MODEL:

**VS-62H**
6x2 HDMI Matrix Switcher

P/N: 2900-300170 Rev 2
VS-62H 6x2 HDMI Matrix Switcher Quick Start Guide

This guide helps you install and use your VS-62H for the first time. For more detailed information, go to http://www.kramerav.com/manual/VS-62H to download the latest manual or scan the QR code on the left.

Step 1: Check what’s in the box

- VS-62H 6x2 HDMI Matrix Switcher
- 1 Power cord
- 1 Quick Start Guide
- 1 Set of rack “ears”
- Kramer RC-IR3 Infrared Remote Control
- 4 Rubber feet

Save the original box and packaging in case your VS-62H needs to be returned to the factory for service.

Step 2: Install the VS-62H

Mount the device in a rack (using the included rack “ears”) or attach the rubber feet and place it on a shelf.

Step 3: Connect the inputs and outputs

Always switch off the power to all devices before connecting them to your VS-62H.

Always use Kramer high-performance cables for connecting AV equipment to the VS-62H.

Step 4: Connect the power

Connect the power adapter to the VS-62H and plug it into the mains electricity.

Step 5: Operate the VS-62H

Switch an Input to an Output:
- Press an input button on the top row (To OUT1) to switch that input to output 1
- Press an input button on the bottom row (To OUT2) to switch that input to output 2

To Copy an EDID from an Output to an Input:
1. Press the EDID button.
2. Press the required Input button corresponding to either Output 1 or Output 2.
3. Press the EDID button.
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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 **VS-62H 6x2 HDMI Matrix Switcher** which is ideal for the following typical applications:

- Conference rooms
- Education
- Hospitality
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 www.kramerav.com/support/product_downloads.asp 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:

- For optimum range and performance, use the recommended Kramer cables available at www.kramerav.com/product/VS-62H
- 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 VS-62H 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 power cord that is supplied with the unit. Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only

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.kramerav.com/support/recycling/.
3 Overview

The **VS-62H** is a high quality, 6x2 matrix switcher for HDMI signals. It reclocks and equalizes the signals and can route any input to either or both outputs simultaneously.

In particular, the **VS-62H** features:

- Up to 8.91Gbps data rate (2.97Gbps per graphics channel)
  Suitable for resolutions up to UXGA and 4K x 2K
- Support for HDCP (High Definition Digital Content Protection)
- True video clock detection
- Automatic switching modes (last connected and priority switching)
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- Programmable step-in functionality when used in conjunction with compatible step-in devices, such as the **SID-X3N** and **DIP-31** (using an HDMI cable that supports HEC, the HDMI Ethernet Channel)
- Non-volatile EDID storage
- Kramer reKlocking™ & Equalization Technology that rebuilds the digital signal to travel longer distances
- Static or dynamic DHCP IP addressing
- Embedded Web pages that provide remote configuration and operation
- A lock button to prevent unwanted tampering with the buttons on the front panel
- Support for Kramer Protocol 3000
You can control the VS-62H using the front panel buttons, or remotely via:

- RS-232 serial commands transmitted by a PC, touch screen system or other serial controller
- The Kramer RC-IR3 infrared, remote control transmitter
- A PC connected via a LAN to the Ethernet port on the VS-62H
- An optional, external, remote IR receiver (see Section 3.1)

### 3.1 Using the IR Transmitter

You can use the RC-IR3 IR transmitter to control the machine via the built-in IR receiver on the front panel or, instead, via an optional external IR receiver (for example, P/N C-A35M/IRR-50). The external IR receiver can be located up to 15m away from the machine. This distance can be extended to up to 60m when used with three extension cables (for example, P/N C-A35M/A35F-50).

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable (for example, P/N: 505-70434010-S) with the 3.5mm connector that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm connector.
Defining the VS-62H 6x2 HDMI Matrix Switcher

Figure 1 defines the front panel of the VS-62H.

![Front Panel Diagram](image)

Table 1: VS-62H 6x2 HDMI Matrix Switcher Front Panel

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IR LED</td>
<td>Lights yellow when receiving an IR signal</td>
</tr>
<tr>
<td>2</td>
<td>IR Sensor</td>
<td>Signal receiver for the infrared remote control transmitter</td>
</tr>
<tr>
<td>3</td>
<td>INPUT SELECTOR Buttons</td>
<td>TO OUT 1~6 Press one of the six inputs to switch it to Output 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Press the currently selected input button to mute the output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TO OUT 2 1~6 Press one of the six inputs to switch it to Output 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Press the currently selected input button to mute the output</td>
</tr>
<tr>
<td>4</td>
<td>MUTE Button</td>
<td>Press to toggle mute of both output signals</td>
</tr>
<tr>
<td>5</td>
<td>EDID Button</td>
<td>Press to capture the EDID</td>
</tr>
<tr>
<td>6</td>
<td>ON LED</td>
<td>Lights green when the device is powered on</td>
</tr>
<tr>
<td>7</td>
<td>LOCK Button</td>
<td>Press and hold to lock the front panel buttons. Press and hold again to unlock</td>
</tr>
<tr>
<td>8</td>
<td>FUNCTION Button</td>
<td>Press to activate the test pattern generator. When the generator is active, press one of the input buttons to select a test pattern</td>
</tr>
</tbody>
</table>
Figure 2 defines the rear panel of the VS-62H.

