DATA-TRONIX®

USER GUIDE AND MANUAL

4-Input Independent Output Allocation Encoder-Modulator with ASI

MODEL: DT-IPTV-QAM-ASI-4HC
Version 1.0
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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

This package contains:

- DT-IPTV-QAM-ASI-4HC Encoder / Modulator
- One power cable
- Five Mini Din 10pin/6 RCA Cables
- Four HDMI Cables
- User Guide and Manual

Inspect the package before starting installation to ensure there is no damage and all supplied contents are present.

Product Description

The DT-IPTV-QAM-ASI-4HC Encoder/Modulator provides a dynamic independent DVB-C Annex B QAM output along with 4 IP and ASI (MPTS) streams making it ideal for any commercial RF system. The high quality HD design allows for watching action packed movies and sports channels on any HDTV. The DT-IPTV-QAM-ASI-4HC Encoder/Modulator is a feature rich Digital Encoding platform allowing it to be deployed in a variety of installations. This space saving design delivers up to 4 High Quality HD/SD QAM channels in a single 1RU space.

- ☐ 2 Frequency Independent QAM outputs
- ☐ High resolution up to 1080i (MPEG-2) / 1080p (H.264)
- ☐ 3 VCN (Virtual Channel Number) modes
- ☐ GUI for easy setup and control
- ☐ HDMI, Component / Composite via DIN cable
- ☐ Up to 4 selectable SPTS IP streams
- ☐ Up to 4 selectable ASI streams with MPTS output
- ☐ MPEG-2 or H.264 (AVC) Video (selectable) output
- ☐ EAS functionality
- ☐ 43dB typical MER
- ☐ Closed captioning support
- ☐ +40 dBmV RF Output
- ☐ Rack mountable 1RU height

***Based on program Mbps requirements**

Specifications

VIDEO/AUDIO INPUTS	
HDMI	X4 HDMI 1.4v
Mini DIN	X4 [Component & Composite Video / Audio input (combined)]
VIDEO FORMATS	
Resolution	1080p (H.264 Only), 1080i, 720p, 576p, 576i, 480p, 480i
VIDEO / AUDIO COMPRESSION	
Video Codes MPEG-2	MP@HL
Video Codecs H.264 (HD)	> 1080p30, HP@Level 4.2 / ≤1080p30, HP@Level 4 >720p30, HP@Level 3.2 / ≤720p30, HP@Level 3.1
Video Codecs H.264 (SD)	Frame rate > 30, MP@Level 3.1 / ≤30, Level 3
Audio Codecs	MPEG-1 Layer II / AAC / AC-3 pass through
VIDEO Bitrate	
MPEG-2	SD: 1 to 8Mbps / HD: 10 to 15.7Mbps
H.264	SD: 1 to 4Mbps / HD: 4 to 8Mbps
RF Output	
Channel Plan	Varies by country
Output Level	+40 dBmV
Output Impedance	75 ohm
Level Adjustment	0~-20dB
Modulation Modes	256 QAM / 64 QAM
QAM Type	DVB-C Annex B
Channel Allocation Type	Independent
VCN Mode	3 Modes supported
MER	43dB typical
IP	
Streaming Protocols	UDP/RTP Unicast, Multicast
Stream Types	4 SPTS
Stream Control	Enable / Disable control per stream
Connector	1 GbE IP stream
ASI Support	
Stream Type	Single output (1 MPTS stream carrying up to 4 programs)
EAS Support	
Connection	Dry contact
Audio/Video Input	DIN
General	
Local Monitoring	LED system indicators (Power & 4 Encoder status LEDs)
Web Management	1 RJ-45 10/100 Management
GUI Supported	Microsoft Edge, Firefox, Chrome, Safari
Password Protected	GUI: Changeable
Fan Cooled	Internal
Power Supply	12VDC 7.5 Amp
Consumption	34W typical
Dimension	482.7mm x 286mm x 44.2mm / 1RU 19" EIA (Housing Body: 438mm x 286mm x 44.2mm)

*Subject to change without notifications

Device Programming and Setup:

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.

Unpacking and Inspection

Each unit is shipped 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 immediately. Do not put the equipment into service if there is any indication of defect or damage.

Hardware Installations and Connections

It is highly recommended that quality cables and connectors be used for all video and audio source connections.

- The unit is designed to be rack mounted in a standard EIA19" rack.
- The unit comes standard with HDMI and DIN inputs (Component and Composite video inputs). The DT-IPTV-QAM-ASI-4HC encoder / modulator is intelligently designed to detect the video input from the video source. **HDMI Connection:** Connect the HDMI cable(s) from the video source(s) into the HDMI input(s). Or, Connect the DIN Cable to the back of the encoder as required using the DIN to DIN or DIN to breakout cable.
- Repeat this step for each video source connection required.
- Be sure the connections for each source are consistent with the unit's inputs (IN1…IN4).
- Use a quality 75Ω coaxial cable with "F" connectors from the unit's **RF OUT jack** to the **distribution system** (combiner or reverse splitter) or directly to a television.
- Connect the included power cord to the unit's **POWER** plug.
- Connect the power cord to an appropriately rated AC power outlet.

