



# EH244

## ENCODER HOST SERIES

Platform for supporting modular MPEG2 and H.264 video encoders

### INSTRUCTION MANUAL



#### For EH244 Encoder Host Series Including:

| <i>BASE MODEL</i> | <i>OUTPUTS</i>      | <i>PART NO.</i> |
|-------------------|---------------------|-----------------|
| EH244-Q           | Quad QAM            | 1002568         |
| EH244-Q-ASI       | Quad QAM & Quad ASI | 1002569         |
| EH244-IP          | IP                  | 1002578         |
| EH244-IP-ASI      | IP & Quad ASI       | 1002579         |
| EH244-Q-IP        | IP & Quad QAM       | 1002580         |
| EH244-Q-IP-ASI    | Quad QAM ASI & IP   | 1002593         |

- 
- 
- 
- 
- 

|       |                  |
|-------|------------------|
| _____ | Firmware Version |
| _____ | Date             |

**DRAKE** is a registered trademark of R.L. Drake Holdings, LLC.

© Copyright 2013 R. L. Drake Holdings, LLC P/N: 651234300 A Printed in U.S.A.

**Rev: 20131126**  
 1002568 EH244-Q  
 1002569 EH244-Q-ASI  
 1002578 EH244-IP  
 1002579 EH244-IP-ASI  
 1002580 EH244-Q-IP  
 1002593 EH244-Q-IP-ASI

TABLE OF CONTENTS AND CAUTION STATEMENTS..... 2

IMPORTANT SAFETY INSTRUCTIONS ..... 3

Chapter 1 – INTRODUCTION ..... 5

    GENERAL DESCRIPTION ..... 5

    MODELS / OUTPUT CONFIGURATIONS ..... 5

Chapter 2 – INSTALLATION AND MOUNTING ..... 6

    EAS - Modes (Emergency Alert Services) ..... 6

    DTA - Modes (Digital Transport Adapter) ..... 7

Chapter 3 - CONFIGURATION ..... 8

    Front Panel Configuration ..... 8

    Ethernet Control Interface Configuration ..... 10

Chapter 4 - IMPORTANT NOTES ..... 16

Chapter 5 – DATA ..... 17

    SPECIFICATIONS..... 17

    LIMITED WARRANTY..... 18

    TECHNICAL SUPPORT / SERVICE INFORMATION ..... 19

Caution Statements:

**WARNING: TO PREVENT FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE TO RAIN OR MOISTURE**

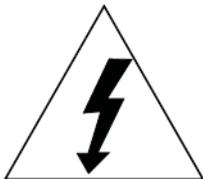
**WARNING:** THE SOCKET-OUTLET SHALL BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE.

**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL



A product and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the product and cart combination to overturn.



The lightning flash with arrow head symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

**\*\*\*NOTE: Connect and apply power only after all other connections are made.\*\*\***

**IMPORTANT SAFETY INSTRUCTIONS**

|                   |   |
|-------------------|---|
| <b>WARNING:</b>   | TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.<br>DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.  |
| <b>CAUTION:</b>   | TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.  |
| <b>ATTENTION:</b> | POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT. |

1. **Read Instructions:** All the safety and operating instructions should be read before the product is operated.
2. **Retain Instructions:** The safety and operating instructions should be retained for future reference.
3. **Heed Warnings:** All warnings on the product and in the Instruction Manual should be adhered to.
4. **Follow Instructions:** All operating and use instructions should be followed.
5. **Cleaning:** Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleansers. Use a damp cloth for cleaning.
6. **Attachments:** Do not use attachments that are not recommended by the product manufacturer as they may cause hazards.
7. **Water and Moisture:** Do not use this product near water—for example, near a bathtub, wash bowl, kitchen sink or laundry tub; in a wet basement; or near a swimming pool; and the like.
8. **Accessories:** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
9. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
10. **Ventilation:** Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should not be placed in a built-in installation such as bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
11. **Power Sources:** This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
12. **Grounding or Polarization:** This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternate Warnings – If this product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin, the plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
13. **Outdoor Antenna Grounding:** If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
14. **Power-Cord Protection:** Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

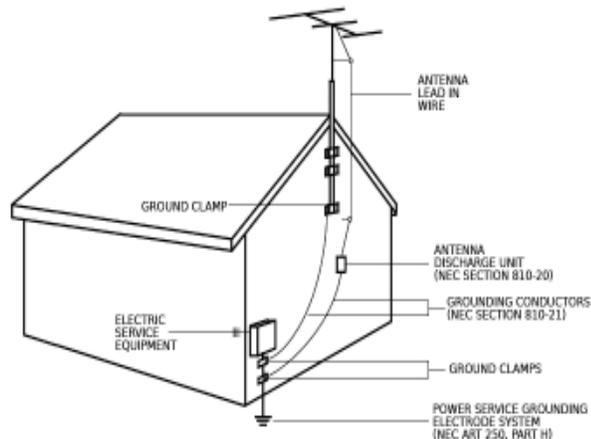
(continued on Page 4)

(continued from Page 3)

- 15. Lightning:** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- 16. Power Lines:** An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.
- 17. Overloading:** Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- 18. Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- 19. Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 20. Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
- When the power-supply cord or plug is damaged,
  - If liquid has been spilled, or objects have fallen into the product,
  - If the product has been exposed to rain or water,
  - If the product does not operate normally by following the operating instructions.
- Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation,
- If the product has been dropped or damaged in any way, and
  - When the product exhibits a distinct change in performance—this indicates a need for service.
- 21. Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.
- 22. Safety Check:** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- 23. Wall or Ceiling Mounting:** The product should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 24. Heat:** The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

**NOTE TO CABLE 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.



NEC = NATIONAL ELECTRIC CODE

Example of antenna grounding as per National Electrical Code, ANSI/NFPA 70

## INTRODUCTION

### General Description

The Drake Digital EH244 Encoder Host is a platform for supporting Drake Digital modular MPEG2 and H.264 video encoders, including the SDE24A, HDE24, and SDI24A. The EH244 Encoder Host multiplexes the outputs of the Encoder Modules into a digital output (QAM RF, ASI stream, or Internet Protocol data stream - IP, depending on which EH244 model you have purchased) stream, configurable via a front panel interface or Ethernet web server. The EH244 Encoder Host also includes provisions for Emergency Alert System (EAS), using either video replacement or SCTE18 control messages.

