

Crestron **CNX-PBVR4**
Professional Balanced Video Receiver
Operations Guide



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Professional Balanced Video Receiver: CNX-PBVR4

Introduction

Features and Functions

The CNX-PBVR4 Professional Balanced Video Receiver is designed to accept up to 16 channels of differential (balanced) video and digital audio from the Crestron® Room Solution Boxes (CNXRMC or CNXRMCLV) and provide single-ended (unbalanced) video and digital audio to the Crestron Video Distribution Switch (CNX-PVID8x3 or 8x4) for redistribution to other room boxes or PVIDs.

This non-Cresnet® unit is a key component for distributing video and/or digital audio throughout an entire home, using standard CAT5 cabling.

Functional Summary

- 16 Channels in 4 Video I/O Groups
- 4 RJ45 Connectors (1 per Group) for CAT5 Balanced Video/Digital Audio Input
- 12 Video Input Compensation Potentiometers (3 per Group) to Adjust for CAT5 Cable Length
- 16 RCA Connectors (4 per Group) for Video and Digital Audio Output:
 - Component Video including HDTV
 - S-Video
 - Composite Video
 - Single, Fixed Compensation Line for Composite Video or S/PDIF Digital Audio

Specifications

Specifications for the CNX-PBVR4 are given in the following table.

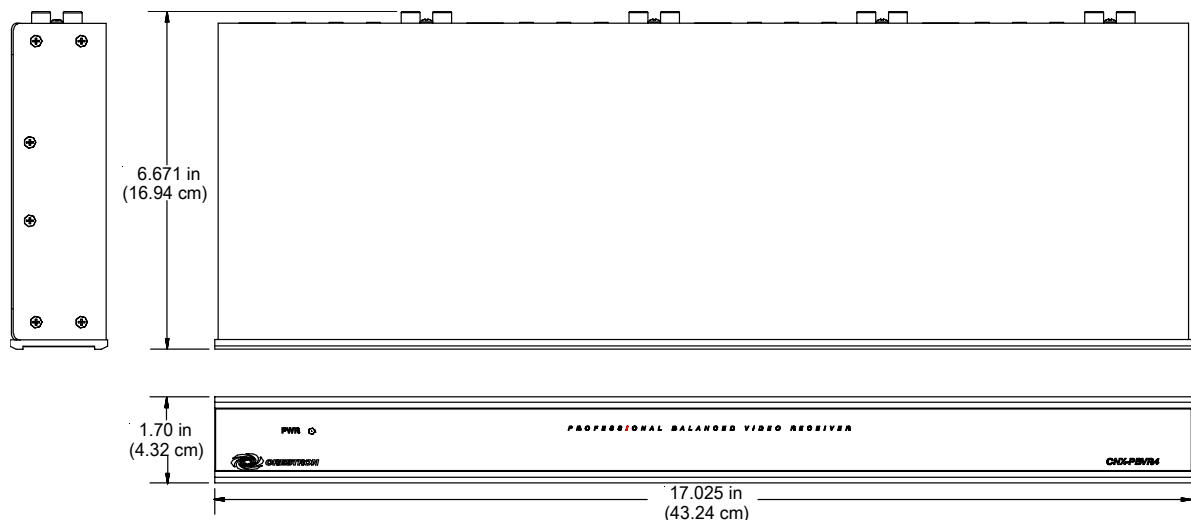
CNX-PBVR4 Specifications

| SPECIFICATION | DETAILS |
|--|--|
| Power Requirements | 24 VDC, 1A, 24W (Power Pack, PW-2410, included) |
| Video Signal Type | Composite Video S-Video Component Video S/PDIF Digital Audio |
| Gain Bandwidth | Unity 50 MHz |
| CAT5 Input Cable Length from CNXRMCLV | Up to 300 feet maximum. |
| Video Input Input Video Type Connector Impedance Voltage Level | Balanced Shielded RJ-45 (8-pin) Female 100 Ohms 0.3V to 2Vp-p with no offset |
| Video Output Output Video Type Connector Impedance Voltage Level | Unbalanced RCA Female 75 Ohms 0.3V to 2Vp-p with no offset |
| Environmental Temperature & Humidity | 41° to 113°F (5° to 45°C) 10% to 90% RH (non-condensing) |
| Dimensions & Weight | Height: 1.7 in (4.32 cm) (1 rack space) Width: 19.0 in (48.26 cm) – with ears 17.03 in (43.24 cm) – without ears Depth: 6.67 in (16.94 cm) Weight: 2.88 lb (1.29 kg) |

Physical Description

The CNX-PBVR4, shown below, is housed in a black enclosure with labeling on front and back panels. Refer to the physical views shown after this paragraph.

