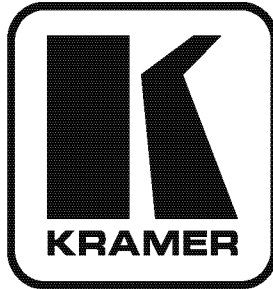


Kramer Electronics, Ltd.



USER MANUAL

Model:

VS-41HC

4x1 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 groups¹ that are clearly defined by function.

Congratulations on purchasing your Kramer **VS-41HC** *4x1 HDMI Switcher*.

The **VS-41HC** is ideal for home cinema, conference room presentations and advertising applications.

Each package includes the following items:

- **VS-41HC** *4x1 HDMI Switcher*
- Power adapter (12V DC Input)
- Kramer **RC-IR3** Infrared Remote Control Transmitter (including the required batteries and a separate user manual²)
- This user manual²

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 cables³

2.1 Quick Start

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

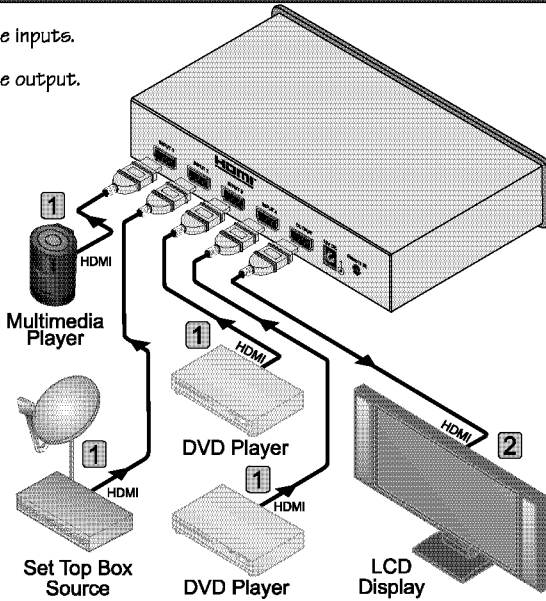
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity;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

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

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

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

- 1 Connect the inputs.
- 2 Connect the output.

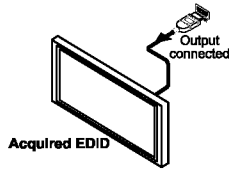


Step 2: Connect the power

Step 3: Acquire the EDID - see section 6

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

- Turn the power ON
- Press the EDID button
- WAIT for the input buttons to stop blinking in sequence



Operate via the front panel buttons and IR remote control

3 Overview

The desktop-sized **VS-41HC** is a high performance switcher for HDMI signals. It switches any one of the four inputs to a single HDMI output.

In particular, the **VS-41HC** features:

- Support for up to 2.25Gbps bandwidth per graphic channel¹
- Support for HDCP (High Definition Digital Content Protection)
- HDTV compatibility
- A MUTE button to disconnect the output and a PANEL LOCK button to prevent unwanted tampering with the buttons on the front panel
- EDID PassThru – Passes EDID/HDCP signals from source to display
- 3D Pass-Through
- Control via the front panel buttons or remotely via the Kramer infrared remote control transmitter

3.1 Defining EDID

The Extended Display Identification Data (EDID²) is a data-structure, provided by a display, to describe its capabilities to an HDMI source. The EDID enables the **VS-41HC** to “know” what kind of monitor is connected to the output. The EDID includes the manufacturer’s name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

3.2 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital³ audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality.

In particular, HDMI⁴:

- Provides a simple⁵ 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 lengthy⁶ cable

1 Suitable for resolutions higher than UXGA at 60Hz, and for all HD resolutions

2 Defined by a standard published by the Video Electronics Standards Association (VESA)

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

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

5 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

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

- Supports standard, enhanced, high-definition video, and multi-channel digital audio¹ on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable², 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

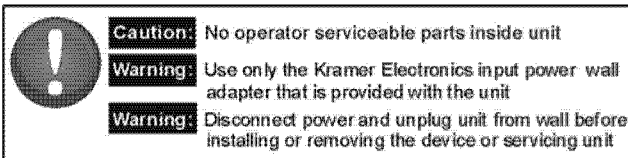
HDMI has the capacity to support:

- Existing high-definition video formats (720p, 1080i, and 1080p/60), as well as standard definition formats such as NTSC or PAL

3.3 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-41HC** away from moisture, excessive sunlight and dust



1 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

2 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-41HC 4x1 HDMI Switcher

Figure 1 and Table 1 define the front and rear panels of the VS-41HC.

