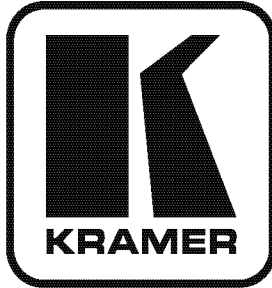


Kramer Electronics, Ltd.



USER MANUAL

Model:

VP-423

PC Video-Wall Scaler

Contents

1	Introduction	1
2	Getting Started	1
2.1	Quick Start	1
3	Overview	3
4	Your VP-423 PC Video-Wall Scaler	4
5	Connecting the VP-423 PC Video-Wall Scaler	5
6	Operating the VP-423 PC Video-Wall Scaler	6
6.1	Using the Front Panel Buttons	6
6.2	Using the OSD	7
6.2.1	Using the Front Panel Buttons	7
6.2.2	The MAIN MENU	8
6.2.3	The WALL ARRANGEMENT Submenu	8
6.3	The COLOR Submenu	10
6.4	The FINETUNE Submenu	10
7	Setting the Wall Arrangement	10
8	Technical Specifications	12

Figures

Figure 1:	VP-423 PC Video-Wall Scaler – Front and Rear View	4
Figure 2:	Connecting the VP-423 PC Video-Wall Scaler	6
Figure 3:	Setting the X and Y Position in a 4x4 Wall Arrangement Matrix	9
Figure 4:	Setting the Position of Each Display	11

Tables

Table 1:	VP-423 PC Video-Wall Scaler Features	4
Table 2:	The Main Menu Parameters and Functions	8
Table 3:	The WALL ARRANGEMENT Menu Parameters and Functions	8
Table 4:	Available Output Resolutions	9
Table 5:	The COLOR Menu – Available Adjustments	10
Table 6:	The FINETUNE Submenu	10
Table 7:	Technical Specifications of the VP-423 PC Video-Wall Scaler	12

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 groups¹ that are clearly defined by function.

Thank you for purchasing your Kramer MegaTOOLS® **VP-423 PC Video-Wall Scaler**. This product is ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Video wall scaling

The package includes the following items:

- **VP-423 PC Video-Wall Scaler**
- Power adapter (5V DC input)
- This user manual²

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 cables³

2.1 Quick Start

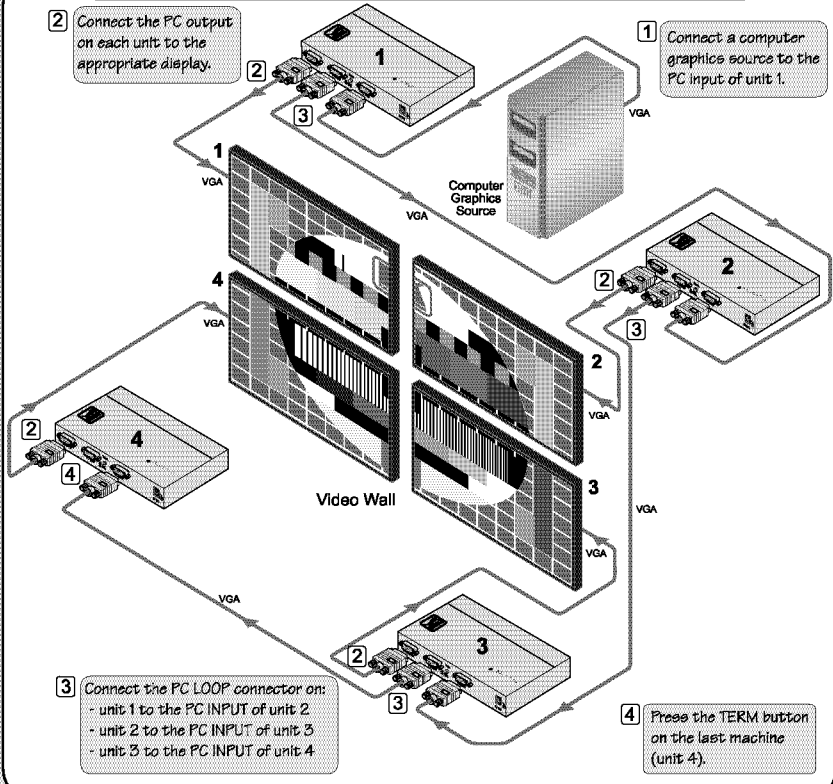
This quick start chart summarizes the basic setup and operation steps.

