

Everywhere You Want To Go...



ND-24-IP

Network Decoder with HD-SDI, HDMI and Component Outputs

INSTRUCTION MANUAL



| Model | Item # | Description |
|----------------|---------|---|
| ND-24-IP | 1002643 | Network Decoder with SDI, HDMI and Component output |
| ND-RP-2 | 1002653 | Rack Panel ND-24-IP |
| ND-24-Zixi-LIC | 1002654 | Zixi Link License Required for Point-to-Point Links |

937-746-4556
www.rldrake.com

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

| | |
|--|--|
| Purchase Location Name: | |
| Purchase Location Telephone Number: | |
| ND-24-IP Serial Number: | |

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

Manual Revision

This second release of the ND-24-IP instruction manual uses firmware release version 1.5.4.

The first release of this manual uses firmware release version 1.0.6.

For more information regarding product firmware releases, please visit our website at www.rldrake.com. You may also contact Technical Assistance at 937-746-6990 or by email: servicehelp@rldrake.com

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Important Safety Instructions

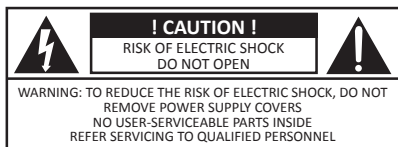
- 1. Read Instructions**—All the safety and operating instructions should be read before the product is operated.
- 2. Retain Instructions**—The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings**—All warnings on the product and in the operating instructions 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.



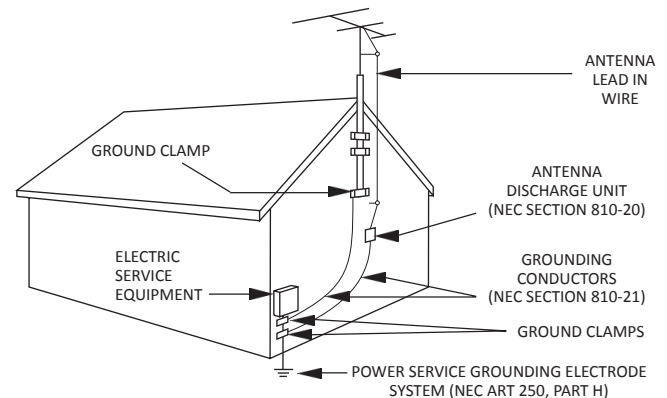
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL 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 et 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'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 à brancher sur une prise ayant un connecteur à la terre. Assurez-vous que la connexion 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 ouvrant ou en retirant 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 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.



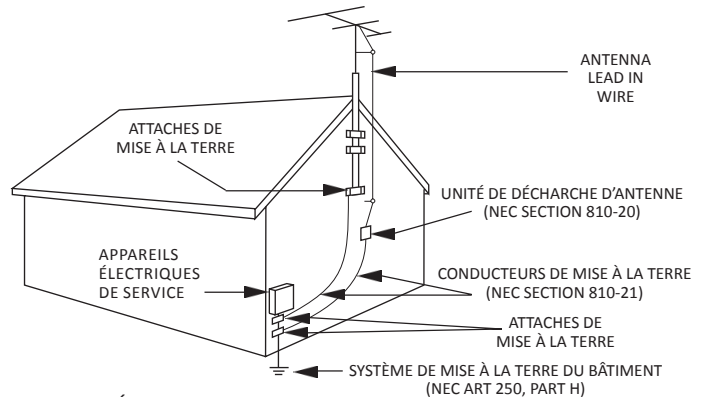
Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

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 A DECOUVERT.

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.

General Description & Features

INTRODUCTION

The **ND-24-IP** is a low cost professional MPEG-2 and H.264 decoder that is capable of receiving content from off-air, clear QAM, and IP sources. The ND-24-IP is capable of simultaneously outputting video content in SDI, HDMI and component formats. SDI outputs are available in 3G-SDI, HD-SDI, or SD-SDI formats.

The unit can be used as a stand-alone high quality decoder, or used in conjunction with other IP encoders, to provide an end-to-end IP video delivery solution over a managed network.

When the ND-24-IP decoder is used with Drake's PEG encoder (with Zixi option) and a Zixi Link License, it can provide a point-to-point reliable IP video transport from anywhere in the world with an internet connection. The ND-24-IP can also be used in a point-to-multipoint application, where the ND-24-IP would decode the IP based Zixi protocol stream from a Zixi Broadcaster.

