

VideoEase Discreet Audio-Video Baluns



500019



500020



500021

Application Guide

Version 1.03

MuxLab

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Purpose

The purpose of this document is to explain how to apply MuxLab's Discreet Audio-Video Baluns in different operating scenarios and to discuss issues not covered in the Installation Guide that comes with the products.

Function of the Discreet Audio-Video Baluns

The function of the Discreet Audio-Video Baluns is to provide a cost-effective method to connect consumer audio-video equipment via Cat5 twisted pair cable in a point-to-point connection. The size of the product and the screw terminal connections allow the baluns to be installed in various combinations thereby maximizing the use of the Cat5 cable.

Equipment Supported

Used in pairs, the Discreet Audio-Video equipment work with any audio-video equipment that supports analog audio, analog video and digital audio formats. The list includes equipment such as the following:

DVD players	PCs	1xN switchers
VCR	Gamestations	MPEG decoders
Monitors	Splitters	Video servers
Projectors	Distribution amplifiers	Cameras
Plasma screens	Scan converters	CCTV equipment
Home theatre systems	Video scalers	
Laptops	Matrix switchers	

Component Video Balun (500021) - Performance Limit

Due to the bandwidth limitation of the Component Video Balun, the product supports only medium resolution (480i and 480p). It does not support high definition video (HDTV) which is 720p and 1080i. Therefore when used with HiDef sources such as satboxes, or HiDef DVD, it is recommended to select 480 resolution. The same applies to the RGB Balun (5000002).

Specifically, in one situation it was been found that ghosting occurred when an older model NEC42VP4 plasma screen was upgraded to a newer Panasonic TH50PHD7. The balun bandwidth, coupled with a higher receiver bandwidth of the plasma may have combined to create an impedance mismatch, thereby causing ghosting to appear on the screen. One way to

reduce the ghosting may be to turn off the progressive scan (p) of the component video source thereby reducing the signal bandwidth.

Typical Applications

The Discreet Audio-Video Baluns may be used to establish a variety of point-to-point connections via Cat5 twisted pair. The following diagrams illustrate some basic applications.

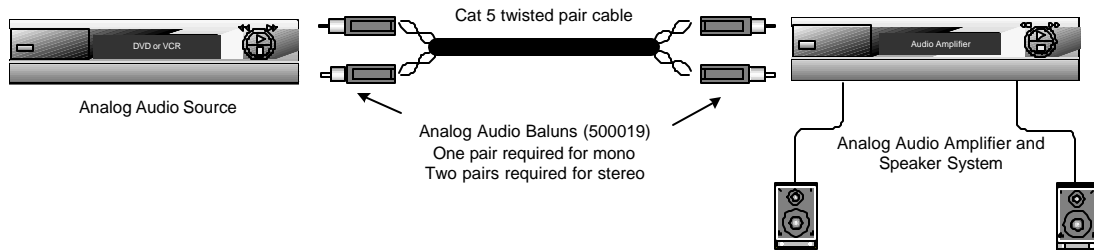


Figure 1; Analog Stereo Audio

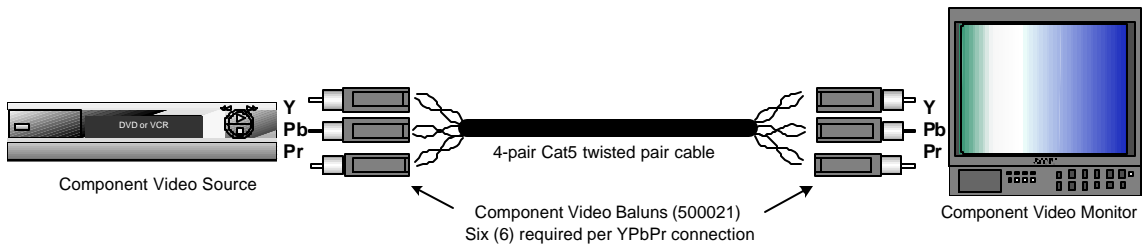


Figure 2; Component Video (YPbPr)

