LG CodePlus PIVD100R Warranty

Broadcast Products Welcome to the LG family! We believe that you will be pleased with your new PIVD100R Pro:Idiom Video Distribution Transcoder System. Please read this warranty carefully, it is a "LIMITED WARRANTY" as defined under Federal Law. This warranty gives you specific legal rights, and you may also have other rights that vary from state-to-state within the U.S.A.

LG's RESPONSIBILITY

Warranty Term One year parts and labor from date of purchase or delivery date.

Parts New or remanufactured replacements for factory-defective parts may be used. Such replacement parts are warranted for the remaining portion of the original warranty period.

Warranty Service Warranty service is provided at LG. Customer pays for shipping charges to LG; LG pays for return shipping charges to return the PIVD100R to customer. Call **1-888-865-3026** for further information.

Not Covered This warranty covers manufacturing defects and does not cover installation, adjustment of customer controls, installation or repair of antenna systems, cable converters or cable company-supplied equipment; it also does not cover damage due to misuse, abuse, negligence, acts of God or other causes beyond the control of LG. Any alteration of the product after manufacture voids this warranty in its entirety.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND LG SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, OR INCIDENTAL DAMAGES OF ANY KIND, INCLUDING LOST REVENUES OR PROFITS IN CONNECTION WITH THIS PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

OWNER'S RESPONSIBILITY

Effective Warranty Date Warranty begins on the date of delivery of the PIVD100R.
For your convenience, keep the dealer's dated bill of sale or delivery ticket as evidence of the purchase date.

Installation Guide Read the Installation & Setup Guide carefully so that you will understand the operation of the PIVD100R and how to adjust the settings.

Warranty Service **For warranty service information,** call **1-888-865-3026.** Parts and service labor that are LG's responsibility (see above) will be provided without charge. Other service is at the owner's expense. If you have any problem in obtaining satisfactory warranty service, call **1-888-865-3026.**
You must provide the model number, serial number and date of purchase or date of original installation.

For Customer Support/Service, please call:

1-888-865-3026

www.LGsolutions.com

206-4203
Revision C

Life's Good

CodePlus™ PIVD100R Pro:Idiom® Video Distribution Transcoder System

Installation & Setup Quick Reference | Warranty

The latest product information and documentation is available online at:
www.LGsolutions.com

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P/N: 206-4203 (Rev C)

For Customer Support/Service, please call:

1-888-865-3026

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WARNING:

TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead 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 PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

L’appareil ne doit pas être exposé à des égouttements d’eau ou des éclaboussures et de plus qu’aucun objet rempli de liquide tel que des vases ne doit être placé sur l’appareil.

REGULATORY INFORMATION:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user should be required to correct the interference at his own expense.

CAUTION:

Do not attempt to modify this product in any way without written authorization from LG Electronics U.S.A., Inc. Unauthorized modification could void the user’s authority to operate this product.

NOTE TO SATELLITE DISH INSTALLER:

This reminder is provided to call your attention to Articles 810 and 820 of the 2002 National Electrical Code. Refer to Article 810, in particular 810-1 and 810-15, for required grounding of the metal dish antenna. Refer also to 810-2 which, by reference to Article 820, requires that the satellite dish coaxial cable shield be connected to the grounding system of the building as close to the point of cable entry as practical.

COMPLIANCE:

The responsible party for this product’s compliance is: LG Electronics U.S.A., Inc.
2000 Millbrook Drive, Lincolnshire, IL 60069, USA • Phone: 1-847-941-8000

Marketed and Distributed in the United States by LG Electronics U.S.A., Inc.
2000 Millbrook Drive, Lincolnshire, IL 60069

Open Source Software Notice

The following GPL executables and LGPL libraries used in this product are subject to the GPL Version 2.0/LGPL Version 2.1 License Agreements:
GPL EXECUTABLES: bash-2.05b, busybox-1.1.3, e2fsprogs-1.34, ethtool-3, gawk-3.1.3, linux kernel 2.6.33, lrzsz_0.12.21, LTIB 10.1.1, lzo-2.03, mtd-utils-1.2.0, net-tools-1.60, ntpclient_2003_194, openvpn-2.1.1, pciutils-2.1.11, ppp-2.4.1, procps-3.1.11, screen-4.0.2-1, skell-1.13, time-1.7
LGPL LIBRARIES: eglibc 2.8, libelf-0.8.5, termcap-2.0.8

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You can obtain a copy of the GPL, LGPL licenses from: http://www.gnu.org/licenses/old-licenses/gpl-2.0.html and http://www.gnu.org/licenses/oldlicenses/lgpl-2.1.html.

