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Stock
No. 6370-2
User Manual

MPEG-2 HD Encoder

HDE-8C-QAM w/Opt 2

8xComponent/Composite + 1xSpare inputs

4xQAM + 1xASI outputs

EAS compatible

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800-523-6049

www.blondertongue.com

We recommend that you write the following information in the spaces provided below.

Purchase Location Name:	
Purchase Location Telephone Number:	
HDE-8C-QAM Serial Number:	

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Section 1 — General & Safety Instructions



The STOP sign symbol is intended to alert you to the presence of REQUIRED operating and maintenance (servicing) instructions that if not followed, may result in product failure or destruction.



The YIELD sign symbol is intended to alert you to the presence of RECOMMENDED operating and maintenance (servicing) instructions.



The LIGHTNING flash symbol is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

**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 FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV System Installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Safety Instructions

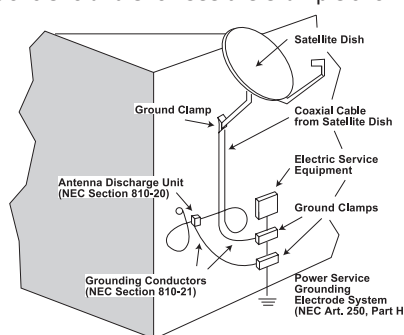


**YOU SHOULD ALWAYS FOLLOW THESE INSTRUCTIONS TO HELP ENSURE
AGAINST INJURY TO YOURSELF AND DAMAGE TO YOUR EQUIPMENT.**

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature per Section 2.3.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
- Read all safety and operating instructions before you operate the unit.
- Retain all safety and operating instructions for future reference.
- Heed all warnings on the unit and in the safety and operating instructions.

Safety Instructions - continued

- Follow all installation, operating, and use instructions.
- Unplug the unit from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the unit.
- Do not use accessories or attachments not recommended by Blonder Tongue, as they may cause hazards, and will void the warranty.
- Do not operate the unit in high-humidity areas, or expose it to water or moisture.
- Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious personal injury and damage to the unit. Install the unit only in a mounting rack designed for 19" rack-mounted equipment.
- Do not block or cover slots and openings in the unit. These are provided for ventilation and protection from overheating. Never place the unit near or over a radiator or heat register. Do not place the unit in an enclosure such as a cabinet without proper ventilation. Do not mount equipment in the rack space directly above or below the unit.
- Operate the unit using only the type of power source indicated on the marking label. Unplug the unit power cord by gripping the plug, not the cord.
- The unit is equipped with a three-wire ground-type plug. This plug will fit only into a ground-type power outlet. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the ground-type plug.
- Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.
- Be sure that the outdoor components of the antenna system are grounded in accordance with local, federal, and National Electrical Code (NEC) requirements. Pay special attention to NEC Sections 810 and 820. See the example shown in the following diagram:



- We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the unit is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the lines between the unit and the antenna. This will prevent damage caused by lightning or power line surges.
- Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing the antenna, take extreme care to avoid touching such power lines or circuits, as contact with them can be fatal.
- Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.
- Never insert objects of any kind into the unit through openings, as the objects may touch dangerous voltage points or short out parts. This could cause fire or electrical shock.
- Do not attempt to service the unit yourself, as opening or removing covers may expose you to dangerous voltage and will void the warranty. Refer all servicing to authorized service personnel.
- Unplug the unit from the wall outlet and refer servicing to authorized service personnel whenever the following occurs:
 - The power supply cord or plug is damaged;
 - Liquid has been spilled, or objects have fallen into the unit;
 - The unit has been exposed to rain or water;
 - The unit has been dropped or the chassis has been damaged;
 - The unit exhibits a distinct change in performance.
- When replacement parts are required, ensure that the service technician uses replacement parts specified by Blonder Tongue. Unauthorized substitutions may damage the unit or cause electrical shock or fire, and will void the warranty.
- Upon completion of any service or repair to the unit, ask the service technician to perform safety checks to ensure that the unit is in proper operating condition.

Returning Product for Repair (or Credit)

A Return Material Authorization (RMA) Number is required on all products returned to Blonder Tongue, regardless if the product is being returned for repair or credit. Before returning product, please contact the Blonder Tongue Service Department at 1-800-523-6049, Ext. 4256 or visit our website: www.blondertongue.com for further information.

Section 2 — Product Summary

2.1 Revision History & Reason

The second release of the manual added single part virtual channel numbering capability.
The third release updated the system connection diagram.

2.2 Product Application & Description

Application:

HDE-8C-QAM (MPEG-2 HD Encoder – 8xComponent/8xComposite – 4xQAM) accepts up to eight (8) analog programs from any of the following inputs: 8xComponent and 8xComposite. The encoder is equipped with a spare input (9th input) to replace any one (1) of the primary eight (8) inputs in the event of a failure.

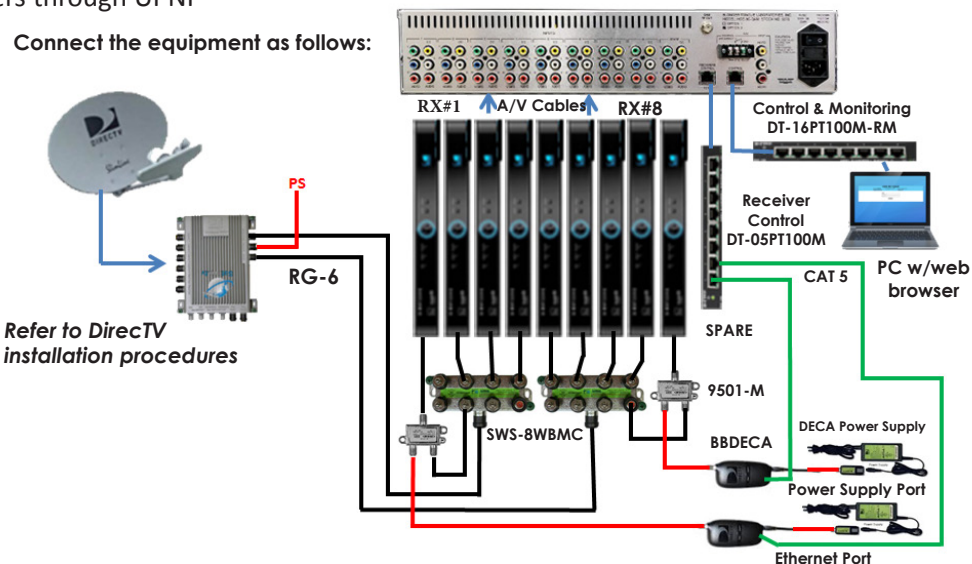
The encoder digitizes, MPEG-2 encodes each input into a high-definition stream, multiplexes the resulting eight (8) program streams, and then modulates them onto four (4) adjacent QAM channels in the 54-1002 MHz range (CATV 2-158). Any one (1) of the four (4) QAM output streams is also available in ASI format.

The encoder supports Dolby® Digital audio encoding, and Closed Captioning (EIA-608). It is also equipped with an Emergency Alert System (EAS) interface. A front-panel RF test point allows for monitoring/testing of the QAM output without service interruption.

The encoder accepts eight (8) primary analog programs and one (1) spare from DIRECTV Network’s H25-100 satellite receivers. Remote monitoring and control of the nine (9) satellite receivers is accomplished through UPnP protocol via a rear-panel 10/100Base-T Ethernet connection using a standard Web browser. An Ethernet switch with a minimum of 5 ports and two (2) DirecTV DECA units are required for connecting the receivers to the encoder’s receiver control port.

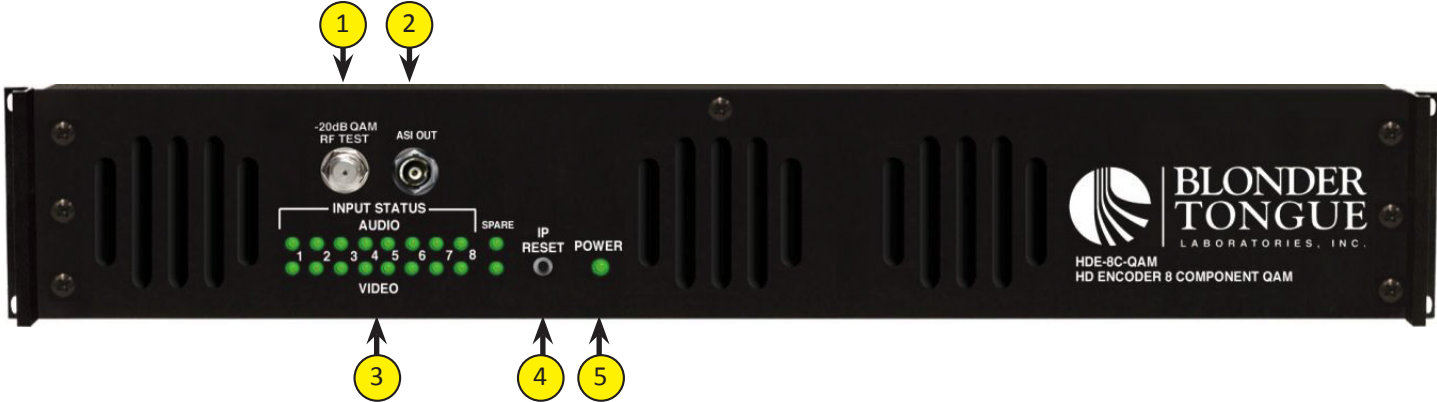
Features:

- Accepts up to 8 programs from any of the following inputs: 8xComponent and 8xComposite
- Supports additional 1 spare input to replace the failed input
- Digitizes, MPEG-2 encodes, and multiplexes up to 8 inputs into 4 QAM output channels (2 programs per QAM channel)
- Provides any 1 of the 4 QAM output streams in ASI format
- Compatible with ITU Annex A and B digital QAM formats
- Provides comprehensive GUI-based monitoring and control via standard Web browsers
- Provides a front-panel RF test point (at 20dB below primary QAM output)
- Equipped with EAS interface (Analog Video + L/R Audio)
- Supports Real-time Dolby® Digital audio encoding
- Supports Closed Captioning EIA-608
- Supports user-defined PSIP configuration
- Controls STB receivers through UPNP



Description:

Front panel connectors and indicators:

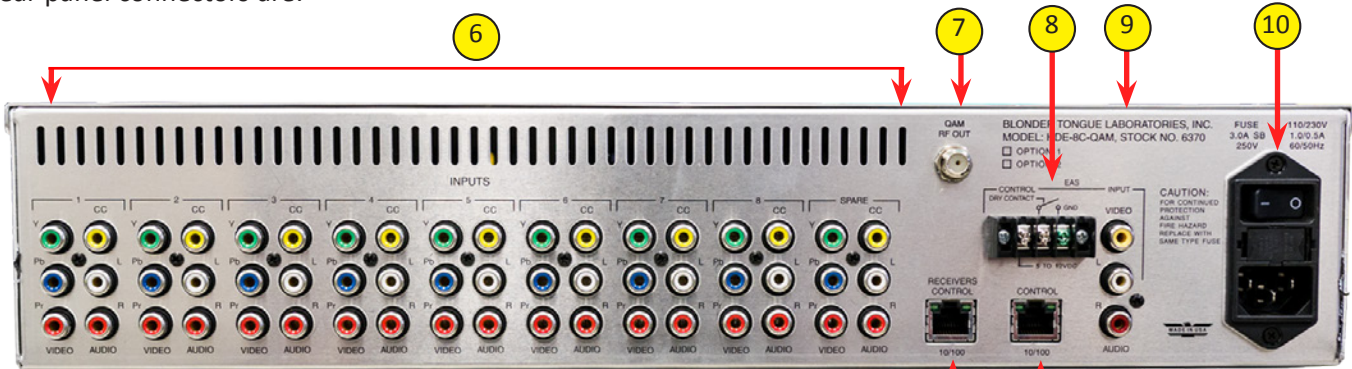


- 1 -20dB QAM RF TEST:**
"F" connector for RF testing @ 20dB below the main QAM RF output.
- 2 ASI OUT:**
The "ASI OUT" BNC connector delivers any one (1) of the four (4) QAM output and is typically used as input to an external modulator.
- 3 INPUT STATUS LEDs:**
LEDs indicate the status of audio and video of each of the eight (8) inputs plus the spare input as follows:
 - Audio LED**
 - Green = Audio input is detected and has no errors
 - Red = Audio input with error
 - Off = Audio input not detected
 - Video LED**
 - Green = Video input is detected and has no errors
 - Red = Video input with error
 - Off = Video input not detected

Audio and Video LED's in Spare Mode
When the Spare Mode is enabled, both audio and video LEDs on the spare input (#9) and its user assigned replacement input will blink green. The LED indicators will return to their previous states when the mode is disabled.

Audio and Video LED's in EAS Mode
When EAS is activated, the Audio LEDs will change one at a time to red starting from Input # 1 and moving right towards Input #8. The sequence continues on the Video LED row, again starting at input #1 and moving right. After all LEDs are have turned red they all simultaneously switch back to green and the cycle begins again, continuing until EAS has been deactivated.
- 4 IP RESET:**
When pushed and held for about 10 seconds, the power LED will blink once to confirm reset operation. The encoder defaults to the original IP address, Usernames, and Passwords as shipped from the Factory (shown below).
 - IP address = 172.16.70.1
 - Username = Admin (case-sensitive)
 - Password = pass (case-sensitive)
- 5 POWER:**
LED is Green = AC power is detected.
LED is off = indicates (i) AC power is not connected, or (ii) AC power is connected but the power supply is defective. The unit must be sent to Blonder Tongue for repair for condition (ii).

