

# PEG PLUS Model

## Public Educational & Governmental Access Encoder

### INSTRUCTION MANUAL



Model	Item #	Description
PEG PLUS	1002613B	HD PEG Channel Encoder with HD-SDI Input or Composite Video with Left + Right Audio and IP Output

**800-523-6049**  
**www.rldrake.com**

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

<b>Purchase Location Name:</b>	
<b>Purchase Location Telephone Number:</b>	
<b>PEG PLUS Serial Number</b>	

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

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## Manual Revision

Issue 2: User Manual updated for use with firmware v1.5.9 - v1.5.24 (current as of 06/07/18).

Issue 1: User Manual created 01/31/17. Firmware release v1.5.9.

### 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.

### Firmware Updates:

For more information regarding the latest product firmware releases, please visit our website at [www.rldrake.com](http://www.rldrake.com). The Firmware Updates page is available under the "Support" menu option within the main navigation. General instructions for the FTP site, as well as updating your firmware, are provided on this page. For further assistance, you may also contact Technical Assistance at 937-746-6990 or by email: [servicehelp@rldrake.com](mailto:servicehelp@rldrake.com)

### Product Documentation:

Download the latest User Manual (PDF) by visiting our website. Navigate to the product page by entering the full Model Name or Stock Number in the search field. Upon reaching the product page, the "User Manual" and other downloads are made available beneath the product image.

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# Important Safety Instructions

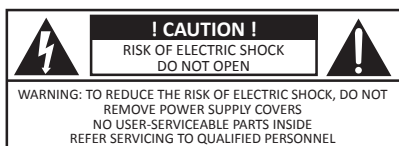
- 1. Read Instructions**—All the safety and operating instructions should be read before the product is operated.
- 2. Retain Instructions**—The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings**—All warnings on the product and in the operating instructions 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 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. 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:
  - a. When the power-supply cord or plug is damaged,
  - b. If liquid has been spilled, or objects have fallen into the product,
  - c. If the product has been exposed to rain or water,
  - d. 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,
  - e. If the product has been dropped or damaged in any way, and
  - f. 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**



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.



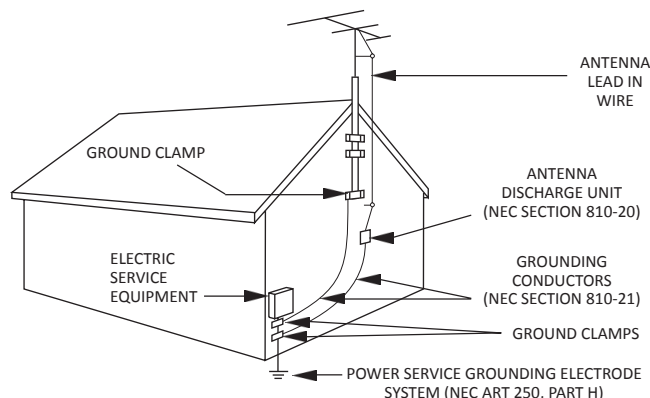
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**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.

# 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 fabricant; 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 fabricant 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 fabricant.
- 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'entreprise 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 à brancher sur une prise ayant un connecteur à la terre. Assurez-vous que la connection à 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 prévient 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:
  - a. Quand le cordon d'alimentation ou sa fiche sont endommagés,
  - b. Si des objets sont tombés dans l'appareil, ou si du liquide y a été renversé,
  - c. Si l'appareil a été exposé à la pluie ou à l'eau,
  - d. 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.
  - e. Si l'appareil a été échappé ou endommagé de n'importe quelle façon, et
  - f. 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 fabricant 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 fabricant.
- 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.**



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.



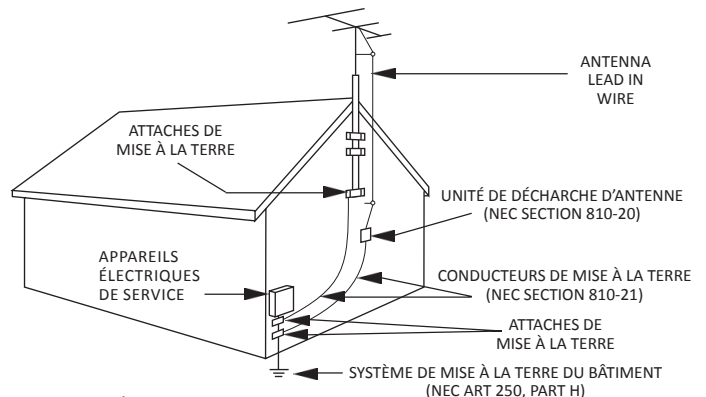
Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

**AVERTISSEMENT:** AFIN D'ÉVITER TOUT RISQUE D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER CET APPAREIL À LA PLUIE OU À L'HUMIDITÉ. NE PAS OUVRIR LE BOÎTIER, CONFIER TOUS TRAVAUX À DU PERSONNEL TECHNIQUE QUALIFIÉ.

**CAUTION:** POUR PRÉVENIR LES CHOC ÉLECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ÊTRE INSÉRÉES A FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

**FIGURE A**

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



NEC - CODE ÉLECTRIQUE NATIONAL

### NOTE AUX INSTALLATEURS DE SYSTÈME DE CATV:

CE RAPPEL EST FOURNI POUR PORTER À L'ATTENTION DES INSTALLATEURS DE SYSTÈME DE CATV, L'ARTICLE 820 - 40 DU NEC QUI DONNE DES DIRECTIVES POUR UNE MISE À LA TERRE APPROPRIÉE ET, EN PARTICULIER, SPÉCIFIE QUE LE CÂBLE DE MISE À LA TERRE DEVRAIT ÊTRE RACCORDÉ AU SYSTÈME DE MISE À LA TERRE DU BÂTIMENT LE PLUS PRÈS POSSIBLE DE L'ENTRÉE DU CÂBLE.

# Specifications

PEG PLUS • Item # 1002613B

MPEG-2 or H.264 Digital Video PEG Encoder with HD-SDI or Composite Input and IP Output

INTERFACE		AUDIO OPTIONS	
VIDEO INPUTS:	SD/HD-SDI BNC Type Input Connection Composite Video RCA Input Connector Closed Caption Support (embedded only)	ENCODER FORMAT:	Dolby® Digital, AAC, or MPEG1-Layer 2
AUDIO INPUTS:	SD/HD-SDI Embedded PCM Audio Analog Audio (L, R) 2xRCA Input Connectors Supports Audio Gain Adjustment	OUTPUT BIT RATE:	128, 192, 224, or 384 Kbps
		<i>Manufactured under license from Dolby Laboratories</i>	
VIDEO OPTIONS		OUTPUT	
INPUT VIDEO MODES:	480i (640x480/720x480 @ 30 FPS) 720p (1280x720 @ 60 FPS) 1080i (1920x1080 @ 30, 59.94 & 60 FPS) AUTO-SCAN for Input Resolution	VIDEO OUTPUT:	SFP Port IP SPTS (SFP sold separately)
VIDEO FORMAT:	MPEG-2 OR H.264	PACKET FORMAT:	UDP SPTS (two HD or SD streams)
VIDEO ADJUSTMENTS:	BRIGHTNESS CONTRAST HUE SATURATION	ZIXI:	UDP Transport Stream Protocol
H.264 PROFILE SUPPORT:	BASELINE MAIN HIGH	PHYSICAL SPECIFICATIONS	
		TEMPERATURE RATING:	0 - 50° C Ambient
		FORM FACTOR:	Desktop Modulator
		DIMENSIONS:	Approximately 7.6" D X 2.0" H X 8.7" W
		WEIGHT:	1.5 lbs
		POWER REQUIREMENTS:	100-120 VAC/60 Hz

