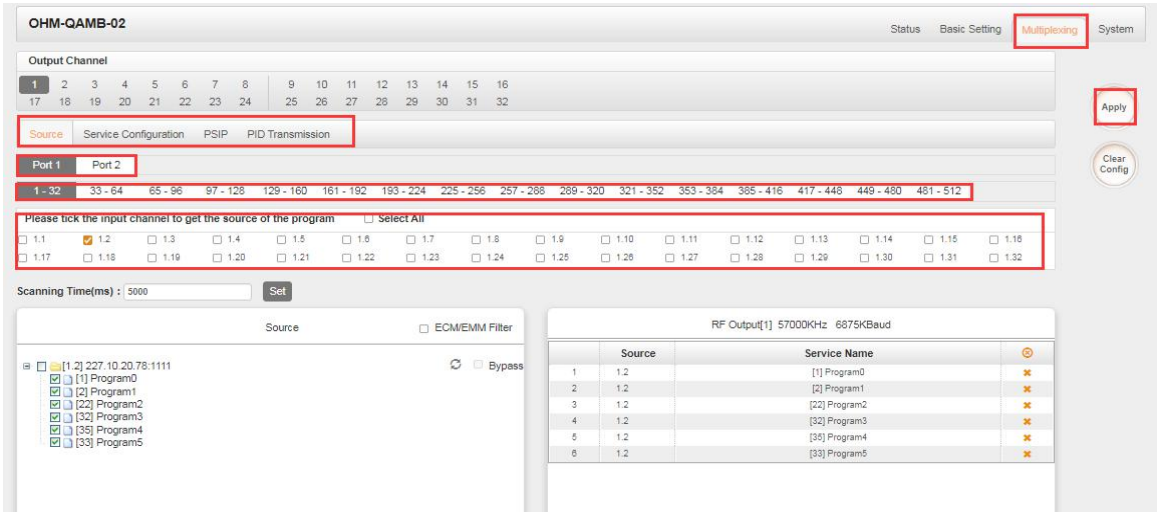
Port 1 shows the 16 channels. Check the box under Enable to enable a channel. Input the correct Multicast/Unicast IP address, IP port and appropriate output bitrate, and select the correct Protocol for the output IP. Once done, click ***Apply*** for the changes to take effect. See the image below for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



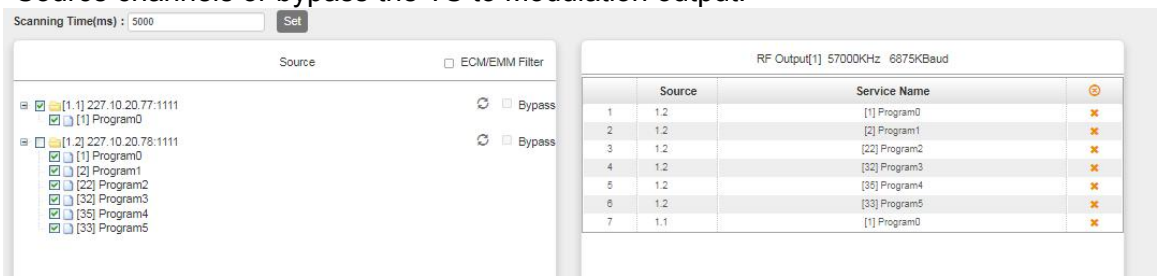
3.3.21.2.3 Multiplexing

Multiplexing has four tabs: ***Source***, ***Service Configuration***, ***PSIP*** and ***PID Transmission***. Here you are 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.

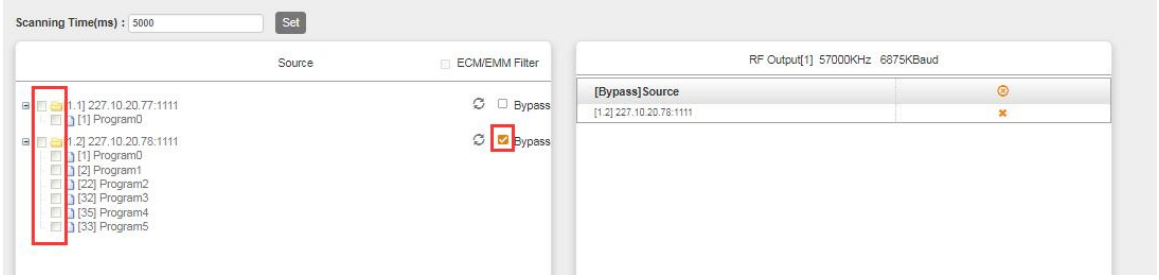
Multiplexing-Source> Source is where you select a source for output. You can chose ***Port 1*** or ***Port 2*** for the source. Each port is divided into 16 groups to complete 512 channels. Select a Port and you can see service lists of Group and Channel as shown below.



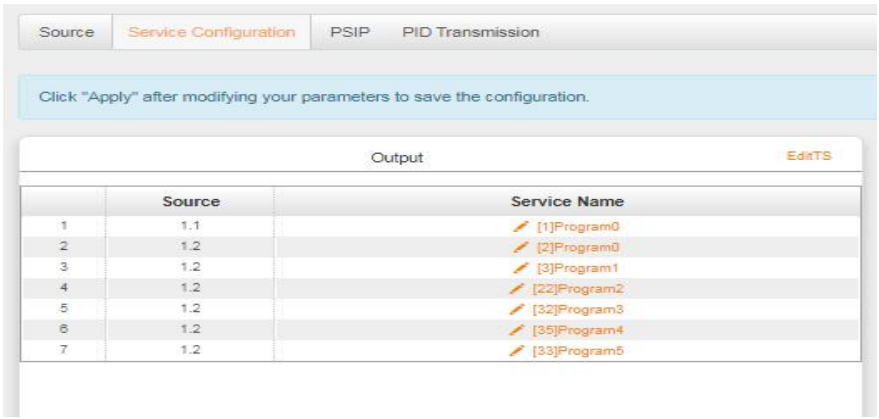
To output the service on the Modulation Output, you can simply put a tick in the box beside the service you want to output. You can output multiple Service from different Source channels or bypass the TS to Modulation output.



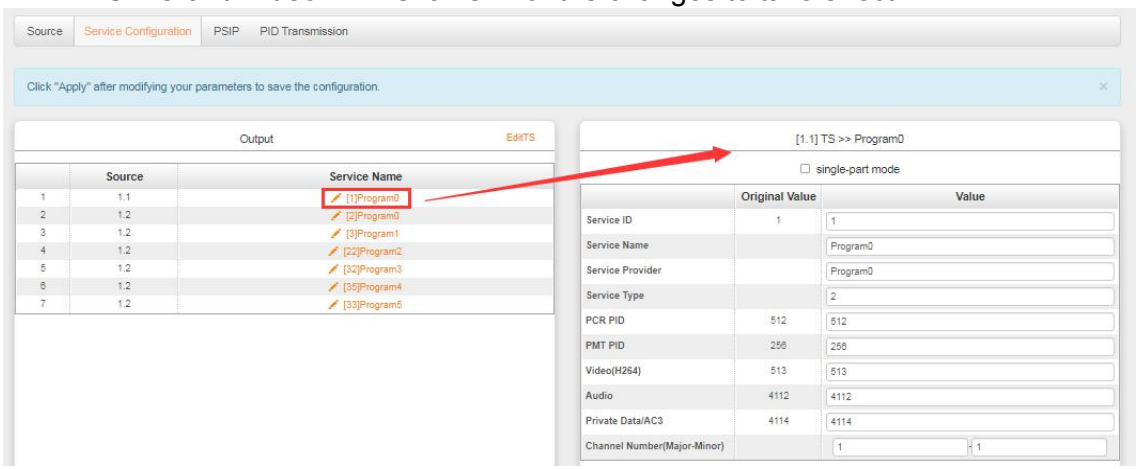
To Output the TS by Bypass mode, you can simply check the ***Bypass*** box of the TS. You can only bypass 1 TS and cannot output other services from different channel sources. Bypass mode allows you to keep the input signal automatically be redirected to Modulation output without re-scanning the input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



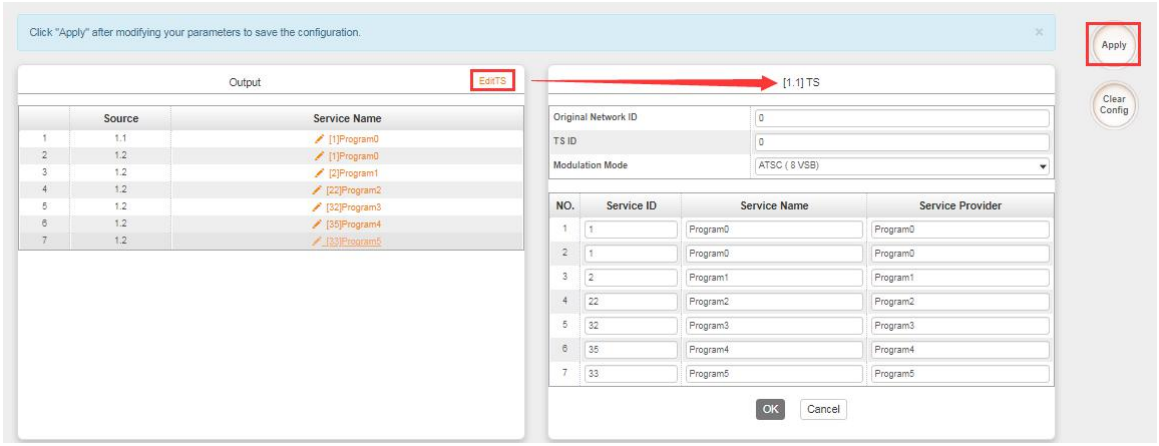
Multiplexing-Service Configuration> After output the services from IP input to Modulation output, you can now edit the Service ID and other PID on the output. Click on the Service Configuration to see this page, it shows the output service on this channel only.



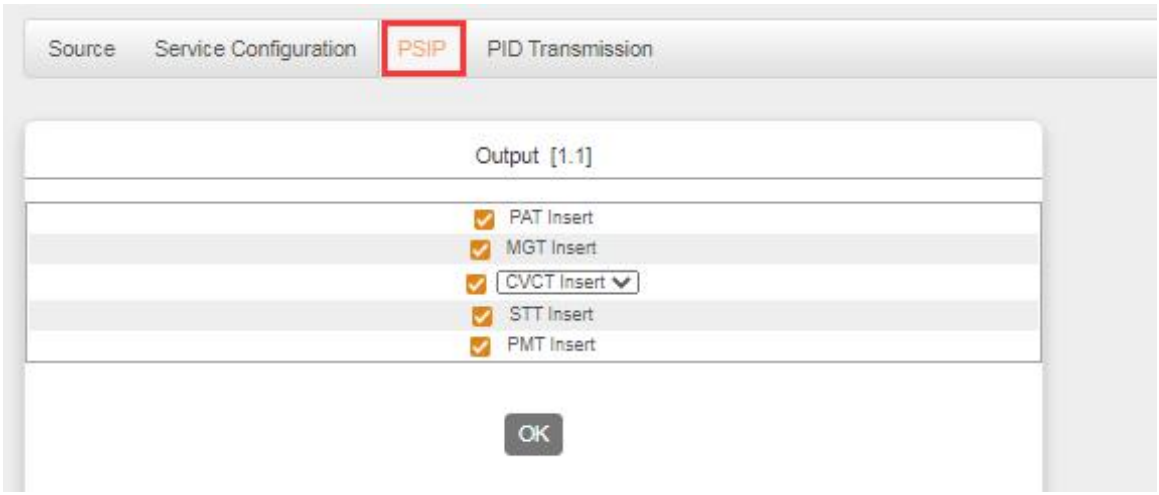
You can click the Name of the service and it will show a table where you can modify some information of the service like Service ID, Service Name, Service Provider, PCR PMT AUDIO and Video PID. Click ***OK*** for the changes to take effect.



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



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

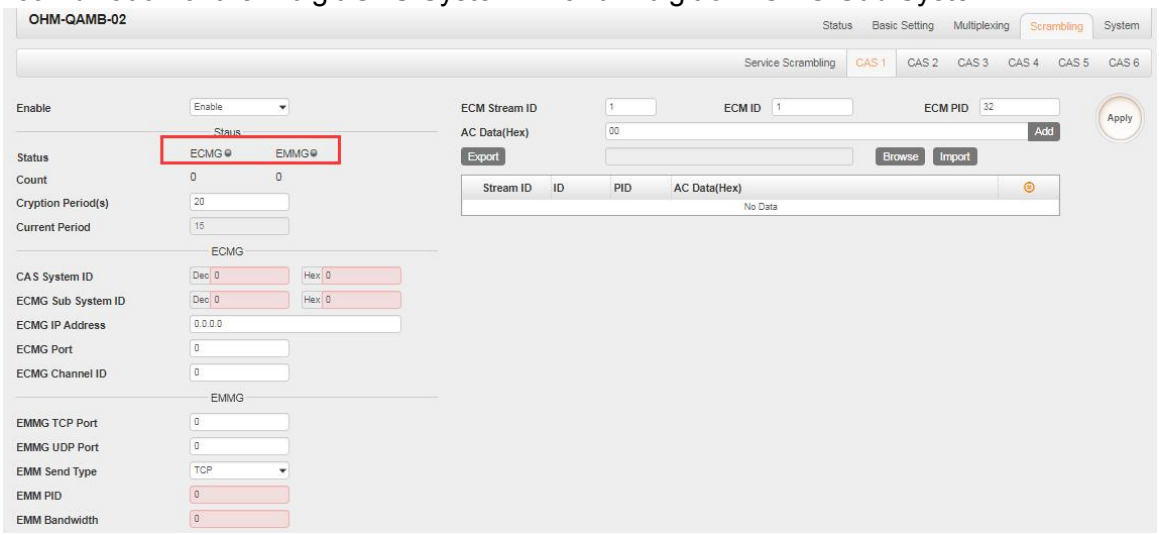


Multiplexing-PID Transmission> This page is to transmit the input PID to Output on the PID required by the system.

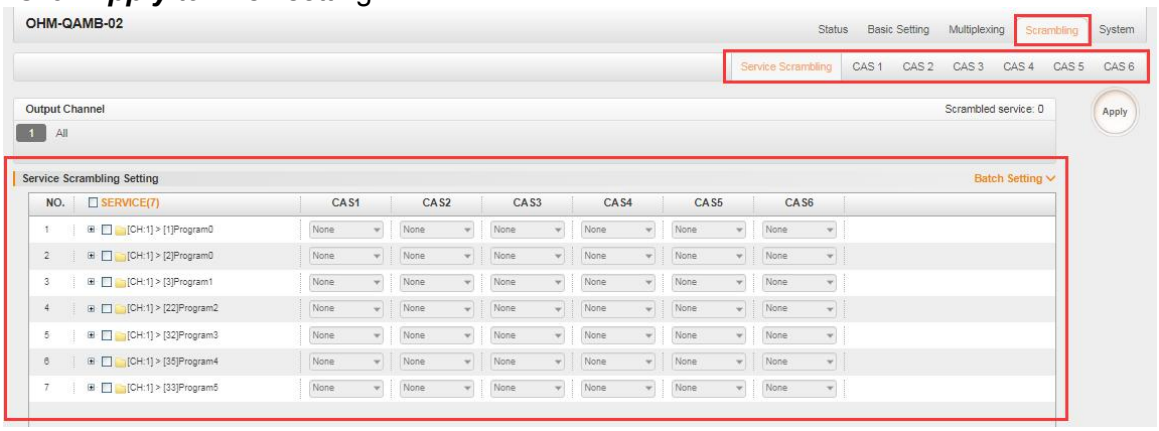
3.3.21.2.4 Scrambling

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.