FEATURES

- Simultaneous SDI/HDMI/Component HD + Composite SD Outputs
- Decoding content from Off-Air, Clear QAM, and IP sources
- Supports both MPEG-2 and H.264 content
- LCD screen
- Closed Captioning
- VBR or CBR
- IGMPv2 and IGMPv3
- IP Security Camera Decoding (VLC Compatible)



ND-RP-2 (stk # 1002653) - Rack Panel for two (2) ND-24-IP Decoders

Specifications

ND-24-IP Network Decoder with HD-SDI, HDMI and Component outputs Item # 1002643

| INPUT | |
|---------------------------|--|
| IP Mode | |
| Connectors: | RJ-45 |
| Standard: | 100/1000Base-T Ethernet |
| UDP/RTP: | Supported |
| Protocols: | IGMPv3/IGMPv2 Supported |
| Stream Portfolio | |
| SPTS and MPTS: | Null Packet Deletion |
| Bit Rate: | Variable and Constant |
| 8VSB Mode | |
| Connectors: | 1x "F" Female |
| Standard: | ATSC Digital Television A/53E |
| Tuning Range: | UHF (Ch.14-69), VHF (Ch.2-13) |
| Data Rate: | 19.392 MHz |
| Bandwidth: | 6 MHz |
| Power Level: | -20 to +20 dBmV |
| Impedance: | 75 Ω |
| QAM Mode | |
| Connectors: | 1x "F" Female |
| Standard: | ITU-T J.83; Annex A and B (64 & 256 QAM) |
| Tuning Range: | CATV Ch. 2-158 (STD, HRC, IRC) |
| Data Range: | 38.8 Mbps (QAM 256); 26.97 Mbps (QAM 64) – Auto Detect |
| Bandwidth: | 6 MHz |
| Power Level: | -15 to 20 dBmV (@ QAM 256), -20 to 20 dBmV (@ QAM 64) |
| Impedance: | 75 Ω |
| ALARMS/MONITORING/CONTROL | |
| Local | |
| Monitoring: | Front-panel LCD screen |
| Control: | Front-panel Navigational Key-pad |
| Remote | |
| Monitoring/ Control: | GUI-based menu via Web browser (1x RJ45 rear-panel connector; 10/100Base-T) IR input: 3.5 mm (future firmware release) |

| OUTPUT | |
|------------------------------|---|
| 3G/HD/SD-SDI | |
| Connectors: | 1x BNC |
| Standards: | SMPTE 424M (3G), SMPTE 292M (HD) & SMPTE 259M (SD) |
| Video Resolution: | 480i, 720p, 1080i, & 1080p |
| Audio: | Embedded PCM |
| HDMI | |
| Connectors: | 1x HDMI |
| Video Resolution: | 480i, 720p, 1080i, & 1080p |
| Audio: | Embedded PCM |
| Composite | |
| Connectors: | 1x RCA for Video |
| Video Resolution: | 480i |
| Audio: | 2x RCA for Analog Audio (L,R) |
| Component | |
| Connectors: | 3x RCA for Video (Y, Pb, Pr) |
| Video Resolution: | 480i, 720p, & 1080i |
| Video Aspect Ratio: | 4:3 & 16:9 |
| Audio: | 2x RCA for Analog Audio (L,R) |
| Digital Audio (SPDIF) | |
| Connectors: | 1x RCA |
| GENERAL | |
| Mechanical | |
| Dimensions: | 8.69 x 8.0 x 1.97 inches (220.7 x 203 x 50.0 mm) |
| Weight: | 3.0 lbs (1.36 kg) |
| Operating Temperature: | 32 to 122 °F (0 to 50 °C) |
| Storage Temperature: | -13 to 158 °F (-25 to 70 °C) |
| Operating Humidity: | 0 to 95% RH @ 35 °C max, non-condensing |
| Storage Humidity: | 0 to 95% RH @ 35 °C max, non-condensing |
| Power | |
| Power: | 5 VDC External Power Supply |
| Dissipation: | 10 W |

Front and Rear Panel Operation



FRONT PANEL

- 1 **LCD Display:** used for Network Settings
- 2 **Controls:** used for Network Settings
- 3 **Infrared Remote Control** (future firmware release)

REAR PANEL

- 4 **HDMI Out:** HDMI A/V Output
- 5 **HD-SDI Out:** HD/SD SDI Output ^{*(1)}
- 6 **SPDIF:** S/PDIF Digital Audio Output
- 7 **Audio Out:** Analog L+R Audio Output
- 8 **Video Out:** Composite Analog Video Output ^{*(1)}
- 9 **Component Out:** Component Video Output
- 10 **Remote Control:** GigE Ethernet Port for User Interface
- 11 **Data Input:** GigE Ethernet Port for IP Input
- 12 **IR:** IR extender (future firmware release)
- 13 **Expansion Port** (future firmware release)
- 14 **8VSB/QAM Input:** Digital Tuner Input
- 15 **+5VDC, 2.0A:** DC supplied from included AC adapter.

^{*(1)} Note - Current firmware allows for SD-SDI or composite video. When the video resolution is 480i and SD-SDI is set to "Enable", you'll get SD-SDI, but NOT composite. If SD-SDI is set to "Disable", you'll get composite, but not SD-SDI. If the video resolution is anything other than 480i, this has no effect.

