HILLS. Antenna®

Hills Antenna
HDMI to DVB-T Digital Modulator

USER MANUAL

Available Models:

17HD4CHMODMPEG2/4	4 HDMI to 4Ch H.264 + MPEG-2
17HD4CHMODMPEG4	4 HDMI to 4Ch H.264
17HD8CHMODMPEG2/4	8 HDMI to 4Ch H.264 + MPEG-2
17HD8CHMODMPEG4	8 HDMI to 4Ch H.264

A NOTE FROM HILLS ANTENNA ABOUT THIS MANUAL

Intended Audience

This user manual has been written to help people who have to use, integrate and install a Hills Antenna 4Ch / 8Ch Modulator. Some chapters require some prerequisite knowledge in electronics, especially in broadcast technologies and standards.

Disclaimer

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Hills Antenna shall have no liability for any error or damage of any kind resulting from the use of this document.

Copy Warning

This document includes some confidential information. Its usage is limited to the owners of the product that it is relevant to, and should not be copied, modified or translated into another language.

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER FROM THIS UNIT. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO PREVENT SHOCK HAZARD,
DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION: RISK OF ELECTRIC SHOCK. DO NOT OPEN.

Safety Instructions

1. Read all safety and operating instructions before you operate the modulator.
2. Retain all safety and operating instructions for future reference.
3. Heed all warnings on the modulator and in the safety and operating instructions.
4. Follow all installation, operating and use instructions.
5. Unplug the modulator from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the modulator.
6. Do not use accessories or attachments not recommended by us, as they may cause hazards, and will void the warranty.
7. Do not operate the modulator in high-humidity areas, or expose it to water or moisture.
8. Do not place the modulator on an unstable surface. The modulator may fall, causing serious personal injury and damage to the modulator. Install the modulator only in a mounting rack designed for 19” rack-mounted equipment.
9. Do not block or cover slots and openings in the modulator. These are provided for ventilation and protection from overheating. Never place the modulator near or over a heat source.
10. We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the modulator is left unattended for long periods of time, unplug it from the wall outlet or PDU and disconnect the lines between the modulator and its source. This will prevent damage caused by lightning or power line surges.
11. Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.
12. Never insert objects of any kind into the modulator through openings as the objects may touch dangerous voltage and will void the warranty. Refer all servicing to authorized service personnel.
13. Unplug the modulator from the wall outlet or PDU and refer servicing to authorized service personnel whenever the following occurs:

- The power supply cord or plug is damaged
- Liquid has been spilled into or objects have fallen into modulator
- The modulator has been exposed to rain or water
- The modulator has been dropped or the chassis has been damaged
- The modulator exhibits a distinct change in performance

When replacement parts are required, ensure that the service technician uses replacement parts specified by Hills Antenna. Unauthorised substitutions may damage the modulator or cause electrical shock or fire, and will void the warranty.

TABLE OF CONTENTS

Net Management System Port – Quick Reference

NMS IP PORT:	192.168.1.30
USER NAME:	user
PASSWORD:	user

1. INTRODUCTION

The Hills Antenna HDMI to DVB-T Modulator comes in 4 and 8 HDMI input connector options. After encoding and multiplexing, the device will modulate the signals into DVB-T/ T2, DVB-C, ATSC, ISDB and DTMB standards. Thanks to its IP input port in the front panel, it can can also receive an IP signal and output in RF signal as well.

2. FEATURES

- Video encoding in H.264 and audio encoding in MPEG and AAC
- Supports all major resolutions from 480i through to 1080p@60Hz
- Supports CA PID filtering, remapping and PSI/SI editing
- Offers 4 or 8 continuous output channels
- Easy configuration with built-in Web UI

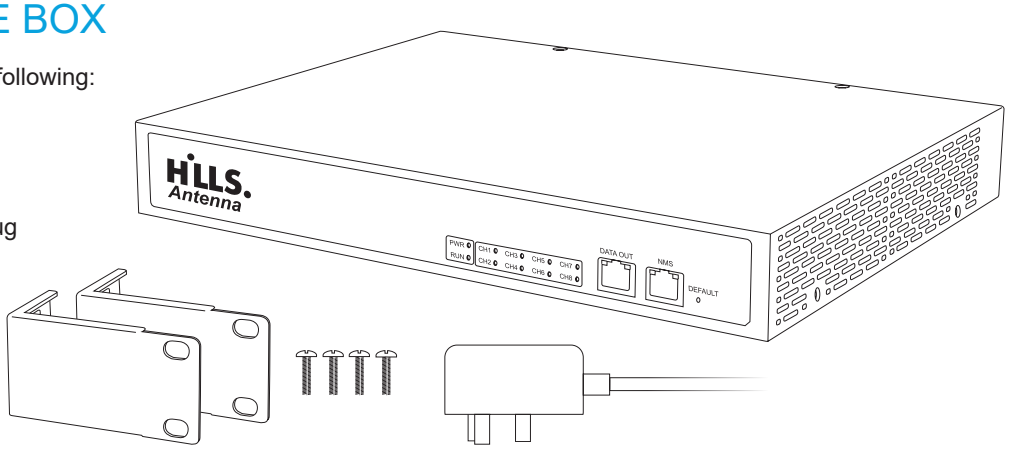
3. SPECIFICATIONS

		17HD4CHMODMPEG2/4	17HD4CHMODMPEG4	17HD8CHMODMPEG2/4	17HD8CHMODMPEG4
INPUT	Input Connectors	4x HDMI + 1x RJ45	4x HDMI + 1x RJ45	8x HDMI + 1x RJ45	8x HDMI + 1x RJ45
	Transport Protocol	UDP, RTP			
	Input IP Addresses	256 (max.)			
	Input Transport Stream	MPTS & SPTS			
OUTPUT	Standard	DVB-T			
	Bandwidth	6, 7 or 8 M			
	Constellation	QPSK, 16QAM, 64QAM			
	Guard Interval	2K, 4K, 8K			
RF	Output Level	≥ 45dBmV			
	Frequency Range	50~999.999MHz			
	Out-band Rejection	≥ 60dB			
	MER	Typ. 38dB			
GENERAL	Power Consumption	< 57W			
	Dimensions	318(W) x 260(D) x 44(H) mm			
	Languages	中文 / English			

4. WHAT'S IN THE BOX

Each modulator is packed with the following:

- 1x Modulator
- 2x Mounting Rack Ears
- 4x Mounting Screws
- 1x Power Cord with 3-Pin AU Plug
- 1x 100-240V AC to 12V DC 7A Power Supply
- 1x Manual



5. INSTALLATION

This Modulator is designed to be installed in a rack shelf or a standard rack.
Please follow the instructions below to install the digital modulator:

1. Connect the power plug to the jack.
2. Connect the video source to the modulator.
3. Connect the modulator to your laptop or computer.
4. Power up the modulator.

