KRAMER

USER MANUAL
MODEL:

VA-4X
HDMI Extender / Toolbox

Contents

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!

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/VA-4X to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving 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 neighboring electrical appliances that may adversely influence signal quality.

- Position your Kramer **VA-4X** away from moisture, excessive sunlight and dust.

Safety Instructions

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

- For products with relay terminals and GPI\O ports, please refer to the permitted rating for an external connection, located next to the terminal or in the User Manual.

- There are no operator serviceable parts inside the unit.

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

- To ensure continuous risk protection, replace fuses only according to the rating specified on the product label which located on the bottom of the unit.

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.

Overview

Congratulations on purchasing your Kramer **VA-4X HDMI Extender / Toolbox**. **VA-4X** is a versatile 4K@60Hz (4:4:4) HDMI™ multi-channel extender that equalizes and reclocks TMDS data before re-transmitting the signal, thus increasing the HDMI cable range for all 4 outputs. It is a true 4-channel HDMI "Toolbox", with functionality including 4 independent test-pattern generators, chroma sub-sampling down-conversion and EDID management options, and, of course, video extension.

- Extension without Loss of Quality – Kramer Equalization & re-Klocking™ Technology rebuilds the digital signal integrity to travel longer distances. **VA-4X** typically extends 4K@60Hz (4:4:4) signals 20m from point to point (10m on the input and 10m on the output).

- Zero-latency compression – Enables reducing 4K@60Hz resolution from 4:4:4 to 4:2:2 or 4:2:0 chroma sampling on up to four inputs/outputs HDMI signals.

- Easy EDID Management – Via a user-friendly software application upload, download, create or modify EDID. Via the software application or OSD menu – select the EDID source from the following options: default (internal), external (sink) or user defined.

- Content Protection Compatibility – Interoperability between HDCP 2.2 and HDCP 1.4 systems for up to 4 HDMI sources simultaneously.

- Comprehensive Signal Testing – Independent pattern generator on each output with a variety of patterns and resolutions to choose from.

- Local Control and Configuration – Use the OSD menu via front panel buttons for EDID source selection, chroma reduction, pattern generating, firmware upgrade and factory reset. An RS-232 serial port is provided for EDID application control and a convenient USB port enables new firmware upload via a memory stick.

- Easy Installation – Compact MegaTOOLS® fan-less enclosure for surface mounting or side-by-side mounting of 2 units in a 1U rack space with the recommended rack adapter.

Typical Applications

- **VA-4X** is ideal for the following typical applications:

- HDMI extension for up to 4 lines

- Testing and installation verification using 4 independent pattern generators

- EDID management of 4 HDMI channels

- Enabling compatibility with lower bandwidth 4K systems (e.g. HDBaseT) via 4K 4:4:4 to 4:2:0 chroma-downsampling

Defining VA-4X HDMI Extender / Toolbox
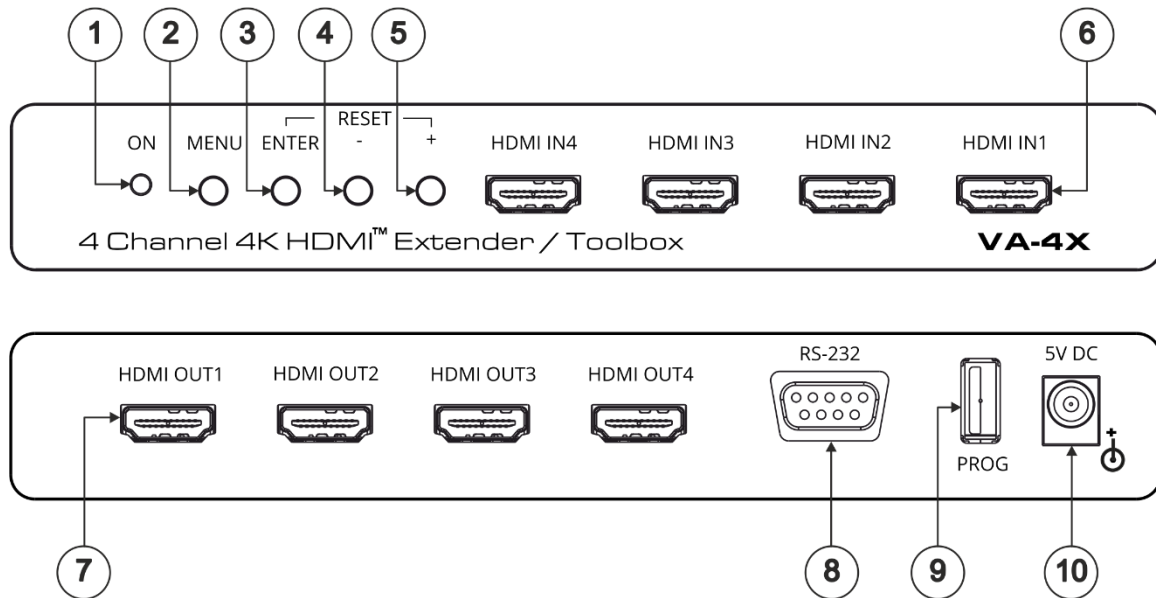
This section defines **VA-4X**.

