Kramer Electronics, Ltd.

USER MANUAL

Model:

PIP-4

4 input Picture-in-Picture Inserter

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KRAMER: SIMPLE CREATIVE TECHNOLOGY

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 **PIP-4,** *4 input Picture-in-Picture Inserter,* which is ideal for:

- Video production studios for source monitoring
- Teleconferencing using one screen
- Home theater multi-channel monitoring
- Security applications

The package includes the following items:

- **PIP-4,** 4 input Picture-in-Picture Inserter
- **RC-IR3** *Infrared Remote Controller* (including batteries and manual[2])
- Power adapter (5V DC output)
- 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

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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 http://www.kramerelectronics.com

2.1 Quick Start

The following quick start chart summarizes the basic setup and operation steps for the **PIP-4**.
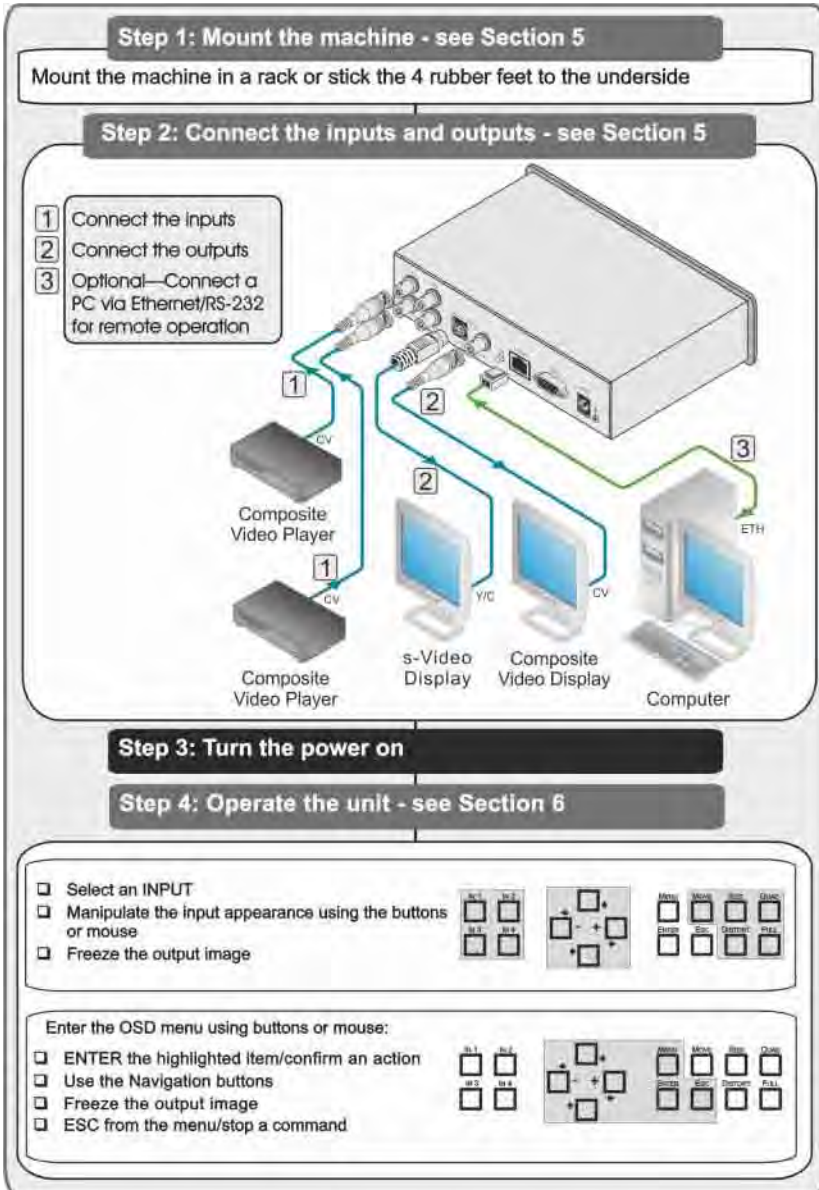
3   Overview

The high performance Kramer desktop **PIP-4** is a picture-in-picture inserter for composite video signals.

