

Kramer Electronics, Ltd.



USER MANUAL

Model:

VP-23RC

Presentation Switcher / Controller

Contents

1	Introduction	1
2	Getting Started	1
2.1	Quick Start	1
3	Overview	3
3.1	About the VP-23RC	3
3.1.1	Understanding the Presentation Switcher Section	3
3.1.2	Understanding the Media / Room Controller Section	4
3.1.3	Controlling the VP-23RC	5
3.2	Connecting the VP-23RC Rear Panel	6
3.3	Recommendations for Achieving the Best Performance	7
3.4	Terminology Used in this User Manual	7
4	Your Presentation Switcher / Controller	8
4.1	The VP-23RC Front Panel	8
4.2	The VP-23RC Rear Panel	10
4.3	The VP-23RC Underside Panel	13
5	Installing the VP-23RC on a Rack	14
6	Connecting the VP-23RC Presentation Switcher Section	15
6.1	Connecting the Balanced/Unbalanced Stereo Audio Input/Output	17
6.2	Wiring the CAT 5 LINE OUT RJ-45 Connector	18
6.3	Shielded Twisted Pair (STP) / Unshielded Twisted Pair (UTP)	18
7	Connecting to the Media / Room Controller Equipment	19
7.1	Setting the Media / Room Controller PROGRAM Dipswitches	21
7.1.1	Factory Reset	21
8	Controlling the VP-23RC	22
8.1	Controlling the VP-23RC via a PC	22
8.1.1	Connecting an RS-232 port to a PC	23
8.2	Controlling Additional Kramer Machines via RS-232 and RS-485	24
8.2.1	The Presentation Switcher Section Dipswitches	24
8.3	Controlling via the ETHERNET	25
8.3.1	Connecting the ETHERNET Port directly to a PC (Crossover Cable)	26
8.3.2	Configuring Your PC	26
8.3.3	Connecting the ETHERNET Port via a Network Hub (Straight-Through Cable)	27
9	Operating Your VP-23RC	28
9.1	The Front Panel Buttons	28
9.2	Configuration of the VP-23RC	29
9.3	Media / Room Controller Section Operation	29
9.3.1	Operating the Media / Room Controller	32
9.3.2	An Example of Operating the VP-23RC	33
9.3.3	Using the Media / Room Controller Macro Buttons	33

9.3.4	Turning the Light of the Backlit Buttons On and Off	34
9.4	The Presentation Switcher Section Operation	34
9.4.1	The Independent Switchers Mode	34
9.4.2	The Master Audio Mode	35
9.4.3	The Presentation Switcher SELECTOR Buttons Macro Sequence	37
10	Flash Memory Upgrade	38
10.1	Flash Memory Upgrade for the Presentation Switcher Section	38
10.1.1	Downloading from the Internet	38
10.1.2	Connecting the PC to the RS-232 Port	38
10.1.3	Upgrading the Firmware	39
10.2	Flash Memory Upgrade for the Media / Room Controller Section	43
10.2.1	Downloading from the Internet	43
10.2.2	Connecting the PC to the RS-232 Port	43
10.2.3	Upgrading Firmware	44
10.2.4	Installing the Web Applet	44
10.3	Troubleshooting Firmware Upgrade Issues	45
11	Technical Specifications	46
12	Hex Table	47
12.1	Audio Gain Control Hex Tables	47
13	Communication Protocol	49

Figures

Figure 1:	VP-23RC Configuration Example	6
Figure 2:	VP-23RC Presentation Switcher / Controller – Front View	9
Figure 3:	VP-23RC Presentation Switcher / Controller – Rear View	11
Figure 4:	VP-23RC Presentation Switcher / Controller – Underside View	13
Figure 5:	Connecting the VP-23RC Presentation Switcher Section	16
Figure 6:	Connecting the Balanced Stereo Audio Input/Output	17
Figure 7:	Connecting the Unbalanced Stereo Audio Input	17
Figure 8:	Connecting the Unbalanced Stereo Audio Output	17
Figure 9:	CAT 5 PINOUT	18
Figure 10:	Connecting the VP-23RC Media/Room Controller Section	20
Figure 11:	Connecting a PC without using a Null-modem Adapter	23
Figure 12:	Default Dipswitch Settings	24
Figure 13:	Control Configuration via RS-232 and RS-485	25
Figure 14:	Local Area Connection Properties Window	26
Figure 15:	Internet Protocol (TCP/IP) Properties Window	27
Figure 16:	Example of a Typical Media/Room Controller Section Configuration	30
Figure 17:	Example of a Typical Setup in the Lecture Auditorium	31
Figure 18:	Labels Setup	32
Figure 19:	VP-23RC Operation Example	33
Figure 20:	Separate Switcher Mode	35
Figure 21:	Switching in the Master Audio Mode	36
Figure 22:	Presentation Switcher Macro Sequence Example	37
Figure 23:	Splash Screen	39

Figure 24: Atmel – Flip Window	39
Figure 25: Device Selection Window	40
Figure 26: Selecting the Device from the Selection Window	40
Figure 27: Loading the Hex	41
Figure 28: RS-232 Window	41
Figure 29: Atmel – Flip Window (Connected)	42
Figure 30: Atmel – Flip Window (Operation Completed)	42
Figure 31: The KFR-Programmer Window	44

Tables

Table 1: Terminology Used in this User Manual	7
Table 2: Front Panel VP-23RC Presentation Switcher / Controller Features	10
Table 3: Rear Panel VP-23RC Presentation Switcher / Controller Features	12
Table 4: VP-23RC Underside Panel Features	13
Table 5: CAT 5 PINOUT	18
Table 6: PROGRAM Dipswitch Settings	21
Table 7: Connecting an RS-232 Port to a PC	23
Table 8: Dipswitch Settings	24
Table 9: Connection Scheme (for the example in Figure 16)	30
Table 10: The Commands Configuration	32
Table 11: Technical Specifications of the VP-23RC Presentation Switcher / Controller	46
Table 12: VP-23RC Hex Table	47
Table 13: VP-23RC Master Audio Selector Hex Table	47
Table 14: Set the Audio Output Gain Control for the Groups	47
Table 15: Set the Audio Output Gain Control for the Microphone	47
Table 16: Set the Audio Output Gain Control for the Master Audio	48
Table 17: Increase or Decrease the Audio Output Gain by One Step	48
Table 18: Protocol Definitions	49
Table 19: Instruction Codes	50

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 groups¹ that are clearly defined by function.

Congratulations on purchasing your Kramer **VP-23RC** *Presentation Switcher / Controller*, which is ideal for:

- Controlling multimedia rooms, such as classrooms, auditoriums, conference rooms and so on
- Production studios, rental and staging

The package includes:

- **VP-23RC**
- Windows®-based Kramer control software and Kramer RC Configuration software
- Null-modem adapter, power cord², and one 3.5mm to IR emitter control cable
- Kramer **RC-IR2** Infrared Remote Control Transmitter (including the required batteries and a separate user manual³)
- This user manual³

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 cables⁴

2.1 Quick Start

This quick start chart summarizes the basic setup and operation:

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

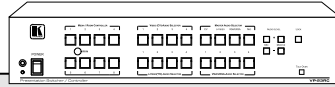
2 We recommend that you use only the power cord that is supplied with this machine

3 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

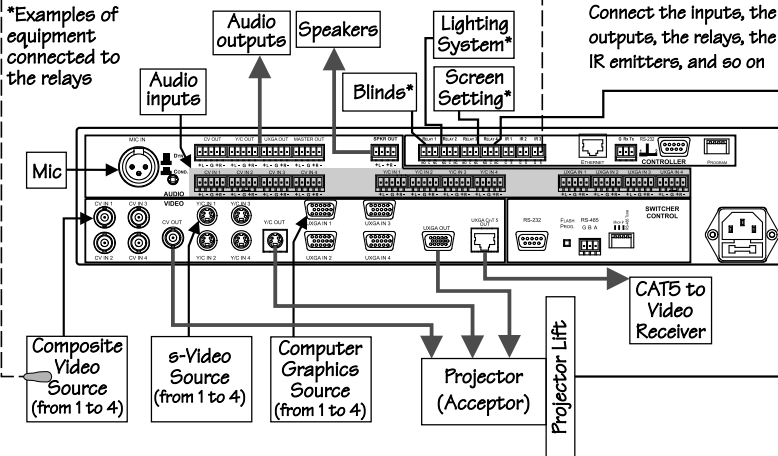
4 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

Step 1: Mount the machine - see section 5

Mount the machine in a rack or
stick the 4 rubber feet to the underside



Step 2: Connect the Inputs and outputs - see sections 6 and 7



Step 3: Connect the control port - see section 8

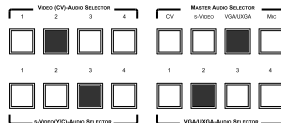
Connect an RS-232 Control Port, and/or the ETHERNET Port

Step 4: Turn the power ON

Step 5: Configure the button macros (system integrator)

Step 6: Set the Presentation Switcher Section - see section 9

Press a button to select an input (from 1 to 4) on each switcher to route to the appropriate output. Selected input buttons illuminate



Select the MASTER AUDIO SELECTOR button to switch a selected input audio signal or the MIC input to the master outputs: MASTER OUT and/or SPKR OUT

Adjust MIC signal Level



Adjust MASTER audio signal Level

To mute the audio, press the illuminated button for more than 2 seconds

Talk Over the master audio output with the microphone



Step 7: Operate the machine

Operate via the front panel buttons, IR remote control, RS-485, RS-232, and ETHERNET

3 Overview

This section describes:

- Using shielded twisted pair (STP)/unshielded twisted pair (UTP) (see section 6.3)
- The **VP-23RC** (see section 3.1)
 - Presentation Switcher section (see section 3.1.1)
 - Media / Room Controller (see section 3.1.2)
 - Means of control (see section 3.1.3)
- An example of how to connect the **VP-23RC** (see section 3.2)
- Recommendations for achieving the best performance (see section 3.3)
- Terminology used in this user manual (see section 3.4)

3.1 About the VP-23RC

The **VP-23RC** is a high quality all-in-one Presentation Switcher and Media/Room Controller, which lets you control A/V equipment and room items such as window blinds, room lights, and a projector lift. The **VP-23RC** includes two major sections: the Presentation Switcher section and the Media/Room Controller section, each of which can be operated independently, or in tandem.

3.1.1 Understanding the Presentation Switcher Section

The Presentation Switcher section includes three independent 4x1 audio/video switchers¹, and a master audio switcher².

The **VP-23RC** *Presentation Switcher* section features:

- Three sets of four selector buttons (for composite video and audio, s-Video and audio, and VGA/UXGA and audio), and four master audio selector buttons (CV, s-Video, VGA/UXGA and Mic). Each of these 16 selector buttons lets you select the inputs to switch to the outputs and can be configured³ to carry out a sequence of up to 15 commands (a macro) so that when pressing a configured button, the switching action is followed by a macro sequence
- VGA/UXGA video bandwidth of 350MHz to ensure transparent performance even in the most critical applications, and is HDTV compatible
- Composite/SDI video bandwidth of 650MHz, an s-Video bandwidth of 385MHz, and a CAT 5 bandwidth of 158MHz

1 A 4x1 switcher for composite video and audio, a 4x1 switcher for s-Video and audio, and a 4x1 switcher for computer graphics (VGA/UXGA) signals with audio

2 That routes one of the pre-selected audio inputs (from these three switchers) to two separate outputs

3 By the system integrator

- Digital microphone input level control and digital master audio level control
- Microphone talk-over mode¹
- A CAT 5 output, with a transmission range of more than 300 feet (over 100 meters) that transmits VGA/UXGA signals² to a remote acceptor via a receiver
- An internal 5-Watt per channel (24kHz, 3dB) power amplifier for connecting the speakers directly to the machine
- A panel LOCK button to prevent tampering with the front panel
- Recall of the previous setup from non-volatile memory
- Audio output level change (via RS-232)

3.1.2 Understanding the Media / Room Controller Section

The Media/Room Controller section controls A/V equipment—especially projectors and associated equipment³—in media rooms (such as classrooms, boardrooms, or auditoriums), as well as room functions such as lights, blinds, a projector lift and/or a screen motor.

