![Blonder Tongue logo]

Blonder Tongue

SOLUTIONS FOR ALL YOUR APPLICATIONS

High-Definition Demodulator Module

HDE-8C DIN Series w/Opt 2

8xDIN (Component Video) Input
6371 Q   **4xQAM Outputs**
6371 QIP   **4xQAM + 8xIP Outputs**
EAS Compatible

Status	Date	Document No.	Issue No.	Author
ACTIVE	November 02, 2016	651243600A	1	KK

MADE IN

![USA flag]

THE USA

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 DIN Series Serial Number:	

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Reverse engineering or disassembly is prohibited.

Cross-Reference & Hyperlinking Usage

This guide makes use of hyperlinks for the Table of Contents, some cross-reference linking between sections, and external hyperlinking to web addresses. This has been done to assist the reader in finding the information they are seeking in a much quicker way. In addition to hyperlinking, the Table of Contents also makes use of the bookmarking feature present in the Adobe Reader application.

Product and Documentation Updates

Download the latest User Manual (PDF) by visiting our website. Navigate to the product page by entering the full Model Name or Stock Number in the search field. Upon reaching the product page, the "User Manual" download link will be located beneath the product image. **Firmware Updates** are available under "Tech Support" in the "Resources" section of the website. General instructions for the FTP site, as well as updating your firmware, are provided on this page.

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.

Table of Contents

Section 1 — General & Safety Instructions

STOP
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.

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.

➡ 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:
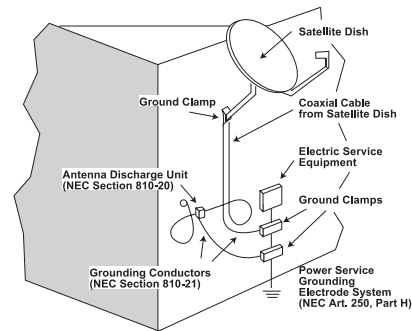
➡ We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the unit is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the lines between the unit and the 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.

Section 2 — Product Summary

2.1 Revision History & Reason

This is the first release of this manual.

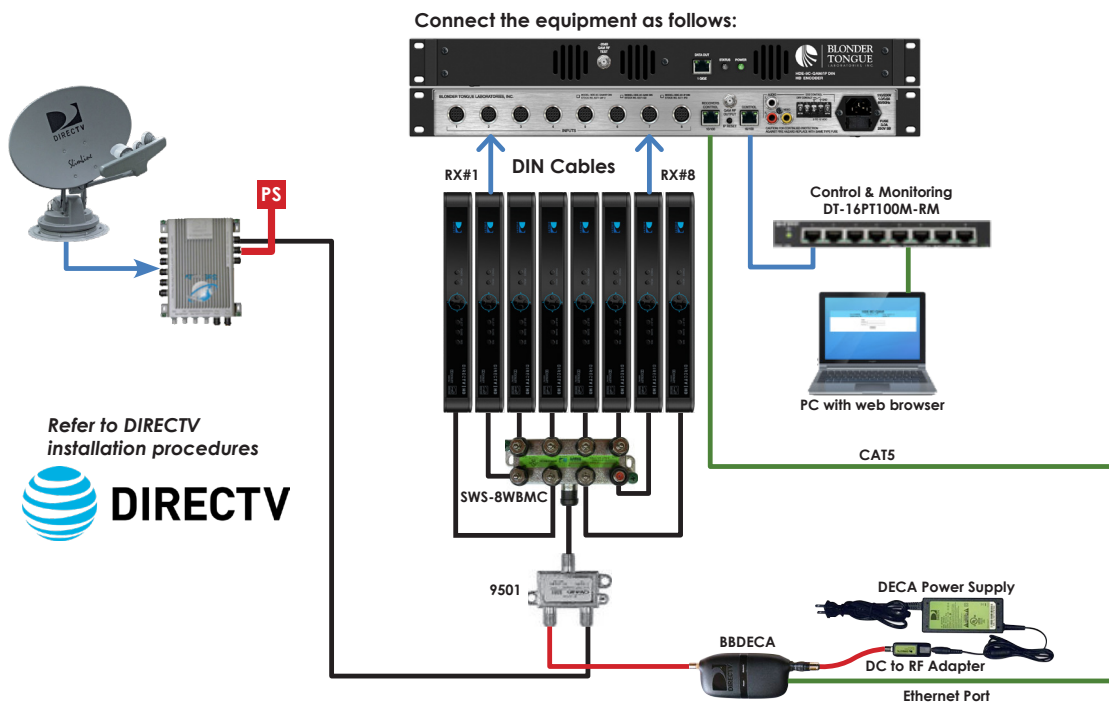## 2.2 Product Application & Description

Application:

The **HDE-8C DIN Series** of encoders offers the ability to deliver eight (8) HD programs in just 1RU to conserve valuable rack space. The encoder is designed to be seamlessly interconnected to eight (8) DIRECTV H25 satellite receivers using factory supplied DIN cables (Quantity 8; Stock# 3703).

The unit digitizes and MPEG-2 encodes each input into a high-definition stream. The eight (8) program streams are multiplexed and then modulated onto four adjacent watermarked QAM* channels in the 54-1002 MHz range (CATV 2-158). Models equipped with an IP output provide 8xSPTS with watermarking.

The encoder supports Dolby® Digital audio encoding and Closed Captioning (EIA-608) for each of the eight encoded programs. An Emergency Alert System (EAS) interface consisting of a composite video and L+R audio program input is provided on all models. Comprehensive remote monitoring and control of the encoder, as well as the H25 receivers are accomplished using any standard Web browser via a rear-panel 10/100Base-T Ethernet connection.
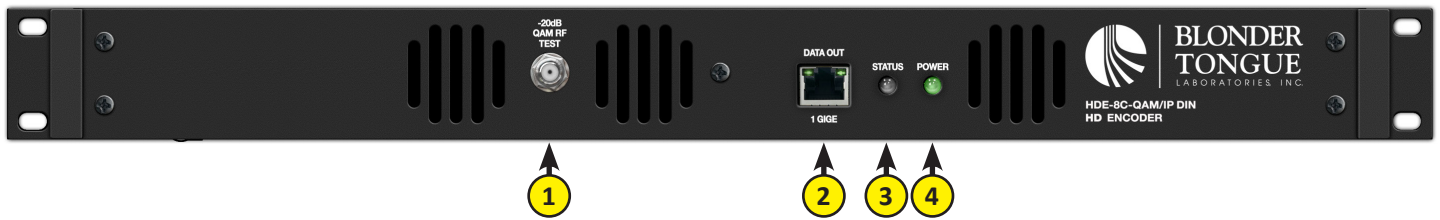
Features:

- Accepts 8 HD programs from DIN inputs (Receiver to encoder DIN cables are included)
- Digitizes, MPEG-2 encodes, and modulates up to 8 inputs into 4xQAM* output channels (2 programs per QAM channel)
- Configurable to ITU-T J.83 Annex A and B digital QAM formats
- Provides 8xSPTS outputs on IP equipped models
- Provides comprehensive GUI-based monitoring and control via standard Web browsers
- Provides a front-panel -20dB RF test point (QAM models only)
- Equipped with EAS interface (Analog Video + L/R Audio) and triggering compatible with all EAS receivers
- Supports Real-time Dolby® Digital audio encoding
- Supports Closed Captioning EIA-608 for each of the 8 encoded programs
- Supports user-defined PSIP configuration

Connect the equipment as follows:

Refer to DIRECTV installation procedures

Dolby® is a registered trademark of Dolby Laboratories.

*Model Dependent

Description:

Unit front and rear panel connectors and indicators:

FRONT PANEL:

(1) -20dB QAM RF TEST: "F" connector for RF testing @ -20dB below the main QAM RF output.