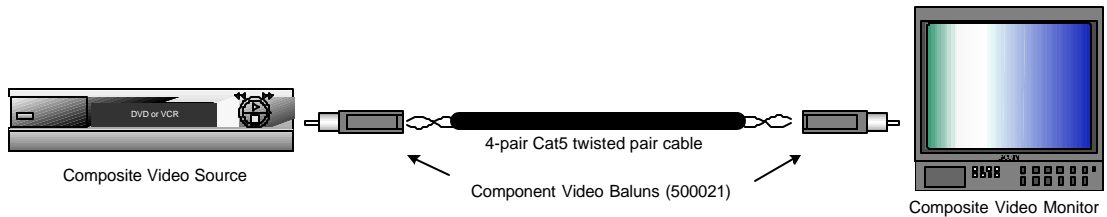


Figure 3; Composite Video (NTSC, PAL, SECAM)

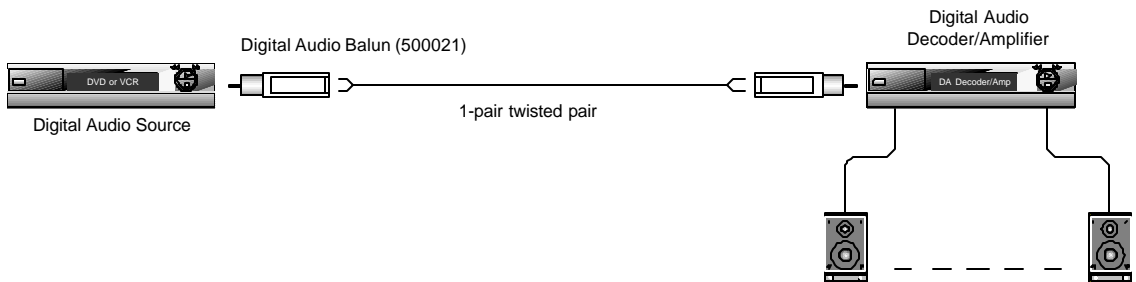


Figure 4; Digital Audio (ie; Dolby™ Digital)

Combining Baluns for Maximum Cat 5 Cable Utilization

The Discreet Audio-Video Baluns may be combined on the back of audio-video equipment in a variety of combinations, thereby allowing for maximum utilization of the Cat 5 cable. The following diagrams illustrate how a single four-pair Cat5 cable may be optimized in different application scenarios.

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Figure 5: Component Video Only

