Kramer Electronics, Ltd.

USER MANUAL

Model:

VP-435

Component / UXGA HDMI 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 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer **VP-435** *Component / UXGA HDMI Scaler*. This product, which incorporates HDMI™ technology, is ideal for:

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

The package includes the following items:

- **VP-435** *Component / UXGA HDMI Scaler*
- Power adapter (12V DC)
- Infrared remote control transmitter
- This user manual[2]

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[3]

2.1 Quick Start

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

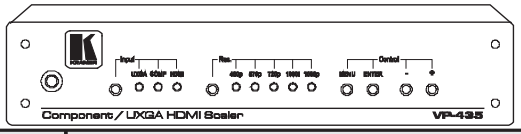
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

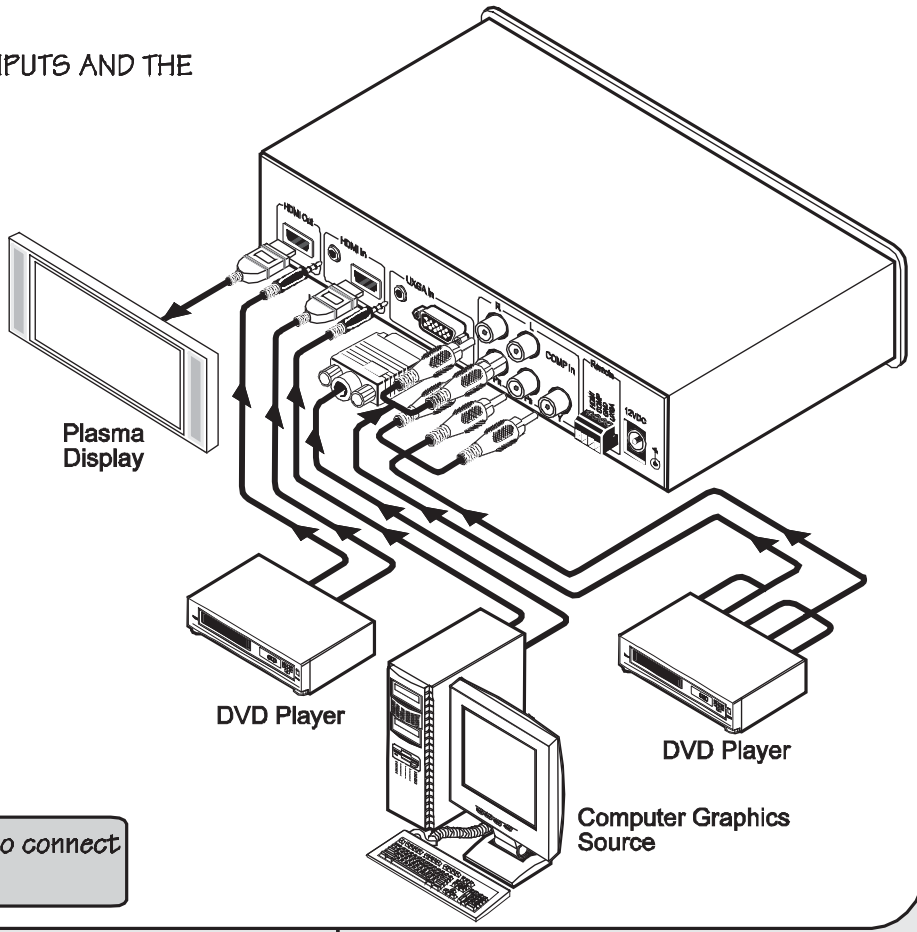
Step 1: Mount the machine

Mount the machine in a rack or stick the 4 rubber feet to the underside



Step 2: Connect the input and outputs - see section 5

CONNECT THE INPUTS AND THE OUTPUT

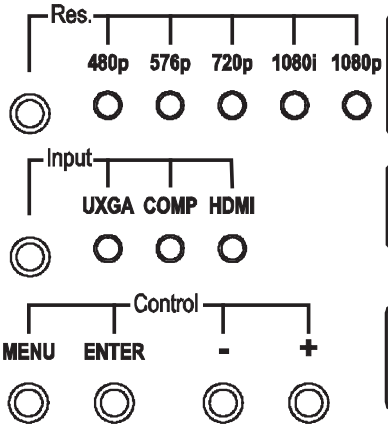


You do not have to connect all the inputs

Step 3: Turn the power ON

Step 4: Control the machine - see section 6

VIA THE FRONT PANEL BUTTONS



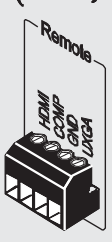
Select the output resolution

Select the INPUT

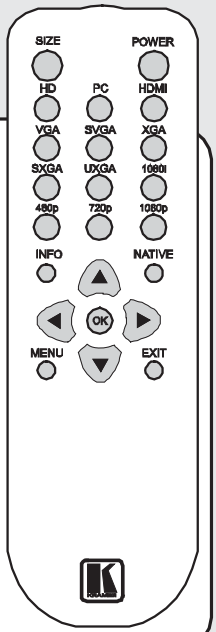
CONTROL via the OSD menu

VIA THE REMOTE PINS

By momentarily connecting the appropriate input number PIN (HDMI, COMP or UXGA) to the GND (Ground)



VIA THE IR REMOTE CONTROL TRANSMITTER



3 Overview

The Kramer **VP-435** is a high quality component video/UXGA to HDMI scaler. It accepts one of three inputs: either component video[1] on RCA connectors, computer graphics on a 15-pin HD connector, or an HDMI signal (selected via a front panel selector button or via the Remote contact closure switch). It scales the video, embeds the audio, and outputs the signal to the HDMI output.