The EH244 Encoder Host accepts up to 6 Drake Digital Encoder Modules, and allows each encoder's output program to be included or excluded from the outgoing digital QAM RF Channels, IP program data stream, or the ASI output stream (or a combination of these output formats). The EH244 Encoder Host Series comes available in two base models that can be ordered with various output format configurations tailored to your specific application requirements.

### Models / Output Configurations

The EH244 Encoder Host Series is available in two standard models:

***EH244-Q Quad QAM Encoder Host*** (Part Number 1002568)

This base unit outputs four (4) sequential Clear QAM RF channels.

***EH244-IP (IP Output) Encoder Host*** (Part Number 1002578)

This base unit outputs a single (1) Internet Protocol (IP) data stream.

From these two base models, you may order alternate or additional output format configurations. From the base EH244 Quad QAM Encoder Host, you may select the following additional output format configuration:

***EH244-Q-ASI Quad QAM / Quad ASI Encoder Host*** (Part Number 1002569)

This unit outputs four (4) ASI streams as well as four (4) Clear QAM RF channels.

The second base model in the EH244 Encoder Host Series, is the EH244-IP. The EH244-IP utilizes a video codec to output MPEG transport streams encapsulated in a stream of IP (Internet Protocol) packets. From the base model EH244-IP (IP Output) Encoder Host, you may select the following additional output format configurations:

***EH244-IP-ASI Quad ASI / IP Encoder Host*** (Part Number 1002579)

This unit outputs four (4) ASI streams in addition to a single (1) IP data stream.

***EH244-Q-IP Quad QAM / IP Encoder Host*** (Part Number 1002580)

This unit outputs four (4) Clear QAM RF channels in addition to the single (1) IP data stream.

***EH244-Q-IP-ASI Quad QAM / IP / ASI Encoder Host*** (Part Number 1002593)

This unit outputs four (4) Clear QAM RF channels in addition to the single (1) IP data stream and four (4) ASI streams.

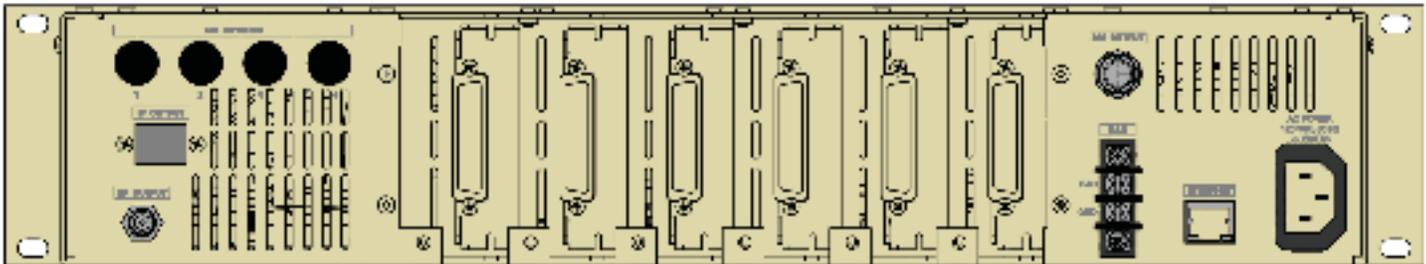
**\*NOTE: All models / Output Configuration Types of the EH244 Encoder Host Series will have a separate isolated ASI Output Port. This separate ASI Output is a low-data ASI port used only to output SCTE-18 data for EAS or DTA MODES when daisy-chaining several EH244 Series or EH24 Series models together in a headend (see Chapter 2, INSTALLATION AND MOUNTING on Page 6 for specific information).**

## INSTALLATION AND MOUNTING

The EH244 Series Encoder Host is designed to be installed in a standard 19" rack.

**\*NOTE: All Drake Digital Encoder and Interface Modules must be installed in the EH244 Series chassis before power is applied. DO NOT INSERT ENCODER MODULES OR INTERFACE MODULES WHILE THE EH244 SERIES UNIT IS POWERED. Inserting any Encoder or Interface Modules into the EH244 Series Encoder Host chassis, while it is powered, will void the EH244 Series Encoder Host's and Encoder / Interface Modules' warranties.**

*Image: Rear view of base model EH244 Quad QAM Encoder Host*



|                         |          |          |          |          |           |            |
|-------------------------|----------|----------|----------|----------|-----------|------------|
| Module Slot Number:     | 1        | 2        | 3        | 4        | 5         | 6          |
| Encoded Program Number: | 1 (& 2*) | 3 (& 4*) | 5 (& 6*) | 7 (& 8*) | 9 (& 10*) | 11 (& 12*) |

The input modules that will be inserted into the back of the EH244 Series chassis, are referred to in this manual (and in the Ethernet Control Interface, *Chapter 3 CONFIGURATION on Page*) numerically by position of the Slot that they occupy. They are 1, 2, 3, 4, 5, and 6, from left to right, when viewing the rear of the EH244 Series unit. Each Encoder Module's program number will be assigned based on its Slot location:

Slot 1 will provide programs 1 (\*and 2 if using an SDE24 Dual Standard Definition MPEG Encoder Module); Slot 2 will provide programs 3 (\*and 4); Slot 3 will provide programs 5 (\*and 6); etc.

