

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**VS-406**

*Audio Selector/Amplifier*

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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 the Kramer **VS-406** *Audio Selector/Amplifier*, which is ideal for:

- Audio broadcast and production studios
- Hi-fi retail stores

Each package includes the following items:

- The **VS-406** *Audio Selector/Amplifier*
- Power supply (24V DC) and rack “ears”
- This user manual<sup>2</sup>

## 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>3</sup>

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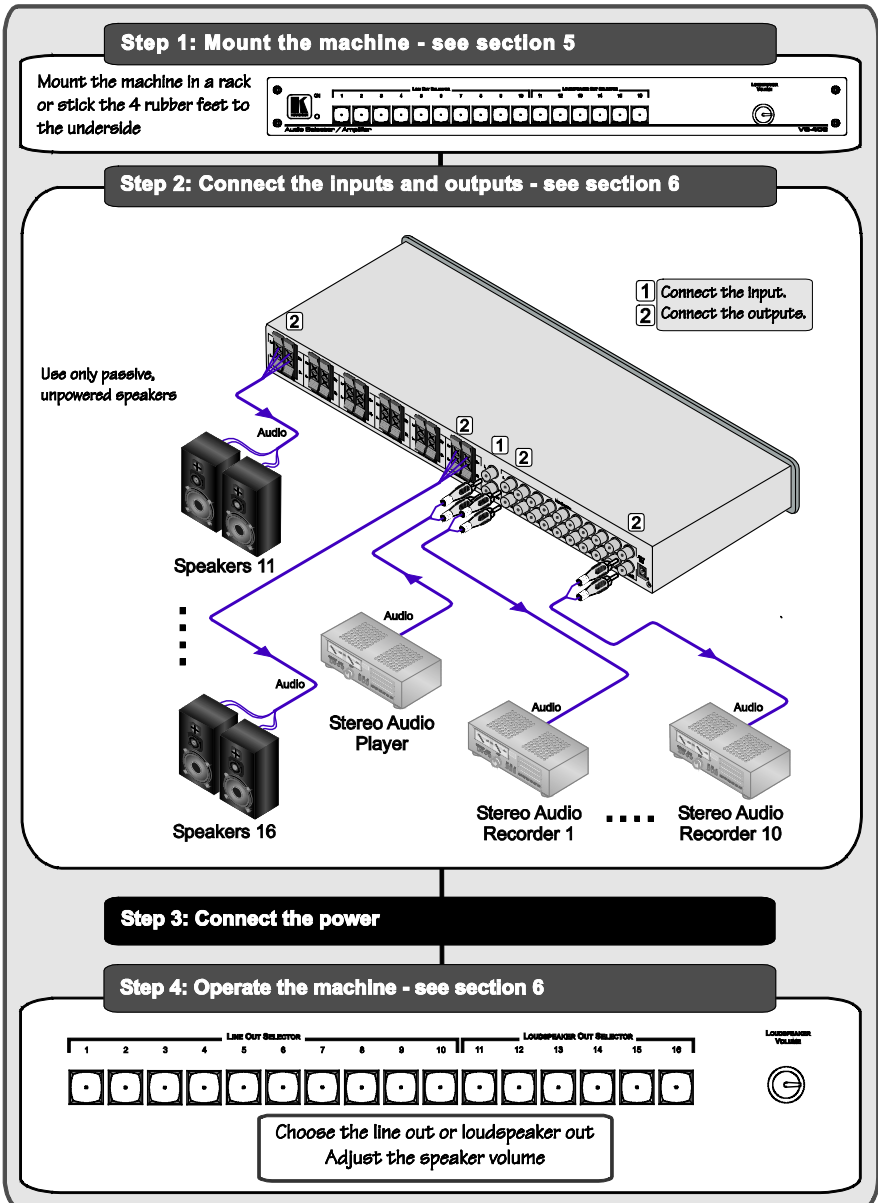
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

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

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

## 2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.



### 3 Overview

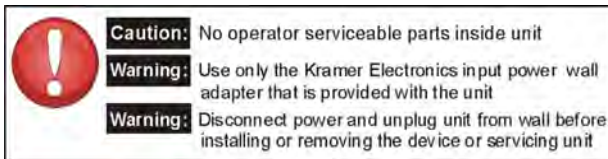
The **VS-406** is a switcher/amplifier for unbalanced analog audio stereo signals. The unit mechanically switches the single line input to one output, either one of ten unpowered unbalanced audio stereo line outputs, or one of six amplified speaker outputs. The unit does not switch to line and speaker outputs simultaneously.

