Manual

DataTronix™
Managed Data Solutions

DT-ATSC-QAM-8V2
User Manual

8 input ATSC-8VSB / QAM-B to QAM-B
Trans-Modulator

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Safety Precautions

The presence of this symbol is to alert the installer and user to the presence of uninsulated dangerous voltages within the product's enclosure that may be of sufficient magnitude to produce a risk of electric shock.

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE. DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

- DO NOT apply power to the unit until all connections have been made, all components have been installed and all wiring has been properly terminated.
- DO NOT terminate, change or uninstall any wiring without first disconnecting the unit's power adapter from the device.
- This device is supplied with the appropriately rated power supply. The use of any other power supply could cause damage and invalidate the manufacturer's warranty.
- DO NOT connect the power cord to the device if the power cord is damaged.
- DO NOT cut the power cord.
- DO NOT plug the power cord into an AC outlet until all cables and connections to the device have been properly connected.
- The device should be installed in an environment consistent with its operating temperature specifications. Placement next to heating devices and ducts is to be avoided as doing so may cause damage. The device should not be placed in areas of high humidity.
- DO NOT cover any of the device's ventilation openings.
- DO NOT cover or obstruct the device's fan or fan openings.
- If the device has been in a cold environment allow it to warm to room temperature for at least 2 hours before connecting to an AC outlet.

Package Contents

- ➢ One DT-ATSC-QAM-8V2
- ➢ One Power Cable
- ➢ One Installation / Configuration Manual

Unpacking and Inspection
Each unit is shipped from the factory tested. Ensure all items are removed from the container prior to discarding any packing material.

Thoroughly inspect the unit for shipping damage with particular attention to connectors and controls. If there is any sign of damage to the unit or damaged or loose connectors contact your distributor right away.

Installation
System Installer must adhere to Article 820-40 of the NEC that provides guidelines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as possible.

Introduction to DT-ATSC-QAM-8V2: ATSC-8VSB / QAM-B to QAM-B Trans-Modulator
The DataTronix DT-ATSC-QAM-8V2 is a high quality 8VSB /Clear QAM to QAM Trans-modulator. It was designed to allow system integrators to receive and process up to 8 individual 8VSB (ATSC) / Clear QAM channels along with up to 56 sub channels, and easily convert these signals to produce a high-quality RF QAM distribution system. The DT-ATSC-QAM-8V2 is a highly flexible system allowing integrators to quickly receive, convert, and distribute high quality Digital QAM channels to their customers.

Features
- ✓ Accepts 8 RF inputs (ATSC-8VSB/QAM)
- ✓ Allows for Up to 64 Output Programs
- ✓ Allows User to “Cherry Pick” Desired Programs as Needed
- ✓ Supports STD/HRC/IRC Formats
- ✓ Supports Full Range of ATSC-8VSB/QAM Signals
- ✓ Offers 8 Fully Independent RF QAM Outputs
- ✓ Easy to Setup and Monitor with GUI
- ✓ Front Panel LED Indicators
- ✓ 3 VCN Modes Supported
- ✓ High Density 1RU Design

System Parsing / Response Time:
The initial System Parsing time will range from 4-6 minutes on average as the system identifies and populates the required parameters. As the user navigates the device's menu note that a small delay may occur in populating the data on the screen as the system is constantly performing system parsing and system house-keeping functions.

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Input	
RF Mode (ATSC-8VSB and QAM)	
Connector	1 x F-Type, Female
Input Impedance	75 ohm
Modulation	ATSC-8VSB ITU J.83 Annex B (64-QAM, 256-QAM)
Tuning Block Freq Range	55 to 861MHz (Center)
Bandwidth	6 MHz
Numbers of Tuner	8
Input Level	6 MHz
Loop Through	
Connector	1 x F-Type, Female, Passive

Output	
QAM	
Connector	1x “F” Female
Modulation	256-QAM / 64-QAM
Standard	J.83 Annex B
Frequency Range	57 to 861 MHz (Under STD Mode)8 Independent RF Frequencies
Channels’ Bandwidth	6 MHz
Output Level	45 dBmV Typical
Output Impedance	75 ohm
Level Adjustment	0 to -20 dB
VCN	Auto (Major & Minor) Manual (Major & Minor) Manual (One Part)
Carrier Suppression	55 dB
RF Output Return Loss	10 dB Typical
Signal-to-Noise Ratio (SNR)	42 dB Typical
MER	41 dB Minimum, 44 dB Typical

Web Management	
GigE	
Connector	1 x RJ45
Standard	100 / 1000Base-T Ethernet, Full / Half Duplex, Auto-Negotiation
HTTP	Embedded

Emergency Alert System (EAS) (Optional)	
GigE	
Connector	1 x RJ45
Standard	100 / 1000Base-T Ethernet, Full / Half Duplex, Auto-Negotiation
UDP / RTP	Supported (user-selectable)
Protocol	SCTE-18 Supported

Alarms / Monitoring	
Local Monitoring	8 x NIM Status LEDs / 1 x Power LED
Local Control	IP Reset Button
GUI Supported	Firefox, Chrome
Password Protected	GUI: Changeable

Power	
Power Supply	12VDC 5.4Amp.
Consumption	23 W Typical
Input Voltage Range	100 to 240 VAC

Mechanical and Environmental	
Chassis (W x D x H)	19.01 x 9.45 x 1.74" (483 x 240 x 44.2 mm)
Weight	7.9 lbs.
Operating Temperature	32 to 122°F (0 to 50°C)
Storage and Transportation Temperature	32 to 140°F (0 to 60°C)
Language	English
Warranty	1-Year Limited Warranty

Specifications Subject to Change Without Notice.

Hardware Installation

1. Use properly installed terrestrial antennas. Verify for proper signal reception and signal levels.
2. Properly connect required outputs of terrestrial antennas/splitter feeds to the DT-ATSC-QAM-8V2.
3. Apply Power to the DT-ATSC-QAM-8V2.
4. Connect an Ethernet cable from Utility Port on the DT-ATSC-QAM-8V2 to a PC/MAC.