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 the Internet at this URL: <http://www.kramerelectronics.com>

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

Step 1: Connect the units - see section 5

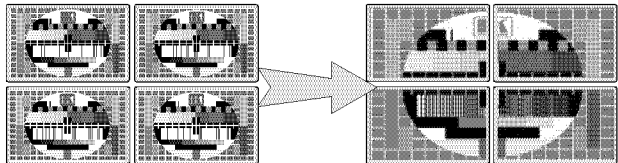


Step 2: Connect the power to each unit

Step 3: Set the parameters - see sections 5 and 6

- WALL ARRANGEMENT** - Sets the wall arrangement
- COLOR** - Adjusts - Adjusts the color of the display
- FINETUNE** - Finetunes the position of the display
- FACTORY RESET** - Resets the device to its factory default parameters
- INFORMATION** - Displays the source, input and output resolutions and the software version
- EXIT** - Select to exit the OSD

Set the Wall Arrangement



3 Overview

The Kramer **VP-423 PC Video-Wall Scaler** is a high-performance digital scaler for computer video graphics. It lets you display the output over multiple computer displays or television sets that are tiled together to form one very large display.

The **VP-423** supports the following output resolutions: 640x480 60Hz (VGA), 800x600 60Hz (SVGA), 1024x768 60Hz (XGA), 1280x768 60Hz, 1280x800 60Hz (WXGA), 1280x1024 60Hz (SXGA), 1440x900 60Hz (WXGA+), 1400x1050 60Hz (SXGA+), 1680x1050 60Hz (WSXGA), 1600x1200 60Hz (UXGA), 1920x1200 60Hz (WUXGA), 1280x720 60Hz, 1920x1080 60Hz, 1280x720 50Hz and 1920x1080 50Hz.

The **VP-423 PC Video-Wall Scaler** features:

- A PC loop for chaining the PC input to the next **VP-423** unit
- An On-Screen Display (OSD) for easy setup and adjustment, as well as definition of the location of the output on the video-wall, accessible via the front-panel buttons
- A built-in ProcAmp for convenient signal adjustment
- A non-volatile memory that retains the last settings used
- Quick auto-adjust (via the OSD)
- Operation directly via the front panel push buttons and the on-screen display (OSD)

The machine is fed from an external 5V DC source, making it suitable for field operation.

To achieve the best performance:

- Use only good quality connection cables¹ 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 **VP-423** away from moisture, excessive sunlight and dust



Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit².

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

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

² For example, part number 2535-052002

4 Your VP-423 PC Video-Wall Scaler

Figure 1 and Table 1 define the **VP-423 PC Video-Wall Scaler**:

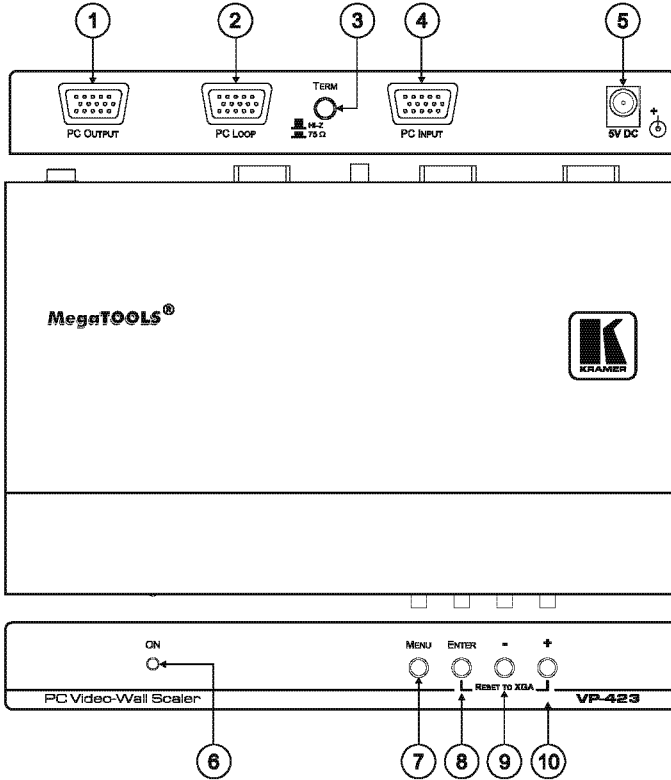


Figure 1: VP-423 PC Video-Wall Scaler – Front and Rear View

Table 1: VP-423 PC Video-Wall Scaler Features

#	Feature	Function
1	PC OUTPUT 15-pin HD connector	Connect to a wall display
2	PC LOOP 15-pin HD connector	Connect to the PC INPUT of the next VP-423 unit
3	TERM Button	Press to 75Ω TERM (when the PC LOOP connector is not used); release to Hi-Z (when an additional unit is connected to the PC LOOP connector)
4	PC INPUT 15-pin HD connector	Connect to a computer graphics source
5	5V DC	+5V DC connector for powering the unit
6	ON LED	Lights when the unit is powered on
7	MENU Button	Press to view the on-screen display (OSD) menu
8	ENTER Button	In the OSD, press to choose the highlighted menu item. Press together with the + button to reset to XGA
9	- Button	In the OSD, press to move backward through the list or to decrement the parameter value
10	+ Button	In the OSD, press to move forward through the list or to increment the parameter value. Press together with the ENTER button to reset to XGA

5 Connecting the VP-423 PC Video-Wall Scaler

The example in [Figure 2](#) shows a video wall composed of four screens arranged in a 2x2 matrix. Each screen is connected to a **VP-423** unit. The four **VP-423** units are looped and then set via the OSD of each unit (see [Section 7](#)).

To connect a **VP-423** 2x2 video wall¹, as illustrated in the example in [Figure 2](#), do the following:

1. On the first unit:
 - Connect a computer graphics source to the PC INPUT 15-pin HD connector on the first **VP-423** (unit 1)
 - Connect the PC OUTPUT 15-pin HD connector to a display
 - Release the TERM button to the Hi-Z position
 - Connect the PC LOOP 15-pin HD connector to the PC INPUT 15-pin HD connector of the next **VP-423** unit (unit 2)
2. On the second unit:
 - Connect the PC OUTPUT 15-pin HD connector to a display
 - Release the TERM button to the Hi-Z position
 - Connect the PC LOOP 15-pin HD connector to the PC INPUT 15-pin HD connector of the next **VP-423** unit (unit 3)
3. On the third unit:
 - Connect the PC OUTPUT 15-pin HD connector to a display
 - Release the TERM button to the Hi-Z position
 - Connect the PC LOOP 15-pin HD connector to the PC INPUT 15-pin HD connector of the next **VP-423** unit (unit 4)
4. On the fourth unit:
 - Connect the PC OUTPUT 15-pin HD connector to a display
 - Press the TERM button to the 75Ω position
5. On all the **VP-423** units, connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 2](#)).