6. FRONT PANEL VIEW

1. Indicators

- PWR Indicates power is on
- RUN The light will keep flashing when system is operating
- CH 1-8 Indicates each channels working status

2. Data

IP signal input port at 1000M.

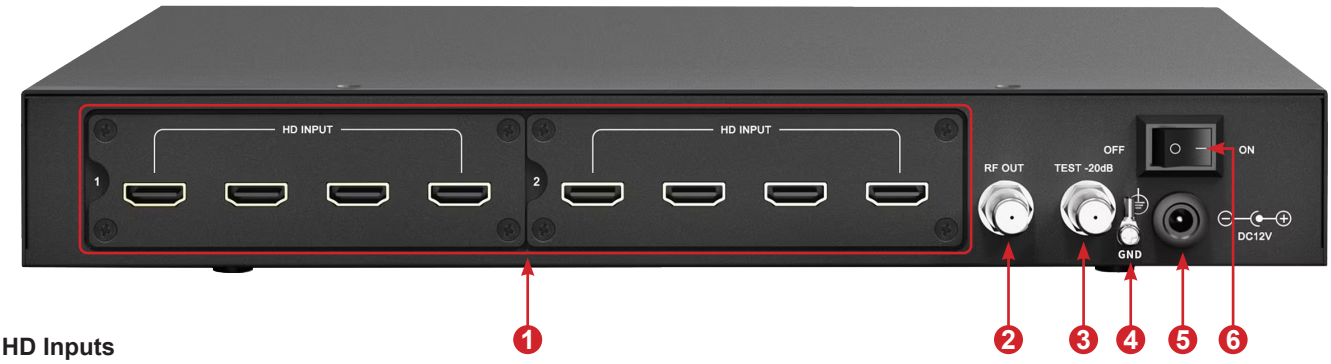
3. NMS

Net management system port [IP: 192.168.1.30 / USER NAME: user / PASSWORD: user].

4. Default

Press for 10 seconds to restore the encoder to the factory setting (Like the network and PID settings).

7. REAR PANEL VIEW



1. HD Inputs

HDMI inputs into the modulator.

2. RF Out

40dBmV maximum output is provided at this port.

3. TEST -20dB

Output level read at this point will be down 20dB from the actual output.

4. GDN

For modulator grounding.

5. 12V DC Port

12V 5A power DC jack.

6. OFF/ON Switch

WARNING: For the protection of your equipment and its proper working, it is necessary to connect the modulator to a ground connection.

8. WEB MANAGEMENT

8.1 Login

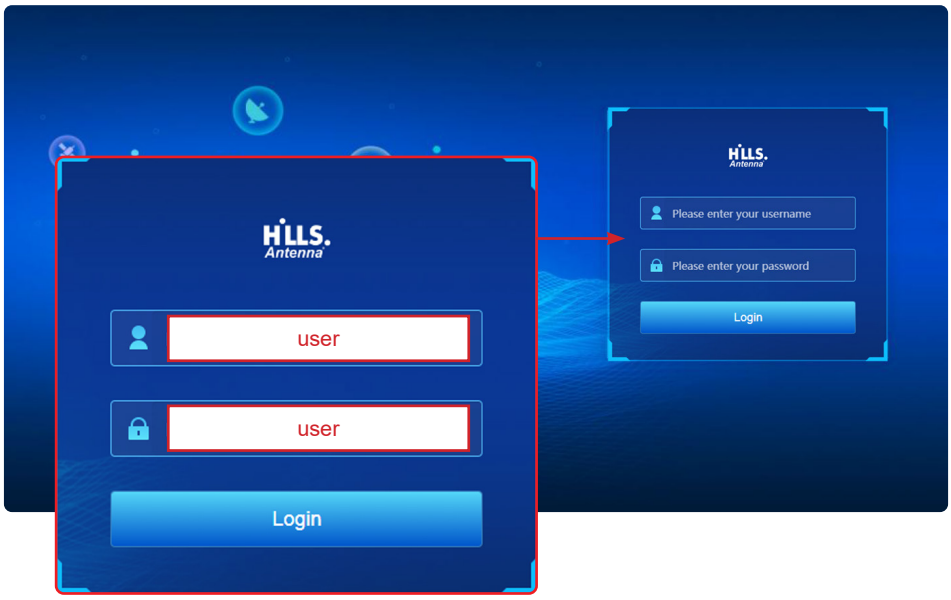
The modulator has a user friendly interface for programming and monitoring the device.

The user can get access to the built-in web UI by logging into Google Chrome, Firefox or Microsoft Edge accounts.
(The best browsers)

The default user name and the default password are the following:

Username: user

Password: user



Please make sure your computer address is in the same IP segment as the modulator.

Reminder: 1. Please change the user name and password if needed.
2. Username/password are case-sensitive and may contain letters or numbers.
3. Username/password must be a minimum of 5 characters and a maximum of 32 characters in length.

8.2 System Page

This page is read-only, and displays the general health of the unit, such as temperature, input / output ports and Serial number.

The information is provided as a quick way to monitor the system or assist with a troubleshooting issue.