The **PIP-4** features:

- A multi-standard, picture-in-picture video inserter that accepts up to four composite video sources and displays them all on the same screen simultaneously
- s-Video and composite video outputs
- Non-volatile memory that retains the last setting[1]

With the **PIP-4**, you can:

- Position sources on the screen as desired and select their size dynamically using a mouse or by selection from a list
- Freeze the output
- Output video as both s-Video and composite signals

In addition, the **PIP-4**:

- Includes 10-bit video A/D and D/A converters throughout the unit, ensuring the highest quality video
- Can be operated locally via:
  - The front panel buttons
  - A user-friendly OSD (On-Screen Display) menu
- Can be operated remotely via an IR remote controller, RS-232 and Ethernet
- Is rugged and dependable

3.1   Recommendations for best performance

To achieve the best performance:

- Connect only good quality connection cables[2] 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 **PIP-4** 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

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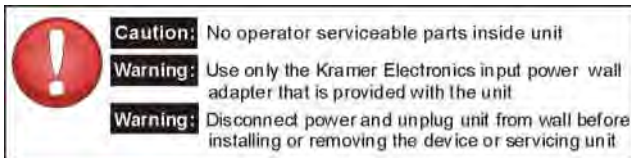
1 Provided the last setting was valid for at least 30 seconds before switching the machine off

2 The complete list of Kramer cables is available from http://www.kramerelectronics.com

4 Defining the PIP-4, 4 input Picture-in-Picture Inserter

Figure 1 and Table 1 defines the front panel of the **PIP-4,** *4 input Picture-in-Picture Inserter*.

Figure 1: PIP-4 Front Panel

Table 1: PIP-4 Front Panel Features

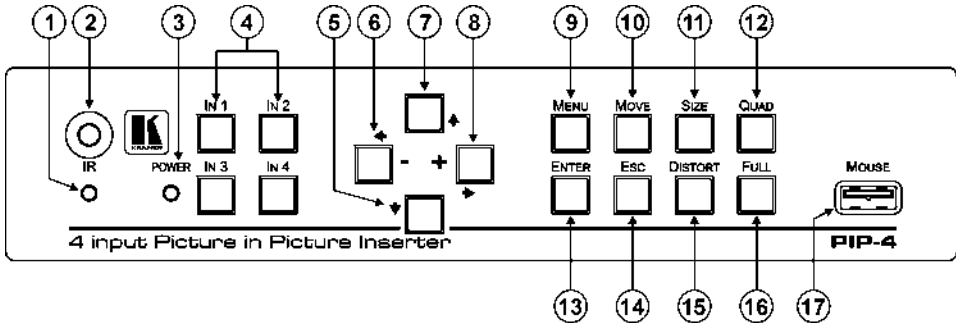| #	Feature		Function
1	*IR* LED		Lights yellow when the unit receives IR signals
2	*IR* Sensor		IR signal receiver
3	*POWER* LED		Lights green when the unit is powered on
4	*IN 1*	Input Selector Buttons	Press to select input 1
	IN 2		Press to select input 2
	IN 3		Press to select input 3
	IN 4		Press to select input 4
5	▼ Button	Navigation Buttons	In MOVE mode, moves he selected pane down. In SIZE mode, shrinks he selected pane. In DISTORT mode, moves the bottom of the pane down. In the OSD menu, moves the cursor down one option
6	◀ /– Button		In MOVE mode, moves he selected pane left. When in SIZE mode, shrinks he selected pane. In DISTORT mode, moves the right hand side of the selected pane to he left. In the OSD menu, moves the cursor to the left
7	▲ Button		In MOVE mode, moves he selected pane up. In SIZE mode, expands the selected pane. In DISTORT mode, moves the bottom of the pane up. In he OSD menu, moves the cursor up one option
8	▶ /+ Button		In MOVE mode, moves the selected pane right. When in SIZE mode, expands the selected pane. In DISTORT mode, moves the right hand side of he selected pane to he right. In the OSD menu, moves the cursor to the right
9	*MENU* Button		Press to display the OSD menu. Press again to exit the OSD menu
10	*MOVE* Button		Moves he ac ive pane. Press to enter the MOVE mode followed by one of the arrow buttons
11	*SIZE* Button		Resizes he ac ive pane while retaining the aspect ratio. Press to enter the SIZE mode followed by one of the arrow buttons
12	*QUAD* Button		Press to display all 4 inputs in equally sized panes

#	Feature	Function
13	*ENTER* Button	When in the OSD menu, press to select he current option or to confirm an ac ion
14	*ESC* Button	Exits the OSD Menu
15	*DISTORT* Button	Distorts the active pane by changing he aspect ra io. Press to enter the DISTORT mode followed by one of he arrow buttons
16	*FULL* Button	Expands the active pane to full screen
17	*MOUSE* USB Connector	Connect USB/PS/2 mouse for operating he OSD menu