This product includes:

- OpenSSH-4.3p2:
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Specifications

Dimensions

Height:	1.692 inches (42.977 mm)
Width:	19.0 inches (482.6 mm) with mounting brackets attached (for EIA standard 19-inch rack mount)
Depth:	8.5 inches (215.9 mm)
Weight:	4.45 pounds (2.02 kgrms) rack-only weight

Environmental Storage Conditions

Temperature:	-20° to 70° Celsius -4° to 158° Fahrenheit
Humidity:	95% non-condensing

Environmental Operating Conditions

Temperature (Tma):	0° to 40° Celsius 32° to 104° Fahrenheit
Humidity:	95% non-condensing

Electrical

RF Out Connector:	Type 'F'
RF Output Span:	4 Contiguous Channels (typically 24 MHz)
RF Output Frequency Range:	54 MHz to 864 MHz
Active Output Level at RF Out jack:	+ 42 dBmV Min.
DC Input:	+12V DC @ 2.1 Amps
Ethernet Connector (Control Port):	10/100/1000BaseT, RJ-45
Ethernet Connector (Feature Port):	1000BaseT Full Duplex, RJ-45
X-Ports (8):	100BaseTX, RJ-45
USB Ports (2):	USB 2.0

Note: Design and specifications subject to change without prior notice.

IMPORTANT SAFETY INSTRUCTIONS

1. **Read these instructions.**
2. **Keep these instructions.**
3. **Heed all warnings.**
4. **Follow all instructions.**
5. **Do not use this apparatus near water.**
6. **Clean only with dry cloth.**
7. **Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.**
8. **Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.**
9. **Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.**
10. **Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.**
11. **Only use attachments/accessories specified by the manufacturer.**
12. **Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination in order to avoid injury from tip-over.**
13. **Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**
14. **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 supply to your INSTALLATION, consult your product dealer or local power company.
15. **Overloading**
    Do not overload wall power outlets and extension cords as this can result in a risk of fire or electric shock.
16. **Disconnect Device**
    The AC mains plug is used as the disconnect device. The disconnect device must remain readily operable.
17. **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. Do not use liquid cleaners or aerosol cleaners.
18. **Outdoor Use**
    Warning: To prevent fire or shock hazards, do not expose this product to rain or moisture.
19. **Wet Location**
    Do not use this product near water or moisture or in an area, such as a basement, that might become flooded. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
20. **Test Equipment**
    In some cases, LG has supplied or recommended the use of test equipment and devices for the setup and testing of the equipment. The operation and maintenance of test equipment is described in their associated instruction manuals. Please refer to these manuals for explicit instructions regarding the safe use and handling of the equipment.

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IMPORTANT SAFETY INSTRUCTIONS

(Continued from previous page)

21. Damage Requiring Service
Unplug this product from the wall power outlet and refer servicing to qualified service personnel under the following conditions:

a. If 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 the cabinet has been damaged.

f. If the product exhibits a distinct change in performance.

Caution: Refer all servicing to qualified service personnel.

22. Servicing

Caution: These servicing instructions are for use by qualified service personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that described in the operating instructions unless you are qualified to do so.

23. Replacement Parts
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

24. 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.

PIVD100R Rack Installation
(also see pages 10 and 11)

To install the PIVD100R in a rack:

- Carefully slide the PIVD100R into a standard 19-inch equipment rack.
- When mounting in the rack, make sure to use the appropriate hardware. ALL FOUR MOUNTING SCREWS MUST BE USED.
- This equipment is not designed to support other devices. Do NOT stack other equipment on the top of the PIVD100R.
- Rear cabling must be dressed and supported so that the weight of the cabling is not a strain on the PIVD100R connectors.
- MOUNTING OF THE EQUIPMENT IN THE RACK SHOULD BE SUCH THAT A HAZARDOUS CONDITION IS NOT ACHIEVED DUE TO UNEVEN MECHANICAL LOADING.

Rack-mount Considerations

A. Elevated Operating Ambient
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer (see Specifications information in this document).

(Continued on next page)

Troubleshooting

This section provides PIVD100R installation and setup troubleshooting information.

Equipment Setup Review

- Make sure all connectors and connections are tight and secure on all entertainment system components.
- Check the PIVD100R LEDs:
  - Under standard operating conditions the PWR (Power) LED on the PIVD100R front panel is continuously lit green. If there is a hardware fault, the PWR LED will turn and stay red. (When power is first applied to the PIVD100R, the PWR LED initially flashes red and then turns green.)
  - When the PIVD100R is booted and operating normally, the STATUS LED is continuously lit green.
- COM 23 STBs: Ensure the satellite STB access card is installed, up-to-date, and authorized by DIRECTV.
- ViP 222 and ViP 222k STBs: Ensure the satellite STB smart card is up-to-date and authorized by DISH Network.

Network Setup

If the network is configured for DHCP but the PIVD100R has not been assigned an IP address, i.e., the Ctrl IP field in the PIVD100R System Information display is blank:

1. Check the Control Port connector on the rear panel of the PIVD100R. Make sure the cable connection is tight and secure.
2. Observe the green LED on the Control Port. Once the PIVD100R is connected to the network, the LED will be lit continuously.
3. Contact the network administrator to verify the network status and check that the DHCP server is working properly.