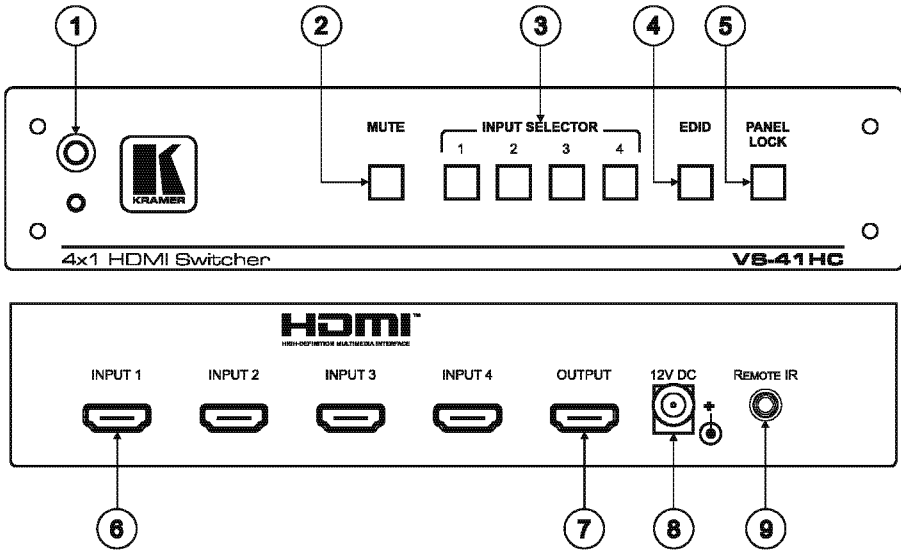


Figure 1: VS-41HC 4x1 HDMI Switcher

Table 1: VS-41HC 4x1 HDMI Switcher Front Panel Features

#	Feature	Function
1	IR Receiver	The red LED lights when receiving signals from the Infrared remote control transmitter
2	MUTE Button	Press to toggle disconnecting the output
3	INPUT SELECTOR Buttons	Press an INPUT button to select an input (from 1 to 4)
4	EDID Button ¹	Press to acquire the EDID
5	PANEL LOCK Button	Press to toggle disengaging the front panel buttons
6	INPUT HDMI Connectors	Connect to the HDMI sources (from 1 to 4)
7	OUTPUT HDMI Connector	Connect to the HDMI acceptor
8	12V DC	+12V DC connector for powering the unit
9	REMOTE IR Opening ²	Connects to an external IR receiver unit for controlling the machine via an IR remote controller instead of using the front panel IR receiver ³

¹ Illuminates when configuring the EDID

² Covered by a cap. The 3.5mm connector at the end of the internal IR connection cable fits through this opening

³ Optional. Can be used instead of the front panel (built-in) IR receiver to remotely control the machine (only if the internal IR connection cable has been installed)

4.1 Using the IR Transmitter for the VS-41HC 4x1 HDMI Switcher

You can use the **RC-IR3** IR transmitter to control the machine via the built-in IR receiver on the front panel or, instead, via an optional external IR receiver¹. The external IR receiver can be located 15 meters away from the machine. This distance can be extended to up to 60 meters when used with three extension cables²

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable³ with the 3.5mm connector that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm connector.

5 Connecting a VS-41HC 4x1 HDMI Switcher

To connect the **VS-41HC 4x1 HDMI Switcher** (as illustrated in [Figure 2](#)), do the following⁴:

1. If required, acquire the EDID (see section [6](#)).
2. Connect the OUTPUT HDMI connector to an HDMI acceptor (for example, an LCD display).
3. Connect⁵ the HDMI sources as follows:
 - A multimedia player to INPUT 1
 - A set top box to INPUT 2
 - A DVD player to INPUT 3
 - A DVD player to INPUT 4
4. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 2](#)).

Press an INPUT SELECTOR button (from 1 to 4) to choose which HDMI input to route to the output.

