

# HDMI 4x1™

## 4 Inputs to 1 Output HDMI Switcher

### OPERATING INSTRUCTIONS



4x1 HDMI Switcher (with HDCP) that switches any of four (4) inputs of HDMI A/V to one (1) output. Conveniently switches 60 Hz and 50Hz video sources, and multiple audio formats. The selected input video can be scaled to match the native resolution of your display, using world-renowned Key Digital® Clear Matrix Pro™ technology. Easily control all features with the convenient front-panel display and pushbuttons, the IR Remote Control, or RS-232. It's all-digital, for the absolute best, crystal-clear, and pristine switching and picture quality!



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The Experts in Digital Video Technology and Solutions.

# HDMI 4x1™ Operating Instructions

## HDMI 4x1™ Switcher

### **Safety Instructions – Please be sure to follow these instructions for safe operation of your unit**

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer
- 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.



- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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# HDMI 4x1™ Operating Instructions

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# HDMI 4x1™ Operating Instructions

## KEY FEATURES

The HDMI 4x1™ Switcher is a 4x1 HDMI Switcher that supports HDCP Copy Protection and switches any of four (4) inputs of HDMI A/V to one (1) output. Concurrently switch all Inputs, including HDMI, Toslink Optical audio, digital PCM audio, and analog Left & Right stereo audio. It's all-digital, for crystal-clear and pristine switching and picture quality!



Conveniently switches 60 Hz and 50Hz video sources, and multiple audio formats. The selected input video can be scaled to match the native resolution of your display, using world-renowned Key Digital® Clear Matrix Pro™ technology. All the video processing features you'd expect from Key Digital® are also provided. Use the convenient front-panel display and push-buttons, the IR Remote Control, or RS-232 to easily control all features of the product.

# HDMI 4x1™ Operating Instructions

## *HDMI Switcher:*

- Crystal-clear switching of four (4) HDMI Inputs to One (1) HDMI Output
  - HDMI Type A 19-pin connector
  - To support DVI-D Video I/O, use HDMI<->DVI adapter cable(s)
- Supports HDCP Copy Protection
- Switches 60 Hz and 50Hz video sources, and multiple audio formats
- HDMI repeater functionality with hot plug detection

## *Switches Video and Audio with individual connectors for:*

- HDMI Video and Audio
- Toslink Optical Audio
- Digital PCM Audio
- Analog stereo Left & Right Audio

## *Can also be configured to process and scale any HDMI video input to match the native resolution of your display:*

- Using world-renowned Key Digital® Clear Matrix Pro™ technology
- A full-function, high-quality Video Processor is included
- Supports all popular source and display formats and resolutions
- Pass-through mode (output = input)
- Accepts and automatically detects 60 Hz and 50 Hz input formats (the output frame rate will be the same as the input frame rate)
- Built-in Test patterns available through the front-panel controls as well as RS-232

## *Easy to control and operate:*

- Convenient front-panel display and pushbuttons
- Store your custom settings (like brightness, contrast, much more) for each of the four (4) HDMI Inputs
- Easy-to-operate IR Remote Control, and rear-panel remote input
- RS-232
- Firmware upgradeable