(2) DATA OUT 1 GIGE (*QAM/IP Only*): RJ45 connector for GigE (1000Base-T Ethernet) interface for SPTS or MPTS output streams. Only static IP address can be assigned to this interface. (Factory Default: "192.168.252.1")

(3) STATUS LED: LEDs indicate the status of the unit as follows:

> **Off:** Normal Operation
> **Blinking Red:** Overtemperature condition
> **Blinking Green:** EAS active
> **Blinking Red-Green:** Unit identification

(4) POWER LED: The power LED indicates the power of the unit as follows:

> **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).
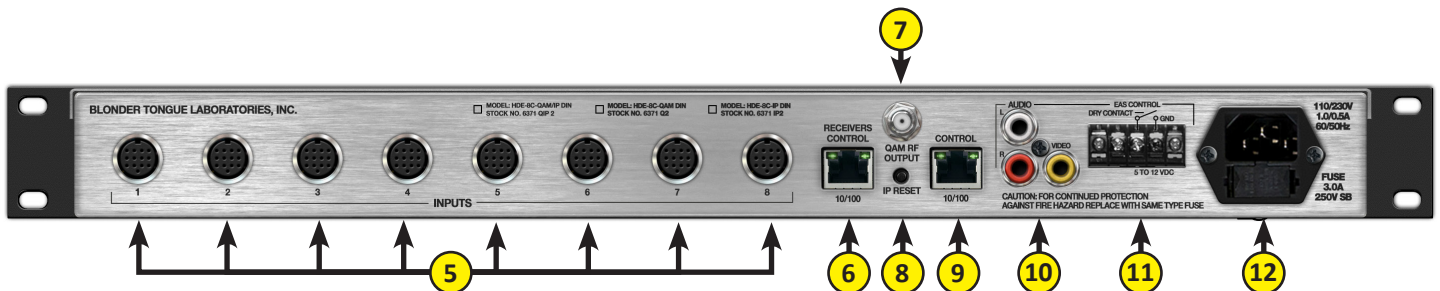
REAR PANEL:

(5) INPUTS #1 thru 8: Each DIN connector provides inputs for:

> **Component video:** Y, Pb, Pr
> **Closed Captioning (CC):** Analog NTSC (Composite video) EIA-608 which will then be inserted in the MPEG-2 transport stream.
> **L/R Analog Audio**
> **Digital Audio**

(6) RECEIVERS CONTROL 10/100: RJ45 connector for 10/100Base-T Ethernet interface for controlling satellite receivers.

(7) QAM RF OUT: "F" connector for up to four (4) QAM RF outputs.

(8) IP RESET: Push and hold for 5 seconds, to reset. Factory Defaults are as follows:

> IP address = 172.16.70.1
> Username = Admin (case-sensitive)
> Password = pass (case-sensitive)

Description (continued):

(9) **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. (Factory Default: "172.16.70.1")

(10) **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 is detected on EAS INPUT connectors. The EAS feature will not be functional unless both these conditions are met.**

(11) **EAS CONTROL:** Terminal strip to activate the EAS messaging feature in one of the two following ways:

   a) 5-12 VDC between terminals 1 & 3 shown to the right.

   b) Dry Contact between terminals 2 & 3 shown to the right.

1 2 3 (GROUND)
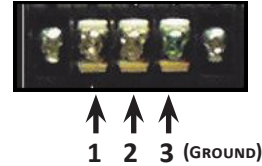
   NOTE: This feature is intended to activate EAS and override all of the input programs (whether Component or Composite) with the EAS INPUT (see **(10)** above for details). The QAM OUT (see **(7)** , page 6) will contain the video and audio present at the EAS INPUT.

(12) **INPUT POWER:** IEC 14 power inlet plug - rated 110/230 VAC; 1.0/0.5A; 60/50 Hz; equipped with Slo-Blo, 3.0 Amps, 250 V Fuse.

Stock # 3703 - H258C DIN Cable:
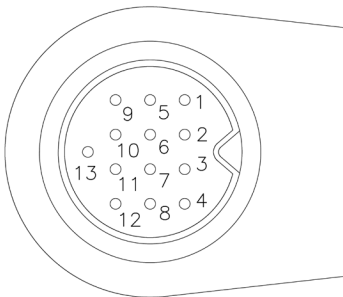
	WIRING DIAGRAM			
CABLE NUMBER	AUDIO/VIDEO CONNECTION	13 PIN DIN	10 PIN MINI DIN	DIGITAL AUDIO RCA
1 CENTER	COMPONENT VIDEO — Y	1 ---------- 6		
2 CENTER	COMPONENT VIDEO — Pr	2 ---------- 1		
	NOT CONNECTED	3 (N/U)		
	NOT CONNECTED	4 (N/U)		
3 CENTER	COMPONENT VIDEO — Pb	5 ---------- 3		
1,2,3 SPIRAL	COMPONENT VIDEO — GND	6 -------- 2,4,7		
4 CENTER	AUDIO RIGHT	7 ----------10		
5 CENTER	AUDIO LEFT	8 ---------- 8		
4.5 SPIRAL	AUDIO GND	9 ---------- 9		
6 CENTER	DIGITAL AUDIO	10 -----------------------CENTER		
	NOT CONNECTED	11 (N/U)		
7 CENTER	CLOSED CAPTION	12 ---------- 5		
6,7 SPIRAL	DIGITAL AUDIO & CLOSED CAPTION GND	13 ---------- 4 --------- SHELL		
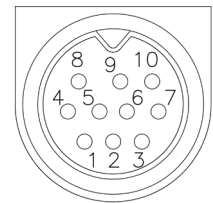
ALL CONNECTORS ARE VIEWED LOOKING INTO CABLE END (PIN SIDE)

13 PIN RIGHT ANGLE MALE STANDARD DIN CONNECTOR
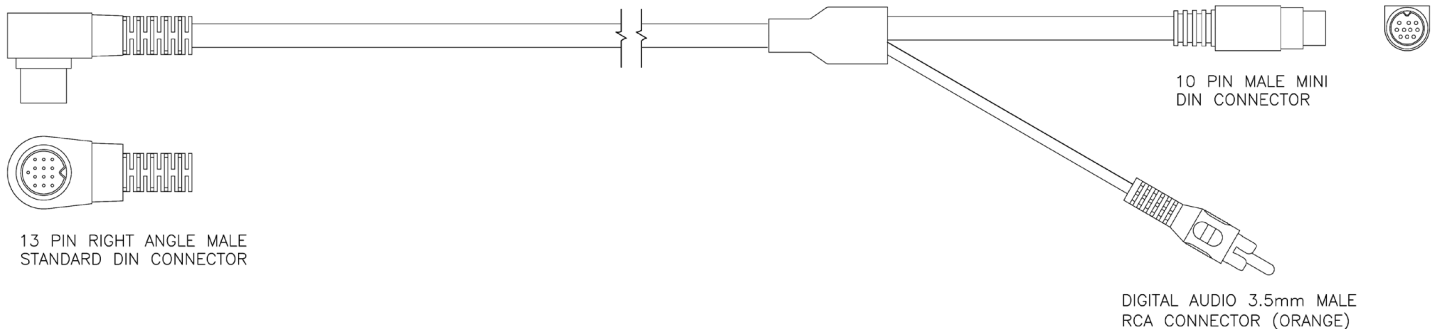
10 PIN MALE MINI DIN CONNECTOR

13 PIN RIGHT ANGLE MALE STANDARD DIN CONNECTOR

10 PIN MALE MINI DIN CONNECTOR

DIGITAL AUDIO 3.5mm MALE RCA CONNECTOR (ORANGE)

2.3 Product Specification

Input

Component	
Connectors:	8xDIN (13 pin); each DIN socket provides connections for component video, L/R audio, digital audio (PCM and Dolby® Digital pass-through only), and Closed Captioning
Video Resolution:	480i, 720p, & 1080i
Video Aspect Ratio:	4:3 & 16:9

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, & 1080i
Frame rate:	29.97 fps (480i); 59.97 fps (720p); 29.97 fps (1080i)
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; 96-448 Kbps (user-selectable)

Closed Captioning	
Connector:	via DIN
Component:	EIA- 608

Alarms/Monitoring/Control

Local Monitoring:	1x Status LED 1x Power LED 1x "F" Female RF Test Port (QAM Models Only)
Local Control:	1x IP Reset button
Remote Monitoring/Control:	GUI-based menu via Web browser (1x RJ45 connector; 10/100Base-T)

Output

QAM*	
Connector:	1x "F" Female (rear panel; up to 4x RF QAM ch. combined)
Modulation:	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%

GigE*	
Connector:	1xRJ45 (front panel)
Standard:	1000Base-T Ethernet
UDP/RTP:	Supported (user-selectable)
Address Assignment:	8xIPv4 Address and port numbers (user-selectable)

* Model-Dependent

General

Dimensions (W x D x H):	19.0 x 16.0 x 1.75 inches (483 x 406 x 45 mm)
Power:	110 - 230 VAC, 50/60 Hz (Fuse: 4.0A, 250 VDC, Slo Blo)
Power Dissipation:	~60 W
Weight:	~7.2 lbs (3.27 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

Section 3 – Installation & Power-up

3.1 Unpacking

You will find the following items in the box:

- HDE-8C DIN Series 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.
- H258C DIN Cable (Stk# 3703) (QTY=8)

3.2 Installation

The HDE-8C DIN Series 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. A 1RU open space is recommended above the encoder for ventilation.

