

# **Kramer Electronics, Ltd.**



## **USER MANUAL**

### **Models:**

***VS-44AV, 4x4 Video Audio Matrix Switcher***

***VS-81AV, 8x1 Video/Audio-Stereo Switcher***

***VS-81AYC, 8x1 s-Video/Audio-Stereo Switcher***

***VS-81V, 8x1 Video Switcher***

***VS-81X, 8x1 Balanced Audio Switcher***

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## 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups<sup>1</sup> that are clearly defined by function.

Thank you for purchasing your Kramer mechanical switcher, which is ideal for a system in which a passive, hard-wired signal path is preferred.

## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables<sup>2</sup>

Each package includes the following items:

- The one or more Kramer mechanical switchers
- This user manual<sup>3</sup>

To achieve the best performance:

- Use only good quality connection cables to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer switcher away from moisture, excessive sunlight and dust

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

3 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

### 3 Kramer Mechanical Switchers

This user manual describes the following Kramer mechanical switchers:

- **VS-44AV**, 4x4 Video Audio Matrix (see section [3.1](#))
- **VS-81AV**, 8x1 Video/Audio-Stereo Switcher (see section [3.2](#))
- **VS-81AYC**, 8x1 s-Video/Audio-Stereo Switcher (see section [3.3](#))
- **VS-81V**, 8x1 Video Switcher (see section [3.4](#))
- **VS-81X**, 8x1 Balanced Audio Switcher (see section [3.5](#))

#### 3.1 Your VS-44AV 4x4 Video Audio Matrix Switcher

The Kramer **VS-44AV 4x4 Video Audio Matrix Switcher** is a high-quality mechanical 4x4 matrix switcher for composite video and stereo audio signals. The **VS-44AV** is designed to simultaneously route up to 4 sources each to any one of 4 available outputs. The **VS-44AV** is unique in allowing 4 different cross points of video and stereo audio to operate at the same time. However, it cannot simultaneously distribute an input signal to multiple outputs. The high-quality input selector buttons are color coded for easy identification and unselected inputs are terminated via 75Ω resistors.

[Figure 1](#) and [Table 1](#) define the **VS-44AV 4x4 Video Audio Matrix Switcher**. [Table 2](#) gives the technical specifications for the **VS-44AV**.

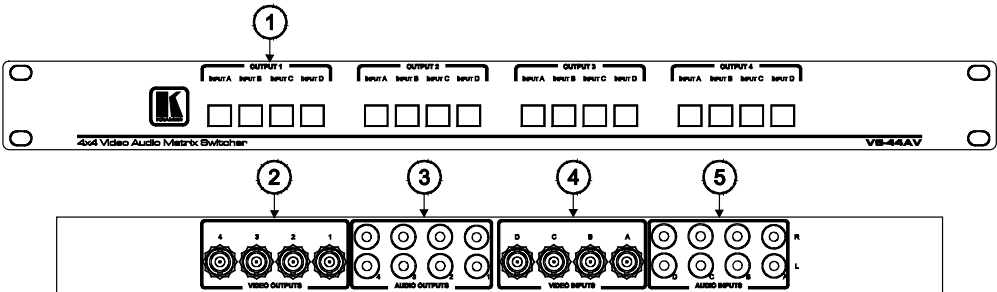


Figure 1: VS-44AV 4x4 Video Audio Matrix Switcher

Table 1: VS-44AV Functions

#	Feature	Function
1	OUTPUT/INPUT Selector Buttons	Select the video and audio source (from A to D) to route to each video/audio acceptor (from 1 to 4)
2	VIDEO OUTPUT BNC connectors	Connect to the video acceptors (from 1 to 4)
3	AUDIO OUTPUT RCA connectors	Connect to the right and left audio acceptors (from 1 to 4)
4	VIDEO INPUT BNC connectors	Connect to the video sources (from A to D)
5	AUDIO INPUT RCA connectors	Connect to the right and left audio sources (from A to D)