¹ You can tile a video wall of up to 4x4 displays

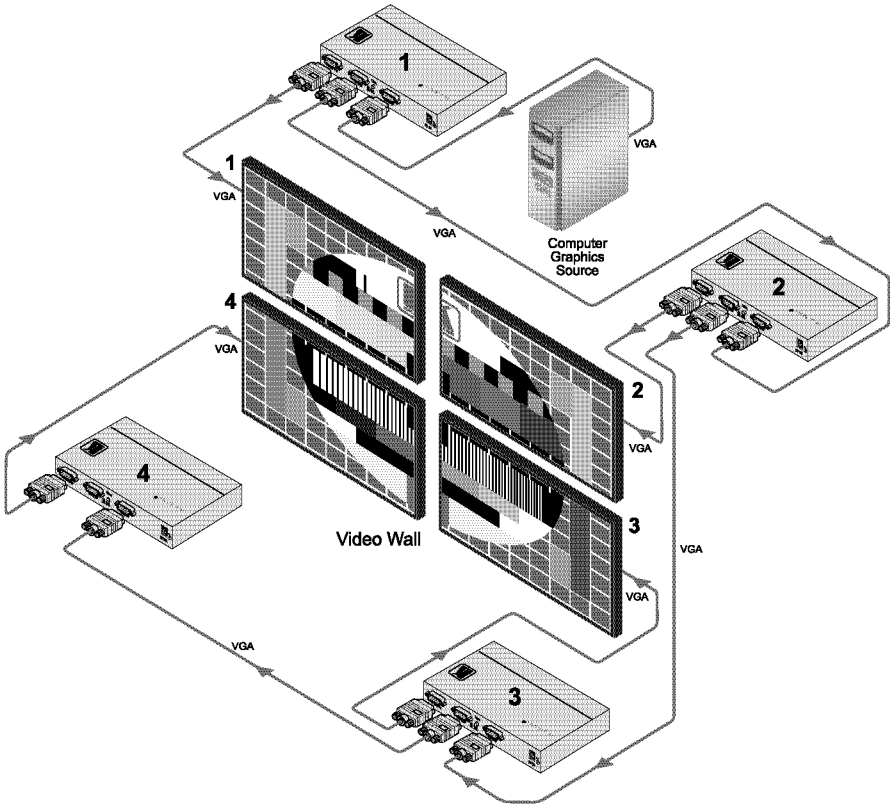


Figure 2: Connecting the VP-423 PC Video-Wall Scaler

6 Operating the VP-423 PC Video-Wall Scaler

The VP-423 is operated directly via the front panel buttons (see [Section 6.1](#)) and via the OSD menu (see [Section 6.2](#)).

6.1 Using the Front Panel Buttons

During normal operation (no OSD is shown), pressing the front panel:

- MENU button will open the on-screen display (OSD) main menu (see [Section 6.2](#)), the next press closes the OSD
- + and ENTER buttons together will reset the display to XGA

6.2 Using the OSD

You can use the OSD to set the wall arrangement as well as set a wide variety of parameters. When the MENU button is pressed, the main menu opens allowing access to all the device settings (see [Table 2](#)).

When setting WALL ARRANGEMENT, COLOR and FINETUNE, a submenu opens with the applicable parameters.

6.2.1 Using the Front Panel Buttons

When the OSD appears, the front panel buttons perform the following functions:

- Pressing + and – move forward and backward through the menu items, or increment and decrement the parameter values
- Pressing ENTER selects and activates a menu item or accepts the parameter value set
- Pressing MENU closes the OSD menu¹

As an example of how to set the parameters, such as to increase the contrast on the display:

1. From normal operation, press MENU.
The OSD main menu appears on the screen.
2. Press the + and/or – button to navigate until the COLOR submenu is highlighted
3. Press ENTER
4. Press the + or – button to highlight the CONTRAST Submenu.
5. Press ENTER.
6. Press the + button to increase the value (increase the contrast) or the – button to decrease the value (decrease the contrast).
The value ranges from 0 to 255.
7. Press ENTER to set the value.
8. To return to normal operation, highlight EXIT and press ENTER, press MENU, or wait until the menu times-out.

¹ The menu times out by default after 10 seconds

6.2.2 The MAIN MENU

Table 2 defines the main menu parameters and functions:

Table 2: The Main Menu Parameters and Functions

Parameter	Function
WALL ARRANGEMENT	Sets the wall arrangement
COLOR	Adjusts the color, brightness and contrast settings of the display
FINETUNE	Fine tunes the position of the display and the timing parameters
FACTORY RESET	Resets the device to its factory default parameters
INFORMATION	Displays the source, input and output resolutions and the software version
EXIT	Select to exit the OSD

6.2.3 The WALL ARRANGEMENT Submenu

The WALL ARRANGEMENT menu defines the wall arrangement setup, as defined in Table 3:

Table 3: The WALL ARRANGEMENT Menu Parameters and Functions

Parameter	Function	Range	Default
DISP. WIDTH	Set the number of screens comprising the width of the wall display	1 to 4	1
DISP. HEIGHT	Set the number of screens comprising the height of the wall display	1 to 4	1
DISP. POS X	Set the X position of the display in the matrix	1 to 4	1
DISP. POS Y	Set the Y position of the display in the matrix	1 to 4	1
LEFT FINETUNE	Move the picture on the screen to the left	0 to 255	0
RIGHT FINETUNE	Move the picture on the screen to the right	0 to 255	0
TOP FINETUNE	Move the picture on the screen up	0 to 255	0
BOTTOM FINETUNE	Move the picture on the screen down	0 to 255	0
OUTPUT	Sets the output resolution (see Table 4)		
EXIT	Select to exit the OSD		