Figure 1: VA-4X HDMI Extender **/** Toolbox Front Panel

#	Feature	Function
1	ON LED	Lights green when the unit is powered on.
2	MENU Button	Press to enter/exit the on-screen display (OSD) menu.
3	ENTER Button	In the OSD, press to choose the highlighted menu item. When not in the OSD, press to view information (enabled when a channel input and output are connected and the channel Display Information is set to On). Press ENTER and + simultaneously to reset the device to its default parameters.
4	- Button	In the OSD, press to move back through the list or to decrease the parameter value.
5	+ Button	In the OSD, press to move forward through the list or to increase the parameter value. Press ENTER and + simultaneously to reset the device to its default parameters.
6	HDMI IN Connectors (1 to 4)	Connect to HDMI sources.
7	HDMI OUT Connectors (1 to 4)	Connect to HDMI acceptors.
ⓘ	IN 1 to OUT 1 comprises Channel 1, IN 2 to OUT 2 comprises Channel 2 and so on.	
8	RS-232 9-pin D-sub Connector	Connect to a PC to control **VA-4X** via the EDID Manager software.
9	PROG USB Port	Connect to a USB memory stick for firmware upgrade.
10	5V DC	Connect to included power adapter.

Mounting VA-4X

This section provides instructions for mounting **VA-4X**. Before installing, verify that the environment is within the recommended range:

- Operation 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:
- Mount **VA-4X** before connecting any cables or power.

Warning:
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment should be maintained.
- Maximum mounting height for the device is 2 meters.

To mount the VA-4X in a rack:

Mount the unit in a rack using the recommended rack adapter
(see www.kramerav.com/product/VA-4X)

To mount the VA-4X on a table or shelf:

- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface.
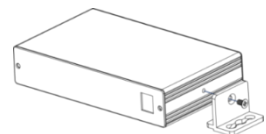
For more information go to www.kramerav.com/downloads/VA-4X

Connecting VA-4X

(i) Always switch off the power to each device before connecting it to your **VA-4X**. After connecting your **VA-4X**, connect its power and then switch on the power to each device.
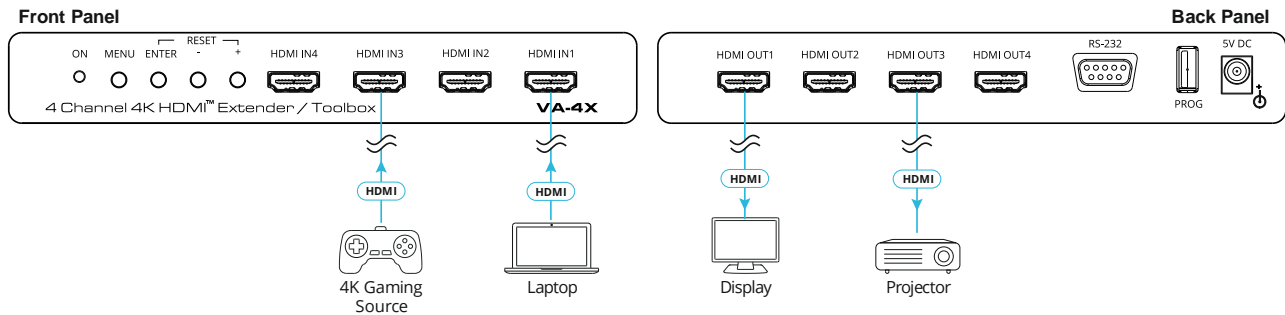

Figure 2: Connecting to the VA-4X Rear Panel

To connect the VA-4X as illustrated in the example in Figure 2:

1. Connect up to 4 HDMI sources (for example, 4K gaming sources, laptop) to the HDMI IN Connectors (1 to 4) ⑥ on the front panel.

2. Connect up to four HDMI acceptors (for example, display, projector) to HDMI OUT Connectors (1 to 4) ⑦.

3. Connect the power adapter to the **VA-4X** and to the mains electricity (not shown in Figure 2).

Operating and Controlling VA-4X

Configure and control your **VA-4X** using the following methods:

- OSD menu via front panel buttons (see Configuring Settings – OSD Menu on page 6).

- EDID designer software (see Configuring EDID via EDID Manager on page 10).