Connecting to the GUI Interface:

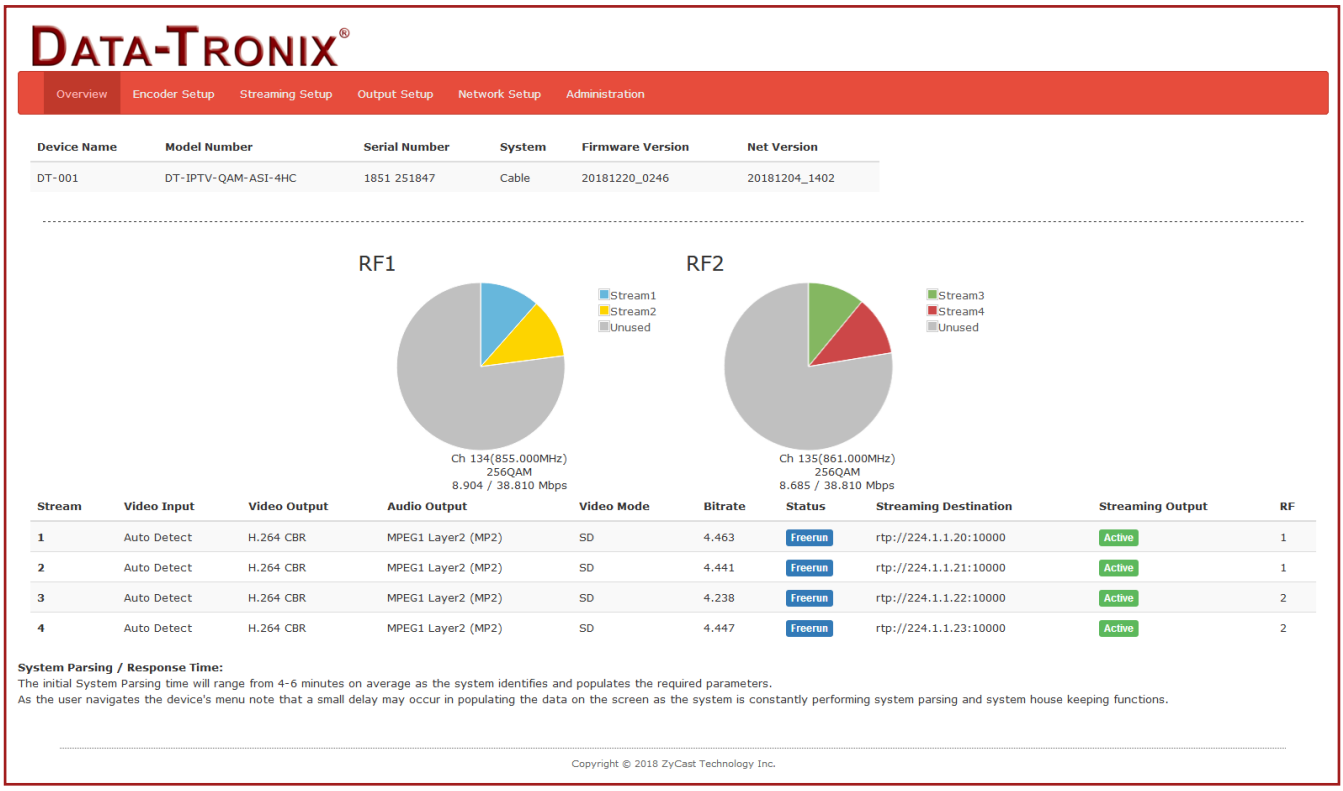
Factory Default IP: 192.168.1.9

1. Connect an Ethernet cable directly (**no Cross Over cable required**) to the Web Management Port on the rear panel of the encoder or connect the Ethernet cable to an Ethernet switch. Connect an Ethernet Cable to your PC/Laptop.
2. Modify your PC/Laptop IP address to 192.168.1.11.
3. Enter '192.168.1.9' into your web browser.
4. Enter GUI and make required device changes.
5. Save all changes as required, upload and reboot for changes to take effect.
6. Verify parameters then end web session.

Encoder Setup

After connecting the device to the “Web Management” port located on the rear of the device and connecting to a PC/Laptop.

Enter Device's IP address in web browser to access the Overview Page.



Overview Page of DT-IPTV-QAM-ASI-4HC

The Overview page of DT-IPTV-QAM-ASI-4HC shows inputs 1-4 system status including: Video Source parameter, Video Output setting, Audio Output, Bitrate, and more.

The Overview page provides a quick snapshot of the DT-IPTV-QAM-ASI-4HC when fully functioning**.**

System Parsing / Response Time:

The initial System Parsing time will vary 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 upkeep functions.