(Continued from previous page)

f) (Dual tuner STB only) Repeat steps (c) to (e) to set the channel for the second of the two tuners. When the channel has been set on both tuners, continue to step (g).

g) At the `STB Command >` prompt, type **stb** and press **Enter** to access the STB Menu for another STB.

At the `Enter STB number [#]>` prompt, type the number of the PIVD100R X-Port connected to the next STB for which you wish to set the channel(s) and press **Enter**. The system will identify the (newly) current STB and then display an STB command prompt.

h) Repeat steps (c) to (g) to set the channel on each STB/tuner.

Note: After you set the channel for the last STB/tuner, you will not have to repeat step (g).

19. At the `STB Command >` prompt, type **exit** and press **Enter** to return to the `Command >` prompt.
20. (Optional) If you wish to review the system settings at this time, at the `Command >` prompt, type **info** and press **Enter** to display the system information.

    Note: You can also run the "monitor" command, if desired, to review the system settings. Refer to the extended Installation & Setup Guide for further information on monitoring the system.
21. At the `Command >` prompt, type **reset** and press **Enter** to reset the system.

    Note: This initiates a reset of the PIVD100R and may also initiate a reset of one or more STBs, if required. Once the PIVD100R is reset (may take up to 90 seconds), it may then take up to 10 minutes for the system to resume normal operation.
22. Check one or more room receivers to make sure all content is properly mapped and available.

IMPORTANT SAFETY INSTRUCTIONS

(Continued from previous page)

B. Reduced Air Flow
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PIVD100R. Do NOT stack other equipment on the top of the PIVD100R. Also, ensure that the unit's AC power adapter is never stacked or bundled with other AC power adapters. Each adapter should have adequate ventilation and should be isolated from other heat sources.

C. Circuit Overloading
Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring.

D. Reliable Earthing
Maintain reliable earthing of rack-mounted equipment. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

E. Mains Outlet Earthing
The apparatus with Class I construction must be connected to a mains socket outlet with a protective earthing connection.

PIVD100R Installation on a Flat Surface

To install the PIVD100R on a level surface (table top, shelf, etc.):

- Install the equipment in an environment compatible with the maximum operating ambient temperature (Tma) specified by the manufacturer (see Specifications information in this document).
- Place spacers or rubber feet (not provided) on the bottom of the PIVD100R.
- Carefully place the PIVD100R on the level surface.
- To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PIVD100R. Do NOT stack other equipment on the top of the PIVD100R.

The LG CodePlus™ PIVD100R Pro:Idiom® Video Distribution Transcoder System provides a flexible 8- to 16-program HDTV solution for system providers who provide satellite delivered content to commercial facilities (hotels, hospitals, etc.). The PIVD100R incorporates eight 100BaseTX X-Ports that connect up to eight satellite set-top boxes (STBs) from either DIRECTV® or DISH Network® satellite service.

Features

- Two output options: RF or IP (concurrent operation not supported)
  - RF output: The PIVD100R generates four contiguous 256-QAM cable channels, with up to two DIRECTV or three DISH Network program streams multiplexed on each channel. This capability provides up to 8 HD programs of DIRECTV content or up to 12 HD programs of DISH Network content.
  - IP output: The PIVD100R provides up to 8 HD programs of DIRECTV content or up to 16 HD programs of DISH Network content.
- Transcodes satellite content for distribution
- Built-in Pro:Idiom content protection
- Supports Pro:Idiom encryption key maintenance
- Transcoded output supports Closed Captions and V-Chip (Parental Control) (if included in the signal source)
- Remote management capability over Ethernet via either graphical user interface (GUI) or command line interface
- Unit does not require local monitor, keyboard, or mouse connection
- Small, lightweight chassis
- 19-inch rack-mountable
- 1U height profile to minimize rack space usage

The PIVD100R converts satellite MPEG-4 HD programming to an encrypted, encoded transport stream. A Pro:Idiom-compatible television is required to view premium HD content, and a proper session ID must be set at the TV in order for Pro:Idiom decryption to be enabled. LG's Pay-Per-View (PPV) partners can set up this session through their interface. LG's Free-To-Guest (FTG) Mode of operation also enables Pro:Idiom decryption.

Multiple PIVD100R units may be combined in the head end to deliver an entire channel lineup of HD programming.

Note: Design and specifications subject to change without prior notice.

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b) At the `Setup Command >` prompt, type **type** and press **Enter**. The system will display a list of the available STB types (DIRECTV or DISH), followed by a prompt for the new STB type:

`Enter number of new STB type [2]>`

c) At the prompt, type the number that corresponds to the appropriate STB type and press **Enter**.

The system will confirm your selection, for example:

`STB type is set: Dish`

Note: If you set a new STB type, you will be prompted to reset the system. If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.

17. If the `Setup Command >` prompt is on display, type **exit** and press **Enter** to return to the `Command >` prompt.
18. Set the channel(s) on each of the installed STBs as follows:

a) At the `Command >` prompt, type **stb** and press **Enter** to access the STB Menu.

b) At the `Enter STB number >` prompt, type the number of the PIVD100R X-Port connected to the STB for which you wish to set the channel(s). Then, press **Enter**.