Device Programming and Setup

Connecting to the GUI Interface

1. Connect an Ethernet Cable directly to the Utility Port on the rear panel of the device or connect the Ethernet cable to an Ethernet switch. Connect an Ethernet cable to Your PC/Laptop
2. Modify Your PC/Laptop IPV4 address to 192.168.1.11
3. Enter Default IP Address for DT-ATSC-QAM-8V2 into Your Web Browser (Suggested browser: Firefox or Chrome)

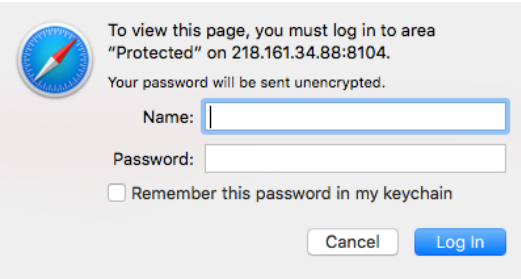
Factory Default IP: 192.168.1.9

System Setup via GUI Interface

After connecting the device to the GUI interface (please see descriptions above):

1. Enter device's IP address in web browser.
2. Login: Enter unit Name/Password

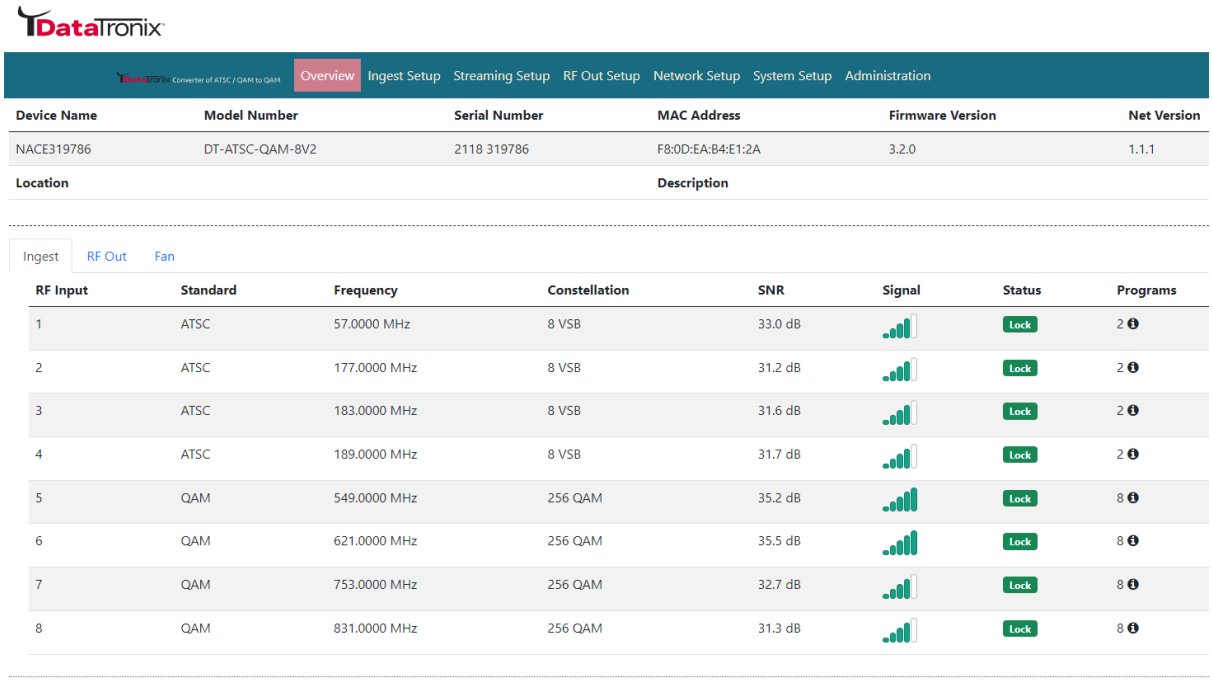
   Name: **admin** / Password: **Admin123**



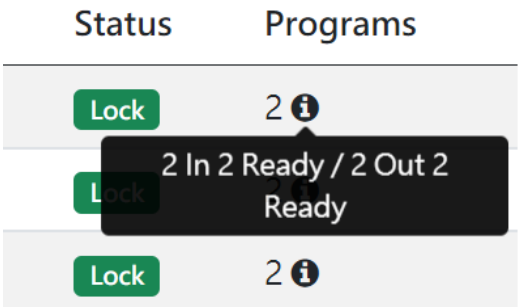
Note: To modify the system password, go to the **[Administration Page]** of the device.

Overview Page

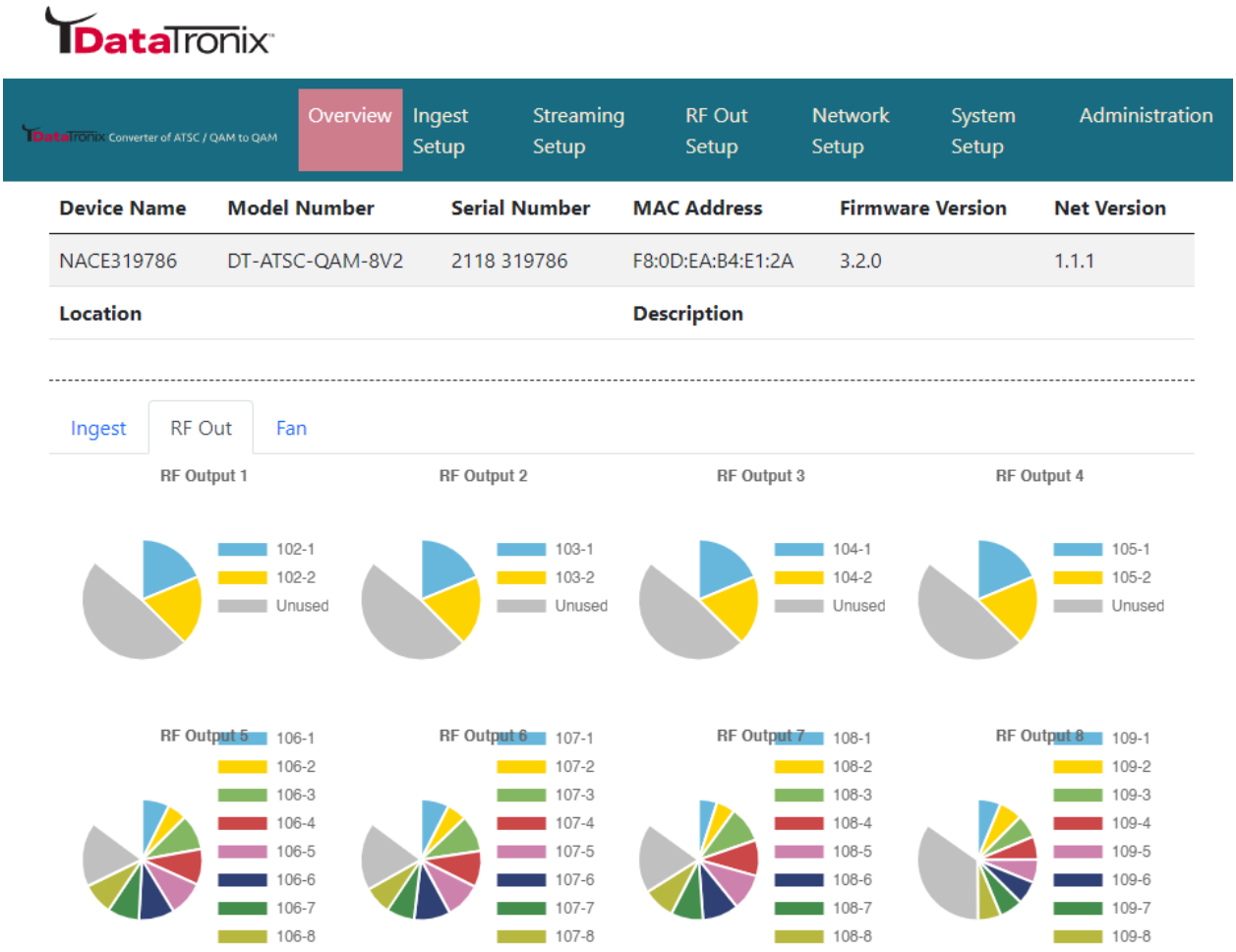
[Overview Page] provides an overall system status of the DT-ATSC-QAM-8V2 including: RF Input Type, Frequency, SNR, Signal Status, and Programs**.