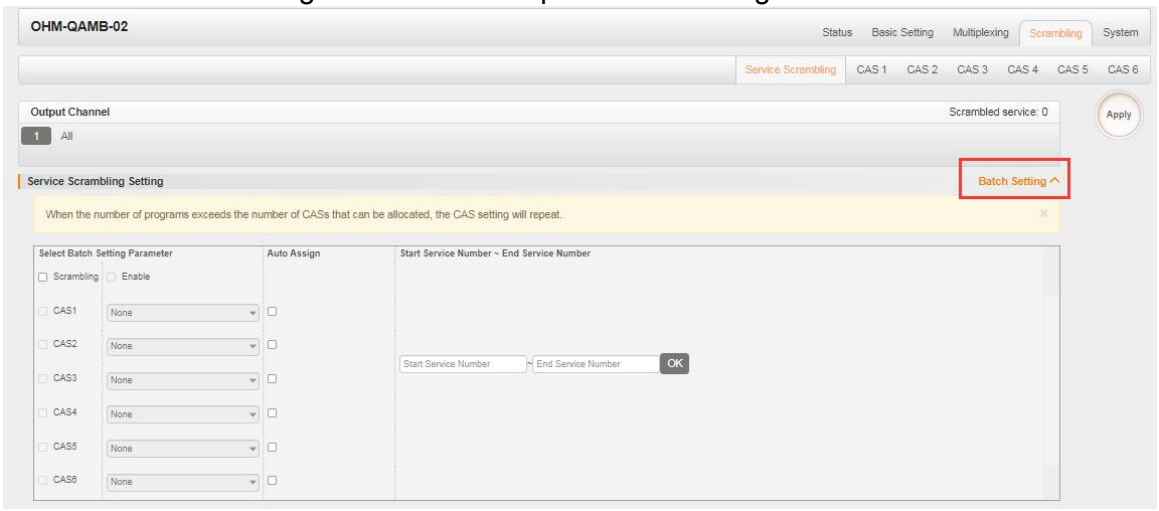
Input the correct CA parameters on this page and make sure the ECMG and EMMG are connected GREEN. Some CA will provide a Super CAS ID with 8 digits. This is a combination of the 4-digit CAS System ID and 4-digit of ECMG Sub System ID.



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.



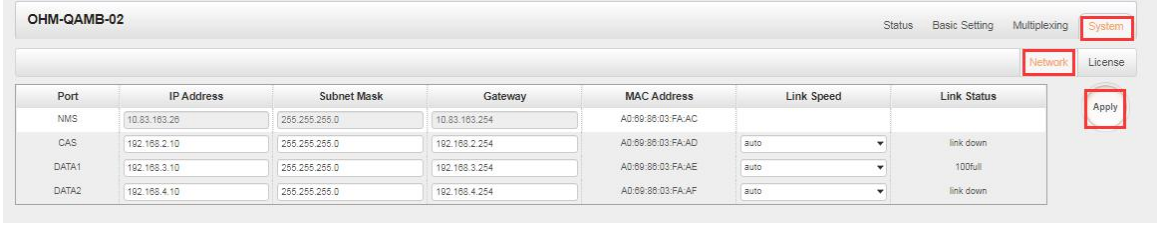
The Modulation Output Channel will only list the enabled channels but not all 16 channels. If the channels and CA ID to be used are arranged in a chronological order, you can use ***Batch Setting*** for faster encryption. This is advisable if you have 10 or more services in a single channel for output.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



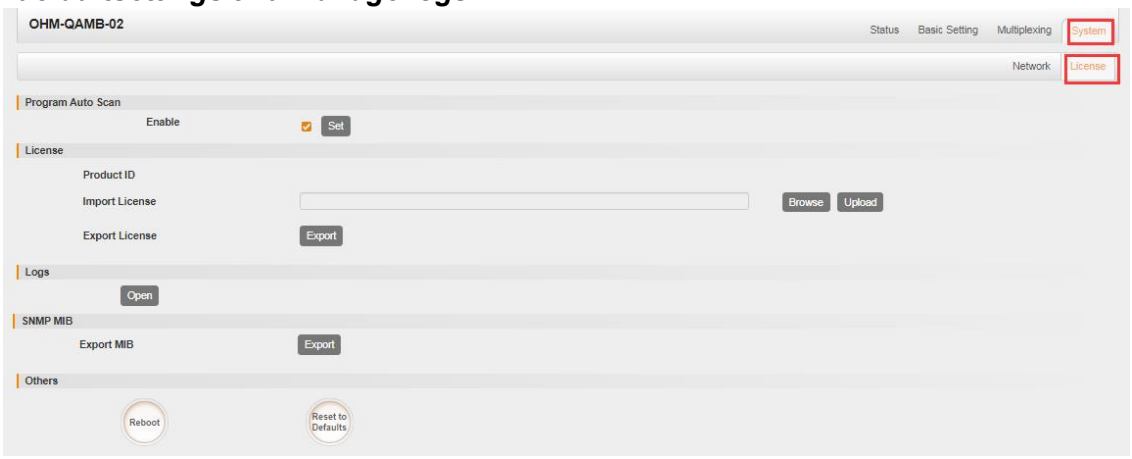
3.3.21.2.5 System

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.

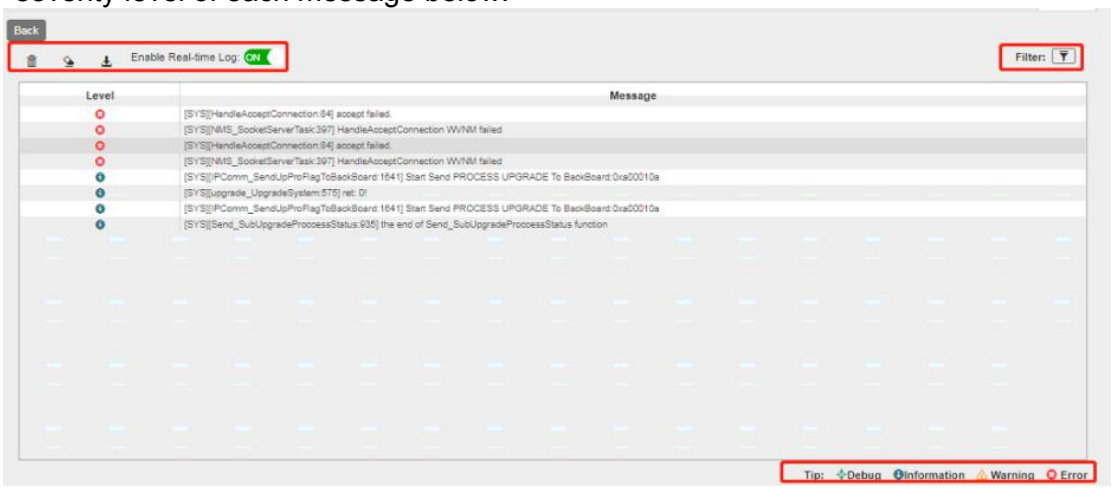


License> Here you can import/export ***license***, reboot module, ***restore factory defaultsettings*** and ***manage logs***.



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.

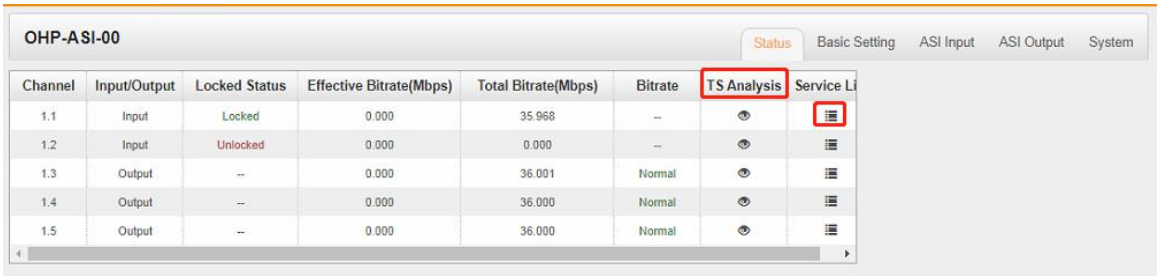
Function Modules

3.3.22 OHP-ASI

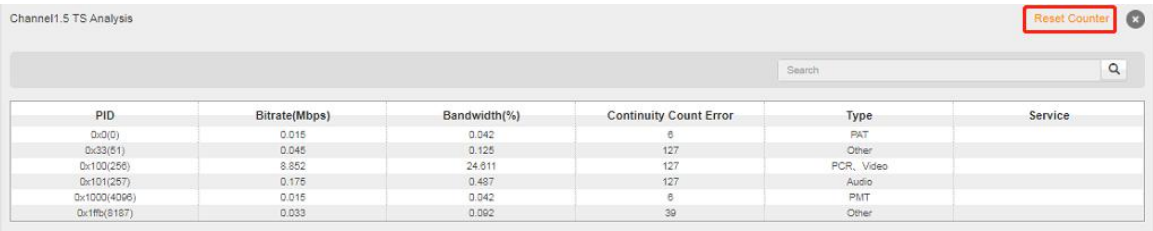
CP-ASI-00 module is an ASI module that has 5 bidirectional ASI ports. Each port can be defined as either ASI input port or ASI output port. It supports different TS stream formats of 188/204 bytes packet length and Byte/Packet stream mode with up to 150Mbps TS stream bitrate.

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

3.3.23.1 Module Status

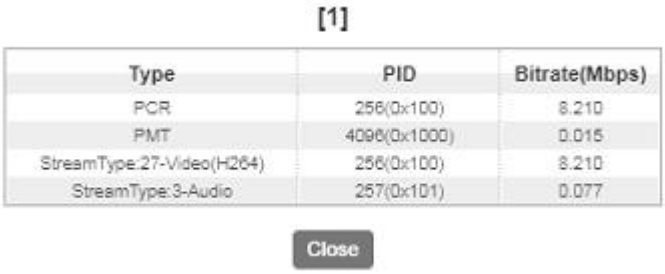


Click ***TS Analysis*** of each channel, you can see TS bitrate Analysis. Click ***Reset Counter*** to reset the Continuity Count Error counter. In the Search bar, you can input key words or numbers, such as PIDs, Type or Service, for a quick search.

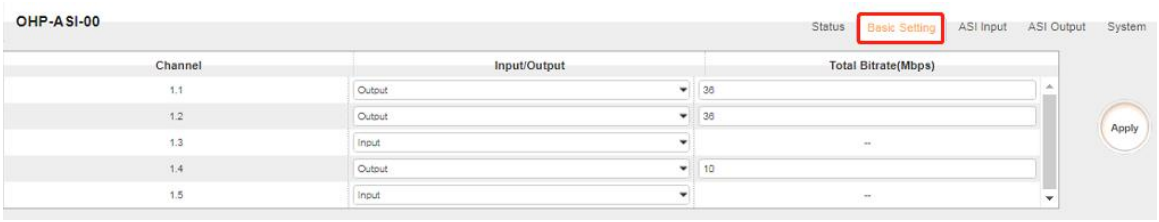


Click the icon ☰ to check service information of all the inputs.

You can check program details by clicking the program item.



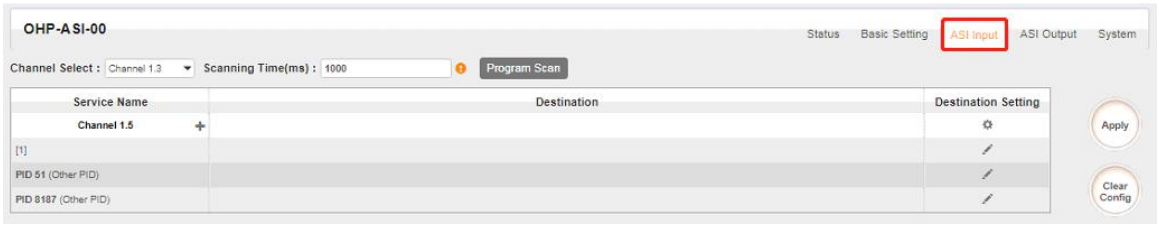
3.3.23.2 Module Setting



Name	Range
Total Bitrate (Mbps)	4.1 - 180

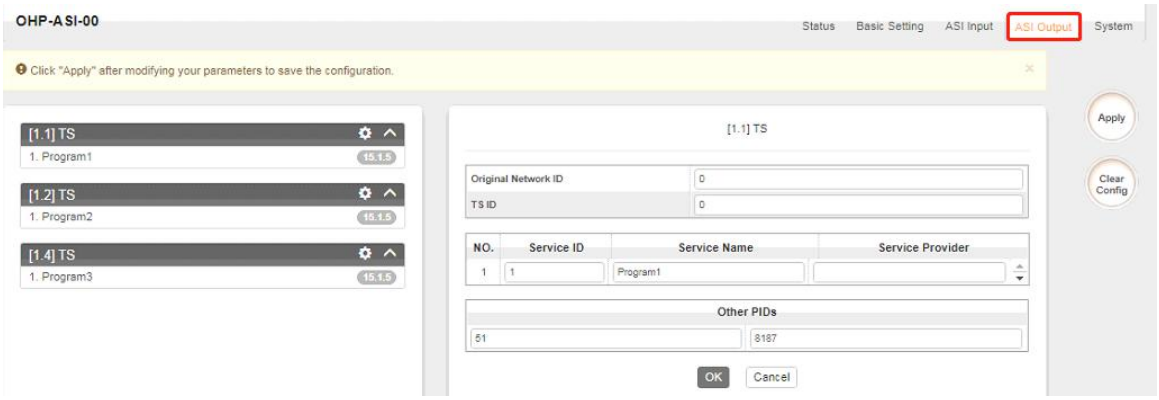
Click the ***Apply*** button on the right side to make the change take effect.