Installation & Power-Up

Unpacking

You will find the following items in the box:

- ND-24-IP Network Decoder (QTY = 1)
- ND-24-IP Quick Guide
- ND-24-IP AC Adapter (QTY = 1)

Installation

The ND-24-IP is designed to be mounted in the close proximity to a 120 VAC – 60 Hz power plug.



For safe and reliable operation, do not block airflow.

Power-Up

Plug the AC Adapter into the back of the ND-24-IP unit at the input marked "+5VDC, 2.0A" and then into an AC power plug (120 VAC – 60 HZ).

Network Settings

The ND-24-IP has two rear panel network ports labeled Remote Control and Data Input. These ports are configured through the front panel.

Press 'ENTER' on the front panel and the following will appear.

> Control (eth1)

> Data (eth0)

Select port you wish to configure with 'Up' 'Down' arrows.

> Edit Cfg (ethx) where x specifies the port

MENU HIERARCHY

Network Settings

```
-- Control (eth1)
|
|- Edit Cfg (eth1)*
|  |- Enable DHCP
|  |- Edit Address**
|  |- Edit Netmask**
|  |- Edit Gateway**
|
|- Display IP
|- Display MAC
|- Display Netmask
-- Data (eth0)
|
|- Edit Data (eth0)*
|  |- Enable DHCP
|  |- Edit Address**
|  |- Edit Netmask**
|  |- Edit Gateway**
|
|- Display IP
|- Display MAC
|- Display Netmask
```

* Changes will not be applied until backing out of the "Edit XXX (ethX)" menu for an interface, at which point you will be prompted to confirm changes. Selecting "No" at the prompt will retain existing settings for that interface.

** Edit Address/Netmask/Gateway options will not be displayed if DHCP is enabled on the interface.

MENU NAVIGATION

The UP ARROW and DOWN ARROW keys allow moving an item selection cursor, indicated on screen by a right-arrow symbol, up and down between menu items.

In general, the ENTER key will enter the selected menu item, which may be either another sub-menu, a read-only status item (e.g Display MAC), or an editable items (e.g. "Edit Address").

For menu and read-only status items, the LEFT ARROW key acts as "back" button, returning to the previous level in the hierarchy.

For editable items, e.g. "Edit Address", the LEFT ARROW and RIGHT ARROW keys will move the cursor left and right, the UP ARROW and DOWN ARROW keys will modify the value at the cursor, and the ENTER key will accept the new value and return the previous menu.

Login Screen

To begin setup, connect the appropriate input and output video cables and plug in the ND-24-IP 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 and for IE, use IE11 minimum. Before you can communicate with the unit you must configure your computer's IP address to be on the same subnet as the ND-24-IP's Control IP address. To do so, follow these steps:

Connect an Ethernet cable from your computer to the Control GigE port on the rear panel of the ND-24-IP.

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

- a) On your computer, open the "Control Panel"
- b) Double-click on "Network Connections"
- c) Right-click on the "Local Area Connection", and then click on the "properties".
- d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol (TCP/IP)".
- e) A dialog box entitled "Internet Protocol (TCP/IP) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:
 - IP address:** same subnet as Control IP (eg.172.16.80.xxx where xxx is a different value than the one used for ND-24-IP)
 - Subnet mask:** 255.255.255.0
 - No need to enter a value for the **Default Gateway** for local access.

Click **OK** to close the dialog box. Now your computer is ready to communicate with the unit.

- OR -

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

- a) On your computer, navigate to the "Network and Sharing Center".
(Note: Can be found using the search box in the Start Menu or for Windows 8.x, the Start Screen)
- b) Once open, click on "Change Adapter Settings" on left hand side of the window.
- c) Right-click on the "Local Area Connection", and then click on the "Properties".
- d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol Version 4 (TCP/IPv4)".
- e) A dialog 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:** same subnet as Control IP (eg.172.16.80.xxx where xxx is a different value than the one used for ND-24-IP)
 - Subnet mask:** 255.255.255.0
 - No need to enter a value for the **Default Gateway** for local access.

Click **OK**.

Open a web browser on your computer and enter the URL address (Control IP Address). Once the ND-24-IP web server has been loaded from your browser, you should see the Control Panel as shown in the following sections.

Player Control Tab

The "Player Control" Tab configurable settings are determined by the selected "Source Type" (Figure 1) .