The **VP-23RC** Media/Room Controller section includes:

- Eight configurable buttons to set up any supported commands
- An Ethernet port⁴ for configuration and control
- Two bidirectional RS-232⁵ serial ports for universal display (for example, projectors) and control of the **VP-23RC** (or other) switcher
- Four relays for the simplified and centralized control of room functions (such as lights, blinds, screen settings, and so on). The relays have normally open (NO) and normally closed (NC) contacts
- Three IR control ports
- An IR-learner for the customized remote transmitters, without the need for an external unit IR remote control
- Macro mode operation, for programming up to 15 commands with the press of a single button
- Firmware upgrade support

¹ The microphone input signal lowers the line audio output level when the connected microphone detects sound

² Excludes audio

³ Including the A/V equipment connected to the VP-23RC Presentation Switcher section

⁴ Also for controlling the Presentation Switcher section

⁵ The RS-232 terminal block port (item 14 in Figure 3) is also used for firmware upgrade

3.1.3 Controlling the VP-23RC

Control the **VP-23RC** using the front panel buttons, or remotely via:

- RS-232¹ serial commands transmitted by a touch screen system, PC, or other serial controller
- The Kramer Infrared remote control transmitter
- The ETHERNET²

The **VP-23RC** is dependable, rugged, and fits into two vertical spaces (2U) of a standard 19" professional rack.

¹ The RS-232 port (item 24 in Figure 3) located in the SWITCHER CONTROL area of the rear panel

² The Ethernet port is located in the CONTROLLER area of the rear panel and is also used for configuration of the media/room controller section by the system integrator

3.2 Connecting the VP-23RC Rear Panel

The **VP-23RC** can be connected in different configurations, integrating the Presentation Switcher section with the Media/Room Controller section. The block diagram in Figure 1 shows a **VP-23RC** configuration example:

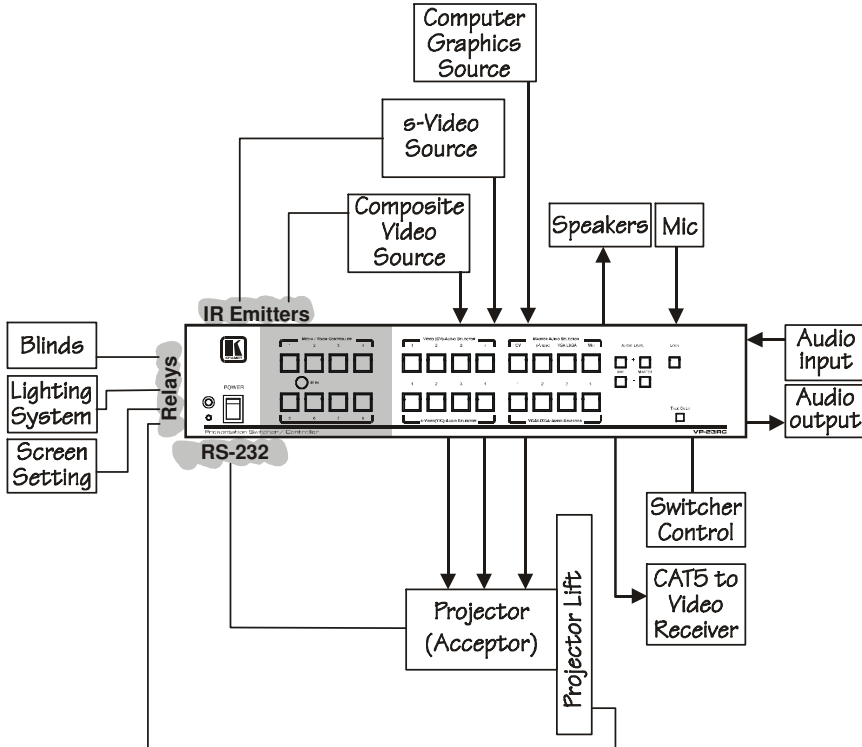


Figure 1: VP-23RC Configuration Example

In this example:

- Three VIDEO sources are connected to the inputs
- The three VIDEO outputs are all connected to the same projector
- The projector is connected to the RS-232 port in the CONTROLLER area
- Two of the video sources are also connected to the IR terminal blocks
- A CAT 5 UXGA receiver is connected
- Various room items are connected to the RELAY terminal blocks
- A microphone and speakers are connected, as well as the audio inputs and outputs

To connect the **VP-23RC** as illustrated in the block diagram in Figure 1:

- Connect the A/V equipment¹ to the Presentation Switcher section (see section 6)
- Connect the A/V equipment and room items to the Media/Room Controller section (see section 7)

3.3 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your Kramer **VP-23RC** away from moisture, excessive sunlight and dust

3.4 Terminology Used in this User Manual

Table 1 defines some terms that are used in this user manual.

Table 1: Terminology Used in this User Manual

Term	Definition
802.3	The standard specification for ETHERNET that is maintained by the Institute of Electrical and Electronics Engineers (IEEE).
Dynamic Host Configuration Protocol (DHCP)	Allows the network administrator to distribute IP addresses from a central point and automatically send a new IP address when an Ethernet point is plugged into a different network location.
Gateway	A network position serving as an entry to another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node.
IP Address	A 32-binary digit number that identifies each sender or receiver (within a network via a particular server or workstation) of data (HTML pages or e-mails) that is sent in packets across the Internet. Every device connected to an IP network must have a unique IP address. This address is used to reference the specific unit.
Local Area Network (LAN)	Computers sharing a common communications line or wireless link, which often share a server within a defined geographic area.
Media Access Control (MAC) Address	A computer's unique hardware number (or address) in a LAN or other network. On an Ethernet LAN, the (MAC) address is identical to the Ethernet address.
Transmission Control Protocol/Internet Protocol (TCP/IP)	The basic communication language or protocol of the Internet that breaks the message into appropriately sized packets for the network, and can be used as a communications protocol in an intranet or an extranet.

¹ Such as DVD players, video players, speakers and so on

4 Your Presentation Switcher / Controller

The **VP-23RC** front and rear panels relate in the following way:

- The Presentation Switcher section relates to the AUDIO, VIDEO and SWITCHER CONTROL areas on the rear panel
- The Media/Room Controller section relates to the CONTROLLER area on the rear panel
- The Power connector, the RS-232 port in the SWITCHER CONTROL AREA and the ETHERNET port are common to both sections

This section describes the **VP-23RC**:

- Front panel (see section 4.1)
- Rear panel (see section 4.2)
- Underside panel (see section 4.3)

4.1 The VP-23RC Front Panel

Figure 2 and Table 2 define the front panel of the **VP-23RC**.

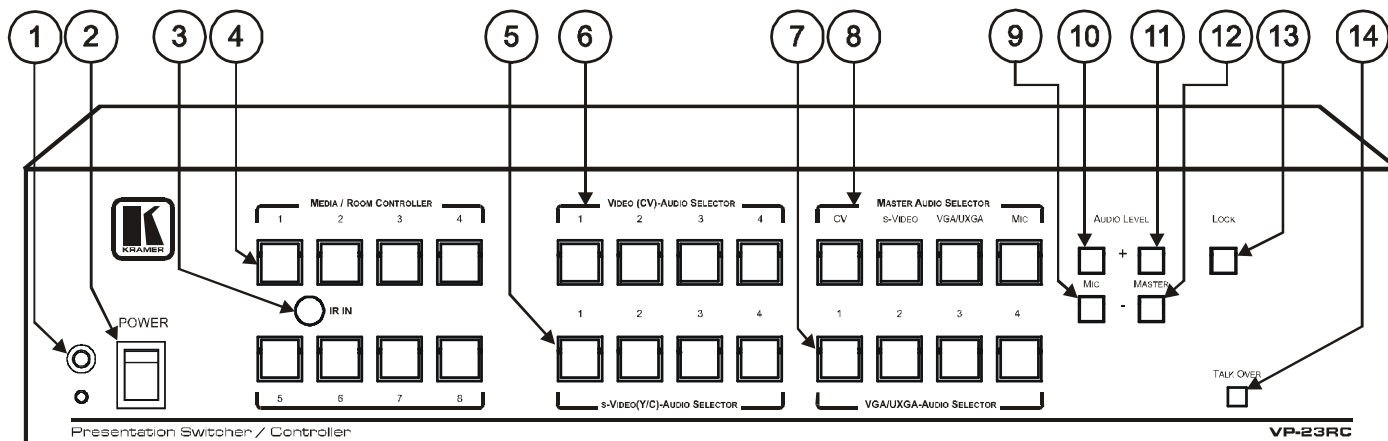


Figure 2: VP-23RC Presentation Switcher / Controller – Front View

Table 2: Front Panel VP-23RC Presentation Switcher / Controller Features

#	Feature			Function
1	IR (Infrared) Receiver			Signals from the Kramer remote control transmitter illuminate the LED
2	POWER Switch			Illuminated switch for turning the unit ON or OFF
3	IR IN Receiver			Accepts IR remote commands for the IR learner feature ¹
4	MEDIA / ROOM CONTROLLER Buttons			Control the room and the A/V equipment (from 1 to 8) ²
5	s-VIDEO (Y/C)-AUDIO SELECTOR Buttons			Selects the s-Video-audio source (from 1 to 4) ²
6	VIDEO (CV)-AUDIO SELECTOR Buttons			Selects the composite video-audio source (from 1 to 4) ²
7	VGA/UXGA-AUDIO SELECTOR Buttons			Selects the VGA/UXGA video-audio source from (1 to 4) ²
8	MASTER AUDIO SELECTOR ²	CV Button		Press to route the selected audio signal from the composite video section to the master audio outputs ³
		s-VIDEO Button		Press to route the selected audio signal from the s-Video section to the master audio outputs ³
		VGA/UXGA Button		Press to route the selected audio signal from the VGA/UXGA section to the master audio outputs ³
		MIC Button		Press to route the microphone input to the master audio outputs ³
9	AUDIO LEVEL	MIC	- Button	Decrease the microphone audio signal level
10			+ Button	Increase the microphone audio signal level
11		MASTER	+ Button	Increase the master audio signal level
12			- Button	Decrease the master audio signal level
13	LOCK Button			Press to lock the front panel buttons
14	TALK OVER Button			Push the button to activate talk over ⁴

4.2 The VP-23RC Rear Panel

Figure 3 and Table 3 define the rear panel of the **VP-23RC**.

¹ Used by the system integrator only, see section 9.2

² Each button when pressed can also execute a macro sequence of up to 15 programmed commands (as configured by the system integrator)

³ MASTER OUT and SPKR OUT

⁴ With the TALK OVER button selected, speaking into the microphone amplifies the voice of the speaker, overriding and fading out all other audio channels. However, pressing the MIC button in the Master Audio Selector renders the Talk Over function inactive