Figure 2: VS-62H 6x2 HDMI Matrix Switcher Rear Panel

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>REMOTE IR Opening</td>
<td>Connect to an external IR receiver for controlling the device via an IR remote controller (see Section 3.1). Covered by a cap. The 3.5mm mini jack at the end of the internal IR connection cable fits into this opening</td>
</tr>
<tr>
<td>2</td>
<td>REMOTE INPUT To OUT 1 6-pin Terminal Block</td>
<td>Connect to up to six remote, contact-closure input selection switches for Output 1 (see Section 6.3)</td>
</tr>
<tr>
<td>3</td>
<td>REMOTE INPUT To OUT 2 7-pin Terminal Block</td>
<td>Connect to up to six remote, contact-closure input selection switches for Output 2</td>
</tr>
<tr>
<td>4</td>
<td>RS-232 3-pin Terminal Block</td>
<td>Connect to a PC/serial controller (see Section 6.1)</td>
</tr>
<tr>
<td>5</td>
<td>SETUP 8-way DIP-switch</td>
<td>Sets the device configuration (see Section 9.1)</td>
</tr>
<tr>
<td>6</td>
<td>PROG VIA USB Connector</td>
<td>Connect to a PC to upgrade the firmware (see Section 9.3)</td>
</tr>
<tr>
<td>7</td>
<td>PROG VIA RS-232 Upgrade Switch</td>
<td>Depress to upgrade the firmware via the RS-232 port, release for normal operation</td>
</tr>
<tr>
<td>8</td>
<td>ETHERNET RJ-45 Connector</td>
<td>Connect to a PC via a LAN (see Section 6.2)</td>
</tr>
<tr>
<td>9</td>
<td>RESET Switch</td>
<td>Press while power-cycling the device to reset to factory default parameters (see Section 13)</td>
</tr>
<tr>
<td>10</td>
<td>5V DC Connector</td>
<td>Connect to the power adapter, center pin positive</td>
</tr>
<tr>
<td>11</td>
<td>INPUT 1~6 HDMI Input Connectors</td>
<td>Connect to up to six HDMI sources (see Section 6)</td>
</tr>
<tr>
<td>12</td>
<td>OUT 1 and OUT 2 HDMI Output Connectors</td>
<td>Connect to up to two HDMI acceptors</td>
</tr>
</tbody>
</table>
5 Installing in a Rack

This section provides instructions for rack mounting the unit.

### Before installing in a rack

Be sure that the environment is within the recommended range:

<table>
<thead>
<tr>
<th>OPERATING TEMPERATURE:</th>
<th>0° to +40°C (32° to 104°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORAGE TEMPERATURE:</td>
<td>-40° to +70°C (-40° to 158°F)</td>
</tr>
<tr>
<td>HUMIDITY:</td>
<td>10% to 90%, RHL non-condensing</td>
</tr>
</tbody>
</table>

### CAUTION!

When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

### To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.

2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site
6 Connecting the VS-62H 6x2 HDMI Matrix Switcher

Always switch off the power to each device before connecting it to your VS-62H. After connecting your VS-62H, connect its power and then switch on the power to each device.

To connect the VS-62H 6x2 HDMI Matrix Switcher as illustrated in the example in Figure 3:

1. Connect up to six HDMI sources, (for example, Blu-ray Disc players) to the HDMI Input connectors.

Figure 3: Connecting the VS-62H 6x2 HDMI Matrix Switcher
2. Connect the two OUT HDMI connectors to up to two HDMI acceptors, (for example, LCD displays with built-in speakers).

3. If required, connect a PC/controller to the RS-232 port (see Section 6.1) and/or the Ethernet port (see Section 6.2).

4. Connect the power adapter to the device and plug the power adapter into the mains electricity (not shown in Figure 3).

5. If required, acquire the EDID (see Section 8.1).

### 6.1 Connecting a Serial Controller to the VS-62H via RS-232

To connect a serial controller to the VS-62H:

- From the RS-232 9-pin D-sub serial port on the serial controller connect:
  - Pin 2 to the TX pin on the VS-62H RS-232 terminal block
  - Pin 3 to the RX pin on the VS-62H RS-232 terminal block
  - Pin 5 to the GND pin on the VS-62H RS-232 terminal block

### 6.2 Connecting to the VS-62H via Ethernet

You can connect to the VS-62H via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 6.2.1)
- Via a network hub, switch, or router, using a straight-through cable (see Section 6.2.2)

**Note:** If you want to connect via a router and your IT system is based on IPv6, speak to your IT department for specific installation instructions.

### 6.2.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the VS-62H directly to the Ethernet port on your PC using a crossover cable with RJ-45 connectors.

