BLONDER TONGUE L • L • C

USER MANUAL
DRAKE SERIES

DRAKE PEG PLUS HEVC

MPEG-2, H.264, OR H.265 DIGITAL VIDEO PEG CHANNEL ENCODER

STOCK #	MODEL NAME	DESCRIPTION
1002613C	Drake PEG PLUS HEVC	MPEG-2, H.264 (AVC), or H.265 (HEVC) HD PEG Encoder; HD-SDI or Composite Input; IP Output
1002644B	Drake PEG-RP-2	Rack Mount Panel for (2) PEG PLUS units

Rev: 012626

D/N: UMD-PEGH1002613C

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

Purchase Location Name:	
Purchase Location Telephone Number:	
PEG PLUS HEVC Serial Number(s):	

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions.

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Document Number: UMD-PEGH1002613C

Printed in the United States of America.

CROSS-REFERENCE & HYPERLINKING USAGE

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

PRODUCT AND DOCUMENTATION UPDATES

The latest user documentation (PDF) and Firmware Updates can be obtained by visiting our website. Navigate to the product page by entering the full Model Name in the search field. **Firmware Updates** can also be directly accessed under the “Support” section of the website. If you cannot find your product model on the website, please reach out to Tech Support through our support request form.

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 review our return policies or contact our service department for further information.

TABLE OF CONTENTS

SECTION 1 – IMPORTANT SAFETY INSTRUCTIONS

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 operating instructions 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 alternatingcurrent 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. **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.
14. **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. See Figure A.
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.
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.

CAUTION STATEMENT

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

! CAUTION !
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE POWER SUPPLY COVERS
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance 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.

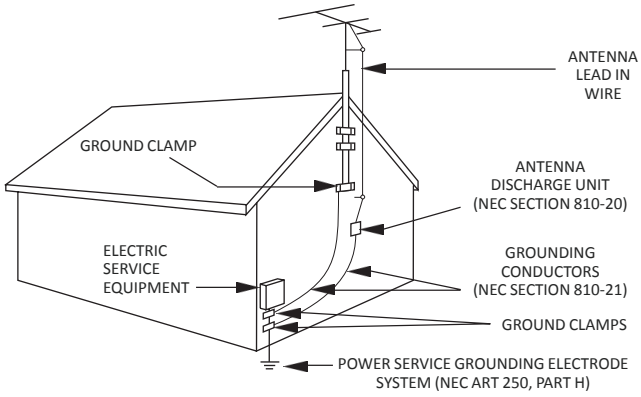
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION: 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.

FIGURE A

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



NEC - NATIONAL ELECTRIC CODE

NOTE TO CATV SYSTEM INSTALLERS:

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820 - 40 OF THE NEC WHICH 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.

SECTION 1 – IMPORTANTES DE SÉCURITÉ

1. **Lire les directives** - Toutes les directives de sécurité et d'utilisation devraient être lues avant de mettre l'appareil en opération.
2. **Conserver les directives** - Les directives de sécurité et d'utilisation devraient être conservées pour consultation future.
3. **Tenir compte des avertissements** - Tous les avertissements apparaissant sur l'appareil et dans les consignes d'utilisation devraient être respectés.
4. **Suivre les directives** - Toutes les directives d'opération et d'utilisation devraient être suivies.
5. **Nettoyage** - Débrancher l'appareil de la prise électrique murale avant le nettoyage. Ne pas utiliser de nettoyants liquides ou aérosols. Employer un linge humide pour le nettoyage.
6. **Fixation** - Ne pas utiliser d'autres fixations que celles recommandées par le manufacturier; elles pourraient être source de dangers.
7. **Eau et humidité** - Ne pas utiliser cet appareil près de l'eau. Par exemple, près d'une baignoire, d'un bac de lavage, d'un évier de cuisine ou d'une cuvette de lessivage; dans un sous-sol humide; ou à proximité d'une piscine; et autres environnements similaires.
8. **Accessoires** - Ne pas installer cet appareil sur un chariot, un socle, un trépied, un support ou une table instables. L'appareil pourrait tomber, entraînant des blessures graves à un enfant ou à un adulte, et des dommages importants à l'appareil. Employer seulement avec un chariot, un socle, un trépied, un support, ou une table recommandés par le fabricant ou vendu avec l'appareil. Toute installation de l'appareil devrait être conforme aux directives du manufacturier et devrait utiliser des accessoires d'installation recommandés par celui-ci.
9. Un chariot supportant l'appareil devrait être déplacé avec précaution. Les arrêts brusques, la force excessive et les surfaces inégales peuvent renverser le chariot.
10. **Ventilation** - Des fentes et ouvertures dans le châssis sont prévues pour la ventilation de l'appareil, pour en assurer la fiabilité d'opération et le protéger contre la surchauffe. Ces ouvertures ne doivent pas être bloquées ou recouvertes. Ces ouvertures ne devraient jamais être bloquées en plaçant l'appareil sur un lit, un sofa, une couverture, ou une surface semblable. Cet appareil ne devrait pas être installé dans un meuble encastré comme une bibliothèque ou une étagère à moins de lui fournir une ventilation adéquate ou que l'installation soit conforme aux directives du manufacturier.
11. **Sources d'alimentation électrique** - Cet appareil devrait être utilisé seulement avec le type d'alimentation électrique inscrite sur l'étiquette. Si vous n'êtes pas certain du type d'alimentation électrique fourni à votre maison, consultez le vendeur de l'appareil ou l'entreprises d'énergie locale. Pour des appareils alimentés par une batterie ou d'autres sources, se référer aux consignes d'utilisation.
12. **Mise à la terre ou Polarisation** - Cet appareil est équipé avec un cordon d'alimentation à trois fils. Il est a brancher sur une prise ayant un connecteur a la terre. Assurez-vous que la connection a la terre ne manque pas.
13. **Protection du cordon d'alimentation** - Les cordons d'alimentation devraient être disposés de façon à ce qu'on ne puisse marcher dessus ou qu'ils soient susceptibles d'être coincés par des articles placés sur ou contre eux. Une attention particulière doit être portée aux fiches, prises de courant, et aux points où ils sortent de l'appareil.
14. **Mise à la terre de l'antenne extérieure** - Si un système extérieur d'antenne ou de câble est relié à l'appareil, s'assurer que le système d'antenne ou de câble est muni d'une mise à la terre afin de fournir une certaine protection contre les surtensions et les charges d'électricité statique. L'article 810 du code électrique national, ANSI/NFPA 70, fournit l'information nécessaire en ce qui concerne la mise à la terre appropriée du mât et de la structure porteuse, la mise à la terre du câble de connexion à une unité de décharge d'antenne, le calibre des conducteurs de mise à la terre, la location de l'unité de décharge d'antenne, le raccordement aux électrodes de mise à la terre et les spécifications pour les électrodes de mise à la terre. Voir la figure A.
15. **Foudre** - Pour une protection supplémentaire de cet appareil pendant un orage électrique, ou quand il est laissé sans surveillance et inutilisé pendant de longues périodes, le débrancher de la prise électrique murale et déconnecter le système d'antenne ou de câble. Ceci préviendra les dommages à l'appareil dus à la foudre et aux surtensions.
16. **Lignes électriques** - Un système d'antenne extérieur ne devrait pas être situé à proximité de lignes électriques aériennes ou de tout autre circuit électrique, où il pourrait tomber sur de tels circuits ou lignes électriques. Lors de l'installation d'un système d'antenne extérieur, d'extrêmes précautions devraient être prises afin de prévenir tout contact avec des lignes ou circuits électriques. Entrer en contact avec de tels circuits ou lignes électriques pourrait être fatal.
17. **Surcharge** - Ne pas surcharger les prises de courant murales, les rallonges électriques ou les prises de courant intégrées. Un risque d'incendie ou de choc électrique pourrait résulter d'une telle surcharge.
18. **Insertion d'objet ou de liquide** - Ne jamais insérer d'objet par les ouvertures de cet appareil. Il pourrait toucher des points de voltage dangereux ou court-circuiter des pièces, ce qui pourrait résulter en incendie ou en choc électrique. Ne jamais verser de liquide sur l'appareil.
19. **Entretien** - Ne pas essayer de faire soi-même l'entretien de cet appareil. En ouvrir ou en retirer les couvercles pourrait vous exposer à des voltages dangereux ou à d'autres dangers. Confier tout entretien à un personnel de service qualifié.
20. **Dommage exigeant un entretien** - Débrancher cet appareil de la prise de courant électrique et confier l'entretien au personnel de service qualifié dans les éventualités suivantes:
    - ❏ Quand le cordon d'alimentation ou sa fiche sont endommagés,
    - ❏ Si des objets sont tombés dans l'appareil, ou si du liquide y a été renversé,
    - ❏ Si l'appareil a été exposé à la pluie ou à l'eau,
    - ❏ Si l'appareil ne fonctionne pas normalement en suivant les consignes d'utilisation. Ajuster seulement les commandes qui sont mentionnées dans le guide d'opération. Un mauvais ajustement des autres commandes pourrait causer des dommages à l'appareil et souvent exiger un travail supplémentaire de la part d'un technicien qualifié pour remettre l'appareil en état normal d'opération.
    - ❏ Si l'appareil a été échappé ou endommagé de n'importe quelle façon, et
    - ❏ Quand l'appareil montre un changement notable de performance – ceci indique qu'un entretien est nécessaire.
21. **Pièces de rechange** - Si des pièces de rechange sont nécessaires, s'assurer que le technicien de service a employé des pièces de rechange spécifiques du manufacturier ou ayant les mêmes caractéristiques que les pièces originales. L'utilisation de pièces de rechange non autorisées pourrait résulter en incendie, choc électrique ou autres dangers.
22. **Vérification de sécurité** - À la suite de toute réparation ou entretien de cet appareil, demander au technicien de service d'exécuter des vérifications de sécurité afin de s'assurer que l'appareil est en condition normale de fonctionnement.
23. **Montage au mur ou au plafond** - L'appareil ne devrait être monté au mur ou au plafond qu'uniquement de la façon recommandée par le manufacturier.
24. **Chaleur** - L'appareil devrait être situé loin de sources de chaleur telles que des radiateurs, des registres de chaleur, des fourneaux, ou d'autres appareils (y compris amplificateurs) produisant de la chaleur.