Your Presentation Switcher / Controller

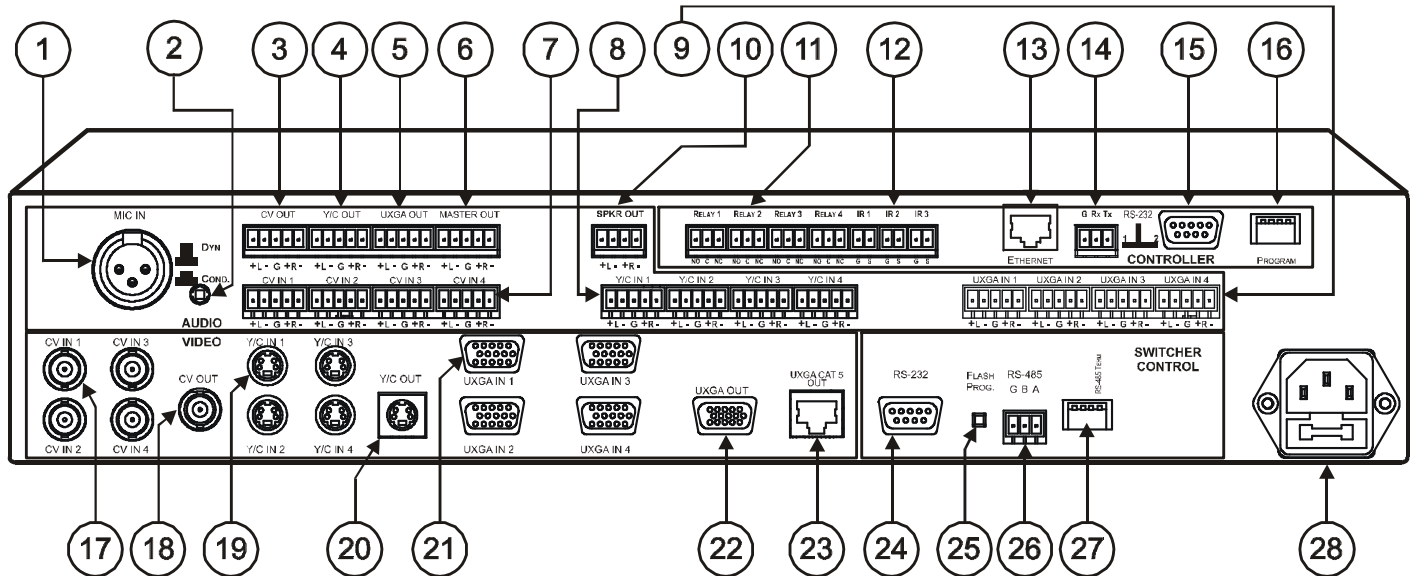


Figure 3: VP-23RC Presentation Switcher / Controller – Rear View

Table 3: Rear Panel VP-23RC Presentation Switcher / Controller Features

#	Feature		Function
1	AUDIO	MIC IN Connector	Connect to the microphone
2		COND. / DYN Selector Switch	Push in to select a condenser, release to select a dynamic microphone
3		CV OUT Terminal Block Connector	Connect to the composite video balanced audio acceptor
4		Y/C OUT Terminal Block Connector	Connect to the s-Video balanced audio acceptor
5		UXGA OUT Terminal Block Connector	Connect to the VGA/UXGA balanced audio acceptor
6		MASTER OUT Terminal Block Connector	Connect the master balanced audio channel acceptor ¹
7		CV IN Terminal Block Connectors	Connect to the composite video balanced audio sources ²
8		Y/C IN Terminal Block Connectors	Connect to the s-Video balanced audio sources ²
9		UXGA IN Terminal Block Connectors	Connect to the VGA/UXGA balanced audio sources ²
10		SPKR OUT Terminal Block Connector	Connect to a pair of loudspeakers
11	CONTROLLER	RELAY Terminal Block Connector	Connect each relay ² to a room item. The PINOUT is: NO: Normally Open; C: Common; NC: Normally Closed
12		IR Terminal Block Connectors	Connect to an IR emitter cable (from IR1 to IR 3)
13		ETHERNET Connector	Connects to the PC through computer networking ³
14		RS-232 Ports	Port 1: Terminal Block Connector (G, Rx, Tx) ⁴ Port 2: 9-pin D-sub Connector
15			
16		PROGRAM Dipswitches	DIP1 is for firmware upgrade (see section 10.2); DIP 3 is for factory reset; DIP 2 and DIP 4 are not used (see section 7.1)
17	VIDEO	CV IN BNC Connectors	Connect to the composite video sources ²
18		CV OUT BNC Connector	Connect to the composite video acceptor
19		Y/C IN 4-pin Connectors	Connect to the s-Video sources ²
20		Y/C OUT 4-pin Connector	Connect to the s-Video acceptor
21		UXGA IN 15-pin HD Connectors	Connect to the VGA/UXGA video sources ²
22		UXGA OUT 15-pin HD Connector	Connect to the VGA/UXGA video acceptor
23		UXGA CAT5 OUT RJ-45 Connector	Connect to a remote computer graphics acceptor via a receiver (for example, the TP-120), see section 3.2
24	SWITCHER CONTROL	RS-232 9-pin D-sub Port	Connect to a PC to control the VP-23RC
25		FLASH PROG. Button	Push in to upgrade the Presentation Switcher section to the latest Kramer firmware (see section 10.1), or release for Normal (the factory default)
26		RS-485 Terminal Block Port	Pins B (-) and A (+) are for RS-485; Pin G may be connected to the shield (if required)
27		Dipswitches	DIPs 1, 2 and 3 are OFF, DIP 4 is ON for RS-485 termination
28		Power Connector with Fuse	AC connector enabling power supply to the unit

1 Both the MASTER OUT and the SPKR OUT terminal block connectors receive the same signal: the MASTER OUT outputs the signal as it is while the SPKR OUT is amplified

2 From 1 to 4

3 To configure the Media/Room Controller section or control the VP-23RC via the ETHERNET

4 Port 1 can connect to a PC to upgrade the firmware of the Media/Room Controller section

4.3 The VP-23RC Underside Panel

Figure 4 and Table 4 define the **VP-23RC** underside features:

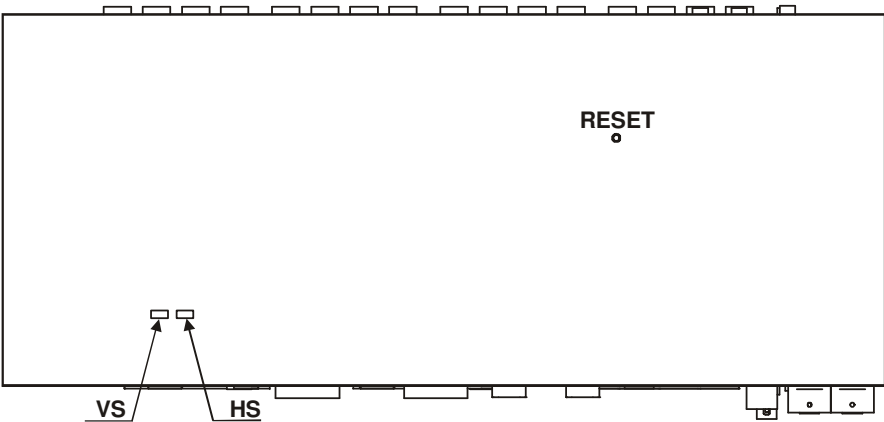


Figure 4: VP-23RC Presentation Switcher / Controller – Underside View

Table 4: VP-23RC Underside Panel Features

Feature	Function
RESET Button	Press to reset the unit prior to firmware upgrade (see section 10.1)
VS Switch	Slide the switch to the left (to NORMAL) to retain the polarity of the vertical sync pulses on the UXGA CAT5 OUT connector; slide the switch to the right ¹ to change the vertical sync pulses on the UXGA CAT5 OUT connector (VS) polarity to NEGATIVE polarity ²
HS Switch	Slide the switch to the left (to NORMAL) to retain the polarity of the horizontal sync pulses on the UXGA CAT5 OUT connector; slide the switch to the right ¹ to change the horizontal sync pulses on the UXGA CAT5 OUT connector (HS) polarity to NEGATIVE polarity ²

¹ By default, both switches are set to the left

² Downgoing syncs

5 Installing the VP-23RC on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing



CAUTION!!

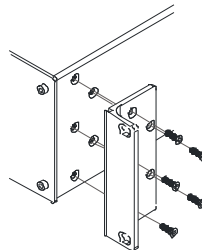
When installing on a 19" rack, avoid hazards by taking care that:

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.

How to Rack Mount

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 that:

- **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 (you can download it at: <http://www.kramerelectronics.com>)

6 Connecting the VP-23RC Presentation Switcher Section

To connect¹ the **VP-23RC** Presentation Switcher section, as illustrated in the example in Figure 5, do the following²:

1. Connect the following video sources:
 - One³ composite video source (for example, a composite video player) to the CV IN 1 BNC connector
 - One³ s-Video source (for example, an s-Video player) to the Y/C IN 1 4-pin connector
 - One³ VGA/UXGA source (for example, a computer graphics source) to the UXGA IN 1 15-pin HD connector
2. Connect the acceptors to a projector⁴ as follows:
 - The composite video CV OUT BNC connector to the composite video input of the projector
 - The s-Video Y/C OUT 4-pin connector to the s-Video input of the projector
 - The VGA/UXGA UXGA OUT 15-pin HD connector to the VGA/UXGA input of the projector
3. Connect the appropriate balanced⁵ audio sources and acceptors (not shown in Figure 5).
4. If required, connect the MASTER OUT terminal block connector (not shown in Figure 5; see section 9.4.2).
5. Connect the SPKR OUT block connector to a pair of loudspeakers, by connecting the left loudspeaker to the “L+” and the “L-” terminal block connectors, and the right loudspeaker to the “R+” and the “R-” terminal block connectors. **Do not Ground the loudspeakers.**
6. Connect the UXGA CAT5 OUT twisted pair connector (see section 6.2) to a line receiver (for example, the **TP-120 XGA Line Receiver**⁶, which is connected to a remote display).
7. If required, connect a dynamic or a condenser microphone⁷ to the MIC IN XLR connector.

1 You do not need to connect all the inputs

2 Switch OFF the power on each device before connecting it to your VP-23RC. After connecting your VP-23RC, switch on its power and then switch on the power on each device

3 Although in this example only one source is connected, you can connect all of the four inputs, that is, 12 in total

4 In this example a projector is used, but you can also connect separate outputs such as displays or video recorders

5 To connect audio inputs and outputs, see section 6.1

6 The receiver receives the CAT 5 signal, decodes it and outputs it to a VGA acceptor

7 Use the Con / Dyn switch (refer to the rear panel, item 2 in Figure 3) to select a dynamic microphone or a condenser

8. If required, connect a PC to the RS-232 port (see section 8.1.1).

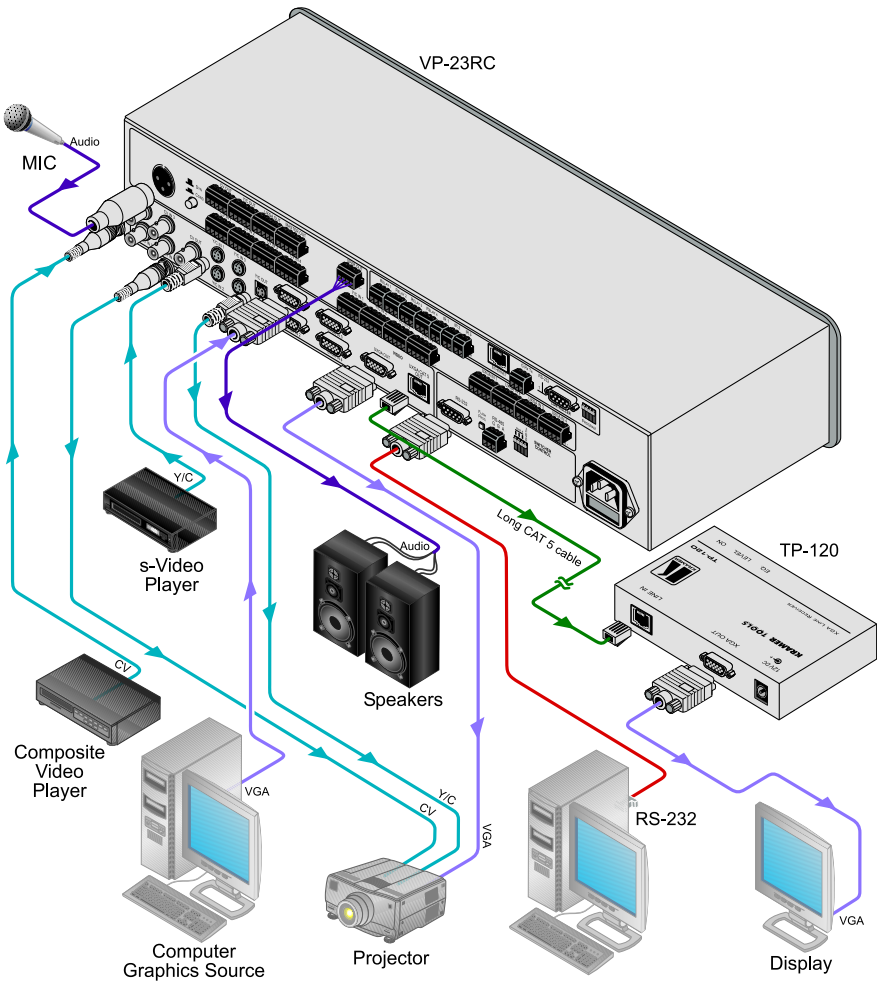


Figure 5: Connecting the VP-23RC Presentation Switcher Section

6.1 Connecting the Balanced/Unbalanced Stereo Audio Input/Output

Figure 6 illustrates how to wire a balanced input/output connection:

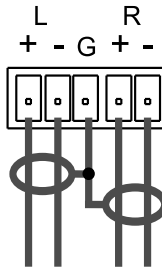


Figure 6: Connecting the Balanced Stereo Audio Input/Output

Figure 7 illustrates how to wire an unbalanced input:

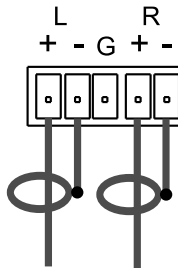


Figure 7: Connecting the Unbalanced Stereo Audio Input

Figure 8 illustrates how to wire an unbalanced acceptor to the balanced output of the unit:

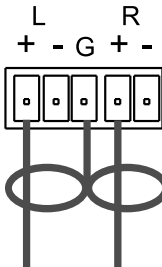


Figure 8: Connecting the Unbalanced Stereo Audio Output

6.2 Wiring the CAT 5 LINE OUT RJ-45 Connector

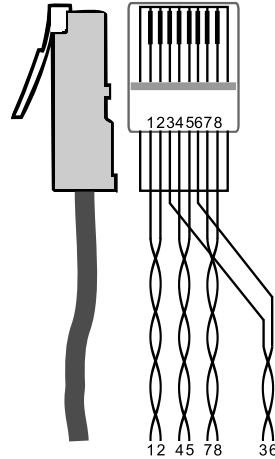
Table 5 and Figure 9 define the CAT 5 PINOUT, using a straight pin-to-pin cable with RJ-45 connectors:

Table 5: CAT 5 PINOUT

EIA /TIA 568A	
PIN	Wire Color
1	Green / White
2	Green
3	Orange / White
4	Blue
5	Blue / White
6	Orange
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	3 and 6
Pair 3	1 and 2
Pair 4	7 and 8

EIA /TIA 568B	
PIN	Wire Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

Figure 9: CAT 5 PINOUT



6.3 Shielded Twisted Pair (STP) / Unshielded Twisted Pair (UTP)

We recommend that you use shielded twisted pair (STP) cable. There are different levels of STP cable available, and we advise you to use the best quality STP cable that you can afford. Our non-skew-free cable, Kramer **BC-STP**, which is intended for digital signals and for analog signals where skewing is not an issue, is recommended for the **VP-23RC**. For cases where there is skewing, our UTP skew-free cable, Kramer **BC-XTP**, may be used. Bear in mind, though, that we advise using STP cables where possible, since the compliance to electromagnetic interference was tested using those cables.

