



SOLUTIONS FOR ALL YOUR APPLICATIONS

Stock No.  
**6366**  
**USER MANUAL**

MPEG-2 HD/SD Encoder/Multiplexer

# HDE-2S-IP

2xHD-SDI OR 8xSD-SDI/NTSC to 1xIP/2xASI

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800-523-6049

[www.blondertongue.com](http://www.blondertongue.com)

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Purchase Location Name:	
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HDE-2S-IP 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.**

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.

## Safety Instructions - continued

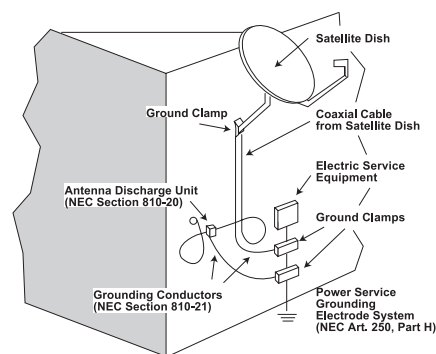
Do not block or cover slots and openings in the unit. These are provided for ventilation and protection from overheating. Never place the unit near or over a radiator or heat register. Do not place the unit in an enclosure such as a cabinet without proper ventilation. Do not mount equipment in the rack 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](http://www.blondertongue.com) for further information.

## Section 2 — Product Summary

### 2.1 Revision History & Reason

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This is the first issue of this Instruction Manual.

### 2.2 Product Application & Description

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Application:

HDE-2S-IP (MPEG-2 HD/SD Encoder Multiplexer - 2xHD-SDI or 8xSD-SDI/NTSC to IP/2xASI) accepts two (2) high definition (HD) programs from HD-SDI inputs or up to eight (8) standard definition (SD) programs across the SDI and/or NTSC inputs. MPEG-2 encoded outputs are multiplexed into one Multi Program Transport Stream (MPTS), which is available in the following formats simultaneously: 1xIP (100/1000 BaseT) and 2xASI.

The encoder supports Dolby<sup>®</sup> Digital audio encoding for (16) analog stereo audio pairs (L+R) which in addition to primary and secondary audio programs also provide a third pair for the Audio Descriptor Service, an additional narration track for blind and visually impaired, as mandated by the Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA).

Ad insertion SCTE 35 compliant queuing messages are detected for each program from either the multiple audio Cue Tone inputs or an insertion contact closure (operator selectable).

A baseband audio analog encoding capability table is provided in Section 2.3 (page 12) for easy reference. In addition to the baseband audio analog encoding capability audio programs that are already encoded and present on the SDI inputs may be multiplexed with the respective output (pass-through) without utilizing the baseband audio analog encoding resource.

The encoder also supports Closed Captioning (EIA-608, and EIA-708), and Emergency Alert System (EAS). A front-panel DVI port is available for real-time monitoring of active programs during operation.

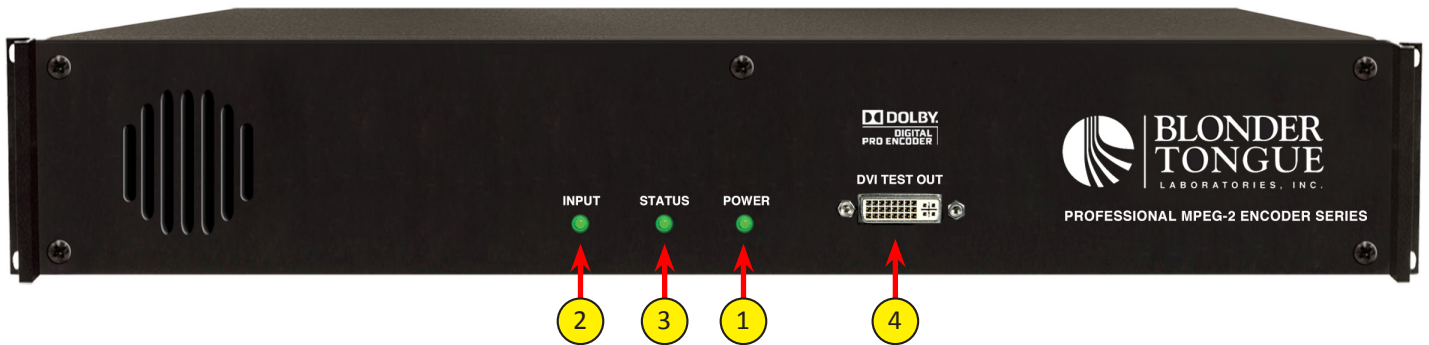
Comprehensive remote monitoring and control is accomplished using any standard Web browser via a rear-panel SFP port (10/100BaseT).

Features:

- Accepts up to (2) HD or (8) SD programs from the following inputs: 2xHD-SDI, 6xSD-SDI, and/or 6xNTSC
- Simultaneously delivers the following outputs: 2xASI (mirrored) and 1xIP (100/1000 BaseT)
- Provides comprehensive GUI-based monitoring and control using standard web browsers via 10/100 BaseT SFP module (included)
- Provides audio encoding for Primary Audio, SAP (Secondary Audio Program), & Audio Descriptor Service
- Provides user-selectable audio level adjustment of +/- 6 dB in 0.5 dB increments on all analog audio inputs through GUI interface
- Detects ad messaging via SCTE 35 activated by either multiple Cue Tone Audio inputs or upon contact closures (user selectable)
- Supports Closed Captioning EIA-608 and EIA-708
- Supports Real-time Dolby<sup>®</sup> Digital audio encoding
- Supports Emergency Alert System (EAS)
- Supports user-defined static PSIP configuration
- Supports compressed digital audio pass through for all SDI inputs
- Supports fixed VBR and Stat-Mux video encoding

**Description:**

Front panel connectors and indicators:



**1 POWER LED:** This will be Green if unit is powered. Off when there is no power.

POWER	DESCRIPTION
Green	Unit is powered on and the power supply is functioning properly.
Off	Unit power is disconnected/switched off, or the power input fuse is blown/the power supply has failed

**Table 1: Front Panel LED Indicators - POWER**

**2 INPUT LED:** This input LED will be Green when all the inputs that are configured through the webpage and they are working. If even one input is not connected when it should be then the LED will be red. The analog Audio inputs are not part of this input Status LED condition.

**3 STATUS LED / SOFTWARE STATUS LED:** This LED will be Green when software is running in Normal mode.

**4 DVI TEST OUT:** Multi-Channel output suitable for preview and monitoring of the ASI output.

STATUS	INPUT	DESCRIPTION
Green	Green	Normal Operation
Green	Blinking Green-Yellow	EAS Video Switch Over Activated
Green	Red-Off-Red-Off	Video Input or ASI Input Signal Loss Detected for an Off-Air Service

**Table 2: Front Panel LED Indicators – Normal Broadcast Operations**

STATUS	INPUT	DESCRIPTION
Blinking Green		System Booting / Starting-Up
Blinking Red-Yellow or Red-Green		High Temperature Warning
Red	Red	High Temperature Error System has shut down
Red	Red	Invalid or Failed SFP Device Detected in IP-1 Socket
Red	Yellow	Invalid or Failed SFP Device Detected in Socket IP-2, 3 or 4
Red	Off	Failure Detected in System Hardware, BIST or Boot-up

**Table 3: Front Panel LED Indicators – System Integrity and Status**

STATUS	INPUT	DESCRIPTION
Blinking Green	Blinking Green	System Reset Button pressed for less than 5 seconds. Upon button release, encoder continues normal operation.
Blinking Yellow	Blinking Yellow	System Reset Button pressed for 5 seconds. Upon button release, encoder reboots.
Blinking Red	Blinking Red	System Reset Button pressed for 15 seconds. Upon button release, encoder IP address and password resets to default, encoder reboots.