This type of connection is recommended for identifying the VS-62H with the factory configured default IP address.
After connecting the VS-62H to the Ethernet port, configure your PC as follows:

1. Click **Start** > **Control Panel** > **Network and Sharing Center**.

2. Click **Change Adapter Settings**.

3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**. The Local Area Connection Properties window for the selected network adapter appears as shown in **Figure 4**.


5. Click **Properties**. The Internet Protocol Properties window appears as shown in **Figure 5**.
6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in **Figure 6**.

For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.
6.2.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VS-62H** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

6.3 Connecting the Remote Contact-closure Switches

You can connect up to six remote, contact-closure switches per output to control the **VS-62H** remotely. These switches replicate the Input selection buttons on the front panel of the **VS-62H**.
Figure 7 illustrates the wiring of the switch connections to the terminal block.

Figure 7: Remote Contact-closure Switch Connections
7 Principles of Operation

This section describes the operating theory of the VS-62H and includes:

- Automatic signal detection (see Section 7.1)
- Input switching modes (see Section 7.2)
- EDID operation (see Section 7.3)

7.1 Automatic Signal Detection

The VS-62H can automatically detect the presence of a video signal on an input based on the presence of a video sync or clock signal.

7.2 Input Switching Modes

7.2.1 Manual Mode

In Manual switching mode, routing is performed according to the front panel button selection or according to the remote command selection.

7.2.2 Automatic Mode

Automatic switching can be performed in either of the following ways:

- **Input priority.** Upon detection of an active input, the input with the highest priority is automatically selected. Input priority is from the lowest input number (1) to the highest (6)

- **Last Connected.** The device automatically selects the most recently connected input. Should this source become inactive, the device automatically switches to the last connected input that was active. When turning the device on and more than one input is active, the input with the highest priority is selected

If a manual selection is made when the device is in Automatic mode, the device enters Manual Override mode. The manually selected input remains selected as long as it is active. When a manually selected input becomes inactive, the device returns to Automatic mode.
7.3 EDID Operation

The VS-62H has a default EDID (see Section 14) stored on all inputs. This EDID can be exchanged for either:

- A custom EDID which is uploaded to one or more inputs using Protocol 3000 commands (see Section 15.2)
  --OR--

- The EDID of a display device connected to an output by using either the front panel buttons (see Section 8.2), a Protocol 3000 command, or the Web pages

The EDID is non-volatile and the last valid EDID is used when the device is powered up.

7.4 Step-in Functionality

The VS-62H can function as a step-in switcher when connected to a suitable HDMI transmitter, (for example, the SID-X3N or the DIP-31), using the correct HDMI cable with HEC support.

Use the Web pages (see Section 10.2.2) to assign remote device button actions. The default button actions are shown in the following table. Up to three buttons can be active at the same time.

<table>
<thead>
<tr>
<th>Command</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echo</td>
<td>Allows a connected controller to be programmed to perform a variety of tasks triggered by the user buttons, such as, room control, (lights, screen, and so on)</td>
</tr>
<tr>
<td>Out1</td>
<td>Step in current input to Output 1</td>
</tr>
<tr>
<td>Out2</td>
<td>Step in current input to Output 2</td>
</tr>
</tbody>
</table>
# Operating the VS-62H 6x2 HDMI Matrix Switcher

This section describes operating the VS-62H and consists of:

- Switching an input to an output (see Section 8.1)
- Acquiring an EDID from an output (see Section 8.2)
- Muting and unmuting the outputs (see Section 8.3)
- Locking and unlocking the front panel buttons (see Section 8.4)
- Generating a test pattern (see Section 8.5)

## 8.1 Switching an Input to an Output

To switch an input to an output, (for example, Input 5 to Output 2):

- Press the Input 5 button in the bottom Output (To OUT 2) row. The LED lights red and Input 5 is switched to Output 2.

## 8.2 Acquiring an EDID from an Output

You can acquire the EDID from OUT 1 or OUT 2 and copy it to any or all of the six inputs to be stored in non-volatile memory. You can also reset any or all of the inputs to the default EDID.

**To copy the EDID from an Output to one or more Inputs:**

1. Press the EDID button to enter the EDID setting mode. The EDID button lights.

   **Note:** If there is no button activity for 10 seconds, the device automatically exits the EDID setting mode to normal operation, the EDID button no longer lights and any changes made are lost.

2. From the To OUT 1 (top) row, press each of the Inputs to which you want to copy the EDID from Output 1. Each selected Input LED lights.
3. From the To OUT 2 (bottom) row, press each of the Inputs into which you want to copy the EDID from Output 2. Each selected Input LED lights.

4. Press the EDID button. The button no longer lights and the EDID changes are saved.

**To copy the default EDID to one or more Inputs:**

1. Press the EDID button to enter the EDID setting mode. The EDID button lights.

2. For each Input to which you want to copy the default EDID, press both the To OUT 1 and To OUT 2 buttons simultaneously. Both top row and bottom row Input LEDs light.