The system will identify the current STB and then display an STB command prompt, for example:

```
Current STB: STB-1
STB-1 Command >
```

c) At the `STB Command >` prompt, type **channel** and press **Enter**.

d) (Dual tuner STB only) At the `Enter tuner number (1 or 2) [1]>` prompt, either press **Enter** to accept the default value in square brackets, or type the appropriate tuner number and then press **Enter**.

e) At the `Enter channel [7]>` prompt, either press **Enter** to accept the default value in square brackets, or type in a new channel number and then press **Enter**.

The system will display confirmation, for example:

`Channel: 8` or `Tuner: 1 Channel: 2`

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14. (Optional) For remote management purposes, you can set a static IP address for the PIVD100R Control Port as follows:
    a) If the `Command >` prompt is on display, type **setup** and press **Enter** to access the Setup Menu.
    b) At the `Setup Command >` prompt, type **setip** and press **Enter**. The system will display the current network configuration, followed by the Network Configuration Menu.
    c) Use the Network Configuration Menu “ip” and “dns” commands and follow the system prompts to configure the Control Port. Refer to the extended Installation & Setup Guide for further information on the commands.

    Note: Review the New Network Configuration overview carefully before you confirm the Control Port configuration settings. Ensure each of the addresses was entered correctly.

    Note: If you change the Control Port configuration, you will be prompted to reset the system. If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.
15. Once all physical connections to the PIVD100R have been made and the Control Port IP address has been assigned or configured, you also have the option to complete the system setup remotely using either the web GUI or the command line interface.
    - To complete the system setup in the current session (via the Service Port), continue with step 16.
    - If you wish to complete the setup remotely, reset the system at this time: At either the `Command >` prompt or the `Setup Command >` prompt, type **reset** and press **Enter**. When you are ready, establish remote communication with the PIVD100R, and then continue with step 16. Note that you may use the GUI to perform the configuration steps, if desired. Refer to the extended Installation & Setup Guide for further information on establishing remote communication with the PIVD100R and/or for further information on the GUI.
16. Check the STB Type field in the System Information display (if necessary, you can rerun the “info” command from either the `Command >` or `Setup Command >` prompt). If the default value (DIRECTV) does not identify the appropriate service provider, set the STB type as follows:
    a) If the `Command >` prompt is on display, type **setup** and press **Enter** to access the Setup Menu.

(Continued on next page)

This document provides installation and setup support only for the PIVD100R. The satellite dish antenna and satellite STBs must be installed and operating before you proceed to set up the PIVD100R. LG recommends that the system be professionally installed.

Check the following items before you begin PIVD100R installation and setup procedures.

Satellite Dish Antenna

__ The satellite dish must be located where it will have unobstructed access to the satellite signals. At least RG-6 or larger coaxial cables must be installed between the satellite dish antenna system and the satellite STB. Refer to documentation provided with the satellite dish antenna.

__ Ensure the appropriate satellite dish configuration (either 3-LNB or 5-LNB depending on the satellite provider) is in place for MPEG-4 HD channel reception. If the number of transcoders exceeds the dish antenna capacity, multi-switch equipment will be required. For more information, refer to the manufacturer’s documentation.

Satellite STBs

__ DIRECTV satellite service: Up to eight COM 23 satellite STBs are supported for either RF or IP output.

__ DISH Network satellite service: Up to six ViP® 222 or ViP 222k satellite STBs are supported for RF output, or up to eight ViP 222 or ViP 222k satellite STBs are supported for IP output.

__ Refer to the manufacturer’s documentation, and carefully follow the system setup procedures for each satellite STB. (The satellite STBs provide the X-Port signal inputs for the PIVD100R.)

__ Authorization from the satellite service provider is required for HD channels. Contact the provider to get subscription programming authorization for each satellite STB.

PIVD100R

__ Unpack the PIVD100R unit and all accessories.

PIVD100R Accessories:	• AC Power Cord and Adapter • 8 x 1 meter CAT5E Cables (for X-Port connections)

__ Select the location for mounting the PIVD100R. Ensure that adequate ventilation is available.

__ Obtain the necessary attachment hardware to mount the PIVD100R chassis in its targeted location.

__ Plan and install the necessary cabling and network (Ethernet) and AC power access for the PIVD100R. You will also need the following to connect a PC directly to the PIVD100R for system setup purposes: FTDI TTL-USB cable (P/N TTL-232R-5V-AJ).

Channel Assignments for RF Output

__ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the RF output of the PIVD100R. Ensure that up to four contiguous CATV channels are allocated for the RF output. The PIVD100R uses a 256-QAM modulation format, thereby occupying approximately 24 MHz of frequency spectrum.

The RF start channel is user-assigned during system setup, and the remaining channels are then automatically assigned per EIA-542 STD CATV frequency allocation standards. For example, if the RF start channel assignment is channel “2,” the three remaining channels will be “3” “4” and “5”. However, if the RF start channel assignment is “6,” the three remaining channels will be “95” “96” and “97”. Refer to EIA-542 STD CATV frequency allocation tables for further information as required.