The example in [Figure 3](#) illustrates the X and Y position of each display in a 4x4 wall arrangement matrix:

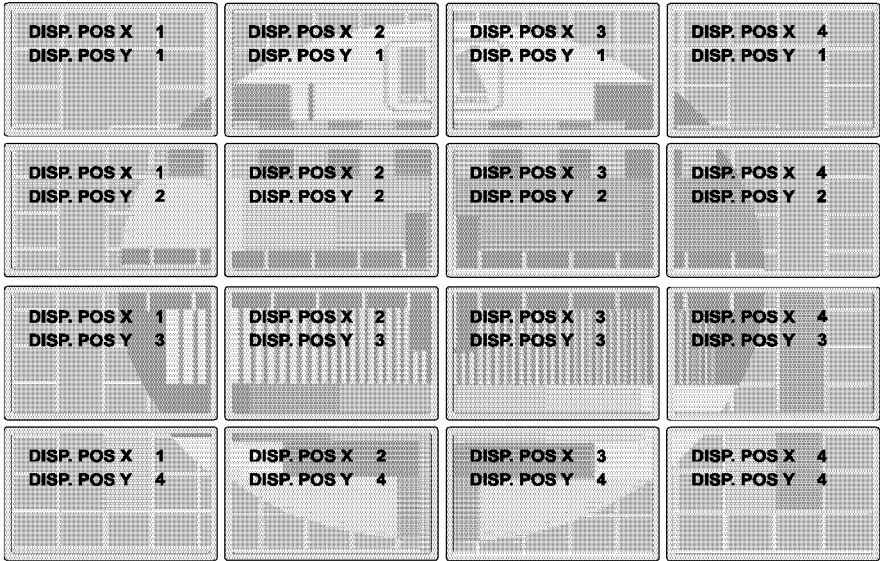


Figure 3: Setting the X and Y Position in a 4x4 Wall Arrangement Matrix

6.2.3.1 The OUTPUT Resolutions

You can choose the output resolution sent to the display via the OUTPUT item in the WALL ARRANGEMENT menu. Each press of the + or – button cycles through the list of resolutions. [Table 4](#) defines the available output resolutions and how they appear in the menu.

Table 4: Available Output Resolutions

Available Resolutions		
640x480 60 (VGA)	1280x1024 60 (SXGA)	1920x1200 60 (WUXGA)
800x600 60 (SVGA)	1440x900 60 (WXGA+)	1280x720 60
1024x768 60 (XGA)	1400x1050 60 (SXGA+)	1920x1080 60
1280x768 60	1680x1050 60 (WSXGA)	1280x720 50
1280x800 60 (WXGA)	1600x1200 60 (UXGA)	1920x1080 50

6.3 The COLOR Submenu

Table 5 defines the COLOR menu:

Table 5: The COLOR Menu – Available Adjustments

Parameter	Function	Range	Default
CONTRAST	Adjust the contrast	0 to 255	105
BRIGHTNESS	Adjust the brightness	0 to 192	96
R	Adjust the red component	0 to 255	128
G	Adjust the green component	0 to 255	128
B	Adjust the blue component	0 to 255	128
AUTOCOLOR	Set the color automatically		
EXIT	Exit this menu		

6.4 The FINETUNE Submenu

Table 6 defines the FINETUNE menu:

Table 6: The FINETUNE Submenu

Parameter	Function	Range	Default
H-POSITION	Set the horizontal position of the display	0 to 254	127
V-POSITION	Set the vertical position of the display	0 to 254	127
CLOCK ¹	Adjust the clock frequency	0 to 254	127
PHASE ¹	Adjust the clock phase	0 to 63	0
AUTO ADJUST	Automatically adjusts the above parameters		
EXIT	Exit this menu		

7 Setting the Wall Arrangement

To set the wall arrangement, do the following:

1. Set the input resolution from the PC to the highest possible resolution.
2. Press the MENU front panel button to activate the OSD, and select the WALL ARRANGEMENT submenu.
3. Select OUTPUT and select the display's native resolution (for example, 1920x1200).
Be sure to set the resolution on all the scalers to the same value.
4. Set each scaler to input a full screen picture:
 - Press the MENU button
 - Select WALL ARRANGEMENT
 - Select DISPLAY WIDTH and set to 1
 - Press the ENTER button
 - Select DISPLAY HEIGHT and set to 1

