

KRAMER



USER MANUAL

MODEL:

VS-44DT

4x4 HDMI/HDBT Matrix Switcher with PoE



VS-44DT Quick Start Guide

This guide helps you install and use your VS-44DT for the first time.

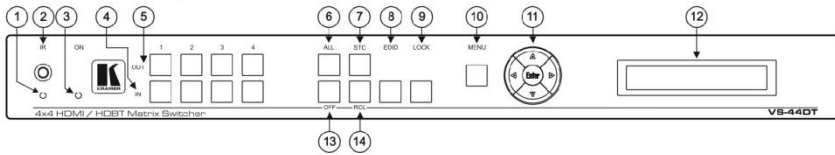
Go to www.kramerav.com/downloads/VS-44DT to download the latest user manual and check if firmware upgrades are available.

Scan for full manual

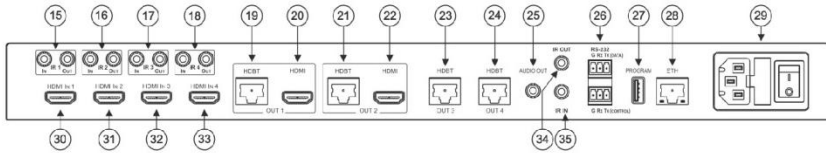
Step 1: Check what's in the box

- VS-44DT 4x4 HDMI/HDBT Matrix Switcher
- 1 Set of rack ears
- 4 IR receiver cables
- 4 Rubber feet
- IR remote control transmitter with batteries
- 1 Power cord
- 4 IR emitter cables
- 1 Quick start guide

Step 2: Get to know your VS-44DT



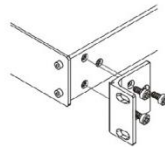
#	Feature	Function
1	IR LED	Lights yellow when receiving an IR signal
2	IR Sensor	IR receiver for remote control
3	POWER LED	Lights green when the device is powered on
4	IN Buttons	Press to select an input after selecting an output (from 1 to 4)
5	OUT Buttons	Press to select an output followed by an input or OFF (from 1 to 4)
6	ALL Button	Press, followed by an input to switch this input to all the outputs, or press, followed by the Off button to disconnect all the outputs
7	STO Button	Press to store a preset configuration followed by the preset number in which to save it
8	EDID Button	Press to copy the EDID from an output to an input
9	LOCK Button	Press and hold to lock the front panel buttons. Press and hold again to unlock
10	MENU Button	Press to enter the configuration menu or to move up one level when inside the menu
11	Menu Navigation Pad	Use the Enter, up (▲), down (▼), left (◀), and right (▶) buttons to navigate the menu or to modify parameters or values within the menu
12	LCD Readout (20 char x 2 lines)	Displays either the input/output matrix currently selected or the menu during configuration
13	OFF Button	Press after an output button to disconnect the currently selected outputs from the inputs. Press after the All button to disconnect all currently switched outputs
14	RCL Button	Press, followed by a preset number to recall the preset configuration



#	Feature	Function	
15	IR 1	IN 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 1
		OUT 3.5mm Mini Jack	Connect to the first IR emitter. Transmits IR commands that are sent over HDBT OUT 1
16	IR 2	IN 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 2
		OUT 3.5mm Mini Jack	Connect to the second IR emitter. Transmits IR commands that are sent over HDBT OUT 2
17	IR 3	IN 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 3
		OUT 3.5mm Mini Jack	Connect to the third IR emitter. Transmits IR commands that are sent over HDBT OUT 3
18	IR 4	IN 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 4
		OUT 3.5mm Mini Jack	Connect to the fourth IR emitter. Transmits IR commands that are sent over HDBT OUT 4
19	OUT 1	HDBT RJ-45 Connector	Connect to the first HDBT receiver, (for example, the TP-580RXR)
20		HDMI Connector	Connect to the first HDMI acceptor, (for example, an HDMI display)
21	OUT 2	HDBT RJ-45 Connector	Connect to the second HDBT receiver, (for example, the TP-580RXR)
22		HDMI Connector	Connect to the second HDMI acceptor, (for example, an HDMI display)
23		HDBT OUT 3 RJ-45 Connector	Connect to the third HDBT receiver, (for example, the TP-580RXR)
24		HDBT OUT 4 RJ-45 Connector	Connect to the fourth HDBT receiver, (for example, the TP-580RXR)
25		AUDIO OUT 3.5mm Mini Jack	Connect to an audio acceptor, (for example, active speakers)
26	RS-232	DATA 3-pin Terminal Block (G,Rx,Tx)	Connect to a serial source/target
		CONTROL 3-pin Terminal Block (G,Rx,Tx)	Connect to a serial controller
27	PROGRAM USB Connector	Connect to a PC to perform firmware upgrades	
28	ETHERNET RJ-45 Connector	Connect to a PC via a LAN	
29	AC Mains	Power Socket	Connect the mains power cord
		Fuse	AC mains supply protection fuse
		Power Switch	Turns the device on and off
30	HDMI IN 1 Connector	Connect to the first HDMI source, (for example, a Blu-ray disk player)	
31	HDMI IN 2 Connector	Connect to the second HDMI source, (for example, a Blu-ray disk player)	
32	HDMI IN 3 Connector	Connect to the third HDMI source, (for example, a Blu-ray disk player)	
33	HDMI IN 4 Connector	Connect to the fourth HDMI source, (for example, a Blu-ray disk player)	
34	IR OUT 3.5mm Mini Jack	Connect to an IR emitter for receiving the combined IR signals from all HDBT port IR transmissions	
35	IR IN 3.5mm Mini Jack	Connect to an external IR receiver for controlling VS-44DT via an IR remote controller	

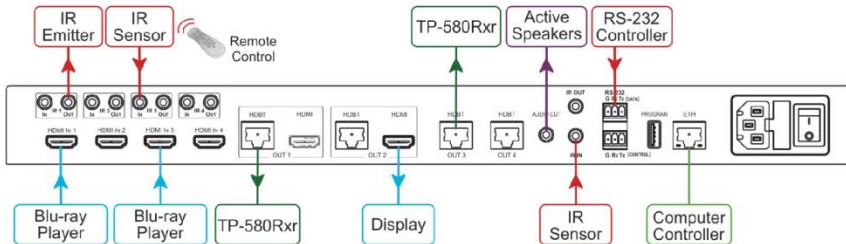
Step 3: Install the VS-44DT

To rack mount the machine attach both ear brackets to the machine (by removing the three screws from each side of the machine and replacing those screws through the ear brackets) or place the machine on a table.



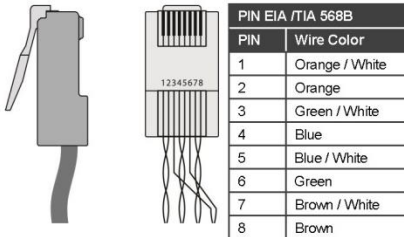
Step 4: Connect the inputs and outputs

Always switch OFF the power on each device before connecting it to your **VS-44DT**. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VS-44DT**.



RJ-45 Pinout:

For the Ethernet and HDBaseT connectors, see the proper wiring diagram below



For optimum range and performance use the recommended Kramer cables available at www.kramerav.com/product/VS-44DT.

Step 5: Connect the power

Connect AC power to the rear of the **VS-44DT**, switch on its power and then switch on the power on each device.

Step 6: Set operation parameters via the menu buttons

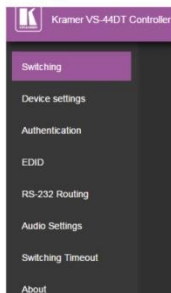
Enter the menu via the MENU button on the front panel or the IR remote control transmitter. Select a menu item and set parameters as required.

If you cannot see any video output, verify that the display, TV, or projector is in good working order and is connected to the **VS-44DT**. Verify that the **VS-44DT** is selected as the source.

Menu Item	Function
Audio Settings	Set the audio output to be routed to AUDIO OUT, set the volume level for each output and toggle mute (on/off) for each output
RS-232 Routing	Turn the RS-232 DATA serial communication routing on and off for each port. The current state is displayed when entering the RS-232 ROUTING menu, for example: ON To port-04.
Auto settings	Set auto switching on or off
Network Status	Set DHCP (on/off) IP address, netmask and gateway settings
Ethernet Status	Displays the following communication parameters: IP address, netmask, gateway, TCP port number, UDP port number and MAC address
FW Version	Displays the firmware version
Update firmware	Updates the firmware

Step 7: Operate via the front panel buttons, the remote controller and via:

Web pages:



RS-232 and Ethernet:

RS-232			
Baud Rate:	115,200	Parity:	None
Data Bits:	8	Command Format:	ASCII
Stop Bits:	1		
Example (route the video from HDMI In 3 to Out 1):			#VID 3->1<cr>
TCP/IP Parameters			
IP Address:	192.168.1.39	UDP Port #:	50000
Subnet mask:	255.255.000.000	Maximum UDP Connections:	4
Default gateway:	000.000.000.000	Maximum TCP Connections:	10
TCP Port #:	5000		
Full Factory Reset			
Menu:	Menu-> RESET TO DEFAULT-> Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again)		
Web Page:	Go to the Device settings page and click FACTORY RESET		
Protocol 3000:	#FACTORY<cr> command		

Step 8: Operate the VS-44DT via front panel display using the menu buttons:

To switch an input to an output:

1. Press an **OUT** button (1 to 4).
2. Press an **IN** button.

To Copy an EDID from an output to an input:

1. Press **EDID**.
2. Press the required **OUT** button.
3. Press the required **IN** button.
4. Press **EDID**.

To store the current configuration:

1. Press **STO**.
2. Press the required IN button to which you want to store the configuration.
3. Press **STO**. The current configuration is stored to the selected preset number.

To recall a preset:

1. Press **RCL**.
2. Press the required IN button in which the configuration is stored.
3. Press **RCL**. The current configuration stored in the selected preset number is recalled.

Technical Specifications:

Inputs:	4 HDMI on HDMI connectors 5 IR on 3.5mm mini jack connectors		
Outputs:	2 HDMI on HDMI connectors; 4 HDBaseT on RJ-45 connectors; 5 IR on 3.5mm mini jack connectors 1 Unbalanced stereo audio 1.3Vpp nominal (2Vrms max) / 100Ω on a 3.5mm mini jack connector		
Ports:	1 Ethernet on an RJ-45 connector 1 Program on a USB connector; 1 RS-232 control on a 3-pin terminal block; 1 RS-232 data on a 3-pin terminal block		
Maximum Data Rate:	10.2Gbps (3.4Gbps per graphic channel)		
Supported Resolutions:	Up to 4K@60Hz (4:2:0)		
HDMI Range:	15m (49ft) @ 8bit resolution; 10m (33ft) @ 12 bit resolution		
HDBaseT Range:	100m (328ft) 4K@30Hz; 180m (590ft) 1080@60Hz@24bpp		
Power Consumption:	100-240V AC 50/60Hz 38VA		
Operating Temperature:	0° to +40°C (32° to 104°F)	Storage Temperature:	-40° to +70°C (-40° to 158°F)
Humidity:	10% to 90%, RHL non-condensing		
Dimensions:	19" x 13.72" x 1U (W, D, H) rack mountable		
Shipping Dimensions:	54.3cm x 44.2cm x 10.7cm (21.4" x 17.4" x 4.2") W, D, H		
Weight:	3.3kg (7.28lbs) approx.	Shipping Weight:	4.1kg (9.04lbs) approx.
Included Accessories:	Rack ears, 4 IR receiver cables, 4 IR emitter cables, remote control transmitter		
Specifications are subject to change without notice at www.kramerav.com			

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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 video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **VS-44DT** 4x4 HDMI/HDBT Matrix Switcher. This product, which incorporates HDMI™ technology, is ideal for:

- Event rooms
- Large conference rooms
- Lecture halls
- Advertising applications

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to www.kramerav.com/downloads/VS-44DT to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighbouring electrical appliances that may adversely influence signal quality
- Position your **VS-44DT** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions



Caution: There are no operator serviceable parts inside the unit

Warning: Use only the power cord that is supplied with the unit

Warning: Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Shielded Twisted Pair/Unshielded Twisted Pair

For optimum range and performance use the recommended Kramer cables available at www.kramerav.com/product/VS-44DT.