Figure 2 and Table 2 defines the rear panel of the **PIP-4,** *4 input Picture-in-Picture Inserter*.
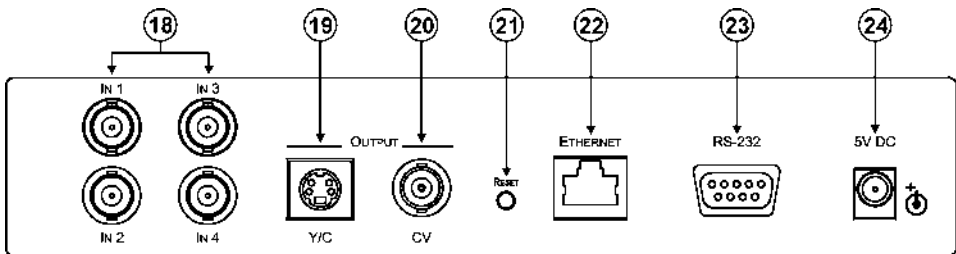
Figure 2: PIP-4 Rear Panel

Table 2: PIP-4 Rear Panel Features

#	Feature		Function
18	*IN 1*	Composite Video BNC Input Connectors	Connect to composite video source 1
	IN 2		Connect to composite video source 2
	IN 3		Connect to composite video source 3
	IN 4		Connect to composite video source 4
19	*OUTPUT*	*Y/C* 4-pin s-Video Output Connector	Connect to he s-Video acceptor
20		*CV* BNC Output Connector	Connect to he composite video acceptor
21	*RESET* Button		Press and hold while switching the unit on to reset all parameters to factory default values (see Section 7)
22	*ETHERNET* RJ-45 Connector		Connect to LAN for remote operation using a PC
23	*RS-232* 9-pin D-sub Connector		Connect to a PC or other device for remote opera ion
24	*5V DC* Power Connector		Connect to supplied power adapter, center pin positive

5   Connecting the PIP-4, 4 input Picture-in-Picture Inserter

To connect[1] the PIP-4 as illustrated in the example in Figure 3:

1. Connect a composite video player source to the IN 1 BNC connector[2].
2. Connect a composite video player source to the IN 2 BNC connector[2].
3. Connect an s-Video display acceptor to the Y/C OUTPUT 4-pin s-Video connector[3].
4. Connect a composite video display acceptor to the CV OUTPUT BNC connector[3].
5. Optional—for remote operation, connect the ETHERNET RJ-45 connector to a LAN to which the PC is connected (see Section 5.2.2)[4].
6. Connect the supplied power adapter to the unit and to the mains supply (not shown in Figure 3).

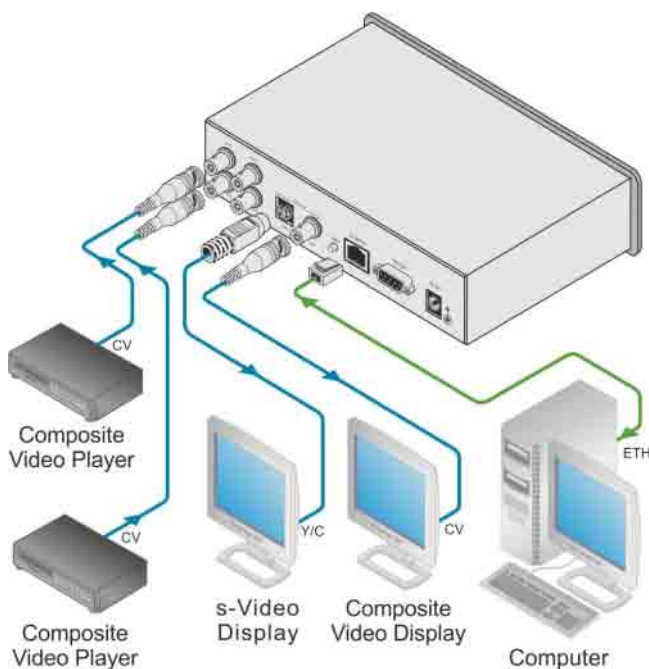*Figure 3: Connecting the PIP-4, 4 input Picture-in-Picture Inserter*

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1 Switch off the power on each device before connecting it to your PIP-4 After connecting your PIP-4, switch on its power and then switch on the power to each device

2 The device supports up to 4 simultaneous inputs

3 You do not have to connect both outputs

4 The device can also be operated remotely via the RS-232 port

5.1 Connecting a PC to the PIP-4 via RS-232 for Remote Operation

You can connect to the **PIP-4** via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect to the **PIP-4** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **PIP-4** unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

5.2 Connecting a PC to the PIP-4 via Ethernet for Remote Operation

You can connect to the **PIP-4** via Ethernet using either of the following methods:

- Direct connection to the PC using a crossover cable (see Section 5.2.1)
- Connection via a network hub, switch, or router, using a straight-through cable (see Section 5.2.2)

5.2.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **PIP-4** to the Ethernet port on your PC, via a crossover cable with RJ-45 connectors.