**\*NOTE: In the case where a Slot has a single program Encoder Module inserted in it, for identification purposes, the Slot will provide only the odd-numbered program.**

**Ex: If there are six (6) HDE24 High Definition MPEG Encoder Modules (which are single program Encoders) inserted into the six (6) Slots of the EH244 Series Encoder Host, the programs' numbers being output from the HDE24's to the EH244 Series' multiplexer would be identified as programs 1, 3, 5, 7, 9, and 11.**

### **EAS - Modes (Emergency Alert Services)**

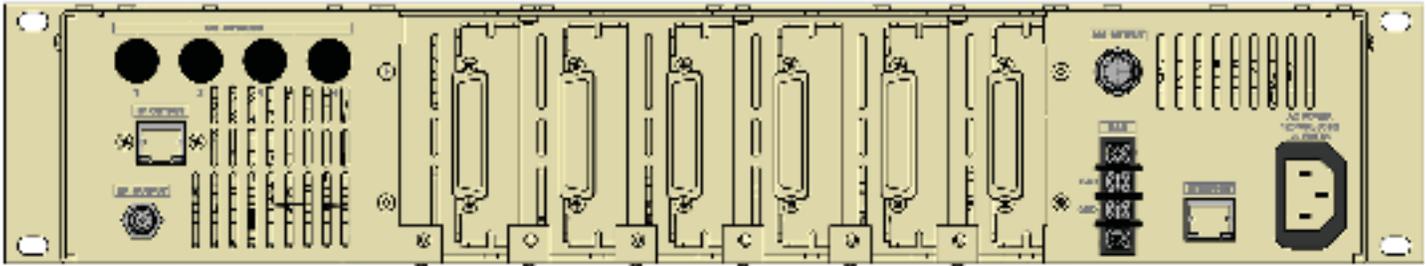
If the EH244 Series Encoder Host will be used in an EAS-enabled system, and the unit will be used as the 'master' EAS unit in *Slot 6 Mode* (or *Slot 6 + SCTE 18 Mode*), a Drake model SDE24EAS (EAS Input Encoder) module must be installed in slot 6 of the chassis.

If the EH244 Series Encoder Host is configured as a 'slave' EAS unit (*Slot 6 Mode* or *Slot 6 + SCTE 18 Mode*), a Drake model ASII module (ASI Input) must be installed in slot 6, and wired to the ASI Output port of the previous Encoder Host (EH24, EH24A, or EH244 Series) in the chain.

(continued on Page 7)

**INSTALLATION AND MOUNTING (continued)**

*Image: Rear view of base model EH244-IP with Quad QAM RF Output*



Module Slot Number:                    1            2            3            4            5            6

**DTA - Modes (Digital Transport Adapter)**

If the EH244 Series Encoder Host will be used as the 'master' in a DTA enabled system, a Drake model ASII module must be installed in slot 6 (or slot 5, if the EH244 Series Encoder Host is also being used as an EAS 'master' unit, using the *Slot 6 Mode* or *Slot 6 + SCTE 18 EAS Mode*). This ASII module must be connected to the output of a PC that is generating the DTA control messages, created by the Drake DTA Control software.

If the EH244 Series Encoder Host will be used as a 'slave' in a DTA-enabled system, a Drake model ASII module must be installed in slot 6, and connected to the previous EH24 Series or EH244 Series Encoder Host's single ASI Output.

**\*NOTE: For 'slave' systems using both DTA-Modes and EAS-Modes simultaneously, a single Drake model ASII module will perform both functions.**

**Power Connection**

Connect the AC line cord to an appropriate 120-240V, 50/60Hz AC power source. The EH244 Series Encoder Host will always be powered and running as long as it is connected to its power source.



As an option, you may connect the EAS contact closure terminals to the output of an EAS receiver to enable emergency alerts. Connect the ethernet control interface port to a secured network or VPN for remote system configuration.\*

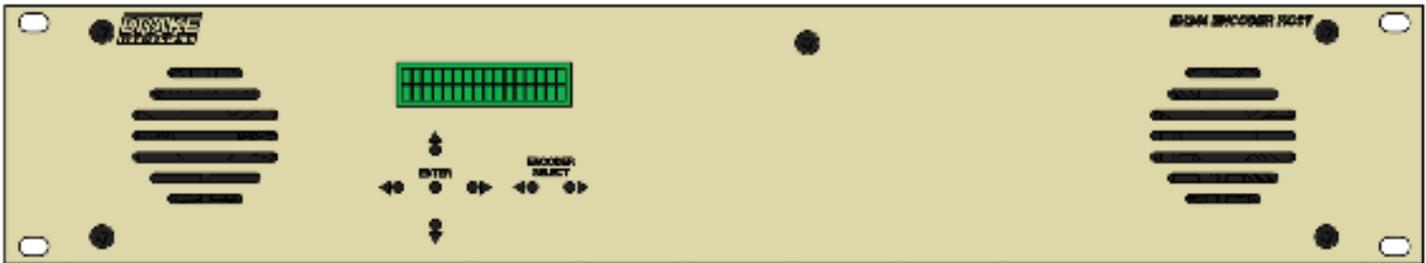
(continued on Page 8)

## CONFIGURATION

The EH244 Series Encoder Host is configured by either the front panel interface or the ethernet-connected web server interface. When the unit is first installed, the front panel should be used to configure the unit's IP (Internet Protocol) settings for the purpose of enabling the ethernet-connected web server interface controls. Most configuration settings of the unit may be programmed from the front panel, however, if the operator chooses to do so.

### Front Panel Configuration

Image: Front panel of all EH244 Series Encoder Host models



The front panel displays several useful status messages that can be selected by using the buttons below the LCD display. Pressing the ▲ button (above ENTER), will cause the LCD display to cycle between:

1. Currently installed firmware version
2. IP address currently assigned to the EH244 Series Encoder Host's ethernet control interface
3. MAC address of the ethernet control interface

Pressing the ▼ button (below ENTER), the LCD display will cycle between the output channel bit rates of the 4 possible multiplexes.