**CLEAR**  
MATRIX PRO

**DIGITAL PICTURE**  
**DPE**  
ENHANCEMENT

**HORIZONTAL OFFSET**  
**HOVO**  
VERTICAL OFFSET

**MULTI-LAYER**  
BOARD TECHNOLOGY

**SURFACE MOUNT**  
TECHNOLOGY

**SDS**  
SUPER DIGITAL SEALING

**DIGITAL EDGE**  
**DEE**  
ENHANCEMENT

**DIGITAL VIDEO**  
**DVIX**  
INTERNAL CLOCK EXCHANGE

**DVPC**  
DIGITAL VIDEO PULSE CONTROLLER

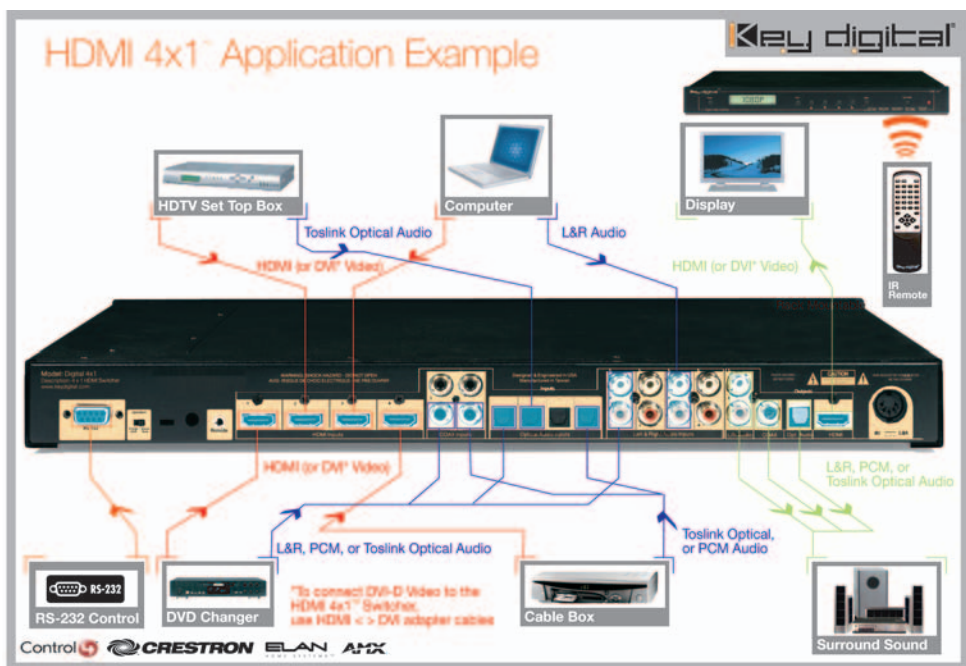
# HDMI 4x1™ Operating Instructions

## About the HDMI 4x1™ Switcher

Thank you for purchasing the Key Digital® HDMI 4x1™ Switcher, a high-quality, versatile HDMI switcher that supports HDCP Copy Protection and switches any of four (4) inputs of HDMI A/V to one (1) output. As more and more A/V products support the HDMI interface, you'll find that the HDMI 4x1™ Switcher is exactly the solution you've been looking for. Your HDMI switcher is engineered with the latest state-of-the-art technologies, and conveniently provides many useful features that are easy to configure and control. The all-digital HDMI interface and Key Digital® switching and processing provide the absolute best, crystal-clear, and pristine picture quality!

*The Solution you've been waiting for, the solution you've been looking for...*

The HDMI 4x1™ Switcher is ideally suited to interface a wide array of source products with an HDMI or DVI output, like your DVD player, Satellite Box, HD DVR, Set Top Box, or even your PC, to any display with an HDMI or DVI input.



# HDMI 4x1™ Operating Instructions

## 4 Inputs to 1 Output HDMI Switcher:

Let's start with the basic functions of your Key Digital® HDMI 4x1™ Switcher. First and foremost, you purchased the product as a four (4) input to one (1) output switcher, capable of supporting the 19-pin HDMI Type A connections with HDCP (Copy Protection).



Your Key Digital® HDMI 4x1™ Switcher carries whatever signals are present on your HDMI cables. That means that you can switch Video as well as Audio. HDMI lets source devices (like your DVD player, Satellite / Set Top Box, or PC) “talk” with your display or “sink” device, and your HDMI 4x1™ Switcher functions as a true HDMI repeater to pass along this information. Your switching connection is truly seamless!

## Versatile video and audio Inputs and Outputs:

Next, let's look at the versatility offered by your HDMI 4x1™ Switcher. Flexible Audio I/O interfaces include HDMI, Toslink Optical audio, digital PCM audio, and analog Left & Right stereo audio. If you have a DVI device you want to switch, or a display with a DVI input, simply use HDMI<->DVI adapter cable(s).

## A built-in Scaler to perfectly match the native resolution of your display:

All of the above features are what you've come to expect from Key Digital®. In fact, you can stop right here, and you would have the perfect solution for all your HDMI switching requirements. But your HDMI 4x1™ Switcher offers so much more...

Wouldn't you like to get the most your HDMI interface has to offer? Sure, HDMI is a pristine, digital A/V interface. But how do you best interface your 480 sources to the native resolution of your display? Or what if the HD output from your Satellite / Set Top Box doesn't match the native resolution of your display? Or what if you want to connect your PC to a projector? This is where the beauty of your Key Digital® HDMI 4x1™ Switcher shines through. With world-renowned Key Digital® Clear Matrix Pro™ technology built right into your HDMI 4x1™ Switcher, any selected input video can be scaled exactly to match the native resolution of your display. Most of the popular source and display formats and resolutions are supported.