2.4 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at www.kramerav.com/support/recycling/.

3 Overview

VS-44DT is a 4x4 4K@60Hz (4:2:0) HDMI/HDBaseT matrix switcher that transmits video, audio, Ethernet, RS-232 and IR signals over extended distances. The **VS-44DT** accepts up to four HDMI and four IR inputs as well as Ethernet and RS-232 network and control. The inputs can be routed to any or all of the four HDBaseT outputs, the first two of which also have simultaneous HDMI outputs.

VS-44DT connects to compatible HDBaseT receivers such as, **TP-780Rxr**, **TP-580Rxr** and **TP-588D**. It supports resolutions of up to 4K@60Hz (4:2:0). The matrix is a PoE provider that provides power over Ethernet to compatible PoE receivers.

The **VS-44DT** features:

- Four HDMI and five IR inputs
- Two HDMI, four HDBaseT and five IR outputs
- PoE support on all four HDBaseT outputs – PoE provider to HDBaseT receivers such as the **TP-588D** and **TP-780Rxr**
- HDBaseT range up to 130m (430ft) at normal mode (2K), up to 100m at normal mode (4K); up to 180m (590ft) ultra-mode (1080p @60Hz @24bpp) when using recommended Kramer cables, available at www.kramerav.com/product/VS-44DT
- An unbalanced, stereo audio output
- Bandwidth up to 10.2Gbps (3.4Gbps per video channel)
- EDID capture—copies and stores the EDID from a display device
- Hot-plug detection (HPD)
- HDCP 1.4 support
- HDTV compatibility
- Support for HDMI – 4Kx2K @30Hz, 3D, Deep Color, x.v.Color™, Lip Sync , Dolby® TrueHD, Dolby Digital Plus, DTS-HD® and linear PCM 7.1 surround sound
- A non-volatile memory for matrix configuration

- A store and recall facility for preset configurations
- Automatic output shutdown if no input signal is detected after a configurable idle period
- An LCD display for easy configuration and operation
- Support for Kramer Protocol 3000
- A lock button to prevent unwanted tampering with the settings
- 1U height that fits a standard 19" professional rack enclosure

You can control the **VS-44DT** using the front panel buttons, or remotely via:

- Built-in, embedded web pages using a standard web browser over Ethernet
- RS-232 serial commands transmitted by a touch screen system, PC or other serial controller
- The Kramer infrared remote control transmitter

3.1 About HDBaseT™ Technology

HDBaseT™ is an advanced, all-in-one connectivity technology (supported by the HDBaseT Alliance). It is particularly suitable in the ProAV – and also the home – environment as a digital networking alternative, where it enables you to replace numerous cables and connectors by a single LAN cable used to transmit, for example, uncompressed, full high-definition video, audio, IR, as well as various control signals.



The products described in this user manual are HDBaseT certified.

3.2 Defining the VS-44DT 4x4 HDMI/HDBT Matrix Switcher

This section defines the **VS-44DT**.

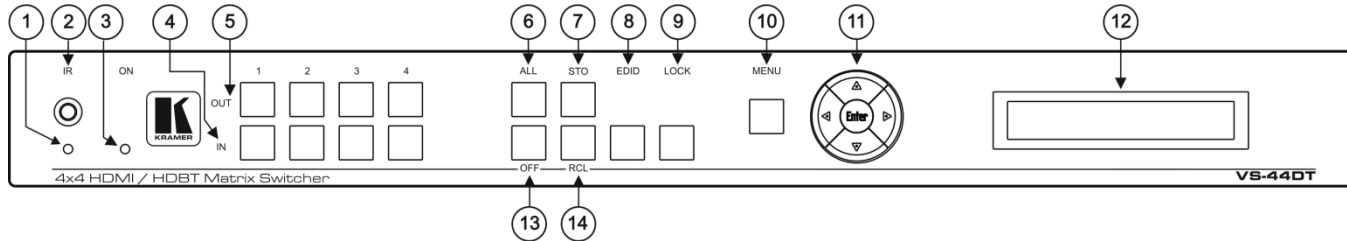


Figure 1: VS-44DT 4x4 HDMI/HDBT Matrix Switcher Front Panel

#	Feature	Function
1	IR LED	Lights yellow when receiving an IR signal
2	IR Sensor	IR receiver for remote control
3	POWER LED	Lights green when the device is powered on
4	IN Buttons	Press to select an input after selecting an output (from 1 to 4), see Section 6.1
5	OUT Buttons	Press to select an output followed by an input or OFF (from 1 to 4)
6	ALL Button	Press followed by an input to switch this input to all outputs, or press followed by the Off button to disconnect all switches, (see Section 6.4)
7	STO Button	Press to store a preset configuration followed by the preset number in which to save it, (see Section 6.2)
8	EDID Button	Press to copy the EDID from an output to an input, (see Section 6.3)
9	LOCK Button	Press and hold to lock the front panel buttons, (see Section 6.6). Press and hold again to unlock
10	MENU Button	Press to enter the configuration menu or to move up one level when inside the menu, (see Section 7.1)
11	Menu Navigation Pad	Use the Enter, up (▲), down (▼), left (◀), and right (▶) buttons to navigate the menu or to modify parameters or values within the menu, (see Section 7.1)
12	LCD Readout (20 char x 2 lines)	Displays either the input/output matrix currently selected or the menu during configuration
13	OFF Button	Press after an output button to disconnect the currently selected outputs. Press after the All button to disconnect all currently switched outputs (see Section 6.4)
14	RCL Button	Press, followed by a preset number to recall the preset configuration (see Section 6.2)

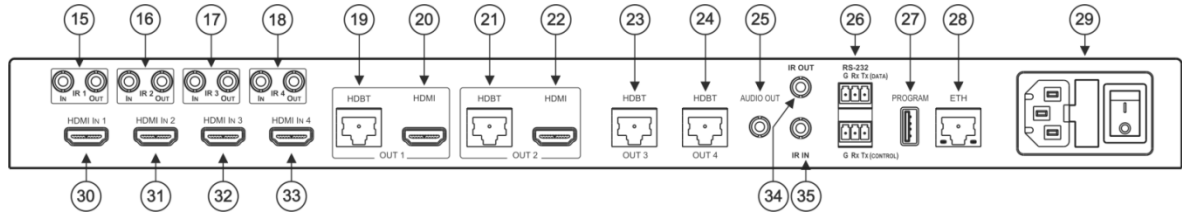


Figure 2: VS-44DT 4x4 HDMI/HDBT Matrix Switcher Rear Panel

#	Feature	Function
15	<i>IR 1</i> <i>IN</i> 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 1
	<i>OUT</i> 3.5mm Mini Jack	Connect to the first IR emitter. Transmits IR commands that are sent over HDBT OUT 1
16	<i>IR 2</i> <i>IN</i> 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 2
	<i>OUT</i> 3.5mm Mini Jack	Connect to the second IR emitter. Transmits IR commands that are sent over HDBT OUT 2
17	<i>IR 3</i> <i>IN</i> 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 3
	<i>OUT</i> 3.5mm Mini Jack	Connect to the third IR emitter. Transmits IR commands that are sent over HDBT OUT 3
18	<i>IR 4</i> <i>IN</i> 3.5mm Mini Jack	Connect to an IR sensor. Receives IR commands and sends them over HDBT OUT 4
	<i>OUT</i> 3.5mm Mini Jack	Connect to the fourth IR emitter. Transmits IR commands that are sent over HDBT OUT 4
19	<i>OUT 1</i> <i>HDBT</i> RJ-45 Connector	Connect to the first HDBT receiver, (for example, the TP-580RXR)
	<i>HDMI</i> Connector	Connect to the first HDMI receiver, (for example, an HDMI display)
21	<i>OUT 2</i> <i>HDBT</i> R-J-45 Connector	Connect to the second HDBT receiver, (for example, the TP-580RXR)
	<i>HDMI</i> Connector	Connect to the second HDMI receiver, (for example, an HDMI display)
23	<i>HDBT OUT 3</i> RJ-45 Connector	Connect to the third HDBT receiver, (for example, the TP-580RXR)
24	<i>HDBT OUT 4</i> RJ-45 Connector	Connect to the fourth HDBT receiver, (for example, the TP-580RXR)
25	<i>AUDIO OUT</i> 3.5mm Mini Jack	Connect to an audio receiver, (for example, active speakers)
26	<i>RS-232</i> <i>DATA</i> 3-pin Terminal Block (G,Rx,Tx)	Connect to a serial source/target
	<i>CONTROL</i> 3-pin Terminal Block (G,Rx,Tx)	Connect to a serial controller
27	<i>PROGRAM</i> USB Connector	Connect to a PC to perform firmware upgrades

#	Feature		Function
28	ETHERNET RJ-45 Connector		Connect to a PC via a LAN
29	AC Mains	Power Socket	Connect the mains power cord
		Fuse	AC mains supply protection fuse
		Power Switch	Turns the device on and off
30	HDMI IN 1 Connector		Connect to the first HDMI source, (for example, a Blu-ray disk player)
31	HDMI IN 2 Connector		Connect to the second HDMI source, (for example, a Blu-ray disk player)
32	HDMI IN 3 Connector		Connect to the third HDMI source, (for example, a Blu-ray disk player)
33	HDMI IN 4 Connector		Connect to the fourth HDMI source, (for example, a Blu-ray disk player)
34	<i>IR OUT</i> 3.5mm Mini Jack		Connect to an IR emitter or IR receiver for receiving the combined IR signals from all HDBT port IR transmissions
35	<i>IR IN</i> 3.5mm Mini Jack		Connect to an external IR receiver for controlling VS-44DT via an IR remote controller

4 Installing in a Rack

This section provides instructions for rack mounting the unit.

Before installing in a rack, be sure that the environment is within the recommended range:

OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing



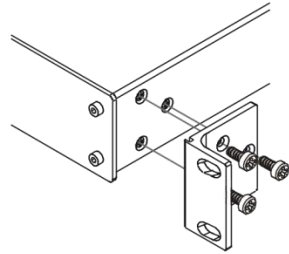
CAUTION!

