

# DT-QAM-ENC-4-MPG2 and DT-QAM-ENC-8-MPG2 User Manual









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# Introduction

The **DT-QAM-ENC-4-MPG2** and **DT-QAM-ENC-8-MPG2** are HD encoder modulators featuring both H.264 and MPEG-2 encoding, enabling seamless integration with a wide range of television systems. Each input can be individually encoded and assigned to a different QAM channel, offering flexible broadcasting options. Configuration and management are simple through a user-friendly web-based interface.

# **Specifications**

Input	
Input Connector	RJ45 - 1 GbE and HDMI - 8
Transport Protocol	UDP, RTP
Max Input IP Address	8
Input Transport Stream	MPTS and SPTS

Output					
Standard	DVB-C	DVB-T	ATSC	J.83B	DTMB
Bandwidth	6M	6, 7 or 8 M	6M	6 M	8 M
Constellation	64 QAM, 256 QAM	QPSK, 16QAM, 64QAM	8VSB	64 QAM, 256 QAM	QPSK, 16QAM, 32QAM, 64QAM QAM_4NR
	Symbol Rate	Code Rate			Code Rate
Other Settings	_	Guard Interval	_	-	Interleave
		2K, 4K, 8K			Sync Frame
		_			PN Phase

RF	
Output Level	≥ 45dBmV
Frequency Range	50-999.999 MHzI
Out-band Rejection	≥60 dB
MER	Typ. 38 dB

General		
Power Consumption	60 W	
Weight	8.2 lbs (3.71 kg)	
Dimensions	12.52 x 10.24 x 1.73" (318 x 260 x 44 mm)	
Language	English	
Warranty	1-Year Limited Warranty	



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 cart, bracket or table. 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 radiator or heat register.
- 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 form 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 us.



# **Unpacking and Handling**

A full DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 is shipped with all equipment assembled, wired, factory tested, and then packaged in an appropriate shipping container.

- DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 digital modulator (QTY=1)
- Power Cord and 3-pin plug (QTY=1)

### **Mechanical Inspection**

Inspect the front and rear of the equipment for shipping damage. Make sure the equipment is clean, and no wire, cable, or connectors are broken, damaged or loose.

#### **Precautions**

- Avoid heat buildup
- · Ensure easy access to rack wiring
- · Facilitate servicing and maintenance
- · Avoid direct heating or air conditioning
- · Make sure rack supports are sufficiently rigid to support racks
- Beware of dripping water onto equipment form leaky roofs, waveguide roof entries and cold water pipe condensations

#### Damage in Shipment

Should any damage be discovered after unpacking the unit, immediately contact DataTronix at 800-688-9282.

#### Installation

The DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 is designed to be installed in a rack shelf or a standard rack. Please follow the instructions below to install the DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 digital modulator:

- 1. Connect the power plug to the jack
- 2. Connect the video source to the DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 modulator
- 3. Connect the DT-QAM-ENC-4-MPG2 or DT-QAM-ENC-8-MPG2 to your laptop or computer
- 4. Power up the modulator



## DT-QAM-ENC-4-MPG2 Front Panel View



- 1. PWR Indicate power on.
- 2. RUN The light will keep flashing when system is on.
- 3. DT-QAM-ENC-4-MPG2: CH1-CH4/ DT-QAM-ENC-8-MPG2: CH1-CH8
- **4. DATA IN:** IP signal input port at 1000M
- **5. NMS** Net management system port [IP:192.168.1.30; USER NAME: user; PASSWORD: user]
- **6. DEFAULT** Press for 10 seconds to restore the encoder to the factory setting \((Like the network setting and PID settings)

# **Rear Panel View**



- HD INPUT PORTS: Feed the HDMI signals into the modulator.
   (4 HD Input on DT-QAM-ENC-4-MPG2/ 8 HD Input on DT-QAM-ENC-8-MPG2)
- 8. RF OUT: 40dBmV maximum output is provided at this port
- 9. TEST: Output level read at this point will be down 20dB from the actual output
- 10. POWER CORD: 12V 5A power source
- 11. ON/OFF SWITCH: Turns the unit on or off
- 12. GDN: For modulator grounding

#### **WARNING:**

For the protection of your equipment and its proper working, it is necessary to connect the DT-QAM-ENC-4-MPG2 / DT-QAM-ENC-8-MPG2 to a ground connection.



