HD SPIDER SERIES™

KD-VA5

RGBHV-to-Component Video or Component-to-RGBHV Video Adapter

Operating Instructions

The KD-VA5 by Key Digital™ is a universal analog Video Adapter that converts RGBHV Video sources to Component Video (YPbPr) out, or it can be configured to convert Component Video (YPbPr) sources to RGBHV out. It is compact and simple to operate using three slide switches, with clearly labeled status LEDs located on the top of the unit. The KD-VA5 supports various sync modes, like SCART, sync on Green, and separate composite sync. Intelligent Auto Sensing™ let's the unit run itself. Convenient pass-through connectors allow you to maintain connections to your existing PC monitor or component video displays. Performs no video processing and supports all popular analog video formats like HDTV, NTSC, and PAL. Mounting clip & external power supply provided.

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Key Digital™, led by digital video pioneer Mike Tsinberg, develops and manufactures high quality, cutting-edge technology solutions for virtually all applications where high quality video imaging is important. Key Digital™ is at the forefront of the video industry for Home Theater Retailers, Custom Installers, System Integrators, Broadcasters, Manufacturers, and Consumers. We provide total video system solutions because we know and help drive the technology, the industry, the business, and all the latest up-and-coming standards. But most of all, we know exactly what you need for your unique application - the right solution.

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Rev 0 – August 2006

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Introduction

Thank you for purchasing the KD-VA5 by Key Digital™, a state-of-the-art universal analog Video Adapter. The KD-VA5 is the flexible solution you've been looking for to mix and match RGBHV and Component Video (YPbPr) sources and displays. It also has many well-thought-out features, including:

› Allows you to connect RGBHV sources, such as from your PC, to Component Video (YPbPr) displays:
  ➜ Pass-through lets you simultaneously maintain connection to your RGBHV PC monitor
› Allows you to connect Component Video (YPbPr) sources, such as from your Cable Box or DVD player, to RGBHV displays:
  ➜ Pass-through lets you simultaneously maintain connection to your HDTV Component Video display
› Supports most analog interlaced and progressive video formats, at 60 Hz or 50 Hz, such as HDTV, NTSC, and PAL:
  ➜ 1080i (60 & 50 Hz)
  ➜ 720p (60 & 50 Hz)
  ➜ 480p (60 Hz)
  ➜ 576p (50 Hz)
  ➜ 576i (50 Hz, SCART only)
› Uses RCA and HD-15 VGA female connectors, and supports cable runs up to 50 feet
› Simple to operate with three configuration slide switches, and clearly labeled silk-screened instructions and LEDs for status indication on the top cover
› Intelligent Auto Sensing™ automatically switches from RGBHV-to-Component Video or Component-to-RGBHV Video by sensing active sync on the "Y" Component Video signal
› Supports sync on Y, separate H&V sync, as well as a variety of alternate sync formats, including:
  ➜ Sync on green, composite sync, or SCART
› Performs no video processing other than RGBHV-to-Component Video or Component-to-RGBHV Video conversions, ensuring perfect image quality from input to output

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What's Included

The following contents are provided with your purchase:

1. **One KD-VA5 unit**
2. **Separate external 5-Volt power supply**
3. **Mounting clip**
4. **Operating Manual**
5. **Warranty card**

Useful Tips

It is suggested that you read and follow this entire Operating Manual. Some useful tips to keep in mind when installing and using the KD-VA5:

