KRAMER ELECTRONICS LTD.
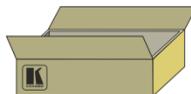
USER MANUAL

MODEL:

VP-470
SD / 3G HD-SDI Scaler

VP-470 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

☑ The **VP-470** SD / 3G HD-SDI Scaler   ☑ 1 Quick start guide
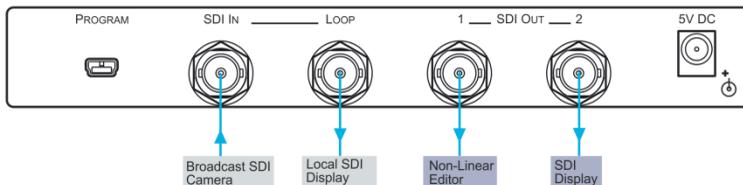
☑ 1 Power supply (5V DC)   ☑ 4 Rubber feet

Save the original box and packaging materials in case you need to return your product for service.

Step 2: Install the VP-470

Mount the machine in a rack (using the RK-T2B rack adapter) or place on a table.

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VP-470**.

| PROGRAM | SDI IN ——— LOOP | 1 — SDI OUT — 2 | 5V DC |

Broadcast SDI Camera

Local SDI Display

Non-Linear Editor

SDI Display

Always use Kramer high-performance cables for connecting AV equipment to the **VP-470**.

Step 4: Connect the power

Connect the 5V DC power adapter to the **VP470** and plug the adapter into the mains electricity.

Step 5: Configure the VP-470 via the OSD menu

Press the MENU button to open the OSD menu:

RESET TO 1080P

MENU   ENTER   -   +   FREEZE

RESET TO 720P

OUTPUT
PICTURE
ASPECT RATIO
OVER SCAN
AUDIO
OSD SETTINGS
ADVANCED
PATTERN
FACTORY DEFAULT
INFORMATION
EXIT

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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 video, audio, presentation, and broadcasting professionals 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 that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; 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 and GROUP 11: Sierra Video Products.

Congratulations on purchasing your Kramer **VP-470** *SD / 3G* HD-SDI Scaler, which is ideal for the following typical applications:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Home theater up-scaling
- Production studios, rental and staging
- Presentation and multimedia applications

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

> Go to http://www.kramerelectronics.com to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)

- Do not secure the cables in tight bundles or roll the slack into tight coils

- Avoid interference from neighboring electrical appliances that may adversely influence signal quality

- Position your Kramer **VP-470** away from moisture, excessive sunlight and dust

> This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions

> **Caution:** There are no operator serviceable parts inside the unit
>
> **Warning:** Use only the Kramer Electronics input power wall adapter that is provided with the unit
>
> **Warning:** Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

3   Overview

The **VP-470** is a high−performance digital scaler for 3G HD−SDI signals. It up or down−scales the incoming SDI signal to resolutions up to 1080p, and routes it to two identical SDI outputs.

The following output resolutions are supported:

- SDTV: 480i @59.94Hz, 576i @50Hz

- HDTV: 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @23.98/24/25/29.97/30Hz

- 3G: 1080p @50/59.94/60Hz

The **VP-470** also features:

- A maximum data rate of 3Gbps

- Multi-standard operation: SDI (SMPTE 259M), HD-SDI (SMPTE 292M) and 3G HD-SDI (SMPTE 424M)

- HDTV Compatibility

- An OSD (On-screen Display) accessible via the front panel buttons for easy setup and adjustment

- Selectable Output Size & Aspect Ratio: Full, panscan, letter box, under− and over−scan settings

- A built-in ProcAmp (Color hue, sharpness, contrast and brightness) for convenient signal adjustment

- A non-volatile memory that retains the last settings used

- A freeze button

- SDI input and loop output (up to 3G HD-SDI)

- An external 5V DC source, making it suitable for field operation

- Compact MegaTOOLS™, letting 2 units to be rack mounted side−by−side in a 1U rack space with the optional RK−T2B universal rack adapter