## A built-in Video Processor:

But the power of your HDMI 4x1™ Switcher does not end there. An easy-to-operate, full-function, high-quality Video Processor is built into your switcher. For each input, you can control a broad range of functions, from Brightness and Contrast, to Size, Position, and even “Zoom” - Aspect Ratio adjustments. Test patterns built-into your HDMI 4x1™ Switcher help you set-up your video system.

## So easy to Control:

With so many features and versatility, you may be wondering: Is the HDMI 4x1™ Switcher easy to operate and control? Simply use the convenient front-panel display and pushbuttons, the IR Remote Control, or RS-232 to easily control all features of the product.

# HDMI 4x1™ Operating Instructions

## Getting Started

Follow these instructions to quickly and easily set-up your HDMI 4x1™ Switcher unit.

Open the carton and you will find the following contents:

1. One HDMI 4x1™ Switcher unit
2. External, 6-Volt power supply
3. IR Remote Control with batteries included
4. Operating Instructions Manual
5. Warranty card

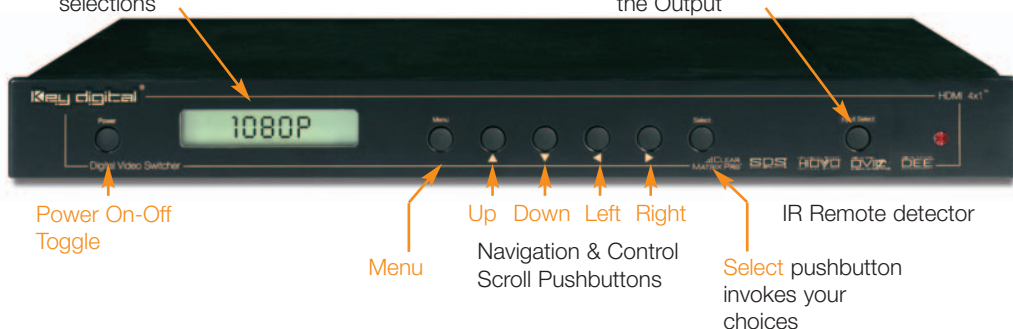
Setting up your HDMI 4x1™ Switcher for operation:

Your HDMI 4x1™ Switcher is easy to configure and operate. In this section, you will first connect all of your A/V input and output devices to your HDMI 4x1™ Switcher unit. Do not connect the external 6 Volt DC supply (provided) to the back of the Switcher until all your Video and Audio connections to the HDMI 4x1™ Switcher are complete.

### 1. Become familiar with the location of the buttons, display, and connectors on your HDMI 4x1™ Switcher unit.

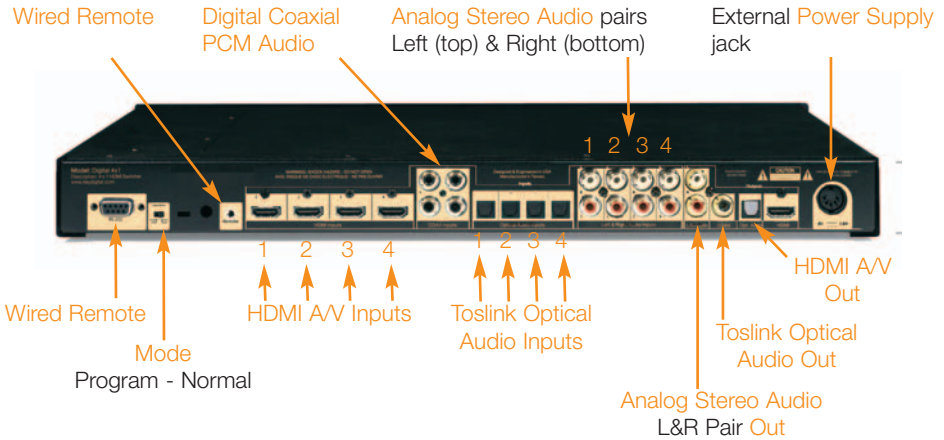
**LCD Display:** provides visual indication of modes, formats, and selections