1. **Always test the full operation of your unit before final installation of cables behind walls or ceilings.**
2. **Use ONLY the 5V, 1 Amp Power Supply provided with your unit.**
3. "Component Video" means "YPbPr" with "Sync" usually provided on the "Y" channel.
4. KD-VA5 Intelligent Auto Sensing™ looks for active sync on the "Y" Component Video source input, so if you are in the RGBHV-to-Component Video mode and want to view the RGBHV source you must ensure there is no active sync on the "Y" channel.
5. You must set the three slide switches to correspond to the desired Sync settings. Follow the instructions on the silkscreen cover of the unit, or read the details provided in this Operating Manual.
6. Limit cable lengths to 50' each, using high-quality cables of equal cable length.
7. The KD-VA5 supports only the following popular analog SD and HD video formats:
   ➔ 1080i (60 & 50 Hz),
   ➔ 720p (60 & 50 Hz)
   ➔ 480p (60 Hz)
   ➔ 576p (50 Hz)
   ➔ 576i (50 Hz, SCART only)
8. Take advantage of the "pass-through" feature to simultaneously connect Component and RGBHV Video sources and displays.
9. Verify intended operation/configuration by observing the LEDs on the top of the unit and the corresponding silkscreen explanations.
10. This video adapter is NOT a video processor or video scaler, so other than format conversions between RGBHV and Component (YPbPr) Video, there is no further video processing performed in the unit.
11. This video adapter does not support audio. You must handle your audio connections and needs separately.
12. Other than Intelligent Auto Sensing™ feature, the KD-VA5 does not provide switching or distribution capabilities. Only use each output to drive one video display, and do not daisy chain the video inputs to any other product.

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KD-VA5 Operating Instructions

Installation

The first step to enjoying the KD-VA5 is to install the unit into your system. Determine which of the following modes of operation are needed for your analog video and sync:

Analog Video Modes

❯ RGBHV-to-Component (YPbPr) Video conversion

➔ Also supports SCART RGB Video input

❯ Component-to-RGBHV Video conversion

Sync Modes

❯ Component Video with sync on "Y"

❯ RGBHV Video with separate H & V sync

❯ Additional sync modes supported:

➔ RGB Video with "sync on green"

➔ SCART input (RGB Video plus Composite Sync on H input)

➔ Composite sync on H output

Pass-through

The KD-VA5 also has a convenient "pass-through" feature that allows you to maintain connections to your existing displays:

❯ RGBHV-to-Component (YPbPr) Video conversion drives your Component Video HD display, while the RGBHV pass-through continues to drive your RGBHV display

❯ Component-to-RGBHV Video conversion drives your RGBHV display, while the Component Video pass-through continues to drive your Component Video HD display

Take advantage of this handy feature so that you can have your system configured and ready to operate with any combination of RGBHV and Component Video sources and displays.

Intelligent Auto Sensing™

Intelligent Auto Sensing™ automatically switches from RGBHV-to-Component Video or Component-to-RGBHV Video by sensing active sync on the "Y" Component Video signal. You must understand this feature for proper output selection and pass-through operation of your unit.
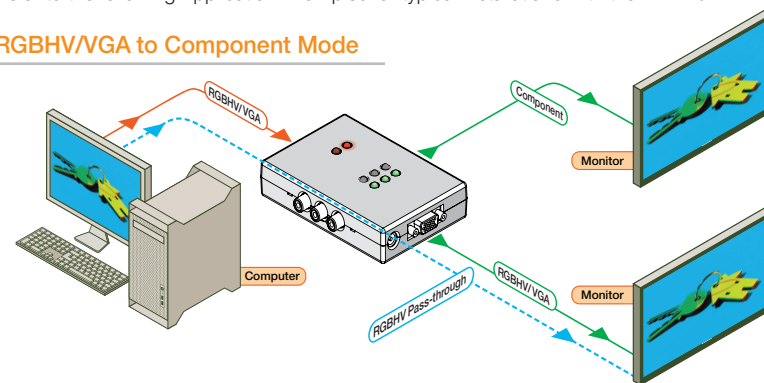
Switching and Distribution