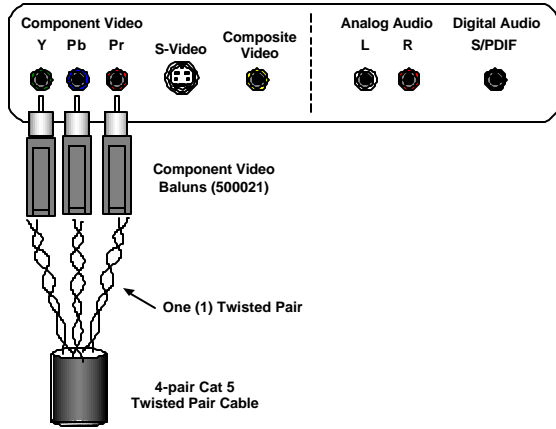


Figure 6: Component Video and Digital Audio

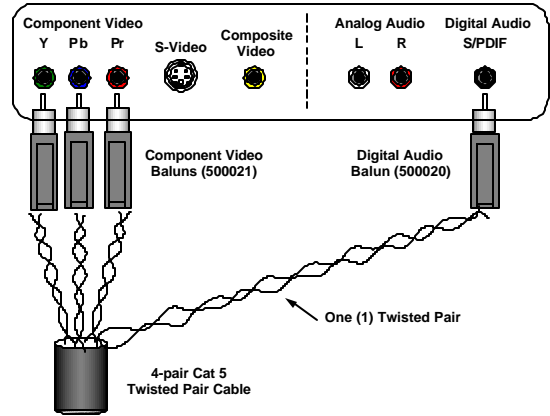


Figure 7: Composite Video and Digital Audio

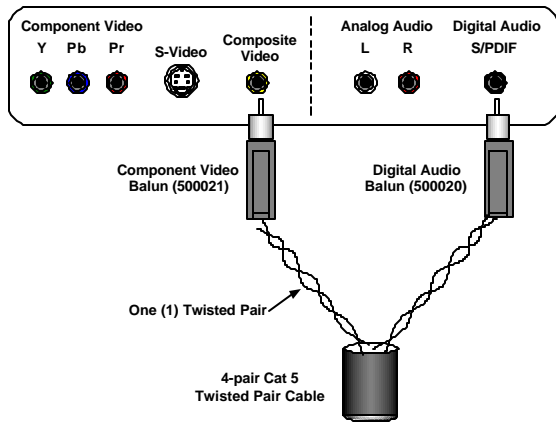


Figure 8: Composite Video and Analog Audio

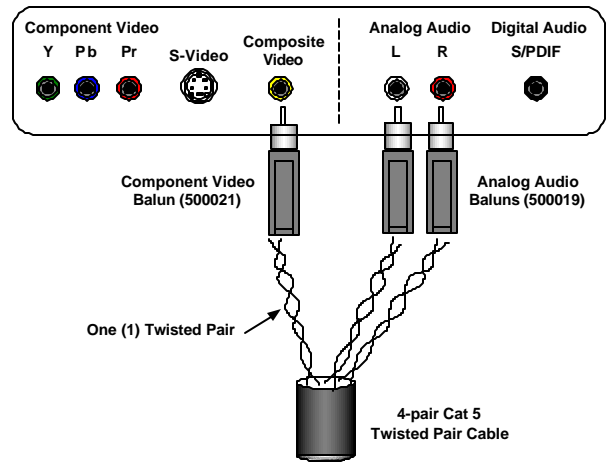


Figure 9: S-Video and Analog Audio

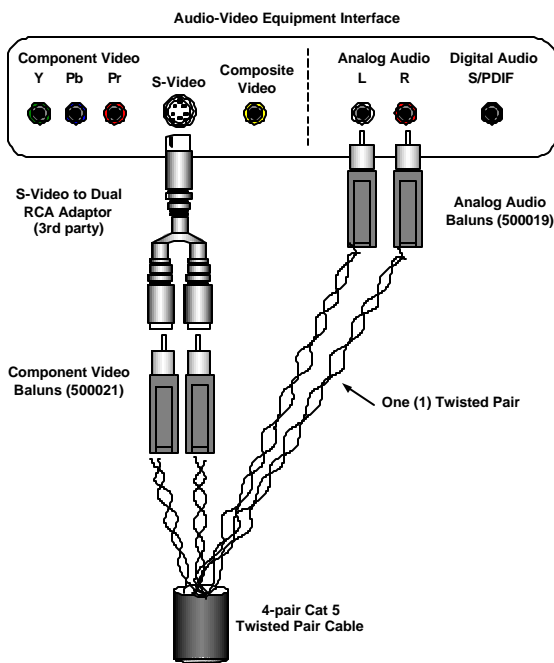
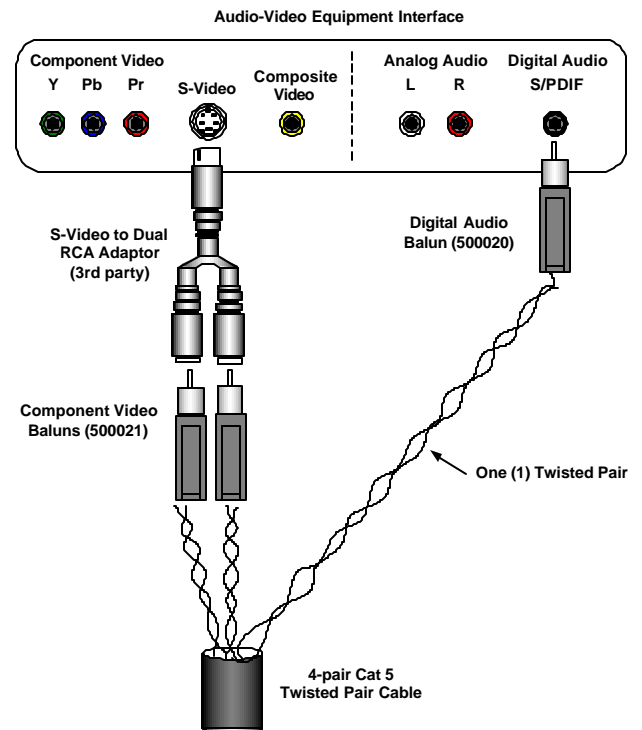
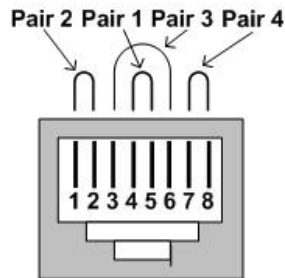