Although unshielded twisted pair (UTP) cable might be preferred for long range applications, the UTP cable should be installed far away from electric cables, motors and so on, which are prone to create electrical interference. However, since the use of UTP cable might cause inconformity to electromagnetic standards, Kramer does not commit to meeting the standard with UTP cable.

You can connect to a remote computer graphics acceptor via a receiver (for example, the **TP-120**), see section 3.2.

Some Kramer twisted pair products include the Power Connect feature. The **VP-23RC** does not have this feature.

7 Connecting to the Media / Room Controller Equipment

To connect¹ the **VP-23RC** Media/Room Controller section, as the example illustrated in Figure 10 shows, do the following²:

1. Connect the RELAY³ terminal block connectors as follows:
 - Connect RELAY 1 to the blinds
 - Connect RELAY 2 to the lighting system
 - Connect RELAY 3 to the projector lift
 - Connect RELAY 4 to the screen
2. Connect the IR terminal block connectors⁴, via the Kramer IR Emitter Control Cable (C-A35/IRE-10)⁵, as follows:
 - Connect IR 1 to the composite video player (connected to CV IN 1 on the **VP-23RC**)
 - Connect IR 2 to the s-Video player (connected to Y/C IN 1 on the **VP-23RC**)
3. Connect the RS-232 port 1 to the projector⁶.
4. Set the PROGRAM dipswitches (see section 7.1).
5. Connect the power cord.

Upon completion of the installation, and before operation, the **VP-23RC** needs to be configured by the system integrator (see section 9.2)

¹ You do not need to connect all the items

² Note that Figure 10 emphasizes the connections related to the Media/Room Controller section, other connections are grayed out

³ On each 3-pole terminal block connector, connect either: C to **NO**, or C to **NC** (C is Common, NO is Normally Open and NC is Normally Closed)

⁴ VP-23RC has three IR emitters. In this example only two IR emitters are connected

⁵ Refer to the cables' user manuals for installation instructions. In addition, two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable

⁶ In this example only Port 1 is connected, but you can also connect the RS-232 port 2 to a display or other device (or, if required, connect it to a PC for firmware upgrade, see section 10.2)

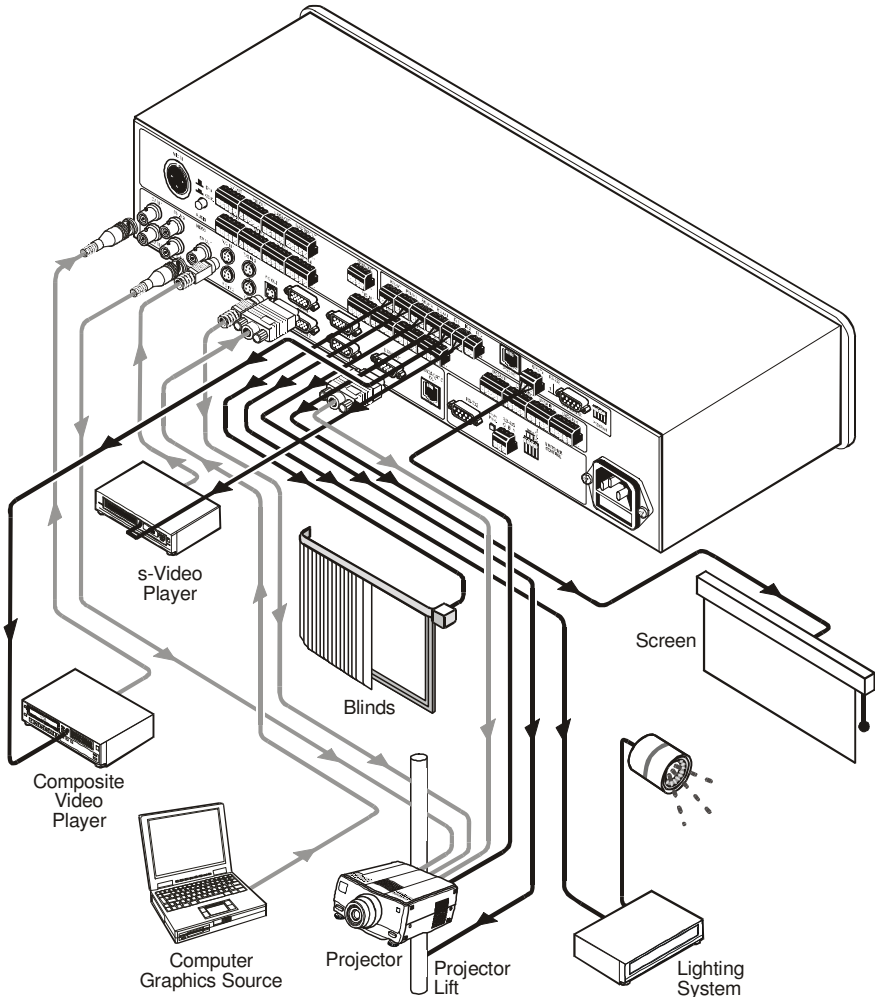


Figure 10: Connecting the VP-23RC Media/Room Controller Section

7.1 Setting the Media / Room Controller PROGRAM Dipswitches

The PROGRAM dipswitches are located in the CONTROLLER area of the rear panel (see section 7.1). Table 6 defines the PROGRAM dipswitch settings:

Table 6: PROGRAM Dipswitch Settings

DIPS	Description
1	ON for Firmware Upgrade (see section 10.2)
2	Not used
3	ON for Factory Reset (see section 7.1.1)
4	Not used

7.1.1 Factory Reset

Factory reset clears all the button macro configurations¹, serial ports definition and also returns the IP number, Gateway and Net mask to their preset default settings².

Warning: Factory Reset erases all the configured button macros

To reset the Media/Room Controller to its default settings, do the following:

1. Turn the power on the **VP-23RC** OFF.
2. Set DIP 3 ON.
3. Turn the power on the **VP-23RC** ON.
The machine initializes after about 5 seconds
4. Set DIP 3 OFF.

¹ On the Media/Room Controller buttons as well as on the Presentation Switcher SELECTOR buttons

² IP number: 192.168.1.39, Gateway: 0.0.0.0, and Net mask: 255.255.0.0

8 Controlling the VP-23RC

The **VP-23RC** can be controlled via:

- A PC (see section 8.1)
- RS-232 and RS-485 (see section 8.2)
- The ETHERNET (see section 8.3)

8.1 Controlling the VP-23RC via a PC

To control the **VP-23RC**¹ via the control software:

1. Connect your PC to the SWITCHER CONTROL RS-232 port on the rear panel (see section 8.1.1).
2. Download the Windows®-based Kramer control software (provided with the machine) to your PC.
3. Run the application. The Port window appears.
4. Select the Local Connection area, select the COM port² to which the **VP-23RC** is connected, and click OK.

The application finds the unit automatically.

¹ The Media/Room Controller section can be controlled by a PC only if the MEDIA / ROOM CONTROLLER buttons are configured (see section 9.2)

² If you want to use the Windows®-based Kramer control software via the Ethernet, select the Remote Connection area, insert the machine's IP number and set the port to 5002

8.1.1 Connecting an RS-232 port to a PC

You can connect a PC to the **VP-23RC** via an RS-232 port, as defined in Table 7:

Table 7: Connecting an RS-232 Port to a PC

RS-232 Rear Panel Port Location	For...
Port 1 in the CONTROLLER area	Media/Room Controller firmware upgrade (see section 10.2)
RS-232 port in the SWITCHER CONTROL area	- Presentation Switcher firmware upgrade (see section 10.1) - Controlling the VP-23RC via a PC (see section 8) - Controlling other Kramer machines that are connected to the VP-23RC via RS-485 (see section 8.2)

To connect a PC using the Null-modem adapter provided with the machine (recommended method):

- Connect the RS-232 9-pin D-sub rear panel port¹ on the **VP-23RC** to the Null-modem adapter² via a 9-wire flat cable and connect the Null-modem adapter to the RS-232 9-pin D-sub port on your PC

To connect without using a Null-modem adapter:

- Connect the RS-232 9-pin D-sub port on your PC to the RS-232 9-pin D-sub rear panel port on the **VP-23RC**, as Figure 11 illustrates

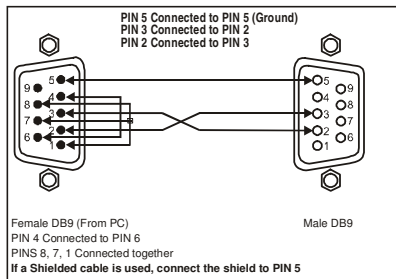


Figure 11: Connecting a PC without using a Null-modem Adapter

1 Select the RS-232 port according to your needs, as defined in Table 7

2 For the male RS-232 port (port 2 in the CONTROLLER area), use a male-to-female adapter

8.2 Controlling Additional Kramer Machines via RS-232 and RS-485

You can cascade other Kramer machines¹ together with the **VP-23RC** via the RS-485 port, and control them via the SWITCHER CONTROL RS-232 port using a PC.

To connect two Kramer **VP-8x8A** machines to the **VP-23RC**, via RS-485, as illustrated in the example in Figure 13, do the following:

1. Connect the audio/video sources and acceptors on the **VP-23RC** and on the additional Kramer machines (refer to the relevant user manuals for installation instructions).
2. Connect the RS-232 port on the **VP-23RC** unit to the PC using the Null-modem adapter provided with the machine (recommended), as section 8.1.1 describes.
3. Connect the RS-485 terminal block port on the **VP-23RC** to the RS-485 port on the first **VP-8x8A**. Connect the RS-485 port on the first **VP-8x8A** to the RS-485 port on the second **VP-8x8A** machine.
4. Set the dipswitches as follows:
 - Set the Machine number of each of the other units to a machine number other than machine number 1
 - Set Dip 4 ON on the **VP-23RC** (RS-485 TERM) and terminate the RS-485 line on the last unit

8.2.1 The Presentation Switcher Section Dipswitches

The Switcher setup dipswitches are located in the SWITCHER CONTROL area of the rear panel. Table 8 and Figure 12 define the factory default dipswitch settings²:

Table 8: Dipswitch Settings

DIPS	Function	Description
1, 2, 3	Not used	Set to OFF
4	RS-485 TERM	ON for RS-485 Line Termination with 120Ω; OFF for no RS-485 Line Termination

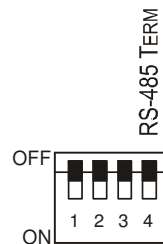


Figure 12: Default Dipswitch Settings

¹ But not other VP-23RC machines

² By default, all dipswitches are set to OFF

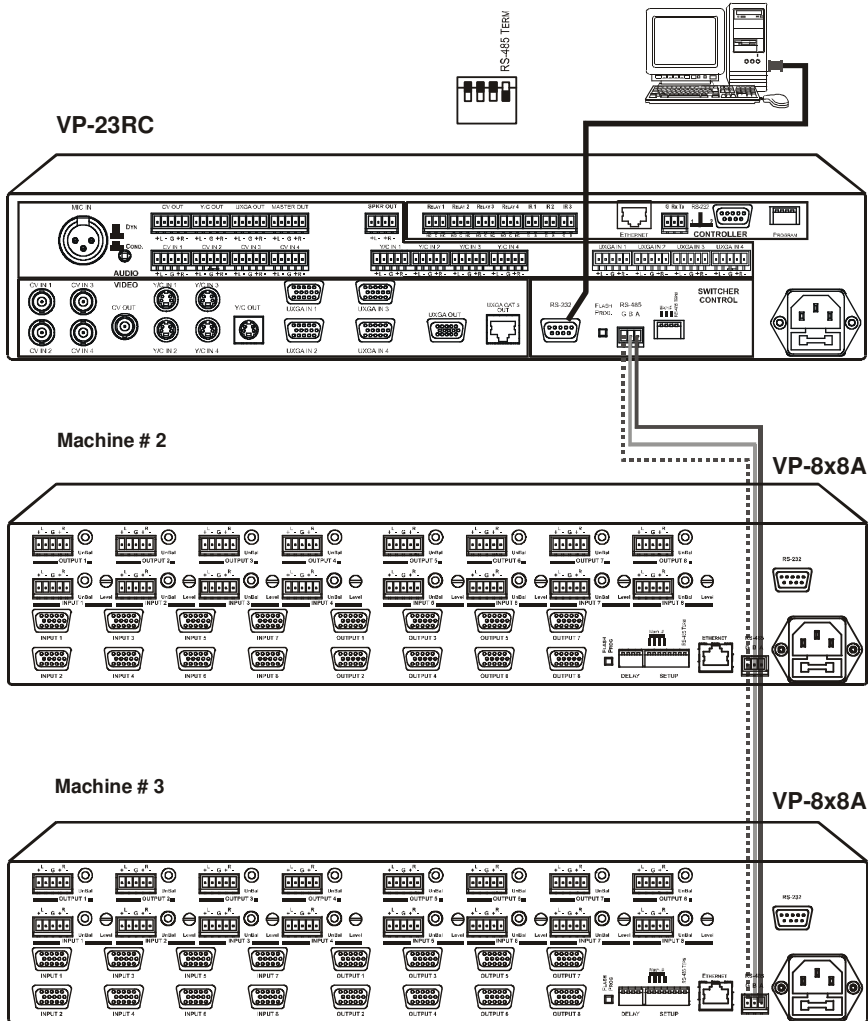


Figure 13: Control Configuration via RS-232 and RS-485

8.3 Controlling via the ETHERNET

You can control the **VP-23RC** via the Ethernet as well as configure the Media/Room Controller buttons and the Presentation Switcher **SELECTOR** buttons¹.