The **VP-435** *Component / UXGA HDMI Scaler*:

- Is HDTV compatible and the resolution can be scaled up to 480p, 576p, 720p, 1080i or 1080p via a front panel selector button[2]
- Has analog audio inputs for the COMP, UXGA and HDMI inputs
- Automatically detects and selects the audio source for the HDMI input. Default selection is HDMI – if this is not present, then the machine uses the audio from the analog input
- Comes with an On-Screen Display (OSD) for easy setup and adjustment, accessible via the IR remote control and via the front-panel buttons
- Has a non-volatile memory that retains the last settings used
- Is housed in a desktop sized enclosure and is 12V DC fed

Control your **VP-435**:

- Directly, via the front panel push buttons
- Remotely, from the infrared remote control transmitter
- Remotely, from the REMOTE contact closure switch

1 Also known as Y, Pb, Pr, Y, Cb, Cr and YUV; compatible with both SD and HD component

2 Other resolutions can be selected via the OSD menu. These include: 1080i, 1080p, 576i, 576p, 720p, 1080i, 1080p, WXGA, WSXGA, WUXGA, 1280x800, WXGA+, SXGA+, NATIVE, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the maximum high-definition image and sound quality in use today. Note that Kramer Electronics Limited is an HDMI Adopter and an HDCP Licensee.

In particular, HDMI[2]:

- Provides a simple[3] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[4] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[5] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[6], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play
- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p/60), standard definition formats such as NTSC or PAL, as well as 480p and 576p.

1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

3 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

4 HDMI technology has been designed to use standard copper cable construction at up to 15m

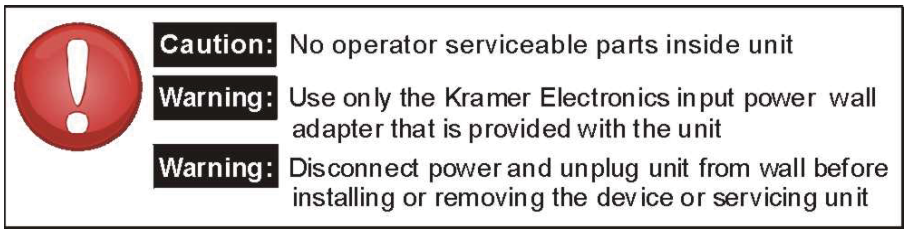
5 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

6 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

3.2 Recommendations for Best Performance

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 **VP-435** away from moisture, excessive sunlight and dust



4 Your VP-435 Component / UXGA HDMI Scaler

Figure 1, Table 1 and Table 2 define the **VP-435** *Component / UXGA HDMI Scaler*:

