VideoEase™ Component Video Hub (500250, 500251, 500252, 500253)

Installation Guide

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MuxLab

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1. Overview

1.1. Description

The VideoEase Component Video Hub allows one (1) full component video (YPbPr/RGB) source and one (1) digital or analog audio video source to be distributed up to eight (8) or sixteen (16) destinations depending on the model for more cost-efficient cabling. The 500250 supports up to eight (8) ports. The 500252 supports up to sixteen (16) ports. Applications include; Digital signage, Boardroom systems, Multi-room systems, Classroom training, Retail systems.

1.2. Features

- Modular RJ45 on input and output
- Cascadable up to two (2) levels with other hubs
- Supports 480i/p up to 1,000 ft (305m) via Cat5
- Supports 720p/1080i/p up to 500 ft (152m) via Cat5
- Supports digital or analog audio on fourth twisted pair
- Configuration switch to support digital audio or analog audio
- Ground loop isolation on every port
- Integrates seamlessly with MuxLab component video baluns

2. Technical Specifications

Environment	Component baseband video (YPbPr/RGB) and Digital Audio
Devices	DVD players, DVR, AV matrix switchers, DLP projectors, plasmas, monitors, home theatre.
Transmission	Transparent to the user.
3 dB Bandwidth	Video: DC to 77 MHz. Digital Audio: DC to 52MHz Analog Audio: 20 to 20kHz
Insertion Loss (differential)	Video: -0.8 dB @ 4 MHz Digital Audio: -1.26 dB @ 4 MHz. Analog Audio: 1 dB @ 4 MHz.
Video Return Loss	-23dB @ 4 MHz.
Common Mode Rejection **Input: balanced. Output: balanced**	Video: Greater than 40 dB over the frequency range. Digital Audio: Greater than 31.5 dB over the frequency range Analog Audio: Greater than 60 dB @ 1 KHz; Greater than 40 dB over the frequency range.
Crosstalk Immunity	-60 dB @ 4 MHz
Total Harmonic Distortion	Analog Audio: Less than 0.007% @ 1KHz.
Max. Distance via **Cat 5 Twisted Pair (UTP)***	Component Video (YPbPr): 480i/p: 1,000 ft (305m) * 720p and 1080i: 500 ft (152m) * Digital Audio: 600 ft (182m) * Analog Audio: 3.250 ft (990m) * **Measured between Source (ie;DVD) and Destination (ie;Monitor) with Hub placed anywhere between the source and destination*
Compatible Baluns	500000, 500002, 500009, 500020, 5000021, 500050, 500051, 500052, 500053
Cascadability	Up to two (2) levels.
Ground Loop Isolation	Ground loop isolation on every port.
Cable – UTP	24 gauge or lower solid copper twisted pair wire impedance: 100 ohms at 1 MHz. Cat 3 or better.

Connectors	Source Input: One (1) RJ45S on rear panel Looping Output: One (1) RJ45S on rear panel Distribution Outputs: Eight (8) or sixteen (16) RJ45S on front panel
RJ45 Pin Configuration *Reverse Polarity Sensitive*	Red (Pr) : Pins 7 [R] & 8 [T] Green (Y) : Pins 3 [R] & 6 [T] Blue (Pb) : Pins 1 [R] & 2 [T] Audio : Pins 4 [R] & 5 [T]
Configuration Switch	Sets hub to support digital or analog audio on fourth twisted pair. Factory default: analog audio.
LED Diagnostics	Power (green), Video Sync (green), Digital Audio Sync (green):
Power Supply	External AC: 110V and 220/240V DC: 12VDC, 1.25A (8-port model) or 2.5A (16-port model).
Temperature	Operating: 0º to 40º C. Storage:-20º to 85º C. Humidity: up to 95% non-condensing.