CNX-PVID8x4 Physical Views



Ports, Controls, and Indicators

The CNX-PBVR4 has a single LED power indicator (PWR) on the front panel to indicate when DC power is applied to the unit; all video signal ports and controls are located on the rear panel.

NOTE: This unit is a non-Cresnet device.

CNX-PBVR4 Front Panel



As shown in the illustration following this paragraph, the unit's ports and controls consist of four identical video I/O groups of input and output connectors and signal compensation potentiometers. Also located on the rear panel is the male connector for 24VDC input power from the supplied power pack, PW-2410. The ports and controls are described in the paragraphs following the illustration.

CNX-PBVR4 Rear Panel



Each of the four video I/O groups consists of an RJ45 (8-pin) connector (labeled A, B, C, and D), three potentiometers (labeled VIDEO INPUT COMP 1, 2, and 3), and four gold plated female RCA connectors (labeled VIDEO OUT 1, 2, 3, and 4).

RJ45 Connectors

Each connector receives up to four baseband video input signals via CAT5 cable from a Room Solution Box, such as the CNXRMCLV, or from a Crestron Video Distribution Switch, such as the CNX-PVID8x3 or CNX-PVID8x4. Three baseband signals can be provided by the CNX-PVID8x3 and the CNX-PVID8x4 can provide four. Component video—including HDTV, S-Video and/or composite video comprise Level 1 through Level 3 inputs. Level 4 inputs, because they are fed to fixed compensation circuits, are typically used for composite video or digital audio. The three to four baseband video signals (1 through 4) correspond to the levels available on the particular model of CNX-PVID used.

Potentiometers

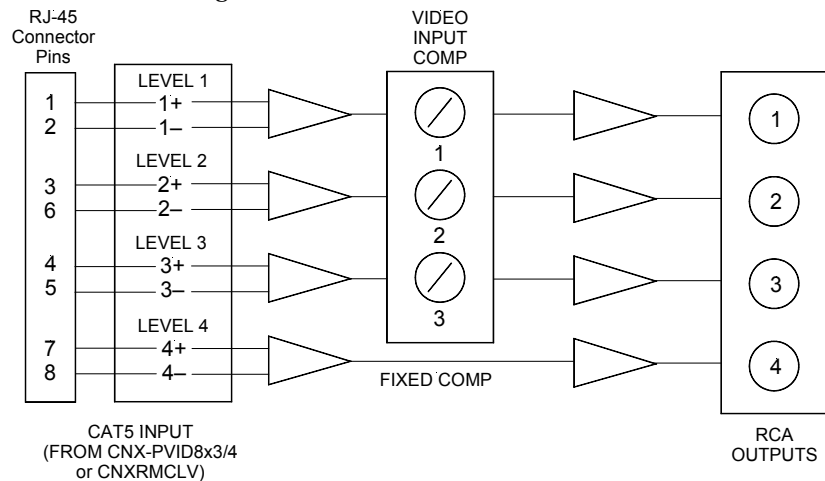
Three of the video inputs in each group have potentiometers, used to adjust each signal independently to compensate for line loss due to lengthy CAT5 cable runs. The fourth input signal has fixed cable compensation. Use a small, flat blade screwdriver to adjust the pots following the procedures given in "Video Input Compensation" on page 7.

RCA Connectors

These four gold-plated RCA connectors provide flexibility to output component, composite, and S-Video, along with digital audio for a variety of configurations required by the local equipment in the room.

The four groups combined expand that flexibility, allowing for the simultaneous distribution of at least one of every video format. The simplified block diagram following this paragraph illustrates the internal configuration of each I/O group.

VIDEO I/O Block Diagram



Although there is great flexibility to output a variety of video formats, certain characteristics dictate the combination of video formats delivered by the CNX-PBVR4. Characteristics include the internal wiring of the unit, the fact that three of the four inputs can be compensated, and the ability to simultaneously distribute at least one of every video format. The table after this paragraph lists three highly recommended output configurations for the CNX-PBVR4 video I/O groups.

Recommended Output Configurations for CNX-PBVR4 I/O Groups

| VIDEO OUT PORT | CONFIGURATION A | CONFIGURATION B | CONFIGURATION C |
|----------------|-----------------------------|-----------------|-----------------|
| 1 | Component (Y) | S-Video (Y) | Composite |
| 2 | Component (P _b) | S-Video (C) | Composite |
| 3 | Component (P _r) | | Composite |
| 4 | Digital Audio | Digital Audio | Digital Audio |

PWR Indicator

The CNX-PBVR4 has a single **PWR** (power) indicator on its front panel. This LED illuminates when the unit is connected to and receives 24VDC power from the supplied power pack.

Industry Compliance

As of the date of manufacture, this unit has been tested and found to comply with specifications for CE marking and standards per EMC and Radio Communications Compliance Labeling (N11785)



NOTE: 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.

