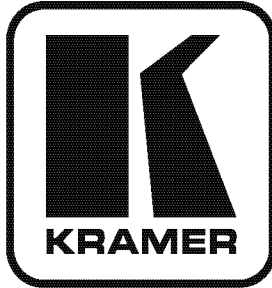


Kramer Electronics, Ltd.



USER MANUAL

Models:

VP-420, *PC/HD Scaler*

VP-421, *PC/HD Scaler*

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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 groups¹ that are clearly defined by function.

Thank you for purchasing your Kramer **VP-420** or **VP-421** *PC/HD Scaler*. These products are ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Home theater up-scaling

The package includes the following items:

- **VP-420** or **VP-421** *PC/HD 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

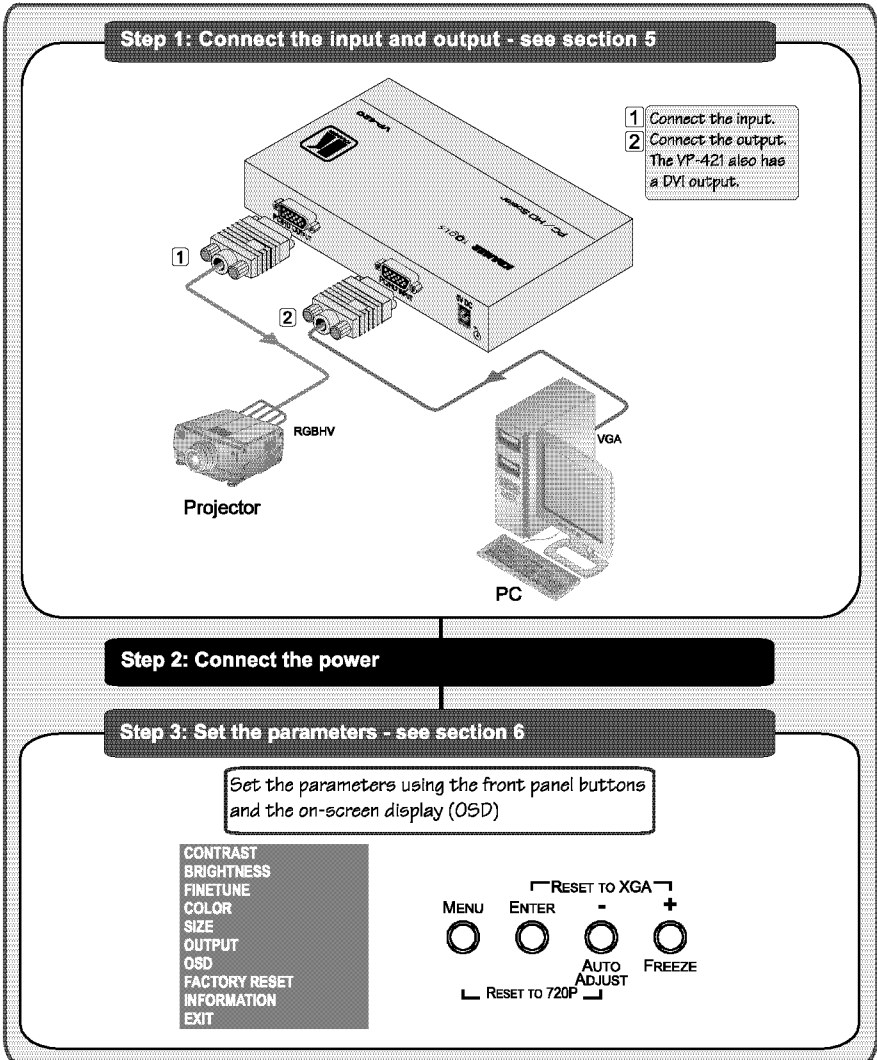
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

2 Download up-to-date Kramer user manuals from the Internet at <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 Kramer **VP-420/VP-421** *PC/HD Scaler* is a high-performance digital scaler for computer graphics and HDTV signals. It up- or down-scales computer graphics and HDTV signals to resolutions up to WUXGA and 1080p. The following output resolutions are supported:

PC: VGA, SVGA, XGA, 1280x800, SXGA, UXGA, WXGA, SXGA+, WXGA+, WSXGA, WUXGA, **COMPONENT:** 480p, 576p, 720p @50/60Hz, 1080i @50/60Hz, 1080p @50/60Hz.