ATTENTION DÉCLARATION

AVERTISSEMENT: Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

! AVERTISSEMENT !
RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

ATTENTION: POUR RÉDUIRE LE RISQUE D'ÉLECTROCUTION, NE PAS ENLEVER LE DOS DE L'APPAREIL NI OUVRIR LE BOÎTIER. AUCUNE PIÈCE N'EST RÉPARABLE PAR L'UTILISATEUR À L'INTÉRIEUR. SE RÉFÉRER UNIQUEMENT À DES TECHNICIENS QUALIFIÉS POUR L'ENTRETIEN.

Une combinaison de l'appareil et chariot doit être déplacé avec précaution. Des arrêts brusques, une force excessive et des surfaces inégales peuvent causer la combinaison de l'appareil et le chariot.

Le symbole de l'éclair à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'une "tension dangereuse" non isolée dans le boîtier du produit. cette tension est suffisante pour provoquer l'électrocution de personnes.

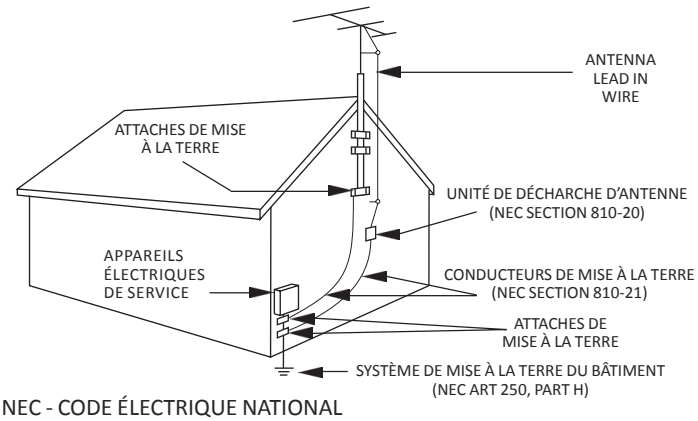
Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION: 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.

FIGURE A

Exemple de mise à la terre d'antenne selon le Code Électrique National, ANSI/NFPA 70



NEC - CODE ÉLECTRIQUE NATIONAL

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SECTION 2 – PRODUCT SUMMARY

2.1 PRODUCT APPLICATION & FEATURES

APPLICATION

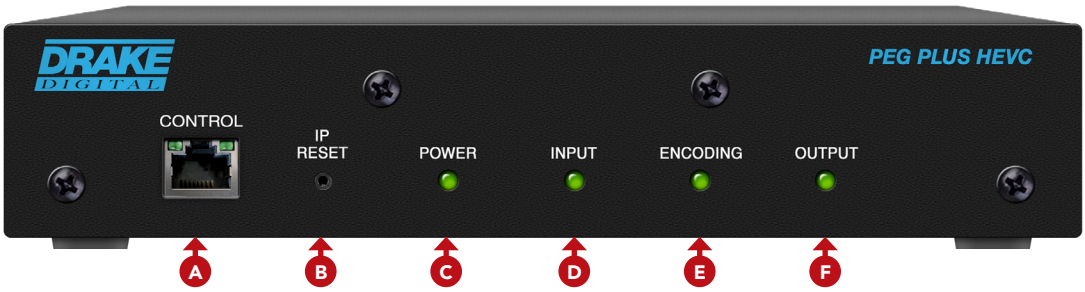
The Drake **PEG PLUS HEVC** is a stand-alone digital video PEG channel encoder capable of encoding one HD and one SD output stream of the same content in either MPEG-2, MPEG-4/H.264, or HEVC/H.265 formats. This encoder features a single SD/HD-SDI or Composite video input, and an IP-encapsulation output via a single SFP Ethernet port or 1Gbps RJ45 Ethernet port.

Audio options include selectable SDI PCM-embedded audio or analog left/right audio, offering compression choices of Dolby® Digital (AC3) or AAC stereo. A separate 1Gbps RJ45 Ethernet port is provided for control and monitoring.

KEY FEATURES

- Built-in watchdog timer with system reboot capability
- VLAN support for streaming and traffic management
- Unicast, Multicast, and SRT Output Formats
- ATSC PSIP tables support
- User-defined PID configuration
- DVB Service Information Table Generation (NIT+SDT)
- Field-Upgradable Firmware
- Separate Management Port and Streaming Port
- Configuration and Shutdown Control via HTTP Server UI and Programmable API

2.2 PRODUCT DESCRIPTION



FRONT PANEL

A **Control:** RJ45 connector for 1000Base-T Ethernet interface for monitoring and configuring the unit via standard web browser. Only a static IP address can be assigned to this interface. (Factory Default: "**172.16.70.1**")

B **IP Reset:** When pushed and held for 5 seconds, temporarily resets the IP address, Usernames, and Passwords to Factory Default. Activation is indicated by the Power LED blinking twice. Default values are as follows:

- **IP Address**: **172.16.70.1**
- **Subnet Mask**: **255.255.255.0**
- **Username**: **admin** *(case-sensitive)*
- **Password**: **pass** *(case-sensitive)*

PLEASE NOTE: Resetting power will revert IP and login credentials back to what has been configured by the user. The effects of activating the IP Reset feature are temporary and only last until the unit is power cycled.

C **Power Status:** If the LED is Green, the AC power is detected. If the LED is Off, it will indicate one of the following:

- AC power is not connected, **or**
- AC power is connected but the power supply is defective. Unit must be sent to factory for repairs.

D **Input Status:** LED is illuminated when input video is being received from the HD/SD SDI or Composite input.

E **Encoding Status:** LED is illuminated when the internal encoder is operational.

F **Output Status:** LED is illuminated when the copper or optical SFP is connected to a network.

REAR PANEL

G **NTSC Composite Video/Audio In:** Analog video with Left and Right Audio.

H **HD-SDI In:** Digital video HD/SD SDI input.

I **IP Video:** RJ45 for 1000Base-T Ethernet (GigE) interface; used for IP video output.

J **SFP Ethernet Output:** Optical or Copper SFP IP video and audio output. (SFP sold separately)

K **+5VDC Power Port:** Accepts 5 volt (VDC) power to the unit.

2.3 PRODUCT SPECIFICATIONS

INPUT	
Video Inputs	1x RCA Composite; 1x BNC SD/HD-SDI
Audio Inputs	1x BNC SDI (PCM-Embedded Audio); 2x RCA (L, R) - Analog Audio
Supported	Closed Caption (embedded only); Audio Gain Adjustment
Control	1x RJ45 Gigabit Ethernet (Front Panel)
VIDEO	
Video Resolution	480i (640x480 / 720x480 @ 30 FPS) 720p (1280x720 @ 60 FPS) 1080i (1920x1080 @ 30 FPS) AUTO-SCAN for Input Resolution
AUDIO	
Audio Format	L-PCM (IEC-60958) at up to 192 kHz

ALARMS & MONITORING	
Local Monitoring	1x Power LED (bicolor) 1x Input LED (bicolor) 1x Encoding LED (bicolor) 1x Output LED (bicolor)
Local Control	1x IP Reset Button
Remote Monitor/ Control	1x RJ45 (10/100 Base-T) GUI-based menu via standard web browser

GENERAL	
Dimensions (W x H x D)	8.7 x 2.0 x 7.6 in (221 x 51 x 193 mm)
Form Factor	Desktop (rack panel sold separately)
Power Requirements:	**External Power Supply** Input 100/120VAC, 60Hz Output +5VDC @ 4.0A
Power Dissipation	25 W
Weight	1.5 lbs (0.68 kg)
Temperature Rating	32 to 122 °F (0 to 50 °C)

OUTPUT	
Connectors	1x RJ45 Gigabit Ethernet Output 1x SFP Module Port Output, RJ45 or Fiber Optic (Plug-In sold separately) **Either SFP or RJ45 may be used for Output**
IP OUTPUT	
IP Protocols	UDP; RTP; SRT
Streaming Protocols	Unicast; Multicast
SRT Protocols	Specifications - www.SRTalliance.org
SPTS STREAM PROTOCOLS	
Standard	ISO/IEC 13818-1 Systems
Encoding Type	VBR; CBR (or Capped VBR) - 3Mbps to 27Mbps
Streams Supported	2x SPTS
Video Bitrate	2 Mbps to 19 Mbps (0.1 Mbps increments)
Packet Format	UDP SPTS (2x HD or SD streams)
ENCODED VIDEO	
Video Resolution	1080p (30 FPS); 1080i (60 FPS); 720p (30, 60 FPS); 480p (30, 60 FPS); 480i (60 FPS)
Video Format	MPEG-2; H.264 (AVC); H.265 (HEVC)
Video Adjustments	Brightness, Contrast, Hue, Saturation
H.264 Profile Support	Baseline, Main, High
ENCODED AUDIO	
Audio Formats	Dolby® Digital AC3 or AAC
Audio Output Bitrates	128, 192, or 256 Kbps

SECTION 3 – INSTALLATION & POWER-UP

3.1 UNPACKING

You will find the following items in the box:

- PEG PLUS HEVC Encoder (QTY=1)
- Power Adapter (QTY = 1)

3.2 INSTALLATION AND POWER-UP

The **PEG PLUS HEVC** Encoder is designed to be mounted on a desktop in close proximity to a 120 VAC, 60Hz power outlet.

DO NOT BLOCK THE UNIT'S AIR INTAKE OR AIR DISCHARGE OPENINGS.

Unit performance will be degraded without proper ventilation. For safe and reliable operation, do not place objects within 1 inch of the unit that blocks the airflow. Excessive heat will shorten the life of the unit.

A 1RU (1.75") open space must be provided above the PEG PLUS HEVC encoders when mounted in a 19 inch rack or cabinet to allow air flow for encoder heat dissipation. The PEG-RP-2 accessories or a standard 19" rack shelf can be used for mounting 2 PEG PLUS HEVC encoder modules in 1RU.

Adequate ventilation is very important for unit installations. Some air movement is advisable, especially if mounted within enclosed rack cabinets.

1. To install using a PEG-RP-2 rack mount accessory, remove the front plates of up to 2 PEG PLUS units, via the front-panel screws. Align and attach the PEG-RP-2 front plate using the same screws. Secure the unit's front panel a to the rack by inserting four (4) machine screws, with cup washers, through the four (4) mounting holes in the front panel. A 1RU open space is recommended above the unit for ventilation.
2. Plug the Power Adapter into a power plug (120 VAC, 60Hz). Plug the power pin into the back of the PEG unit at the input marked "DC Power".