## Available SFPs (sold separately)



Item #	Model	Description
1002620	SFP-C-10/100/1000 Transceiver	10/100/1000BASE-T SFP, RJ-45, 100M, COPPER
1002621	SFP-MM-850-550M	1000BASE-SX SFP, 850NM, 550M, MMF, DDM
1002622	SFP-SMF-1310-10KM	1000BASE-LX SFP, 1310NM, 10KM, SMF, DDM
1002670	SFP-SMF-1310-40KM	1000BASE-LX SFP, 1310NM, 40KM, SMF, DDM
1002623	SFP-SMF-1550-80KM	1000BASE-ZX SFP, 1550NM, 80KM, SMF, DDM
1002624	SFP-SMF-CWDM-1470nm-80KM	1.25GBASE-CWDM-SFP, 1470NM, 80KM, SMF, DDM
1002625	SFP-SMF-CWDM-1490nm-80KM	1.25GBASE-CWDM-SFP, 1490NM, 80KM, SMF, DDM
1002626	SFP-SMF-CWDM-1510nm-80KM	1.25GBASE-CWDM-SFP, 1510NM, 80KM, SMF, DDM
1002627	SFP-SMF-CWDM-1530nm-80KM	1.25GBASE-CWDM-SFP, 1530NM, 80KM, SMF, DDM
1002628	SFP-SMF-CWDM-1550nm-80KM	1.25GBASE-CWDM-SFP, 1550NM, 80KM, SMF, DDM
1002629	SFP-SMF-CWDM-1570nm-80KM	1.25GBASE-CWDM-SFP, 1570NM, 80KM, SMF, DDM
1002630	SFP-SMF-CWDM-1590nm-80KM	1.25GBASE-CWDM-SFP, 1590NM, 80KM, SMF, DDM
1002631	SFP-SMF-CWDM-1610nm-80KM	1.25GBASE-CWDM-SFP, 1610NM, 80KM, SMF, DDM
1002632-XX	SFP-SMF-DWDM-CHXX-40KM	1.25GBASE-DWDM-SFP, CH. 20-59, 40KM, SMF, DDM
1002633-XX	SFP-SMF-DWDM-CHXX-80KM	1.25GBASE-DWDM-SFP, CH. 20-59, 80KM, SMF, DDM
Last 2 numbers indicate channel number (20-59).		

Specifications are subject to change without notice or obligation.  
Dolby is a registered trademark of Dolby Laboratories.



# General Description & Features

## INTRODUCTION

The **PEG PLUS** is a stand-alone MPEG-2 or H.264 digital video PEG channel encoder with a single SD/HD-SDI, or composite video input, and an IP-encapsulation output via a single SFP Ethernet port. A separate RJ45 10/100 Ethernet port is provided for control and monitoring capability.

The **PEG PLUS** features selectable SDI PCM-embedded audio, or analog left and right audio. Audio compression can be either Dolby® Digital, MPEG1-Layer 2 stereo, or AAC stereo.

An optional Zixi output protocol is also available to provide the ability to stream content in H.264 format over an unmanaged network, including the public internet. The Zixi UDP-based video optimized protocol provides professional broadcasters, sports networks, and service providers a mechanism to adapt to the public internet using standard IP networks as a way to ingest and transport broadcast quality video.

An optional rack mount panel is available for up to (2) **PEG PLUS** encoders.

## FEATURES

- MPEG-2 or H.264 video encoding
- Selectable SD/HD-SDI or Composite video input
- Encodes two HD or SD streams of the same content in either MPEG-2 or MPEG-4/H.264 formats
- Supports video resolutions of 480i, 720p, or 1080i
- Selectable SDI PCM-embedded audio or analog L+R audio
- Dolby® Digital, AAC, or MPEG1-Layer 2 stereo audio encoding from PCM-embedded audio source
- IP output via SFP port (SFP sold separately)
- Unicast and multicast capable
- Separate Management port and streaming port
- Built-in watchdog timer with system reboot capability
- Field-upgradable firmware
- Configuration and shutdown control via HTTP server UI and programmable API
- Supports VLAN & QoS for streaming or traffic mgmt.
- SNMP V2
- User-defined PID configuration
- Supports ATSC PSIP tables
- DVB Service information table generation (NIT+SDT)
- Insert custom screen message upon loss of video
- Compositing support to add program PNG logo file

<u>Model</u>	<u>Item #</u>	<u>Description</u>
PEG PLUS	1002613B	MPEG-2 or H.264 HD PEG Encoder with HD-SDI or Composite Input and IP Output
	1002613B Z	MPEG-2 or H.264 HD PEG Encoder with Zixi Option
PEG-RP-2	1002644B	Rack Mount Panel for (2) PEG PLUS units



PEG-RP-2 with (2) PEG PLUS units

# Front and Rear Panel Operation



## FRONT PANEL

- 1 **Ethernet Control:** 10/100 Ethernet wired connection for local and remote management
- 2 **IP Reset Button:** When pressed for >2 seconds, the IP address of the control port will enable to the default factory IP address (172.16.70.1, Subnet Mask 255.255.255.0) The login credentials will also be enabled to the default username “admin” and password “pass”.

**NOTE:** The old IP address, login, and password will still be present in the encoder settings.

**Status LEDs** provide a status of tasks performed by the PEG PLUS encoder in real-time:

- 3 **Power:** LED is illuminated when the power is ON.
- 4 **Input:** LED is illuminated when input video is being received from the HD/SD SDI or Composite input.
- 5 **Encoding:** LED is illuminated when the internal encoder is operational.
- 6 **Output:** LED is illuminated when the copper or optical SFP is connected to a network.

## REAR PANEL

- 7 **NTSC Composite Video/Audio In:** Analog video with Left and Right Audio.
- 8 **HD-SDI In:** Digital video HD/SD SDI input.
- 9 **SFP Ethernet Output:** Optical or Copper SFP IP video and audio output. (SFP sold separately)
- 10 **5VDC Power Port:** Accepts 5 volt (VDC) power to the unit.



# Installation & Power-Up

## Unpacking

You will find the following items in the box:

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

## Installation

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



For safe and reliable operation, do not place objects within 1 inch of the unit that blocks the airflow.

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

## Power-Up

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.

# Login Screen

First, connect the appropriate input and output video cables and plug in the PEG PLUS power cable.

## ETHERNET ACCESS:

Local or remote communication with the unit is only possible through a GUI-based menu via any standard web browser **Chrome** or **Firefox** is recommended. Before you can communicate with the unit you must configure your computers Local Area Network connection to confirm with the PEG PLUS default IP of 172.16.70.1. To do so, follow these steps:

Connect an Ethernet cable from your computer to the Control 10/100 port of the PEG PLUS.

1. The following steps explain how to do this for a PC with **Windows XP** operating software:

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

**IP address:** 172.16.70.2

**Subnet mask:** 255.255.255.0

**Default Gateway:** No need to enter a value for local access.

Click **OK** to close dialog box. Your computer is now ready to communicate with the unit.

**- OR -**

2. The following steps explain how to do this for a PC with **Windows 7**, **Windows 8.x** or **Windows 10** operating software:

- a) On your computer, navigate to the "Network and Sharing Center". (Note: This can be found using the search box in the Start Menu or for Windows 8.x, the Start Screen)
- b) Once open, click on "Change Adapter Settings" on left hand side of the window.
- c) Right-click on the "Local Area Connection", and then click on the "Properties".
- d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol Version 4 (TCP/IPv4)".
- e) A dialog 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

**Default Gateway:** No need to enter a value for local access.

Click **OK** to close dialog box. Your computer is now ready to communicate with the unit.