3.3.23.3 ASI Input

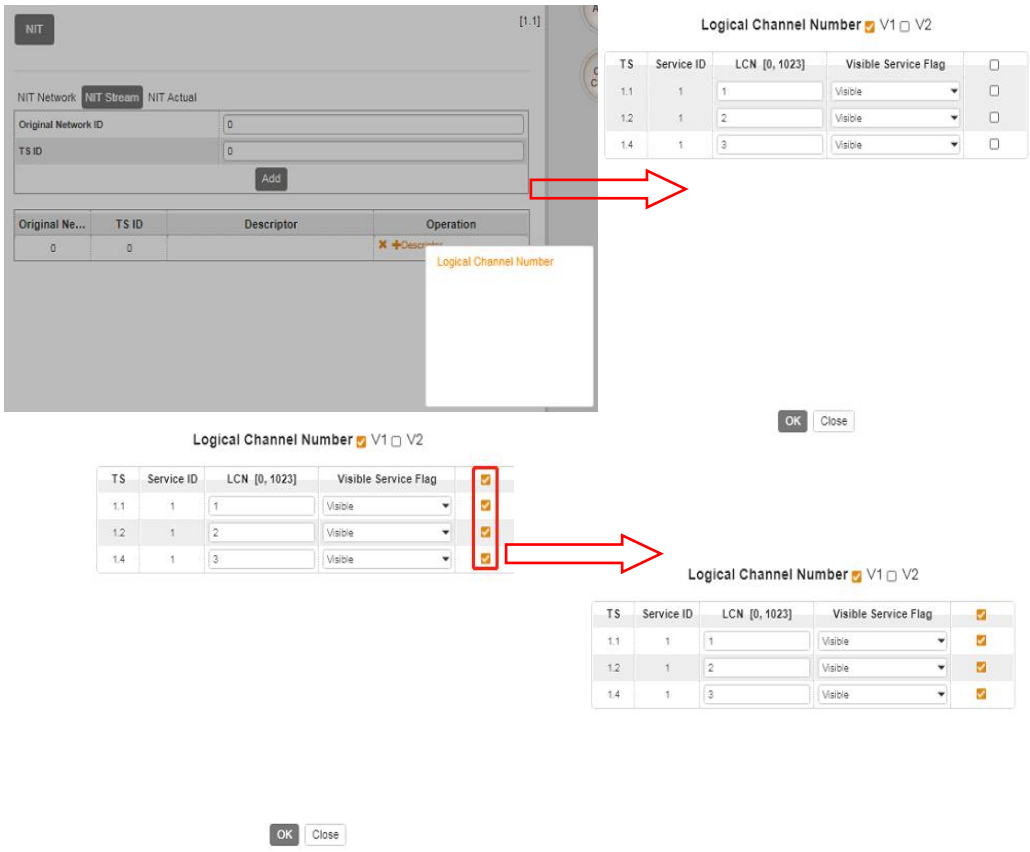


You can route a whole stream or a service(s) from the input channel toward the available output channels (IP or RF). Two types of routing are available.
To use **Bypass mode**
In this mode, you can route a whole input transport stream towards an IP or RF output which will be occupied only by this stream. 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.

3.3.23.4 ASI Output

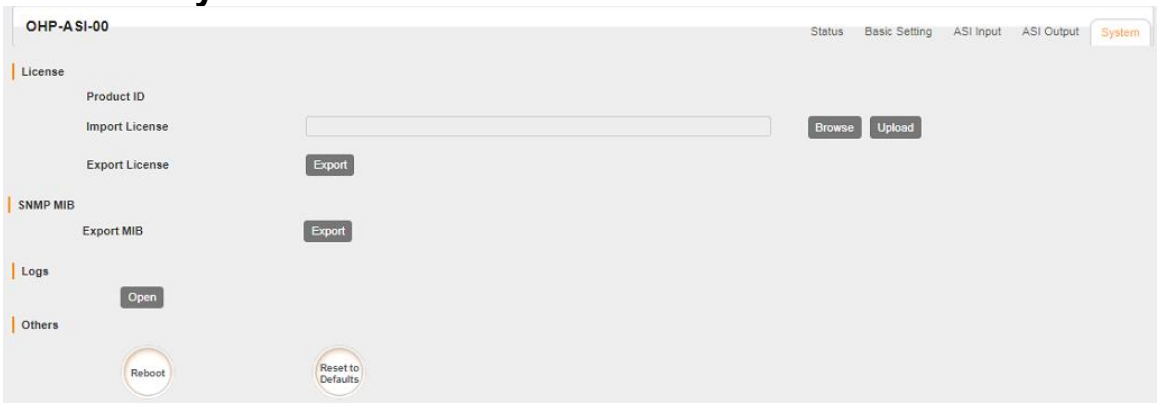


- TS setting: Please refer to IP Output service configuration on baseboard IP output.
- LCN setting: You need to add NIT streams of all frequencies to the base TS (frequency), which is for your STB to automatically search and identify all the TS (frequencies) LCN information.
  - Check or reset Original 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.



- 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.

3.3.23.5 System



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

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

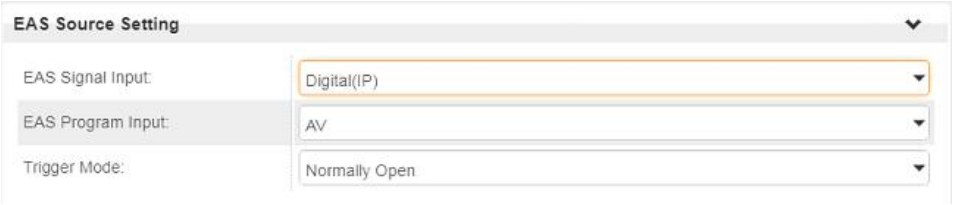
3.3.23 OHP-EAS

The OHP-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.

3.3.24.1 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.



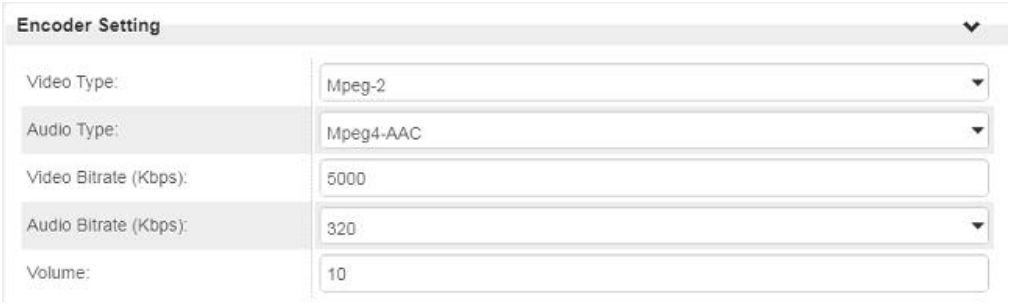
EAS Signal Input is where you select how the module senses the trigger:

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

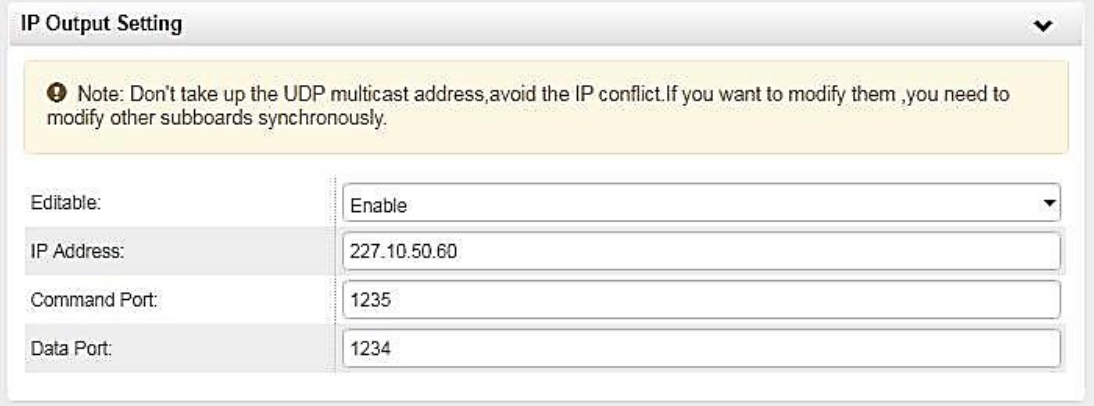
EAS Program Input. Here you can select where the content originates from.

- 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 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 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 Settings. You can 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			
EAS Signal Input	Digital (IP) Analogue (Dry Contact)	**EAS Program Input**	ASI AV
Trigger Mode	Normally Open Normally Closed		
Encoder Setting			
Video Type	H.264, MPEG-2	Audio Type	AC3, Mpeg-1 Layer 2

			Mpeg2-AAC, Mpeg4-AAC
Video Bit rate (Kbps)	1500~20000	Audio Bitrate (Kbps)	128，192，256，384
Volume	-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

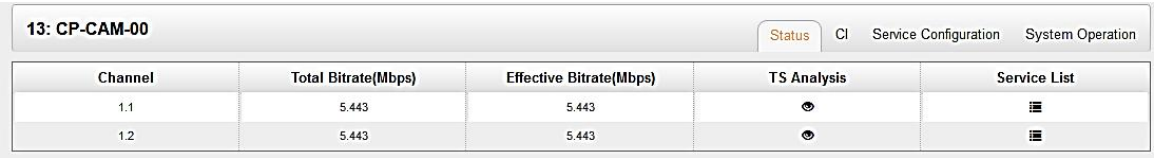
Version Info	
Firmware Version:	V0.2.0
Software Version:	V0.0.32
Hardware Version:	V0.0.0

3.3.24 OHP-CAM-00

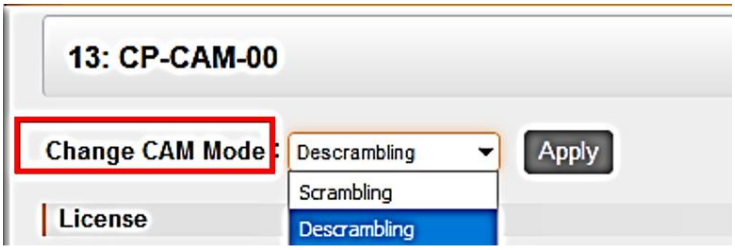
OHP-CAM-00 is used to decrypt and encrypt services. It has 2 independent CI card slots that are compatible with mainstream CAM cards but support only Xcrypt CAM CAS for encryption and supports mainstream CAS decryption.

3.3.25.1 Module Status

Click the name of OHP-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 OHR-DVBC-00 on page 30 to 35 for reference.

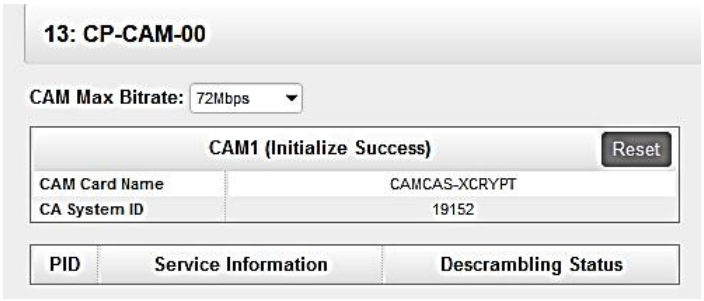


Note that this module has scrambling and descrambling functions. To choose which function you want to use, go to System Operation and select the CAM mode.



3.3.25.2 CI

You can output the received encrypted services in DVBS2, DVBC, ISDT, etc. to OHP-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.



3.3.25.2 Service Configuration

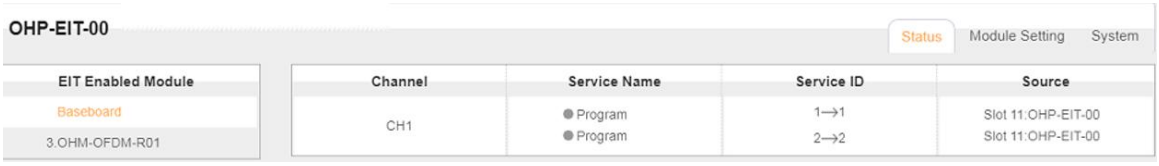
For the Service Configuration, you can select Descrambling or No Descrambling for a service before output. To configure the service to output, please refer to service configuration procedures of other modules.
*You need to click ***Apply*** button after you configure service to Descrambling, otherwise the descrambling configuration will not be saved.

3.3.25 OHP-EIT-00

OHP-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.

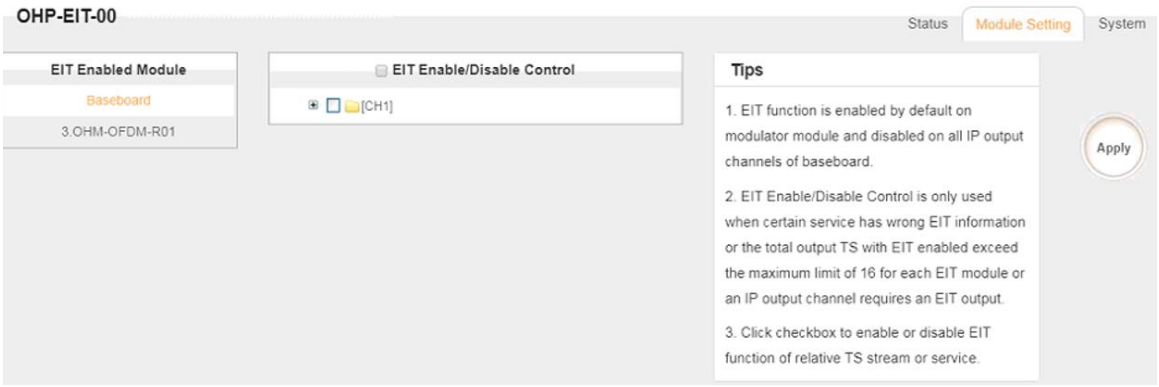
3.3.26.1 Module Status

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



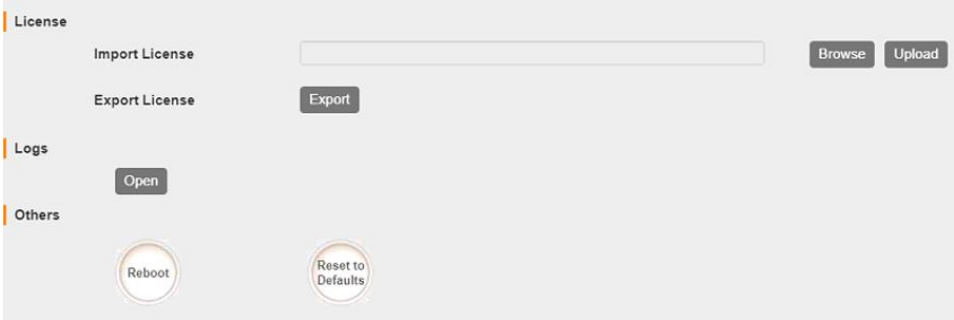
3.3.26.2 Module Setting

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



3.3.26.3 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.



3.3.26 OHP-IP-00

CP2-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.

3.3.27.1 Module Status

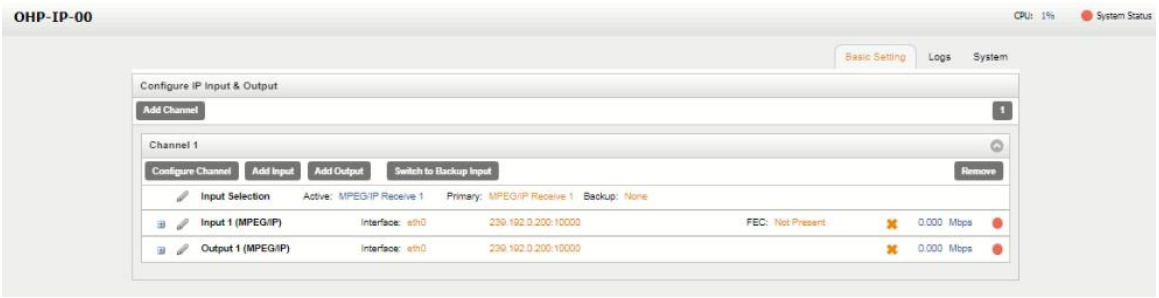
The CPU status (CPU: 1%) is shown as a percentage. It reflects the amount of processing capacity that is currently being used.