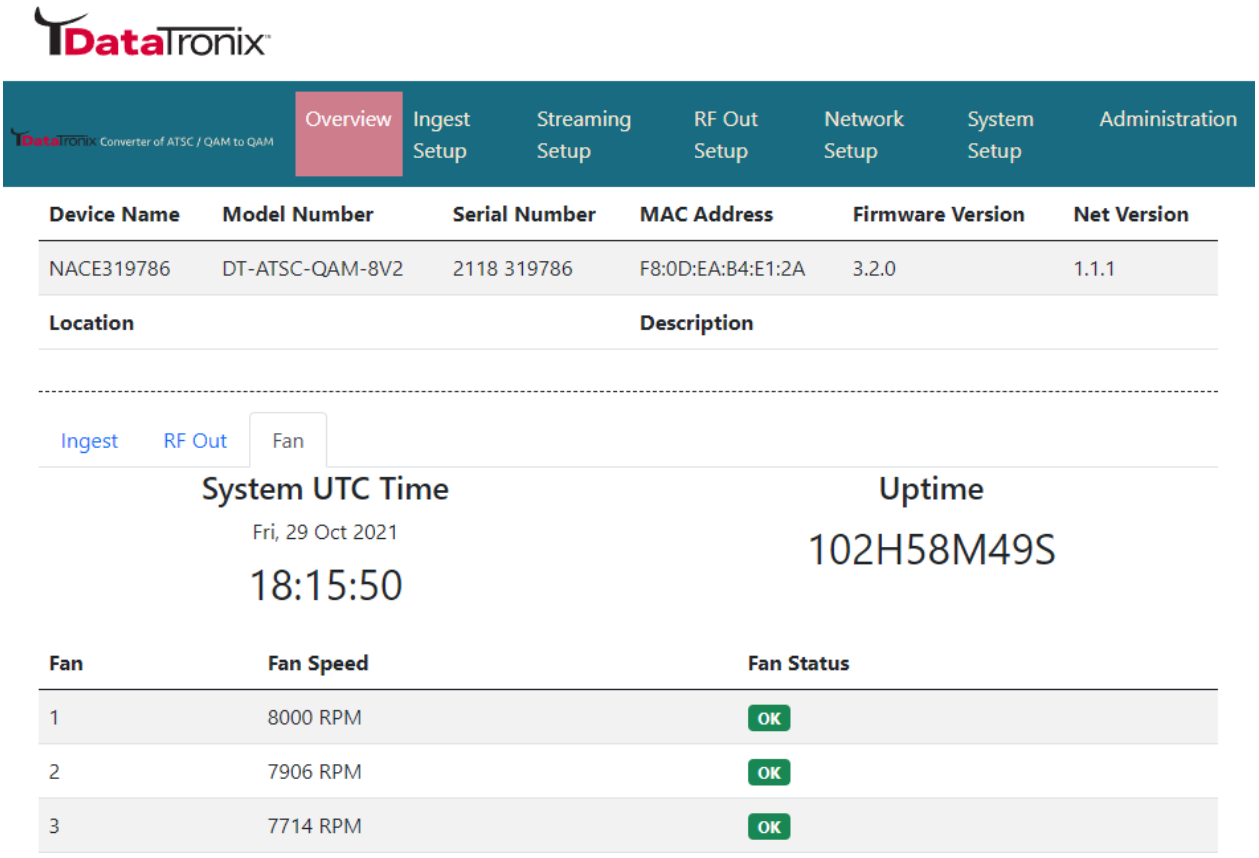
**Programs : If you move your cursor to "ℹ" you will see the detailed information (see figure below as example) of the Programs.