Other than Intelligent Auto Sensing™ feature, the KD-VA5 does not provide switching or distribution capabilities. Only use each output to drive one video display, and do not daisy chain the video inputs to any other product or products.
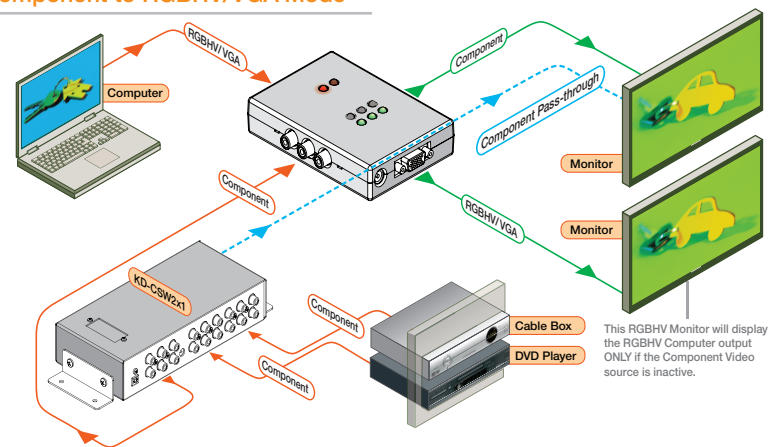
Application Examples

Refer to the following Application Examples for typical installations with the KD-VA5.

RGBHV/VGA to Component Mode

Component to RGBHV/VGA Mode

This RGBHV Monitor will display the RGBHV Computer output ONLY if the Component Video source is inactive.

KD-VA5 Operating Instructions

Connecting the KD-VA5 into your system

> ⚠️ CAUTION: Always test the full operation of your unit before running cables behind walls or ceilings!

› Find a safe and convenient location to place your KD-VA5 unit. You will need to connect the separate power supply to the unit later. After you have made all wiring connections per the instructions below, you may also want to use the mounting clip provided with your unit.

› Using high-quality video cables, such as those available from Key Digital™, connect your video source to the appropriate input of the KD-VA5. Use high-quality cables of equal cable length.

For RGBHV Video inputs, use HD-15 VGA cables and connect to the female input connector marked **RGBHV Input** on the unit

Note: Do not daisy chain the video connections to another input, since the KD-VA5 has built-in 75 Ω video terminations

For Component Video (YPbPr) inputs, use video cables with RCA jacks and connect to the color-coded female input connector marked **Pb Y Pr** on the unit

› SCART (RGB Video plus Composite Sync on H) is also supported on the RGBHV Input connector. Obtain the appropriate SCART adapter to interface to the KD-VA5 HD-15 VGA input connector.

› Using high-quality video cables, such as those available from Key Digital™, connect your display(s) to the appropriate output(s) of the KD-VA5.

› For most applications, sync for RGB Video will be separate H & V carried over the HD-15 VGA cable, and sync for Component Video (YPbPr) will be carried over the "Y" channel. The KD-VA5 also supports the following sync options, so be sure sync is provided accordingly for your particular application:

➔ RGB Video with "sync on green" (RGsB)
➔ SCART input (RGB plus Composite Sync on H input)
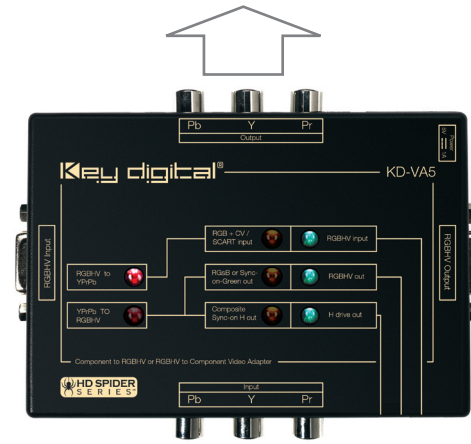➔ Composite sync on H output
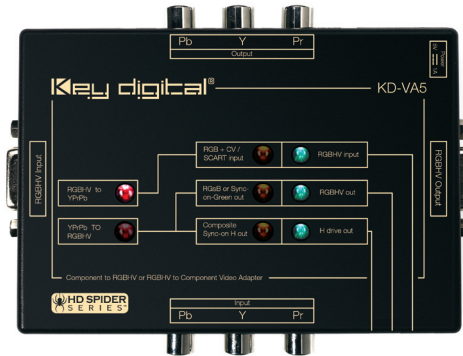
For Component Video (YPbPr) inputs, use video cables with RCA jacks and connect to the color-coded female input connector marked **Pb Y Pr** on the unit

Note: Limit cable runs to 50 feet.