The highest available RF channel number for the PIVD100R is “135.” Thus, to allocate all four channels available for PIVD100R RF output, the RF start channel must be set no higher than “132.”

__ Find a location on the frequency spectrum that is free of existing noise.

Channel Assignments for IP Output

__ The PIVD100R outputs IPv4 multicast streams. Ensure the institution’s IP network and room receivers support IPv4 multicast and that the network is capable of selectively routing multicast traffic. Refer to vendor equipment documentation for further information.

__ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the IP output of the PIVD100R. Ensure that up to 16 unused and unreserved IPv4 multicast addresses, within the designated range 224.0.0.0 to 239.255.255.255, are allocated for the PIVD100R IP output.

IP channels are user-assigned during system setup. You may opt to specify an IP start channel and enable the system to auto-increment the remaining channel assignments. For example, if the IP start channel assignment is “227.0.0.40,” the remaining channels will be “227.0.0.41,” “227.0.0.42,” etc. Or, you may opt to manually specify the IP details for each IP channel.

__ Reserve at least one User Datagram Protocol (UDP) port for the multicast data streams. You can use the system default (1234) or another unassigned port number for each data stream, as required, for example, 50000, 50001, etc. The port(s) must avoid conflict with other protocols in use.

Note: Refer to the IANA IPv4 Multicast Address Space Registry and/or IANA Service Name and Transport Protocol Port Number Registry for further IP address/port information as required.

Refer to the ***CodePlus PIVD100R Pro:Idiom Video Distribution Transcoder System Installation & Setup Guide*** for further installation and configuration information.

Product documentation is available online at: **www.LGsolutions.com**.

(Continued from previous page)

The system will display an overview of the settings, for example:

```
RF config:     Mode 2, QAM-B, RF: 6 MHz, 5.36 MSps
RF channels:   7 8 9 10
```

f) Connect RF OUT on the PIVD100R rear panel to the RF distribution center combiner, and balance the RF signal so that the signal level at the TV(s) is between 0 to +7 dBmV.

Caution: For proper system performance, the PIVD100R signal level at the TV input (ANTENNA IN) must be between 0 to +7 dBmV. Note that additional equipment (i.e., attenuators) may be required to adjust the signal level.

g) Go to step 14.

13. (IP output only) Complete PIVD100R IP output configuration as follows:

a) If the `Command >` prompt is on display, type **setup** and press **Enter** to access the Setup Menu.

b) At the `Setup Command >` prompt, type **ipout** and press **Enter** to access the IP Output Configuration Menu.

c) The IP Output Configuration Menu offers two options for configuring output IP channels:

- To manually configure the output IP channels, type **set** and press **Enter** at the `IP Output Command >` prompt. For each STB/tuner, you will need to specify a multicast IP address and the multicast port number.
- To auto-configure output IP channels from a base multicast IP address and port number, type **fill** and press **Enter** at the `IP Output Command >` prompt. Type the base multicast IP address and the multicast port number at the system prompts. The system will then auto-increment the remaining IP channels.

Refer to the extended Installation & Setup Guide for further information on these commands.

d) Once you have completed the output IP channel configuration as required, at the `IP Output Command >` prompt, type **apply** and press **Enter** to confirm and apply the configuration data to the system. Then, type **exit** and press **Enter** at the next `IP Output Command >` prompt to return to the Setup Menu prompt.

e) Connect a CAT5E or better cable between the Feature Port on the PIVD100R rear panel and the institution’s IP distribution network.

f) Continue with step 14.

(Continued on next page)

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10. Check the Output field in the System Information display. If the default value (RF) does not identify the appropriate output type, set the output mode as follows:
    a) At the `Command >` prompt, type **setup** and press **Enter** to access the Setup Menu.
    b) At the `Setup Command >` prompt, type **omode** and press **Enter** to set the output mode. The system will display a list of the available output mode options (RF or IP), followed by a prompt for the new output mode:
    `Enter number of new output mode [1]>`
    c) At the prompt, type the number that corresponds to the appropriate output mode and press **Enter**.
    The system will confirm your selection, for example:
    `Output mode is set: IP`
11. The next step depends on the output mode:
    - If you are setting up the system for RF output, continue with step 12.
    - If you are setting up the system for IP output, go to step 13.
12. (RF output only) Complete PIVD100R RF output configuration as follows:
    a) If the `Command >` prompt is on display, type **setup** and press **Enter** to access the Setup Menu.
    b) At the `Setup Command >` prompt, type **rf** and press **Enter**. The system will display a list of RF mode options, followed by a prompt for a selection:
    `Select a new RF mode [2]:`
    c) At the prompt, type the number that corresponds to the appropriate RF mode and press **Enter**.
    Note: By default, the PIVD100R is configured for QAM-B RF output; thus, the default value in square brackets should show the appropriate option for RF output, in which case, you can simply press **Enter** at the prompt to accept the default value.
    d) At the `Enter a new RF channel [3]:` prompt, either press **Enter** to accept the default value in square brackets, or type a new RF start channel number and then press **Enter**.
    e) At the `Enter number of channels [4]:` prompt, either press **Enter** to accept the default value in square brackets, or type the applicable number of channels (Maximum = 4) and then press **Enter**.