The System Status (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.

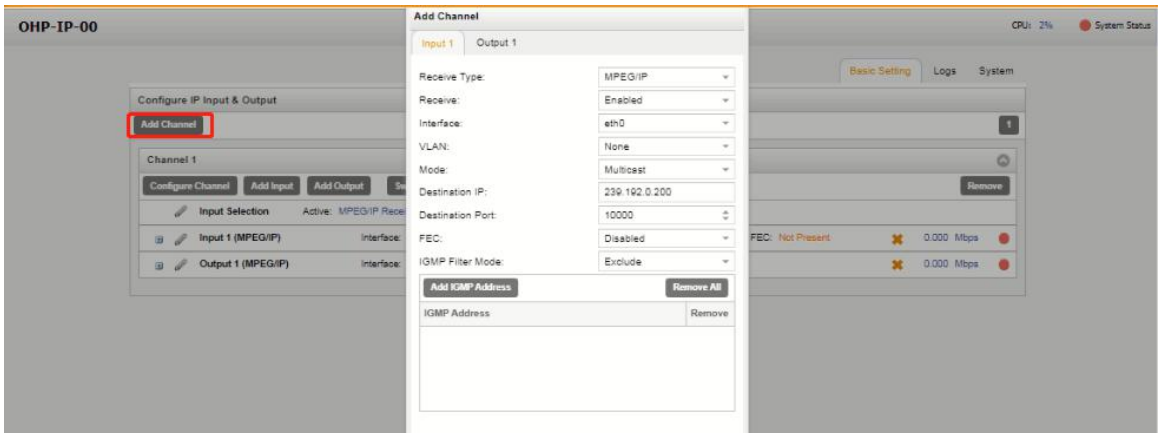
3.3.27.2 Module Settings

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). 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.

Universal Input Settings

*Note: when the "Receive" option is enabled for a given protocol (MPEG/IP, SRT, Zixi, HLS, Seamless RTP), 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".

MPEG/IP Receive Settings

Settings	Range	Description
Mode	Multicast 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.
Destination IP	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.
Destination Port	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.

FEC	Enabled Disabled	Sets the port to accept FEC on the incoming MPEG/IP stream
IGMP Filter Mode	Exclude Include	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.

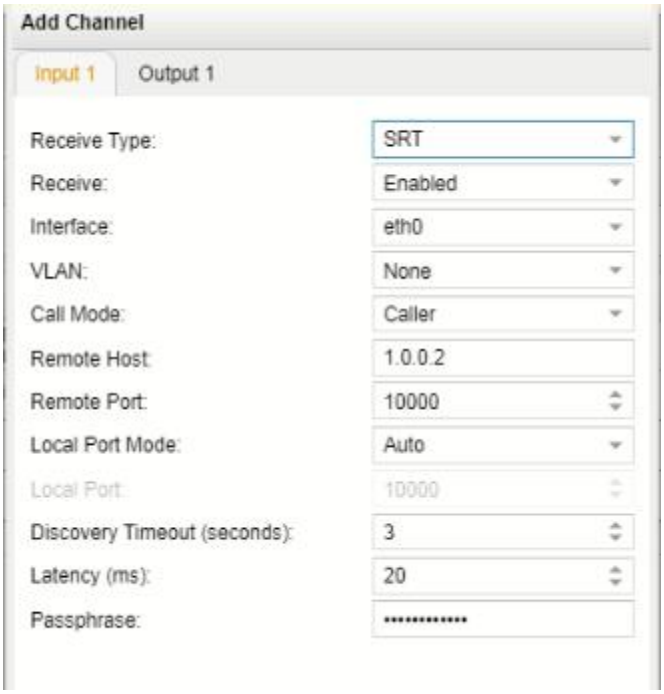
Click the icon by the MPEG/IP input to view information about the incoming stream. Clicking the icon will hide the IP statistics.

MPEG/IP Receive Statistics

The Reset Counters 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”.

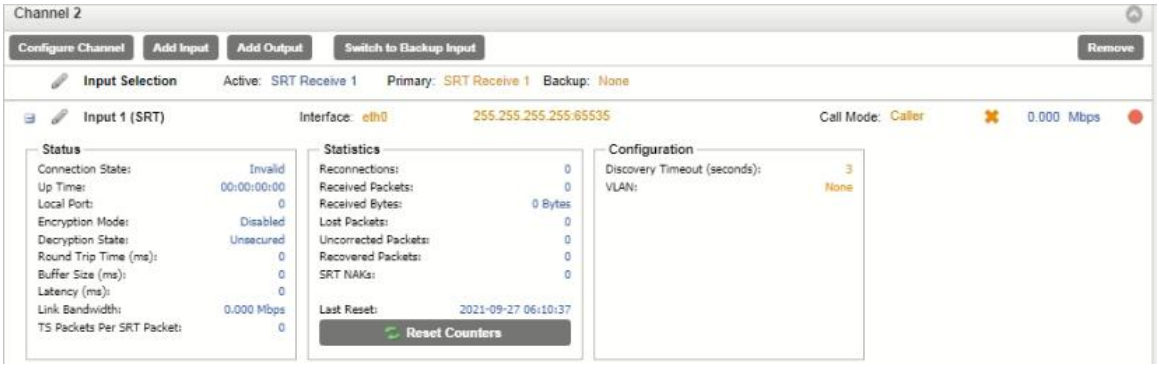


SRT Receive Settings

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

Passphrase	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.



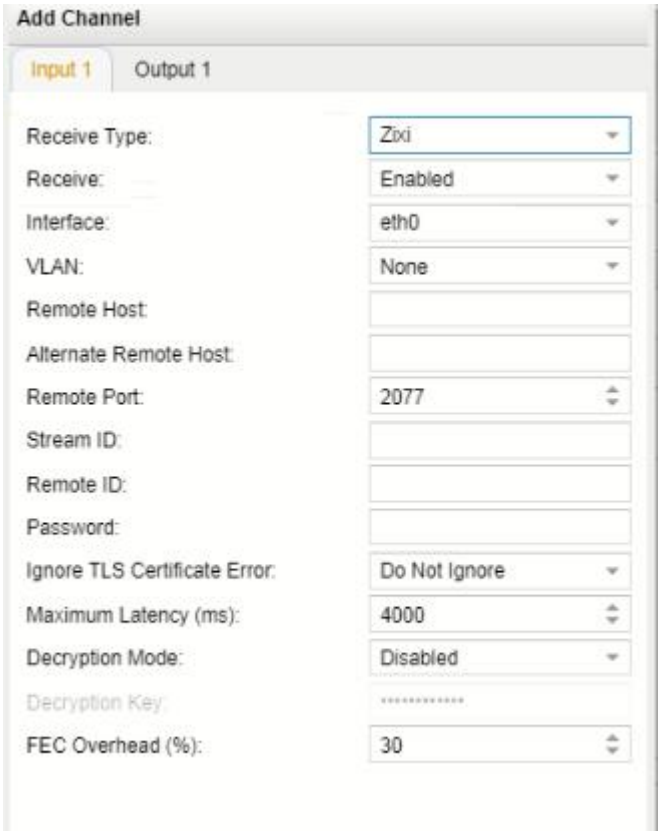
SRT Receive Statistics

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”.

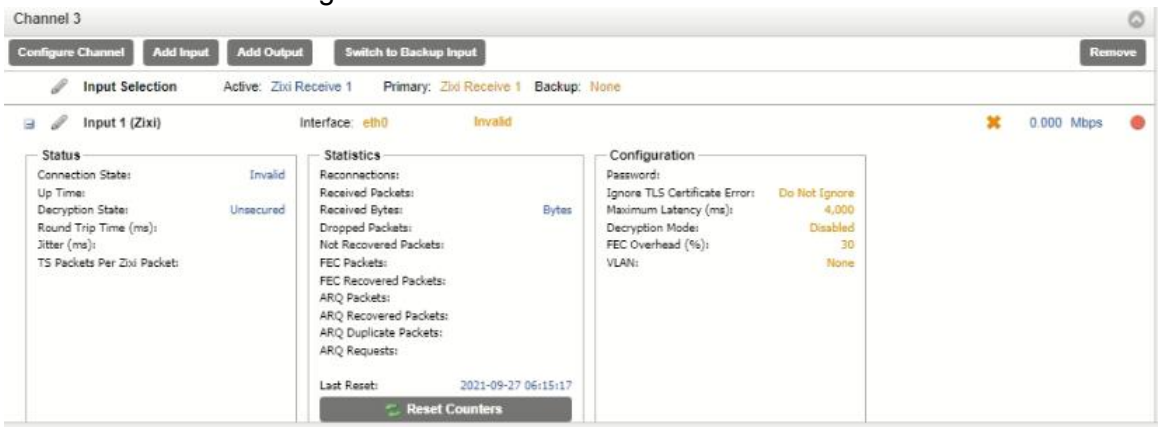


Zixi Receive Settings

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

		milliseconds)
Decryption Mode	Disabled AES-128 AES-192 AES-256 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
Decryption Key	User entry	Provides the key to allow signal processing if decryption is to be done
FEC Overhead (%)	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.

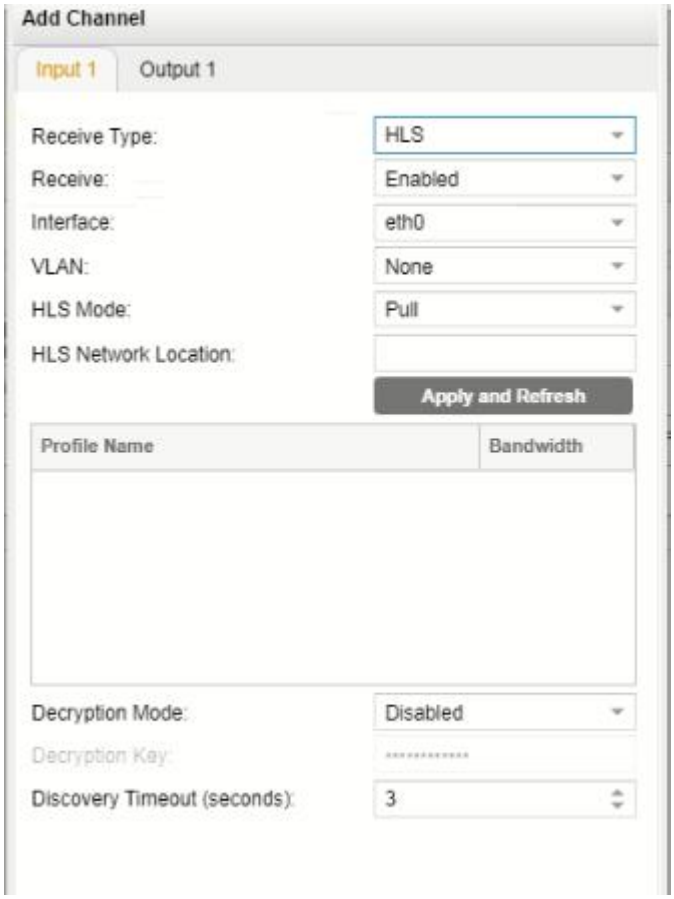


Zixi Receive Statistics

The Reset Counters 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”



HLS Receive Settings

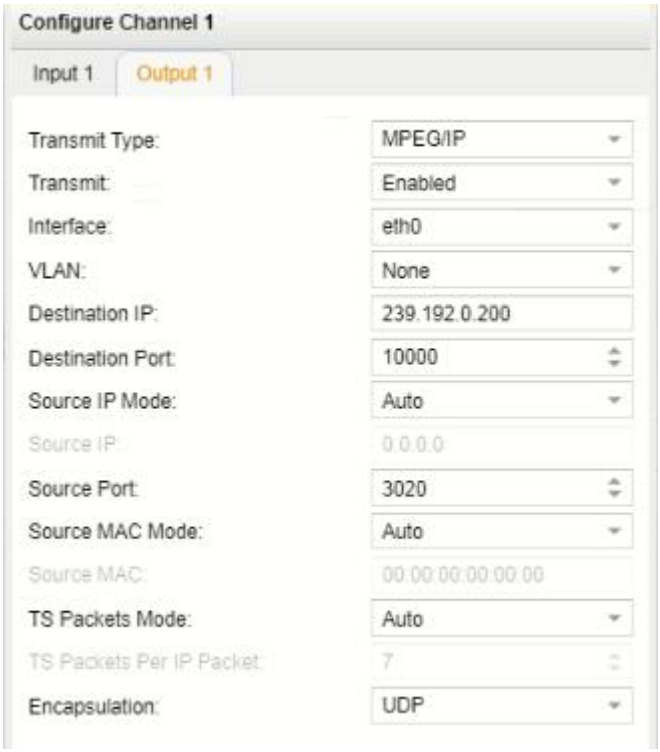
Settings	Range	Description
HLS Mode	Push Pull	Determines if the HLS receives through a local or network location
HLS Network Location	User Entry	Defines address of the HLS stream to be received
Profile / Bandwidth	User Selected	After entering an HLS network location and clicking “Apply and Refresh”, a list of available profiles will be displayed
Decryption Mode	Disabled AES 128	Defines if a decryption of the received signal is needed, AES 128 standard
Decryption Key	User Entry	Provides the key to allow signal processing if decryption is to be done
Discovery Timeout (seconds)	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”.

