LG PCS200R Pro:Centric Server Warranty

Broadcast Products Welcome to the LG family! We believe that you will be pleased with your new PCS200R Pro:Centric Server. Please read this warranty carefully, it is a "LIMITED WARRANTY" as defined under Federal Law. This warranty gives you specific legal rights, and you may also have other rights that vary from state-to-state within the U.S.A.

LG's RESPONSIBILITY

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

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

Warranty Service Warranty service is provided at LG. Customer pays for shipping charges to LG; LG pays for return shipping charges to return PCS200R Pro:Centric Server to customer. Call **1-888-865-3026** for further information.

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

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

OWNER'S RESPONSIBILITY

Effective Warranty Date Warranty begins on the date of delivery of the PCS200R Pro:Centric Server.
For your convenience, keep the dealer's dated bill of sale or delivery ticket as evidence of the purchase date.

Installation Guide Read the Installation & Setup Guide carefully so that you will understand the operation of the PCS200R Pro:Centric Server and how to adjust the settings.

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

For Customer Support/Service, please call:

1-888-865-3026

www.LGsolutions.com

PCS200R Pro:Centric® Server

Installation & Setup
Quick Reference | Warranty

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

Open Source Software Notice

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.

WARNING:
This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. ***Wash hands after handling***.

FCC NOTICE (For USA and Canada):
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 instructions 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 will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation of the device. Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

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

Product Type	Pro:Centric Server
Model Number/Range	PCS200R

Those products identified by the Product Type and Model Range above from LG Electronics, Inc. ("LGE") contain the open source software detailed below. Please refer to the indicated open source licences for the terms and conditions of their use.

Components	License
bash, busybox, das u-boot, dev, e2fsprogs, ethtool, gawk, grep, hotplug, iptables, linux kernel, lrzsz, lzo, merge, module-init-tools, mtd-utils, net-tools, ntfs-3g, ntpclient, openvpn, pciutils, procinfo, procps, screen, skell, sysconfig, syslogd, time, usbutils	GPL 2.0
eglibc, ffmpeg, gmp, Java SwingLabs, libelf, libusb, LIVE555 Streaming Media, openRTSP, termcap	LGPL 2.0/2.1

The source code and other important information for the above may be obtained free of charge from LGE at http://opensource.lge.com. LGE will also provide open source code to you on CD-ROM for a charge covering the cost of performing such distribution (such as the cost of media, shipping and handling) upon e-mail request to opensource@lge.com. This offer is valid for three (3) years from the date on which you purchased the product.

Please be informed that LG Electronics products may contain open source software listed in the table below.

Components	License
Apache Ant, Apache Commons EL, Apache Commons FileUpload, Apache Commons IO, Apache Commons Logging, Apache Commons Modeling, Apache Commons Net, Apache Derby, Apache HttpComponents, Apache Jakarta, Apache James, Apache Tomcat 6.0, httpd	Apache License v2.0
flex, portmap, tcp-wrappers	BSD License
libcurl	Curl License
dhcp, expat	MIT License
openssh	OpenSSH License
OpenSSL	OpenSSL License
sudo	sudo License
zlib	zlib/libpng License

Modulation Specifications

Standard:	ITU-T J.83 Annex B (QAM-B)
Constellations:	64-QAM, 256-QAM
Symbol Rate:	64-QAM 5.056941 MBaud
	256-QAM 5.360537 MBaud
Interleaving:	Fixed I = 128, J = 1

Standard:	EN 300 429 V1.2.1 (DVB-C)
Constellations:	64-QAM, 256-QAM
Symbol Rate:	64-QAM 6.9 MBaud
	64-QAM 6.111 MBaud
	256-QAM 6.9 MBaud
	256-QAM 6.111 MBaud

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.

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.

25. Handling Notice

⚠ **Caution: Only qualified service personnel should handle and install this unit. A series of screws with lock washers are used to secure the top and bottom covers of the unit. Use caution when handling the unit as the lock washers may have rough edges. Do NOT run your fingers over the top and bottom covers of the unit.**

Dimensions

Height:	1.692 inches (42.977 mm)
Width:	19.0 inches (482.6 mm) (for EIA standard 19-inch rack mount)
Depth:	8.5 inches (215.9 mm)
Weight:	5.65 pounds (2.56 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 Connectors (2)*:	75 Ohm, Type 'F'
Frequency:	VHF/UHF 54-865 MHz
RF Output Span:	Up to 8 Contiguous Channels (typically 48–64 MHz)
RF Output Frequency Range:	54 MHz to 865 MHz
Active Output Level at RF Out jacks:	-1 dBm (+47.75 dBmV) Typical
Test Output Level:	-47.75 dBm (+1 dBmV) Typical
Frequency Accuracy:	±5 ppm
Impedance at ASI Out jack:	75 Ohms
Level at ASI Out jack:	800 mv
DC Input:	+12V DC @ 3.25 Amps
Ethernet Connector (Control Port):	10/100/1000BaseT, RJ-45
Ethernet Connector (Feature Port):	100/1000BaseT Full Duplex, RJ-45
USB Port*:	USB 2.0
Solid State Drive:	UL listed, FCC compliant, and/or other applicable agency-recognized/listed (Maximum current draw = +5V DC @ 2.0 Amps)

* RF OUT (0 dBmV) connector and USB port reserved for service technician use only.