Figure 10: S-Video and Digital Audio

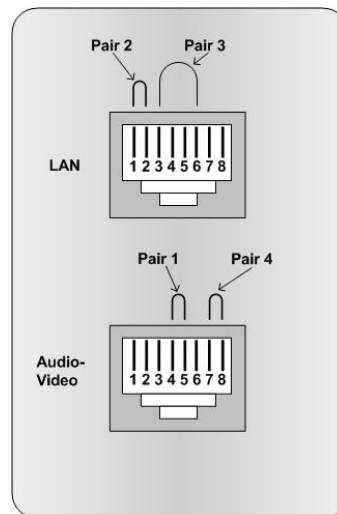


Using Spare Twisted Pairs from a LAN Connection

In some installations where a point-to-point audio-video connection is needed and it is not practical to add twisted pair cable, there is the possibility of using spare twisted pair cable that is behind the wall. For example if an Ethernet 10/100 LAN is installed and there is a LAN outlet connecting two rooms between a PC and a LAN hub, it may be possible to use the unused twisted pairs from this connection. Ethernet 10/100 requires two (2) twisted pairs. These twisted pairs must be terminated on pins 1&2, 3&6 of the RJ45 jack. Assuming a four-pair Cat 5 cable was installed between the PC and the hub, there may be two unused twisted pairs available behind the wall if they have not already been used for other services.



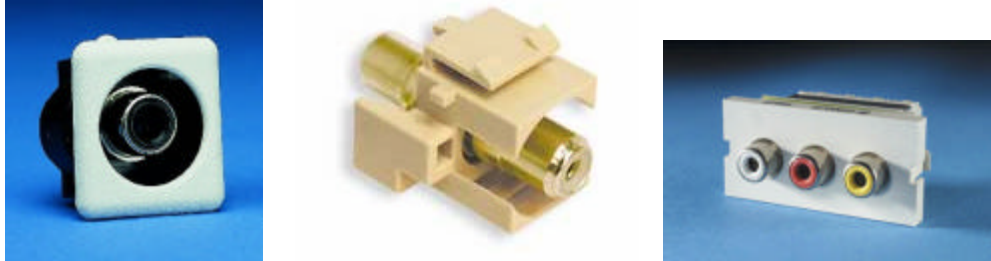
Assuming the spare pairs are available and the expertise to modify the wiring is available, the two spare twisted pairs could be diverted to a second and/or third RJ45 outlet at both ends. This would allow up to two audio-video channels to be transmitted via Cat5 between the two locations. The following diagram shows how the two spare twisted pairs could be used to transmit stereo-audio or composite video and monaural audio from one room to another.