For RGBHV Video inputs, use HD-15 VGA cables and connect to the female input connector marked **RGBHV Input** on the unit

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KD-VA5 Operating Instructions

› Using only the 5 Volt, 1 Amp Power Supply provided with your unit, connect the power supply jack to the KD-VA5 jack located near the RGBHV Output, and plug the power supply cord into an appropriately rated power source.
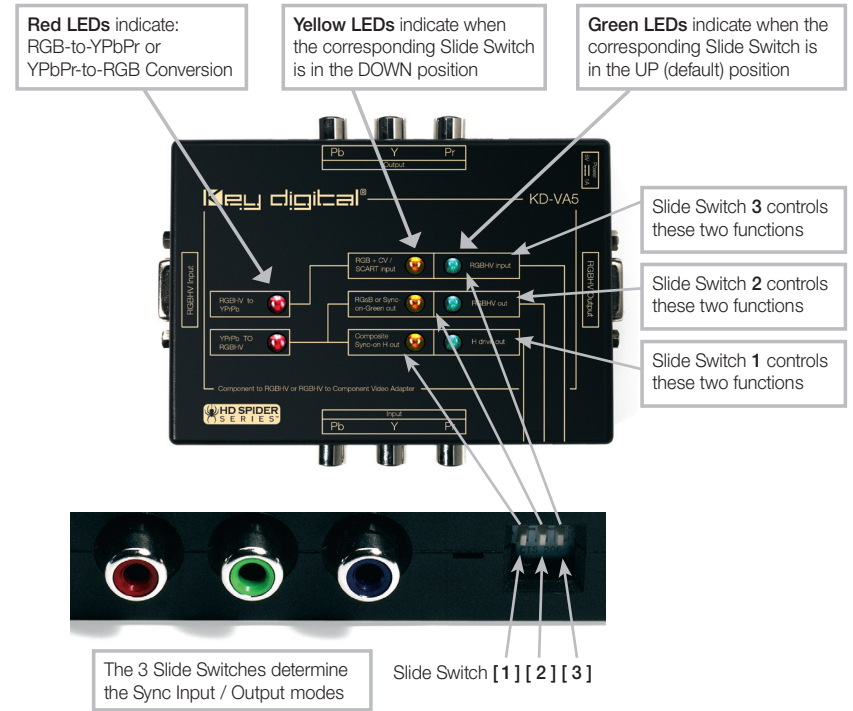
5 Volt, 1 Amp Power Supply connected to the KD-VA5

Carefully insert the power supply jack into the KD-VA5

› A mounting clip (bracket) is provided to allow you to secure your KD-VA5 to a wall, rack, etc. It is suggested that you fully operate the unit first (see the following "Configuration and Operation" section of this Operating Manual) before securing the unit in its mounting bracket. Then, use an appropriate fastener to secure the bracket to a safe, dry location, and carefully snap the KD-VA5 into its mounting bracket. If you need to remove the unit from the mounting bracket, use care to pry the unit out without snapping the clips.

Secure the mounting clip to a wall or other surface, and carefully insert the KD-VA5 into the clips

KD-VA5

Mounting Clip, provided

Configuration and Operation

Now that the KD-VA5 is wired into your system, the three slide switches on the side of the unit near the Pb Y Pr Input must be set for the desired mode of sync operation. The LEDs on the top of the unit verify the desired operation of the unit. For most applications, the Slide Switches will be in the UP (default) position, and the Green LEDs will be ON.