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

This section provides introductory PCS200R installation and setup troubleshooting information. Refer to the extended Installation & Setup Guide for additional trouble-shooting information.

Equipment Setup Review

- Make sure all connectors and connections are tight and secure on all entertainment system components.

- Check the PCS200R LED: Under standard operating conditions, i.e., when the PCS200R is booted and operating normally, the PWR (Power) LED on the PCS200R front panel is continuously lit green. If there is a hardware fault, the PWR LED will turn and stay red.

  Note: When power is first applied to the PCS200R, the PWR LED initially flashes red and then turns green (blinking during boot-up).

Network Setup

If the network is configured for DHCP but the PCS200R has not been assigned an IP address, i.e., the Ctrl IP field in the PCS200R System Information display is blank:

1. Check the Control Port connector on the rear panel of the PCS200R. Make sure the cable connection is tight and secure.

2. Observe the green LED on the Control Port. Once the PCS200R 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.

PCS200R Rack Installation
(also see pages 11 to 12)

- Wear a properly grounded, antistatic wrist strap to avoid causing electrostatic (ESD) damage to the PCS200R.

- Carefully slide the PCS200R into a standard 19-inch equipment rack.

- When mounting in the rack, make sure to use the appropriate hardware. ALL FOUR MOUNT-ING SCREWS MUST BE USED.

- This equipment is not designed to support other devices. Do NOT stack other equipment on the top of the PCS200R.

- Rear cabling must be dressed and supported so that the weight of the cabling is not a strain on the PCS200R connectors.

- MOUNTING OF THE EQUIPMENT IN THE RACK SHOULD BE SUCH THAT A HAZARD-OUS 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.

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 nor-mally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PCS200R. Do NOT stack other equipment on the top of the PCS200R. 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.

The LG PCS200R Pro:Centric® server is a stand-alone, remotely-controlled processor and controller for the Pro:Centric system. The server can be used to capture data from an Internet source, assemble the data as display pages, and output the pages in DTV format over ASI, RF, or IP.

Features

• Three output options: ASI, RF, or IP

 − ASI output: The PCS200R generates one channel for GEM data only or multiplexed GEM/site data.

 − RF output: Both QAM-B (6 MHz) and DVB-C (7 MHz or 8 MHz) modulations are supported. The PCS200R generates one 256-QAM or 64-QAM RF channel for GEM/site data.

 − IP output: The PCS200R generates two multicast streams for GEM/site data.

• Customer may work with content provider to create Pro:Idiom® encrypted content on a SATA solid state drive (SSD) for RF or IP video playout channels

 − RF output: In addition to the GEM/site data channel, the PCS200R generates up to seven contiguous 256-QAM or 64-QAM RF channels for video playout. Each of these channels supports either two or three program streams multiplexed on each channel. This capability provides output of up to 21 programs of video content.

 − IP output: In addition to two multicast streams for GEM/site data, the PCS200R generates 21 multicast data streams for video playout. Each data stream supports one program. This capability provides output of up to 21 programs of video content.

• Provides remote management capability over Ethernet

• Small, lightweight chassis

• 19-inch rack-mountable

• 1U height profile to minimize rack space usage

An Internet browser-based Admin Client graphical user interface (GUI), provided for system integrator (SI) partners and lodging/institution administrators, facilitates support and maintenance of the Pro:Centric system. The Admin Client enables users to remotely manage system backups, output configuration, software updates, portal/information section content, TV configuration settings, etc.