On the left-side is the Menu bar, whilst the right-side shows the selected menu settings.

Serial Number: The unique ID for this modulator.

Modulation: Indicates the RF output modulation.

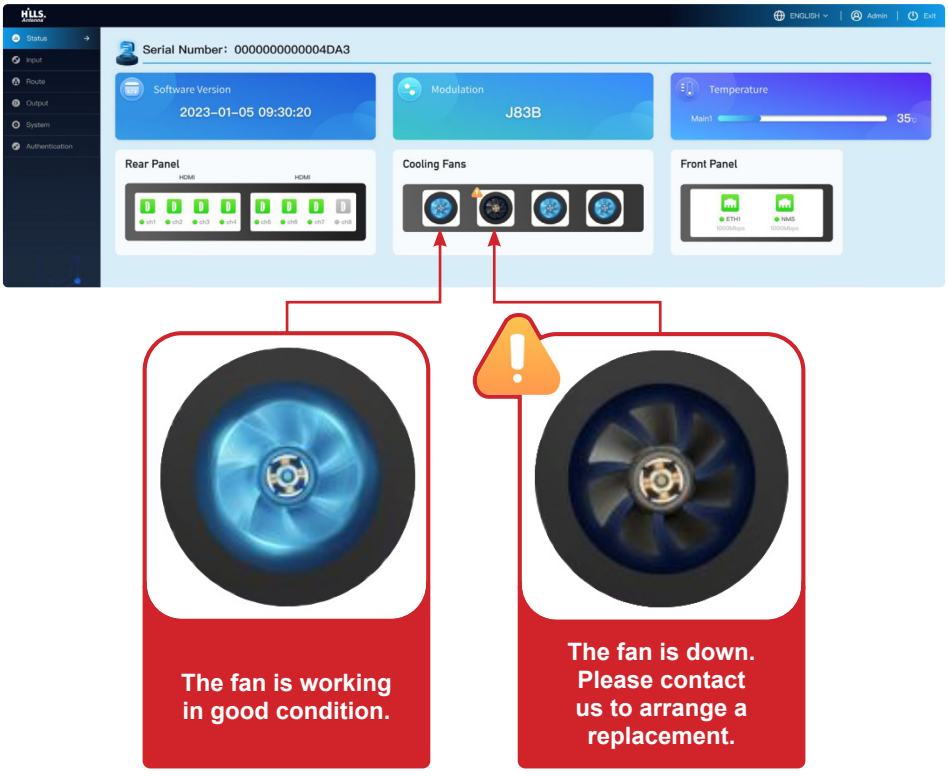
Software Version: If there's something wrong with this device, please send this information to us.

Temperature: Indicates the CPU working temperature in real-time.

Rear Panel: Indicates the input connector status. The green color means the HDMI cable is well connected, whilst the grey means disconnected.

Cooling Fans: There are four cooling fans installed inside the modulator.

Front Panel: Indicates the IP input status.



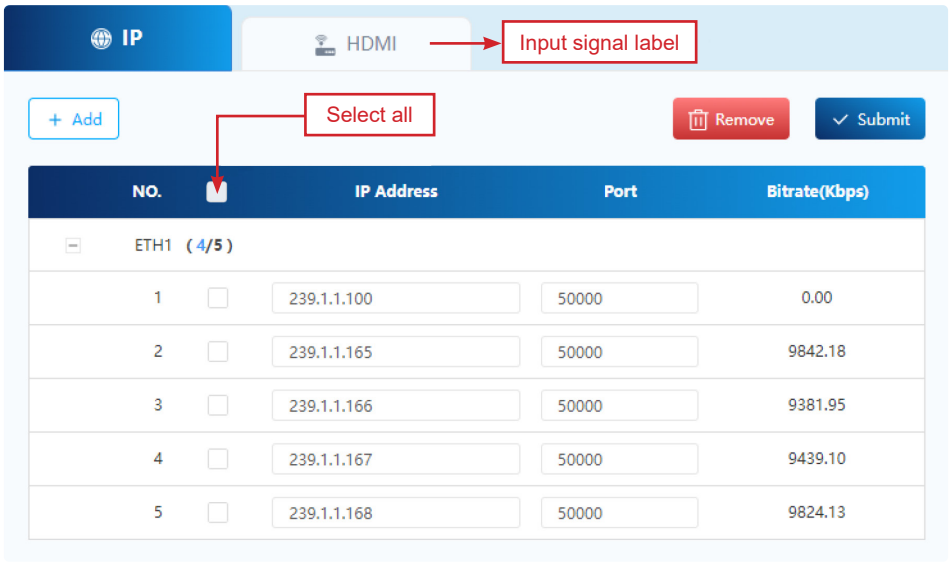
8.3 Setting Flow

1. Set up the input parameters.
2. Select the output channels via the router.
3. View output channels.

8.4 Input Settings

In the input setting page, there might be different labels with different input cards.

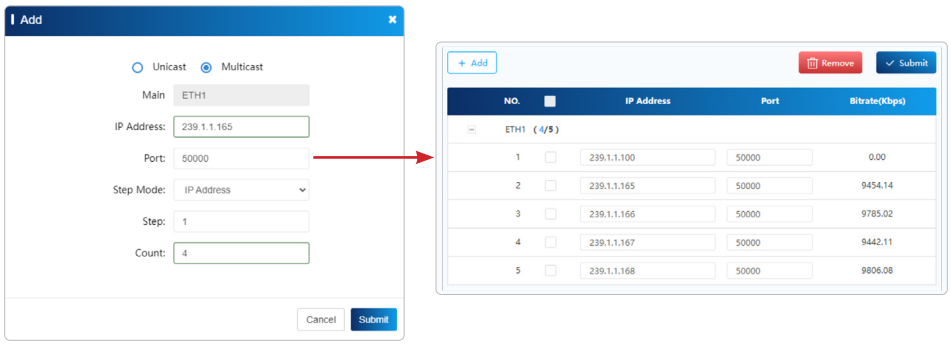
The first one here is the IP input signal and the second label is the HDMI input signal.