**IMPORTANT:** The front-panel Control Port (Management Port) and the rear-panel SFP Port **MUST** be on different subnets. See ["Networking Section"](#)

Open a **Chrome** or **Firefox** web browser on your computer and enter the following URL address (<http://172.16.70.1>). Once the PEG PLUS web server has been loaded from your browser, you should see the login dialog.

Enter the username and password and click LOG IN. The default username is **"admin"** (in lower case letters) and the default password is **"pass"** (in lower case letters).

NOTE: If you have any issues connecting to the PEG PLUS encoder, we recommend clearing the cache in the browser's settings.

Figure 1 - "Login" Screen

# Status Tab

Status	Encoder	System	Log	Firmware Update
System Information and Status				
System Information				
1	CPU Usage: Total: 13%; Encoder: 6%			
2	Serial Number:			
3	Hardware Version: 0			
4	Software Version: v1.5.4_20161205			
5	Unit Name:			
6	Unit Location:			
7	Up-Time: 0:24:36.530000			
	System Time (UTC): Tue Dec 6 18:39:13 2016			
Input Status				
8	Status: Ready			
9	FW Version: 1.25			
10	SDI Input: Locked			
	SDI Format: 1920x1080i59.94Hz			
11	Composite Input: Unlocked			
12	Active Video Source: SDI: 1920x1080i59.94Hz			
13	Active Audio Source: SDI			

Figure 2a - "Status" Tab (Read-Only)

## System Information

- 1 CPU Usage:** Indicates the total usage of CPU resources and the encoder CPU usage.
- 2 Serial Number:** Indicates serial number of PEG PLUS encoder
- 3 Hardware Version:** Indicates the hardware version of the PEG PLUS encoder
- 4 Software Version:** Indicates the software version of the unit
- 5 Unit Name and Location:** Indicates user-defined unit constants set under the "System Tab: Networking" section.
- 6 Up-Time:** Indicates the uptime of the unit expressed in days, hours, minutes, and seconds.
- 7 System Time (UTC):** The system time can be synced up with the browser time by using the controls under the System menu and will be displayed in UTC time format.

## Input Status Box

- 8 Status:** Indicates the status of the input.
- 9 Firmware Version:** Indicates the current firmware version.
- 10 SDI Input and Format:** Input indicates if the video is present and locked. Format indicates resolution (see [Figure 2b](#)).
- 11 Composite Input and Format:** Input indicates if the video is present and locked. Format indicates resolution (see [Figure 2b](#)).
- 12 Active Video Source:** Indicates the current active video source(s) and resolution (see [Figure 2b](#)).
- 13 Active Audio Source:** Indicates if there is embedded audio on the stream(s).

PEG PLUS supports resolutions of:

**480i** (640x480/720x480 @ 30 FPS)  
**720p** (1280x720 @ 60 FPS)  
**1080i** (1920x1080 @ 30, 59.94, & 60 FPS)

Figure 2b

# Status Tab with Zixi

## ZIXI Stream Status Box

- 14 **Status:** Indicates the status of the input.
- 15 **Host IP:** User defined IP address or host name. The public IP address of the device (Decoder or Broadcaster) you are streaming to.
- 16 **Conn. Up Time:** Indicates the uptime of connection.
- 17 **Reconnects:** Indicates the number of reconnections.
- 18 **Bitrate:** Indicates the transport stream bitrate of the encoder.
- 19 **Tx Bytes:** Indicates the transmit bytes being sent.

ZIXI Stream 0 Status	
14	Status: connected
15	Host IP: 172.16.182.6
16	Conn. Up Time: 0D 00:01:40
17	Reconnects: 0
18	Bitrate: 6.94 Mbps
19	Tx Bytes: 76.57 MB

Figure 2c

## Encoder Tab: AV Input

### AV Input - Source Settings

The screenshot displays the 'Encoder' tab in a software interface, specifically the 'AV INPUT' sub-tab. The 'Source Settings' section is highlighted. It includes a dropdown for 'Source' set to 'SDI'. Below this, the 'Audio Adjustments' section shows 'Audio Sync Adjustment' set to '+0'. The 'Composite Video Adjustments' section includes 'Brightness' set to '0', 'Contrast' set to '1.0 (default)', 'Saturation' set to '1.0 (default)', and 'Hue Shift (degrees)' set to '+0.0'. An 'Apply' button is located at the bottom of the settings area.

Figure 3 - "Encoder" Tab - AV Input

### A/V Source Selection

- 1 **Source:** Video input selection of SDI or Composite

### Audio Adjustments

- 2 **Audio Sync Adjustment:** Audio/video lip-sync adjustment used to adjust the audio to video synchronization. For example, you may need to delay or lag the audio if the video input is SDI and the audio source is analog. Range is +/- 500ms.

# Encoder Tab: AV Input

AV Input - Source Settings (continued, see [Figure 3](#))

## Composite Video Adjustments

- 3 **Brightness:** Range is +/- 30 (increments of 1)
- 4 **Contrast:** Range is 0.3 to 2.0 (increments of 0.1)
- 5 **Saturation:** Range is 0 to 2.0 (increments of 0.1)
- 6 **Hue Shift (degrees):** Range is -89.6 to +85.4 (increments of 0.3)

# Encoder Tab: Encoding

Audio Encoder Settings ([Figure 4a](#))

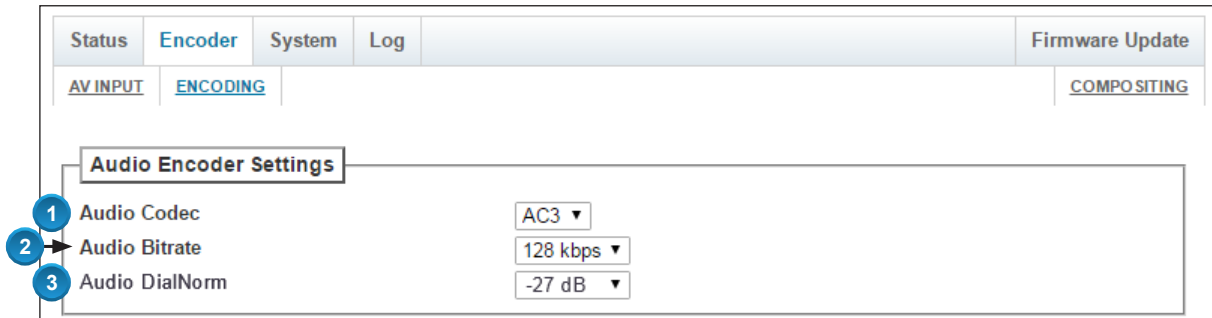


Figure 4a - "Encoder" Tab - Encoding - Audio Encoder Settings

- 1 **Audio Codec:** Options are: **MP2** for MPEG-1 Audio Layer 2, **AC-3** for Dolby Digital (AC-3), or **AAC** (Advanced Audio Coding)
- 2 **Audio Bitrate:** Options are: **128**, **192**, **224**, or **384 Kbps**.
- 3 **Audio DialNorm:** 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.