Red LEDs indicate: RGB-to-YPbPr or YPbPr-to-RGB Conversion

Yellow LEDs indicate when the corresponding Slide Switch is in the DOWN position

Green LEDs indicate when the corresponding Slide Switch is in the UP (default) position

Slide Switch **3** controls these two functions

Slide Switch **2** controls these two functions

Slide Switch **1** controls these two functions

The 3 Slide Switches determine the Sync Input / Output modes

Slide Switch [1] [2] [3]

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Configuration and Operation (continued)

Video Formats

The KD-VA5 supports only the following, most popular analog interlaced and progressive video formats, like HDTV, NTSC, and PAL:

> 1080i (60 & 50 Hz)

> 720p (60 & 50 Hz)

> 480p (60 Hz)

> 576p (50 Hz)

> 576i (50 Hz, SCART only)

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Auto Sensing

The KD-VA5 senses the appropriate Mode of operation, using Intelligent Auto Sensing™:

Component-to-RGBHV Mode	If the Component Video input is connected with active sync on Y, the Intelligent Auto Sensing™ automatically forces the KD-VA5 to the Component-to-RGBHV Video Mode by sensing active sync on the "Y" Component Video signal.
RGBHV-to-Component Mode	If there is no YPbPr input (in particular, no sync on the "Y" channel), the unit automatically selects the RGBHV-to-Component Video Mode.

See the Application Examples earlier in this Operating Manual. In each mode (RGBHV-to-Component Video or Component-to-RGBHV Video) the corresponding Red LED should be lit. Active sync on the "Y" Component Video input forces the KD-VA5 to operate in the Component-to-RGBHV Video mode. To override this mode, you must turn off the Component Video source. However, you may also need to disconnect the "Y" cable in some cases, in the event the Component Video source continues to provide sync on the Y channel even when power is not supplied to the Component Video source (this may happen in some instances with e.g. a Set Top Box).

Slide Switch Sync Settings

Locate the block with the three (3) small Slide Switches labeled "1" "2" "3" on the side of the unit, near the Pb Y Pr Input connector. The "Up" position is the "default" position (most typical applications use these settings) that corresponds to the Green LEDs being lit on the face of the unit. The "Down" position selects the corresponding Yellow LEDs active.

"Up" for Green (default) LED selection

"Down" for Yellow LED selection

Slide Switch **[1] [2] [3]**
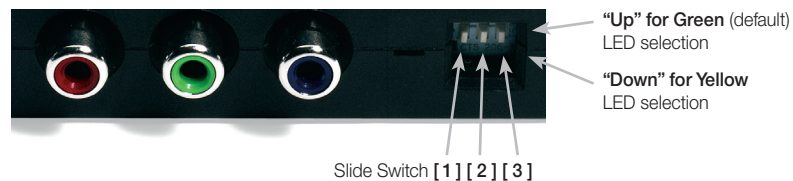
	Switch in the DOWN position Yellow LED ON	"Default": Switch in the UP position Green LED ON
Switch 3	**SCART Input:** RGB Video and Composite Sync on H	RGBHV Video Input on the HD-15 VGA Input connector
Switch 2	**RGB Video Out:** Sync is on the Green channel (RGsB)	RGBHV Video Output, with separate H & V sync
Switch 1	**RGB Video Out:** Composite Sync provided on the "H" Output	RGBHV Video Output, with separate H & V sync (the "H" channel carries H sync and not Composite Sync)

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Technical Specifications

Model #: KD-VA5

RGBHV-to-Component or Component-to-RGBHV Video Adapter

Analog Video Modes

❯ RGBHV-to-Component (YPbPr) Video conversion
   ➔ Also supports SCART RGB Video input
❯ Component-to-RGBHV Video conversion