> ⚠ **THE H25 RECEIVERS SHOULD BE MOUNTED ABOVE THE HDE-8C DIN ENCODER FOR PROPER CABLE ROUTING.**

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 a fuse (SLO-BLO, 3.0 Amp, 250V).

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

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

Section 4 – 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 8.

- 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 8 satellite receivers.

  ① Now connect each receiver output with DIN cables (Stk# 3703) to the encoder inputs, making sure that receiver #1 (RX#1) is connected to #1 DIN input on the encoder. Repeat this process for remaining receivers.

  ② Connect the 8 satellite receivers and the BBDECA as shown below.

- Power up the receivers and the encoder.

Connect the equipment as follows:
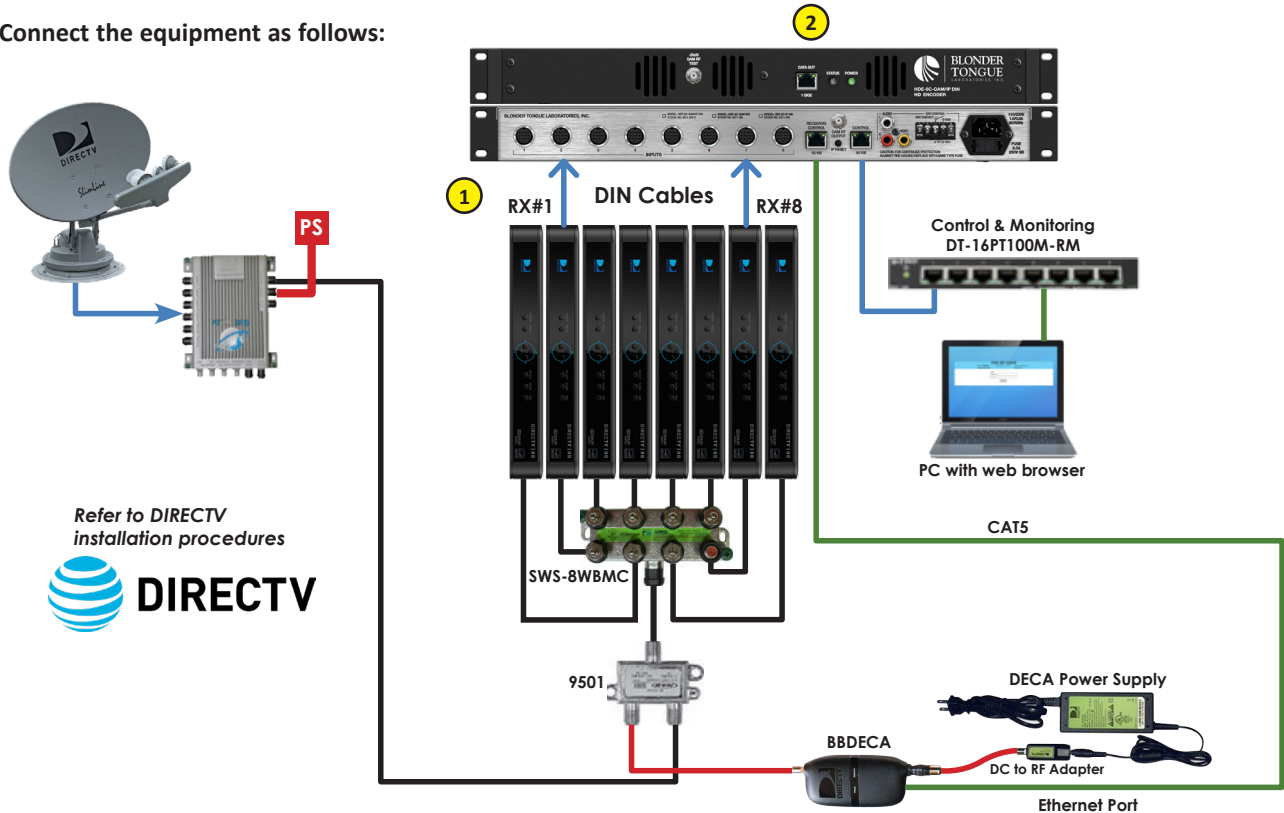
Step 2 - Login

- Log in to the HDE-8C DIN Series encoder, using a standard web browser. This can be done through the Control 10/100 port located 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 DIN Series encoder.

- The factory default Username is "Admin" and the password is "pass" (case-sensitive)

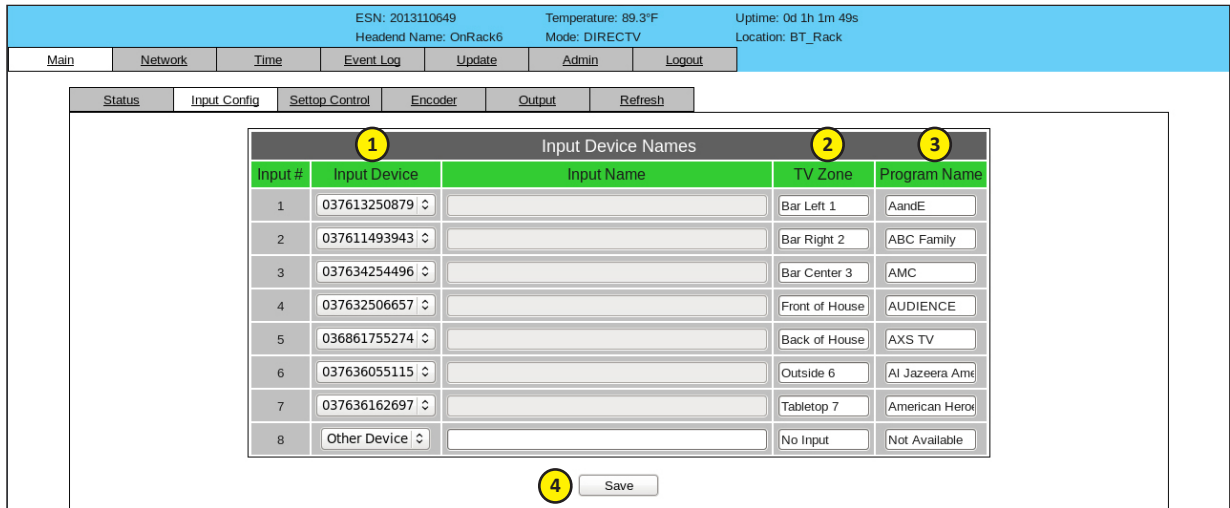## Step 3 - Assigning Receivers

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 TV Zone: For use with the BaR Game Changer application. Customize zone names that appear on the WiFi remote device.

3 Program Name: For use with the BaR Game Changer application. This field can be left blank as it will be automatically populated by the BaR app once the receivers have been tuned remotely.

4 Click "SAVE" at the bottom to apply changes.

| ESN: 2013110649 | Temperature: 89.3°F | Uptime: 0d 1h 1m 49s |
| Headend Name: OnRack6 | Mode: DIRECTV | Location: BT_Rack |

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

| Status | Input Config | Settop Control | Encoder | Output | Refresh |

Input Device Names

Input #	Input Device	Input Name	TV Zone	Program Name
1	037613250879		Bar Left 1	AandE
2	037611493943		Bar Right 2	ABC Family
3	037634254496		Bar Center 3	AMC
4	037632506657		Front of House	AUDIENCE
5	036861755274		Back of House	AXS TV
6	037636055115		Outside 6	Al Jazeera Ame
7	037636162697		Tabletop 7	American Hero
8	Other Device		No Input	Not Available

4 Save

Step 4 - TS Configuration

Go to the Main > Output > TS Config Tab

1 Verify the Multiplexed MPTS Output default settings are suitable for your application

- TS bitrate = QAM Modulator

- Modulation Mode = QAM 256

- Out of band = disabled

Note: ASI Output is not available on the HDE-8C DIN Series

2 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.