> This type of connection is recommended for identifying the
> PIP-4 with the factory configured default IP address

To connect directly to your PC and to configure it:

1. Using a crossover cable, connect the unit directly to your PC.
2. Right-click the **My Network Places** icon on your desktop.
3. Select **Properties**.
4. Right-click Local Area Connection Properties.
5. Select **Properties**.
   The Local Area Connection Properties window appears.
6. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see Figure 4).

Figure 4: Local Area Connection Properties Window

7. Select Use the following IP Address, and fill in the details as shown in
   Figure 5.
8. Click **OK**.

Figure 5: Internet Protocol (TCP/IP) Properties Window

5.2.2 Connecting the ETHERNET Port via a Network Hub

You can connect the Ethernet port of the **PIP-4** to the Ethernet port on a network
hub or network router, via a straight-through cable with RJ-45 connectors.

6 Operating the PIP-4

You can operate your **PIP-4** via the following:

- The OSD menu using either a mouse (see Section 6.2.1) or the front panel buttons (see Section 6.2.2)
- An IR remote controller
- Ethernet over a LAN (see Section 6.3.1)
- A remote controller via RS-232 serial commands (see Section 6.3.1)

6.1 The OSD Menu

The OSD menu provides access to the **PIP-4** configuration. Using the OSD menu you can change the general display and individual input settings.

Table 3: PIP-4 Menu Items

Menu Item	Submenu	Description
DISPLAY	Quad Full	Selects all 4 inputs to display
	Source	Sets each input video pane's characteristics
	Zoom	Zooms the center of the selected pane to double size
	Overscan/Normal	Selects whether to display in normal or overscan mode
UTILITY	Brightness	Sets the brightness of each input video signal
	Contrast	Sets the contrast of each input video signal
	Sharpness	Sets the sharpness of each input video signal
	Hue	Sets the hue of each input video signal
	Color	Sets the color of each input video signal
Store		Stores the current setting in one of he 10 presets
Recall		Recalls one of the 10 presets
Erase		Erases one of the 10 presets

6.1.1 Display Submenu

Table 4 defines the Display submenu features.

Table 4: The Display Submenu Options

Item	Parameter	Values
Full/Quad	Not applicable	Full/Quad
Source	Window	0–3
	Source video	0–3
	Mirror V	On/Off
	Mirror H	On/Off
	Freeze	On/Off
	Blank	On/Off
Zoom	Not applicable	On/Off
Overscan/Normal	Not applicable	Overscan/Normal

6.1.2 Utility Submenu

Table 5 defines the utility submenu.

Table 5: The Utility Submenu Options

Item	Parameter	Values
Brightness	Channel	1–4
	Brightness	1–255
Contrast	Channel	1–4
	Contrast	1–255
Sharpness	Channel	1–4
	Sharpness	0–15
Hue	Channel	1–4
	Hue	1–255
Color	Channel	1–4
	Color	1–255

6.2 Operating the PIP-4 Locally

You can operate your **PIP-4** locally via the OSD menu using either:

- A mouse plugged in to the USB connector (see Section 6.2.1)
  —or—
- The front panel buttons (see Section 6.2.2)

6.2.1 Operating the PIP-4 Using the Mouse

The mouse control operates in the following manner:

- Left-click on a pane to select it
- Click and hold within a pane, and drag to move it
- Click and hold on the border of a pan, and drag to change the size and aspect ratio of the pane. Dragging the border of a pane over the opposite border of the pane flips the pane over (mirrors the pane)
- Right click anywhere to display the OSD Menu
  - In the OSD Menu, left click to navigate the OSD and modify parameters

Note: If there is no mouse activity for 20 seconds, the OSD closes automatically.

Example

To change the brightness of Input 2:

1. Left-click on the input 2 pane.
2. Right-click to display the OSD.
3. Use the mouse to navigate to Utility > Brightness
4. Left-click on Brightness.
   The Brightness parameter setting is displayed.
5. Modify the setting to the required value using the Brightness left and right arrows.
6. Click on the X to close the OSD.

Example

To vertically mirror the Input 3 pane:

1. Right-click to display the OSD.
2. Use the mouse to navigate to Display > Source.
3. Click on the Source Video right arrow to select Input 3.
4. Click Mirror V.
5. Click on the X to close the OSD.