For safe and reliable operation, only use the power adapter supplied with the PEG PLUS Encoder.

SECTION 4 – CONNECTING TO A PC/LAPTOP

4.1 ETHERNET ACCESS

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

1. Plug one end of the Ethernet cable into the **Control** management port located on the front-panel of the unit. Connect the other end of the Ethernet cable to your computer.
2. The factory default IP address of the control management port is **172.16.70.1**. To be able to communicate with the management port, you must first change your computer's IP address.

The following steps explain how to do this for a computer within the **Windows** operating software:

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

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

(c) Right-click on the local area network, and then click on "**Properties**".

(d) A "**Properties**" dialog box will appear. In this box, double-click on the "**Internet Protocol Version 4 (TCP/IPv4)**".

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

4.2 ACCESSING THE GATEWAY VIA THE WEB BROWSER

You must complete the steps described in Section 4.1 before proceeding as follows:

1. Open a web browser on your computer (Chrome or Firefox is recommended) and enter the following URL address (**http://172.16.70.1**). The "**Login**" prompt (Figure 4.2a) will appear.
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.

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

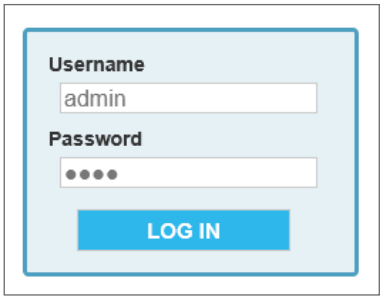


Figure 4.2a - "Login" Screen

4.2 ACCESSING THE GATEWAY VIA THE WEB BROWSER (CONTINUED)

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**" at the top of each web page:

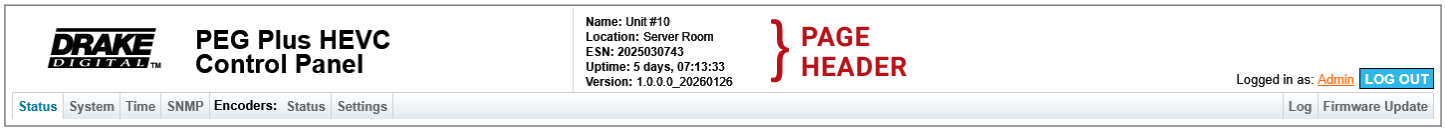


Figure 4.2b - Page Header and Navigation

- **Name:** a user-defined field to make identification easier
- **Location:** a user-defined field to make identification easier
- **ESN:** unit's serial number
- **Uptime:** time elapsed since last time the unit was turned on
- **Version:** software version of the Controller Module.

As shown in Figure 4.2b, under the "**Page Header**" the following Navigation tabs and links will appear:

- **Left Navigation:** "**Status**", "**System**", "**Time**", "**Encoders: Status**", "**Encoders: Settings**", "**Encoders: Graphics Overlay**", and "**Encoders: Global Output Settings**"
- **Right Navigation:** "**Log**" and "**Firmware Update**"
- **Modules Navigation:** This includes tabs to the remaining 12 module slots. The tabs will give access to any installed module in the numbered slot. To review how the physical slots are numbered, please see the product diagram in **Section 2.3**.
- In addition, in the upper right corner above the navigation, the user can access the "**Admin**" screen through a link, alongside the **[LOG OUT]** button.

Each tab for the "**Left**" and "**Right**" Navigation is described in the subsequent sections.

SECTION 5 – BASIC CONFIGURATION

5.1 "STATUS" TAB

"**Status**" (Figures 5.1a and 5.1b) is a "read-only" screen which displays the general health of the unit, such as temperature, fan speed and status reporting. The information is provided as a quick way to monitor the system or assist with troubleshooting issues that may arise.

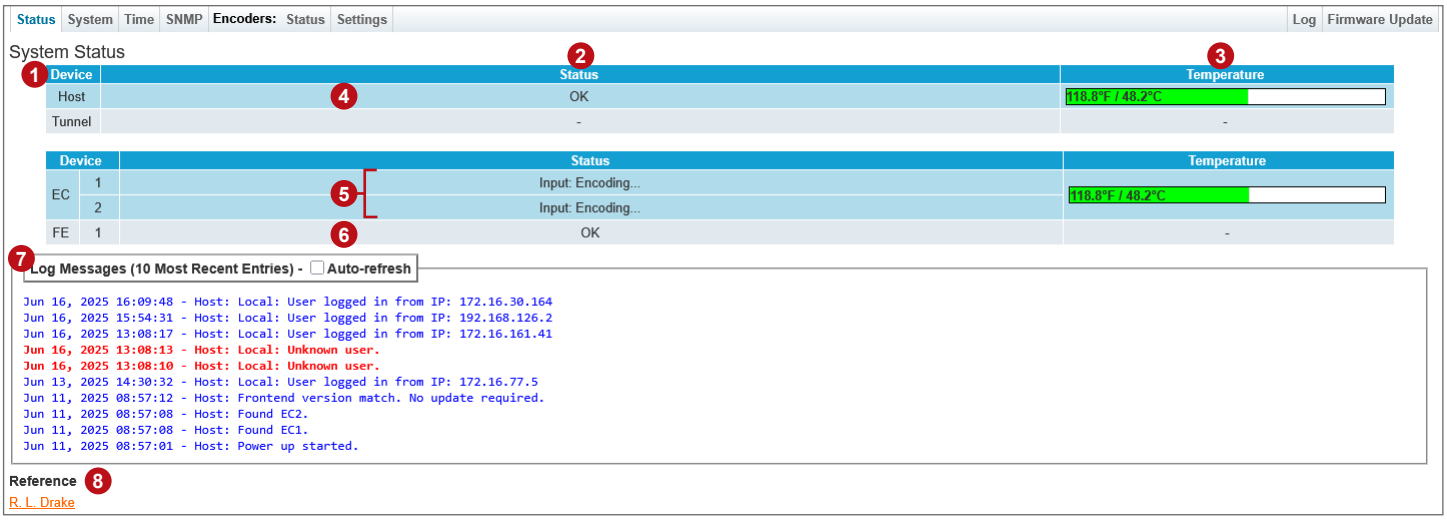


Figure 5.1a - "System Status"

The "**System Status**" page has three (3) columns of data for each system component. The data is detailed as follows:

1 **Device:** Indicates the following system components:

- **Host** is the **PEG PLUS HEVC** system.
- **Tunnel** displays the status information of the unit's SSH Remote Management setup when this feature is enabled.
- **EC1 and EC2** (Encoders) displays information for each of the 2 input streams being encoded. These will populate other data as the channels are set up and enabled. When a numbered encoder is not available the row will display as empty.
- **FE1** (Front End) displays information for the FPGA that handles the inputs and this area provides some status and feedback in on this page.

2 **Status:** Indicates a status for each system component being monitored. The following section gives a breakdown of the information given in this column.

3 **Temperature:** Indicates the following temperature information in real-time (Figure 5.1b):

- **Host:** Temperature the Host unit is currently running at. Temperatures are displayed in both Fahrenheit and Celsius.

Figure 5.1b - Temperature Status Color Range

- **EC1 and EC2:** Temperature the encoders are currently running at. The temperatures are displayed in both Farenheit and Celsius.

5.1 "STATUS" TAB (CONTINUED)

STATUS - MESSAGES / INFORMATION

4 **Host:** Types of messages under status column for Host:

- **Ok:** indicates the host is working without errors.
- **Error:** indicates one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.
- **Warnings:** indicates one or more warnings have been triggered. Check system log for more information.

5 **EC1 and EC2 (Encoders):** Types of messages under the status column(s).

- **Encoding...:** indicates the EC is actively encoding. Each of the EC programs is shown on its own row. If applicable, SRT output status will be displayed.
- **Error:** indicates that one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.

6 **FE1:** Types of messages under the status column(s).

- **Ok:** indicates the host is working without errors.
- **Error:** indicates one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.

NOTE: Listed are the most common status messages. Messages shown will give indication of what is occuring within the unit, alongside those shown under the Log screen, to assist with any required troubleshooting.

Figure 5.1b - "System Status"

OTHER INFORMATION:

6 **Log Messages:** The Log Messages sections will show the 10 most recent entries to the system log. For a full view of all messages, please see the Log tab. The user can click on the "Auto-Refresh" checkbox to enable that function. See Section 7.2 for more information on types of messages.

7 **Reference:** The reference link within this sub-section points to the Blonder Tongue website.

5.2 "SYSTEM" TAB

"**System**" (Figure 5.2) is a "read and write" screen. The general ethernet connection and user-defined identification data for the platform can be configured here.

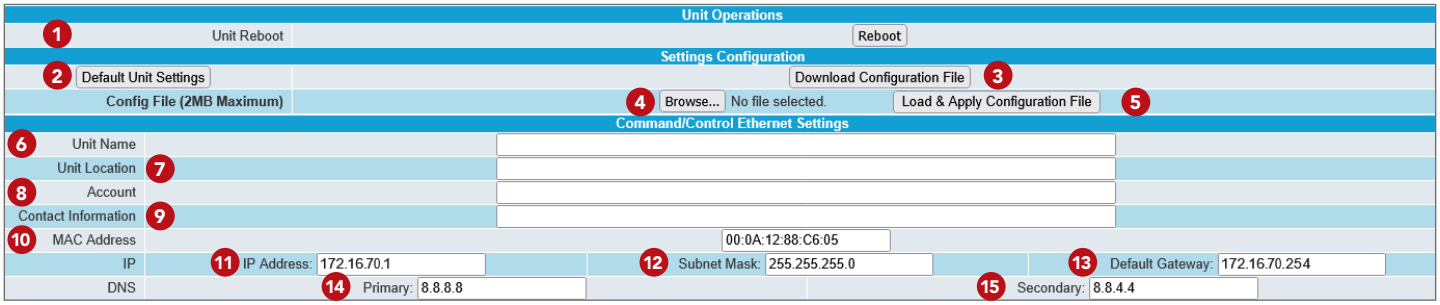


Figure 5.2a - "System Configuration" - Unit Operations, Settings Configuration, Command/Control Ethernet Settings

UNIT OPERATIONS

1 **Reboot** Clicking this button will reboot the unit. All firmware updates will be applied upon restart.

IMPORTANT: A reboot is required after defaulting or applying a configuration file.

SETTINGS CONFIGURATION

2 **Default Unit Settings** Resets the unit back to the factory defaults. It is always recommended to save the existing configuration file before resetting to the default values.