3 Click "SAVE" at the bottom to apply changes.

Step 4 - TS Configuration (continued)

Step 5 - Configure IP Output

Go to the Main > Output > IP Tab

1 Assign the Destination IP, Encapsulation protocol, Destination and Source Ports for each transport stream.

2 Verify the Stuffing is set to "Disabled" and the Output is "Enabled"

3 Click "SAVE" to apply the settings.

Step 6 - 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.
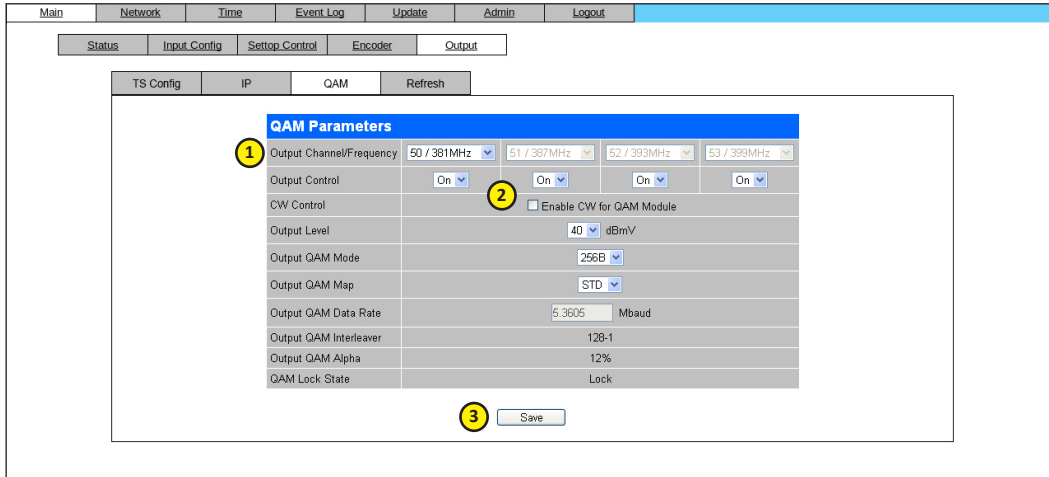
Section 5 – Communicating with the Unit

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 the unit's IP address to conform with your existing IP network or LAN. 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 7**, **Windows 8.x** or **Windows 10** operating software:

(a) On your computer, navigate to the "Network and Sharing Center".

(Note: Can be found using the search box in the Start Menu or for Windows 8.x, the Start Screen)

(b) Once open, click on "Change Adapter Settings" on left hand side of the window.

(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 Version 4 (TCP/IPv4)".

(e) A dialog boxm 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. Your computer is now ready to communicate with the unit.

- OR -

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. Your computer is now ready to communicate with the unit.

Section 6 - Configuring the Unit

6.1 Accessing the Unit Via the Web Browser

You must complete the steps described in Section 5 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.

PAGE
HEADER {

| ESN: 2013110649 | Temperature: 116.3°F | Uptime: 3d 19h 13m 24s |
| Headend Name: | Mode: DIRECTV | Location: |

Login

Username: Admin

Password: ••••

Submit

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 as described in the Sections below. 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, Input Config, Settop Control, 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 "**Update**" doesn't include any sub-tab.
- Primary tab "**Admin**" 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 "**Receiver**" within the 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.

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 the orange header, the following parameters about each program in the 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 6.6.1 for details).

In the section entitled "**Output**" under the blue header, the following parameters about each QAM output are displayed:

⑤ **RF Chan:** indicates (i) the RF channel number of the qwQAM output, and (ii) whether the output QAM is On or Off (see Section 6.6.2 for details).

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

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:

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 **Input 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 **TV Zone:** For use with the BaR Game Changer application. This field is used to customize zone names that appear on the Wifi remote device.

⑤ **Program Name:** For use with the BaR Game Changer application. This field can be left blank as it will be automatically populated by the BaR app once the receivers have been tuned remotely.

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

6.4 "Main > Settop Control" Configuration

The "Main > Settop Control" configuration section includes the following sub-tabs: Diagnostics, DHCP, Channel Config and Refresh.

6.4.1 "Main > Settop Control > Channel Config" Screen

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

Figure 6.4.1 - "Main > Settop Control" Channel Config

① **Settop Box:** Indicates the Receiver Number

② **Software Ver:** Indicates the software version of each receiver.

③ **Channel:** User entered channel number for the receiver.

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

6.4.2 "Main > Settop Control> Diagnostics" Screen

This page allows the user to remove receivers from the HDE-8C DIN unit's database.

WARNING: Once Saved, changes cannot be undone.

Figure 6.4.2 - "Main > Settop Control > Diagnostics" Screen

① **Line #:** Not to be confused with Input #. This is the sequence the encoder obtained the receiver information.

② **Remove:** Select the receivers to be removed, then press SAVE.

③ **Receiver:** Indicates the Receiver Number.

④ **Software Rev:** Indicates the software version of each receiver.

⑤ **Accessible:** Accessible thru IP, green=accessible, red=not.

⑥ **Channel:** Receiver's channel number.

⑦ **Save:** Press Save to store changes.

6.4.2 "Main > Settop Control > Diagnostics" Screen (continued)

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:** Indicates the Receiver Number

(10) **IP:** 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.

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

6.4.3 "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.

| ESN: 2013110649 | Temperature: 89.3°F | Uptime: 0d 1h 1m 49s |
| Headend Name: OnRack6 | Mode: DIRECTV | Location: BT_Rack |

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

Status | Input Config | Settop Control | Encoder | Output

Diagnostics | DHCP | Channel Config | Refresh

#	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

Figure 6.4.3 - "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 DIN unit's database each receiver will get a new IP address. However, after the first time the HDE-8C DIN unit will remember the MAC address for each receiver and after any power up, the HDE-8C DIN unit will provide the same IP address to the Receiver.

6.4.4 "Main > Settop Control > Refresh" Tab

The "Refresh" tab can be clicked while you are on any of the following Settop Control sub-tabs screens: "Diagnostics", "DHCP", and "Channel Config". When clicked, it will update all relevant fields/parameters of the active screen as that information is retrieved from the unit in a real-time basis.

6.5 "Main > Encoder" Configuration

The "Main > Encoder" section includes the following sub-tabs: "Video", "Audio", and "Refresh".

6.5.1 "Main > Encoder > Video" Screen

The "Main > Encoder > Video" screen (Figure 6.5.1) is a "user-configurable" screen to select the video encoder parameters for each input program:

Figure 6.5.1 - "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 Section 6.6.1 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 a TV or other visual display. Options are: "Enabled" and "Disabled". (Factory Default: "Disabled")

3   **Input Format:** allows the user to select the type of input video source. Options are: "Component" and "Composite".

NOTE: The Composite setting is not valid when using DIN-DIN cables (Stk# 3703).

4   **Video Filter Level:** A two-dimensional low-pass filter controlling the degree with which the input video is filtered. 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:** Options are: "Frame" or "Field". (Factory Default: "Frame")

6.5.1 "Main > Encoder > Video" Screen (continued)

6 **GOP Size**: The length between I-frames is known as the group of pictures (GOP) size. The range is 1 to 120. (Factory default: "15" - i.e. 1 I-frame for every 14 non-I-frames)

7 **Test Pattern**: is the video pattern that the encoder will display upon loss of input video. Options are: "Color Bars", "Black Screen", "Blue Screen", and "Red Screen".