Auto Sensing

❯ Intelligent Auto Sensing™ automatically switches from RGBHV-to-Component Video or Component-to-RGBHV Video by sensing active sync on the "Y" Component Video signal
   ➔ If the Component Video input is connected with active sync on Y, the Intelligent Auto Sensing™ automatically forces the KD-VA5 to the Component-to-RGBHV Video Mode by sensing active sync on the "Y" Component Video signal
   ➔ If there is no YPbPr input (in particular, no sync on the "Y" channel), the unit automatically selects the RGBHV-to-Component Video Mode

Sync Modes

❯ Component Video with sync on "Y"
❯ RGBHV Video with separate H & V sync
❯ Additional sync modes supported:
   ➔ RGB Video with "sync on green" (RGsB)
   ➔ SCART input (RGB Video plus Composite Sync on H input)
   ➔ Composite sync on H output

Pass-through

❯ Allows connections to two display types:
❯ RGBHV-to-Component (YPbPr) Video conversion drives the Component Video HD display, while the RGBHV pass-through drives an RGBHV display
❯ Component-to-RGBHV Video conversion drives the RGBHV display, while the Component Video pass-through drives the Component Video HD display

Resolution

❯ The output resolution = the input resolution
   ➔ Performs no video processing

Compatible Video Signals

❯ Supports most analog interlaced and progressive video formats, at 60 Hz or 50 Hz, like HDTV, NTSC, and PAL:
   ➔ 1080i (60 & 50 Hz)
   ➔ 720p (60 & 50 Hz)
   ➔ 480p (60 Hz)
   ➔ 576p (50 Hz)
   ➔ 576i (50 Hz, SCART only)

Analog Video Characteristics

❯ Output stage drives high-quality, equal-length video cables up to 50'
❯ 1V p-p @ 75 ohms, terminated
❯ Composite video sync on "Y" input (YPbPr)
❯ Video bandwidth:
   ➔ -3 dB @ 150 MHz
   ➔ Linear phase pass-band
❯ Unity video gain
❯ Each input of the KD-VA5 has its own 75 Ω termination
   ➔ Do not daisy chain inputs

Connectors

❯ RGBHV Input Port and Output Port are HD-15 VGA female connectors
❯ YPbPr Component Video Input Port and Output Port are color-codes RCA female jacks for each component
❯ 3.5 mm jack for the external power supply input

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Mechanical

❯ Size: 4.75" x 2" x 0.75"

❯ Weight: 0.5 lbs.

❯ Shipping weight: 1.0 lb.

❯ Enclosure Type: Plastic

❯ Mounting: Wall mounting bracket

Power Requirements

❯ External power supply provided

❯ + 5V DC @ 1 Amps, 110-240 VAC, 50-60 Hz

CAUTION: No other power supply adapter can be used with this unit! Using a power supply other than the one provided by Key Digital™ with the unit VOIDS THE ENTIRE PRODUCT WARRANTY, may cause damage to the unit and associated equipment, and is a potential safety hazard.

How to Contact Key Digital™

Repairs and Warranty Service

❯ Should your KD-MSW4x2Pro distribution amplifier and switcher require warranty service, please contact Key Digital™ to obtain a Returned Materials Authorization (RMA) number

❯ Please contact us at either:

➔ Phone: **1-914-667-9700 ext 215**

➔ E-mail: **rma@keydigital.com**

Technical Support

❯ For technical questions about using our products, please contact us at either:

➔ Phone: **1-914-667-9700 ext 301**

➔ E-mail: **tech@keydigital.com**

Customer Support

❯ For customer support questions about using our products, please contact us at either:

➔ Phone: **1-914-667-9700 ext 223**

➔ E-mail: **customersupport@keydigital.com**

Warranty

All Key Digital™ products are built to high manufacturing standards and should provide years of trouble-free operation. They are backed by a limited two-year parts and labor warranty.

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Installation Notes

Installation Notes

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