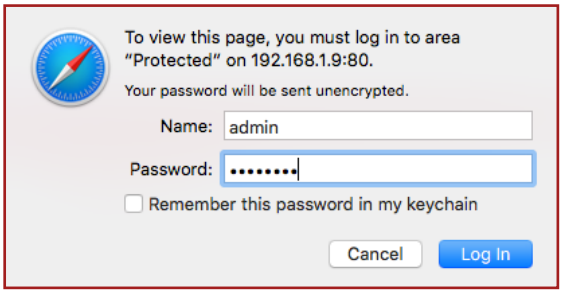
Encoder Programming and Setup via GUI Interface:

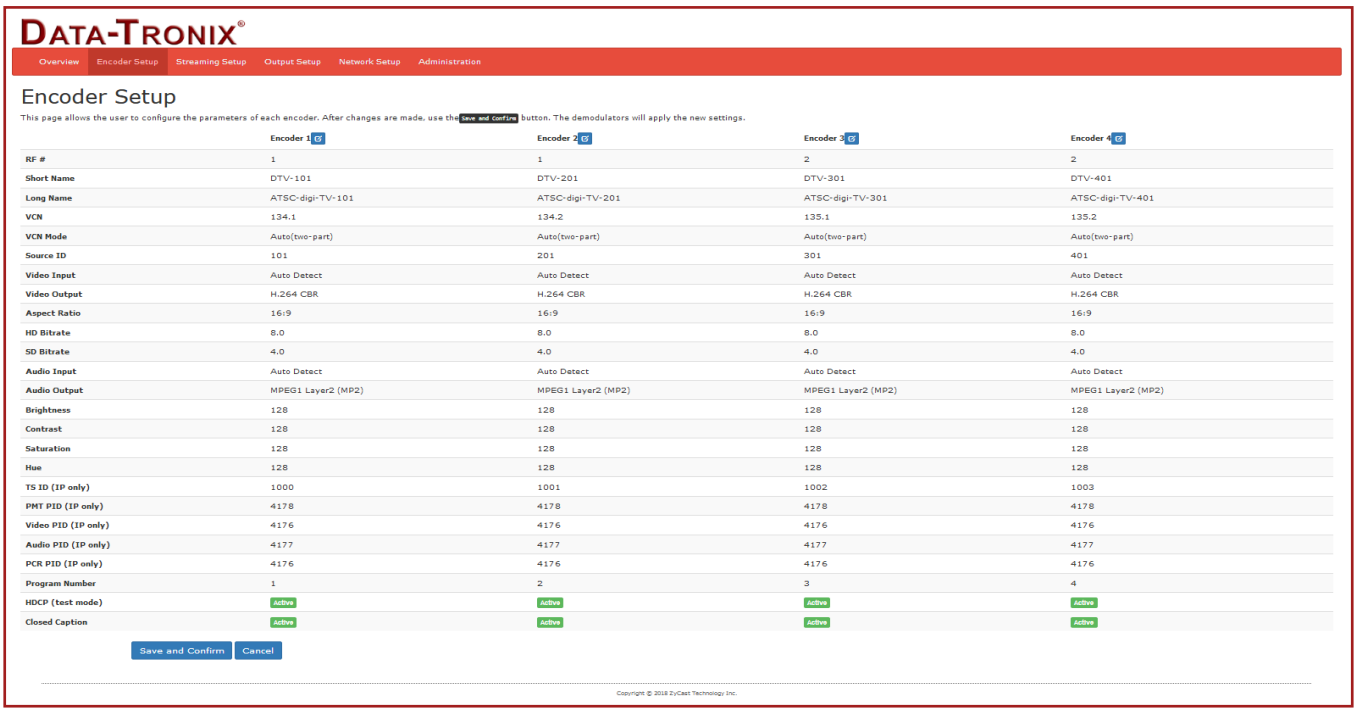
Select the Encoder Setup Tab; you will then be prompted to enter the user name and password for device.

GUI Login Password:

Default User Name: **admin**
Default Password: **Admin123**

Note: To change the Password for the GUI go to the Administration Tab.