Overview (RF Output): RF Outputs showing the number of sub-streams/programs

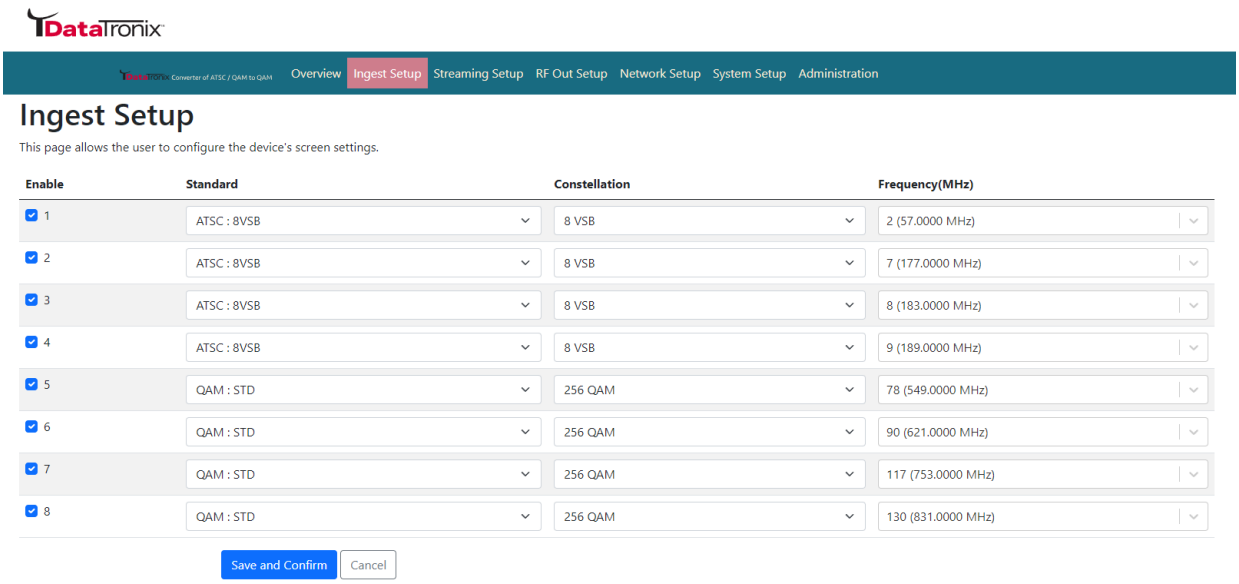


Overview (Fan): This tab shows fan status and system uptime



Ingest Setup

Use the **[Ingest Setup]** page to configure each input. Up to 8 individual - ATSC or QAM inputs can be assigned.



Ingest Setup Procedures

1. **Select** Ingest setup tab from the top menu
2. **Select** the appropriate ingest input (1 thru 8). Enable as required
3. **Select Standard:** ATSC or QAM

   ATSC: 8VSB / QAM: STD / QAM: HRC / QAM: IRC
4. **Select Constellation:** For QAM select 64-QAM or 256-QAM as required
5. **Select** Frequency (MHz) **(Input)**

   ATSC-8VSB: UHF (CH 14 – 69) VHF (CH 2-13)

   QAM: CH 2 – CH 135 (57 MHz to 861 MHz)
6. Save and Confirm to save all changes

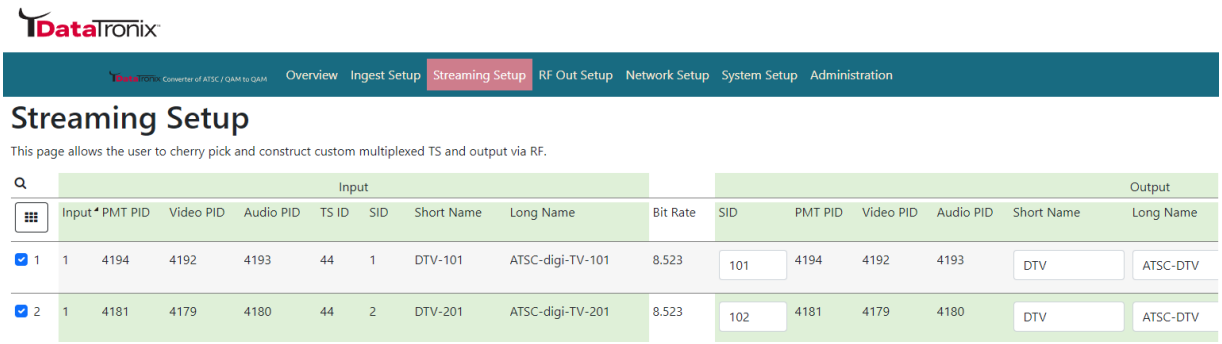
*****Note: Leaving any ingest setup page without saving the set parameters will cause the device to revert to the last saved settings.**

Streaming Setup

Use the **[Streaming Setup]** page to set the output: **SID**, Select **VCN Mode Type, VCN, Short Name,** and other parameters.

Enable / Select / and Setup Streams

1. Enable each stream/program as required by checking the check box
   Note: To remove a stream/program - deselect/uncheck the stream(s) # on the left side of the table
2. **Modify SID (Services Output ID)**
   Note 1: If installing multiple DT-ATSC-QAM-8V2 units make sure not to duplicate SID outputs
   Note 2: Enter SID for a program and the followed programs will be assigned by consecutive numbers
3. **Enter** Short Name [1-7 Characters]
4. **Enter** Long Name [1-16 Characters]
5. **Select** VCN Mode:
   VCN Mode 2-Part Auto [Example 102.1 – Set Automatically by the Device]
   VCN Mode 2-Part Manual [102.2 – Manual Entry by User]
   VCN Mode 1-Part Manual [102 – Manual Entry by User]
   Note: Only 1 VCN mode type can be selected



6. **Modify** Source ID as required
   Note: If installing multiple DT-ATSC-QAM-8V2 units make sure not to duplicate source ID outputs
7. **Select** RF# from 1-8 to assign programs to desired carrier
   Note 1: Bitrate mapping may be required based on the Mbps of the streams/programs in the RF Out
   Note 2: Use the streaming setup page to move program(s) as needed to allow for increased overhead of required programs
8. Save and Confirm all parameters

*******Note: Leaving any Streaming Setup page without saving the set parameters will cause the device to revert to the last saved settings**

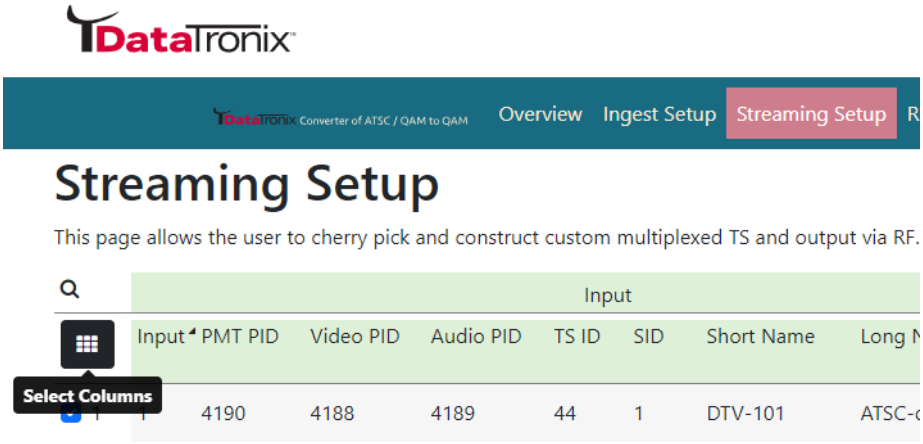
Streaming System Parameters

Input	
Input No.	Total Input Number Received by Tuner
PMT PID	Program Map Table PID
Video PID	Video Stream PID
Audio PID	Video Stream PID
TS ID	Input Transport Stream ID
SID	Service ID (Program ID)
Short Name	From Content Provider
Long Name	From Content Provider
Bit Rate	Input Bit Rate