Table 2: VS-44AV Technical Specifications

INPUTS:	4 video, 1Vpp/75Ω on BNC connectors 4 audio stereo, 1Vpp nominal on RCA connectors
OUTPUTS:	4 video, 1Vpp/75Ω on BNC connectors 4 audio stereo, 1Vpp nominal on RCA connectors
SWITCHING SYSTEM:	Mechanical, break-before-make
CROSSPOINTS:	16 for video, 16x2 for audio, 4 active at any given time
CROSSTALK:	-42dB @5MHz
BANDWIDTH (-3dB):	220MHz (video), 100kHz (audio)
SIGNAL LEVELS:	Up to 3Vpp video, 36Vpp audio
DIMENSIONS:	19" x 7" x 1U W, D, H rack mountable
WEIGHT:	1.6kg (3.5lbs) approx.

### 3.2 Your VS-81AV 8x1 Video/Audio-Stereo Switcher

The Kramer **VS-81AV**, *8x1 Video/Audio-Stereo Switcher* is a high-quality mechanical 8x1 switcher for composite video and stereo audio signals. The **VS-81AV** is designed for applications requiring an unpowered rack-mountable unit for routing of video and stereo audio signals. Audio is always switched together with the corresponding video signal and unselected video inputs are terminated via 75Ω resistors. High-quality switching components provide excellent isolation between inputs. Its unpowered passive design is advantageous for applications in which various regulatory compliances would otherwise be required. The "hard-wired" signal path offers excellent bandwidth, and can even switch other signal formats.

[Figure 2](#) and [Table 3](#) define the **VS-81AV 8x1 Video/Audio-Stereo Switcher**. [Table 4](#) gives the technical specifications for the **VS-81AV**.

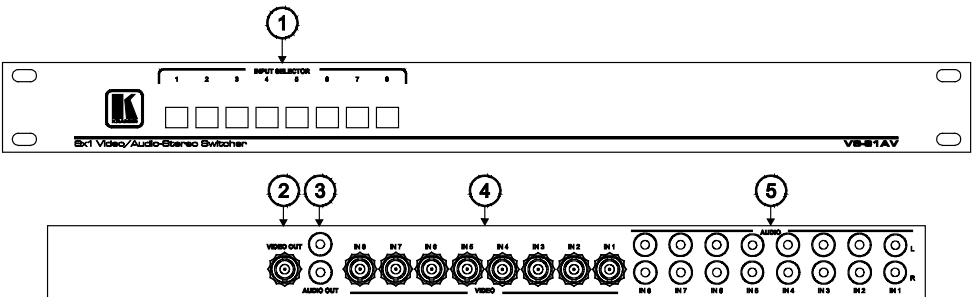


Figure 2: VS-81AV 8x1 Video/Audio-Stereo Switcher

Table 3: VS-81AV Functions

#	Feature	Function
1	INPUT Selector Buttons	Select the video/audio source (from 1 to 8) to route to the output
2	VIDEO OUT BNC connector	Connects to the video acceptor
3	AUDIO OUT RCA connectors	Connect to the left and right audio acceptor
4	VIDEO input BNC connectors	Connect to the video sources (from 1 to 8)
5	AUDIO input RCA connectors	Connect to the left and right audio sources (from 1 to 8)

Table 4: VS-81AV Technical Specifications

INPUTS:	8 video, 1Vpp/75 $\Omega$ nom. on BNC connectors 8 audio stereo, 1Vpp nom. on RCA connectors
OUTPUT:	1 video, 1Vpp/75 $\Omega$ nom. on a BNC connector 1 audio stereo, 1Vpp nom. on an RCA connector
SWITCHING SYSTEM:	Mechanical, break-before-make
CROSSPOINTS:	1 of 8
SIGNAL LEVELS:	Up to 3Vpp video, 36Vpp audio
BANDWIDTH (-3dB):	Video: 400MHz; Audio: 100kHz
DIMENSIONS:	19" x 7" x 1U W, D, H rack mountable
WEIGHT:	1.5kg (3.3lbs) approx.