To change any settings using the front panel:

1. Press one of the two ◀ or ▶ buttons labeled ENCODER SELECT until the LCD displays *EH244*
2. Press and hold in ENTER (for about two seconds) until the LCD display begins to blink.

**This blinking indicates that the EH244 Series Encoder Host is now in CONFIGURATION MODE.**

3. Use the ◀ and ▶ buttons on either side of ENTER to cycle through settings on the unit.
4. Press the ▲ and ▼ buttons above and below ENTER to cycle through the valid values for each setting currently shown on the LCD display.
5. Once *all changes* to the configuration settings have been complete, press ENTER again to save all settings and return the front panel to its normal mode.

The following settings are available from the front panel:

**USER NAME:** Variable – this sets the username for the ethernet control interface authorization; this field is case-sensitive.\*

**PASSWORD:** Variable – this sets the password for the ethernet control interface authorization; this field is case-sensitive.\*\*

**HOST NAME:** Variable – this sets the display hostname for the ethernet control interface.

\*The default username for this unit is "admin" (in all lower case letters).

\*\*The default password for this unit is "EH244" (with all letters being upper case).

**CONFIGURATION (continued)**

**DHCP:** *ENABLED, DISABLED* – this configures the ethernet control interface to use DHCP for its IP configuration settings when enabled, or to use the static IP configuration that follows when disabled.

**IP ADDRESS:** Variable – this sets the ethernet control interface's static IP address when DHCP is disabled.

**SUBNET MASK:** Variable – this sets the ethernet control interface's IP subnet netmask when DHCP is disabled.

**GATEWAY ADDRESS:** Variable – this sets the default gateway for the ethernet control interface when DHCP is disabled.

**DTA/EAS CONTROL:** *DISABLED, MASTER, SLAVE* – this sets the unit's EAS and DTA control mode. When MASTER, the unit is the first in the daisy chain of Drake devices; when SLAVE, the unit is not the first in the daisy chain.

**DTA MODE:** *DISABLED, ENABLED* – this enables the DTA control feature of the unit (which allows SCTE65 control messages to be passed out to low-cost DTA settop boxes for channel lineup and firmware update purposes).

**EAS MODE:** *DISABLED, MODULE 6, SCTE 18, MODULE 6+SCTE 18* – this sets the EAS mode in use. MODULE 6 replaces all video and audio streams with the input from the EAS encoder when an EAS alert is active. SCTE 18 sends the SCTE 18 EAS control messages when an EAS alert is active. MODULE 6+SCTE 18 performs both actions when an EAS alert is active.

**EAS RF CHANNEL:** Channel number – this configures the SCTE 18 force-tuning RF channel number that every receiver should tune to during an EAS alert.

**EAS MODULATION:** *QAM-64B, QAM-256B* – this configures the SCTE 18 force-tuning channel modulation method that every receiver should tune to during an EAS alert.

**EAS MPEG PROG #:** Program number – this configures the SCTE 18 force-tuning MPEG program number that every receiver should tune to during an EAS alert.

**EAS MAJOR CHAN:** Major number – this sets the PSIP major channel number of the SCTE 18 force-tuning channel.

**EAS MINOR CHAN:** Minor number – this sets the PSIP minor channel number of the SCTE 18 force-tuning channel.

**PACKET DELAY:** 0-200 usec – this sets the delay interval between encoder output packets, in microseconds. This setting may be used to enable older settop boxes with small decoder buffers to work with the SDE24 encoder's output stream. If needed, a setting around 70-100usec works well, but this setting must be tweaked for each encoder based on the deployed settop boxes.

**OUTPUTx BITRATE:** Variable – when a specific output is not being used for generating a QAM channel, the output bitrate may be varied to allow for more flexible deployments. This allows the optional ASI outputs to run at higher than the standard QAM data rates (or lower, if they will be used in conjunction with an external lowerbitrate modulator).

**ENCODER x:** OUTPUT - x – this setting allows each encoder's output program to be assigned to any or all of the output channels, by cycling through all of the options.

**MGT/VCT:** *DISABLED, CVCT, TVCT* – this sets the MGT/VCT table style to the cable (CVCT) or broadcast (TVCT) standard as needed by the deployment.

**VIRTUAL+MPEG #s:** *DEFAULT, USER DEFINED* – this setting allows the operator to override the default virtual channel numbers (which default to RF\_channel\_number - encoder\_index\_number). The user-defined settings must be set from the ethernet control interface.

**CONFIGURATION (continued)****Ethernet Control Interface Configuration**

There are two options for the ethernet control interface setup: DHCP enabled or DHCP disabled.

If your ethernet network has a DHCP server available, and you would like to use that to configure the IP address of your EH244 Series Encoder Host, you may choose to *ENABLE* DHCP from the front panel of the unit: Once the unit's front panel has exited CONFIGURATION MODE, press the ▲ button above ENTER twice to view the IP address that was discovered by DHCP.

If your network does not have a DHCP server, or you opt to not use DHCP for configuring the EH244 Series Encoder Host's IP address (*DISABLE* DHCP is the recommended configuration to avoid the unit's IP address changing in the future), you must obtain an IP address, subnet mask, and default gateway from your network administrator. Once you have determined the specific and accurate input values for these items pertaining to your particular network, set these values from the front panel.

Once the unit has an assigned IP address, you may view and change its settings from a web browser. To access the Ethernet-connected Web-Server Control Interface, launch your web browser (once the EH244 Series Encoder host has been connected to your network via Ethernet cable, and all appropriate settings mentioned previously have been set). Enter the unit's IP address in the web browser's URL window. For example, if the unit's IP address were 159.101.023.001, you would load <http://159.101.023.001> into your web browser to view and configure your EH244 Series Encoder Host:

**Image: Web browser URL window for EH244 Series' IP Address entry**



Once the EH244 Series Encoder Host's web server has been loaded in your web browser, you should see the login dialog.