¹ Done by the system integrator, see section 9.2

Before using the **VP-23RC** via a network hub or network router, make sure that:

- The IP number of the machine is defined on the network subnet and that its number is unique in the local network
- A Firewall is not preventing access to the device

If you need further assistance, contact your system integrator.

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

You can connect the Ethernet port of the **VP-23RC** 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 **VP-23RC** and for the initial configuration (see section 9.2)

8.3.2 Configuring Your PC

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 14).

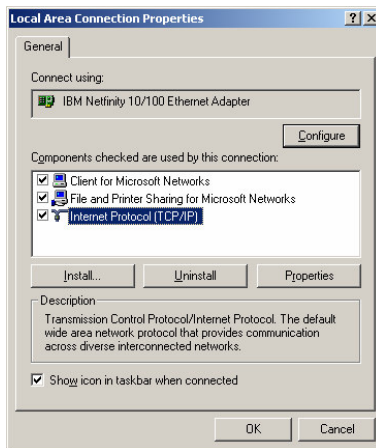


Figure 14: Local Area Connection Properties Window

6. Select Use the following IP Address, and fill in the details as shown in Figure 15.
7. Click **OK**.

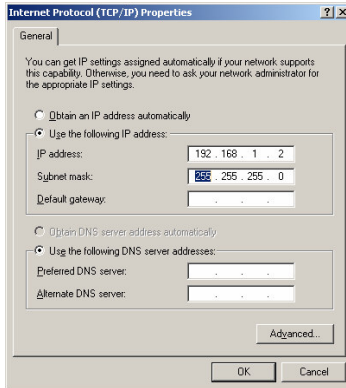


Figure 15: Internet Protocol (TCP/IP) Properties Window

Remember to restore your previous PC settings after setting the **VP-23RC** IP

If the Media/Room Controller is not yet configured you can control via the Ethernet, the Presentation Switcher section only.

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

After initially configuring the **ETHERNET** port, you can connect the Ethernet port of the **VP-23RC** to the Ethernet port on a network hub or network router, via a straight-through cable with RJ-45 connectors.

9 Operating Your VP-23RC

This section describes the:

- Front panel buttons (see section 9.1)
- **VP-23RC** button configuration (see section 9.2)
- Media/Room Control section operation (see section 9.3)
- Presentation Switcher section operation (see section 9.4)

9.1 The Front Panel Buttons

The front panel buttons include the:

- MEDIA / ROOM CONTROL buttons¹ (1 to 8)
- VIDEO (CV)-AUDIO SELECTOR buttons¹ (1 to 4)
- S-VIDEO (Y/C)-AUDIO SELECTOR buttons¹ (1 to 4)
- VGA/UXGA-AUDIO SELECTOR buttons¹ (1 to 4)
- MASTER AUDIO SELECTOR buttons¹ (CV, S-VIDEO, VGA/UXGA and MIC)
- TALK OVER button², which lowers or mutes the MASTER AUDIO LEVEL when the microphone picks up speech³
- MIC AUDIO LEVEL up and down buttons to adjust the level at the master audio out⁴ connectors⁵ and the talk-over function threshold⁶
- MASTER AUDIO LEVEL up and down buttons to adjust the audio output level at the master audio out connectors⁴, without influencing any other audio output
- Panel LOCK button to lock the front panel buttons

By default⁷, the stereo audio signals switch together with the video, that is, the unit is set in audio-follow-video⁸ (AFV) mode. You can change to breakaway mode⁹, via the RS-232 port in the SWITCHER CONTROL area

¹ Which can be programmed to execute a sequence of up to 15 commands per button (see section 9.4.3)

² Two channels are active in the Talk Over mode, a source selected via the MASTER AUDIO SELECTOR buttons and the microphone channel

³ Adjust the microphone level via the MIC AUDIO LEVEL + and - buttons

⁴ MASTER OUT and SPKR OUT

⁵ Useful in the TALK OVER mode, when the microphone level needs to be adjusted separately

⁶ Achieving optimum results for a particular environment when using a microphone may require experimentation in adjusting the AUDIO and MIC LEVELS

⁷ This is, the pre-installed factory default. The default can be modified via the Windows®-based Kramer control software

⁸ In which all operations relate to both the video and the audio channels

⁹ In which video and audio channels switch independently

Pressing an illuminated AUDIO SELECTOR button for more than 2 seconds disconnects that master audio output, and the button no longer illuminates. The video will continue to display but without sound.

The Master Audio automatically follows the last input selected (for example, VGA/UXGA), regardless of the switcher group (VGA, s-Video, or composite video), and the respective button¹ under the MASTER AUDIO SELECTOR section illuminates, indicating that the selected input (for example, VGA/UXGA) is routed to the master outputs.

9.2 Configuration of the VP-23RC

The Media/Room Controller section and the Presentation Switcher SELECTOR buttons are configured by the system integrator. For further details, refer to the Kramer RC configuration and Installation Guide PDF file, located in the technical support section on our Web site: <http://www.kramerelectronics.com>

9.3 Media / Room Controller Section Operation

The Media/Room Controller section is easy-to-use, as the example in Figure 16 and Table 9 describes²:

¹ Replacing the previous illuminated button

² This example describes how to setup one of an unlimited number of available setups for the system

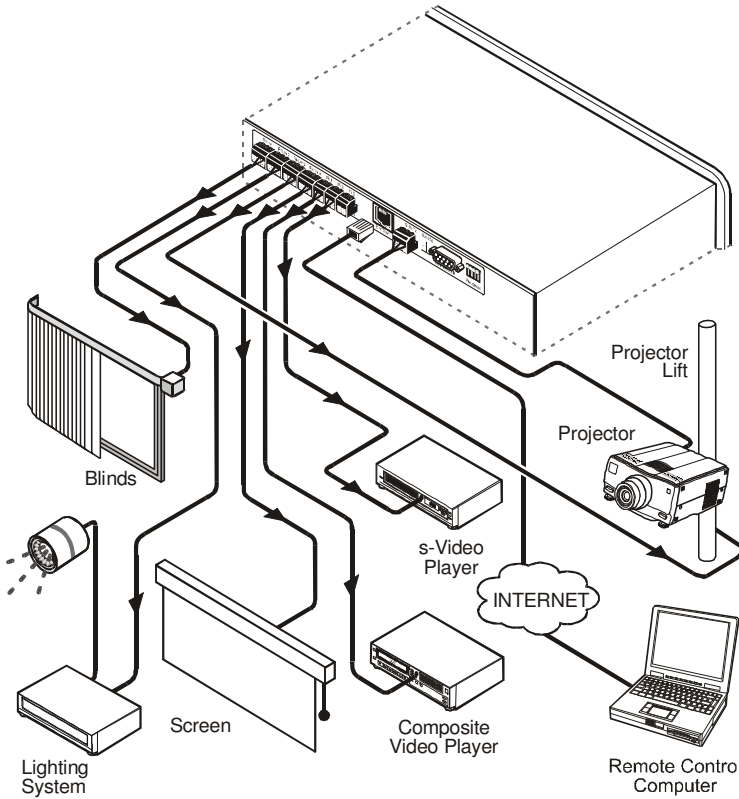


Figure 16: Example of a Typical Media/Room Controller Section Configuration

Table 9: Connection Scheme (for the example in Figure 16)

This connector:	Controls:
RELAY 1	The blinds
RELAY 2	The lighting system
RELAY 3	Projector lift motor
RELAY 4	The screen settings motor
IR 1 PIN ¹	A composite video player
IR 2 PIN ¹	An s-Video player
IR 3 PIN	Not connected in this example
RS-232 Terminal Block Connector (1 and 2)	(1) A projector; (2) an LCD ²
Ethernet	The VP-23RC via a remote control PC

¹ Connected via the IR emitter

² Alternatively, the second RS-232 port can be used to control another A/V unit

Figure 17 shows a common setup for the **VP-23RC** in a media room. An overhead projector and screen, speakers, lights; and a cabinet with a DVD and a VCR inside, are all controlled via the **VP-23RC**. The presenter's laptop is located on the podium (also connected to the **VP-23RC**), alongside the **VP-23RC**.

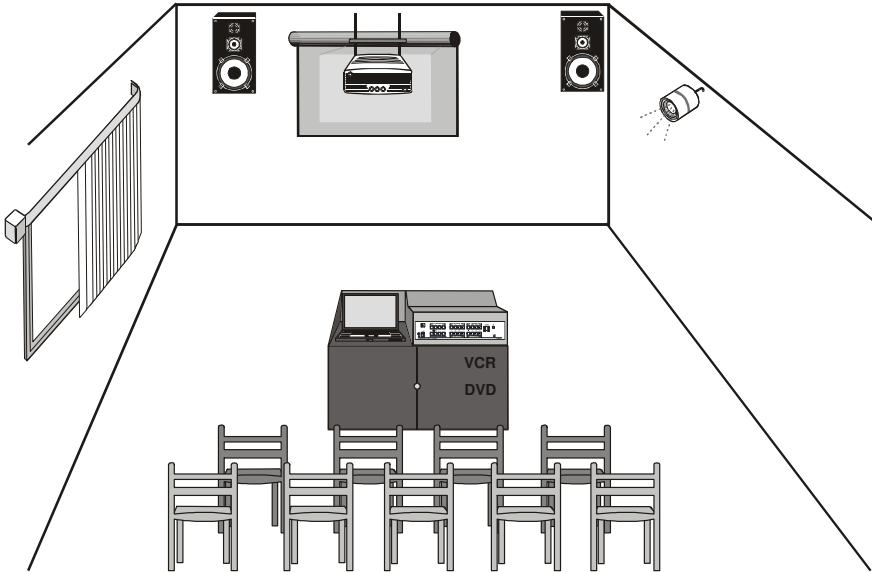


Figure 17: Example of a Typical Setup in the Lecture Auditorium

9.3.1 Operating the Media / Room Controller

In the following example¹, illustrated in Figure 18, the **VP-23RC** is labeled² with specific functions and each button is programmed³ to perform several tasks⁴ as defined in Table 10.

Each button may be assigned with up to 15 commands.