3 **Download Configuration File** Downloads the current unit configuration file.

4 **Browse... No file selected.** Browse and select a configuration file. (2 MB maxiumum file size)

5 **Load & Apply Configuration File** After selecting a file, click this to load and apply the new configuration.

COMMAND/CONTROL ETHERNET SETTINGS

6 **Unit Name:** a user-defined field providing identification of the unit by name. The character limit is 64 alphaumeric, however if other character types are used, the display limit is decreased and may truncate.

7 **Unit Location:** a user-defined field providing identification of the unit's location. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.

8 **Account:** a a user-defined field providing identification of the unit's account information. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.

9 **Contact Information:** a user-defined field providing identification of the unit's account contact information. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.

10 **MAC Address:** the Media Access Control (MAC) Address is a read-only field that serves as a unique identifer assigned to the network.

11 **IP Address:** the static IP address that is assigned to the unit, allowing the user to access it via the web interface. Pressing the IP reset button returns unit to factory default of **172.16.70.1**.

12 **Subnet Mask:** the subnet mask allows the user to access it from another network via the web interface. Factory Default is **255.255.255.0** for local subnet.

5.2 "SYSTEM" TAB (CONTINUED)

13 **Default Gateway:** the gateway address of unit, allowing the user to access it from another network via the web interface. The gateway address should be in the same subnet as IP Address.

14 **Primary DNS:** the primary Domain Name Server (DNS) hosts the controlling zone file, containing all the authoritative information for a domain.

15 **Secondary DNS:** the secondary Domain Name Server (DNS) contains read-only copies of the zone file, and gets its info from a primary server in a communication known as a zone transfer.

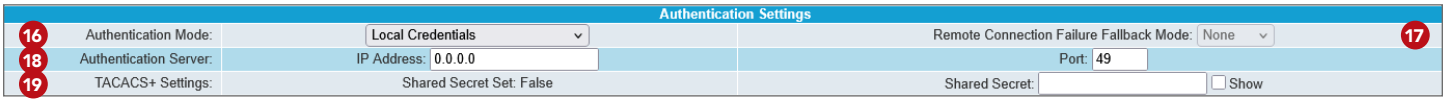


Figure 5.2b - "System Configuration" - Authentication Settings

AUTHENTICATION SETTINGS

This section allows the user to configure how administrative access to the unit is authenticated. The unit supports both local user authentication and integration with a centralized authentication server using TACACS+ (Terminal Access Controller Access-Control System Plus).

16 **Authentication Mode:** Select the method used to authenticate users accessing the unit—either through locally managed credentials or a centralized authentication server using TACACS+.

- **Local Credentials:** Usernames and passwords are managed directly on the unit.
- **Remote Credentials (TACACS+):** Authentication is handled by an external TACACS+ server. This is commonly used in enterprise environments for centralized user management.

17 - **Remote Connection Failure Fallback Mode:** Defines the system behavior if the remote TACACS+ server becomes unreachable. This setting is unlocked if Remote Credentials (TACACS+) is set as the Authentication Mode. Options are as follows:
  - None: No fallback authentication is allowed; access is denied if the remote server fails.
    - *Note:* To avoid accidental lockouts, it is **strongly** recommended to configure a fallback authentication method whenever possible.
  - Local: The system falls back to locally stored user credentials for authentication.
  - Cached: The system allows access using previously cached remote user credentials from a successful prior login.

> **WARNING:** Selecting **"None"** as the fallback authentication option may result in the user being locked out of the system if the TACACS+ server becomes inaccessible.

18 **Authentication Server:** Enter the IP address and port of the external TACACS+ server that will handle authentication when Remote Credentials are selected.

- **IP Address:** The static IP address of the TACACS+ server.
- **Port:** The port used by the server for authentication communication. (*TACACS+ Default: typically 49*)

19 **TACACS+ Settings:** Configure the shared secret used for encrypted communication between the unit and the TACACS+ server.

- **Shared Secret Set:** Indicates whether a shared secret has been set. *(Read-only)*
- **Shared Secret:** Password or key used for encrypted communication between unit and the TACACS+ server.
  - **Show:** Check this box to toggle visibility of the shared secret.

5.2 "SYSTEM" TAB (CONTINUED)

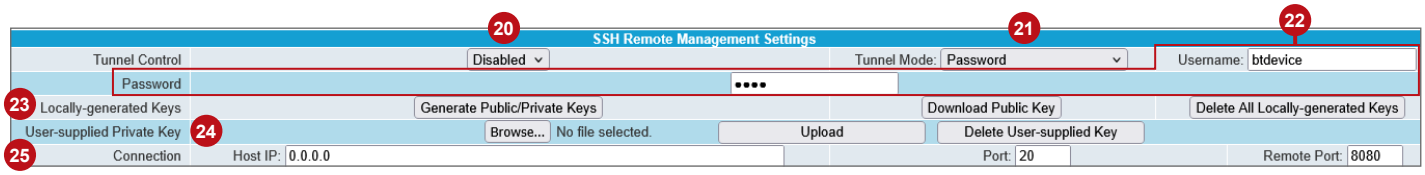


Figure 5.2c - "System Configuration" - SSH Remote Management Settings

SSH REMOTE MANAGEMENT SETTINGS

This section allows the user to enable and configure Secure Shell (SSH) remote access for the unit. SSH is a secure protocol that enables encrypted communication and command execution over an unsecured network. These settings are primarily used to establish an SSH tunnel to the unit for secure remote management.

20 **Tunnel Control:** Controls whether SSH tunneling is active for the unit. Select "**Enabled**" to unlock and configure the rest of the SSH configuration options. By default this section is set to "**Disabled**".

21 **Tunnel Mode:** Specifies the method used for SSH authentication. Available options include: "**Password**", "**Locally-Generated Keys**", or "**User-supplied private Key**".

22 **Mode: Password** - Allows basic SSH login credentials to be used.

- **Username:** The login name required by the remote host
- **Password:** The corresponding password for the SSH session.

23 **Mode: Locally Generated Keys** - Uses an SSH key pair created by the unit for authentication.

- **Generate Public/Private Keys:** Creates a new SSH key pair. *(Note: will overwrite existing key pair)*
- **Download Public Key:** Downloads the generated public key for installation on the remote SSH host.
- **Delete All Locally-Generated Keys:** Removes any key pairs previously generated by the unit.

24 **Mode: User-supplied Private Key** - Allows the user to upload their own private SSH key.

- **Browse**: Opens a file browser to select a private key file from the user's local machine.
- **Upload**: Uploads the selected key to the unit.
- **Delete User-Supplied Key**: Removes the currently uploaded key.

25 **Connection:** These fields define the destination and ports for the SSH tunnel.

- **Host IP:** The IP address of the remote server the SSH session will connect to.
- **Port:** The listening port for SSH on the remote host. (*default for SSH is typically 22*)
- **Remote Port:** (*Optional*) Used when port forwarding is involved or when a specific service port on the remote system needs to be accessed through the tunnel.

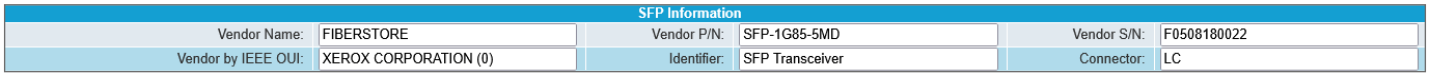


Figure 5.2d - "System Configuration" - IP Video Ethernet Settings

SFP INFORMATION

This section displays technical and vendor-specific details for the Small Form-factor Pluggable (SFP) transceiver module currently installed in the unit. These values are automatically populated based on the module's onboard memory and are not user-editable.

26 **Vendor Name:** Displays the name of the company that manufactured the SFP module.

5.2 "SYSTEM" TAB (CONTINUED)

27 **Vendor P/N:** Displays the vendor-assigned part number of the SFP.

28 **Vendor S/N:** Displays the unique serial number of the SFP module.

29 **Vendor by IEEE OUI:** Displays the vendor name associated with the IEEE Organizationally Unique Identifier (OUI).

30 **Identifier:** Displays the recognized transceiver type, such as "SFP Transceiver."

31 **Connector:** Displays the physical connector type used (e.g., LC, SC).

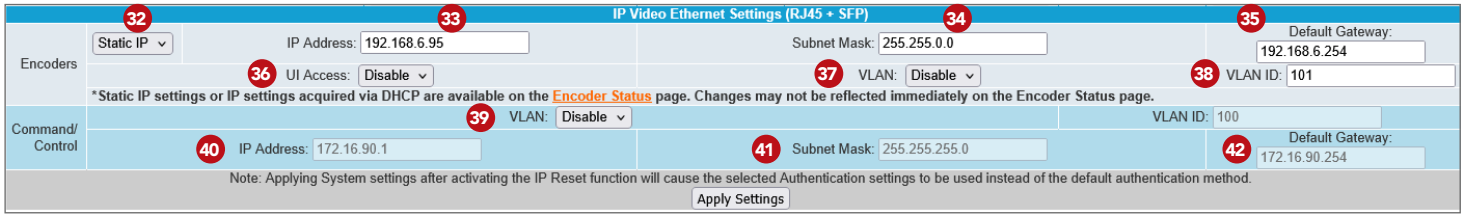


Figure 5.2e - "System Configuration" - IP Video Ethernet Settings

IP VIDEO ETHERNET SETTINGS (RJ45 + SFP)

This section allows configuration of Ethernet settings for video encoder traffic and command/control communication over both RJ45 and SFP interfaces. These settings help manage how the unit connects to the network for video streaming and administrative access.

Encoders: Configure the network settings for the encoder interfaces responsible for video streaming. These settings determine how the encoders obtain IP addresses and interact with VLANs.

32 ▸ **Static IP or DHCP:** Choose whether the encoders use manually assigned (Static) IP settings or obtain configuration dynamically via DHCP.

33 ▸ **IP Address:** The IPv4 address assigned to the encoder.

34 ▸ **Subnet Mask:** Defines the network's address range.

35 ▸ **Default Gateway:** The gateway used to reach devices outside the local network.

36 ▸ **UI Access:** Enable or disable access to the web user interface via this network path.

37 ▸ **VLAN:** Enable or disable VLAN tagging for the encoder interface.

38 ▸ **VLAN ID:** Specify the VLAN ID (if VLAN is enabled).