Dimensions	500250/500251: 9.125” x 6.75” x 1.75” (23.18 cm x 17.15 cm x 4.45 cm) 500252/500253: 19” x 6.75” x 1.75” (48.26 cm x 17.15 cm x 4.45 cm)
Weight	500250/500251: 3.3 lbs (1.5 kgs) 500252/500253: 5.5 lbs (2.5 kgs)
Compliance	FCC, CE-EMC Directive 89/336/EEC, RoHS, WEEE
Warranty	2 years
Order Information	500250 Component Video Hub, 8 Ports, 110V 500251 Component Video Hub, 8 Ports, 220/240V 500252 Component Video Hub, 16 Ports, 110V 500253 Component Video Hub, 16 Ports, 220/240V

3. Installation Procedure

3.1. Parts List

The Component Video Hub comes with the following parts. Please verify that all pieces are present before proceeding.

- Base Unit
- External Power Supply 12VDC/1.25A (500250, 500251) or 12VDC/2.5A (500252, 500253)
- Rubber stand-offs (500250, 500251 only)
- Installation Guide

3.2. Product Overview

The external connections and diagnostics of Component Video Hub are detailed in the following diagrams. Please familiarize yourself with them before installing the unit.

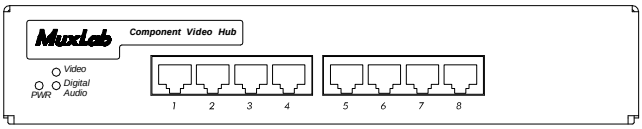


Figure 1: Component Video Hub 8 Ports (500250, 500251) Front panel

Figure 2: Component Video Hub 16 Ports (500252, 500253) Front panel

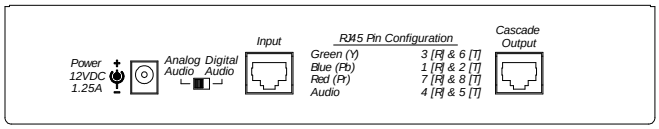


Figure 3: Component Video Hub Rear panel (all models)

3.3. Pre-Installation Checklist

The Component Video Hub provides a centralized component video distribution center via copper twisted pair cabling.

1. The Component Video Hub is typically installed in a remote telecom room and is connected to the component video source and display devices via Cat5 twisted pair. MuxLab component video baluns are installed at each component video devices to support the connection to the hub via Cat5 cable.

2. For optimum performance and to support HDTV (720p, 1080i/p) resolution, the Component Video Hub is used in conjunction with MuxLab's passive Component Video Baluns (p/ns 500050, 500051, 500052, 500053).

3. The Component Video Hub will also work with third party vendor baluns, providing the pin configuration and signal polarity are compatible. However, performance specifications may be affected.

3.4. Physical Installation

The Component Video Hub has two models; 8-port desktop (500250, 500251) and 16-port rack-mount (500252, 500253).

1. If the 8-port hub is being installed on a desk, select the final destination for the product and install the unit on a desk or shelf as shown below.

Figure 5: 8-port desktop installation

2. If the 16-port hub is being installed, select the final destination for the product and install the unit using standard rack-mount screws.

Figure 6: 16-port rack-mount installation

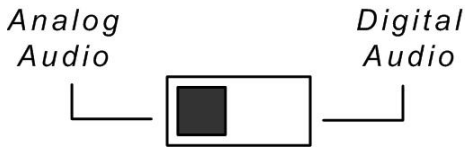
3.5. Installation Procedure

The Component Video Hub is available in 8-port (500250, 500251) and 16-port (500252, 500253) versions. In order to install the product, please follow the steps below:

1. Install the Component Video Hub in its final location by performing steps 1 or 2 listed in the previous section.

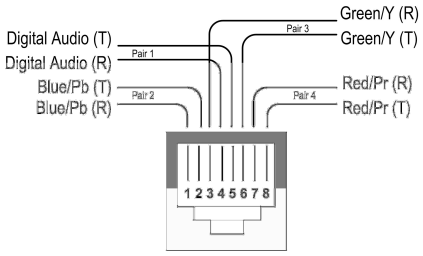
2. Ensure that the power is turned off on the component video source and displays.