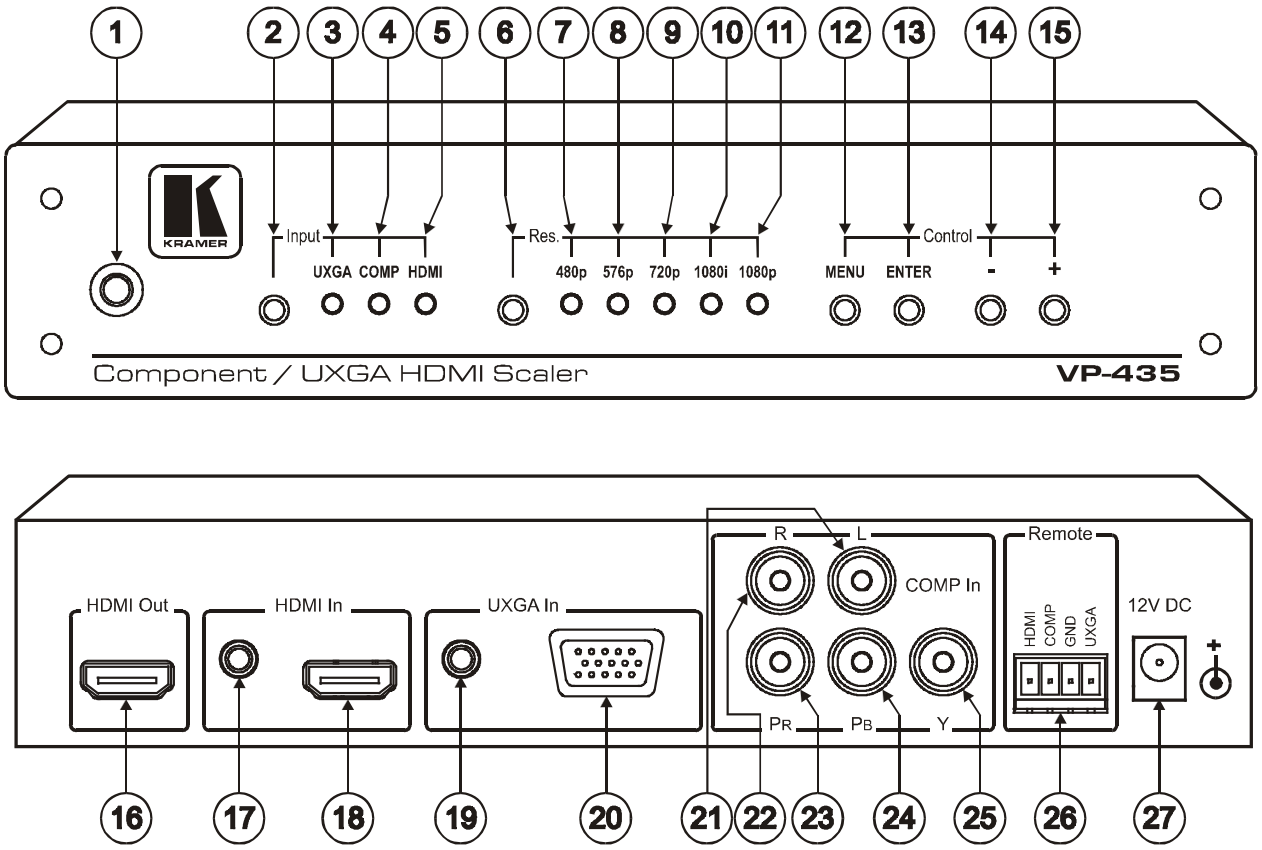


Figure 1: VP-435 Component / UXGA HDMI Scaler – Front and Rear View

Table 1: VP-435 Component / UXGA HDMI Scaler Front Panel Features

#	Feature		Function
1	*IR* Receiver		Receives signals from the remote control transmitter
2	*Input*	Selector Button	Press to select the UXGA input, the COMP input, or the HDMI input
3		*UXGA* Indicator LED	Lights when the UXGA input is selected
4		*COMP* Indicator LED	Lights when the COMP input is selected
5		*HDMI* Indicator LED	Lights when the HDMI input is selected
6	*Res.*	Selector Button	Press to select the resolution: 480p, 576p, 720p, 1080i or 1080p
7		*480p* Indicator LED	Lights when the 480p resolution is selected
8		*576p* Indicator LED	Lights when the 576p resolution is selected
9		*720p* Indicator LED	Lights when the 720p resolution is selected
10		*1080i* Indicator LED	Lights when the 1080i resolution is selected
11		*1080p* Indicator LED	Lights when the 1080p resolution is selected
12	*Control*	*MENU* Button	Displays the OSD menu (see Section 6.2)
13		*ENTER* Button	Press to accept changes and change the SETUP parameters[1]
14		- Button	Press to move down the menu list[1]
15		+ Button	Press to move up the menu list values[1]

Table 2: VP-435 Component / UXGA HDMI Scaler Rear Panel Features

#	Feature		Function
16	*HDMI Out* Connector		Connects to the HDMI acceptor
17	*HDMI In*	3.5mm Mini Jack Connector	Connects to the analog unbalanced stereo audio signal[2]
18		HDMI Connector	Connects to the HDMI source
19	*UXGA In*	3.5mm Mini Jack Connector	Connects to the analog unbalanced stereo audio signal source
20		UXGA 15-pin HD Connector	Connects to the UXGA source
21	*COMP In*	*L* RCA Connector	Connect to the left and right analog unbalanced stereo audio source (of the COMP source)
22		*R* RCA Connector	
23		*PR* RCA Connector	Connects to the component video source[3]
24		*PB* RCA Connector	
25		*Y* RCA Connector	
26	*Remote* Terminal Block		Connects to a contact closure switch (see Section 5.1)
27	*12 VDC*		+12V DC connector for powering the unit

1 See Section 6.2.2

2 The audio source is automatically detected and selected. The default selection is the audio signal embedded in the HDMI signal. If this is not present, then the machine uses the audio from the analog input

3 For component video, connect all three connectors: Y, Cb, Cr (also known as YUV)

5 Connecting the VP-435 Component / UXGA HDMI Scaler

To connect[1] your **VP-435**, as illustrated in the example in Figure 2, do the following:

1. Connect a component video source (for example, a DVD player) to the COMP In Y, Pb, Pr, RCA connectors, and to the COMP In L and R audio RCA connectors.
2. Connect a computer graphics source to the UXGA In 15-pin HD connector, and to the UXGA In audio 3.5mm mini jack connector.
3. Connect an HDMI source (for example, a DVD player) to the HDMI In connector[2], and to the HDMI In analog audio 3.5mm mini jack connector.
4. Connect the HDMI Out connector to an HDMI acceptor (for example, a plasma display).
5. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 2).

1 You do not have to connect all the inputs, connect only those that are required

2 Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the VP-435 via a DVI-HDMI adapter