Command/Control: Configure the network path used for system control, monitoring, and administrative functions. These settings are typically used for management access, separate from video traffic

▸ **VLAN:** Enable or disable VLAN tagging for the command/control interface.

39 ▸ **VLAN ID:** Numeric VLAN identifier. Editable only when VLAN is enabled.

40 ▸ **IP Address:** IPv4 address for command/control communication. Editable only when VLAN is enabled.

41 ▸ **Subnet Mask:** Defines the subnet range. Editable only when VLAN is enabled.

42 ▸ **Default Gateway:** Gateway for network management traffic. Editable only when VLAN is enabled.

REMEMBER: Click on the **[APPLY SETTINGS]** button to save and apply new values/configuration changes.

5.3 "TIME" TAB

"**Time**" (Figure 5.3a, Figure 5.3b, Figure 5.3c, and Figure 5.3d) is a "read and write" screen. Time settings for the system and the event log are configured here.

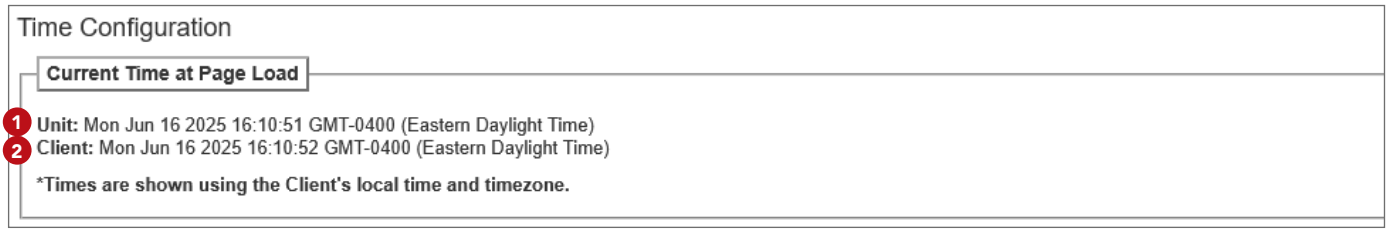


Figure 5.3a - "Current Time at Page Load"

CURRENT TIME AT PAGE LOAD

1. **Unit (or hardware) Time:** read-only display of the unit's current date and time, shown in UTC format. The time is adjusted for states, territories and countries that use time change (ie. Eastern Standard Time and Eastern Daylight Time).

2. **Client (or local browser) Time:** read-only display of the current client, or local browser, date and time, shown in UTC format with time zone. The time is adjusted for states, territories and countries that use time change (ie. Eastern Standard Time and Eastern Daylight Time).

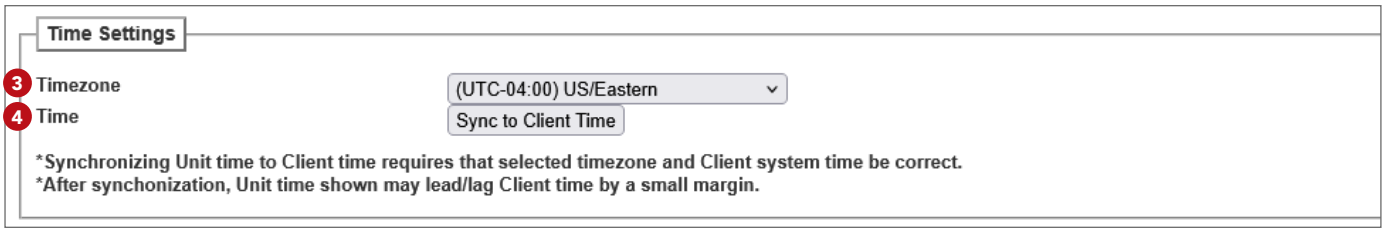


Figure 5.3b - "Time Settings"

TIME SETTINGS

3. **Timezone:** user is able set the time zone, shown in UTC format.

4. **Time:** Clicking the button will synchronize the Hardware time to Client time. This requires that the selected time zone and client system time are correct. After synchronization, the Hardware time shown may lead or lag the Client time by a small margin.

5.3 "TIME" TAB (CONTINUED)

Figure 5.3c - "NTP Settings"

NTP SETTINGS

5 **Enable NTP System Time Synchronization:** Enable (☑) or Disable (☐) System Time Synchronization.

6 **Use Custom NTP Servers:** Enable (☑) or Disable (☐) the Custom NTP Servers. Network Time Protocol (NTP) uses one or more IP addresses that the platform can sync time to. When enabled, the three fields under **7** are usable.

7 **Custom NTP Server IP (#1, #2, #3):** Enter the custom NTP server IP addresses within these fields. The time servers specified must support the Network Time Protocol (NTP) in order for automated time acquisition to work properly.

NOTE: Default NTP Servers are "0.pool.ntp.org", "1.pool.ntp.org", "2.pool.ntp.org", and "3.pool.ntp.org".

REMINDER: Internet access must be present in order to access the default NTP Servers.

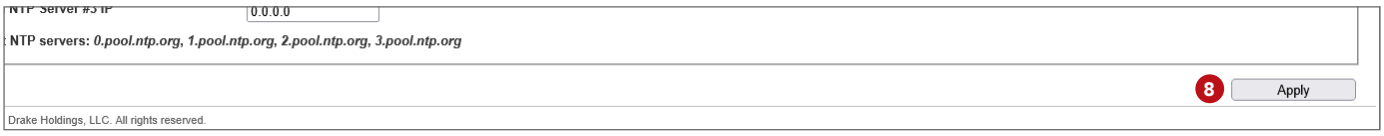


Figure 5.3d - Saving your configuration

8 Apply Click to apply and save the system configuration changes.

SECTION 6 – CONFIGURING THE ENCODERS

6.1 "ENCODERS: STATUS" TAB

The "**Encoders: Status**" Tab (Figure 6.1) is a "read-only" screen which indicates the status of each encoder. A visual status of the pipeline is also shown on the left side. When hovering over an encode block, the corresponding status table, to the right, will highlight.

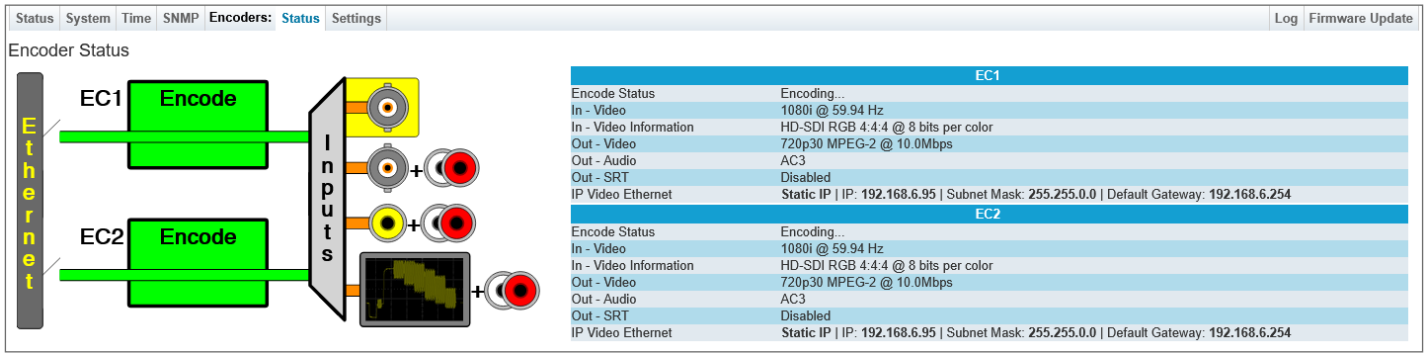
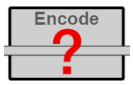
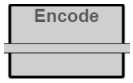


Figure 6.1 - "Encoders: Status" Screen

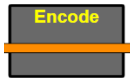
ENCODER STATUS STATES



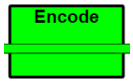
Light Gray (Red ? Mark): Encoder has not been detected yet.



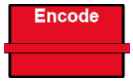
Light Gray: Encoder is disabled.



Dark Gray (Orange Pipe): Encoder is idle.



Green: Encoder is active.

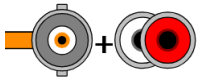


Red: Encoder has failed.

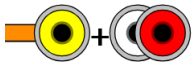
ENCODER INPUTS

- **HD-SDI**

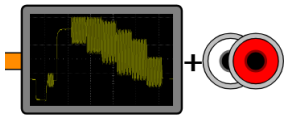
- **HD-SDI + Analog Audio**



- **Composite + Analog Audio**



- **Black Video + Analog Audio**



6.2 "ENCODERS: SETTINGS" TAB

The "**Encoders: Settings**" Tab (Figure 6.2) allows the user to configure each encoder (EC) and displays status information about the input and output streams. A visual status of the pipeline is also shown on the left side. When hovering over an encode block, the corresponding status table, to the right, will highlight.