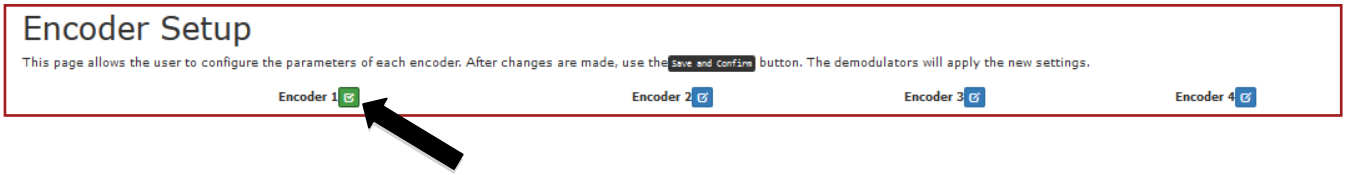


	Encoder 1	Encoder 2	Encoder 3	Encoder 4
RF #	1	1	2	2
Short Name	DTV-101	DTV-201	DTV-301	DTV-401
Long Name	ATSC-digi-TV-101	ATSC-digi-TV-201	ATSC-digi-TV-301	ATSC-digi-TV-401
VCN	134.1	134.2	135.1	135.2
VCN Mode	Auto(two-part)	Auto(two-part)	Auto(two-part)	Auto(two-part)
Source ID	101	201	301	401
Video Input	Auto Detect	Auto Detect	Auto Detect	Auto Detect
Video Output	H.264 CBR	H.264 CBR	H.264 CBR	H.264 CBR
Aspect Ratio	16:9	16:9	16:9	16:9
HD Bitrate	8.0	8.0	8.0	8.0
SD Bitrate	4.0	4.0	4.0	4.0
Audio Input	Auto Detect	Auto Detect	Auto Detect	Auto Detect
Audio Output	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)
Brightness	128	128	128	128
Contrast	128	128	128	128
Saturation	128	128	128	128
Hue	128	128	128	128
TS ID (IP only)	1000	1001	1002	1003
PMT PID (IP only)	4178	4178	4178	4178
Video PID (IP only)	4176	4176	4176	4176
Audio PID (IP only)	4177	4177	4177	4177
PCR PID (IP only)	4176	4176	4176	4176
Program Number	1	2	3	4
HDCP (test mode)	Active	Active	Active	Active
Closed Caption	Active	Active	Active	Active

Encoder Setup Page of DT-IPTV-QAM-ASI-4HC

Encoder Setup page allows the integrator to select and set the parameters needed for each stream.

1. **Select the "Edit" Icon:** 



2. **Select and set the specific parameters settings as required.**
   Note: you can select and set all the parameters for all the encoders at one time.

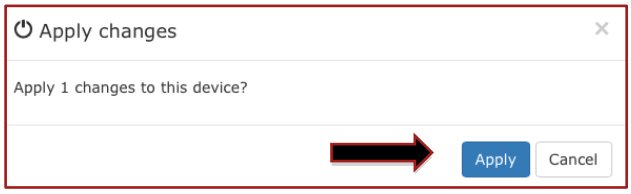
3. **After setting all the required parameters- Select the edit icon again**.
   Note: All changed parameters will be shown in **red**. *Pictured Below.*

	Encoder 1	Encoder 2	Encoder 3	Encoder 4
RF #	1	1	2	2
Short Name	DTV-101	DTV-201	DTV-301	DTV-401
Long Name	ATSC-digi-TV-101	ATSC-digi-TV-201	ATSC-digi-TV-301	ATSC-digi-TV-401
VCN	101	201	301	401
VCN Mode	Manual(one-part)	Manual(one-part)	Manual(one-part)	Manual(one-part)
Source ID	101	201	301	401
Video Input	Auto Detect	Auto Detect	Auto Detect	Auto Detect
Video Output	H.264 CBR	H.264 CBR	H.264 CBR	H.264 CBR
Aspect Ratio	16:9	16:9	16:9	16:9
HD Bitrate	8.9	9.0	8.7	8.7
SD Bitrate	4.0	4.0	4.0	4.0
Audio Input	Auto Detect	Auto Detect	Auto Detect	Auto Detect
Audio Output	MPEG4 AAC	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)	MPEG1 Layer2 (MP2)

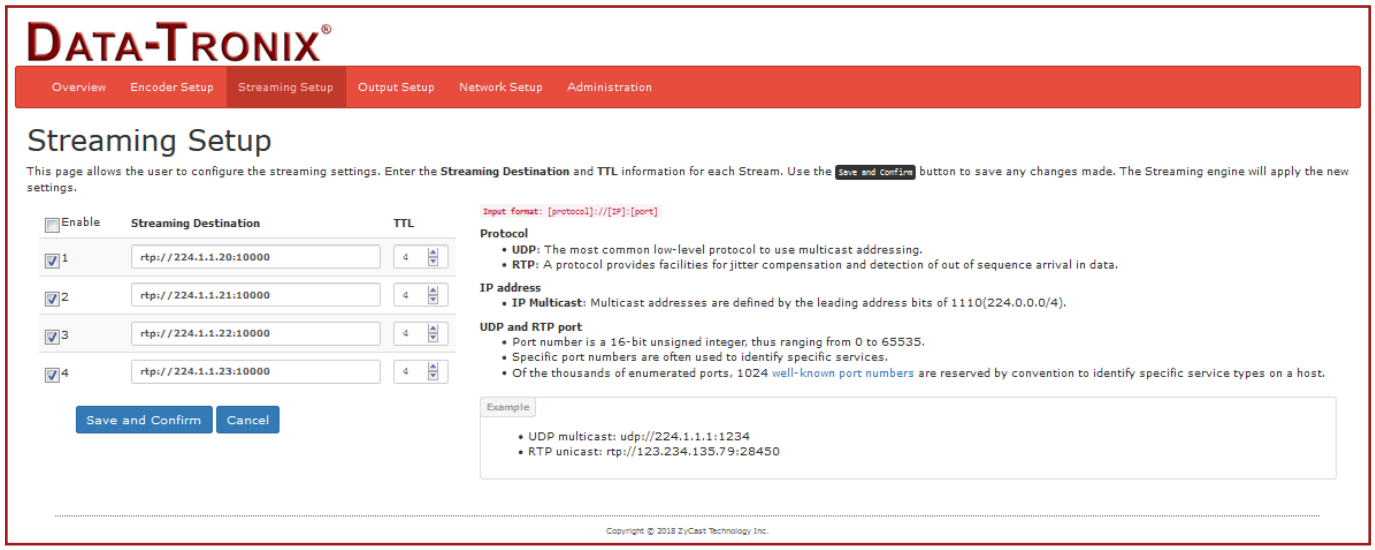
4. **Select** "Active/Inactive" to activate for remaining parameters as required.