8.4.1 IP Signal

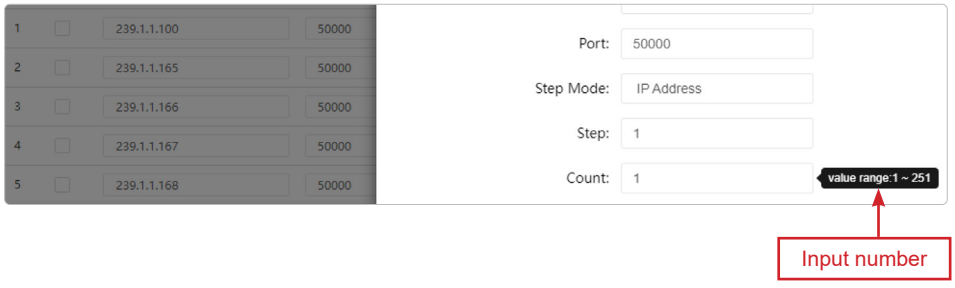
1. Click the +Add button to add the IP address.
2. Choose the Multicast in normal situation and input your IP address.
3. Click Submit and the system will allocate the programs an IP address, which will be listed out in the Router.

For quick input, we also provide step mode. There are three modes: IP Address, Port, and IP Address With Port. Choose any option that meets your requirements.



Step: The value range is from 1 to 10.

Count: The maximum value is 256. Notice that the note for this box is the available input number.



Remove: To delete the IP address that you don't want.

Submit: Click Submit only when you modify the IP address manually.

8.4.2 HDMI Signal

Status: A Green status indicates a successful connection, whilst a Grey status indicates a fault or unused port.

Channel: 1-1 means the first HDMI port in the first card.

Enable: Enable or disable the HDMI input port.

Input Resolution:
Display the input resolution.

Output Resolution:
Downscale the input resolution.

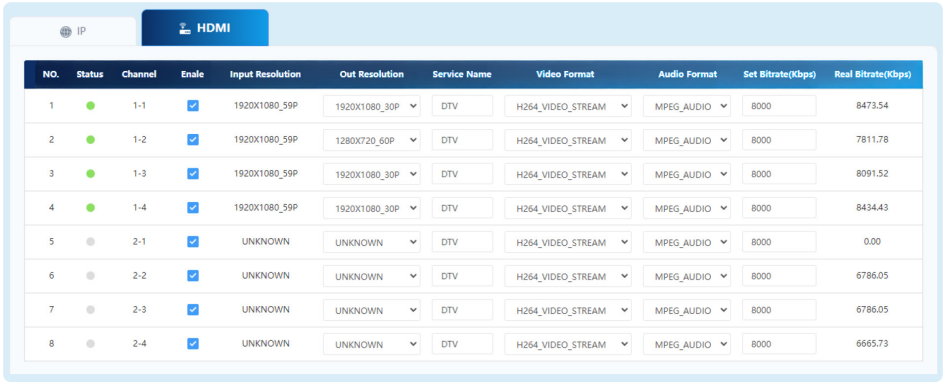
Service Name:
Input the service name here.

Video Format: For this device, it only supports H.264.

Audio Format: Select from MPEG and AAC.

Set Bitrate: Set the output bit rate here. Maximum rate is 20,000Kbps.

Real Bitrate:
The real output bit rate.



8.5 Router Settings

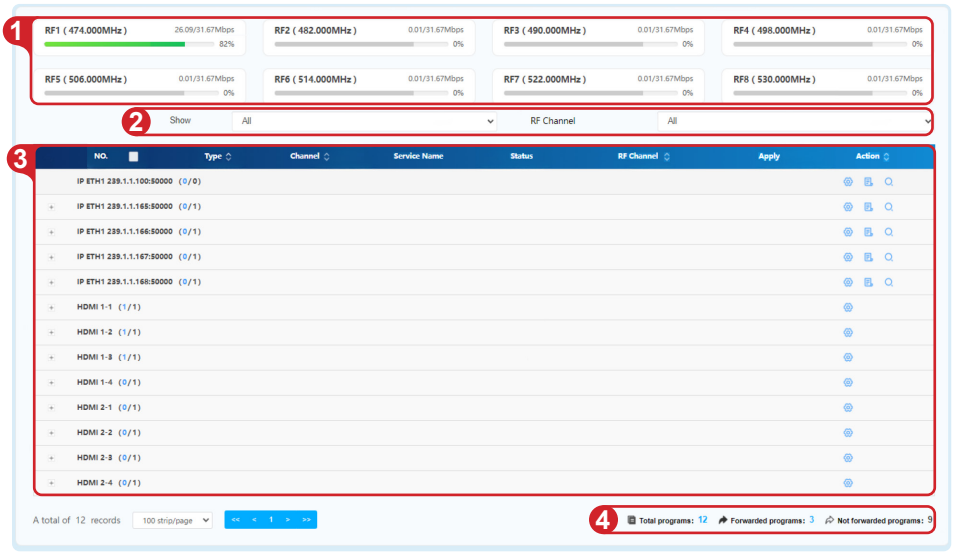
The router setting is the most important in this modulator, which you can see all the input channels and forward these channels to the output frequencies.