Rear panel connectors are:



6 INPUTS #1 thru 8 + Spare:

RCA connectors for Video and Audio inputs marked as follows:

Y, Pb, Pr - Analog Component Video

Y – Composite Video

CC – Analog NTSC Closed Captioning (EIA-608, also known as Line 21), which will then be digitized and inserted in the MPEG-2 Transport Stream of the Component inputs.

L, R - Analog Left/Right Audio

7 QAM RF OUT:

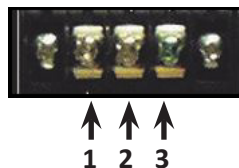
“F” connector for up to four (4) QAM RF outputs.

8 EAS CONTROL:

Terminal strip to activate the EAS messaging feature in one of two the following ways:

a) 5-12 VDC between terminals 1 & 3 shown below

b) Dry Contact between terminals 2 & 3 shown below



NOTE: This feature is intended to activate EAS and override all the input programs (whether Component or Composite) with the EAS INPUT (see 9 below for details). The QAM OUT (see 7 above), and ASI OUT (see 2) will both contain the video and audio present at the corresponding RCA connectors of the EAS INPUT.

9 EAS INPUTS:

RCA connectors for EAS Analog Audio (marked L & R) and Composite Video (marked Video) inputs.



EAS feature is functional only when (i) EAS Control is triggered ON, and (ii) Video/audio is detected on EAS INPUT connectors. The EAS feature will not be functional unless both these conditions are met.

10 INPUT POWER:

IEC 14 power inlet plug - rated 110/230 VAC; 1.2/0.6A; 60/50 Hz; equipped with Slo-Blo, 4.0 Amps, 250 V Fuse and On/Off switch.

11 RECEIVERS CONTROL 10/100 :

RJ45 connector for 10/100Base-T Ethernet interface for controlling satellite receivers.

12 CONTROL 10/100:

RJ45 connector for 10/100Base-T Ethernet interface for monitoring and configuring the unit. Only static IP address can be assigned to this interface. The factory default value is 172.16.70.1.

2.3 Product Specification

Specifications

Input

Component	
Primary Connectors:	8 sets each 3x RCA for Video (Y, Pb, Pr) 8 sets each 2x RCA for Analog Audio (L, R)
Spare Connectors:	3x RCA for Video (Y, Pb, Pr) 2x RCA for Analog Audio (L, R)
Video Resolution:	480i, 720p
Video Aspect Ratio:	4:3 & 16:9
Composite Video	
Primary Connectors:	8 sets each 1x RCA for Video (Y) 8 sets each 2x RCA for Analog Audio (L,R) (shared with component connectors)
Spare Connectors:	1x RCA for Video (Y) 2x RCA for Analog Audio (L,R) (shared with component connectors)
Video Resolution:	480i
EAS (Emergency Alert System)	
Connectors:	3x RCA (Video, Audio L & R)
Trigger Mechanism:	5-12 VDC & Dry Contact Closure (Terminal Strip)
Encoding Profile	
Video	
Output Format:	MPEG-2 HD MP@ML; ISO 13818-2
Chroma:	4:2:0
Resolution:	480i, 720p
Frame rate:	29.97 fps (480i); 59.97 fps (720p)
Aspect Ratio:	4:3 & 16:9
GOP Structure:	I & P frames (user-selectable)
Transport Rate:	Variable (user-selectable)
Video Bit Rate:	Variable (user-selectable)
Video Pre-filter:	Variable (user-selectable)
Audio	
Output Format:	Dolby® Digital
Sampling rate:	48 kHz
Bit rate:	Variable; 128-320 Kbps (user-selectable)
Closed Captioning	
Component:	EIA- 608; 1x RCA (CC)
Composite:	EIA-608

General

Dimensions (W x D x H):	19.0 x 19.5 x 3.5 inches (483 x 495 x 89 mm)
Power:	110 - 230 VAC, 50/60 Hz (Fuse: 4.0A, 250 VDC, Slo Blo)
Power Dissipation:	~60 W (max)
Weight:	~15 lbs (6.8 kg)
Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-13 to 158 °F (-25 to 70 °C)
Operating Humidity:	0 to 95% RH @ 35 °C max, non-condensing
Storage Humidity:	0 to 95% RH @ 35 °C max, non-condensing

Output

QAM	
Connector:	1x "F" Female (rear panel; up to 4x RF QAM ch. combined)
Modulation:	Watermarked QAM 16, 32, 64, 128, and 256
Standards:	ITU-T J.83; Annex A and B
DVB Symbol Rate:	Variable; up to 7 MSymbol/sec (MBAud)
Frequency Range:	54 to 1002 MHz
Tuning:	CATV Channel Selectable (CH. 2 to 158)
Channel Bandwidth:	24 MHz (4x Adjacent 6 MHz)
RF Level:	+40 dBmV ± 1 dB (4 channels combined)
RF Level Adjustment Range:	+35 to +42 dBmV, 1 dB increments
Frequency Tolerance:	± 0.5 kHz @ 77 °F (25 °C)
Frequency Stability:	± 5 kHz over 32 to 122 °F (0 to 50 °C)
Amplitude Flatness:	± 0.25 dB (over 6 MHz channel)
Phase Noise:	-98 dBc (@ 10 kHz)
Spurious:	-60 dBc
Broadband Noise:	-70 dBc (@ +40 dBmV output level, 5.5 MHz bandwidth)
Impedance:	75 Ω
Spectral Inversion:	Auto Recognition
Carrier Suppression:	45 dB
Return Loss:	14 dB typical
Signal-to-Noise Ratio (SNR):	40 dB typical
MER:	39 dB typical
I/Q Phase Error:	Less than 1 degree
I/Q Amplitude Imbalance:	Less than 1%
ASI	
Connector:	1x BNC (front-panel)
Output Assignment:	Any 1 of 4 QAM output streams
Format:	DVB-ASI
Standard:	ETSI EN 50083-9

Alarms/Monitoring/Control

Local Monitoring:	16x Input Status LEDs (Video 1-8; Audio 1-8) 2x Spare LEDs (Video & Audio) 1x Power LED
Local Control:	1x "F" Female RF Test Port 1x IP Reset button
Remote Monitoring/Control:	GUI-based menu via Web browser (1x RJ45 connector; 10/100Base-T) UPNP control of STB receivers (1x RJ45 connector; 10/100Base-T)

Section 3 – Installation & Power-up

3.1 Unpacking

You will find the following items in the box:

- HDE-8C-QAM Encoder (QTY=1)
- Power Cord with IEC C13 line socket and 3-pin Type B NEMA 5 plug (QTY=1)
- A hardware bag (item 741021800) containing one (1) 7' crossover RJ45 Ethernet cable:
- A hardware bag (item 741022600) containing (10) receiver labels.

3.2 Installation

The HDE-8C-QAM encoder is designed to be installed in a standard 19-inch (483 mm) rack (EIA 310-D, IEC 60297, and DIN 41494 SC48D).

To install the encoder, secure the unit's front panel to the rack by inserting four (4) machine screws, with cup washers, through the four (4) mounting holes in the front panel.



**FOR SAFE AND RELIABLE OPERATION, THE GROUND PIN OF THE POWER CORD PLUG
MUST BE GROUNDED PROPERLY.**

3.3 Power-up

Connect the line cord to a 110/230 VAC, 60/50 Hz outlet. Please note that the IEC power connector on the rear panel of the unit is equipped with an ON/OFF switch and a fuse (SLO-BLO, 4.0 Amp, 250V).

The "POWER" LED on the front-panel will light green.

Section 4 – Communicating with the Unit

Local or remote communication with the unit is only possible through a GUI-based menu via any standard web browser. Before you can communicate with the unit, you must configure your computer's IP address to be in the same subnet as the unit's default IP address. To do so, follow these steps:

- (1) Plug one end of the Ethernet cross cable that is provided in the hardware bag to unit's rear-panel RJ45 interface marked "Control 10/100". Plug the other end of the cable to your computer.
- (2) The factory default IP address of the unit is 172.16.70.1. To be able to communicate with the unit, you must first change your computer's IP address.

The following steps explain how to do this for a computer with Windows XP operating software:

- (a) On your computer, open the "Control Panel"
- (b) Double-click on "Network Connections"
- (c) Right-click on the "Local Area Connection", and then click on the "properties".
- (d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol (TCP/IP)".
- (e) A dialog box entitled "Internet Protocol (TCP/IP) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

IP address: 172.16.70.2

Subnet mask: 255.255.255.0

No need to enter a value for the Default Gateway.

Click OK to close the dialog box. Now your computer is ready to communicate with the unit.

-OR -

The following steps explain how to do this for a computer with Windows 7 operating software:

- (a) On your computer, open the "Control Panel"
- (b) Click on "Network and Internet"
- (c) Click on the "View network status and tasks"
- (d) Click on "Change Adapter Settings" on left hand side of the window
- (e) Right-click on the "Local Area Connection", and then click on the "properties".
- (f) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol Version 4 (TCP/IPv4)".
- (g) A dialog box entitled "Internet Protocol Version 4 (TCP/IPv4) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

IP address: 172.16.70.2

Subnet mask: 255.255.255.0

No need to enter a value for the Default Gateway.

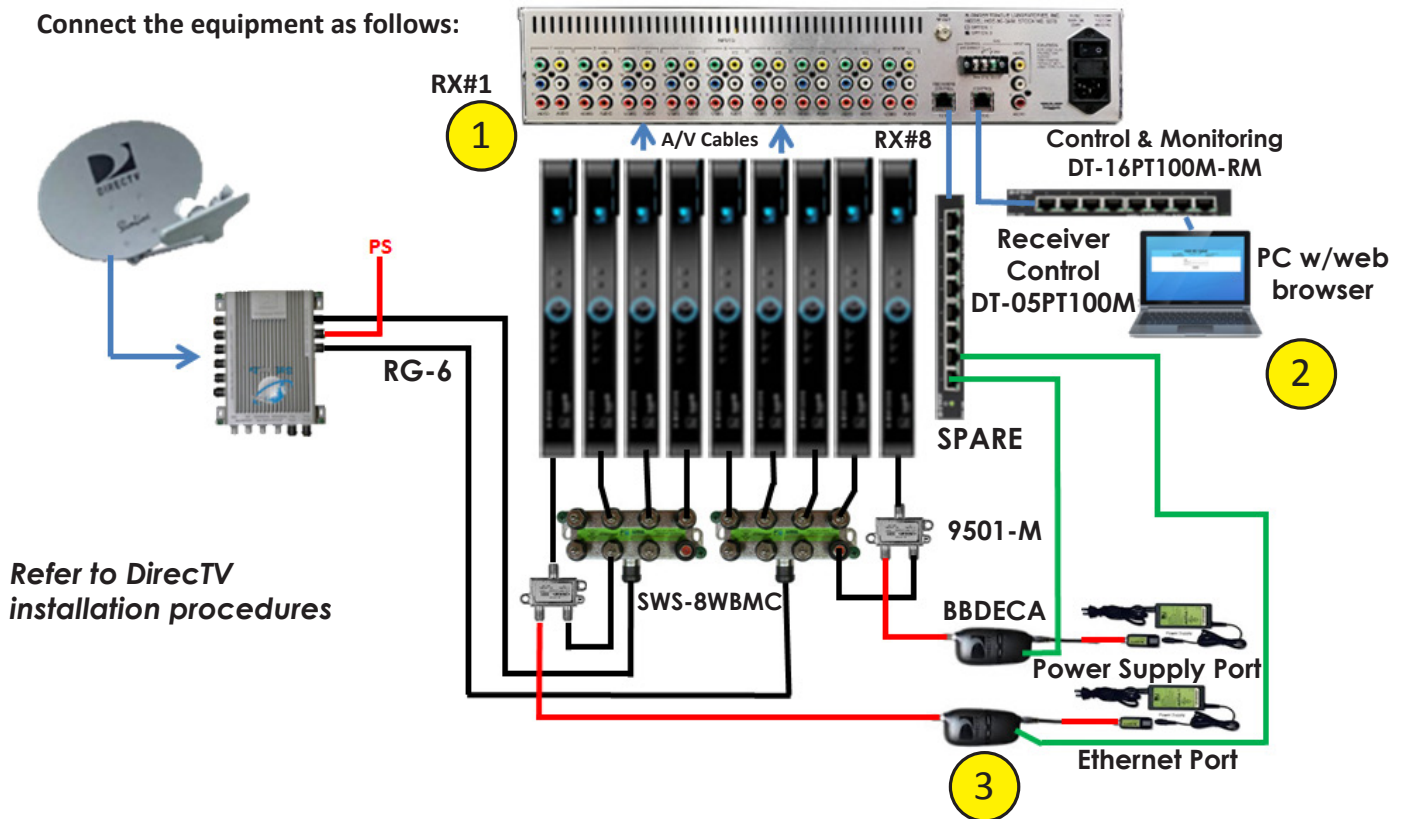
Click OK to close the dialog box. Now your computer is ready to communicate with the unit.