Format the Solid State Drive

⚠ **Caution: In order to use the solid state drive for video playout, you MUST format the file system. Note that during formatting, any files that are currently loaded on the solid state drive will be deleted.**

Log in to the PCS200R command line interface and use the "format" command to format the drive's file system. Refer to the extended Installation & Setup Guide for further information on this command. All additional video playout configuration is performed in the Pro:Centric server Admin Client (see the ***Pro:Centric Server Admin Client User Guide***).
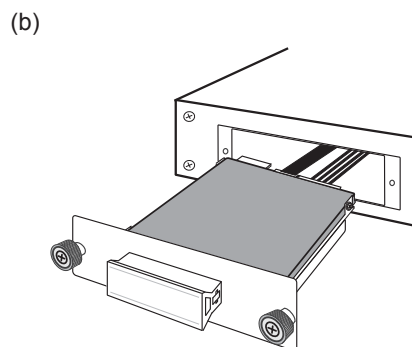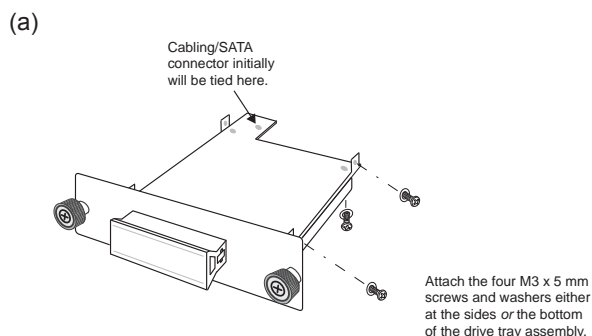
Note: If the drive was previously formatted for use with another PCS200R server, you do not need to reformat the file system.

(Continued from previous page)

7. Plug the PCS200R SATA connector/cabling into the solid state drive (see diagram b below).

8. Slide the drive tray assembly back into the PCS200R. Then, engage and tighten the thumbscrew on each side of the slot cover securely.

⚠ **Note: It is recommended that you use a Phillips screwdriver to secure the thumbscrews on the SSD slot cover.**

9. Plug the PCS200R AC power cord back into its powered AC line receptacle to restore power. After it is powered back on, the PCS200R resumes normal operation.

(a)

Cabling/SATA connector initially will be tied here.

Attach the four M3 x 5 mm screws and washers either at the sides *or* the bottom of the drive tray assembly.

(b)

Check the following items before you begin PCS200R installation and setup procedures.

Note: Once the PCS200R hardware is installed and the initial setup completed, output parameters are configured in the Pro:Centric server Admin Client. Along with this document, it is recommended that you have a copy of the ***Pro:Centric Server Admin Client User Guide*** readily available.

PCS200R

__ Unpack the PCS200R Pro:Centric server unit and all accessories.

PCS200R Accessories:	• AC Power Cord and Adapter • Four M3 x 5 mm screws for (optional) SATA SSD assembly • Four lock washers for (optional) SATA SSD assembly

__ Select the location for mounting the PCS200R. Ensure adequate ventilation is available.

__ Obtain the necessary attachment hardware to mount the PCS200R chassis in its targeted location.

__ Plan and install the necessary cabling and network (Ethernet) and AC power access for the PCS200R. You also will need the following to connect a PC directly to the PCS200R for system setup purposes: FTDI TTL-USB cable (P/N TTL-232R-5V-AJ).

SATA Solid State Drive (Optional)

__ To provide additional media/video playout channels, a customer-supplied SATA solid state drive may be installed in the SSD slot on the PCS200R rear panel. The solid state drive used must be UL listed, FCC compliant, and/or other applicable agency-recognized/listed. (Maximum current draw = +5V DC @ 2.0 Amps)

Video Channel Assignments for RF Output (QAM-B) with Solid State Drive

Each input program is limited to one-half or one-third of the output channel bitrates (Mbps), which in turn are dependent on the modulation format. 256-QAM modulation supports up to 38.8 Mbps, and 64-QAM modulation supports up to 26.97 Mbps.

__ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the RF output of the PCS200R. Ensure that up to eight contiguous CATV broadcast channels are allocated for the PCS200R RF output. The PCS200R uses a 256-QAM or 64-QAM modulation format, thereby occupying approximately 48 MHz of frequency spectrum.

The RF start channel is user-assigned during system setup (in the Admin Client), and the remaining channels (up to seven) are then automatically assigned per EIA-542 STD CATV frequency allocation standards. For example, if the RF start channel assignment is channel 2, the seven remaining channels will be 3, 4, 5, 6, 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 PCS200R is 135. Thus, to allocate all eight channels available for PCS200R RF output, the RF start channel must be set no higher than 128.

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

Video Channel Assignments for RF Output (DVB-C) with Solid State Drive

Each input program is limited to one-half or one-third of the output channel bitrates (Mbps), which in turn are dependent on the modulation format. 256-QAM modulation supports up to 45.05 Mbps (7 MHz bandwidth) or 50.87 Mbps (8 MHz bandwidth), and 64-QAM modulation supports up to 33.79 Mbps (7 MHz bandwidth) or 38.15 Mbps (8 MHz bandwidth).

— Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the RF output of the PCS200R. Ensure that up to eight contiguous CATV channel frequencies are allocated for the PCS200R RF output. The PCS200R uses a 256-QAM or 64-QAM modulation format, thereby occupying approximately 56 MHz or 64 MHz (depending on channel bandwidth) of frequency spectrum.

The RF start channel frequency is user-assigned, in KHz, during system setup (in the Admin Client), and the remaining channel frequencies (up to seven) are then automatically assigned in accordance with the specified bandwidth. For example, if the RF start channel frequency assignment is 57000 KHz with a 7 MHz bandwidth, the seven remaining channel frequencies will be 64000 KHz, 71000 KHz, 78000 KHz, 85000 KHz, 92000 KHz, 99000 KHz, and 106000 KHz.

The highest available RF channel frequency for the PCS200R is 861000 KHz.

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

Video Channel Assignments for IP Output with Solid State Drive

Each IP stream is limited to 19.4 Mbps.

— The PCS200R 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.

To provide capacity for additional media/video playout channels, a (customer-supplied) SATA solid state drive may be installed in the SSD slot on the PCS200R rear panel. This section describes how to install the drive and also provides information on the required formatting.

Install the Solid State Drive

You will need to have available the four M3 x 5 mm screws and attendant washers (one lock washer per screw) shipped with the PCS200R. These will be used to attach the solid state drive to the PCS200R SSD drive tray assembly.

⚠ **Caution: The Pro:Centric server is NOT designed to be hot-swappable!!! Power to the PCS200R must be removed before the solid state drive is inserted or removed.**

⚠ **Caution: The solid state drive used must be UL listed, FCC compliant, and/or other applicable agency-recognized/listed. (Maximum current draw = +5V DC @ 2.0 Amps)**

⚠ **Caution: The solid state drive must be inserted and removed by qualified service personnel only.**

1. Log in to the PCS200R command line interface and use the "shut" command to shut down the system in an orderly manner. Refer to the extended Installation & Setup Guide for further information on this command.

2. Put on a properly grounded, antistatic wrist strap to avoid causing electrostatic (ESD) damage both to the solid state drive and the PCS200R.

3. Unpack the solid state drive unit.

4. Remove the PCS200R AC power cord from the AC line receptacle from which it is receiving power.

5. Disengage the SSD slot cover from the PCS200R rear panel by turning the thumbscrew on each side of the cover counterclockwise (use a Phillips screwdriver if necessary). Then, slowly, slide out the SSD drive tray assembly.

⚠ **Caution: As shipped, the cabling/SATA connector for the solid state drive is connected by zip tie to the rear end of the SSD drive tray assembly. Use scissors or a similar tool to remove the zip tie, taking care not to damage the cables.**

6. Place the solid state drive onto the drive tray, and use the four M3 x 5 mm screws and washers to attach it to the drive tray assembly. You may attach the drive either from the bottom or from the sides (see diagram a on following page).

(Continued from previous page)

14. Make the appropriate connection to the RF distribution system or IP distribution network depending on the PCS200R output option to be used.

    • ASI output: Connect the RF output on the upconverter to the RF distribution center combiner, and balance the RF signal so that the Pro:Centric signal level at the TV(s) is between 0 to +7 dBmV.

    • RF output: Connect RF OUT on the PCS200R to the RF distribution center combiner, and balance the RF signal so that the Pro:Centric signal level at the TV(s) is between 0 to +7 dBmV.

    • IP output: Connect a CAT5E or better Ethernet cable between the Feature Port on the PCS200R rear panel and the institution's IP distribution network.

    ⚠ **Caution (ASI/RF output only): For proper system performance, the Pro:Centric signal level at the TV input (ANTENNA IN) must be between 0 to +7 dBmV. Note that additional equipment may be required to adjust the signal level.**

    ⚠ **Caution: When not in use, the RF OUT (0 dBmV) connector must remain terminated with attached terminator accessory.**

15. Configure the ASI/RF or IP output parameters and/or the Video Playout settings in the Pro:Centric server Admin Client. Refer to the ***Pro:Centric Server Admin Client User Guide*** for further information.

    Note: By default, the server output is enabled for 256-QAM-B modulation (RF output), with the data channel set to 75.

16. Check one or more room receivers to make sure all content is properly mapped and available.

___ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the IP output of the PCS200R. Ensure that up to 23 unused and unreserved IPv4 multicast addresses, within the designated range 224.0.0.0 to 239.255.255.255, are allocated for the PCS200R IP output.

The IP start channel is user-assigned during system setup (in the Admin Client), and the remaining channel assignments are then automatically incremented. 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.

