Manual

DataTronix
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DT-QAM-12-SD
User Manual

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1. Introduction

The **DataTronix 12-Source SD RCA to QAM Encoder Modulator** is a professional video distribution device designed to convert multiple standard-definition video sources into digital television channels for delivery over a coaxial cable network. By combining video encoding and RF modulation in a single unit, it allows facilities to efficiently distribute multiple video programs to televisions equipped with integrated QAM tuners.

The unit accepts up to **twelve composite video inputs (RCA) with stereo audio**, making it compatible with a wide range of legacy and standard-definition video sources such as media players, security cameras, satellite receivers, and digital signage systems. Each input is encoded using **MPEG-2 video compression** and then multiplexed into f**our configurable QAM digital RF channels** for distribution across a coaxial infrastructure.

Designed for reliability and ease of deployment, the encoder modulator features a **compact 1RU rack-mount chassis** suitable for professional installations including hotels, healthcare facilities, campuses, security systems, and digital signage networks. A **web-based management interface** allows administrators to configure input channels, RF frequencies, and system settings from any computer connected to the network.

The DataTronix encoder modulator is particularly useful in environments where **standard-definition distribution is required,** such as systems supporting legacy televisions or installations where high-definition content distribution is restricted by licensing or bandwidth limitations.

Key Features

- **12 RCA composite video inputs** with stereo audio
- Converts **12 SD video sources into 4 digital QAM channels**
- **MPEG-2 video encoding** optimized for standard-definition sources
- Supports **MPEG 1 Lay II, AAC-LC, HE-AAC, AC3 audio formats**
- **RF output frequency range:** 54–864 MHz
- Supports **64-QAM and 256-QAM** modulation
- **Web-based configuration and monitoring** interface
- **High-power RF output:** 50+ dBmV
- **Typical MER levels:** 38+ dB
- **Standard 1RU rack-mount chassis** for easy installation

2. Specifications

Input	
Input connector (Rear panel)	12 x RCA
Video Encoding	MPEG 2
Video Input Resolution	720 x 576p; 720 x 576i
	640 x 480p; 640 x 480i
Video Bit Rate	5000 - 19000 Kbps
Audio Encoding	MPEG 1 Lay II, AAC-LC, HE-AAC, AC3
Audio Sample Rate	32 / 44.1 / 48 KHz

Output	
Output Connector	1 x RF Female @75Ω
Output Range	54-864 MHz
Output Frequency	4 Agile Channels
Output Level	≥45dBmV
MER	Typical 38dB
DVB-C J.83B	
Bandwidth	6M, 7M, 8M
Constellation	64 QAM, 256 QAM
Symbol rate	Symbol Rate Automatically

TS Processing	
Advanced PSI/SI Regeneration	Yes

General	
Input voltage	90 - 264VAC, DC12V 5A
Power Consumption	Less than 49.1W
Rack Space	1RU
Weight	5.64 lbs (2.56 kg)
Dimensions	18.97 x 1.73x 10.23” (482 x 44 x 260 mm)
Warranty	2-Year Limited Warranty

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3. Product Overview

DT-QAM-12-SD Front Panel View

1. **PWR**: Indicate power on.
2. **RUN**: The light will keep flashing when system is on.
3. **Channel:** The light will keep flashing when the signal is lost.
4. **NMS**: Net management system port
   [IP:192.168.1.30; USER NAME: user ; PASSWORD: user]
5. **DEFAULT**: Restore the settings to factory mode

DT-QAM-12-SD Rear Panel View

6. **Audio/Video Input Ports:** Left/Right (White/Red) audio inputs and Analog(Yellow) video for 12 sources
7. **RF Adj:** Adjust the output RF level
8. **RF TEST:** Output level read at this point will be down 20dB from the actual output
9. **RF OUT:** 50 dBmV maximum output
10. **GDN:** For modulator grounding
11. **A/C Power Input & Switch:** To Turn ON and OFF the device

WARNING:
For the protection of your equipment it is necessary to connect the DT-QAM-12-SD to a ground connection.

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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

4. 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.

5. Unpacking and Handling

A full DT-QAM-12-SD is shipped with all equipment assembled, wired, factory tested, and then packaged in an appropriate shipping container.

- DT-QAM-12-SD digital modulator (QTY=1)
- Power Cord (QTY=1)

5.1 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.