Section 5 – Quick Start Guide

STEP 1 - Connect the Inputs

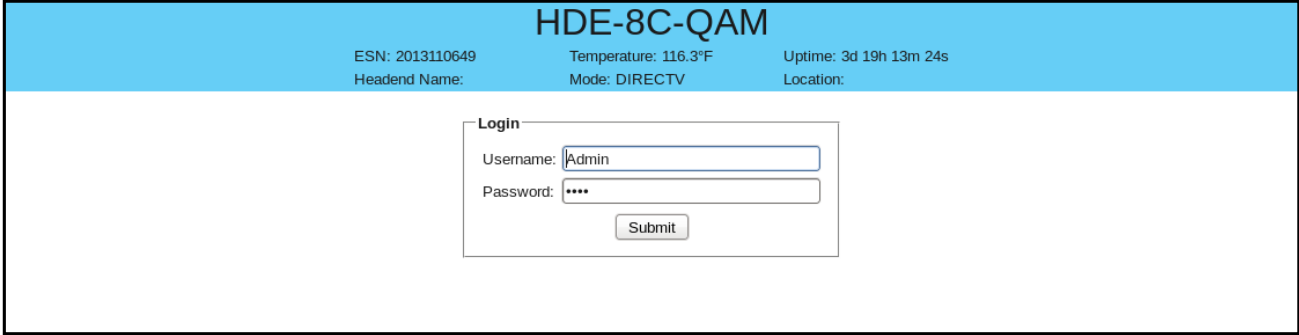
- Locate the blank receiver labels in the plastic bag supplied with the encoder. Number each label with UNIT numbers 1 through 9.
 - Find the receiver ID number label on the first receiver. Write the last 4 digits of the ID on label #1 (RX1_####_) and place on the front of the receiver.
 - Repeat for all 9 satellite receivers (8 primary plus 1 optional spare).
- 1 Now connect each receiver output to the encoder inputs, making sure that receiver #1 (RX#1) is connected to #1 component input on the encoder. Repeat this process for remaining receivers.
 - 2 Connect the Receivers Control 10/100 port on the encoder (see section 2.2 #11 in manual) to an Ethernet switch (with a minimum of 5 ports) with a CAT 5 jumper cable.
 - 3 Connect the 9 satellite receivers and the BBDECAs as shown below.
- Power up the receivers and the encoder.

Connect the equipment as follows:



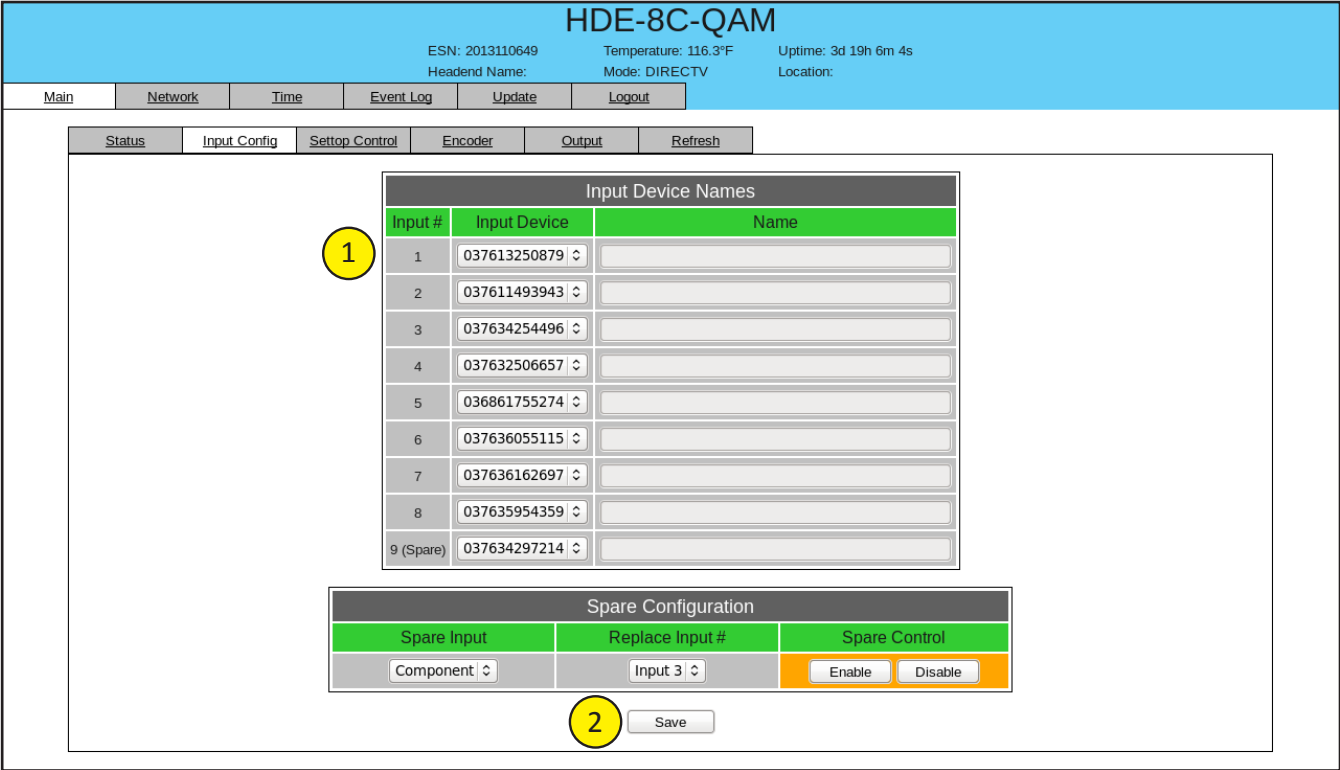
STEP 2 - Login

- Log in to the HDE-8C-QAM, using a standard web browser.
 This can be done through the Control 10/100 port, next to the Receiver Control port.
 Either go directly from a computer or through an Ethernet switch.
- Assign 172.16.70.2 as the static address for your computer
- Now open your browser and enter 172.16.70.1 to access the HDE-8C-QAM.
- The Username is “Admin” and the password is “pass” (case-sensitive)



STEP 3 - Assigning Receivers

- If not already, allow several minutes for the receivers to be discovered and assigned IP addresses
- 1 From the Main > Input Config Tab of the Web Pages, assign RX#1 to Input #1, RX#2 to Input #2, etc.
 - 2 Click “SAVE” to apply changes.



Step 4 - TS Configuration

- Go to the Main > Output > TS Config Tab

- Verify the Multiplexed MPTS Output default settings are suitable for your application
 - TS bitrate = QAM Modulator
 - Modulation Mode = QAM 256
 - Out of band = disabled
- Verify the Output Mapping Section.
 - Input for each TS must be different.
 - Every PID and Program Number must be different.
 - Short Name should be a descriptive name of the program, as it will be shown on the television (max 7 alphanumeric characters)
 - Major and Minor Channel numbers are what the TV will display as the channel.
- Click "SAVE" to apply changes.

HDE-8C-QAM
ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 8m 1s
 Headend Name: Mode: DIRECTV Location:

Main | Network | Time | Event Log | Update | Logout

Status | Input Config | Setup Control | Encoder | Output

Multiplexed MPTS Output Configuration

TS ID	TS Bitrate	Modulation Mode	Out of Band	ASI Output
TS1	1 <input type="text"/>	QAM Modulator ▾	QAM256 ▾	Disabled ▾
TS2	2 <input type="text"/>	QAM Modulator ▾	QAM256 ▾	Disabled ▾
TS3	3 <input type="text"/>	QAM Modulator ▾	QAM256 ▾	Disabled ▾
TS4	4 <input type="text"/>	QAM Modulator ▾	QAM256 ▾	Disabled ▾

Output Mapping

Input	PID	Program Number	Short Name	Major Channel	Minor Channel
TS1					
Input1 ▾	64 <input type="text"/>	1 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	1 <input type="text"/>
Video	65 <input type="text"/>				
Audio	66 <input type="text"/>				
Input2 ▾	80 <input type="text"/>	2 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	2 <input type="text"/>
Video	81 <input type="text"/>				
Audio	82 <input type="text"/>				
TS2					
Input3 ▾	96 <input type="text"/>	1 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	3 <input type="text"/>
Video	97 <input type="text"/>				
Audio	98 <input type="text"/>				
Input4 ▾	112 <input type="text"/>	2 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	4 <input type="text"/>
Video	113 <input type="text"/>				
Audio	114 <input type="text"/>				
TS3					
Input5 ▾	128 <input type="text"/>	1 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	5 <input type="text"/>
Video	129 <input type="text"/>				
Audio	130 <input type="text"/>				
Input6 ▾	144 <input type="text"/>	2 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	6 <input type="text"/>
Video	145 <input type="text"/>				
Audio	146 <input type="text"/>				
TS4					
Input7 ▾	160 <input type="text"/>	1 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	7 <input type="text"/>
Video	161 <input type="text"/>				
Audio	162 <input type="text"/>				
Input8 ▾	176 <input type="text"/>	2 <input type="text"/>	<input type="text"/>	3 <input type="text"/>	8 <input type="text"/>
Video	177 <input type="text"/>				
Audio	178 <input type="text"/>				

Step 5 - Configure QAM Output

• Setup the QAM output channels by going to the Main > Output > QAM tab

- 1 Select the channel for the 1st QAM. The next 3 will be automatically assigned.
- 2 Ensure all outputs are on and CW mode is not enabled.
- 3 Click "SAVE" to apply changes.

The screenshot shows the HDE-8C-QAM configuration interface. At the top, there is a header with the title "HDE-8C-QAM" and system information: ESN: 2013100499, Temperature: 87.5°F, Uptime: 33d 2h 57m 11s, Headend Name, Mode: Dish, and Location. Below the header is a navigation menu with tabs: Main, Network, Time, Event Log, Update, and Logout. Underneath is another set of tabs: Status, Input Config, Setup Inputs, Encoder, and Output. The "Output" tab is selected, and within it, the "QAM" sub-tab is active. The "QAM Parameters" section is highlighted in blue and contains the following settings:

QAM Parameters				
Output Channel/Frequency	50 / 381MHz	51 / 387MHz	52 / 393MHz	53 / 399MHz
Output Control	On	On	On	On
CW Control	<input type="checkbox"/> Enable CW for QAM Module			
Output Level	40 dBmV			
Output QAM Mode	256B			
Output QAM Map	STD			
Output QAM Data Rate	5.3605 Mbaud			
Output QAM Interleaver	128-1			
Output QAM Alpha	12%			
QAM Lock State	Lock			

At the bottom of the QAM Parameters section, there is a "Save" button. Three yellow circles with numbers 1, 2, and 3 are overlaid on the screenshot to indicate the steps: 1 points to the first frequency dropdown, 2 points to the "On" dropdown and the "Enable CW" checkbox, and 3 points to the "Save" button.

Section 6 - Configuring the Unit

6.1 Accessing the Unit Via the Web Browser

You must complete the steps described in Section 4 before proceeding as follows:

- (1) Open a web browser on your computer (Internet Explorer 7 or higher is recommended) and enter the following URL address (**http://172.16.70.1**). The "Login" Screen (Figure 6.1) will appear.

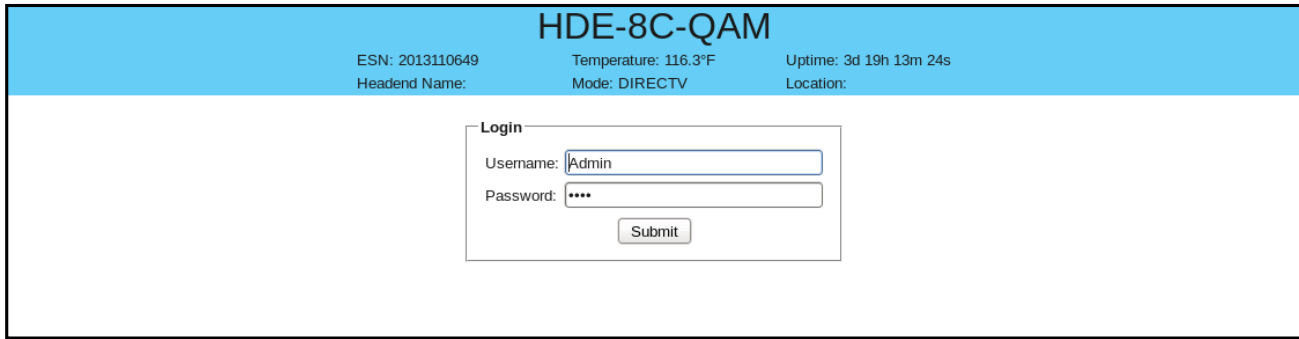


Figure 6.1 - "Login" Screen

- (2) Enter the following case-sensitive factory-default Username and Password, and click on the "Submit" button.

NOTE: When logged in as Admin, the user has read and write permission. Only one Admin can be logged in at a time. When logged in as Guest, the user has only read permission. Up to four Guests can be logged in simultaneously.

Username = **Admin** (case-sensitive)

Password = **pass** (case-sensitive)

- OR -

Username = **Guest** (case-sensitive)

Password = **pass** (case-sensitive)

Monitoring and configuration of the unit is achieved via a series of web pages described in following sections. The following read-only information is displayed in a "page header" – in blue color – on top of each web page:

ESN: unit's Serial number

Headend name: a user-defined field to make identification easier

Temperature: temperature of unit's chipset

Uptime: time elapsed since last time the unit was turned on

Location: a user-defined field to make identification easier

As shown in Figure 6.2, under the blue "page header" the following Primary tabs will appear:

- Primary tab "**Main**" includes the following sub-tabs: Status, Inputs, Encoder, Output, and Refresh.
- Primary tab "**Network**" doesn't include any sub-tab.
- Primary tab "**Time**" doesn't include any sub-tab.
- Primary tab "**Event Log**" doesn't include any sub-tab.
- Primary tab "**Logout**" doesn't include any sub-tab.

Each Primary and sub-tab is described in the subsequent Sections.