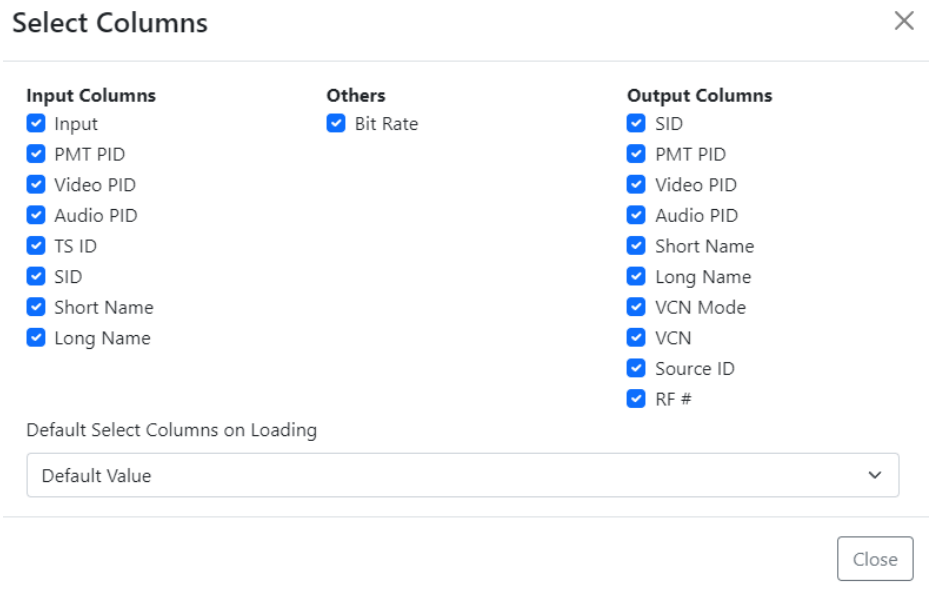
Output	
SID	Service ID - Definable
PMT PID	Program Map Table PID
Video PID	Video Stream PID
Audio PID	Audio Stream PID
Short Name	Definable [1-7 Characters]
Long Name	Definable [1-16 Characters]
VCN Mode	Selectable (Auto 2-Part, Manual 2-Part, Manual 1-Part.)
VCN	Definable (When Using Manual VCN Modes)
Source ID#	Definable

Customize the Streaming Setup View
The **[Streaming Setup]** parameters page is easily customizable for each system.
To customize the parameters shown:

1. **Select "Select Columns" tool**



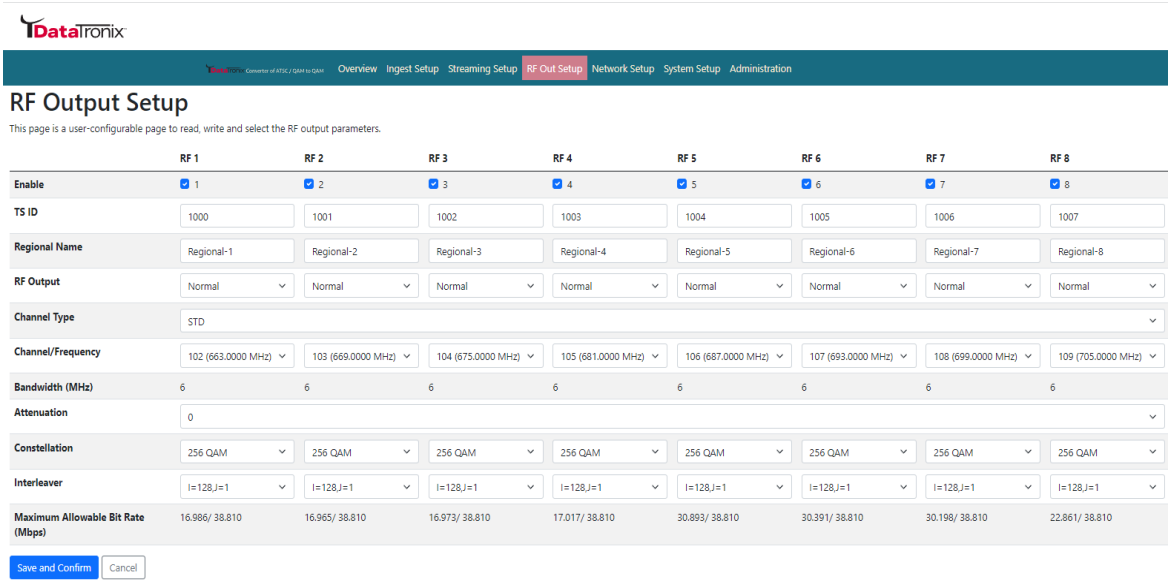
2. **Add or remove parameter as needed by selecting or deselection**



3. **Close window after selecting / deselecting parameters**

RF Output Setup

Use the **[RF Setup Page]** to properly setup each RF output channel.