# **Web Management**

## Login:

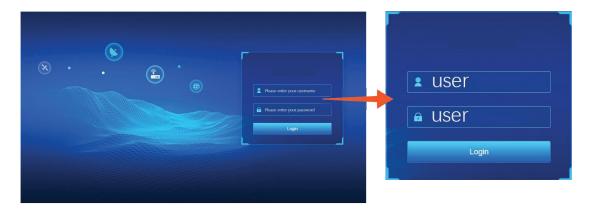
The DT-QAM-ENC-4-MPG2 / DT-QAM-ENC-8-MPG2 has a user friendly interface for programming and monitoring the device. The user can access to the built-in web UI by logging into Google Chrome, Firefox or Microsoft Edge accounts. (The best browsers)

## DT-QAM-ENC-4-MPG2 / DT-QAM-ENC-8-MPG2 Setup Instructions

- 1. Connect the **DT-QAM-ENC-4-MPG2** or **DT-QAM-ENC-8-MPG2** to your computer or laptop using an Ethernet cable via the **NMS** port.
- 2. Power on the modulator and wait approximately 2 minutes until the **RUN** indicator remains steady.
- 3. Open your web browser and log in to the modulator using the default IP address: 192.168.1.30.

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

Username: **user** Password: **user** 



#### NOTE:

Please make sure your computers IP address is in the same subnet as the modulator. Reminders:

- 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 1 byte and a maximum of 32 bytes in length.





## **System Page:**

This page is a read-only one which displays the general health of the unit, such as temperature, Input and output ports and Serial number. The information is provided as a quick way to monitor the system or assist with troubleshooting issue.



**Serial Number:** The unique ID for this modulator.

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

**Modulation:** Indicates the RF output modulation.

**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 while the gray means disconnected.

**Cooling Fans:** There are four cooling fans installed in the left side of the case.



The fan is working.



The fan is down. Please replace it.

Front Panel: Indicates the IP input (1000M) and NMS status (100M).

**ON-CLOUD State:** Green for connecting with the Cloud server. Grey means disconnection.

Input: Set up the input parameters

**Route:** Select the output channels/services.

**Output:** View the output channels and set up the modulation parameters. **System:** System settings: Network/ Account/ System/ Time and Date/ Cloud



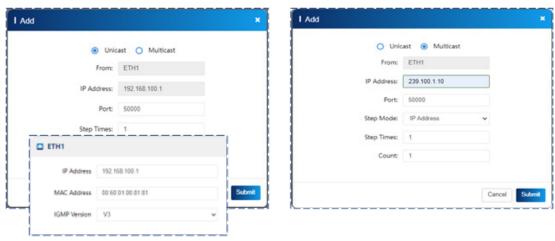
### **Input Settings - IP:**



- 1. Click the **+Add** button to add an IP address.
- 2. In most cases, select Multicast and enter the desired IP address.
- 3. Click **Submit**. The system will analyze the IP stream and display the available programs in the Router section.

#### To Delete an IP Address:

Check the box next to the IP address you wish to remove, then click **Delete.** 



Unicast: Select to input the unicast streams. Normally it is the same like the output port.

Multicast: Select to input the multicast streams. Normally it starts with 239.

**From:** A read-only information.

IP Address: Input the IP address. When you select unicast, please change the IP in SYSTEM>-

NETWORK>ETH1.

**Port:** Input the port number.

**Step Mode: IP address:** Only Change the Ip Address

Port: Only change the Port

IP address +Port: Changes the Ip Address and the Port

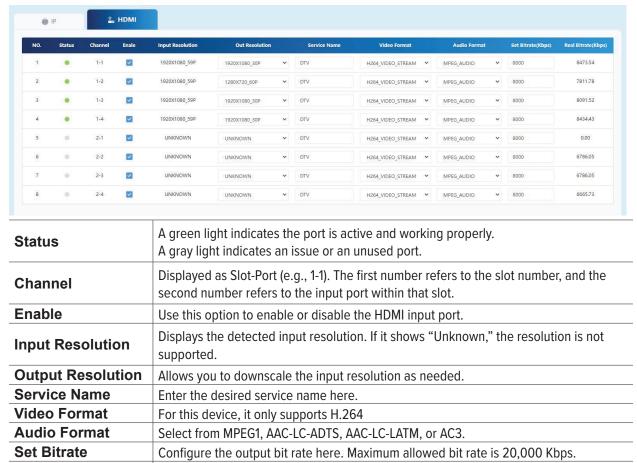
**Step Times:**The system will add 1 to the IP address or port according to the Step mode. The max

value is 10.