3. Press the EDID button. The button no longer lights and the EDID changes are saved.

### 8.3 Mutting and Unmutting the Outputs

**To mute and unmute both outputs simultaneously:**

1. Press the Mute button. The Mute button lights and the outputs are muted.

2. Press the lit Mute button. The outputs are unmuted and the button no longer lights.

**To mute and unmute one output:**

1. Press the currently selected (and lit) input button. The output is muted and the button flashes.

2. Press the currently muted (and flashing) input button. The output is unmuted and the button lights solid.
8.4 Locking and Unlocking the Front Panel Buttons

To lock and unlock the front panel buttons:

1. Press and hold the Lock button.
   The front panel buttons are locked and the button lights.

2. Press and hold the Lock button again.
   The front panel buttons are unlocked and the button no longer lights.

8.5 Generating a Test Pattern

For diagnostic purposes, the VS-62H can generate a number of test patterns on the outputs.

To generate a test pattern on the outputs:

1. Press the Function button.
   The button lights.

2. Press any of the Input buttons to select a test pattern.
   The selected test pattern is generated on the outputs.

To exit the test pattern generator:

- Press the lit Function button.
  The test pattern generation ceases and the button no longer lights.

Figure 8 shows the test patterns available.
Figure 8: Available Test Patterns
9 Configuring and Maintaining the VS-62H

This section describes the configuration and maintenance of the VS-62H and consists of:

- Setting the DIP-switches (see Section 9.1)
- Resetting the device to factory default settings (see Section 9.2)
- Upgrading the firmware (see Section 9.3)

9.1 Setting the DIP-switches

The DIP-switches dictate the behavior of the VS-62H.

All DIP-switches are off by default.

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1 | HDCP support on inputs            | On—Disable HDCP support on all inputs  
|   |                                   | Off—Enable HDCP support which is defined by P3000 commands                 |
| 2 | Video mode switching Output 1     | On—Auto  
|   |                                   | Off—Manual                                                                  |
| 3 | Last connected/Priority mode Output 1 | When DIP-switch 2 is set to Auto (ON):  
|   |                                   | On—Enable Last Connected mode  
|   |                                   | Off—Enable Priority mode where the priority of each input is defined by the input number, (1 is the highest priority) |
| 4 | Video mode switching Output 2     | On—Auto  
|   |                                   | Off—Manual                                                                  |
| 5 | Last connected/Priority mode Output 2 | When DIP-switch 4 is set to Auto (ON):  
|   |                                   | On—Enable Last connected mode  
|   |                                   | Off—Enable Priority mode where the priority of each input is defined by the input number, (1 is the highest priority) |
9.2 Resetting the VS-62H to Factory Default Settings

To reset the device to factory default settings:

1. Power off the device.

2. Press and hold down the Reset button on the rear panel.

3. While holding down the Reset button, power on the device.

4. Wait a few seconds and release the button.
   The device is reset to its factory settings.

9.3 Upgrading the Firmware

The VS-62H can be upgraded via any of the following:

- Mini USB
- RS-232
- Ethernet

For instructions on upgrading the firmware see “K-Upload Software”.
10 Operating the VS-62H Remotely via the Web Pages

The VS-62H can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in Section 6.2
- Ensure that your browser is supported (see Section 12)
- Ensure that JavaScript is enabled

10.1 Browsing the VS-62H Web Pages

Note: In the event that a Web page does not update correctly, clear your Web browser’s cache (by pressing CTRL-F5).

To browse the VS-62H Web pages:

1. Open your Internet browser.

2. Type the IP number of the device (see Section 6.2) in the Address bar of your browser.

![Image](http://192.168.1.39)

The Loading page appears.

[Figure 9: The Loading Page]

Immediately after the Loading page, the General Info page appears which displays information related to the device and the Web page version.
There are six Web pages:

- General Info (see Section 10.1)
- Routing (see Section 10.2)
- EDID (see Section 10.3)
- Device Setting (see Section 10.4)
- Firmware Update (see Section 10.5)
- About Us (see Section 10.6)

In addition to displaying information regarding the device, the General Info page also has a button (see Figure 11) at the top right hand side of the page that allows locking and unlocking of the front panel buttons.

Figure 11: The Lock Button
10.2 The Routing Page

The VS-62H Routing page lets you perform operational actions, such as, switching inputs/outputs and selecting HDCP support.

Figure 12: The Routing Page

<table>
<thead>
<tr>
<th>#</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Output Buttons 1 and 2</td>
<td>2 Buttons for output selection, signal identification, and audio and video muting (see Section 10.2.1)</td>
</tr>
<tr>
<td>2</td>
<td>Inputs Tab</td>
<td>6 Buttons for input selection, and port and signal identification (see Section 10.2.1)</td>
</tr>
<tr>
<td>3</td>
<td>Patterns Button Tab</td>
<td>6 Buttons for video pattern generation (see Section 10.2.3)</td>
</tr>
</tbody>
</table>
Figure 13: The Output Buttons