### 3.3 Your VS-81AYC 8x1 s-Video/Audio-Stereo Switcher

The Kramer **VS-81AYC**, *8x1 s-Video/Audio-Stereo Switcher* is a high quality mechanical 8x1 switcher for s-Video (Y/C) and stereo audio signals using 4-pin and RCA connectors. The **VS-81AYC** is designed for applications requiring an unpowered rack mountable unit for the routing of s-Video (Y/C) and stereo audio signals. Audio is always switched together with the corresponding s-Video (Y/C) signal and unselected video inputs are terminated via 75 $\Omega$  resistors. High quality switching components provide excellent isolation between inputs. Its unpowered passive design is advantageous for applications in which various regulatory compliances would otherwise be required. The "hard-wired" signal path offers excellent bandwidth, and can switch other signal formats.

[Figure 3](#) and [Table 5](#) define the **VS-81AYC**, *8x1 s-Video/Audio-Stereo Switcher*. [Table 6](#) gives the technical specifications for the **VS-81AYC**.

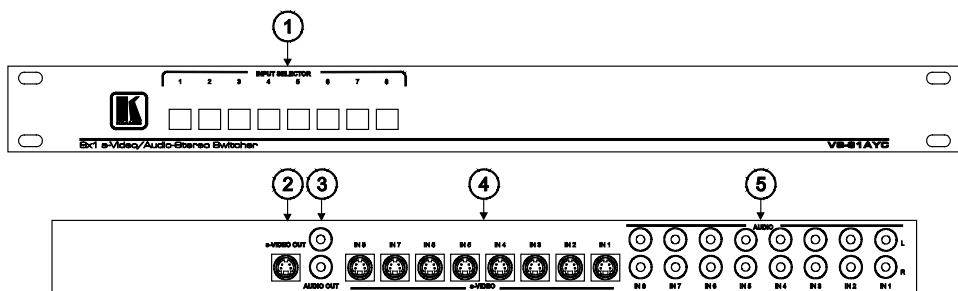


Figure 3: VS-81AYC 8x1 s-Video/Audio-Stereo Switcher

Table 5: VS-81AYC Functions

#	Feature	Function
1	INPUT Selector Buttons	Select the s-Video/audio source (from 1 to 8) to route to the output
2	s-VIDEO OUT 4-pin connector	Connects to the s-VIDEO acceptor
3	AUDIO OUT RCA connectors	Connect to the left and right audio acceptor
4	s-VIDEO input 4-pin connector	Connect to the s-VIDEO sources (from 1 to 8)
5	AUDIO input RCA connectors	Connect to the left and right audio sources (from 1 to 8)

Table 6: VS-81AYC Technical Specifications

INPUTS:	8 s-Video, 1Vpp/75Ω (Y), 0.3 Vpp/75Ω (C) nom. on 4-pin connectors 8 audio stereo, Vpp nom. on RCA connectors
OUTPUTS:	1 s-Video, 1Vpp/75Ω (Y), 0.3 Vpp/75Ω (C) nom on a 4-pin connector 1 audio stereo, Vpp nom on RCA connectors
SWITCHING SYSTEM:	Mechanical, break-before-make
CROSSPOINTS:	1 of 8
SIGNAL LEVELS:	Up to 3Vpp video, 36Vpp audio
BANDWIDTH (-3dB):	Video: 350MHz (Y); Audio: 100kHz
DIMENSIONS:	19" x 7" x 1U W, D, H rack mountable
WEIGHT:	1.4kg (3.1lbs) approx.

### 3.4 Your VS-81V 8x1 Video Switcher

The Kramer **VS-81V**, 8x1 Video Switcher is a high quality mechanical 8x1 switcher for composite video using BNC connectors. The **VS-81V** is designed for applications requiring a compact desktop unit for routing composite video signals. High quality switching components and carefully designed circuits provide excellent isolation between inputs and unselected inputs are terminated via 75Ω resistors. Its unpowered design is advantageous for applications in which various regulatory compliances would otherwise be required. The passive "hard-wired" signal path offers very high bandwidth and can also switch other signal formats.

Figure 4 and Table 7 define the VS-81V, 8x1 Video Switcher. Table 8 gives the technical specifications for the VS-81V.