3.1 Defining the VP-470 SD / 3G HD-SDI Scaler
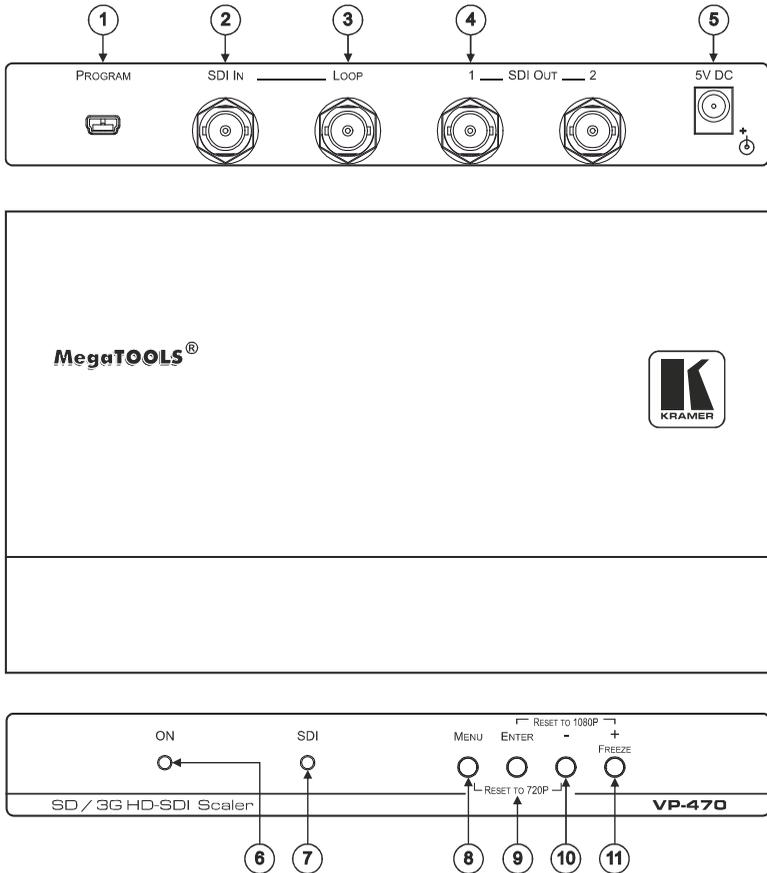
This section defines the **VP-470**.

Figure 1: VP-470 SD / 3G HD-SDI Scaler

#	Feature	Function
1	*PROGRAM USB Connector*	Use for firmware upgrade
2	*SDI IN* BNC Connector	Connect to the SDI source
3	*LOOP* BNC Connector	Connect to an additional unit or a local display. The signal is reclocked and equalized
4	*SDI OUT* BNC Connector (1 and 2)	Connect to the SDI acceptor
5	*5V DC*	Connect to the +5V DC power adapter, center pin positive
6	*ON* LED	Lights green when the unit is powered on
7	*SDI* LED	Lights blue when an SDI signal is detected on the input
8	*MENU* Button	Press to display the OSD (On-screen Display) menu. When the OSD is not displayed, press together with the – button to set the output resolution to 720p (1280x720)
9	*ENTER* Button	In the OSD, press to select the highlighted menu item. When the OSD is not displayed, press together with the + button to set the output resolution to 1080p
10	– Button	In the OSD, press to step up through the options or to decrement the parameter value
11	+ / *FREEZE* Button	In the OSD, press to step down through the options or to increment the parameter value. When the OSD is not displayed, press to freeze the display

4 Connecting the VP-470

> Always switch off the power to each device before connecting it to your **VP-470**. After connecting your **VP-470**, connect its power and then switch on the power to each device.