5.2 Precautions

- Prevent excessive heat buildup around the equipment.
- Ensure clear and convenient access to rack wiring.
- Allow adequate space for servicing and routine maintenance.
- Avoid placing equipment in direct airflow from heating or air conditioning systems.
- Verify that rack supports are structurally sound and capable of supporting the full load.
- Protect equipment from moisture, including leaks from roofs, cable entry points, and condensation from cold water pipes.
- Do not operate the device without its lid or protective cover in place.
- Do not perform any work on the system during a thunderstorm.

5.3 Damage in Shipment

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

6. Installation

The DT-QAM-12-SD encoder modulator is designed for installation in a rack shelf or a standard equipment rack. Follow the steps below to properly install the unit:

1. Connect the power cord to the power input jack.
2. Connect the video sources to the DT-QAM-12-SD RCA input connectors.
3. Connect the DT-QAM-12-SD to your laptop or computer using the network interface for configuration.
4. Power on the encoder modulator.
   Note: During installation, ensure the device is protected from dust and installed in a clean, well-ventilated environment.

7. Programming VIA Web Interface

7.1 Login:

Follow the steps below to access the web management interface of the **DT-QAM-12-SD** encoder modulator**:**

1. Connect the Device

Connect the **DT-QAM-12-SD** to your computer or laptop using an Ethernet cable through the **NMS (Network Management System) port.**

2. Power On the Unit

Turn on the modulator and wait approximately **2 minutes** until the **RUN indicator remains steady.**

3. Open a Web Browser

Launch a web browser and enter the **default IP address: 192.168.1.30** in the address bar to access the login page.

4. Use a Supported Browser

For best performance, use one of the following browsers:

- **Google Chrome**
- **Mozilla Firefox**
- **Microsoft Edge**

5. Enter Login Credentials

Use the default login credentials below:

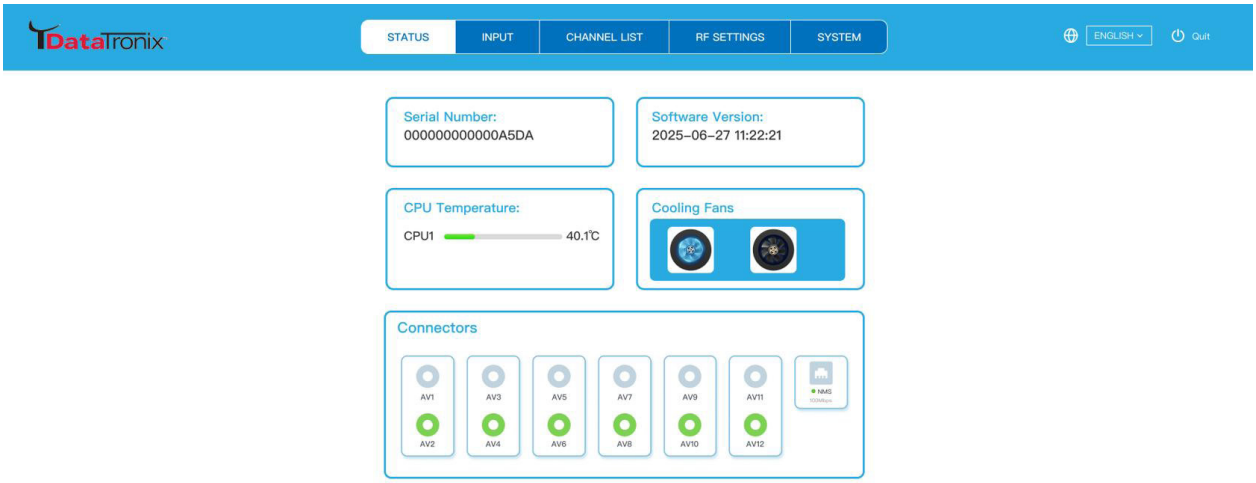
Username: user
Password: user

NOTE:

1. 1. Please make sure your set your computer to the correct range to communicate with the DT-QAM-12-SD (example 192.168.1.100)
2. You may **change the username and password** after logging in if desired.
3. **Usernames and passwords are case-sensitive** and may include letters and numbers.
4. The **username and password length** must be **between 1 and 32 characters.**

7.2 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.