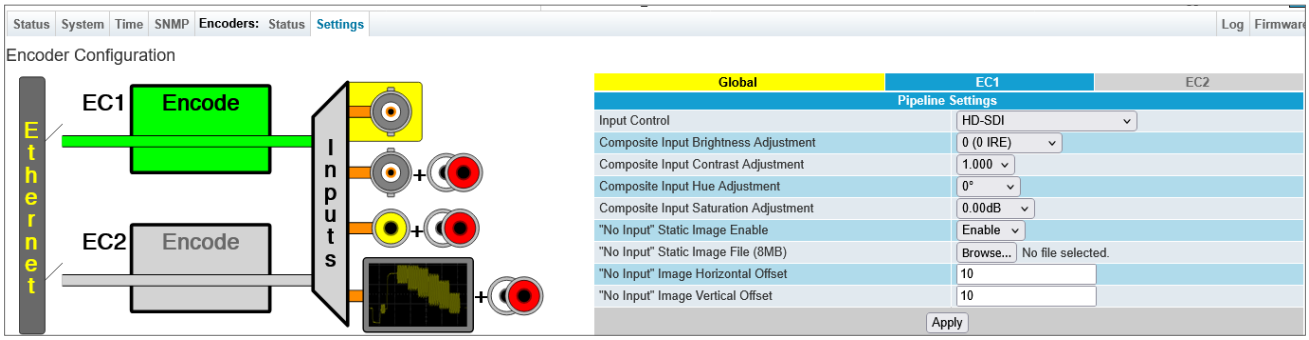


Figure 6.2 - "Encoders: Settings" Tab

6.2.1 "ENCODERS: SETTINGS" GLOBAL

To begin configuration on the encoders, click on the blue header tab labeled "**Global**" settings, as shown above. The configurable options are as follows:

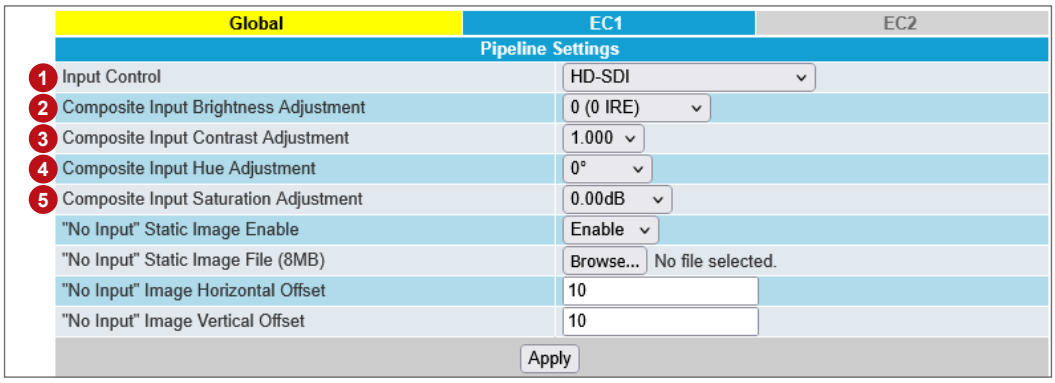


Figure 6.2.1 - "Encoders: Settings" Screen - Global Tab

1. **Input Control:** Defines the primary video input source for the encoder. Options as follows:
   - **HD-SDI:** Standard high-definition SDI video input only.
   - **HD-SDI + Analog Audio:** SDI video paired with separate analog audio input.
   - **Composite + Analog Audio:** Standard-definition analog video with analog audio.
   - **Black Video + Analog Audio:** Black screen video output with analog audio input (often used as a placeholder or for testing).
2. **Composite Input Brightness Adjustment:** Adjusts the brightness level of the composite video input.
   - **Range:** +30 IRE to –30 IRE
   - **Numeric Scale:** –127 to +127, with 0 as the midpoint (0 IRE) and increments of 1.
3. **Composite Input Contrast Adjustment:** Adjusts the ratio between light and dark portions of the composite video signal, effectively controlling overall image intensity.
   - **Range:** 0.3 to 2.0 (increments of 0.008 per step)
   - **Default**: 1.0 (neutral contrast level). Raising the value increases visual separation between bright and dark areas, while lowering it produces a flatter image. Use subtle adjustments to prevent signal clipping or loss of shadow detail.
4. **Composite Input Hue Adjustment:** Applies a rotational shift to the color phase of the composite video signal, altering the perceived tint across the entire image.
   - **Range:** Range is +90° to -90° (increments of 0.7° per step)
   - **Default**: 1.0 (neutral contrast level). Minor hue adjustments may compensate for phase misalignment caused by certain analog sources or capture inconsistencies. Excessive rotation can result in unnatural coloration.
5. **Composite Input Saturation Adjustment:**
   - Range: 6.00 dB to 42.00 dB (increments of 0.05 dB per step)
   - Default: 12.00 dB (nominal color level). Increasing saturation amplifies chroma signal amplitude, enhancing color richness; reducing it desaturates the image toward grayscale. Use modest adjustments to maintain color accuracy.

6.2.1 "ENCODERS: SETTINGS" GLOBAL (CONTINUED)

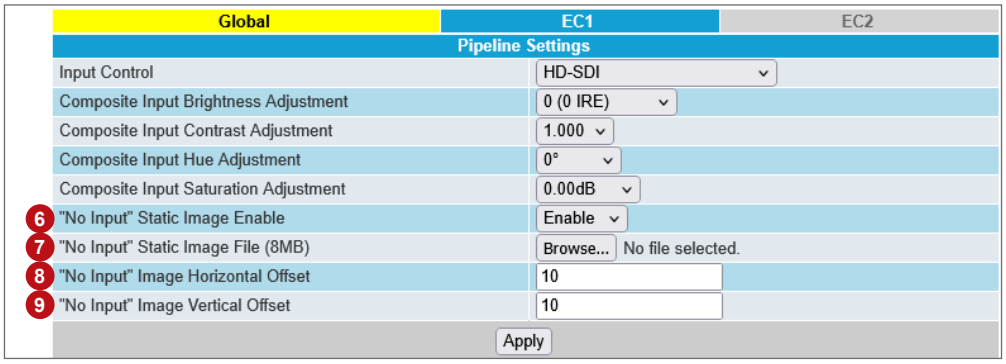


Figure 6.2.1 - "Encoders: Settings" Screen - Global Tab

6 **"No Input" Static Image Enable:** The "No Input" settings allow for a static image to be displayed upon loss of video input. It displays only when an image file has been uploaded and the option is set to "**Enable**". By default the selection is set to "**Disable**" for this feature.

7 **"No Input" Static Image File:** A single image file may be uploaded here. The largest resolution that should be uploaded is 1920x1080 and the image file will be rejected if the file size exceeds 8MB. An uploaded image file must be deleted before another is allowed to be uploaded. Supported file formats are "**JPG/JPEG**", "**GIF**", and "**PNG**".

8 **"No Input" Image Horizontal Offset:** Applies a pixel shift to the image uploaded and displayed. The shift occurs from the zero point, the top-left corner, and shifts towards the right for horizontal offset. The default setting is "**10**" pixels and the numbers are defined in increments of 1px.

9 **"No Input" Image Vertical Offset:** Applies a pixel shift to the image uploaded and displayed. The shift occurs from the zero point, the top-left corner, and shifts towards the bottom for vertical offset. The default setting is "**10**" pixels and the numbers are defined in increments of 1px.

REMINDER: Click on the "Apply" button to apply any new values and/or configurations.

6.2.2 "ENCODERS: SETTINGS" EC1: ENCODER SETTINGS

To begin configuration on the encoder pipeline settings, click on the blue header tab labeled "**EC1**" settings, as shown (Figure 6.2.2a, 6.2.2b, 6.2.2c, 6.2.2d). The configurable options are as follows:

1 **Pipeline Control:** Allows the user to "**Enable**" or "**Disable**" the encode.

2 **Resolution:** Sets the output video resolution. The options available are "**480i60**", "**480p30**", "**480p60**", "**720p30**", "**720p60**", "**1080i60**", "**1080p30**", and "**1080p60**".

3 **Video Encoding Format:** Sets the output video encoding format. The options available are "**MPEG-2**", "**H.264/AVC**", and "**H.265/HEVC**".

6.2.2 "ENCODERS: SETTINGS" EC1: ENCODER (CONTINUED)

4 **Overscan Adjustments (Horizontal and Vertical):** Allows the user to adjust framing of the resulting encoded video to account for variances in the actual viewable region on display devices. The adjustment range in both the vertical and horizontal directions is from **0** to **100** pixels.

5 **Video Bitrate:** Sets the output video bitrate in Mbps. The adjustment range is "**2.0**" to "**19.0**", incremented by "**0.1**" Mbps.

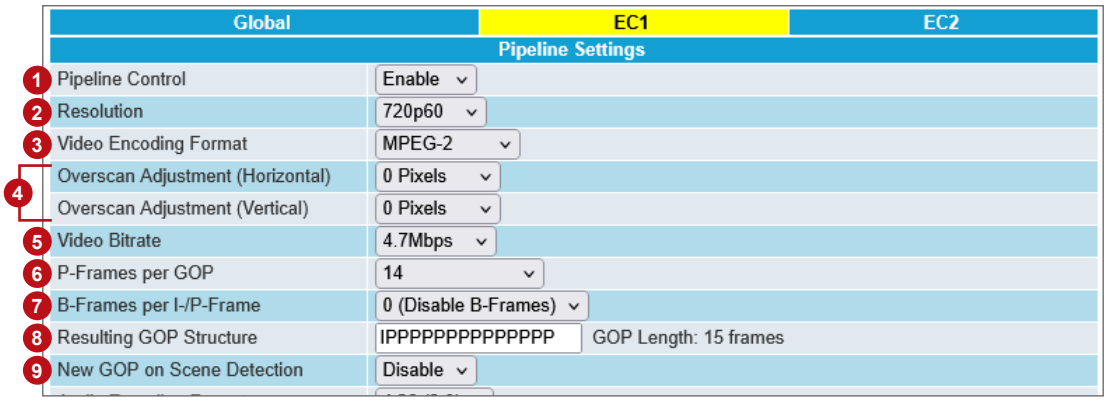


Figure 6.2.2a - "Encoders: Settings" Screen - EC1 Tab

GROUP-OF-PICTURES (GOP) FRAME SETTINGS

The GOP structure defines how video frames are organized and compressed over time. It balances encoding efficiency, bandwidth use, and visual quality. There are three main frame types used in this structure:

- I-Frames (Intra-coded): Full, standalone image frames. These act as reset points or keyframes.
- P-Frames (Predicted): Reference earlier I- or P-frames and store only the changes.
- B-Frames (Bidirectional): Reference both earlier and future frames, offering high compression efficiency.

Together, these frame types determine how often full images are sent and how much data can be saved through prediction. Adjusting GOP structure can affect how quickly a stream recovers from errors and how much bandwidth is required during transmission.

6 **P-Frames per GOP**: Specifies total number of P frames in a Group-of-Pictures (GOP). The adjustment range is "**0 (I-frame Only)**" or "**1**" through "**30**" incremented by "**1**".

7 **B-Frames per I/P-Frame**: Specifies number of B frames between each I or P frame in a GOP. The adjustment range is "**0 (Disable B-Frames)**" or "**1**" through "**3**" incremented by "**1**".

8 **Resulting GOP Structure:** Displays Structure as set between P and B Frame Settings. The GOP Length shows total length between P and B Frame settings.

> ***NOTE**: When streaming MPEG-SD stream the default P-Frame per GOP is 4 and the default B-Frame between I/IP is 2, which gives you a default Total GOP Length of 15.*

9 **New GOP on Scene Detection:** An encoding quality optimization that will analyze the incoming video and start a new Group Of Picture (I-frame) if it detects a scene change. This should result in higher-quality video during scene changes. The setting allows the user to "**Enable**" or "**Disable**" this feature.