To connect the **VP-470** as illustrated in the example in Figure 2:

1. Connect a broadcast SDI camera to the SDI IN BNC connector.

2. Connect the LOOP BNC connector to a local display.

3. Connect the SDI OUT 1 BNC connector to a non-linear editor.

4. Connect the SDI OUT 2 BNC connector to an SDI display.

5. Connect the 5V DC power adapter to 5V DC power socket and to the mains electricity (not shown in the illustration).
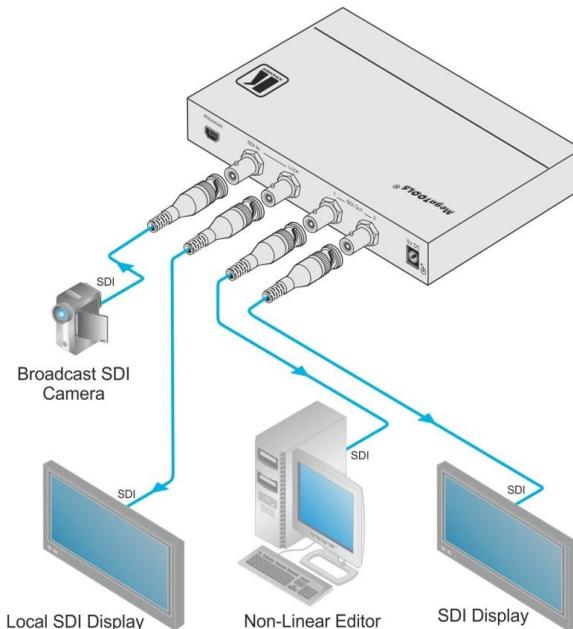

Figure 2: Connecting the VP-470 SD / 3G HD-SDI Scaler

5 Operating the VP-470 SD / 3G HD-SDI Scaler

The **VP-470** is operated directly via the front panel buttons and via the OSD menu (see Section 5.2).

5.1 Using the Front Panel Buttons

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

- **MENU**: Displays the OSD Main Menu (see Section 5.2). Press a second time to close the OSD

- **FREEZE**: Freezes the display. Press a second time to unfreeze the display

- **MENU** and **-**: Press together to set the output to 720p

- **ENTER** and **FREEZE**: Press together to set the output to 1080p

5.2 Using the OSD

The OSD is used to set a variety of parameters.

When using the OSD, the front panel buttons operate in the following manner:

- **MENU**: Opens the OSD main menu (see Section 5.2.2). Press a second time to close the OSD

- **ENTER**: Selects the highlighted menu item or parameter and accepts changes

- **–** : Steps down through the menu list or decrements the parameter value

- **+** : Steps up through the menu list or increments the parameter value

By default, after a period of 20 sec with no button activity, the OSD menu times-out automatically.

5.2.1 Example of Setting a Parameter

To set the value of the brightness on the display output to 46:

1. From normal operation, press MENU.
   The OSD main menu appears on the screen.

2. Press the + or – button to select PICTURE.
   The PICTURE line background changes to blue.

3. Press ENTER.
   The PICTURE submenu is displayed.

4. Press the + or – button to select BRIGHTNESS.
   The BRIGHTNESS line background changes to blue.

5. Press ENTER.
   BRIGHTNESS and its current value change to green.

6. Press the +/- button to increase/decrease the value to 46.

7. Press ENTER to set the value.
   BRIGHTNESS and its value change back to white.

8. Press MENU to exit. Alternatively, press the - button until EXIT is selected
   and then press ENTER to go back in the OSD menu.

