

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**VS-21**

*2x1 Audio/Video/Component Switcher*

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## 1 Introduction

Dedication by Kramer Electronics since 1981, to the development and manufacture of high quality video/audio equipment, makes the Kramer line an integral part of the finest production and presentation facilities in the world. In recent years, Kramer has redesigned and upgraded most of the line, making the best even better! The Kramer line of professional video/audio electronics is one of the most versatile and complete available, and is a true leader in terms of quality, workmanship, price/performance ratio and innovation. In addition to our high quality switchers and matrices, we also offer excellent distribution amplifiers, remote controllers, processors, interfaces and computer-related products.

Congratulations on purchasing your **VS-21 2x1 Audio/Video/Component Switcher**. The Kramer **VS-21** is ideal for applications in which a passive “hard-wired” signal path is preferred, and for applications such as small editing systems. The package includes the following items:

- **VS-21 2x1 Audio/Video/Component Switcher**
- This user manual<sup>1</sup> and the Kramer concise product catalog/CD

## 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>

## 3 Overview

The high resolution **VS-21 2x1 Audio/Video/Component Switcher** is a versatile mechanical switcher that can be used for many different types of signals. In particular, the **VS-21**:

- Switches 3 identical channels simultaneously, so it may be used for composite video with 2 audio channels; for 3 independent composite video channels; for one composite and one Y/C channel; for component video (YUV or RGB), SDI, HDTV or for any other combination

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<sup>1</sup> Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com/manuals.html>

<sup>2</sup> The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com> (click “Cables and Connectors” in the Products section)

- Uses an “RF” PCB design with 3 ultra high bandwidth channels, providing bandwidth exceeding 1000 MHz (1 GHz), and is therefore suitable for use with almost any common signal
- Is housed in a desktop enclosure and can be used in “reverse” as well – functioning as a 1x2 switcher (toggling one source between two acceptors)
- Provides a simple solution for many switching needs and as the design is passive, it does not need power, thus increasing its versatility

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding 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 and position your Kramer VS-21 away from moisture and excessive sunlight and dust

#### 4 Your VS-21 2x1 Audio/Video/Component Switcher

Figure 1, Table 1 and Table 2 define the front and rear panels of the VS-21:

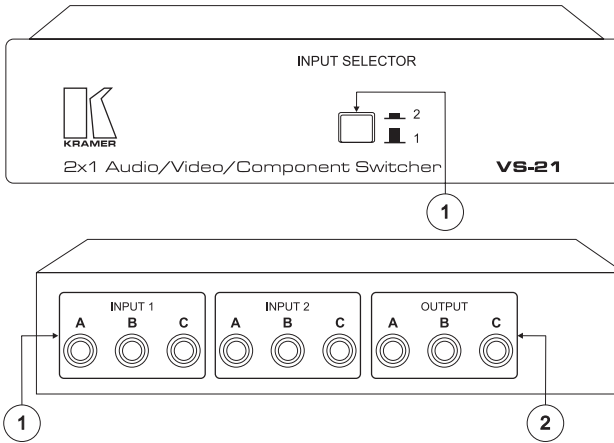


Figure 1: VS-21 2x1 Audio/Video/Component Switcher

Table 1: Front Panel VS-21 2x1 Audio/Video/Component Switcher Features

#	Feature	Function
1	INPUT SELECTOR Switch	Push in to select input 2; release to select input 1

Table 2: Rear Panel VS-21 2x1 Audio/Video/Component Switcher Features

#	Feature	Function
1	Set of 3 channel INPUT RCA Connectors	Connects to the source(s) from 1 to 2
2	Set of 3 channel OUTPUT RCA Connectors	Connects to the acceptor(s)

## 5 Using the VS-21 2x1 Audio/Video/Component Switcher

You can use your versatile **VS-21 2x1 Audio/Video/Component Switcher** as a:

- 2x1 Composite video switcher with 2 audio channels (see Figure 2)
- 1x2 Composite video switcher<sup>1</sup> with 2 audio channels (see Figure 3)
- 2x1 Component video switcher (see Figure 4)
- 1x2 Component video switcher<sup>1</sup>