1. Frequency Bars

2. List Filter

3. Router List

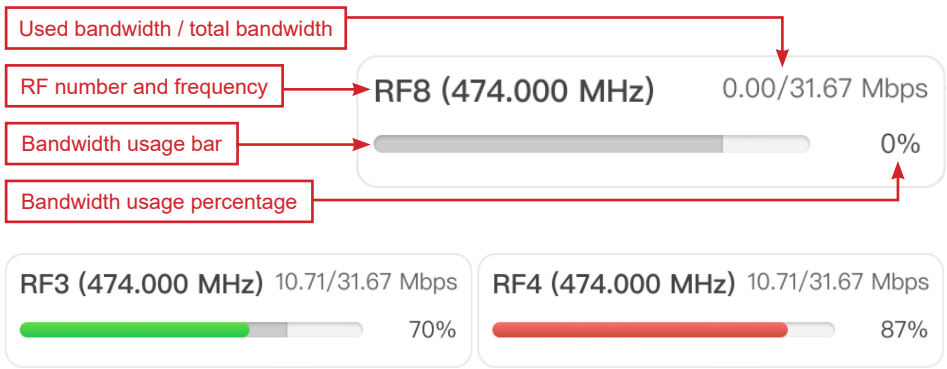
4. Stream Information



8.5.1 Frequency Bars

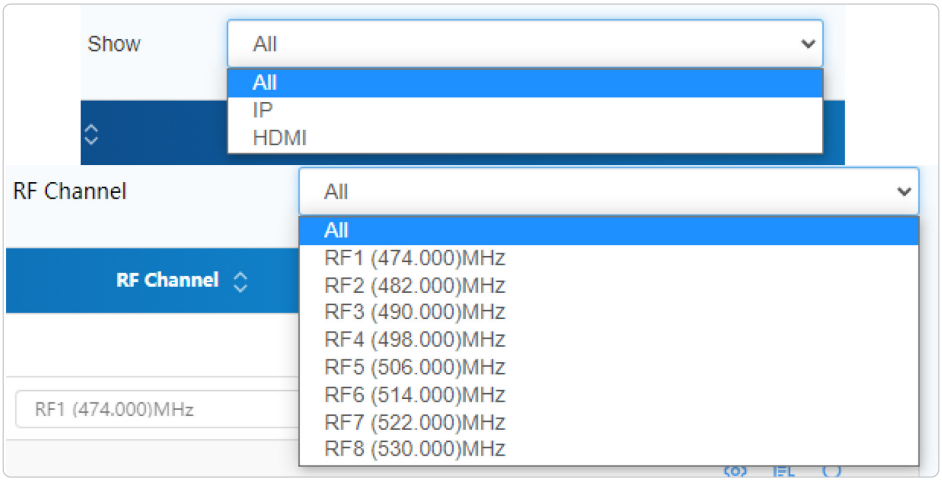
The bar will move while the user sends the programs to the frequency.

We recommend up to 80% use of total bandwidth is optimal. Once over 80%, the colour bar will change from green to red as a warning signal.



8.5.2 List Filter

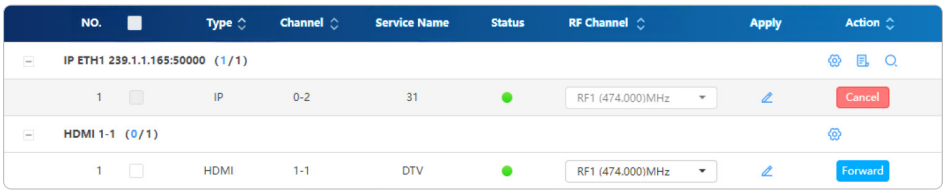
The router list contains a lot of information and streams. Use the list filter to display only the information required.



8.5.3 Router List

In this list, you can see all the input streams and the programs preset frequency with the Forward button.

Please pay attention to the Frequency Bar and do not exceed 80% of the usage, which might cause picture issues.



Common PID edit: Program number, Service name, Provider, Major number & Minor number.

Timeout setting / CA filtering enable / PID remapping: We recommend enabling this function to avoid PID issues.

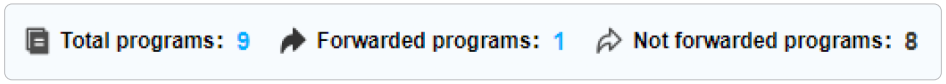
PSI/SI viewer displays PSI/SI table.

Refresh. This ICON only appears in IP stream and satellite stream.

DO NOT set the PMT PID, VIDEO PID and AUDIO PID with the same ID.

8.5.4 Stream Information

This information is a summary of the router list, which is very helpful to the operators.



8.6. Output

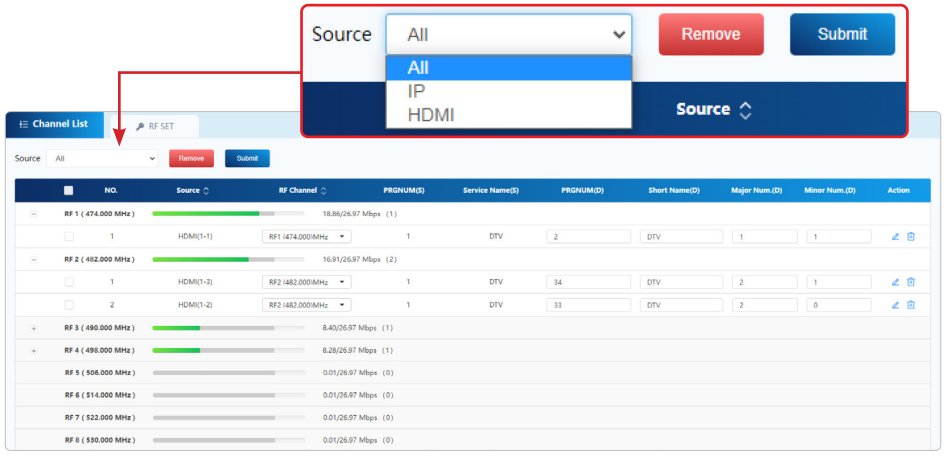
8.6.1 Output Channel List

In the Output page, you can easily reschedule the program and PIDs.

There is also a “Source” drop-down menu filter for quick viewing.

Remove: Delete and Batch delete.

Submit: Click submit to apply the changes in this list.