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

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



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

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site

5 Connecting the VS-44DT



Always switch off the power to each device before connecting it to your **VS-44DT**. After connecting your **VS-44DT**, connect its power and then switch on the power to each device.

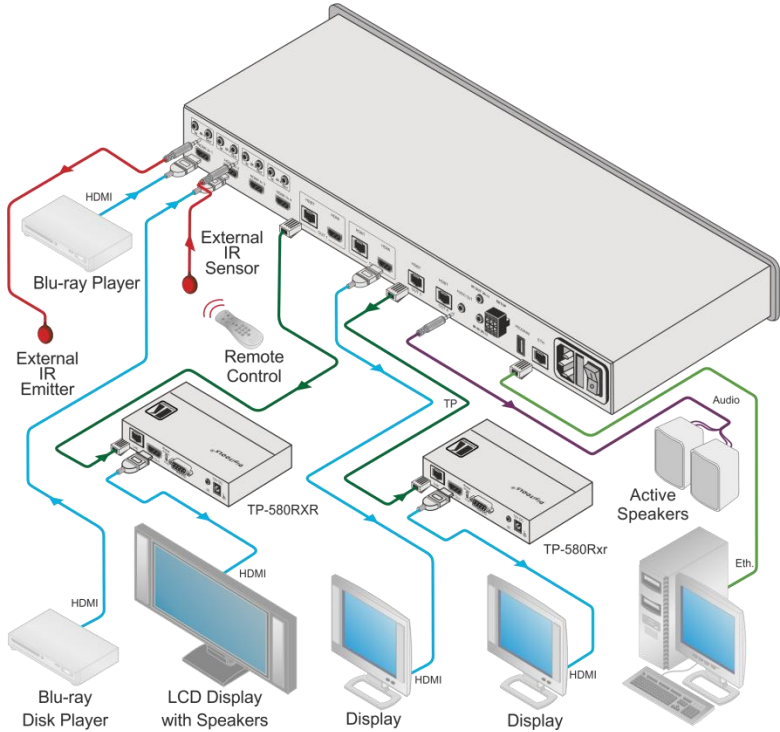


Figure 3: Connecting the VS-44DT 4x4 HDMI/HDBT Matrix Switcher

To connect the VS-44DT as illustrated in the example in [Figure 3](#):

1. Connect the HDMI sources, (for example, Blu-ray players) to the HDMI IN 1 and IN 2 connectors.
2. Connect an external IR sensor to the IR 3 IN 3.5mm mini jack.
3. Connect the IR 1 OUT 3.5mm mini jack to an external IR emitter.

4. Connect the OUT 2 HDMI connector to an HDMI acceptor, (for example, a display).
5. Connect the OUT 1 HDBT RJ-45 connector to a compatible HDBT receiver, (for example, the **TP-580Rxr**), and connect the HDMI output of the **TP-580Rxr** to a display.
6. Connect the OUT 3 HDBT RJ-45 connector to a compatible HDBT receiver, (for example, the **TP-580Rxr**), and connect the HDMI output of the **TP-580Rxr** to a display.
7. Connect the AUDIO OUT 3.5mm mini jack to an audio acceptor, (for example, active speakers).
8. Connect a controller via either RS-232 or a LAN to the Ethernet RJ-45 connector.

5.1 Connecting the VS-44DT to a Serial Controller

You can connect the **VS-44DT** via an RS-232 connection to a serial controller, for example, a PC.

To connect the VS-44DT via RS-232 to a serial controller:

- Connect the RS-232 CONTROL 3-pin terminal block on the rear of the **VS-44DT** to the 9-pin D-sub connector on PC, (pin TX to pin 2, pin RX to pin 3, pin G to pin 5)

5.2 Connecting the VS-44DT to a Serial Data Source/Acceptor

You can connect the **VS-44DT** via an RS-232 connection to a serial data source or acceptor, for example, a PC or device to be controlled.

To connect the VS-44DT via RS-232 to a serial data controller or acceptor:

- Connect the RS-232 DATA 3-pin terminal block on the rear of the **VS-44DT** to the 9-pin D-sub connector on PC, (pin TX to pin 2, pin RX to pin 2, pin G to pin 5)

5.3 Connecting to the VS-44DT via Ethernet

You can connect to the **VS-44DT** via Ethernet using either of the following methods:

- Directly to the PC using a crossover or straight cable (see [Section 5.3.1](#))
- Via a network hub, switch, or router, using a straight-through cable (see [Section 5.3.2](#))

Note: If you want to connect via a router and your IT system is based on IPv6, speak to your IT department for specific installation instructions.

5.3.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VS-44DT** directly to the Ethernet port on your PC using a crossover or straight cable with RJ-45 connectors.



This type of connection is recommended for identifying the **VS-44DT** with the factory configured default IP address.

After connecting the **VS-44DT** to the Ethernet port, configure your PC as follows:

1. Click **Start > Control Panel > Network and Sharing Center**.
2. Click **Change Adapter Settings**.
3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**.

The Local Area Connection Properties window for the selected network adapter appears as shown in [Figure 4](#).

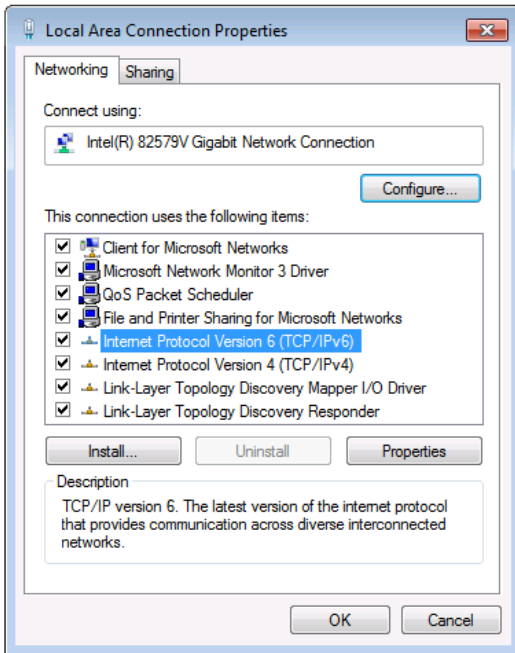


Figure 4: Local Area Connection Properties Window

4. Highlight **Internet Protocol Version 4 (TCP/IPv4)**.
5. Click **Properties**.

The Internet Protocol Properties window appears as shown in [Figure 5](#).

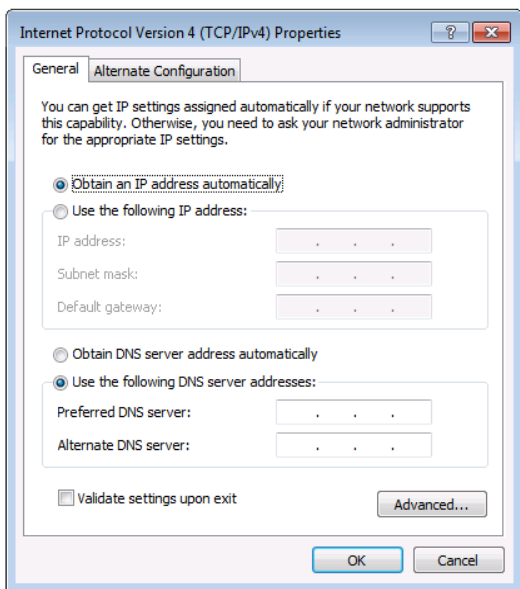


Figure 5: Internet Protocol Version 4 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in [Figure 6](#).

For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.

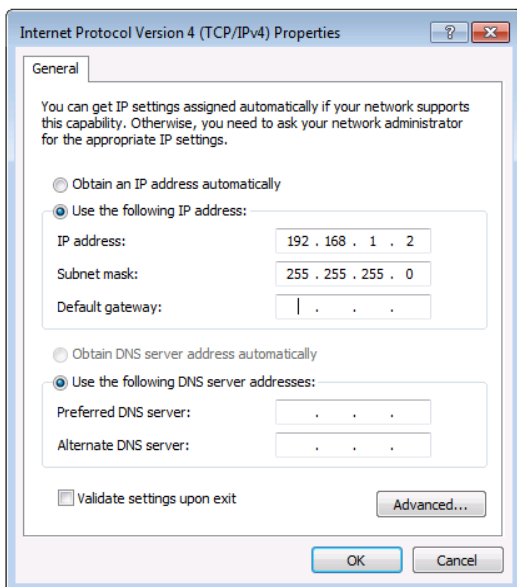


Figure 6: Internet Protocol Properties Window

7. Click **OK**.
8. Click **Close**.

5.3.2 Connecting the Ethernet Port via a Network Hub or Switch

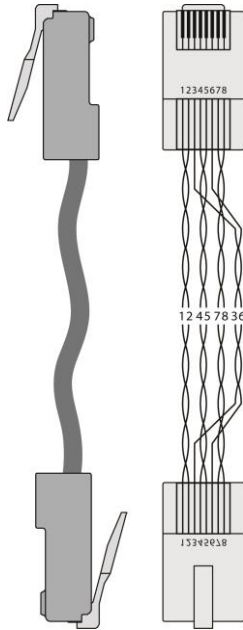
You can connect the Ethernet port of the **VS-44DT** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

5.4 Wiring the RJ-45 Connectors

This section defines the TP pinout, using a **straight** pin-to-pin cable with RJ-45 connectors.

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

Figure 7: TP PINOUT



6 Operating the VS-44DT

When the **VS-44DT** is powered on, the following is displayed briefly on the LCD display:

KRAMER ELECTRONICS

4X4 HDMI/HDBT Matrix

Following the self-test the current switching configuration is displayed, an example of which is shown below. The top row indicates the output port and the bottom row indicates which input port is switched to the output port displayed directly above it. An input port showing 0 (zero) indicates that the output port has no input switched to it.

O: 1 2 3 4

I: 3 0 1 2



When operating via the front panel buttons, if there is no button activity for approximately 30 seconds, the procedure is aborted and the display reverts back to the Input / Output display.

After approximately 8 minutes of no activity, the LCD turns off.
Push any button to turn the LCD back on.

6.1 Switching Inputs to Outputs

You can switch:

- Individual inputs to individual outputs
- One input to all outputs

To switch an output to an input, (for example, Input 4 to Output 3):

1. Press Out 3.
The Output button lights red.
2. Press In 4.
The Input button lights red and the switch is executed.

To switch one input to all outputs, (for example, Input 2 to all outputs):

1. Press All.

The All button lights red.

2. Press In 2.

The Input 2 button lights and Input 2 is switched to all outputs.

6.2 Storing and Recalling Preset Configurations

You can store up to four preset configurations for instant recall. The bottom row of input buttons relate to presets one to four.

To store the current configuration in preset 2:

1. Press STO.

2. Press IN 2.

The selection is displayed in the readout.

3. Press STO.

The current configuration is stored in preset 2.

To recall preset 4:

1. Press RCL.

2. Press IN 4.

The selection is displayed in the readout.

3. Press RCL.

The configuration stored in preset 4 is recalled.