___ Reserve one User Datagram Protocol (UDP) port for the multicast data streams. You can use the system default (1234) or another unassigned port number, for example, 50000, 50001, etc. The port 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.

ASI Output (Optional)

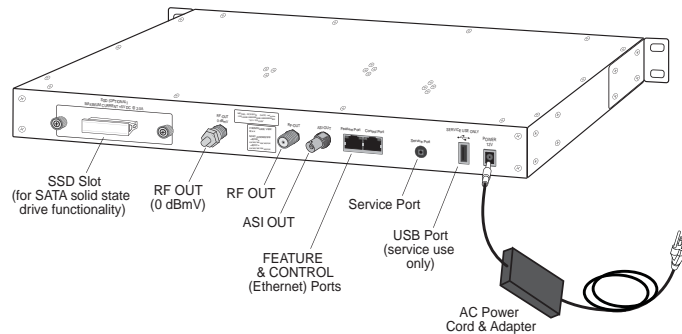ASI output supports up to 19.4 Mbps each for GEM and site data (total of 38.8 Mbps).

___ If the system is using ASI output, install the modulator and upconverter that will receive the ASI output signal from the PCS200R. Refer to the manufacturer's documentation.

Refer to the ***PCS200R Pro:Centric Server Installation & Setup Guide*** for further installation and configuration information.

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

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

PCS200R Rear View

SSD Slot
(for SATA solid state
drive functionality)

RF OUT
(0 dBmV)

RF OUT

ASI OUT

FEATURE
& CONTROL
(Ethernet) Ports

Service Port

USB Port
(service use
only)

AC Power
Cord & Adapter

Disconnect Device
The AC mains plug is used as the disconnect device. The disconnect device must remain readily operable.
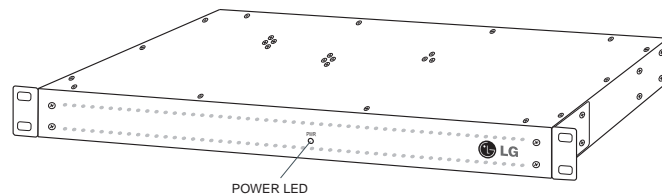
RF OUT (0 dBmV) Connector
Reserved for service technician use only. When not in use, this connector must remain terminated with attached terminator accessory.

USB Port
Reserved for service technician use only.

PCS200R Front View

POWER LED

Ventilation
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 PCS200R. Do NOT stack other equipment on the top of the PCS200R.

Screws with Lock Washers
Only qualified service personnel should handle and install the PCS200R. A series of screws with lock washers are used to secure the top and bottom covers of the PCS200R. Use caution when handling the unit as the lock washers may have rough edges. Do NOT run your fingers over the top and bottom covers of the unit.

(Continued from previous page)

11. (Optional) Set the date and time on the PCS200R.

    By default, the PCS200R is synchronized with an NTP server and configured for the US Eastern time zone. If the PCS200R is connected to the Internet, the NTP client will periodically update the time setting on the PCS200R. You can set the time zone as required. If the PCS200R is not connected to the Internet, you also have the option to disable NTP synchronization and specify date and time data manually.

    Use the PCS200R "tz" and/or "time" commands (available from the `Command >` prompt), as necessary, to set the date and time on the PCS200R.

    • Use the "tz" command and follow the system prompts to change the time zone.

    • Use the "time" command and follow the system prompts to change the NTP configuration or manually configure the date and time parameters on the PCS200R.

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

    Note: If you changed the time zone and/or the NTP configuration, you will be prompted to reset the system. You may wait to reset the system until you are directed to do so in step 13.

12. If a SATA solid state drive is installed (see step 1), the drive's file system must be properly formatted. If the drive was previously formatted for use with another PCS200R, you do not need to reformat the drive. Otherwise, at the `Command >` prompt, type **format** and press **Enter**. Then, follow the system prompts to initiate the formatting.

    Caution: This operation deletes any files that are currently present on the drive. Refer to the extended Installation & Setup Guide for further information.

13. If you made any configuration changes in steps 10 and 11 that require a system reset, at the `Command >` prompt, type **reset** and press **Enter**.

    The reset process may take up to two minutes, after which the PCS200R resumes normal operation.

(Continued from previous page)

10. This step describes how to set a static IP address for the Control Port and/or Feature Port.

> ⚠️ **Caution: Setting a static IP address for the Control Port (for remote management purposes) is optional. However, if you will be using IP output from the PCS200R, you MUST configure the Feature Port as described in step (c) below.**

a) At the `Command >` prompt, type **setip** and press **Enter**. The system will display the current network configuration, followed by the Network Configuration Menu.