8.6.2 RF Setting

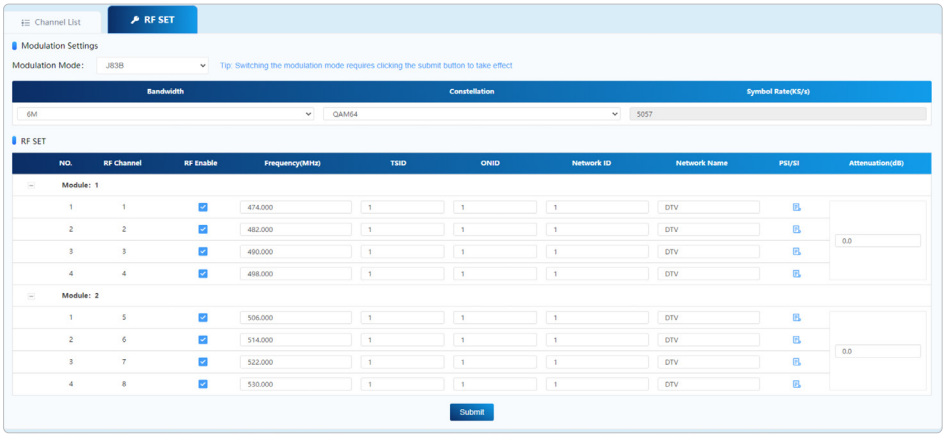
In this page, you can set up the output modulation with its parameters and the output frequencies.

Modulation Mode: Our device supports all the major modulation, but it will display one in a regular device. Please contact our sales team for more OEM requirement.

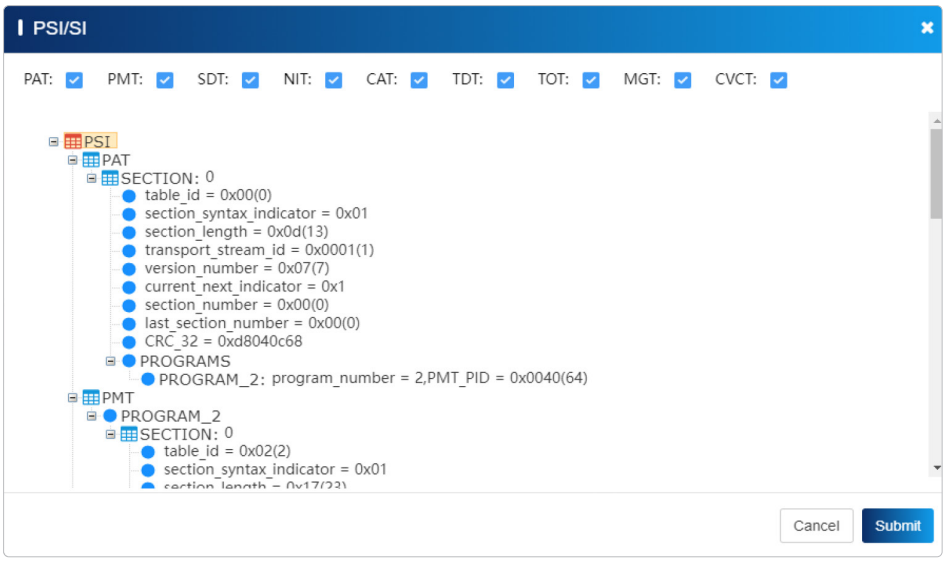
Modulation Settings: Different combinations have different bandwidth. We suggest you use default settings.

RF Enable: RF channel enable and disable.

Frequency: Input the frequency in the first box and the system will do the rest.



By clicking the PSI/SI button, the system will pop up the channel PSI/SI table for your reference.



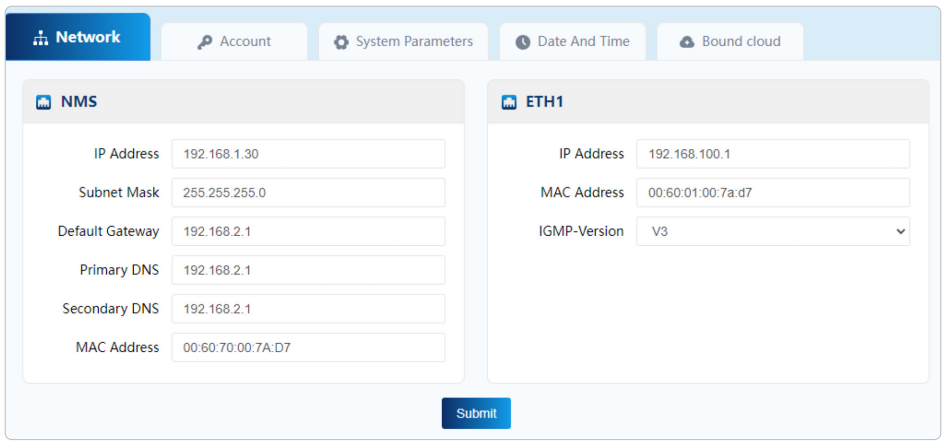
Reminder: The output frequencies are 4 continuous ones. You only need to fill the first one and the system will show the other three.

8.7 System

8.7.1 Network Settings

Management in IP address should only be changed when it is necessary to manage the entire system from a different subnet. Otherwise, please use the current default settings.

IGMP Version: If your input IP stream contains IGMP, please select the right version to match the inputs.



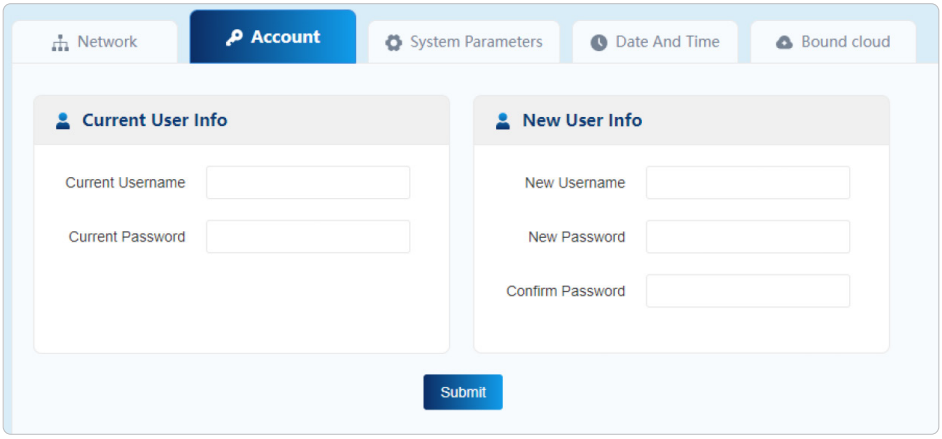
Making changes in this area can affect the system communication. **PROCEED WITH CAUTION!**

8. WEB MANAGEMENT (continued)

8.7.2 Account

To verify the user name and the password, please input your current user name and password. Please remember that they are both case-sensitive.