Configuring Settings – OSD Menu

The OSD enables you to configure **VA-4X**. When using the menu, it appears as an overlay on top of any image that appears on the display. The menu is operated using the front panel buttons.

VA-4X OSD enables performing the following:

Navigating OSD

Navigate the OSD using the navigation buttons on the front panel, as follows:

- MENU Button ② – Open the OSD on your screen or exit a menu option.

- + Button ⑤ or - Button ④ – Move up or down in the menu / sub-menu or scroll through parameter options.

- ENTER Button ③ – Expand a menu / sub-menu item, activate a menu / sub-menu item to edit it or select the required value.

ⓘ When a menu item is selected, it turns green.

When a menu / sub-menu item is activated and editable, the item turns blue.

For example, to define where the OSD is displayed:

1. Press the **Menu** button.
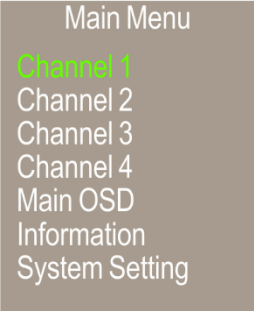
The Main Menu appears with Channel 1 selected.

Main Menu

Channel 1
Channel 2
Channel 3
Channel 4
Main OSD
Information
System Setting

Figure 3: Main Menu with Channel 1 Selected

2. Press the **–** button four times.
   Main OSD is selected.

Main Menu

Channel 1
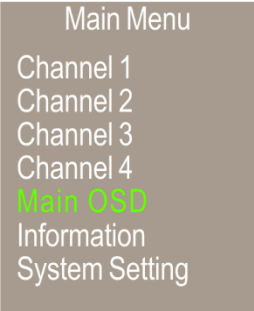Channel 2
Channel 3
Channel 4
Main OSD
Information
System Setting

Figure 4: Main Menu with Main OSD Selected

3. Press the **ENTER** button.
   The Main OSD menu appears with Display Select selected.

Main OSD

Display Select: All Channels
Display Timeout: 40 Sec

Figure 5: Main OSD Menu with Display Select Selected

4. Press the **ENTER** button.

   Display Select is activated and editable.

Main OSD

Display Select: All Channels
Display Timeout: 40 Sec

Figure 6: Main OSD Menu with Editable Display Select

5. Use the **+** or **–** button to select the desired option.

6. Press the **ENTER** button.
   The selected option is set.

Defining EDID Source

VA-4X enables you to define, for each of the 4 inputs, the source from which the EDID is taken.

To define the EDID source for one of the 4 inputs:

1. In the OSD, go to **Channel X** (**X** = **1**, **2**, **3**, or **4**) > **Input EDID**.

2. Select one of the following EDID sources:

   ▪ **Sink** – Display.

   ▪ **User** – User defined (see Upload EDID and Store on VA-4X on page 12).

   ▪ **Internal** – Default EDID (see Default EDID on page 20).

   The EDID source is defined.

Configuring Resolution Downsampling

VA-4X enables you to configure, for each of the 4 inputs, how the system handles downsampling of certain high resolutions.

To configure resolution downsampling for one of the 4 inputs:

1. In the OSD, go to **Channel X** (**X** = **1**, **2**, **3**, or **4**).

2. Go to the resolution for which you are configuring the downsampling; choose from the following:

   ▪ **4K2K 50/60 RGB**

   ▪ **4K2K 50/60 YUV4:4:4**

   ▪ **4K2K 50/60 YUV4:2:2**

3. Select the downsampling method from the following:

   ▪ **4:2:0 Downsampling**

   ▪ **4:2:2 Downsampling**

   ▪ **Passthrough**

   The resolution downsampling is configured.

Defining 5V Shutoff

VA-4X enables you to define, for each of the 4 channels, the behavior of the feature that shuts off the 5V signal on an output after the device no longer detects an active video source.

To define 5V shutoff when no active source is found on one of the 4 inputs:

1. In the OSD, go to **Channel X** (**X** = **1**, **2**, **3**, or **4**).

2. Go to **Auto Sync Off** and select one of the following:

   ▪ **Disable** – 5V remains ON.

   ▪ **Fast** – after 15 seconds 5V signal turns OFF.

▪ **Slow** - after 2 minutes 5V signal turns OFF.

5V shutoff on the output is defined for the selected channel.

Configuring Test Patterns

VA-4X enables you to display a test pattern for each of the 4 outputs and define a unique resolution and test pattern type for each one.

The default pattern resolution is 1280x720@60 and the default pattern type is white.

To configure a test pattern on one of the 4 outputs:

1. In the OSD, go to **Channel X** (**X** = **1**, **2**, **3**, or **4**).

2. Go to **Output Pattern** > **Mode** and select **ON**.
   The test pattern is displayed on the selected output.

3. Go to **Timing** and select the required resolution.

   The output display updates with the selected resolution.