6.2.2 Operating the PIP-4 Using the Front Panel Buttons

The front panel buttons are used to:

- Manipulate video panes
- Navigate the OSD menu

Note: If there is no mouse activity for 20 seconds, the OSD closes automatically.

6.2.2.1 Manipulating Video Panes

You can use the front panel buttons (displayed within gray boxes in <u>Figure 6</u>) to manipulate the display (such as, changing size and aspect ratio) of each of the four inputs independently.
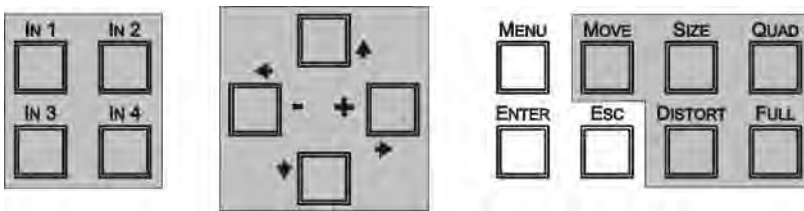
Figure 6: Video Pane Manipulation Buttons

The buttons operate in the following manner:

- IN 1 to IN 4: Select the input to manipulate
- ♠, ♥, ← –, ➤+: Move up, down, left/decrease and right/increase
- Move, Size, Quad, Distort and Full: Select an operation to perform on the pane

Example

To increase the size of the Input 3 window:

1. Press IN 3.
   The Input 3 window becomes active. Its outline becomes black and flashes.
2. Press SIZE.
   Size is displayed in the Input 3 pane.
3. Repeatedly press or press and hold the ➤+ button until the window is the required size.
4. Press ESC.

6.2.2.2 Navigating the OSD Menu

You can use the front panel OSD menu buttons (see <u>Figure 7</u>) to navigate the OSD in order to modify the video parameters (such as brightness and contrast) of each input independently.
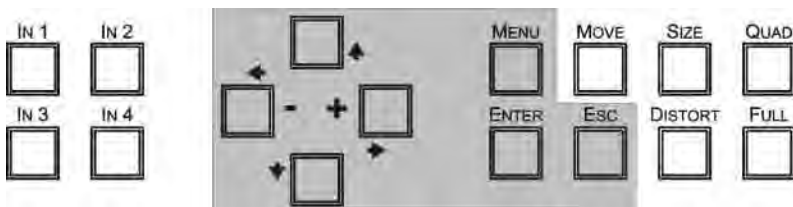
Figure 7: OSD Menu Buttons

The buttons operate in the following manner:

- MENU: Display the OSD[1]. Press again to exit the OSD from any level
- ENTER: Enter a menu item or accept a parameter value
- +, – : Increase/decrease a parameter value
- ▲, ▼, ◄, ►: Navigate through the menu items
- ESC: Exit the OSD menu, a menu item or parameter value

Note: If there is no mouse activity for 20 seconds, the OSD closes automatically.

Example

To vertically mirror the Input 3 pane:

1. Press IN 3.
   The Input 3 window becomes active. Its outline becomes black and starts to flash.
2. Press MENU.
   The OSD is displayed and Display is highlighted.
3. Press ►.
   The cursor moves to Screen.
4. Press ▼.
   Source is highlighted.
5. Press ENTER.
   The Source Setup screen is displayed.
6. Check the Mirror V box.
7. Click on the X to close the OSD.

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1 The menu times-out after 20 seconds

6.3 Operating the PIP-4 Remotely

You can operate your **PIP-4** remotely via the following:

- IR remote controller
- Ethernet over a LAN
- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller

6.3.1 Operating the PIP-4 via RS-232/Ethernet

The PIP-4 Control application[1] is used to control the device via either RS-232 or Ethernet.

7 Resetting the PIP-4 Parameters to Factory Defaults

To reset all parameters to factory default values:

1. Switch the unit off.
2. Press and hold the Reset button on the rear panel of the unit.
3. While holding the Reset button, switch the power to the unit on.
4. Wait until the video pane(s) are displayed and release the Reset button. The parameters are reset to factory default values.

8 Upgrading the Firmware

For instructions on upgrading the firmware, see the *Updating the PIP-4 Firmware Using P3K Software* document.

The latest version of firmware and installation instructions can be downloaded from the Kramer Web site at www.kramerelectronics.com.