6.3 Acquiring an EDID

You can acquire the EDID from an output and assign it to either one or all inputs.

To acquire the EDID from an output and store it on one input, (for example, Output 3 to Input 1):

1. Press EDID.
The button lights red.
2. Press Out 3.
3. Press In 1.
4. Press EDID.
The button no longer lights and the EDID from Output 3 is stored in Input 1.

6.4 Disconnecting One or All Outputs

The Off button is used to disconnect one or all currently switched outputs.

To disconnect one currently switched output, (for example, Output 2):

1. Press Out 2.
2. Press OFF.

To disconnect all currently switched outputs:

1. Press ALL.
2. Press OFF.

6.5 Resetting the Device to Factory Default Configuration

The **VS-44DT** can be reset to factory default configuration either by sending a Protocol 3000 command or by using the front panel buttons.

To reset the device to the factory default configuration by sending a P3000 command:

1. Connect to the **VS-44DT** from a PC via the serial port using the following parameters:
 - 115200, 8, 1, none
2. Send the P3000 command to reset the device to factory default (see [Section 11.4.1.3](#)).

After a few seconds the **VS-44DT** is reset to factory default.

To reset the device to the factory default configuration using the front panel buttons:

1. Press the Menu button.
The Menu button lights and the first option on the menu appears.
2. Use the up (▲) and down (▼) arrows on the keypad to scroll to the RESET TO DEFAULT option.
3. Press the Enter button.
The Reset to Default No and Yes options appear.
4. Use the left (◀) and right (▶) arrows on the keypad to select Yes.
5. Press Enter.
After a few seconds the standby readout is displayed and the device is reset to factory default.

6.6 Locking and Unlocking the Front Panel

You can lock the front panel buttons to prevent unwanted key presses from changing the current configuration.

To lock the front panel:

Press and hold the Lock button.

The button lights, the Locked message is displayed briefly, and the front panel buttons are locked. Pressing any button causes the Locked message to display briefly and the Lock button to flash

To unlock the front panel:

Press and hold the Lock button.

7 Configuring the VS-44DT

7.1 Using the Menu

The main menu comprises seven sections:

- Audio Setting (see [Section 7.1.1](#))
- RS-232 Routing (see [Section 7.1.2](#))
- Auto Settings (see [Section 7.1.3](#))
- Network Parameters (see [Section 7.1.4](#))
- Ethernet Status (see [Section 7.1.5](#))
- FW version display (see [Section 7.1.6](#))
- Reset to Default (see [Section 7.1.7](#))
- Update Firmware (see [Section 7.1.8](#))

Use the following keys to navigate the menu:

- Menu—Enter the Menu or exit one level when in the Menu
- Enter—Select a parameter/value
- Up (▲) or Down (▼)—scroll up through the parameter
- Right (▶) or Left (◀)—scroll down through the value list

Note: If there is no button activity for approximately 20 seconds, the display reverts back to the Input/Output display.

7.1.1 Setting the Audio Source and Volume

The Audio Settings menu lets you define which of the audio outputs is routed to the analog audio output and set its volume.

Parameter	Description
Output 1 to 4:	Sets the audio output source (1 to 4)
Volume	Set for each output (0 to 100)
Mute	Set to ON/OFF for each output

7.1.2 Setting RS-232 Routing

The RS-232 Status sub-menu turns the RS-232 DATA serial communication routing on and off. The current state is displayed when entering the RS-232 ROUTING menu, for example: ON To port-04.

Parameter	Description
To Port:	Turns the RS-232 routing to each port (1 to 4) ON or OFF

7.1.3 Setting Auto Switching

The AUTO SETTINGS sub-menu lets you enable or disable auto switching.

Parameter	Description
AUTO SWITCH: OUT (1 to 4)	Sets auto switching ON or OFF

7.1.4 Setting the Network Parameters

The Network Status sub-menu controls DHCP selection and IP network parameters.

Parameter	Description
OFF, ON	Turns DHCP ON and OFF. When off, set the network parameters (see Section 7.2)
IP Settings	Sets the IP network address
Netmask Settings	Sets the IP netmask
Gateway Settings	Sets the IP gateway

Note: When turning DHCP on, the device performs an automatic reset.

7.1.5 Ethernet Status Sub-menu

The parameters in the Ethernet Status sub-menu display the TCP/IP communication parameters.

Parameter	Description	Default
IP Status:	Displays the TCP/IP address of the device	192.168.1.39
Netmask Status:	Displays the TCP/IP netmask of the device	255.255.0.0
Gateway Status:	Displays the TCP/IP gateway	192.168.0.1
TCP port	Set the TCP port number (0 to 65535)	5000
UDP Port	Set the UDP port number (0 to 65535)	50000
MAC Address:	Displays the MAC address of the device	-

7.1.6 FW Version Display

Displays the firmware version.

7.1.7 Reset to Default

Parameter	Description
RESET TO DEFAULT	Resets the device to default factory parameters (NO or YES)

7.1.8 Update Firmware Sub-menu

Parameter	Description
UPDATE FIRMWARE:	Updates the firmware (NO or YES)

7.2 Selecting DHCP

To select the DHCP:

1. Press the Menu button to display the menu.
The menu is displayed.
2. Using the up (▲) or down (▼) button, move through the menu options until the Network Settings option is displayed.
3. Press Enter.
The DHCP ON and OFF options are displayed.
4. Using the left (◀) or right (▶) button, select either ON or OFF.
5. Press Enter.
The change is saved.

7.3 Configuring the IP Network Address

To configure the IP network address:

1. Press the Menu button to display the menu.
The menu is displayed.
2. Using the up (▲) or down (▼) button, move through the menu options until the Network Settings option is displayed.

3. Press Enter.
The DHCP Settings option is displayed.
4. Using the up (▲) or down (▼) button, move through the menu options until the IP Settings option is displayed.
5. Press Enter.
6. Using the left (◀) or right (▶) button, move the cursor to the digit you wish to change.
7. Using the up (▲) or down (▼) button, select the required digit.
8. Repeat steps 6 and 7 until the required address is displayed.
9. Press Enter.
The change is saved.

7.4 Resetting the VS-44DT to Factory Default Configuration

To reset the VS-44DT to factory default parameters:

1. Press the Menu button to display the menu.
The menu is displayed.
2. Using the up (▲) or down (▼) button, move through the menu options until the Reset to Default: option is displayed.
3. Press Enter.
The NO and YES options are displayed.
4. Using the left (◀) or right (▶) button, select YES.
5. Press Enter.
The device is reset to factory default parameters and automatically reboots.

8 Operating the VS-44DT Remotely Using the Web Pages

The **VS-44DT** can be operated remotely using the embedded web pages. The web pages are accessed using a web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in [Section 5.3](#).
- Ensure that your browser is supported

The following operating systems and web browsers are supported:

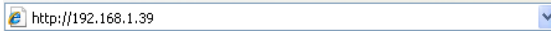
Windows 7 and higher:	
Chrome version 25	Internet Explorer version 9
Firefox version 19	
Mac (PC) Yosemite 10 and higher:	
Chrome version 51	
iOS 8.0 and higher:	
Chrome version 47	Safari N/A
Android OS 5.0 and higher:	
Chrome version 50	

There are eight web pages:

- The Switching page (see [Section 8.1](#))
- The Device Settings page (see [Section 8.2](#))
- The Authentication page (See [Section 8.3](#))
- The EDID page (see [Section 8.4](#))
- The RS-232 Routing page (see [Section 8.5](#))
- The Audio Settings page (see [Section 8.6](#))
- The Switching Timeout page (see [Section 8.7](#))
- The About page (see [Section 8.8](#))

To browse the VS-44DT web pages:

1. Open your Internet browser.
2. Type the IP address of the device in the Address bar of your browser. For example, the default IP address:



The Switching page appears.

8.1 Switching Page

[Figure 8](#) shows the Switching page that is also the first web page. The column on the left shows a list of all the available web pages. The Video switching area lets you select an input to switch to the outputs.

The model name, FW version and IP address appear on the lower left side of the main page. The lower part of the screen lets you save the settings and upload a saved setting.

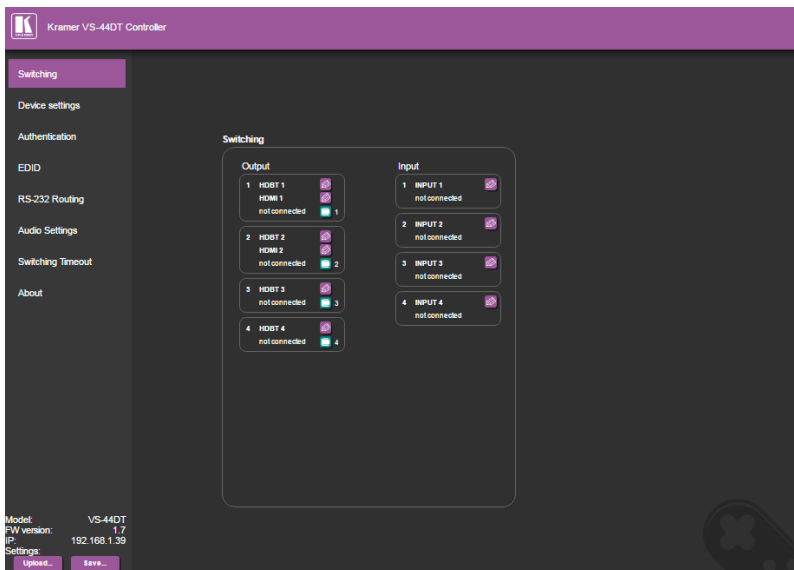


Figure 8: Switching Page

To switch an input to an output, select an output and then select the input you want to switch to that output. [Figure 9](#) defines the Switching area:

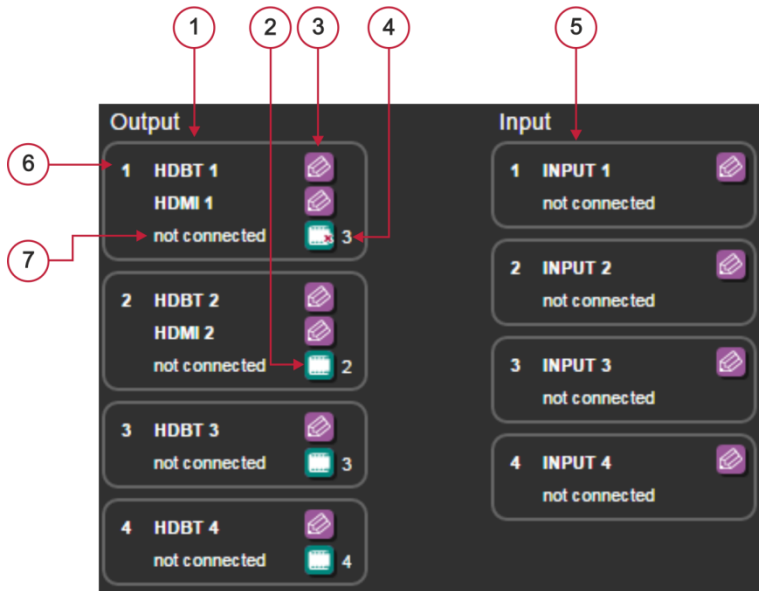


Figure 9: Switching Button Details

#	Item	Description
1	Four output buttons	Click on the button to select an output
2	Mute button	Click to mute the output. The mute output is indicated by a small red x on top of the icon
3	Edit button	Click to edit the output Properties
4	Input number	Indicates which input is switched to this output. 0 indicates that no input is connected
5	Four input buttons	Click to select an input
6	Output number	Indicates the output number
7	Signal Status	Indicates the signal status

To edit an input button, click that input's edit icon (📄). The Input Properties window appears:

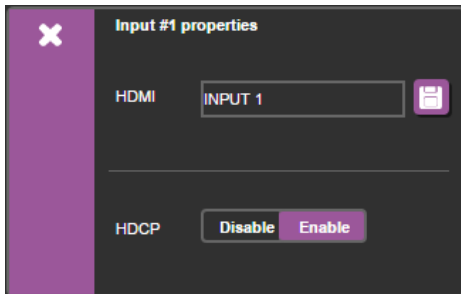


Figure 10: Input Edit Window

The Input Properties window enables you to:

- Change the name of the input as you want it to appear in the web page (click 📄 to save the name).
- Enable/disable HDCP.