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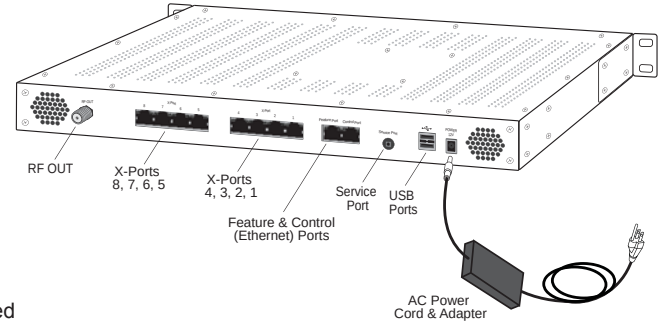
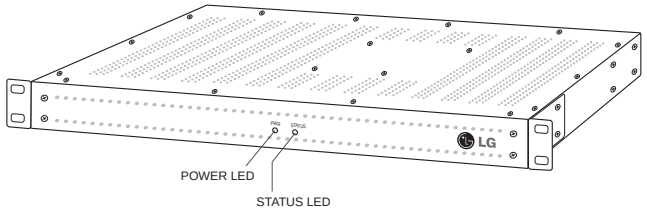
PIVD100R Rear View



Disconnect Device
The AC mains plug is used as the disconnect device. The disconnect device must remain readily operable.

PIVD100R Front View

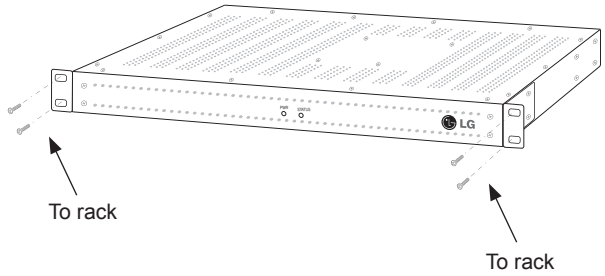


Ventilation Holes
Air flow must not be obstructed. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PIVD100R. Do NOT stack other equipment on the top of the PIVD100R.

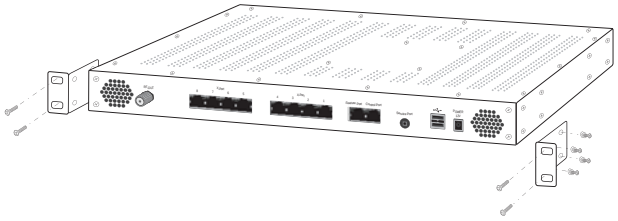
Typical Rack Installation

1. (Optional) As shipped, the PIVD100R mounting brackets are attached flush with the front of the unit (see diagram a). If desired, the mounting brackets may be detached from the unit and reattached, for example, so that they are flush with the rear of the unit (see diagram b). If you wish to change the location/orientation of the mounting brackets, carefully remove each of the four (M4 x 10 mm) screws and attendant washers (one flat and one lock washer per screw) holding each bracket in place. Then, use the same screws and washers to reattach the mounting brackets in the desired location.
2. Carefully slide the chassis into a standard 19-inch equipment rack.
3. Use all four mounting screws to secure the chassis to the rack.

(a)



(b)



Use flat washer and lock washer with each M4 x 10 mounting bracket screw.

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7. At the `login as:` prompt, type **admin** and press **Enter**. Then, at the `password:` prompt, type **Password4Partners** (case-sensitive) and press **Enter**.

   Note: After the system setup is complete, it is highly recommended that you use the "pwd" command, available from the PIVD100R command line interface Setup Menu, to change the admin user password from its default value. Refer to the extended Installation & Setup Guide for further information.

8. At the `Command >` prompt, type **info** and press **Enter**. (Note that you can press **Enter** at any PIVD100R command prompt to view current menu.)

   The initial System Information display identifies PIVD100R default configuration settings, including the Control Port IP address, the STB type, and the output configuration, for example:

```
PIVD100R
Pro:Idiom Video Distribution Transcoder System
Copyright (c) 2010-2012 LG Electronics U.S.A., Inc.
Copyright (c) 2010-2012 Zenith Electronics LLC

SN:               101-12470001
Version           1.5
HW id:            3-207-79-4
Ctrl MAC:         00:0C:63:3B:00:BE
Ctrl IP:          136.166.60.92
STB Type:         DirecTV
Output:           RF
RF config:        Mode 2, QAM-B, RF: 6 MHz, 5.36 MSps
RF channels:      3 4 5 6
Local time:       Thu Mar 22 14:42:02 CDT 2012
```

9. Check the Ctrl IP (Control Port IP address) field in the System Information display. By default, the PIVD100R uses DHCP; thus, the DHCP server, if configured, assigns an IP address to the PIVD100R once the PIVD100R successfully connects to the network.
   - If the Ctrl IP field shows an IP address, the PIVD100R is up and running on the network. Continue with step 10.
   - If the network is configured for DHCP but the Ctrl IP field is blank, refer to "Network Setup" troubleshooting information on page 21.
   - If the network is not configured for DHCP, you will need to configure a static IP address for the PIVD100R. Complete steps 10 to 13 (as required), and then set the PIVD100R IP address using the commands indicated in step 14.