	RF 1	RF 2	RF 3	RF 4	RF 5	RF 6	RF 7	RF 8
Enable	1	2	3	4	5	6	7	8
TS ID	1000	1001	1002	1003	1004	1005	1006	1007
Regional Name	Regional-1	Regional-2	Regional-3	Regional-4	Regional-5	Regional-6	Regional-7	Regional-8
RF Output	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Channel Type	STD							
Channel/Frequency	102 (663.0000 MHz)	103 (669.0000 MHz)	104 (675.0000 MHz)	105 (681.0000 MHz)	106 (687.0000 MHz)	107 (693.0000 MHz)	108 (699.0000 MHz)	109 (705.0000 MHz)
Bandwidth (MHz)	6	6	6	6	6	6	6	6
Attenuation	0							
Constellation	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM
Interleaver	I=128,J=1	I=128,J=1	I=128,J=1	I=128,J=1	I=128,J=1	I=128,J=1	I=128,J=1	I=128,J=1
Maximum Allowable Bit Rate (Mbps)	16.986/ 38.810	16.965/ 38.810	16.973/ 38.810	17.017/ 38.810	30.893/ 38.810	30.391/ 38.810	30.198/ 38.810	22.861/ 38.810

1. **Enable / Disable RF** output as required.
2. **Enter TS_ID** (Transport Stream ID) value.
3. **Enter** regional name as required
4. **Select** RF type [Normal, Inverted, C.W.]
5. **Select** Channel type [STD, HRC, IRC]
6. **Set** CH/Freq. [CH 2 – CH 135 / Freq. 57MHz ~ 861MHz]
   Note: DT-ATSC-QAM-8V2 is frequency agile
7. **BW:** factory set [6MHz]
8. **Set** attenuation [0 ~ -20dB. 1dB Steps]
9. **Select** constellation [64-QAM , 256-QAM]
10. **Select** interleaver – change as required.[Default: I=128, J=1]
11. **Save and Confirm** all changes

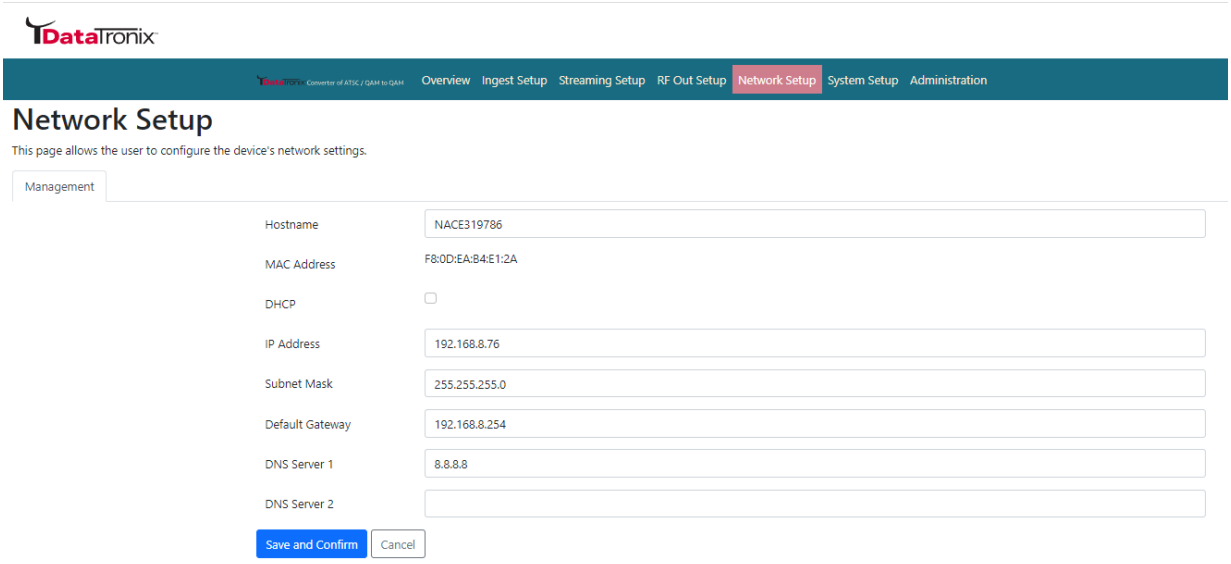
Note 1: Bitrate Mbps shown allows the integrator to quickly review assigned stream bitrate allocated and Capacity

Note 2: Bitrate mapping may be required based on the Mbps of the streams/programs in the RF Out

Note 3: Use the [Streaming Setup Page] to move program(s) as needed to allow for increased overhead of required programs

Note 4: Leaving any [RF Output Setup Page] without saving the set parameters will cause the device to revert to the last saved settings

Network Setup



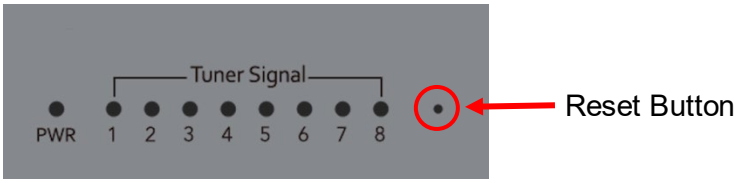
Device IP Address Setup

1. **Select** network setup tab to manage the IP address of the device
2. **Modify** hostname as required
3. **Select** DHCP or static IP
4. **For Static IP: select static IP** and enter static IP address for device
5. **Enter** Subnet Mask
6. **Enter** Default Gateway
7. **Enter DNS Server 1** address
8. **Enter DNS Server** 2 address (if required)
9. **Save and Confirm** all changes

Forgot IP Address

You can return to the default IP address (factory default) setting from via front panel by following the steps below:

1. **Press** the Reset button from the front panel (Circled in Picture Below)



2. **Power** on the unit
3. **Release** the reset button once the power LED stops flashing and become static green
4. Unit's IP address will revert back to default IP: 192.168.1.9
5. Unit's login data will revert back to factory default