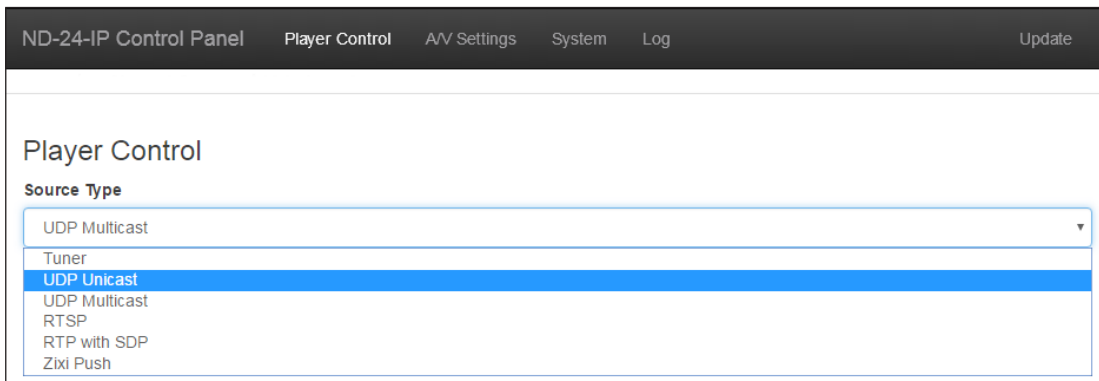


Figure 1 - "Player Control" - Source Type selections

PLAYER CONTROL TAB: INPUT

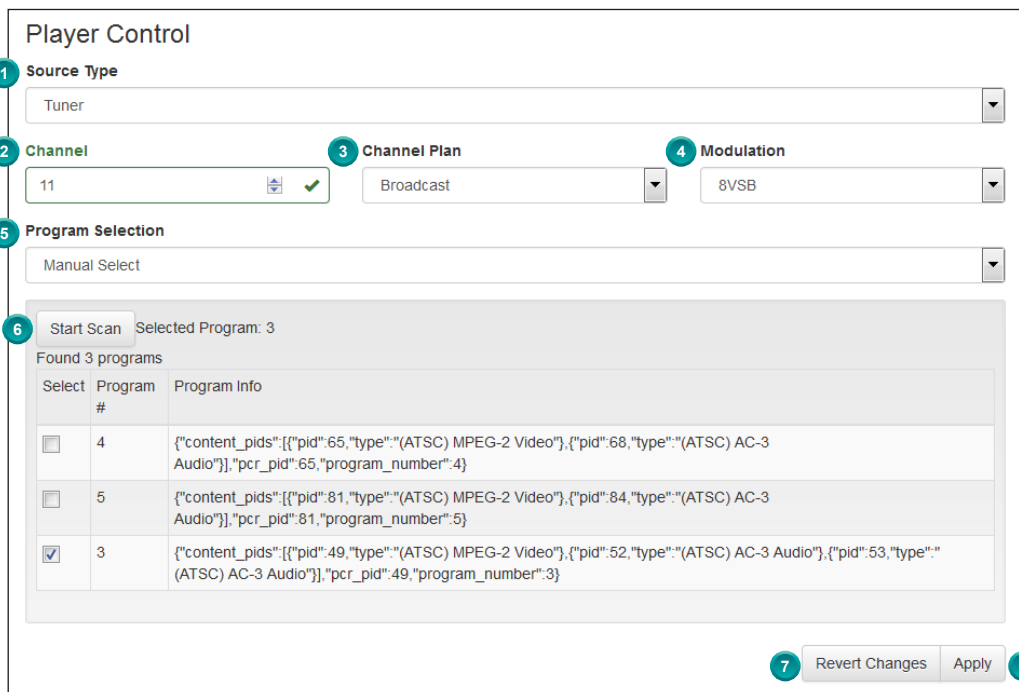


Figure 2 - "Player Control" - Tuner

- 1 Source Type:** Tuner
- 2 Channel:** RF channel to receive. Channels are dependent on "Channel Plan" (**3**). Use up-down buttons or direct channel entry for desired channel.
- 3 Channel Plan:** CATV (STD,IRC,HRC) channel range 2 to 158. Broadcast channel range 2 to 69.
- 4 Modulation:** Select QAM for CATV or 8VSB for Broadcast channel plans.

Player Control Tab

5 **Program Selection:**

Auto - Selects the first program in the PAT table

Program Number - User enters the desired program number to receive.

Manual Select - When selected "Start Scan" button (6) will be displayed.

6 **Start Scan:** Available only when in Manual Select Program mode. Clicking on the scan button will display all available programs. Select the desired program by checking the respective Select box.

7 **Revert Changes:** Returns to previous settings after the last "Apply".

8 **Apply:** Enters the current displayed settings into the decoder.

PLAYER CONTROL TAB: UDP UNICAST

The screenshot shows the 'Player Control' window for 'UDP Unicast'. It features four main input fields: 1. 'Source Type' dropdown menu set to 'UDP Unicast'. 2. 'UDP Port' text input field containing '2088' with a green checkmark. 3. 'Program Selection' dropdown menu set to 'Program Number'. 4. 'Program Number' text input field containing '-1' with a red 'x' icon. At the bottom right, there are two buttons: 'Revert Changes' (marked with a 5) and 'Apply' (marked with a 6).