MPEG/IP Output Settings

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



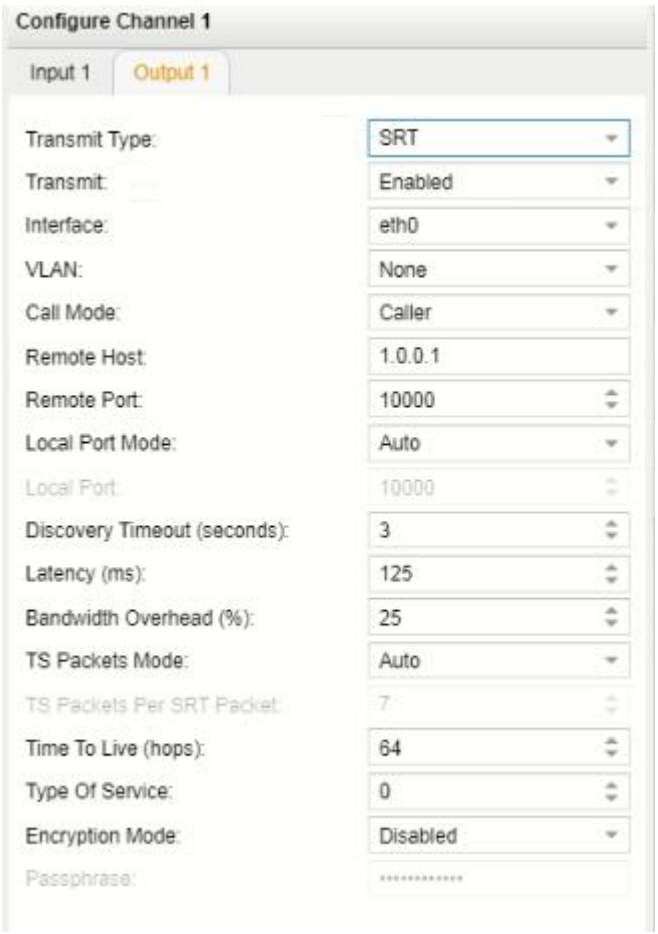
MPEG/IP Output Settings

Settings	Range	Description
Destination IP	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
Destination Port	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
Source IP Mode	Auto Manual	When set to *Auto*, the source IP address on the output stream will match the corresponding local interface. When set to *Manual*, a user entered address can be assigned to the output stream
Source IP	xxx.xxx.xxx.xxx	Defines the Source IP address to be assigned to the output stream
Source Port	0 – 65535	Defines the source IP port to be assigned to

		the output stream
Source MAC Mode	Auto Manual	When set to *Auto*, the source MAC address of the output stream will match the corresponding local interface. When set to *Manual*, a user entered address can be assigned to the output stream
Source MAC	xx:xx:xx:xx:xx:xx	The user defined MAC for when using Manual MAC Mode
TS Packets Mode	Auto Manual	In *Auto* mode, the source will define the number of TS packets per IP packet. In *Manual* mode, the user will define the number of TS packets per IP packet
TS Packets per IP Packet	1-7	The number of TS packets that are contained with a single IP packet. Default is 7. Lowering this value below default increases network overhead
Encapsulation	UDP RTP	Sets the Encapsulation to UDP or RTP

SRT Output Settings

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

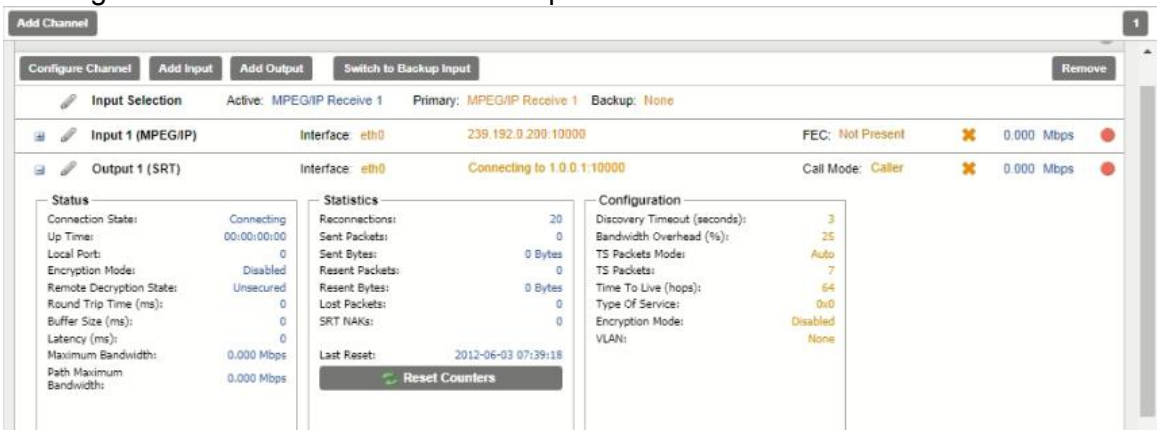


SRT Output Settings

Settings	Range	Description
Call Mode	Caller Listener Rendezvous	Defines the ‘handshake’ mechanism to be used when establishing connection.
Remote Host	xxx.xxx.xxx.xxx	Defines the IP address of the stream on the remote device
Remote Port	0 – 65535	Defines the port of the stream on the remote devices
Local Port Mode	Auto Manual	In *Auto* mode, the local port number will be assigned automatically In *Manual* mode, the local port number will be defined by the user

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

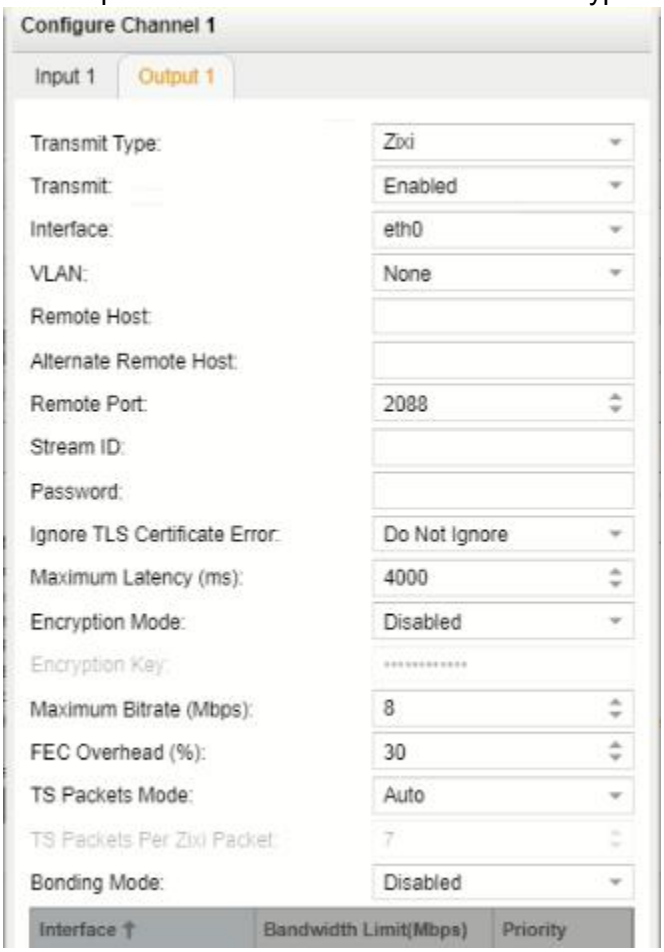


SRT Output Statistics

The Reset Counters 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”.

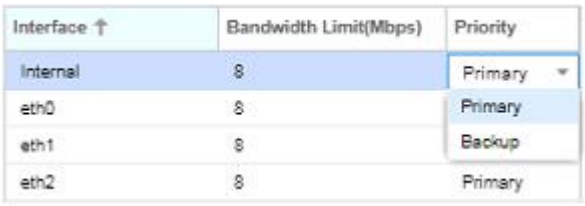


Zixi Output Settings

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

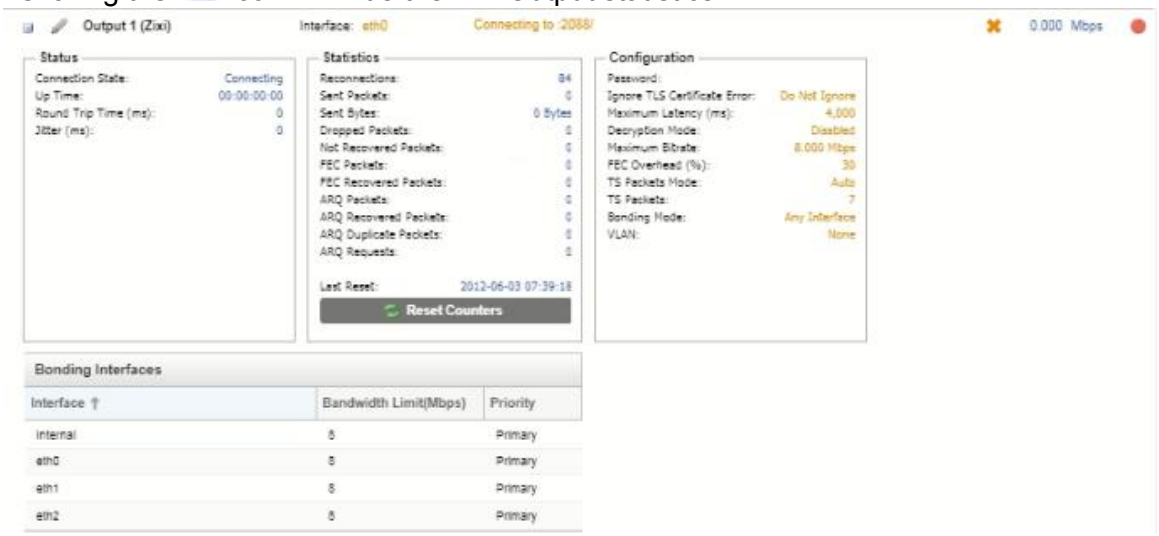
Ignore TLS Certificate Error	Do Not Ignore Ignore	Defines whether to cease or continue processing if TLS Certificate Error is signaled
Maximum Latency (ms)	30 – 10,000	Defines the maximum latency or buffer size (in milliseconds)
Encryption Mode	Disabled AES-128 AES-192 AES-256 Automatic	Defines which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

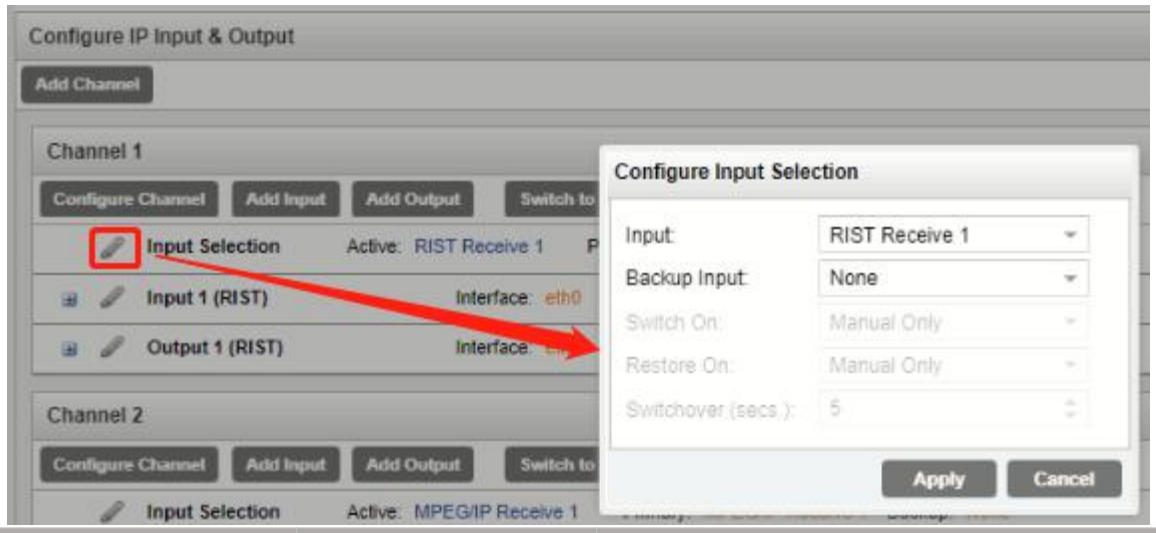


Zixi Output Statistics

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

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
Input	Input 1 Input 2	Used for both normal operation and input failover settings. During normal operation, this input will be the active input
Backup Input	Input 1 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.
Switch On	Manual Only TS Sync Loss	Choose the event that triggers the switch from the primary to the backup input
Restore On	Manual Only Primary Input TS Restored Backup Input TS Sync Loss	Choose the event that triggers a switch back to the primary input
Switchover (secs)	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.

Active Backup Input

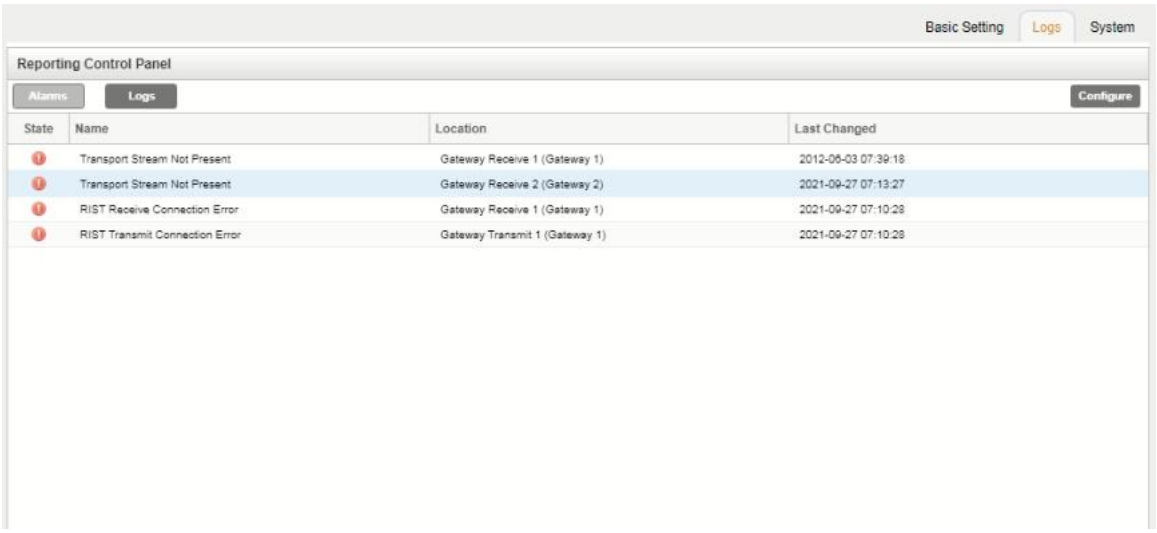
Additional Transmit Instance

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.

3.3.27.3 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.



Alarms

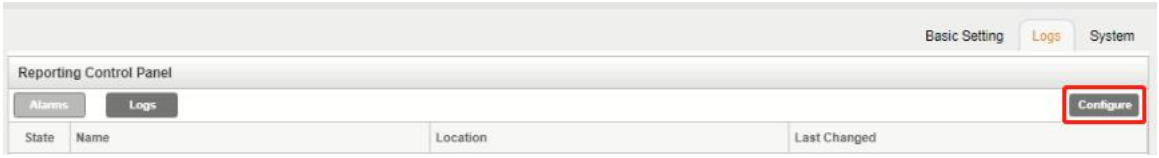
Clicking on the Alarms button displays the Active Alarms menu. This list displays all of the active alarms currently being reported by the unit. There are four columns in the log that display different types of information

Alarms	
Column Name	**Description**
State	This area displays an icon that will signify the importance of the event The icon means the message is Informational and no error has been detected. The icon means the message is an Alarm and the unit status has been set to 'Error'
Name	This column displays the description of the detected instance.
Location	This column displays the hardware or function that is experiencing the active error.
Last Changed	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

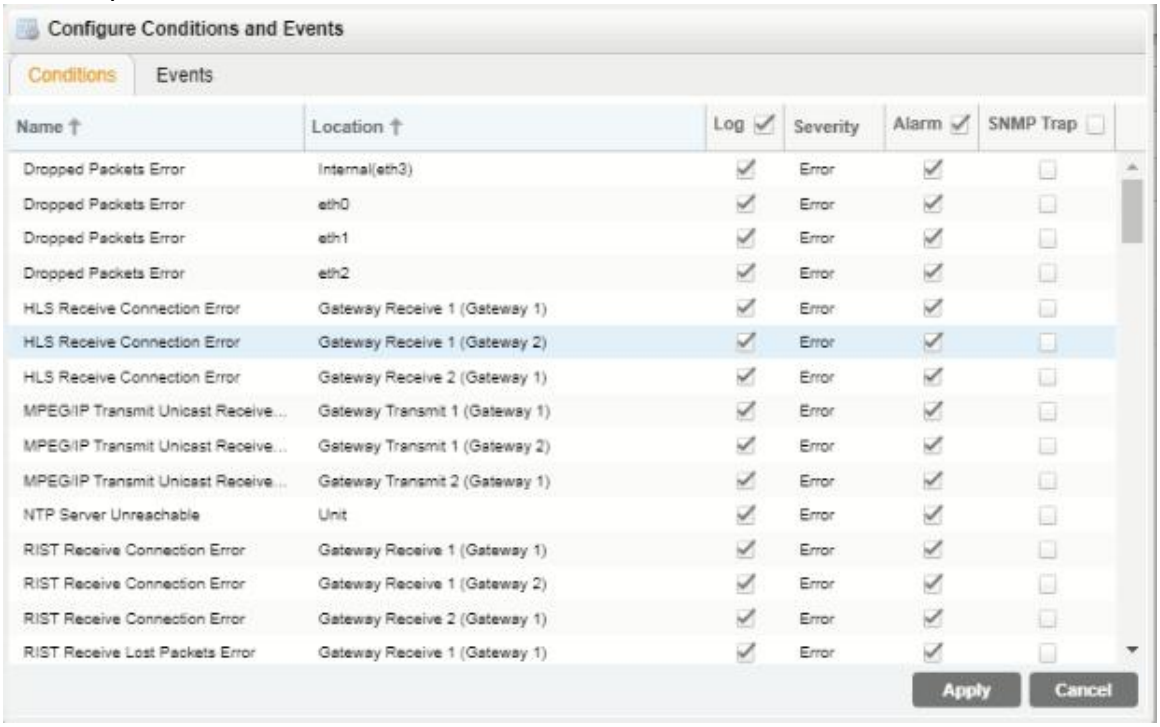
Configuring the Alarms

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.