A login dialog box for the Drake Digital EH244 Control Panel. The dialog has a light blue background and a blue border. At the top, it says "Drake Digital" and "EH244 Control Panel". Below that, there are two input fields: "Username" and "Password". The "Username" field is highlighted with an orange border. At the bottom right, there is a blue button with the text "LOG IN" in white.

Enter the username and password and click LOG IN. The username and password required to log into the unit are both set from the front panel. The default username is "admin" (in lower case letters) and the default password is "EH244" (in upper case letters).

(continued on Page 11)

**CONFIGURATION (continued)**

Once you are logged in to the EH244 Web-Server Control Panel, you will be presented with the status page:

*Image: EH244 Web-Server Control Panel, STATUS Tab*

**DRAKE DIGITAL™** EH244 Control Panel [LOG OUT](#)

[Status](#) [Encoders](#) [Channels](#) [Output](#) [IP Output](#) [Firmware Update](#)

EH244 Configuration and Status

**System Information**

- Hostname: eh
- Uptime: 04:49:27
- Web I/F Build Date: 13:00:26 Apr 17 2013
- Main Firmware Version: 3.0

**Status**

Enable Status Auto-Refresh

[Click here to refresh](#)

**Bitrate for ASI/QAM Outputs**

|                | Output 1 | Output 2 | Output 3 | Output 4 |
|----------------|----------|----------|----------|----------|
| Bitrate (Mbps) | 0.05     | 0.05     | 0.05     | 0.05     |

**Percent Output Buffer Usage Per Slot**

| Slot | Output 1 |      | Output 2 |      | Output 3 |      | Output 4 |      |
|------|----------|------|----------|------|----------|------|----------|------|
|      | cur.     | max. | cur.     | max. | cur.     | max. | cur.     | max. |
| 1    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 2    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 3    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 4    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 5    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 6    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |
| 6    | 0        | 0    | 0        | 0    | 0        | 0    | 0        | 0    |

**Reference**

[HDF24 Manual](#)  
[SDF24 Manual](#)  
[SDI24 Manual](#)  
[RF Channel Lists](#)

2012 © R.L. Drake Holdings, LLC. All rights reserved.

Along the top edge of the Status tab page, there are five tabs listed; each tab allows you to view and configure different parts of the EH244 Series Encoder Host. The Status tab gives the overall status of the whole unit, including firmware versions, output bit-rates for all 4 QAM or ASI outputs, output buffer usage, and links to the relevant encoder manuals.

## CONFIGURATION (continued)

Image: EH244 Web-Server Control Panel, ENCODERS Tab

**DRAKE** **DIGITAL**™ EH244 Control Panel LOG OUT

Status **Encoders** Channels Output Firmware Update

### Encoder Configuration

**Module Selection**

|                       |         |
|-----------------------|---------|
| Select Encoder Module | 2 SDE ▼ |
| Module Type           | SDE24   |
| Firmware Version      | 1.4     |

**Video Settings**

|                           |              |
|---------------------------|--------------|
| Video Source              | Composite ▼  |
| Input Vertical Resolution | NTSC (480) ▼ |
| Resolution                | 480x720 ▼    |
| Video Encoder Format      | MPEG-2       |
| Video Bitrate (Mbps)      | 2.5 ▼        |

**Picture Settings**

|            |       |
|------------|-------|
| Brightness | 128 ▼ |
| Contrast   | 102 ▼ |
| Saturation | 102 ▼ |
| Hue        | 128 ▼ |

**Audio Settings**

|                      |            |
|----------------------|------------|
| Audio Encoder Format | AC3 ▼      |
| Audio Bitrate        | 320 kbps ▼ |
| Audio Input Limit    | 1 Vrms ▼   |
| Audio Gain           | 0dB ▼      |

2012 © R.L. Drake Holdings, LLC. All rights reserved.

The Encoders tab allows you to set each encoder's individual parameters. Select an encoder module from the drop-down menu, and the appropriate setting selections will be displayed.

**CONFIGURATION (continued)**

The Channels tab provides an interface to configure the virtual channel mappings for this encoder host. If PSIP is *ENABLED*, this page will display a screen that looks like:

**DRAKE DIGITAL™** EH244 Control Panel LOG OUT

Status Encoders **Channels** Output IP Output Firmware Update

Configure MPEG and Virtual Channel Numbers

**PSIP Mode**

PSIP Mode TVCT ▼

Select the type of VCT or disable PSIP data completely. One-part program numbers can only be used with a CVCT.

Enable User-Defined Numbers

PSIP Tables will either include the user defined MPEG and channel numbers as defined in the channel setup table below or system defaults. When user-defined numbers are disabled, the MPEG number and minor channel number will be set to the encoder ID. The major channel number will reflect the RF output channel.

**Channel Setup**

| Encoder | Type | MPEG Number | Use One Part VCN | Major / One-Part Number | Minor Number | Name |
|---------|------|-------------|------------------|-------------------------|--------------|------|
|         |      |             |                  |                         |              |      |

Show Help

Revert Apply

2012 © R.L. Drake Holdings, LLC. All rights reserved.