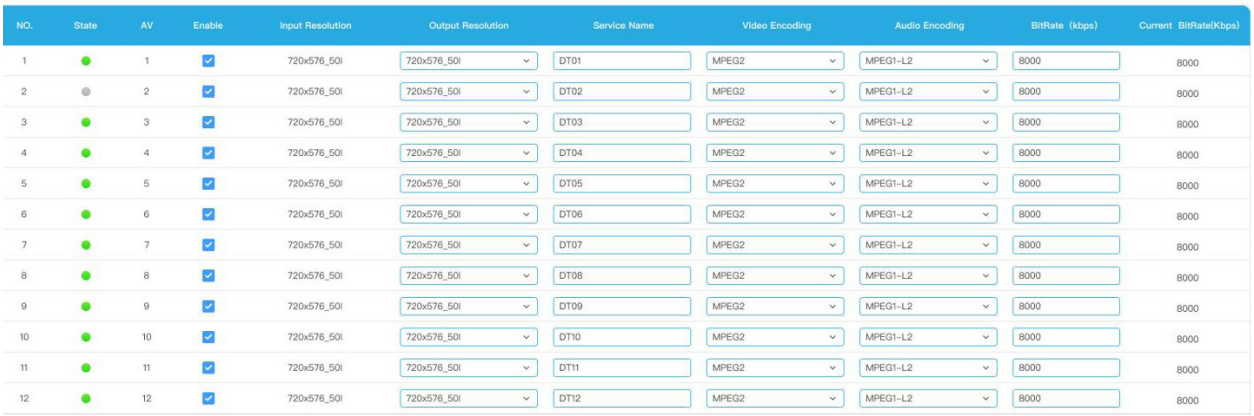
In the left side, it is the MENU while the settings are displayed in the right side.
Serial Number: The unique ID for this modulator.
Software Version: If there's something wrong with this device, please send this information to us.
CPU Temperature: Indicates the CPU working temperature in real-time.
Connectors: Indicate the input connector status. The green color means the satellite signal is locked while the gray color means the signal is unlocked or no connection.
Cooling Fans: There are two cooling fans installed in the left side of the case.

The fan is working.

The fan is down. Please replace it.

Input: Set up the input parameters
Channel List: Set each Channel's information. (Short name, Major and minor channel numbers)
RF Settings: Set each RF output channel frequency number
System: System settings: Network / Account / System / Time and Date / Cloud

7.3 Input Page

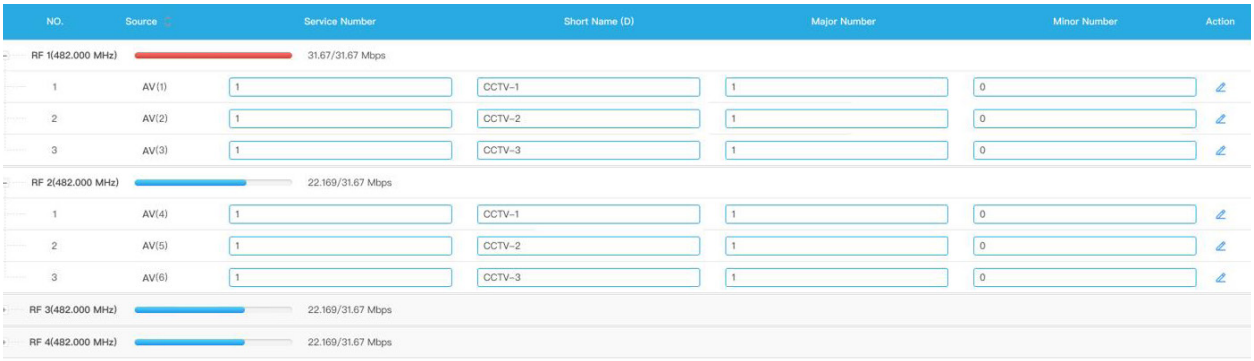


NO.	State	AV	Enable	Input Resolution	Output Resolution	Service Name	Video Encoding	Audio Encoding	BitRate (kbps)	Current BitRate(Kbps)
1		1		720x576_50i	720x576_50i	DT01	MPEG2	MPEG1-L2	8000	8000
2		2		720x576_50i	720x576_50i	DT02	MPEG2	MPEG1-L2	8000	8000
3		3		720x576_50i	720x576_50i	DT03	MPEG2	MPEG1-L2	8000	8000
4		4		720x576_50i	720x576_50i	DT04	MPEG2	MPEG1-L2	8000	8000
5		5		720x576_50i	720x576_50i	DT05	MPEG2	MPEG1-L2	8000	8000
6		6		720x576_50i	720x576_50i	DT06	MPEG2	MPEG1-L2	8000	8000
7		7		720x576_50i	720x576_50i	DT07	MPEG2	MPEG1-L2	8000	8000
8		8		720x576_50i	720x576_50i	DT08	MPEG2	MPEG1-L2	8000	8000
9		9		720x576_50i	720x576_50i	DT09	MPEG2	MPEG1-L2	8000	8000
10		10		720x576_50i	720x576_50i	DT10	MPEG2	MPEG1-L2	8000	8000
11		11		720x576_50i	720x576_50i	DT11	MPEG2	MPEG1-L2	8000	8000
12		12		720x576_50i	720x576_50i	DT12	MPEG2	MPEG1-L2	8000	8000