6.2 "Main > Status" Screen

The "Main > Status" screen (Figure 6.2) is a "read only" screen and displays Input, PID and Output information of each of the four (4) transport streams (TS). Each TS contains two (2) programs:

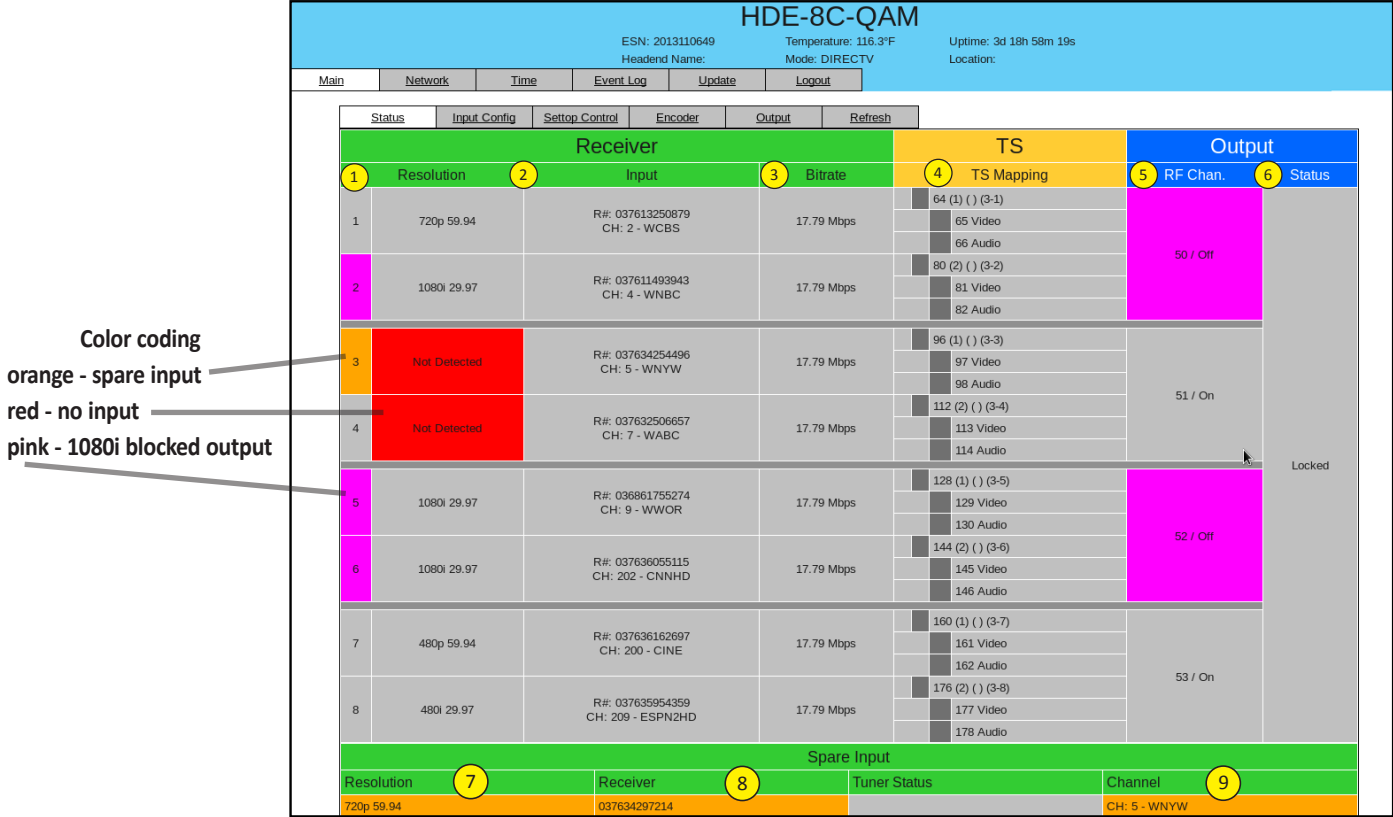


Figure 6.2 - "Main > Status" Screen

In the section entitled "Input" under green header, the following parameters about each input program in the TS are displayed:

1 **Resolution:** indicates the resolution and frame rate of the video input.



Maximum allowable resolution for this system is 720p. 1080i inputs will result in an Output RF Chan (#5) to be highlighted in PINK and the encoder will not pass the programs. The user is required to change the output resolution on the satellite receiver to 720p.

2 **Input:** indicates the user-defined name of the input source (see Section 6.3 for details). Displays receiver's assigned Receiver #, tuner channel number – channel name if assigned

3 **Bitrate:** indicates the bitrate of the input program.

In the section entitled "TS" under an orange header, the following parameters about each program in output TS are displayed:

4 **TS Mapping:** indicates the list of programs selected by the user to be assigned to each output TS (TS #1 thru 4). The program information includes the PMT PID, Program number, Short Name, Major-minor channel number (see Section 6.8.1 for details).

In the section entitled "Output" under blue header, the following parameters about each program in output TS are displayed:

5 **RF Chan:** indicates (i) the RF channel number of the QAM output, and (ii) whether the output QAM is On or Off (see Section 6.8.2 for details).

6 **Status:** indicates whether the Quad-QAM RF output module is locked or not.

In the section entitled "Spare Input" under green header, the following parameters about the Spare Input (9th input) are displayed:

7 **Resolution:** indicates the resolution and frame rate of the video input.

8 **Receiver** = assigned Receiver #

9 **Channel** = receiver's channel # - short name

6.3 "Main > Input Config" Screen

The "Main > Input Config" screen (Figure 6.3) is a "user-configurable" screen where the following input source parameters can be configured:

Input #	Input Device	Name
1	037613250879	
2	037611493943	
3	037634254496	
4	037632506657	
5	036861755274	
6	037636055115	
7	037636162697	
8	037635954359	
9 (Spare)	037634297214	

Spare Input	Replace Input #	Spare Control
Component	Input 3	Enable Disable

Save

Figure 6.3 - "Main > Input Config" Screen

- 1 **Input #:** indicates the physical input interface.
- 2 **Input Device:** Displays the receiver's ID number. The pull down displays available Receiver ID numbers or "Other Device" that can be assigned to the encoder input number.
- 3 **Name:** enter a name to identify the input source device. This feature is only available when "Other Device" in #2 above is selected. For DirecTV receiver entries the Name field is grayed out
- 4 **Spare Input:** allows the user to select the type of input source. Possible options are Component, and Composite.
- 5 **Replace Input #:** Options are Input #1 to 8. Allows the user to select the desired physical input interface number that can be manually replaced (Spare Control- Enable) or returned to the assigned input receiver (Spare Control- Disable) after an automatic or manual spare operation.
- 6 **Spare Control:** Allows the user to manually replace an input (selected in 5) with the spare receiver. The encoder also operates automatically. If the HDE-8C detects the loss of video from any one of the eight (8) primary receivers, the encoder will automatically switch to the spare receiver and tune to the same channel as the receiver it has replaced. This action typically takes less than 30 seconds and may display a color bar test pattern prior to the spare switch over. If the spare receiver cannot successfully tune to the required channel for any reason, the non-working or disconnected receiver will not be spared, leaving the SPARE available.

Once the encoder has switched to the spare receiver (indicated by an orange fill around the input number on the STATUS screen Fig. 6.2) it can only be cleared manually. This can be done after the signal has been restored on the failed receiver and confirmed on the STATUS screen. The Replace Input # (#5 above) will display the failed input.

Click the "Disable" button to return the encoder to the primary receiver.



Remember to click on the SAVE button to apply the new values/configurations.

6.4 "Main > Settop Control> Channel Config" Screen

The Channel Config menu facilitates setting the channel line up for the unit.

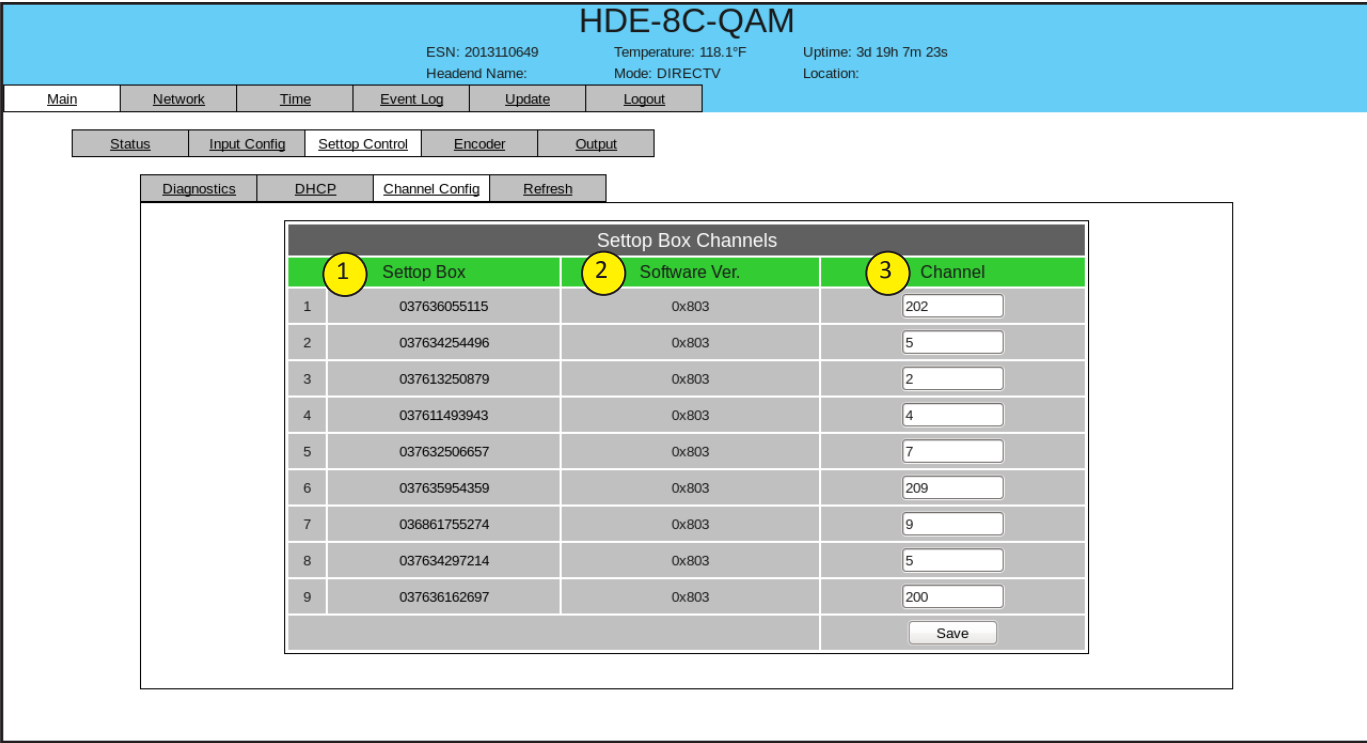


Figure 6.4 - "Main > Settop Control" Channel Config

- 1 Receiver #
- 2 Software version of each receiver.
- 3 Channel # = user entered channel number for the receiver.

6.5 "Main > Settop Control > Diagnostics" Screen

This page allows the user to remove receivers from the unit's database.

HDE-8C-QAM

ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 6m 20s
 Headend Name: Mode: DIRECTV Location:

Main | Network | Time | Event Log | Update | Logout

Status | Input Config | Settop Control | Encoder | Output

Diagnostics | DHCP | Channel Config | Refresh

Warning: Once saved, changes cannot be undone.

#	Remove	Receiver	Software Rev.	Accessible		Channel
1	<input type="checkbox"/>	037636055115	0x803	Yes ▾		202
2	<input type="checkbox"/>	037634254496	0x803	Yes ▾		5
3	<input type="checkbox"/>	037613250879	0x803	Yes ▾		2
4	<input type="checkbox"/>	037611493943	0x803	Yes ▾		4
5	<input type="checkbox"/>	037632506657	0x803	Yes ▾		7
6	<input type="checkbox"/>	037635954359	0x803	Yes ▾		209
7	<input type="checkbox"/>	036861755274	0x803	Yes ▾		9
8	<input type="checkbox"/>	037634297214	0x803	Yes ▾		5
9	<input type="checkbox"/>	037636162697	0x803	Yes ▾		200

Save

#	Receiver	IP	Power On	Ping	Ping	Power Off
1	037636055115	192.168.253.20	Power On	Ping	-	Power Off
2	037634254496	192.168.253.22	Power On	Ping	-	Power Off
3	037613250879	192.168.253.21	Power On	Ping	-	Power Off
4	037611493943	192.168.253.23	Power On	Ping	-	Power Off
5	037632506657	192.168.253.27	Power On	Ping	-	Power Off
6	037635954359	192.168.253.24	Power On	Ping	-	Power Off
7	036861755274	192.168.253.25	Power On	Ping	-	Power Off
8	037634297214	192.168.253.28	Power On	Ping	-	Power Off
9	037636162697	192.168.253.26	Power On	Ping	-	Power Off

Figure 6.5 - "Main > Settop Control > Diagnostics" Screen

- 1 Line # - Not to be confused with Input #. This is the sequence the encoder obtained the receiver information.
- 2 Select the receivers to be removed, then press SAVE
- 3 Receiver #.
- 4 Software Rev.
- 5 Accessible thru IP, green=accessible, red=not.
- 6 Receiver's channel number.
- 7 Save: press Save to store changes.

This table is used for network diagnostic of the receivers. The row of a unit previously detected but currently not able to communicate is shown in red.

- 8 Line # - Not to be confused with Input #. This is the sequence the encoder obtained the receiver information.
- 9 Receiver #.
- 10 Assigned IP address.
- 11 Press "Power On" to power on receiver.
- 12 Ping - press to ping unit. The response is shown in the adjacent column.
- 13 Press "Power Off" to power off receiver.

6.6 "Main > Settop Control> DHCP" Screen

The Dynamic Host Configuration Protocol (DHCP) screen is a read-only status of the server. DHCP is the communication protocol which centrally manages the assignment of receiver IP addresses.

The screenshot shows the HDE-8C-QAM interface. At the top, it displays system information: ESN: 2013110649, Temperature: 116.3°F, Uptime: 3d 19h 7m 5s, Headend Name, Mode: DIRECTV, and Location. Below this is a navigation menu with options: Main, Network, Time, Event Log, Update, and Logout. A secondary menu includes Status, Input Config, Settop Control, Encoder, and Output. Under Settop Control, there are sub-menus: Diagnostics, DHCP, Channel Config, and Refresh. The DHCP sub-menu is active, displaying a table with two columns: DHCP Database IPs (labeled with a circled '1') and Detected IPs (labeled with a circled '2').