1 Model: C-A35M/IRR-50

2 Model: C-A35M/A35F-50

3 P/N: 505-70434010-S

4 Switch OFF the power on each device before connecting it to your VS-41HC. After connecting your VS-41HC, switch on its power and then switch on the power on each device

5 You do not have to connect all the HDMI sources

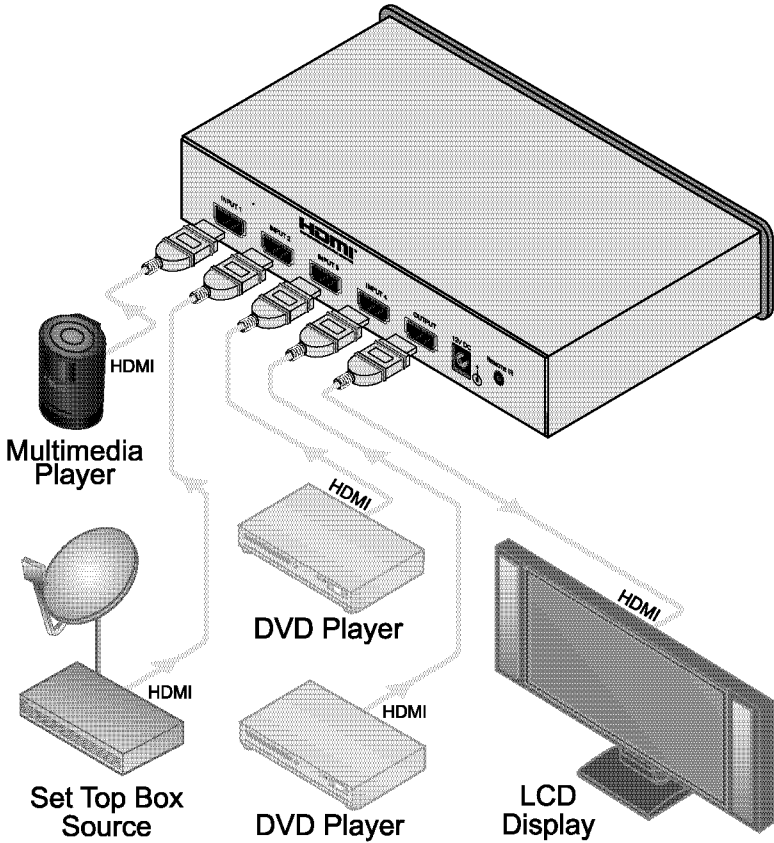


Figure 2: Connecting a VS-41HC 4x1 HDMI Switcher

6 Setting the EDID

You can acquire or change the EDID (see section [6.1](#)) or reset the machine to the default EDID (see section [6.2](#)).

6.1 Acquiring / Changing the EDID

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

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

1. Connect the power supply.
2. Connect the new output display device.
3. Press the EDID button.

The INPUT buttons blink in sequence until the EDID is acquired.

6.2 Resetting the Default EDID

To reset the default EDID, disconnect the output and repeat the steps in section [6.1](#).

7 Technical Specifications

[Table 2](#) includes the technical specifications:

Table 2: Technical Specifications¹ of the VS-41HC 4x1 HDMI Switcher

INPUTS:	4 HDMI Connectors
OUTPUT:	1 HDMI Connector
BANDWIDTH:	Supports up to 2.25Gbps bandwidth per graphic channel
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
RESOLUTION:	1080p @30bpp
POWER SOURCE:	12V DC, 320mA; 12V/1.25A Adapter
CONTROLS:	Front panel buttons, Infrared remote control transmitter
DIMENSIONS:	22cm x 18cm x 4.5cm (8.6" x 7" x 1.8") W, D, H. Half 19 inch 1U
WEIGHT:	1.3kg (2.9lbs) approx.
ACCESSORIES:	Power cord, IR remote control
OPTIONS:	Kramer HDMI cables ² , external remote IR receiver cable, RK-1 rack adapter

¹ Specifications are subject to change without notice

² For best results, use Kramer cables such as the C-H/H series, the C-H-DVI series and/or our HDMI over fiber optics C-FOHM/FOHM series

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 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 S TP 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.

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P/N: 2900-000423 REV 3