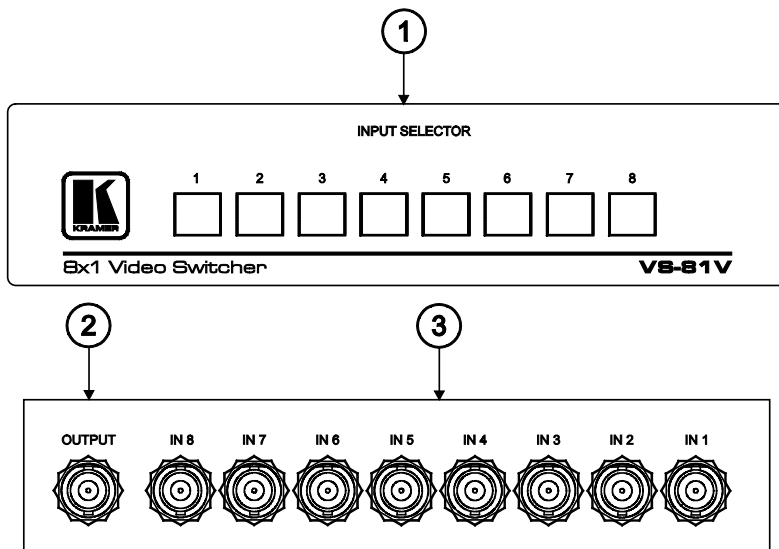


Figure 4: VS-81V 8x1 Video Switcher

Table 7: VS-81V Functions

#	Feature	Function
1	INPUT Selector Buttons	Select the video source (from 1 to 8) to route to the output
2	VIDEO OUTPUT BNC connector	Connect to the video acceptor
3	VIDEO input BNC connectors	Connect to the video sources (from 1 to 8)

Table 8: VS-81V Technical Specifications

INPUTS:	8 video, 1Vpp/75Ω nom. on BNC connectors
OUTPUTS:	1 video, 1 Vpp/75Ω nom. on a BNC connector
SWITCHING SYSTEM:	Mechanical, break-before-make
CROSSPOINTS:	1 of 8
VIDEO CROSSTALK:	-47dB @5MHz
BANDWIDTH (-3dB):	400 MHz
DIMENSIONS:	18.8cm x 10.2cm x 4.4cm (7.4" x 4" x 1.7") W, D, H.
WEIGHT:	0.72kg (1.6lbs) approx.
OPTIONS:	RK-81 19" rack adapter

### 3.5 Your VS-81X 8x1 Balanced Audio Switcher

The Kramer **VS-81X**, *8x1 Balanced Audio Switcher* is a high quality mechanical 8x1 switcher for mono balanced audio using XLR connectors. The **VS-81X** is designed for applications requiring a compact desktop unit for routing audio signals. High quality switching components provide excellent isolation between inputs. Its unpowered passive design is advantageous for applications in which various regulatory compliances would otherwise be required. The "hard-wired" signal path can also switch other signal formats.

[Figure 5](#) and [Table 9](#) define the **VS-81X**, *8x1 Balanced Audio Switcher*. [Table 10](#) gives the technical specifications for the **VS-81X**.

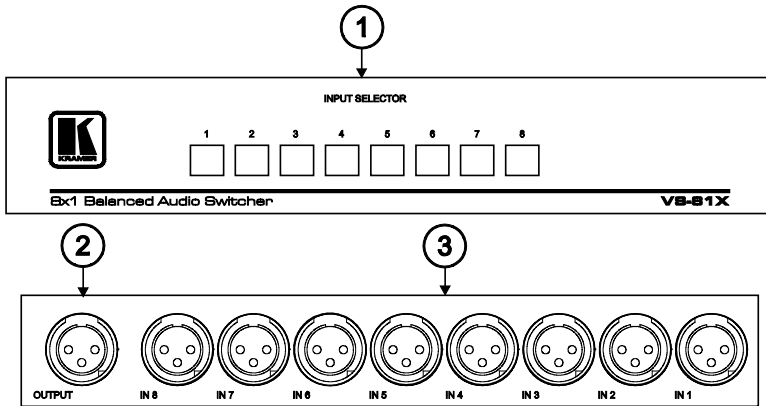


Figure 5: VS-81X 8x1 Balanced Audio Switcher

Table 9: VS-81X Functions

#	Feature	Function
1	INPUT Selector Buttons	Select the audio source (from 1 to 8) to route to the output
2	AUDIO OUTPUT XLR connector	Connect to the audio acceptor
3	AUDIO input XLR connectors	Connect to the audio sources (from 1 to 8)