5.2.2 The Main Menu

Parameter	Function			
OUTPUT	Set the output resolution (default is 720P 60):			
	OUTPUT PAGE 1	RESOLUTION	OUTPUT PAGE 2	RESOLUTION
	480I 59	480i @59.94Hz	1080I 59	1080i @59.94Hz
	576I 50	576i @50Hz	1080P 59	1080p @59.94Hz
	720P 50	720p @50Hz	1080I 60	1080i @60Hz
	720P 59	720p @59.94	1080P 60	1080p @60Hz
	720P 60	720p @60Hz		
	1080P 23	1080p @23.98Hz		
	1080P 24	1080p @24Hz		
	1080P 25	1080p @25Hz		
	1080P 29	1080p @29.97Hz		
	1080P 30	1080p @30Hz		
	1080I 50	1080i @50		
	1080P 50	1080p @50		
PICTURE	Set the output picture parameters (see Section 5.2.3)			
ASPECT RATIO	FULL (default), 16:9 TV, 16:10 TV, 4:3 TV or BEST FIT			
OVERSCAN	ENABLE over scan YES/NO (default). If enabled, set the H SIZE and V SIZE percentage			
AUDIO	ENABLE the audio YES (default)/NO SOURCE GROUP – Set the SDI audio channel settings to AUTO, 1+2 or 3+4			
OSD SETTINGS	Set the OSD parameters: Position, Transparency, Menu Timeout, Info Timeout and Display (see Section 5.2.4)			
ADVANCED	**AUTO SYNC-OFF** – turn the auto sync ON/OFF (default). When ON, this deactivates the output after a few minutes if no input is present, until a valid input is again detected or any button is pressed. This is useful, for example, when the output is connected to a projector, and the projector will automatically shut down when it has no input **MIRROR-V** – set to OFF (default) or ON to flip the image vertically **FREEZE** - set the function of the FREEZE button: FREEZE + MUTE (default), MUTE ONLY, FREEZE ONLY			
PATTERN	Set pattern ON/OFF (default). When ON, select COLOR BAR, GRAY SCALE, CROSS HATCH, CROSS, WHITE WINDOW or RAMP			
FACTORY DEFAULT	Resets to the default parameters If you cannot see the display after factory reset, use the front panel buttons to set the correct resolution: To reset to 1080p, press the FREEZE (+) and ENTER buttons simultaneously for about 2 seconds To reset to 720p press the – and MENU buttons simultaneously for about 2 seconds			
INFORMATION	Displays the input and output resolutions, audio group detection report and the firmware version			
EXIT	Exit the Main menu			

5.2.3 The PICTURE Menu

Parameter	Function
CONTRAST	Set the contrast
BRIGHTNESS	Set the brightness
SATURATION	Set the color saturation
HUE	Set the color hue
SHARPNESS	Set the image sharpness
PICTURE RESET	Reset the PICTURE parameters to their default state
EXIT	Exit the menu

5.2.4 The OSD SETTINGS Submenu

Parameter	Function
POSITION	LEFT-T (default), RIGHT-T, RIGHT-B, LEFT-B or CENTER
TRANSPARENCY	Set the OSD background between 0 (solid black) and 15 (transparent)
MENU TIMEOUT	Set the OSD timeout period in seconds (from 5 to 50, OFF)
INFO. TIMEOUT	Set the INFO timeout period in seconds (from 5 to 50, OFF)
INFO. DISPLAY	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 the time period set in INFO. TIMEOUT following any change in the resolution
EXIT	Exit the menu

6   Technical Specifications

INPUT:	1 SDI/HD-SDI/3G HD-SDI on a BNC connector
OUTPUTS:	1 SDI/HD-SDI/3G HD-SDI on a BNC connector (loop) 2 SDI/HD-SDI/3G HD-SDI on BNC connectors
INPUT RESOLUTIONS:	SDTV: 480i @59.94Hz, 576i @50Hz, HDTV: 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @23.98/24/25/29.97/30Hz, 1080sF @23.98/24/25/29.97/30Hz 3G: 1080p @50/59.94/60 1080sF @23.98/24 inputs don't support 480i/576i output; for 1080sF25/29.97/30 inputs, the OSD info. shows 1080i50/59.94/60
OUTPUT RESOLUTIONS:	SDTV: 480i @59Hz, 576i @50Hz HDTV: 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @23.98/24/25/29.97/30Hz 3G: 1080p @50/59.94/60Hz
PROCESSING DELAY:	30ms
CONTROLS:	Menu, OSD, reset to 1080p or 720p and Freeze front panel buttons
POWER CONSUMPTION:	5V DC, 440mA
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	18.8cm x 11.4cm x 2.4cm (7.4" x 4.5" x 1") W, D, H
WEIGHT:	0.75kg (1.7lbs) approx.
ACCESSORIES:	Power supply
OPTIONS:	RK-2TB 19" rack adapter
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.

2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.

3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

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For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

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P/N: 2900- 300035   Rev: 1