Kramer Electronics, Ltd.

USER MANUAL

Model:

VS-21H-IR

2x1 HDMI Switcher

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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[1] that are clearly defined by function.

Congratulations on purchasing your Kramer DigiTOOLS® **VS-21H-IR** *2x1 HDMI*[2] *Switcher*! The **VS-21H-IR** is ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

Note, that the Kramer VS-21H-IR is identical to the VS-21HDMI-IR; just the name has changed replacing the suffix "HDMI" by "H" (according to the HDMI Guideline).

The package includes the following items:

- **VS-21H-IR** 2x1 HDMI Switcher
- Power adapter (12V DC)
- Infrared remote control transmitter (including the required batteries and a separate user manual[3])
- This user manual[3]

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[4]

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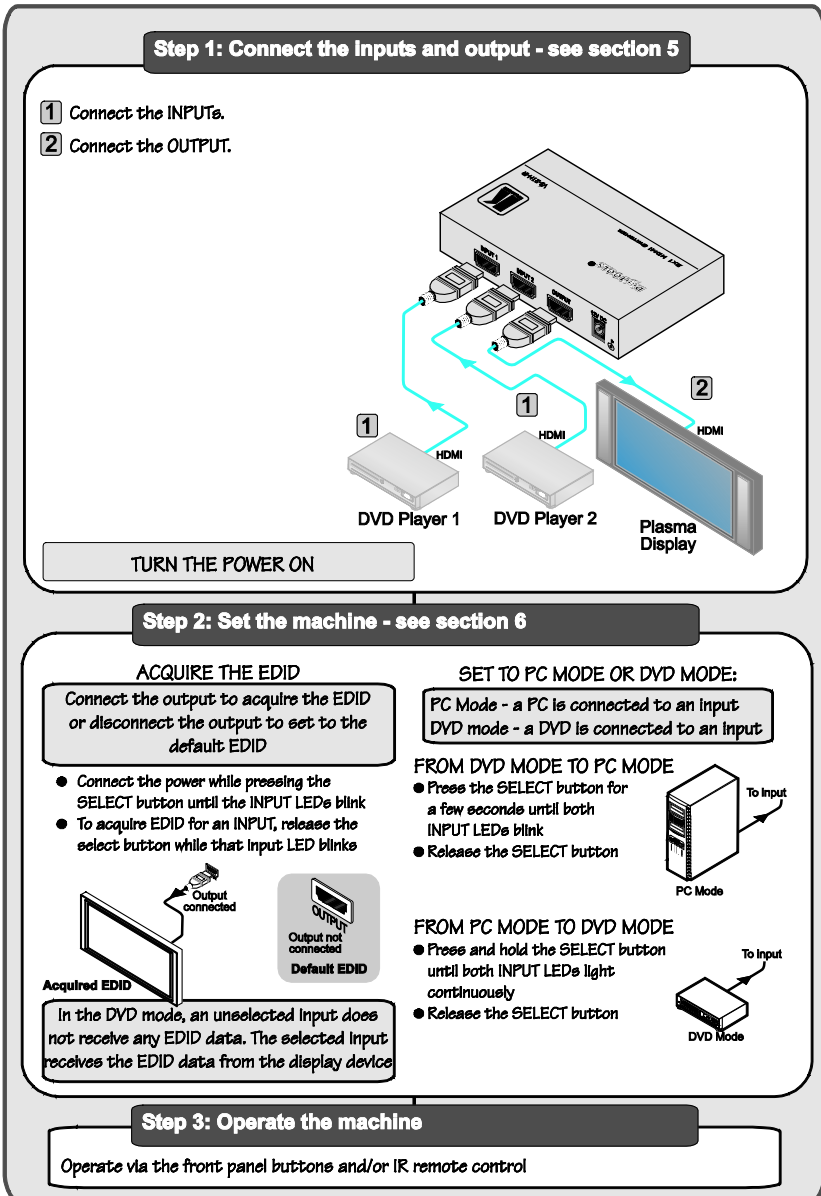
2 High-Definition Multimedia Interface