Setup

Rack Mounting

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

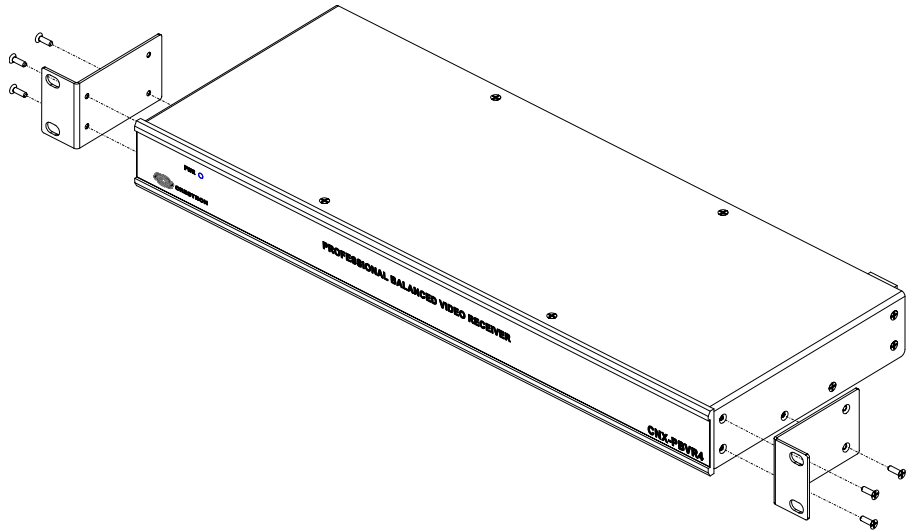
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
 - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
-

NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

NOTE: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit. (e.g., use of power strips).

Two “ears” are provided with the unit and must be installed so that it can be rack mounted. Refer to the following illustration and complete the procedures below to attach ears to the unit. The only tool required is a Phillips screwdriver.

NOTE: Mounting screws are provided with the ears.

Ear Attachment for Rack Mounting

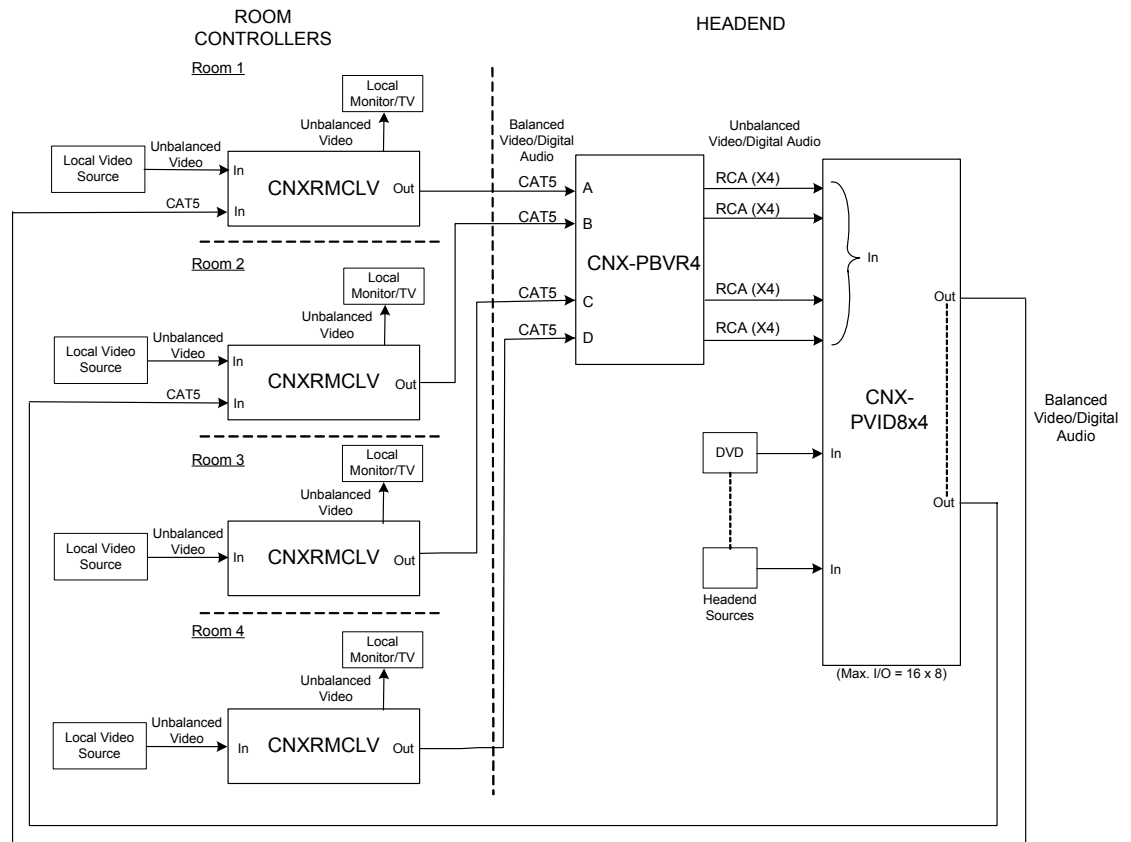
1. Using a Phillips screwdriver, remove the three side screws closest to the front panel.
2. Position a rack ear so that its mounting holes align with the vacated holes, and secure the ear to the unit with the three longer screws supplied with the ears.
3. Repeat the procedure to attach the remaining ear to the opposite side.