Stream 1: MPEG-4/AVC HD (See [Figure 4b](#), next page)

## Video Encode

- 4 **Video Bitrate, HD Input:** Range is 3.5 to 13 (incremented by 0.1)  
**NOTE:** Once an input is applied, only the detected resolution (SD or HD) will be displayed. Both SD & HD video bitrates are displayed only when no input is detected.
- 5 **Video Bitrate, SD Input:** Range is 1 to 4 (incremented by 0.1)
- 6 **P-Frames per GOP:** Specifies total number of P frames in a Group-of-Pictures (GOP). Options are 0, 1, 2, 3, 4, 5, 9, 14, and 29.
- 7 **B-Frames per I/P-Frame:** Specifies number of B frames between each I or P frame in a GOP. Range is 1.3 to 4.  
**NOTE:** When streaming H.264 HD stream the default P-Frame per GOP is 14 and the default B-Frame between I/IP is 3, which gives you a default Total GOP Length of 60.

# Encoder Tab: Encoding

Stream 1: MPEG-4/AVC HD (continued, see [Figure 4b](#))

Stream 1: MPEG-4/AVC HD			
Video Encode			
4	Video Bitrate, HD Input	5.0	
5	Video Bitrate, SD Input	3.5	
6	P-Frames per GOP	Default	
7	B-Frames per I/P-Frame	Default	
Transport Stream			
8	Transport Bitrate, HD Input	5.625 Mbps	
9	Transport Bitrate, SD Input	4.125 Mbps	
10	Transport Stream ID	0x1	1 0x1
11	Program Number	1	1 0x1
12	PMT PID	0x1e0	480 0x1e0
13	Video PID	0x1e1	481 0x1e1
14	Audio PID	0x1e2	482 0x1e2
15	Service Info Type	None	

Figure 4b - "Encoder" Tab - Encoding - Stream 1: MPEG-4/AVC HD

## Transport Stream

- 8 **Transport Bitrate, HD Input:** Range is 4.125 to 25 (incremented by 0.125)
- 9 **Transport Bitrate, SD Input:** Range is 0.625 to 25 (incremented by 0.125)  
NOTE: TS Bitrate must be greater than 0.400 Mbps + audio bitrate + video bitrate.
- 10 **Transport Stream ID:** Configures the transport stream ID number used Program Specific Information (PSI) tables in the stream. Range is 1 - 65,535.
- 11 **Program Number:** Configures the MPEG Program used in all PSI tables for this stream. Range is 1 - 65,535.
- 12 **PMT PID:** Configures the Packet Identifier (PID) used to transmit all Program Map Tables in the stream.
- 13 **Video PID:** Configures the PID used to transmit Video and associated data.
- 14 **Audio PID:** Configures the PID used to transmit audio and associated data.  
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.
- 15 **Service Info Type:** Default value is "None"

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.

If set to "ATSC/PSIP", the following fields are enabled:

- VCT Short Name: 7-letter name for the channel.
- Major Channel Number - Specifies the Major Channel Number in the VCT. Range is 1 - 999.
- Minor Channel Number - Specifies the Minor channel number in the VCT. Range is 1 - 999.



# Encoder Tab: Encoding

## Stream 2: MPEG-4/AVC SD (Figure 4c)

Stream 2: MPEG-4/AVC SD			
<b>Video Encode</b>			
16	Video Bitrate	1.5 ▼	
17	P-Frames per GOP	Default ▼	
18	B-Frames per I/P-Frame	Default ▼	
<b>Transport Stream</b>			
19	Transport Bitrate, SD Input	3.750 Mbps ▼	
20	Transport Stream ID	0x1	1 0x1
21	Program Number	1	1 0x1
22	PMT PID	0x1e0	480 0x1e0
23	Video PID	0x1e1	481 0x1e1
24	Audio PID	0x1e2	482 0x1e2
25	Service Info Type	None ▼	

Figure 4c - "Encoder" Tab - Encoding - Stream 2: MPEG-4/AVC SD

### Video Encode

- 16 **Video Bitrate:** Range is 1 to 4 (incremented by 0.1)
- 17 **P-Frames per GOP:** Specifies total number of P frames in a Group-of-Pictures (GOP). Options are 0, 1, 2, 3, 4, 5, 9, 14, and 29.
- 18 **B-Frames per I/P-Frame:** Specifies number of B frames between each I or P frame in a GOP. Range is 1.3 to 4.

**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.

### Transport Stream

- 19 **Transport Bitrate, SD Input:** Range is 0.625 to 25 (incremented by 0.125)  
**NOTE:** TS Bitrate must be greater than 0.400 Mbps + audio bitrate + video bitrate.
- 20 **Transport Stream ID:** Configures the transport stream ID number used Program Specific Information (PSI) tables in the stream. Range is 1 - 65,535.
- 21 **Program Number:** Configures the MPEG Program used in all PSI tables for this stream. Range is 1 - 65,535.
- 22 **PMT PID:** Configures the Packet Identifier (PID) used to transmit all Program Map Tables in the stream.
- 23 **Video PID:** Configures the PID used to transmit Video and associated data.
- 24 **Audio PID:** Configures the PID used to transmit audio and associated data.

**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.

- 25 **Service Info Type:** Default value is "None"

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.

If set to "ATSC/PSIP", the following fields are enabled:

VCT Short Name: 7-letter name for the channel.  
Major Channel Number - Specifies the Major Channel Number in the VCT. Range is 1 - 999.  
Minor Channel Number - Specifies the Minor channel number in the VCT. Range is 1 - 999.

# Encoder Tab: Encoding

## Stream 3: MPEG-2 HD (Figure 4d)

Stream 3: MPEG-2 HD			
<b>Video Encode</b>			
26	Video Bitrate, HD Input	8.5	
27	Video Bitrate, SD Input	2.7	
28	GOP Length	15	
<b>Transport Stream</b>			
29	Transport Bitrate, HD Input	9.500 Mbps	
30	Transport Bitrate, SD Input	3.750 Mbps	
31	Transport Stream ID	0x1	1 0x1
32	Program Number	1	1 0x1
33	PMT PID	0x1e0	480 0x1e0
34	Video PID	0x1e1	481 0x1e1
35	Audio PID	0x1e2	482 0x1e2
36	Service Info Type	None	

Figure 4d - "Encoder" Tab - Encoding - Stream 3: MPEG-2 HD

### Video Encode

- 26 Video Bitrate, HD Input:** Range is 3.5 to 13 (incremented by 0.1)

**NOTE:** Once an input is applied, only the detected resolution (SD or HD) will be displayed. Both SD & HD video bitrates are displayed only when no input is detected.

- 27 Video Bitrate, SD Input:** Range is 1 to 4 (incremented by 0.1)

- 28 GOP Length:** Group-of-Pictures (GOP) length. Range is 1 to 127 (incremented by 1). Default value is 15

### Transport Stream

- 29 Transport Bitrate, HD Input:** Range is 4.125 to 25 (incremented by 0.125)

- 30 Transport Bitrate, SD Input:** Range is 0.625 to 25 (incremented by 0.125)

**NOTE:** TS Bitrate must be greater than 0.400 Mbps + audio bitrate + video bitrate.

- 31 Transport Stream ID:** Configures the transport stream ID number used Program Specific Information (PSI) tables in the stream. Range is 1 - 65,535.

- 32 Program Number:** Configures the MPEG Program used in all PSI tables for this stream. Range is 1 - 65,535.

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

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

- 35 Audio PID:** Configures the PID used to transmit audio and associated data.

**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.

- 36 Service Info Type:** Default value is "None"

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.

If set to "ATSC/PSIP", the following fields are enabled:

VCT Short Name: 7-letter name for the channel.

Major Channel Number - Specifies the Major Channel Number in the VCT. Range is 1 - 999.

Minor Channel Number - Specifies the Minor channel number in the VCT. Range is 1 - 999.