Count: The system will generate the IP address according to the count value. The max value is 256.



## **HDMI Signal**



#### NOTE:

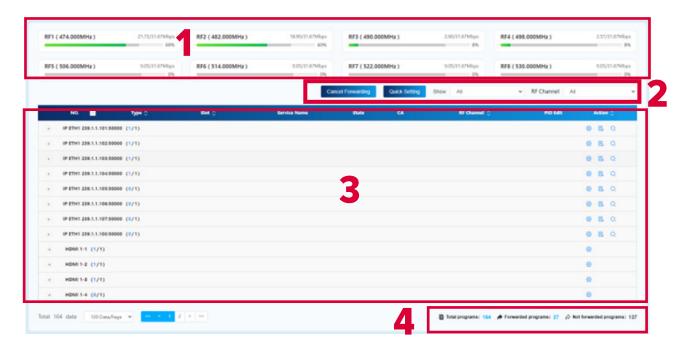
**Real Bitrate** 

For broad compatibility, it is recommend to use AAC-LC-ADTS. For efficient transmission, you might choose AAC-LC-LATM.

Displays the actual current output bit rate



# **Router Settings**



The router setting is the most important in this modulator. This is where you are able to view all input channels, and forward to output frequencies

1	Bandwidth Progress Bar
2	Quick setting and List Filter
3	Service/Channel List
4	Service/Channel Information



## **Bandwidth Progress Bars**



The progress bar will move as the user sends programs to the frequency. We recommend utilizing no more than 80% of the total bandwidth, indicated by the gray zone. Once usage exceeds 80%, the bar will change from green to red as a warning signal.

RF Number	It could be 4RF or 8RF according to your order.	
Frequency	Change the frequency in the output settings.	
Used bandwidth/ Total Bandwidth	The total bit rate of your selected services/ Total bandwidth you can use.	
Bandwidth usage percentage	Precisely express the used bandwidth in percentage.	



#### Green Bar:

Additional channels or services can be added to this frequency, as the current data rate usage is low.



#### Grey Bar Covered:

The data rate has reached the maximum recommended limit. To maintain stable operation, no additional services should be added to this frequency.

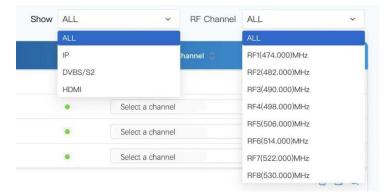


#### Red Bar:

The recommended data rate has been exceeded, which may cause data overflow. This can result in distorted images or a complete loss of service on the affected channel.



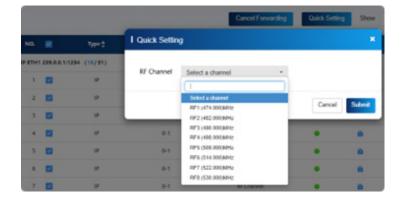
#### Information Filter



Since the router list may contain a large amount of information, a filter is provided to help manage channels and services more efficiently.

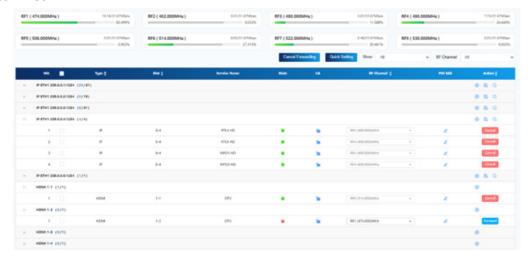
Simply select the input type or output frequency type from the drop-down menu, and the system will display the corresponding information based on your selection.

Cancel Forwarding	Cancel all the forwarded channels/services in the router list.
Quick Setting	Forward the selected channels/services to a desired frequency.





## **Router List**



View all input streams and assign programs to preset frequencies using the Forward button. Keep the Progress Bar below 80% to avoid picture issues.