Table 10: VS-81X Technical Specifications

INPUTS:	8 balanced audio, line or mic level, on XLR connectors
OUTPUT:	1 balanced audio, line or mic level, on an XLR connector
SWITCHING SYSTEM:	Mechanical, break-before-make
CROSSPOINTS:	1 of 8
SIGNAL LEVELS:	Up to 36Vpp
BANDWIDTH (-3dB):	25kHz
DIMENSIONS:	25.5cm x 10.2cm x 4.5cm (10" x 4" x 1.7") W, D, H.
WEIGHT:	0.82kg (1.8lbs) approx.
OPTIONS:	RK-81X 19" rack adapter

## 4 Connecting Kramer Mechanical Switchers

This section gives examples of how to connect Kramer mechanical switchers.

- To connect a mechanical video switcher, see the example in section [4.1](#)
- To connect a mechanical audio switcher, see the example in section [4.2](#)
- To connect a mechanical audio/video switcher, see the example in section [4.3](#)

### 4.1 Connecting a VS-81V 8x1 Video Switcher

To connect your **VS-81V 8x1 Video Switcher**, as the example in [Figure 6](#) illustrates:

1. Connect up to 8 composite video sources to the appropriate BNC input connectors.
2. Connect the BNC OUTPUT connector to the composite video acceptor. Pushing a front panel INPUT selector button routes that composite video source to the composite video acceptor.

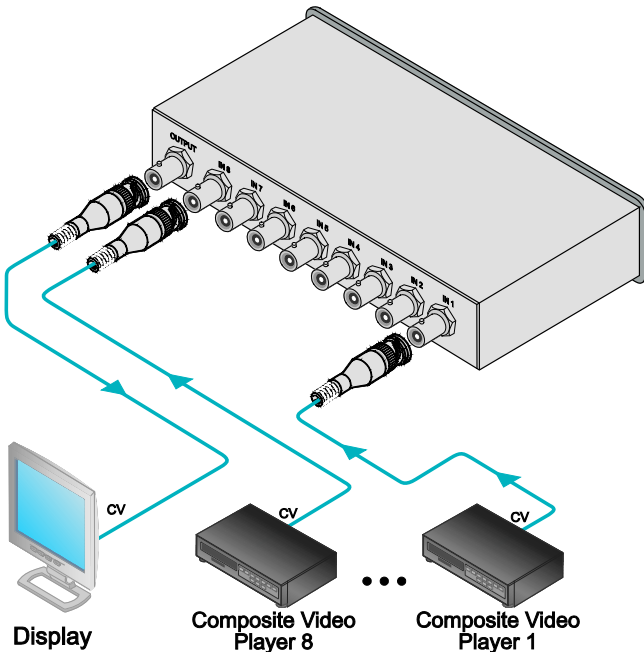


Figure 6: Connecting a VS-81V 8x1 Video Switcher

## 4.2 Connecting a VS-81X Balanced Audio Switcher

To connect your **VS-81X Balanced Audio Switcher**, as the example in [Figure 7](#) illustrates:

1. Connect up to 8 balanced audio sources to the 8 XLR input connectors.
2. Connect the XLR OUTPUT connector to the audio acceptor.  
Pushing a front panel INPUT selector button routes that balanced audio source to the balanced audio acceptor.