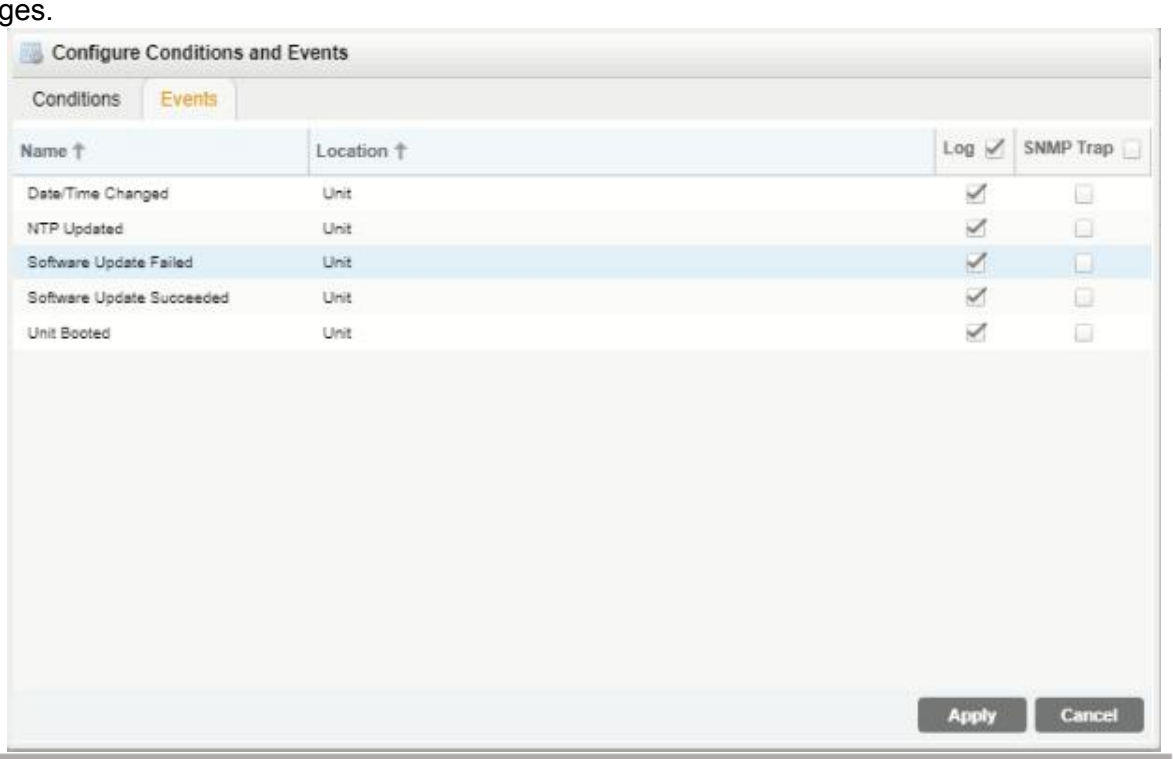
Logs	
Column Name	**Description**
Name	Defines the error message that will be provided if the instance is detected.
Location	This shows the user the specific hardware or stream processing path where the instance is detected.

Log	A checked box defines which instances will be recorded to the log file
Severity	A dropdown box within the row allows the user to define the instance as an Error or Information event.
Alarm	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.
SNMP Trap	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

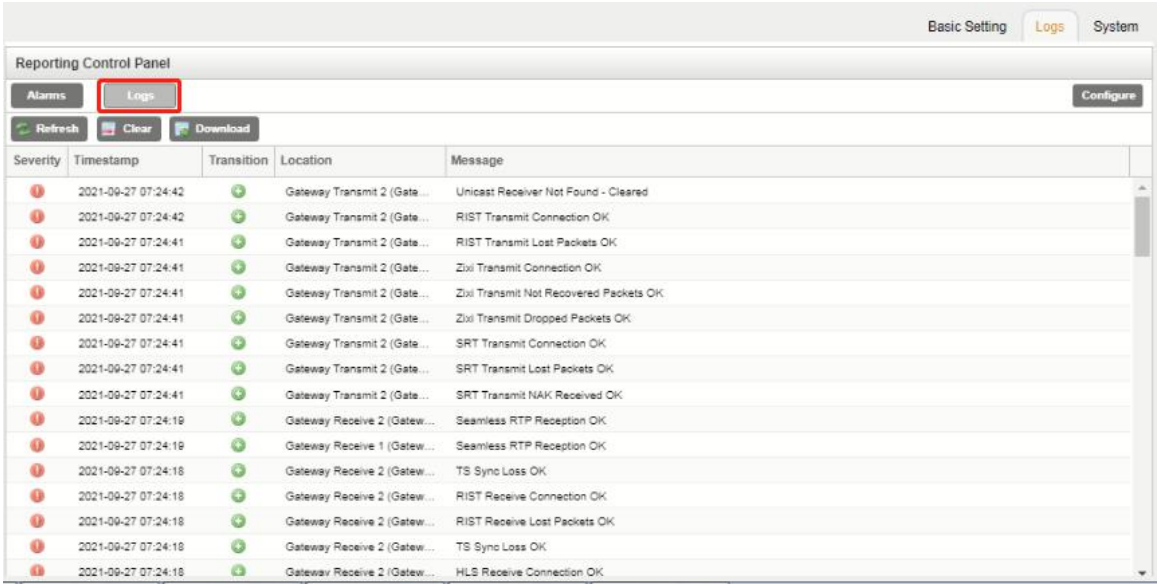
These instances are global to the system because they will have an impact on all hardware and stream processing areas of the OHP-IP-00 module. These instances can only be configured to be recorded in the log file and/or to be sent as SNMP Trap messages.



Events	
Column Name	**Description**
Name	Defines the error message that will be provided if the instance is

	detected.
Location	This will always be “Unit” since these instances are global
Log	A checked box defines which instances will be recorded to the log file.
SNMP Trap	A checked box defines which instances will trigger the OHP-IP-00 module to send a trap message.

Event Logs



The Logs window provides the user a display of the log file and management tools to st reamline the data returned. There are three buttons that will manage the log file.

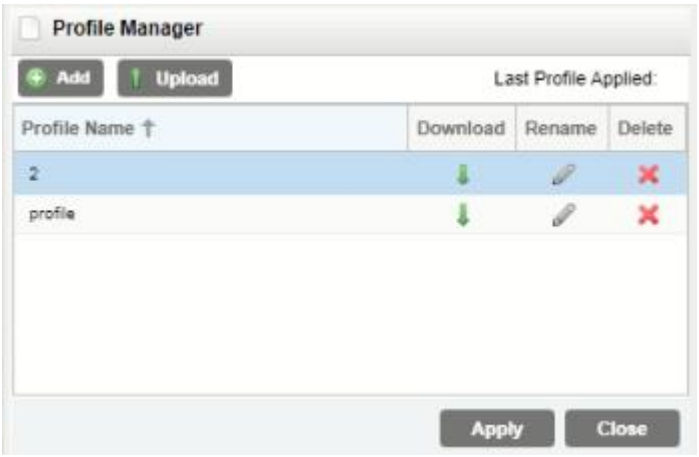
Refresh		Prompts the OHP-IP-00 to update the displayed logs.
Clear		Clears the log file.
Download		Exports the log file as a “.csv” extension file to the pc.

The log file itself is made up of five columns that explain each event, when it occurred, an d the area of the system where the event was detected.

Column Name	Description
Severity	The Info icon means the message is Informational and no error has been detected. The Error icon means the message is an Alarm and the unit status has been set to 'Error'.
Timestamp	This is the OHP-IP-00 module associated date and time of the instance.
Transition	The Went Bad icon means the instance entered into an Error state. The Went Good icon means the instance entered into a Clear state. The Event icon means a single point instance (such as NTP Time was updated) took place.
Location	Defines the hardware or function that experienced the alarm or event.
Message	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.**

3.3.27.4 System Settings

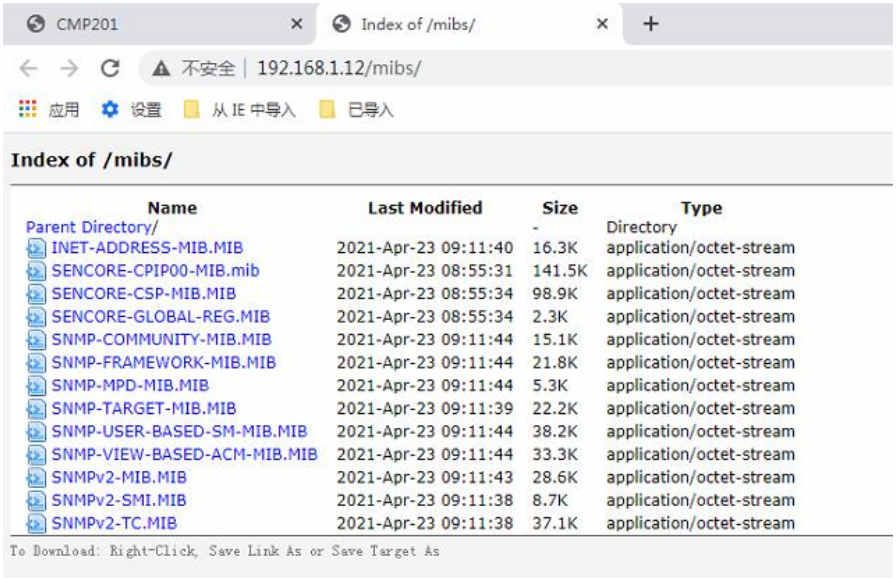


The OHP-IP-00 has the ability to save all configured settings to multiple profiles. Profiles can be saved locally, renamed and saved to external storage to be used on other OHP-IP-00 modules. Profiles can be used to quickly and easily change the configuration of the module to suit different inputs and decoding requirements.

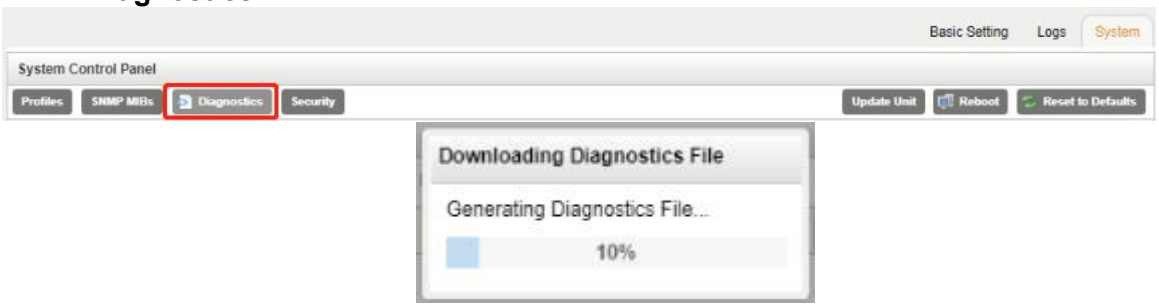
Add New Profile	Add	Used to create or add a new profile to the profile list
Upload Profile	Upload	Used to upload a profile to the module from the user pc
Apply Profile	Apply	Used to apply a profile selected from profile list
Rename Profile		Used to edit the selected profile name
Delete Profile		Used to delete a profile from the profiles list
Download Profile		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.

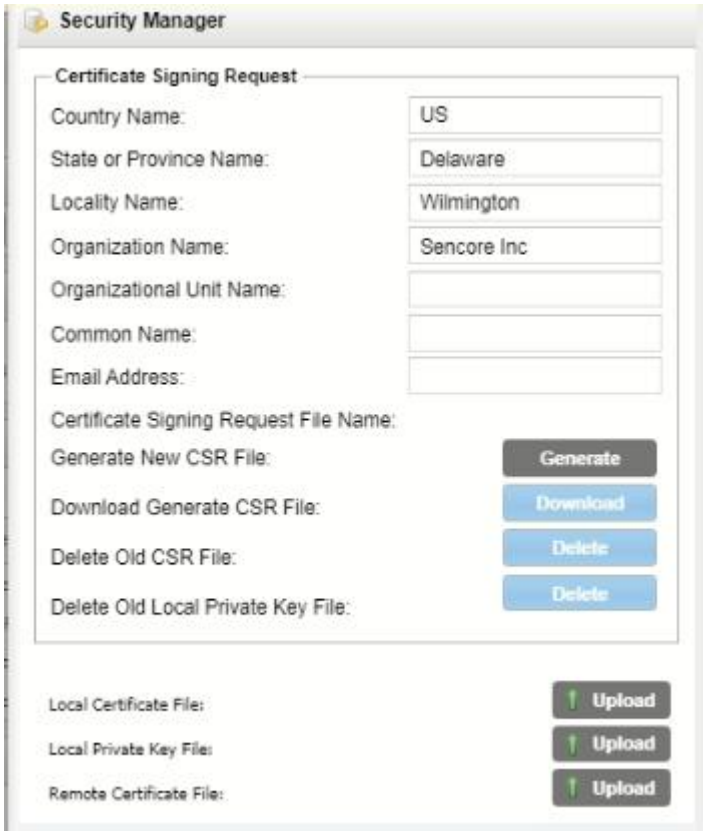
Click the ‘Diagnostics’ button and a window will open showing the diagnostic file creation progress.