Figure 3a - "Player Control" - UDP Unicast

1 **Source Type:** UDP Unicast

2 **UDP Port:** Enter in port number to be used.

3 **Program Selection:**

Auto - Selects the first program in the PAT table

Program Number - User enters the desired program number to receive.

Manual Select - When selected "Start Scan" button (4) will be displayed.

Clicking on the "Start Scan" button will display all available programs. Select the desired program by checking the respective Select box.

The screenshot shows the 'Start Scan' button (marked with a 4) in a greyed-out state. To its right, the text 'Selected Program: 917' is displayed. Below this, the text 'No program data available' is shown in a light grey box.

Figure 3b - "Program Selection" - Start Scan

5 **Revert Changes:** Returns to previous settings after the last "Apply".

6 **Apply:** Enters the current displayed settings into the decoder.

Player Control Tab

PLAYER CONTROL TAB: UDP MULTICAST

Player Control

1 Source Type
UDP Multicast

2 Multicast Group
239.0.0.2 ✓

3 Port
2088 ✓

4 IGMP Version
IGMPv2

5 Program Selection
Program Number
Program Number
-1 ✗

7 Revert Changes Apply 8

Figure 4a - "Player Control" - UDP Multicast

- 1 **Source Type:** UDP Multicast
- 2 **Multicast Group:** Enter IP address
- 3 **Port:** Enter in port number to be used.
- 4 **IGMP Version:** Supports either IGMPv2 or IGMPv3
- 5 **Program Selection:**

Auto - Selects the first program in the PAT table

Program Number - User enters the desired program number to receive.

Manual Select - When selected "Start Scan" button (6) will be displayed.

Clicking on the "Start Scan" button will display all available programs. Select the desired program by checking the respective Select box.

6 Start Scan Selected Program: 1

Found 1 programs

| Select | Program # | Program Info |
|-------------------------------------|-----------|---|
| <input checked="" type="checkbox"/> | 1 | {"content_pids":[{"pid":101,"type":"(ATSC) MPEG-2 Video"},{"pid":102,"type":"(ATSC) AC-3 Audio"}],"pcr_pid":101,"program_number":1} |

Figure 4b - "Program Selection" - Start Scan

- 7 **Revert Changes:** Returns to previous settings after the last "Apply".
- 8 **Apply:** Enters the current displayed settings into the decoder.

Player Control Tab

PLAYER CONTROL TAB: RTSP

Player Control

1 Source Type
RTSP

2 URL

3 Program Selection
Program Number

Program Number
-1

5 Revert Changes Apply 6

Figure 5a - "Player Control" - RTSP

1 **Source Type:** RTSP

2 **URL:** Enter URL address in RTSP protocol format.

Formatting of the URL: *rtsp://user:pass:@<ipaddress>/camera info*

"rtsp" - The type of protocol to enable streaming of the IP output of camera.

"user:pass" - The login and password information for the camera (refer to camera manual).

"<ipaddress>/" - Insert the IP address of the camera.

"Camera info" - This is related to each camera (refer to camera manual).

3 **Program Selection:**

Auto - Selects the first program in the PAT table

Program Number - User enters the desired program number to receive.

Manual Select - When selected "Start Scan" button (4) will be displayed.

Clicking on the "Start Scan" button will display all available programs. Select the desired program by checking the respective Select box.

4 Start Scan Selected Program: 917
No program data available

Figure 5b - "Program Selection" - Start Scan

5 **Revert Changes:** Returns to previous settings after the last "Apply".

6 **Apply:** Enters the current displayed settings into the decoder.

Player Control Tab

PLAYER CONTROL TAB: RTP WITH SDP

Player Control

1 Source Type
RTP with SDP

2 SDP Text

3 Program Selection
Program Number

Program Number
-1

5 Revert Changes Apply 6

Figure 6a - "Player Control" - RTP with SDP

- 1 **Source Type:** RTP with SDP
- 2 **SDP Text:** SDP (Session Description Protocol) profile text here in order to use with RTP (Real-time Transport Protocol) Source Type.
- 3 **Program Selection:**
- Auto - Selects the first program in the PAT table
 - Program Number - User enters the desired program number to receive.
 - Manual Select - When selected "Start Scan" button (4) will be displayed.
- Clicking on the "Start Scan" button will display all available programs. Select the desired program by checking the respective Select box.

4 Start Scan Selected Program: 917
No program data available

Figure 6b - "Program Selection" - Start Scan

- 5 **Revert Changes:** Returns to previous settings after the last "Apply".
- 6 **Apply:** Enters the current displayed settings into the decoder.

Player Control Tab

PLAYER CONTROL TAB: ZIXI PUSH

If a Zixi Link License is not pre-installed with the unit for point-to-point links over the public internet, a separate Zixi Link License (Model: ND-24-Zixi-LIC; P/N: 1002654) will be required.