<table>
<thead>
<tr>
<th>#</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Output Button Number</td>
<td>Identifies the Output number</td>
</tr>
<tr>
<td>2</td>
<td>HDCP Indicator</td>
<td>Indicates whether the Output port supports HDCP</td>
</tr>
<tr>
<td>3</td>
<td>Video Mute Button</td>
<td>Click the button to mute the video</td>
</tr>
<tr>
<td>4</td>
<td>Signal Indicator</td>
<td>Indicates whether or not there is a device connected to the output</td>
</tr>
<tr>
<td>5</td>
<td>Mode Indicator</td>
<td>Indicates the switching mode currently employed</td>
</tr>
</tbody>
</table>
### 10.2.1 Switching an Input to an Output

To switch an Input to an Output, (for example, Input 2 to Output 2):

1. Click on Output button 2.
   The button changes color to purple and the Output is selected.

2. Click on Input button 2.
   The button changes color to purple and the output is switched.
10.2.2 Controlling a Remote Transmitter

Compatible remote transmitters, (for example, the SID-X3N or the DIP-31) that are connected to the VS-62H can be controlled using the Web pages, (see Section 10.2, Figure 14).

![Remote Device Control Window](image)

Figure 15: The Remote Device Control Window

The VS-62H allows you to program the general purpose buttons on remote modules. The table shows the functionality defined for each button. The options are:

- HDMI, DP, DVI, PC—selects one of the inputs
- Echo—allows a connected controller to be programmed to perform a variety of tasks triggered by the user buttons, such as, room control, (lights, screen, and so on)
- Out 1—step-in current input to output 1
- Out 2—step-in current input to output 2

**Note:** These settings are per input and remain valid even if the remote SID-X3N is exchanged for another SID-X3N.

Up to three of the Echo, Out 1 and Out 2 buttons can be active at the same time.
10.2.3 Using Test Patterns as Video Inputs

You can use one of six built-in, video test patterns as a video Input.

![Routing](image)

Figure 16: Test Pattern Tab

**To select a test pattern as an Input for an Output:**

1. Click the Patterns tab.
   The six test pattern buttons are shown.

2. Click the required Output to select it.
   The button changes color.

3. Click the required test pattern button.
   The button changes color and the selected test pattern is switched to the Output.
10.3 The EDID Page

The VS-62H EDID page lets you copy EDID data to one or more Inputs from an:

- Output
- Input
- EDID data file

Figure 17: The EDID Page

**Note:** The display is not updated automatically when the status of an EDID changes on the device due to outputs being exchanged. Click Refresh to update the display.
To copy EDID data from an Output or Input to one or more inputs:

1. Click the source button from which to copy the EDID (Output or Input).
   The button changes color and the EDID summary information reflects the EDID data.

2. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box.
   All selected Input buttons change color and the EDID summary information reflects the Input selection(s).

3. Click the Copy button.
   The “EDID was copied” success message is displayed and the EDID data are copied to the selected Input(s).

4. Click OK.

To copy EDID data to an Input from an EDID data file:

1. Click the source Browse button.
   The Windows Browser opens.

2. Browse to the required file.

3. Select the required file and click Open.
   The EDID summary information reflects the selection.

4. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box.
   All selected Input buttons change color and the EDID summary information reflects the Input selection(s).

5. Click the Copy button.
   The “EDID was copied” success message is displayed and the EDID data are copied to the selected Input(s).

6. Click OK.
10.4 The Device Setting Page

The VS-62H Device Settings page lets you modify some communication parameters and view others.

![Device Setting Page](image)

Figure 18: The Device Setting Page

To modify serial or Ethernet communication parameters:

1. Adjust the parameters as required, either by entering the parameters directly or by using the drop-down list.

2. Click Set.
   The changes are saved.
10.5 The Firmware Upgrade Page

The Firmware Upgrade page lets you perform a firmware upgrade from a firmware file.

![Firmware Upgrade Page](image)

Figure 19: The Firmware Upgrade Page

**To upgrade the firmware:**

1. Click the Choose File button.
   The Windows Browser opens.

2. Browse to the required file.

3. Select the required file and click Open.
   The firmware file name is displayed in the Firmware Upgrade page.

4. Click Start Upgrade.
   The firmware file is loaded and a progress bar is displayed.
   
   ![Warning] Do not interrupt the process or the **VS-62H** may be damaged.

5. When the process is complete reboot the device.
   The firmware is upgraded.
10.6 The About Us Page

The **VS-62H** About Us page displays the Web page version and Kramer Electronics Ltd company details.

![WEB VERSION 1.0.0]

Kramer Electronics Ltd.
3 Am VeOlam St.
Jerusalem, Israel, 95463
Tel: +972 2 9544000
Fax: +972 2 6535369
Email: info@kramerel.com
Web: http://www.kramerelectronics.com

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Figure 20: The About Us Page
11 Wiring the Twisted Pair RJ-45 Connectors

Connect/solder the cable shield to the RJ-45 connector shield.

**Do not use a crossed TP cable with this product.**
Using a TP cable that is incorrectly wired may cause permanent damage to the device.