# Encoder Tab: Encoding

## Stream 4: MPEG-2 SD (Figure 4e)

Stream 4: MPEG-2 SD			
<b>Video Encode</b>			
37	Video Bitrate	2.7 ▼	
38	GOP Length	15 ▼	
<b>Transport Stream</b>			
39	Transport Bitrate, SD Input	3.750 Mbps ▼	
40	Transport Stream ID	0x1	1 0x1
41	Program Number	1	1 0x1
42	PMT PID	0x1e0	480 0x1e0
43	Video PID	0x1e1	481 0x1e1
44	Audio PID	0x1e2	482 0x1e2
45	Service Info Type	None ▼	

Figure 4e - "Encoder" Tab - Encoding - Stream 4: MPEG-2 SD

### Video Encode

- 37 Video Bitrate:** Range is 1 to 4 (incremented by 0.1)
- 38 GOP Length:** Group-of-Pictures (GOP) length. Range is 1 to 127 (incremented by 1). Default value is 15

### Transport Stream

- 39 Transport Bitrate, SD Input:** Range is 0.625 to 25 (incremented by 0.125)  
**NOTE:** TS Bitrate must be greater than 0.400 Mbps + audio bitrate + video bitrate.
- 40 Transport Stream ID:** Configures the transport stream ID number used Program Specific Information (PSI) tables in the stream. Range is 1 - 65,535.
- 41 Program Number:** Configures the MPEG Program used in all PSI tables for this stream. Range is 1 - 65,535.
- 42 PMT PID:** Configures the Packet Identifier (PID) used to transmit all Program Map Tables in the stream.
- 43 Video PID:** Configures the PID used to transmit Video and associated data.
- 44 Audio PID:** Configures the PID used to transmit audio and associated data.  
**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.

- 45 Service Info Type:** Default value is "None"

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.

If set to "ATSC/PSIP", the following fields are enabled:

- VCT Short Name: 7-letter name for the channel.
- Major Channel Number - Specifies the Major Channel Number in the VCT. Range is 1 - 999.
- Minor Channel Number - Specifies the Minor channel number in the VCT. Range is 1 - 999.

## IP Output - 1 (Figure 4f)

- 46 Enable Output:** Options are: **Enable** or **Disable**
- 47 Source Stream:** Each IP Output can be set to one of the following: Stream 1, Stream 2, Stream 3 or Steam 4.

# Encoder Tab: Encoding

## IP Output - 1 (continued, see [Figure 4f](#))

**IP Output 1**

46 Enable Output: Enable ▾

47 Source Stream: Stream 1: MPEG-4/AVC ▾

48 Destination IP / Hostname: 239.10.10.10

49 Destination Port: 50000

50 TTL: 145 ▾

51 DiffServ / DSCP: Default / Best Effort [0] ▾

**Default / Best Effort [0]**

- CS4 [32]
- AF41 [34]
- AF42 [36]
- AF43 [38]
- CS6 [48]
- CS1 [8]
- AF11 [10]
- AF12 [12]
- CS7 [56]
- CS2 [16]
- CS5 [40]
- AF21 [18]
- AF22 [20]
- AF13 [14]
- AF23 [22]
- CS3 [24]
- AF31 [26]
- AF32 [28]
- AF33 [30]

Figure 4f - "Encoder" Tab - Encoding - IP Output

- 48 **Destination IP / Hostname:** Destination unicast or multicast IP address or Hostname determined by the downstream network device.
- 49 **Destination Port:** Destination port assigned to the IP or Hostname of the IP Output
- 50 **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").
- 51 **DiffServ / DSCP:** Configures the value of the differentiated services code point (DSCP) field in the IPv4 header for the video output stream. The format of this field is specified by IETF RFC2474, but actual values are specified by several related RFCs. The encoder does not support explicit congestion notification (ECN) which makes use of the lower 2 bits of this header field. (See [Figure 4f](#) for available options)

## IP Output - 2 ([Figure 4g](#))

**IP Output 2**

52 Enable Output: Enable ▾

53 Source Stream: Stream 3: MPEG-2 ▾

54 Destination IP / Hostname: 239.10.10.10

55 Destination Port: 50001

56 TTL: 128 ▾

57 DiffServ / DSCP: Default / Best Effort [0] ▾

Figure 4g - "Encoder" Tab - Encoding - IP Output

- 52 **Enable Output:** Options are: **Enable** or **Disable**
- 53 **Source Stream:** Each IP Output can be set to one of the following: Stream 1, Stream 2, Stream 3 or Steam 4.
- 54 **Destination IP / Hostname:** Destination unicast or multicast IP address or Hostname determined by the downstream network device.
- 55 **Destination Port:** Destination port assigned to the IP or Hostname of the IP Output
- 56 **TTL (Time to Live):** See "[#50. IP Output - 1](#)" for description on this setting. The range is 1 to 255 and is incremented by 1. (Factory Default: "128").
- 57 **DiffServ / DSCP:** See "[#51. IP Output - 1](#)" for description on this setting. Configures the value of the differentiated services code point (DSCP) field in the IPv4 header for the video output stream. (See [Figure 4f](#) for options)

Press the "**Apply**" button to apply the settings.

# Encoder Tab: Encoding (Zixi)

## Zixi Output Settings

When setting up the Zixi option version of the encoder, the user will first need to insert the License Key within the Admin Panel (see [page 27](#)). Once this is done, the Zixi Output sections for Stream 1 and 2 will show up as follows in the Encoder Tab: Encoding Screen, under the IP Output sections (See [Figure 4h](#)):

To begin setting up the Zixi Outputs:

- 58 Click on the plus (+) sign next to each Output section title (See [Figure 4h](#)) in order to expand the section.
- 59 All settings may now be seen (See [Figure 4i](#)). To close the section again, simply click the minus (-) sign in the title.

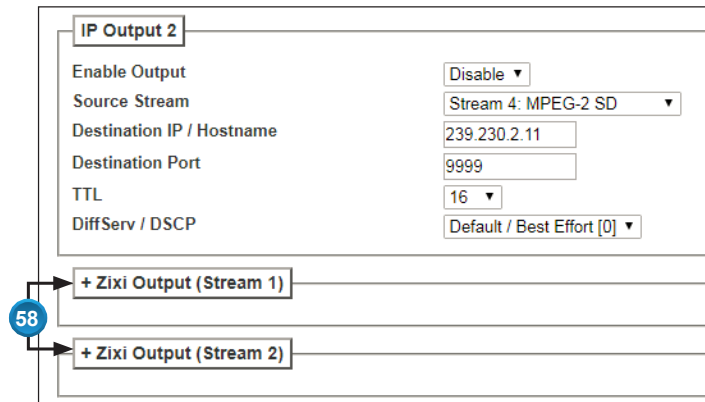


Figure 4h - "Encoder" Tab - Encoding  
Zixi Output: Stream 1 & 2 (Closed)

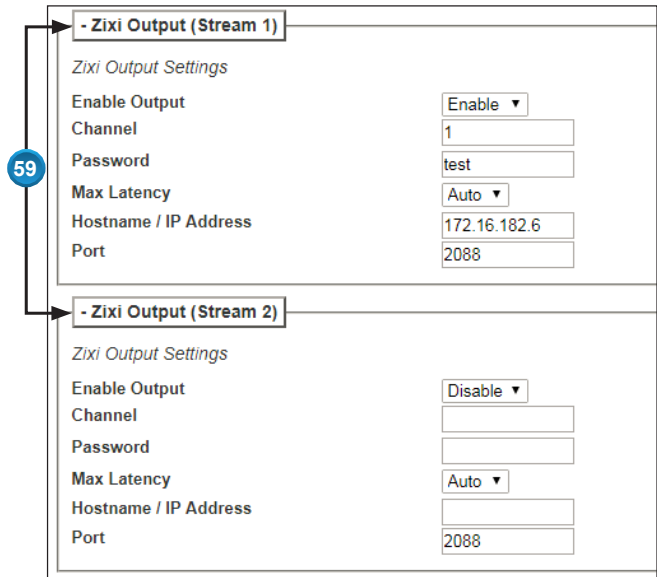


Figure 4i - "Encoder" Tab - Encoding  
Zixi Output: Stream 1 & 2 (Open)