4. Go to **Pattern** and select the required pattern type.

   The selected pattern is displayed on the output.

Configuring Information OSD

VA-4X enables you to configure an information OSD for each of the channels that shows the input/output numbers and resolution of the channel. The OSD appears on the connected display upon connection or powerup of the video source for this channel.

To configure the information OSD for one of the 4 channels:

1. In the OSD, go to **Channel X** (**X** = **1**, **2**, **3**, or **4**).

2. Go to **OSD** > **Display Information** and select **Yes**.

3. Go to **Display Timeout** and select the amount of time for the information display to remain on the screen.

   The information OSD for the selected channel is configured.

Configuring OSD Menu

VA-4X enables you to configure on which output the OSD appears and how long the OSD menu remains on the screen after the last button press.

To configure the OSD menu:

1. In the OSD, go to **Main OSD** > **Display Select**.

2. Select the output on which you want the OSD to appear or select **All Channels** to display the OSD menu on all four outputs.

3. Go to **Display Timeout** and select the amount of time for the OSD to remain on the screen after the last button press.

The OSD menu is configured.

Verifying Channel Information

VA-4X enables you to verify the following information about each channel:

- Resolution.
- Input and output color space.
- Input and output HDCP status.

To verify channel information:

- In the OSD, go to **Information** > **Channel X** (**X** = **1**, **2**, **3**, or **4**).

  Information appears for the selected channel.

Performing Factory Reset

VA-4X enables you to reset the device to factory default settings.

To perform a factory reset:

1. In the OSD, go to **System Setting** > **Factory Reset**.
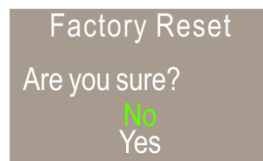
   A confirmation message appears.

Factory Reset

Are you sure?

No
Yes

Figure 7: Factory Reset Confirmation

2. Select **Yes**.

   VA-4X reboots and resets to factory default settings.

Configuring EDID via EDID Manager

VA-4X enables you to configure EDID using EDID Manager software.

To use EDID Manager software:

1. Download the EDID Manager software to your computer at
   www.kramerav.com/product/VA-4X#Tab_Resources.

2. Power on **VA-4X** and connect it to your computer via the RS-232 9-pin D-sub
   Connector ⑧.

3. Open EDID Manager software.

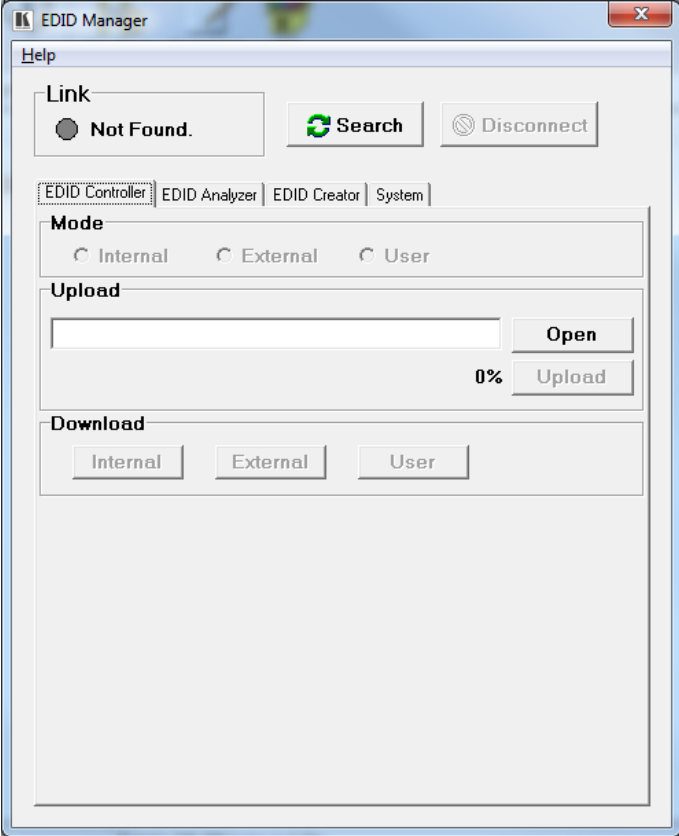The EDID Manager window appears:

Figure 8: EDID Manager – EDID Controller Tab

4. Click **Search**.

VA-4X is connected. **FC-17** appears under **Link** and the current EDID source (Internal, External or User) appears under **Mode**.

(i) The **VA-4X** firmware and EDID are identical to those of **FC-17**.

Figure 9: EDID Manager – **VA-4X** Connected

Use EDID Manager to:

- <u>Upload EDID and Store on VA-4X</u>, see page <u>12</u>.
- <u>Download EDID from VA-4X</u>, see page <u>14</u>.
- <u>Viewing EDID Details</u>, see page <u>15</u>.
- <u>Create or Modify EDID</u>, see page <u>16</u>.