Note: These settings are typically fixed in most units. The PEG PLUS HEVC allows advanced users to fine-tune GOP structure for specific streaming requirements.

6.2.2 "ENCODERS: SETTINGS" EC1: ENCODER (CONTINUED)

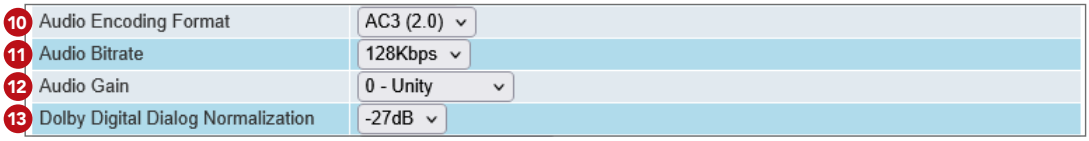


Figure 6.2.2b - "Encoders: Settings" Screen - EC1 Tab

AUDIO SETTINGS

These settings control the audio output (Figure 6.2.2b). Please note that a copy of these settings will be applied to EC2 (Encoder 2) if the Pipeline Control is set to "Enabled", as shown in **Section 6.2.3**.

10 **Audio Encoding Format:** Sets the output audio encoding format. Options available are "**AC3 (2.0)**" and "**AAC**".

11 **Audio Bitrate:** Sets the output audio bitrate. Options available are "**128Kbps**", "**192Kbps**", and "**256Kbps**".

12 **Audio Gain:** Sets the output audio gain. Options available are "**Mute**" and a range between "**-7 (minimum)**" to "**+7 (maximum)**". "**0**" is equivalent to Unity.

13 **Dolby Digital 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 encoder 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.

Note: These audio settings allow for advanced tuning of encoded stream loudness. For most installations, default values are sufficient unless specific loudness targets or broadcast requirements apply.

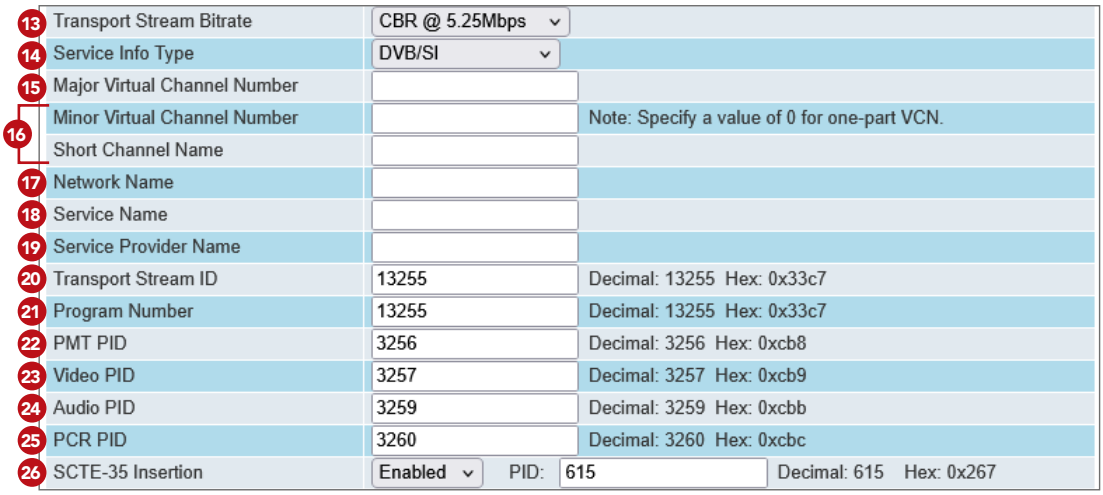


Figure 6.2.2c - "Encoders: Settings" Screen - EC1 Tab

TRANSPORT STREAM SETTINGS

The Transport Stream Information section provides advanced configuration options for customizing stream metadata. These values are used in the MPEG Transport Stream to define content structure, network identity, and regional settings. Settings for the transport stream configuration are as shown in Figure 6.2.2c.

14 **Transport Stream Bitrate**: Sets the transport stream bitrate in Mbps. Options available are either "**VBR**" or a range for **CBR** between "**3.00**" and "**27.00**", incremented by "**0.25**".

6.2.2 "ENCODERS: SETTINGS" EC1: ENCODER (CONTINUED)

15 **Service Info Type:** Configures the type of virtual channel table included in the QAM output. The virtual channel tables handle the EIT, or Event Information Tables, which contain the titles and program guide data. CVCT *(Cable Virtual Channel Table)*, TVCT *(Terrestrial Virtual Channel Table)*, and DVB/SI *(Digital Video Broadcasting/ Service Information)*. Option mode selections and fields utilized for this model are as follows:

If set to "**None**", No extra ATSC or DVB tables are included in the resulting stream. Only the minimum type of tables are included: PAT and PMT. This is the default value.

If set to "**ATSC/PSIP/CVCT**" or "**ATSC/PSIP/TVCT**", the following fields are used:

- VCT Channel Short Name: 7-letter name for the channel. (alpha-numeric)
- Major/Minor Channel Number - Specifies each, Major/Minor Channel Numbers, in the VCT. (Range: 1 - 999)

If set to "**DVB/SI**", the following fields are enabled:

- DVB Network Name - user-specified field for the "Network Name" in the DVB NIT table.
- DVB Service Name and DVB Provider Name - user-specified field for these fields in the DVB SDT table.

16 **Major/Minor Virtual Channel Numbers:** Allows a user to configure the major/minor virtual channel numbers associated with a program when output via QAM. The defined range is between "**1**" and "**999**"

This can be done as One-part and two-part. One part can be set by setting the Minor Virtual Channel number to "**0**". The Major Virtual Channel will then be used as the One-part VCN value.

17 **Short Channel Name:** Allows a user to assign a name to a program when output via QAM. Names may be up to 7 alpha-numeric characters in length.

18 **Network Name:** This field defines the provider or operator's name as it appears in the DVB Network Information Table (NIT) and typically identifies the organization responsible for signal delivery.

19 **Service Name:** This field specifies the user-facing name of the service or channel. This is used in the DVB Service Description Table (SDT) and functions similarly to the ATSC "Short Channel Name." It often appears in program guides or on-screen displays.

20 **Service Provider Name:** Indicates the name of the content provider or originator as listed in the DVB SDT. This field may be used to display the name of the the broadcaster or originator of the content, distinct from the network operator.

21 **Transport Stream ID:** Configures the transport stream ID number used Program Specific Information (PSI) tables in the stream. Range is "**1**" to "**65535**".

22 **Program Number:** Configures the MPEG Program used in all PSI tables for this stream. Range is "**1**" to "**65535**".

23 **PMT PID:** Configures the Packet Identifier (PID) used to transmit all Program Map Tables (PMT) in the stream.

24 **Video PID:** Configures the PID used to transmit Video and associated data.

25 **Audio PID:** Configures the PID used to transmit Audio and associated data.

26 **PCR PID:** Configures the PID used to transmit the Program Clock Reference (PCR) and is used to synchronize the video and audio packets. This helps maintain accurate audio/video sync during playback.

NOTE: *All PIDs are displayed in Hex format. If you type a decimal format into the field, the GUI will automatically convert your decimal format to a Hex value. PIDs are expressed in both decimal & hex formats to the right of the entry field.*

27 **SCTE-35 Insertion:** Allows the user to configure the PID used to transmit locally generated commercials and short program data. Can be "**Enabled**" or "**Disabled**".

6.2.2 "ENCODERS: SETTINGS" EC1: ENCODER (CONTINUED)

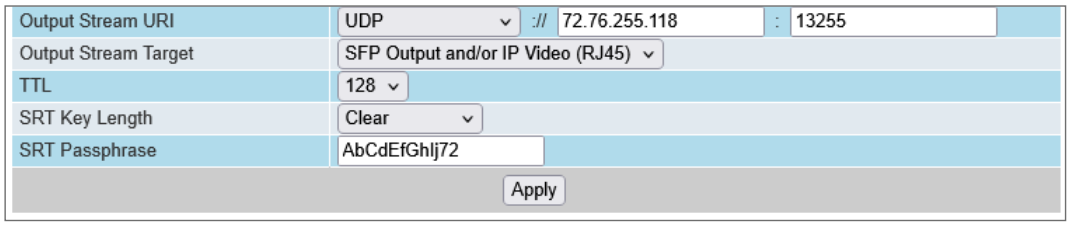


Figure 6.2.2d - "Encoders: Settings" Screen - EC1 Tab

OUTPUT STREAMING PROTOCOL AND SECURITY SETTINGS

Configure how the stream is delivered, how long packets remain valid (TTL), and whether it's secured using optional SRT encryption. See Figure 6.2.2d.

28 **Output Stream URI:** The user can configure the following URI Output stream settings: "**Protocol**", "**IP**", and "**Port**". The user must select the protocol that matches the one used by the receiving equipment. The available options within this model are: "**Disabled**", "**UDP**" "**RTP**", "**SRT Caller**", "**SRT Listener**", and "**SRT Rendezvous**".

29 **Output Stream Target**: Allows the user to select an output port. The available options are: "**SFP Output and/or IP Video (RJ45)**" and "**Control**".

30 **TTL (Time to Live)**: TTL is an upper bound 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 and is incremented by 1. (Factory Default: "128").

31 **SRT Key Length:** Allows a user to select the encryption level of a resulting SRT stream. Options available for this model are "**Clear**" (no encryption), "**AES128 (16)**", "**AES192 (24)**", and "**AES256 (32)**".

32 **SRT Passphrase:** Allows a user to configure an encryption passphrase when operating in an SRT mode. The passphrase must be 10 to 79 alphanumeric characters in length. The device receiving the SRT stream will use this same passphrase to decrypt the stream.

6.2.3 "ENCODERS: SETTINGS" EC2: ENCODER SETTINGS

The EC2 encoder shares nearly all configurable parameters with EC1. As such, there are a few differences between EC1 and EC2, which will be noted in this section.

EC2 ENCODER TAB – KEY DIFFERENCES FROM EC1

The below are primary differences within the EC2 Encoder Tab. All other encoder settings mirror those of EC1. See Section 6.2.2 for a complete description.

- **Resolution Limitation:** EC2 is restricted to a maximum resolution of 480i.
- **Audio Settings:** EC2 uses a copy of EC1's audio configuration. While phrased differently in the interface, it references the same encoding format, bitrate, and gain.