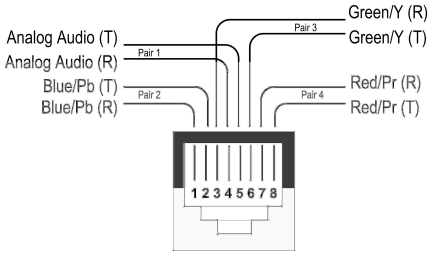
3. If audio will be transmitted along with video, set the hub to digital or analog audio by sliding the switch on the rear panel to the appropriate position as shown in the diagram below. The factory default setting is "analog audio".



4. In order to distribute component video (YPbPr/RGB) and audio (optional), one (1) Component Video Balun must be connected at the component video source and at each component video display. To install the baluns, perform the following steps (5, 6 and 7):

5. Identify the pin configuration of the baluns. Three (3) twisted pairs are required for video and one (1) twisted pair is required for optional digital audio. The pin configuration follows the EIA/TIA 568A/B standard. The Component Video Baluns are reverse polarity sensitive. Please ensure that wiring is straight-through (Ring to Ring, Tip to Tip).





6. Plug one (1) Component Video/Digital Audio Balun (500050, 500051) or Component Video/Analog Audio Balun (500052, 500053) into the

component video coaxial cable output of the video source according to the color code of the RCA cable leads.

7. Connect a Component Video/Digital Audio Balun (500050, 500051) or Component Video/Analog Audio Balun (500052, 500053) to each component video display.

8. Complete the connection between the component video source and the Component Video Hub using standard straight-thru Cat5 twisted pair cable and connecting hardware, terminated on RJ45 plugs at both ends. Ensure that there are no split pairs or taps.

9. Complete the connection between the hub and each component video display using standard straight-thru Cat5 twisted pair cable and connecting hardware, terminated on RJ45 plugs at both ends. Ensure that there are no split pairs or taps.

10. If audio is to be connected (optional), connect an RCA lead between each Component Video Balun and the audio equipment at both ends.

11. Connect the external 12VDC power supply to the hub and plug the power supply into an AC power outlet. If power is present, then the green power LED will be ON.

12. Power-on the component video equipment. Check the image quality and refer to the troubleshooting table below if the image quality is unsatisfactory.

