

# PCS100R Pro:Centric™ Server

# Installation & Setup Guide Warranty



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### 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.

#### 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.

(Continued on next page)

# **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.

# **PCS100R Rack Installation** (also see pages 9 and 10)

To install the PCS100R in a rack:

- Carefully slide the PCS100R into a standard 19-inch equipment rack.
- When mounted in the rack, make sure appropriate hardware is used. 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 PCS100R.
- Rear cabling must be dressed and supported so that the weight of the cabling is not a strain on the PCS100R 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. Do NOT stack other equipment on the top of the PCS100R unit.

# **IMPORTANT SAFETY INSTRUCTIONS**

(Continued from previous page)

### 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.

### PCS100R Installation on a Flat Surface

To install the PCS100R on a level surface (table top, shelf, stacked with other equipment, etc.):

- Carefully place the PCS100R on a level surface.
- Note the operating temperature from the specifications.
- Do NOT stack other equipment on the top of the PCS100R.
- If necessary, place spacers or rubber feet (not provided) on top and bottom.

## **Table of Contents / Setup Checklist**

### **Table of Contents**

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### Setup Checklist

- 1. Unpack the PCS100R Pro:Centric<sup>™</sup> server unit and all accessories. Accessories provided: Power Cord and Adapter
- 2. Select the location for mounting the PCS100R. Ensure that there is adequate ventilation available.
- 3. Obtain the necessary attachment hardware to mount the PCS100R chassis in its targeted location.
- 4. Plan and install the necessary cabling and network (Ethernet) and AC power access for the PCS100R. You will also need the following to connect a PC directly to the PCS100R for system setup verification purposes:
  - DB9 Male-to-DB9 Female RS-232 straight-through serial cable (Example: Cables Unlimited PCM-2100-06 serial cable)
  - (Optional) USB 2.0-to-serial DB9 adapter (Example: Cables Unlimited USB-2920 adapter). If there is no serial port on the PC, use the adapter to connect the serial cable to the PC.
- 5. Carefully follow the rack installation procedure for the PCS100R (see pages 9 and 10).
- 6. If not already done, install the modulator and upconverter that will receive the ASI output signal from the PCS100R. Refer to the manufacturer's documentation.
- 7. Complete the setup procedure for the PCS100R (see pages 11 and 12).

## **PCS100R Product Description**

The PCS100R Pro:Centric server is a stand-alone, remotely-controlled processor/ controller for the Pro:Centric system. This device can be used to capture data from an Internet source, assemble the data as display pages, and output the pages in DTV format over the ASI. With appropriate post-processing, this ASI signal can then be used for either IP or RF distribution in a lodging site application.

### Features

- Remote programming capability via Ethernet
- · 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

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

## **Rear and Front Panel Overviews**



### Installing the PCS100R in a Rack

- 1. Carefully slide the chassis into a standard 19-inch equipment rack.
- 2. Use all four mounting screws to secure the chassis to the rack (see diagram below).
- Refer to "Surge Protected Power Strip Requirements" below. Although power is not actually applied to the PCS100R until later during the system setup (see "Typical System Installation" on page 12), the power strip should be readied at this time.



### Surge Protected Power Strip Requirements

(see also diagram on following page)

- The PCS100R AC line should be plugged in to the surge protected power strip.
- Any modulators, upconverters, accessories, etc. connected to the ASI output of the PCS100R also should be connected to this same surge protected power strip.
- The power strip should provide surge protection in both Normal (hot to neutral) and Common (hot to ground and neutral to ground) Modes.
- The surge suppression should be 600 joules minimum, though 3800 joules is preferred, with UL1499 rated let-through voltage equal to 330 volts.

The surge protected power strip should conform to the ANSI C62.41 standard or equivalent.

## **Rack Installation (Cont.)**



### **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. Do NOT stack other equipment on the top of the PCS100R unit.

### 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.

# System Setup

Refer to the following diagrams, and complete the system installation as described on page 12.