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

6.5.2 "Main > Encoder > Audio" Screen

The "Main > Encoder > Audio" screen (Figure 6.5.2) is a "user-configurable" screen where the following parameters associated with the Dolby® Digital encoded stereo audio are configured and displayed for each audio input:
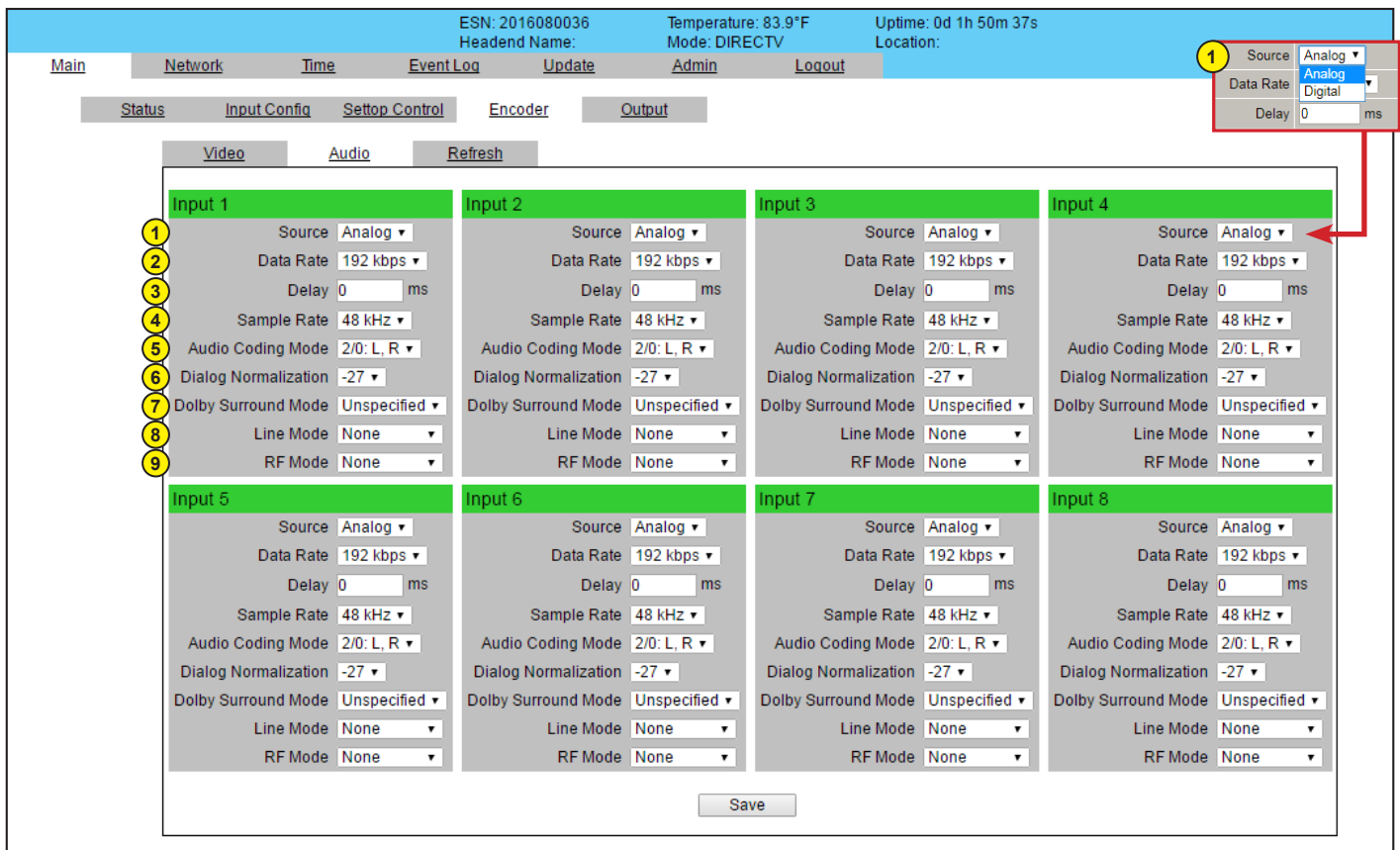

Figure 6.5.2 - "Main > Encoder > Audio" Screen

1 **Source:** allows the user to select the type of audio input source. Options are: "Analog" or "Digital". (Factory Default: "Analog")

Analog audio consists of 2 channels (left & right) using Pin #8 (L) and Pin # 7 (R) on the 13 Pin DIN connector of the supplied DIN-DIN adapter cables. Digital audio utilizes the orange RCA connector on the satellite receiver side for the encoder input (Pin#10). The HDE-8C DIN accepts two formats of digital audio from the program source, uncompressed 2 channel PCM or encoded Dolby Digital 2 / 5.1 channel(s). Dolby Digital audio inputs are seamlessly passed through the unit since they are already encoded. PCM audio must be encoded within the unit. See page 7 for a diagram of the DIN-DIN adapter cables.

6.5.2 "Main > Encoder > Audio" Screen (continued)

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

(3) **Delay:** allows the user to adjust the audio delay (-300 to 300 ms) to correct for input video/audio sync mismatch.

(4) **Sample Rate:** indicates the input sampling rate of the encoder. The unit supports 48 kHz sampling rate.

(5) **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).

(6) **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 unit 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.

(7) **Dolby Surround Mode:** indicates if the audio is two-channel Dolby or not. 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.

(8) **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. (Factory Default: "None")

(9) **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 device(s). (Factory Default: "None")

Options for **(8)** and **(9)** 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 loud shouting and amplify whispers.
>
> 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.
>
> 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 band width 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 loud shouting and amplify whispers.

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

6.5.3 "Main> Encoder > Refresh" Tab

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

6.6 "Main > Output" Screen

The "Main > Output" section includes the following sub- tabs: TS Config, QAM, IP (QAM/IP Model Only) and Refresh.

6.6.1 "Main > Output > TS Config" Screen

The "Main > Output > TS Config" screen (Figure 6.6.1) is a "user-configurable" screen where the following output parameters are configured and displayed for each output stream:

Figure 6.6.1 - "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. Options are: "QAM Modulator", "19.39 Mbps", and "38.81 Mbps".

③ **Modulation Mode:** user can select the modulation mode. Options are: "Reserved", "Analog", "QAM64", "QAM256", "8-VSB", and "16-VSB".

6.6.1 "Main > Output > TS Config" Screen (continued)

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. 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 unit.

⑤ **ASI Output:** this option is not available on the HDE-8C DIN Series encoders.

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

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 range is 1 to 65535.

> ⚠ **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.

> **NOTE:** For CATV single part virtual channels, the "Virtual Channel Table" setting under the "Admin" tab must be "CVCT".

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

6.6.2 "Main > Output > QAM" Screen

The "Main > Output > QAM" screen (Figure 6.6.2) is a "user-configurable" screen to assign QAM parameters to the TS:
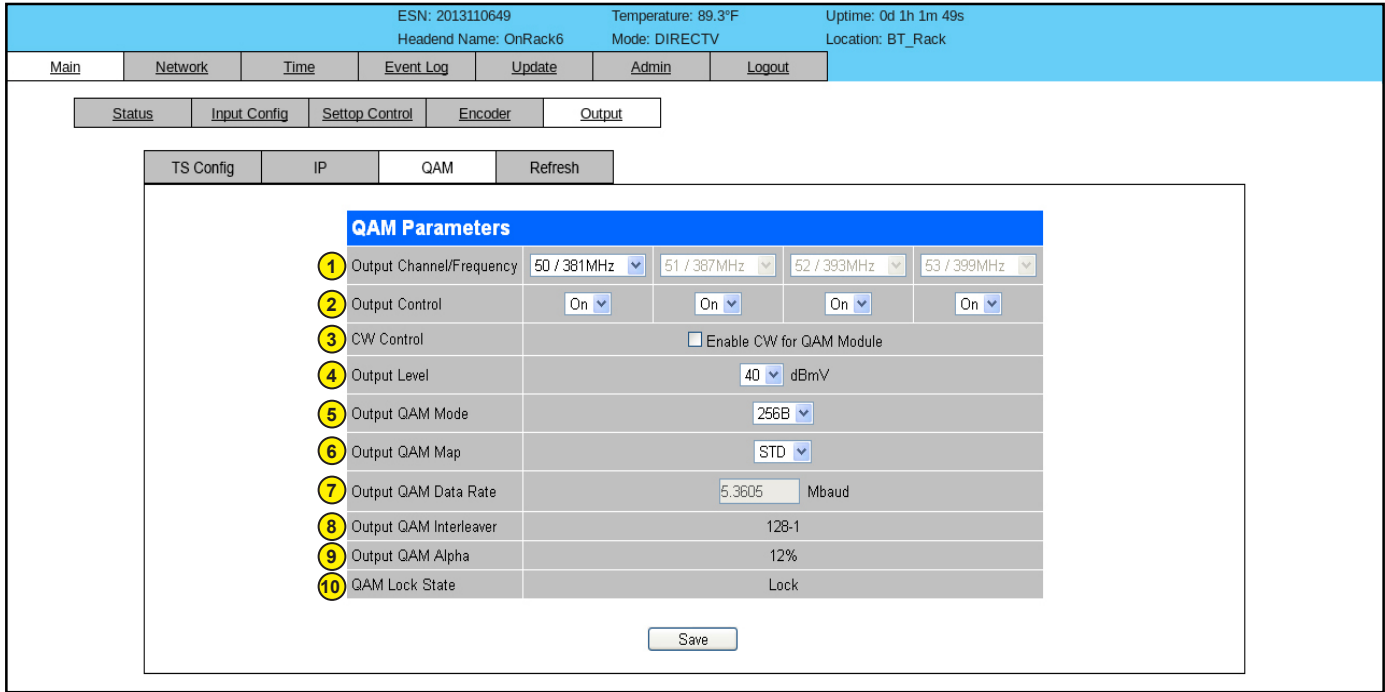