**Table 4: Front Panel LED Indicators – System Reset Button Activation**

STATUS	INPUT	DESCRIPTION
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated

**Table 5: Front Panel LED Indicators – License File Update Sequence**

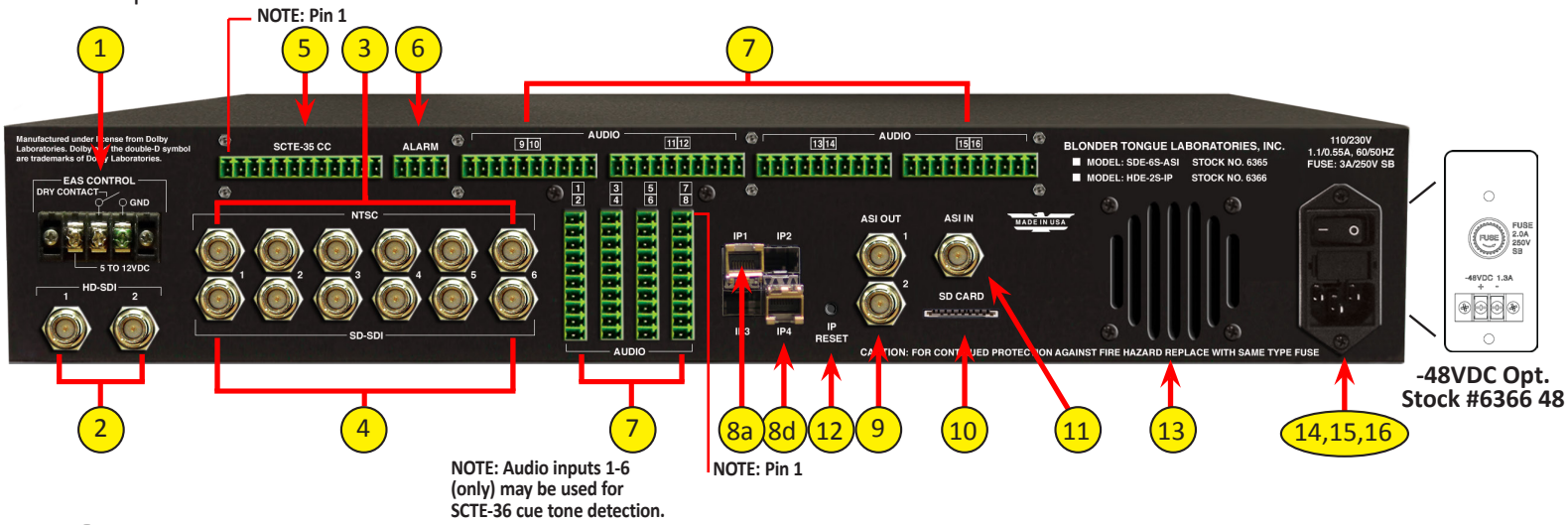
STATUS	INPUT	DESCRIPTION
Yellow	Blinking Green	Loading Firmware Update File in Normal Update Mode
Yellow	Off	Validating Firmware Update in Normal Update Mode
Yellow	Steady Green or Off	Unexpected or unknown failure during Normal Firmware Update Sequence. Waiting for power cycle.
Yellow	Blinking Red	No firmware file found on rear panel SD Card during Normal Firmware Update Sequence using SD Card update method. Waiting for power cycle.
Yellow	Off	Firmware load or validation failure detected during Normal Firmware Update Sequence. Waiting for power cycle.
Blinking Green	Off	Firmware Update Completed. Waiting for power cycle.
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated

**Table 6: Front Panel LED Indicators – Normal Firmware Update Sequence**

STATUS	INPUT	DESCRIPTION
Red	Blinking Green	Loading Firmware Update File in System Recovery Mode
Red	Off	Validating Firmware Update in System Recovery Mode
Red	Green or Off	Unexpected or unknown failure during System Recovery Firmware Update. Waiting for power cycle.
Red	Blinking Red	No firmware found on rear panel SD Card while attempting System Recovery Firmware Update Sequence. Requires a power cycle with valid firmware on SD card in rear panel SD Card socket.
Red	Off	Failure Detected during Firmware Load or Validation. Requires a power cycle with valid firmware on SD card in rear panel SD Card socket.
Blinking Green	Off	Firmware Update Completed. Waiting for power cycle.
Yellow	Yellow	License File and/or Product Authorization Code has been Loaded and Validated

**Table 7: Front Panel LED Indicators – System Recovery Firmware Update Sequence**

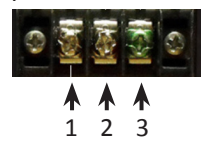
Front panel connectors and indicators:



**1 EAS CONTROL:**

Terminal strip to activate the EAS messaging feature in one of two the following ways: Dry contact & 5-12VDC

- 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 SDI or NTSC inputs) with the EAS INPUT. The ASI OUT (see 9) as well as IP4 (see 8d) will all provide the EAS message.

- 2 2xHD-SDI INPUTS:** Supports embedded audio and EIA 708 Closed Captioning.
- 3 6xNTSC INPUTS:** Supports EIA 608 Closed Captioning.
- 4 6xSD-SDI INPUTS:** Supports embedded audio and EIA 708 Closed Captioning.
- 5 SCTE-35 CONTACT CLOSURE (CC) TERMINAL BLOCK INPUTS:** A dry contact between respective pins enables SCTE-35.

LEFT						RIGHT					
1	2	3	4	5	6	7	8	9	10	11	12
SCTE # 1		SCTE # 2		SCTE # 3		SCTE # 4		SCTE # 5		SCTE # 6	

Table 1: SCTE-35 CC

**6 ALARM RELAY TERMINAL BLOCK OUTPUT:** These are normally closed contacts after the encoder has completely booted up. A failure state creates an open condition as follows:

- Alarm#1 (pins 3 &4): Loss of power
- Alarm#2 (pins 1 &2): Over temperature (=> 140 deg. F) or a firmware configuration failure

LEFT		RIGHT	
1	2	3	4
ALARM # 1		ALARM # 2	

Table 2: Alarm Relay Terminal Block Output

**NOTE: Audio inputs 1-6 may be used for SCTE-35 Cue Tone detection.**

**7 AUDIO TERMINAL BLOCK INPUTS**



	CONTACT #	AUDIO 1/2	AUDIO 3/4	AUDIO 5/6	AUDIO 7/8
<b>TOP</b>	1	Audio #1 L+	Audio #3 L+	Audio #5 L+	Audio #7 L+
	2	Audio #1 L-	Audio #3 L-	Audio #5 L-	Audio #7 L-
	3	Audio #1 R+	Audio #3 R+	Audio #5 R+	Audio #7 R+
	4	Audio #1 R-	Audio #3 R-	Audio #5 R-	Audio #7 R-
	5	Ground	Ground	Ground	Ground
	6	Audio #2 L+	Audio #4 L+	Audio #6 L+	Audio #8 L+
	7	Audio #2 L-	Audio #4 L-	Audio #6 L-	Audio #8 L-
	8	Audio #2 R+	Audio #4 R+	Audio #6 R+	Audio #8 R+
	9	Audio #2 R-	Audio #4 R-	Audio #6 R-	Audio #8 R-
<b>BOTTOM</b>	10	Ground	Ground	Ground	Ground