#	DHCP Database IPs	Detected IPs
1	192.168.253.20	192.168.253.20
2	192.168.253.21	192.168.253.21
3	192.168.253.22	192.168.253.22
4	192.168.253.23	192.168.253.23
5	192.168.253.24	192.168.253.24
6	192.168.253.25	192.168.253.25
7	192.168.253.26	192.168.253.26
8	192.168.253.27	192.168.253.27
9	192.168.253.28	192.168.253.28

Figure 6.6 - "Main > Settop Control > DHCP" Screen

- 1 DHCP Database: IP addresses in database assigned to each receiver
- 2 Detected IPs: IP address retrieved from receivers.

Please note that the very first time that the receiver is connected to a "Clean" HDE-8C-QAM database each receiver will get a new IP address. However, after the first time the HDE-8C-QAM will remember the MAC address for each receiver and after any power up, the HDE-8C-QAM will provide a same IP address to the Receiver.

6.7 "Main > Encoder" Screen

The "Main > Encoder" screen (Figure 6.10.1) is a "user-configurable" screen and includes the following sub-tabs: Video and Audio.

6.7.1 "Main > Encoder > Video" Screen

The "Main > Encoder > Video" screen (Figure 6.10.1) is a "user-configurable" screen to select the video encoder parameters for each input program:

Figure 6.7.1 - "Main > Encoder > Video" Screen

- 1 **Bitrate:** allows user to enter the bitrate for each input video. It is recommended to ensure that the sum of the bitrates of the input videos in a TS, does not exceed "TS Bitrate" selected on the "Main > Output > TS Config" screen (see 2 of section 6.10 for details). Setting higher bitrates will provide greater video detail in comparison to lower bitrates, but may reduce the number of programs available within the TS. Typically HD programs use 12 to 17 Mbps and SD programs use 3 to 7 Mbps bitrates.
- 2 **Closed Caption:** is the process of passing EIA-608 Closed Captioning (CC) information and displaying the CC text on TV or other visual display. Possible options are Enabled, and Disabled. The factory default value is "Disabled".
- 3 **Input Format:** allows the user to select the type of input video source. Possible options are Component, and Composite.
- 4 **Video Filter Level:** A two-dimensional low-pass filter controlling the degree with which the input video is filtered. Possible options are: Off (no filtering), On-Level 1, On-Level 2, On-Level 3, and On-Level 4 (highest filtering coefficient). Level 1 filtering of the video will smoothen the sharp edges of the pixels and produce a softer image. The softer an image, the less number of bits required to encode the image at the quantizer level.
- 5 **Video Coding Mode:** possible options are Frame, or Field. The factory default value is Frame.
- 6 **GOP Size:** The length between I-frames is known as the group of pictures (GOP) size. The factory default value is 15 i.e. 1 I-frame for every 14 non-I-frames. The range is 1 to 120.
- 7 **Test Pattern:** is the video pattern that the encoder will display upon loss of input video. Possible options are: Color Bars, Black, Blue and Red screens.



Remember to click on the SAVE button to apply the new values/configurations.

6.7.2 "Main > Encoder > Audio" Screen

The "Main > Encoder > Audio" screen (Figure 6.7.2) is a "user-configurable" screen where the following parameters associated with the Dolby® Digital encoded stereo audio are configured and displayed for the each audio input:

HDE-8C-QAM

ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 7m 48s
 Headend Name: Mode: DIRECTV Location:

Main
Network
Time
Event Log
Update
Logout

Status
Input Config
Settop Control
Encoder
Output

Video
Audio
Refresh

	Input 1	Input 2	Input 3	Input 4																																																																
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">1</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">2</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">3</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">4</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">5</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">6</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px; margin-bottom: 5px;">7</div> <div style="border: 1px solid gray; border-radius: 50%; width: 20px; height: 20px;">8</div> </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Data Rate</td><td>192 kbps ▾</td></tr> <tr><td>Delay</td><td>0 ms</td></tr> <tr><td>Sample Rate</td><td>48 kHz ▾</td></tr> <tr><td>Audio Coding Mode</td><td>2/0: L, R ▾</td></tr> <tr><td>Dialog Normalization</td><td>-27 ▾</td></tr> <tr><td>Dolby Surround Mode</td><td>Unspecified ▾</td></tr> <tr><td>Line Mode</td><td>None ▾</td></tr> <tr><td>RF Mode</td><td>None ▾</td></tr> </table>	Data Rate	192 kbps ▾	Delay	0 ms	Sample Rate	48 kHz ▾	Audio Coding Mode	2/0: L, R ▾	Dialog Normalization	-27 ▾	Dolby Surround Mode	Unspecified ▾	Line Mode	None ▾	RF Mode	None ▾	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Data Rate</td><td>192 kbps ▾</td></tr> <tr><td>Delay</td><td>0 ms</td></tr> <tr><td>Sample Rate</td><td>48 kHz ▾</td></tr> <tr><td>Audio Coding Mode</td><td>2/0: L, R ▾</td></tr> <tr><td>Dialog Normalization</td><td>-27 ▾</td></tr> <tr><td>Dolby Surround Mode</td><td>Unspecified ▾</td></tr> <tr><td>Line Mode</td><td>None ▾</td></tr> <tr><td>RF Mode</td><td>None ▾</td></tr> </table>	Data Rate	192 kbps ▾	Delay	0 ms	Sample Rate	48 kHz ▾	Audio Coding Mode	2/0: L, R ▾	Dialog Normalization	-27 ▾	Dolby Surround Mode	Unspecified ▾	Line Mode	None ▾	RF Mode	None ▾	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Data Rate</td><td>192 kbps ▾</td></tr> <tr><td>Delay</td><td>0 ms</td></tr> <tr><td>Sample Rate</td><td>48 kHz ▾</td></tr> <tr><td>Audio Coding Mode</td><td>2/0: L, R ▾</td></tr> <tr><td>Dialog Normalization</td><td>-27 ▾</td></tr> <tr><td>Dolby Surround Mode</td><td>Unspecified ▾</td></tr> <tr><td>Line Mode</td><td>None ▾</td></tr> <tr><td>RF Mode</td><td>None ▾</td></tr> </table>	Data Rate	192 kbps ▾	Delay	0 ms	Sample Rate	48 kHz ▾	Audio Coding Mode	2/0: L, R ▾	Dialog Normalization	-27 ▾	Dolby Surround Mode	Unspecified ▾	Line Mode	None ▾	RF Mode	None ▾	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Data Rate</td><td>192 kbps ▾</td></tr> <tr><td>Delay</td><td>0 ms</td></tr> <tr><td>Sample Rate</td><td>48 kHz ▾</td></tr> <tr><td>Audio Coding Mode</td><td>2/0: L, R ▾</td></tr> <tr><td>Dialog Normalization</td><td>-27 ▾</td></tr> <tr><td>Dolby Surround Mode</td><td>Unspecified ▾</td></tr> <tr><td>Line Mode</td><td>None ▾</td></tr> <tr><td>RF Mode</td><td>None ▾</td></tr> </table>	Data Rate	192 kbps ▾	Delay	0 ms	Sample Rate	48 kHz ▾	Audio Coding Mode	2/0: L, R ▾	Dialog Normalization	-27 ▾	Dolby Surround Mode	Unspecified ▾	Line Mode	None ▾	RF Mode	None ▾
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Delay	0 ms																																																																			
Sample Rate	48 kHz ▾																																																																			
Audio Coding Mode	2/0: L, R ▾																																																																			
Dialog Normalization	-27 ▾																																																																			
Dolby Surround Mode	Unspecified ▾																																																																			
Line Mode	None ▾																																																																			
RF Mode	None ▾																																																																			
Data Rate	192 kbps ▾																																																																			
Delay	0 ms																																																																			
Sample Rate	48 kHz ▾																																																																			
Audio Coding Mode	2/0: L, R ▾																																																																			
Dialog Normalization	-27 ▾																																																																			
Dolby Surround Mode	Unspecified ▾																																																																			
Line Mode	None ▾																																																																			
RF Mode	None ▾																																																																			
Data Rate	192 kbps ▾																																																																			
Delay	0 ms																																																																			
Sample Rate	48 kHz ▾																																																																			
Audio Coding Mode	2/0: L, R ▾																																																																			
Dialog Normalization	-27 ▾																																																																			
Dolby Surround Mode	Unspecified ▾																																																																			
Line Mode	None ▾																																																																			
RF Mode	None ▾																																																																			

Figure 6.7.2 - "Main > Encoder > Audio" Screen

- 1 **Data Rate:** allows the user to select the audio encoding bitrate in Kbps (kilobits per second). The range is 96 to 448 kbps. The factory default value is 192 kbps that supports Audio Coding Mode 2/0:L, R.

NOTE: See Dolby Encoding guidelines for additional information.

- 2 **Delay:** allows the user to adjust the audio delay (-300 to 300 ms) to correct for input video/audio sync mismatch.
- 3 **Sample Rate:** indicates the input sampling rate of the encoder. The HDE-8C-QAM supports 48 kHz sampling rate.
- 4 **Audio Coding Mode:** also referred to as Channel mode. Indicates the number of main audio channels within the encoded bitstream and also indicates the channel format. The unit supports 2/0:L,R= audio is a dual channel (Left & Right).
- 5 **Dialog Normalization:** behaves as an Audio Automatic Gain Control (AGC) or Dynamic Range Control (DRC). It has the ability to take different incoming audio levels and normalize them. The ability of the Dialog Normalization depends on the configuration of the Dynamic Range Control. The HDE-8C-QAM allows you to adjust the normalization from -1 to -31 dB. The typical value is -27 dB. This is based on the standard film audio formats which normally are between -25 and -31 dB.
- 6 **Dolby Surround Mode:** indicates if the audio is two-channel Dolby or not. Possible options are:
Unspecified: indicates the decoder must determine the audio format by itself.
Disabled: indicates the audio is not encoded in surround mode.
Enabled: indicates the audio is encoded in surround mode.
- 7 **Line Mode:** allows the user to select the type of Dynamic Range Compression to be applied to signals that will be used as direct audio feeds into a TV tuner or other receive devices. The factory default value is “None”.
- 8 **RF Mode:** allows the user to select the type of Dynamic Range Compression to be applied to signals that will be used for retransmission on an RF carrier, and then fed into TV tuner or other receive devices at the end of the line. The factory default value is “None”.

Possible options for 7 and 8 are:

- i) **None:** no dynamic range controls have been assigned.
- ii) **Film Standard:** suitable for movies where the very low-level sounds are not to be amplified due to other undesirable background noises that may become audible, but rather the peaks and valleys are normalized instead. It has a null bandwidth of 10 dB (-31 to -21 dB) and can add up to 6 dB of boost for low levels and attenuate high levels. The setting is used to quiet load shouting and amplifier whispers. See Dolby Encoding guidelines for additional information.
- iii) **Film Light:** is similar to “Film Standard” but with a null bandwidth of 20 dB (-41 to -21 dB) and can add up to 6 dB of boost for low levels and attenuate high levels.
- iv) **Music Standard:** suitable for program content that is mainly made up of music where the sound level is to be normalized (reducing the loudness) to be consistent with other programs. It has a null bandwidth of 10 dB (-31 to -21 dB) and can add up to 12 dB of boost for low levels and attenuate high levels. See Dolby Encoding guidelines for additional information.
- v) **Music Light:** similar to “Music Standard” but with a null bandwidth of 20 dB (-41 to -21 dB) and can add up to 12 dB of boost for low levels and attenuate high levels.
- vi) **Speech:** suitable for program content that is mainly made up of speech only and has a null bandwidth of 10 dB (-31 to -21 dB) for average speech and can add up to 15 dB of boost for low levels and attenuate high levels. The setting is used to quiet load shouting and amplifier whispers. See Dolby Encoding guidelines for additional information.



Remember to click on the **SAVE** button to apply the new values/configurations.

6.7.3 "Main> Output > Refresh" Tab

The "Main> Output >Refresh" tab can be clicked while you are on any of the following sub-tabs screens: "Status", "Inputs", "Encoder", and "Output". When clicked, it will update all relevant fields/parameters of the active screen as that information is retrieved from the HDE-8C-QAM in a real-time basis.

6.8 "Main > Output" Screen

The "Main > Output" screen (Figure 6.8) is a "user-configurable" screen and includes the following sub- tabs: TS Config, and QAM.