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

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

Step 1: Connect the inputs and output - see section 5

1 Connect the INPUTs.
2 Connect the OUTPUT.

DVD Player 1   DVD Player 2   Plasma Display

HDMI   HDMI   HDMI

TURN THE POWER ON

Step 2: Set the machine - see section 6

ACQUIRE THE EDID

Connect the output to acquire the EDID or disconnect the output to set to the default EDID

● Connect the power while pressing the SELECT button until the INPUT LEDs blink
● To acquire EDID for an INPUT, release the select button while that input LED blinks

Output connected
Output not connected
Default EDID
Acquired EDID

In the DVD mode, an unselected input does not receive any EDID data. The selected input receives the EDID data from the display device

SET TO PC MODE OR DVD MODE:

PC Mode - a PC is connected to an input
DVD mode - a DVD is connected to an input

FROM DVD MODE TO PC MODE
● Press the SELECT button for a few seconds until both INPUT LEDs blink
● Release the SELECT button

To Input
PC Mode

FROM PC MODE TO DVD MODE
● Press and hold the SELECT button until both INPUT LEDs light continuously
● Release the SELECT button

To Input
DVD Mode

Step 3: Operate the machine

Operate via the front panel buttons and/or IR remote control

3 Overview

The **VS-21H-IR** is a high quality switcher for HDMI signals that accepts two HDMI inputs—letting you select either HDMI input using a switch located on the panel—and routes the selected HDMI input signal to the HDMI output.

In particular, the **VS-21H-IR** features:

- Support of up to 2.25Gbps bandwidth per graphic channel[1]
- HDMI Support – HDMI (V.1.4 with Lip Sync, HDMI Uncompressed Audio Channels, Dolby TrueHD, DTS-HD, CEC)
- EDID PassThru that passes EDID/HDCP signals from source to display
- 12V DC power
- IR remote control capability

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[2] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality. Note that Kramer Electronics Limited is an HDMI Adopter and an HDCP Licensee.

In particular, HDMI[3]:

- Provides a simple[4] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy[5] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[6] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel

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1 Suitable for resolutions up to UXGA at 60Hz, and for all HD resolutions

2 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

3 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

4 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

5 HDMI technology has been designed to use standard copper cable construction at up to 15m

6 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

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[1], and user-friendly connector
- 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

HDMI has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p/60), standard definition formats such as NTSC or PAL, as well as 480p and 576p.

3.2 Recommendations for 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 **VS-21H-IR** away from moisture, excessive sunlight and dust

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

4 Your VS-21H-IR 2x1 HDMI Switcher

Figure 1 and Table 1 define the **VS-21H-IR** *2x1 HDMI Switcher*:

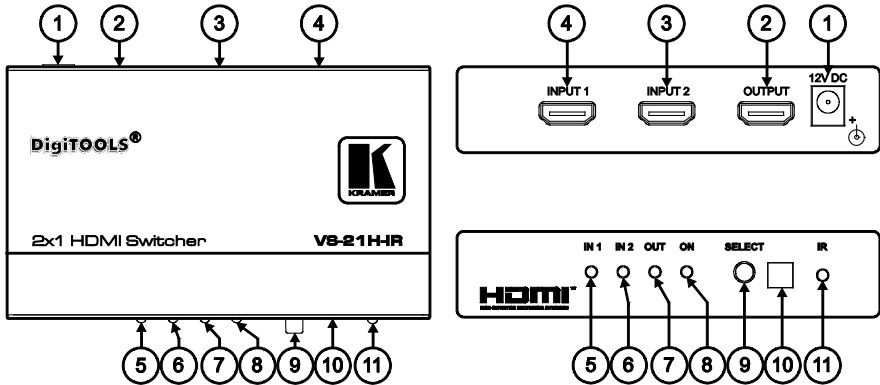*Figure 1: VS-21H-IR 2x1 HDMI Switcher*

Table 1: VS-21H-IR 2x1 HDMI Switcher (Top Side Panel) Features

#	Feature	Function
1	*12V DC*	+12V DC connector for powering the unit
2	*OUTPUT* HDMI Connector	Connects to the HDMI acceptor
3	*INPUT 2* HDMI Connector	Connects to the HDMI source 2
4	*INPUT 1* HDMI Connector	Connects to the HDMI source 1
5	*IN 1* LED	Lights when source 1 is selected[1]
6	*IN 2* LED	Lights when source 2 is selected[1]
7	*OUT* LED	Lights when the output is connected
8	*ON* LED	Lights when receiving power
9	*SELECT* Button	Toggles[2] between IN 1 and IN 2
10	*IR* Receiver Window	Receives signals from the infrared remote control transmitter
11	*IR* LED	The red LED lights when receiving signals from the Infrared remote control transmitter

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1 Blinks when selected but no input is connected

2 IN 1 LED lights when INPUT 1 is selected, or the IN 2 LED lights when IN 2 is selected

5 Connecting the VS-21H-IR 2x1 HDMI Switcher

To connect the **VS-21H-IR**, as the example in [Figure 2](#) shows, do the following[1]:

1. Connect up to two HDMI sources to the INPUT connectors, using the Kramer HDMI cables: INPUT 1 connector to HDMI source 1 (for example, DVD Player 1) and INPUT 2 connector to HDMI source 2 (for example, DVD Player 2).

2. Connect the OUTPUT connector to the HDMI acceptor (for example, a plasma display), using the Kramer HDMI cable.

3. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

4. Press the SELECT button[2] to choose which HDMI input to route to the output. The SELECT button toggles between INPUT 1 and INPUT 2, lighting the IN 1 LED when INPUT 1 is selected, or the IN 2 LED when IN 2 is selected.
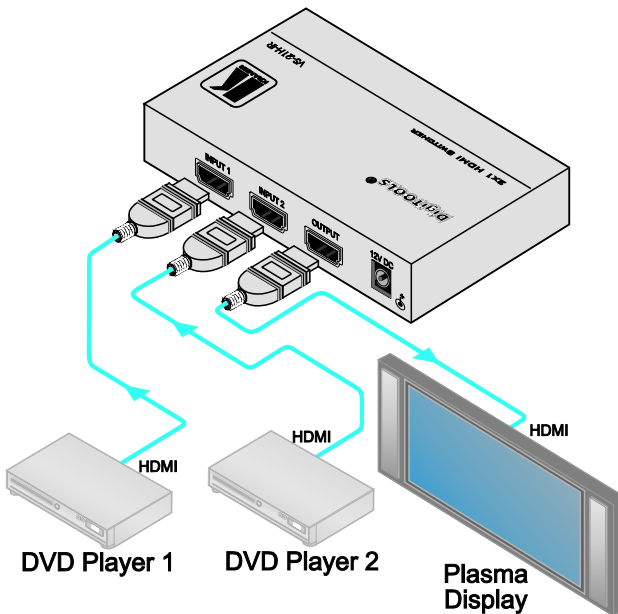

Figure 2: Connecting a VS-21H-IR 2x1 HDMI Switcher

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1 Switch OFF the power on each device before connecting it to your VS-21H-IR After connecting your VS-21H-IR, switch on its power and then switch on the power on each device

2 Or press key 1 or 2 on the remote transmitter, once setup (see section [5 1](#))

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5.1 Using the Remote Control Transmitter

You can use the remote control transmitter[1] to switch INPUT 1 or 2 to the output. Before doing so, set it to work with the **VS-21H-IR** by assigning a GROUP number.

To assign the GROUP number on the remote control transmitter, do the following:

1. Point the remote control transmitter at the remote receiver (item 10 in Figure 1 / Table 1) and press the GROUP key.

2. Press key 11.
   This sets and saves the group number.

To switch INPUT 1 or 2 to the output via the remote control transmitter, press key 1 or 2.

6 Operating the VS-21H-IR 2x1 HDMI Switcher

This section describes how to operate the **VS-21H-IR**, using the SELECT button. The **VS-21H-IR** functions in two modes: the PC mode[2] (see section 6.1) and the DVD mode (see section 6.2).