Click the exit icon (🔍) to exit the window.

[Figure 11](#) shows the HDBaseT properties window for output 1 and [Figure 12](#) shows the HDMI properties window for output 1.

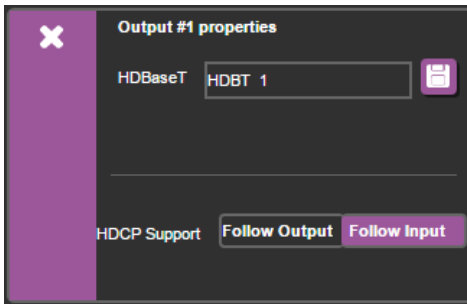


Figure 11: HDBaseT Output Properties Window

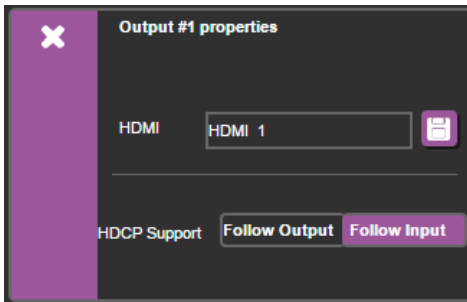



Figure 12: HDMI Output Properties Window

The Input Properties window enables you to:

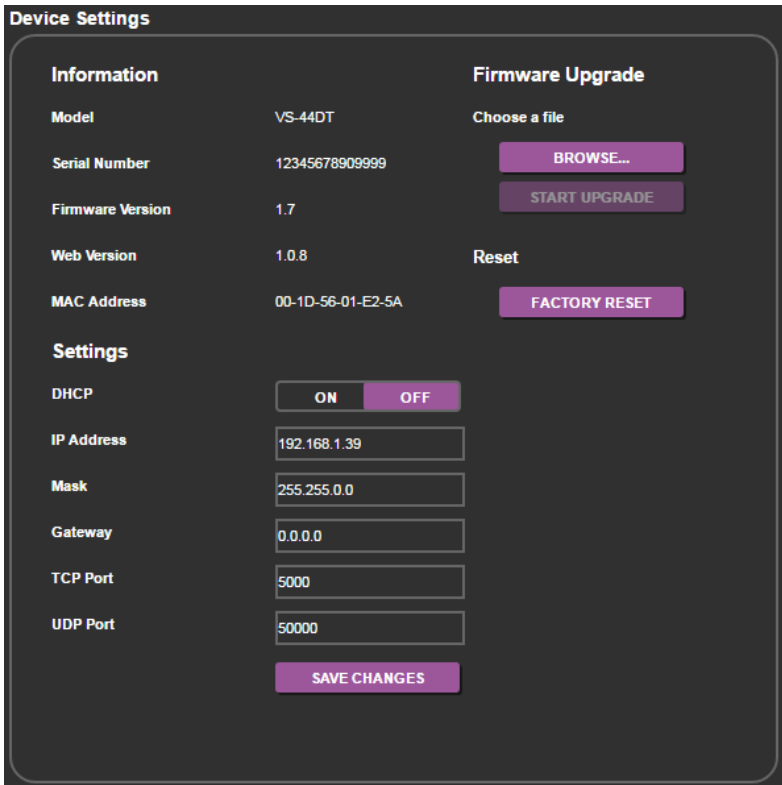
- Change the name of the input as you want it to appear in the web page (click  to save the name).
- Set the HDCP Support to follow the input or follow output.

Click the exit icon () to exit the window.

8.2 Device Settings Page

The Device Settings page enables you to:

- View the device information
- Perform firmware upgrade
- Reset the device to its factory default settings
- Turn DHCP on and off
- View and edit the current IP settings



The screenshot displays the 'Device Settings' page with a dark theme. It is organized into three main sections: Information, Firmware Upgrade, and Settings.

Information

Model	VS-44DT
Serial Number	12345678909999
Firmware Version	1.7
Web Version	1.0.8
MAC Address	00-1D-56-01-E2-5A

Firmware Upgrade

Choose a file

BROWSE...

START UPGRADE

Reset

FACTORY RESET

Settings

DHCP ON OFF

IP Address

Mask

Gateway

TCP Port

UDP Port

SAVE CHANGES

Figure 13: Device Settings Page

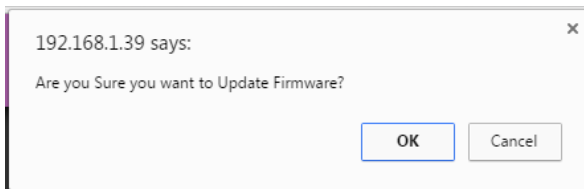
8.2.1 Updating the Firmware

To update the firmware:

1. Click BROWSE... in the Firmware Upgrade area, and select the new firmware file (download the latest firmware file from www.kramerav.com/downloads/VS-44DT).

2. Click START UPGRADE.

The following message appears:



3. Click OK.

The new firmware is installed.

Do not interrupt the procedure or the device may be rendered inoperable.

4. Wait until the device reboots automatically at the end of the procedure.

8.3 Authentication Page

The Authentication page enables you to:

- Turn web page authentication on and off
- Set the web password

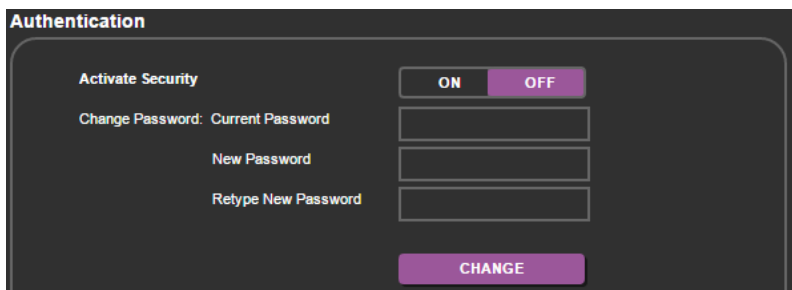


Figure 14: Authentication Page

If security is activated, you need to access the web pages using the password and then click the arrow.

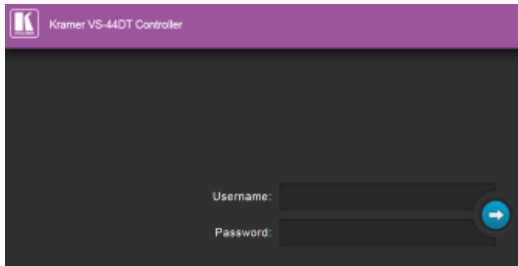


Figure 15: Login Page

If authentication is enabled, enter a valid user name (default = Admin) and password (default = Admin) and click on the arrow.

8.4 EDID Page

The EDID page allows you to:

- Copy an EDID from:
 - The default EDID
 - Any HDBaseT output
 - Any input
 - An EDID stored in a file
- Copy an EDID to one or more inputs

The screenshot shows a dark-themed web interface titled "EDID". It is divided into several sections:

- Read from:** A dropdown menu currently showing "Default".
- Outputs:** A vertical list of four buttons labeled "1 HDBT 1 No Signal", "2 HDBT 2 No Signal", "3 HDBT 3 No Signal", and "4 HDBT 4 No Signal".
- Inputs:** A vertical list of three buttons labeled "1 INPUT 1 No Signal", "2 INPUT 2 No Signal", and "3 INPUT 3 No Signal".
- Copy to:** A checkbox labeled "Inputs" is checked. Below it are four buttons labeled "1 INPUT 1 No Signal", "2 INPUT 2 No Signal", "3 INPUT 3 No Signal", and "4 INPUT 4 No Signal".
- Central controls:** The text "From" is above "NONE", "To" is above "NONE", and a "COPY" button is centered below.
- Bottom left:** A purple "BROWSE..." button.

Figure 16: EDID Page

To copy an EDID to one or more inputs:

1. Select the source you want to read from (Default EDID in this example).
The source details appear on the EDID page.
2. Select the input/s to which you want to copy the EDID to.

The screenshot shows a web interface for configuring EDID. It is divided into several sections:

- Read from:** A dropdown menu with "Default" selected.
- Outputs:** Four buttons labeled "1 HDBT 1 No Signal", "2 HDBT 2 No Signal", "3 HDBT 3 No Signal", and "4 HDBT 4 No Signal".
- Inputs:** Three buttons labeled "1 INPUT 1 No Signal", "2 INPUT 2 No Signal", and "3 INPUT 3 No Signal".
- EDID Details:** A table showing the selected EDID's specifications:

Name:	VS-44DT
Native EDID:	1920x1080P60.0
Audio Channels:	2 Channels
Deep Color:	No supported
3D:	No supported
4K2K:	Supported
- Copy to:** A section with a "Inputs" checkbox and four input selection buttons:
 - 1 INPUT 1 No Signal (unchecked)
 - 2 INPUT 2 No Signal (checked)
 - 3 INPUT 3 No Signal (unchecked)
 - 4 INPUT 4 No Signal (checked)
- From:** Default
- To:** Inputs 2, 4
- Actions:** A "BROWSE..." button and a "COPY" button.

Figure 17: Copying the EDID

3. Click COPY.

The COPY EDID RESULTS lists the actions taken.