**Input Select:** convenient selection of which 1-of-4 Inputs to switch to the Output



Front-panel view of the HDMI 4x1™ Switcher

# HDMI 4x1™ Operating Instructions



Rear-panel view of the HDMI 4x1™ Switcher

## 2. Find a convenient and safe location to place your HDMI 4x1™ Switcher unit.

## 3. Connect your A/V Equipment to your HDMI 4x1™ Switcher unit.

You may have several source devices with an HDMI output that you would like to conveniently connect and arbitrarily switch into your display device. Your HDMI 4x1™ Switcher accepts up to four (4) source devices. You can select (switch) any one (1) of these four (4) devices to the output of the Switcher and hence to the input of your display.

Video signals are carried digitally over the HDMI link. The HDMI 4x1™ Switcher is a true HDMI repeater, and detects the characteristics of the source and display devices. The HDMI 4x1™ Switcher supports HDCP Copy Protection.

You may decide to route your Audio signals over HDMI (along with the Video). Your HDMI 4x1™ Switcher also supports Audio switching of digital coaxial PCM audio (1 x RCA connector), Toslink optical audio, and/or analog audio Left & Right stereo pairs (2 x RCA connectors, color-coded Left and Right).

If the equipment you would like to connect to your HDMI 4x1™ Switcher has only DVI-D connectors, then you will need to separately purchase HDMI <> DVI-D adapter cables to connect the equipment to your HDMI 4x1™ Switcher. Remember, while HDMI supports Video and Audio over the same connection, DVI-D supports Video only and you will need to separately connect your Audio signals to the HDMI 4x1™ Switcher.

At this time, connect your equipment to the inputs and outputs of your HDMI 4x1™ Switcher unit.

# HDMI 4x1™ Operating Instructions

## 4. Be sure that your HDMI 4x1™ Switcher is set to “Normal” operating mode.

To change operating Modes: Power must NOT be applied to your HDMI 4x1™ Switcher unit. The power supply MUST be disconnected (either from the back of your unit or from the wall outlet) to have a complete power shutdown - reset.



**Mode:** Program - Normal  
Physically disconnect the power to your unit before setting the rear-panel Mode slide switch to “Normal” mode

Only select “Program” mode when you need to perform a Firmware Upgrade of your HDMI 4x1™ Switcher unit, as provided and instructed by Key Digital®. Firmware Upgrade instructions are provided later in this Operating Manual.

If the rear-panel Mode switch is set to “Program” mode and your HDMI 4x1™ Switcher unit is powered ON, or even if the power supply is connected and the unit is turned OFF, the unit is expecting a firmware upgrade and will not operate properly. If you did not intend to perform the firmware upgrade, turn your HDMI 4x1™ Switcher unit OFF. Then, you must physically disconnect power to your unit, set the rear-panel Mode slide switch to “Normal” mode, physically reconnect power to the unit, and then turn the power back ON to your unit for normal operation of your HDMI 4x1™ Switcher.

## 5. Connect the external power supply to your HDMI 4x1™ Switcher unit.

Do not connect the external 6 Volt DC supply (provided) to the back of the Switcher until all your Video and Audio connections to the HDMI 4x1™ Switcher are complete (as described in the prior step of this Operating Manual) and you have set the Mode switch to “Normal” mode.

Once you have made all the A/V connections to your HDMI 4x1™ Switcher and the Mode is set to “Normal”, plug in the external 6 VDC @ 5 Amp Power Supply (provided with your unit) to the jack on the back of the unit and connect the power cord into an appropriately rated wall outlet or power strip. You may now turn your HDMI 4x1™ Switcher unit ON using the front-panel pushbutton, the IR Remote Control, or RS-232.

# HDMI 4x1™ Operating Instructions

## Basic Operation of the HDMI 4x1™ Switcher

Now that you have connected your A/V equipment and the power supply to the HDMI 4x1™ Switcher, you are ready to operate and control the unit.