(Continued on next page)

Typical System Installation

(see also Typical Setup Flow Charts on the previous pages)

1. Verify that each satellite STB is set up and functioning. Each STB should be powered up, initialized, authorized, and displaying the default channel properly—refer to the manufacturer's documentation.

   Caution: Do NOT make any connections between the satellite STBs and the PIVD100R until you have verified that the STBs are authorized and functioning properly.

2. For each satellite STB: Connect one of the supplied CAT5E cables between one of the X-Ports on the PIVD100R rear panel and the ETHERNET port on the satellite STB.

   Note: Once you make the connection between a satellite STB and the PIVD100R, STB front panel and remote control functionality may be limited. If necessary, to restore IR remote usability, unplug the X-Port cable and reset the STB. (The STB/tuner channels will be set later during the system setup.)

3. To enable remote management, connect one end of a CAT5 RJ-45 Ethernet cable to the Control Port on the PIVD100R rear panel, and connect the other end of the cable to the institution's network.

   Caution: The subnet 192.168.0.x is reserved for STB communication and cannot be used for the Control Port network subnet. This is the only restriction; for example, you can use 192.168.1.x, 10.x.x.x, etc. Contact your service representative for further information.

4. Connect the PIVD100R power supply to the POWER connector on the PIVD100R rear panel. Then, plug the AC power cord into a powered AC line receptacle. When power is applied, the PWR (Power) LED on the PIVD100R front panel will initially flash red and then turn green.

   The boot-up process for the PIVD100R may take up to 90 seconds. When boot-up is complete, the STATUS LED on the PIVD100R front panel will light continuously green.

5. Once the STATUS LED is lit continuously, use the FTDI TTL-232R-5V-AJ cable to connect a PC to the Service Port on the PIVD100R rear panel.

6. Using HyperTerminal or an equivalent terminal emulation program on the PC, configure the serial port as follows: Bits per second/baud = 115200; Data bits = 8; Parity = None; Stop bits = 1; Flow Control = None

   Once the connection is established, you should see a login prompt. (If the login prompt is not automatically displayed, press **Enter** to refresh the screen.)

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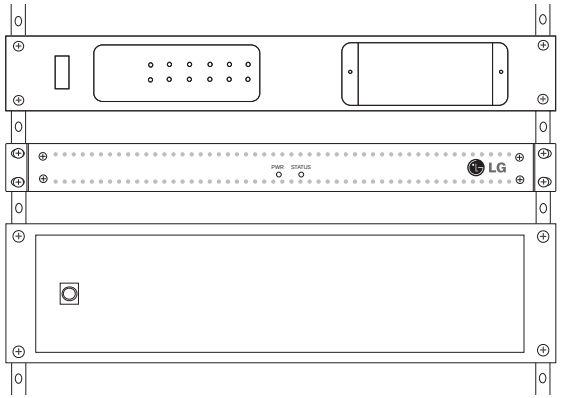
Front View of Rack Cabinet



Rack-mount Considerations

A. Elevated Operating Ambient
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer (see Specifications information in this document).

B. Reduced Air Flow
Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PIVD100R. Do NOT stack other equipment on the top of the PIVD100R. Also, ensure that the unit's AC power adapter is never stacked or bundled with other AC power adapters. Each adapter should have adequate ventilation and should be isolated from other heat sources.