More specifically, the **VS-406** features:

- Unpowered 1x10 mechanical line to line switching
- Amplified 1x6 line to speaker switching
- A loudspeaker volume knob
- A power ON indication LED
- A 24V DC power supply
- Standard 19" 1 U rack mount size

To achieve the best performance:

- Use only good quality connection cables<sup>1</sup> 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 **VS-406** away from moisture, excessive sunlight and dust

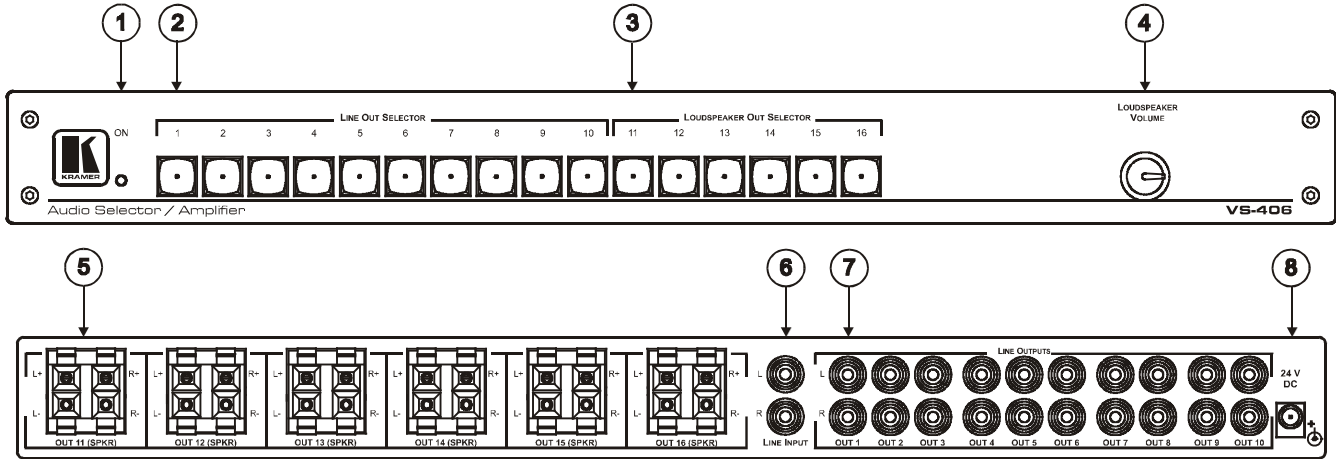


### 4 Your VS-406 Audio Selector/Amplifier

[Figure 1](#) and [Table 1](#) define the unit.

<sup>1</sup> Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

## Your VS-406 Audio Selector/Amplifier



*Figure 1: VS-406 Audio Selector/Amplifier*

*Table 1: VS-406 Audio Selector/Amplifier Functions*

#	Feature	Function
1	ON LED	Illuminates green when receiving power
2	LINE OUT SELECTOR Buttons	Press to choose the output line (1 to 10)
3	LOUDSPEAKER OUT SELECTOR Buttons	Press to choose the output speaker pair (11 to 16)
4	LOUDSPEAKER VOLUME Knob	Turn to adjust the volume level of the selected speakers
5	OUT (SPKR) (L+, L-, R+, R-) Terminal Blocks	Connect to the stereo speaker pairs (11 to 16)
6	LINE INPUT (L, R) RCA Connectors	Connect to the unbalanced audio stereo line source
7	LINE OUTPUT (L, R) RCA Connectors	Connect to the unbalanced audio stereo acceptors (1 to 10)
8	24V DC Connector	+24V DC for powering the unit

## 5 Installing the VS-406 in a Rack

This section provides instructions for rack mounting the unit.

### Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing



### CAUTION!

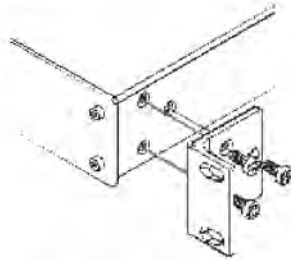
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

### How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from: <http://www.kramerelectronics.com>

## 6 Connecting and Operating the VS-406

To connect the **VS-406**, as shown in [Figure 2](#), do the following<sup>1</sup>:

1. Connect an unbalanced stereo audio source (for example, a stereo audio player) to the LINE INPUT L and R RCA connectors.
2. Connect the LINE OUTPUT RCA connectors to up to 10 unbalanced stereo audio acceptors (for example, stereo audio recorders).
3. Connect the OUT (SPKR) connectors to up to 6 speaker pairs (use only passive, unpowered speakers).
4. Connect the 24V DC power supply.

To operate the **VS-406**:

1. Press the appropriate button on the LINE OUT SELECTOR (from 1 to 10) or the LOUDSPEAKER OUT SELECTOR (from 11 to 16).  
The line input switches to the selected line output or speaker.
2. Adjust the speaker volume by turning the LOUDSPEAKER VOLUME knob.

**Note:** The power supply is only needed when operating loudspeakers. No power is needed for line switching.

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<sup>1</sup> Switch OFF the power on each device before connecting it to your VS-406. After connecting your VS-406, connect its power and then switch on the power on each device.



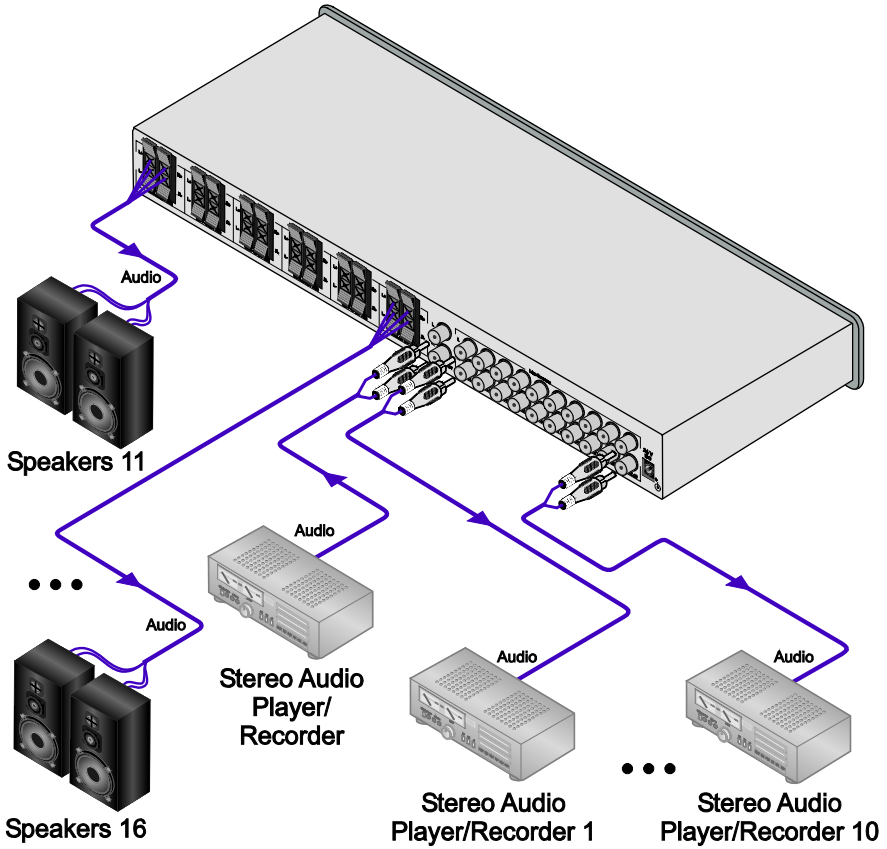


Figure 2: Connecting the VS-406 Audio Selector/Amplifier

## 6.1 Optional Gain Adjustment

You can set the overall gain of the loudspeaker outputs by adjusting the gain DIP-switches located on the circuit board inside the **VS-406**. Settings available are 26dB, 32dB, 38dB (factory default setting) and 42dB.