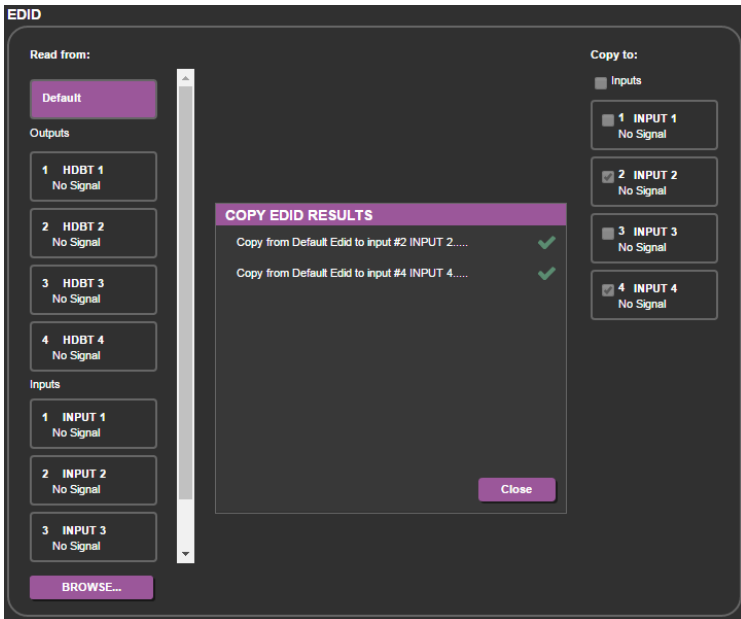


Figure 18: EDID Copied

8.5 RS-232 Routing Page

The RS-232 Routing page allows you to route RS-232 data to Out 1, Out 2, Out 3 or Out 4.



Figure 19: RS-232 Routing Page

8.6 Audio Settings Page

The Audio Settings page allows you to:

- Set the volume of the audio output or mute it
- Select the audio signal from one of the four HDBT outputs to be routed to the unbalanced stereo output

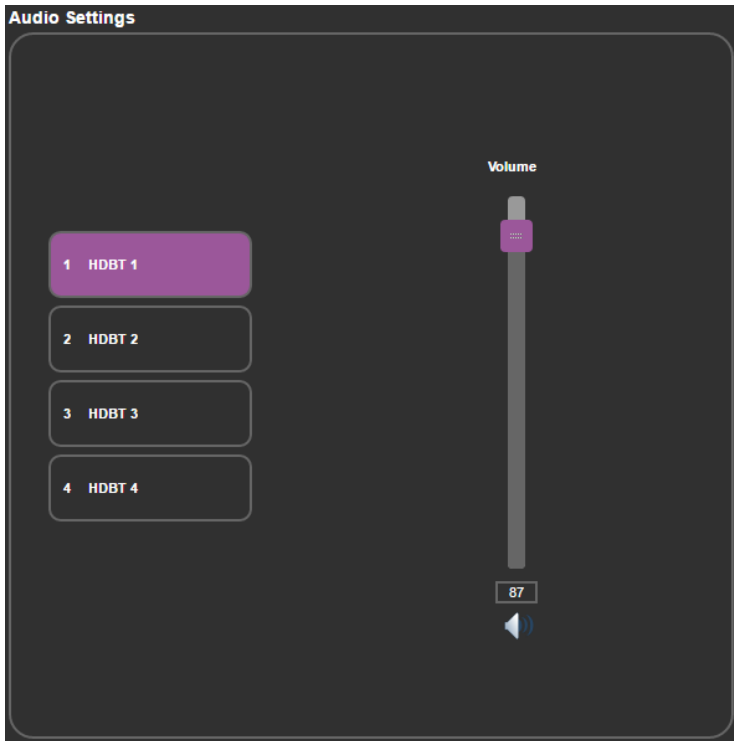


Figure 20: Audio Settings Page

8.7 Switching Timeout Page

The switching timeout page allows you to:

- Delay the switching upon signal loss (5V is on)
- Delay the switching upon unplugging the cable
- Delay 5V of when signal is lost

Switching Timeout

Delay switching upon signal loss for (leave 5V ON) seconds.

Delay switching input upon cable unplug for seconds.

Delay power off 5V upon signal loss for seconds.

Figure 21: Switching Timeout Page

8.8 About Page

The About page displays the device firmware revision and the Kramer company details.



Figure 22: About Page

9 Updating the Firmware

The **VS-44DT** uses two microcontrollers that run firmware located in flash memory. The firmware for these microcontrollers may be upgraded independently.

To upgrade the main microcontroller firmware:

1. From www.kramerav.com/downloads/VS-44DT download the latest firmware file to your PC.
2. Open Windows Explorer on your PC.
3. Power off the **VS-44DT**.
4. Connect the **VS-44DT** to your PC using a USB cable.
5. Power on the **VS-44DT** while holding down the OFF button.
6. After a few seconds a removable drive is displayed in your Windows Explorer. Release the OFF button.
7. Copy the firmware file from your PC to the new removable drive.
8. After the file has been transferred, power-cycle the **VS-44DT**.
As soon as the **VS-44DT** is ready for operation, the upgrade process is complete.

To upgrade the I/O microcontroller firmware:

1. Go to www.kramerav.com/downloads/VS-44DT and download the latest firmware file, to your PC.
2. Open Windows Explorer on your PC.
3. Power off the **VS-44DT**.
4. Connect the **VS-44DT** to your PC using a USB cable.
5. Power on the **VS-44DT** while holding down the STO, RCL and LOCK buttons.

6. Copy the firmware file from your PC to the new removable drive.
7. After the file has been transferred, power-cycle the **VS-44DT**.
As soon as the **VS-44DT** is ready for operation, the upgrade process is complete.

10 Technical Specifications

Inputs:	4 HDMI on HDMI connectors 5 IR on 3.5mm mini jack connectors
Outputs:	2 HDMI on HDMI connectors 4 HDBaseT on RJ-45 connectors 5 IR on 3.5mm mini jack connectors 1 Unbalanced stereo audio 1.3Vpp nominal (2Vrms max) / 100Ω on a 3.5mm mini jack connector
Ports:	1 Ethernet on an RJ-45 connector 1 Program on a USB connector 1 RS-232 control on a 3-pin terminal block 1 RS-232 data on a 3-pin terminal block
Maximum data rate:	10.2Gbps (3.4Gbps per graphic channel)
Supported Resolutions:	Up to 4K@60Hz (4:2:0)
HDMI Range:	15m (49ft) @ 8bit resolution 10m (33ft) @ 12 bit resolution
HDBaseT Range:	100m (328ft) 4K@30Hz 180m (590ft) 1080@60Hz@24bpp
Power Consumption:	100-240V AC 50/60Hz 38VA
Operating Temperature:	0° to +40°C (32° to 104°F)
Storage Temperature:	-40° to +70°C (-40° to 158°F)
Humidity:	10% to 90%, RHL non-condensing
Dimensions:	19" x 13.72" x 1U (W, D, H) rack mountable
Shipping Dimensions	54.3cm x 44.2cm x 10.7cm (21.4" x 17.4" x 4.2") W, D, H
Weight:	3.3kg (7.27lbs) approx.
Shipping Weight:	4.1kg (9.04lbs) approx.
Included Accessories:	Rack ears, 4 IR receiver cables, 4 IR emitter cables; remote control transmitter
Specifications are subject to change without notice, go to our web site at www.kramerav.com	

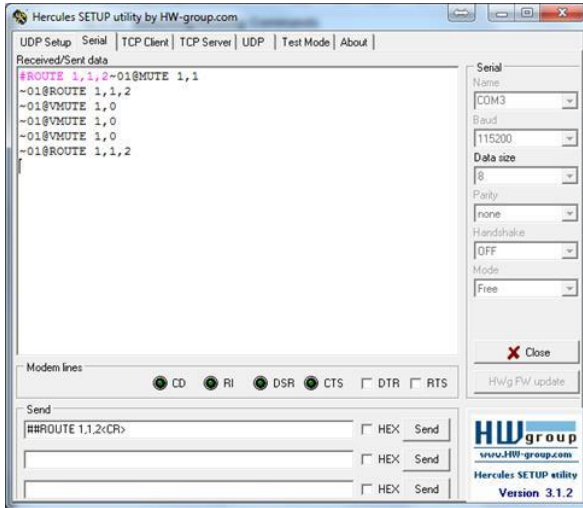
10.1 Default IP Parameters

RS-232	
Baud Rate:	115,200
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Example (Route the video from the HDMI IN 3 to Out1):	#VID 3>1<cr>
Ethernet	
IP Address:	192.168.1.39
Subnet Mask:	255.255.0.0
Default Gateway:	192.168.0.1
TCP Port #:	5000
Default UDP Port #:	50000
Maximum TCP Ports:	4
Maximum UDP Ports:	10
Full Factory Reset	
Menu:	Menu-> RESET TO DEFAULT-> Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again).
Web Page:	Go to the Device Settings page and click FACTORY RESET
Protocol 3000:	#factory<cr> command

11 Protocol 3000

The **VS-44DT** can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the **VS-44DT**. For example, a basic video input switching command that routes a layer 1 video signal to HDMI out 1 from HDMI input 2 (`ROUTE 1, 1, 2`), is entered as follows:

- Terminal communication software, such as Hercules:



The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):

'Device Code (17)' PROPERTIES	
name	Device Code (17)
data	#ROUTE 1,1,2x0D

- K-Config (Kramer configuration software):

Command Syntax Display Command as Hex Decimal ASCII



All the examples provided in this section are based on using the K-Config software.

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on the **VS-44DT**. To enter `CR` press the Enter key (`LF` is also sent but is ignored by the command parser).

Commands sent from various non-Kramer controllers (e.g., Crestron) may require special coding for some characters (such as, `/x##`). For more information, refer to your controller's documentation.

For more information about:

- Using Protocol 3000 commands, see [Section 11.1](#)
- General syntax used for Protocol 3000 commands, see [Section 11.2](#)
- Protocol 3000 commands available for the **VS-44DT**, see [Section 11.3](#)

11.1 Understanding Protocol 3000

Protocol 3000 commands are structured according to the following:

- **Command** – A sequence of ASCII letters (A-Z, a-z and -). A command and its parameters must be separated by at least one space.
- **Parameters** – A sequence of alphanumeric ASCII characters (0-9, A-Z, a-z and some special characters for specific commands). Parameters are separated by commas.
- **Message string** – Every command entered as part of a message string begins with a message starting character and ends with a message closing character.



A string can contain more than one command. Commands are separated by a pipe (|) character.

The maximum string length is 64 characters.

- **Message starting character:**
 - # – For host command/query
 - ~ – For device response
- **Device address** – K-NET Device ID followed by @ (optional, K-NET only)
- **Query sign** – ? follows some commands to define a query request
- **Message closing character:**
 - $\overline{\text{CR}}$ – Carriage return for host messages (ASCII 13)
 - $\overline{\text{CR LF}}$ – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)
- **Command chain separator character** – Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|). When chaining commands, enter the message starting character and the message closing character only at the beginning and end of the string.



Spaces between parameters or command terms are ignored. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.

11.2 Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

- $\overline{\text{CR}}$ = Carriage return (ASCII 13 = 0x0D)
- $\overline{\text{LF}}$ = Line feed (ASCII 10 = 0x0A)
- $\overline{\text{SP}}$ = Space (ASCII 32 = 0x20)

Some commands have short name syntax in addition to long name syntax to enable faster typing. The response is always in long syntax.

