CodePlus™ PIVD100R
Pro:Idiom® Video Distribution Transcoder System

Installation & Setup Guide
Warranty

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P/N: 206-4202 (Rev B)

For Customer Support/Service, please call: **1-888-865-3026**

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

WARNING
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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

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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 11 and 12)

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).

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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 Server 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.

Table of Contents

Safety Warnings 2
Important Safety Instructions. . . . . 3 – 5
Table of Contents 6
PIVD100R Product Description. 7
Setup Information . . . . . 8 – 9
Rear and Front Panel Overviews 10
Rack Installation . . . . . 11 – 12
  Typical Rack Installation 11
  Rack-mount Considerations. 12
System Setup . . . . . 13 – 19
  Typical Setup Flowchart for PIVD100R with RF Output 13
  Typical Setup Flowchart for PIVD100R with IP Output. 14
  Typical System Installation. 15
Network and Communication Setup 20
Configuration Options via GUI . . . . . 21 – 36
  Access the PIVD100R Web GUI 21
  PIVD100R System Status 22
  STB Information 23
  STB Menu Options. 24
  PIVD100R System Setup Options 27
  MUX Setup Options 32
  PIVD100R Maintenance Options 34
Configuration Options via Command Line . . . . . 37 – 60
  Log In to the PIVD100R and Access the Main Menu 37
  View System Information 38
  Monitor the System 38
  STB Menu Commands. 40
  Setup Menu Commands 45
  Update Menu Commands 56
  Pro:Idiom Menu Commands 58
  Reset the System. 60
  Exit the Current Session 60
Troubleshooting. . . . . 61 – 65
  PIVD100R Setup 61
  PIVD100R Communication 62
  Receiver Reception 63
Specifications 66
Document Revision History / Notes 67
Open Source Software Notice. 68
Warranty . . . . . Back Cover

PIVD100R Product Description

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 Ethernet interface 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.

Setup Information

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 the 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 PIVD100R 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.

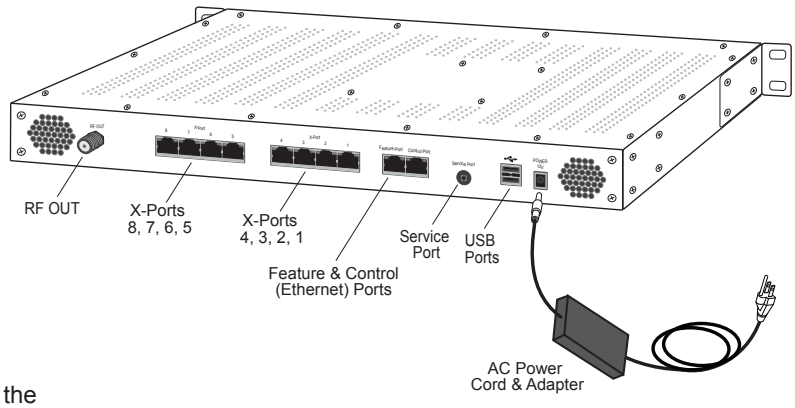
IP channels are user-assigned during system setup. You may opt to specify an IP start channel and enable the system to auto-increment the remaining channel assignments. For example, if the IP start channel assignment is “227.0.0.40,” the remaining channels will be “227.0.0.41,” “227.0.0.42,” etc. Or, 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 the IANA Service Name and Transport Protocol Port Number Registry for further IP address/port information as required.

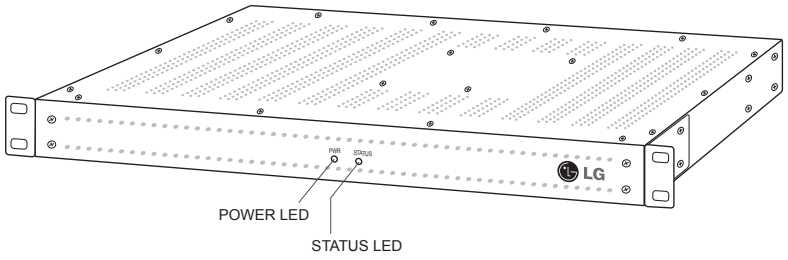
Rear and Front Panel Overviews

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



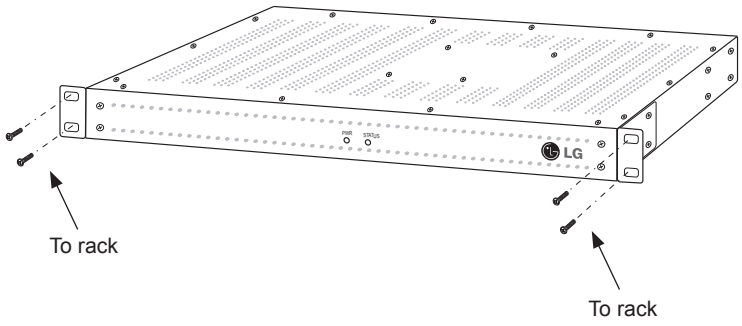
Ventilation Holes
Air flow must not be obstructed. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PIVD100R. Do NOT stack other equipment on the top of the PIVD100R.

Rack Installation

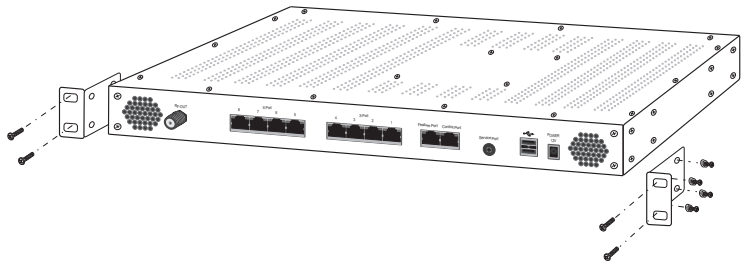
Typical Rack Installation

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)



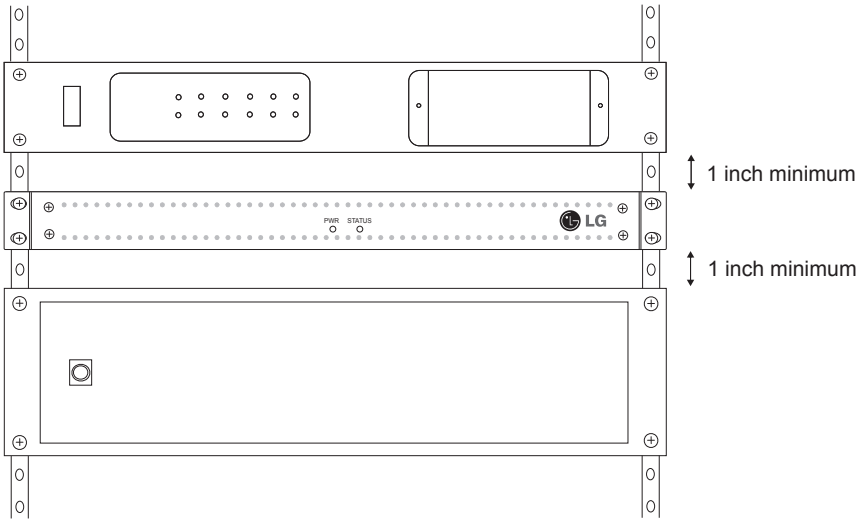
(b)



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

Rack Installation (Cont.)

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).

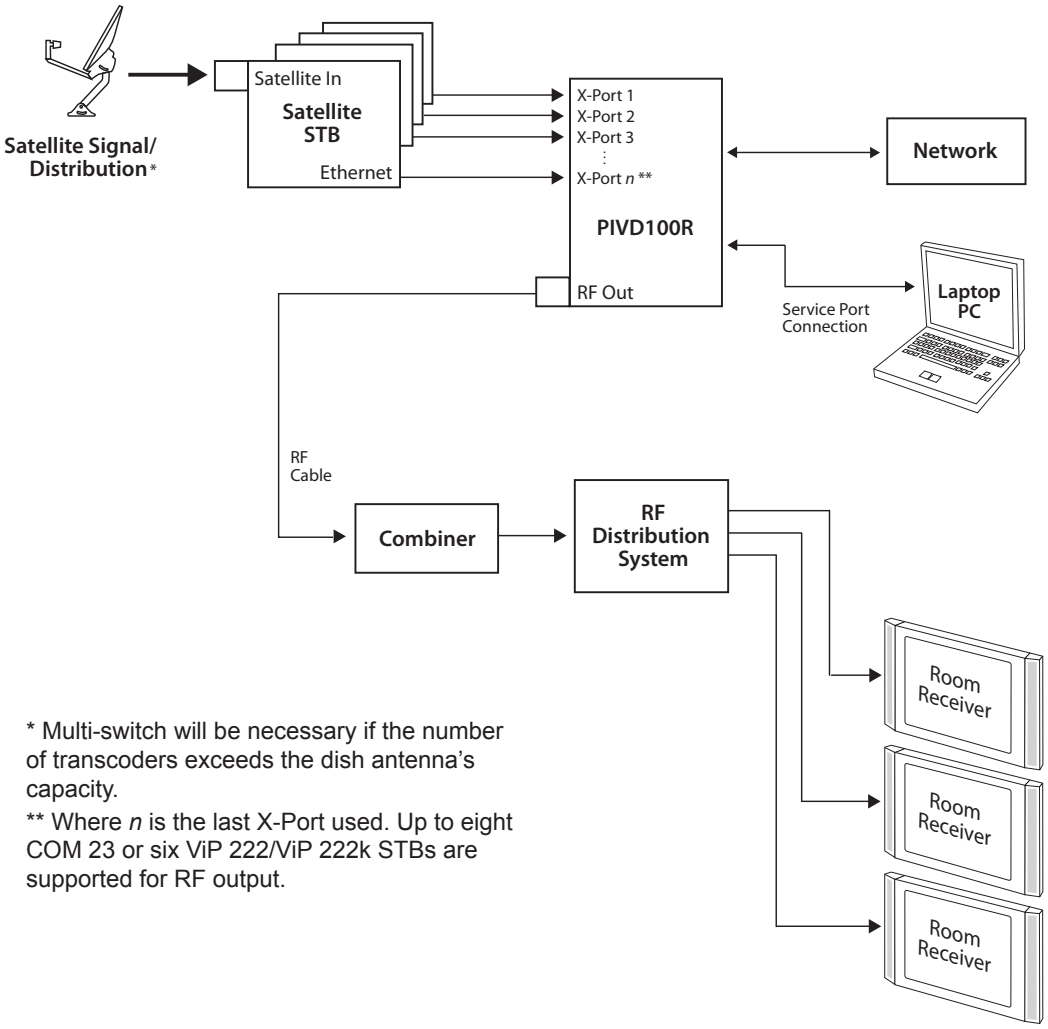
E. Mains Outlet Earthing

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 15 to 19.

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

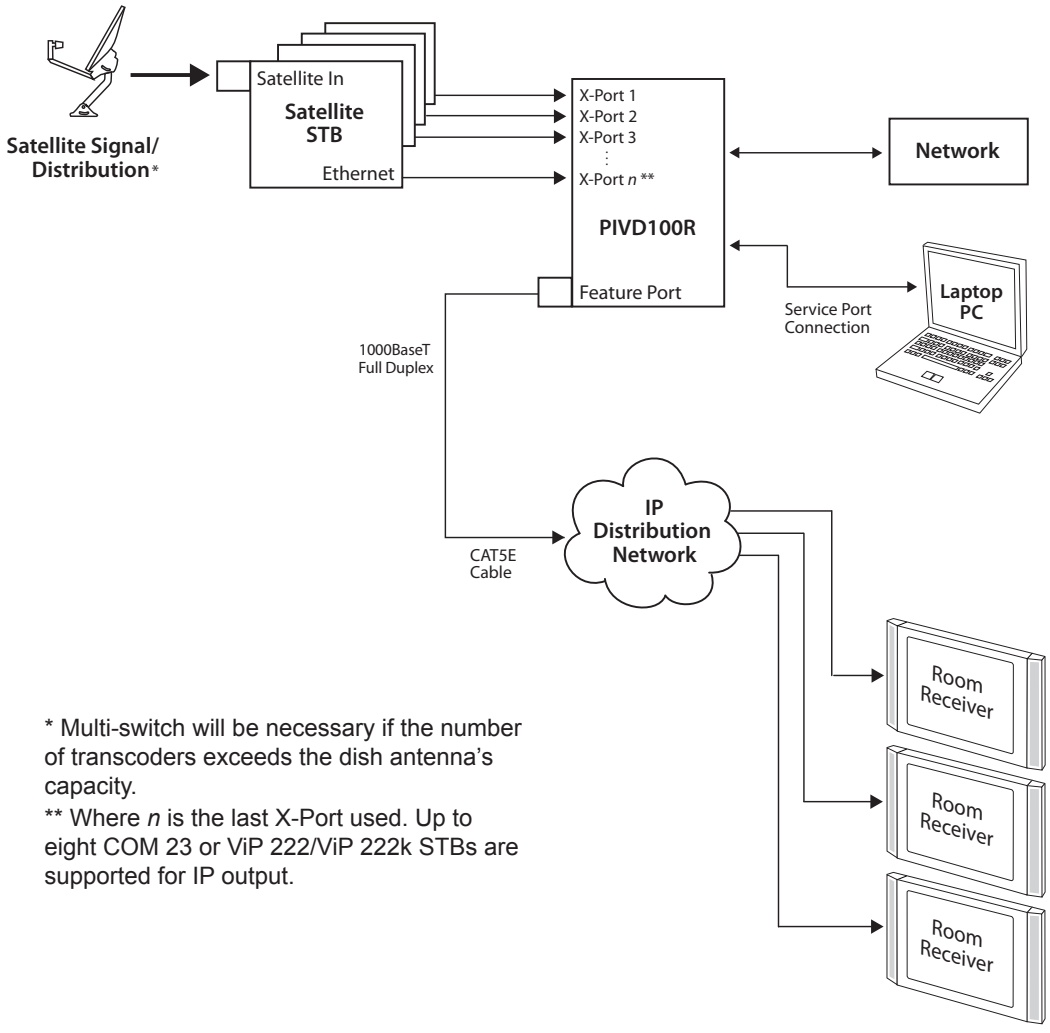


* Multi-switch will be necessary if the number of transcoders exceeds the dish antenna's capacity.

** 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.

System Setup (Cont.)

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.