¹ We recommend adjustment via the auto adjust function rather than manually adjusting the clock and phase

5. For each screen, adjust the image on the display to appear fully on the screen:
 - Use the AUTO ADJUST function in the FINETUNE menu
 - Open the FINETUNE and adjust the following parameters: H-POSITION, V-POSITION, CLOCK and PHASE¹
6. Set the number of screens on the wall (for example, 2x2):
 - Press the MENU front panel button and enter the WALL ARRANGEMENT submenu
 - Set the DISP. WIDTH to 2 and press ENTER
 - Set the DISP HEIGHT to 2 and press ENTER
7. Set the position of each display² on the TV wall via the DISP. POS X and the DISP. POS Y sub-menus for each screen, as defined in [Figure 4](#).

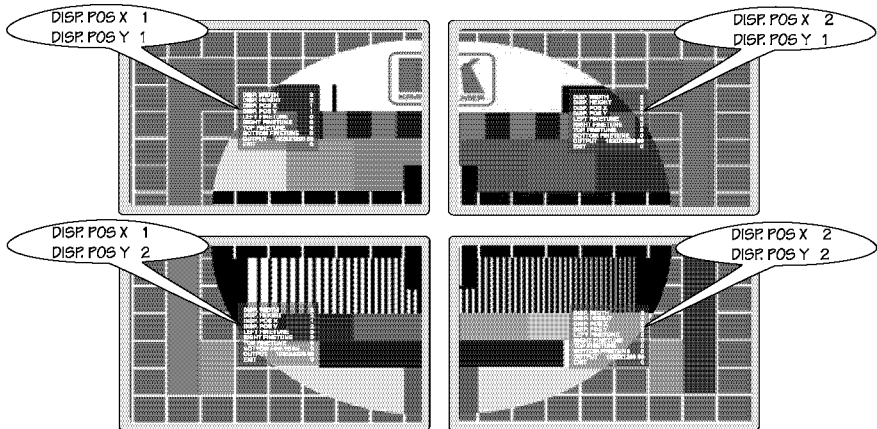


Figure 4: Setting the Position of Each Display

8. Adjust the color of the displays so that they all match:
 - Press the MENU front panel button and Enter the COLOR submenu
 - In the COLOR submenu select AUTOCOLOR
 - If required, adjust the CONTRAST, BRIGHTNESS, R, G and B values on each display manually

¹ We recommend adjustment via the auto adjust function rather than manually adjusting the clock and phase

² The top display on the far left is defined by position X = 1 and position Y = 1 (see [Figure 3](#))

9. Adjust the quality of the display on each screen.
It is recommended to set and adjust the wall arrangement, with a circular image showing on the screens:
 - Press the MENU front panel button and Enter the WALL ARRANGEMENT submenu
 - In the WALL ARRANGEMENT submenu set the following parameters: RIGHT FINETUNE, LEFT FINETUNE, TOP FINETUNE AND BOTTOM FINETUNE to move the picture on each screen to fit the adjacent screen

Note: after any change to the input or output resolution, perform the setup procedure once again

8 Technical Specifications

Table 7 lists the technical specifications:

Table 7: Technical Specifications¹ of the VP-423 PC Video-Wall Scaler

INPUT:	1 PC, looping on a 15-pin HD connector with termination switch
OUTPUT:	1 PC on a 15-pin HD connector, loop output (passive)
OUTPUT RESOLUTIONS:	VGA, SVGA, XGA, 1280x800, SXGA, WXGA, SXGA+, WXGA+, WSXGA, WUXGA, 720p(RGBHV format), 1080p(RGBHV format)
OUTPUT REFRESH RATE:	60Hz
PROCESSING DELAY:	20ms
CONTROLS:	Front panel buttons, ON LED
POWER SOURCE:	5V DC, 800mA
DIMENSIONS:	18.8cm x 11.4cm x 2.45cm (7.4" x 4.5" x 0.98") W, D, H
WEIGHT:	0.66kg (1.45lbs) approx.
ACCESSORIES:	Power supply
OPTIONS	19" rack adapter

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 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.
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 installation 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)



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.



Caution

Safety Warning:

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



Kramer Electronics, Ltd.

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E-mail: info@kramereel.com

P/N: 2900-000568 REV 1