Figure 6.6.2 - "Main > Output > QAM" Screen

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 6.6.2). 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.

> ⚠️ **RF Channel number will be displayed on TV only if 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 QAM output mode to CW (Continuous Wave) which activates an analog carrier at the selected channel's center frequency; this is typically used in level adjustment of the system.

④ **Output Level:** allows user to select the level for the QAM RF 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 desired QAM modulation mode. 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 desired QAM Map (channel/frequency plan). 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.**

6.6.3 "Main > Output > IP" Screen (QAM/IP Model Only)

The "Main > Output > IP" screen (Figure 6.6.3) is a "user-configurable" screen to assign IP parameters to the TS:

Figure 6.6.3 - "Main > Output > IP" Screen

(1) **Destination IP:** allows user to assign the IP address of the equipment to which the GigE output is streamed to.

> ⚠️ **The Destination IP Address must be present before streaming occurs, otherwise the session is aborted. For Multicast applications, the IP address must be in the range 224.0.0.0 through 239.255.255.255. For Unicast applications, the IP address must be outside the above mentioned range.**

(2) **Encapsulation:** user must select the protocol that matches the protocol used by the receiving equipment. Options are: "RTP" and "UDP". (Factory Default: "UDP")

(3) **Destination Port:** user must enter the IP Port of the receiving equipment. The range is 1 to 65535. The port number assigned to each TS must be unique. (Factory Default: "50000")

(4) **Source Port:** user must enter the IP Port of the equipment that the input IP source is streamed from. The range is 1 to 65535. The port number assigned to each TS must be unique. (Factory Default: "50000")

> **NOTE:** Port number is recommended to be from 49152 to 65535. Reason: Ports 1-1023 are reserved and 1024-49151 are registered ports.

(5) **Time to Live:** is limit to the amount of time an IP packet can exist in an IP network. The value is set by the sender of the packet, and reduced by every host on the route to packet's final destination. If the Time to Live reaches zero before the packet arrives at its final destination, then the packet is discarded. The purpose of this field is to avoid an undeliverable packet from circulating on an IP network perpetually. The range is 1 to 255. (Factory Default: "128")

(6) **Stuffing:** Null packets are inserted to ensure that the TS bitrate assigned in (2) of Section 6.6.1 remains constant. Options are: "Enable" and "Disable". It is advisable to Disable stuffing when only GigE output is used to help reduce the traffic on the network.

(7) **Output Enable:** Allows user to "Enable" or "Disable" the IP output.

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

6.6.4 "Main > Output > Refresh" Tab

The "Refresh" tab can be clicked while you are on any of the following sub-tabs screens: "TS Config", "QAM", and "IP" (QAM/IP Model Only). When clicked, the Refresh tab will update all relevant fields/parameters of the active screen as that information is retrieved from the unit in a real-time basis.

6.7 "Network" Screen

The "Network" screen (Figure 6.7) is a user-configurable screen where the following parameters are displayed or configured:

Figure 6.7 - "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 **GigE Port MAC Address:** indicates the MAC Address of the "Data Out 1 GigE" Port. (QAM/IP Model Only)

④ **Software Version:** indicates the software version of the unit.

⑤ **FPGA Version (1 - 5):** Indicates the current hardware version of each FPGA chipset within the unit.

⑥ **Modulator Version:** indicates the current version of the QAM Modulator firmware

6.7 "Network" Screen (continued)

7. **Hardware Version:** indicates the unit's hardware version.

8. **Serial Number:** indicates the unit's serial number.

9. **Headend Name:** a user-defined field to make identification easier. User can enter up to 49 alphanumeric characters.

10. **Location:** a user-defined field to make identification easier. User can enter up to 49 alphanumeric characters.

11. **Login Timeout (Minutes):** indicates the period of time before the unit logs itself out if there is no activity on the web screens. Options are: "5", "15", "30", or "60" minutes.

12. **Control Port IP Address:** see 18 of Section 6.11 for details.

13. **Control Port Subnet Mask:** see 19 of Section 6.11 for details.

14. **Control Port Default Gateway:** see 20 of Section 6.11 for details.

15. **Receivers Control Port IP Address:** see 21 of Section 6.11 for details.

16. **Receivers Control Port Subnet Mask:** see 22 of Section 6.11 for details.

17. **Receivers Control Port Default Gateway:** see 23 of Section 6.11 for details.

18. **GigE Port IP Address:** see 24 of Section 6.11 for details. (QAM/IP Model Only)

19. **GigE Port Subnet Mask:** see 25 of Section 6.11 for details. (QAM/IP Model Only)

20. **GigE Port Default Gateway:** see 26 of Section 6.11 for details. (QAM/IP Model Only)

21. **Event Log Destination:** see 27 of Section 6.11 for details.

22. **Log Destination Port #:** see 28 of Section 6.11 for details.

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

6.8 "Time" Screen

The "Time" screen (Figure 6.8) allows you to set the current date and time for the unit. 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 26 of Section 6.11 for details).

Figure 6.8 – "Time" Screen

6.8 "Time" Screen (continued)

(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 NPT server to acquire the time directly from NTP Server when an internet connection is available (see **(26)** of Section 6.11 for details).

(4) In the section entitled "**Set Date & Time**", the user can manually enter the date and time.

> ⚠ **Remember to click on the buttons below the individual sections or the "Apply All Time Settings" to apply and save the new values/configurations.**

6.9 "Event Log" Screen

The "Event Log" screen (Figure 6.9) is a "read and write" screen where the following parameters can be displayed or configured. The data in the Event Log can be forwarded to a SysLog database – (see **(28)**, **(29)**, and **(30)** of Section 6.11 for details). The lines are color coded as follows:

Red font = error message
Blue font = informational message
Green font = confirmation or feedback message

Figure 6.9 – "Event Log" Screen

(1) **Event Log Destination:** see **(24)** of Section 6.11 for details.

(2) **Log Destination Port #:** see **(25)** of Section 6.11 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 event log would be saved only on the screen and not on any database.

6.10 "Update" Screen

The "Update" screen (Figure 6.10) allows user to browse, select, and download/update the Config file.
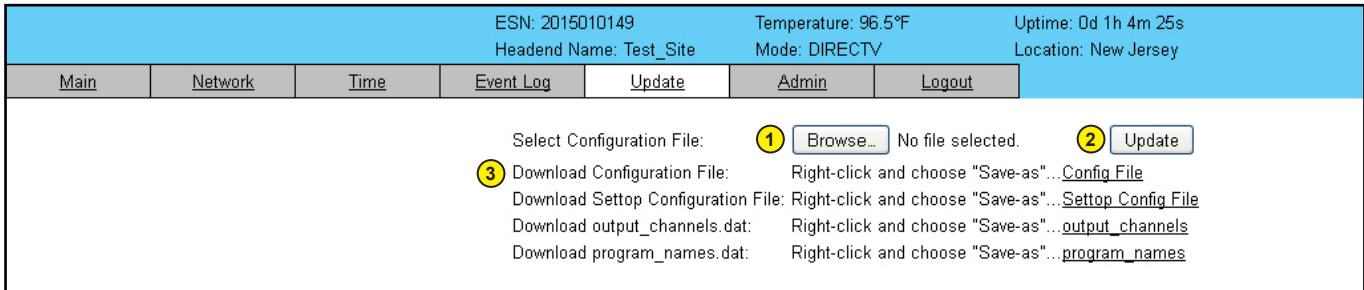
Figure 6.10 - "Update" Screen

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.