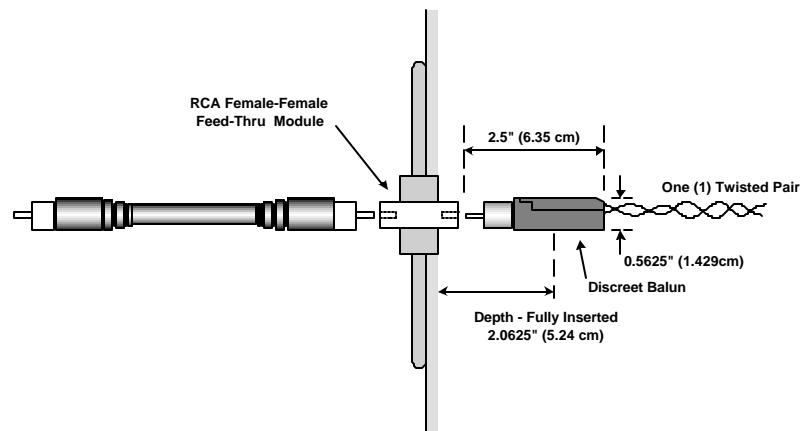
In regard to crosstalk, there will be no interference between the audio-video signal and the LAN signal under the same Cat5 cable jacket.

Wallplates With Multimedia Feed-Thru Modules

The Discreet Audio Video Baluns work in conjunction with wallplates with third party multimedia feed-thru modules. The Discreet Baluns offer the advantage of greater distance performance versus standard Cat5 multimedia modules thus providing increased cabling flexibility and range. The following photos illustrate some typical multimedia modules available on the market.



In this application, the Discreet Baluns are connected to the back of the feed-thru module. A standard RCA coax jumper cable is used to connect the equipment to the front of the wallplate. Since the Discreet Balun adds depth, one of the issues to consider is the amount of clearance that is available behind the module. The following diagram illustrates a typical connection with approximate dimensions for balun depth and height.



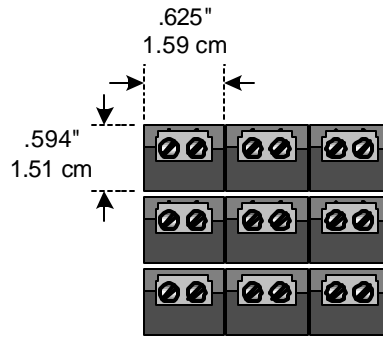
The following are some of the companies offering multimedia feed-thru modules.

Company	Website	Product
Leviton	http://www.levitonvoicedata.com/	QuickPort Audio/Video Cable Connectors
Hubbell	http://www.hubbell.com/	Modular Inserts
Ortronics	http://www.ortronics.com/	
Panduit	http://www.panduitncc.com/	
ICC	http://www.icc.com	
Unicom	http://www.unicomlink.com/#	
Signamax/AESP	http://www.signamax.com/	Multimedia feed-thru modules
Siemon	http://www.homecabling.com/	

The tradenames mentioned in this table are registered trademarks of their respective companies.

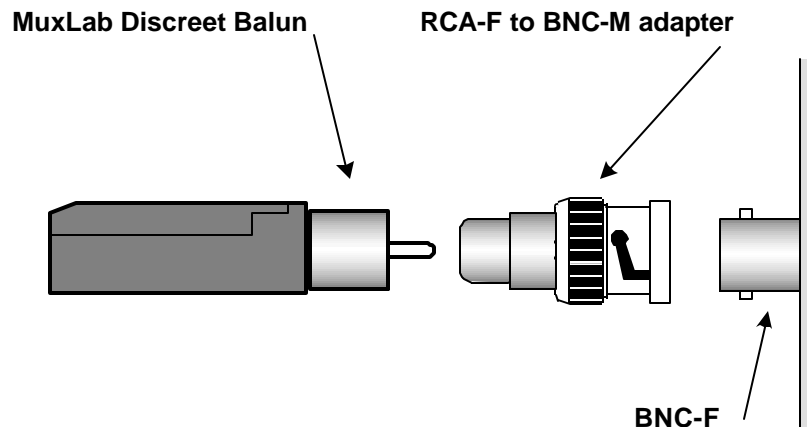
Balun Spacing Requirements

The Discreet Baluns are designed to mount side by side on the rear of any audio-video equipment. The height and width dimensions are .594" x .625" (1.51 x 1.59 cm). Therefore the minimum center-to-center spacing of the RCA is approximately .95" to 1.0" (2.41 to 2.54 cm). The following diagram illustrates the layout when a matrix of Discreet Baluns are mounted adjacent to each other.