The following options can now be set for Zixi Output Stream 1 and Stream 2:

**Zixi Output (Stream 1)** (See [Figure 4j](#), next page)

- 60 **Enable Output:** Options are **Enable** or **Disable**.
- 61 **Channel:** Uniquely identifies a given stream on the port. Several streams can be "multiplexed" on the same UDP port.
- 62 **Password:** Used to prevent unauthorized connections but does not encrypt the stream. The encoder's password **MUST** match the decoder's password. Note: An empty field is equivalent to no password.
- 63 **Max Latency:** Used to set maximum allowed latency of the stream over the Zixi protocol. Units are in milliseconds and are numeric values ranging from 100 to 5000 in increments of 100. Default option is "Auto".
  - a) Setting Max Latency to a low value means more forward error correction (FEC) is needed to guarantee stream delivery.
  - b) Setting Max Latency to a higher value allows the Zixi layer to use re-transmission instead of / in addition to FEC.
- NOTE:** In general, higher latency yields lower CPU load on the encoder and less overhead on the data rate.
- 64 **Hostname/IP Address:** User-defined IP address or host name.
- 65 **Port:** The UDP port used for communicating from the encoder-to-broadcaster. Default port used by Zixi broadcasters is "2088".

# Encoder Tab: Encoding (Zixi)

Zixi Output (Stream 1) (continued, see [Figure 4j](#))

- Zixi Output (Stream 1)	
Zixi Output Settings	
60 Enable Output	Enable ▾
61 Channel	1
62 Password	test
63 Max Latency	Auto ▾
64 Hostname / IP Address	172.16.182.6
65 Port	2088

Figure 4j - "Encoder" Tab - Encoding - Zixi Output: Stream 1 (example)

Zixi Output (Stream 2) ([Figure 4k](#))

- 66 **Enable Output:** Options are **Enable** or **Disable**.
- 67 **Channel:** Uniquely identifies a given stream on the port. Several streams can be "multiplexed" on the same UDP port.
- 68 **Password:** Used to prevent unauthorized connections but does not encrypt the stream. The encoder's password **MUST** match the decoder's password. Note: An empty field is equivalent to no password.
- 69 **Max Latency:** Used to set maximum allowed latency of the stream over the Zixi protocol. Units are in milliseconds and are numeric values ranging from 100 to 5000 in increments of 100. Default option is "Auto".
  - a) Setting Max Latency to a low value means more forward error correction (FEC) is needed to guarantee stream delivery.
  - b) Setting Max Latency to a higher value allows the Zixi layer to use re-transmission instead of / in addition to FEC.
- NOTE:** In general, higher latency yields lower CPU load on the encoder and less overhead on the data rate.
- 70 **Hostname/IP Address:** User-defined IP address or host name.
- 71 **Port:** The UDP port used for communicating from the encoder-to-broadcaster. Default port used by Zixi broadcasters is "2088".

Press the **"Apply"** button to apply the settings.

- Zixi Output (Stream 2)	
Zixi Output Settings	
66 Enable Output	Enable ▾
67 Channel	2
68 Password	test
69 Max Latency	Auto ▾
70 Hostname / IP Address	172.16.182.8
71 Port	2088

Apply

Figure 4k - "Encoder" Tab - Encoding - Zixi Output: Stream 2 (example)



# Encoder Tab: Compositing

The screenshot displays the 'Encoder Configuration - Compositing' interface. It features three vertically stacked configuration sections, each for a different video resolution: 480i, 720p, and 1080i. Each section has a title bar indicating the resolution and required image dimensions. Below each title bar, there is a 'Select File (PNG only)' label, a 'Browse...' button, a status indicator 'No file selected.', and an 'Upload' button. A large black rectangular area in the center of each section displays the text 'This channel is currently unavailable'. At the bottom left of each section is a 'Delete Image' button. The interface is clean and uses a light gray border for the main container and individual sections.

Encoder Configuration - Compositing

Overlay for 480i - No Input (Must be 720x480)

Select File (PNG only)

Browse... No file selected. Upload

This channel is currently unavailable

Delete Image

Overlay for 720p - No Input (Must be 1280x720)

Select File (PNG only)

Browse... No file selected. Upload

This channel is currently unavailable

Delete Image

Overlay for 1080i - No Input (Must be 1920x1080)

Select File (PNG only)

Browse... No file selected. Upload

This channel is currently unavailable

Delete Image

Figure 5 - "Encoder Configuration - Compositing"

Compositing allows for an overlay of a static image upon loss of video input. It supports PNG file format and displays only when an image file has been uploaded.

PLEASE NOTE:

"Overlay for No Input (480i)," image resolution must be 720x480.

"Overlay for (720p)," image resolution must be 280x720.

"Overlay for (1080i)," image resolution must be 1920x1080.

# System Tab: Networking

The system configuration tab allows the user to set Ethernet and SNMP settings.

Status	Encoder	System	Log	Firmware Update
<a href="#">NETWORKING</a>	<a href="#">SAVE / RESTORE</a>	<a href="#">REMOTE MANAGEMENT</a>	<a href="#">SET SYSTEM TIME</a>	

### System Configuration

**1 SFP Video Network Settings**  
MAC Address: F0:3F:F8:FF:FF:1A  
DHCP Enable:  ▾  
IP Address:   
Subnet Mask:  ▾  
Default Gateway:   
HTTP Server Enable:  ▾  
VLAN Enable:  ▾  
VLAN Tag:

**2 SFP Control-Only VLAN Settings**  
VLAN Enable:  ▾

**3 Control Port Ethernet Settings**  
Control Port MAC Address: F0:3F:F8:FF:FF:1B  
IP Address:   
Subnet Mask:  ▾  
Default Gateway:

**4 DNS Settings**  
DNS Mode:  ▾  
Nameserver:

**5 Unit Description**  
Unit Name:   
Unit Location:

**6 SNMP Settings**  
Trap Target IP:   
Trap Target Port:   
System Contact:

**7 Web Settings**  
User Timeout:  ▾

Figure 6 - "System" Tab - Networking - System Configuration

# System Tab: Networking

## 1 SFP Video Network Settings:

**Mac Address:** read-only field that indicates the MAC Address of the “SFP Output” Port.

**DHCP Enable:** Enables or Disables DHCP on the SFP Output.

**IP address:** the static IP address that is assigned to the SFP Network Output. (Default: “**172.16.80.1**”)

**Subnet Mask:** the subnet mask address of the SFP Network Output.

**Default Gateway:** The Gateway Address of the SFP Network Output.

**HTTP Server Enable:** “Enabled”: This allows management capability on the same SFP port (SFP port IP Address) as the streaming video.

**VLAN Enable:** Enables or Disables VLAN.

**VLAN Tag:** allows the user to set the defined VLAN Tag for the unit.

## 2 **SFP Control-Only VLAN Settings:** Enables or disables VLAN Settings for Control-Only.

## 3 **Control Port Ethernet Settings:** are defined here for the control port.

**MAC Address:** read-only field that indicates the MAC Address of the “Control 100/1000” Port.

**IP Address:** the static IP address that is assigned to the unit, allowing the user to access it via the web interface.