Table 10: The Commands Configuration

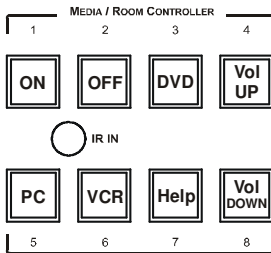


Figure 18: Labels Setup

Button	The Macro Sequence
1	• Power up the projector • Power up the DVD player • Power up the video player • Roll down the projector screen • Lower down the projector from the ceiling • 1 minute delay [for the projector to heat up] • Turn lights off • Close blinds • 30 second delay for blinds to close • The projector selects the PC input
2	• Open blinds • Turn lights on • 30 second delay for blinds to open • Power down the projector • Lift the projector up to the ceiling • Stop the DVD player • Power down the DVD player • Stop the video player • Power down the video player • Roll up the projector screen
3	• Stop the video player • The projector selects the DVD input • Play the DVD
4	• Audio level up
5	• Stop the DVD • Stop the VCR • The projector selects a PC input
6	• Stop the DVD • The projector selects the VCR input • Play the VCR
7	• Signals for technical assistance
8	• Audio level down

¹ This is only one example among numerous possibilities, each button can be configured as required

² To insert labels, refer to the Kramer RC configuration and Installation Guide PDF file, located in the technical support section on our Web site: <http://www.kramerelectronics.com>

³ By the system integrator

⁴ A macro sequence, including up to 15 commands per button, carried out one after the other

9.3.2 An Example of Operating the VP-23RC

Figure 19 shows an operating example:

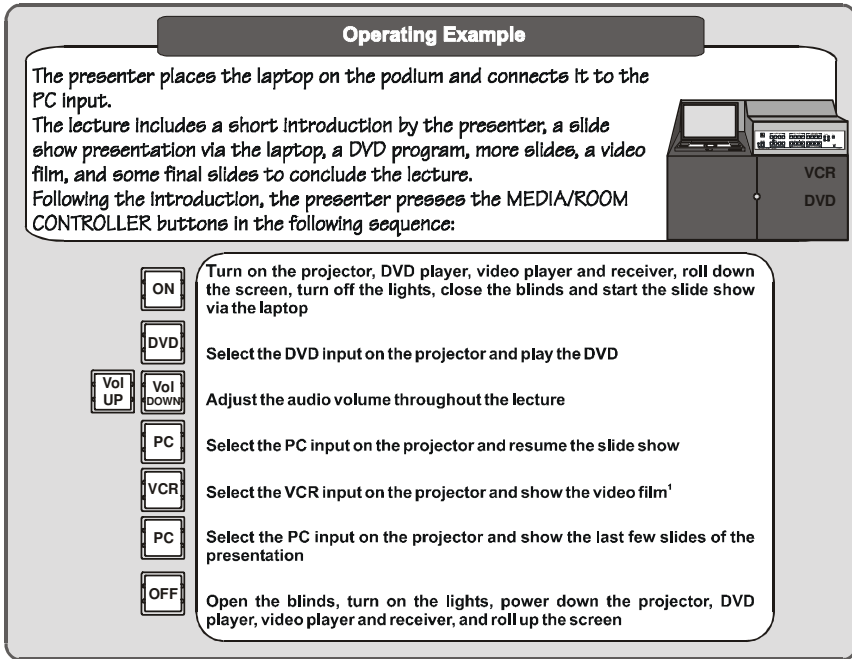


Figure 19: VP-23RC Operation Example

9.3.3 Using the Media / Room Controller Macro Buttons

Pressing any button initiates a macro sequence¹, during which the button blinks (as programmed by the system integrator).

If during the macro sequence the button blinks faster than usual², this indicates that a malfunction has been detected³ and if the problem is critical, the **VP-23RC** exits the macro sequence⁴.

To solve the problem, summon technical help⁵

¹ The macro sequence can be carried out instantly or can take a while, depending on the delay times included in the sequence

² Six times per second, as compared with twice per second during normal operation

³ For example, a faulty DVD player

⁴ This procedure and others are set by the system integrator

⁵ In this example, press the HELP DESK button

If you want to stop a macro sequence, press and hold that button for 5 seconds. The sequence will come to an end. You can resume operation by pressing any button¹. The unit will carry out the macro sequence commands from the beginning.

9.3.4 Turning the Light of the Backlit Buttons On and Off

When the room is darkened, the buttons can be illuminated for convenience.

To **turn on** the backlight, press buttons 3 and 7 simultaneously

To **turn off** the backlight, press the respective buttons once again.

9.4 The Presentation Switcher Section Operation

The Presentation Switcher section has two operation modes:

- The Independent Switchers mode (see section 9.4.1)
- The Master Audio mode (see section 9.4.2)

In both operation modes, if configured, the SELECTOR buttons, once pressed, execute a sequence of configured commands (see section 9.4.3).

9.4.1 The Independent Switchers Mode

In the independent switchers mode, the three switchers of the **VP-23RC** operate independently from each other, as illustrated in Figure 20 (the Media/Room Controller connections are not shown in this illustration). You can route one of the 4 CV inputs, one of the 4 Y/C inputs and one of the 4 VGA/UXGA inputs to the corresponding CV, Y/C and UXGA² outputs, respectively.

To switch an input to an output³:

- Press one⁴ button from the set of four buttons in the VIDEO (CV)-AUDIO SELECTOR section and/or⁵
- One button from the set of four buttons in the s-VIDEO (Y/C)-AUDIO SELECTOR section and/or⁵
- One button from the set of four buttons in the VGA/UXGA-Audio SELECTOR section

¹ Including the button you kept pressed to stop the macro sequence

² And to the UXGA CAT5 OUT connector (audio excluded)

³ Assuming that all inputs are connected

⁴ You cannot select more than one button in a section

⁵ You can overlook a section and choose not to select a button from it

Each pressed button illuminates¹, indicating selection and outputting of that video and audio source.

If a button includes a macro sequence, it will be executed when pressing that button.

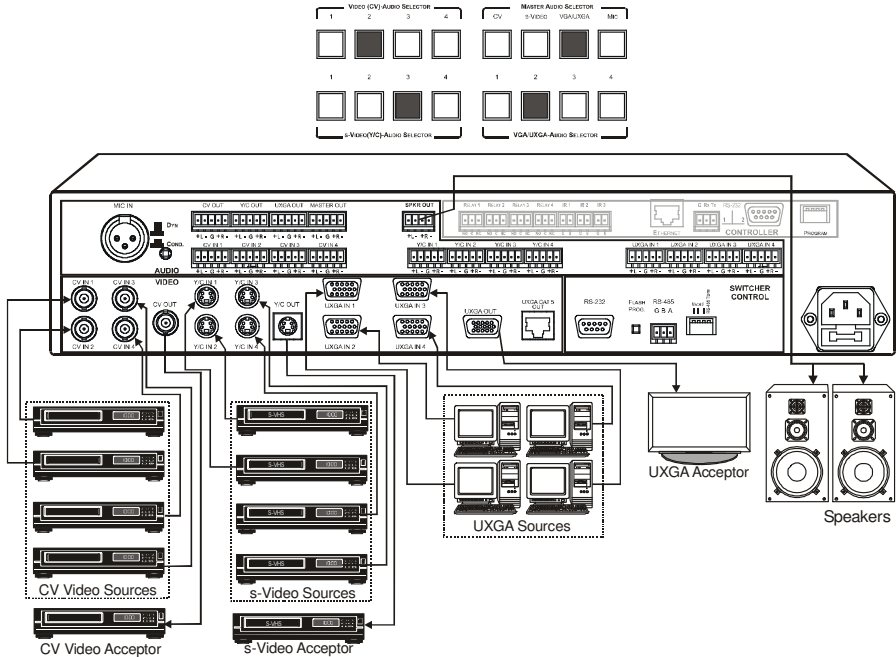


Figure 20: Separate Switcher Mode

9.4.2 The Master Audio Mode

In the master audio mode, you can route an audio input signal from any of the A/V switchers or from the microphone, to the MASTER OUT and/or SPKR OUT outputs.

Figure 21 shows a plasma-display connected to the VP-23RC unit via the UXGA OUT HD15F connector, and a pair of speakers connected to the SPKR OUT terminal block connector (the Media/Room Controller connections are not shown in this illustration).

If a button includes a macro sequence, it will be executed when pressing that button.

¹ Pressing an illuminated button for more than 2 seconds will disconnect the output and the button will no longer illuminate

(I) When pressing button 2 under the VGA/UXGA-AUDIO SELECTOR, the UXGA IN 2 signal is routed to the display¹. The VGA/UXGA button under the MASTER AUDIO SELECTOR section automatically illuminates, and the UXGA audio signal is routed to the SPKR OUT² and the MASTER OUT² terminal block connectors simultaneously³.

(II) After connecting a microphone to the MIC IN XLR connector, the MIC button under the MASTER AUDIO SELECTOR section illuminates and the speakers output the MIC IN⁴ audio signal, while retaining the UXGA display. You can return to the UXGA audio output by pressing the VGA/UXGA button under the MASTER AUDIO SELECTOR section once again.

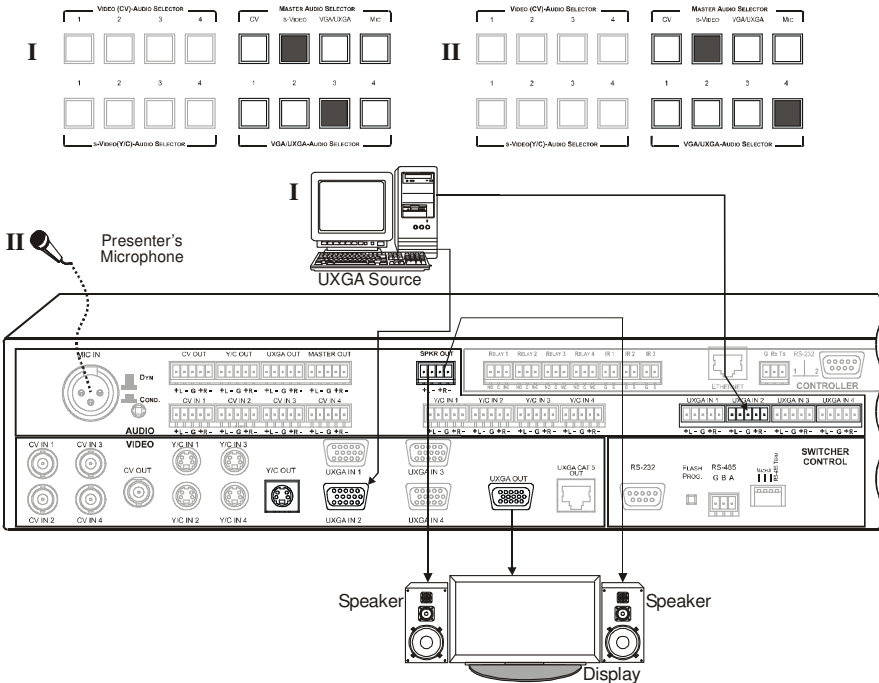


Figure 21: Switching in the Master Audio Mode

1 The UXGA output is simultaneously routed to the UXGA CAT 5 OUT connector

2 The MASTER audio signal is routed simultaneously to the SPKR OUT and the MASTER OUT channels. The only difference between them is that the SPKR OUT channel has an internal power amplifier, which lets you connect the speakers directly to the unit

3 As well as to the AUDIO UXGA OUT terminal block connector, which is not connected in this example

4 Another way to use the microphone is to press the TALK OVER button: the main audio level is lowered when the microphone picks up speech

9.4.3 The Presentation Switcher SELECTOR Buttons Macro Sequence

The SELECTOR buttons can be configured to execute a sequence of commands (a macro) in a similar way to the Media / Room Controller buttons (see section 9.3.1) so that when a SELECTOR button is pressed, it will first perform the switching action and concurrently carry out the macro. The example in Figure 22 illustrates a macro sequence that can be programmed to a Presentation Switcher SELECTOR button.

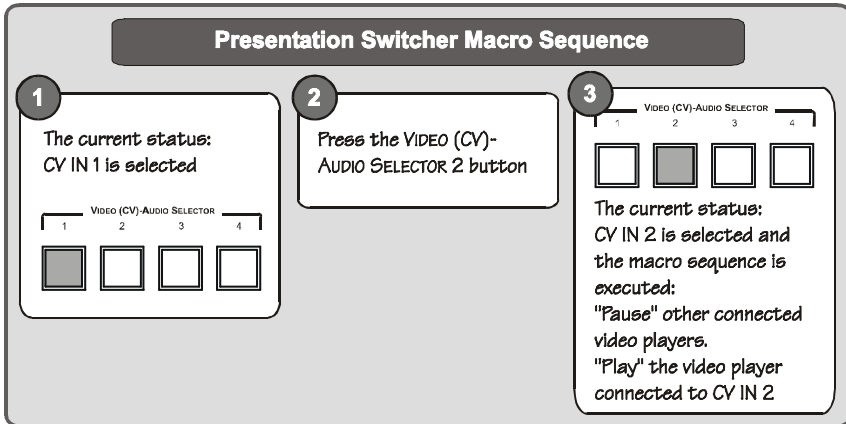


Figure 22: Presentation Switcher Macro Sequence Example

Note that you cannot stop a macro on the presentation switcher SELECTOR buttons once it is in process

10 Flash Memory Upgrade

The firmware is upgraded separately for the Presentation Switcher section (see section 10.1) and for the Media/Room Controller section (see section 10.2).

