KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VS-81H
8x1 HDMI Switcher

VS-81H Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerav.com/manual/VS-81H to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

☑ **VS-81H**
  8x1 HDMI Switcher
☑ 1 Power cord
☑ 1 Set of rack "ears"
☑ 4 Rubber feet
☑ 1 Quick Start sheet

☑ Windows®-based Kramer control software
☑ Windows®-based Ethernet Configuration
☑ Manager and Virtual Serial Port Manager
☑ Kramer **RC-IR3** Infrared Remote Control
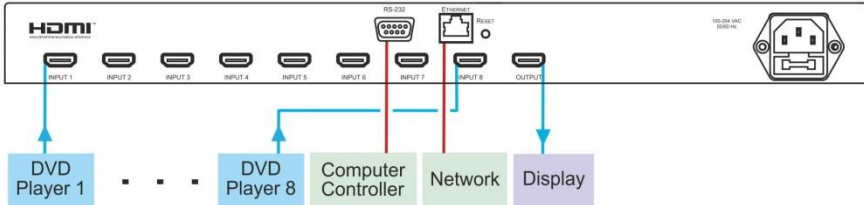 Transmitter with batteries and user manual
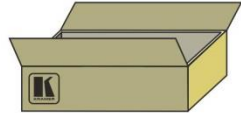
Save the original box and packaging in case your **VS-81H** needs to be returned to the factory for service.

Step 2: Install the VS-81H

Mount the machine in a rack or attach the rubber feet and place on a table.

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VS-81H**.

Always use Kramer high-performance cables for connecting AV equipment to the **VS-81H.**
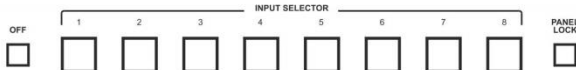
Step 4: Connect the power

Connect the power cord to the **VS-81H** and plug it into the mains electricity.

Step 5: Operate the VS-81H

Select the input, capture the EDID or lock the front panel buttons.
Operate the machine from the front panel, IR remote control, RS-232 or over a network.

Contents

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 14 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; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **VS-81H** *8x1 HDMI Switcher*, which is ideal for the following typical applications:

- Conference room presentations
- Rental and staging

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/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:

- 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 **VS-81H** 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

Warning: 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.kramerelectronics.com/support/recycling/*.

3 Overview

The **VS-81H** is a high-performance switcher for HDMI signals. It equalizes the signal and switches one of the 4 inputs to a single HDMI output.

In particular, the **VS-81H** features:

- A maximum data rate of 6.75Gbps (2.25Gbps per graphic channel)

- HDTV compatibility (suitable for resolutions up to UXGA at 60Hz, and for all HD resolutions)

- HDMI support with Deep Color, x.v.Color™, up to 7.1 Uncompressed Audio Channels

- HDCP support (High Definition Digital Content Protection)

- EDID pass-through that passes EDID/HDCP signals from source to display

- 3D pass-through

- Kramer Equalization Technology that equalizes the digital signal allowing it to travel distances of up to 15m (50ft)

- Eight input selector buttons

- A OFF button to disconnect the output and a PANEL LOCK button to prevent unwanted tampering with the buttons on the front panel

- A world-wide power supply 100−240V AC

- Installation in one vertical space of a standard 19" professional rack enclosure

Control the **VS-81H** using the front panel buttons, or remotely via:

- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller

- The Kramer **RC-IR3** infrared remote control transmitter

- The Ethernet

3.1 Defining the VS-81H 8x1 HDMI Switcher

This section defines the **VS-81H**.
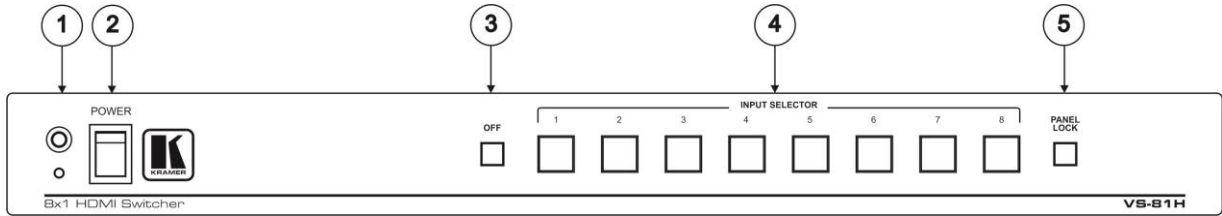
Figure 1: VS-81H 8x1 HDMI Switcher Front Panel