Hookup

The CNX-PBVR4 provides great flexibility in redistributing video signals throughout an entire home. Local room sources can now be distributed and shared to other rooms through the headend. For example, as seen in the simplified configuration diagram on the next page, users in Room 1 or Room 2 can choose to view from among the headend sources, their own local sources, or the local sources of the other three rooms.

NOTE: Terminators are not required on unused video output connectors.

To maintain highest signal integrity, Crestron recommends a maximum length of 300 feet for CAT5 input cables from the CNXRMCLV room solution boxes to the CNX-PBVR4.

Typical Hookup Connections for the CNX-PBVR4

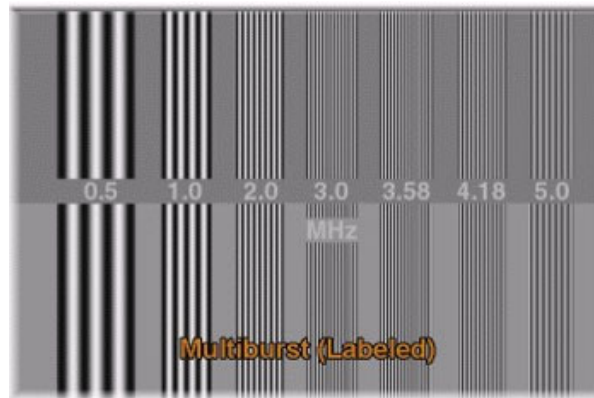
Video Input Compensation

After the system is completely hooked up, it may be necessary to adjust the video input compensation pots on the CNX-PBVR4 to achieve the best picture on one or more of the monitors. All that is required to complete this procedure is a narrow slotted screwdriver and a third party audio/video calibration DVD (or laser disc). Crestron recommends one of the following:

- Avia Guide to Home Theater from Ovation[®] Software (www.ovationsw.com)
- Video Essentials from DVD International (www.videoessentials.com).

Complete this procedure.

1. Place the third party audio/video calibration DVD (or similar) in the system's DVD player.
2. Search through the DVD for the chapter that displays the multi-burst pattern, as shown on the next page.

Sample of Multi-Burst Pattern

NOTE: For S-video and component video sources, be sure to adjust the pot for luminance compensation first (VIDEO INPUT COMP 1). The pots for chrominance compensation should be adjusted last.

3. While the pattern is being displayed on the monitor, use the screwdriver to adjust the VIDEO INPUT COMP 1 compensation pot until the line intensity on the monitor appears uniform.
4. Each compensation pot is labeled with a numeric range (1 through 10). Note the numeric value of the VIDEO INPUT COMP 1 compensation pot adjusted in step 3.
5. Use the screwdriver to adjust the other two compensation pots (VIDEO INPUT COMP 2 & 3) so that they match the numeric value of the VIDEO INPUT COMP 1 compensation pot.

Problem Solving

Troubleshooting

In the event of poor quality or missing signal output at one or more distribution points supplied by circuits that include the CNX-PBVR4, and troubleshooting procedures for the other devices in the network do not resolve the problem, do the following:

1. Verify existence of input signals(s) from the CNXRMCLV.
2. Verify that the correct (24 VDC, 1A) external Power Pack is properly connected, and that the front panel PWR indicator is illuminated.
3. Verify pinouts on CAT5 cable connectors. Make sure crimping is secure and that there are no shorts.
4. Verify that all CAT5 input cables and RCA output cables are securely connected.
5. After determining which of the four signal groups may be at fault, either perform the Video Input Compensation procedures (discussed on page 7), or swap the input and output cables between the groups to locate the source of the trouble. If further assistance is required, please contact a Crestron customer service representative.

Further Inquiries

If after reviewing this Operations Guide for the CNX-PBVR4, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team in your area. Dial one of the following numbers.

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876].
- In Europe, call Crestron International at +32-15-50-99-50.
- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +5255-5093-2160.
- In Australia and New Zealand, call Crestron Control Solutions at +61-2-9737-8203.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the CNX-PBVR4, additional information and programming examples may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website (www.crestron.com) periodically for manual update availability and its relevance. Updates are available from the Downloads | Product Manuals section and are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supercedes all previous warranties.

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