If you forget your new user name or new password, you can use the reset “Default” button on the front panel to restore factory settings.



8.7.3 System Parameters

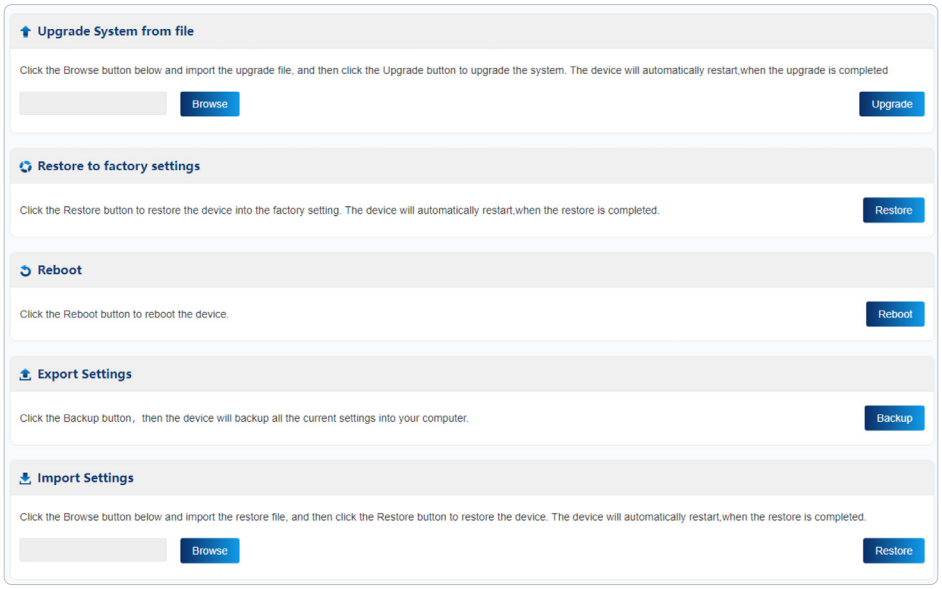
Upgrade system from file: Upgrade the modulator with the latest software.

Restore to factory settings: The restore function will recover the input and output settings and the IP address to the factory mode.

Reboot: To reboot the modulator.

Export Settings: Back up the input and output settings to your computer.

Import Settings: Recover the settings to the modulator from your computer.



Notice: Another method to restore all settings is to press the default button in the front panel for 3 to 5 seconds. If you see the running light is flashing, that means the settings restore is complete.

9. QUICK IP ETHERNET CONNECTION GUIDE

1. Log into your operation system as the administrator.

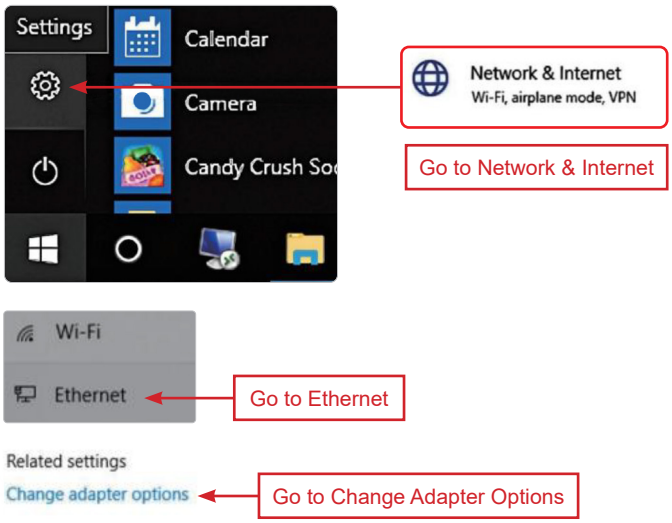
2. Go to “ Windows Start”.

3. Go to Windows Settings.

4. Go to “Network & Internet”.

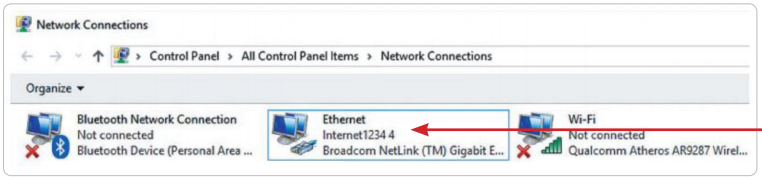
5. Go to “Ethernet” on the left side of the menu.