C. Circuit Overloading
Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring.

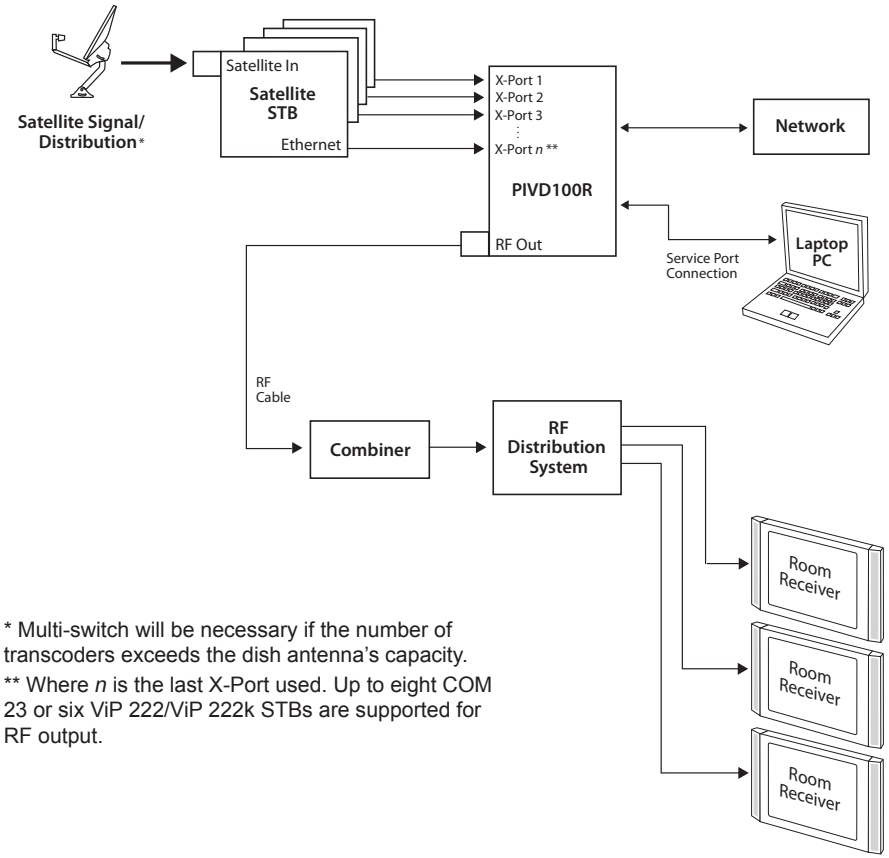
D. Reliable Earthing
Maintain reliable earthing of rack-mounted equipment. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

E. Mains Outlet Earthing
The apparatus with Class I construction must be connected to a mains socket outlet with a protective earthing connection.

Refer to the following diagrams, and complete the system installation as described on pages 14 to 20.

Caution: Do NOT make system connections until instructed to do so during the system installation procedure. In some instances, configuration steps must be performed before physical connections are made.

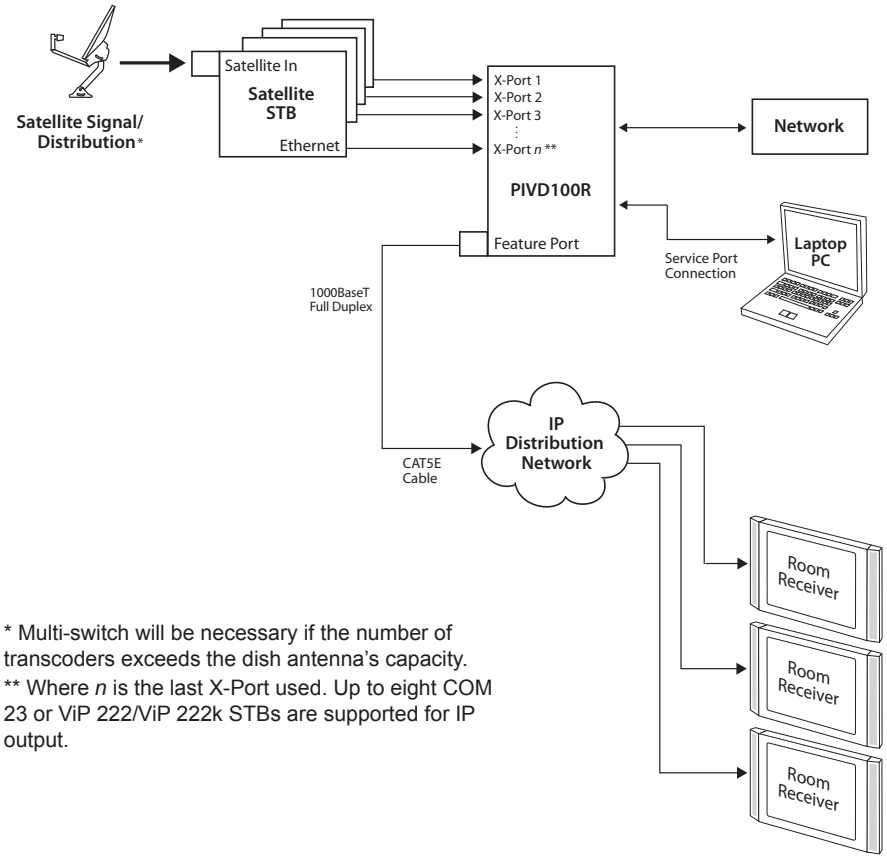
Typical Setup Flow Chart for PIVD100R with RF Output



* Multi-switch will be necessary if the number of transcoders exceeds the dish antenna's capacity.

** Where *n* is the last X-Port used. Up to eight COM 23 or six ViP 222/ViP 222k STBs are supported for RF output.

Typical Setup Flow Chart for PIVD100R with IP Output



* Multi-switch will be necessary if the number of transcoders exceeds the dish antenna's capacity.

** Where *n* is the last X-Port used. Up to eight COM 23 or ViP 222/ViP 222k STBs are supported for IP output.