Typical Setup Flow Chart for the PCS100R



**VPN Network Connections Overview** 



# System Setup (Cont.)

### **Typical System Installation**

(see also Typical Setup Flow Chart and VPN Network Connections Overview on page 11)

1. Connect a 75 ohm BNC-to-BNC coaxial cable between ASI OUT on the PCS100R and ASI IN on the modulator.

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

- 2. Connect an RF coaxial cable between IF OUT on the modulator and IF IN on the upconverter.
- 3. Connect one end of a CAT5 RJ-45 Ethernet cable to the NETWORK port on the PCS100R rear panel, and connect the other end of the cable to the institution's network.
- 4. Connect the PCS100R power supply to the POWER connector on the PCS100R rear panel.
- 5. Use the straight-through serial cable and, if necessary, the USB adapter to connect a PC to the RS-232 port on the PCS100R rear panel. (This step will enable you to verify the network connection once power is applied in step 7.)
- Using HyperTerminal or an equivalent terminal emulation program on the PC, configure the serial port as follows: Bits per second = 115200; Data bits = 8; Parity = None; Stop bits = 1; Flow Control = None
- 7. Plug the PCS100R AC power cord into the surge protected power strip (see "Surge Protected Power Strip Requirements" on page 9). When power is applied, the STATUS LED on the PCS100R front panel will light, and you will see boot-up messages on the PC.

When the boot-up is complete, a System Information display identifies important information about the PCS100R, including the unit serial number, hardware ID (firmware version), software versions, MAC address, and IP address, for example:

```
PCS100R Pro:Centric Server v3.3

SN: 001-12090025

Hardware ID: 0.0.0.15

OS version: Linux 2.6.33-zenith-pcs100r

OS release: #98 Mon Aug 9 09:36:05 CDT 2010

MAC Address: 00:0C:63:3B:00:0E

IP Address: 192.168.0.51

Datarate: high (38.8 Mbps)

Local time: Thu Jan 13 12:50:32 EDT 2011
```

- 8. Check the IP Address field in the display. By default, the PCS100R uses DHCP; thus, the DHCP server assigns an IP address to the PCS100R once the PCS100R successfully connects to the network. If the IP Address field shows an IP address, the PCS100R is up and running on the network. If the IP Address field is blank, refer to Troubleshooting information on the following page.
- 9. Connect the RF output on the upconverter 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 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.

### Troubleshooting

If the PCS100R is not connecting to the network, i.e., the IP Address field in the System Information display (see setup procedure on previous page) is blank:

- 1. Check the NETWORK connector on the rear panel of the PCS100R. Make sure the cable connection is tight and secure.
- 2. Observe the green LED on the NETWORK port. Once the PCS100R is connected to the network, the LED will be lit continuously.
- 3. Contact the network administrator to verify the network status.

### **Specifications**

#### 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:	2.70 pounds (1.22 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 35° Celsius
	32° to 95° Fahrenheit
Humidity:	95% non-condensing

### Electrical

DC Input:	+12V DC @ 5 Amps
Impedance at ASI Out jack:	75 ohms
Level at ASI Out jack:	800 mv
Ethernet:	10/100/1000BaseT

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

# **Document Revision History / Notes**

### **Document Revision History**

Date	Description
June 2010	Revision A: New document
September 2010	Revision B: Specifications update
January 2011	Revision C: System setup update
November 2011	Revision D: Surge protected power strip requirements added

Product documentation is available online at: www.LGsolutions.com/products. From the Products page, select TVs, Systems & Solutions, then Head End Systems, then Pro:Centric Server (click Show [+] to view the list of products), then PCS100R. Click the Literature & Downloads tab at the bottom of the PCS100R page, and select the required document(s) from the Downloads list.

### Notes

The following GPL executables and LGPL libraries used in this product are subject to the GPL Version 2.0/LGPL Version 2.1 License Agreements:

**GPL EXECUTABLES:** Linux kernel 2.6.33, LTIB 10.1.1, bash-2.05b, busybox-1.1.3, e2fsprogs-1.34, ethtool-3, gawk-3.1.3, Irzsz\_0.12.21, Izo-2.03, mtd-utils-1.2.0, net-tools-1.60, ntpclient\_2003\_194, openvpn-2.1.1, pciutils-2.1.11, ppp-2.4.1, procps-3.1.11, screen-4.0.2-1, skell-1.13, time-1.7

LGPL LIBRARIES: eglibc 2.8, libelf-0.8.5, termcap-2.0.8

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# LG PCS100R Pro:Centric Server Warranty

Welcome to the LG family! We believe that you will be pleased with your new PCS100R Pro:Centric Server. Please read Broadcast Products 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 PCS100R 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.

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#### **OWNER'S RESPONSIBILITY**

Effective Warranty Date Warranty begins on the date of delivery of the PCS100R 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 PCS100R Pro:Centric Server and how to adjust the settings.

For warranty service information, call 1-888-865-3026. Parts and service labor that are LG's responsibility (see above) Warranty Service 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

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