To set the gain DIP-switches:

1. Remove the screws from the top and sides that hold the top cover.
2. Remove the top cover to access the circuit board.
3. Using a small screwdriver or pointed object, slide the DIP-switches to set the desired gain (see [Figure 3](#)).
4. Replace the top cover and secure with the screws removed as per Step 1 above.

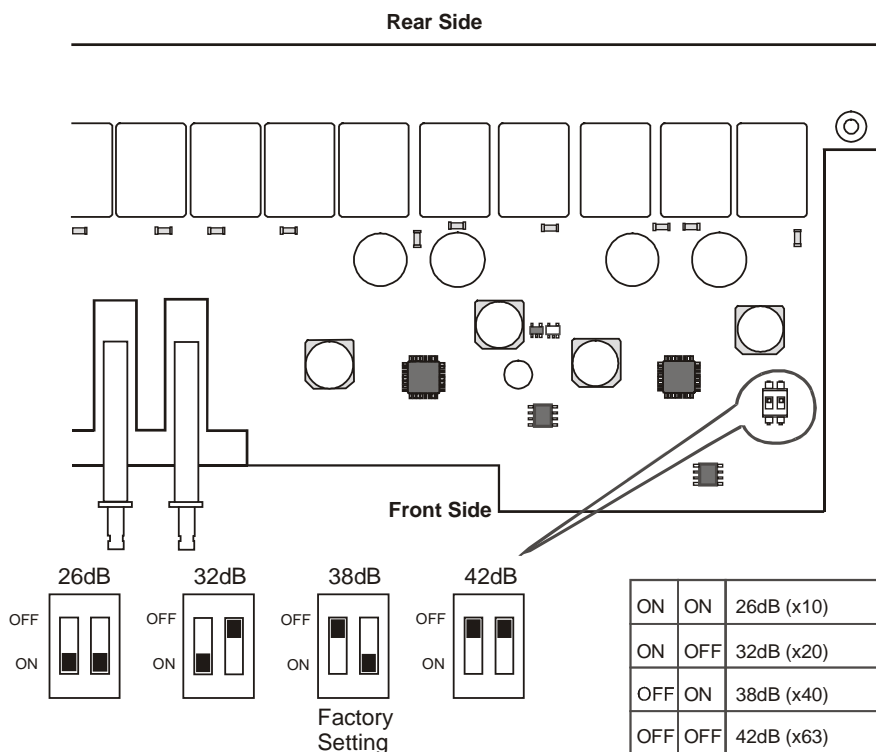


Figure 3: Adjusting the Gain DIP-Switches

## 7 Technical Specifications

The **VS-406** technical specifications are shown in [Table 2](#):

*Table 2: VS-406 Technical Specifications<sup>1</sup>*

INPUTS:	1 unbalanced stereo audio on RCA connectors
OUTPUTS:	6 powered speakers on sprung terminal blocks; 10 line level unbalanced audio stereo on RCA connectors
INPUT SENSITIVITY:	0.5Vpp @38dB total gain
MAXIMUM OUTPUT LEVEL:	40Vpp @10% THD + N, 33W/channel, 8Ω full load
MAX. VOLTAGE GAIN:	+38dB
BANDWIDTH (-3dB):	20kHz
S/N RATIO:	74dB @10% THD + N
CONTROLS:	Volume level range: -51dB to 38dB (internal gain switches are set to 38dB)
COUPLING:	Input – AC, output – DC
AUDIO THD + NOISE:	0.2% @ 2W into 8Ω
AUDIO 2nd HARMONIC:	0.16% @ 2W into 8Ω
AMPLIFIER TYPE:	Class D
POWER SOURCE:	24V DC, 3.6A
DIMENSIONS:	19" x 4.0" x 1U
WEIGHT:	1kg (2.2lbs)
ACCESSORIES:	Power supply, rack "ears"

<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 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 your 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  
\* 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.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramerel.com](mailto:info@kramerel.com)

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