The Protocol 3000 syntax is in the following format:

- **Host Message Format:**

Start	Address (optional)	Body	Delimiter
#	<i>Device_id@</i>	Message	CR

- **Simple Command** – Command string with only one command without addressing:

Start	Body	Delimiter
#	Command SP <i>Parameter_1,Parameter_2,...</i>	CR

- **Command String** – Formal syntax with command concatenation and addressing:

Start	Address	Body	Delimiter
#	<i>Device_id@</i>	Command_1 <i>Parameter1_1,Parameter1_2,...</i> Command_2 <i>Parameter2_1,Parameter2_2,...</i> Command_3 <i>Parameter3_1,Parameter3_2,...</i> ...	CR

- **Device Message Format:**

Start	Address (optional)	Body	Delimiter
~	<i>Device_id@</i>	Message	CR LF

- **Device Long Response** – Echoing command:

Start	Address (optional)	Body	Delimiter
~	<i>Device_id@</i>	Command SP [<i>Param1 ,Param2 ...</i>] result	CR LF

11.3 Protocol 3000 Commands

This section includes the following commands:

- System Commands (see [Section 11.4.1](#))
- Video Commands (see [Section 11.4.2](#))
- EDID Handling Commands (see [Section 11.4.3](#))
- Audio Commands (see [Section 11.4.4](#))
- Switching Commands (see [Section 11.4.5](#))
- Communication Commands (see [Section 11.4.6](#))

11.4 Kramer Protocol 3000 Commands

The following are the detailed protocol commands

11.4.1 System Commands

Command	Description
#	Protocol handshaking
BUILD-DATE	Get device build date
FACTORY	Reset to factory default configuration
HELP	Get command list
MODEL	Get device model
PROT-VER	Get device protocol version
RESET	Reset device
VERSION	Get device firmware version
AV-SW-TIMEOUT	Set/get auto switching timeout
DISPLAY	Get output HPD status
SIGNAL	Get input signal lock status
PRST-RCL	Recall saved preset list
PRST-STO	Store current connections, volumes and modes in preset
LOCK-FP	Lock the port
MACH-NUM	Set machine number

11.4.1.1

Functions		Permission	Transparency
Set:	#	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Protocol handshaking	# <u>CR</u>	
Get:	-	-	
Response			
~nn@SEOk <u>CR LF</u>			
Notes			
Validates the Protocol 3000 connection and gets the machine number			
K-Config Example			
"#", 0x0D			

11.4.1.2 BUILD-DATE

Functions		Permission	Transparency
Set:	-	-	-
Get:	BUILD-DATE?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device build date	# BUILD-DATE? <input type="checkbox"/>	
Response			
~ <input type="checkbox"/> <input type="checkbox"/> @ BUILD-DATE <input type="checkbox"/> SE _{date} <input type="checkbox"/> SE _{time} <input type="checkbox"/> CR LF			
Parameters			
<i>date</i> – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day			
<i>time</i> – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds			
K-Config Example			
`#BUILD-DATE?`,0x0D			

11.4.1.3 FACTORY

Functions		Permission	Transparency
Set:	FACTORY	End User	Public
Get:	-	-	-
Description		Syntax	
Set:	Reset device to factory default configuration	# FACTORY <input type="checkbox"/>	
Get:	-	-	
Response			
~ <input type="checkbox"/> <input type="checkbox"/> @ FACTORY <input type="checkbox"/> SEOK <input type="checkbox"/> CR LF			
Notes			
This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect.			
K-Config Example			
`#FACTORY`,0x0D			

11.4.1.4 HELP

Functions		Permission	Transparency
Set:	-	-	-
Get:	HELP	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get command list or help for specific command	1. #HELP <code>CR</code> 2. #HELP <code>SP</code> COMMAND_NAME <code>CR</code>	
Response			
1. Multi-line: ~ <code>nn</code> @Device available protocol 3000 commands: <code>CR LF</code> command, <code>SP</code> command... <code>CR LF</code> 2. Multi-line: ~ <code>nn</code> @HELP <code>SP</code> command: <code>CR LF</code> description <code>CR LF</code> USAGE:usage <code>CR LF</code>			
Parameters			
COMMAND_NAME – name of a specific command			
Notes			
To get help for a specific command use: HELP <code>SP</code> COMMAND_NAME <code>CR LF</code>			
K-Config Example			
"#HELP",0x0D			

11.4.1.5 MODEL

Functions		Permission	Transparency
Set:	-	-	-
Get:	MODEL?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device model	#MODEL? <code>CR</code>	
Response			
~ <code>nn</code> @MODEL <code>SP</code> model_name <code>CR LF</code>			
Parameters			
model_name – String of up to 19 printable ASCII chars			
Notes			
This command identifies equipment connected to Step-in master products and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests			
K-Config Example			
"#MODEL?",0x0D			

11.4.1.6 PROT-VER

Functions		Permission	Transparency
Set:	-	-	-
Get:	PROT-VER?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get device protocol version	# PROT-VER? <code>CR</code>	
Response			
~ <code>nn</code> @ PROT-VER <code>SP</code> 3000: <i>version</i> <code>CR LF</code>			
Parameters			
<i>version</i> - XX.XX where X is a decimal digit			
K-Config Example			
"#PROT-VER?",0x0D			

11.4.1.7 RESET

Functions		Permission	Transparency
Set:	RESET	Administrator	Public
Get:	-	-	-
Description		Syntax	
Set:	Reset device	# RESET <code>CR</code>	
Get:	-	-	
Response			
~ <code>nn</code> @ RESET <code>SP</code> OK <code>CR LF</code>			
Notes			
To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port.			
K-Config Example			
"#RESET",0x0D			

11.4.1.8 VERSION

Functions		Permission	Transparency
Set:	-	-	-
Get:	VERSION?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get firmware version number	# VERSION? <code>CR</code>	
Response			
~ <code>nn</code> @ VERSION <code>SP</code> <i>firmware_version</i> <code>CR LF</code>			
Parameters			
<i>firmware_version</i> - XX.XX.XXXX where the digit groups are: major.minor.build version			
K-Config Example			
"#VERSION?",0x0D			

11.4.1.9 AV-SW-TIMEOUT

Functions		Permission	Transparency
Set:	AV-SW-TIMEOUT	End User	Public
Get:	AV-SW-TIMEOUT?	End User	Public
Description		Syntax	
Set:	Set auto switching timeout	# AV-SW-TIMEOUT [SP] <i>action,time_out</i> [CR]	
Get:	Get auto switching timeout	# AV-SW-TIMEOUT? [SP] <i>action</i> [CR]	
Response			
~nn@ AV-SW-TIMEOUT [SP] <i>action,time_out</i> [CR]			
Parameters			
<i>action</i> – event that triggers the auto switching timeout: 0=video out signal loss <i>timeout</i> – timeout in seconds (minimum 3 seconds)			
Notes			
The timeout must not exceed 60000 seconds. The timeout for video signal loss (0) event must not be less than 3 seconds.			
K-Config Example			
Set video signal loss timeout to 6 seconds: `#AV-SW-TIMEOUT 0,6",0x0D			

11.4.1.10 DISPLAY

Functions		Permission	Transparency
Set:	-	-	-
Get:	DISPLAY?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get output HPD status	# DISPLAY? [SP] <i>out_id</i> [CR]	
Response			
~nn@ DISPLAY [SP] <i>out_id,status</i> [CR LF]			
Parameters			
<i>out_id</i> – Out 1=1; Out 2=2; Out 3=3; Out 4=4 <i>status</i> – HPD status according to signal validation : 0 (Off), 1 (On), 2 (On and all parameters are stable and valid)			
Response Triggers			
A response is sent to the com port from which the Get was received, after command execution and: After every change in output HPD status from On to Off (0) After every change in output HPD status from Off to On (1) After every change in output HPD status form Off to On and all parameters (new EDID, etc.) are stable and valid (2)			
K-Config Example			
Get the output HPD status of HDMI Out: `#DISPLAY? 1",0x0D			

11.4.1.11 SIGNAL

Functions		Permission	Transparency
Set:	-	-	-
Get	SIGNAL?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get input signal status	# SIGNAL? <input type="checkbox"/> inp_id <input type="checkbox"/>	
Response			
~nn@ SIGNAL? <input type="checkbox"/> inp_id,status <input type="checkbox"/> <input type="checkbox"/>			
Parameters			
inp_id – input number: IN 1=1, IN 2=2, IN 3=3, IN 4=4 status – signal status according to signal validation: 0 (Off), 1 (On)			
Response Triggers			
After execution, a response is sent to the com port from which the Get was received A response is sent after every change in input signal status from On to Off or from Off to On			
K-Config Example			
Get the input signal status of HDMI In: `#SIGNAL? 1",0x0D			

11.4.1.12 PRST-RCL

Functions		Permission	Transparency
Set:	PRST-RCL	End User	Public
Get	-	-	-
Description		Syntax	
Set:	Recall saved preset list	# PRST-RCL? <input type="checkbox"/> preset <input type="checkbox"/>	
Get:	-	-	
Response			
~nn@ PRST-RCL? <input type="checkbox"/> preset <input type="checkbox"/> <input type="checkbox"/>			
Parameters			
preset – input number: IN 1=1, IN 2=2, IN 3=3, IN 4=4			
K-Config Example			
Recall preset 1: `#PRST-RCL 1",0x0D			

11.4.1.13 PRST-STO

Functions		Permission	Transparency
Set:	PRST-STO	End User	Public
Get	-	-	-
Description		Syntax	
Set:	Store current connections, volumes and modes in preset	#PRST-STO SP preset CR	
Get:	-	-	
Response			
~nn@PRST-STO SP preset CR LF			
Parameters			
preset – preset number: IN 1=1, IN 2=2, IN 3=3, IN 4=4			
K-Config Example			
Store preset 1: `#PRST-STO 1",0x0D			

11.4.1.14 LOCK-FP

Functions		Permission	Transparency
Set:	LOCK-FP	End User	Public
Get	LOCK-FP?	End User	Public
Description		Syntax	
Set:	Lock front panel	#LOCK-FP SP lock_mode CR	
Get:	Get front panel lock state	#LOCK-FP?	
Response			
~nn@LOCK-FP SP lock_mode SP OK CR LF			
Parameters			
lock_mode – unlock the front panel buttons (Off)=0, lock the front panel buttons (On)=1			
K-Config Example			
Unlock front panel: `#LOCK-FP 0",0x0D			

11.4.1.15 MACH-NUM

Functions		Permission	Transparency
Set:	MACH-NUM	End User	Public
Get	-	-	-
Description		Syntax	
Set:	Set machine number	# MACH-NUM <input type="text" value="SE"/> <input type="text" value="machine_number"/> <input type="text" value="CR"/>	
Get:	-	-	
Response			
~ <input type="text" value="nn"/> @ MACH-NUM <input type="text" value="SE"/> <input type="text" value="machine_number"/> <input type="text" value="CR LF"/>			
Parameters			
<i>machine_number</i> – new device machine number			
K-Config Example			
Set new machine number to 3: "#MACH-NUM 3",0x0D			

11.4.2 Video Commands

Command	Description
VMUTE	Set/get video switch state

11.4.2.1 VMUTE

Functions		Permission	Transparency
Set:	VMUTE	End User	Public
Get:	VMUTE?	End User	Public
Description		Syntax	
Set:	Set enable/disable video on output	# VMUTE <input type="text" value="SE"/> <input type="text" value="output_id,flag"/> <input type="text" value="CR"/>	
Get:	Get video on output status	# VMUTE? <input type="text" value="SE"/> <input type="text" value="output_id"/> <input type="text" value="CR"/>	
Response			
~ <input type="text" value="nn"/> @ VMUTE <input type="text" value="SE"/> <input type="text" value="output_id"/> <input type="text" value="CR"/>			
Parameters			
<i>output_id</i> – the number of outputs: OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4 <i>flag</i> – disable video on output=0, enable video on output=1			
Notes			
The timeout must not exceed 60000 seconds. The timeout for video and audio signal loss events must not be less than 5 seconds.			
K-Config Example			
Enable video on OUT 1: "#VMUTE 1,1",0x0D			

11.4.3 EDID Handling Commands

Additional EDID data functions can be performed via the **VS-44DT** web pages or a compatible EDID management application, such as Kramer EDID Designer (see www.kramerav.com/product/EDID%20Designer).