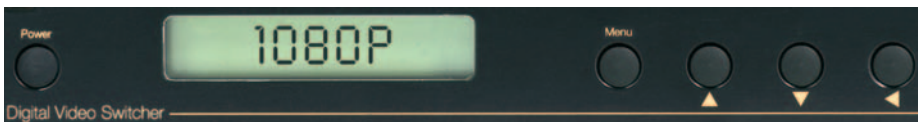
Be sure that your HDMI 4x1™ Switcher is set to “Normal” operating mode, as instructed in the prior Step in this Operating Manual:

Whenever power is supplied to your HDMI 4x1™ Switcher unit and your unit is “turned OFF,” the unit is actually in “Standby” mode. To change operating Modes, power must NOT be applied to your HDMI 4x1™ Switcher unit. The power supply MUST be disconnected (either from the back of your unit or from the wall outlet) to have a complete power shutdown - reset. Be sure the rear-panel Mode slide switch is set to “Normal” mode. (Only select “Program” mode when you need to perform a firmware upgrade of your HDMI 4x1™ Switcher unit, as provided and instructed by Key Digital®.)

### Controlling your HDMI 4x1™ Switcher unit:

Your HDMI 4x1™ Switcher is easy to control and operate, and you have several convenient options for controlling your HDMI 4x1™ Switcher. All controls are available via:

- Front-panel pushbuttons, with a handy LCD display for instant feedback. The pushbuttons act to “cycle” through operations, and you can navigate with the Up, Down, Left, and Right arrows. The LCD will display the current function.




To use the front-panel pushbuttons and LCD:

- The LEFT and RIGHT arrow pushbuttons allow you to scroll through the different “menus”
- The UP and DOWN arrow pushbuttons allow you to scroll through the different “options” or selections, for the given menu
- The Select pushbutton allows you to invoke the Menu or Option selection
- The Input Select pushbutton allows for convenient front-panel selection of which 1-of-4 Inputs to switch to the Output

# HDMI 4x1™ Operating Instructions

- IR Remote Control (discrete commands are available). Always be sure there is a clear line-of-site from the hand-held IR Remote Control and the IR detection lens at the front right panel of your HDMI 4x1™ Switcher unit.



**ON** —————→ [ON] [Back] [OFF] ←———— **OFF**

**“Hot Buttons”** that bring you directly to the Menu functions

**“Resolution”** Allows you to select the desired output resolution

The **LEFT** and **RIGHT** arrows allow you to scroll through the different “Menus”

Cycle through and switch any **Input** 1 - 4 to the Output

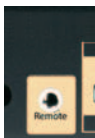
The **UP** and **DOWN** arrows allow you to scroll through the different “options” or selections, for the given menu

**Input Selects**  
Allow you to switch any Input 1 - 4 to the Output

The **Select** pushbutton allows you to invoke the Menu or Option selection

**“Aspect”** Allows you to select the desired output Aspect Ratio processing

- Wired (rear-panel) remote input.



- RS-232 (Crestron, CNMSX-PRO, AMX compatible)



# HDMI 4x1™ Operating Instructions

## 1. Basic HDMI Switcher operation.

The most basic operation of your HDMI 4x1™ Switcher unit is to provide switching of any one (1) of up to four (4) HDMI A/V inputs (and corresponding analog, PCM, and/or Toslink optical Audio inputs) to the output. Since your HDMI 4x1™ Switcher supports full HDMI repeater functionality with hot plug detection, it passes the EDID upstream > downstream from the e.g. display to the selected (switched) source device.

Having followed the procedures in this Operating Manual, the following steps should have been taken:

- a. Find a safe location for your HDMI 4x1™ Switcher
- b. All of your A/V devices should be interconnected to your HDMI 4x1™ Switcher
- c. The rear-panel Mode switch should be set to "Normal" mode (before the power supply is connected to your unit)
- d. The external 6 VDC @ 5 Amp power supply should be connected to the rear of your unit and plugged into an appropriate power outlet

Now, turn the power ON to your HDMI 4x1™ Switcher unit. Press the Power switch on the front left of the unit, or use the IR Remote Control:



Power On-Off  
Toggle

You can immediately enjoy using your HDMI 4x1™ Switcher by selecting any desired input to be switched to the output, using the "Input Select" switch on the front right of the unit. Simply depress the "Input Select" switch and cycle through for Input 1, Input 2, Input 3, or Input 4. Your HDMI 4x1™ Switcher will detect all active inputs.

Input Select: convenient selection of which  
1-of-4 Inputs to switch to the Output



Note that the Inputs 1 through 4 correspond to the HDMI inputs as marked on the rear panel of the switcher. Also note that the corresponding analog, PCM, and/or Toslink optical Audio inputs are also switched to their output.