13. The following diagrams show a couple of typical configurations.

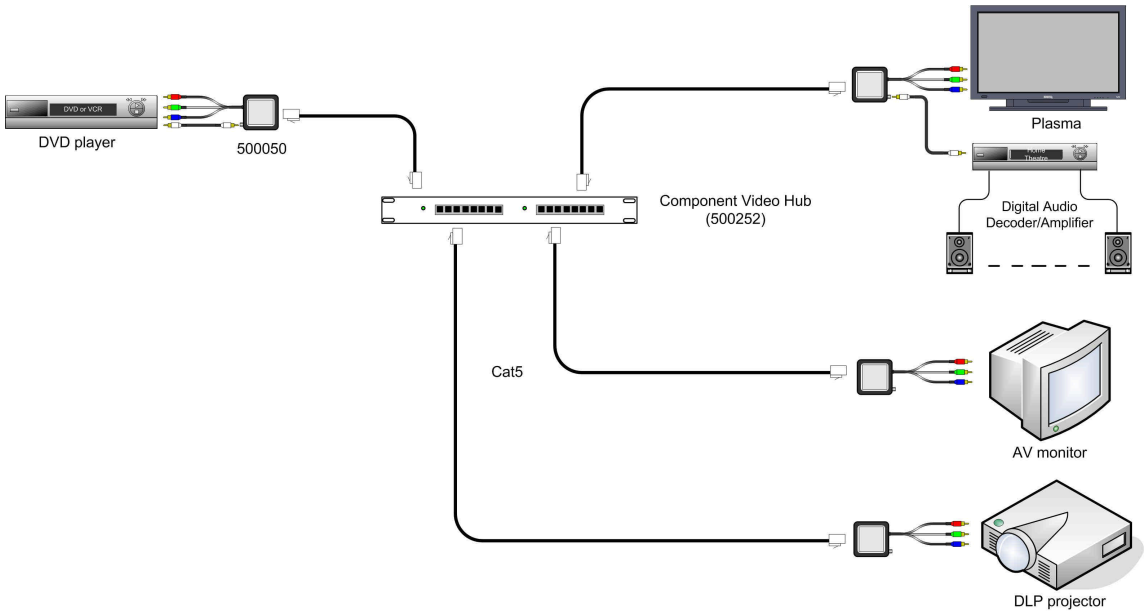


Figure 4: Typical Configuration – Component Video and Digital Audio

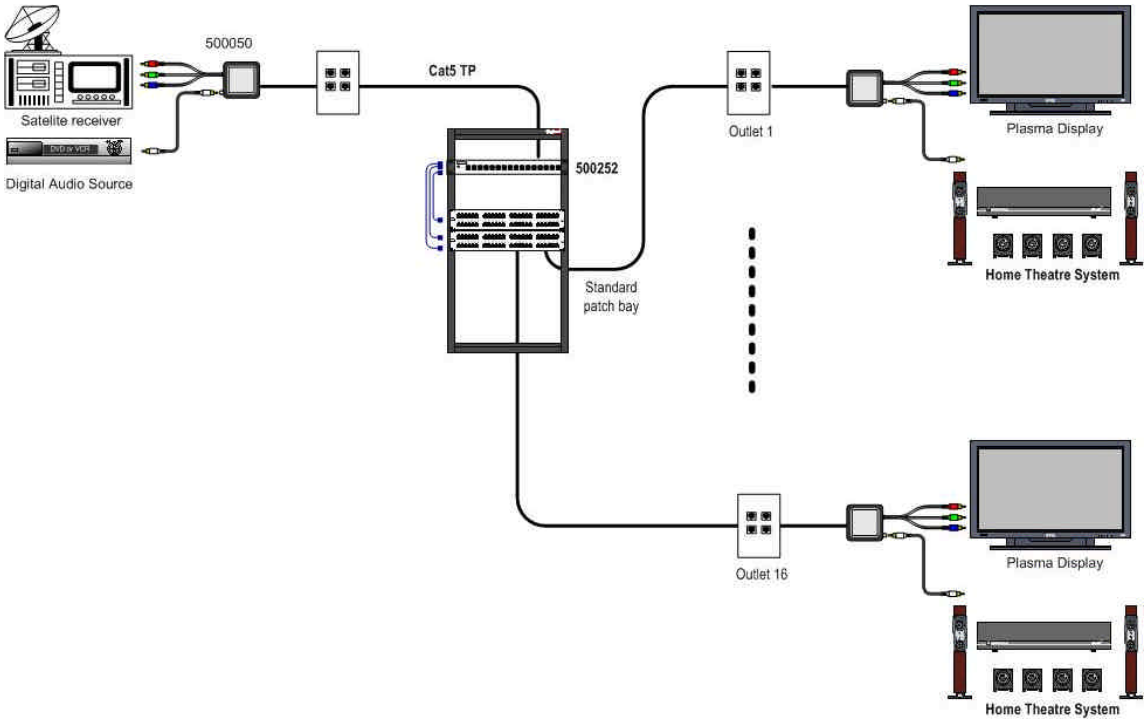


Figure 5: Typical Configuration – Component Video and Digital Audio

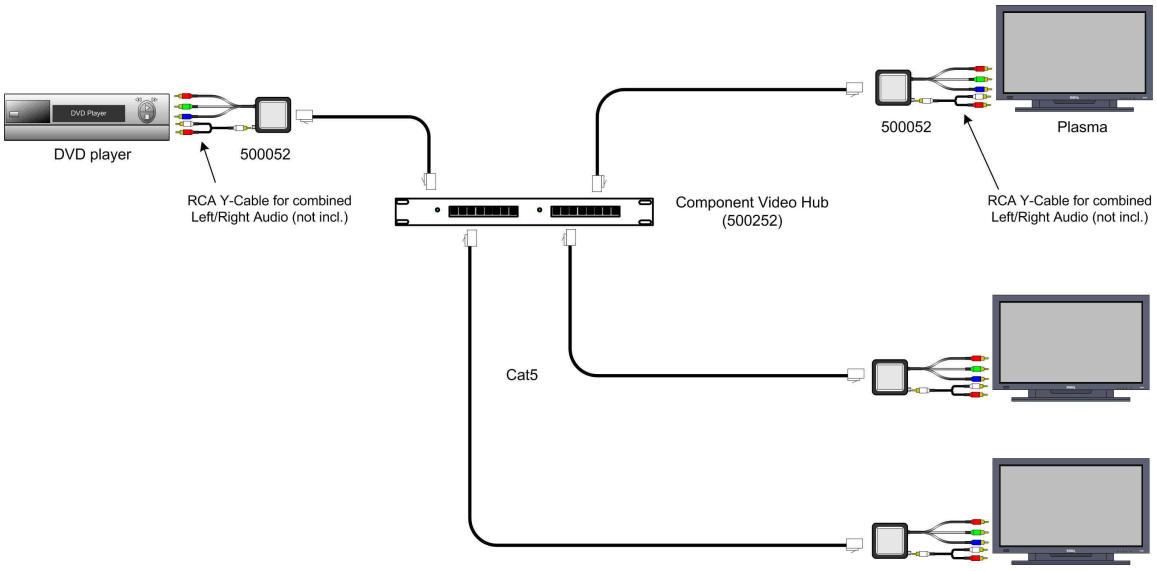


Figure 6: Typical Configuration – Component Video and Analog Audio

3.6. Cascading

In order to drive more displays, the Component Video Hub may be cascaded with another hub. In order to optimize the image quality, it is recommended to cascade up to two (2) levels only as shown in the following diagrams.