10.1 Flash Memory Upgrade for the Presentation Switcher Section

The **VP-23RC** firmware for the Presentation Switcher section is located in FLASH memory, which lets you upgrade to the latest Kramer firmware version in minutes! The process involves:

- Downloading from the Internet (see section 10.1.1)
- Connecting the PC to the RS-232 port (see section 10.1.2)
- Upgrading Firmware (see section 10.1.3)

10.1.1 Downloading from the Internet

You can download the up-to-date file¹ from the Internet. To do so:

1. Go to our Web site at <http://www.kramerelectronics.com> and download the file: “*FLIP_VP23RC.zip*” from the Technical Support section.
2. Extract the file: “*FLIP_VP23RC.zip*” to a folder (for example, C:\Program Files\Kramer Flash).
3. Create a shortcut on your desktop to the file: “*FLIP.EXE*”.

10.1.2 Connecting the PC to the RS-232 Port

Before installing the latest Kramer firmware version on a **VP-23RC** unit, do the following:

1. Connect the RS-232 DB9 rear panel port in the SWITCHER CONTROL area to the Null-modem adapter via a 9-wire flat cable, and connect the Null-modem adapter to the RS-232 DB9 port on your PC (as in section 8.1.1).
2. On the rear panel, push in the FLASH PROG. button (to program), using a screwdriver.
3. Connect the power on the **VP-23RC** unit and switch it ON.
4. On the underside panel, push in the RESET button (see Figure 4), using a screwdriver.

¹ The files indicated in this section are given as an example only. These file names are liable to change from time to time

10.1.3 Upgrading the Firmware

Follow these steps to upgrade the firmware for the Presentation Switcher section:

1. Double click the desktop icon: “*Shortcut to FLIP.EXE*”.
The Splash screen appears as follows:

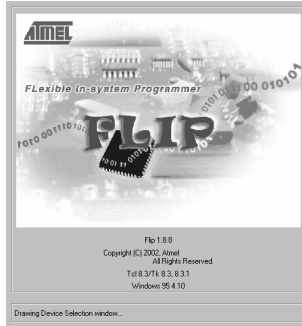


Figure 23: Splash Screen

2. After a few seconds, the Splash screen is replaced by the “*Atmel – Flip*” window:

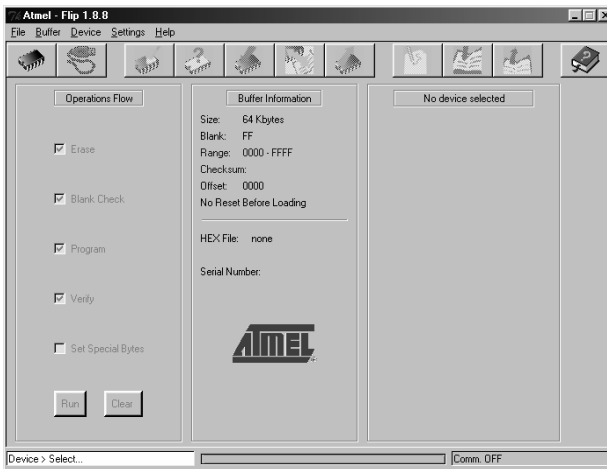


Figure 24: Atmel – Flip Window

3. Press the keyboard shortcut key *F2* (or select the “*Select*” command from the *Device* menu, or press the integrated circuit icon in the upper right corner of the window).
The “*Device Selection*” window appears:



Figure 25: Device Selection Window

4. Click the button next to the name of the device and select from the list:
AT89C51RD2:

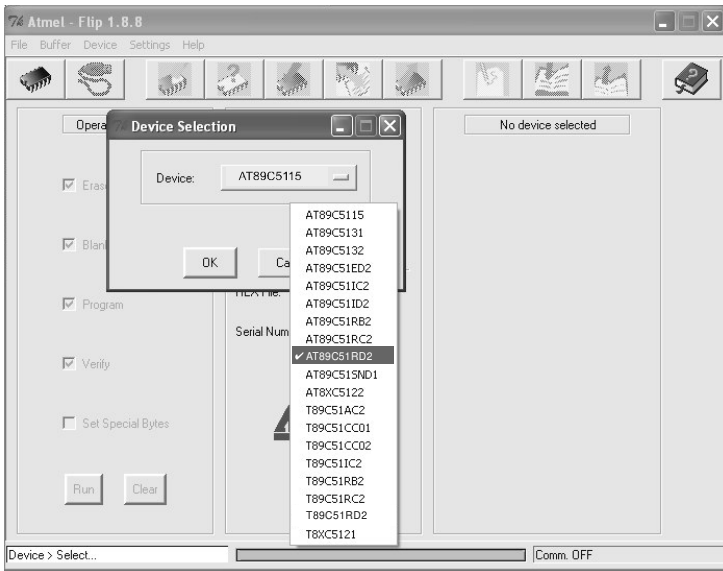


Figure 26: Selecting the Device from the Selection Window

5. Click OK and select “Load Hex” from the File menu.

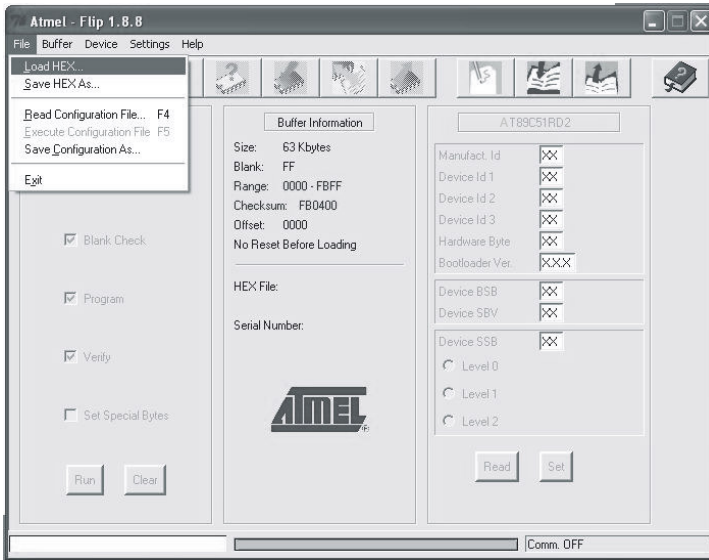


Figure 27: Loading the Hex

6. The Open File window opens. Select the correct HEX file that contains the updated version of the firmware for **VP-23RC** (for example, **23RCM_Vlp2.hex**) and click Open.
7. Press the keyboard shortcut key *F3* (or select the “*Communication / RS232*” command from the *Settings* menu, or press the keys: *Alt SCR*). The “*RS232*” window appears. Change the COM port according to the configuration of your computer and select the 9600 baud rate:

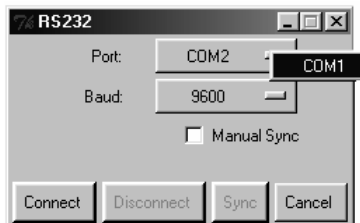


Figure 28: RS-232 Window

8. Click Connect.
In the “*Atmel – Flip*” window, in the *Operations Flow* column, the *Run* button is active, and the name of the chip appears as the name of the third column: **AT89C51RD2**.
Verify that in the *Buffer Information* column, the “*HEX File: VP23RC.hex*” appears.

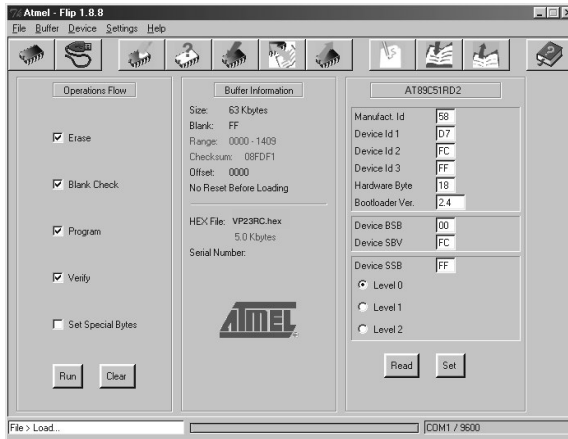


Figure 29: Atmel – Flip Window (Connected)

9. Click **Run**.

After each stage of the operation is completed, the check-box for that stage becomes colored green¹.

When the operation is completed, all 4 check-boxes will be colored green and the status bar message: *Memory Verify Pass* appears²:

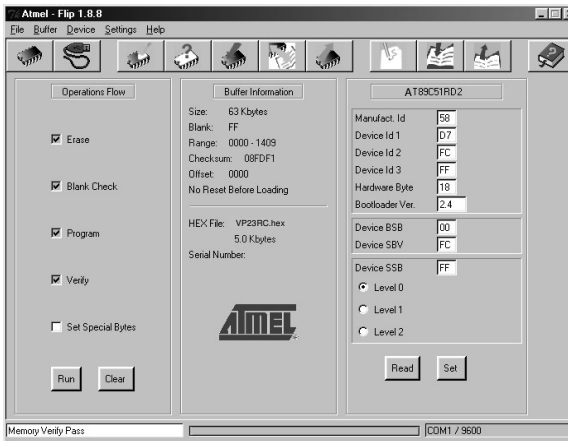


Figure 30: Atmel – Flip Window (Operation Completed)

10. Close the “Atmel – Flip” window.

11. Disconnect the power on the **VP-23RC**.

¹ See also the blue progress indicator on the status bar

² If an error message: “Not Finished” shows, click Run again

12. Disconnect the RS-232 rear panel port on the **VP-23RC** unit from the Null-modem adapter.
13. Release the FLASH PROG button on rear panel.
14. Connect the power to the **VP-23RC**.

10.2 Flash Memory Upgrade for the Media / Room Controller Section

The **VP-23RC** Media/Room control firmware is located in FLASH memory, which lets you upgrade to the latest Kramer firmware version in minutes!

The process involves:

- Downloading the upgrade package from the Internet
- Connecting the PC to the RS-232 port 1 in the CONTROLLER area
- Upgrading the firmware
- Installing the Web Applet

10.2.1 Downloading from the Internet

You can download the up-to-date file¹ from the Internet. To do so:

1. Go to our Web site at <http://www.Kramerelectronics.com> and download the file: “*RC_vp23rc_xx.zip*” from the technical support section.
2. Extract the file “*RC_vp23rc_xx.zip*” package, which includes the KFR-Programmer application setup and the .s19 firmware file, to a folder (for example, C:\Program Files\KFR Upgrade).
3. Install the KFR-Programmer Application.

10.2.2 Connecting the PC to the RS-232 Port

Before installing the latest Kramer firmware version on the **VP-23RC**, do the following:

1. Connect the RS-232 Terminal Block Connector rear panel port 1 in the CONTROLLER area to the Null-modem adapter via a 3-wire split cable, and connect the Null-modem adapter to the RS-232 9-pin D-sub port on your PC.
2. Set DIP 1 on the PROGRAM dipswitches located in the CONTROLLER area ON.
3. Connect the power on your machine.

¹ File names are liable to change from time to time

10.2.3 Upgrading Firmware

Follow these steps to upgrade the firmware:

1. Double click the KFR-Programmer desktop icon.
The KFR-Programmer window appears (see Figure 31).

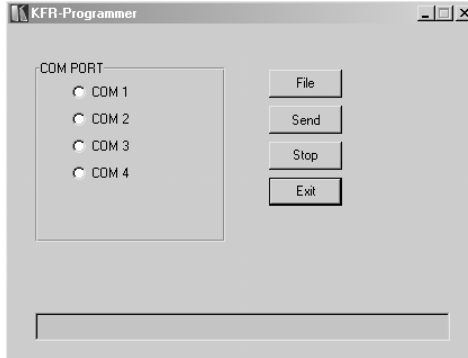


Figure 31: The KFR-Programmer Window

2. Select the required COM Port¹.
3. Press the File button to select the *.s19* firmware file included in the package.
4. Press the Send button to download the file. The Send button lights red.
5. Wait until downloading is completed and the red Send button turns off.
6. Set DIP 1 on the PROGRAM dipswitches located in the CONTROLLER area OFF.

10.2.4 Installing the Web Applet²

Follow these steps to install the Web Applet:

1. Connect RC device to your PC through computer networking.
2. Start RC Configuration Software and connect to the RC device (see RC Configuration and Installation Guide).
3. In the Device menu select Upgrade Applet option and browse to *MC.dat* file included in the package

Wait until uploading is completed and the success message appears. Click OK.

¹ To which the VP-23RC is connected on your PC

² This section is applicable only to firmware version 26.0 and higher and requires RC Configuration Software version 1.26.0.38 and higher

10.3 Troubleshooting Firmware Upgrade Issues

If the RC device does not communicate and it is impossible to perform the flash upgrade procedure, the problem may sometimes be solved by performing the factory default restore procedure.