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1 Download the application from http://www.kramerelectronics.com

9 Technical Specifications

[Table 6](#) lists the technical specifications[1] of the **PIP-4,** *4 input Picture-in-Picture Inserter.*

Table 6: Technical Specifications[2] of the PIP-4, 4 input Picture-in-Picture Inserter

INPUTS:	4 composite video 1Vpp @75Ω on BNC connectors
OUTPUTS:	1 s-Video 1Vpp, 0.3Vpp @75Ω on a 4-pin s-Video connector 1 composite video 1Vpp @75Ω on a BNC connector
DIGITAL RESOLUTION:	10 bit
S/N RATIO:	60db (weighted)
YC SEPARATION:	Adaptive 4-line digital comb filters
MEMORY:	Non-volatile memory for storage of 2 setups
CONTROL:	Front-panel, OSD, RS-232 and E hernet
POWER SOURCE:	5V DC, 450mA
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)
STORAGE TEMPERATURE:	-45° to +72°C (-49° to 162°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	21.5cm x 17.7cm x 4.4cm (8 5" x 7" x 1.7") W, D, H
WEIGHT:	0 8kg (1.76lbs) approx.
ACCESSORIES:	Power Supply, RC-IR3 Infrared Remote Control
OPTIONS:	RK-1 rack adapter

10 Default Communication Parameters

Table 7: Default Communication Parameters

Protocol 3000 (Default)	
Baud Rate:	115,200
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Example (Output 1 to Input 1):	#AV 1>1<CR>

Ethernet	
Default Settings	**Reset Settings**
IP Address: 192.168.1.39 Subnet Mask: Gateway:	Power cycle the unit while holding in the Factory Reset button, located on the rear panel of the unit
TCP Port #: 5000	
UDP Port #: 50000	

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1 Measurements relate to composite video, unless otherwise stated

2 Specifications are subject to change without notice

11 Communication Protocol 3000

The Protocol 3000[1] is an RS-232/Ethernet communication protocol that enables you to control the device from any standard terminal software (for example, Windows® HyperTerminal Application).

11.1 Protocol 3000 Syntax

Host message format:

Start	Address (optional)	Body	Delimiter
#	*Destination_id@*	message	CR

Simple command (commands string with only one command without addressing):

start	body	delimiter
#	Command SP Parameter_1,Parameter_2,…	CR

Commands string (formal syntax with commands concatenation and addressing):

 # Address@ **Command_1** *Parameter1_1,Parameter1_2,… |Command_2 Parameter2_1,Parameter2_2,… |Command_3 Parameter3_1,Parameter3_2,… |…***CR**

Device message format:

Start	Address (optional)	Body	Delimiter
~	*Sender_id@*	message	CR LF

Device long response (**Echoing command**):

Start	Address (optional)	Body	Delimiter
~	*Sender_id@*	**command** SP **[***param1 ,param2 …***]** result	CR LF

CR = Carriage return (ASCII 13 = 0x0D)

LF = Line feed (ASCII 10 = 0x0A)

SP = Space (ASCII 32 = 0x20)

11.2 Command Parts Details

Command:
Sequence of ASCII letters ('A'-'Z', 'a'-'z' and '-')
Command will separate from parameters with at least single space

Parameters:
Sequence of Alfa-Numeric ASCII chars ('0'-'9','A'-'Z','a'-'z' and some special chars for specific commands), parameters will be separated by commas

Message string:
Every command must to be entered as part of message string that begin with **message starting char** and end with **message closing char**, note that string can contain more then one command separated by pipe ("|") char

Message starting char:
 '#' for host command\query

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1 VER-0 1

'~' for machine response

Device address (Optional, for Knet):

Knet Device ID follow by '@' char

Query sign = '?', will follow after some commands to define query request

Message closing char =

Host messages - Carriage Return (ASCII 13), will be referred to by $\boxed{\text{CR}}$ in this document

Machine messages **-** Carriage Return (ASCII 13) + Line-Feed (ASCII 10), will be referred to by $\boxed{\text{CRLF}}$

Spaces between parameters or command parts will be ignored

Commands chain separator char:

When **message string** contains more than one command, commands will be separated by pipe ("|")

Commands entering:

If terminal software used to connect over serial \ ethernet \ USB port, that possible to directly enter all commands characters ($\boxed{\text{CR}}$ will be entered by Enter key, that key send also $\boxed{\text{LF}}$, but this char will be ignored by commands parser)

Sending commands from some controllers (like Crestron) require coding some characters in special form (like \X##) Anyway, there is a way to enter all ASCII characters, so it is possible to send all commands also from controller

(Similar way can use for URL \ Telnet support that maybe will be added in future)

Commands forms:

Some commands have short name syntax beside the full name to allow faster typing, response is always in long syntax

Commands chaining:

It is possible to enter multiple commands in same string by '|' char (pipe)