5. **Select** "**Save and Confirm**" to save all changed parameters.

6. **Select** "Apply" in the pop-up window.



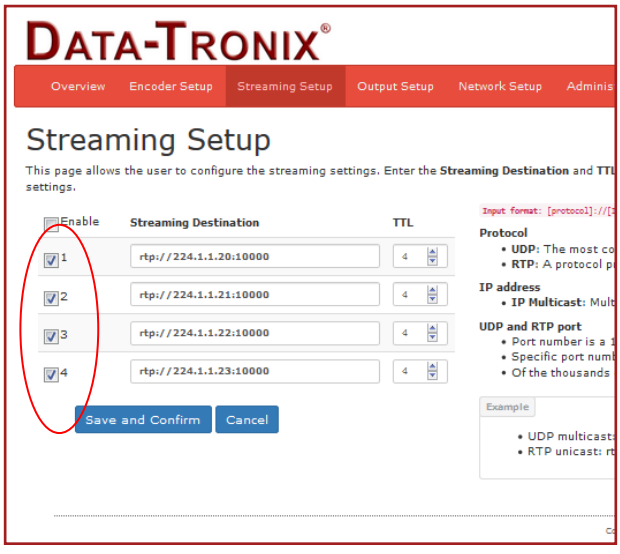
IP Streaming Setup



Streaming Setup Page of DT-IPTV-QAM-ASI-4HC

Enabling IP Streams

1. **Enable** the Stream by selecting the check box 1-4.
   Note: All streams can be enabled at the same time by using the "master" checkbox.
2. **Enter** the stream Destination IP [example: udp://224.1.1.4:1234].
3. **Set** the TTL value.
4. **Select** 'Save and Confirm' once all the streams are setup.



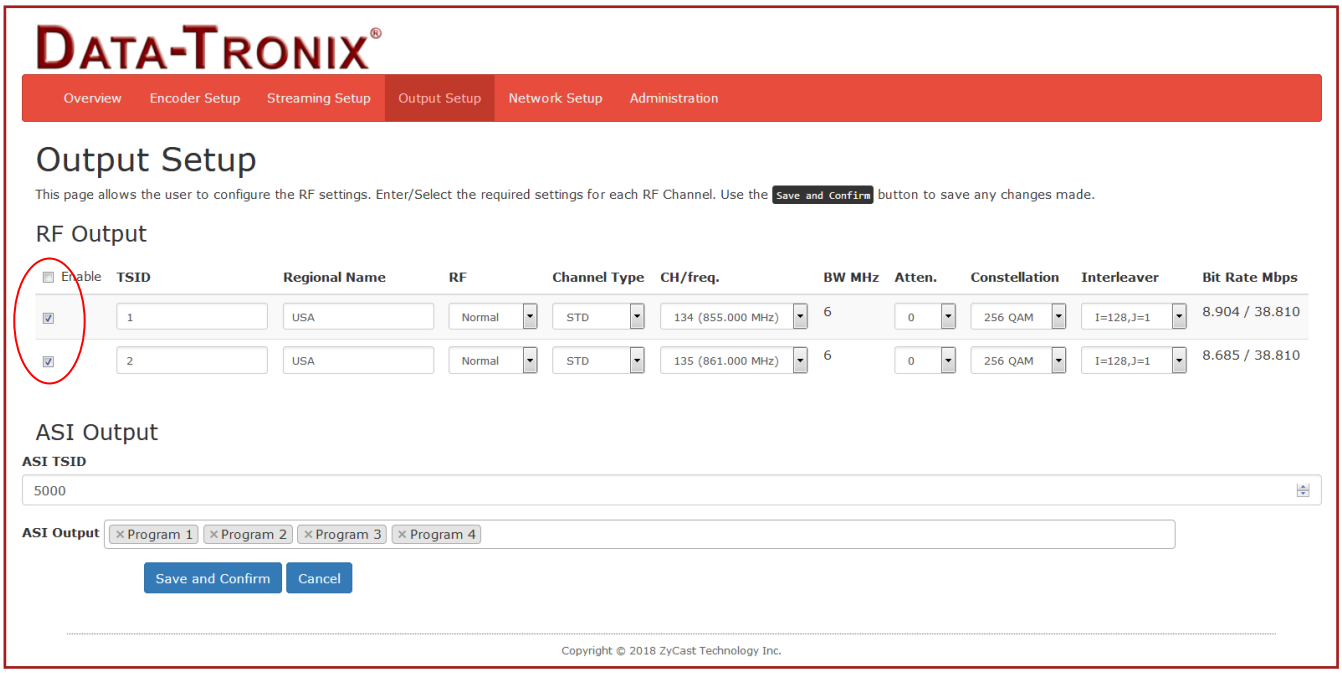
Disabling IP Streams

The DT-IPTV-QAM-ASI-4HC offers the user a SPTS output stream. Each Stream can be disabled as required.