6.8.1 "Main > Output > TS Config" Screen

The "Main > Output > TS Config" screen (Figure 6.8.1) is a "user-configurable" screen where the following output parameters are configured and displayed for each output stream:

HDE-8C-QAM
 ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 8m 1s
 Headend Name: Mode: DIRECTV Location:

Main | Network | Time | Event Log | Update | Logout

Status | Input Config | Settop Control | Encoder | Output

TS Config | QAM | Refresh

Multiplexed MPTS Output Configuration

TS ID	TS Bitrate	Modulation Mode	Out of Band	ASI Output
TS1	1	QAM Modulator	QAM256	Disabled
TS2	2	QAM Modulator	QAM256	Disabled
TS3	3	QAM Modulator	QAM256	Disabled
TS4	4	QAM Modulator	QAM256	Disabled

Output Mapping

Input	PID	Program Number	Short Name	Major Channel	Minor Channel
TS1					
Input1	64	1		3	1
Video	65				
Audio	66				
Input2	80	2		3	2
Video	81				
Audio	82				
TS2					
Input3	96	1		3	3
Video	97				
Audio	98				
Input4	112	2		3	4
Video	113				
Audio	114				
TS3					
Input5	128	1		3	5
Video	129				
Audio	130				
Input6	144	2		3	6
Video	145				
Audio	146				
TS4					
Input7	160	1		3	7
Video	161				
Audio	162				
Input8	176	2		3	8
Video	177				
Audio	178				

Save

Figure 6.8.1 - "Main > Output > TS Config" Screen

In the section entitled “**Multiplexed MPTS Output Configuration**”, the user can select and configure the following parameters of the MPTS output stream:

- 1 **TS ID:** user must enter the identification number for the output TS. The range is 1 to 65535. The TS ID assigned must be unique.
- 2 **TS Bitrate:** user must select bitrate for the TS. Possible options are:
 - QAM Modulator – Select this setting when using the QAM output of the encoder. The maximum bitrate will be 38.81 Mbps for QAM 256.
 - 19.39 Mbps – Select this setting when the primary encoder output will be ASI for an ATSC application.
 - 38.81 Mbps – Select this setting if an external QAM 256 modulator(s) will be used with the encoder’s ASI output(s).
- 3 **Modulation Mode:** user can select the modulation mode. Possible options are: Reserved, Analog, QAM64, QAM256, 8-VSB, and 16-VSB.
- 4 **Out of Band:** an out-of-band (OOB) is a channel which is the combination of the forward and reverse OOB channels. When a cable virtual channel is flagged as being out-of-band, it is carried on the out-of-band channel. Possible options are Enable, and Disable. When Enabled, assigns the OOB bit in the TS packet and labels the TS as out-of-band.
NOTE: As per the ATSC and Cable standards, the Modulation Mode and Out-of-Band fields are required to be assigned in the TS packet. Selecting the above two fields would allow the TS packets to be compliant with industry standards, but would not affect the input or output configuration of the HDE-8C-QAM.

In the section entitled “**Output Mapping**”, the user can select and configure the following parameters for each output TS indicated by “**TS#**”, under gray header:

- 5 **ASI Output:** allows the user to select any one of the four transport streams to be provided on the front panel ASI output.
- 6 **Input:** indicates the list of the programs selected by the user that are included in the TS. It includes the Input program number, video source, and audio source.
- 7 **PID:** indicates the PID value assigned to each stream. PID (Packet Identifier) values are embedded by the content provider in the MPEG-2 stream to identify tables and programming packets.



The PID value must be unique in a MPTS output stream. If a duplicate PID exists, assign a different PID in the range of 48 to 8176 (recommended range provided by the International Standards)

- 8 **Program Number:** user must enter a unique output program number for each program. PMT (Program Map Table) provides information on each program present in the transport stream such as program number, and the list of the elementary streams (audio, video or data).



The Program Number must be unique in a MPTS output stream. If a duplicate Program Number exists, assign a different number in the range of 1 to 65535.

- 9 **Short Name:** user may enter the short name of the channel. Up to 7 alphanumeric characters are allowed.
- 10 **Major Channel:** user may enter the major channel number for the output program. The range is 1 to 99 for Terrestrial and 1 to 999 for Cable.
- 11 **Minor Channel:** user may enter minor channel number for the output program. The range is 1 to 99 for Terrestrial and 0 to 999 for Cable. **NOTE:** when zero (0) is entered as a minor channel, it sets the encoder to provide a one part virtual channel number as entered in the major channel field. For example, a major channel of “205” with a minor channel of “0” will be displayed on a TV “205”. A major channel of “205” with a minor channel of “1” will be displayed on a TV as “205-1”.



Make sure that the major-minor channel pair is unique for each program on the MPTS output.

- 12 **Save:** if duplicate values exist for PID, Program Number, Short Name or Major – Minor Channel Pair in a MPTS output stream, when the SAVE button is clicked, the following pop-up window would appear accordingly: “Error! Duplicate Program Numbers found”.



Please ensure the duplicate values are edited & click on SAVE button AGAIN to apply the new values/configurations.

6.8.2 "Main > Output > QAM" Screen

The "Main > Output > QAM" screen (Figure 6.8.2) is a "user-configurable" screen to assign QAM parameters to the TS:

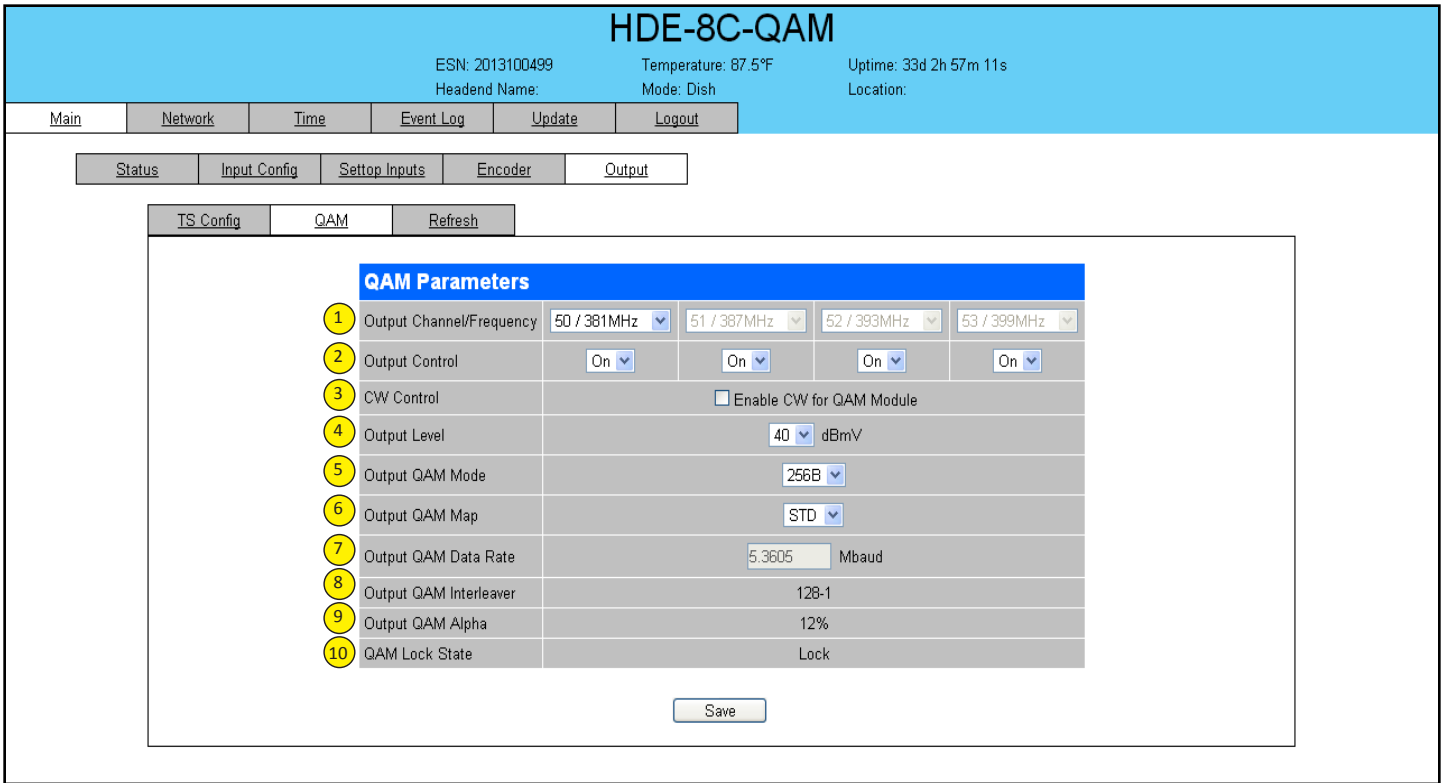


Figure 6.8.2 - "Main > Output > QAM" Screen

- 1 **Output Channel/Frequency:** user must assign a RF channel number to the RF QAM output of the Quad-QAM module (i.e. RF channel 50, as shown in Figure 6.11.2). The remaining three RF QAM channels will be automatically assigned to the next adjacent channels (i.e. RF channels 51, 52, and 53). The range is NTSC channels 2 to 155.



The RF Channel number will be displayed on TV only if the source stream does not carry any virtual channel number.

- 2 **Output Control:** turns each of the 4 RF channels On/Off.
- 3 **CW Control:** allows the user to switch the QAM output mode to CW (Continuous Waveform) which activates an analog carrier at the selected channel's center frequency; this is typically used in frequency alignment of the system.
- 4 **Output Level:** must select the QAM RF output level for the output. The range is 35 to 45 dBmV. It is recommended to maintain the output level at 40 dBmV for normal operation.
- 5 **Output QAM Mode:** allows user to select the desired QAM modulation mode. Possible options are: 64B, 256B, 16A, 32A, 64A, 128A, and 256A. For most applications in the USA, the recommended QAM modulation mode is 256B.
- 6 **Output QAM Map:** allows user to select the desired QAM Map (channel/frequency plan). Possible options are STD, IRC, and HRC.
- 7 **Output QAM Data Rate:** indicates the maximum data rate depending on the selected QAM mode, for example 5.360500 Mbaud for QAM 256B.
- 8 **Output QAM Interleaver:** indicates the interleaver value for the selected QAM mode.
- 9 **Output QAM Alpha:** indicates the Alpha value for the selected QAM mode.
- 10 **QAM Lock State:** indicates whether Quad-QAM module is working properly (locked) or not.

NOTE: The module may take a few seconds to lock when QAM output parameters are changed.



Remember to click on the **SAVE** button to apply the new values/configurations.

6.8.3 "Main> Output > Refresh" Tab

The "Main> Output > Refresh" tab can be clicked while you are on any of the following sub-tabs screens: "Status", "Inputs", "Encoder", and "Output". When clicked, it will update all relevant fields/parameters of the active screen as that information is retrieved from the HDE-8C-QAM in a real-time basis.

6.9 "Network" Screen

The "Network" screen (Figure 6.9) is a user-configurable screen where the following parameters are displayed or configured:

HDE-8C-QAM

ESN: 2013110649
Temperature: 116.3°F
Uptime: 3d 19h 8m 49s

Headend Name:
Mode: DIRECTV
Location:

Main

Network

Time

Event Log

Update

Logout

1	Control Port MAC Address:	00:14:39:00:39:2E
2	Receivers Control Port MAC Address:	00:14:39:00:39:2F
3	Software Version:	3.0.16 Prerelease 9
4	FPGA1 Version:	1.9
5	FPGA2 Version:	1.4
6	FPGA3 Version:	1.4
7	FPGA4 Version:	1.4
8	FPGA5 Version:	1.4
9	Modulator Version:	8.8
10	Hardware Version:	1
11	Serial Number:	2013110649
12	Headend Name:	<input type="text"/>
13	Location:	<input type="text"/>

14	Login Timeout (Minutes):	<input type="text" value="60"/>
----	--------------------------	---------------------------------

15	Control Port IP Address:	172.16.70.1
16	Control Port Subnet Mask:	255.255.255.0
17	Control Port Default Gateway:	172.16.70.254
18	Receivers Control Port IP Address:	192.168.253.1
19	Receivers Control Port Subnet Mask:	255.255.255.0
20	Receivers Control Port Default Gateway:	192.168.253.254
21	Event Log Destination:	172.16.70.10
22	Log Destination Port #:	514

Figure 6.9 – "Network" Screen

- 1 **Control Port MAC Address:** indicates the MAC Address of the “Control 10/100” Port.
- 2 **Receivers Control Port MAC Address:** indicates the MAC Address of the “Receivers Control 10/100” Port.
- 3 **Software Version:** indicates the software version of the unit.
- 4 **FPGA1 Version:** indicates the current hardware version of the unit’s FPGA1 chipset.
- 5 **FPGA2 Version:** indicates the current hardware version of the unit’s FPGA2 chipset.
- 6 **FPGA3 Version:** indicates the current hardware version of the unit’s FPGA3 chipset.
- 7 **FPGA4 Version:** indicates the current hardware version of the unit’s FPGA4 chipset.
- 8 **FPGA5 Version:** indicates the current hardware version of the unit’s FPGA5 chipset.
- 9 **Modulator Version:** indicates the current version of the QAM Modulator firmware
- 10 **Hardware Version:** indicates the unit’s hardware version.
- 11 **Serial Number:** indicates the unit’s serial number.
- 12 **Headend Name:** a user-defined field to make identification easier.
- 13 **Location:** a user-defined field to make identification easier.
- 14 **Login Timeout (Minutes):** indicates the period of time before the unit logs itself out if there is no activity on the web screens. Range is 5, 15, 30, or 60 minutes.
- 15 **Control Port IP Address:** see 11 of Section 6.10 for details.
- 16 **Control Port Subnet Mask:** see 12 of Section 6.10 for details.
- 17 **Control Port Default Gateway:** see 13 of Section 6.10 for details.
- 18 **Receivers Control Port IP Address (FUTURE OPTION):** see 14 of Section 6.10 for details.
- 19 **Receivers Control Port Subnet Mask (FUTURE OPTION):** see 15 of Section 6.10 for details.
- 20 **Receivers Control Port Default Gateway (FUTURE OPTION):** see 16 of Section 6.10 for details.
- 21 **Event Log Destination:** see 17 of Section 6.10 for details.
- 22 **Log Destination Port #:** see 18 of Section 6.10 for details.

6.10 "Admin.html" Hidden Screen

To change/modify the IP network parameters, as well as the Username and Password values for the unit, you must be logged in to the unit as "Admin" to access a hidden screen shown in Figure 6.7.1 by typing the URL of the unit followed by a forward slash and Admin.html, for example: http://172.16.70.1/Admin.html.