Upload EDID and Store on VA-4X

To upload an EDID from your computer and store it on VA-4X:

1. Select **EDID Controller**.

   The EDID Controller tab appears (<u>Figure 8</u>).

2. In the Upload area, click **Open**.
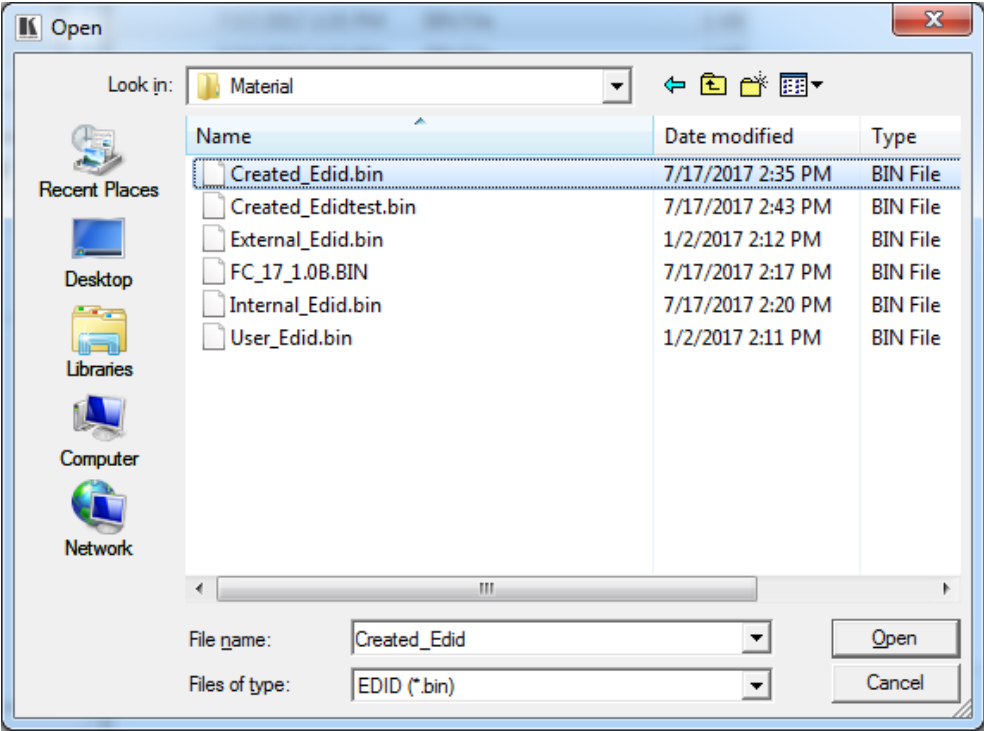
A file browser appears.

Figure 10: EDID Manager – File Browser

3. Select an EDID file and click **Open**.

    The selected file name appears in the Upload area.
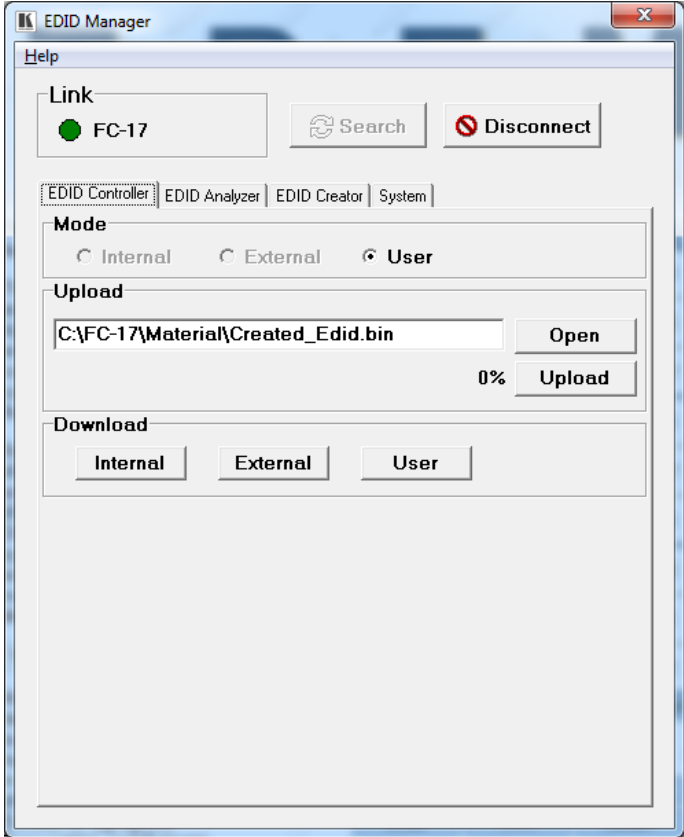