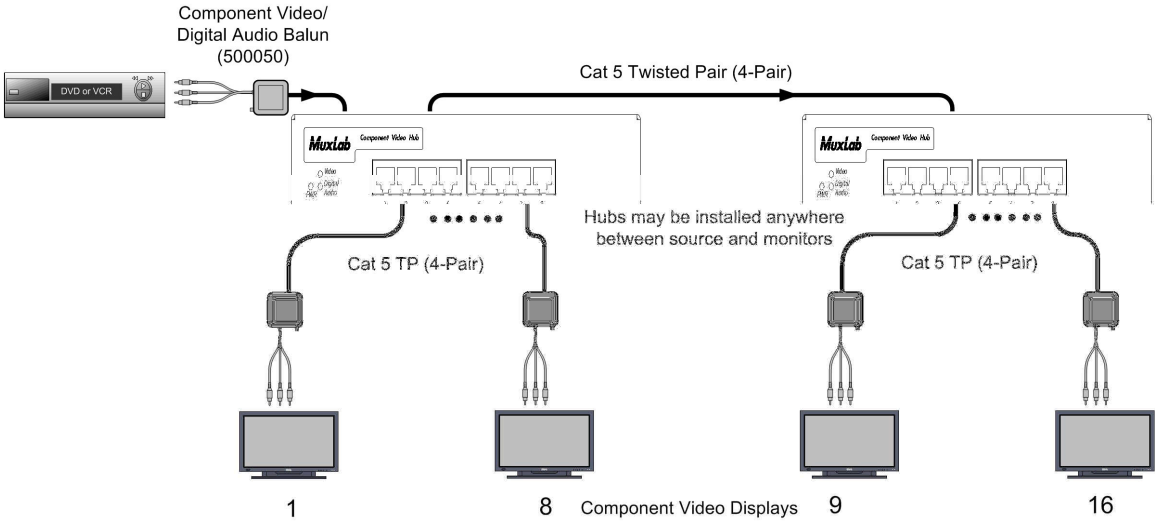


Figure 6: Cascading one hub

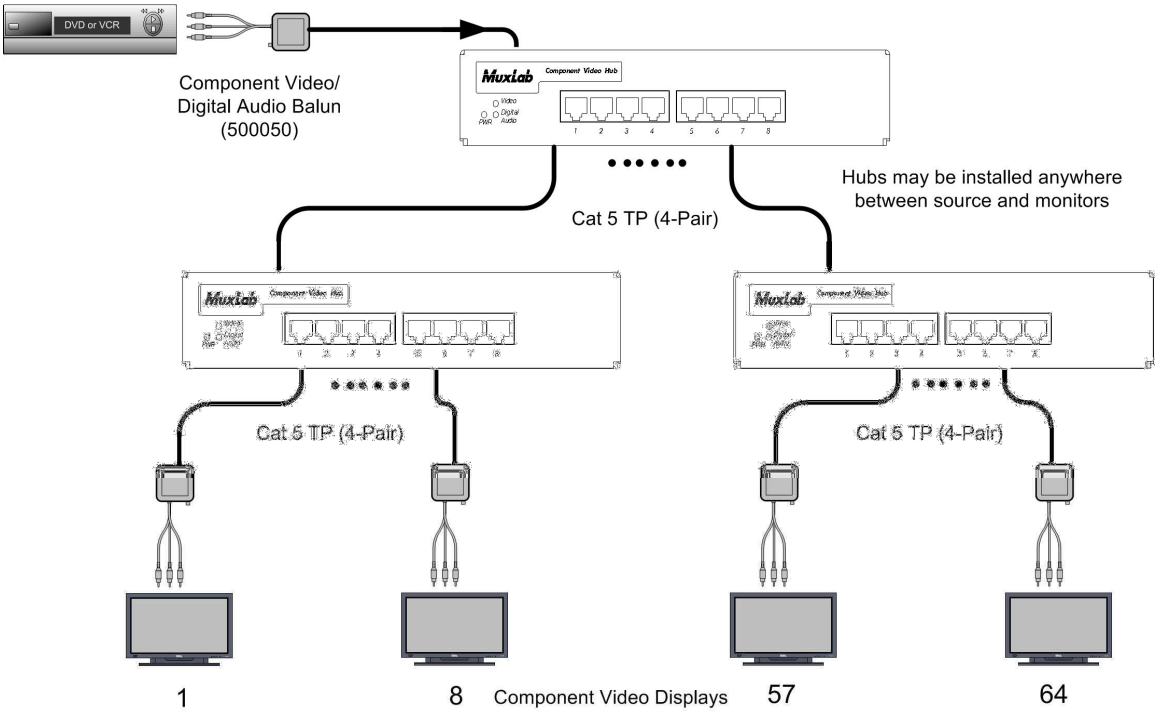


Figure 7: Cascading Multiple Hubs

In order to cascade two hubs together, connect a Cat5 straight-through cable between the Output Port (regular or cascade) of the source hub to the Input Port of the second hub as shown in the following diagram.

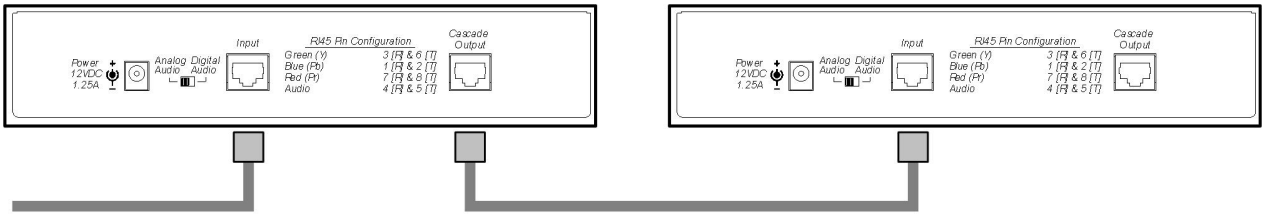


Figure 8: Cascade Hub Cabling

4. Troubleshooting

The following tables describe some of the symptoms, probable causes and possible solutions in respect to the installation of the Component Video Hub. If you still cannot diagnose the problem, please call MuxLab Customer Technical Support at 877-689-5228 (toll-free in North America) or (+1) 514-905-0588 (International).