**Table 3: Audio Terminal Block Inputs**

	LEFT									RIGHT
CONTACT #	1	2	3	4	5	6	7	8	9	10
<b>AUDIO 9/10</b>	Audio #9 L+	Audio #9 L-	Audio #9 R+	Audio #9 R-	Ground	Audio #10 L+	Audio #10 L-	Audio #10 R+	Audio #10 R-	Ground
<b>AUDIO 11/12</b>	Audio #11 L+	Audio #11 L-	Audio #11 R+	Audio #11 R-	Ground	Audio #12 L+	Audio #12 L-	Audio #12 R+	Audio #12 R-	Ground
<b>AUDIO 13/14</b>	Audio #13 L+	Audio #13 L-	Audio #13 R+	Audio #13 R-	Ground	Audio #14 L+	Audio #14 L-	Audio #14 R+	Audio #14 R-	Ground
<b>AUDIO 15/16</b>	Audio #15 L+	Audio #15 L-	Audio #15 R+	Audio #15 R-	Ground	Audio #16 L+	Audio #16 L-	Audio #16 R+	Audio #16 R-	Ground

**Table 4: Audio Terminal Block Inputs**



**8 GIGE ETHERNET PORTS:**

- a) **IP1 - SFP Plug-in 10/100baseT Ethernet Control** - Comprehensive remote monitoring and control via any standard web browser through the 10/100 BaseT Ethernet Interface. SFP module is included.
- b) **IP2** - not used
- c) **IP3** - not used
- d) **IP4 - Ethernet Output - SFP Connector 10/100/1000Base-T**. SFP module is included.

IP1 Position      Key Position      IP4 Position

Make sure the latch is closed when installing SFP

Open latch as shown to remove.



**ESD sensitive device. Do not touch card-edge connectors at the insertion end of the module.**

**9 ASI OUTPUTS 1 AND 2:** BNC connectors - ASI outputs are typically used as inputs to external modulators.

**10 SD CARD BASED SW UPGRADE:** Future Option

**11 ASI INPUT:** Future Option

**12 IP RESET BUTTON:** To factory default

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)

**13 VENTILATION FAN**

**14 POWER SWITCH**

**15 FUSE**

**16 IEC POWER PLUG:** IEC 14 power inlet plug - rated 110/230 VAC; 1.2/0.6A; 60/50 Hz; equipped with Slo-Blo, 3.0 Amps, 250 V Fuse and On/Off switch. 48 VDC power (optional) is provided on Stk# 6366 48.

## 2.3 Product Specification

### Specifications

#### Input

<b>HD-SDI</b>	<b>Connectors:</b> 2x BNC <b>Standard:</b> SMPTE 292M <b>Video Resolution:</b> 480i, 720p, & 1080i <b>Audio:</b> Embedded PCM and pass-thru Dolby® Digital Analog Stereo Balanced Audio (SD-SDI)
<b>SD-SDI</b>	<b>Connectors:</b> 6x BNC <b>Standard:</b> SMPTE 259M <b>Video Resolution:</b> 480i <b>Audio:</b> Embedded PCM and pass-through Dolby® Digital Analog Stereo Balanced Audio
<b>NTSC</b>	<b>Connectors:</b> 6x BNC for Analog Video 8x terminal strips for Analog Audio <b>Standard:</b> Analog Video <b>Video Resolution:</b> 525 lines per frame <b>Audio:</b> Analog Stereo Balanced Audio
<b>EAS (Emergency Alert System)</b>	<b>Connectors:</b> <b>BNC:</b> Video (User-selectable NTSC 1 to 6) <b>Terminal:</b> Audio (User-selectable Audio 1 to 16) <b>Standard:</b> Analog Audio/Video <b>Trigger Mechanism:</b> 5-12 VDC & Dry Contact Closure (Terminal Strip)

<b>Encoding Profile</b>	
<b>Video</b>	<b>Output Format:</b> MPEG-2 MP@ML, ISO 13818-2 <b>Chroma:</b> 4:2:0 <b>Resolution:</b> 480i, 720p & 1080i <b>Frame rate:</b> 29.97 fps (480i); 29.97 fps (1080i); 59.97 fps (720p) <b>Aspect Ratio:</b> 4:3, 16:9 <b>GOP Structure:</b> I & P frames (user-selectable) <b>Transport Rate:</b> Variable (user-selectable) <b>Video Rate:</b> Variable (user-selectable) <b>Video Pre-filter:</b> Variable (user-selectable) <b>Color Space:</b> YCbCr
<b>Audio</b>	<b>Output Format:</b> Dolby® Digital <b>Sampling rate:</b> 48 kHz <b>Bit rate:</b> Variable; 96-448 Kbps (user-selectable) <b>Level Adjustment:</b> ± 6 dB, 1 dB increment (user-selectable)
<b>Digital Program Insertion (DPI)</b>	<b>Connectors:</b> Terminal strip for Cue Tone Audio <b>Standard:</b> SCTE 35
<b>Closed Captioning</b>	<b>HD/SD -SDI:</b> EIA-608, EIA 708; (Embedded in input) <b>NTSC:</b> EIA-608 (Embedded in input)

#### Output

<b>ASI</b>	<b>Connector:</b> 2x BNC (Rear-panel) <b>Format:</b> DVB-ASI <b>Standard:</b> ETSI EN 50083-9
<b>IP</b>	<b>Connector:</b> 1x SFP (Rear-panel - SFP module included) <b>Standard:</b> IEEE 802.3 100/1000 Base-T Ethernet <b>Network Protocols:</b> UDP, RTP, multicast, unicast, MPTS output

#### Baseband Analog Audio Encoding Capability

SD-SDI or NTSC Video Input #	1	2	3	4	5	6
<b>Primary Audio</b>	Y	Y	Y	Y	Y	Y
<b>Secondary Audio</b>	Y	Y	Y	Y	Y	Y
<b>Video Descriptor Audio</b>	Y	Y	Y	Y	Note 1	Note 1
<b>Cue Tone Audio</b>	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
<b>Cue Tone via Contact Closure</b>	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3

There are a total of sixteen (16) stereo analog audio encoding engines in the unit. The table above illustrates one example of how this resource may be utilized. In this example all the audio programs are provided as stereo baseband analog inputs. In this example none are provided by digital audio present on the SD-SDI inputs.

**Note 1:** In the example above, a third discrete Audio Encoder input will not be available for video inputs 5 and 6. However, the Secondary Audio for 5 and 6 can be used to provide the Video Descriptor Service instead of being used for a second language input.

**Note 2:** Detects ad insertion messages generated per SCTE 35 from multiple Cue Tone Audio inputs (user selectable).

**Note 3:** Detects ad insertion messages in a preset sequence per SCTE 35 activated by a contact closure (user selectable).

#### General

<b>Dimensions (W x D x H):</b>	19.0 x 16.0 x 3.5 inches (483 x 406 x 89 mm); 2RU
<b>Power:</b> <b>Stock #6366:</b> <b>Stock #6366 48:</b>	110-230VAC, 60/50Hz (Fuse: 3.0A, 250V, SloBlo) -48VDC (Fuse: 2.0A, 250V SloBlo)
<b>Power Dissipation:</b>	100W (MAX)
<b>Weight:</b>	17 lbs (3.6 kg)
<b>Operating Temperature:</b>	32 to 122 °F (0 to 50 °C)
<b>Storage Temperature:</b>	-13 to 158 °F (-25 to 70 °C)

#### Alarms/Monitoring/Control

<b>Local Monitoring:</b>	1x Input and 1x Status LEDs 1x Power LED 1x DVI Port 1x IP Reset button
<b>Local Control:</b>	1x IP Reset button
<b>Remote Monitoring/Control:</b>	GUI-based menu via Web browser (1x SFP rear-panel port; 10/100Base-T) (SFP module included) SD card based S/W upgrade (future option)

## Section 3 – Installation & Power-up

### 3.1 Unpacking

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You will find the following items in the box:

- HDE-2S-IP- Encoder (QTY=1)
- Power Cord with IEC C13 line socket and 3-pin Type B NEMA 5 plug (QTY=1)
- A hardware bag (item 741022200) containing the following:
  - Seven-foot cross-pinned (cross-over) RJ45 Ethernet cable (QTY=1)
  - SFP Transceiver (QTY=2)
  - 4 Pin Plug (QTY=1)
  - 12 Pin Plug (QTY=1)
  - 10 Pin Plug (QTY=8)
  - Six-foot DVI to HDMI cable (QTY=1)

### 3.2 Installation

---

The HDE-2S-IP 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

---

#### **110/230 VAC Encoders (Stk# 6366) :**

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, 3.0 Amp, 250V). The "POWER" LED on the front-panel will light green.