To disable an IP Stream "**uncheck**" the checkbox in front of the appropriate IP Stream_ID (1-4).

RF Setup

Output Setup



Output Setup Page of DT-IPTV-QAM-ASI-4HC

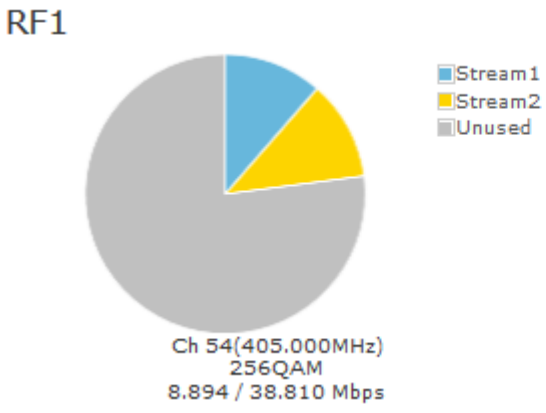
Use the Output Setup Page to setup each RF Output.

The DT-IPTV-QAM-ASI-4HC offers the integrator the ability to set the output channel independently of the other output channels of the DT-IPTV-QAM-ASI-4HC Encoder. This professional parameter allows the integrator greater flexibility for placing video streams within the system. Each RF/QAM (2 streams per RF) can be allocated independently.

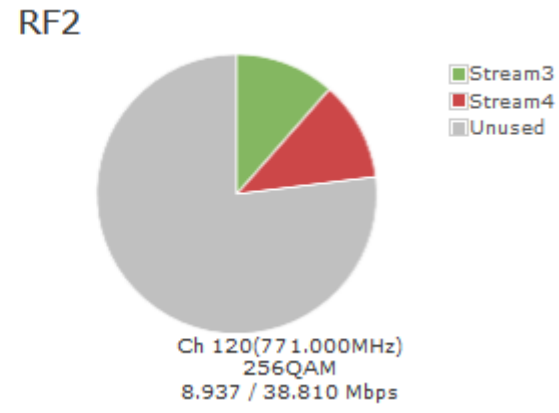
1. **Select** RF Output Setup from the menu.
2. **Enable/Disable** RF1-RF2 by checking or unchecking Checkbox (as required).
3. **Modify** the RF TSID (as required).
4. **Select and Set** RF Type.
5. **Select and Set** Channel Type.
6. **Select and Set** Ch/Freq required.
7. **Select and Set** Attenuation (if required).
8. **Select and Set** required Constellation.
9. **Modify** Interleaver (if required).
10. **Modify** ASI TS_ID (if required)
11. **Select / Remove** any ASI Program/Stream (as required).
12. **Save and confirm** all changes have been made.

Note: The DT-IPTV-QAM-ASI-4HC allows the integrator the ability to set the output channels independently of the other 3 output channels.

Example 1: Example 1 shows RF1- RF2 with a large frequency separation.

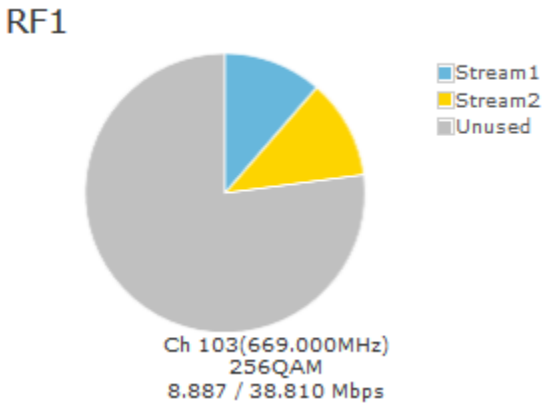


CH # 54
(405.000 MHz)

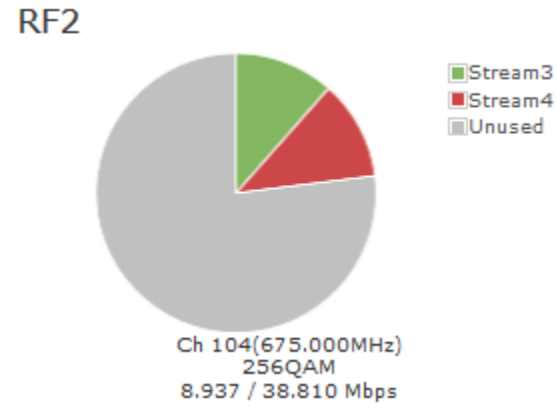


CH# 120
(771.000 MHz)

Example 2: Example 2 shows RF1- RF2 with a small frequency separation.