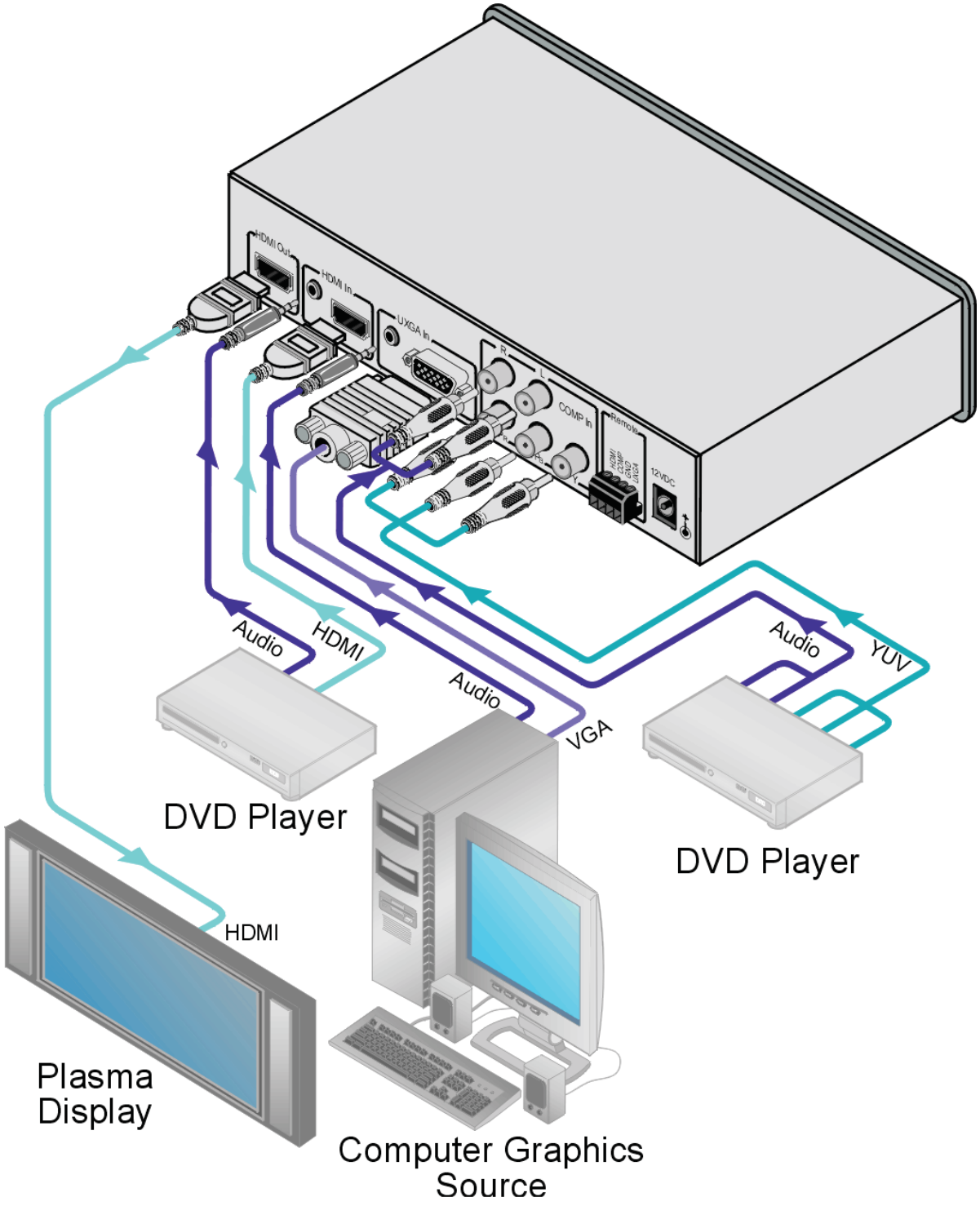


Figure 2: Connecting the VP-435 Component / UXGA HDMI Scaler

5.1 Controlling the VP-435 via the Remote Terminal Block Connector

The contact closure remote control pins operate in a similar way to the Input selector button. Using the contact closure remote control (also known as push-to-make momentary contact) you can select the HDMI, the COMP or the UXGA input. To do so, momentarily connect the required input[1] pin on the REMOTE terminal block connector to the GND (Ground) pin, as Figure 3 illustrates.

DO NOT Connect more than one PIN to the GND PIN at the same time

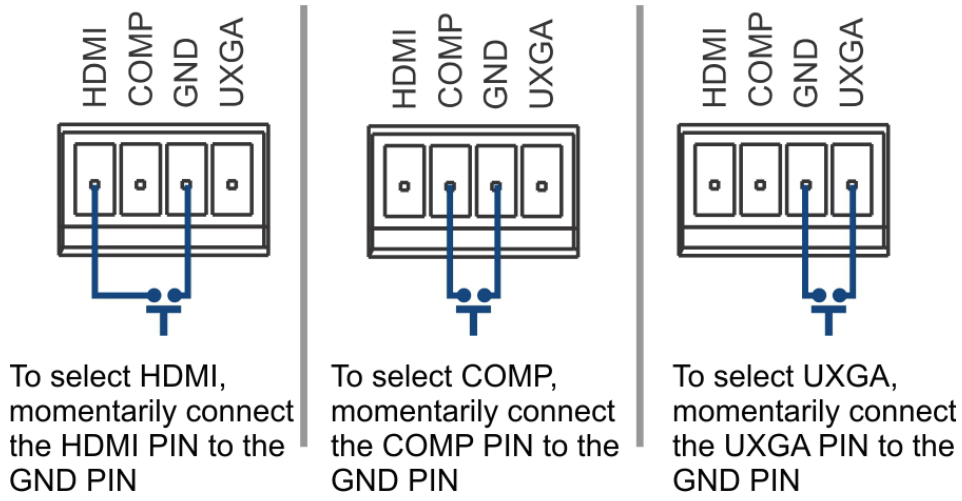


Figure 3: Connecting the Contact Closure Remote Control PINs

1 HDMI, COMP or UXGA

6 Controlling the VP-435

The **VP-435** can be controlled directly via the front panel buttons (see Section 6.1), via the OSD menu (see Section 6.2), and/or remotely from the infrared remote control transmitter (see Section 6.3).

6.1 Controlling via the Front Panel Buttons

The **VP-435** includes the following front panel buttons:

- An Input selector button for selecting the required input (UXGA, COMP. or HDMI)
- A resolution (Res.) button for selecting the desired resolution
- Control buttons, including the MENU, ENTER, + and – buttons

6.2 Using the CONTROL Buttons

The CONTROL buttons let you control the **VP-435** via the OSD menu. Press the:

- MENU button to enter the menu[1]
- ENTER button to accept changes and to change the menu settings (a selected value parameter appears red and when set, changes back to white)
- + and – buttons to move through the OSD menu, which is displayed on the video output

On the OSD menu, select EXIT to exit the menu.

1 The default timeout is set to 10 seconds

6.2.1 The MAIN MENU

Table 3 defines the MAIN MENU features and functions.