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.)

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 change the admin user password from its default value. See "Change the Login Password" on page 56 for further information.

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System Setup (Cont.)

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

   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 61.
   - 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.
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) Use the Setup Menu “omode” command, as described on page 47, to set the appropriate output mode.
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.

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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) Use the Setup Menu "rf" command, as described on page 50, to configure the RF mode and the RF channels.

       Note: By default, the PIVD100R is configured for QAM-B RF output; thus, when you are prompted to select the RF mode (initial prompt before RF channel configuration), the default value shown in square brackets should show the appropriate option for RF output.
    c) 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.
    d) 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, use the "set'' command. You will need to specify a multicast IP address and the multicast port number for each STB/tuner.
       - To auto-configure output IP channels from a base multicast IP address and port number, use the "fill" command. Once you enter the base multicast IP address and the multicast port number, the system will auto-increment the remaining IP channels.

       Refer to "Configure the IP Output" on pages 50 to 53 for further information on the IP Output Configuration Menu commands. Make sure to use the IP Output Configuration Menu "apply" command to confirm and apply the configuration data to the system.
    d) Once you have completed the output IP channel configuration, at the next `IP Output Command >` prompt, type **exit** and press **Enter** 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)

System Setup (Cont.)

(Continued from previous page)

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 to configure the Control Port. Refer to “Configure the Control Port” on pages 48 to 49 for further information.

    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 “Network and Communication Setup” on page 20 for information on establishing remote communication with the PIVD100R and/or “Configuration Options via GUI” on pages 21 to 36 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.
    b) Use the Setup Menu “type” command, as described on page 47, to select the STB type.

    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.

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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) Use the STB Menu “channel” command, as described on page 42, to set the STB/tuner channel. If applicable, make sure to set the channel for both STB tuners.
    d) Use the STB Menu “stb” command, as described on page 41, to access the STB Menu for the next STB for which you wish to set the channel(s). Then, use the “channel” command to set the channel(s) for the (newly) current STB.

       Repeat this step to set the channel on each STB/tuner.
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. See “Monitor the System” on page 38 for further information.
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.

Network and Communication Setup

This section describes PIVD100R communication options for configuration purposes.

Note: Before you proceed with any additional configuration, the system should be installed and operating as described in the system installation procedure on pages 15 to 19.

Also note that configuration updates periodically require that you reset the PIVD100R. Make sure to reset the unit when directed to do so.

There are three options for communicating with the PIVD100R.

- When the PIVD100R is connected to an IP network, you can use a standard Internet browser to communicate with the PIVD100R via a graphical user interface (GUI).
- When the PIVD100R is connected to an IP network, you can also use an SSH client to communicate with the PIVD100R via a command line interface.
- To establish a direct connection to the PIVD100R, connect a PC to the serial port on the PIVD100R using the FTDI TTL-USB cable (P/N TTL-232R-5V-AJ). Plug the USB end of the cable into an open USB port on your PC. If necessary, install the device driver. Plug the other end of the cable into the Service Port jack on the PIVD100R rear panel.

  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

PIVD100R configuration options via web GUI are described on pages 21 to 36; PIVD100R configuration options via command line are described on pages 37 to 60. For security and control purposes, some options available from the command line menus are not available from the GUI.

You will need to know the “admin” user password in order to log in to either the web GUI or the command line interface. The default admin user password is “Password4Partners” (case-sensitive). If necessary, for example, if the password has been changed from its default value, consult the system administrator to obtain the current admin user password.

Note: The default network setting for the PIVD100R is DHCP, in which case the server assigns an IP address to the PIVD100R. If necessary, consult the network administrator to obtain the IP address that has been assigned to the PIVD100R.

Note: If you want to connect the PC directly to the PIVD100R Control Port using an Ethernet CAT5E cable, in order to establish communication you must first connect the PC to the PIVD100R Service Port and set the PIVD100R’s IP address (see “Configure the Control Port” on pages 48 to 49). The PIVD100R’s IP address must be on the same subnet as the PC’s IP address.

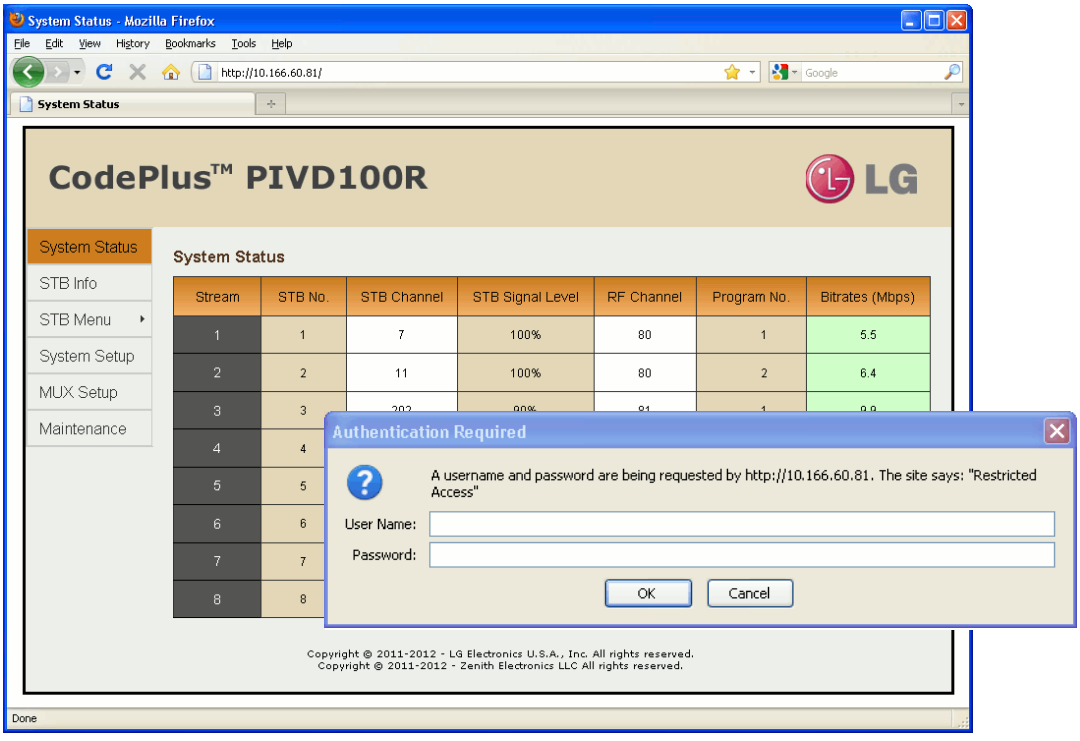
Access the PIVD100R Web GUI

Note: The PIVD100R must be connected to an IP network for GUI access. See “Network and Communication Setup” on page 20 for further information.

If necessary, consult the system administrator to obtain the current “admin” user password before proceeding. The default admin user password is “Password4Partners” (case-sensitive).

1. Launch a web browser, and type **http://*ipaddress*** in the browser’s address bar, where *ipaddress* is the network IP address of the PIVD100R. Then, press **Enter**.
2. The system will display a login authentication pop-up window. In the User Name field, type **admin**; in the Password field, type the admin user password. Then, click **OK**.

The PIVD100R web GUI opens with the System Status on display (see “PIVD100R System Status” on the next page for further information). The options panel at the left of the screen enables you to view and configure system settings. The following sections provide detailed information on the configuration settings and commands.



Note: The System Status screen above shows a typical DIRECTV system with RF output data.

Note: It is possible, if desired, to change the login password via the command line interface Setup Menu “pwd” command as described on page 56.

When you have completed your activities in the PIVD100R web GUI, it is recommended that you close your browser to prevent unauthorized access to the system.

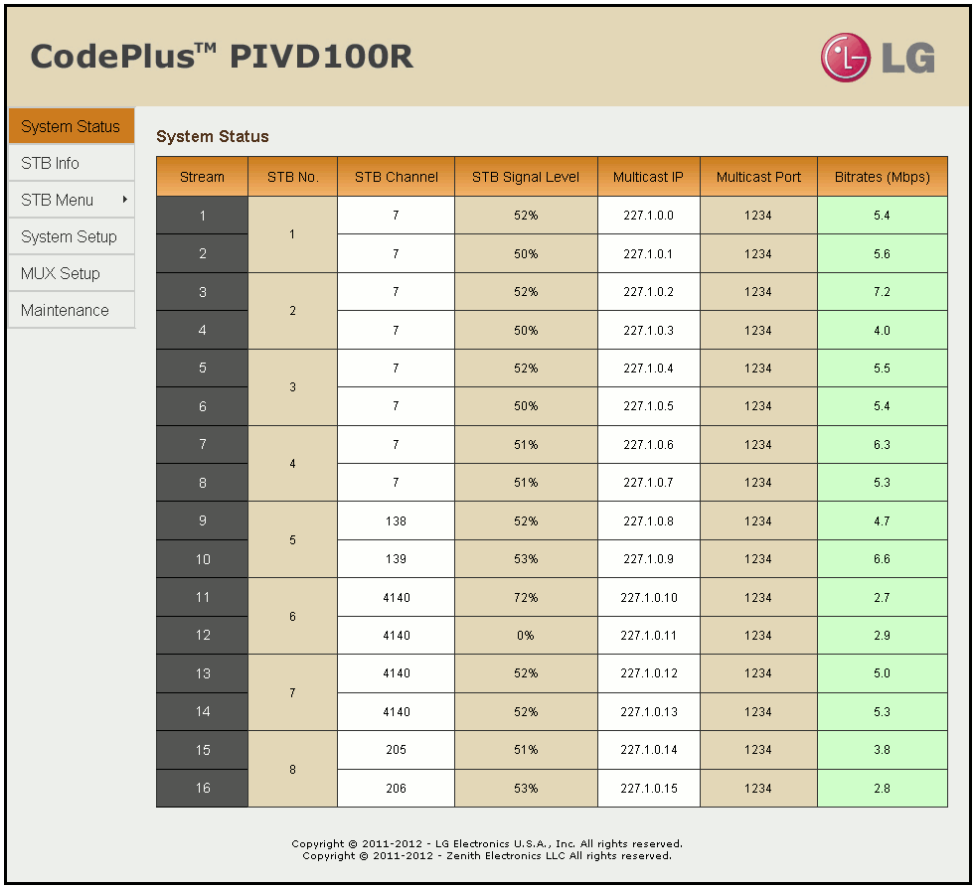
Configuration Options via GUI (Cont.)

PIVD100R System Status

For each transport stream (one per COM 23 STB or two per ViP 222/ViP 222k STB), the System Status screen identifies the STB number, the STB channel, the STB signal level, and the streaming bitrates. Depending on the output mode, the display also identifies (for each stream) either the RF channel and program number or the multicast IP address and port number.

From the System Status screen, you can click on an STB channel number to access the STB Menu for the selected STB. Also, you can click on an RF channel number or multicast IP address, depending on the output mode, to access the System Setup screen and menu options for the PIVD100R. Refer to “STB Menu Options” on pages 24 to 27 for information on the STB Menu and “PIVD100R System Setup Options” on pages 27 to 32 for information on the System Setup display and menu options.

To view the System Status data at any time while you are working in the web GUI, click on **System Status** in the options panel at the left of the screen.



Stream	STB No.	STB Channel	STB Signal Level	Multicast IP	Multicast Port	Bitrates (Mbps)
1	1	7	52%	227.1.0.0	1234	5.4
2		7	50%	227.1.0.1	1234	5.6
3	2	7	52%	227.1.0.2	1234	7.2
4		7	50%	227.1.0.3	1234	4.0
5	3	7	52%	227.1.0.4	1234	5.5
6		7	50%	227.1.0.5	1234	5.4
7	4	7	51%	227.1.0.6	1234	6.3
8		7	51%	227.1.0.7	1234	5.3
9	5	138	52%	227.1.0.8	1234	4.7
10		139	53%	227.1.0.9	1234	6.6
11	6	4140	72%	227.1.0.10	1234	2.7
12		4140	0%	227.1.0.11	1234	2.9
13	7	4140	52%	227.1.0.12	1234	5.0
14		4140	52%	227.1.0.13	1234	5.3
15	8	205	51%	227.1.0.14	1234	3.8
16		206	53%	227.1.0.15	1234	2.8

Typical System Status Screen

(DISH Network system with IP output data)

The STB Signal Level and Bitrates columns refresh every 30 seconds with the latest data. If a bitrates value is shown with a green background, the data transmission is within a standard operating range; if the bitrates value is shown with a yellow background, the data transmission may be too slow (i.e., between 0.2 and 2 Mbps); and if the bitrates value is shown with a red background, there is little to no data transmission (under 0.2 Mbps). If an STB is powered OFF, the Bitrates column will show “N/A.”

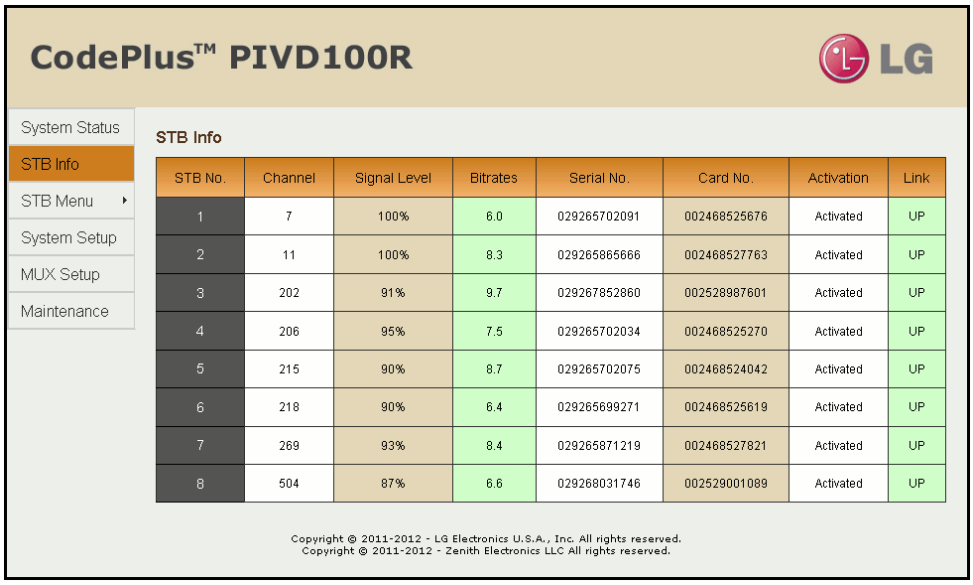
Note: The System Status screen above shows a typical DISH Network system with IP output data. If a DISH Network system is configured for RF output, the System Status screen will show up to 12 streams (four channels with three programs each). If an additional STB (one or two) is installed for spare purposes, you will be able to see the spare(s) in the STB Information screen described below.