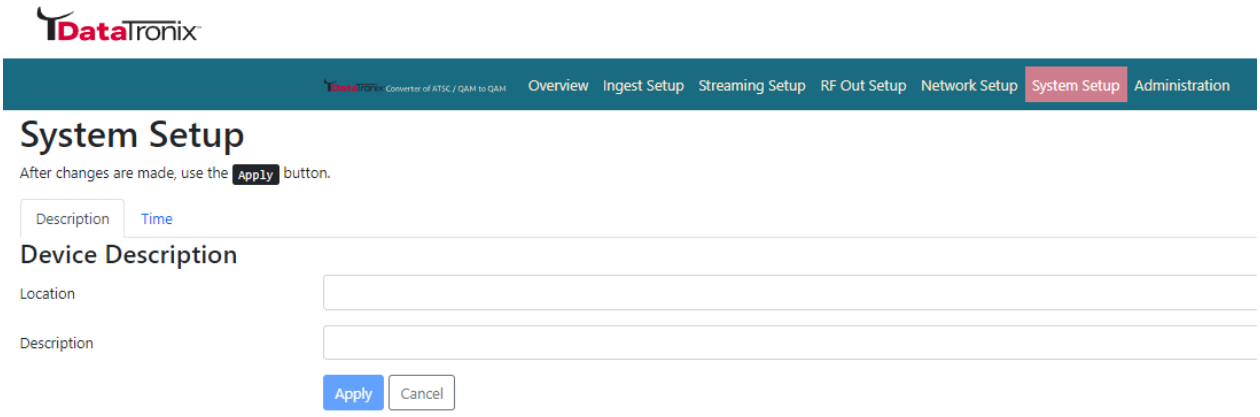
   Name: admin / **Password:** Admin123

Note: ONLY THE IP ADDRESS WILL REVERT BACK TO DEFAULT SETTING,- NO CHANGES WILL BE MADE TO THE CONFIGURATION

System Setup

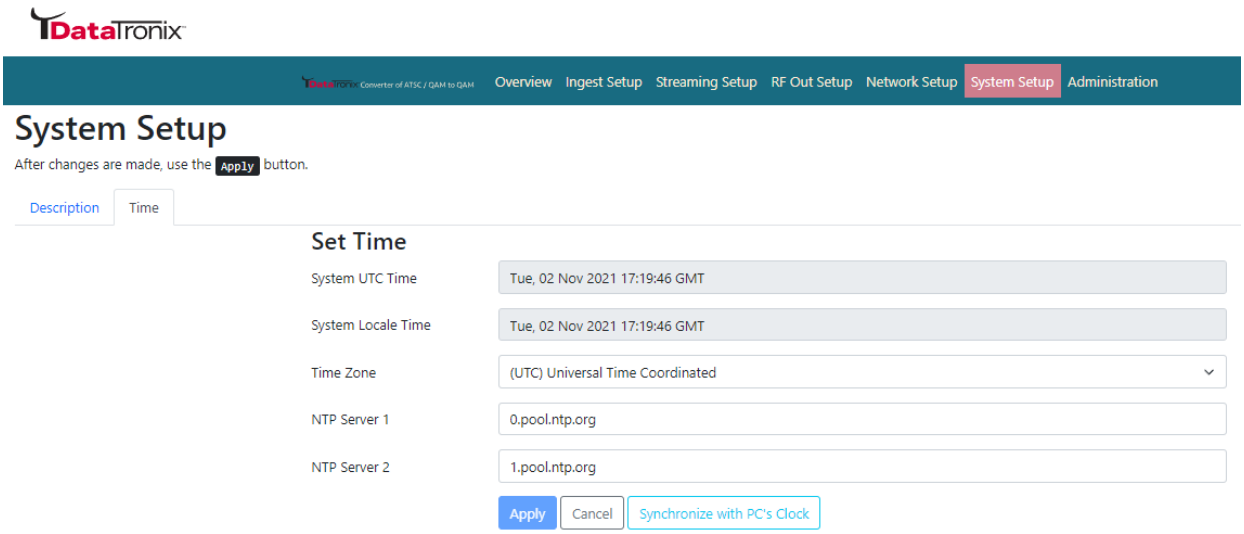
Description

Use the **[System Setup Page]** to designate location and description of the DT-ATSC-QAM-8V2 unit.



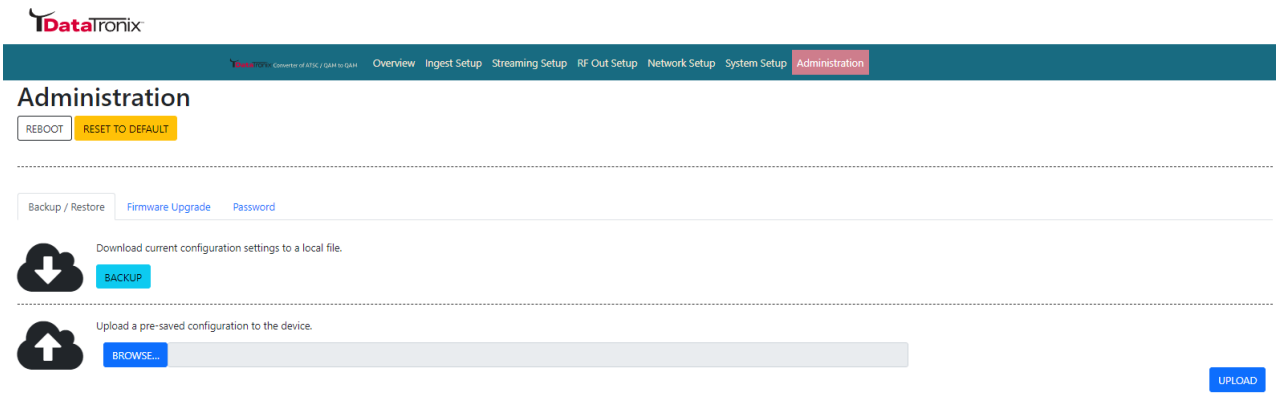
Time / NTP Server Setup

Use the time tab to set the units system time and time zone and NTP Server.



1. **Select** time tab on system setup page
2. **Select** time zone from the drop-down tool
3. **Enter** NTP Server 1 / 2 addresses as required
4. **Select** synchronize system with PC clock as required
5. **Select** apply to apply all changes

Administration



Reboot

Use the **Reboot** button to reboot the device. No parameters will be changed.

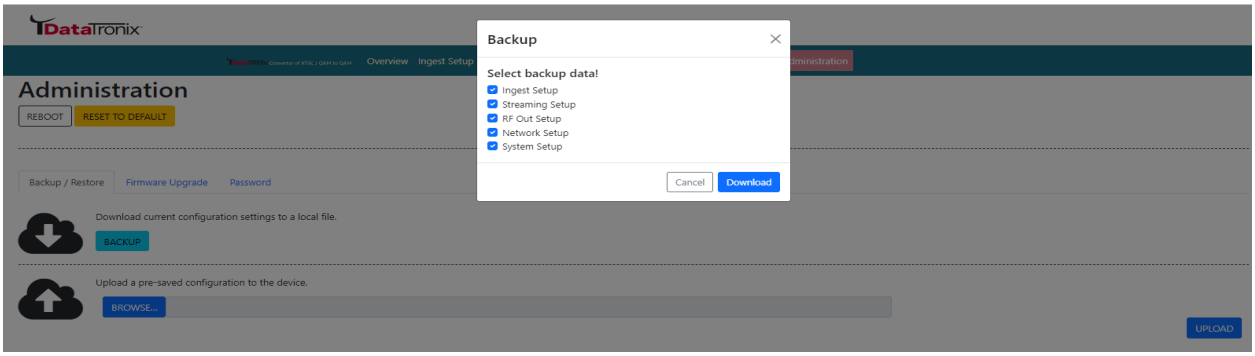
Reset to Default

Use the **Reset to Default** button to reset all parameters to original factory settings.