Use the Network Configuration Menu commands indicated below and follow the system prompts to configure the port(s). Refer to the extended Installation & Setup Guide for further information on the commands.

b) Use the "eth0" and "dns" commands to configure the Control Port, as necessary.

c) Use the "eth1" command to configure the Feature Port, if required, for PCS200R IP output.

Note that the Feature Port MUST be configured with a static IP address that is on a different subnet than the Control Port IP address. Also, make sure the Feature Port speed (default: 1000 Mbps) is appropriate for your system. If necessary, at the prompt for the port speed, change the value to 100 Mbps.

d) 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:

`Do you want to save the new configuration? [y/n]:`

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

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

Note: If you changed the configuration of the port(s), you will be prompted to reset the system. You may wait to reset the system until you are directed to do so in step 13.
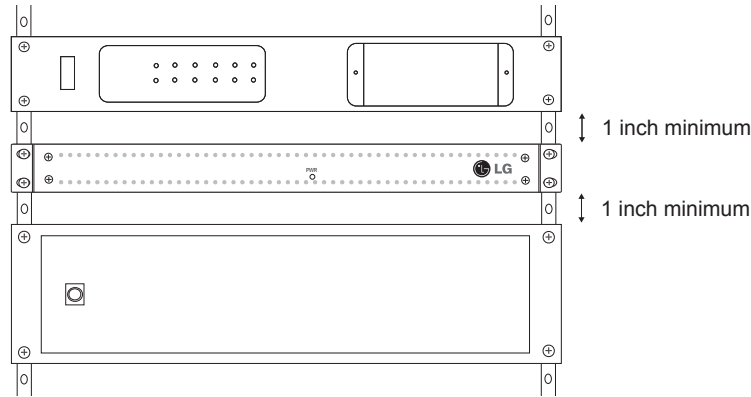
Typical Rack Installation

1. To avoid causing electrostatic (ESD) damage to the PCS200R during installation, attach an antistatic wrist strap to a properly grounded rack/object and put it on.

2. (Optional) As shipped, the PCS200R 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.

3. Carefully slide the chassis into a standard 19-inch equipment rack.

4. Use all four mounting screws to secure the chassis to the rack.

(a)

To rack

To rack

(b)
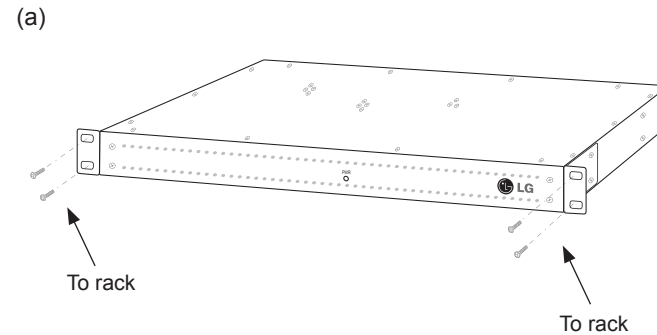
Use flat washer and lock washer with each M4 x 10 mm mounting bracket screw.

Front View
of Rack Cabinet

↕ 1 inch minimum

↕ 1 inch minimum

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 PCS200R. Do NOT stack other equipment on the top of the PCS200R. 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.

(Continued from previous page)

⚠ **Note: After the system setup is complete, it is highly recommended that you use the "pwd" command available from the PCS200R Main Menu to change the admin user password from its default value. Refer to the extended Installation & Setup Guide for further information.**

8. At the `Command >` prompt, type **info** and press **Enter**. (You can press **Enter** at any PCS200R command prompt to view current menu, if desired.)

The initial System Information display identifies PCS200R, default configuration settings, including the Control Port IP address and the output configuration, for example:

```
PCS200R Pro:Centric Server v7.4
Copyright (c) 2010 - 2015 Zenith Electronics LLC

SN:            201-12301011
Hardware ID:   2
OS version:    Linux 3.4.0-zenith-pcs200+
OS release:    #121 SMP Mon Dec 8 10:38:49 CST 2014
Ctrl MAC:      00:0C:63:40:36:14
Ctrl IP:       10.1.2.3
Feat MAC:      00:0C:63:40:36:15
Feat IP:       n/a
VPN IP:        n/a
RF config:     Mode 3, 256-QAM-B, RF: 6 MHz, 5.36 MSps, ASI: 38.81 Mbps
RF channel:    75
Channels:      1
Local time:    Mon Jan 19 14:42:02 EST 2015
```

9. Check the Ctrl IP (Control Port IP address) field in the System Information display. By default, the PCS200R uses DHCP; thus, the DHCP server, if configured, assigns an IP address to the Control Port once the PCS200R successfully connects to the network.