#### **-48 VDC Encoders (Stk# 6366 48) :**

Connect the positive and negative leads from the batteries to the rear panel terminal strip.

## 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 the unit's IP address to conform to 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 "IP1". 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 – Configuring the Unit

### 5.1 Accessing the Unit via a 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 5.1) will appear.

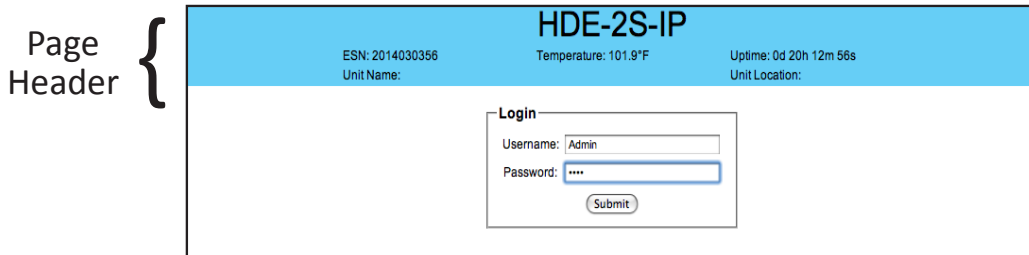


FIGURE 5.1 – "Login" Screen

- (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 = <b>Admin</b> (case-sensitive) Password = <b>pass</b> (case-sensitive)	- OR -	Username = <b>Guest</b> (case-sensitive) Password = <b>pass</b> (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 5.2, under the blue "page header" the following Primary tabs will appear:

- Primary tab "**Main**" includes the following sub-tabs: Status, Stream Info (applicable to MPTS Mode only), QAM Config, Diagnostics, Mode, 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 "**Config**" 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.



In the section entitled “**TS (Transport Stream)**” under yellow header, the following parameters about each input program in the TS are displayed:

- 1 **TS Mapping: TS1** : indicates the top level transport stream name. The bold heading under Bitrates shows the actual overall bitrate over the prescribed bitrate (set in TS Config section, Section 5.XX)
- 2 **P1 (Program 1)**: indicates the PMT PID **48**, Transport Stream ID **(1)** (set in the TS Config section), the TS Short Name **( )** (set in the TS Config section), the Major and Minor Channel numbers **(3-1)** (set in the TS Config section). See Section 5.8 for details on configuring the TS Config.
- 3 **Bitrate**: indicates the bitrate of the input program

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

- 4 **IP**: indicates whether or not the IP Output is enabled. (See Section 5.9 for details).



**ENCODED VIDEO:**

- 1 **Maximum Format Size:** (480i) Indicates the resolution of the incoming video
- 2 **Video Source:** (6xNTSC, 6xSD/SDI, 2xHD/SDI) Indicates the video inputs source
- 3 **Video Input Signal Status:** this field will indicate whether the video is valid on the input.
- 4 **Detected Video Format:** this field will indicate what the incoming video format and resolution is.
- 5 **Detected Closed Captions:** this field will indicate whether or not there is Closed Captioning (EIA-608) embedded in the incoming stream.
- 6 **Video Smoothing Filter:** 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.
- 7 **Encoding Mode:** Possible options are Frame, or Field. The factory default value is Frame.
- 8 **GOP Structure:** Indicates the frame structure for the GOP (Group of Pictures) in the MPEG stream. The options are I-Frame (Intra-Frame or anchor frame) or IPPP (Intra-Frame plus Predictive frames).
- 9 **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.
- 10 **Video Bit Rate Control:** Indicates the ability to change incoming streams from VBR (Variable Bit Rate) to Stat-MUX. Stat-MUX is setting an upper limit on the outgoing stream bandwidth and fitting all 6 programs into that bandwidth.
- 11 **Video Bitrate Target:** This sets the upper limit target video bitrate for the outgoing video. Note that the total of all of the 6 streams must not exceed the total of the total TS Bitrate (set in the TS Config screen).

**PROGRAMS:**

- 1 **Virtual Channel Number:** (3-1) This is set in the Main/TS Config screen. The Major Channel is 3 and the Minor Channel is 1.
- 2 **Virtual Channel Name (short name):** Indicates the short name for the channel. This is set in the Main/TS Config screen.
- 3 **Encoded Video Channel:** Any one of 8 video channels can be assigned here.
- 4 **Encoded Audio Program 1:** Any one of 16 audio programs can be used here. This is set in the Main/Audio screen.
- 5 **Encoded Audio Program 2:** Any one of 16 audio programs can be used here. This is set in the Main/Audio screen.
- 6 **Encoded Audio Program 3:** Any one of 16 audio programs can be used here. This is set in the Main/Audio screen.
- 7 **Encoded Audio Program 4:** Any one of 16 audio programs can be used here. This is set in the Main/Audio screen.
- 8 **SCTE 35:** Displays the SCTE number (1 to 6) configured in Section 5.5 that is associated with this program.



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

### 5.4 "Main > Audio" Screen

The "Main > Audio" screen (Figure 5.4) is a "user-configurable" screen and includes the following sub-tabs: Encoded Audio and Programs.

HDE-2S-IP  
ESN: 2014030356      Temperature: 103.7°F      Uptime: 0d 20h 7m 24s  
 Unit Name:      Unit Location:

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

Status	Video	Audio	SCTE 35	EAS	TS Map	TS Config	IP	Output	Refresh
--------	-------	-------	---------	-----	--------	-----------	----	--------	---------

	A1	A2	A3	A4	A5	A6	A7	A8
1 Audio Signal Source	HD-SDI 1	HD-SDI 2						
2 Left Channel Track	0	0	0	0	0	0	0	0
3 Right Channel Track	1	1	1	1	1	1	1	1
4 Audio Digitizer Sample Rate	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz
5 Audio Delay (ms)	0	0	0	0	0	0	0	0
6 Dialog Normalization	-27	-27	-27	-27	-27	-27	-27	-27
7 Dolby Coding Mode	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R
8 Dolby Surround Mode	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
9 Dolby DRC Line Mode	None	None	None	None	None	None	None	None
10 Dolby DRC RF Mode	None	None	None	None	None	None	None	None
11 Default Audio Language	ENG	ENG	ENG	ENG	ENG	ENG	ENG	ENG
12 Encoded Audio Bit Rate	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps
13 Encoded Audio Scaling Factor	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB

	A9	A10	A11	A12	A13	A14	A15	A16
Audio Signal Source								
Left Channel Track	0	0	0	0	0	0	0	0
Right Channel Track	1	1	1	1	1	1	1	1
Audio Digitizer Sample Rate	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz	48 kHz
Audio Delay (ms)	0	0	0	0	0	0	0	0
Dialog Normalization	-27	-27	-27	-27	-27	-27	-27	-27
Dolby Coding Mode	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R	2/0:L,R
Dolby Surround Mode	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Dolby DRC Line Mode	None	None	None	None	None	None	None	None
Dolby DRC RF Mode	None	None	None	None	None	None	None	None
Default Audio Language	ENG	ENG	ENG	ENG	ENG	ENG	ENG	ENG
Encoded Audio Bit Rate	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps	192 kbps
Encoded Audio Scaling Factor	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB	-6.0 dB