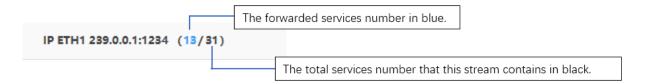
Steps:

- 1. Find your desired services
- 2. Select an RF channel
- 3. Click Forward to assign services

	This checkbox is used to quickly select the stream under unfolded stream title
Type	The input stream type : IP,HDMI
Slot	The stream's input slot. E.g. : 0-5 means the IP input and this is the 5th IP address.
Service Name	The service's original name.
State	Green :signal is locked; Orange: PSI is changed; Red: The stream is lost.
CA	1 This is a free to view service;
RF Channel	Choose the RF output channel for the selected stream. To change the frequency, navigate to OUTPUT > RF SET > Frequency.
Action	Forward: use this service; Cancel : No use this service
• =	■: Unfold the stream details; ■: Fold the stream details.
<u> </u>	Common PID Edit: Modify program number, service name, provider, LCN, etc.*
<b>©</b>	Timeout setting/ CA filtering enable / PID remapping. *
₽,	PSI/SI viewer. It will display the PSI/SI table here.*
Q	Refresh. This ICON only appears in IP stream and satellite stream.

<sup>\*</sup> View more information in next page.

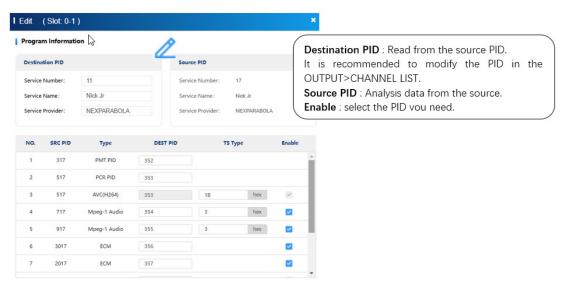


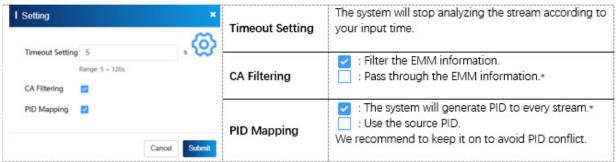


#### Stream Information

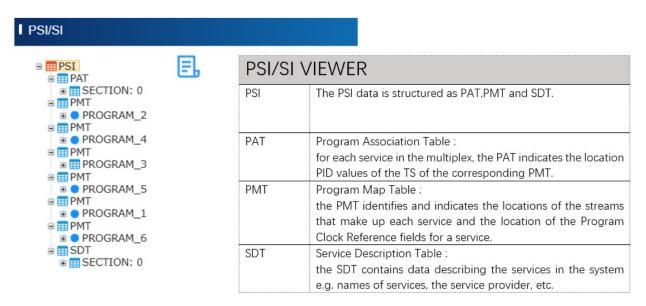


This information is a summary of the router list, which is very helpful to the operators.



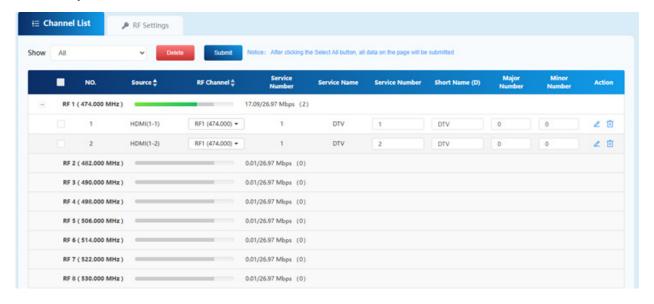






## **Output**

**Channel List:** In the OUTPUT page, we can reschedule the channels/services and PID in a much easier way.





Delete	Delete the selected service.
Submit	Submit the updated service.
	This checkbox is used to quickly select the stream under unfolded stream title
Source	The input stream type : IP,DVBS/S2
RF Channel	Select a output RF channel for the desired service. To modify it, please go with OUTPUT>>RF SETTING>>Frequency
Service Number	To create a service list. But this function has to be supported by the set- top-box.
Short Name	Input the short name here.
Major Number	Major number input value range is 0 to 1023.
Minor Number	Minor number input value range is 0 to 1023.
• =	■: Unfold the stream details; =: Fold the stream details.
2	Common PID edit : Service number/Service name/Provider
Û	Delete this service.