**Subnet Mask:** the Subnet Mask address of the unit, allowing the user to access it from another network via the web interface.

**Default Gateway:** the gateway address of unit, allowing the user to access it from another network via the web interface.



IMPORTANT: The front-panel Control Port (Management Port) and the rear-panel SFP Port MUST be on different subnets.

## 4 **DNS Settings:**

**DNS Mode:** Options are **DHCP Provided** or **Manual** mode. When in **manual** mode, enter Primary, Secondary name servers and/or Search Domains in the space provided.

**Name Servers:** Read-only field that indicates conversion from domain names to IP addresses.

To set system time you will need to set the IP address of your local DNS server by configuring DNS Mode to “manual.” The encoder will then resolve the standard NTP server pool DNS entry and sync the system time.

### **Setting the UTC Time:**

#### Method 1A:

1. Set DHCP enable on SFP Video
2. Enable HTTP Server
3. Set DNS settings to DHCP Provided

#### Method 1B:

1. Set DHCP to disable on SFP Video
2. Enter your desired IP Address and a valid gateway
3. Enable HTTP Server
4. Set DNS Settings to Manual
5. Under Primary DNS, enter your network DNS
6. If none is available, you can use google DNS of 8.8.8.8, but your gateway must be able to reach the internet.

#### Method 1C:

1. Set valid IP under control port settings and a valid gateway
2. Set DNS Settings to Manual
3. Under Primary DNS, enter your network DNS
4. If none is available, you can use google DNS of 8.8.8.8, but your gateway must be able to reach the internet.

# System Tab: Networking

- 5 **Unit Description:** Unit Name and User Location are user-defined fields to make identification easier.
- 6 **SNMP Settings:** Simple Network Management Protocol (SNMP) monitoring for the unit. Settings include: Trap Target IP, Trap Target Port, and System Contact.
- 7 **Web Settings:** User Timeout - Range is 5 to 30 minutes (increments of 5)

# System Tab: Save/Restore

Save and Restore Settings

1 Save / Download Configuration

Click [Download](#) to Save configuration or right-click to "Save As"

2 Restore / Upload Configuration

Select file to upload

Choose File No file chosen

Click 'Upload' to upload configuration file

Upload

Figure 7 - "System" Tab - Save and Restore Settings

The Save/Restore Settings tab enables the user to import and export settings in the PEG PLUS encoder.

- 1 Click "[Download](#)" to save current configuration settings through a downloaded file.
- 2 To upload a saved configuration file, select the file to upload and then click the Upload button.

**PLEASE NOTE:** A reboot of the encoder is recommended after the config file has been uploaded. (See "[Admin Panel](#)" section)

# System Tab: Remote Management

The PEG PLUS encoder can be remote-managed by using SSH tunneling.

Secure Socket Shell (SSH) is a network protocol that provides administrators with a secure way to access a remote computer over an unsecured network such as the Internet.

# System Tab: Networking

The screenshot shows the 'System' tab in the PEG PLUS Control Panel. The 'Remote Management' section is active, displaying the 'SSH Reverse Tunnel' configuration. The 'Enable Tunnel' dropdown is set to 'Disable'. The 'SSH Host' field contains 'example.com', 'SSH Port' is '20', 'SSH User' is 'ipencoder', 'SSH Password' is empty, and 'Remote Port' is '8080'. An 'Apply' button is at the bottom.

Status	Encoder	System	Log	Firmware Update
<a href="#">NETWORKING</a>	<a href="#">SAVE / RESTORE</a>	<a href="#">REMOTE MANAGEMENT</a>	<a href="#">SET SYSTEM TIME</a>	

### Remote Management

**SSH Reverse Tunnel**

Enable Tunnel: Disable ▼

SSH Host:

SSH Port:

SSH User:

SSH Password:

Remote Port:

Figure 8 - "System" Tab - Remote Management

## Basic Setup with SSH Tunneling:

1. Configure an account on an ssh server (that's accessible to the PEG unit), and enable password logins for that account
2. Configure the ssh server's IP (or resolvable hostname, if applicable) in the PEG's "SSH Host" field
3. Configure the ssh server's ssh TCP port in the PEG's "SSH Port" field ('standard' is 22)
4. Enter the username and password for the ssh server account in the PEG's "SSH User" and "SSH Password" fields
5. Enter the port number of the remote (ssh server side) tunnel termination
6. Point a web browser at the ssh server's "Remote Port" configured in step 5 (for instance: "http://SSH\_SERVER\_NAME:REMOTE\_PORT")

# System Tab: Set System Time

The screenshot shows the 'System' tab in the PEG PLUS Control Panel. The 'System Time Configuration' section is active, displaying the 'Encoder System Time (UTC)' as '2016-12-06 19:22:02' and the 'Browser Time (UTC)' as '2016-12-06 19:22:17'. A 'Set Encoder Time' button is at the bottom.

**DRAKE DIGITAL™** **PEG PLUS Control Panel**

Logged in as: admin [LOG OUT](#)

Status	Encoder	System	Log	Firmware Update
		<a href="#">SYSTEM TIME</a>		

### System Time Configuration

Encoder System Time (UTC): 2016-12-06 19:22:02

Browser Time (UTC): 2016-12-06 19:22:17

Figure 9 - "Firmware Update" Tab

The System Time can be synced up to the current Browser time by using the "Set Encoder Time" button on this page. The time will be shown in UTC format.