**Do not** use unshielded TP cables with this product.

Figure 21 defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

<table>
<thead>
<tr>
<th>EIA / TIA 568B</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN</td>
<td>Wire Color</td>
</tr>
<tr>
<td>1</td>
<td>Orange / White</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>Green / White</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>Blue / White</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Brown / White</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
<tr>
<td>Pair 1</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Pair 2</td>
<td>1 and 2</td>
</tr>
<tr>
<td>Pair 3</td>
<td>3 and 6</td>
</tr>
<tr>
<td>Pair 4</td>
<td>7 and 8</td>
</tr>
</tbody>
</table>
### Technical Specifications

<table>
<thead>
<tr>
<th><strong>Inputs:</strong></th>
<th>6 HDMI Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outputs:</strong></td>
<td>2 HDMI Connectors</td>
</tr>
</tbody>
</table>
| **Ports:** | 1 Ethernet on an RJ-45 connector  
1 IR on a 3.5mm mini jack  
12 Remote selection contact-closure switches on 13 terminal block pins  
1 Serial port on a 3-pin terminal block  
1 Program port on a mini USB |
| **Bandwidth:** | Up to 8.91Gbps data rate (2.97Gbps per graphic channel) |
| **Standards Compliance:** | HDMI and HDCP |
| **Resolution:** | Up to UXGA; 4K x 2K |
| **Supported Baud Rates:** | 9600, 115200bps |
| **Power Consumption:** | 5V DC 880mA |
| **Controls:** | Front panel buttons, infrared remote control transmitter, RS-232, Ethernet, remote input selection switches |
| **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:** | 21.5cm x 16.6cm x 4.4cm (8.46” x 6.54” x 1.73”) W, D, H |
| **Weight:** | 1.0kg (2.2lbs) approx. |
| **Included Accessories:** | Power adapter, IR transmitter |
| **Options:** | External remote IR receiver cable, RK-3TR |

Specifications are subject to change without notice at [www.kramerv.com](http://www.kramerv.com).
## Default Communication Parameters

### RS-232

<table>
<thead>
<tr>
<th>Protocol 3000</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate:</td>
<td>115,200</td>
</tr>
<tr>
<td>Data Bits:</td>
<td>8</td>
</tr>
<tr>
<td>Stop Bits:</td>
<td>1</td>
</tr>
<tr>
<td>Parity:</td>
<td>None</td>
</tr>
<tr>
<td>Command Format:</td>
<td>ASCII</td>
</tr>
</tbody>
</table>

### TCP/IP Parameters

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address:</td>
<td>192.168.1.39</td>
</tr>
<tr>
<td>Netmask:</td>
<td>255.255.0.0</td>
</tr>
<tr>
<td>Gateway:</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>TCP Port #:</td>
<td>5000</td>
</tr>
<tr>
<td>UDP Port #:</td>
<td>50000</td>
</tr>
</tbody>
</table>
14 Default EDID

Monitor
Model name................. VS-62H
Manufacturer............... KMR
Plug and Play ID.......... KMR0200
Serial number............... 1
Manufacture date........... 2010, ISO week 24
Filter driver............... None

EDID revision............... 1.3
Input signal type........... Digital (DVI)
Color bit depth............. Undefined
Display type............... RGB color
Screen size................ 700 x 390 mm (31.5 in)
Power management.......... Not supported
Extension blocks............. 1 (CEA-EXT)

DDC/CI........................ n/a

Color characteristics
Default color space........ Non-sRGB
Display gamma............... 2.20
Red chromaticity........... Rx 0.640 - Ry 0.341
Green chromaticity......... Gx 0.286 - Gy 0.610
Blue chromaticity.......... Bx 0.146 - By 0.069
White point (default)...... Wx 0.284 - Wy 0.293
Additional descriptors..... None

Timing characteristics
Horizontal scan range...... 31-94kHz
Vertical scan range........ 50-85Hz
Video bandwidth............ 170MHz
CVT standard............... Not supported
GTF standard............... Not supported
Additional descriptors..... None
Preferred timing........... Yes
Native/preferred timing... 1280x720p at 60Hz
Modeline.................... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 746 +hsync +vsync
Detailed timing #1........ "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

Standard timings supported
720 x 400p at 70Hz - IBM VGA
720 x 400p at 88Hz - IBM XGA2
640 x 480p at 60Hz - IBM VGA
640 x 480p at 67Hz - Apple Mac II
640 x 480p at 72Hz - VESA
640 x 480p at 75Hz - VESA
800 x 600p at 56Hz - VESA
800 x 600p at 60Hz - VESA
800 x 600p at 72Hz - VESA
800 x 600p at 75Hz - VESA
832 x 624p at 75Hz - Apple Mac II
1024 x 768i at 87Hz - IBM
1024 x 768p at 60Hz - VESA
1024 x 768p at 70Hz - VESA
1024 x 768p at 75Hz - VESA
2880 x 1024p at 75Hz - VESA
1152 x 870p at 75Hz - Apple Mac II
1280 x 720p at 60Hz - VESA STD
1280 x 800p at 60Hz - VESA STD
1440 x 900p at 60Hz - VESA STD
1280 x 960p at 60Hz - VESA STD
1280 x 1024p at 60Hz - VESA STD
1440 x 1080p at 60Hz - VESA STD
1680 x 1050p at 60Hz - VESA STD
1600 x 1200p at 60Hz - VESA STD