REMINDER: Click on the "Apply" button to apply any new values and/or configurations.

SECTION 7 – UPDATE, TROUBLESHOOT, AND MAINTENANCE

7.1 "LOG" TAB

The "**Log**" (Figure 7.1) screen displays system log messages. The following is a description of the changeable parameters for this screen as well as a description of the message filter types.

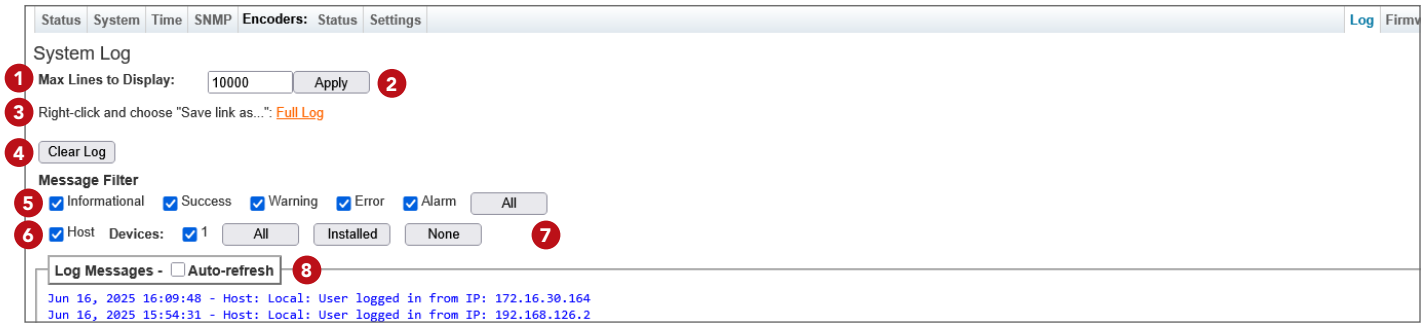


Figure 7.1 - "System Log"

1. **Max Lines to Display:** allows the user to select the maximum number of lines to display starting at the most recent. (Minimum: 1, Maximum: 100,000)
2. Apply Click this button to apply changes to Max Lines to Display setting.
3. **Full Log:** To save the full event log, right-click the link and choose "Save link as..." as instructed. The log can then be saved to a user-chosen location.
4. Clear Log Click this button to clear the event log.

MESSAGE FILTERS

The following message filters can be set to enabled or disabled.

5. **Event Message Severity:** The following severity messages can be chosen individually or enable them all easily by clicking the all button.
   - **Informational:** messages appear in blue text and indicates an informational-only event was logged.
   - **Success:** messages appear in green text and indicates an event was logged where an operation was successful.
   - **Warning:** messages appear in dark orange text and indicates an event was logged pertaining to an issue that did not cause a loss of service.
   - **Error:** messages appear in bold red text and indicates an event was logged that caused or may cause loss of service.
   - **Alarm:** messages appear as **bold white text on a red background** and indicates an ongoing event was logged that is actively causing a loss of service.
6. **Host:** the user may enable or disable the event log monitoring of the Host unit.
7. **Devices:** the user may show or hide the event log monitor messages of any or all encoders.
8. **Auto Refresh:** The user is able to set the auto-refresh on this page. The log messages will display real-time as they happen.

7.2 "FIRMWARE UPDATE" TAB

The "**Firmware Update**" tab (Figures 7.2a to 7.2d) is located on the right side of the main menu. This page allows the user to review the currently installed firmware version and provides a quick and easy way to apply firmware updates.

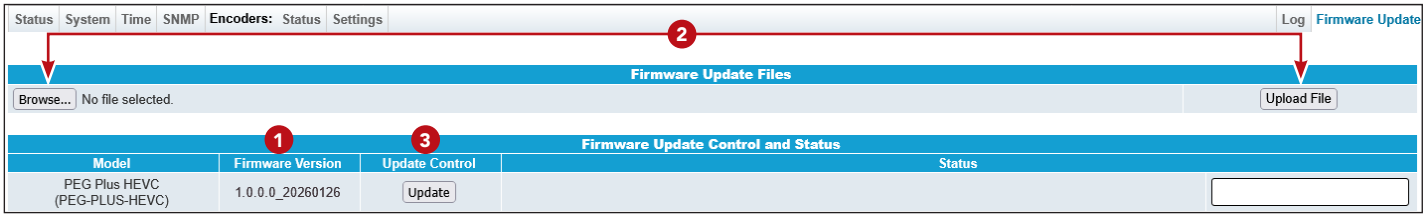


Figure 7.2a - "Firmware Update" Tab

1 Check "**Firmware Version**" to ensure you have the latest firmware. To determine if a new firmware update has been released, please go to our website at: (www.blondertongue.com/support/firmware-updates/)

Click the "**Firmware Download Site**" linked button and then click through the following folders to view the device files: "***RL DRAKE***" > "***P-***" > "***PEG_PLUS_HEVC_Stk# 1002613C***"

NOTE: There is a check of the file name versus product model ID to eliminate a user inadvertently updating any product models with incorrect files.

2 Under the "**Firmware Update Files**" section, the user can use Browse... and Upload File to select and send the update file(s) into the unit. See a view of the file when uploaded to the platform as shown below on Figure 7.2b.

Figure 7.2b - File when uploaded

3 Update the Firmware version by clicking the Update button. The update status and progress will show under the "**Status**" columns. Below are the firmware updates as they appear while in-progress (Figure 7.2c) and upon completion (Figure 7.2d).

Note: After clicking the "Update" button, please allow a few seconds for the file to load.

Figure 7.2c - Update In Progress

4 Once the update progress is complete, the user **MUST** reboot the unit. The most convenient method for this process is by clicking the Reboot button (Figure 7.2d) to apply and finalize the update(s).

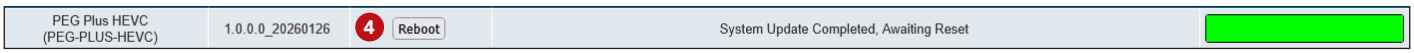


Figure 7.2d - Completed Update

NOTE: An update can also be applied and finalized by using the reboot control through the system page.

When firmware updates are complete, the user can remove the loaded file by clicking the X button shown on **Figure 7.2b** next to the "Upload File" button under "Firmware Update Files".

7.3 "ADMIN" SCREEN

The "**Admin**" (Figure 7.3) settings allow a user to change or modify the Username and Password values for the unit while logged in. To access this screen, click the "admin" link at the top right corner as shown below.

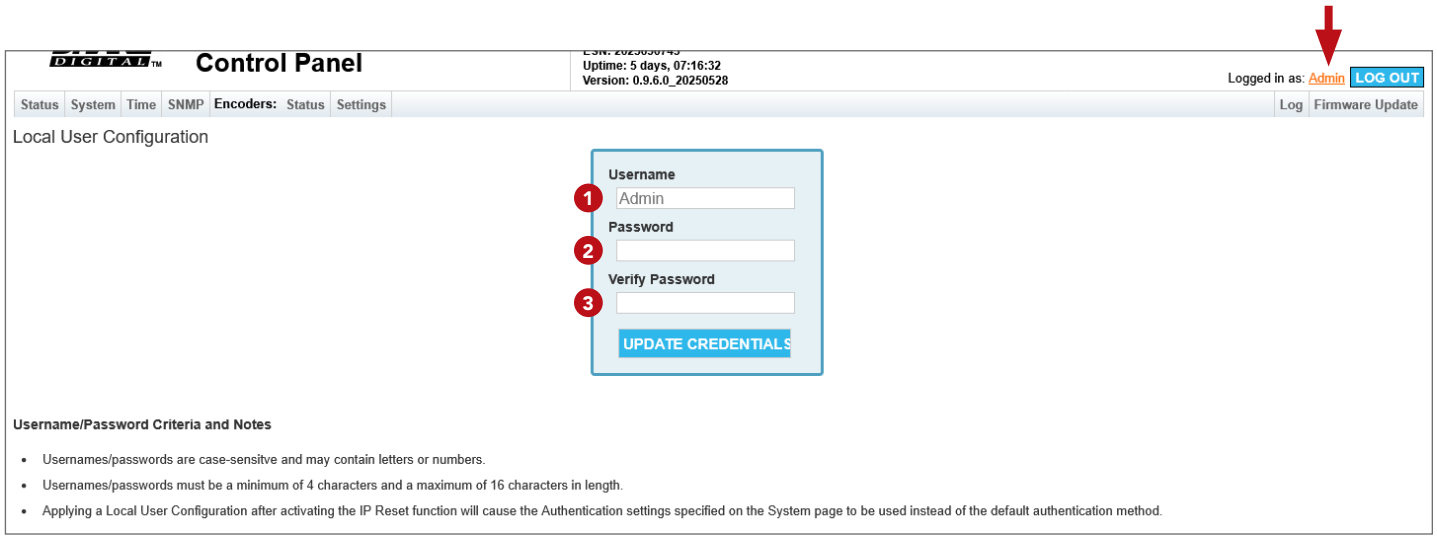


Figure 7.3 - "User Configuration"

1. **Username:** is the Administrator's login (16 characters maximum). This login allows the user to make changes to any area of the unit. (Factory Default: "Admin")
2. **Password:** is only used when changing the current Administrator's password (16 characters maximum). The password will not be displayed. (Factory Default: "pass")
3. **Verify Password:** is required when changing the current Administrator's password. It MUST match the "Password" field and will not be displayed.

PLEASE NOTE: Both the Login and Password are case-sensitive.

7.4 TROUBLESHOOTING

For any additional technical support issues, please send more information to us about your issue via our website at www.blondertongue.com/support/ or call us toll-free at 1-800-523-6049 between the hours of 9:00 AM and 5:00 PM (EST, UTC -5).

For best service on calls, please leave a voice message with a brief summary of your problems including the Product Model Name(s) which are having issues. We will have someone use this information to prepare, in advance, to assist you in advance and contact you as soon as possible during business hours.

LIMITED WARRANTY

Seller will at its sole option, either repair or replace (with a new or factory reconditioned product, as Seller may determine) any product manufactured or sold (or in the case of software, licensed) by Seller which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment or such other specifications as may have been expressly agreed upon in writing: (i) for a period of one (1) year (and for all BIDA products a period of eight (8) years) from the date of original purchase for all stock hardware products (ii) 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"); (iii) 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 (ii) 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.

(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. (**Rev 1121**)

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