#	Feature	Function
1	IR Receiver	LED illuminates when receiving signals from the infrared remote control transmitter
2	*POWER* Switch	Illuminated switch for turning the unit ON or OFF
3	*OFF* Button	Press to toggle disconnecting the output Flashes when the EDID of the connected monitor is different from the last EDID that was saved
4	*INPUT SELECTOR* Buttons	Press to select an input (from 1 to 8)
5	*PANEL LOCK* Button	Press to toggle disengaging the front panel buttons and to set to the PC/DVD mode
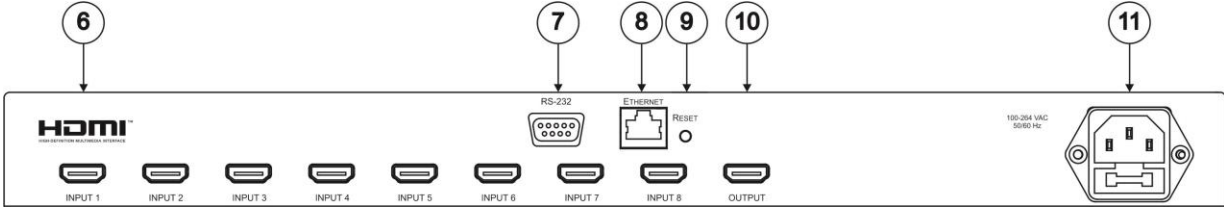
Figure 2: VS-81H 8x1 HDMI Switcher Rear Panel

#	Feature	Function
6	*INPUT* HDMI Connectors	Connect to the HDMI sources (from 1 to 8)
7	*RS-232* 9-pin D-sub Connector	Connects to a PC or an RS-232 remote controller
8	*ETHERNET* Connector	Connects to a PC, Ethernet controller or network
9	*RESET* Button	Press to reset to the factory default definitions: First disconnect the power cord and then connect it again while pressing the RESET button. The unit powers up and loads the factory default definitions into its memory. IP number – 192.168.1.39 Mask – 255.255.255.0 Gateway – 192.168.1.1
10	*OUTPUT* HDMI Connector	Connects to the HDMI acceptor
11	Power Connector with Fuse	AC connector enabling power supply to the unit

4 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:

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

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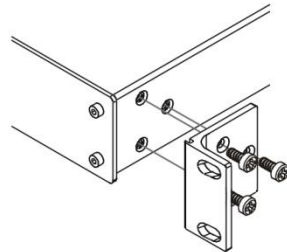
2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

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

5 Connecting the VS-81H

Always switch off the power to each device before connecting it to your **VS-81H**. After connecting your **VS-81H**, connect its power and then switch on the power to each device.

To connect the **VS-81H** *8x1 HDMI Switcher* (as illustrated in Figure 3), do the following:

1. If required:

    - Set the appropriate INPUTS to the DVD mode (see Section 6.1)

    - Acquire the EDID (see Section 6.2)

2. Connect the HDMI sources as follows:
    You do not have to connect all the HDMI sources.
    Alternatively, you can connect a PC to any of the inputs and set those inputs to the PC mode (see Section 6.1)

    - A multimedia player to INPUT 1

    - A set top box to INPUT 2

    - A DVD player to INPUT 6

    - A DVD player to INPUT 8

3. Connect the OUTPUT HDMI connector to an HDMI acceptor (for example, a plasma display).

4. If required, connect a PC and/or controller to the RS-232 port (see Section6.3) and/or the ETHERNET port (see Section 6.4).

5. Connect the power connector to the mains electricity (not shown in Figure 3).

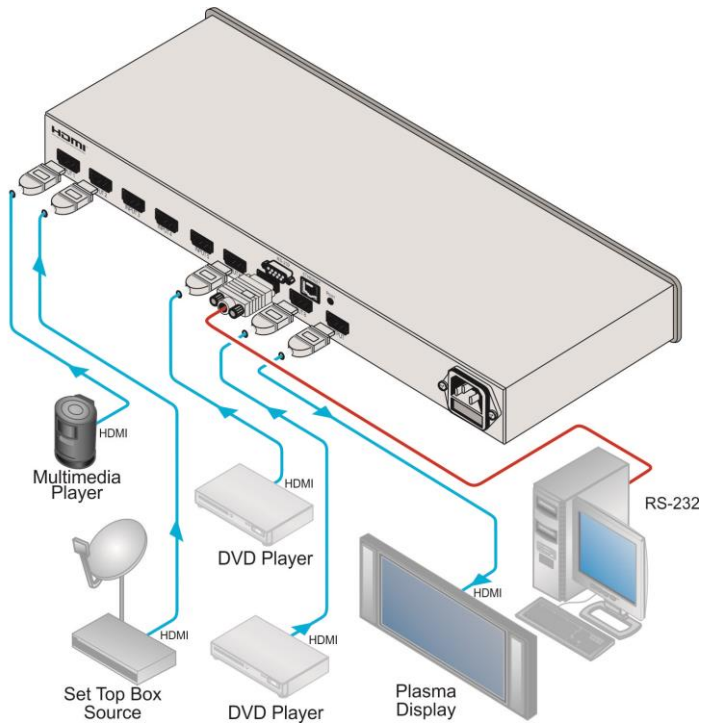Press an INPUT SELECTOR button (from 1 to 8) to choose the HDMI input to route to the output.