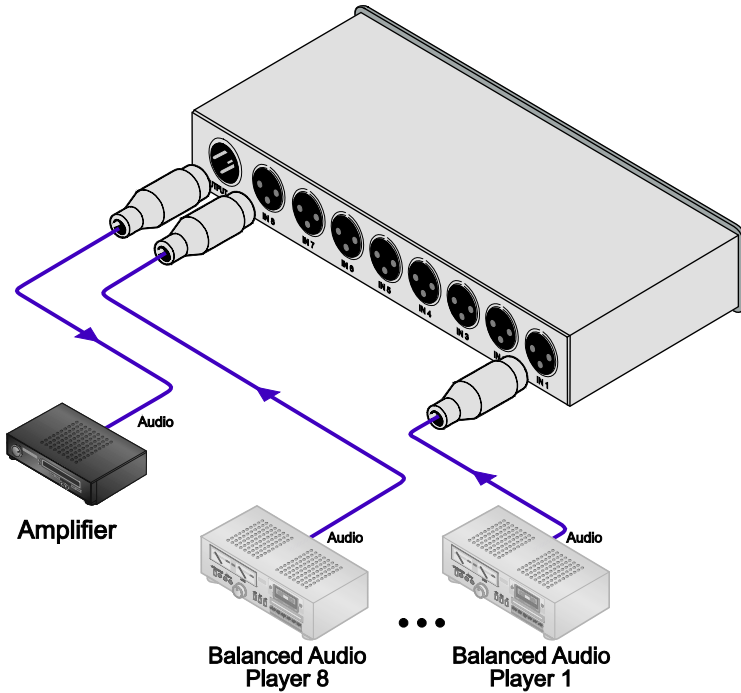


Figure 7: Connecting a VS-81X Balanced Audio Switcher

### 4.3 Connecting a VS-81AV 8x1 Video/Audio-Stereo Switcher

To connect your **VS-81AV 8x1 Video/Audio-Stereo Switcher**, as the example in [Figure 8](#) illustrates:

1. Connect up to 8 composite video sources to the VIDEO IN BNC connectors.
  2. Connect up to 8 audio sources to the AUDIO IN RCA connectors making sure that the audio and video inputs match (that is, from Player 1, connect the video to VIDEO IN 1 and the audio to AUDIO IN 1, and so on.)
  3. Connect the VIDEO OUT BNC connector to the video acceptor (for example, a composite video display).
  4. Connect the AUDIO OUT RCA connectors to the audio acceptor (for example, a composite video display with speakers).
- Pushing a front panel INPUT selector button routes the selected AV source to the AV acceptor.

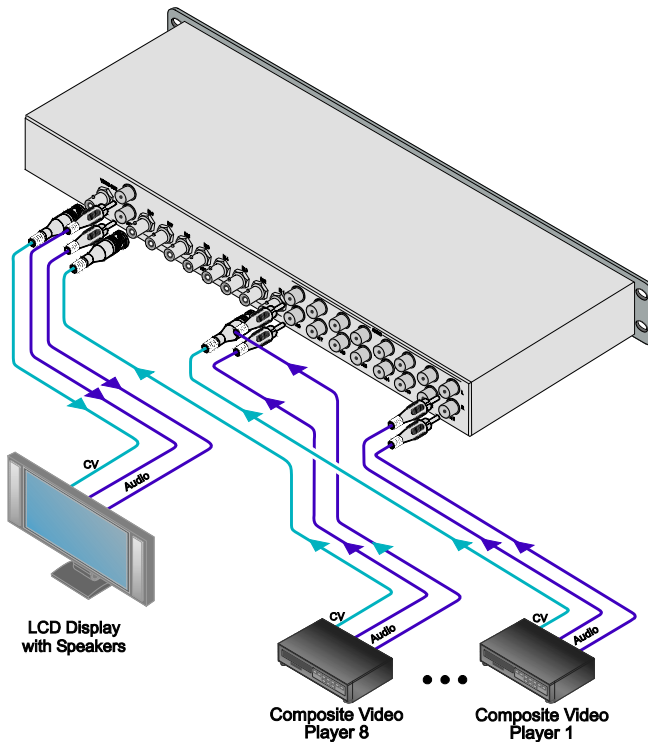


Figure 8: Connecting a VS-81AV 8x1 Video/Audio-Stereo Switcher

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## LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

### WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

### WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site [www.kramerelectronics.com](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part I: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part I: Residential, commercial and light industry environment".
- CFR-47:  
FCC\* Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B Unintentional radiators"

### CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.  
\* FCC and CE approved using STP cable (for twisted pair products)



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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com) where updates to this user manual may be found.  
We welcome your questions, comments and feedback.**



**Caution**

**Safety Warning:**

Disconnect the unit from the power supply before opening/servicing.



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**Kramer Electronics, Ltd.**  
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