State: Green light means working while gray means something wrong or unused port.
AV: 1 means the first input audio video signal
Enable: Enable and disable the signal input port
Input Resolution: Display the input resolution.
Output Resolution: Display the output resolution
Service Name: Input the service name here
Video Format: For this device, it only supports MPEG 2
Audio Format: Select from MPEG 1 Lay II, AAC-LC, HE-AAC, AC3
Set Bit Rate: Set the output bit rate here. And the maximum rate is 20,000Kbps.
Real Bit Rate: The real output bit rate

7.4 Output

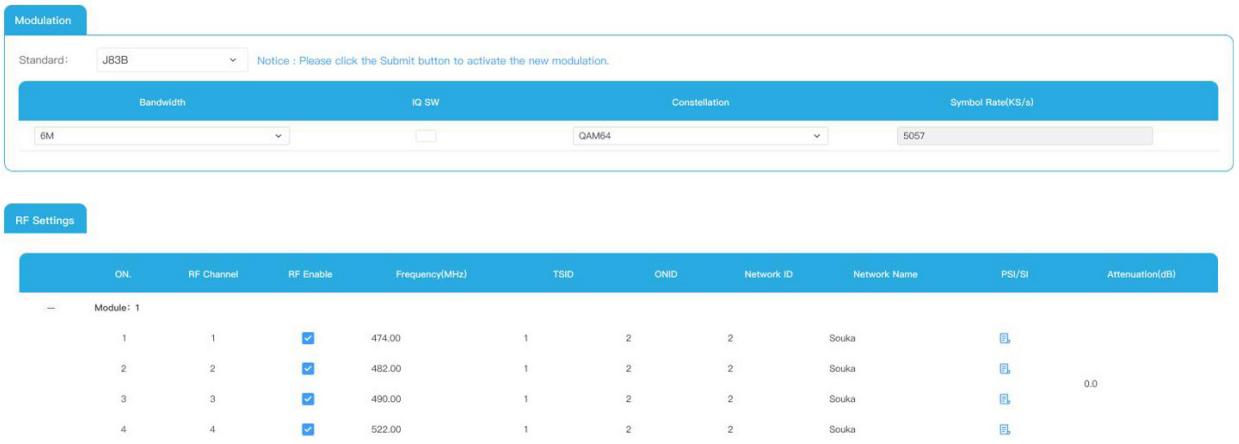
7.4.1 Channel List: In the Output page, we can reschedule the channels/services and PID in a much easier way.



NO.	Source	Service Number	Short Name (D)	Major Number	Minor Number	Action
RF 1(482.000 MHz)		31.67/31.67 Mbps				
1	AV(1)	1	CCTV-1	1	0	
2	AV(2)	1	CCTV-2	1	0	
3	AV(3)	1	CCTV-3	1	0	
RF 2(482.000 MHz)		22.169/31.67 Mbps				
1	AV(4)	1	CCTV-1	1	0	
2	AV(5)	1	CCTV-2	1	0	
3	AV(6)	1	CCTV-3	1	0	
RF 3(482.000 MHz)		22.169/31.67 Mbps				
RF 4(482.000 MHz)		22.169/31.67 Mbps				

Service Number: To create a service list. But this function has to be supported by the set-top-box.
Short Name: Enter a short name for the channel. Up to 64 bytes are allowed.
Major Number: Enter a major channel number for the output program.The range is 1 to 1023.
Minor Number: Enter a minor channel number for the output program.The range is 1 to 1023 .
Common PID edit : Service number/Service Name/PMT PID...

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



Modulation

J.83B (QAM)	
Bandwidth	Select QAM channel bandwidth from 6/7/8MHz. 6MHz is the standard bandwidth.
IQ SW	In-phase and Quadrature
Constellation	Select the signal modulation 64QAM/256QAM
Symbol Rate	The symbol rate will be changed automatically according to the constellation.