	P1	P2	P3	P4	P5	P6	P7	P8
1 Virtual Channel Number	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
2 Virtual Channel Name	2S#1	2S#2						
3 Encoded Video Program	Video 1	Video 2	-	-	-	-	-	-
4 Video Input Source	HD-SDI 1	HD-SDI 2						
5 Encoded Audio Program 1	A1	A2	A3	A4	A5	A6	A7	A8
6 Encoded Audio Program 2	A9							
7 Encoded Audio Program 3	A10							
8 Encoded Audio Program 4	A11							
9 SCTE35	SCTE 1							

Figure 5.4 "Main/Audio" Screen

**ENCODED AUDIO:**

- 1 **Audio Signal Source:** Indicates the audio source program. This can be any one of 16 NTSC audio tracks, 6 SD/SDI embedded audio sources or 2 HD/SDI embedded audio sources.
- 2 **Left Channel Track:** This setting only applies to audio embedded in the incoming SD/SDI and HD/SDI streams. Any one of the embedded audios can be used here.
- 3 **Right Channel Track:** This setting only applies to audio embedded in the incoming SD/SDI and HD/SDI streams. Any one of the embedded audios can be used here.
- 4 **Audio Digitizer Sample Rate:** indicates the input sampling rate of the encoder. The HDE-2S-IP supports 48 kHz sampling rate.
- 5 **Audio Delay (ms):** allows the user to adjust the audio delay (-300 to 300 ms) to correct for input video/audio sync mismatch.
- 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 HDE-2S-IP 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 Config 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).
- 8 **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.
- 9 **Dolby DRC 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".
- 10 **Dolby DRC 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 9 and 10 are:

- a. **None: no dynamic range controls have been assigned.**
- b. **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.
- c. **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.
- d. **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.
- e. **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.
- f. **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 load shouting and amplifier whispers. See Dolby Encoding guidelines for additional information.

- 11 **Default Audio Language:** Defines the language of the audio to be sent in the outgoing stream.
- 12 **Encoded Audio Bitrate:** Defines the outgoing audio bit rate.
- 13 **Encoded Audio Scaling Factor:** Default is 0 dB. Permits user adjustments of the encoded audio level.

**PROGRAMS:**

- 1 **Virtual Channel Number:** (3-1) This is set in the Main/TS Config screen. The Major Channel is 3 and the Minor Channel is 1.
- 2 **Virtual Channel Name (short name):** Indicates the short name for the channel. This set In the Main/TS Config screen. See Section 5.3 for details.
- 3 **Encoded Video Channel:** Displays the video input assigned to the program number in Section 5.3.
- 4 **Video Input Source:** Displays the video input source assigned to the program number in Section 5.3.
- 5 **Encoded Audio Program 1-4:** Any one of 16 audio programs can be assigned here. This is set in the Main/Audio screen.
- 6 **SCTE 35:** Displays the SCTE number (1 to 6) configured in Section 5.5 that is associated with this program.

**5.5 "Main > SCTE 35" Screen**

The "Main > SCTE 35" screen (Figure 5.5) is a "user-configurable" screen to configure the SCTE35 parameters for each of 1-6.

## HDE-2S-IP

ESN: 2014030356      Temperature: 101.9°F      Uptime: 0d 20h 8m 22s  
Unit Name:      Unit Location:

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

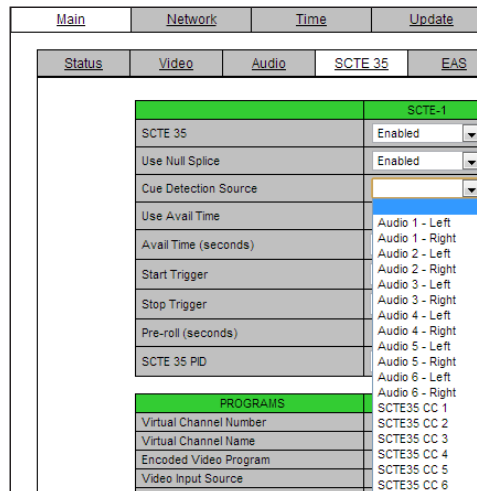
Status	Video	Audio	SCTE 35	EAS	TS Map	TS Config	IP	Output	Refresh
	SCTE-1	SCTE-2	SCTE-3	SCTE-4	SCTE-5	SCTE-6	SCTE-7	SCTE-8	
1 SCTE 35	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
2 Use Null Splice	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
3 Cue Detection Source	SCTE35 CC 1								
4 Use Avail Time	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
5 Avail Time (seconds)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
6 Start Trigger									
7 Stop Trigger									
8 Pre-roll (seconds)	6	6	6	6	6	6	6	6	6
9 SCTE 35 PID	3A	4A	5A	6A	7A	8A	9A	AA	
PROGRAMS	P1	P2	P3	P4	P5	P6	P7	P8	
1 Virtual Channel Number	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	
2 Virtual Channel Name	2S#1	2S#2							
3 Encoded Video Program	Video 1	Video 2	-	-	-	-	-	-	
4 Video Input Source	HD-SDI 1	HD-SDI 2							
5 Encoded Audio Program 1	A1	A2	A3	A4	A5	A6	A7	A8	
Encoded Audio Program 2	A9								
Encoded Audio Program 3	A10								
Encoded Audio Program 4	A11								
6 SCTE35	SCTE 1								

Save

Figure 5.5 - "Main > SCTE 35" Screen

**INPUTS:**

- 1 **SCTE-35:** Enabled or disabled are the options here. If there is an SCTE-35 feed coming to the encoder either through the contact closure feed or an audio channel this setting makes it happen.
- 2 **Null Splice:** Allows splice information to be sent in the incoming stream.
- 3 **Cue Detection Source:** Specifies the source of the SCTE 35 messaging. Selections are Audio's 1 to 6 and Contact Closures (see page 9, 5 SCTE-35 CC for details).



- 4 **Use Avail Time:** Allows the incoming stream to determine the duration of the incoming ad to be spliced.
- 5 **Avail Time (seconds):** This allows the user to specify the length of the ad to be spliced vs. allowing the incoming stream to determine the ad length.
- 6 **Start Trigger:** The start trigger can be set to support a specific ad insertion program. A "\*" Indicates the start of a splice. Please refer to the specific ad insertion program for the start bit information.
- 7 **Stop Trigger:** The stop trigger can be set to support a specific ad insertion program. A "#" Indicates a stop or end of a splice. Please refer to the specific ad insertion program for the start bit information.
- 8 **Pre-roll (seconds):** User configurable time to set before the start of the ad to be played.
- 9 **SCTE 35 PID:** Set the PID value of the outgoing SCTE 35 stream.

**PROGRAMS:**

- 1 **Virtual Channel Number:** (3-1) This is set in the Main/TS Config screen. The Major Channel is 3 and the Minor Channel is 1.
- 2 **Virtual Channel Name (short name):** Indicates the short name for the channel. This set In the Main/TS Config screen.
- 3 **Encoded Video Channel:** Displays the video input assigned to the program number in Section 5.3.
- 4 **Video Input Source:** Displays the video input assigned to the program number In Section 5.3.
- 5 **Encoded Audio Program 1-4:** Any one of 16 audio programs can be used here. This is set in the Main/Audio screen.
- 6 **SCTE 35:** Assigns SCTE #1 to #6 input configurations to a program number.



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

### 5.6 "Main > EAS" Screen

The "Main > EAS" screen (Figure 5.6) is a "user-configurable" screen where parameters associated with the Emergency Alert System can be set.

## HDE-2S-IP

ESN: 2014030356  
Unit Name:
Temperature: 103.7°F
Uptime: 0d 20h 8m 53s  
Unit Location:

Main
Network
Time
Update
Event Log
Logout

Status
Video
Audio
SCTE 35
EAS
TS Map
TS Config
IP
Output
Refresh

EAS

1 EAS Enable
Enabled ▾

2 Video Source
NTSC 6 ▾

3 Audio Source
Audio 16 ▾

PROGRAMS	P1	P2	P3	P4	P5	P6	P7	P8
Virtual Channel Number	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
Virtual Channel Name	2S#1	2S#2						
Encoded Video Program	Video 1	Video 2	-	-	-	-	-	-
Video Input Source	HD-SDI 1	HD-SDI 2						
Encoded Audio Program 1	A1	A2	A3	A4	A5	A6	A7	A8
Encoded Audio Program 2	A9							
Encoded Audio Program 3	A10							
Encoded Audio Program 4	A11							
SCTE35	SCTE 1							

7 Test EAS

Save

Figure 5.6 - "Main > EAS" Screen

**EAS:**

- 1 **EAS Enabled:** Enable or disable the EAS input here.
- 2 **Video Source:** Specifies the video input source configured on the Video settings screen.
- 3 **Audio Source:** Specifies the audio input source and is configured on the Audio settings screen.

**PROGRAMS:**

- 1 **Virtual Channel Number:** (3-1) This is set in the Main/TS Config screen. The Major Channel is 3 and the Minor Channel is 1.
- 2 **Virtual Channel Name (short name):** Indicates the short name for the channel. This set In the Main/TS Config screen.
- 3 **Encoded Video Channel:** Displays the video input assigned to the program number in Section 5.3.
- 4 **Video Input Source:** Displays the video input source as selected in Section 5.3 "#2"
- 5 **Encoded Audio Program 1-4:** Any one of 16 audio programs can be assigned here. This is set in the Main/Audio screen.
- 6 **SCTE 35:** Displays the SCTE number (1 to 6) configured in Section 5.5 that is associated with this program.
- 7 **Test EAS:** Triggers EAS temporarily for approximately 10 seconds for testing purposes.



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

### 5.7 "Main > TS Map" Screen

The "Main > TS Map" screen (Figure 5.7) is a "user-configurable" screen where the following output parameters are configured and displayed for each program:

## HDE-2S-IP

ESN: 2014030356  
Unit Name:
Temperature: 103.7°F
Uptime: 0d 20h 9m 8s  
Unit Location:

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

Status | Video | Audio | SCTE 35 | EAS | TS Map | TS Config | IP | Output | Refresh

Duplicate PIDs/Program Numbers/Channels/Channel Names may exist when adding programs.  
Please see the [TS Config](#) page to apply the necessary corrections.

	1 Inputs	Bitrates		2 Output	Bitrates
<input type="checkbox"/>	P1	17.25		TS1 - IP / ASI	
<input type="checkbox"/>	V: HD-SDI 1	17.04		P1 <input type="checkbox"/>	48 (1) (2S#1) (3-1)
<input type="checkbox"/>	A1: HD-SDI 1	0.20		<input type="checkbox"/>	49 V: HD-SDI 1
<input type="checkbox"/>	P2	17.25		<input type="checkbox"/>	52 A1: HD-SDI 1
<input type="checkbox"/>	V: HD-SDI 2	17.04		P2 <input type="checkbox"/>	64 (2) (2S#2) (3-2)
<input type="checkbox"/>	A1: HD-SDI 2	0.20		<input type="checkbox"/>	65 V: HD-SDI 2
<input type="checkbox"/>	P3	6.25		<input type="checkbox"/>	68 A1: HD-SDI 2
<input type="checkbox"/>	V:	6.04		<- Remove	
<input type="checkbox"/>	P4	6.25			
<input type="checkbox"/>	V:	6.04			
<input type="checkbox"/>	P5	5.25			
<input type="checkbox"/>	V:	5.04			
<input type="checkbox"/>	P6	5.25			
<input type="checkbox"/>	V:	5.04			
<input type="checkbox"/>	P7	2.20			
<input type="checkbox"/>	V:	1.99			
<input type="checkbox"/>	P8	2.20			
<input type="checkbox"/>	V:	1.99			

Figure 5.7 - "Main > TS Map" Screen

- 1
**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.
- 2
**Output:** allows the user to remove programs from the transport stream. Displays PID, Program#, Short Name and Major/Minor channel information. (see Section 5.8 for setting the display fields)

### 5.8 "Main > TS Config" Screen

The "Main > TS Config" screen (Figure 5.8) is a "user-configurable" screen to assign the Transport ID, Transport Bitrate (overall), Modulation Mode, Out of Band signaling, Outgoing PID value, Program Number, Short program Name and Major and Minor Channel number:

**HDE-2S-IP**  
ESN: 2014030356      Temperature: 103.7°F      Uptime: 0d 20h 9m 27s  
Unit Name:      Unit Location:

Main   Network   Time   Update   Event Log   Logout

Status   Video   Audio   SCTE 35   EAS   TS Map   TS Config   IP   Output   Refresh

#### Multiplexed MPTS Output Configuration

TS ID	TS Bitrate	Modulation Mode	Out of Band
1 TS1	2 38.81Mbps	3 QAM256	4 Disabled

#### Output Mapping

1 Input	2 PID	3 Program Number	4 Short Name	5 Major Channel	6 Minor Channel
<b>TS1 - IP / ASI</b>					
P1	48	1	2S#1	3	1
V: HD-SDI 1	49				
A1: HD-SDI 1	52				
P2	64	2	2S#2	3	2
V: HD-SDI 2	65				
A1: HD-SDI 2	68				

Save

Figure 5.8 "Main > TS Config" Screen

#### MULTIPLEXED MPTS OUTPUT CONFIGURATION:

- 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:
  - i. **19.39 Mbps** – Select this setting when the primary encoder output will be ASI for an ATSC application.
  - ii. **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.

**OUTPUT MAPPING:**

- 1 **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.
- 2 **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)**

- 3 **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.**

- 4 **Short Name:** user may enter the short name of the channel. Up to 7 alphanumeric characters are allowed.
- 5 **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.
- 6 **Minor Channel:** user may enter minor channel number for the output program. The range is the range is 1 to 99 for Terrestrial and 1 to 999 for Cable.



**The channel number displayed on the screen is the combination of the major and minor channels. Make sure that the major-minor channel pair is unique for each program on the MPTS output. For example, if major channel = 6 and minor channel = 1, then the channel number displayed on TV would be 6-1.**



**MPTS Output Stream 'x' and MPTS Output Stream 'y' may have the same PID, Program Number, Major-minor channel pair as each MPTS output stream is a unique stream.**



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

### 5.9 "Main > IP" Tab

The "Main > IP" screen (Figure 5.9) is a user-configurable screen where the Destination IP, Encapsulation, Destination Port, Source Port, Time to Live and Stuffing parameters are configured.

The screenshot shows the HDE-2S-IP configuration interface. At the top, it displays the device name 'HDE-2S-IP', ESN: 2014030356, Temperature: 103.7°F, Uptime: 0d 20h 9m 43s, and Unit Name/Location. Below this is a navigation menu with tabs: Main, Network, Time, Update, Event Log, and Logout. The 'Network' tab is active, showing sub-tabs: Status, Video, Audio, SCTE 35, EAS, TS Map, TS Config, IP, Output, and Refresh. The 'IP' sub-tab is selected, displaying the 'IP Output Config' section. This section contains six fields: Destination IP (239.10.10.10), Encapsulation (UDP), Destination Port (50010), Source Port (50010), Time to Live (128), and Stuffing (Enable). A 'Save' button is located at the bottom of the configuration area.

Figure 5.9 – "IP" Screen

#### IP OUTPUT CONFIG:



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 of 224.0.0.0 through 239.255.255.255. For Unicast applications, the IP address must be outside the range mentioned above.

- 1 **Destination IP:** allows user to assign the IP address of the equipment to which the IP output is streamed to.
- 2 **Encapsulation:** from the two available options (RTP & UDP) must select the one that matches the protocol used by the receiving equipment.
- 3 **Destination Port:** must enter the IP Port of the receiving equipment. The factory default value is 50000. The range is 1 to 65535.
- 4 **Source Port:** must enter the IP Port of the equipment that the input IP source is streamed from. The factory default value is 50000. The range is 1 to 65535.

**NOTE:** Port number is recommended to be from 49152 to 65535. Reason: Port 1-1023 and 1024-49151 are the Reserved Ports and the Registered Ports, respectively.

- 5 **Time to Live:** is an upper limit on the time that 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 value is 128.
- 6 **Stuffing:** Null packets are inserted to ensure that the TS bitrate assigned in 2 of Section 5.5 remains constant. Possible options are Enable and Disable. It is advisable to disable stuffing when only IP output is used to help reduce the traffic on the network.



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

### 5.10 "Main > Output" Tab

The "Main > Output" screen (Figure 5.10) is a user-configurable screen where the following parameters are displayed or configured:

## HDE-2S-IP

ESN: 2014030356  
Unit Name:

Temperature: 103.7°F

Uptime: 0d 20h 9m 54s  
Unit Location:

Main
Network
Time
Update
Event Log
Logout

Status
Video
Audio
SCTE 35
EAS
TS Map
TS Config
IP
Output
Refresh

TS			Output	
	TS Mapping	Bitrates	1 IP	ASI
	<b>TS1</b>	<b>34.97 / 38.81</b>	IP (UDP://239.10.10.10:50010) ▾	ASI OUT
P1	48 (1) (2S#1) (3-1)	17.25		
	49 V: HD-SDI 1	17.04		
	52 A1: HD-SDI 1	0.20		
P2	64 (2) (2S#2) (3-2)	17.25		
	65 V: HD-SDI 2	17.04		
	68 A1: HD-SDI 2	0.20		

Figure 5.10 – "Output" Screen

- 1 **Output IP:** allows the user to enable the IP output or disable it. The IP output stream address is set in the Main/IP screen found in Section 5.9.



**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 of 224.0.0.0 through 239.255.255.255. For Unicast applications, the IP address must be outside the range mentioned above.**



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

### 5.11 "Network" Screen

The "Network" screen (Figure 5.11) is a user-configurable screen where the following parameters are displayed or configured:

Item #	Parameter	Value
1	SFP 1 MAC Address:	00:14:39:00:38:66
2	SFP 4 MAC Address:	00:14:39:00:38:67
3	Software Version:	1.0.4
4	FPGA1 Version:	1.2
5	FPGA2 Version:	1.2
6	FPGA3 Version:	1.0
7	FPGA4 Version:	1.0
8	FPGA5 Version:	1.3
9	FPGA6 Version:	1.6
10	FPGA7 Version:	1.3
11	Hardware Version:	1
12	Serial Number:	2013100560
13	Unit Name:	<input type="text"/>
14	Unit Location:	<input type="text"/>
15	Login Timeout (Minutes):	60
16	SFP 1 IP Address:	172.16.70.1
17	SFP 1 Subnet Mask:	255.255.0.0
18	SFP 1 Default Gateway:	172.16.70.10
19	SFP 4 IP Address:	172.16.70.4
20	SFP 4 Subnet Mask:	255.255.0.0
21	SFP 4 Default Gateway:	172.16.70.10
22	Event Log Destination:	172.16.70.10
23	Log Destination Port #:	514

Figure 5.11 – "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 **FPGA6 Version:** indicates the current hardware version of the unit’s FPGA6 chipset.
- 10 **FPGA7 Version:** indicates the current hardware version of the unit’s FPGA7 chipset.
- 11 **Hardware Version:** indicates the unit’s hardware version.
- 12 **Serial Number:** indicates the unit’s serial number.
- 13 **Unit Name:** a user-defined field to make identification easier.
- 14 **Location:** a user-defined field to make identification easier.
- 15 **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.
- 16 **SFP 1 IP Address:** Displays the control port IP address. See Section 5.12 for details.
- 17 **SFP 1 Subnet Mask:** Displays Subnet Mask assigned to the Control Port of the unit. See Section 5.12 for details.
- 18 **SFP 1 Default Gateway:** Displays the gateway address assigned to the Control Port. See Section 5.12 for details.
- 19 **SFP 4 IP Address:** Displays the static IP address assigned to the GigE port. See Section 5.12 for details.
- 20 **SFP 4 Subnet Mask:** Displays the Subnet Mask address assigned to the GigE port. See Section 5.12 for details.
- 21 **SFP 4 Default Gateway:** Displays the gateway address assigned to the GigE port. See Section 5.12 for details.
- 22 **Event Log Destination:** Displays IP address of the remote server. See Section 5.12 for details.
- 23 **Log Destination Port:** Displays the Event Log Destination port. See Section 5.12 for details.

### 5.12 "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 5.12 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-2S-IP

ESN: 2014030356  
Unit Name:

Temperature: 103.7°F

Uptime: 0d 20h 2m 41s  
Unit Location:

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

SFP 1 MAC Address:	00:14:39:00:3E:36
SFP 4 MAC Address:	00:14:39:00:3E:37
Software Version:	1.0.5
FPGA1 Version:	1.3
FPGA2 Version:	1.3
FPGA3 Version:	1.0
FPGA4 Version:	1.0
FPGA5 Version:	1.3
FPGA6 Version:	1.6
FPGA7 Version:	1.4
Hardware Version:	2
Serial Number:	2014030356

---

1	Login:	<input type="text" value="Admin"/>
2	Current Password:	<input type="password"/>
3	New Password:	<input type="password"/>
4	Confirm New Password:	<input type="password"/>
5	Guest Login:	<input type="text" value="Guest"/>
6	Current Guest Password:	<input type="password"/>
7	New Guest Password:	<input type="password"/>
8	Confirm Guest Password:	<input type="password"/>

---

9	System Watchdog:	<input type="button" value="Disabled"/>
10	System Reboot:	<input type="button" value="Reboot Unit"/>

---

Configuration Settings:	<input type="button" value="Save Configuration Settings"/>
-------------------------	--

---

<input type="button" value="Choose File"/> no file selected	<input type="button" value="Load &amp; Apply Configuration Settings"/>
---	--

---

11	SFP 1 IP Address:	<input type="text" value="172.16.70.1"/>
12	SFP 1 Subnet Mask:	<input type="text" value="255.255.0.0"/>
13	SFP 1 Default Gateway:	<input type="text" value="172.16.70.10"/>
14	SFP 4 IP Address:	<input type="text" value="172.16.70.4"/>
15	SFP 4 Subnet Mask:	<input type="text" value="255.255.0.0"/>
16	SFP 4 Default Gateway:	<input type="text" value="172.16.70.10"/>
17	Event Log Destination:	<input type="text" value="172.16.150.10"/>
18	Log Destination Port #:	<input type="text" value="514"/>
19	Time Server IP:	<input type="text" value="172.16.150.10"/>

---

20	Syslog Errors:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
21	Syslog Informational:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
22	Syslog Feedback:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled

---

Figure 5.12 – "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 **SFP1 IP Address:** the control port factory default IP address is 172.16.70.1.
- 12 **SFP1 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 **SFP 1 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 Gateway is 172.16.70.254.
- 14 **SFP 4 IP Address:** is the static IP address assigned to the GigE port. The default address is 192.168.253.1.
- 15 **SFP 4 Subnet Mask:** is the Subnet Mask address assigned to the GigE port. Allows the user to determine which subnet the GigE IP address belongs to. The factory default Subnet Mask is 255.255.255.0.
- 16 **SFP 4 Default Gateway:** is the gateway address assigned to the GigE port. It allows the user to access the IP output of the unit from another network. The factory default 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-2S-IP 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 5.8 for details). The factory default value is 172.16.70.2.
- 20 **Syslog Errors:** enable/disables the HDE-2S-IP to forward error messages (in red font) to an SNMP syslog. The factory default value is disabled.
- 21 **Syslog Informational:** enable/disables the HDE-2S-IP to forward information messages (in blue font) to an SNMP syslog. The factory default value is disabled.
- 22 **Syslog Feedback:** enable/disables the HDE-2S-IP to forward feedback or confirmation messages (in green font) to an SNMP syslog. The factory default value is disabled.