The **VP-420/VP-421** *PC/HD Scaler* also features:


- An On-Screen Display (OSD) for easy setup and adjustment, 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
- Freeze button
- RGBHV or component video input and/or output

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

Operate your **VP-420/VP-421** directly via the front panel push buttons and the on-screen display (OSD).

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-420/VP-421** 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 the unit
	Warning: Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

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

4 Your PC/HD Scaler

For a description of the:

- **VP-420 PC/HD Scaler**, see section [4.1](#)
- **VP-421 PC/HD Scaler**, see section [4.2](#)

4.1 Your VP-420 PC/HD Scaler

Figure 1 and Table 1 define the **VP-420 PC/HD Scaler**:

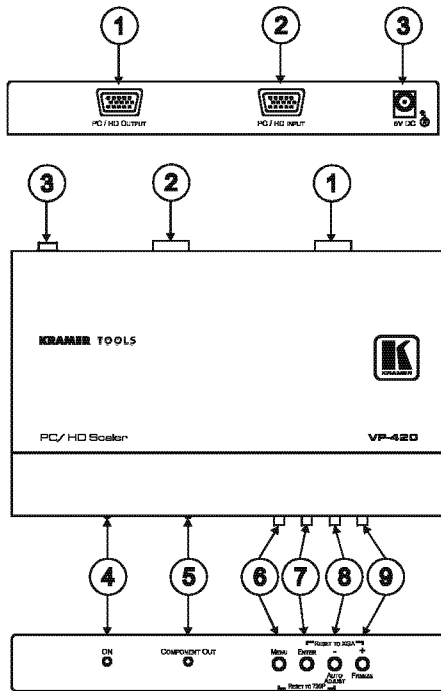


Figure 1: VP-420 PC/HD Scaler – Front and Rear View

Table 1: VP-420 PC/HD Scaler Front Panel Features

#	Feature	Function
1	PC/HD OUTPUT 15-pin HD connector	Connects to computer graphics or HDTV acceptor connector
2	PC/HD INPUT 15-pin HD connector	Connects to computer graphics or HDTV source
3	5V DC	+5V DC connector for powering the unit
4	ON LED	Lights when the unit is powered on
5	COMPONENT OUT LED	Lights when component video is output
6	MENU button	Press to enter/escape the on-screen display (OSD) menu. Press together with the – button to reset to 720p
7	ENTER button	In OSD, press to choose the highlighted menu item. Press together with the + button to reset to XGA
8	–/AUTO ADJUST button	In OSD, press to move backward through the list or to decrement the parameter value. When not in OSD, press to automatically adjust the picture to fit the display
9	+ /FREEZE button	In OSD, press to move forward through the list or to increment the parameter value. When not in OSD, press to freeze the display

4.2 Your VP-421 PC/HD Scaler

Figure 2 and Table 2 define the VP-421 PC/HD Scaler:

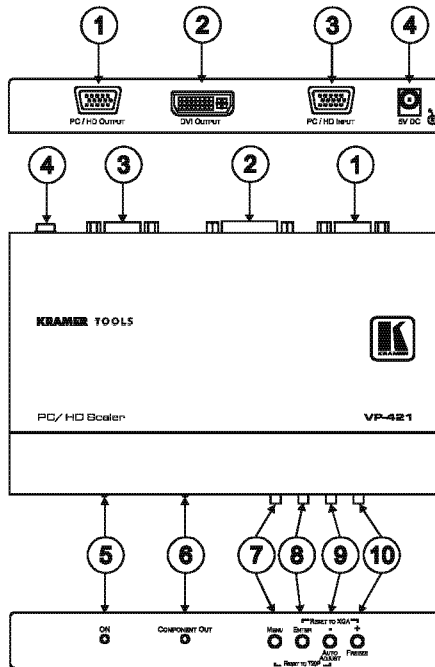


Figure 2: VP-421 PC/HD Scaler – Front and Rear View

Table 2: VP-421 PC/HD Scaler Front Panel Features

#	Feature	Function
1	PC/HD OUTPUT 15-pin HD connector	Connects to computer graphics or HDTV acceptor
2	DVI OUTPUT DVI connector	Connects to DVI acceptor
3	PC/HD INPUT 15-pin HD connector	Connects to computer graphics or HDTV source
4	5V DC	+5V DC connector for powering the unit
5	ON LED	Lights when the unit is powered on
6	COMPONENT OUT LED	Lights when component video is output
7	MENU button	Press to view the on-screen display (OSD) menu. Press together with the – button to reset the display to 720p resolution
8	ENTER button	In OSD, press to choose the highlighted menu item. Press together with the + button to reset to XGA
9	–/AUTO ADJUST button	In OSD, press to move backward through the list or to decrement the parameter value. When not in OSD, press to automatically adjust the picture to fit the display
10	+FREEZE button	In OSD, press to move forward through the list or to increment the parameter value. When not in OSD, press to freeze the display

5 Connecting the VP-420/VP-421 PC/HD Scaler

To connect your **VP-420/VP-421**, as illustrated in the example in [Figure 3](#) do the following:

1. Connect a computer graphics or HDTV source to the PC/HD INPUT 15-pin HD connector.
2. Connect to the PC/HD OUTPUT 15-pin HD connector to a computer graphics or HDTV acceptor as follows:
 - When connecting to an XGA acceptor (RGBHV), then connect to the acceptor’s XGA connector
 - When connecting to a component acceptor (YPbPr), then connect as shown in [Table 3](#)

Table 3: 15-pin HD PINOUT for HD

PIN #	Signal
1	Pr
2	Y
3	Pb
6, 7, 8	Ground

3. If connecting a **VP-421**, connect the DVI OUTPUT to a DVI acceptor¹.
4. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 3](#)).

¹ The VP-421 outputs on both the 15-pin HD connector and the DVI connector. You can connect to either output or to both of them simultaneously

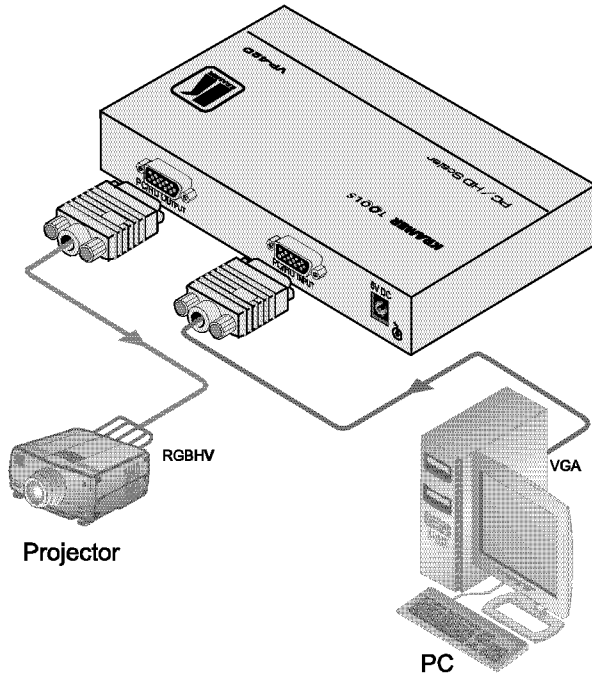


Figure 3: Connecting the VP-420 PC/HD Scaler

6 Operating the VP-420/VP-421

The VP-420/VP-421 is operated directly via the front panel buttons, and via the OSD menu (see section [6.2](#)).

6.1 Using the Front Panel Buttons

During normal operation (without the OSD), the front panel buttons perform the following functions:

- Pressing MENU opens the on-screen display (OSD) main menu (see section [6.2](#)), the next press closes the OSD
- Pressing + / FREEZE freezes the display, the next press unfreezes the display
- Pressing - / AUTO ADJUST automatically centers the display
- Pressing MENU and - / AUTO ADJUST together resets the display to 720p and the COMPONENT OUT LED lights
- Pressing + / FREEZE and ENTER together resets the display to XGA and the COMPONENT OUT LED turns off

6.2 Using the OSD

You can use the OSD to 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 4](#)).

When setting FINETUNE, COLOR, SIZE, OUTPUT (see [Table 5](#)), and OSD (see [Table 6](#)) a submenu opens with the applicable parameters.