**Image: EH244 Web-Server Control Panel, CHANNELS Tab**

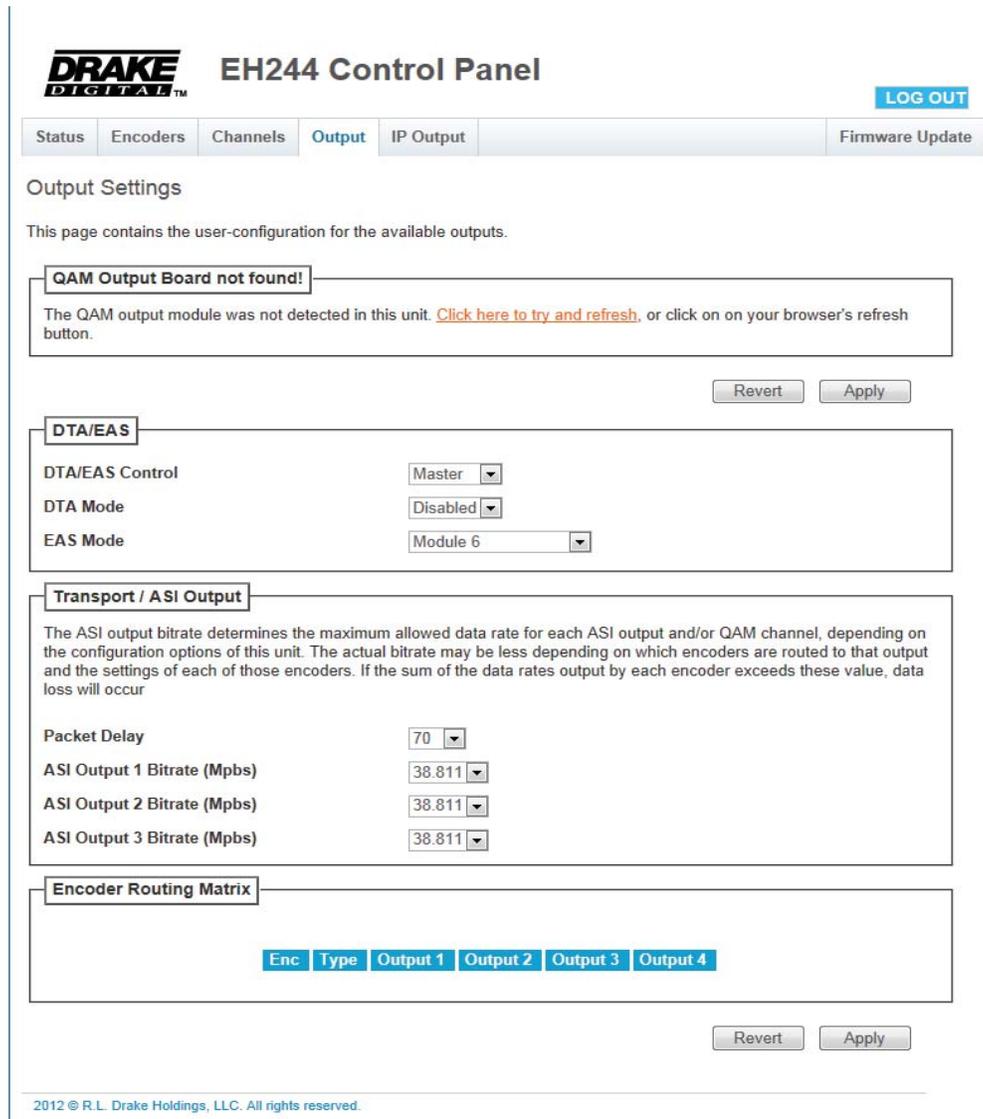
For each encoder output, the MPEG program number can be modified, along with the Major and Minor channel numbers. If one-part virtual channel numbers are desired, the PSIP Mode must be set to CVCT and the Minor number for each channel should be set to 0.

The Output tab provides an interface to set all modulator output settings for the unit. A screenshot of this tab is shown in the Image on Page 14. This tab selects the DTA and EAS modes. For settings like the DTA or EAS options, more specific options will appear as you enable the sub-systems.

(continued on Page 14)

## CONFIGURATION (continued)

Image: EH244 Web-Server Control Panel, OUTPUT Tab



**DRAKE DIGITAL™** EH244 Control Panel LOG OUT

Status Encoders Channels **Output** IP Output Firmware Update

### Output Settings

This page contains the user-configuration for the available outputs.

**QAM Output Board not found!**

The QAM output module was not detected in this unit. [Click here to try and refresh](#), or click on on your browser's refresh button.

Revert Apply

**DTA/EAS**

DTA/EAS Control Master ▼

DTA Mode Disabled ▼

EAS Mode Module 6 ▼

**Transport / ASI Output**

The ASI output bitrate determines the maximum allowed data rate for each ASI output and/or QAM channel, depending on the configuration options of this unit. The actual bitrate may be less depending on which encoders are routed to that output and the settings of each of those encoders. If the sum of the data rates output by each encoder exceeds these value, data loss will occur

Packet Delay 70 ▼

ASI Output 1 Bitrate (Mbps) 38.811 ▼

ASI Output 2 Bitrate (Mbps) 38.811 ▼

ASI Output 3 Bitrate (Mbps) 38.811 ▼

**Encoder Routing Matrix**

| Enc | Type | Output 1 | Output 2 | Output 3 | Output 4 |
|-----|------|----------|----------|----------|----------|
|     |      |          |          |          |          |

Revert Apply

2012 © R.L. Drake Holdings, LLC. All rights reserved.

The IP Output tab allows you to configure the IP streaming configuration for the unit. The top section configures the global settings. The unit supports both MPTS and SPTS output modes. In MPTS mode, all channels assigned to one of the four multiplexes are output in a single IP stream; in SPTS mode, each encoder's output is encapsulated within its own IP stream. Select your desired mode of operation and configure your source IP address for the IP streams. Click the top 'Apply' button when finished.

(continued on Page 15)

**CONFIGURATION (continued)**

The bottom section configures the per-stream output settings:

**DRAKE DIGITAL™** EH244 Control Panel LOG OUT

Status Encoders Channels Output **IP Output** Firmware Update

**IP Output Settings**

This page contains the user-configuration for the IP output board.