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 Menu

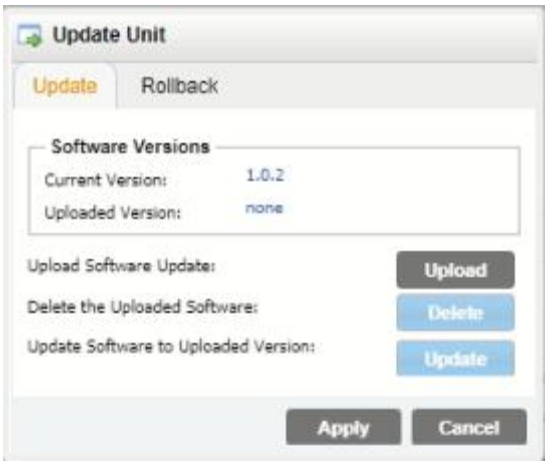
Settings	Range	Description
Name	User entry	Country Name for generated CSR file
State or Province Name	User entry	State/Province Name for generated CSR file
Locality Name	User entry	Locality Name for generated CSR file
Organization Name	User entry	Organization Name for the generated CSR file
Organizational Unit Name	User entry	Organizational Unit Name for the generated CSR file
Common Name	User entry	Common Name for the generated CSR file
Email Address	User entry	Email Address for reference on the generated CSR file
Generate New CSR File	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

Download Generate CSR File	Download	This icon will download the locally generated CSR file onto a remote machine
Delete Old CSR File	Delete	This icon will delete the locally generated CSR file
Delete Old Local Private Key File	Delete	This icon will delete the locally generated private key file
Local Certificate File	Upload	Use this icon to upload the local certificate file
Local Private Key File	Upload	Use this icon to upload the local private key file
Remote Certificate File	Upload	Use this file to upload the remote certificate file

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

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.

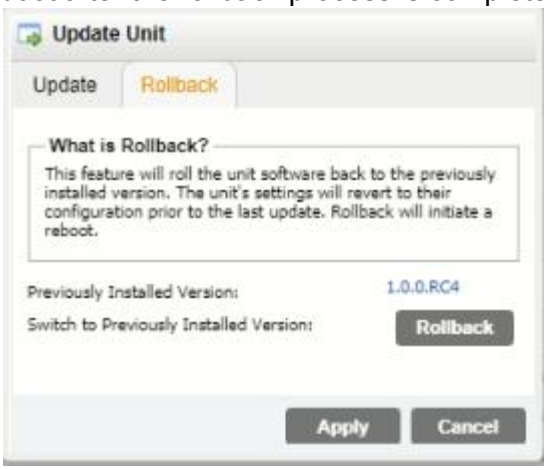


Applying software updates
1. Click Upload button and browse to the appropriate software file
2. A progress bar will show uploading status
3. Once the file is uploaded click on Yes when prompted to update
4. The module will reboot after a software update is complete.

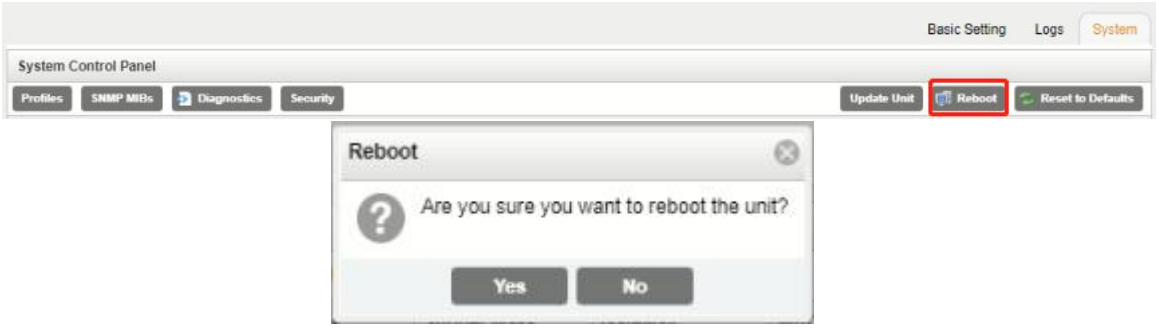
Upload Software Update	Upload	To upload software updates to OHP-IP-00 module, click this button. The user will be prompted to navigate to an update file. The file will then upload to the module. When completed, the module with prompt the user to either apply the update or cancel
Delete the Uploaded Software	Delete	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	Update	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.

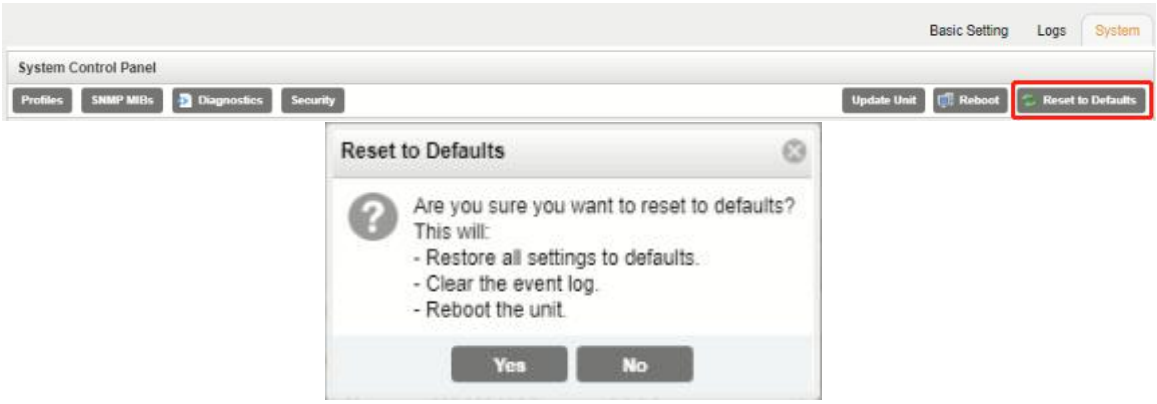


Reboot the Unit



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.

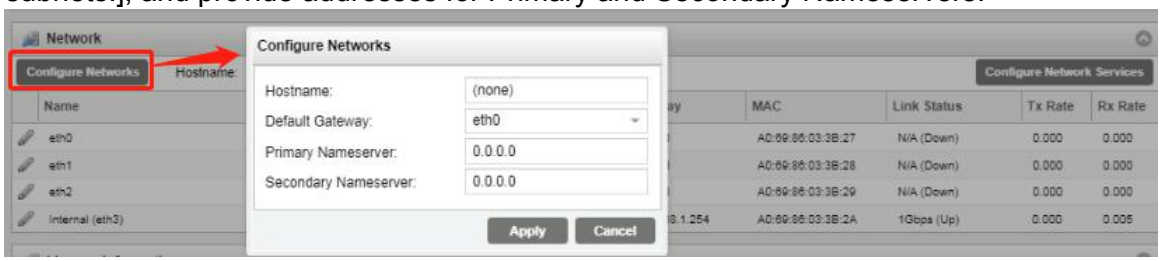
Reset to Defaults



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

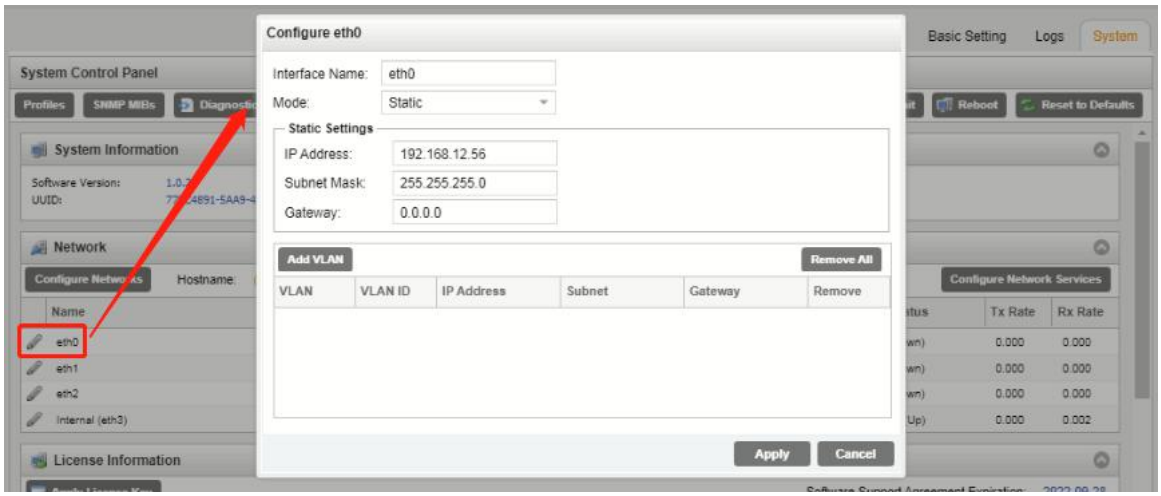
The OHP-IP-00 module can be assigned a Hostname and DNS servers. To access this menu, click on the Configure Networks gear icon. Within the window that opens, the user can assign a Hostname to the module, define which physical port (Eth0, Eth1, Eth2, Internal) the Default Gateway will use [The web-interface 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
Secondary Nameserver	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
Interface Name	User Entered (eth0/eth1/eth2/Internal)	User defined port names
Mode	DHCP, Static	DHCP allows network server to provide IP address Static requires the user to define the IP address to be used
IP Address	xxx.xxx.xxx.xxx	Static mode IP address entry
Subnet Mask	xxx.xxx.xxx.xxx	Static Mode subnet mask entry
Gateway	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.

Setting	Available Selections	Descriptions

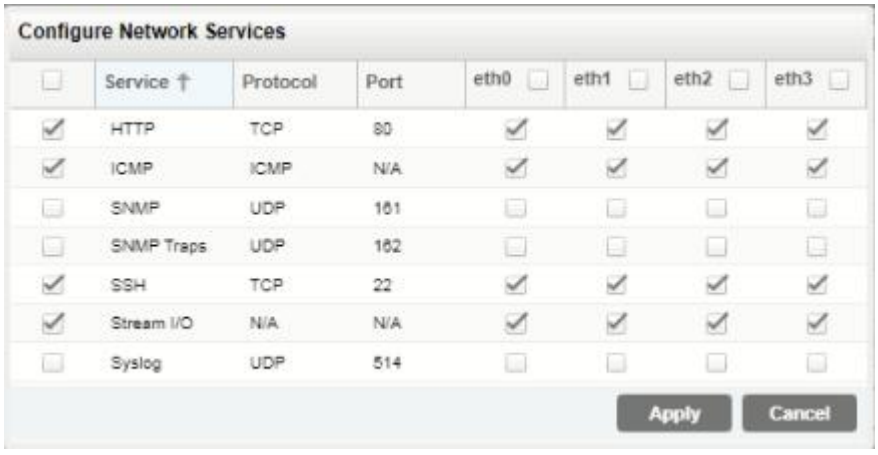
VLAN Name	User Entered	User defined VLAN names
VLAN Tag ID	1 - 4094	The VLAN tag to be assigned to outgoing streams and filtered for incoming streams
IP Address	xxx.xxx.xxx.xxx	Static mode IP address entry
Subnet Mask	xxx.xxx.xxx.xxx	Static Mode subnet mask entry
Gateway	xxx.xxx.xxx.xxx	Static Mode gateway 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 Remove All button.

Configuring Network Services

Both Physical NICs can have specific features enabled for functionality or disabled for security. To configure these settings, click on Configure Network Services 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.



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

SECTION 4 APPENDICES..... 168

APPENDIX A - ACRONYMS AND GLOSSARY..... 169
APPENDIX B - AMONROE ONENETSE CONFIGURATION AND TESTING..... 170
APPENDIX C - SPECIFICATION..... 173
APPENDIX D - WARRANTY..... 187
APPENDIX E - SUPPORT AND CONTACT INFORMATION..... 187
4.4.1 Returning for Service or Calibration..... 187
4.4.2 RMA Number..... 187
4.4.3 Shipping the Product..... 188

APPENDIX A - Acronyms and Glossary

AAC	Advanced Audio Coding
AC-3	Also known as Dolby Digital
AES	Audio Engineering Society
ATSC	Advanced Television Systems Committee
AV	Audio Video
BAT	Bouquet Association Table
BER	Bit Error Ratio
Bit Rate	The rate at which the compressed bit stream is delivered
BNC	British Naval Connector
CAM	Conditional Access Module
CAT	Conditional Access Table
CBR	Constant Bitrate
CI	Common Interface
CVBS	Composite Video Broadcast Signal
dB	Decibel
DVB	Digital Video Broadcasting
EAS	Emergency Alert System
EIT	Event Information Table
EPG	Electronic Program Guide
FEC	Forward Error Correction
GOP	Group of Pictures
HD	High Definition
HDCP	High-bandwidth Digital Content Protection
HDMI	High Definition Multimedia Interface
Kbps	1000 bit per second
LED	Light Emitting Diode
LNB	Low-Noise Block
Mbps	1,000,000 bits per second
MER	Modulation Error Ratio
MPEG	Refers to standards developed by the ISO/IEC JTC1/SC29 WG11, Moving Picture Experts Group. MPEG may also refer to the Group.
MPEG-2	Refers to ISO/IEC standards 13818-1 (Systems), 13818-2 (Video), 13818-3 (Audio), 13818-4
MPTS	Multi-program Transport Stream
NIT	Network Information Table
OFDM	Orthogonal Frequency-Division Multiplexing
PAT	Program Association Table
PCR	Program Clock Reference
PID	Packet Identifier
PMT	Program Map Table
PSI	Program Specific Information
PSU	Power Supply Unit

QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase-Shift Keying
SD	Standard Definition
SDT	Service Description Table
SI	Service Information
SNMP	Simple Network Management Protocol
SNR	Signal Noise Ration
SPTS	Single Program Transport Stream
TDT	Time and Date Table
TS	Transport Stream
VBR	Variable Bitrate

APPENDIX B - AMonroe OneNetSE Configuration and Testing

For development and testing purposes, the Monroe OneNetSE will be used to supply the SCTE18 messages and the EAS substitutions audio and video. The Monroe box will need to be configured in a very specific way in order to work with the proposed OmniHub 16 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.

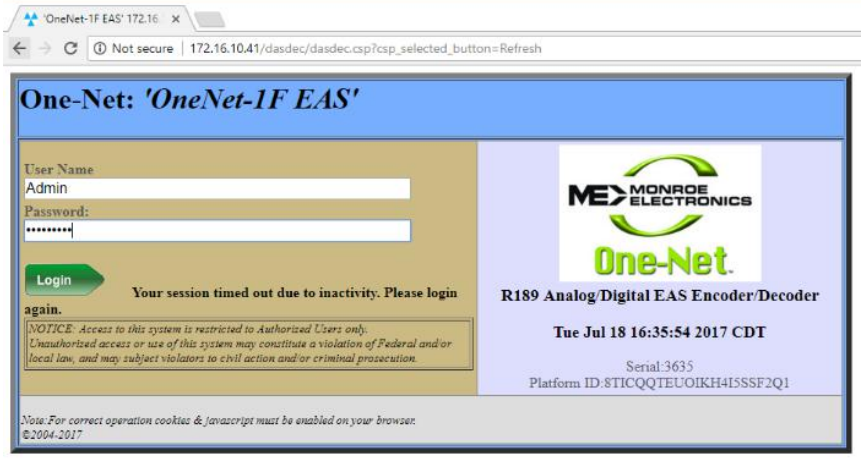
2. Connect the CVBS video and analog-unbalanced audio to an encoder module. Outputs shown in the picture below will be where the video and audio substitutions will come out.