Figure 3: Connecting the VS-81H 8x1 HDMI Switcher

6 Operating the VS-81H

This section describes:

- The PC mode and the DVD mode (see Section 6.1)

- How to acquire the EDID (see Section 6.2)

- How to control the machine via RS-232 (see Section 6.3)

- How to control the machine via the ETHERNET port (see Section 6.4)

6.1 The PC and DVD Modes

The **VS-81H** has two operation modes that can be set individually for each input: the PC mode (default) and the DVD mode:

- Use the PC mode when connecting one or more computers to the inputs using a DVI-to-HDMI converter cable
  For example, the Kramer HDMI-DVI gold-plated cable in various lengths (3", 6", 10" and 15").

- Use the DVD mode when connecting one or more DVDs to the inputs

In the PC mode, an input always has access to the EDID (default or acquired) to prevent the computer from resetting if the output is not connected.

In the DVD mode, an input only has access to the EDID when it is switched to the connected output.

The PC mode and the DVD mode can be applied to a single unit or to several inputs. For example, if you want to connect computers to INPUTS 1 and 2, and DVD machines to INPUTS 6 and 8, set INPUTS 1 and 2 to the PC mode and INPUTS 6 and 8 to the DVD mode.

To set the inputs to either the PC or DVD mode, do the following:

1. Turn off the **VS-81H** POWER.

2. Press the PANEL LOCK button while turning the POWER on again.

3. Keep pressing and holding the PANEL LOCK button for a few seconds and then release it.

   The LOCK button flashes.

   If an input button illuminates, this indicates that that input is set to the DVD mode.

   If an input button is not illuminated, this indicates that that input is set to the PC mode.

4. Press an input to toggle between the PC mode (input button not illuminated) and the DVD mode (input button illuminated).

5. To exit this mode, press the PANEL LOCK button.

6. Connect a computer to the input that is set to the PC mode and a DVD to the input that is set to the DVD mode.

The following table summarizes the differences between the PC mode and the DVD mode:

PC Mode	DVD Mode
The input is connected to a computer	The input is connected to a multimedia application, such as a DVD, a set top box and so on
The EDID is available at all times (to prevent computer reset)	The EDID is available only when the input and an output are connected
The input EDID source is the default EDID or an acquired EDID (see Section 6.2)	The input EDID source is acquired directly from the connected output

6.2   Acquiring the EDID

The acquired EDID is used when an input is set to the PC mode.

To acquire the EDID, do the following:

1. Turn the POWER off.

2. Press the PANEL LOCK button and the INPUT 8 button while turning the POWER on again.

   The INPUT buttons flash in sequence until the unit has completed to read the EDID.

3. Release the PANEL LOCK and INPUT 8 buttons.

If an output was connected, the output EDID is read to all the inputs. If an output was not connected to the machine, the default EDID is read to the inputs.

6.3 Connecting via the RS-232 Port

You can connect to the **VS-81H** to a PC or RS-232 controller using the RS-232 connection.

Note that a null-modem adapter/connection is not required.

To connect to the **VS-81H** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **VS-81H** 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

6.4 Connecting via the ETHERNET Port

You can connect the **VS-81H** via the Ethernet, using a crossover cable (see Section 6.4.1) for direct connection to the PC or a straight through cable (see Section 6.4.2) for connection via a network hub or network router.

After connecting the Ethernet port, install and configure your Ethernet Port. For detailed instructions, see the "Ethernet Configuration (FC-11) guide.pdf" file in the technical support section on our Web site: http://www.kramerelectronics.com.

6.4.1 Connecting the ETHERNET Port directly to a PC (Crossover Cable)

You can connect the Ethernet port of the **VS-81H** to the Ethernet port on your PC, via a crossover cable with RJ-45 connectors.

This type of connection is recommended for identification of the factory default IP Address of the **VS-81H** during the initial configuration.

After connecting the Ethernet port, configure your PC as follows:

1. Right-click the My Network Places icon on your desktop.

2. Select **Properties**.

3. Right-click Local Area Connection Properties.

4. Select **Properties**.
   The Local Area Connection Properties window appears.

5. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see Figure 4).
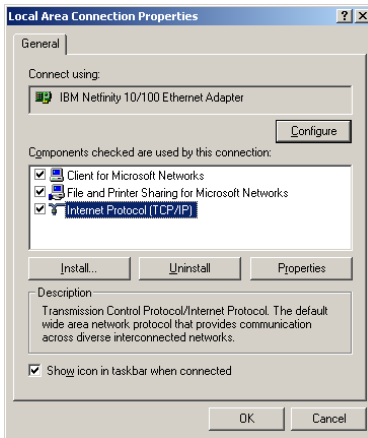
Figure 4: Local Area Connection Properties Window

6. Select Use the following IP Address, and fill in the details as shown in Figure 5.

7. Click **OK**.
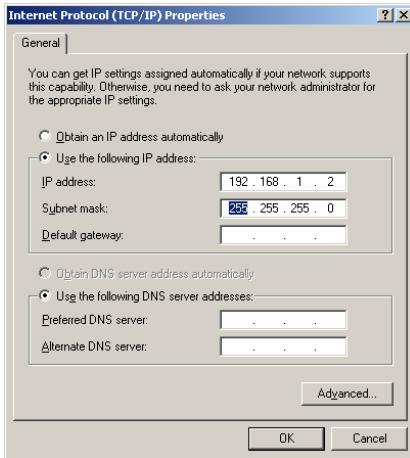
Figure 5: Internet Protocol (TCP/IP) Properties Window

6.4.2 Connecting the ETHERNET Port via a Network Hub (Straight-Through Cable)

You can connect the Ethernet port of the **VS-81H** to the Ethernet port on a network hub or network router, via a straight through cable with RJ-45 connectors.

6.4.3 Configuring Several Units via the Ethernet Port

To control several units via the Ethernet, connect each unit via the Ethernet port to the LAN port of your PC. Use your PC to initially configure the settings of each unit (see Section 6.46.4.1).

7   Technical Specifications

INPUTS:	8 HDMI connectors
OUTPUT:	1 HDMI connector
MAX. DATA RATE:	Up to 6.75Gbps (2.25Gbps per graphic channel)
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
RESOLUTION:	Up to UXGA; 1080p, deep color
POWER SOURCE:	100−240V AC; 50/60Hz, 12VA
CONTROLS:	Front panel buttons, infrared remote control transmitter, RS-232, Ethernet
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:	19" x 7" x 1U (W, D, H)
WEIGHT:	2.5kg (5.5lbs) approx.
ACCESSORIES:	Power cord, rack "ears" and IR remote control
Specifications are subject to change without notice at http://www.kramerelectronics.com	

8   Default Communication Parameters

RS-232	
Protocol 2000	
Baud Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	HEX
Example (Output 1 to Input 1):	0x01, 0x81, 0x81, 0x81
Ethernet	
IP Address:	192.168.1.39
TCP Port Number:	5000
Network Mask:	255.255.255.0
Default Gateway:	192.168.1.1

9　Protocol 2000

Kramer Protocol 2000 for RS-232/RS-485 communication uses four bytes of information as defined below.

MSB　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　LSB

DESTINATION		INSTRUCTION					
0	D	N5	N4	N3	N2	N1	N0
7	6	5	4	3	2	1	0

1st byte

INPUT							
1	I6	I5	I4	I3	I2	I1	I0
7	6	5	4	3	2	1	0

2nd byte

OUTPUT							
1	O6	O5	O4	O3	O2	O1	O0
7	6	5	4	3	2	1	0

3rd byte

			MACHINE NUMBER				
1	OVR	X	M4	M3	M2	M1	M0
7	6	5	4	3	2	1	0

4th byte

1st BYTE:　　　Bit 7 – Defined as 0.
D – "DESTINATION":　　　0 - for sending information to the switchers (from the PC);
1 - for sending to the PC (from the switcher).
N5…N0 – "INSTRUCTION"
The function that is to be performed by the switcher(s) is defined by the INSTRUCTION (6 bits). Similarly, if a function is performed via the machine's keyboard, then these bits are set with the INSTRUCTION NO., which was performed. The instruction codes are defined according to the table below (INSTRUCTION NO. is the value to be set for N5…N0).

2nd BYTE:　　　　　　　Bit 7 – Defined as 1.
　　　　　　　　　　　I6…I0 – "INPUT".
When switching (ie. instruction codes 1 and 2), the INPUT (7 bits) is set as the input number which is to be switched. Similarly, if switching is done via the machine's front-panel, then these bits are set with the INPUT NUMBER which was switched. For other operations, these bits are defined according to the table.

3rd BYTE:　　　　　　　Bit 7 – Defined as 1.
　　　　　　　　　　　O6…O0 – "OUTPUT".
When switching (ie. instruction codes 1 and 2), the OUTPUT (7 bits) is set as the output number which is to be switched. Similarly, if switching is done via the machine's front-panel, then these bits are set with the OUTPUT NUMBER which was switched. For other operations, these bits are defined according to the table.

4th BYTE:　　Bit 7 – Defined as 1.
　　　　　　　Bit 5 – Don't care.
　　　　　　　OVR – Machine number override.
　　　　　　　M4…M0 – MACHINE NUMBER.
Used to address machines in a system via their machine numbers. When several machines are controlled from a single serial port, they are usually configured together with each machine having an individual machine number. If the OVR bit is set, then all machine numbers will accept (implement) the command, and the addressed machine will reply. For a single machine controlled via the serial port, always set M4…M0 = 1, and make sure that the machine itself is configured as MACHINE NUMBER = 1.

All the values in the table are decimal, unless otherwise stated

Instruction Codes for Protocol 2000

Instruction		Definition for Specific Instruction		Notes
#	Description	Input	Output	
1	SWITCH VIDEO	Set equal to video input which is to be switched (0 = disconnect)	Set equal to video output which is to be switched (0 = to all the outputs)	2, 15
1	SWITCH VIDEO	Set equal to video input which is to be switched (0 = disconnect)	Set equal to video output which is to be switched (0 = to all the outputs)	2, 15
30	LOCK FRONT PANEL	0 - Panel unlocked 1 - Panel locked	0	2
31	REQUEST WHETHER PANEL IS LOCKED	0	0	16
61	IDENTIFY MACHINE	1 - video machine name 2 - audio machine name 3 - video software version 4 - audio software version 5 – RS-422 controller name 6 – RS-422 controller version 7 - remote control name 8 - remote software version 9 - Protocol 2000 revision	0 - Request first 4 digits 1 - Request first suffix 2 - Request second suffix 3 - Request third suffix 10 - Request first prefix 11 - Request second prefix 12 - Request third prefix	13

NOTES on the above table:

NOTE 2 – These are bi-directional definitions. That is, if the switcher receives the code, it will perform the instruction; and if the instruction is performed (due to a keystroke operation on the front panel), then these codes are sent. For example, if the HEX code

01   85   88   83

was sent from the PC, then the switcher (machine 3) will switch input 5 to output 8. If the user switched input 1 to output 7 via the front panel keypad, then the switcher will send HEX codes:

41   81   87   83

to the PC.
When the PC sends one of the commands in this group to the switcher, then, if the instruction is valid, the switcher replies by sending to the PC the same four bytes that it was sent (except for the first byte, where the DESTINATION bit is set high).

NOTE 13 – This is a request to identify the switcher/s in the system. If the OUTPUT is set as 0, and the INPUT is set as 1, 2, 5 or 7, the machine will send its name. The reply is the decimal value of the INPUT and OUTPUT. For example, for a 2216, the reply to the request to send the audio machine name would be (HEX codes):
 7D   96   90   81 (i.e. 128dec+ 22dec for 2nd byte, and 128dec+ 16dec for 3rd byte).

If the request for identification is sent with the INPUT set as 3 or 4, the appropriate machine will send its software version number. Again, the reply would be the decimal value of the INPUT and OUTPUT - the INPUT representing the number in front of the decimal point, and the OUTPUT representing the number after it. For example, for version 3.5, the reply to the request to send the version number would be (HEX codes):
7D   83   85   81 (i.e. 128dec+ 3dec for 2nd byte, 128dec+ 5dec for 3rd byte).

If the OUTPUT is set as 1, then the ASCII coding of the lettering following the machine's name is sent. For example, for the VS-7588YC, the reply to the request to send the first suffix would be (HEX codes):
7D   D9   C3   81 (i.e. 128dec+ ASCII for "Y"; 128dec+ ASCII for "C").

NOTE 15 – When the OVR bit (4th byte) is set, then the "video" commands have universal meaning. For example, instruction 1 (SWITCH VIDEO) will cause all units (including audio, data, etc.) to switch. Similarly, if a machine is in "FOLLOW" mode, it will perform any "video" instruction.

NOTE 16 - The reply to the "REQUEST WHETHER PANEL IS LOCKED" is as in NOTE 4 above, except that here the OUTPUT is assigned with the value 0 if the panel is unlocked, or 1 if it is locked.

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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CE

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

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