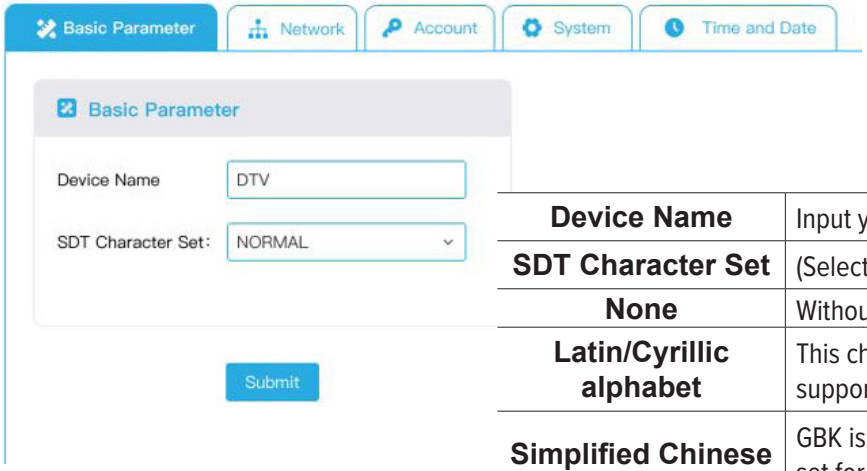
RF Settings

J.83B (QAM)	
RF Channel	The number of output frequency
RF Enable	Enable or disable the channel (A gap of the selected bandwidth occurs)
Frequency	Please input the frequencies here
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.
	PAT/PMT/SDT/NIT/CAT//TDT/TOT/MGT/CVCT table insertion
Attenuation	Reduce the RF output level

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

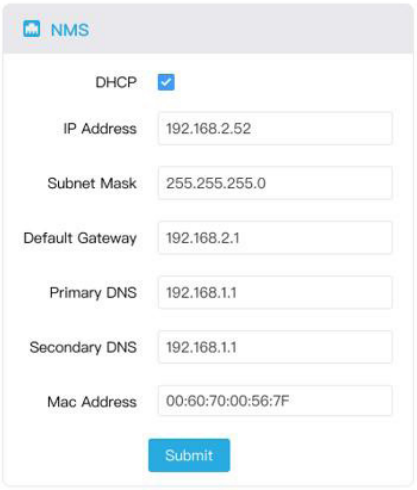
8. System

8.1 Basic Settings



Device Name	Input your device name
SDT Character Set	(Select right charset encoding for your STB)
None	Without adding any identifier.
Latin/Cyrillic alphabet	This character set is particularly designed to support Latin/Cyrillic languages.
Simplified Chinese	GBK is an extension of the GB 2312 character set for Simplified Chinese characters.

8.2 Network Settings

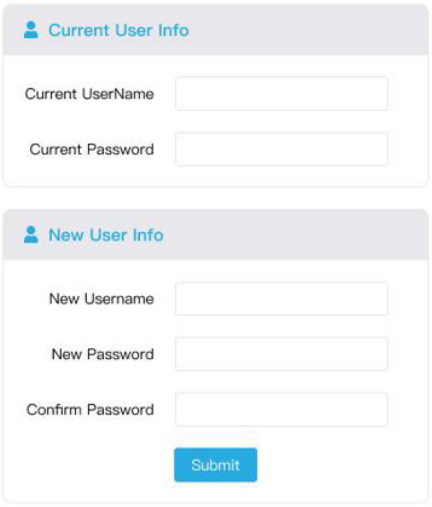


NMS	
IP address, Subnet mask, Gateway, Primary and Secondary DNS	These are network parameters of the management network interface of the DT-QAM-12-SD device, which can be changed as required
MAC Address	MAC address of the management network interface of the DT-QAM-12-SD device.

Note:

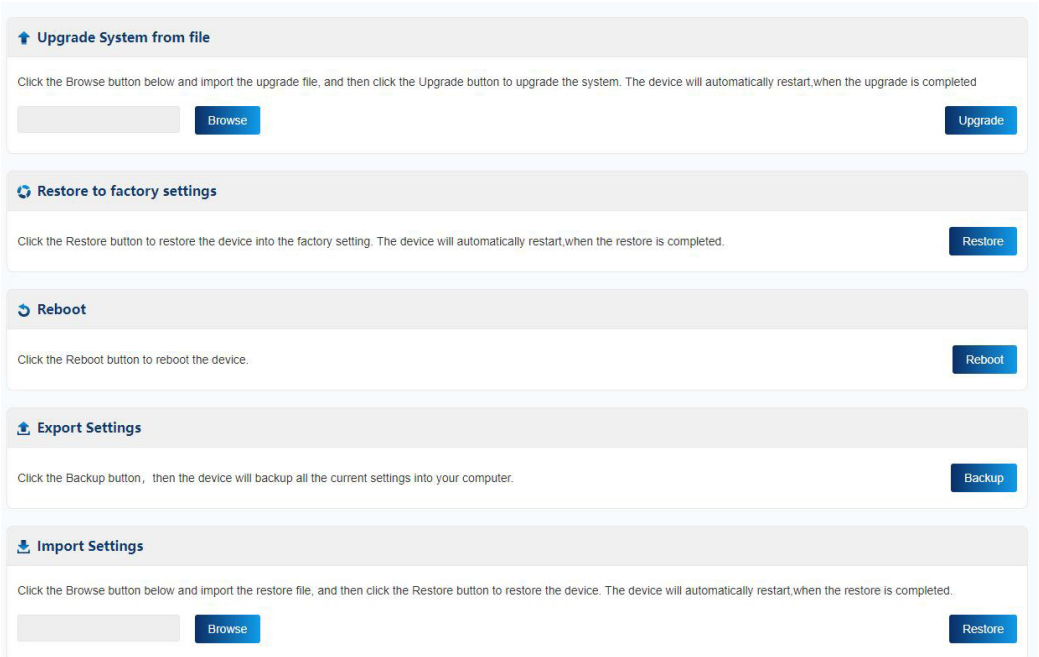
1. Making changes in this area can affect the system communication.
--PROCEED WITH CAUTION!!!
2. Only change the management IP if you need to access the system from a different subnet. Otherwise, leave it as is.

8.3 Account



To verify the user name and the password, please input your current user name and password. **Please notice that they are both case-sensitive.**
If you forget your new user name or new password, you can use the reset button in the front panel to restore.

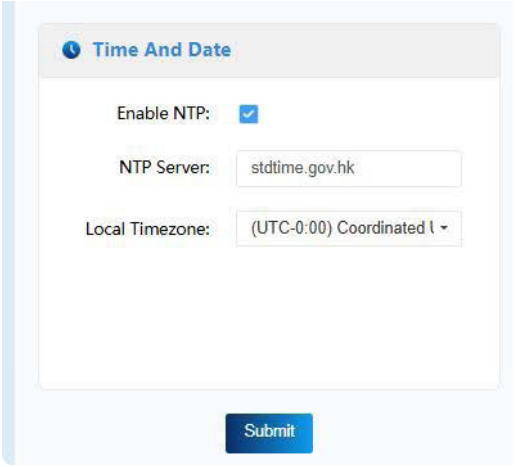
8.4 System

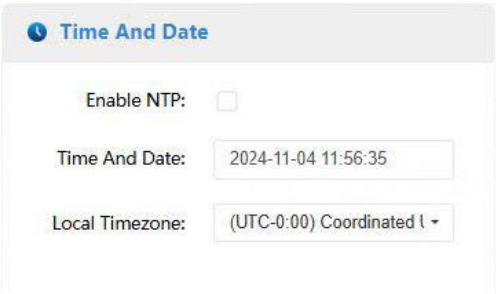


Upgrade system from file: Upgrade the modulator with the latest software.
Restore to factory settings: The restore function will recover the input and output settings and the IP address to the factory mode.
Reboot: To reboot the modulator.
Export Settings: Back up the input and output settings to your computer.
Import Settings: Recover the settings to the modulator from your computer.

NOTICE: 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.

8.5 Time and Date





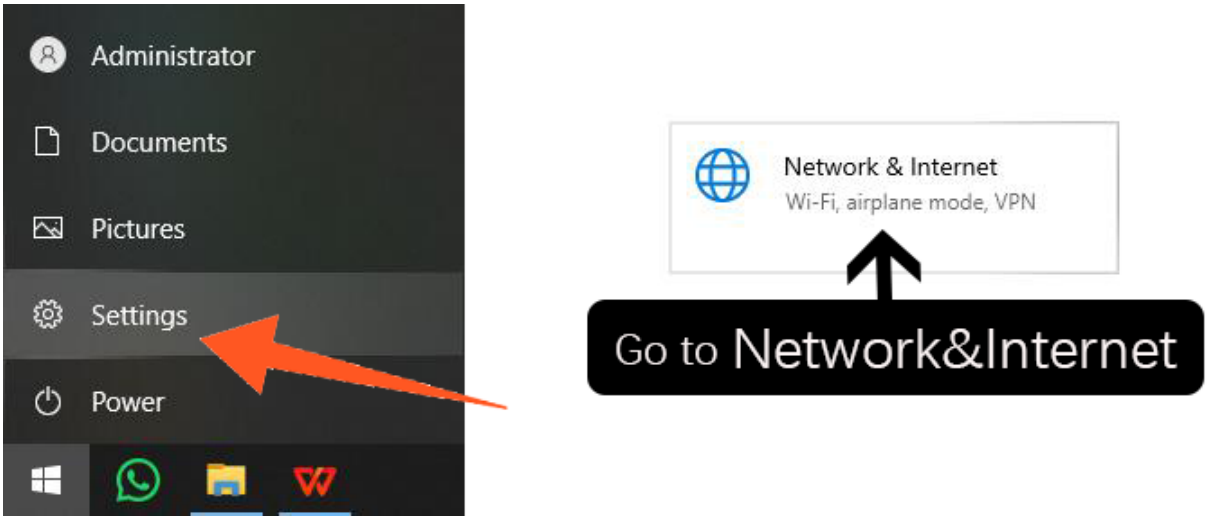
Enable NTP ☑		**Enable NTP** ☐	
NTP Server	Input the NTP server address which is best for you. Make sure the NMS port is connected with the Internet.	**Time And Date**	Press the TODAY button, and the modulator will read the time and datefrom your computer.
Local Timezone	Select a timezone	**Local Timezone**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

9. Quick IP Ethernet Connection Guide

NOTE:

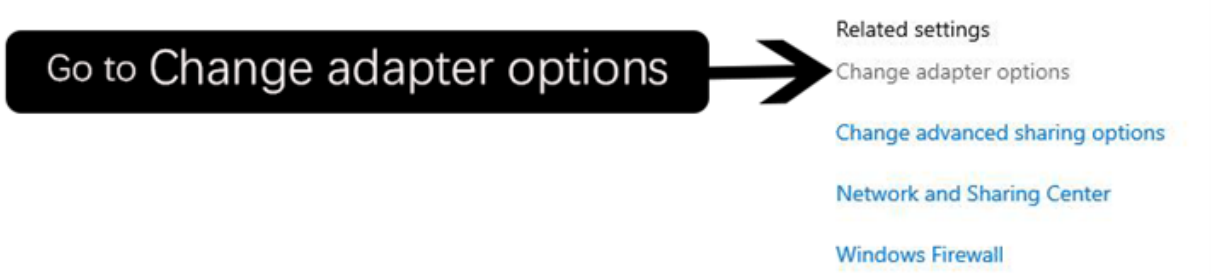
Make sure you login your operation system as the administrator.

1. Go to " Windows Start"

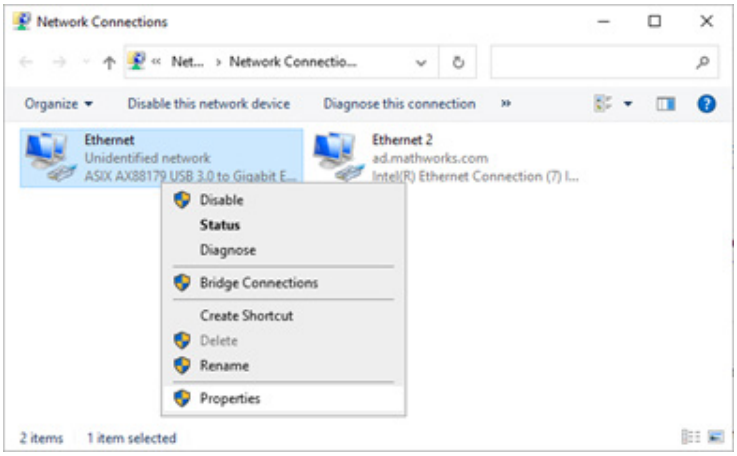


2. Go to Windows Settings
3. Go to " Network & Internet"
4. Go to "Ethernet" on the left side of the menu

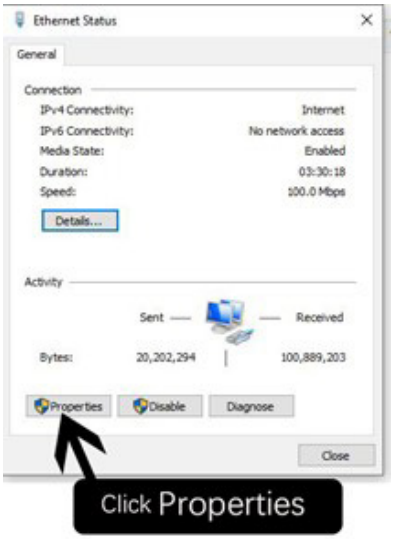
5. Go to " Change adapter options"



