Kramer Electronics, Ltd.

USER MANUAL

Model:

VA-2003

Digital Motion Stabilizer

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This section describes what to do before installing the **VA-2003** on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5 to +45 Deg. Centigrade
Operating humidity range	5 to 65% RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!!

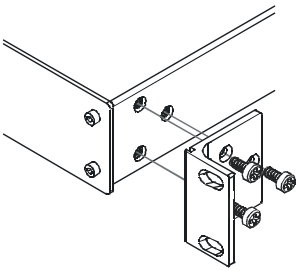
When installing on a 19" rack, avoid hazards by taking care that:

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 that:

- **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 (you can download it at: http://www.kramerelectronics.com)

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 Kramer digital motion stabilizer, we also offer excellent switchers and matrices, as well as distribution amplifiers, remote controllers, processors, interfaces and computer-related products.

Congratulations on purchasing your Kramer **VA-2003** *Digital Motion Stabilizer*, which is ideal for the following typical applications:

- Removing the unsteadiness in images obtained from security cameras mounted on high buildings, caused by strong winds
- Stabilizing a live filming/broadcasting image from a vehicle-mounted or hand held camera, whose quality would otherwise be impaired by vibration

The package includes the following items:

- **VA-2003** *Digital Motion Stabilizer*
- Power cord
- This printed user manual[1]
- 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[2]

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

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

3 Overview

The **VA-2003** *Digital Motion Stabilizer* is a unique high quality real-time CCTV appliance, which plugs in between a standard analog security camera and a downstream device, such as a recorder, monitor or transmission system. It analyzes the source video (perhaps unsteady due to windy conditions, high zooming, positioning near air-conditioners or other vibrating machinery), removing the effects of unintended camera motion and stabilizing an unsteady image[1] in real-time, using DSP techniques.

In particular, the **VA-2003** *Digital Motion Stabilizer*:

- Is compatible with NTSC (default) and PAL video standards
- Accepts composite video and s-Video, and outputs composite video and s-Video simultaneously that are suitable for recording or viewing
- Can be customized to your requirements, using the user friendly OSD Main Menu
- Is controllable via the OSD buttons[2] on the front panel
- Can be used for studio and post production applications as well as to stabilize a pre-existing tape
- Is dependable, rugged, and fits in one vertical space of a standard 19" professional rack enclosure

Achieving the best performance means:

- Connecting 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)
- Avoiding interference from neighboring electrical appliances and positioning your **VA-2003** away from moisture, excessive sunlight and dust

1 The VA-2003 is the electronic equivalent of a mechanical shock absorber

2 The ENTER button, the CANCEL button, and the set of 4 NAVIGATION buttons

4 Your VA-2003 Digital Motion Stabilizer

Figure 1, Table 1, and Table 2 define the **VA-2003**:

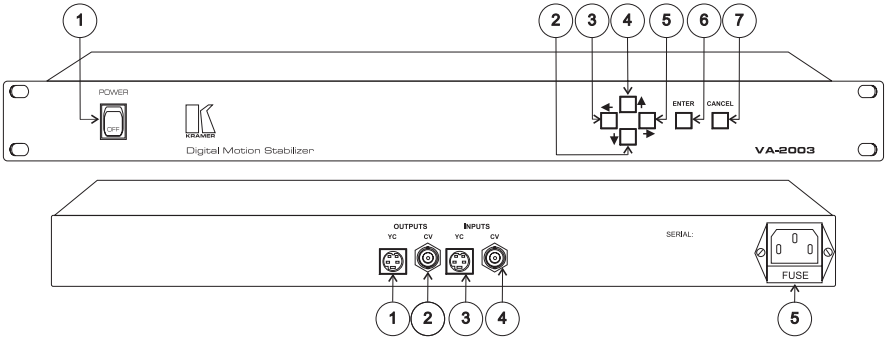


Figure 1: VA-2003 Digital Motion Stabilizer

Table 1: Front Panel VA-2003 Digital Motion Stabilizer Features

#	Feature		Function
1	*POWER* Switch		Illuminated switch supplying power to the unit
2	NAVIGATION Buttons		Moves down one step In the same level only
3			Exits the Main Menu (otherwise has no effect)
4			Moves up one step in the same level
5			Moves one step to the next level (when available)
6	*ENTER* Button		Displays the Main Menu; moves to the next level; confirms a command
7	*CANCEL* Button		Exits the OSD Menu; exits the Main Menu; moves back to the previous level; stops the execution of a command

Table 2: Rear Panel VA-2003 Digital Motion Stabilizer Features

#	Feature		Function
1	*OUTPUTS*	YC 4p Connector	Connects to the s-Video acceptor
2		*CV* BNC Connector	Connects to the composite video acceptor
3	*INPUTS*	*YC 4p* Connector	Connects to the s-Video source
4		*CV* BNC Connector	Connects to the composite video source
5	Power Connector with *FUSE*		AC connector enabling power supply to the unit

5 Connecting the VA-2003 Digital Motion Stabilizer

To connect the **VA-2003** (as the example in Figure 2 illustrates), connect the following[1] to the rear panel:

1. Connect an s-Video source (for example, an s-Video camera) to the YC 4p INPUT connector.
2. Connect a composite video source (for example, a composite CCTV camera) to the CV BNC INPUT connector.
3. Connect the YC 4p OUTPUT connector to an s-Video acceptor (for example, an s-Video S-VHS).
4. Connect the CV BNC OUTPUT connector to a composite video acceptor (for example, a monitor).
5. The power cord.

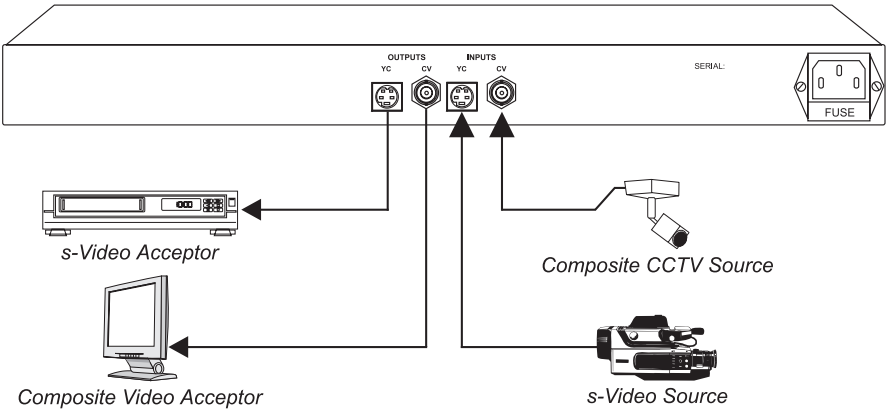


Figure 2: Connecting the VA-2003 Digital Motion Stabilizer

1 Switch OFF the power on each device before connecting it to your VA-2003. After connecting your VA-2003, switch on its power and then switch on the power on each device

6 Operating the VA-2003 Digital Motion Stabilizer

You operate your **VA-2003** via the front panel OSD buttons. After the initial message[1]: "*Looking for a video signal ...*", pressing the *ENTER* button displays the OSD "Main Menu" screen, which appears superimposed over the "faded-out" picture, as Figure 3 illustrates:

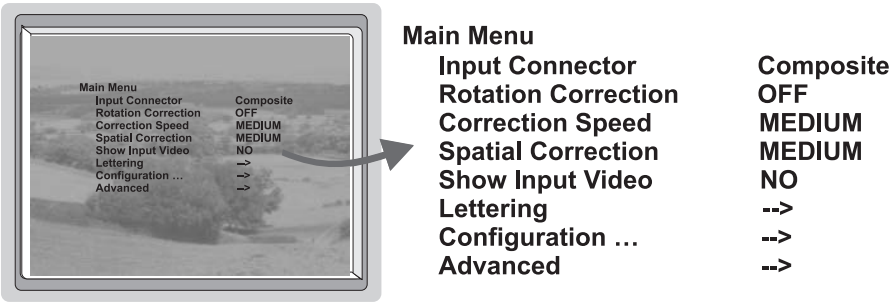


Figure 3: Main Menu Screen

Table 3 defines the Main Menu[2] commands, which let you customize your **VA-2003** to output a high quality stable video image.

Table 3: Main Menu (Default) Commands

Main Menu Command:		Functionality:
Input Connector	Composite	s-Video or Composite
Rotation Correction	OFF	Turn ON or OFF or LOCK or LOCK ALL
Correction Speed	MEDIUM	Changes the way in which detected motion is split up into a wanted component and an unwanted shake
Spatial Correction	MEDIUM	Changes the maximum amplitude of unwanted motion that can be removed
Show Input Video	NO	Simultaneously displays the unsteady image (the "before" effect) in a PIP[3] window over the steady image (the "after" effect)
Lettering	-->	Enables the precise definition of a bounding box around a Top and Bottom Area containing screen lettering[4]
Configuration	-->	Saves the current settings in the non-volatile memory; resets the current settings to the default; displays firmware version details
Advanced	-->	Not to be changed unless explicitly advised by Kramer personnel

1 If the VA-2003 fails to find an active NTSC video signal, the following message will appear: "OK, switching to PAL". If the VA-2003 fails to find an active NTSC or PAL video signal, the following message will appear continuously: "Looking for a video signal …"

2 Firmware release 1.28K

3 (Picture-in-Picture inserter). The position of the PIP window is fixed and cannot be altered

4 Exclude from the shake estimation to provide steadier results

Table 4: Input Connector Menu Commands

Command:	Functionality:
s-Video	Selects the s-Video source
Composite	Selects the composite video source

Table 5: Rotation Correction Menu Commands

Command:	Functionality:
OFF	Estimates and steadies the vertical and horizontal motion of the image
ON	Estimates and steadies the rotation of the camera along the optical axis and zoom (using an advanced algorithm)
LOCK	Removes all measured rotation and zoom leaving the initial image "locked"[1]. The estimated pan is dampened but not completely reduced
LOCK ALL	Removes all motion[2] (disables Correction Speed)

Table 6: Correction Speed[3] Menu Commands

Command:	Functionality:
FAST	When encountering a high frequency shake
MEDIUM	Facilitate removal of lower shake frequencies[4]
SLOW	

Table 7: Spatial Correction Menu Commands

Command:	Functionality:
WIDE	When strong shaking occurs
MEDIUM	When medium amount of shaking occurs
NARROW	When only a small shake occurs

Table 8: Show Input Video Menu Commands

Command:	Functionality:
YES	Displays the PIP
NO	Hides the PIP

1 Lets you turn the camera upside down, and still see an upright output video

2 Pointing the camera to a direction that is too far away from the "locked" view, generates no output

3 Ineffective when Rotation Correction is set to LOCK ALL

4 For example, by the swaying of a camera post in windy conditions

Table 9: Lettering[1] Menu Commands

Command:	Level 2:	Level 3:	Level 4:
Top Exclusion Area -->	Active[2] YES	YES NO	
	Define Top Area [box]	Moving top left corner	(Pressing ENTER) moving bottom right corner
Bottom Exclusion Area -->	Active YES	YES NO	
	Define Bottom Area [box]	Moving top left corner	(Pressing ENTER) moving bottom right corner

Table 10: Configuration Menu Commands

Command:	Level 2:	Functionality:
Save	OK	Stores the current settings in the non-volatile memory, for retrieval next time the VA-2003 is switched on
	CANCEL	Returns to the Configuration menu
Reset	OK	Restores the default settings[3]
	CANCEL	Returns to the Configuration menu
Show Firmware Release	OK	Displays the release number and creation date
	CANCEL	Returns to the Configuration menu

1 You can define a bounding box around the top and bottom margins of the screen to exclude on-screen "lettering" from the stabilization process. This avoids generating unsteady text in the steadied output video

2 The selected lettering areas are not only excluded from motion estimation, but also put back unchanged on the output video

3 To store the default settings in the non-volatile memory, select <Reset> <Save>

7 Technical Specifications

Table 11 includes the technical specifications:

Table 11: Technical Specifications[1] of the VA-2003 Digital Motion Stabilizer

INPUTS:	1 CV, 1Vpp/75Ω and 1 YC, "Y"=1Vpp/75Ω, "C"=0.3Vpp/75Ω
OUTPUTS:	1 CV, 1Vpp/75Ω and 1 YC, "Y"=1Vpp/75Ω, "C"=0.3Vpp/75Ω
BANDWIDTH (-3dB):	YC: 4.7 MHz; CV: 3.2 MHz (PAL)
DIFF. GAIN:	2.0%
DIFF. PHASE:	1.7 deg.
K-FACTOR:	4.6%
S/N RATIO:	60dB
CROSSTALK:	<80dB
CONTROLS:	6 front panel buttons
COUPLING:	DC at Output
POWER SOURCE:	100-240 VAC, 50/60 Hz, 25VA max.
DIMENSIONS:	19-inch (W), 7-inch (D) 1U (H) rack-mountable
WEIGHT:	2.7 kg. (6 lbs.)
ACCESSORIES:	Power cord

1 Specifications are subject to change without notice

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.
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, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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