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

### 5.13 "Time" Screen

The "Time" screen (Figure 5.13) allows you to set the current date and time for the HDE-2S-IP. 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 5.12 for details).

Figure 5.13 - "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 NPT server to acquire the time directly from NTP Server when an internet connection is available (see 19 of Section 5.12 for details).
- 4 In the section entitled "Set Date & Time", the user can manually enter the date and time.

## 5.14 "Update" Screen

The "Update" screen (Figure 5.14) allows user to browse, select, and download/update the Config file.

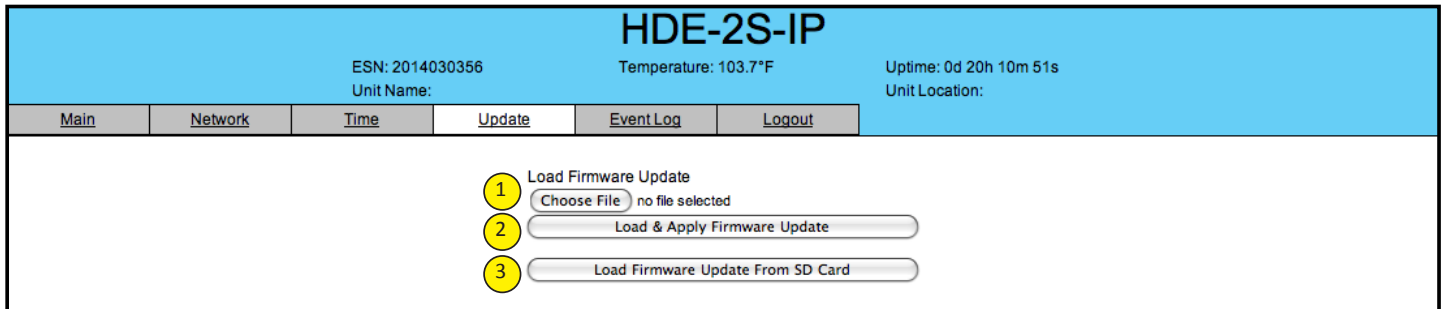


Figure 5.14 "Update" Screen

- 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 Load & Apply Firmware Update:** Installs the configuration file selected in Choose File #1.
- 3 Load Firmware Update From SD Card:** Installs the configuration file when placed loaded on to a SD card (not supplied) installed in slot located on the encoder's rear panel.

The upgrade process takes about 15 minutes. During this time the user may continuously click on the "Event Log" tab to view upgrading feedback.

The Event Log will show "System Update Complete" when done. The encoder now requires a reboot, that can be accomplished by using the power switch or through the hidden Admin page (see Section 5.12 #10 details).

After the reboot, verify the new software/firmware version by going to the Network page (see Section 5.11).

### 5.15 "Event Log" Screen

The "Event Log" screen (Figure 5.15) is a "read and write" screen where the following parameters can be displayed or configured. The data in Event Log can be forwarded to a SysLog database – (see 20, 21, & 22 of section 5.12 for details). The lines are color coded as follows:

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

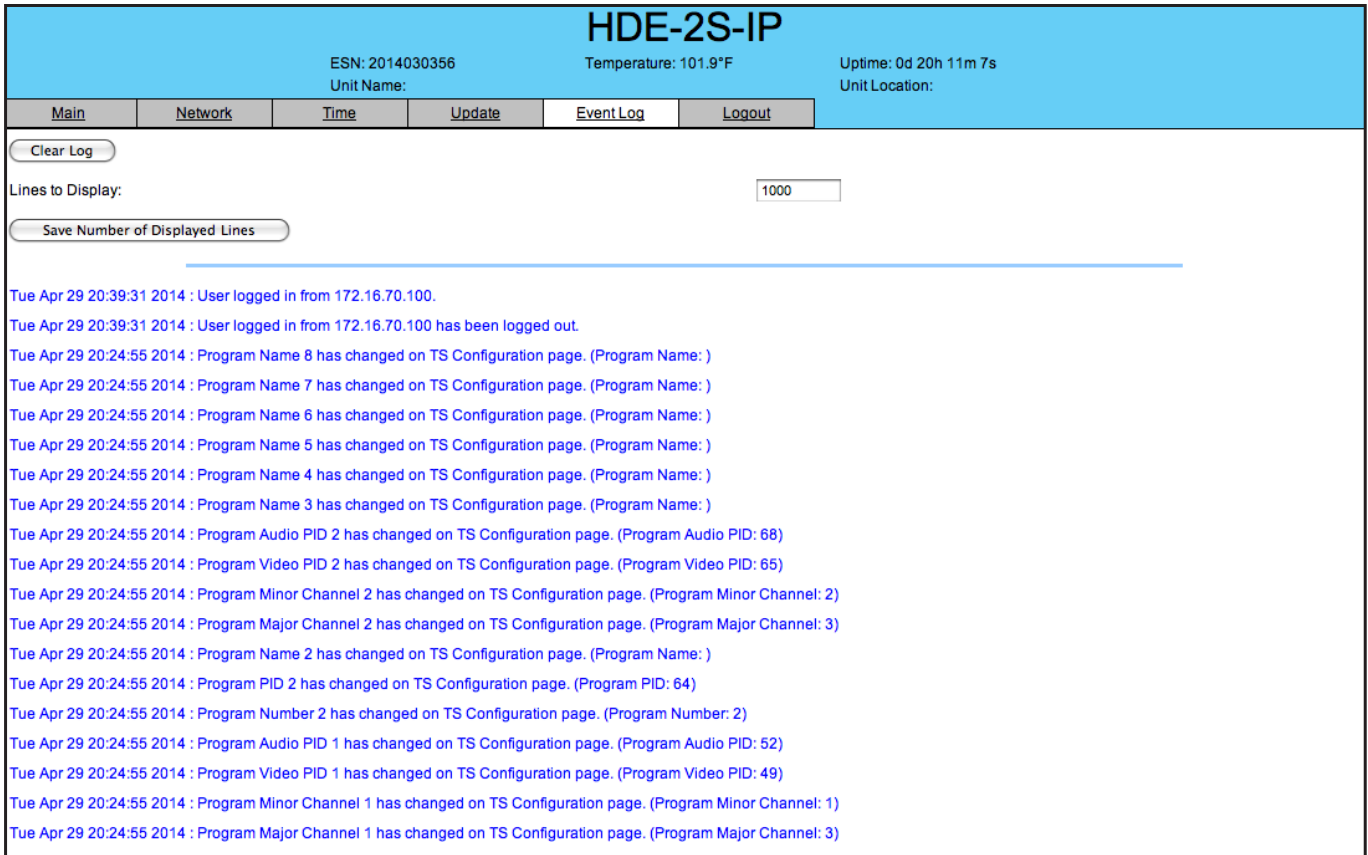


Figure 5.15 - "Event Log" Screen

**NOTES:**

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# 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.

**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 0713)



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