EIA/CEA-861 Information
Revision number............. 3
IT underscan................ Not supported
Basic audio............... Supported
YCbCr 4:4:4............... Supported
YCbCr 4:2:2............... Supported
Native formats............. 1
Detailed timing #1........ 720x480p at 60Hz (4:3)
  Modeline.............. "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync
Detailed timing #2........ 1920x1080i at 60Hz (16:9)
  Modeline.............. "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
Detailed timing #3........ 1920x1080i at 50Hz (16:9)
  Modeline.............. "1920x1080" 74.250 1920 2448 2492 2640 1080 1084 1094 1124 interlace +hsync +vsync
Detailed timing #4........ 1280x720p at 60Hz (16:9)
  Modeline.............. "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
Detailed timing #5........ 1280x720p at 50Hz (16:9)
  Modeline.............. "1280x720" 74.250 1280 1720 1760 1980 720 725 730 750 +hsync +vsync

CE video identifiers (VICs) - timing/formats supported
720 x 576p at 50Hz - EDTV (4:3, 16:15)
1280 x 720p at 50Hz - HDTV (16:9, 1:1)
1920 x 1080i at 60Hz - HDTV (16:9, 1:1)
1920 x 1080i at 50Hz - HDTV (16:9, 1:1)
1280 x 720p at 60Hz - HDTV (16:9, 1:1)
1920 x 1080p at 60Hz - HDTV (16:9, 1:1)
1920 x 1080p at 50Hz - HDTV (16:9, 1:1)

NB: NTSC refresh rate = (Hz*1000)/1001

CE audio data (formats supported)
  LPCM 3-channel, 24-bits at 44/48 kHz

CE speaker allocation data
  Channel configuration........ 3.0
  Front left/right........ Yes
  Front LFE............... No
  Front center........... Yes
  Rear left/right......... No
  Rear center............ No
  Front left/right center.. No
  Rear left/right center... No
  Rear LFE............... No

CE vendor specific data (VSDB)
  IEEE registration number. 0x000C03
  CEC physical address...... 1.0.0.0
  Maximum TMDS clock........ 165MHz

Raw data
00,FF,FF,FF,FF,FF,FF,FF,FF,00,2E,4D,00,02,01,00,00,00,18,14,01,03,81,46,27,78,0A,DS,7C,A3,57,49,9C,25,
11,48,4B,FF,FF,FF,FF,80,81,C0,81,00,95,00,81,40,81,80,90,40,B3,00,A9,40,01,1D,00,72,51,D0,1A,20,6E,28,
55,00,7E,8B,42,00,00,1A,02,5A,80,18,71,3B,2D,40,58,2C,45,00,C4,8E,21,00,00,1E,00,00,00,00,00,00,00,00,
53,2D,34,32,48,4E,0A,20,20,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,
02,03,1A,71,47,11,13,05,14,84,10,1F,23,0A,06,04,83,05,00,00,65,03,0C,00,10,00,8C,0A,D0,8A,20,E0,
2D,10,10,3E,96,00,58,C2,21,00,00,18,01,1D,80,18,71,1C,16,20,5B,2C,25,00,C4,8E,21,00,00,00,00,E0,11,
1D,80,D0,72,1C,16,20,10,2C,25,80,C4,8E,21,00,00,9E,01,1D,00,72,51,D0,1E,20,6E,28,55,00,C4,8E,21,00,
00,1E,01,1D,00,0C,32,D0,1E,20,B8,28,55,40,C4,8E,21,00,00,1E,00,00,00,00,00,00,00,00,00,00,00,00
15 Protocol 3000

The VS-62H can be operated using serial commands from a PC, remote controller or touch screen using the Kramer Protocol 3000.

This section describes:

- Kramer Protocol 3000 syntax (see Section 15.1)
- Kramer Protocol 3000 commands (see Section 15.2)

15.1 Kramer Protocol 3000 Syntax

15.1.1 Host Message Format

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Destination_id@</td>
<td>Message</td>
<td>CR</td>
</tr>
</tbody>
</table>

15.1.1.1 Simple Command

Command string with only one command without addressing:

<table>
<thead>
<tr>
<th>Start</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Command $\text{SP}$_{Parameter_1,Parameter_2,...}</td>
<td>CR</td>
</tr>
</tbody>
</table>

15.1.1.2 Command String

Formal syntax with commands concatenation and addressing:

<table>
<thead>
<tr>
<th>Start</th>
<th>Address</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Destination_id@</td>
<td>Command_1$_{Parameter1_1,Parameter1_2,...}$</td>
<td>CR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Command_2$_{Parameter2_1,Parameter2_2,...}$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Command_3$_{Parameter3_1,Parameter3_2,...}$</td>
<td></td>
</tr>
</tbody>
</table>