STB Information

For each STB connected to the PIVD100R, the STB Information screen identifies the STB channel number, the STB signal level, the streaming bitrates (color coded as described above), the STB serial number, and the link status (UP or DOWN). For COM 23 STBs, the screen will also identify the STB access card number and the activation status of the STB (Activated or N/A), while for ViP 222/ViP 222k STBs, the screen will identify the STB smart card number and the STB software version.

From the STB Information screen, you can click on an STB channel number to access the STB Menu for the selected STB. Refer to “STB Menu Options” on pages 24 to 27 for information on the STB Menu

To view the STB information data at any time while you are working in the web GUI, click on **STB Info** in the options panel at the left of the screen.



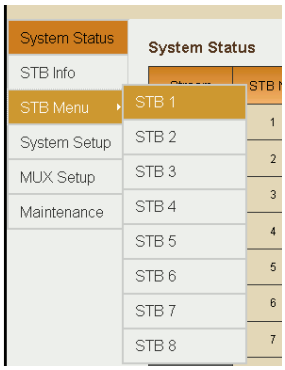
Typical STB Information Screen

Configuration Options via GUI (Cont.)

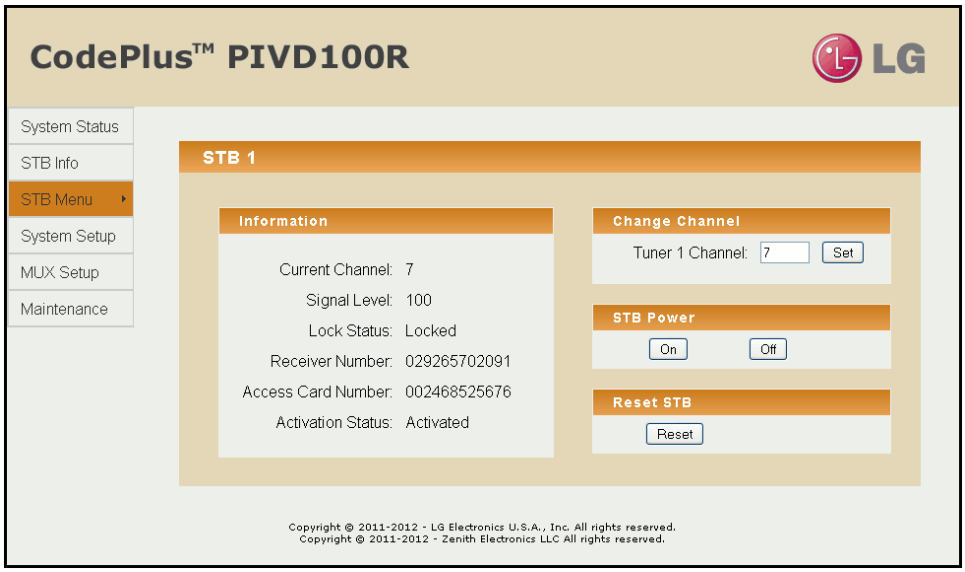
STB Menu Options

The STB Menu screen enables you to view and/or modify the STB configuration. To access the STB Menu for a selected STB, either:

- Click on the desired STB channel number in the System Status or STB Information screen, or
- Click on **STB Menu** in the options panel at the left of the screen, and then select the appropriate STB number from the submenu (see below).



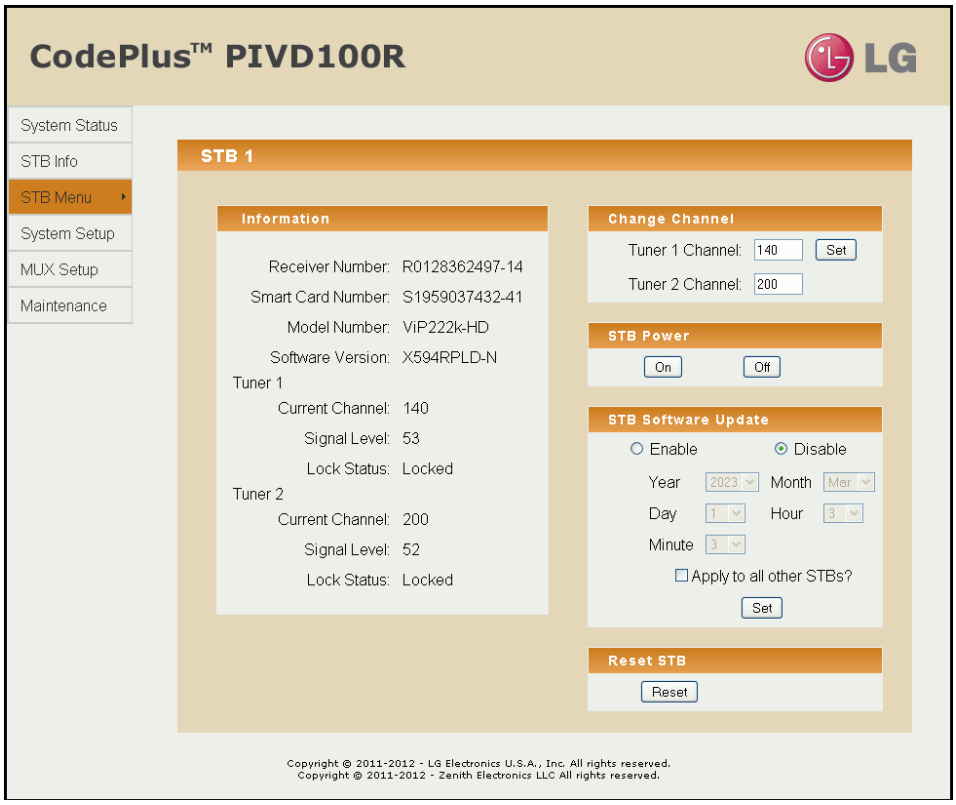
On the left side of the STB Menu screen, an Information section displays STB status and configuration data. On the right side of the STB Menu screen, several menu options are available, as described in the following subsections.



Typical STB Menu Screen

(COM 23 Satellite STB)

Configuration Options via GUI (Cont.)



Typical STB Menu Screen

(ViP 222k Satellite STB)

Set the STB/Tuner Channel

In the Change Channel section of the STB Menu screen, you can specify the appropriate channel number(s) for the STB.

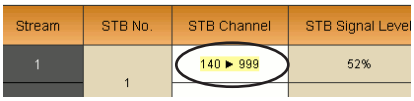
- COM 23 STBs: Type the desired channel number in the Tuner 1 Channel field. Then, click on the **Set** button at the right of the field.
- ViP 222 or ViP 222k STBs: Type the desired channel number in the Tuner 1 Channel and/or Tuner 2 Channel fields. Then, click on the **Set** button at the right of the Tuner 1 Channel field.

If the channel(s) is/are set successfully, the system will display Success! at the bottom of the STB Information display.

Note: The system does not determine whether a particular channel is valid/authorized for your system; it only determines if a “Change Channel” operation is successful. See also note below.

Configuration Options via GUI (Cont.)

Note: It may take a few minutes before a channel change registers in the system. During the transition period for the channel change, or if the channel is not valid and thus the STB cannot tune to the selected channel, the System Status, STB Information, and STB Menu screens will all show indication of a transition in the STB Channel column/field, for example:



Note: If you set/change a ViP 222/ViP 222k STB/tuner channel, it is recommended that you check one or more room receivers to make sure the new channel is tuning properly. If you see a blank screen or a "No Signal" message on a receiver, use the "reset" command described on the following page to reset the STB.

Power the STB On or Off

In the STB Power section of the STB Menu screen, you can power ON the STB from standby mode or power OFF the STB to standby mode.

- To power ON the STB from standby, click on the **On** button.
- To power OFF the STB, i.e., to switch the STB to standby, click on the **Off** button.

In each case, if the action is completed successfully, the system will display Success! at the bottom of the STB Information display.

Schedule an STB Software Update (ViP 222 or ViP 222k STBs Only)

In the STB Software Update section of the STB Menu screen, you can schedule a software update for ViP 222 and ViP 222k STBs. The STB Software Update feature enables the STB to check for and download software updates on a one-time, user-defined basis. An STB Update should periodically be scheduled in conjunction with software updates from the satellite service provider.

Note: If you intend to schedule an STB software update, make sure the time is set on the PIVD100R. See "Date and Time Configuration" on page 31 for further information.

Note: At the time an update is scheduled to begin, the PIVD100R will switch the STB(s) to standby in order to enable it/them to download the update. When the 30 minutes allowed for the update window is over, the PIVD100R will power the STB(s) back ON; however, note that it may take up to 10 minutes for streaming to resume. Contact your service provider for further information.

1. Select the appropriate STB Software Update status—Enable or Disable (default)—by clicking the radio button at the left of the desired option.

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2. If you enabled the STB Software Update in step 1, complete each of the date and time fields to set the parameters for the STB update. Click on the down arrow at the right of each field (Year, Month, Day, Hour, Minute) to select the appropriate value from the drop-down list of options.

   Note: It is recommended that you schedule the 30-minute STB software update window during a time when the STB is not likely to be in use.

3. If you wish to apply the new enabled/disabled status, and if applicable, the data and time data, to all of the STBs connected to this PIVD100R, click the "Apply to all other STBs" checkbox.
4. When you have completed the fields as required, click on the **Set** button at the bottom of the STB Software Update section to confirm your settings.

If you successfully set the STB Software Update status/parameters, the system will display Success! at the bottom of the STB Information display.

Reset the STB

1. Click on the **Reset** button in the Reset STB section of the STB Menu screen.
2. The system will display a pop-up window prompting for confirmation. Either:
   - Click **OK** to proceed.
   - Click **Cancel** to return to the STB Menu screen without resetting the STB.

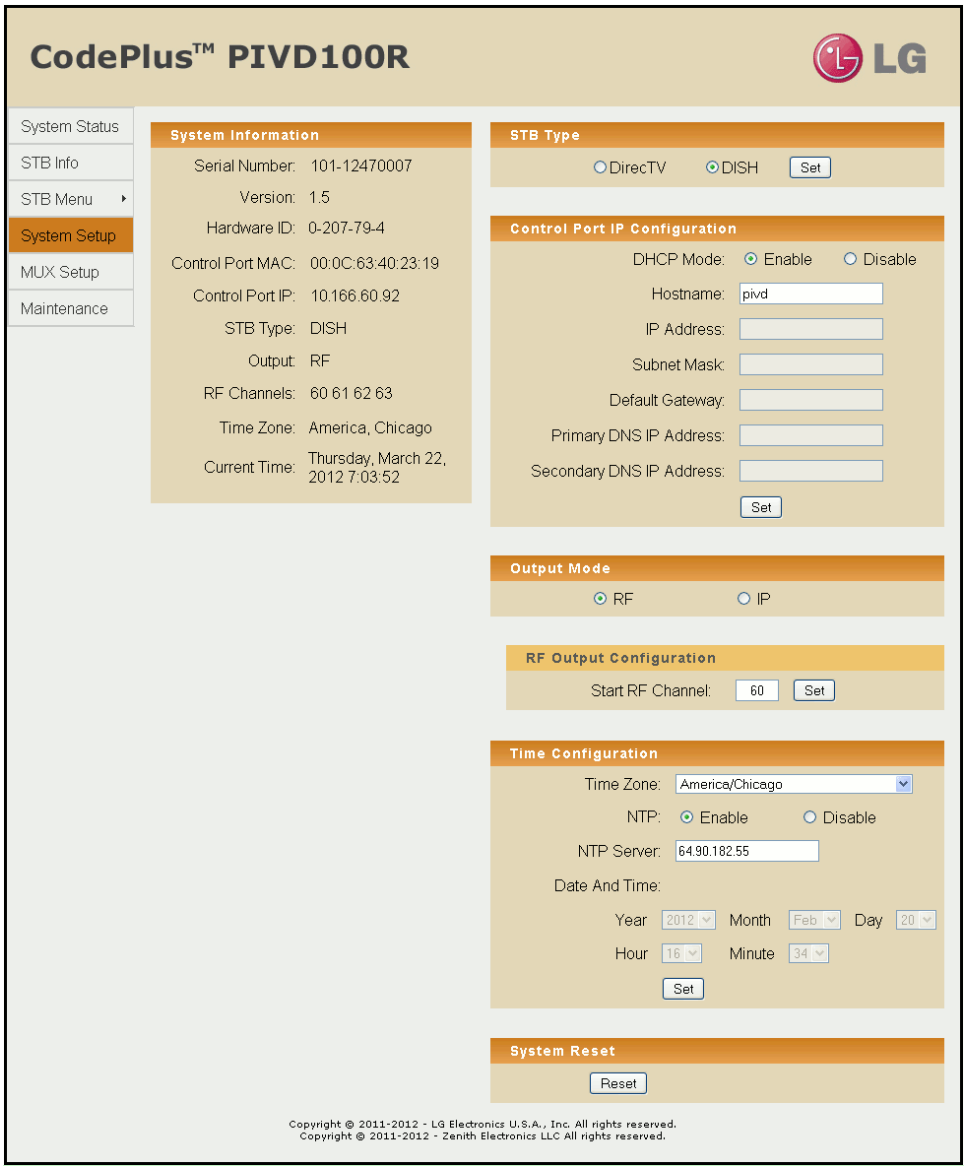
If you opt to proceed, the system will initiate the reset immediately. Note that an STB reset may take up to 10 minutes. After reset, the STB resumes normal operation.

PIVD100R System Setup Options

The System Setup screen enables you to view and/or modify the system configuration. To access the System Setup screen, click on **System Setup** in the options panel at the left of the screen.

On the left side of the System Setup screen, the System Information section provides important information about the current configuration of the PIVD100R, including the unit serial number, software version, hardware ID (firmware version), Control Port MAC and IP addresses, and output configuration. On the right side of the screen, several menu options are available, as described in the following subsections.

Configuration Options via GUI (Cont.)



Typical System Setup Screen

Select the STB Type

1. In the STB Type section of the System Setup screen, click the radio button at the left of the appropriate service provider for your system, and then click on the **Set** button.

   If you successfully changed the STB type, the system will display Success! Reset the system! at the bottom of the System Information display. The System Information display will also show the new STB type.

2. Click on the **Reset** button in the System Reset section of the System Setup screen if you are ready to reset the system immediately (see “Reset the System” on page 32 for further information).

   Note: 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.

Control Port Configuration

In the Control Port IP Configuration section of the System Setup screen, you can modify the Control Port IP configuration as required.

1. Select the appropriate DHCP Mode—Enable (default) or Disable—by clicking the radio button at the left of the desired option.

   Note: If DHCP is enabled, the server assigns an IP address to the PIVD100R, and only the Hostname field will be editable. All other fields will be inaccessible/grayed out.

2. If desired, modify the name of the host in the Hostname field.
3. If DHCP is disabled, specify the host IP address, the subnet mask, the default gateway IP address, the primary DNS IP address, and the secondary DNS IP address in the fields provided. Type each in the format *xxx.xxx.xxx.xxx*.
4. When you have completed the fields as required, click on the **Set** button below the Secondary DNS IP Address field.

   If you successfully changed the IP configuration of the Control Port, the system will display Success! Reset the system! at the bottom of the System Information display. The System Information display will also show the new Control Port IP address, if applicable.

5. Click on the **Reset** button in the System Reset section of the System Setup screen if you are ready to reset the system immediately (see “Reset the System” on page 32 for further information).

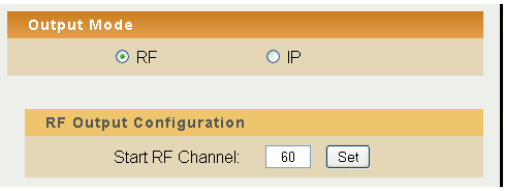
   Note: If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.

Configuration Options via GUI (Cont.)

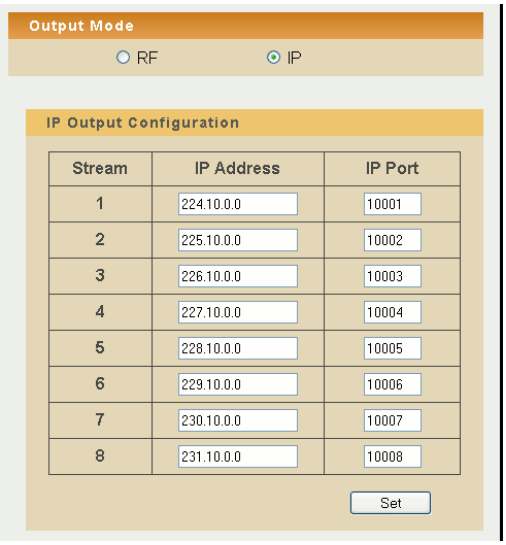
Output Mode Configuration

In the Output Mode section of the System Setup screen, you can modify the PIVD100R output configuration (see RF and IP output configuration examples below).

Example: RF Output Configuration Field



Example: IP Output Configuration Fields



Complete output configuration as follows:

1. Select the Output Mode—RF or IP—by clicking the radio button at the left of the appropriate option.

   Note: Depending on the current configuration of the system, when you access the System Setup screen, either the RF Output Configuration or IP Output Configuration field(s) initially will be on display below the Output Mode options. If you select a new mode, the system will display the applicable field(s) per your selection.

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2. The next step depends on the output mode selected:
   - For RF output configuration: In the Start RF Channel field, type the RF start channel number. The remaining three channels will be automatically assigned per EIA-542 STD CATV frequency allocation standards.
   - For IP output configuration: For each IP channel stream (one per COM 23 STB or two per ViP 222/ViP 222k STB), type the appropriate multicast IP address and port number in the IP Address and IP Port fields, respectively.

     Note: The IP Output Configuration Fields example above shows IP output configuration fields for a COM 23 STB, with one program per stream. If the system is configured for ViP 222/ViP 222k STBs, you will need to specify two programs per stream.

     Note: If you would like to have the PIVD100R auto-increment IP channels from a base multicast IP address, you will need to complete output IP channel configuration from the command line interface. See “Configure the IP Output” on pages 50 to 53 for further information.
3. When you have completed the field(s) as required, click on the **Set** button at the right of the Start RF Channel field or below the last IP Port field, as applicable.

If you successfully changed output configuration parameters, the system will display Success! at the bottom of the System Information display. The System Information display will also show the updated output configuration.

Date and Time Configuration

If your system is configured with ViP 222/ViP 222k STBs, you may want to set the date and time on the PIVD100R for the purposes of scheduling STB software updates (see “Schedule an STB Software Update” on page 26 for further information).

By default, the PIVD100R is synchronized with an NTP client and configured for the Central time zone. If the PIVD100R is connected to the Internet, the NTP client will periodically update the time setting on the PIVD100R. If the PIVD100R is not connected to the Internet, you also have the option to disable NTP client synchronization and specify date and time data manually.

1. Click on the down arrow at the right of the Time Zone field in the Time Configuration section of the System Setup screen, and select the appropriate time zone from the drop-down list of options.
2. Select the appropriate NTP setting—Enable or Disable—by clicking the radio button at the left of the appropriate option.

   Note: Per your selection, certain of the Time Configuration fields will become inaccessible/grayed out. If NTP is enabled, Data and Time fields will be grayed out; if NTP is disabled, the NTP Server field will be grayed out.

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Configuration Options via GUI (Cont.)

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3. The next step depends on whether you enabled or disabled NTP:
   - If you enabled NTP, type the IP address of the NTP server in the NTP Server field.
   - If you disabled NTP, complete the Date and Time fields to manually specify the date and time for the PIVD100R. Click on the down arrow at the right of each field (Year, Month, Day, Hour, Minute) to select the appropriate value from the drop-down list of options.
4. When you have completed the fields as required, click on the **Set** button at the bottom of the Time Configuration section.

   If you successfully changed the PIVD100R time configuration, the system will display Success! Reset the system! at the bottom of the System Information display. The System Information display will also show the updated information in the Time Zone and Current Time fields, as applicable.
5. Click on the **Reset** button in the System Reset section of the System Setup screen if you are ready to reset the system immediately (see “Reset the System” below for further information).

   Note: 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.

Reset the System

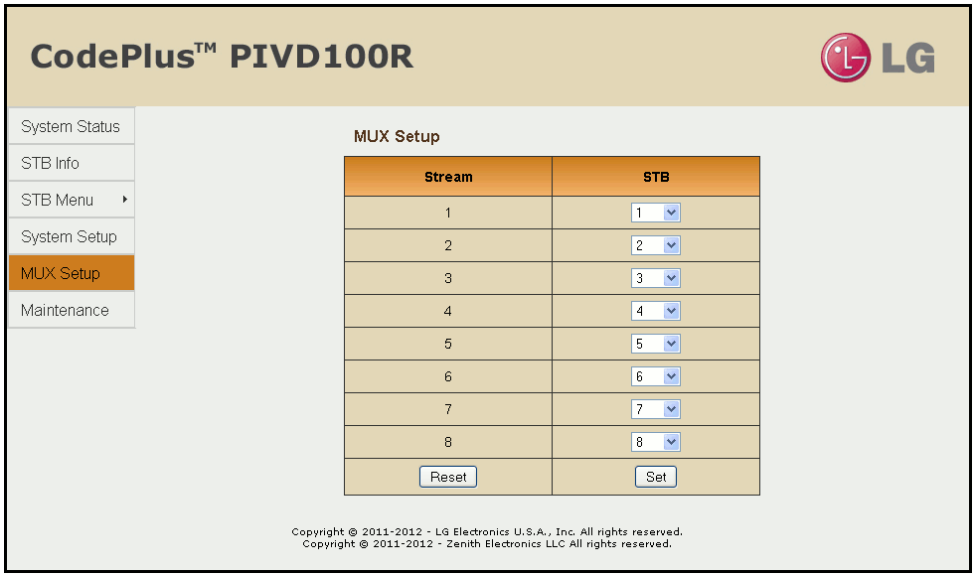
1. Click on the **Reset** button in the System Reset section of the System Setup screen.
2. The system will display a pop-up window prompting for confirmation. Either:
   - Click **OK** to continue.
   - Click **Cancel** to return to the System Setup screen without resetting the PIVD100R.

If you opt to proceed, this will initiate 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.

MUX Setup Options

The MUX Setup screen enables you to reset or reconfigure STB/output assignments. To access the MUX Setup screen, click on **MUX Setup** in the options panel at the left of the screen.

Configuration Options via GUI (Cont.)



Typical MUX Setup Screen

Reset STB/Output Assignments

To reset the previous, i.e., last stored, STB/output assignments, click on the **Reset** button at the bottom of the Stream column. The STB/output assignments will be reset immediately.

Modify STB/Output Assignments

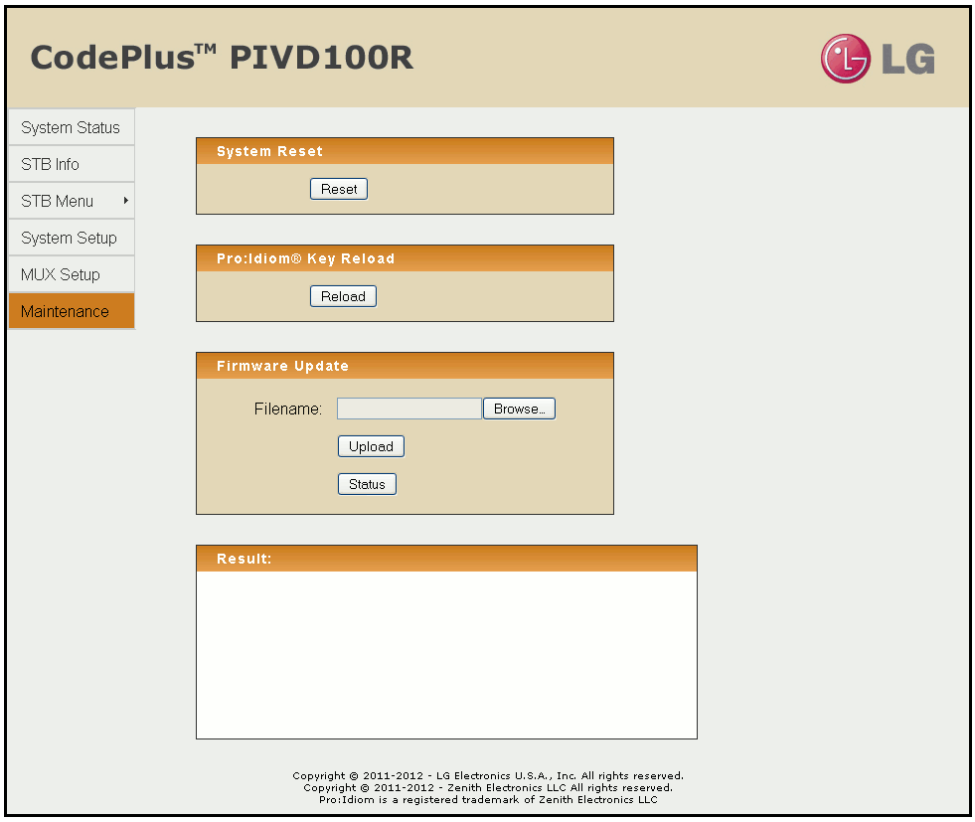
1. Click on the down arrow at the right of each STB field you wish to reassign, and select from the drop-down list of options the appropriate STB number or N/C (no connection) for the stream listed in the Stream column. Note that each STB can only be assigned to one stream (DIRECTV) or one pair of streams (DISH Network).
2. When you have completed the assignments, click on the **Set** button at the bottom of the STB column.
3. The system will display a pop-up window prompting for confirmation of the changes. Either:
   - Click **OK** to confirm and apply the new assignments.
   - Click **Cancel** to return to the MUX Setup screen without saving your changes.

If you successfully change the STB/output assignments, the system will display Success! below the MUX Setup screen.

Configuration Options via GUI (Cont.)

PIVD100R Maintenance Options

The Maintenance screen enables you to reload the Pro:Idiom key, update firmware, and reset the system. To access the Maintenance screen, click on **Maintenance** in the options panel at the left of the screen.



Typical Maintenance Screen

Reload the Pro:Idiom Key

A password is required to initiate a Pro:Idiom key reload. If necessary, obtain the password from the system administrator before beginning this procedure.

Note: If this is the first time the Pro:Idiom key will be reloaded, contact LG for the password.

1. Click on the **Reload** button in the Pro:Idiom Key Reload section of the Maintenance screen to reload the Pro:Idiom key on the TVs.

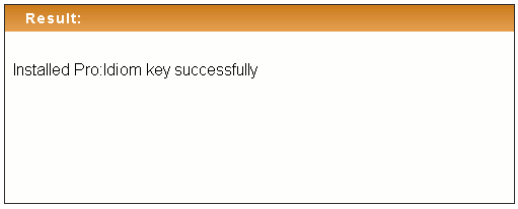
(Continued on next page)

(Continued from previous page)

The system will display a pop-up window prompting for the password required to reload the Pro:Idiom key.

2. Either:
   - Type the password and click **OK** to continue.
   - Click **Cancel** to return to the Maintenance screen without reloading the Pro:Idiom key.

If you opt to proceed, the system will execute the key reload immediately and display results in the Result section at the bottom of the screen, for example:



Note: If you wish to install a new Pro:Idiom key or change the password required for reloading a Pro:Idiom key, it must be done via the command line interface. See “Pro:Idiom Menu Commands” on pages 58 to 60 for further information.

Update the PIVD100R Firmware

The appropriate update file must be provided by LG. The system will not download an improper file.

1. In the Firmware Update section of the Maintenance screen, either click on the **Browse** button at the right of or simply click in the Filename field, and navigate to/select the appropriate file from the File Upload pop-up window.
2. Once you have selected the appropriate file, click on the **Upload** button below the File-name field to initiate the firmware update.
3. The system will display a pop-up window prompting for confirmation to update the system. Either:
   - Click **OK** to continue.
   - Click **Cancel** to return to the Maintenance screen without updating the PIVD100R firmware.

(Continued on next page)

Configuration Options via GUI (Cont.)

(Continued from previous page)

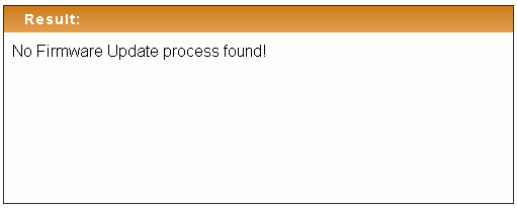
If you opt to proceed, the system will initiate the firmware update, and progress and results messages will be displayed in the Result section at the bottom of the screen, for example:

4. When the firmware update is finished, click on the **Reset** button in the System Reset section of the Maintenance screen to reset the system (see “Reset the System” below for further information).

Check Firmware Update Status

In the Firmware Update section of the Maintenance screen, click on the **Status** button to check the current firmware update status.

The system will display firmware update status (for example, “Firmware Update finished” or “Firmware Update is in progress”) in the Result section at the bottom of the screen. If a firmware update has never been performed on this system, the Result display will show:



Reset the System

1. Click on the **Reset** button in the System Reset section of the Maintenance screen.
2. The system will display a pop-up window prompting for confirmation. Either:
   - Click **OK** to continue.
   - Click **Cancel** to return to the Maintenance screen without resetting the PIVD100R.

If you opt to proceed, this will initiate 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.

Configuration Options via Command Line

Log In to the PIVD100R and Access the Main Menu

Note: The PIVD100R must be connected to an IP network for SSH client access. For direct access to the PIVD100R Service Port, use the FTDI TTL-USB cable (P/N TTL-232R-5V-AJ). See also “Network and Communication Setup” on page 20 for further information.

If necessary, consult the system administrator to obtain the current “admin” user password before proceeding. The default admin user password is “Password4Partners” (case-sensitive).

1. Establish communication with the PIVD100R using an SSH client or via a direct connection to the PIVD100R Service Port.

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

2. At the `login as:` prompt, type **admin** and press **Enter**.
3. At the `password:` prompt, type the admin user password and press **Enter**.
4. At the `Command >` prompt, either:
   - Press **Enter** to display the PIVD100R Main Menu (see example below).
   - Type the desired command and press **Enter**.

The following sections describe each of the configuration commands.

Note: You can always press **Enter** at the `Command >` prompt to display the PIVD100R Main Menu.

Example: PIVD100R Main Menu

```
---------
Main Menu
---------
  info        System information
  monitor     System monitor
  stb         STB Menu
  setup       Setup Menu
  update      Update Menu
  pi          Pro:Idiom Menu
  reset       System reset
  exit        End session
Command >
```

Configuration Options via Command Line (Cont.)

View System Information

1. Log in to the PIVD100R as described on the previous page.
2. At the `Command >` prompt, type **info** and press **Enter**.

The System Information display identifies important information about the PIVD100R, including the unit serial number, software version, hardware ID (firmware version), Control Port MAC and IP addresses, and 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
```

Note: If the system is configured for IP output, the Output field will show “IP” and RF fields will not be present.

It is recommended that you record this information for future reference. If you find it necessary to call customer service or engineering support, please have this information available.

Monitor the System

This option enables you to view static or dynamic system streaming data.

1. Log in to the PIVD100R as described on the previous page.
2. At the `Command >` prompt, either:
   - Type **monitor** and press **Enter** to display the current system data (see examples on the following page).
   - To monitor streaming data in real time, type **monitor** and the number of seconds before the data refreshes. Then, press **Enter**. For example, to refresh the data every second, type **monitor 1** and press **Enter**.

     When you are finished monitoring streaming data, press **Enter** to stop the system monitor and return to the `Command >` prompt.

Configuration Options via Command Line (Cont.)

Example: System Monitor Display (DIRECTV STB/RF Output)

```
SYSTEM MONITOR

Date:       2012-02-16 16:44:27
STB type:   DirecTV
Output:     RF

Bitrates (Mbps):

------+------------+------+------+------+-----+--------
 STB  |  Channel   | Sig  | Lck  | Out  | Str |   RF
------+------------+------+------+------+-----+--------
 1-1  |       7    | 100  | Yes  |  5.1 |  1  |  60-1   :)
 2-1  |      11    | 100  | Yes  | 12.2 |  2  |  60-2   :)
 3-1  |     202    | 90   | Yes  |  8.8 |  3  |  61-1   :)
 4-1  |     206    | 96   | Yes  |  6.8 |  4  |  61-2   :)
 5-1  |     215    | 93   | Yes  | 10.4 |  5  |  62-1   :)
 6-1  |     218    | 94   | Yes  |  8.8 |  6  |  62-2   :)
 7-1  |     269    | 95   | Yes  |  3.7 |  7  |  63-1   :)
 8-1  |     504    | 93   | Yes  |  9.5 |  8  |  63-2   :)
------+------------+------+------+------+-----+--------

Use a parameter for auto-refresh, e.g. type: "monitor 1"
```

Example: System Monitor Display (DISH Network STB/IP Output)

```
SYSTEM MONITOR

Date:       2012-02-21 19:05:20
STB type:   Dish
Output:     IP

Bitrates (Mbps):

------+------------+------+------+------+-----+--------------+--------
 STB  |  Channel   | Sig  | Lck  | Out  | Str |    IP        | Port
------+------------+------+------+------+-----+--------------+--------
 1-1  |       2    |  50  | Yes  |  4.9 |  1  |  227.0.0.0   |  1234   :)
 1-2  |       5    |  51  | Yes  |  6.2 |  2  |  227.0.0.1   |  1234   :)
 2-1  |       7    |  52  | Yes  |  4.9 |  3  |  227.0.0.2   |  1234   :)
 2-2  |       9    |  52  | Yes  |  4.6 |  4  |  227.0.0.3   |  1234   :)
 3-1  |     105    |  51  | Yes  |  4.4 |  5  |  227.0.0.4   |  1234   :)
 3-2  |     112    |  51  | Yes  |  3.8 |  6  |  227.0.0.5   |  1234   :)
 4-1  |     119    |  53  | Yes  |  3.4 |  7  |  227.0.0.6   |  1234   :)
 4-2  |     120    |  51  | Yes  |  4.5 |  8  |  227.0.0.7   |  1234   :)
 5-1  |     138    |  52  | Yes  |  4.0 |  9  |  227.0.0.8   |  1234   :)
 5-2  |     139    |  52  | Yes  |  5.9 | 10  |  227.0.0.9   |  1234   :)
 6-1  |     140    |  51  | Yes  |  3.6 | 11  |  227.0.0.10  |  1234   :)
 6-2  |     144    |  51  | Yes  |  6.2 | 12  |  227.0.0.11  |  1234   :)
 7-1  |     160    |  52  | Yes  |  4.1 | 13  |  227.0.0.12  |  1234   :)
 7-2  |     176    |  53  | Yes  |  5.3 | 14  |  227.0.0.13  |  1234   :)
 8-1  |     205    |  50  | Yes  |  6.2 | 15  |  227.0.0.14  |  1234   :)
 8-2  |     206    |  52  | Yes  |  3.7 | 16  |  227.0.0.15  |  1234   :)
------+------------+------+------+------+-----+--------------+--------

Use a parameter for auto-refresh, e.g. type: "monitor 1"
```

Configuration Options via Command Line (Cont.)

STB Menu Commands

The following subsections describe how to access and use the STB Menu commands.

Access the STB Menu

1. Log in to the PIVD100R as described on page 37.
2. At the `Command >` prompt, type **stb** and press **Enter**.
3. At the `Enter STB number >` prompt, type the number of the PIVD100R X-Port connected to the STB for which you wish to view/modify configuration. Then, press **Enter**.

   The system identifies the current STB and then displays an STB command prompt, for example:

   ```
   Current STB: STB-1

   STB-1 Command >
   ```

4. At the `STB Command >` prompt, either:
   - Press **Enter** to display the STB Menu (see example below).
   - Type the desired command and press **Enter**.

Note: You can always press **Enter** at the `STB Command >` prompt to display the STB Menu.

Example: STB Menu

```
---------
STB Menu
---------
  stb         Change STB
  info        STB info
  monitor     System monitor
  channel     Set channel
  output      Output slot
  on          Turn STB On
  off         Turn STB Off (Standby)
  update      Schedule STB software update
  reset       Reset STB
  exit        Return to the main menu
STB-1 Command >
```

Configuration Options via Command Line (Cont.)

Change STB

This command enables you to switch to the STB Menu for another STB.

1. At the `STB Command >` prompt, type **stb** and press **Enter**.
2. At the `Enter STB number [#]>` prompt, type the number of the PIVD100R X-Port connected to the STB for which you wish to view/modify configuration. Then, press **Enter**.

   The system will identify the (newly) current STB and then display a command prompt, for example:

   ```
   Current STB: STB-3

   STB-3 Command >
   ```

View STB Information

At the `STB Command >` prompt, type **info** and press **Enter** to display STB status and configuration data (see examples below).

Example: STB Information (COM 23 Satellite STB)

```
STB-1 Info
==========
Output:        1
Receiver N:    029267852837
Card N:        002528994052
Activated:     Yes
Channel:       215
Locked:        Yes
Signal level:  93
```

Example: STB Information (ViP 222k Satellite STB)

```
STB-1 Info
==========
Output:        1
Receiver N:    R0128390262-81
Card N:        S1959036673-74
STB Model:     ViP222k-HD
STB SW ver:    X397RPDB-N
SW Update:     2012-03-05 11:56:00
Tuner 1
  Channel:     2
  Locked:      Yes
  Signal lvl:  75
Tuner 2
  Channel:     5
  Locked:      Yes
  Signal lvl:  80
```

Configuration Options via Command Line (Cont.)

Monitor the System

This option enables you to view static or dynamic system streaming data and is also available from the PIVD100R Main Menu and the Setup Menu.

At the `STB Command >` prompt, either:

- Type **monitor** and press **Enter** to display the current system data (see sample displays under the “Monitor the System” section on page 38).
- To monitor streaming data in real time, type **monitor** and the number of seconds before the data refreshes. Then, press **Enter**. For example, to refresh the data every second, type **monitor 1** and press **Enter**.

  When you are finished monitoring streaming data, press **Enter** to stop the system monitor and return to the `STB Command >` prompt.

Set the STB/Tuner Channel

1. At the `STB Command >` prompt, type **channel** and press **Enter**.
2. (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 press **Enter**.
3. 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`

Note: The system does not determine whether a particular channel is valid/authorized for your system; it only determines if a “Set Channel” operation is successful. See also note below.

Note: It may take a few minutes before a channel change registers in the system. During the transition period for the channel change, or if the channel is not valid and thus the STB cannot tune to the selected channel, the System Monitor will show indication of a transition in the Channel column, for example: `7 -> 2`.

Note: If you set/change a ViP 222/ViP 222k STB/tuner channel, it is recommended that you check one or more room receivers to make sure the new channel is tuning properly. If you see a blank screen or a “No Signal” message on a TV, use the “reset” command described on page 45 to reset the STB.

Configuration Options via Command Line (Cont.)

Configure STB/Output Assignments

This option enables you to reconfigure STB/output assignments. Note that each STB can only be assigned one output stream (DIRECTV) or one pair of streams (DISH Network). If you remap an existing stream assignment to another STB X-Port, the initial assignment will be disconnected.

For example: If STB 1 is currently streaming on output 1, and STB 2 is remapped so that it is streaming on output 1, the initial STB 1 assignment will be disconnected. If all STBs are currently assigned to output streams, STB 1 will now be assigned the output that was previously assigned to STB 2. If STB 2 initially had “no connection” status before it was remapped to output 1, STB 1 will now have “no connection” status.

If you wish to remap an existing stream or pair of streams to another STB, it is recommended that you first modify the output assignment of the stream in question to “no connection” before you reassign the stream as required.

1. At the `STB Command >` prompt, type **output** and press **Enter**.
2. (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 press **Enter**.
3. At the `Enter output slot number (1-8 or 0 for no connect) [`*slot#*`]>` prompt, either:
   - Press **Enter** to accept the default (*slot#*) value in square brackets.
   - Type **0** and press **Enter** to specify “no connection.”
   - Type in a slot number (1–8) and press **Enter** to remap the output stream to a different STB/X-Port.

The system will display confirmation, for example:

```
Output slot remapped. STB is now streaming on output 2
```

Note: You can run the “monitor” command, if desired, to review the system settings. Refer to “Monitor the System” on the previous page for further information.

Power the STB On or Off

These commands enable you to power ON the STB from standby mode or power OFF the STB to standby mode.

At the `STB Command >` prompt, either:

- Type **on** and press **Enter** to power ON the STB from standby. The system will display confirmation, for example:

  ```
  Powering on STB-1: OK
  ```

- Type **off** and press **Enter** to power OFF the STB, i.e., to switch the STB to standby. The system will display confirmation, for example:

  ```
  Powering off STB-1: OK
  ```

Configuration Options via Command Line (Cont.)

Schedule an STB Software Update (ViP 222 or ViP 222k STBs Only)

This option is available only for ViP 222 and ViP 222k STBs. The STB Software Update feature enables the STB to check for and download software updates on a one-time, user-defined basis. An STB Update should periodically be scheduled in conjunction with software updates from the satellite service provider.

Note: If you intend to schedule an STB software update, make sure the time is set on the PIVD100R. See "Set the Time Zone" and "Set the Date and Time" on pages 53 to 55 for further information.

Note: At the time an update is scheduled to begin, the PIVD100R will switch the STB(s) to standby in order to enable it/them to download the update. When the 30 minutes allowed for the update window is over, the PIVD100R will power the STB(s) back ON; however, note that it may take up to 10 minutes for streaming to resume. Contact your service provider for further information.

1. At the `STB Command >` prompt, type **update** and press **Enter**.
2. At the `Enable STB software update? [y/n]:` prompt, either:
   - Type **y** and press **Enter** to enable an STB software update. The system will initiate a series of prompts that enable you to configure the date and time parameters for the update. Continue with step 3.
   - Type **n** and press **Enter** to disable the STB software update. At the `Also disable for all other STBs? [y/n]:` prompt, either:
     - Type **y** and press **Enter** to disable a scheduled STB software update on all STBs connected to the PIVD100R, or
     - Type **n** and press **Enter** to disable a scheduled STB software update on the current STB only.

     The system will display confirmation of your setting, for example:

     ```
     STB-1 SW Update: not scheduled
     ```
3. At each of the following prompts, type the year, month, and day, respectively, on which you wish to schedule the STB software update. Note that all three of these fields require numerical values. Press **Enter** after each entry.

   If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

   ```
   Enter year [2012]>
   Enter new month [2]>
   Enter new day [22]>
   ```

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4. At each of the following prompts, type the hour and minute, respectively, at which you wish to schedule the STB software update. Note that the hour should be entered in 24-hour format. Press **Enter** after each entry.

   If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

   ```
   Enter new hour [3]>
   Enter new minute [0]>
   ```

   Note: It is recommended that you schedule the 30 minute STB software update window during a time when the STB is not likely to be in use.

5. At the `Also schedule for all other STBs? [y/n]:` prompt, either:
   - Type **y** and press **Enter** to enable the scheduled STB software update on all STBs connected to the PIVD100R, or
   - Type **n** and press **Enter** to enable the scheduled STB software update on the current STB only.

The system will display confirmation of your setting, for example:

```
STB-1 SW Update: 2012-02-22 03:00:00
```

Reset the STB

At the `STB Command >` prompt, type **reset** and press **Enter** to initiate an immediate reset of the STB. Note that an STB reset may take up to 10 minutes.

Exit the STB Menu

At the `STB Command >` prompt, type **exit** and press **Enter** to exit the STB Menu and return to the PIVD100R Main Menu `Command >` prompt.

Setup Menu Commands

The following subsections describe how to access and use the Setup Menu commands.

Access the Setup Menu

1. Log in to the PIVD100R as described on page 37.
2. At the `Command >` prompt, type **setup** and press **Enter**.
3. At the `Setup Command >` prompt, either:
   - Press **Enter** to display the Setup Menu (see example on following page).
   - Type the desired command and press **Enter**.

Note: You can always press **Enter** at the `Setup Command >` prompt to display the Setup Menu.

Configuration Options via Command Line (Cont.)

Example: Setup Menu

```
----------
Setup Menu
----------
  info        System information
  monitor     System monitor
  type        Set STB type
  omode       Set output mode
  setip       Control port IP configuration menu
  rf          RF output configuration
  ipout       IP output configuration menu
  tz          Timezone setup
  time        Time setup
  pwd         Change password
  exit        Return to the main menu
  reset       System reset
Setup Command >
```

View System Information

This option is also available from the PIVD100R Main Menu.

At the `Setup Command >` prompt, type **info** and press **Enter**.

The System Information display identifies important information about the PIVD100R, including the unit serial number, software version, hardware ID (firmware version), Control Port MAC and IP addresses, and output configuration. See sample display under the “View System Information” section on page 38.

It is recommended that you record this information for future reference. If you find it necessary to call customer service or engineering support, please have this information available.

Monitor the System

This option enables you to view static or dynamic system streaming data and is also available from the PIVD100R Main Menu and the STB Menu.

At the `Setup Command >` prompt, either:

- Type **monitor** and press **Enter** to display the current system data (see sample displays under the “Monitor the System” section on page 38).
- To monitor streaming data in real time, type **monitor** and the number of seconds before the data refreshes. Then, press **Enter**. For example, to refresh the data every second, type **monitor 1** and press **Enter**.

  When you are finished monitoring streaming data, press **Enter** to stop the system monitor and return to the `Setup Command >` prompt.

Configuration Options via Command Line (Cont.)

Select the STB Type

1. At the `Setup Command >` prompt, type **type** and press **Enter**.

   The system will display a list of the available STB types, followed by a prompt for the new STB type, for example:

   ```
   Available STB types:
      1 - Dish
      2 - DirecTV

   Enter number of new STB type [1]>
   ```

2. At the prompt, either press **Enter** to accept the default value (i.e., the current setting) in square brackets, or type the number that corresponds to the appropriate STB type and press **Enter**.

   The system will confirm your selection. If you change the STB type, you will also be prompted to reset the PIVD100R, for example:

   ```
   STB type is set: DirecTV

   Please reset the system
   ```

3. If prompted to do so, make sure to reset the system before you exit the current session. If you are ready to reset the system immediately, at the `Setup Command >` prompt, type **reset** and press **Enter** (see “Reset the System” on page 56 for further information).

   Note: 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.

Set the Output Mode

1. At the `Setup Command >` prompt, type **omode** and press **Enter**.

   The system will display a list of the available output modes, followed by a prompt for the new output mode, for example:

   ```
   Available output modes:
      1 - RF
      2 - IP

   Enter number of new output mode [1]>
   ```

2. At the prompt, either press **Enter** to accept the default value (i.e., the current setting) in square brackets, or 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: RF
   ```

3. Complete the appropriate configuration, depending on the output mode. Refer to “Configure the RF Output” on page 50 or “Configure the IP Output” on pages 50 to 53, as applicable.

Configuration Options via Command Line (Cont.)

Configure the Control Port

1. At the `Setup Command >` prompt, type **setip** and press **Enter**.

   The system displays an overview of the current TCP/IP network configuration followed by the Network Configuration Menu, for example:

```
Current Network Configuration

Interface controller port
  Host name:          pivd100r
  Using DHCP:         YES

DNS servers
  Primary DNS:        68.94.156.1
  Secondary DNS:      68.94.157.1


-------------------------
Network Configuration Menu
-------------------------
  ip         Configure Control Port IP
  dns        Configure DNS
  exit       Exit network configuration

Choose item to modify >
```

2. Either:
   - Continue with step 3 for information on modifying the IP configuration of the Control Port.
   - Go to step 8 for information on modifying the DNS configuration.
   - To exit the Network Configuration Menu without modifying any settings, type **exit** at the Network Configuration Menu `>` prompt.
3. Type **ip** and press **Enter** to modify the configuration of the Control Port.
4. At the `Host name [pivd100r]:` prompt, either press **Enter** to accept the default value in square brackets, or type a new host name and then press **Enter**.
5. At the `Using DHCP (Y/N) [Y]:` prompt, type **y** if the PIVD100R uses DHCP, or type **n** to specify the network IP addresses. Then, press **Enter**.
6. If the PIVD100R is NOT using DHCP, type the information requested at each of the following prompts. Press **Enter** after each entry.

   `This host IP address []:` *(Type the host IP address in the format xxx.xxx.xxx.xxx.)*
   `Network mask []:` *(Type the netmask in the format xxx.xxx.xxx.xxx.)*
   `Gateway IP address []:` *(Type the IP address of the default gateway in the format xxx.xxx.xxx.xxx.)*

(Continued on next page)

Configuration Options via Command Line (Cont.)

(Continued from previous page)

7. Once you enter the gateway IP address, the system will redisplay the Network Configuration Menu.
   - To modify the DNS configuration, continue with step 8.
   - If no additional network configuration is required, go to step 9.
8. To change the DNS configuration, type **dns** and press **Enter**.

   At each of the following prompts, type the information requested. Press **Enter** after each entry.

   ```
   Configuring DNS
   Primary DNS IP address []:
   Secondary DNS IP address []:
   ```

   Once you enter the secondary DNS IP address, the system will redisplay the Network Configuration Menu. You can select another option to modify (see previous steps) or you can exit as described below.
9. When you are finished with network configuration, type **exit** at the Network Configuration Menu `>` prompt. The system will display an overview of the new network configuration and then prompt for confirmation to save the changes, for example:

   ```
   New Network Configuration

   Interface controller port
     Host name:           pivd100r
     Using DHCP:          NO
     Host IP address:     136.166.60.92
     Network mask:        255.255.255.0
     Gateway IP address:  136.166.60.1

   DNS servers
     Primary DNS:         68.94.156.2
     Secondary DNS:       68.94.157.2

   Do you want to save the new configuration? (Y/N):
   ```

10. Type **y** or **n** and press **Enter**, as appropriate.

    If you opt NOT to save the new configuration, the system will return immediately to the `Setup Command >` prompt. Otherwise, the system will confirm the configuration updates and prompt you to reset the system:

    ```
    New configuration has been saved. Please restart the system.
    ```

11. If you are ready to reset the system immediately, at the `Setup Command >` prompt, type **reset** and press **Enter** (see “Reset the System” on page 56 for further information).

    Note: 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.

Configuration Options via Command Line (Cont.)

Configure the RF Output

This option enables you to specify the appropriate RF channels for your location. See “Channel Assignments for RF Output” on page 9, and/or check with your service representative, if necessary.

Note: Ensure the output mode also has been set accordingly. See “Set the Output Mode” on page 47 for further information.

1. At the `Setup Command >` prompt, type **rf** and press **Enter**.

   The system displays a list of the RF mode options and prompts for a selection:

   ```
   RF Setup

   Available RF modes are:
     1) RF: OFF
     2) QAM-B, RF: 6 MHz, 5.36 MSps (default)

   Select a new RF mode [2]:
   ```

2. At the prompt for the RF mode, either:
   - Type **1** and press **Enter** to disable RF output.
   - Type **2** and press **Enter** to enable RF output.

   Note: You can simply press **Enter** if the default shown in square brackets is the correct option for this system.

3. If you selected the RF output (QAM-B) option in step 2, the system will prompt next for an RF channel number (i.e., the RF start channel number):

   ```
   Enter a new RF channel [3]:
   ```

   At the prompt, either press **Enter** to accept the default value in square brackets, or type a new RF start channel number and then press **Enter**.

4. 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).

Once you specify the RF setup, the system displays 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
```

Configure the IP Output

IP Output Configuration Menu options enable you to view and/or modify the IP output configuration for your system. Each of the menu options is described below.

Note: Ensure the output mode also has been set accordingly. See “Set the Output Mode” on page 47 for further information.

Configuration Options via Command Line (Cont.)

Access the IP Output Configuration Menu

1. At the `Setup Command >` prompt, type **ipout** and press **Enter**.
2. At the `IP Output Command >` prompt, either:
   - Press **Enter** to display the IP Output Configuration Menu (see example below).
   - Type the desired command and press **Enter**.

```
----------------------------
IP Output Configuration Menu
----------------------------
  display    Display output IP configuration
  set        Configure output IP channel
  fill       Fill IP configuration with autoincrement IP
  apply      Apply the new IP configuration
  exit       Return to the Setup Menu

IP Output Command >
```

Display Output IP Configuration

1. At the `IP Output Command >` prompt, type **display** and press **Enter** to view the current output configuration, for example:

```
 N     IP Address      Port
---    -------------   ----
1-1    227.0.0.0       1234
2-1    227.0.0.2       1234
3-1    227.0.0.4       1234
4-1    227.0.0.6       1234
5-1    227.0.0.8       1234
6-1    227.0.0.10      1234
7-1    227.0.0.11      1234
8-1    227.0.0.12      1234
```

2. At the `IP Output Command >` prompt, type **exit** and press **Enter** to return to the Setup Menu when you are finished reviewing the display.

Manually Configure Output IP Channels

This option enables you to specify the multicast IP address and port number for each program. Each program must be assigned a unique IPv4 multicast address. See “Channel Assignments for IP Output” on page 9, and/or check with your service representative, if necessary.

Note: If you wish to set a base multicast IP address and have the system auto-increment the remaining program data, use the “fill” option described below.

1. At the `IP Output Command >` prompt, type **set** and press **Enter**.

(Continued on next page)

Configuration Options via Command Line (Cont.)

(Continued from previous page)

2. At the `Enter STB number [#]>` command, type the number of the PIVD100R X-Port connected to the STB for which you wish to modify configuration. Then, press **Enter**.
3. (Dual tuner STB only) At the `Enter tuner number (1 or 2) [1]>` command, either press **Enter** to accept the default value in square brackets, or type the appropriate tuner number and press **Enter**.
4. At the `Enter multicast IP address [227.0.0.0]:` command, either press **Enter** to accept the default value in square brackets, or type the appropriate multicast IP address for this stream and press **Enter**.
5. At the `Enter new multicast port [1234]>` command, either press **Enter** to accept the default value in square brackets, or type the appropriate port number for the multicast stream and press **Enter**.
6. After you type the port number, the system returns to the `IP Output Command >` prompt. To configure additional IP channels, repeat steps 1 to 5.
7. When you have set all output IP channels as required, type **apply** and press **Enter** at the `IP Output Command >` prompt to confirm and apply the configuration data to the system.

   The system will display confirmation before returning to the `IP Output Command >` prompt, for example:

   ```
   New IP outputs configuration is now active.
   ```

8. At the `IP Output Command >` prompt, type **exit** and press **Enter** to return to the Setup Menu.

Auto-configure Output IP Channels

This option enables you to have the system auto-increment the output IP channels from a base multicast IP address and port number. Each program must be assigned a unique IPv4 multicast address. See “Channel Assignments for IP Output” on page 9, and/or check with your service representative, if necessary.

Note: If you wish to manually configure each IP channel, use the “set” option described above.

1. At the `IP Output Command >` prompt, type **fill** and press **Enter**.
2. At the `Enter base multicast IP address [227.0.0.0]:` command, either press **Enter** to accept the default value in square brackets, or type the appropriate base multicast IP address and press **Enter**.
3. At the `Enter new multicast port [1234]` prompt, either press **Enter** to accept the default value in square brackets, or type the appropriate port number for the multicast streams and press **Enter**.

(Continued on next page)

Configuration Options via Command Line (Cont.)

(Continued from previous page)

4. After you type the port number, the system returns to the `IP Output Command >` prompt. At the `IP Output Command >` prompt, type **apply** and press **Enter** to confirm and apply the configuration data to the system.

   The system will display confirmation before returning to the `IP Output Command >` prompt, for example:

   ```
   New IP outputs configuration is now active.
   ```

5. At the `IP Output Command >` prompt, type **exit** and press **Enter** to return to the Setup Menu.

Set the Time Zone

Note: See "Set the Date and Time" on the following page for information on setting the date and time for the PIVD100R.

1. At the `Setup Command >` prompt, type **tz** and press **Enter**.

   The system displays the current time zone information for the PIVD100R and prompts you to specify whether or not you wish to change the time zone.

   ```
   Current time zone is: America/New York
   Change the time zone? [y/n]:
   ```

2. Either:
   - Type **n** and press **Enter** to return to the `Setup Command >` prompt without changing the current time zone.
   - Type **y** and press **Enter** to change the time zone. Then, continue with step 3.
3. The system will display the following prompt for a location, followed by a list of options:

   ```
   Please identify a location so that time zone rules can be set correctly.
   Please select a continent or ocean.
   ```

   At the `#?` prompt, type the number that corresponds to the appropriate option for your location, and then press **Enter**.
4. The system will display the following prompt for a country, followed by a list of options:

   ```
   Please select a country.
   ```

   At the `#?` prompt, type the number that corresponds to the appropriate option for your country, and then press **Enter**.
5. The system will display the following prompt for a region, followed by a list of options:

   ```
   Please select one of the following time zone regions.
   ```

   At the `#?` prompt, type the number that corresponds to the appropriate option for your region, and then press **Enter**.

(Continued on next page)

Configuration Options via Command Line (Cont.)

(Continued from previous page)

After you specify the time zone region, the system displays an overview of your location selections and prompts for confirmation, for example:

```
The following information has been given:

        United States
        Central Time

Therefore TZ='America/Chicago' will be used.
Local time is now:      Tue May 24 16:23:10 CST 2011.
Universal Time is now:  Tue May 24 22:23:10 UTC 2011.
Is the above information OK?
1) Yes
2) No
#?
```

6. Either:
   - Type **1** and press **Enter** if the information in the display is correct. The system will confirm the setting and then prompt you to reset the PIVD100R:

     ```
     Time zone has been set. Please reset the system.
     ```

     Continue with step 7.
   - Type **2** and press **Enter** to return to the initial location prompt and reset the time zone (repeat this procedure from step 3).
7. If you are ready to reset the system immediately, at the `Setup Command >` prompt, type **reset** and press **Enter** (see "Reset the System" on page 56 for further information).

   Note: 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.

Set the Date and Time

If your system is configured with ViP 222/ViP 222k STBs, you may want to set the date and time on the PIVD100R for the purposes of scheduling STB updates (see "Schedule an STB Software Update" on page 44 for further information).

By default, the PIVD100R is synchronized with an NTP server and configured for the US Central time zone. If the PIVD100R is connected to the Internet, the NTP client will periodically update the time setting on the PIVD100R. If the PIVD100R is not connected to the Internet, you also have the option to disable NTP synchronization and specify date and time data manually. Refer to "Set the Time Zone" on the previous page for information on setting the time zone.

1. At the `Setup Command >` prompt, type **time** and press **Enter**.

(Continued on next page)

Configuration Options via Command Line (Cont.)

(Continued from previous page)

2. At the `Use NTP for time synchronization (Y/N) ? [Y]:` prompt, either:
   - Type **y** and press **Enter** if you intend to use an NTP client for time synchronization.

     At the `Enter new NTP server IP: [64.90.182.55]:` prompt, either press **Enter** to accept the default value in square brackets, or type the appropriate NTP server IP address and press **Enter**.

     The system will display confirmation for example:

     `Time will now be synchronized via NTP from server:` *xxx.xxx.xxx.xxx*
     (where *xxx.xxx.xxx.xxx* is the NTP server IP address you provided above)
   - Type **n** and press **Enter** to set the time manually.

     The system will display the current time, for example:

     `Current time: 2012-02-16 18:49:56`

     and then initiate a series of prompts to enable you to set the time. Continue with step 3.
3. At each of the following prompts, type the year, month, and day, respectively. Note that all three of these fields require numerical values. Press **Enter** after each entry.

   If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

   ```
   Enter new year [2012]>
   Enter new month [2]>
   Enter new day [16]>
   ```
4. At each of the following prompts, type the hour and minute, respectively. Note that the hour should be entered in 24-hour format. Press **Enter** after each entry.

   If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

   ```
   Enter new hour [18]>
   Enter new minute [49]>
   ```
5. The system will display the new time and then prompt for confirmation, for example:

   `New time: 2012-02-16 18:53:00`

   `Apply? [y/n]`

   Either, type **y** and press **Enter** to apply the new configuration to the system, or type **n** and press **Enter** to return to the `Setup Command >` prompt without changing the time configuration.

If you do apply new manual configuration, the system will display confirmation, for example:

`New time is set`

Configuration Options via Command Line (Cont.)

Change the Login Password

For security purposes, it is recommended that the admin user login password be unique to the system. Note that the login password is case-sensitive.

1. At the `Setup Command >` prompt, type **pwd** and press **Enter**.

   The system prompts for the current admin user password:

   ```
   Changing password for admin
   Old password:
   ```

2. Type the current password and press **Enter**. The system will then prompt you to type and retype the new password:

   ```
   New password:
   Retype password:
   ```

3. Type and then retype the new password at the prompts. Press **Enter** after each entry.

Once you complete the Password fields successfully, the system displays confirmation:

```
Password for admin changed by admin.
```

Exit the Setup Menu

At the `Setup Command >` prompt, type **exit** and press **Enter** to exit the Setup Menu and return to the PIVD100R Main Menu `Command >` prompt.

Reset the System

This command is also available from the PIVD100R Main Menu.

At the `Setup Command >` prompt, type **reset** and press **Enter**. This will initiate 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.

Update Menu Commands

The following subsections describe how to access and use the Update Menu commands.

Access the Update Menu

1. Log in to the PIVD100R as described on page 37.
2. At the `Command >` prompt, type **update** and press **Enter**.
3. At the `Update Command >` prompt, either:
   - Press **Enter** to display the Update Menu (see example on following page).
   - Type the desired command and press **Enter**.

Note: You can always press **Enter** at the `Update Command >` prompt to display the Update Menu.

Configuration Options via Command Line (Cont.)

Example: Update Menu

```
-----------
Update Menu
-----------
  update      Update
  updser      Update via serial link
  ucfg        Configure update server
  exit        Return to the main menu
Update Command >
```

Update PIVD100R Firmware via Ethernet

This option enables you to update PIVD100R firmware via the Ethernet. The appropriate update file must be provided by LG; the system will not download an improper file.

Note: See “Update PIVD100R Firmware via Serial Link” below for information on updating firmware via a serial link.

1. At the `Update Command >` prompt, type **update** and press **Enter**.
2. At the `Enter update file name:` prompt, type in the firmware update filename and press **Enter**.

   The system will initiate the download and confirm progress, for example:

   `Downloading file: pivd100r_app_xxxx.upd`
3. When the update is successfully completed, reset the system (see “Reset the System” on page 60 for further information).

Update PIVD100R Firmware via Serial Link

This option enables you to update PIVD100R firmware via a serial link to the PIVD100R. The appropriate update file must be provided by LG; the system will not transfer an improper file.

Note: See “Update PIVD100R Firmware via Ethernet” above for information on updating firmware via the Ethernet.

1. At the `Update Command >` prompt, type **updser** and press **Enter**.
2. At the `Send file using XMODEM` prompt, transfer the firmware update file using Xmodem protocol. For example, in HyperTerminal, select **Transfer** and then **Send File...**. In the Send File window, enter or select the appropriate filename in the Filename field, and select **Xmodem** in the Protocol field.

   The system will display progress messages as well as the result of the update process (which may take several minutes).
3. When the update is successfully completed, reset the system (see “Reset the System” on page 60 for further information).

Configure the Update Server

1. At the `Update Command >` prompt, type **ucfg** and press **Enter**.
2. At the `Enter update protocol (ftp or tftp) [ftp]:` prompt, either press **Enter** to accept the default value (i.e., the current setting) in square brackets or type the new update protocol to use (ftp or tftp) and press **Enter**.
3. At the `Enter update host IP address [136.166.60.106]:` prompt, either press **Enter** to accept the default value in square brackets, or type the IP address of the PIVD100R and press **Enter**.
4. (FTP only) At the `Enter update user name [update]:` prompt, type the name for the update user.
5. (FTP only) At the `Enter update user password [update]:` prompt, type the password for the update user.

Exit the Update Menu

At the `Update Command >` prompt, type **exit** and press **Enter** to exit the Update Menu and return to the PIVD100R Main Menu `Command >` prompt.

Pro:Idiom Menu Commands

The following subsections describe how to access and use the Pro:Idiom Menu commands.

Access the Pro:Idiom Menu

Note: You will need to know the Pro:Idiom password to enter this menu. If this is the first time the menu is being accessed, contact LG for the password. Otherwise, if necessary, obtain the password from the system administrator.

1. Log in to the PIVD100R as described on page 37.
2. At the `Command >` prompt, type **pi** and press **Enter**.
3. At the `Enter PI password >` prompt, type the Pro:Idiom password and press **Enter**.
4. At the `P:I Command >` prompt, either:
   - Press **Enter** to display the Pro:Idiom Menu (see example on following page).
   - Type the desired command and press **Enter**.

Note: You can always press **Enter** at the `P:I Command >` prompt to display the Pro:Idiom Menu.

Configuration Options via Command Line (Cont.)

Example: Pro:Idiom Menu

```
--------------
Pro:Idiom Menu
--------------
  pxm          Download a new Pro:Idiom key via Xmodem
  pnet         Download a new Pro:Idiom key from a remote server
  pload        Reload Pro:Idiom key
  pchk         Checksum Pro:Idiom key
  pip          Change PI password
  exit         Return to the main menu
P:I Command >
```

Download a Pro:Idiom Key via XModem

This option enables you to download a Pro:Idiom key via XModem. See “Download a Pro:Idiom Key From a Remote Server” below for information on downloading a Pro:Idiom key from a remote server.

1. At the `P:I Command >` prompt, type **pxm** and press **Enter**.
2. At the `Send Pro:Idiom key file using Xmodem ...` prompt, transfer the new Pro:Idiom key file using Xmodem protocol. For example, in HyperTerminal, select **Transfer** and then **Send File...**. In the Send File window, enter or select the appropriate filename in the Filename field, and select **Xmodem** in the Protocol field.

The system will display progress messages as well as the result of the download process (which may take several minutes).

Download a Pro:Idiom Key From a Remote Server

This option enables you to download a Pro:Idiom key via a remote server. See “Download a Pro:Idiom Key via XModem” above for information on downloading a Pro:Idiom key via XModem.

1. At the `P:I Command >` prompt, type **pnet** and press **Enter**.
2. At the `Enter the Pro:Idiom key URL:` prompt, type the IP address of the server from which to download the Pro:Idiom key file.

The system will display progress messages as well as the result of the download process.

Reload the Pro:Idiom Key

1. At the `P:I Command >` prompt, type **pload** and press **Enter**.
2. At the `Reload PI key. Continue (y/n)?` prompt, type **y** and press **Enter** to continue.

When the reload is complete, the system will display:

```
Reload PI complete OK
```

Configuration Options via Command Line (Cont.)

View the Pro:Idiom Key Checksum

At the `P:I Command >` prompt, type **pchk** and press **Enter**.

The Pro:Idiom key checksum is a 10 digit number that identifies the Pro:Idiom key file installed on the PIVD100R, for example:

```
Pro:Idiom key checksum = 1521204805
```

Change the Pro:Idiom Password

1. At the `P:I Command >` prompt, type **pip** and press **Enter**.
2. At the `Enter new PI password:` prompt, type a new Pro:Idiom password and press **Enter**.

The new password will take effect immediately.

Exit the Pro:Idiom Key Menu

At the `P:I Command >` prompt, type **exit** and press **Enter** to exit the Pro:Idiom Menu and return to the PIVD100R Main Menu `Command >` prompt.

Reset the System

Note: This option is also available from the Setup Menu.

1. If not already logged in, log in to the PIVD100R as described on page 37.
2. At the `Command >` prompt, type **reset** and press **Enter**.

This will initiate 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.

Exit the Current Session

At the `Command >` prompt, type **exit** and press **Enter** to end the current session.

Troubleshooting

PIVD100R Setup

The following sections provide basic troubleshooting information for the PIVD100R.

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

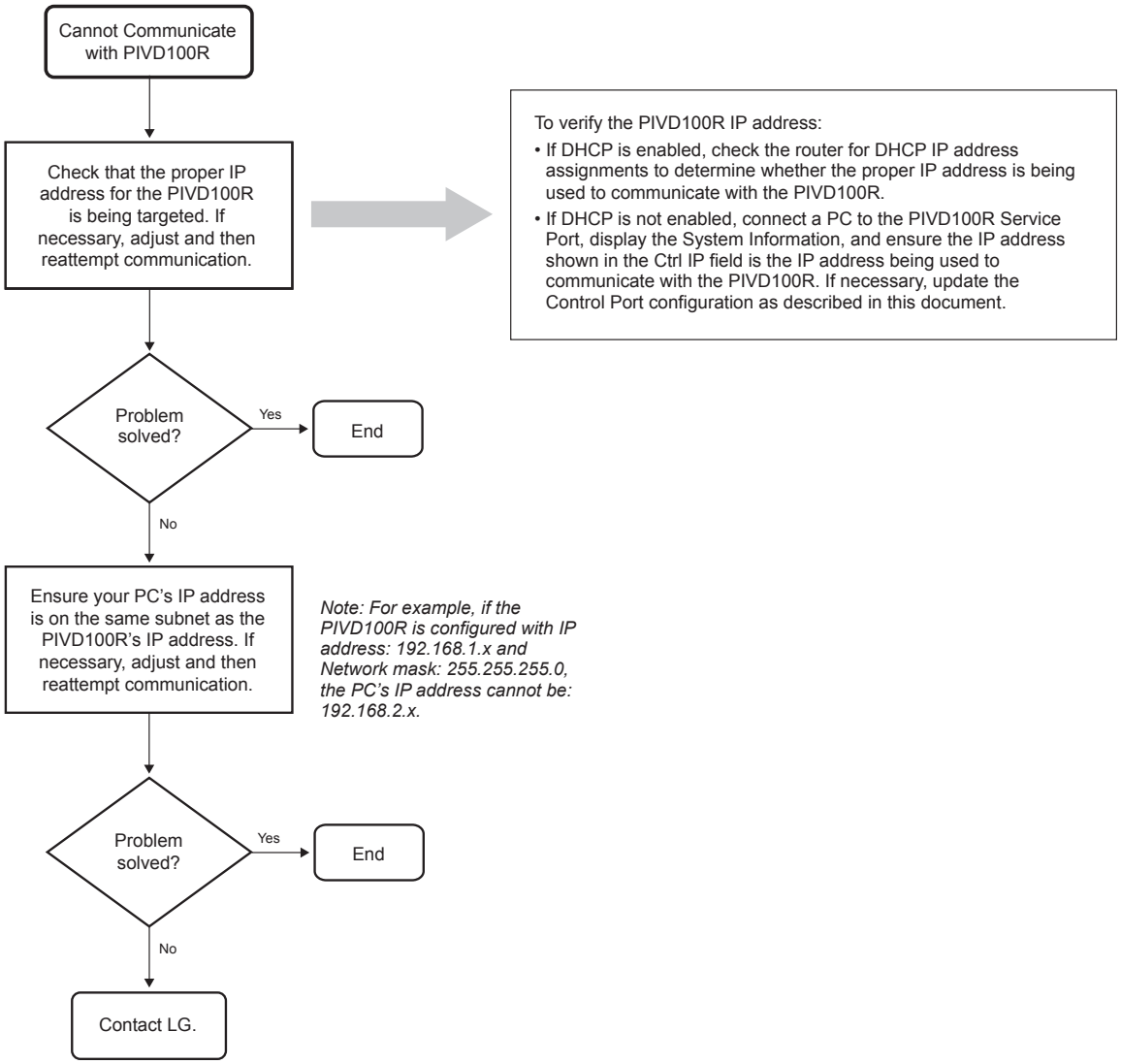
If the network is configured for DHCP but the PIVD100R has not been assigned an IP address, i.e., the Ctrl IP field in the PIVD100R System Information display is blank:

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.

Troubleshooting (Cont.)

PIVD100R Communication

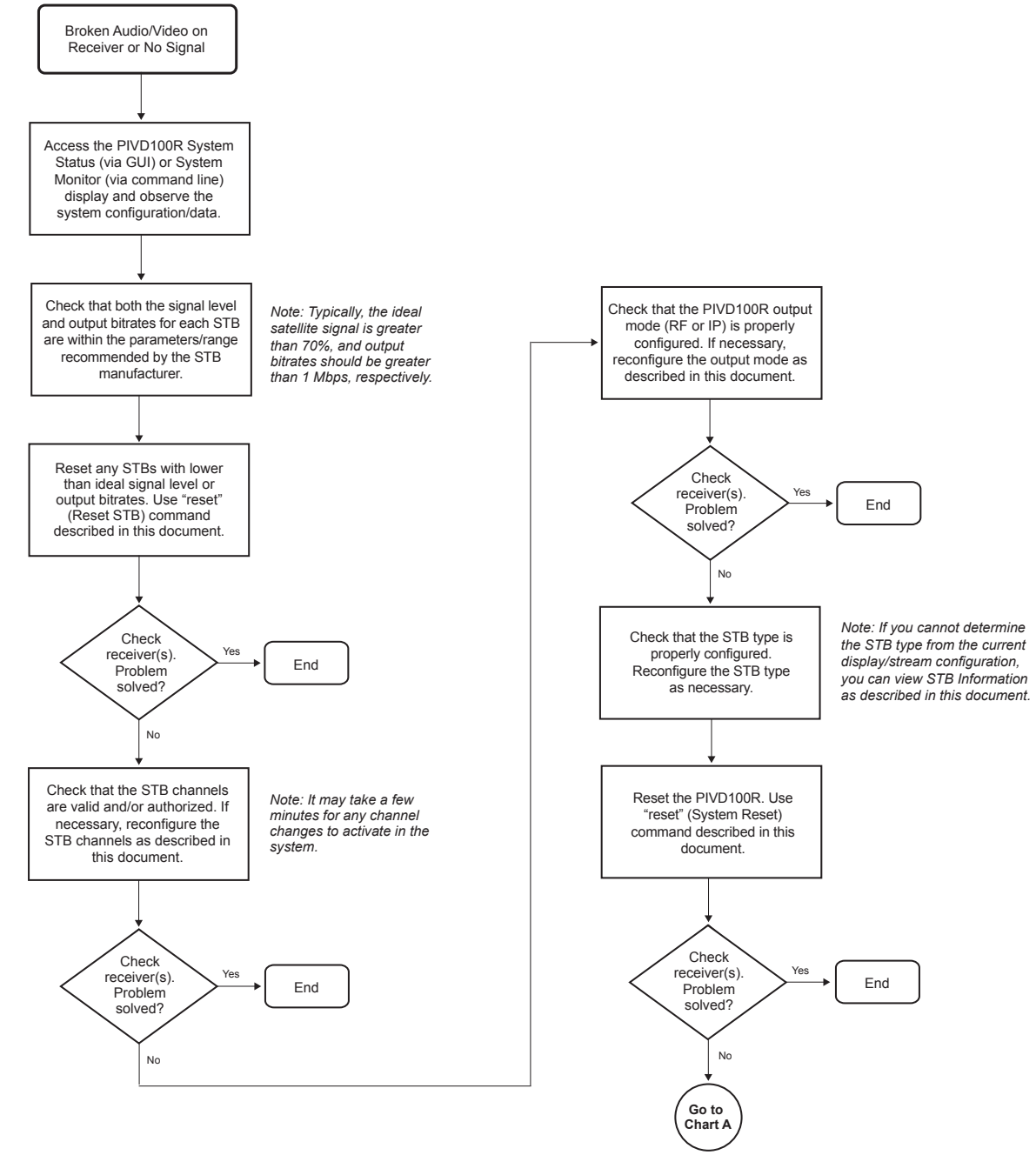
If you are unable to establish communication with the PIVD100R either via the web GUI or the command line interface, refer to the following flow chart.



Troubleshooting (Cont.)

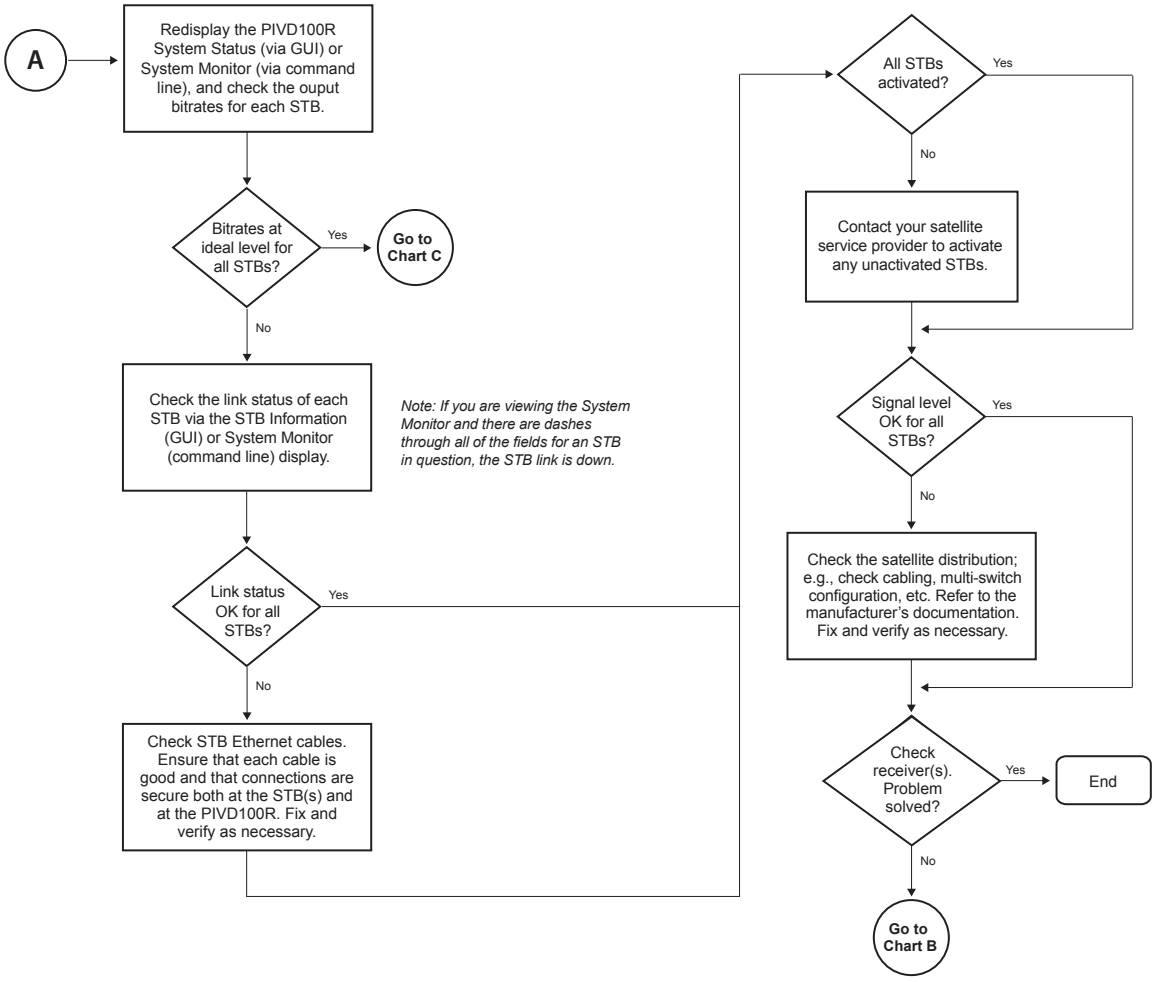
Receiver Reception

If one or more receivers have symptoms of broken audio or video or no signal, refer to the troubleshooting flow charts below and on the following pages. If necessary, contact LG for additional troubleshooting help.

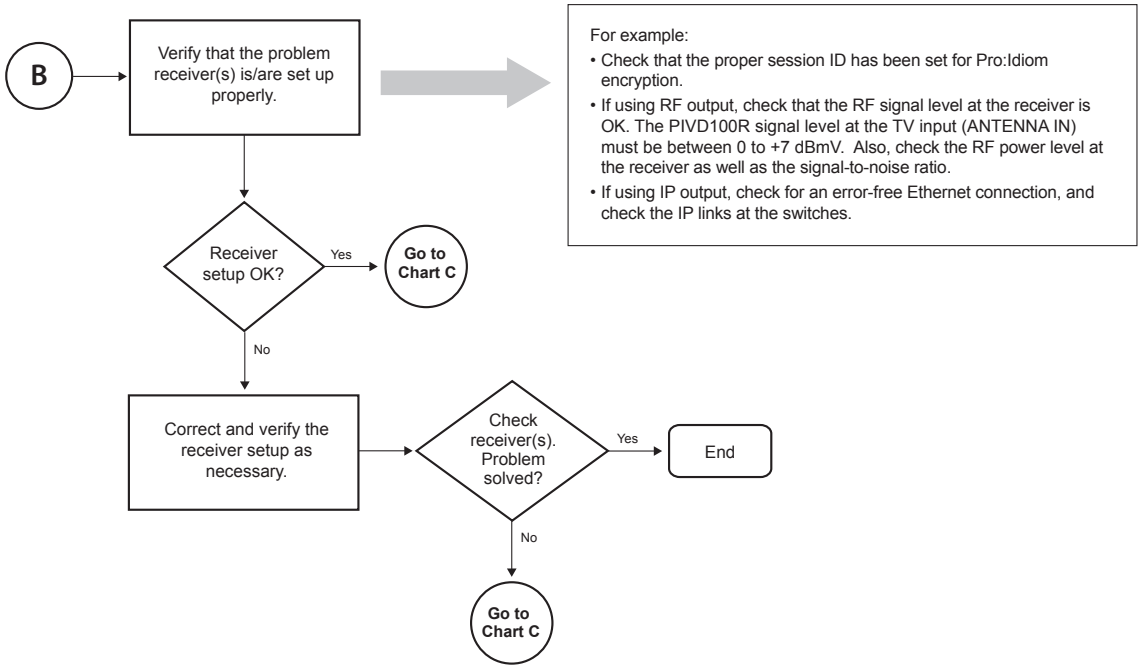


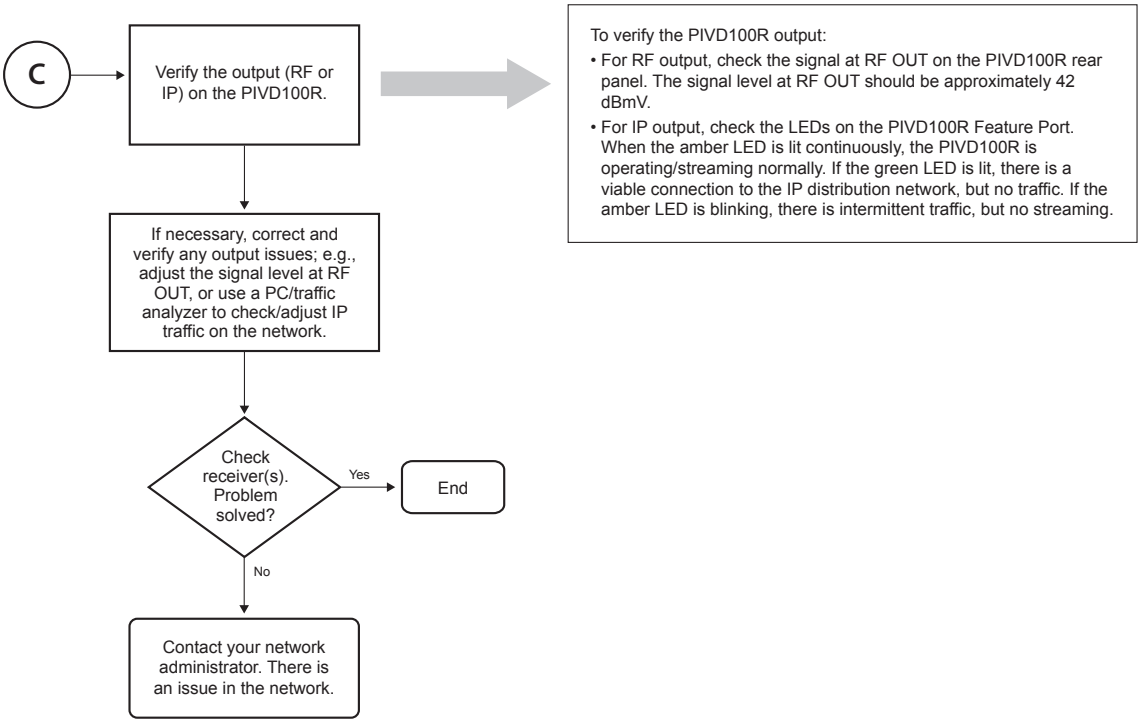
Troubleshooting (Cont.)

Receiver Reception (Cont.)



Receiver Reception (Cont.)





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.

Document Revision History / Notes

Document Revision History

Date	Description
April 2012	Revision A: New document
February 2014	Revision B: Admin user password, system reset updates

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

Notes

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206-4202
Revision B