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 with a web browser.

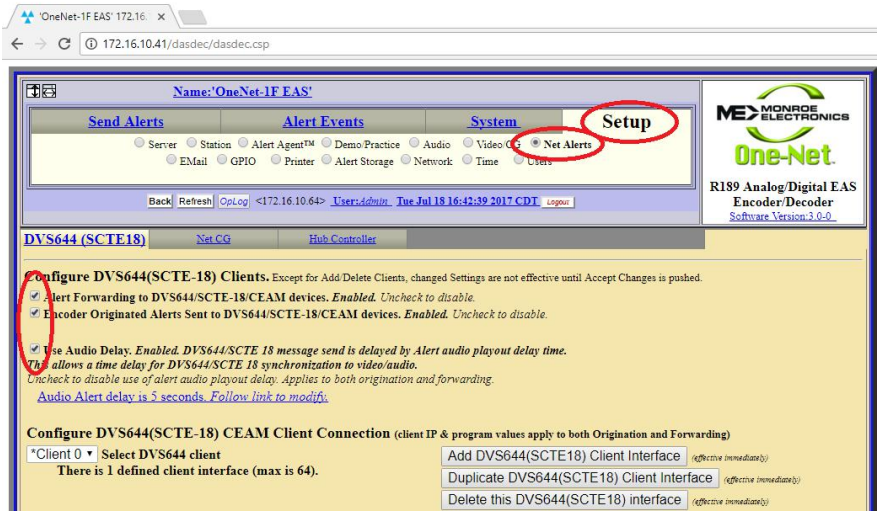
Webpage Configuration

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

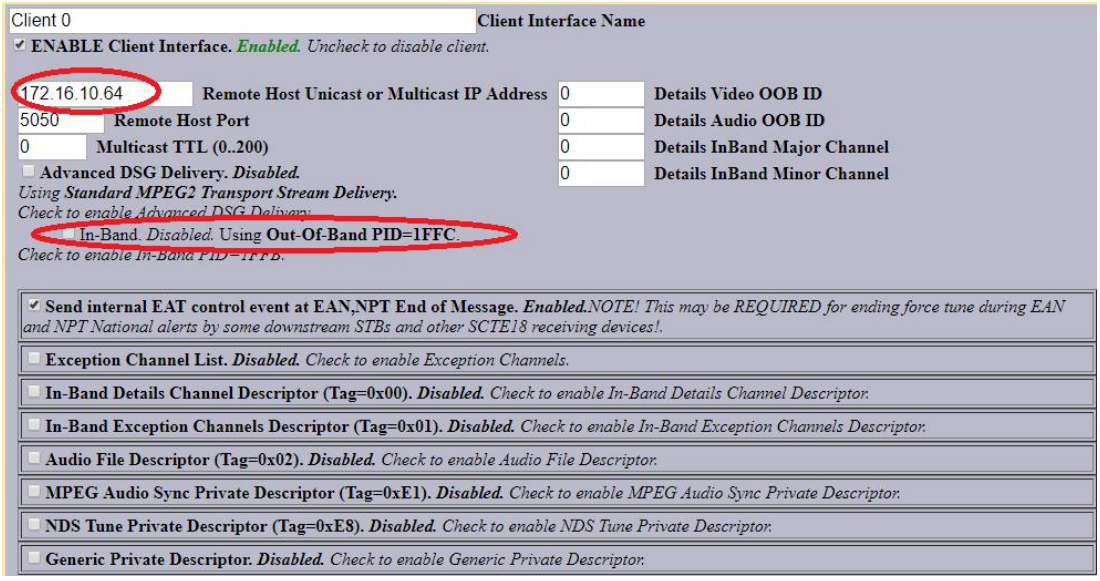


2. Once logged into the unit, browse to the Setup tab and select Net Alerts.
3. Configure the DVS644 (SCTE18) settings in the Monroe exactly like what are shown below. Enable Alert Forwarding and Encoder Originated Alerts to be sent to DVS644/SCTE18 devices.



4. A DVS644 (SCTE-18) CEAM Client Connection should already be configured. If not, click the **Add DVS644 (SCTE18) Client Interface** button.

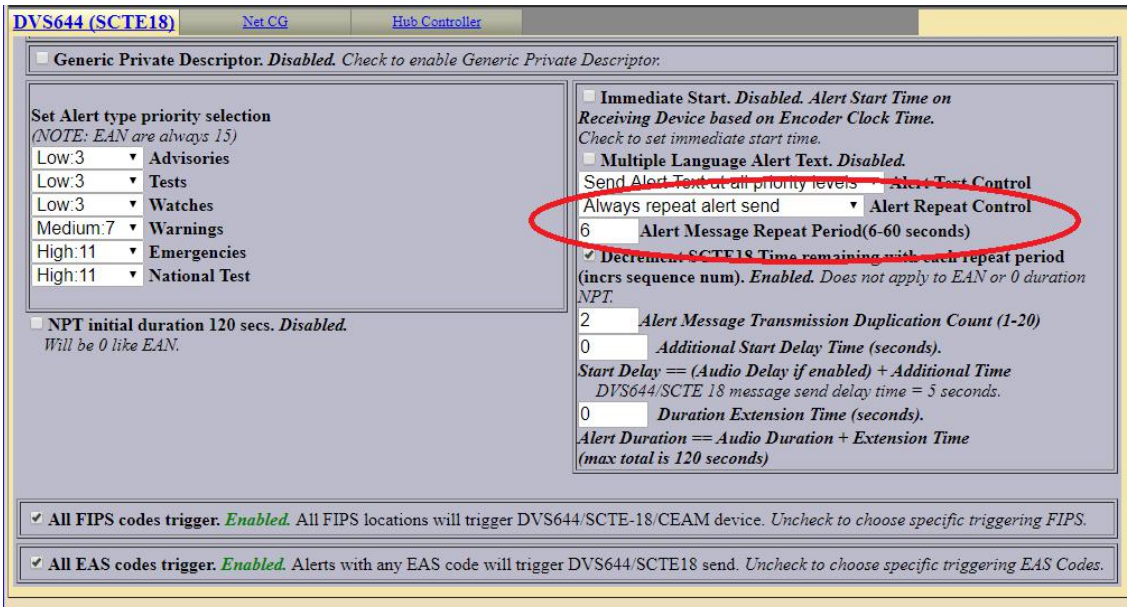
5. Make sure Client 0 is enabled and then input the unicast or multicast address into the “Remote Host Unicast or Multicast IP Address” text box. It is suggested the unicast normally be used, so what should be put in this box is the management IP address of the OmniHub 16. It is also possible to input a multicast address (224.x.x.x – 239.x.x.x).



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 16 listen for SCTE18 messages on any other port.

7. Also make sure the **In-Band** checkbox is disabled. The OmniHub 16 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.



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:

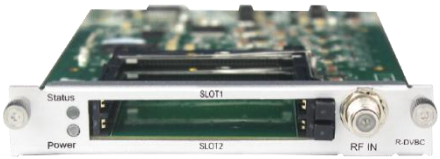
a. Display an EAS screen on the CVBS video output
b. Send two SCTE18 messages
c. Start playing the alert audio

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 playing is finished, the SCTE18 messages will no longer be sent.

   When the OmniHub 16 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 16 should return all services to their original content.

APPENDIX C - Specification

OmniHub 16- Base unit	
Includes -	4RU chassis/case, power supply/line cord
Systems -	
Chassis Dimension	445mm x 177mm x 428mm (WxHxD), 4RU
Front Panel	16 Hot swappable Slots Dual Redundant Power Supplies 4 Gigabit Ethernet port
Remote Operation/Update Interface -	
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	

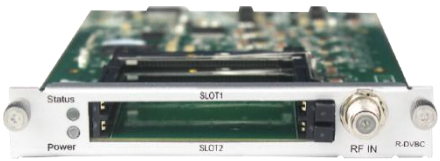


DVB-C Receiver

Input	4 channels via 1 RF Female connector
CI	2 x PCMCIA CI slots
CAM	Descrambled channel quantity depends on CAM capability, 2 CAMs could be different
QAM mode	Annex A/C
Frequency Range	47 ~ 862MHz
Bandwidth	6/7/8MHz
Constellation	16QAM / 32QAM / 64QAM / 128QAM / 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

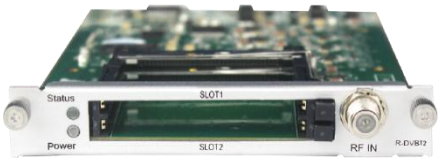
Frequency Range	47 ~ 862MHz
Bandwidth	6MHz
Constellation	64QAM, 256QAM
Symbol Rate	5.057Ms/s (64QAM) 5.360Ms/s (256QAM)
Signal Level	40~80dBuV
CA system	Supports mainstream CAS

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

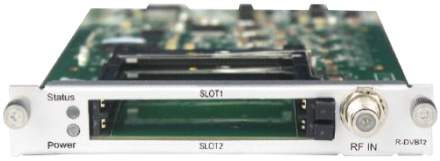
DVB-S/S2 FTA Receiver

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 DVB-S2: 1~45Msps
FEC	DV-S: 1/2, 2/3, 3/4, 5/6, 7/8 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 DVB-T2: QPSK / 16QAM / 64QAM / 256QAM
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 1/8, 1/16, 1/32, 1/128, 19/256, 19/128
FFT Size	DVB-T: 2K, 8K 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 CH1 & CH2 via LNB-1 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 DVB-S2: 1~45Msps
FEC	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8 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 DVB-S2: 1~45Msps
FEC	DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

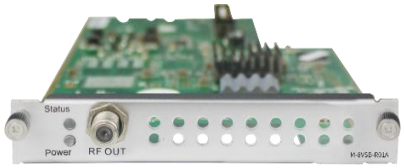
8VSB Receiver

Input	4 channels via 4 RF Female connectors
Frequency Range	50 - 860MHz
Bandwidth	6MHz
Modulation	8VSB
Signal Level	-80~-20dBm

Modulator Module Specification

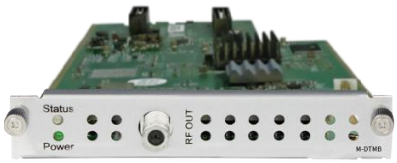
OFDM Modulation

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

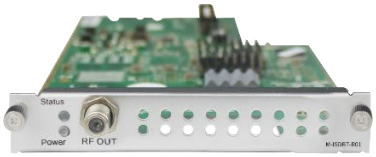
Output	4/8 frequencies via 1 RF female connector 75Ω
Standard	DTMB GB20600-2006
Frequency Range	47 ~ 862MHz
Constellation	4QAM-NR / 4QAM / 16QAM / 32QAM / 64QAM
Output Level	Max. 105dBμV
MER	>32dB

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 75Ω
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. 105dBμV
MER	≥32dB

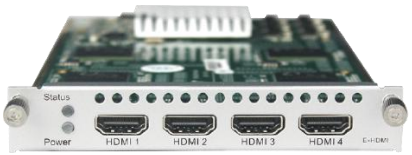


ISDB-T Modulation

Output	4/8 frequencies via 1 RF female connector, 75Ω
Standard	ARIB STD-B31
Frequency Range	57 - 860MHz
Bandwidth	6MHz
Constellation	QPSK, 16QAM / 64QAM
Transmission Mode	2K
RS Code	RS (204.188)

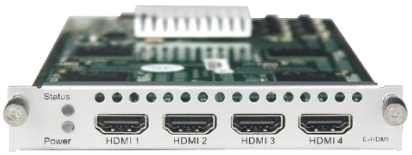
FEC	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval	1/4, 1/8, 1/16, 1/32
Hierarchy Mode	Layer A
Segment Mode	Full Seg
Output Level	Max. 104dBμV
MER	≥40dB

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 SD: MP/HP@L3.0/3.1/3.2
Resolution	SD: 576i50, 480i59.94 HD: 1080p@25/30, 1080i@50/59.94/60, 720p@50/60 *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 SD: MP/HP@L3.0 MPEG-2 SD: MP@ML
Resolution	SD: 576i50, 480i59.94 HD: 1080p@25/30/50/59.94/60, 1080i@50/59.94/60, 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) CC/Component input via DB15 port
Video	H.264/AVC HD: MP/HP@L4.0, SD: MP/HP@L3.0 MPEG-2 SD: MP@ML HD: MP@HL
Resolution	SD: 576i50, 480i59.94f HD: 1080p25/30/50/59.94/60, 1080i50/60, 720p50/60 *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) CC via RCA connector
Video	H.264/AVC HD: MP/HP@L4.0 SD: MP/HP@L3.0 MPEG-2 SD: MP@ML HD: MP@HL
Resolution	SD: 576i50, 480i59.94 HD: 1080p@25/30/50/59.94/60, 1080i@50/60, 720p@50/60 *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 ad dual audio encoding
Audio Mode	Stereo (2.0, including downmix)
Audio Sampling Rate	48KHz

SDI Encoder

Input	2 channels via 2 SDI or CVBS SDI or CVBS via BNC connector Audio via phoenix connector

Video	H.264/AVC HD: MP/HP@L4.0, SD: MP/HP@L3.0 MPEG-2 SD: MP@ML HD: MP@HL
Resolution	SD: 576i50, 480i59.94 HD: 1080p@25/30/50/59.94/60, 1080i@50/60, 720p@50/60 *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 H.265 / HEVC MP@L4.1
Resolution	HD: 1080p-29.97 / 30 / 50 / 59.94 / 60 1080i-29.97 / 30 / 50 / 59.94 / 60 720p-50 /59.94 / 60 SD: 576i-50 576p-50 460i-59.84 / 60 460p-59.84 / 60 *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 H.265 / HEVC MP@L4.1
Resolution	HD: 1080p-29.97 / 30 / 50 / 59.94 / 60 1080i-29.97 / 30 / 50 / 59.94 / 60 720p-50 /59.94 / 60 SD: 576i-50 576p-50 460i-59.84 / 60 460p-59.84 / 60 *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 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, each DB15 for 3 channels 2 x RCA-DB15 adaptor cables come along with the module.
Video	H.264/AVC SD: MP/HP@L3 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)

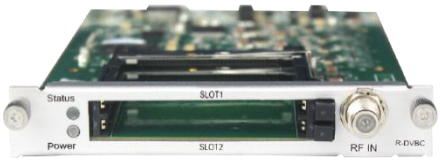
Input	16 channels via 4 DB15 connector, each DB15 for 4 channels 4 x RCA-DB15 adaptor cables come along with the module.
Video	H.264/AVC SD: MP/HP@L3.0/3.1/3.2

Resolution	SD: 576i50, 480i59.94
Bitrate Control	CBR
Video Bitrate	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 Analogue EAS input via 3pin contact closure CVBS input via 1*RCA connector Audio L/R input via 2*RCA connector TS input via 1*BNC connector
Video	H.264 SD: MP/HP@L3.0 MPEG-2 SD: MP @ML (by default)
Resolution	SD: 480i59.94fps
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

4.4.1 Returning for Service or Calibration

The OmniHub 16 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.

4.4.2 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 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.

4.4.3 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.