6.11 "Admin" 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 the Admin screen (Figure 6.11a).

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. Login is case sensitive. (Factory Default: "Admin")

② **Current Password:** is the Administrator's Current Password (10 characters maximum). The password is case sensitive and will not be displayed. (Factory Default: "pass")

③ **New Password:** used only if the user wants to change the current Administrator's password. User 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. Login is case sensitive. (Factory Default: "Guest")

⑥ **Current Guest Password:** is the current Guest Password (10 characters maximum). The password is case sensitive and will not be displayed. (Factory Default: "pass")

⑦ **New Guest Password:** used only if the user wants to change the current Guest password. User 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 ③ above. If password entered in ③ & ④ does not match, an error will be displayed.

6.11 "Admin" Screen (continued)

ESN: 2016080036		Temperature: 83.9°F		Uptime: 0d 1h 58m 6s		
Headend Name:		Mode: DIRECTV		Location:		
Main	Network	Time	Event Log	Update	Admin	Logout

Control Port MAC Address: 00:14:39:00:80:9E
Receivers Control Port MAC Address: 00:14:39:00:80:9F
GigE Port MAC Address: 00:14:39:00:80:9G
Software Version: 4.0.42 Prerelease 3
FPGA1 Version: 1.22
FPGA2 Version: 1.6
FPGA3 Version: 1.6
FPGA4 Version: 1.6
FPGA5 Version: 1.6
Hardware Version: 1
Serial Number: 2016080036

1. Login: Admin
2. Current Password:
3. New Password:
4. Confirm New Password:
5. Guest Login: Guest
6. Current Guest Password:
7. New Guest Password:
8. Confirm Guest Password:

Configuration Mode: 9. Manual ▼
     10. Commit Changes to Config File
Virtual Channel Table: 11. CVCT ▼

12. System Watchdog: Enabled ▼
13. System Reboot: Reboot Unit

14. Flush Settop DB: Flush DB
15. Settop Config File Control: Delete Settop Config file
16. Test Authorized Channels: Test Now

17. Control Port DHCP: Static until DHCP ▼
18. Control Port IP Address: 172.16.70.1
19. Control Port Subnet Mask: 255.255.255.0
20. Control Port Default Gateway: 172.16.70.254
21. Receivers Control Port IP Address: 192.168.253.1
22. Receivers Control Port Subnet Mask: 255.255.255.0
23. Receivers Control Port Default Gateway: 192.168.253.254
24. GigE Port IP Address: 192.168.253.2   **QAM/IP Model Only**
25. GigE Port Subnet Mask: 255.255.255.0
26. GigE Port Default Gateway: 192.168.253.254
27. Event Log Destination: 172.16.70.10
28. Log Destination Port #:   514
29. Time Server IP: 172.16.70.10

30. Download Configuration File: Right-click and choose "Save-as"...Config File

31. Syslog Errors: ○ Enabled ◉ Disabled
32. Syslog Informational: ○ Enabled ◉ Disabled
33. Syslog Feedback: ○ Enabled ◉ Disabled

34. Active Users:

Admin	172.16.70.2
none	0.0.0.0
none	0.0.0.0
none	0.0.0.0
none	0.0.0.0

Save

Figure 6.11a – "Admin" Screen

6.11 "Admin" Screen (continued)

(9) Configuration Mode: controls how the satellite receivers are tuned.

> <u>Automatic Setting:</u> Receivers will be tuned to the channels listed in the Settop Config file. Within a 20 minute period, the HDE-8C DIN Series Encoder will update the receivers to channel numbers contained in the Settop Config file, as well as maintaining the encoders intended QAM RF channels. This feature is used to prevent accidental channel changing on the receivers front panel (if not locked) and on the encoder. The User must create and upload the file for this feature to work (also see "Commit Changes to Config. File" under Manual Mode below).

> **NOTE:** The Automatic Mode cannot be used with the BaR Game Changer application.

> The format for the text configuration file is "0, SAT Channel#, QAM RF Channel#" for each of the 8 receivers. File name **MUST** be "settop_config.dat".

> Shown below (Figure 6.11b) is a sample text file for 8 Receivers. This example uses Windows Notepad but any line editor, including Notepad++, may be used to create the file.
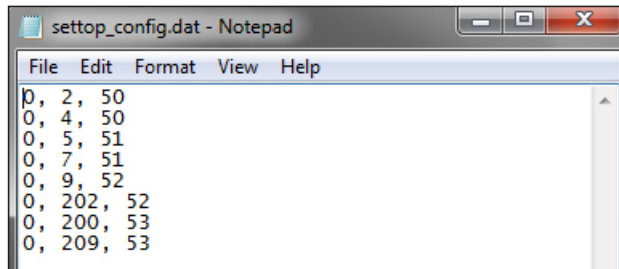
Figure 6.11b – settop_config.dat

> <u>Manual Setting:</u> This mode must be used when the unit is used with the BaR Game Changer application. Receiver tuning is determined by the settings under "Main > Settop Control > Channel Config" (Section 6.4.1) or through the BaR Game Changer Application.

(10) "Commit Channel Changes to Config File": This button is only available when in the Manual Mode. Once all the input/output channel information has been entered on the appropriate screens, a new configuration file is created that can be used for the Automatic mode (not for BaR Game Changer Application).

(11) Virtual Channel Table: CVCT (Cable Virtual Channel Table) is the only setting available.

(12) System Watchdog: When Enabled, automatically reboots the unit if the operating system stops working. When Disabled, manual reboot is required in the case of above events. Options are: "Enabled" and "Disabled".

(13) System Reboot: allows the user to remotely reboot the unit.

(14) Flush Settop DB: Deletes all existing receiver numbers. Used only when the HDE-8C DIN Series encoder has been moved to a different system, or all the receivers have been replaced.

(15) Settop Config File Control: Deletes "Settop Config File". A warning screen appears to confirm the action is desired.

(16) Test Authorized Channels: "Test Now", when selected, will have a warning screen appear to confirm the action is desired. Once initiated, the HDE-8C DIN Series encoder commands each receiver to tune all satellite program/channels contained in the "program_names.dat" file. This file and this feature is used primarily in BaR Game Changer applications but can also provide useful information regarding available programming in standard headend applications as well. Any channel/program that is not authorized for viewing will be recorded in the Event Log. This operation cannot be stopped until it is finished scanning all receivers against the program file. This process can take approximately 10 minutes based on 8 receivers with 150 program channels.

NOTE: Does not return to original channel!

(17) Control Port DHCP: allows the user to define if the encoder will use a DHCP server address (if available) or the assigned Control Port IP Address only. DHCP is needed when using the BT-HE-DASHBOARD Headend Controller. Options are: "Static until DHCP" or "Static Only".

6.11 "Admin" Screen (continued)

(18) 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. (Factory Default: "172.16.70.1")

(19) 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. (Factory Default: "255.255.255.0")

(20) 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. (Factory Default: "172.16.70.254")

(21) Receivers Control Port IP Address: 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. (Factory Default: "192.168.253.1")

(22) Receivers Control Port Subnet Mask: 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. (Factory Default: "255.255.255.0")

(23) Receivers Control Port Default Gateway: 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. (Factory Default: "192.168.253.254")

(24) GigE Port IP Address: is the static IP address assigned to the GigE port (QAM/IP Model Only). (Factory Default: "192.168.253.2")

(25) GigE Port Subnet Mask: is the subnet mask address assigned to the GigE port (QAM/IP Model Only). (Factory Default: "255.255.255.0")

(26) GigE Port Default Gateway: is the gateway address assigned to the GigE Port (QAM/IP Model Only). (Factory Default: "192.168.253.254")

(27) Event Log Destination: is the IP address of the remote server, to which Syslog sends the activities recorded by the unit for monitoring and troubleshooting purposes. (Factory Default: "172.16.70.2")

(28) 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. (Factory Default: "514" - unmodifiable)

(29) 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). (Factory Default: "172.16.70.2")

(30) Download Configuration File: allows the user to download the unit encoder configuration file, which contains all current settings. The file is used to quickly and easily configure a new encoder through the UPDATE screen should the initial unit require servicing.