• If the Crtl IP field shows an IP address, the PCS200R is up and running on the network. If you wish to configure a static IP address for the Control Port and/or if you need to configure a static IP address for the Feature Port (for IP output purposes), continue with step 10. Otherwise, you can go to step 11 at this time.

• If the network is configured for DHCP but the Ctrl IP field is blank, refer to "Network Setup" troubleshooting information on page 24.

• If the network is not configured for DHCP, you will need to configure a static IP address for the PCS200R Control Port as described in step 10.

Typical System Installation

(see also Typical Setup Flow Charts and VPN Network Connections Overview diagrams)

1. (Optional) To provide capacity for additional media/video playout channels, install a SATA solid state drive (customer-supplied) in the SSD slot on the PCS200R rear panel. See Reference section, "Using an SSD Storage Device with the PCS200R," for further information.

2. If your system is using ASI output, make the following connections; otherwise, go to step 3.

   • Connect a 75 ohm BNC-to-BNC coaxial cable between ASI OUT on the PCS200R and ASI IN on the modulator.

   • Connect an RF coaxial cable between IF OUT on the modulator and IF IN on the upconverter.

   ⚠ **Note: The BNC cable must be less than 30 feet (9.2 meters) in length.**

3. To enable remote management, connect one end of a CAT5 RJ-45 Ethernet cable to the Control Port on the PCS200R rear panel, and connect the other end of the cable to the institution's network.

4. Connect the PCS200R power supply to the POWER connector on the PCS200R rear panel. Then, plug the AC power cord into a powered AC line receptacle. When power is applied, the PWR (Power) LED on the PCS200R front panel will initially flash red and then turn green (blinking during boot-up).

   The boot-up process for the PCS200R may take up to two minutes. When boot-up is complete, the PWR LED on the PCS200R front panel will light continuously green.

5. Once the PWR LED is lit continuously (no longer blinking), use the FTDI TTL-232R-5V-AJ cable to connect a PC to the Service Port on the PCS200R 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

   Note: To avoid configuration errors, make sure the keyboard settings on the terminal emulator assign the backspace character to Ctrl + H (ASCII 8).

   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.)
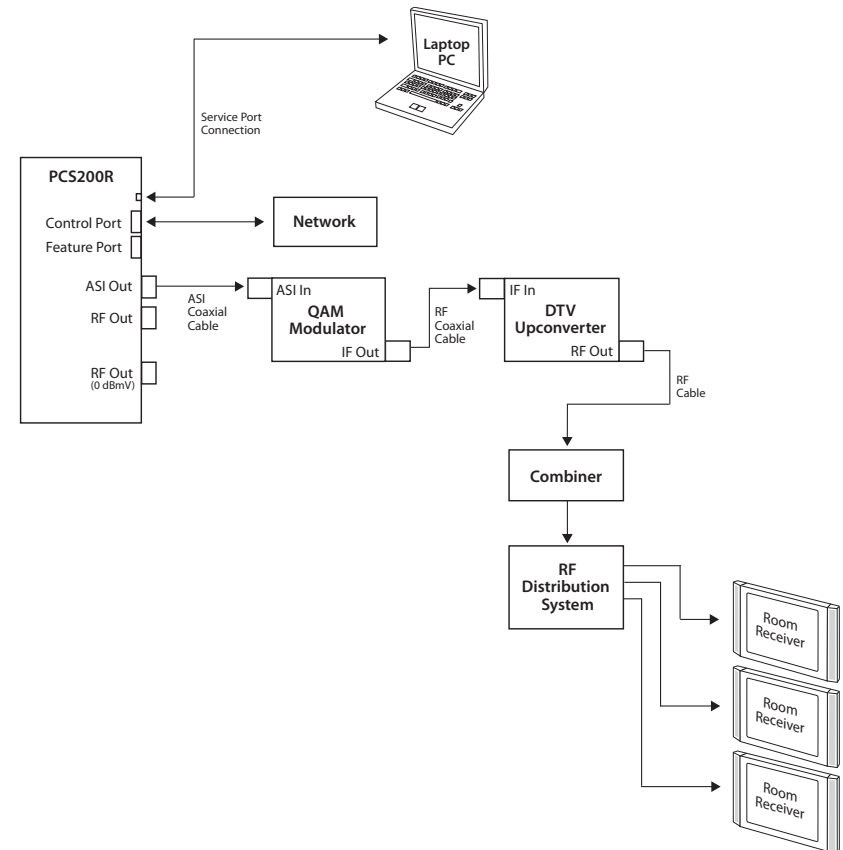
7. At the `login as:` prompt, type **admin** and press **Enter**. Then, at the `password:` prompt, type **Password4Partners** (case-sensitive) and press **Enter**.
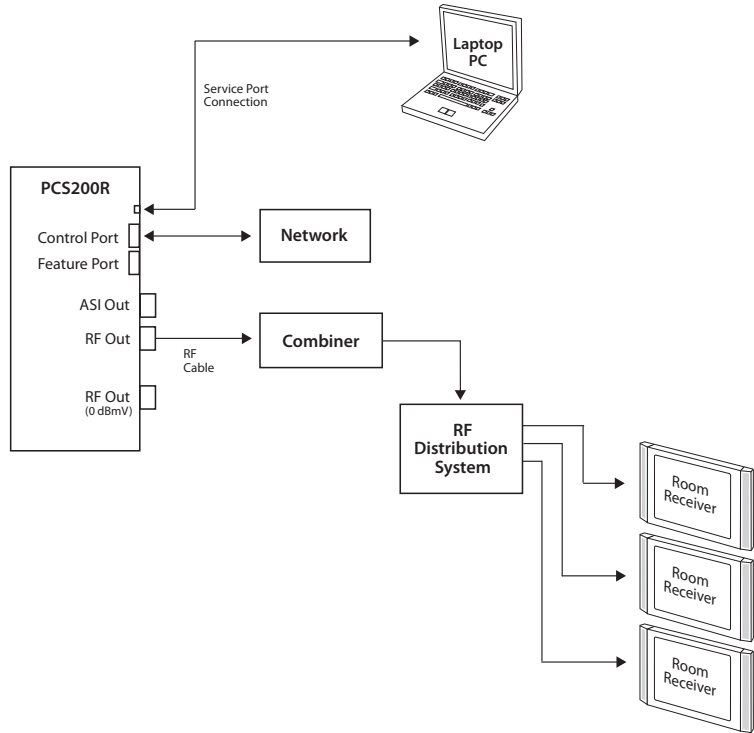
Refer to the following diagrams, and complete the system installation as described on pages 16 to 20.