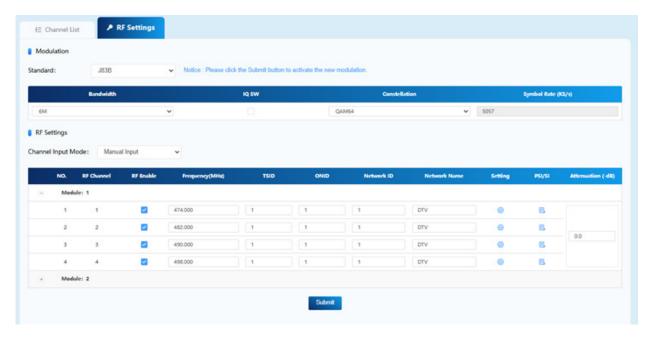
# NOTE:

If there's any change applied in service number/service name, Major number or Minor number, please tick the checkbox and press Submit to save. Otherwise, the change won't be applied to the system.



# **RF Setting**

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



## Modulation

ATSC	
Bandwidth	Select ATSC channel bandwidth from 6/7/8MHz. 6MHz for the regular output data rate.
Constellation	8VSB
IQ SW	IQ Swap ensures the demodulator interprets the constellation correctly.
Symbol Rate	The symbol rate is fixed in 10760 KS/s.
J.83B	
Bandwidth	Select QAM channel bandwidth from 6/7/8MHz. 6MHz for the regular output data rate.
Constellation	Select the signal modulation 64/256QAM
Symbol Rate	The symbol rate is fixed in 5057 KS/s.

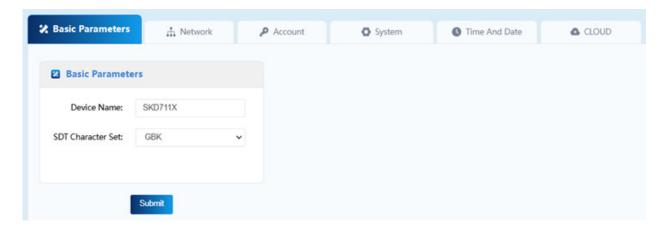


# **RF Settings**

CH Input Mode	Choose the input frequency mode from Input from List or Manual input.
RF Enable	Enable or disable the channel (A gap of the selected bandwidth occurs)
Frequency	Two bonded output channel blocks 1-4 and 5-8. Set the start output frequency of block 1 by setting channel 1 and the start output frequency of block 2 by setting channel 5. All further channels will be set automatically according to the bandwidth.
TSID	Transport Stream ID (Requires a unique number for each channel).
ONID	Allocating the Original Network ID (Identifier of the provider).
Network ID	In local Cable TV system, this is an optional ID. You can input any value as you like.
Network Name	Input the network name.
<b>®</b>	Input private data
<b>≣</b> ,	PAT/PMT/SDT/NIT/CAT/EIT/TDT/TOT table insertion
Attenuation	Reduce the RF output level

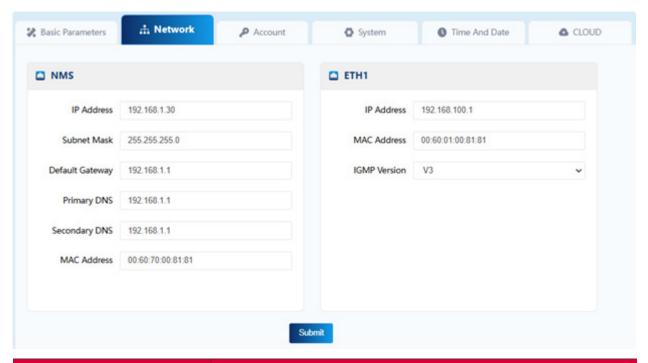
Any changes applied here requests SUBMIT to save.\*\*\*

# **Basic Settings**





# **Network Settings**



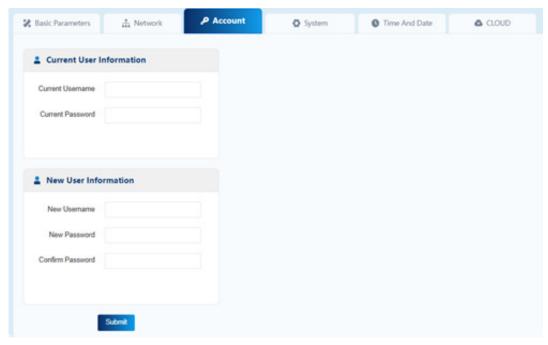
NMS	
IP address, Subnet mask, Gateway, Primary and Secondary DNS	These are network parameters of the management network interface of the SKD711X device, which can be changed as required.
MAC Address	MAC address of the management network interface of the DT-QAM-ENC-** device.
ETH1 (Data In)	
IP Address	The IP address for this port, which is related when it is used under Unicast mode.
MAC Address	MAC address of the input network interface of the DT-QAM-ENC-** device.
IGMP Version	If your input IP stream contains IGMP, please select the right version to match the input stream.

#### NOTE

- 1. Making changes in this area can affect the system communication. --PROCEED WITH CAUTION!!!
- 2. Management in IP address should only be changed when it is necessary to manage the entire system from a different subnet. Otherwise, please leave what it is.



#### Account

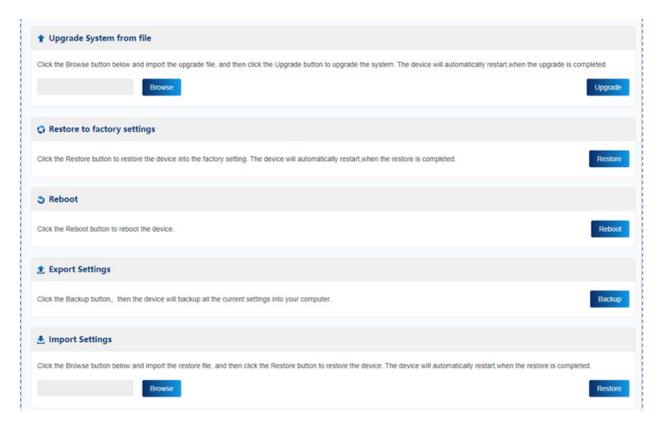


To verify the username and the password, please input your current username and password. **Please notice that they are both case-sensitive.** 

If you forget your new username or new password, you can use the reset button in the front panel to restore.



## **System**



**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.

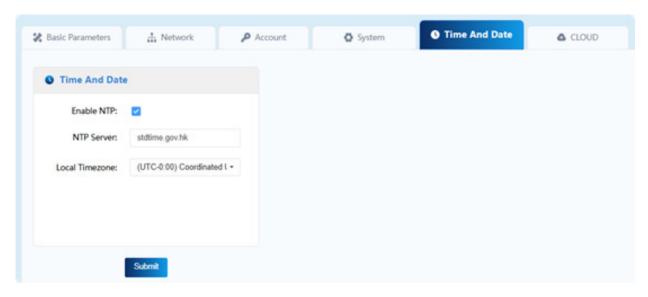
#### NOTE:

Another way to restore the settings:

Press the default button in the front panel for 10 seconds. If you see the running light is flashing, that means the restore is completed.



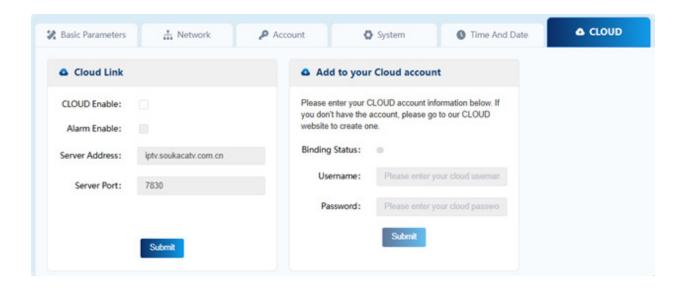
## **Time and Date**



Enable NTP <a></a>	
NTP Server	Input the NTP server address which is best for you.Make sure the NMS port is connected with the Internet.
Local Timezone	Select a timezone
Enable NTP	
Time And Date	Press the TODAY button, and the modulator will read the time and date from your computer.
Local Timezone	Select a timezone



#### Cloud



Cloud Link		
CLOUD Enable	Tick on the checkbox to activate the cloud service	
Alarm Enable	Tick on the checkbox to activate the alarm service	
Server Address	Input the CLOUD server address or the domain name	
Server Port	Input the CLOUD server	
Submit	Press submit to save the information	
Add to your Cloud account		
Binding Status	Green for connecting with the Cloud server. Grey means disconnection.	
Username	Your CLOUD account name.	
Password	Your CLOUD password	
Submit	Press submit to save. A manual reboot is requested to activate the settings.	