Backup

We highly recommend saving your device's setting.

1. **Select** administration tab
2. **Select** backup from the menu
3. User can choose which data required backup from the following pages: Ingest setup / Streaming Setup / RF Out Setup / Network Setup / System Setup
4. **Locate and Name** file for future use



Note: The backup can be imported to assist in setting up new or multiple devices onsite. Remember to Save and backup any and all changes.

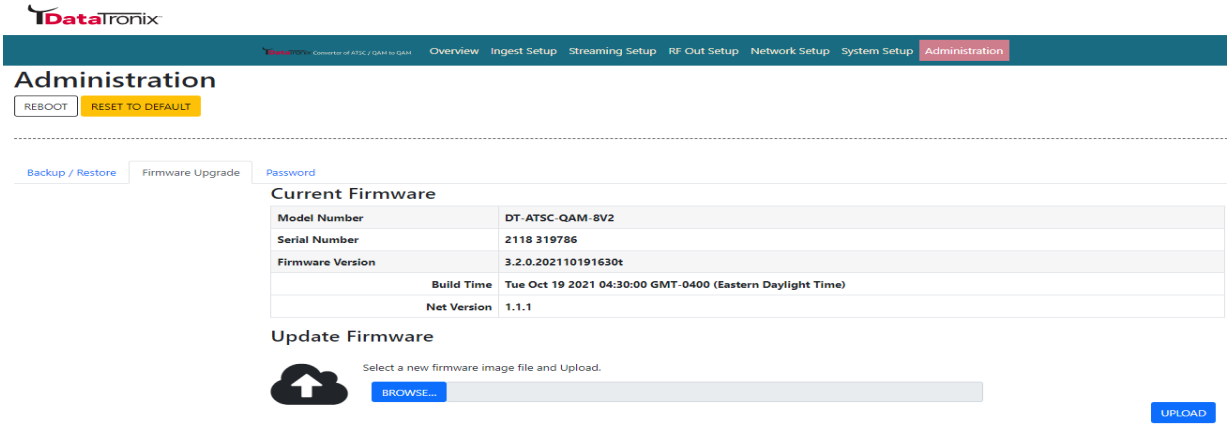
Restore

1. **Select** administration tab
2. **Browse** the required file to be imported
3. **Select** "Upload" to import the selected file into the device

******Note**: Do not power off the unit while importing.

Firmware Update

Use the Firmware Upgrade section to import new FW version.

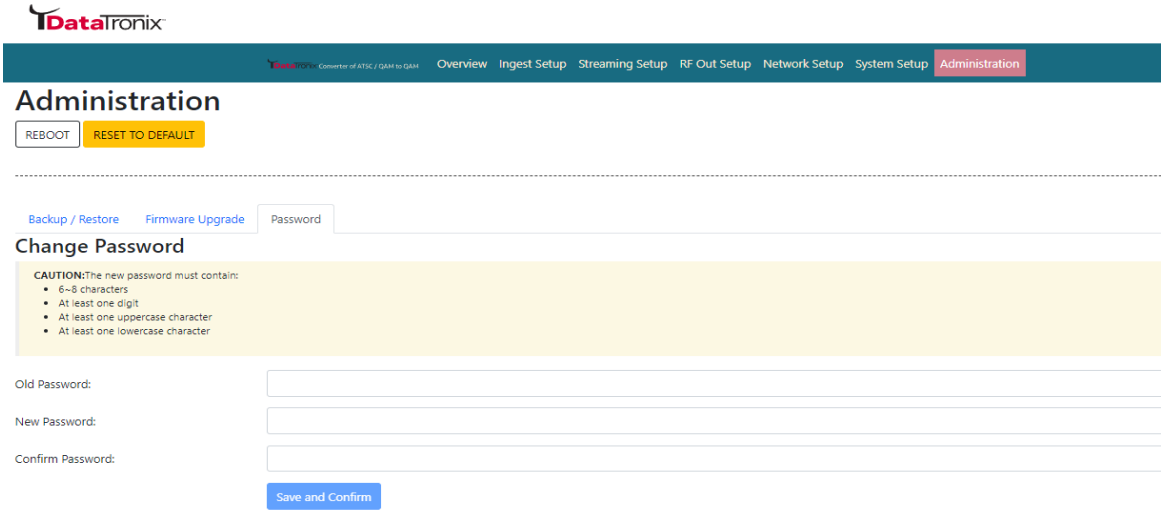


1. **Select** administration tab
2. **Select** firmware upgrade tab
3. **Browse** to locate the required image file to be uploaded
4. **Select** “Upload” to import the selected file into the device

*******Note:** Do not power off the unit while importing.

Change Password

Use the password section to change or modify the device’s password as desired.



1. **Select** administration tab
2. **Select** password tab
3. **Follow** listed instructions
4. **Save and Confirm** to apply new password.

Private Address Ranges, IPv4

Private IPv4 addresses are addresses set aside by the IANA (Internet Assigned Numbers Authority) for use within networks that will not directly communicate or be seen by the internet. These private addresses cannot be used on the Internet or be used to communicate with the Internet. ISP's filter out and delete packets using private IP addresses.

Any organization that uses private IP addresses on devices that communicate with the internet must use a device that performs Network Address Translation.
Anyone can us private addresses and they are not required to seek permission to use them.
Again, networks using private IP addresses cannot communicate directly with the internet.
There are three blocks of addresses that are set aside by IANA for use in private internets and are not publicly routable on the global internet:

Private Class A Range:	10.0.0.0	-	10.255.255.255
Private Class B Range:	172.16.0.0	-	172.31.255.255
Private Class C Range: 1	92.168.0.0	-	192.168.255.255

It is important to note that only some of the 172.xx.xx.xx and the 192.xx.xx.xx address ranges are designated for private use. The remaining addresses are public and can be routable via the global Internet.

More information regarding private addresses can be found at http://www.iana.org and https://www.arin.net.

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.

Product Notes:

Model Number:	
Serial Number:	
Purchase Date:	
Purchased from:	
Install Date:	