15.1.2 Device Message Format

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td>Sender_id@</td>
<td>Message</td>
<td>CR LF</td>
</tr>
</tbody>
</table>

15.1.2.1 Device Long Response

Echoing command:

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td>Sender_id@</td>
<td>Command $\text{SP}$_{[Param1,Param2 ...]}$ result</td>
<td>CR LF</td>
</tr>
</tbody>
</table>

\text{CR} = Carriage return (ASCII 13 = 0x0D)  
\text{LF} = Line feed (ASCII 10 = 0x0A)  
\text{SP} = Space (ASCII 32 = 0x20)
### 15.1.3 Command Terms

#### Command
A sequence of ASCII letters ('A'-'Z', 'a'-'z' and '.')
Command and parameters must be separated by at least one space.

#### Parameters
A sequence of alphanumeric ASCII characters ('0'-'9','A'-'Z','a'-'z' and some special characters for specific commands). Parameters are separated by commas.

#### Message string
Every command entered as part of a message string begins with a **message starting character** and ends with a **message closing character**.

**Note**: A string can contain more than one command. Commands are separated by a pipe ( '|' ) character.

**Message starting character**

'%' – For host command/query

'~' – For device response

**Device address** (Optional, for K-NET)
K-NET Device ID followed by '@'

**Query sign**

'?'+ follows some commands to define a query request.

**Message closing character**

<table>
<thead>
<tr>
<th>CR</th>
<th>– For host messages; carriage return (ASCII 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRLF</td>
<td>– For device messages; carriage return (ASCII 13) + line-feed (ASCII 10)</td>
</tr>
</tbody>
</table>

**Command chain separator character**
When a message string contains more than one command, a pipe ( '|' ) character separates each command.

Spaces between parameters or command terms are ignored.
15.1.4 Entering Commands

You can directly enter all commands using a terminal with ASCII communications software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial or Ethernet port on the Kramer device. To enter CR press the Enter key.

( LF is also sent but is ignored by command parser).

For commands sent from some non-Kramer controllers, (for example, Crestron) some characters require special coding (such as, /X##). Refer to the controller manual.

15.1.5 Command Forms

Some commands have short name syntax in addition to long name syntax to allow faster typing. The response is always in long syntax.

15.1.6 Chaining Commands

Multiple commands can be chained in the same string. Each command is delimited by a pipe character (“|”). When chaining commands, enter the message starting character and the message closing character only once, at the beginning of the string and at the end.

Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.

15.1.7 Maximum String Length

64 characters
## Kramer Protocol 3000 Commands

The following table lists the Protocol 3000 commands that the **VS-62H** supports. For a full description of the commands, see the *Kramer Protocol 3000* document available from [www.kramerav.com](http://www.kramerav.com).

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Protocol handshaking</td>
</tr>
<tr>
<td>AUD</td>
<td>Switch Audio only</td>
</tr>
<tr>
<td>AUD-EMB?</td>
<td>Get audio-in-video embedding status</td>
</tr>
<tr>
<td>BUILD-DATE?</td>
<td>Read device build date</td>
</tr>
<tr>
<td>CPEDID</td>
<td>Copy EDID data from the output to the input EEPROM</td>
</tr>
<tr>
<td>DEF-RES</td>
<td>Assign custom defined scaled video output resolution to “vic” index</td>
</tr>
<tr>
<td>DEF-RES?</td>
<td>Get custom defined video resolution</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Valid / Invalid output</td>
</tr>
<tr>
<td>DISPLAY?</td>
<td>Get output HPD status</td>
</tr>
<tr>
<td>ETH-PORT</td>
<td>Change protocol Ethernet port</td>
</tr>
<tr>
<td>ETH-PORT?</td>
<td>Get protocol Ethernet port</td>
</tr>
<tr>
<td>FACTORY</td>
<td>Reset to factory default configuration</td>
</tr>
<tr>
<td>HDCP-MOD</td>
<td>Set HDCP mode</td>
</tr>
<tr>
<td>HDCP-MOD?</td>
<td>Get HDCP mode?</td>
</tr>
<tr>
<td>HDCP-STAT?</td>
<td>Get HDCP signal status</td>
</tr>
<tr>
<td>HELP</td>
<td>List of commands</td>
</tr>
<tr>
<td>LOCK-FP</td>
<td>Lock front panel</td>
</tr>
<tr>
<td>LOCK-FP?</td>
<td>Get status of front panel lock</td>
</tr>
<tr>
<td>MODEL?</td>
<td>Read device model</td>
</tr>
<tr>
<td>MTX-MODE?</td>
<td>Get switch mode</td>
</tr>
<tr>
<td>NAME</td>
<td>Set machine (DNS) name</td>
</tr>
<tr>
<td>NAME?</td>
<td>Get machine (DNS) name</td>
</tr>
<tr>
<td>NAME-RST</td>
<td>Reset machine name to factory default (DNS)</td>
</tr>
<tr>
<td>NET-DHCP</td>
<td>Set DHCP mode</td>
</tr>
<tr>
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SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing