KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VS-41H
4x1 HDMI Switcher

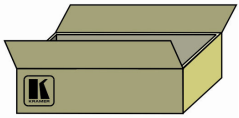
P/N: 2900-000667 Rev 3

VS-41H Quick Start Guide

This page guides you through a basic installation and first-time use of your **VS-41H**.
For more detailed information, see the **VS-41H** User Manual.
You can download the latest manual at http://www.kramerelectronics.com.

Step 1: Check what's in the box

- **VS-41H** 4x1 HDMI Switcher
- 1 Power cord
- 1 Set of rack "ears"
- 4 Rubber feet
- 1 Quick Start sheet
- 1 User Manual
- 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



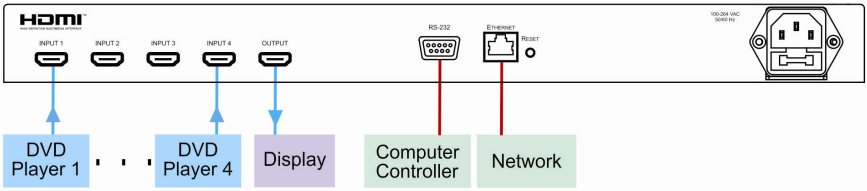
Save the original box and packaging in case your **VS-41H** needs to be returned to the factory for service.

Step 2: Install the VS-41H

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-41H**.



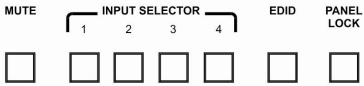
Always use Kramer high-performance cables for connecting AV equipment to the **VS-41H.**

Step 4: Connect the power

Connect the power cord to the **VS-41H** and plug it into the mains electricity.

Step 5: Operate the VS-41H

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



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1 Introduction

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

Our 1,000-plus different models now appear in 11 groups 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 Products.

Congratulations on purchasing your Kramer **VS-41H** *4x1 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
- Use Kramer high-performance, high-resolution cables
- Use only the power cord that is supplied with this machine

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

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables 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-41H** away from moisture, excessive sunlight and dust

3 Overview

The **VS-41H** is a high-performance switcher for HDMI signals. It reclocks and equalizes the signal and switches one of the 4 inputs to a single HDMI output.

In particular, the **VS-41H** 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 & re-Klocking™ Technology that rebuilds the digital signal to travel longer distances.
- Four input selector buttons
- A MUTE 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-41H** 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 EDID

The Extended Display Identification Data (EDID) is a data-structure provided by a display, to describe its capabilities to a graphics card (that is connected to the display's source). The EDID enables the **VS-41H** to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.
EDID is defined by a standard published by the Video Electronics Standards Association (VESA).

3.2 About HDMI—General Description

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital audio/video interface, widely supported in the entertainment and home cinema industry. HDMI ensures an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions. It delivers the maximum high-definition image and sound quality in use today. Note that Kramer Electronics Limited is an HDMI Adopter and an HDCP Licensee.

In particular, HDMI:

- Provides a simple interface between any audio/video source, such as a set-top box, DVD player, or AV receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy cable

  SIMPLICITY - With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in AV systems is reduced
  LENGTHY CABLE - HDMI technology has been designed to use standard copper cable construction at up to 15m

- Supports standard, enhanced, high-definition video, and multi-channel digital audio on a single cable

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

- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements

- Benefits consumers by providing superior, uncompressed digital video quality via a single cable, and user-friendly connector

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

- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play
- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p), standard definition formats such as NTSC or PAL, as well as 480p and 576p

3.3 About HDCP—General Description

The High-Bandwidth Digital Content Protection (HDCP) standard developed by Intel, protects digital video and audio signals transmitted over DVI or HDMI connections between two HDCP-enabled devices to eliminate the reproduction of copyrighted material. To protect copyright holders (such as movie studios) from having their programs copied and shared, the HDCP standard provides for the secure and encrypted transmission of digital signals.

3.4 Defining the VS-41H 4x1 HDMI Switcher

This section defines the **VS-41H**.

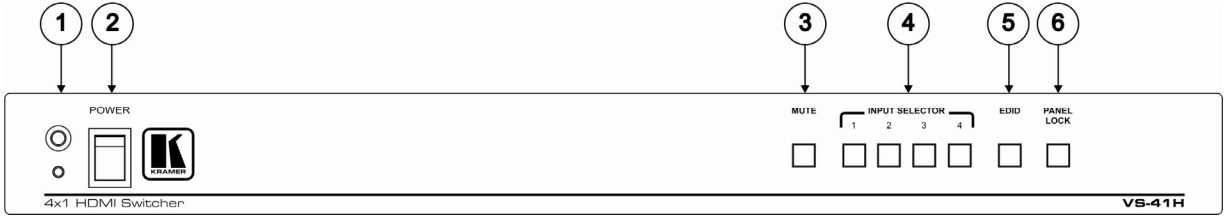


Figure 1: VS-41H 4x1 HDMI Switcher Front Panel

#	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	*MUTE* Button	Press to toggle disconnecting the output
4	*INPUT SELECTOR* Buttons	Press to select an input (from 1 to 4)
5	*EDID* Button	Press to acquire the EDID (button illuminates when configuring the EDID)
6	*PANEL LOCK* Button	Press to toggle disengaging the front panel buttons and to set to the PC/DVD mode

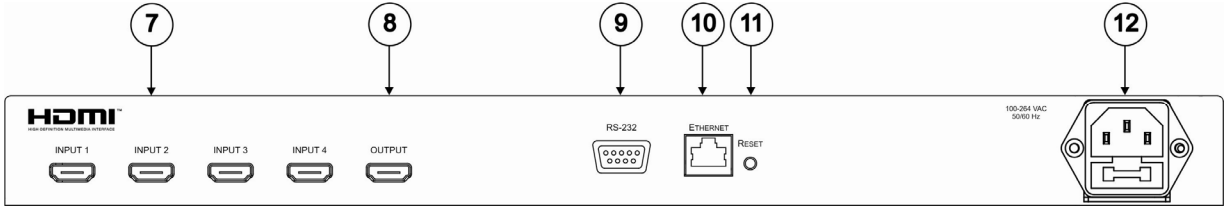


Figure 2: VS-41H 4x1 HDMI Switcher Rear Panel

#	Feature	Function
7	*INPUT* HDMI Connectors	Connect to the HDMI sources (from 1 to 4)
8	*OUTPUT* HDMI Connector	Connects to the HDMI acceptor
9	*RS-232* 9-pin D-sub Connector	Connects to a PC or an RS-232 remote controller
10	*ETHERNET* Connector	Connects to a PC, Ethernet controller or network
11	*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
12	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:	0º to +55ºC (32º to 131ºF)
STORAGE TEMPERATURE:	-45º to +72ºC (-49º to 162ºF)
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.

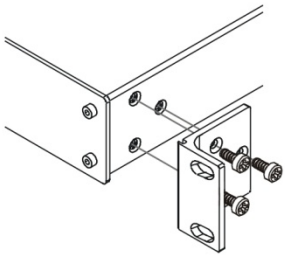
3. The machine is placed straight in the correct horizontal position.

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-41H

Always switch off the power to each device before connecting it to your **VS-41H**. After connecting your **VS-41H**, connect its power and then switch on the power to each device.

To connect the **VS-41H** *4x1 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 3
   - A DVD player to INPUT 4
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 Section 6.3) 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 4) to choose the HDMI input to route to the output.

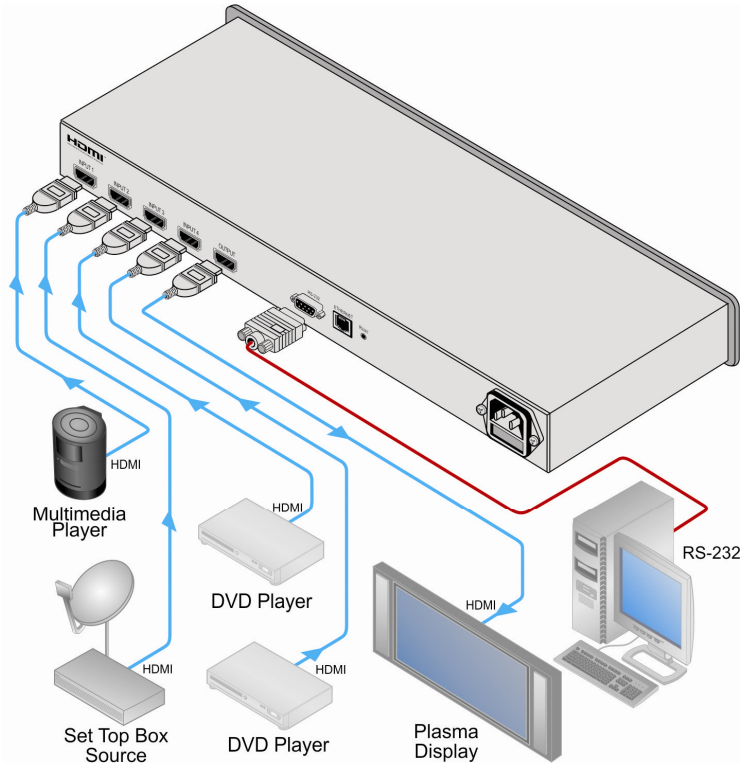


Figure 3: Connecting the VS-41H 4x1 HDMI Switcher

6 Operating the VS-41H

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-41H** 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 3 and 4, set INPUTS 1 and 2 to the PC mode and INPUTS 3 and 4 to the DVD mode.

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

1. Turn off the **VS-41H** 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 Setting the EDID

You can acquire or change the EDID (see Section 6.2.1) or reset the machine to the default EDID (see Section 6.2.2).

6.2.1 Acquiring / Changing the EDID

You can work with the default EDID or acquire or change an EDID via the connected output. Use the EDID button to acquire the output EDID information.

To acquire or change the EDID of a new output display:

1. Connect the new output display device.

2. Press the EDID button.
   The INPUT buttons flash in sequence until the EDID is acquired.

6.2.2 Resetting the Default EDID

To reset the default EDID, disconnect the output and repeat the steps in Section 6.2.1.

6.3 Connecting via the RS-232 Port

You can connect to the **VS-41H** 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-41H** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **VS-41H** 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-41H** 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-41H** 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-41H** 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).

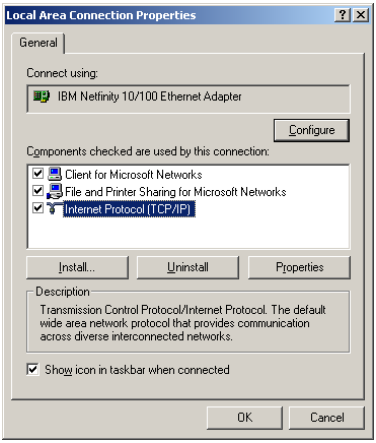


Figure 4: Local Area Connection Properties Window

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

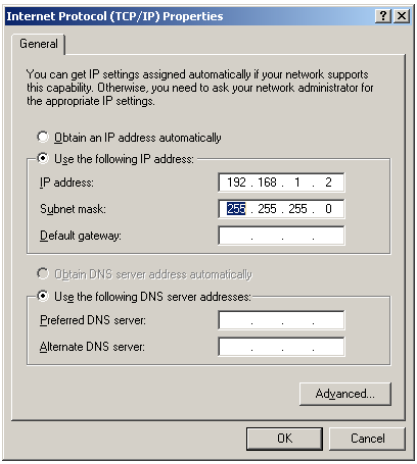


Figure 5: Internet Protocol (TCP/IP) Properties Window

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

You can connect the Ethernet port of the **VS-41H** 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:	4 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
POWER SOURCE:	100–240V AC; 50/60Hz, 10VA
CONTROLS:	Front panel buttons, infrared remote control transmitter, RS-232, Ethernet
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:	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	
0	RESET VIDEO	0	0	1
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
5	REQUEST STATUS OF A VIDEO OUTPUT	Set as SETUP #	Equal to output number whose status is reqd	4, 3
16	ERROR / BUSY	For invalid / valid input (i.e. OUTPUT byte = 4 or OUTPUT byte = 5), This byte is set as the input #	0 - error 1 - invalid instruction 2 - out of range 3 - machine busy 4 - invalid input 5 - valid input	9, 25
24	INCREASE / DECREASE AUDIO PARAMETER	Equal to input / output number whose parameter is to be increased / decreased (0 = all)	0 - increase output 1 - decrease output 2 - increase left output 3 - decrease left output 4 - increase right output 5 - decrease right output 6 - increase input 7 - decrease input 8 - increase left input 9 - decrease left input 10 - increase right input 11 - decrease right input	24
30	LOCK FRONT PANEL	0 - Panel unlocked 1 - Panel locked	0	2
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
62	DEFINE MACHINE	1 - number of inputs 2 - number of outputs 3 - number of setups	1 - for video 2 - for audio 3 - for SDI 4 - for remote panel 5 - for RS-422 controller	14

NOTES on the above table:

NOTE 1 – When the master switcher is reset, (e.g. when it is turned on), the reset code is sent to the PC. If this code is sent to the switchers, it will reset according to the present power-down settings.

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 3 – SETUP # 0 is the present setting. SETUP # 1 and higher are the settings saved in the switcher's memory, (i.e. those used for Store and Recall).

NOTE 4 – The reply to a "REQUEST" instruction is as follows: the same instruction and INPUT codes as were sent are returned, and the OUTPUT is assigned the value of the requested parameter. The replies to instructions 10 and 11 are as per the definitions in instructions 7 and 8 respectively. For example, if the present status of machine number 5 is breakaway setting, then the reply to the HEX code
0B 80 80 85
would be HEX codes
4B 80 81 85

NOTE 9 – An error code is returned to the PC if an invalid instruction code was sent to the switcher, or if a parameter associated with the instruction is out of range (e.g. trying to save to a setup greater than the highest one, or trying to switch an input or output greater than the highest one defined). This code is also returned to the PC if an RS-232 instruction is sent while the machine is being programmed via the front panel. Reception of this code by the switcher is not valid.

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 14 – The number of inputs and outputs refers to the specific machine which is being addressed, not to the system. For example, if six 16X16 matrices are configured to make a 48X32 system (48 inputs, 32 outputs), the reply to the HEX code
3E 82 81 82 (i.e. request the number of outputs)
would be HEX codes
7E 82 90 82
i.e. 16 outputs

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 24 – Further information needed in instructions 21, 22, 25 and 26, is sent using instruction 42 – which is sent prior to the instruction. For example, to request the audio gain value of right input # 9, send hex codes
2A 84 80 81
and then send HEX codes
19 89 81 81.
To set MIX mode, send hex codes
2A 81 84 81
and then send HEX codes
16

NOTE 25 – For units which detect the validity of the video inputs, Instruction 16 will be sent whenever the unit detects a change in the state of an input (in real-time).
For example, if input 3 is detected as invalid, the unit will send the HEX codes
10 83 84 81
If input 7 is detected as valid, then the unit will send HEX codes
10 87 85 81.

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

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