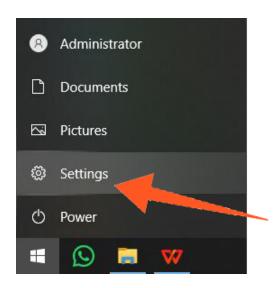


#### **Quick IP Ethernet Connection Guide**

#### NOTE:

Make sure you login your operation system as the administrator.

1. Go to "Windows Start"





- 2. Go to Windows Settings
- 3. Go to "Network & Internet"
- 4. Go to "Ethernet" on the left side of the menu

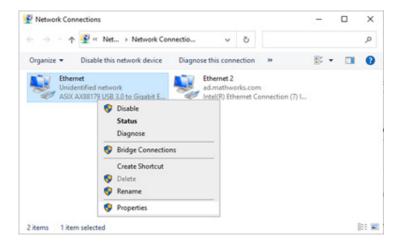


5. Go to "Change adapter options"

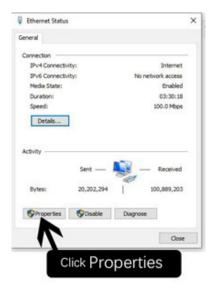




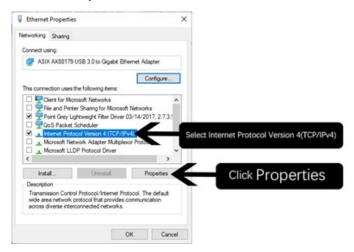
6. Double click on the Ethernet Source or Right Click and select "Properties"



# 7. Open Properties

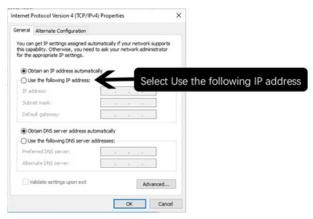


- 8. Go to "Internet Protocol Version 4 (TCP/IPv4)
- 9. Go to "Properties"



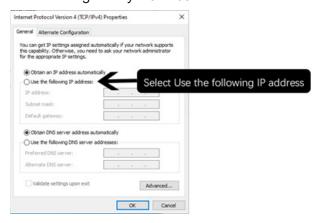


# 10.Go to "Use the following IP address"



#### 11. Set IP address

Set IP address: 192.168.1.10 Set Subnet mask: 255.255.255.0 Set Default gateway: 192.168.1.1



#### 12. Save all the settings.







# **Common Troubleshooting**

Symptom	Recommended Action
Power LED is not lit.	Check the power cord connection
Can't login to the NMS	Check Chapter 10
The WEB UI is not in order and can't save the settings	Clear your browsing data
	Power on the input video device
CH1 to CH8 LED are not lit	Check the HDMI cable
	Check the input video resolution
	No video input
Unknown shown in the input resolution	No supported video resolution
Other issue	Please contact us for technical support





# Warranty

# **DATATRONIX 1-Year Limited Warranty**

DATATRONIX. (the "Company") warrants to the Original Purchaser that the item purchased is free from defects in workmanship or material under normal use. This warranty starts on the date of shipment of the hardware to the Original Purchaser.

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component. To obtain service, the Original Purchaser must return the item to the Company properly packaged for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and a return shipping address on where to deliver the hardware, call 610-429-1821. The shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company's liability for defective hardware is limited to repairing or replacing the hardware.

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), accident, unusual physical, electrical, or electromechanical stress, modifications, neglect, misuse, operation with media not approved by the Company, tampering with or altering of the hardware, riot, war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout or interruption or failure of electricity, air conditioning, or humidity control, Internet, network, or telephone service.

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of shipment to the Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the laws of your local jurisdiction to find out whether the above limitation applies to you.

The Company shall not be liable to your for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been advised of





the possibility of such damages, or for any claim brought against your by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the laws of your local jurisdiction to find out whether the above exclusion applies to you.

This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modification to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon. This warranty gives you specific legal rights. You may also have other rights which vary from one

jurisdiction to another.