6. Go to “ Change adapter options”.

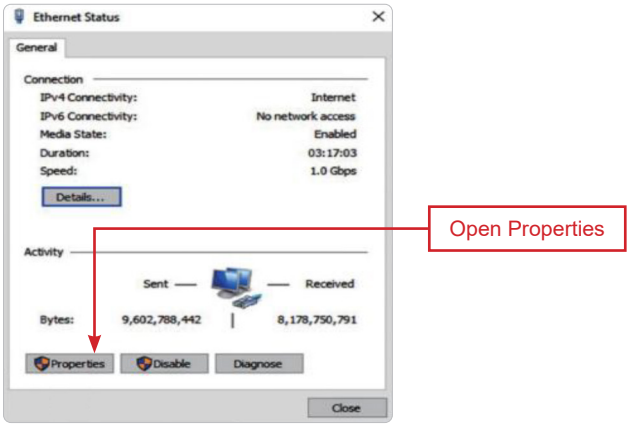


9. QUICK IP ETHERNET CONNECTION GUIDE (continued)

7. Double click on the Ethernet Source or Right Click and select “Properties”.

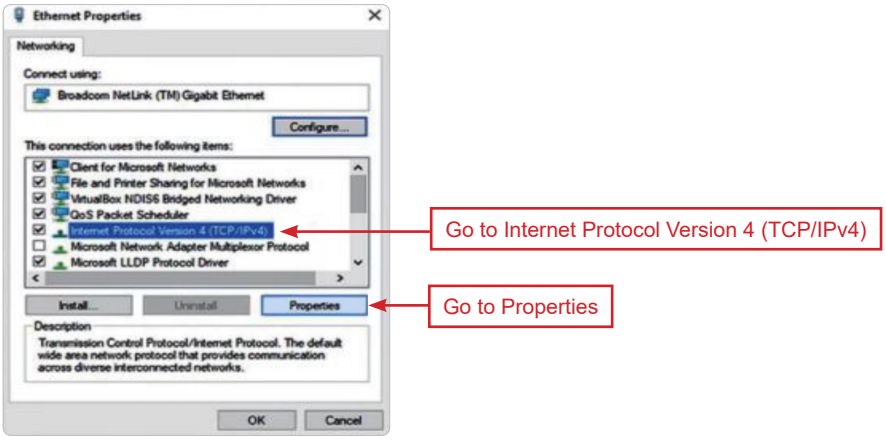


8. Open “Properties”.

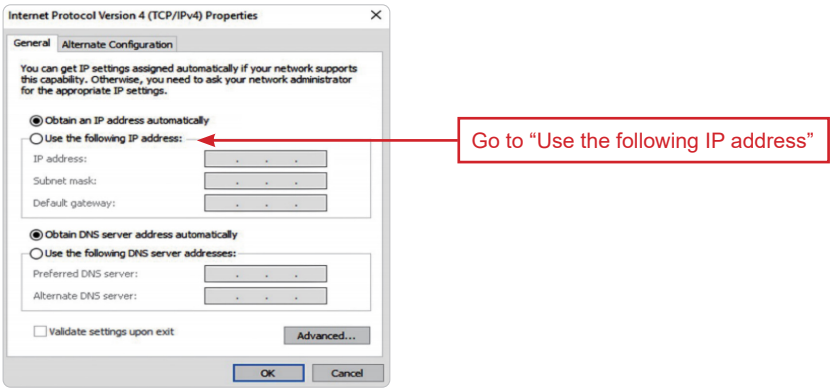


9. Go to “Internet Protocol Version 4 (TCP/IPv4)”.

10. Go to “Properties”.



11. Go to “Use the following IP address”.



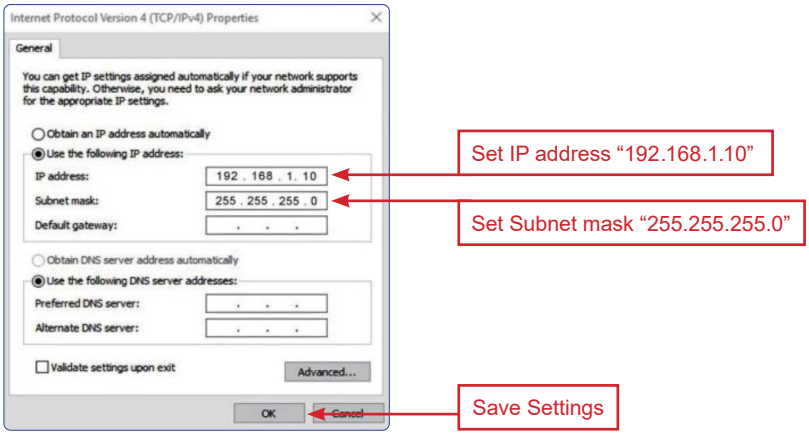
12. Set IP address:

Set IP address: 192.168.1.10

Set Subnet mask: 255.255.255.0

Set Default gateway: 192.168.1.1

13. Click “OK” to save all settings.



10. TROUBLESHOOTING

	Error / Issue	Recommended Action
1	**Power LED is not lit.**	Check the power cord connection.
2	**Can't login to the NMS.**	See Chapter 10.
3	**The WEB UI is not in order and you can't save the settings.**	Clear your browsing data.
4	**CH1 to CH8 LED are not lit.**	Check the power is on for the input video device.
		Check the HDMI cable connections or try another HDMI cable.
		Check the input video resolution.
5	**Unknown shown in the NMS.**	Video input is not detected. Check video input source.
		Video resolution is not supported. Check the input video resolution.
6	**Other issues.**	Please contact us for technical support.

11. WARRANTY

Bitek equipment has been thoroughly tested and found to be in proper operating condition when shipped from the factory and is warranted to be free from defects in materials or workmanship that may develop within one year of the date of purchase. Bitek agrees to remedy such or furnish a new part, or at its option an entire unit, or any part of a unit that disclosed such defect, provided that the unit or part is returned to Bitek or Bitek authorised service facility according to the terms listed below.

Prior authorisation with a return authorisation number issued by Bitek or its representative is required for all returns. The purchaser shall be responsible for all freight charges on shipment to Bitek unless otherwise authorised. Charges to return a unit or part to purchaser will be paid by Bitek. Claim for damage in shipment to the purchaser must be filed by the purchaser with the carrier in accordance with the carrier's regulations.

Bitek shall not be responsible for the shipping charge if the returned unit turns out to be flawless.

A Return Material Authorisation (RMA) Number is required on all products returned to Bitek, regardless if the product is being returned for repairs or credit. Before returning product, please contact Bitek with the following:

12. RETURN MATERIAL AUTHORISATION FORM

Buyer:	
RMA Number:	
Model Number:	
Products ID Number:	
Reason (fault/issue) for return:	

HILLS Antenna®

Thank you for using our products. For more products or information, please visit:

www.hillsantenna.com.au

BITEK PTY LTD

www.bitek.com.au 1300 601 915 enquiry@bitek.com.au