The screenshot shows the 'Player Control' configuration interface for a Zixi Push input. It includes the following elements:

- 1 Source Type:** A dropdown menu set to 'Zixi Push'.
- 2 Zixi Port:** A text input field containing '2088' with a green checkmark.
- 3 Channel/Stream ID:** A text input field containing '2' with a green checkmark.
- 4 Password:** A text input field containing 'hockey' with a green checkmark.
- 5 Program Selection:** A dropdown menu set to 'Manual Select'.
- 6 Start Scan:** A button labeled 'Start Scan' with 'Selected Program: 917' next to it.
- Found 1 programs:** A table with the following content:

| Select | Program # | Program Info |
|-------------------------------------|-----------|--|
| <input checked="" type="checkbox"/> | 917 | {\"content_pids\": [{\"pid\": 481, \"type\": \"A/C video stream as defined in ITU-T Rec. H.264 ISO/IEC 14496-10 Video\"}, {\"pid\": 482, \"type\": \"(ATSC) AC-3 Audio\"}], \"pcr_pid\": 481, \"program_number\": 917} |
- 7 Revert Changes:** A button to return to previous settings.
- 8 Apply:** A button to save the current settings.

Figure 7 - "Player Control" - Zixi Push Input

- 1 Source Type:** Zixi Push will display in drop down menu only after the License Key has been entered.
- 2 Zixi Port:** specify Zixi Port
- 3 Channel/Stream ID:** must match either a PEG encoder ID for point-to-point or Zixi server stream ID for broadcast applications
- 4 Password:** must match either a PEG encoder password for point-to-point or Zixi server stream password for broadcast applications
- 5 Program Selection:**
 - Auto - Selects the first program in the PAT table
 - Program Number - User enters the desired program number to receive.
 - Manual Select - When selected "Start Scan" button (6) will be displayed.
- 6 Start Scan:** Available only when in Manual Select Program mode. Clicking on the scan button will display all available programs. Select the desired program by checking the respective Select box.
- 7 Revert Changes:** Returns to previous settings after the last "Apply".
- 8 Apply:** Enters the current displayed settings into the decoder.

A/V Settings Tab

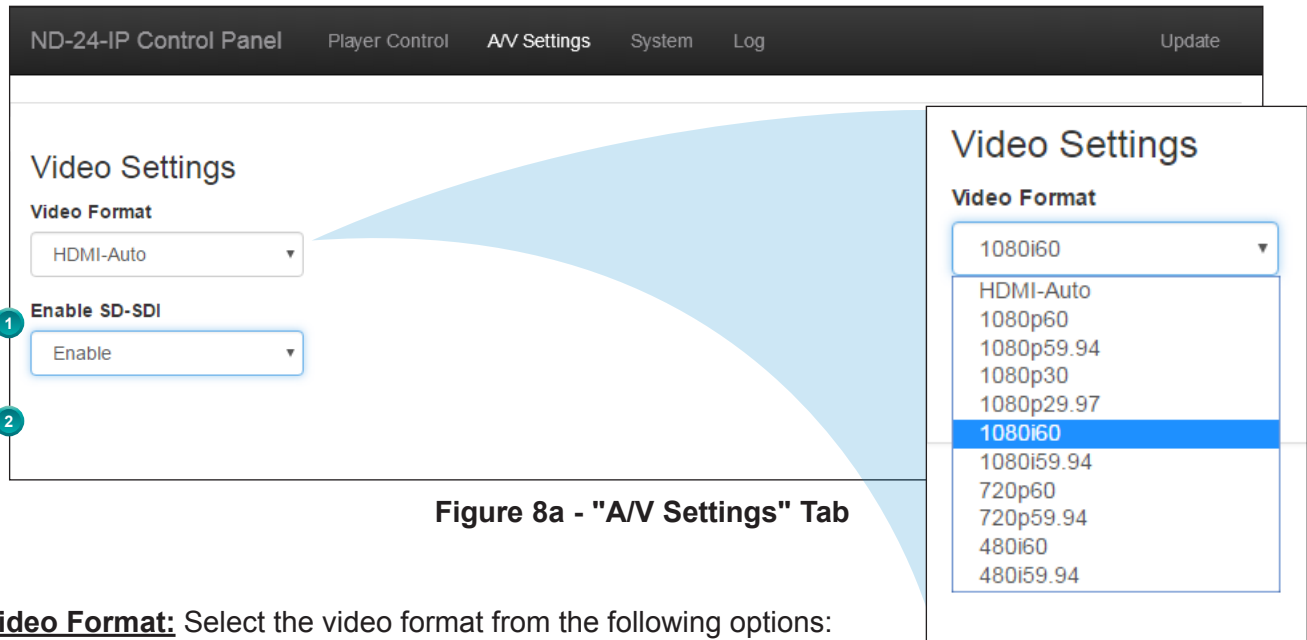


Figure 8a - "A/V Settings" Tab

1 **Video Format:** Select the video format from the following options:
HDMI Auto, 1080p60, 1080p59.94, 1080p30, 1080p29.97, 1080i60,
1080i59.94, 720p60, 720p59.94, 480i60 or 480i59.94

2 **Enable SD-SDI:** Enable or Disable *(1)

*(1) Note - Current firmware allows for SD-SDI or composite video. When the video resolution is 480i and SD-SDI is set to "Enable", you'll get SD-SDI, but NOT composite. If SD-SDI is set to "Disable", you'll get composite, but not SD-SDI. If the video resolution is anything other than 480i, this has no effect.