⚠ **Caution: Do NOT make system connections until instructed to do so during the system installation procedure. In some instances, configuration steps must be performed before physical connections are made.**
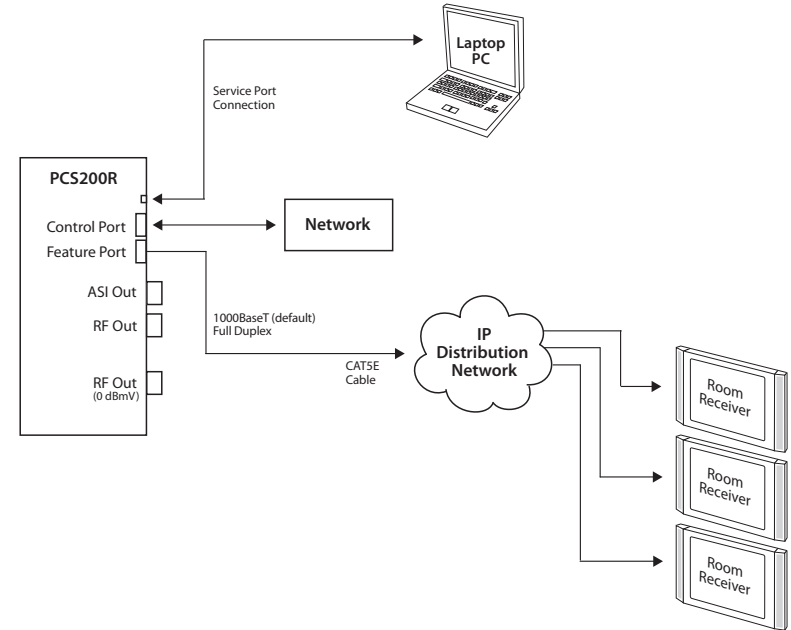
Typical Setup Flow Chart for PCS200R with ASI Output

Typical Setup Flow Chart for PCS200R with RF Output

Laptop
PC

Service Port
Connection

PCS200R

Control Port

Feature Port

ASI Out

RF Out

RF Out
(0 dBmV)

Network

RF
Cable

Combiner

**RF
Distribution
System**

Room
Receiver

Room
Receiver

Room
Receiver

Typical Setup Flow Chart for PCS200R with IP Output

Laptop
PC

Service Port
Connection

PCS200R

Control Port

Feature Port

ASI Out

RF Out

RF Out
(0 dBmV)

Network

1000BaseT (default)
Full Duplex

CAT5E
Cable

**IP
Distribution
Network**

Room
Receiver

Room
Receiver

Room
Receiver

VPN Network Connections Overview

**Pro:Centric
VPN Server**

**Internet/
VPN**

VPN Client

PCS200R

**Laptop
PC**

VPN Client

VPN Client