Balun Access on Matrix Panels

In the professional audio-video environment, the BNC connector is more typically found than the RCA connector. In some applications a matrix of CCTV Screw Terminal Baluns (500009) must be mounted onto a matrix of BNC connectors. If the baluns must be removed periodically, access to the BNC connector in the center of the matrix may be difficult. To overcome the problem, the Component Video Balun (500021) may be used in conjunction with a RCA-F to BNC-M adapter, thereby allowing a video balun in the matrix center to be removed and reconnected with ease. The following diagram illustrates.



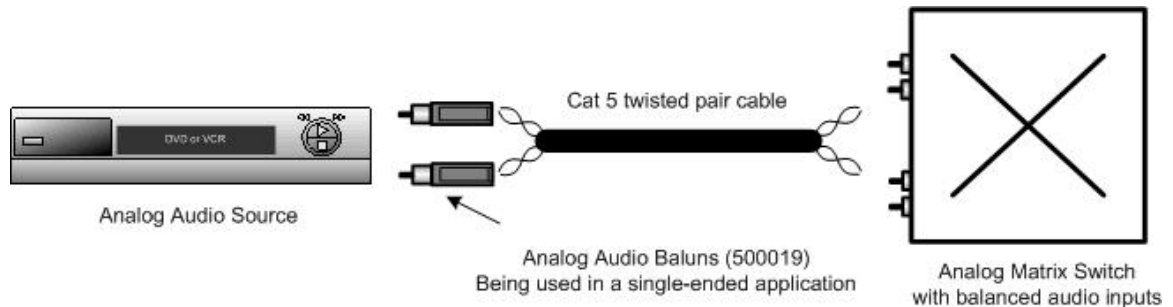
Compatibility With Other MuxLab Baluns

The Discreet Baluns are compatible with other MuxLab VideoEase baluns as shown in the following table. Although designed for the component video environment, the Component Video Balun (500021) supports composite video and S-Video. When used for S-Video and S-Video adapter that converts the standard 4-pin mini-DIN to two RCA connectors is needed as shown in figures 5 & 6.

Model	500019	500020	500021
500000			●
500001	●		●
500002			●
500007			
500009			●
500010			
500011			
500012	●		●
500015			●
500016			
500017	●		
500025	●		
500026	●		
500032			●
500033	●		
500050		●	●
500060	●		●
500061	●		●
500200			●

Analog Audio Balun (500019) in a Single-Ended Configuration

The Analog Audio Balun (500019) may be used in a single-ended application where one end is an 75-ohm unbalanced audio interface and the other is a balanced audio interface. For example the Analog Audio Baluns are connected to an unbalanced audio source such as a DVD or VCR.



If the receiver, such as an audio matrix switcher has balanced audio inputs, the twisted pair from the source can be connected directly to the receiver input.

Line Audio Boosters

In some applications, it may be necessary to boost the line audio signal due to a weak output signal. A line audio boost such as the one found in the following photo may be helpful and may be used in conjunction with the 500019 as well as other MuxLab audio-video baluns.



<http://www.audiooutfitter.com/store/AB-1PA.html>.

Line Audio Splitters

In order to split a single stereo audio source to two receivers, it is recommended to use an active audio distribution amplifier such as the one shown in the following link.



<http://www.kramerelectronics.com/indexes/pic.asp?p=PT-102A>

Compatibility with Crestron™ QM-RMCRX-BA

The Analog Audio Balun has been tested by Crestron to work with its Room Media controller and QuickMedia™ Receiver (Model QM-RMCRX-BA) in a single-ended balanced audio environment. The QM-RMCRX features balance audio output and when used with the 500019 on the receive end, results are positive. The following is a link to the Crestron QM-RMCRX datasheet.



http://www.crestron.com/downloads/pdf/spec_sheets/commercial_and_residential/qm-rmcrx-ba.pdf

For more information, please contact Crestron Technical Support.

Conclusion

Should you require additional information, please contact MuxLab Customer Technical Support for assistance or visit MuxLab's website at www.muxlab.com.

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