Figure 11: EDID Manager – EDID File Selected

4. Click **Upload**.

The selected EDID file is uploaded to **User**.
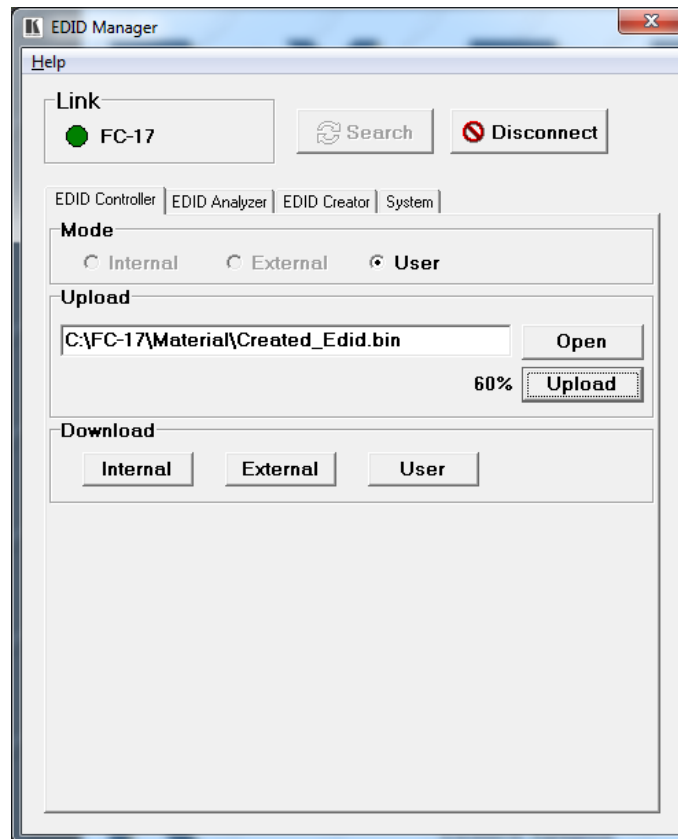
Figure 12: EDID Manager – Uploading EDID

Download EDID from VA-4X

To download an EDID from VA-4X to your computer:

1. Select **EDID Controller**.

   The EDID Controller tab appears ([Figure 8](#)).

2. Click an EDID source: **Internal**, **External** or **User**.

The **Save As** window opens:
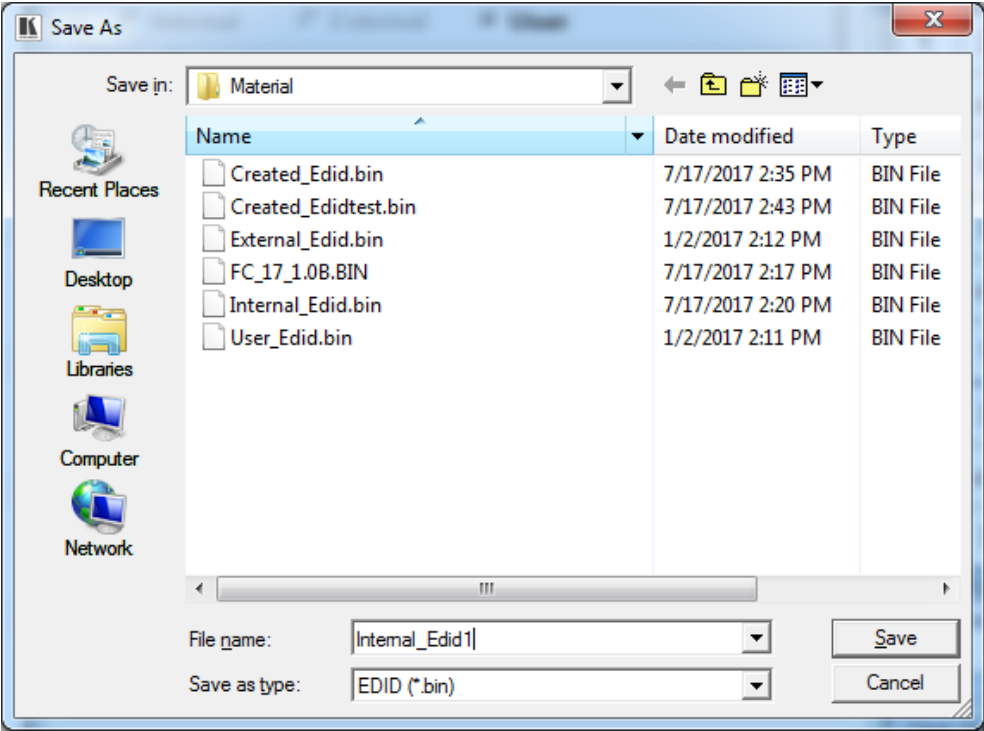
Figure 13: EDID Manager – Saving an EDID

3. Navigate to the folder in which you want to save the EDID file and click **Save**. The selected EDID is downloaded and saved to your computer.