System Tab

"System Information" is predominately a "read-only" screen providing key information on the decoder.

SOFTWARE FEATURES

- 1 **Built-In Features:** Field will display "Zixi" if Link License is pre-installed from factory.
- 2 **License Key:** User can enter a Zixi Link License key (ordered separately #6674) for Zixi point-to-point links. To enter, user clicks on the pencil icon next to "License Key". User can then enter the key in the field and click the "Apply" button to install. After this is done, Zixi Push will then be an option on the Player Control tab's Source Type pull down menu.
- 3 **Add-on Features:** Indicates installed add-on features. "Zixi" will display here after the license key has been entered.

SOFTWARE VERSION

- 4 **Version:** Indicates currently installed software version name.
- 5 **Unique Build ID:** A machine-generated unique identifier for each software release.
- 6 **Debug:** A value of 0 indicates production software. A non-zero value indicates a testing / engineering software release.

System Tab

ND-24-IP Control Panel Player Control AV Settings System Log Update

System Information

Software Features

| | |
|---------------------|-----------------------------------|
| 1 Built-in Features | None |
| 2 License Key | f9b84ad698f89f0c0728355d0a80ea7c2 |
| 3 Add-on Features | zixi |

Software Version

| | |
|-------------------|--------------------------------------|
| 4 Version | 1.5.4v |
| 5 Unique Build ID | 9aa3e0ec-e421-4ae4-bd25-d432145a140f |
| 6 Debug | 0 |
| 7 Date | Mon Jan 23 17:02:36 EDT 2017 |

Hardware Info

| | |
|---------------------|------------------|
| 8 Serial Number | 5094750429168560 |
| 9 Model Name | ND-24-IP |
| 10 Hardware Version | 1 |
| 11 Control Port MAC | 0:14:39:0:78:9a |
| 12 Data Port MAC | 0:14:39:0:78:99 |
| 13 Capabilities | 0 |
| 14 Board Rev | X2 |
| 15 Board Number | 526302000 |

Reboot Decoder

15 Reboot System

Figure 9 - "System Info" Tab (Read-Only)

7 **Date:** Timestamp generated when producing a software release image.

HARDWARE INFO

8 **Serial Number:** Indicates unit serial number.

9 **Model Name:** Indicates the unit's model name.

10 **Hardware Version:** May be used to distinguish between hardware variants in future versions of the product.

11 **Control Port MAC:** Indicates MAC address of the "Remote Control" ethernet port.

12 **Data Port MAC:** Indicates MAC address of the "Data Input" ethernet port.

13 **Capabilities:** Numeric code that indicates optional software and hardware.

14 **Board Rev:** Indicates revision of the main circuit board.

System Tab

- 15 **Board Number:** Indicates the part number of the main circuit board in the product. May be of use in resolving customer support or warranty issues.

REBOOT DECODER

- 16 **Reboot System:** Select Reboot System to reboot the decoder.

Log Tab

The “Log” tab (Figure 10) is a “read-only” screen which documents and displays all unit activity.

The screenshot shows the 'Log' tab of the ND-24-IP Control Panel. The navigation bar includes 'ND-24-IP Control Panel', 'Player Control', 'AV Settings', 'System', and 'Log' (which is active), and an 'Update' button. The main content area is titled 'System Log' and contains a table of system events. The events are listed in chronological order from top to bottom, with the most recent at the bottom. Each entry includes a timestamp, a user ID, an action, and a detailed description of the event.

| Timestamp | User ID | Action | Description |
|---------------------|---------|--|-------------|
| 1970-01-01 12:47:38 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:47:21 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:47:04 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:46:48 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:46:31 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:46:14 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:45:58 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:45:41 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:45:24 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:45:08 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:44:51 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:44:34 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:44:18 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:44:01 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:43:52 | 6 | login: root login on 'pts/1' | |
| 1970-01-01 12:43:44 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:43:42 | 6 | login: root login on 'pts/2' | |
| 1970-01-01 12:43:33 | 6 | login: root login on 'pts/1' | |
| 1970-01-01 12:43:28 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:43:11 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:42:54 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |
| 1970-01-01 12:42:54 | 6 | login: root login on 'pts/1' | |
| 1970-01-01 12:42:38 | 7 | SDI: SDI vsync counted 1000x frames in 16683 ms [59.941 fps] | |
| 1970-01-01 12:42:28 | 6 | login: root login on 'pts/2' | |
| 1970-01-01 12:42:21 | 7 | SDI: SDI vsync counted 1000x frames in 16666 ms [60.002 fps] | |

Figure 10 - "Log" Tab (Read-Only)

Update

The "Update" Tab (Figure 11) allows the user to update the unit's firmware.