6.2.1 Using the Front Panel Buttons

While the OSD is open, the front panel buttons perform the following functions:

- Pressing + and – move forward and backward through the menu items and increment or 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 setting parameters, to increase the contrast on the display:

1. From normal operation, press MENU.
The OSD main menu appears on the screen.
2. Press the + or – button to highlight CONTRAST.
CONTRAST changes to green when highlighted.
3. Press ENTER.
The contrast value parameter changes to red.
4. 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 100.
5. Press ENTER to set the value.
The contrast value parameter changes back to white.
6. 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. To change the OSD display time, adjust the OSD/TIMER parameter

6.2.2 The MAIN MENU

Table 4 defines the MAIN MENU parameters and functions.

Table 4: The MAIN MENU Parameters and Functions

Parameter	Function
CONTRAST	Adjusts the contrast
BRIGHTNESS	Adjusts the brightness
FINETUNE	Adjusts the other ProcAmp parameters, for example, hue, sharpness, noise reduction, and so on
COLOR	Adjusts the color of the display – RED, GREEN, BLUE
SIZE	Select the size of the display: LETTER BOX, PANSCAN, FULL, OVERSCAN, and two underscan settings: UNDER 1 and UNDER 2
OUTPUT	Sets the output resolution (see Table 5)
OSD	Adjusts parameters of the on-screen display (see Table 6)
FACTORY RESET	Resets the device to its factory default parameters and automatically senses the input and output devices
INFORMATION	Displays the source, input and output resolutions and the software version
EXIT	Select to exit the OSD

6.2.3 The “OUTPUT” Submenu

The “OUTPUT” submenu allows you to choose the output resolution sent to the display. Each press of the + or – button cycles through the list of resolutions.

Table 5 defines the resolutions available on the “OUTPUT” submenu and how they appear on the display.

Table 5: The “OUTPUT” Submenu – Available Resolutions

Parameter	Appears As	Parameter	Appears As
VGA	640x480	WUXGA	1920x1200
SVGA	800x600	480P	480p
XGA	1024x768	576P	576p
1280x800	1280x800	720P50	720p @50Hz
SXGA	1280x1024	720P60	720p @60Hz
UXGA	1600x1200	1080P50	1080p @50Hz
WXGA	1366x768	1080P60	1080p @60Hz
SXGA+	1400x1050	1080p (RGBHV) ¹	1920x1080
WXGA+	1440x900	1080i50	1080i @50Hz
WSXGA	1680x1050	1080i60	1080i @60Hz

¹ 1080p (RGBHV) appears in the Menu as 1080PRGB

6.2.4 The “OSD” Submenu

The “OSD” submenu allows you to adjust the location of the OSD, the length of time it is displayed, and the darkness of its background (see [Table 6](#)).

Table 6: The “OSD” Submenu – Available Adjustments

Parameter	Function	Range	Default
H-POSITION	Adjusts the horizontal position of the OSD on the screen	0–100	50
V-POSITION	Adjusts the vertical position of the OSD on the screen	0–100	50
TIMER	Adjusts the length of time in seconds the OSD appears on the screen	0–100	10
BACKGROUND	Adjusts the shade of the OSD background from black to transparent	0–8	4
EXIT	Select to exit to the Main Menu		

7 Technical Specifications

Table 7: Technical Specifications¹ of the VP-420/VP-421 PC/HD Scaler

INPUTS:	1 PC/HD on a 15-pin HD connector, RGBHV/YpPr
OUTPUT:	1 PC/HD on a 15-pin HD connector, RGBHV/YpPr 1 DVI on a DVI connector (<i>VP-421 only</i>)
OUTPUT RESOLUTIONS ² :	PC: VGA, SVGA, XGA, 1280x800, SXGA, UXGA, WXGA, SXGA+, WXGA+, WSXGA, WUXGA, COMPONENT: 480p, 576p, 720p @50/60Hz, 1080i @50/60Hz, 1080p @50/60Hz
OUTPUT REFRESH RATE:	60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions
PROCESSING DELAY:	3 frames
CONTROLS:	Front panel buttons, ON and COMPONENT OUTPUT LEDs
POWER SOURCE:	VP-420: 5V DC, 800mA; VP-421: 5V DC, 1A
DIMENSIONS:	19cm x 13.5cm x 2.5cm (7.5" x 5.3" 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

² All resolutions are outputted @ 60Hz, except where noted

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, 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.

Web site: www.kramerelectronics.com

E-mail: info@kramereel.com

P/N: 2900-000506 REV 4