(31) Syslog Errors: options are "Enable" or "Disable". When Enabled, the unit will forward error messages (in red font) to an SNMP syslog. (Factory Default: "Disabled")

(32) Syslog Informational: options are "Enable" or "Disable". When Enabled, the unit will forward information messages (in blue font) to an SNMP syslog. (Factory Default: "Disabled")

(33) Syslog Feedback: options are "Enable" or "Disable". When Enabled, the unit will forward feedback or confirmation messages (in green font) to an SNMP syslog. (Factory Default: "Disabled")

(34) 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.**

Appendix A: Updating the Software Remotely

General background:

There are two different PROMs that need to be programmed in the Unit. 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 the Unit.

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

b) Update PROM2 with the specific command line.

Step 1 : FTP Two Files to the Unit:
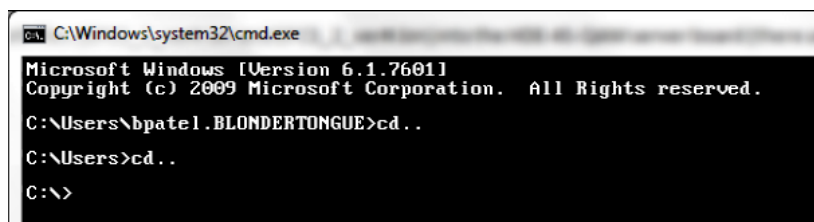
FTP both files (EPCS_1_ver#.bin and EPCS_2_ver#.bin) into the Unit's server board (there are many ways to do this).

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 shown in Figure A-1, then use the command "cd.." to enter the C:\>.

Figure A-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 the Unit:

There are two ways to telnet to the unit:

(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.

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
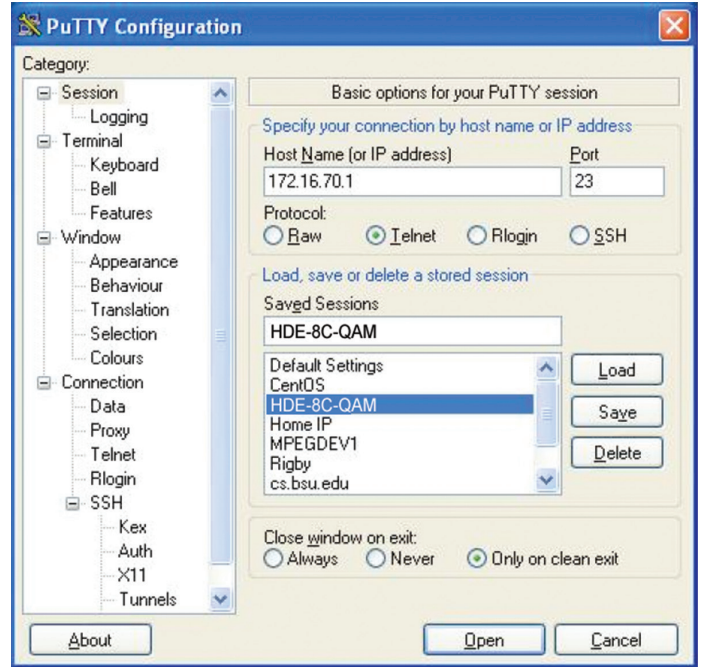
Figure A-2

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 the Unit.

Warning: Care should be taken at this time, if misspelled characters or letters are typed by accident, or you have missed to type the bin command in Step 1, this could cause the Unit Flash memory to be corrupted. The Unit will try to reload the OS using the corrupted file ten (10) times before it displays the following screen (Figure A-3). You can recover from this situation by repeating the procedure all over again from Step 1 above.

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: Both EPCS PROMS can be programmed concurrently using two different terminal sessions (logins). If you get errors during programming then **DO NOT TURN OFF THE UNIT,** just repeat the epcs commands again.

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

Figure A-3

Two choices to reset the Unit:

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

    (2) Use Telnet and type "epcs –c" this will automatically reboot the Unit without a need for resetting with power switch.

              NOTE: The boot-up process for the unit is approximately 30 seconds.

NOTES

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. 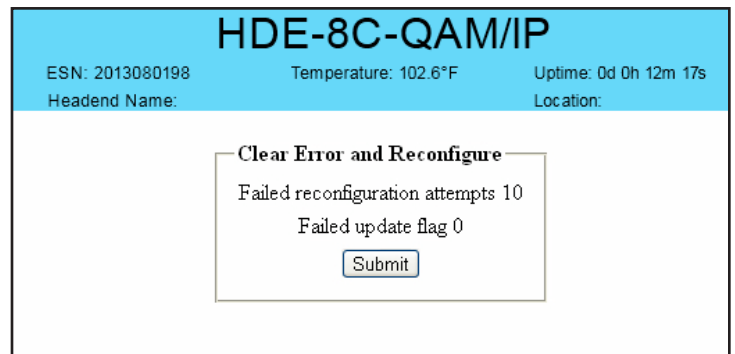 It is emphasized that the extended warranty is in effect an extension of the Blonder Tongue Warranty and covers the items stipulated in Paragraph B to the exclusion of the terms in Paragraph C of this agreement. Eligibility to purchase EW is limited to 90 days following initial shipment on selected products 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 indirectly 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 one (1) year 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.

OTHER THAN THE WARRANTIES SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND, EXPRESS OR IMPLIED, AS TO THE CONDITION, DESCRIPTION, FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR AS TO ANY OTHER MATTER, AND SUCH WARRANTIES SET FORTH ABOVE SUPERSEDE ANY ORAL OR WRITTEN WARRANTIES OR REPRESENTATIONS MADE OR IMPLIED BY SELLER OR BY ANY OF SELLER'S EMPLOYEES OR REPRESENTATIVES, OR IN ANY OF SELLER'S BROCHURES MANUALS, CATALOGS, LITERATURE OR OTHER MATERIALS. IN ALL CASES, BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S SOLE OBLIGATION FOR ANY BREACH OF THE WARRANTIES CONTAINED HEREIN SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT F.O.B. SHIPPING POINT, AS SELLER IN ITS SOLE DISCRETION SHALL DETERMINE. SELLER SHALL IN NO EVENT AND UNDER NO CIRCUMSTANCES BE LIABLE OR RESPONSIBLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, PUNITIVE, DIRECT OR SPECIAL DAMAGES BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT LIABILITY OR OTHERWISE OR ANY OTHER LEGAL THEORY, ARISING DIRECTLY OR INDIRECTLY FROM THE SALE, USE, INSTALLATION OR FAILURE OF ANY PRODUCT ACQUIRED BY BUYER FROM SELLER.

All claims for shortages, defects, and non-conforming goods must be made by the customer in writing within five (5) days of receipt of merchandise, which writing shall state with particularity all material facts concerning the claim then known to the customer. Upon any such claim, the customer shall hold the goods complained of intact and duly protected, for a period of up to sixty (60) days. Upon the request of Seller, the customer shall ship such allegedly non-conforming or defective goods, freight prepaid to Seller for examination by Seller's inspection department and verification of the defect. Seller, at its option, will either repair, replace or issue a credit for products determined to be defective. Seller's liability and responsibility for defective products is specifically limited to the defective item or to credit towards the original billing. All such replacements by Seller shall be made free of charge f.o.b. the delivery point called for in the original order. Products for which replacement has been made under the provisions of this clause shall become the property of Seller. Under no circumstances are products to be returned to Seller without Seller's prior written authorization. Seller reserves the right to scrap any unauthorized returns on a no-credit basis. Any actions for breach of a contract of sale between Seller and a customer must be commenced by the customer within thirteen (13) months after the cause of action has accrued. A copy of Seller's standard terms and conditions of sale, including the limited warranty, is available from Seller upon request. Copies of the limited warranties covering third-party proprietary sub-assembly modules and private-label products manufactured by third-parties may also be available from Seller on request. **(Rev 1021)**