Table 3: The MAIN MENU Features

<table>
<tr><th>Mode</th><th colspan="4">Function</th></tr>
<tr><td>CONTRAST</td><td colspan="4">Set the contrast (0 to 100)</td></tr>
<tr><td>BRIGHTNESS</td><td colspan="4">Set the brightness (0 to 100)</td></tr>
<tr><td>FINETUNE</td><td colspan="4">Set the hue, saturation and sharpness (0 to 100)</td></tr>
<tr><td>COLOR</td><td colspan="4">Set the red, green and blue shades (0 to 100)</td></tr>
<tr><td>SIZE</td><td colspan="4">Select the size of the display: full, overscan, underscan, letter box, panscan, follow in</td></tr>
<tr><td>SOURCE</td><td colspan="4">Select the source: PC (VGA), component video (YPBPR) or HDMI</td></tr>
<tr><td rowspan="14">OUTPUT</td><td colspan="4">Select the output resolution from the menu:</td></tr>
<tr><td>Appears as:</td><td>Output resolution:</td><td>Appears as:</td><td>Output resolution:</td></tr>
<tr><td>1080I60</td><td>1080i @60Hz</td><td>WXGA+</td><td>1440x900</td></tr>
<tr><td>1080P60</td><td>1080p @60Hz</td><td>SXGA+</td><td>1400x1050</td></tr>
<tr><td>576I</td><td>576i</td><td>NATIVE[1]</td><td></td></tr>
<tr><td>576P</td><td>576p</td><td>VGA</td><td>640x480</td></tr>
<tr><td>720P50</td><td>720p @50Hz</td><td>SVGA</td><td>800x600</td></tr>
<tr><td>1080I50</td><td>1080i @50Hz</td><td>XGA</td><td>1024x768</td></tr>
<tr><td>1080P50</td><td>1080p @50Hz</td><td>SXGA</td><td>1280x1024</td></tr>
<tr><td>WXGA</td><td>1366x768</td><td>UXGA</td><td>1600x1200</td></tr>
<tr><td>WSXGA</td><td>1680x1050</td><td>480I</td><td>480i</td></tr>
<tr><td>WUXGA</td><td>1920x1200</td><td>480P</td><td>480p</td></tr>
<tr><td>1280x800</td><td>1280x800</td><td>720P60</td><td>720p @50Hz</td></tr>
<tr><td>OSD</td><td colspan="4">Set the OSD parameters: H POSITION, V POSITION, TIMER, BACKGROUND DISPLAY (see Section 6.2.3)</td></tr>
<tr><td>FACTORY RESET</td><td colspan="4">Resets to the default parameters (resolution is set to VGA[2])</td></tr>
<tr><td>INFORMATION</td><td colspan="4">Displays the source, the input resolution, the output resolution and the software version</td></tr>
<tr><td>AUTO SYNC</td><td colspan="4">Turn the auto sync ON/OFF. When ON, a short period after not detecting a valid video signal on the selected input, the unit will disable the H and V syncs on the analog outputs until a valid input is again detected or any keypad is pressed</td></tr>
<tr><td>AUTO INPUT SCAN</td><td colspan="4">Select automatic input scan (default OFF)
When ON, after power up, the VP-435 switches to the last selected input. If there is no signal present at this input, the VP-435 scans through the inputs (cycling through HDMI>UXGA>COMP) the LED of the detected input flashes. When selecting an input via the front panel or Remote IR transmitter, the VP-435 switches to that input. If a signal is not detected within 30 seconds, the VP-435 starts scanning through the inputs until it finds a valid input</td></tr>
<tr><td>EXIT</td><td colspan="4">Select to exit the menu</td></tr>
</table>

1 Select “NATIVE” to select the output resolution from the EDID of the connected HDMI monitor

2 If you cannot see the display after factory reset, use the front panel Res. button to set the correct resolution

6.2.2 The FINETUNE Menu

Input Signal	Parameter	Function
COMPONENT	HUE	Set the color hue
	SATURATION	Set the color saturation
	SHARPNESS	Set the sharpness of the picture
	NOISE REDUCTION	Select the noise reduction level: OFF, HI, LOW and MID (middle)
	COLOR FILTER	Set to ON to enable color filtering
VGA	PHASE	Set the clock phase
	CLOCK	Set the clock frequency
	H-POSITION	Set the horizontal position of the picture
	V-POSITION	Set the vertical position of the picture
	AUTO TUNE	When set to ON, auto adjusts the image (centers it correctly on the screen) every time the input is switched to VGA or when the input resolution changes
	COLOR FILTER	Set to ON to enable color filtering
HDMI	COLOR FILTER	Set to ON to enable color filtering

6.2.3 The OSD Menu

Table 4 defines the OSD menu.

Table 4: The SETUP Menu Features

Parameter	Function
H POSITION	Sets the horizontal position of the OSD (from 0 to 100)
V POSITION	Sets the vertical position of the OSD (from 0 to 100)
TIMER	Sets the timeout period in seconds (from 5 to 100). The default timeout is 10 seconds
BACKGROUND	Sets the OSD background between 0 (solid black) and 8 (transparent)
DISPLAY[1]	Select the information shown on the screen during operation: **ON** - the information is shown permanently **OFF** - the information is not shown **INFO** - the information is shown for a few seconds

1 Select the information shown on the screen during operation. The information is shown permanently when set to ON. It is not shown when set to OFF and it is shown for a few seconds when set to INFO

6.3 Controlling via the Infrared Remote Control Transmitter

You can control the **VP-435** from the infrared remote control transmitter, as Figure 4 and Table 5 define:

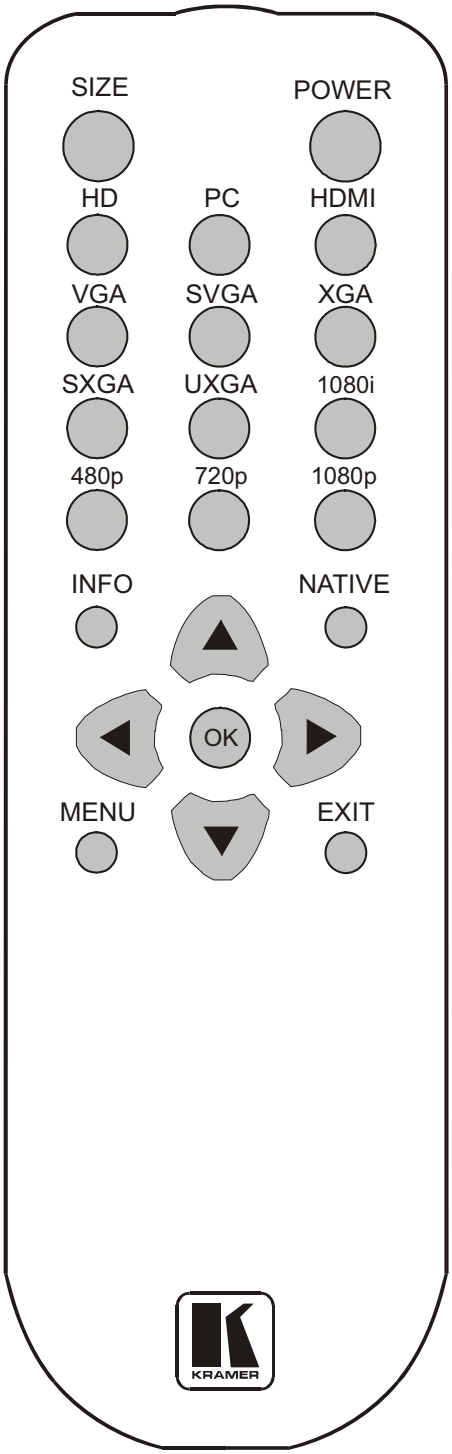


Figure 4: Infrared Remote Control Transmitter

Table 5: Infrared Remote Control Transmitter Functions

Keys	Function
SIZE	Set the size of the image displayed
POWER	Turn the unit **VP-435** ON or OFF[1]
HD	Select the component video input
PC	Select the UXGA input
HDMI	Select the HDMI input
VGA	Set the output resolution to VGA
SVGA	Set the output resolution to SVGA
XGA	Set the output resolution to XGA
SXGA	Set the output resolution to SXGA
UXGA	Set the output resolution to UXGA
1080i	Set the output resolution to 1080i
480p	Set the output resolution to 480p
720p	Set the output resolution to 720p
1080p	Set the output resolution to 1080p
INFO	Displays the selected input, the input and output resolutions and the firmware versions on the OSD
NATIVE	Select the output resolution from the EDID of the connected HDMI monitor
	Four navigation keys
OK	Press to accept changes
MENU	Enter the OSD menu
EXIT	EXIT the menu

1 OFF in this case means that the outputs and the front panel are disabled

7 Technical Specifications

Table 6 includes the technical specifications[1]:

Table 6: Technical Specifications of the VP-435 Component / UXGA HDMI Scaler

INPUTS:	1 HDMI connector 1 UXGA on a 15-pin HD connector 1 component video on 3 RCA connectors 1 analog unbalanced stereo audio on a 3.5mini jack connector (for the HDMI input) 1 analog unbalanced stereo audio on a 3.5mini jack connector (for the UXGA input) 2 analog unbalanced stereo audio (left and right) on RCA connectors, 4dBm nominal
OUTPUT:	1 HDMI connector
OUTPUT RESOLUTIONS:	1080i, 1080p, 576i, 576p, 720p, 1080i, 1080p, WXGA, WSXGA, WUXGA, 1280x800, WXGA+, SXGA+, NATIVE, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p
OUTPUT REFRESH RATE:	60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions
CONTROLS:	Front panel buttons, contact closure and infrared remote for menu driven OSD control
ADDITIONAL CONTROLS:	Contrast, brightness, hue, saturation and sharpness; red, green and blue; Resolution, image size
POWER SOURCE:	12V DC, 800mA
DIMENSIONS:	21.5cm x 16.1cm x 4.36cm (8.46” x 6.34” x 1.7”) W, D, H
WEIGHT:	1.1kg (2.43lb) approx.
ACCESSORIES:	Power supply, IR remote control
OPTIONS:	RK-1 Rack adapter

1 Specifications are subject to change without notice

LIMITED WARRANTY

We warrant 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 us 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 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.

  * 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.