You can also use your **VS-21 2x1 Audio/Video/Component Switcher** as a switcher that includes the following<sup>2</sup> combinations:

- One composite channel and one Y/C channel
- 3 independent composite video channels
- 2 composite video channels and a channel for unbalanced mono audio
- 3 unbalanced mono audio channels
- SDI
- HDTV

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<sup>1</sup> Due to its passive signal path, the VS-21 can also operate in the opposite direction

<sup>2</sup> Or any other appropriate combination

## 5.1 Connecting the VS-21 as a 2x1 Composite Video/Audio Switcher

To use your **VS-21** as a 2x1 composite video/audio switcher, connect the **VS-21** as the example in Figure 2 illustrates:

1. Connect a composite source (for example, a VCR “Composite Source 1”) to the three INPUT 1 channels, as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the right stereo channel to RCA connector C
2. Connect a second composite source (for example, a VCR “Composite Source 2”) to the three INPUT 2 channels, as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the right stereo channel to RCA connector C
3. Connect the three OUTPUT channels to a composite acceptor (for example, a monitor), as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the right stereo channel to RCA connector C
4. Push in the front panel *INPUT SELECTOR* switch to route input 2, or release it to route input 1.

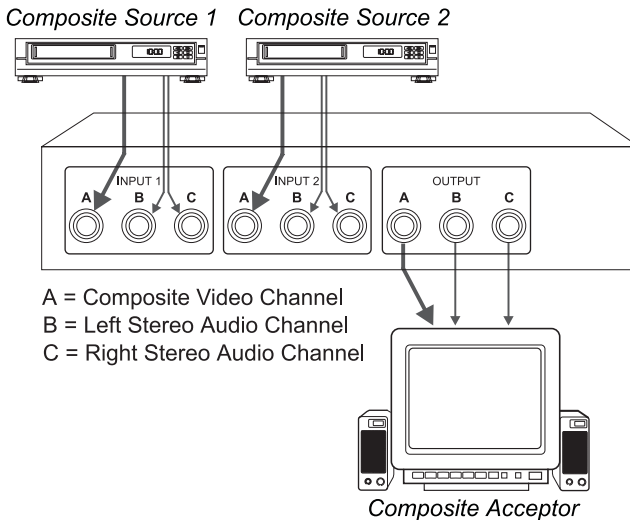


Figure 2: Connecting the VS-21 as a 2x1 Composite Video/Audio Switcher

## 5.2 Connecting the VS-21 as a 1x2 Composite Video/Audio Switcher

To use your **VS-21** as a 1x2 composite video/audio switcher, connect the **VS-21** as the example in Figure 3 illustrates:

1. Connect a composite source (for example, a VCR “Composite Source”) to the three OUTPUT<sup>1</sup> channels, as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the composite source to RCA connector C
2. Connect the three INPUT<sup>2</sup> 1 channels to a composite video acceptor (for example, a monitor “Composite Acceptor 1”), as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the right stereo channel to RCA connector C
3. Connect the three INPUT<sup>2</sup> 2 channels to a composite video acceptor (for example, a monitor “Composite Acceptor 2”), as follows:
  - Connect the composite video channel to RCA connector A
  - Connect the left stereo channel to RCA connector B
  - Connect the right stereo channel to RCA connector C
4. Push in the front panel INPUT SELECTOR switch to route the source to Acceptor 2, or release it to route the source to Acceptor 1.

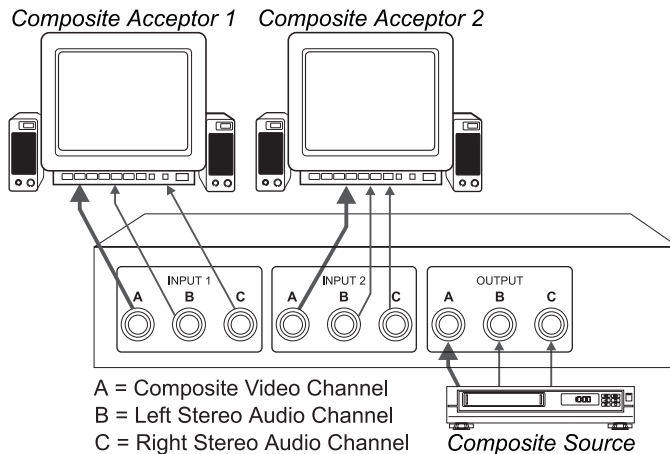


Figure 3: Connecting the VS-21 as a 1x2 Composite Video/Audio Switcher

<sup>1</sup> Serve as the INPUT channels when operating in the opposite direction