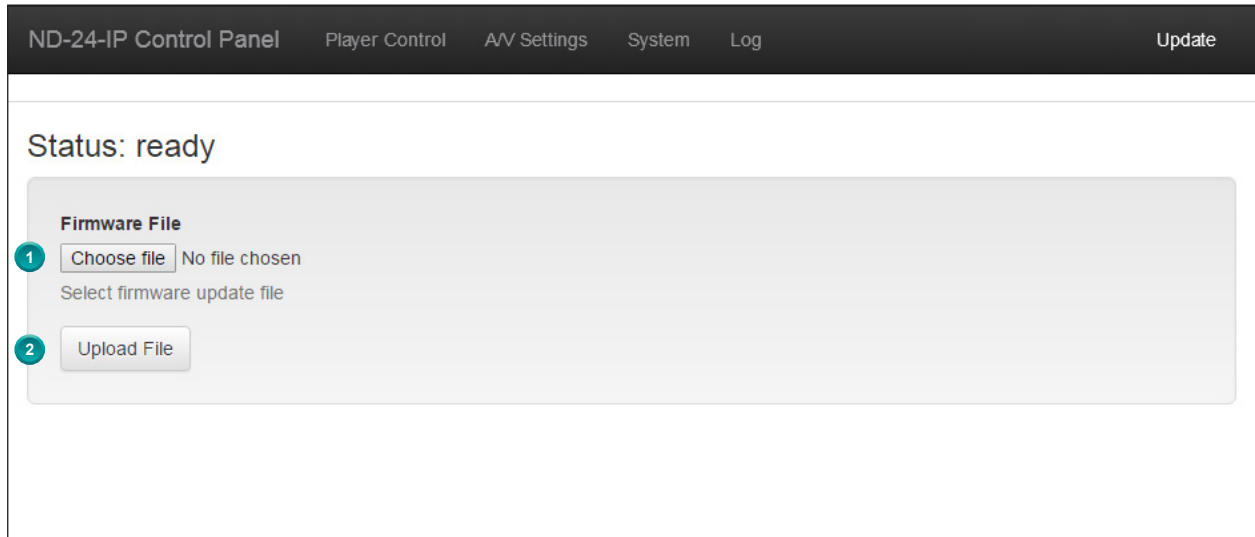


Figure 11 - "Update" Tab

- 1 **Firmware File:** download firmware update file and select
- 2 **Upload File:** press to initiate firmware update

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: 732-313-4256
Email: drakerepair@rldrake.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).

CREDIT RETURNS ONLY

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

Ship your "SERVICE REPAIR ONLY" return to:

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

Ship your "CREDIT RETURNS ONLY" return to:

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

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

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

IF YOU NEED TECHNICAL HELP

Call our Customer Service/Technical Support line at +1 (937) 746-6990 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: servicehelp@rldrake.com
Fax: (937) 806-1510

Many of the products that are sent to us for repair are in perfect working order when we receive them. For these units, there is a standard checkout fee that will be charged. Please perform whatever steps are applicable from the product's Instruction Manual before calling or writing 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 three (3) years from the date of original purchase for all stock hardware products (other than those specifically referenced herein below having a shorter warranty period); (ii) for a period of one (1) year from the date of original purchase, with respect to all MegaPort™, IPTV products, test equipment and fiber optics receivers, transmitters, couplers and integrated receiver/distribution amplifiers; (iii) for a period of one (1) year from the date of original purchase (or such shorter period of time as may be set forth in the license agreement specific to the particular software being licensed from Seller) with respect to all software products licensed from Seller (other than Core Product Software) that is (a) developed for a specific function or application, (b) complimentary to and does not function without the Core Product Software, and (c) listed with a specific model number and stock number in Seller's Price List ("**Non-Core Software**"); (iv) for a period of ninety (90) days from the date of original purchase, with respect to non-serialized products and accessories, such as parts, sub-assemblies, splitters and all other products sold by Seller (other than Core Product Software and Refurbished/Closeout Products) not otherwise referred to in clauses (i) through (iii) above. The warranty period for computer programs in machine-readable form included in a hardware product, which are essential for the functionality thereof as specifically stated in the published product specifications ("**Core Product Software**") will be coincident with the warranty period of the applicable hardware product within which such Core Product Software is installed.

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

Notwithstanding anything herein to the contrary,

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

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

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

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

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

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

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

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

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



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