You may also select which input is switched to the output using the IR Remote Control.

# HDMI 4x1™ Operating Instructions

## 2. Understand the full capabilities of your HDMI 4x1™ Switcher unit.

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Your HDMI 4x1™ Switcher unit is feature-rich, and performs much more than “4 x 1” switching of HDMI signals A/V and corresponding analog, PCM, and/or Toslink optical Audio. Your HDMI 4x1™ Switcher unit has a built-in, high-quality scaler and video processor. Before we start to operate and control these functions, let's look at the gamut of features provided in your unit:

### Video Processing Functions Provided

- Key Digital® DPE™ (digital picture enhancement) and DEE™ (digital edge enhancement)
- Sharpness, Brightness, Contrast
- Saturation, Hue
- Horizontal & Vertical Size, Position, Input Offset
- Zoom (Output Aspect Ratio processing), including options to prevent monitor burn-in for Letterbox or Pillarbox images:
  - Full
  - Letterbox, Pillarbox
  - Horizontal Zoom, Vertical Zoom, Horizontal and Vertical Zoom

You can also scale the selected (switched) HDMI video input to match the native resolution of your display:

- Using world-renowned Key Digital® Clear Matrix Pro™ and SDS™ (Super Digital Scaling) technologies to deliver world-class scaling
- Supports all popular source and display formats and resolutions

## 3. Operating the HDMI 4x1™ Switcher Video Scaler and Video Processor.

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The Video Scaler and Video Processor built into your HDMI 4x1™ Switcher unit is easy to operate. You can control these functions using the front-panel pushbutton switches or your IR Remote Control, with instant feedback from the front-panel LCD display.

Use the “Menu” pushbutton, and “Arrow” keys to scroll through the Menu options. For each input, first select the video format carried by your HDMI signal: either RGB or Component (YPbPr). Each of the four (4) Inputs HDMI Inputs has a separate memory, so you can save your preferred settings per input device. You can then select and store the following preferred parameters for:

- Brightness
- Sharpness
- Contrast
- H-Size

# HDMI 4x1™ Operating Instructions

- V-Size
- Saturation
- Hue
- H-Input Offset
- V-Input Offset
- H-Position
- V-Position
- Input format (RGB or YPbPr)
- Zoom / Aspect Ratio

Once you have selected a parameter to adjust for a particular Input (Input 1 through 4), simply use the Left and Right Arrow buttons to move through the range. For example, “Brightness” is set to a factory default of “00” but can be adjusted Up to +50 or Down to -50.

When instructed, you can reset the setting to Factory Default using the “Select” pushbutton on the front panel.

## 4. Video Resolution Formats Supported.

---

The world-class video processor and scaler built into your HDMI 4x1™ Switcher converts the Input Video format to match the resolution format of your display. Pass-through mode (output = input). Most popular Input and Output video resolution formats are supported, including:

### Input Formats Supported:

---

- |                        |                 |
|------------------------|-----------------|
| • 720 x 480i @ 60 Hz   | • 576i @ 50 Hz  |
| • 720 x 480p @ 60 Hz   | • 576p @ 50 Hz  |
| • 1280 x 720p @ 60 Hz  | • 720p @ 50 Hz  |
| • 1920 x 1080i @ 60 Hz | • 1080i @ 50 Hz |

### Output Formats Supported:

---

- |                        |                                      |
|------------------------|--------------------------------------|
| • 640 x 480p @ 60 Hz   | • 576i @ 50 Hz                       |
| • 720 x 480i @ 60 Hz   | • 576p @ 50 Hz                       |
| • 20 x 480p @ 60 Hz    | • 720p @ 50 Hz                       |
| • 920 x 540 p @ 60 Hz  | • 1080i @ 50 Hz                      |
| • 1280 x 720p @ 60 Hz  | • Pass-through mode (output = input) |
| • 1368 x 768p @ 60 Hz  |                                      |
| • 1280 x 768p @ 60 Hz  |                                      |
| • 1400 x 1050p @ 60 Hz |                                      |
| • 1920 x 1080i @ 60 Hz |                                      |
| • 1920 x 1080p @ 60 Hz |                                      |

# HDMI 4x1™ Operating Instructions

## 5. Zoom - Aspect Ratio adjustments.

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Your HDMI 4x1™ Switcher can perform output Aspect Ratio processing, including options to prevent monitor burn-in for Letterbox or Pillarbox images:

- Full
- Letterbox, Pillarbox
- Horizontal Zoom, Vertical Zoom, Horizontal and Vertical Zoom

You can also scale the selected (switched) HDMI video input to match the native resolution of your display:

- Using world-renowned Key Digital® Clear Matrix Pro™ and SDS™ (Super Digital Scaling) technologies to deliver world-class scaling
- Supports all popular source and display formats and resolutions
  1. H Zoom (Horizontal Zoom): This “H Zoom” feature is particularly useful for some Plasma owners, who may want to stretch the image to fill the screen and avoid the nasty burn-in. If the input signal is a Pillarbox, Horizontal Zoom extends (distorts) the image from left to right to fill the screen. For example, when a 4:3 movie is up-converted to HDTV in a studio, it may be simply released in the Pillarbox format, with black bars to the left and right of the image in a 16:9 window.
  2. V Zoom (Vertical Zoom): This “V Zoom” feature is particularly useful for some Plasma owners, who may want to stretch the image to fill the screen and avoid the nasty burn-in. If the input signal is a Letterbox, Vertical Zoom extends (distorts) the image from top to bottom to fill the screen. For example, it is very common for a widescreen DVD movie to be presented in Letterbox, because the original movie may be captured in 2.35:1 Cinemascope or some other Aspect Ratio that creates a small letterbox in a 16:9 window.
  3. HV Zoom: This mode simultaneously stretches the image uniformly in both the Horizontal and Vertical directions, using the same ratios as in H Zoom and V Zoom. This Zoom mode may be preferred over the H- or V-Zoom, both of which geometrically distort the image. Because the image is “Zoomed,” there will be a slight loss (cropping) of the image at the top and bottom for Pillarbox sources, and at the left and right for Letterbox sources.

## Firmware Upgrades

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From time-to-time, Key Digital® provides the option for you to update the Firmware that operates and controls your HDMI 4x1™ Switcher, such as to add a new or improved feature. These updates are optional, and you should only perform upgrades as provided and instructed by Key Digital®. Check our web site at [www.keydigital.com](http://www.keydigital.com) for the latest firmware updates.

Should a Firmware Upgrade be available that you are interested in installing in your unit, please be sure to carefully and completely follow all of the steps described below.

# HDMI 4x1™ Operating Instructions

In order to perform the Firmware Upgrade, be sure that your HDMI 4x1™ Switcher is set to “Program” operating mode:

The power supply MUST be disconnected (either from the back of your unit or from the wall outlet) to have a complete power shutdown - reset. Next, set the rear-panel Mode slide switch to “Program” mode. Only select “Program” mode when you need to perform a firmware upgrade of your HDMI 4x1™ Switcher unit, as provided and instructed by Key Digital®.



Mode: Program - Normal

Physically disconnect the power to your unit before setting the rear-panel Mode slide switch to “Normal” mode

STEP #	FIRMWARE UPGRADE PROCEDURE
1	Be sure power is disconnected to your HDMI 4x1™ Switcher unit. <b>The power supply MUST be disconnected ( either from the back of your unit or from the wall outlet) to have a complete power shutdown - reset.</b>
2	With power disconnected, set the rear-panel Mode slide switch to “Program” mode. <b>Do NOT apply power yet to your unit.</b>
3	Check our web site at <a href="http://www.keydigital.com">www.keydigital.com</a> for the latest firmware update ZIP file. Download and unzip the firmware ZIP file to any directory on your PC. All of the unzipped files that are created MUST be located in same directory on your PC.
4	<b>Make sure t hat no devices are using the CO M1 serial port on your PC.</b>
5	Connect an RS-232 cable to the COM1 serial port on your PC, and the other end to the RS-232 port on the rear panel of the HDMI 4x1™ Switcher.
6	Turn power ON to your HDMI 4x1™ Switcher unit. <b>The power supply MUST be reconnected to your unit first ; THEN push the ON button at the front-panel of your unit.</b>
7	Double-click the ‘HDMI4x1.bat ’ file. The command mode window should pop up. Monitor this pop-up window to see that the Firmware Upgrade is going well.
8	If an error occurs, check your RS-232 connection and repeat all of the above steps.
9	When the download is complete, turn the power OFF to your HDMI 4x1™ Switcher unit using the front-panel On/Off pushbutton, and then disconnect the RS-232 cable between the unit and your PC.
10	Again, be sure power is disconnected to your HDMI 4x1™ Switcher unit. <b>The power supply MUST be disconnected ( either from the back of your unit or from the wall outlet) to have a complete power shutdown - reset.</b>
11	With the power disconnected, set the rear-panel Mode slide switch to “Normal” mode.
12	Turn power ON to your HDMI 4x1™ Switcher unit. <b>The power supply MUST be reconnected to your unit first ; THEN push the ON button at the front-panel of your unit.</b>
13	The Firmware Upgrade is complete, and your HDMI 4x1™ Switcher is ready for operation.