HDE-8C-QAM

ESN: 2013110649 Temperature: 118.1°F Uptime: 3d 19h 14m 5s
Headend Name: Mode: DIRECTV Location:

Main
Network
Time
Event Log
Update
Logout

Control Port MAC Address: 00:14:39:00:39:2E
 Receivers Control Port MAC Address: 00:14:39:00:39:2F
 Software Version: 3.0.16 Prerelease 9
 FPGA1 Version: 1.9
 FPGA2 Version: 1.4
 FPGA3 Version: 1.4
 FPGA4 Version: 1.4
 FPGA5 Version: 1.4
 Hardware Version: 1
 Serial Number: 2013110649

1 Login:

2 Current Password:

3 New Password:

4 Confirm New Password:

5 Guest Login:

6 Current Guest Password:

7 New Guest Password:

8 Confirm Guest Password:

Configuration Mode:

9 System Watchdog:

10 System Reboot:

Flush Setup DB:

Setup Config File Control:

11 Control Port IP Address:

12 Control Port Subnet Mask:

13 Control Port Default Gateway:

14 Receivers Control Port IP Address:

15 Receivers Control Port Subnet Mask:

16 Receivers Control Port Default Gateway:

17 Event Log Destination:

18 Log Destination Port #:

19 Time Server IP:

Download Configuration File: [Right-click and choose "Save-as"..."Config File](#)

20 Syslog Errors: Enabled Disabled

21 Syslog Informational: Enabled Disabled

22 Syslog Feedback: Enabled Disabled

23 Active Users:

Admin	192.168.253.177
none	0.0.0.0
none	0.0.0.0
none	0.0.0.0
none	0.0.0.0

Figure 6.10 – "Admin.html" Screen

The following parameters can be modified:

- 1 **Login:** is the Administrator's login (10 characters maximum). This login allows the user to make changes to any area of the unit. The factory default Login is "Admin". Login is case sensitive.
- 2 **Current Password:** is the Administrator's Current Password (10 characters maximum). The factory default password is "pass". The password is case sensitive and will not be displayed.
- 3 **New Password:** used only if the user wants to change the current Administrator's password. Must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
- 4 **Confirm New Password:** user must enter the same password as entered in 3 above. If password entered in 3 & 4 does not match, an error will be displayed.
- 5 **Guest Login:** is the Guest login (10 characters maximum). This login allows the user to view the unit settings but does not allow any changes. The factory default Guest Login is "Guest". Login is case sensitive.
- 6 **Current Guest Password:** is the current Guest Password (10 characters maximum). The factory default Guest password is "pass". The password is case sensitive and will not be displayed.
- 7 **New Guest Password:** used only if the user wants to change the current Guest password. Must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
- 8 **Confirm Guest Password:** user must enter the same password as entered in 7 above. If password entered in 7 & 8 does not match, an error will be displayed.
- 9 **System Watchdog:** when Enabled, automatically reboots the unit, if the operating system stops working or the status LED turns status green or off. When Disabled, manual reboot is required in case of above events. Possible options are Enabled and Disabled.
- 10 **System Reboot:** allows the user to remotely reboot the unit.
- 11 **Control Port IP Address:** is the static IP address that is assigned to the Control 10/100 Port. It allows the user to access the unit via the web interface. The factory default IP address is 172.16.70.1.
- 12 **Control Port Subnet Mask:** is the Subnet Mask assigned to the Control Port of the unit. It allows the user to determine which subnet the Control Port IP address belongs to. The factory default Subnet Mask is 255.255.255.0.
- 13 **Control Port Default Gateway:** is the gateway address assigned to the Control Port. It allows the user to access the unit from another network via the web interface. The factory default Default Gateway is 172.16.70.254.
- 14 **Receivers Control Port IP Address (FUTURE OPTION):** is the static IP address that is assigned to the Receivers Control 10/100 Port. It allows the user to remotely monitor and control up to nine select satellite receivers through UPnP protocol via the web interface. The factory default IP address is 192.168.253.1.
- 15 **Receivers Control Port Subnet Mask (FUTURE OPTION):** is the Subnet Mask assigned to the Receivers Control Port. It allows the user to determine which subnet the Receivers Control Port IP address belongs to. The factory default Subnet Mask is 255.255.255.0.
- 16 **Receivers Control Port Default Gateway (FUTURE OPTION):** is the gateway address assigned to the Receivers Control Port. It allows the user to access select satellite receivers from another network via the web interface. The factory default, Default Gateway is 192.168.253.254.
- 17 **Event Log Destination:** is the IP address of the remote server, to which Syslog sends the activities recorded by HDE-8C-QAM for monitoring and troubleshooting purposes. The factory default value is 172.16.70.2.
- 18 **Log Destination Port #:** is the Event Log Destination port to which a duplicate of the error messages created by the unit can be forwarded for monitoring and troubleshooting purposes. The factory default value, which cannot be modified, is 514.
- 19 **Time Server IP:** is the IP address for the Time Server from where the unit can obtain its clock reference (See Section 6.8 for details). The factory default value is 172.16.70.2.
- 20 **Syslog Errors:** enable/disables the HDE-8C-QAM to forward error messages (in red font) to an SNMP syslog. The factory default value is disabled.
- 21 **Syslog Informational:** enable/disables the HDE-8C-QAM to forward information messages (in blue font) to an SNMP syslog. The factory default value is disabled.
- 22 **Syslog Feedback:** enable/disables the HDE-8C-QAM to forward feedback or confirmation messages (in green font) to an SNMP syslog. The factory default value is disabled.
- 23 **Active Users:** indicates the username and IP address of the currently logged in users.



Remember to click on the SAVE button to apply the new values/configurations.

6.11 "Time" Screen

The "Time" screen (Figure 6.11) allows you to set the current date and time for the HDE-8C-QAM. To remain compliant with ATSC and cable standards, it is important to have the accurate date and time stamps. For this reason, it is recommended to use the "Automatic" option which allows the unit to automatically acquire time settings from a "Time Server" - you must enter the IP address of the time server (see 19 of Section 6.10 for details).

HDE-8C-QAM
ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 9m 1s
Headend Name: Mode: DIRECTV Location:

Main Network **Time** Event Log Update Logout

1 Time Adjustments
Local Time Zone: UTC -5:00
GPS Leap Seconds: 16 Seconds
Apply Time Adjustments

2 Daylight Saving Time
DST Adjustment: Off
DST Start - Local Date and Time: March 10 2013 2:00
DST End - Local Date and Time: November 3 2013 2:00
Apply Daylight Saving Time

3 NTP Server
NTP Server IP Address: 172.16.70.10
Acquire NTP Time Now

4 Set Date & Time
Current Local Time: Mon May 12 2014 12:13:29
Current UTC Time: Mon May 12 2014 17:13:29
Time Keeping Method: Manual
Local Date Setting: May 12 2014
Local Time Setting: 12:13:29
Apply Date and Time Settings

Apply All Time Settings

Figure 6.11 - "Time" Screen

- 1 In the section entitled "**Time Adjustments**", the local time zone on Coordinated Universal Time (UTC) can be set.
- 2 In the section entitled "**Daylight Saving Time**", the user can apply the Daylight Savings settings either manually or automatically using the DST Adjustment option.
- 3 In the section entitled "**NTP Server**", the user can enter the IP address of the NTP server to acquire the time directly from NTP Server when an internet connection is available (see 19 of Section 6.10 for details).
- 4 In the section entitled "**Set Date & Time**", the user can manually enter the date and time.

6.12 "Event Log" Screen

The "Event Log" screen (Figure 6.12) is a "read and write" screen where the following parameters can be displayed or configured. The data in Error Log can be forwarded to a SysLog database – (see 20 , 21 , 22 & of Section 6.12 for details). The lines are color coded as follows:

- Red font = error message
- Blue font = information message
- Green font = confirmation or feedback message

HDE-8C-QAM

ESN: 2013110649 Temperature: 116.3°F Uptime: 3d 19h 9m 18s
Headend Name: Mode: DIRECTV Location:

Main	Network	Time	Event Log	Update	Logout
------	---------	------	-----------	--------	--------

1 Event Log Destination: 172.16.70.10
2 Log Destination Port #: 514
3
4 Lines to Display:
5

Mon May 12 11:21:51 2014 : Power on STB 037636162697. MSG:OK.
Mon May 12 11:21:51 2014 : Power on STB 037634297214. MSG:OK.
Mon May 12 11:21:51 2014 : Power on STB 036861755274. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037635954359. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037632506657. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037611493943. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037613250879. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037634254496. MSG:OK.
Mon May 12 11:21:50 2014 : Power on STB 037636055115. MSG:OK.
Mon May 12 10:21:45 2014 : Power on STB 037636162697. MSG:OK.

Figure 6.12 - "Event Log" Screen

- 1 **Event Log Destination:** see 17 of Section 6.10 for details.
- 2 **Log Destination Port #:** see 18 of Section 6.10 for details.
- 3 **Clear Log:** allows the user to clear the records generated during unit's boot-up process and operation afterward. The records are cleared if the unit loses power.
- 4 **Lines to Display:** allows the user to select the number of lines to be displayed. The unit supports up to 400 MB of data or approximately 65,000 lines. The range is 1 to 65,535.
- 5 **Save Number of Displayed Lines:** allows the user to save the error log on the screen. Please note that the error log would be saved only on the screen and not on any database.

6.13 "Update" Screen

The "Update" screen (Figure 6.14) allows user to browse, select, and download/update the Config file.

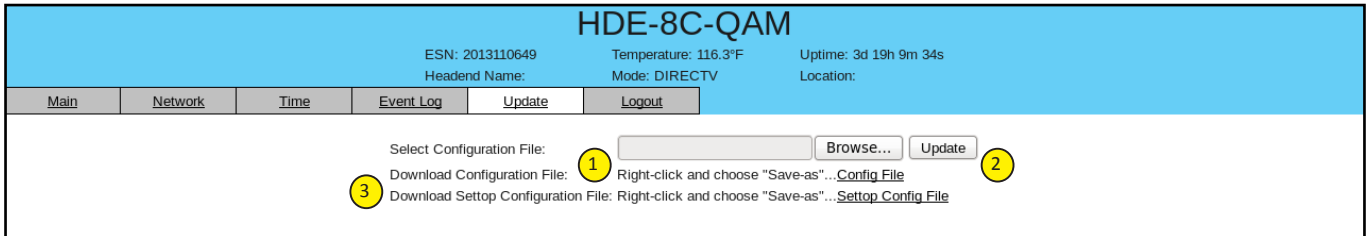


Figure 6.13 "Update" Screen

- 1 **Choose File:** allows the user to select a desired configuration file to be uploaded to the unit from any location on the computer.
- 2 **Update:** allows the user to upload the selected configuration file to the unit.
- 3 **Download Configuration File:** allows the user to download & save the current configuration settings of the unit.

Appendix A: Updating the Software Remotely

General background:

There are two different PROMs that need to be programmed in HDE-8C-QAM. They are called PROM1 and PROM2. Please note not every software update requires both PROMs to be programmed. However, program both PROMs unless you get a written notice with Release notes to do otherwise.

The total procedure takes about 10 minutes if you follow the steps below.

Step 1: FTP two files from your PC to HDE-8C-QAM.

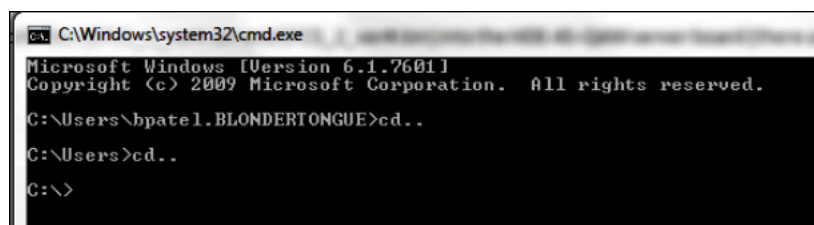
Step 2: a) Update PROM1 with the specific command line.

b) Update PROM2 with the specific command line.

Step 1: FTP two Files to HDE-8C-QAM:

FTP both files (EPCS_1_ver#.bin and EPCS_2_ver#.bin) into the HDE-8C-QAM server board (there are many ways to do this).

- NOTE:**
- a) The EPCS_1_ver#.bin is to program PROM1 and EPCS_2_ver#.bin is to program PROM2.
 - b) All the commands are case sensitive
 - c) It is recommended to copy the EPCS_1_ver#.bin and EPCS_2_ver#.bin files in the root directory. i.e, My Computer > C:
 - d) Only entering the command prompt, if you see a directory different than the root directory as shown in Figure 1, then use the command "cd.." to enter the C:\>.