Video	Power LED	Video LED	Probable Causes	Possible Solutions
No image	OFF	OFF	Power off.	Check power supplies of Component Video equipment.
No image	ON	ON	Wrong pin configuration.	Check pin configuration and verify straight-thru wiring.
No image	ON	OFF	No continuity in video link.	Verify cable continuity between pairs of baluns.
No image	ON	ON	Improper connection. Swapped pairs.	Check that baluns are connected to correct video inputs and outputs.
Picture distorted	ON	ON	EMI interference. Split pair.	Check that wiring is not too close to transformers and lighting ballasts. Check if the UTP pairs are not split.
Wrong colors	ON	ON	Reversed polarity.	Check wiring and ensure straight-through polarity.
Loss of brightness Loss of color Smearing	ON	ON	Exceeded distance/bandwidth specifications. Lower grade UTP cable is introducing high losses.	Check DC loop resistance and verify if distance spec is exceeded. Reduce cable length or eliminate high-loss components. Replace cable by higher grade.
Horizontal upward moving bands	ON	ON	Ground loop problem between one or more devices.	Consecutively turn off other video sources to determine which video source is the cause of interference. Install RGB ground loop blockers at the source or displays.

Digital Audio	Digital Audio LED	Probable Causes	Possible Solutions
No audio	OFF	Power off.	Check power supplies of the audio equipment.
No audio	ON	Wrong pin configuration.	Check pin configuration and verify straight-thru wiring.
No audio	ON	No continuity in video link.	Verify cable continuity between pairs of baluns.
No audio	ON	Improper connection Swapped pairs.	Check that baluns are connected to correct video inputs and outputs.
Missing channels	ON	Cabling problem between the decoder/amp and the audio speakers.	Check audio speaker cabling.
Noise, static	ON	EMI interference.	Check that wiring is not too close to transformers and ballasts.
Noise, static	ON	Distance exceeded or unusual cable attenuation.	Check cable distance and cable grade.

When contacting your nearest MuxLab dealer or MuxLab Technical Support please have the following information ready:

- Unit model number.
- Cabling lay-out. Include model of component video source and receiver, cable length and type.
- Description of problem.
- List of tests performed.

5. Product Warranty Policy

Items under warranty - Company Policy
MuxLab guarantees its products to be free of defects in manufacturing and workmanship for the warranty period from the date of purchase. If this product fails to give satisfactory performance during this warranty period, MuxLab will either repair or replace this product at no additional charge, except as set forth below. Repair and replacement parts will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of MuxLab. This limited warranty does not include repair services for damage to the product resulting from accident, disaster, misuse, abuse, or unauthorized modifications or normal decay of battery driven devices. Batteries if included with the product are not covered under this warranty.

Limited warranty service can be obtained by delivering the product during the warranty period to the authorized MuxLab dealer from whom you purchased the product, or by sending it to MuxLab. MuxLab will not accept any such product for repair without a Return Material Authorization number (RMA#) issued by its Customer Service Department and a proof of purchase date. If this product is delivered to MuxLab by mail, you agree to assume risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or equivalent.

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Warranty Periods
Any product found to be defective within three (3) months of invoice, including one (1) month shelf life, may be returned for replacement by a new unit or a satisfactory repair within one (1) month of receiving any returned product. The customer must provide MuxLab with the serial number and proof of purchase of the defective unit being returned. All R.M.A.'s issued are subject to inspection by MuxLab, and will be returned to customer if not properly package – units must be returned in original container or equivalent. MuxLab will not accept any such product for repair without an authorization for its Technical Support department and without a return authorization number issued by MuxLab Customer Service department. For credit & replace R.M.A., customer will be liable to pay replacement invoice if defective products are not returned.
Product more than six months old, including shelf life.

The defective unit must be returned prepaid to MuxLab and then the unit will be repaired or if repair is not possible, replaced by an equivalent unit and returned to the customer within one (1) month of receiving any returned product. There is no charge for repair (parts and labor) during the full warranty period.

Items Defective and not under Warranty
For products which are no longer under warranty the policy is repair and return. An amount of 25% of the products published list price at the time of purchase will be charged. Customer must issue a purchase order to cover the cost of repair. Each unit will be returned to the customer within one (1) month from receipt of the unit by MuxLab. The defective unit must be returned prepaid to MuxLab. The repaired unit will be returned to the customer FOB MuxLab. The repaired unit has a 90 day warranty.

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