In this case the **message starting char** and the **message closing char** will be entered just one time, in the string beginning and at the end

All the commands in string will not execute until the closing char will be entered

Separate response will be sent for every command in the chain

Input string max length:

64 characters

Backward support:

Design note: transparent supporting for protocol 2000 will be implemented by switch protocol command from protocol 3000 to protocol 2000, in protocol 2000 there is already such a command to switch protocol to ASCII protocol (#56 : H38 H80 H83 H81)

Table 8: Instruction Codes for Protocol 3000

Result Codes	
	Syntax
No error. Command running succeeded	$\boxed{\text{COMMAND}}$ $\boxed{\text{PARAMETERS}}$ **OK**
Protocol Errors	
Syntax Error	**ERR001**
Command not available for this device	**ERR002**
Parameter is out of range	**ERR003**
Unauthorized access (running command without the match login).	**ERR004**

Help commands		
Command	**Syntax**	**Response**
Protocol Handshaking	#$\boxed{\text{CR}}$	~OK$\boxed{\text{CRLF}}$

Device initiated messages	
Command	**Syntax**
Start message	~Protocol Start

Set/Get coordinate	#**CRDT** $\boxed{win\_num}$,x0,y0,x1,y1<CR>
	(win_num = 1-4; x0,y0 - top-left coordinate; x1,y1 – bottom-right coordinate)
	#**CRDT?** $\boxed{win\_num}$<CR>
	(x0,x1 <=180; y0,y1 <=144(for PAL); y0,y1 <= 120(for NTSC))
	(win_num = 1-4 or 0(for output window))

Set/Get Brightness / Contrast / Sharpness / Hue / Color	#**BRIGHTNESS** *inp_num,vol*<CR> (vol = 1-255) #**BRIGHTNESS?** *inp_num*<CR> #**CONTRAST** *inp_num,vol*<CR> (vol = 1-255) #**CONTRAST?** *inp_num*<CR> #**SHARPNESS** *inp_num,vol*<CR> (vol = 0-15) #**SHARPNESS?** *inp_num*<CR> #**HUE** *inp_num,vol*<CR> (vol = 1-255) #**HUE?** *inp_num*<CR> #**COLOR** *inp_num,vol*<CR> (vol = 1-255) #**COLOR?** *inp_num*<CR>
Quad / Full	#**QUAD**<CR> #**FULL** *win_num*<CR>
Set / Get Active window	#**WIN** *win_num*<CR> #**WIN?**<CR>
Set / Get window source	#**SRC-VID** *win_num*, *in_num*<CR> #**SRC-VID?** *win_num*<CR>
Set / Get Vertical Mirror Status / Horizontal Mirror Status / Freeze status / Blank Status	#**SRC-VMIR** *win_num*, *status*<CR> (status = 1 – ON, 0 – OFF) #**SRC-VMIR?** *win_num*<CR> #**SRC-HMIR** *win_num*, *status*<CR> (status = 1 – ON, 0 – OFF) #**SRC-HMIR?** *win_num*<CR> #**SRC-FREEZE** *win_num*, *status*<CR> (status = 1 – ON, 0 – OFF) #**SRC-FREEZE?** *win_num*<CR> #**SRC-BLANK** *win_num*, *status*<CR> (status = 1 – ON, 0 – OFF) #**SRC-BLANK?** *win_num*<CR>
Set / Get Normal / Overscan mode	#**MODE** *mode*<CR> (mode=0--normal, 1--overscan) #**MODE?**<CR>
Zoom On / Off	#**ZOOM** *zoom_mode*, X, Y<CR> (zoom_mode=1-ON,0-OFF; X=horizontal left, Y=vertical top)

Examples	
Function	**Command Syntax**
Set coordinates for window 2. Top left (60,0) and bottom right (150,80)	#CRDT 2, 60, 0, 150, 80 *CR*
Set brightness of input 3 to 140	#BRIGHTNESS 3, 140 *CR*
Get contrast for input 4 Response: Contrast of input 4 is 125	#CONTRAST? 4 *CR* ~CONTRAST 4, 125 *CRLF*
Freeze window 2	#SRC-FREEZE 2, 1 *CR*

Preset commands		
Command	**Syntax**	**Response**
Store current connections to preset	#**PRST-STO** *PRESET* *CR* **Short form**: #**PSTO** *PRESET* *CR*	~**PRST-STO** *PRESET* *RESULT* CRLF
Recall saved preset	#**PRST-RCL** *PRESET* *CR* **Short form:** #**PRCL** *PRESET* *CR*	~**PRST-RCL** *PRESET* *RESULT* CRLF
Delete saved preset	#**PRST-DEL** *PRESET* *CR* **Short form:** #**PDEL** *PRESET* *CR*	~**PRST-DEL** *PRESET* *RESULT* CRLF

Preset commands		
Command	**Syntax**	**Response**
Read saved presets list	#**PRST-LST?** CR **Short form: #PLST?** CR	~**PRST-LST** *PRESET*, *PRESET*, … CRLF
Parameters Description: PRESET = Preset number = 1 - 10 OUT = Output in preset to show for, '*' for all.		