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\bpatel.BLONDERTONGUE>cd..
C:\Users>cd..
C:\>
```

Figure 1

From a command (DOS) prompt (you must be in the same folder as the EPCS files) enter:

ftp -A 172.16.70.1

At the FTP prompt enter the following commands:

{Please ensure that you have entered the "bin" command to confirm that you are FTPing the files as binary files.}

```
bin
put EPCS_1_ver#.bin
put EPCS_2_ver#.bin
bye
```

The above four commands may be automated by entering them in an ASCII text file (called ftpcmd, recommended but can be any name) and executing the following:

ftp -A -s:ftpcmd 172.16.70.1

You can place the ftp command above in a batch file (.bat) then double click on the .bat file to perform the entire download process.

Telnet to HDE-8C-QAM:

There are two ways to telnet to the HDE-8C-QAM:

- (1) Use Command line and type in “telnet IP address” for example “telnet 172.16.70.1”
- (2) Use the Terminal program such as Putty to telnet.

Use a terminal program such as Putty to telnet into the server board (can use Linux, DOS prompt, Putty, etc)

You can save your configurations so it’s very quick and easy to telnet into the board again.

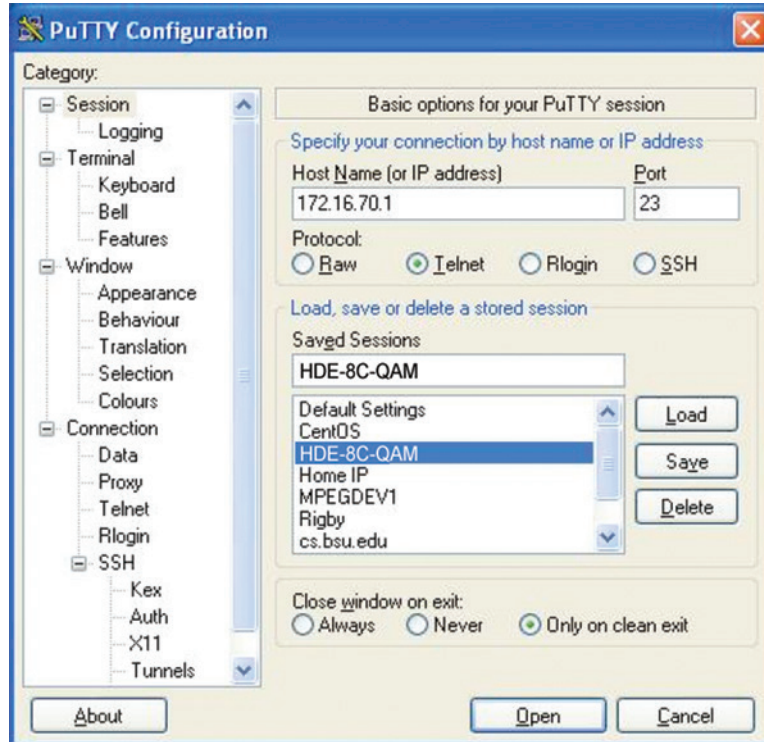


Figure 6.15

After you telnet into the server board you must login into the unit with the following credentials:

Username = **Admin** (case-sensitive)

Password = **pass** (case-sensitive)

Then cd to the /home/ftp directory where the EPCS_x.bin files have been placed.

cd home/ftp

ls

Step 2: Update PROM1 and/or PROM2:

Now you can use the field update utility (epcs) to program the EPCS PROMs. This is a custom utility that resides in HDE-8C-QAM.

Warning: Care should be taken at this time, if miss spelled characters or letters are typed by accident, or you have missed to type the bin command in Step 1, this could cause the HDE-8C-QAM Flash memory to be corrupted. The HDE-8C-QAM will try to reload the OS using the corrupted file ten (10) times before it displays the following screen (Figure 6.15). You can recover from this situation by repeating the procedure all over again from Step 1 above.

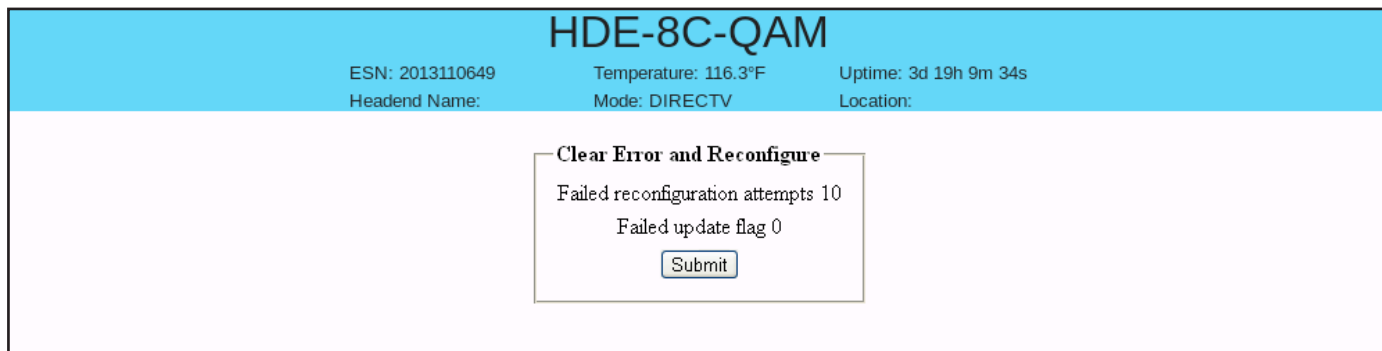


Figure 6.16

Ready: Please read the rest of this page once before typing the commands.

Update FPGA1 by programming EPCS1:

```
epcs -e1 EPCS_1_ver#.bin
```

Update FPGA2 by programming EPCS2: (if necessary)

```
epcs -e2 EPCS_2_ver#.bin
```

NOTE: If you get errors during programming then DO NOT TURN OFF THE HDE-8C-QAM, just repeat the epcs commands again.

The server board should now configure itself on power-up.

Two choices to reset the HDE-8C-QAM:

(1) Reset switch in the back of the unit.

(2) Use Telnet and type “**epcs -c**” this will automatically reboot the HDE-8C-QAM without a need for resetting with power switch.

NOTE: The boot-up process for HDE-8C-QAM is approximately 30 seconds.

NOTES



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Extended Warranty Program

STANDARD TERMS & CONDITIONS OF THE EXTENDED WARRANTY

A. THE EXTENDED WARRANTY AGREEMENT (EWA)

If during the period following the expiration of the Blonder Tongue Manufacturers' Standard Warranty (Copy Included) the products which constitute the subject matter of the extended warranty, manifest any manufacturing or similar such defects then Blonder Tongue shall at its option repair or replace the product. It is emphasized that the extended warranty is in effect an extension of the Blonder Tongue Warranty and covers the items stipulated in Paragraph B to the exclusion of the terms in Paragraph C of this agreement. Eligibility to purchase EW is limited to 90 days following initial shipment on selected products of sufficient value.

The product/products included in this extended warranty agreement are listed in the invoice that accompanies the EWA. Term of the extension will be _____ year(s). Purchase Order is required for extended warranty coverage.

B. WHAT IS COVERED?

1. If a product has been determined to have failed, which falls within the Terms & Conditions of this EWA, Blonder Tongue Inc. may at its sole discretion repair, modify or replace its component parts that are defective at 100% coverage for parts and labor.
2. A loaner unit may be available on request; PO required.
3. Product is manufactured by Blonder Tongue.
4. Extended warranty period is up to and not to exceed 24 months and sold in increments of 12 months. Order # 9981 for 1 year and #9982 for 2 year extensions.
5. Return of repair or replaced product shipping costs for ground shipments.
6. Firmware upgrades at no charge with automatic notification.

C. WHAT IS NOT COVERED?

1. The warranty does not cover any defects caused by foreign objects /connection errors .
2. Use other than by the customer at the declared address appearing in this document.
3. Failure by the end user to comply with the manufacturers' instructions for installation, maintenance or use.
4. The use of accessories which have not been approved by Blonder Tongue.
5. The application and/or use of any incorrect or abnormal electrical supply to the product.
6. Any defect in wiring or electrical connections which does not form part of the product at the time of the original purchase.
7. Neglect, misuse, or willful abuse of the product.
8. Any repairs or attempted repairs of the product by any person other than Blonder Tongue Service Department.
9. Any modification of the product by any person other than Blonder Tongue Service Department.
10. Fire, flood, war, civil disturbance, industrial action, acts of God or any other causes beyond the reasonable control of Blonder Tongue.
11. Any defect caused by lightning strike or power surges.
12. Shipping costs to return products to Blonder Tongue for warranty service.
13. Blonder Tongue will not in any circumstances be liable for any consequential loss or damages suffered by the customer whether directly or in directly related defect in the product to the extent permissible by law.
14. Repairs may not be effected without prior authorization from Blonder Tongue Laboratories.

D. GENERAL

1. The customer shall notify Blonder Tongue Laboratories in writing within ten days of any change of his or her address.
2. Customer must provide original **purchase receipt** and **serial number** to initiate extended warranty coverage.
3. The fee paid for the warranty is not refundable under any circumstances unless cancelled within seven days of purchase.
4. The customer shall take all reasonable precautions to maintain the product is maintained in good working order.
5. The warranty contract ceases to exist if the product is replaced or a credit is given to the customer. Any monies paid for the warranty contract are forfeited and not refundable. This is only applicable when the product is out of the manufacturer's warranty.
6. The extended warranty period as stated on the Extended Warranty Agreement shall be the governing period notwithstanding any additional supplier warranty on specific components.
7. The warranty shall in no way effect the terms and conditions of the sale agreement in terms of which the customer bought the product.
8. The extended warranty is limited to the terms and conditions herein contained
9. No agreement, varying, adding to, amended, deleting, or cancelling this warranty shall be effective unless given in writing (email is acceptable) and signed by or on behalf of both parties.
10. The cost of the extended warranty is 8% of the purchase price for a 1 or 2 year extension beyond the Blonder Tongue standard warranty. e.g. A product price of \$1000 will be \$80 for the 1st year (12 mos) and additional \$80 for 2 year (24 mos) extension for a total of \$160.
11. Warranty product return postage paid to: Blonder Tongue Laboratories, Inc.

Attn: Warranty Service Dept.
1 Jake Brown Road
Old Bridge, NJ 08857

Contact Blonder Tongue at 800-523-6049 ext. 555 to order extended warranty service.

Limited Warranty

Seller will at its sole option, either repair or replace (with a new or factory reconditioned product, as Seller may determine) any product manufactured or sold (or in the case of software, licensed) by Seller which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment or such other specifications as may have been expressly agreed upon in writing: (i) for a period of three (3) years from the date of original purchase for all stock hardware products (other than those specifically referenced herein below having a shorter warranty period); (ii) for a period of one (1) year from the date of original purchase, with respect to all MegaPort™, IPTV products, test equipment and fiber optics receivers, transmitters, couplers and integrated receiver/distribution amplifiers; (iii) for a period of one (1) year from the date of original purchase (or such shorter period of time as may be set forth in the license agreement specific to the particular software being licensed from Seller) with respect to all software products licensed from Seller (other than Core Product Software) that is (a) developed for a specific function or application, (b) complimentary to and does not function without the Core Product Software, and (c) listed with a specific model number and stock number in Seller's Price List ("**Non-Core Software**"); (iv) for a period of ninety (90) days from the date of original purchase, with respect to non-serialized products and accessories, such as parts, sub-assemblies, splitters and all other products sold by Seller (other than Core Product Software and Refurbished/Closeout Products) not otherwise referred to in clauses (i) through (iii) above. The warranty period for computer programs in machine-readable form included in a hardware product, which are essential for the functionality thereof as specifically stated in the published product specifications ("**Core Product Software**") will be coincident with the warranty period of the applicable hardware product within which such Core Product Software is installed.

Software patches, bug fixes, updates or workarounds do not extend the original warranty period of any Core Product Software or Non-Core Software.

Notwithstanding anything herein to the contrary,

(i) Seller's sole obligation for software that when properly installed and used does not substantially conform to the published specifications in effect when the software is first shipped by Seller, is to use commercially reasonable efforts to correct any reproducible material non-conformity (as determined by Seller in its sole discretion) by providing the customer with: (a) telephone or e-mail access to report non-conformance so that Seller can verify reproducibility, (b) a software patch or bug fix, if available or a workaround to bypass the issue if available, and (c) where applicable, replacement or damaged or defective external media, such as CD-ROM disk, on which the software was originally delivered;

(ii) Seller does not warrant that the use of any software will be uninterrupted, error-free, free of security vulnerabilities or that the software will meet the customer's particular requirements; and the customer's sole and exclusive remedy for breach of this warranty is, at Seller's option, to receive (a) suitably modified software, or part thereof, or (b) comparable replacement software or part thereof;

(iii) Seller retains all right, title and interest in and to and ownership of all software (including all Core Product Software and Non-Core Software) including any and all enhancements, modifications and updates to the same; and

(iv) in some cases, the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller's products, third party software installed in certain of Seller's products, and on certain private-label products manufactured by third-parties for resale by Seller, will be of shorter duration or otherwise more limited than the standard Seller limited warranty. In such cases, Seller's warranty with respect to such third-party proprietary sub-assembly modules, third-party software and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, certain products, that are not manufactured by Seller, but are resold by Seller, may carry the original OEM warranty for such products, if any. The limited warranty set forth above does not apply to any product sold by Seller, which at the time of sale constituted a Refurbished/Closeout Product, the limited warranty for which is provided in the following paragraph.

Seller will at its sole option, either repair or replace (with a new or factory-reconditioned product, as Seller may determine) any product sold by Seller which at the time of sale constituted a refurbished or closeout item ("**Refurbished/Closeout Product**"), which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment of that product or fails to meet such other specifications as may have been expressly agreed upon in writing between the parties, for a period of ninety (90) days from the date of original purchase. Notwithstanding the foregoing, in some cases the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller products, third party software installed in certain of Seller's products, and on certain private-label products manufactured by third-parties for resale by Seller will be of shorter duration or otherwise more limited than Seller limited warranty for Refurbished/Closeout Products. In such cases, Seller's warranty for Refurbished/Closeout Products constituting such third party proprietary sub-assembly modules, third party software, and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, notwithstanding the foregoing, (i) certain Refurbished/Closeout Products that are not manufactured (but are resold) by Seller, may carry the original OEM warranty for such products, if any, which may be longer or shorter than Seller's limited warranty for Refurbished/Closeout Products. All sales of Refurbished/Closeout Products are final.

To obtain service under this warranty, the defective product, together with a copy of the sales receipt, serial number if applicable, or other satisfactory proof of purchase and a brief description of the defect, must be shipped freight prepaid to Seller at the following address: One Jake Brown Road, Old Bridge, New Jersey 08857.

This warranty does not cover failure of performance or damage resulting from (i) use or installation other than in strict accordance with manufacturer's written instructions, (ii) disassembly or repair by someone other than the manufacturer or a manufacturer-authorized repair center, (iii) misuse, misapplication or abuse, (iv) alteration, (v) exposure to unusual physical or electrical stress, abuse or accident or forces or exposure beyond normal use within specified operational or environmental parameters set forth in applicable product specifications, (vi) lack of reasonable care or (vii) wind, ice, snow, rain, lightning, or any other weather conditions or acts of God.

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