Viewing EDID Details

To view EDID details:

1. Select **EDID Analyzer**.

The **EDID Analyzer** tab appears.

Figure 14: EDID Manager – EDID Analyzer Tab

2. View EDID details.

Create or Modify EDID

To create or modify EDID:

1. Select **EDID Creator**.

The EDID Creator tab appears.
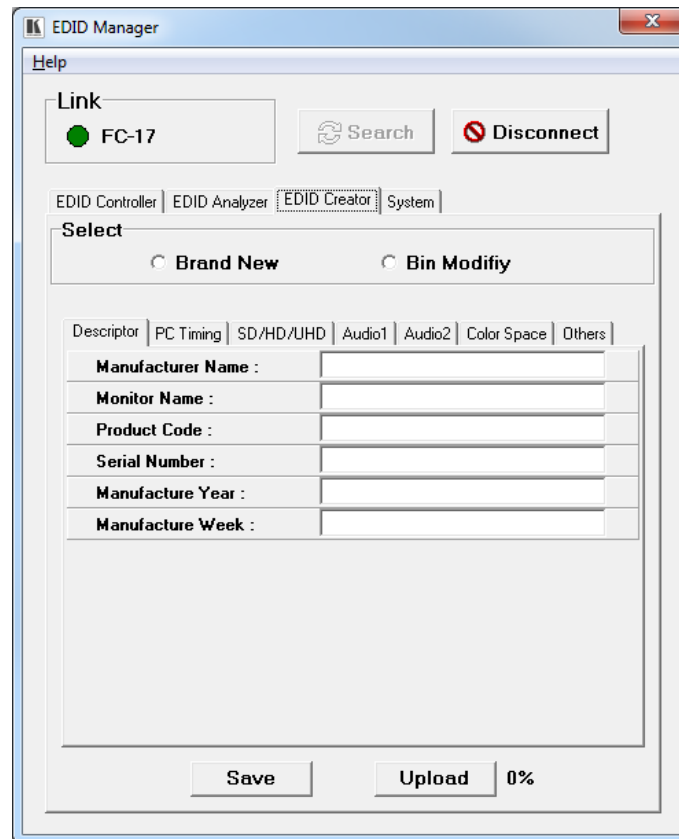
Figure 15: EDID Manager – EDID Creator Tab

2. Do one of the following:

   ▪ Select **Brand New**.

   ▪ Select **Bin Modify** and select an EDID file to modify.

3. Select each of the following subtabs and enter or change data, as required:

   ▪ **Descriptor** – General information about the EDID source.

   ▪ **PC Timing** – EDID supported resolution and refresh rates.

   ▪ **SD/HD/UHD** – EDID supported resolution and refresh rates.

   ▪ **Audio1**, **Audio2** –EDID supported audio formats, audio frequencies, channels, and speaker locations.

   ▪ **Color Space** – EDID supported color formats and bit depths.

   ▪ **Other data** – CEC Address.

4. Click **Save**.

5. Click **Upload** to upload the Bin file to USER.

Upgrading Firmware

VA-4X enables you to upgrade the device firmware.

(i) To see the current installed firmware version, in the OSD, go to **Information**.

To upgrade the VA-4X firmware:

1. Insert a USB memory stick with the new firmware file into the PROG USB Port ⑨ on **VA-4X**.

2. Do one of the following:

   ▪ In the OSD, go to **System Setting** > **Firmware Update** and select **Yes** on the confirmation message.
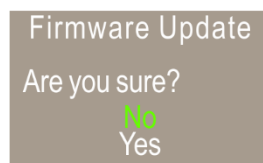
Figure 16: Firmware Update Confirmation

   -OR-

   ▪ Press the front panel MENU Button ② - Button ④ simultaneously for several seconds until the firmware progress message appears.

⚠ **Caution:** Do not power cycle or operate the device during firmware upgrade.

3. After the upgrade is complete, remove the USB memory stick and power cycle **VA-4X**.

   The firmware is upgraded.