To restore the factory default settings, do the following:

1. Turn off the **VP-23RC** unit.
2. In the **CONTROLLER** area of the rear panel, set DIP-switch 3 ON for factory reset.
3. Turn on the machine.
4. Wait for about 5 seconds (factory default is now complete, but the machine has to be restarted to function properly).
5. Turn off the machine.
6. Turn off the factory default DIP-switch.
7. Turn on the machine.

11 Technical Specifications

Table 11 includes the technical specifications¹:

Table 11: Technical Specifications of the VP-23RC Presentation Switcher / Controller

PORTS (CONTROLLER):	2 RS-232 on a terminal block connector and a DB 9M; 1 ETHERNET RJ-45 port	
INPUTS:	4 VGA / XGA on 15-pin HD connectors 4 s-Video, 1 Vpp (Y), 0.3Vpp (C) / 75 Ω on 4 pin connectors 4 composite video 1Vpp / 75 Ω on BNC connectors Each input is accompanied by the appropriate balanced stereo-audio channels: +4dBm / 50 kΩ on detachable terminal block connectors Mic: 3mV / 10 kΩ condenser / dynamic on an XLR connector IR learner	
OUTPUTS:	1 x VGA / XGA on a 15-pin HD connector 1 s-Video - 1 Vpp (Y), 0.3Vpp (C), / 75 Ω on 4 pin connector 1 composite video 1 Vpp / 75 Ω on a BNC connector 1 STP CAT5 connector (Line OUT) Each output is accompanied by the appropriate balanced stereo-audio channel: +4dBm / 150 Ω on detachable terminal blocks 1 master stereo audio +4dBm / 150 Ω on a detachable 4-pin terminal block 1 stereo speaker output 2x5W continuous into 4Ω 4 relays on terminal block connectors (36V AC or DC, 2A, 60VAC maximum on non-inductive load) 3 IR emitters on terminal block connectors	
MAX. OUTPUT LEVEL:	VIDEO: YC: 1.8Vpp; CV: 1.8Vpp XGA: 1.7Vpp; CAT 5: 1.3Vpp	AUDIO: Group: 20dBm Master: 15dBm
BANDWIDTH (-3dB):	VIDEO: YC: 385MHz; CV: 650MHz XGA: 350MHz; CAT 5: 158MHz	AUDIO: Group: 46kHz Speakers: 40kHz; Master: 33kHz
DIFF. GAIN:	YC: 0.03%; CV: 0.03%; CAT 5: 6.4%; XGA: 0.15%	
DIFF. PHASE:	YC: 0.03 Deg.; CV: 0.03 Deg.; CAT 5: 0.2 Deg.; XGA: 0.09 Deg.	
K-FACTOR:	<0.1%	
S/N RATIO:	VIDEO: YC: 81dB; CV: 75dB CAT 5: 59dB; XGA: 75dB (unweighted)	AUDIO: Group: 74dB Speakers: 53dB (max pwr weighted) Master out: 72dB
CROSSTALK (all hostile):	VIDEO: -49dB @5MHZ	AUDIO: Group: < -76dB Master: < -69dB @1kHz
CONTROLS:	Channel selector for video and audio, for YC, CV and XGA; master audio output selector, audio level, talkover, lock, RS-232, RS-485, and Ethernet	
COUPLING:	VIDEO: YC, CV and XGA: DC	AUDIO: AC, input and output
AUDIO THD + NOISE@1kHz:	Group: 0.08%; Speakers: 2% (max pwr); Master: 0.25%	
AUDIO 2nd HARMONIC:	Group: 0.065%; Speakers: 1.6% (max pwr); Master: 0.155%	
POWER SOURCE:	230VAC, 50/60Hz (115VAC, USA) 35VA	
DIMENSIONS:	19-inch (W), 7-inch (D) 2U (H) rack-mountable	
WEIGHT:	3.8 kg (8.4 lbs.) approx.	
ACCESSORIES:	3.5mm to IR Emitter Control Cable (C-A35/IRE-10); power cord, infra-red remote control transmitter, Java based control software (internal), Windows®-based Kramer control software	
OPTIONS:	3.5mm to IR Emitter Control Cable (C-A35/IRE-10); 15 meter and 20 meter IR Emitter Extension Cables	

¹ Specifications are subject to change without notice

12 Hex Table

Table 12 lists the Hex values (which the protocol in section 13 describes in more detail) for the **VP-23RC** Presentation Switcher section:

Table 12: VP-23RC Hex Table

Inputs		Composite Video OUT and Audio OUT CV	s-Video OUT and Audio OUT s-Video	VGA OUT and Audio OUT VGA
Group	#			
Composite Video	In 1	01 81 81 81		
	In 2	01 82 81 81		
	In 3	01 83 81 81		
	In 4	01 84 81 81		
s-Video	In 1		01 81 82 81	
	In 2		01 82 82 81	
	In 3		01 83 82 81	
	In 4		01 84 82 81	
VGA	In 1			01 81 83 81
	In 2			01 82 83 81
	In 3			01 83 83 81
	In 4			01 84 83 81

Table 13: VP-23RC Master Audio Selector Hex Table

Master Audio Selector (Group Audio OUT)	Audio Master OUT
Composite Video Audio OUT	02 81 81 81
s-Video Audio OUT	02 82 81 81
VGA Audio OUT	02 83 81 81
Microphone	02 84 81 81
Disconnect All	02 80 81 81

12.1 Audio Gain Control Hex Tables

The following tables describe the audio gain controls.

Table 14: Set the Audio Output Gain Control for the Groups

Audio Gain Control for Groups			
Composite Video	s-Video	VGA	Notes
16 81 80 81	16 82 80 81	16 83 80 81	Mute
⋮	⋮	⋮	
16 81 EC 81	16 82 EC 81	16 83 EC 81	0dB (1:1)
⋮	⋮	⋮	
16 81 FF 81	16 82 FF 81	16 83 FF 81	9dB

Table 15: Set the Audio Output Gain Control for the Microphone

Audio Gain Control for Microphone	
16 84 80 81	Mute
⋮	
16 84 CD 81	
⋮	
16 84 FF 81	Maximum

Table 16: Set the Audio Output Gain Control for the Master Audio

Audio Gain Control for Master Out	
16 85 80 81	Mute
⋮	
16 85 F9 81	0dB
⋮	
16 85 FF 81	3dB

Table 17: Increase or Decrease the Audio Output Gain by One Step

	Composite Video	s-Video	VGA	Microphone	Master Out
Increase	18 81 80 81	18 82 80 81	18 83 80 81	18 84 80 81	18 85 80 81
Decrease	18 81 81 81	18 82 81 81	18 83 81 81	18 84 81 81	18 85 81 81

13 Communication Protocol

This protocol, which enables RS-232 communication between the **VP-23RC** and the PC, uses 4 bytes of information, and data is at 9600 baud, no parity, 8 data bits and 1 stop bit.

Table 18: Protocol Definitions

MSB								LSB	
		DESTINATION	INSTRUCTION						
0		D	N5	N4	N3	N2	N1	N0	
7		6	5	4	3	2	1	0	
1st byte									
		INPUT							
1		0	0	0	0	I2	I1	I0	
7		6	5	4	3	2	1	0	
2nd byte									
		OUTPUT							
1		0	0	0	0	0	O1	O0	
7		6	5	4	3	2	1	0	
3rd byte									
		MACHINE NUMBER							
1		0	0	0	M3	M2	M1	M0	
7		6	5	4	3	2	1	0	
4th byte									

1st BYTE:

Bit 7 – Defined as 0.

D – “DESTINATION BIT”.

This bit is always low, when sending from the PC to the switchers, and high for information sent to the PC.

N5...N0 – “INSTRUCTION”.

These 6 bits define the function that is to be performed by the switcher(s). 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.

Bits 3 – 6 - Defined as 0.

I2... I0 – “INPUT”.

For disconnect, set as 0. For other operations, these bits are defined according to Table 19.

3rd BYTE:

Bit 7 – defined as 1.

Bits 2-6 defined as 0.

O1, O0 – “OUTPUT”

For operations, these bits are defined according to Table 19.

4th BYTE:

Bit 7 – Defined as 1.

Bits 3-6 Defined as 0.

M3... M0 – “MACHINE NUMBER”.

MACHINE NUMBER = (DIPSWITCH CODE) + 1.

Table 19: Instruction Codes

INSTRUCTION		DEFINITION FOR SPECIFIC INSTRUCTION		NOTE
#	DESCRIPTION	INPUT	OUTPUT	
0	RESET MACHINE	0	0	1
1	SWITCH GROUPS	1-4 Set equal to video and audio inputs to be switched for the relative group	1-3 Set equal to group to which output is to be switched	2
2	SWITCH AUDIO OUTPUTS	1-5* Set equal to audio output to be switched to Master Audio out	1	2
5	REQUEST GROUP STATUS	0	1-3 Set equal to the group of which status is required	3
6	REQUEST STATUS OF MASTER AUDIO OUTPUT	0	1	3
8	BREAKAWAY SETTING	0	0 – Audio-follow-video 1 – Audio breakaway	2
11	REQUEST BREAKAWAY SETTING	0	0	3
16	ERROR	Don't care	0 – Invalid instruction 1 – Out of range	4
18	RESET MACHINE	0	0	1
22	SET AUDIO GAIN OF AUDIO OUTPUT	1-5*	Gain value	7
24	INCREASE/DECREASE AUDIO GAIN	1-5*	0 – Increase gain 1 – Decrease gain	8
25	REQUEST GAIN	1-5*	0 – Video gain 1 – Audio gain	3, 9
30	LOCK FRONT PANEL	0 – Panel unlocked 1 – Panel locked	0	
31	REQUEST WHETHER PANEL IS LOCKED	0	0	3
44	MEDIA CONTROL	Set equal to switch number	Switch data	
45	REQUEST MEDIA CONTROL SETTINGS	Set equal to switch number	0	
57	SET AUTO SAVE	1 – Autosave 2 – No save	Don't care	5
61	IDENTIFY MACHINE	1 or 2 – Machine name 3 or 4 – Program version	0 – request first 4 digits 1 – request first suffix 10 – request first prefix	6
62	DEFINE MACHINE	1 – Number of inputs 2 – Number of outputs	1 – For video 2 – For audio	3

* 1 – for CV group, 2 – for SV group, 3 – for VGA group, 4 – for microphone, 5 – for master audio out
 NOTES on to Table 19:

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:

0000 0001 Instruction “Switch Groups”
 1000 0010 Input #2
 1000 1001 in composite video group
 1000 0001 Machine #1 (master)

Was sent from the PC, then the switcher (machine #1) will switch input 2 in composite video group to its output. If the user switched input 4 in the VGA group via the front panel keypad, then the switcher will send:

0100 0001
 1000 0100
 1000 0011

1000 0001 to the PC.

When the PC sends instruction #1 or #2 to the switcher, then, if the instruction is valid, the switcher replies by sending the same four bytes to the PC that were sent (except for the first byte, where the DESTINATION bit is set high).

NOTE 3

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 to the value of the requested parameter. The reply to the instruction #5 (what is the status of the VGA group?):

0000 0101
1000 0000
1000 0011
1000 0001
Would be:
0100 0101
1000 0000
1000 0100
1000 0001

NOTE 4

An error code is returned to the PC if an invalid code was sent to the switcher (for example, when trying to switch an input or a group which is 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 will not be valid.

NOTE 5

Under normal conditions, the machine's present status is saved each time a change is made. The power-down save (the auto save) may be disabled using this code. Note that each time that the machine is turned ON, the auto save function is automatically set.

NOTE 6

This is a request to identify the switchers in a system. If the INPUT is set as 1 or 2, the machine will send its name. The reply is the decimal value of the INPUT and the OUTPUT. For example, the reply to the request to send the machine's name (for machine #001) will be:

0111 1101
1000 0000 (i.e. 128+0)
1001 0111 (i.e. 128+23)
1000 0001

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 following the decimal point. For example, for version 3.5 the reply will be:

0111 1101
1000 0011 (i.e. 128+3)
1000 0101 (i.e. 128+5)
1000 0001

NOTE 7

GAIN VALUE – Number from 0 to 127

NOTE 8

Answer = Current Audio Gain (0 –127)

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- | | |
|-----------|---|
| EN-50081: | "Electromagnetic compatibility (EMC);
generic emission standard.
Part 1: Residential, commercial and light industry" |
| EN-50082: | "Electromagnetic compatibility (EMC) generic immunity standard.
Part 1: Residential, commercial and light industry environment". |
| CFR-47: | FCC* Rules and Regulations:
Part 15: "Radio frequency devices
Subpart B Unintentional radiators" |

CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.
* FCC and CE approved using STP cable (for twisted pair products)



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



Kramer Electronics, Ltd.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com

P/N: 2900-000155 REV 5