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

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000262 REV 9

VP-48X 3G HD-SDI Scalers Output Resolutions

This table was last updated on January 4th 2012

Model #	Input/Output	480i59	576i	720p50	720p59	720p60	1080i50	1080i59	1080i60	1080p23	1080p24
VP-480	CV	V	V	V	V	V	V	V	V	V	V
VP-481	DVI	V	V	V	V	V	V	V	V	V	V
VP-482	HDMI	V	V	V	V	V	V	V	V	V	V
VP-483	VGA	V	V	V	V	V	V	V	V	V	V

Model #	Input/Output	1080p25	1080p29	1080p30	1080pSF25	1080pSF29	1080pSF30	1080p50	1080p59	1080p60
VP-480	CV	V	V	V	V	V	V	V	V	V
VP-481	DVI	V	V	V	V	V	V	V	V	V
VP-482	HDMI	V	V	V	V	V	V	V	V	V
VP-483	VGA	V	V	V	V	V	V	V	V	V

VP-48X Scalers Input Resolutions and Refresh Rate

	CV	DVI	HDMI	VGA
Resolution/Refresh Rate	VP-480	VP-481	VP-482	VP-483
480I/576I(NTSC/PAL)	V *	X	X	X
480P/576P		V**	V**	X
720P@(60/50)		V**	V**	V**
1080I@(60/50)		V**	V**	X
1080P@(60/50)		V**	V**	V**
1080P@(24/25/30)		V**	V**	X
VGA@(60/72/75/85)		V	V	V
SVGA@(56/60/72/75/85)		V	V	V
XGA@(60/70/75/85)		V	V	V
SXGA@(60/75/85)		V	V	V
UXGA@60		V	V	V
WXGA@60(1280x800)		V	V	V
WXGA+@60(1440x900)		V	V	V
WXGA@60(1366x768)		V	V	V
SXGA+@60(1400x1050)		V	V	V
WSXGA@60(1680x1050)		V	V	V
WUXGA@60(1920x1200)		V	V	V

*: 480i30*2 / 576i25*2

**: VP-481 DVI input supports only RGB colorspace.

**: VP-482 HDMI input supports both RGB and YUV colorspace for all HD resolutions.

**: VP-483 VGA input supports only RGB colorspace for 720p and 1080p input resolutions.

Kramer Scaler Output Resolution Tables

This table was last updated on June 16th 2011

Model #[1]	Input	VGA	SVGA	XGA	WXGA	SXGA	UXGA	WUXGA	480p	576p	720p	1080i	1080p
		640x480	800x600	1024x768	1366x768	1280x1024	1600x1200	1920x1200	480p	576p	720p	1080i	1080p
VP-413	PAL	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x	x	x	x
	NTSC	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x	x	x	x
VP-413XL	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x
VP-414	PAL	60Hz	60Hz	60Hz	60Hz	x	x	x	X	50Hz	50Hz	50Hz	x
	NTSC	60Hz	60Hz	60Hz	60Hz	x	x	x	60Hz	X	60Hz	60Hz	x
VP-414XL	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	X	50Hz	50Hz	50Hz	50Hz
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	X	60Hz	60Hz	60Hz
VP-415	PAL	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x	x	x	x
	NTSC	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x	x	x	x
VP-416	PAL	60Hz	60Hz	60Hz	60Hz	x	x	x	X	50Hz	50Hz	50Hz	x
	NTSC	60Hz	60Hz	60Hz	60Hz	x	x	x	60Hz	X	60Hz	60Hz	x
VP-418	PAL	x	x	x	x	x	x	x	X	50Hz	50Hz	x	x
	NTSC	x	x	x	x	x	x	x	60Hz	X	60Hz	x	x
VP-418XL	PAL	x	x	x	x	x	x	x	X	50Hz	50Hz	50Hz	50Hz
	NTSC	x	x	x	x	x	x	x	60Hz	X	60Hz	60Hz	60Hz
VP-419XL	PAL	60Hz	60Hz	60Hz	x	60Hz	x	x	X	50Hz	60Hz	60Hz	x
	NTSC	60Hz	60Hz	60Hz	x	60Hz	x	x	60Hz	X	60Hz	60Hz	x

[1] Applicable to VP-434 and VP-435, firmware version 6.01; VP-437 firmware version 5.5.7; and VP-437xl firmware version 5.5.5

Model#	Input / Output	VGA	SVGA	XGA	1280x800	WXGA	WSXGA	SXGA	SXGA+	WSXGA	UXGA	WUXGA	1920X1080	480p	576p	720p	1080i	1080p
		640x480	800x600	1024x768	1280x800	1366x768	1440x900	1280x1024	1400x1050	1680x1050	1600x1200	1920x1200	1920X1080	480p	576p	720p	1080i	1080p
VP-409	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	x	x	x	x
VP-410	PAL	x	x	x	x	x	x	x	x	x	x	x	x	X	50Hz	50/60Hz	50/60Hz	50/60Hz
	NTSC	x	x	x	x	x	x	x	x	x	x	x	x	60Hz	X	50/60Hz	50/60Hz	50/60Hz
VP-417	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	X	50Hz	50/60Hz	50/60Hz	50/60Hz
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-420	VGA (or) Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-421	VGA (or) Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-422	HDMI	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-434	VGA	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-435	VGA	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	HDMI	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-437	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	VGA	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	HDMI	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-436 and VP-437XL	PAL	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	NTSC	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	VGA	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	Component	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
	HDMI	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	x	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz

Model #	Input/ Output	VGA	SVGA	XGA	1280x768	WXGA	1366x768	WXGA+	SXGA	SXGA+	WSXGA	UXGA	WUXGA	1280x720	1920x1080
		640x480	800x600	1024x768	1280x768	1280x800	1366x768	1440x900	1280x1024	1400x1050	1680x1050	1600x1200	1920x1200	1280x720	1920x1080
VP-423	VGA	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	50/60Hz	50/60Hz	50/60Hz

For FW version V102, add 1366X768

3G-SDI Scaler

Model #	Input/ Output	VGA	SVGA	XGA	1280x768	1280x800	WXGA	WSXGA	SXGA	SXGA+
		640x480	800x600	1024x768	1280x768	1280x800	1366x768	1440x900	1280x1024	1400x1050
VP-471	3G-SDI	X	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz
VP-472	3G-SDI	X	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz
VP-473	3G-SDI	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz

Model #	Input/ Output	WSXGA	UXGA	WUXGA	1920X1080	480p	576p	720p	1080i	1080p
		1680x1050	1600x1200	1920x1200	1920X1080	480p	576p	720p	1080i	1080p
VP-471	3G-SDI	60Hz	60Hz	60Hz	X	60Hz	50Hz	50/60Hz	X	50/60Hz
VP-472	3G-SDI	60Hz	60Hz	60Hz	X	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz
VP-473	3G-SDI	60Hz	60Hz	60Hz	60Hz	60Hz	50Hz	50/60Hz	50/60Hz	50/60Hz

Kramer Scaler Output Format Table

This table was last updated on February 15th 2011

Model #	Output Connector	VGA	SVGA	XGA	1280x800	WXGA	WXGA+	SXGA	SXGA+	WSXGA	UXGA	WUXGA	480p	576p	720p	1080i	1080p
	Output Format	640x480	800x600	1024x768	1280x800	1366x768	1440x900	1280x1024	1400x1050	1680x1050	1600x1200	1920x1200	480p	576p	720p	1080i	1080p
VP-410	HDMI																
VP-417	HD-15	RGBHV											RGB				
	DVI	RGBHV											RGB				
VP-420	HD-15	RGBHV											YPbPr (via/ HD-15 to 3 RCA cable)				
VP-421	HD-15	RGBHV											YPbPr (via/ HD-15 to 3 RCA cable)				
	DVI												RGB				
VP-422	HD-15	RGBHV											YPbPr (via/ HD-15 to 3RCA cable)				
VP-423	HD-15	RGBHV											x	x	RGBHV	x	RGBHV
	HD-15 bypass	RGBHV											x	x	RGBHV	x	RGBHV
VP-434	HDMI	RGB			x	RGB	x	RGB	x	RGB			RGB				
VP-435	HDMI	RGB			x	RGB	x	RGB	x	RGB			RGB				
VP-437	5 BNC	RGBHV											RGBHV				
	HD-15	RGBHV											RGBHV				
	HDMI	RGB											RGB				
VP-437XL	5 BNC	RGBHV											RGBHV				
	HD-15	RGBHV											RGBHV				
	HDMI	RGB											RGB				

VP-43X Scalers Input Resolutions and Refresh Rate

This table was last updated on December 8th 2010

Resolution/Refresh Rate	AV/SV	Component	D-SUB	DVI/HDMI
480i/576i(NTSC/PAL)	480i30x2 / 576i25x2	V	x	x
480p/576p		V	x	V
720p@(60/50)	_	V	V (RGB)	V
1080i@(60/50)	_	V	x	V
1080p@(60/50)	_	V	V (RGB)	V
1080p@(24/25/30)	_	V	x	V
VGA@(60/72/75/85)	_		V	V
SVGA@(56/60/72/75/85)	_		V	V
XGA@(60/70/75/85)	_		V	V
SXGA@(60/75/85)	_		V	V
UXGA@60	_		V	V
WXGA@60(1280x800)	_		V	V
WXGA+@60(1440x900)			V	V
WXGA@60(1366x768)	_		V	V
SXGA+@60(1400x1050)			V	V
WSXGA@60(1680x1050)	_		V	V
WUXGA@60(1920x1200)			V	V

*: 480i30*2 / 576i25*2

VP-42X Scalers Input Resolutions and Refresh (December 8th 2010)

This table was last updated on December 8th 2010

Resolution/Refresh Rate	D-SUB VP-420/421/422	D-SUB VP-423	HDMI
480i/576i(NTSC/PAL)	X	X	X
480p/576p	**X**	**X**	V
720p@(60/50)	V (RGB)	V	V
1080i@(60/50)	X	X	V
1080p@(60/50)	V (RGB)	V	V
1080p@(24/**25**/30)	X	X	V
VGA@(60/72/75/85)	V	V	V
SVGA@(56/60/72/75/85)	V	V	V
XGA@(60/70/75/85)	V	V	V
SXGA@(60/75/85)	V	V	V
UXGA@60	V	V	V
WXGA@60(1280x800)	V	**X**	V
WXGA+@60(1440x900)	V	**X**	V
WXGA@60(1366x768)	V	**X**	V
SXGA+@60(1400x1050)	V	**X**	V
WSXGA@60(1680x1050)	V	V	V
WUXGA@60(1920x1200)	V	V	V

Kramer Scaler Output Resolutions Table

Model #	Input/Output	VGA	SVGA	XGA	1280x800	WXGA	WXGA+	SXGA	SXGA+	WSXGA	UXGA	WUXGA	1920x1080
		640x480	800x600	1024x768	1280x800	1366x768	1440x900	1280x1024	1400x1050	1680x1050	1600x1200	1920x1200	1920x1080
VP-413	PAL	60Hz	60Hz	60Hz	x	60Hz	x	x	x	x	x	x	x
	NTSC	60Hz	60Hz	60Hz	x	60Hz	x	x	x	x	x	x	x
VP-413XL	PAL	60Hz	60Hz	60Hz	x	60Hz	x	60Hz	x	x	60Hz	60Hz	x
	NTSC	60Hz	60Hz	60Hz	x	60Hz	x	60Hz	x	x	60Hz	60Hz	x
VP-413W	PAL	x	x	x	60Hz	60Hz	60Hz	x	x	60Hz	x	60Hz	60Hz
	NTSC	x	x	x	60Hz	60Hz	60Hz	x	x	60Hz	x	60Hz	60Hz