<sup>2</sup> Serve as the OUTPUT connectors when operating in the opposite direction

### 5.3 Connecting the VS-21 as a 2x1 Component Video Switcher

To use the **VS-21** as a component video (Y, B-Y, R-Y, sometimes called YUV or Y, P<sub>b</sub>, P<sub>r</sub>) switcher, connect the **VS-21** as the example in Figure 4 illustrates:

1. Connect a component video source (for example, a BETACAM VCR “Component Source 1”) to the three INPUT 1 channels, as follows:
  - Connect the Y component video channel to RCA connector A
  - Connect the B-Y component video channel to RCA connector B
  - Connect the R-Y component video channel to RCA connector C
2. Connect a second component video source (for example, a BETACAM VCR “Component Source 2”) to the three INPUT 2 channels, as follows:
  - Connect the Y component video channel to RCA connector A
  - Connect the B-Y component video channel to RCA connector B
  - Connect the R-Y component video channel to RCA connector C
3. Connect the three OUTPUT channels to a component video acceptor (for example, a component video monitor), as follows:
  - Connect the Y component video channel to RCA connector A
  - Connect the B-Y component video channel to RCA connector B
  - Connect the R-Y component video channel to RCA connector C
4. Push in the front panel *INPUT SELECTOR* switch to route input 2, or release it to route input 1.

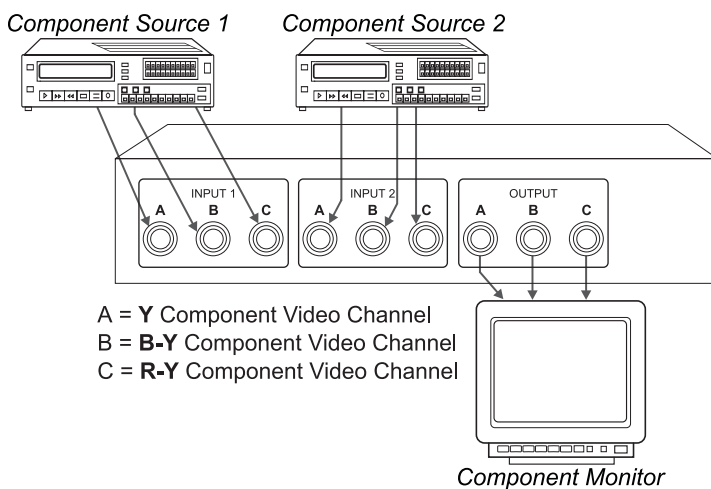


Figure 4: Connecting the VS-21 as a 2x1 Component Video Switcher



## 6 Technical Specifications

Table 3 includes the technical specifications:

*Table 3: Technical Specifications<sup>1</sup> of the VS-21 2x1 Audio/Video/Component Switcher*

INPUTS:	2 sets consisting of 3 channels, on RCA connectors
OUTPUT:	1 set consisting of 3 channels, on RCA connectors
BANDWIDTH (-3dB):	>1000 MHz (1 GHz)
DIMENSIONS:	18.8 cm x 10.2 cm x 4.4 cm (7.4" x 4" x 1.7"), W, D, H
WEIGHT:	0.64 kg. (1.4 lbs.) approx.

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<sup>1</sup> Specifications are subject to change without notice

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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 three 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.
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 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: 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.



**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com).**

**Updates to this user manual may be found at  
<http://www.kramerelectronics.com/manuals.html>.**

**We welcome your questions, comments and feedback.**

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