6.1 Working in the PC Mode

This section describes how to acquire / change the EDID (see section 6.1.1) and how to reset the default EDID (see section 6.1.2) when working in the PC mode.

6.1.1 Acquiring / Changing the EDID

You can work with the default EDID or acquire / change the EDID.

To acquire or change the EDID:

1. Connect the new output display device.
   If no output display device is connected to the output, the default EDID is stored in the non-volatile memory.

2. Connect the power while keeping the SELECT button pressed until the LEDs start to flash.

3. To change the EDID and store it in the non-volatile memory of:
   - INPUT 1, release the SELECT button while the IN 1

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1 The setup parameters for the remote control transmitter are as follows: router number = 1 (default); group number = 11, single digit mode (default), video (default) For further details, see the RC-IR2 user manual

2 The default

LED flashes
- INPUT 2, release the SELECT button while the IN 2
  LED flashes
- Both INPUT 1 and 2, release the SELECT button
  while both the IN 1 and the IN 2 LEDs light

4. When a certain input—INPUT 1 or INPUT 2—is selected the EDID
   information comes directly from the display. When the input is not selected,
   the **VS-21H-IR** uses the virtual EDID stored in the non-volatile memory.

6.1.2 Resetting the Default EDID

To reset the default EDID, do the following:

1. Disconnect the power.

2. Disconnect the output cable.

3. Connect the power while keeping the SELECT button pressed until the
   desired INPUT LED flashes.

6.2 Working in the DVD Mode

In the DVD mode, an unselected input will not receive any EDID data. The
selected input will receive the EDID data from the display device.

6.2.1 Toggling from the DVD mode to the PC mode

To toggle from the DVD mode to the PC mode:

1. Press the SELECT button for a few seconds until both INPUT LEDs
   flash.

2. Release the SELECT button.
   The new EDID data is stored in the non-volatile memory.
   If an output display device is connected to the output, the EDID from that
   output display device will be stored in the non-volatile memory.
   If no output display device is connected to the output, the default EDID will
   be stored in the non-volatile memory.

6.2.2 Toggling from the PC mode to the DVD mode

To toggle from the PC mode to the DVD mode:

1. Press and hold the SELECT button until both INPUT LEDs light
   continuously without flashing.

2. Release the SELECT button.
   The **VS-21HDMI-IR** switches to DVD mode.

7 Technical Specifications

includes the technical specifications[1] of the **VS-21H-IR**:

Table 2: Technical Specifications[2] of the VS-21H-IR 2x1 HDMI

INPUTS:	2 HDMI connectors
OUTPUT:	HDMI connector
BANDWIDTH:	Supports up to 2.25Gbps bandwidth per channel
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
CONTROLS:	Input Select button, IR remote control
INDICATOR LEDs:	IN 1, IN 2, OUT, and ON LEDs
POWER SOURCE:	12V DC, 150mA
DIMENSIONS:	12cm x 7.15cm x 2.76cm (4.7" x 2.8" x 1.08") W, D, H
WEIGHT:	0.3kg (0.67lbs) approx.
ACCESSORIES:	Power supply, bracket installa ion kit, IR remote control
OPTIONS:	HDMI/HDMI male-to-male cables

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1 Specifications are subject to change without notice

2 Environmental Specifications: Operating temperature: –10°C to 50°C; storage temperature: –30°C to 60°C

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 three 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 you product, you must take or ship it prepaid to any authorized Kramer service center

2   Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product Please also include in any mailing a contact name, company, address, and a description of the problem(s)

3   For the name of the nearest Kramer authorized service center, consult your authorized dealer

LIMITATION OF IMPLIED WARRANTIES

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

EXCLUSION OF DAMAGES

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

1   Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:

2   Any other damages, whether incidental, consequential or otherwise Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you

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

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

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

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

CAUTION!

⊠   Servicing the machines can only be done by an authorized Kramer technician Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment

⊠   Use the supplied DC power supply to feed power to the machine

⊠   Please use recommended interconnection cables to connect the machine to other components
     * FCC and CE approved using STP cable (for twisted pair products)

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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.

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