**IP Output** Revert Apply

IP Output Board Firmware Version 1.0

IP Output Mode SPTS

IP Source Address 172.16.70.123

Source MAC Address ff:ff:ff:ff:ff:ff

**IP Output Channel Selection**

Select IP Output Channel --

2012 © R.L. Drake Holdings, LLC. All rights reserved.

**Image: EH244 Web-Server Control Panel, IP OUTPUT Tab**

In MPTS mode, there are 4 streams possible (corresponding to the 4 transport multiplexes assigned from the Output tab). In SPTS mode, there are 12 streams available, corresponding to the 12 possible encoder channels in the EH244 Series Encoder Host chassis.

For MPTS mode:

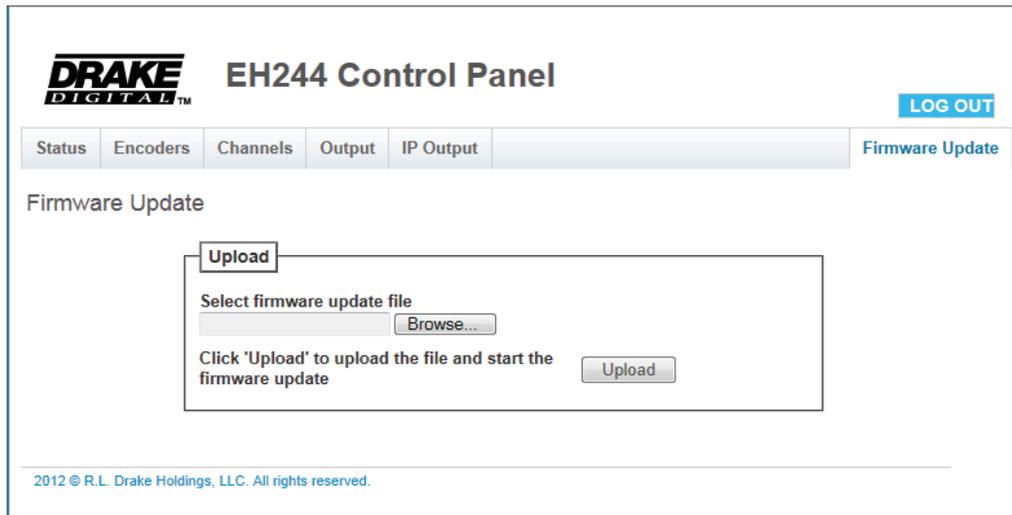
1. Configure the channel's destination in Configuration Settings.
2. ENABLE or DISABLE the channel.
3. Click the lower *APPLY* button.

The destination IP address must be a multicast address (224.000.000.000 - 239.255.255.255), and the UDP ports must be within the range of 1 - 65535 each. The output stream format is RTP-encapsulated within UDP.

For SPTS mode, configuration is the same as MPTS mode, but you must also choose which transport multiplex source (configured in the Output tab) the encoder source is assigned to.

**CONFIGURATION (continued)**

Image: EH244 Web-Server Control Panel, FIRMWARE UPDATE Tab



The Firmware Update tab allows you to update all of the firmware on the unit with a single upload (see Figure 7). Once you have received a new firmware image for the unit, click on the Choose File button and select the provided firmware; click Upload to initiate the update. After a few minutes, the unit will restart with the new firmware. If a power loss occurs during update, the unit will recover automatically – if the firmware upload was not completed, it may be necessary to re-initiate the update process once power is restored.

**IMPORTANT NOTES**

When the EH244 Series Encoder Host is running in EAS mode, the emergency alert state is entered when the two terminals on the rear panel labeled EAS are connected together via an external contact closure. EAS receivers should provide this contact closure output, which will be wired to the terminal block on the rear of the EH244 Series Encoder Host Chassis.

If the EH244 Series Encoder Host is using the Slot 6 or Slot 6 + SCTE 18 EAS modes, ensure that the bit rates of the SDE24EAS encoder's two output channels are at least as low as all of the other encoders in the entire system. This guarantees that, during an EAS event, the output bit-rates of the system are not exceeded by the replacement video channels.

**SPECIFICATIONS****Multiplexer Specifications**

|                                |   |
|--------------------------------|---|
| Program Filtering and Grooming | Each encoder output can be disabled or output to any or all output channels                           |
| Multiplexer                    | All programs directed to each output are multiplexed into a correct multi-program transport stream    |
| ASI Outputs                    | An optional 4 ASI Output board may be ordered that mirrors the 4 QAM channel output transport streams |

**Table Handling - PSIP (Program and System Information)**

|                          |           |
|--------------------------|-----------|
| PSIP Table Rewriting     | Supported |
| MGT/VCT Table Generation | Supported |
| SCTE18 EAS Generation    | Supported |

**QAM (Quadrature Amplitude Modulation) RF**

|                             |   |
|-----------------------------|---|
| Modulation Modes:           | 64, 256QAM ITU j.83 Annex B<br>16, 32, 64, 128, 256QAM ITU j.83 Annex A |
| Symbol Rates:               | 1-7Mpsps variable, with presets for Annex B                             |
| Frequency Coverage:         | 54-1002MHz, up to 4 frequency-adjacent channels                         |
| Channel Plans:              | Standard CATV, HRC, IRC, Broadcast                                      |
| Max Output Power:           | +54dBmV   |
| Min Output Power:           | +42dBmV   |
| Output Level Accuracy:      | ±2dB  |
| Phase Noise:                | < -108dBc/Hz@10kHz offset   |
| Broadband Noise:            | < -75dBc@12MHz offset in a 6MHz bandwidth                               |
| MER:                        | >44dB equalized   |
| Channel Frequency Response: | <1dB  |
| Carrier Suppression:        | >80dB   |
| I/Q Imbalance:              | <1 degree   |
| Spurious Emissions:         | <-60dBc   |