Command	Description
CPEDID	Copy EDID data from the output to the input EEPROM

11.4.3.1 CPEDID

Functions	Permission	Transparency
Set:	CPEDID	End User
Get:	-	Public
Get:	-	-
Description	Syntax	
Set:	Copy EDID data from the output to the input EEPROM	#CPEDID[SP]src_type,src_id,dst_type,dest_bitmap[CR]
Get:	-	-
Response		
	~nn@CPEDID[SP]src_type,src_id,dst_type,dest_bitmap[CR LF]	
Parameters		
	<i>src_type</i> – EDID source type: IN=0, OUT=1, default EDID=2 <i>src_id</i> – IN=1~4, OUT=1~4 <i>dst_type</i> –input=0 <i>dest_bitmap</i> – bitmap representing destination IDs. Format: XXXX..X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' indicates that EDID data is copied to this destination. Setting '0' indicates that EDID data is not copied to this destination.	
Response Triggers		
	Response is sent to the com port from which the Set was received (before execution)	
Notes		
	Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word) Example: bitmap 0x0013 means inputs 1, 2 and 5 are loaded with the new EDID. In this device, if the destination type is input (0), the bitmap size is 4 bits, for example bitmap 0x5 means inputs 1 and 3 are loaded with the new EDID.	
K-Config Example		
	Copy the EDID data from the HDMI Out 1 output (EDID source) to the HDMI In 1 input: "#CPEDID 1,1,0,0x1",0x0D Copy the EDID data from the default EDID source to HDMI In 1 and HDMI In 2: "#CPEDID 2,0,0,0x3",0x0D	

11.4.4 Audio Commands

Command	Description
MUTE	Set/get audio mute
VOLUME	Set/get simple audio volume

11.4.4.1 MUTE

Functions		Permission	Transparency
Set:	MUTE	End User	Public
Get:	MUTE?	End User	Public
Description		Syntax	
Set:	Set audio mute	#MUTE[SF]channel,mute_mode[CR]	
Get:	Get audio mute	#MUTE?[SF]channel[CR]	
Response			
~nn@MUTE[SF]channel,mute_mode[CR]			
Parameters			
channel –OUT=1 mute_mode – mute mode off=0, mute mode on=1			
K-Config Example			
Mute the audio: "#MUTE 1,1",0x0D			

11.4.4.1 VOLUME

Functions		Permission	Transparency
Set:	VOLUME	End user	-
Get:	VOLUME?	End User	public
Description		Syntax	
Set:	Set simple audio volume	#VOLUME[SF]P1,P2[CR]	
Get:	Get simple audio volume	#VOLUME?[SF]P1[CR]	
Response			
~nn@VOLUME[SF]P1,P2[CR LF]			
Parameters			
P1 – Out channel: OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4 P2 – Volume: 0-100			
K-Config Example			
Set the OUT 2 audio volume to 50: "#VOLUME 2,50",0x0D			

11.4.5 Switching Commands

Command	Description
VID	Set/get video switch state
ROUTE	Set/get layer routing

11.4.5.1 VID

Functions		Permission	Transparency
Set:	VID	End User	Public
Get:	VID?	End User	Public
Description		Syntax	
Set:	Set video switch state	#VID ^[SP] in>out ^[CR]	
Get:	Get video switch state	#VID? ^[SE] out ^[CR]	
Response			
Set:~ ^[nn] @VID ^[SP] in>out ^[CR LF]			
Get:~ ^[nn] @VID ^[SP] in>out ^[CR LF]			
Parameters			
in – input number or '0' to disconnect output: IN 1=1, IN 2=2, IN 3=3, IN 4=4, output disconnected=0			
> – connection character between IN and OUT parameters			
out – output number or '*' for all outputs: OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4			
K-Config Example			
Switch IN 1 to OUT 3: "#VID 1>3",0x0D			

11.4.5.2 ROUTE

Functions		Permission	Transparency
Set:	ROUTE	End User	-
Get:	ROUTE?	End User	Switching
Description		Syntax	
Set:	Set layer routing	#ROUTE ^[SP] layer,dest,src ^[CR]	
Get:	Get layer routing	#ROUTE? ^[SP] layer,dest ^[CR]	
Response			
~ ^[nn] @ROUTE ^[SP] P1,P2,P3 ^[CR LF]			
Parameters			
layer – Layer number: Video=1, Audio=2, Data=3			
dest – Destination: Video: All=*, Disconnect=x, OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4 Audio: All=*; Data: All=*			
src – source ID: Video: IN 1=1, IN 2=2, IN 3=3, IN 4=4 Audio: OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4 Data: OUT 1=1, OUT 2=2, OUT 3=3, OUT 4=4			
Notes			
This command replaces all other routing commands.			
K-Config Example			
Route the video from IN 2 to all the outputs: "#ROUTE 1,*,2",0x0D			

11.4.6 Communication Commands

Command	Description
ETH-PORT	Set/get Ethernet port protocol
NET-DHCP	Set/get DHCP mode
NET-GATE	Set/get gateway IP
NET-IP	Set/get IP address
NET-MAC	Get MAC address
NET-MASK	Set/get subnet mask

11.4.6.1 ETH-PORT

Functions		Permission	Transparency
Set:	ETH-PORT	Administrator	Public
Get:	ETH-PORT?	End User	Public
Description		Syntax	
Set:	Set Ethernet port protocol	# ETH-PORT [SP] <i>portType</i> , <i>ETHPort</i> [CR]	
Get:	Get Ethernet port protocol	# ETH-PORT? [SP] <i>portType</i> [CR]	
Response			
~nn@ ETH-PORT [SP] <i>portType</i> , <i>ETHPort</i> [CR LF]			
Parameters			
<i>portType</i> – TCP=0, UDP=1			
<i>ETHPort</i> – TCP / UDP port number: 0-65565			
Notes			
If the port number you enter is already in use, an error is returned The port number must be within the following range: 0-(2 ¹⁶ -1)			
K-Config Example			
Set the Ethernet port protocol for TCP to port 12457: "#ETH-PORT 0,12457",0x0D			

11.4.6.2 NET-DHCP

Functions		Permission	Transparency
Set:	NET-DHCP	Administrator	Public
Get:	NET-DHCP?	End User	Public
Description		Syntax	
Set:	Set DHCP mode	# NET-DHCP <i>SP</i> mode <i>CR</i>	
Get:	Get DHCP mode	# NET-DHCP? <i>CR</i>	
Response			
~nn@ NET-DHCP <i>SP</i> mode <i>CR</i> LF			
Parameters			
<i>mode</i> – 0 (do not use DHCP. Use the IP address set by the factory or the NET-IP command), 1 (try to use DHCP. If unavailable, use the IP address set by the factory or the NET-IP command)			
Notes			
Connecting Ethernet to devices with DHCP may take more time in some networks To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the NAME command. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available Consult your network administrator for correct settings			
K-Config Example			
Enable DHCP mode, if available: "#NET-DHCP 1",0x0D			

11.4.6.3 NET-GATE

Functions		Permission	Transparency
Set:	NET-GATE	Administrator	Public
Get:	NET-GATE?	End User	Public
Description		Syntax	
Set:	Set gateway IP	# NET-GATE <i>SP</i> ip_address <i>CR</i>	
Get:	Get gateway IP	# NET-GATE? <i>CR</i>	
Response			
~nn@ NET-GATE <i>SP</i> ip_address <i>CR</i> LF			
Parameters			
<i>ip_address</i> – gateway IP address, in the following format: xxx.xxx.xxx.xxx			
Notes			
A network gateway connects the device via another network, possibly over the Internet. Be careful of security problems. Consult your network administrator for correct settings.			
K-Config Example			
Set the gateway IP address to 192.168.0.1: "#NET-GATE 192.168.000.001",0x0D			

11.4.6.4 NET-IP

Functions		Permission	Transparency
Set:	NET-IP	Administrator	Public
Get:	NET-IP?	End User	Public
Description		Syntax	
Set:	Set IP address	# NET-IP SF <i>ip_address</i> CR	
Get:	Get IP address	# NET-IP? CR	
Response			
~ nn @ NET-IP SF <i>ip_address</i> CR LF			
Parameters			
<i>ip_address</i> – IP address, in the following format: xxx.xxx.xxx.xxx			
Notes			
Consult your network administrator for correct settings			
K-Config Example			
Set the IP address to 192.168.1.39: "#NET-IP 192.168.001.039",0x0D			

11.4.6.5 NET-MAC

Functions		Permission	Transparency
Set:	-	-	-
Get:	NET-MAC?	End User	Public
Description		Syntax	
Set:	-	-	
Get:	Get MAC address	# NET-MAC? CR	
Response			
~ nn @ NET-MAC SF <i>mac_address</i> CR LF			
Parameters			
<i>mac_address</i> – unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit			
K-Config Example			
"#NET-MAC?",0x0D			

11.4.6.6 NET-MASK

Functions		Permission	Transparency
Set:	NET-MASK	Administrator	Public
Get:	NET-MASK?	End User	Public
Description		Syntax	
Set:	Set subnet mask	# NET-MASK SE <code>net_mask</code> CR	
Get:	Get subnet mask	# NET-MASK? CR	
Response			
~nn@ NET-MASK SE <code>net_mask</code> CR LF			
Parameters			
<code>net_mask</code> - format: xxx.xxx.xxx.xxx			
Response Triggers			
The subnet mask limits the Ethernet connection within the local network Consult your network administrator for correct settings			
K-Config Example			
Set the subnet mask to 255.255.0.0: `#NET-MASK 255.255.000.000`,0x0D			

The warranty obligations of Kramer Electronics Inc. ("Kramer Electronics") for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long this Coverage Lasts

The standard limited warranty for Kramer products is seven (7) years from the date of original purchase, with the following exceptions:

1. All Kramer VIA products are covered by a standard three (3) year warranty for VIA hardware and a standard one (1) year warranty for firmware and software updates. (An extended software warranty plan for an additional 2 years can be purchased separately).
2. All Kramer fiber optic cables and adapters, all Kramer speakers and Kramer touch panels are covered by a standard one (1) year warranty.
3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Miricom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a ten (10) year warranty.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics Will Do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics Will Not Do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy Under This Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, visit our web site at www.kramerav.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number). You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

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Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

KRAMER



P/N: 2900-300470



Rev: 1



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our web site to find updates to this user manual.

We welcome your questions, comments, and feedback.

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