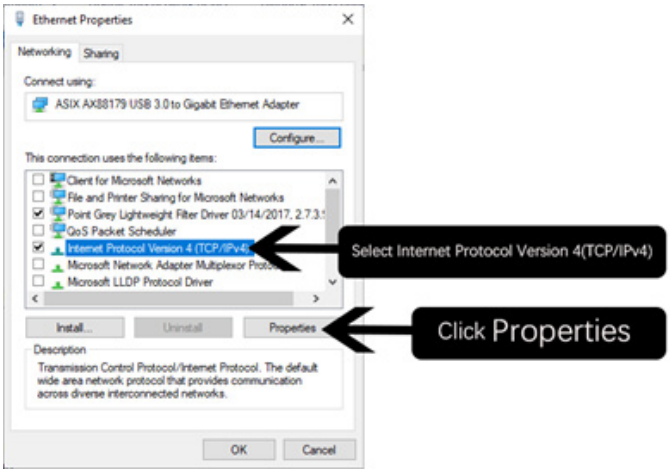
6. Double click on the Ethernet Source or Right Click and select “Properties”



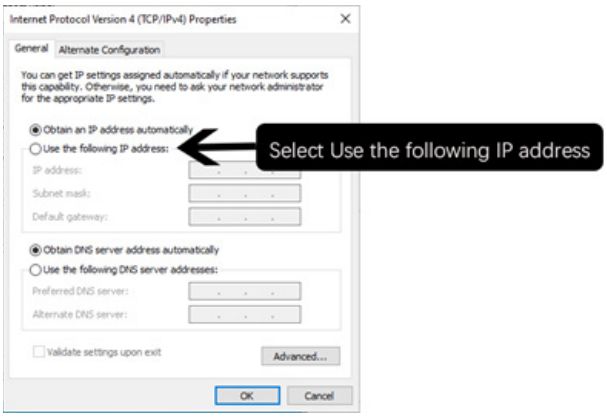
7. Open Properties



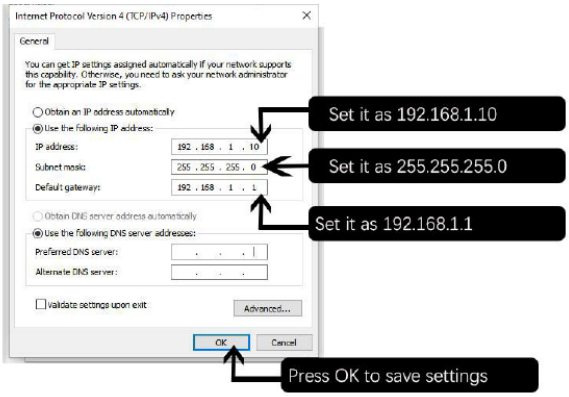
8. Go to “Internet Protocol Version 4 (TCP/IPv4)
9. Go to “Properties”



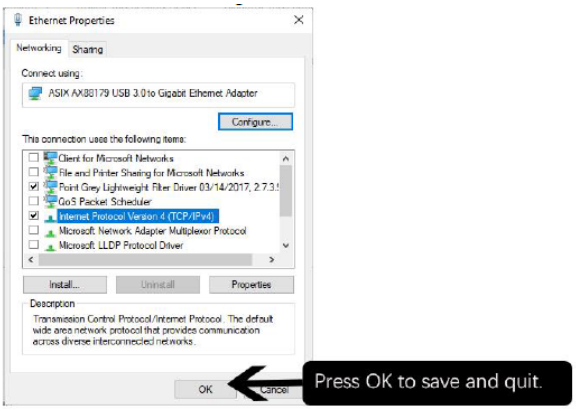
10.Go to “Use the following IP address”



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
Unable to log in to the NMS	See Section 9 - Page 15
The web UI is not functioning properly and does not save settings	Clear your browsing data
CH1 to CH8 LEDs are not lit	Power on the input video device
	Check the video cable
Other issue	Please contact us for technical support 610-429-1821 - Option #3

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Warranty

DATATRONIX 2-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.