**IP (INTERNET PROTOCOL)**

|   |   |
|---|---|
| 1000Base-T Ethernet (GbE) Connector Format: | 1 x RJ45 Gigabit Ethernet (GbE)             |
| Data Throughput:                            | 214 Mbps                                    |
| Standard:                                   | IEEE 802.3 10/100/1000Base-T Ethernet       |
| Packet Format:                              | RTP within UDP                              |
| Source Address Assignment:                  | Single IPv4 address & port; user-selectable |

**ASI (Asynchronous Serial Interface) - \*STREAMING QUAD ASI OUTPUTS\***

|                    |                  |
|--------------------|------------------|
| Connector:         | 4 x BNC          |
| Format:            | DVB-ASI; 50083-9 |
| ASI Data Bit Rate: | 270 Mbps         |

**ASI (Asynchronous Serial Interface) - \*SINGLE NON-STREAMING ASI OUTPUT ONLY\***

|                  |                                       |
|------------------|---------------------------------------|
| ASI Connectors:  | 1 x BNC for EAS/DTA data control only |
| Format:          | DVB-ASI for EAS/SCTE-65               |
| Data Throughput: | 214 Mbps                              |
| Standard:        | ETSI EN 50083-9                       |

**Physical Specifications**

|                     |                         |
|---------------------|-------------------------|
| Temperature Rating: | 0-50C ambient           |
| Form Factor:        | 2RU 19" rack enclosure  |
| Dimensions:         | 14.25"D x 3.5"H x 19" W |
| Weight:             | 9.5 lbs                 |
| Power Requirements: | 90-260VAC 65W maximum   |

All specifications are subject to change without prior notice.

## 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)

**SERVICE INFORMATION**

A Return Material Authorization (RMA) Number is required on ALL PRODUCT RETURNS (regardless of whether the product is being returned for repair or for credit). Product that is received at the factory without an RMA Number will be returned to the Sender, unopened.

RMA Numbers must be used when returning product for credit or repair. Use of RMA Numbers will ensure efficient processing. When needing to return your product to R.L. Drake Holdings, LLC., please follow these simple steps listed below (in the order that they appear).

SERVICE REPAIRS ONLY

1. Contact R.L. Drake Holdings, LLC.'s Service Department in one of three ways:
  - A. Phone: 937-746-6990
  - B. Email: servicehelp@rldrake.com
  - C. Fax: 937-806-1510
2. Request from Drake Service a copy of the Product Return Authorization Form.
3. Complete the Product Return Authorization Form fully.
4. Return the completed Product Return Authorization Form to the Drake Service Department using one of the contact methods listed in Step 1.
5. After completing Steps 1 through 4, an RMA Number will be assigned to you.
6. Securely pack the product and mark the box with your RMA Number. If shipping multiple boxes, all boxes must be marked with the RMA Number. Place the RMA Number near the return address **in large, bold print** (approx. 2" in height).
7. Ship your "SERVICE REPAIR ONLY" return to:

R.L. Drake Holdings, LLC.  
Attn: Product Service Returns  
9900 Springboro Pike  
Miamisburg, OH 45342

CREDIT RETURNS ONLY

1. Contact R.L. Drake Holdings, LLC.'s Service Department in one of three ways:
  - A. Phone: 937-746-6990
  - B. Email: servicehelp@rldrake.com
  - C. Fax: 937-806-1510
2. Request from Drake Service a copy of the Product Return Authorization Form.
3. Complete the Product Return Authorization Form fully.
4. Return the completed Product Return Authorization Form to the Drake Service Department using one of the contact methods listed in Step 1.
5. After completing Steps 1 through 4, an RMA Number will be assigned to you.
6. Securely pack the product in its **original undamaged box** (returning the product without its original packaging in good, new condition may cause the incursion of additional fees). Pack this box within another shipping container or box. Mark the shipping box or container with your RMA Number. Place the RMA Number near the return address **in large, bold print** (approx. 2" in height).
7. Ship your "CREDIT RETURNS ONLY" return to:

R.L. Drake Holdings, LLC.  
Attn: Product Credit Returns  
One Jake Brown Road  
Old Bridge, NJ 08857

**\*NOTE: All Credit Returns are subject to a 15% Restock Fee**

**\*NOTE: All shipments are to be PRE-PAID by the sender. NO COD's will be accepted.**

**IF YOU NEED TECHNICAL HELP**

Call our Customer Service/Technical Support line at +1 (937) 746-6990 between 8:00 A.M. and 4:00 P.M. Eastern Standard Time, weekdays. Please have the unit's serial number available. We will also need to know the specifics of any other equipment connected to the unit. When calling, please have the unit up and running, near the phone if possible. Our technician(s) will likely ask certain questions to aid in diagnosis of the problem. Also, have a voltmeter handy, if at all possible.

DRAKE also provides technical assistance by Email: servicehelp@rldrake.com  
Fax: (937) 806-1510.

Many of the products that are sent to us for repair are in perfect working order when we receive them. For these units, there is a standard checkout fee that will be charged. Please perform whatever steps are applicable from the product's Instruction Manual before calling or writing - this could save unnecessary phone charges. Please do not return the product without calling Drake Service and following the steps above first; it is preferred to help troubleshoot the problem over the phone (or by Email) first, saving you both time and money.



**R.L. DRAKE HOLDINGS, LLC**

9900 SPRINGBORO PIKE  
MIAMISBURG, OH 45342 USA

**SALES:** 937.746.4556  
800.777.8876  
**FAX:** 937.806.1510

[sales@rldrake.com](mailto:sales@rldrake.com)

**SERVICE:** 937.746.6990  
**FAX:** 937.806.1510

[servicehelp@rldrake.com](mailto:servicehelp@rldrake.com)

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