Examples:		
Store current Audio & Video connections to preset 5	#PRST-STR 5**CR**	~PRST-STR 5 OK CRLF
Recall Audio & Video connections from preset 3	#PRCL 3**CR**	~PRST-RCL 3 OK CRLF

Machine info commands		
Command	**Syntax**	**Response**
* Time settings commands require admin authoriza ion		
Read in\outs count	#**INFO-IO?** CR	~**INFO-IO: IN** *INPUTS_COUNT*, **OUT** *OUTPUTS_COUNT* CRLF
Read max presets count	#**INFO-PRST?** CR	~**INFO-PRST: VID** *PRESET_VIDEO_COUNT*, **AUD** *PRESET_AUDIO_COUNT* CRLF
Reset configuration to factory default	#**FACTORY** CR	~**FACTORY** *RESULT* CRLF

Identification commands		
Command	**Syntax**	**Response**
Protocol Handshaking	#**CR**	~**OK** CRLF
Read device model	#**MODEL?** CR	~**MODEL** *MACHINE_MODEL* CRLF
Read device serial number	#**SN?** CR	~**SN** *SERIAL_NUMBER* CRLF
Read device firmware version	#**VERSION?** CR	~**VERSION** *MAJOR* .*MINOR* .*BUILD* .*REVISION* CRLF
Set machine name	#**NAME** *MACHINE_NAME* CR	~**NAME** *MACHINE_NAME* *RESULT* CRLF
Read machine name	#**NAME?** CR	~**NAME** *MACHINE_NAME* CRLF
Reset machine name to factory default*	#**NAME-RST** CR	~**NAME-RST** *MACHINE_FACTORY_NAME* *RESULT* CRLF
*Note: machine name not equal to model name. This name relevance for site viewer identification of specific machine or for network using (with DNS feature on). *MACHINE_NAME* = Up to 14 Alfa-Numeric chars.		

Identification commands		
Command	**Syntax**	**Response**
* **Machine factory name =** Model name + last 4 digits from serial number.		

Network settings commands		
Set IP Address	#NET-IP *IP_ADDRESS* CR #NTIP CR	~NET-IP *IP_ADDRESS* *RESULT* CRLF
Read IP Address	#NET-IP? CR #NTIP? CR	~NET-IP *IP_ADDRESS* CRLF
Read MAC Address	#NET-MAC? CR #NTMC CR	~NET-MAC *MAC_ADDRESS* CRLF CRLF
Set subnet mask	#NET-MASK *SUBNET_MASK* CR #NTMSK CR	~NET-MASK *SUBNET_MASK* *RESULT* CRLF
Read subnet mask	#NET-MASK? CR #NTMSK? CR	~NET-MASK *SUBNET_MASK* CRLF
Set gateway address	#NET-GATE *GATEWAY_ADDRESS* #NTGT	~NET-GATE *GATEWAY_ADDRESS* *RESULT*
Read subnet mask	#NET-GATE? #NTGT?	~NET-GATE *GATEWAY_ADDRESS* CRLF
Set DHCP mode	#NET-DHCP *DHCP_MODE* CR #NTDH CR	~NET-DHCP *DHCP_MODE* *RESULT* CRLF
Read subnet mask	#NET-DHCP? CR #NTDH? CR	~NET-DHCP *DHCP_MODE* CRLF
DHCP_MODE = 0 – Don't use DHCP (Use IP set by factory or IP set command). 1 – Try to use DHCP, if unavailable use IP as above.		
Change protocol ethernet port	#ETH-PORT *PROTOCOL* , *PORT* CR #ETHP CR	~ETH-PORT *PROTOCOL* ,*PORT* *RESULT* CRLF
Read protocol ethernet port	#ETH-PORT? *PROTOCOL* CR #ETHP? CR	~ETH-PORT *PROTOCOL* , *PORT* CRLF
PROTOCOL = TCP / UDP (transport layer protocol) *PORT* = ethernet port to enter protocol 3000 commands. 1-65535 = User defined port 0 - reset port to factory default (50000 for UDP, 5000 for TCP)		

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

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