Technical Specifications

Inputs	4 HDMI	On a female HDMI connector
Outputs	4 HDMI	On a female HDMI connector
Ports	1 USB	On a female USB type-A connector for firmware upgrade
	1 RS-232	On a 9–pin D–sub connector for EDID management via a software application
Video	HDCP Standards Compliance	1.4 & 2.2
	Max Resolution	4K@60Hz (4:4:4)
User Interface	Control	OSD menu via front panel buttons
	Indicator	Power LED
Power	Consumption	5V DC
	Source	1.8A
Environmental Conditions	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
Enclosure	Size	MegaTOOLS®
	Type	Aluminum
	Cooling	Convection Ventilation
General	Net Dimensions (W, D, H)	18.75cm x 11.50cm x 2.54cm (7.38" x 4.53" x 1.00")
	Shipping Dimensions (W, D, H)	34.50cm x 16.50cm x 5.20cm (13.58" x 6.50" x 2.05")
	Net Weight	0.5kg (1.0lbs) approx.
	Shipping Weight	1.0kg (2.2lbs) approx.
Accessories	Included	Power adapter, bracket set
	Optional	For optimum range and performance use the recommended HDMI, USB, and serial Kramer cables available at www.kramerav.com/product/VA-4X
Specifications are subject to change without notice at www.kramerav.com		

Default EDID

Monitor
  Model name.............. FC-174
  Windows description...... Generic PnP Monitor
  Manufacturer............ KMR
  Plug and Play ID......... KMR031D
  Serial number........... 49
  Manufacture date......... 2016, ISO week 19
  Filter driver........... None

  EDID revision........... 1.3
  Input signal type........ Digital
  Color bit depth.......... Undefined
  Display type............. RGB color
  Screen size.............. 360 x 290 mm (18.2 in)
  Power management......... Standby, Suspend, Active off/sleep
  Extension blocs.......... 1 (Unknown type)

  DDC/CI.................. n/a

Color characteristics
  Default color space...... Non-sRGB
  Display gamma............ 2.40
  Red chromaticity......... Rx 0.611 - Ry 0.329
  Green chromaticity....... Gx 0.312 - Gy 0.559
  Blue chromaticity........ Bx 0.148 - By 0.131
  White point (default).... Wx 0.320 - Wy 0.336
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 27-91kHz
  Vertical scan range...... 23-85Hz
  Video bandwidth.......... 170MHz
  CVT standard............. Not supported
  GTF standard............. Not supported
  Additional descriptors... None
  Preferred timing......... Yes
  Native/preferred timing.. 1920x1080p at 60Hz (16:9)
    Modeline.............. "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
  Detailed timing #1....... 1280x800p at 60Hz (16:10)
    Modeline.............. "1280x800" 83.500 1280 1352 1480 1680 800 803 809 831 -hsync +vsync

Standard timings supported
   640 x 480p at 60Hz - IBM VGA
   640 x 480p at 72Hz - VESA
   640 x 480p at 75Hz - VESA
   800 x 600p at 56Hz - VESA
   800 x 600p at 60Hz - VESA
   800 x 600p at 72Hz - VESA
   800 x 600p at 75Hz - VESA
  1024 x 768p at 60Hz - VESA
  1024 x 768p at 70Hz - VESA
  1024 x 768p at 75Hz - VESA
  1280 x 1024p at 75Hz - VESA
  1600 x 1200p at 60Hz - VESA STD
  1280 x 1024p at 60Hz - VESA STD
  1400 x 1050p at 60Hz - VESA STD
  1920 x 1080p at 60Hz - VESA STD
   640 x 480p at 85Hz - VESA STD
   800 x 600p at 85Hz - VESA STD
  1024 x 768p at 85Hz - VESA STD
  1280 x 1024p at 85Hz - VESA STD

Report information
  Date generated........... 23/07/2020
  Software revision........ 2.91.0.1043
  Data source.............. Registry
  Operating system......... 10.0.18362.2

Raw data
  00,FF,FF,FF,FF,FF,FF,00,2D,B2,1D,03,31,00,00,00,00,13,1A,01,03,80,24,1D,8C,EA,9C,20,9C,54,4F,8F,26,
  21,52,56,2F,CF,00,A9,40,81,80,90,40,D1,C0,31,59,45,59,61,59,81,99,02,3A,80,18,71,38,2D,40,58,2C,
  45,00,10,09,00,00,00,00,1E,9E,20,00,90,51,20,1F,30,48,80,36,00,10,0A,00,00,00,1C,00,00,00,FC,00,46,
  43,2D,31,37,34,0A,20,20,20,20,20,20,00,00,00,FD,00,17,55,1B,5B,11,00,0A,20,20,20,20,20,20,20,01,B1

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 hardware products are covered by a standard three (3) year warranty for the VIA hardware and a standard three (3) year warranty for firmware and software updates; all Kramer VIA accessories, adapters, tags, and dongles are covered by a standard one (1) year warranty.
2. Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, ring mounted adapters, portable power chargers, Kramer speakers, and Kramer touch panels are all covered by a standard one (1) year warranty.
3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Minicom 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. If a direct or similar replacement product is supplied, the original product's end warranty date remains unchanged and is transferred to the replacement 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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