# Log Tab

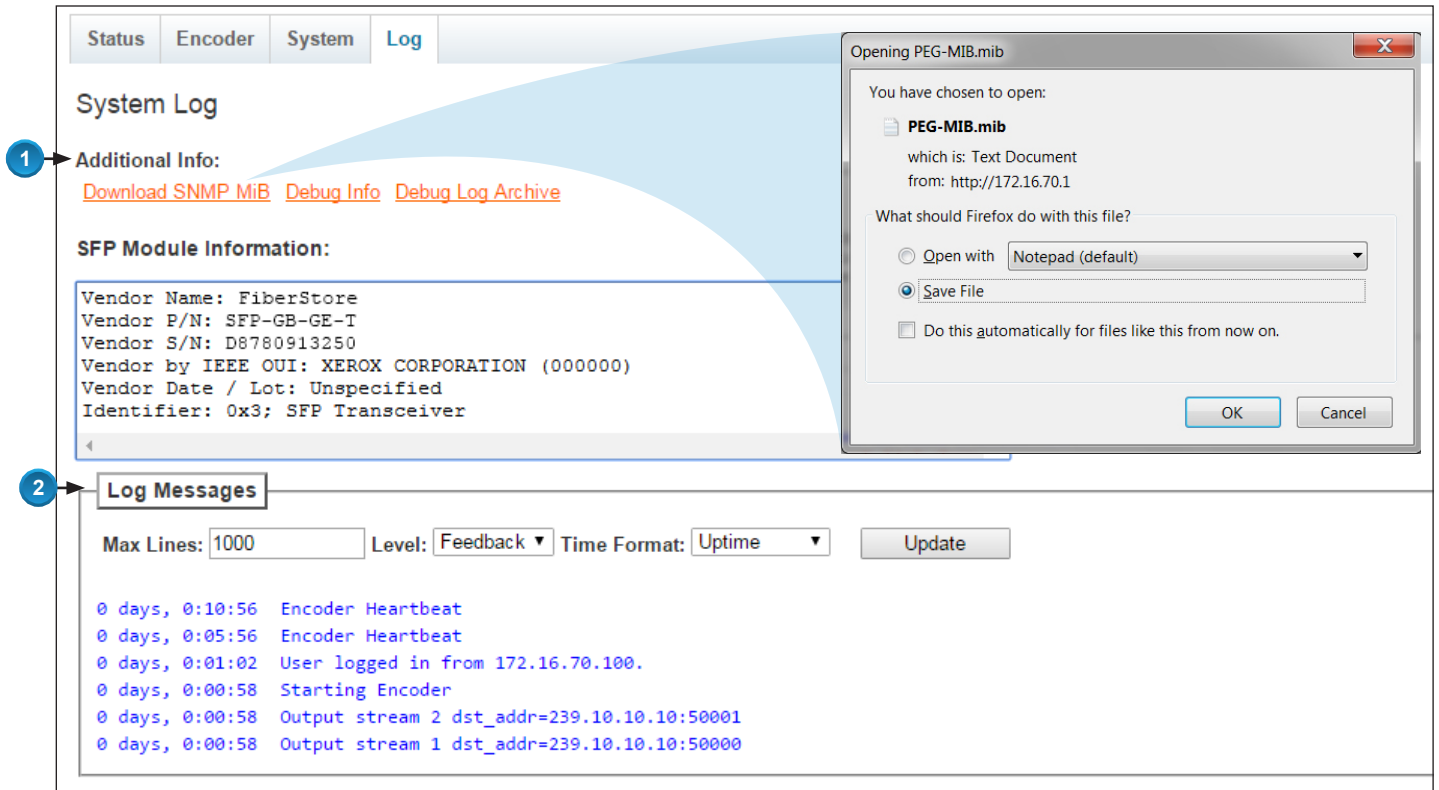


Figure 10 - "Log" Tab - System Log

## 1 Additional Info

**Download SNMP MiB:** Click on the link to save the encoder's ".mib" file.

**Debug Info:** Link to a text-only view of Debug Info

**Debug Log Archive:** Downloadable tar.gz archive file of the Debug Log.

## 2 Log Messages

**Max Lines to Display:** Sets the maximum number of lines to display starting at the most recent.

**Level:** Available options are Error, Info, Feedback, Debug and All.

**Time Format:** Available options are Uptime or Time-of-Day.

Press the "Update" button to apply the settings.

# Admin Panel

To change/modify the IP network parameters, as well as the Username and Password for the unit, you must be logged in to the unit as "Admin" to access a hidden screen shown in Figure 12 on the next page. At the top right of the screen select "Logged in as: admin".

**1 Admin Username:** is the Administrator's login (10 characters maximum). This login allows the user to make changes to any area of the unit. Login is case sensitive. (Factory Default: "admin")

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



# Admin Panel

**DRAKE DIGITAL™** **PEG PLUS Control Panel**

Logged in as: **admin** **LOG OUT**

Status Encoder System Log Firmware Update

**User Settings**

*Admin User Credentials*

1 Admin Username admin

2 Current Password

3 New Password

4 Confirm Password

*Guest User Credentials*

5 Guest Username guest

6 Current Password

7 New Password

8 Confirm Password

Apply

**System Controls**

Apply System Defaults Reboot

**Licensed Features**

Enabled Add-On Features:

- None

Update Key: Update Key

Figure 11 - "Admin" Panel

- 3 **New Password:** used only if the user wants to change the current Administrator's password. Must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
- 4 **Confirm Password:** must enter the same password as entered in "#3". If password doesn't match, an error message will be displayed.
- 5 **Guest Username:** is the Guest login (10 characters maximum). This login allows the user to view the unit settings but does not allow any changes. Login is case sensitive. (Factory Default: "guest")
- 6 **Current Password:** is the Current Guest Password (10 characters maximum). Password is case sensitive and will not be displayed. (Factory Default: "pass")
- 7 **New Password:** used only if the user wants to change the current Guest password. Must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
- 8 **Confirm Password:** must enter the same password as entered in "#7". If password doesn't match, an error message will be displayed.

# Admin Panel

- 9 **System Controls:** used to return settings to System Defaults or to Reboot the unit if applying settings through an import of a configuration file (See System Tab, "[Save/Restore](#)" section).
- 10 **Licensed Features:** To enable optionally purchased add-on features (such as Zixi), type in the License Key number provided by Drake and then press the "Update Key" button.

## Firmware Update Tab

This tab uploads the newest available firmware for the PEG PLUS and deploys firmware to the unit. While the firmware update tab is actively updating; the logging information and instructions are provided. When the update is completed, the unit will automatically reboot.

The screenshot shows the 'Firmware Update' tab selected in the Admin Panel. The navigation bar at the top includes 'Status', 'Encoder', 'System', 'Log', and 'Firmware Update'. The main content area is titled 'Firmware Update' and shows 'Update Status: ready'. Below this, there is an 'Upload' button and a numbered list of instructions: 1. Select firmware update file, and 2. Click 'Update' to upload the file and begin the update process. To the right of the instructions, there is a 'Choose File' button (labeled 'No file chosen') and an 'Update' button.

Figure 12 - "Firmware Update" Tab

- 1 **Select Firmware Update File:** press to browse and select firmware version file
- 2 **Update:** press to initiate firmware update

### Firmware Updates:

For more information regarding the latest product firmware releases, please visit our website at [www.rldrake.com](http://www.rldrake.com). The Firmware Updates page is available under the "Support" menu option within the main navigation. General instructions for the FTP site, as well as updating your firmware, are provided on this page. For further assistance, you may also contact Technical Assistance at 937-746-6990 or by email: [servicehelp@rldrake.com](mailto:servicehelp@rldrake.com)



# Service

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:  
Phone: 800-523-6049  
Email: [information@blondertongue.com](mailto:information@blondertongue.com)  
Fax: 732-679-4022
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).

Ship your "SERVICE REPAIR ONLY" return to:

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

## CREDIT RETURNS ONLY

1. Contact R.L. Drake Holdings, LLC.'s Service Department in one of three ways:  
Phone: 800-523-6049  
Email: [information@blondertongue.com](mailto:information@blondertongue.com)  
Fax: 732-679-4022
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).

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 800-523-6049 weekdays between 8:00 A.M. and 4:00 P.M. Eastern Standard Time. 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: [information@blondertongue.com](mailto:information@blondertongue.com)  
Fax: 732-679-4353

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 as 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.

# Limited Warranty

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

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

Notwithstanding anything herein to the contrary,

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

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

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

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

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

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

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

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

All claims for shortages, defects, and non-conforming goods must be made by the customer in writing within five (5) days of receipt of merchandise, which writing shall state with particularity all material facts concerning the claim then known to the customer. Upon any such claim, the customer shall hold the goods complained of intact and duly protected, for a period of up to sixty (60) days. Upon the request of Seller, the customer shall ship such allegedly non-conforming or defective goods, freight prepaid to Seller for examination by Seller's inspection department and verification of the defect. Seller, at its option, will either repair, replace or issue a credit for products determined to be defective. Seller's liability and responsibility for defective products is specifically limited to the defective item or to credit towards the original billing. All such replacements by Seller shall be made free of charge f.o.b. the delivery point called for in the original order. Products for which replacement has been made under the provisions of this clause shall become the property of Seller. Under no circumstances are products to be returned to Seller without Seller's prior written authorization. Seller reserves the right to scrap any unauthorized returns on a no-credit basis. Any actions for breach of a contract of sale between Seller and a customer must be commenced by the customer within thirteen (13) months after the cause of action has accrued. A copy of Seller's standard terms and conditions of sale, including the limited warranty, is available from Seller upon request. Copies of the limited warranties covering third-party proprietary sub-assembly modules and private-label products manufactured by third-parties may also be available from Seller on request. (Rev 0713)



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