CH#103
(669.000 MHz)



CH# 104
(675.000 MHz)

Note: If the RF is disabled, the frequency will not be occupied.
- If a stream is disabled, the stream will occupy the channel frequency even if not present in the RF diagram.

ASI Control:

The DT-IPTV-QAM-ASI-4HC offers the integrator a MPTS ASI output stream.

1. **Modify** the ASI TS_ID as required.
2. **Remove/Add** ASI streams as required.
3. **Select Save and Confirm** to save all modified parameters.

Disable RF/QAM

The DT-IPTV-QAM-ASI-4HC offers the integrator the ability to disable a RF QAM.
To disable a RF (QAM) output, "uncheck" the checkbox associated with the RF QAM.

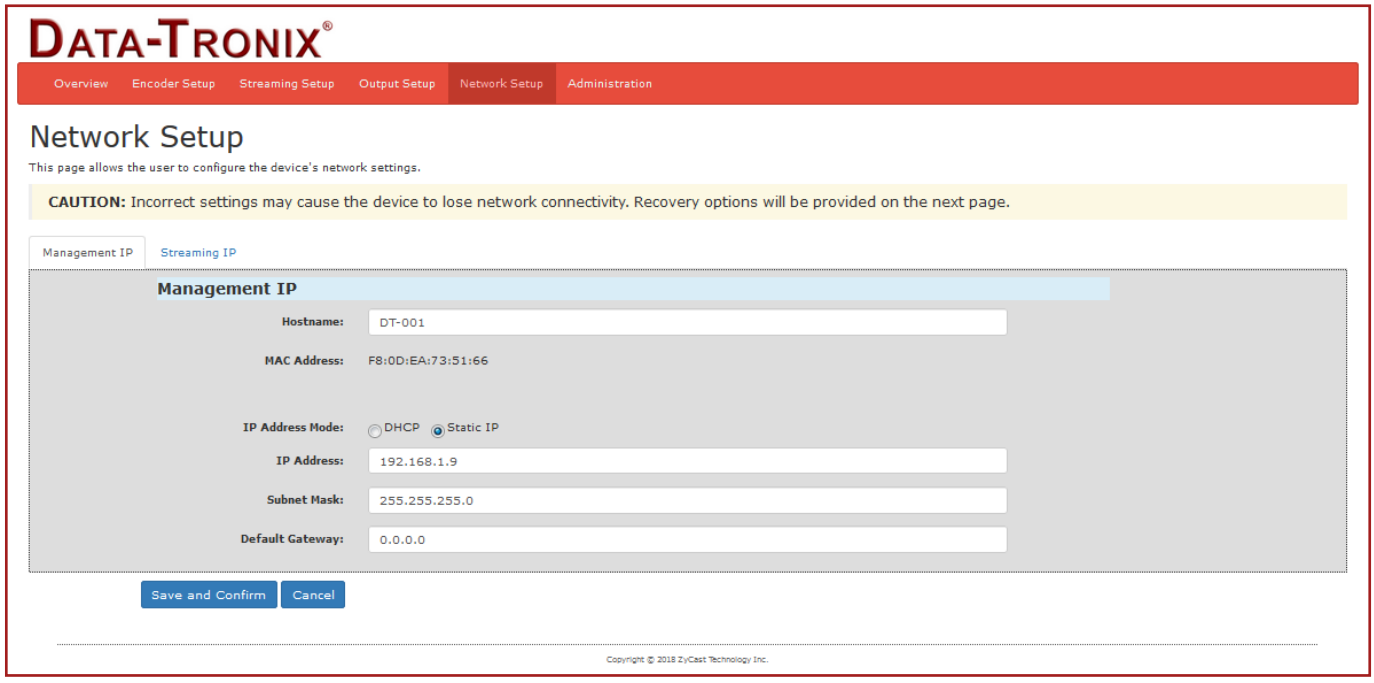
Application Notes

When installing more than 1 device into a system, each device must have a unique **RF TS_ID** and **ASI TS_ID**.

We highly recommend you save your encoder configuration files.
Note: See Administration tab for how to backup device settings.

Network Configuration

Management IP Setup:

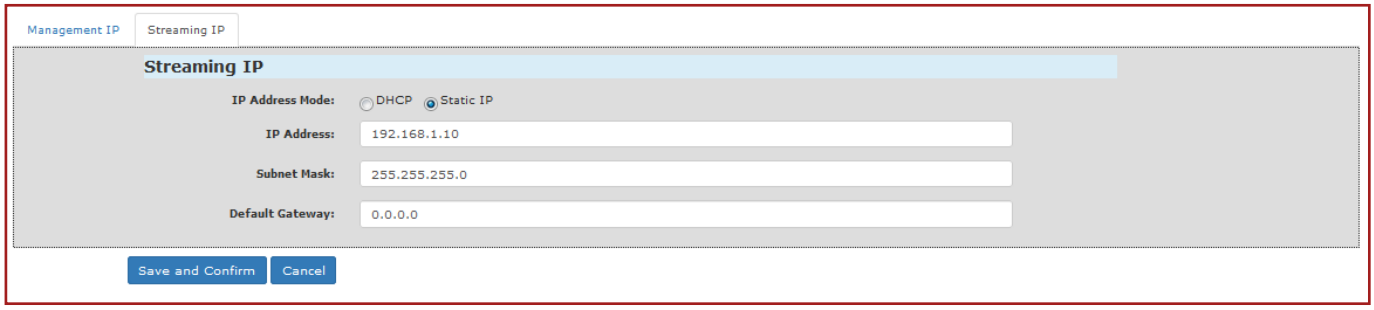


Network Setup Page of DT-IPTV-QAM-ASI-4HC

Use the Network Setup to configure the device's Management Port's IP address (GUI address) of the device, Subnet Mask, Gateway, Enable/Disable DHCP, and set Host Name.

Save and Confirm: Once all parameters are set remember to Save and confirm all changes.

Streaming IP Setup:



Use the Streaming IP tab to modify the Streaming IP port of the device as required.

Save and Confirm: Once all parameters are set remember to Save and confirm all changes have been made.

Administration



Administration Setup Page of DT-IPTV-QAM-ASI-4HC

Reboot Device:

Use the Reboot command button to reboot the device.

Note: Any unsaved changes will be lost.

Reset to Default:

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

Saving your configuration files

We highly recommend you save your configuration files. Simply select the “Backup” button and the configuration files will be saved to your computer.

Backup:

We highly recommend saving your device’s setting.

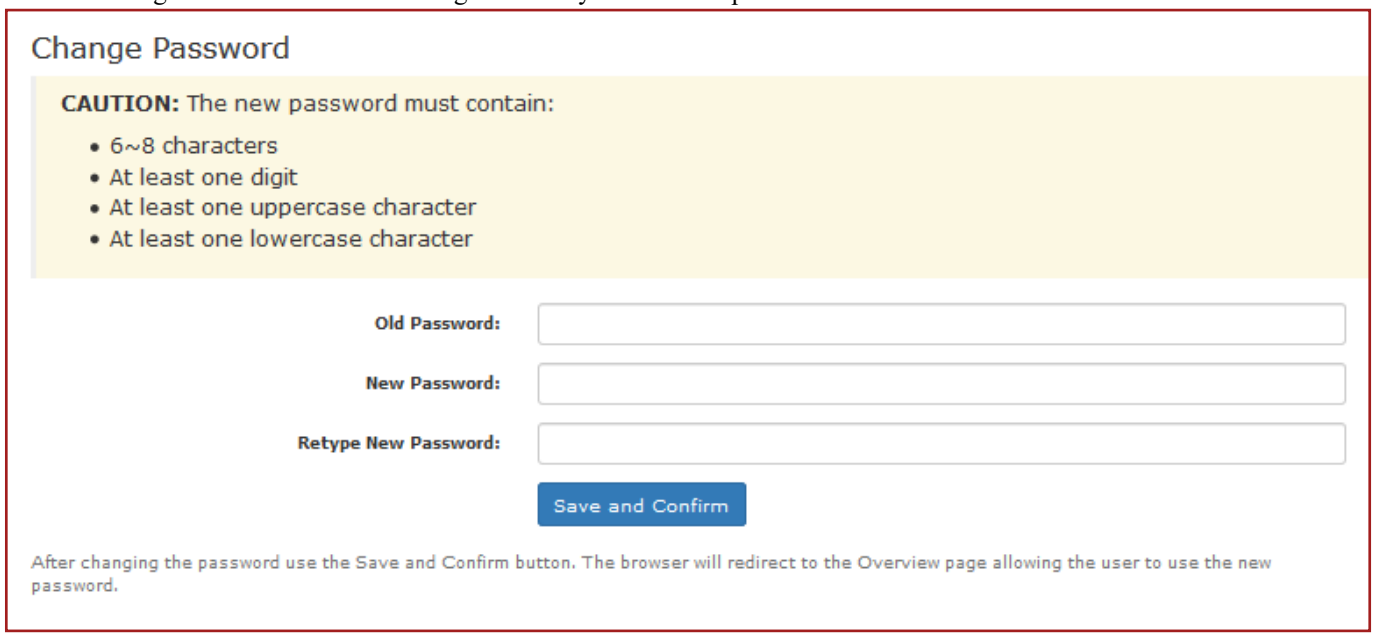
1. **Select** Administration.
2. **Select** Backup from the menu.
3. **Locate and name** file for future use.

Restore/Upload saved file configurations:

1. **Select** Administration.
2. **Select** "Choose file" menu.
3. **Locate** the required file to be imported.
4. **Select** "Upload" to import the selected file into the device.
5. Remember to save and backup any and all changes.

Change Password:

Use the Change Password section to change or modify the device's password as desired.



Save and Confirm 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 not 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 use 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: 192.168.0.0 - 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

Product Notes:

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.