## HDMI 4x1™ Operating Instructions

## HDMI 4x1™ Switcher

## RS-232 Discrete Commands

Provided below is a table of the Discrete RS-232 Commands that allow you to control your HDMI 4x1™ Switcher.

Item	Command Name	Parameter - [#]	Description
Input Selection	<i>in</i> [#]	0 : Input 1	Selects one (1) Input of the four (4) HDMI Inputs
		1 : Input 2	
		2 : Input 3	
		3 : Input 4	
Aspect Ratio	<i>a</i> [#]	0 : Full	Selects Aspect Ratio conversion options
		1 : Letter Box	
		2 : Pillar Box	
		3 : H-Zoom	
		4 : V-Zoom	
Output Resolution	<i>or</i> [#]	0 : 1920x1080P	
		1 : not used	
		2 : not used	
		3 : 1920x1080I	
		4 : 1400x1050P	
		5 : 1280x768P	
		6 : 1368x768P	
		7 : 1280x720P	
		8 : 1920x540P	
		9 : 720x480P	
10 : 720x480I			
Output CSC	<i>csc</i> [#]	0 : YPbPr	Selects output format "color space control"
		1 : RGB	
Input CSC	<i>csc</i> [#]	0 : YPbPr	Selects input format "color space control"
		1 : RGB	
Picture Adjustments	<i>br</i> [#]	range from -50 to 50	Direct setting of Output Brightness
		<i>b-</i>	Output Brightness Down
		<i>b+</i>	Output Brightness Up
	<i>cr</i> [#]	range from -50 to 50	Direct setting of Output Contrast
		<i>c-</i>	Output Contrast Down
		<i>c+</i>	Output Contrast Up

## HDMI 4x1™ Operating Instructions

Picture Adjustments	<b>br</b> [#]	range from -50 to 50	Direct setting of Output Brightness
	<b>b-</b>		Output Brightness Down
	<b>b+</b>		Output Brightness Up
	<b>cr</b> [#]	range from -50 to 50	Direct setting of Output Contrast
	<b>c-</b>		Output Contrast Down
	<b>c+</b>		Output Contrast Up
	<b>sar</b> [#]	range from -50 to 50	Direct setting of Output Saturation
	<b>sa-</b>		Output Saturation Down
	<b>sa+</b>		Output Saturation Up
	<b>hur</b> [#]	range from -50 to 50	Direct setting of Output Hue
	<b>hu-</b>		Output Hue Down
	<b>hu+</b>		Output Hue Up
	<b>shr</b> [#]	range from -50 to 50	Direct setting of Output Sharpness
	<b>sh-</b>		Output Sharpness Down
	<b>sh+</b>		Output Sharpness Up
	<b>hsr</b> [#]	range from -20 to 20	Direct setting of Horizontal Size
	<b>hs-</b>		Output Horizontal Size Down
	<b>hs+</b>		Output Horizontal Size Up
	<b>vsr</b> [#]	range from -20 to 20	Direct setting of Vertical Size
	<b>vs-</b>		Output Vertical Size Down
	<b>vs+</b>		Output Vertical Size Up
	<b>hpr</b> [#]	range from -20 to 20	Direct setting of Horizontal Position
	<b>hp-</b>		Output Horizontal Position Down
	<b>hp+</b>		Output Horizontal Position Up
	<b>vpr</b> [#]	range from -20 to 20	Direct setting of Vertical Position
	<b>vp-</b>		Output Vertical Position Down O
	<b>vp+</b>		Output Vertical Position Up
	<b>hir</b> [#]	range from -20 to 20	Direct setting of Horizontal Input Offset
	<b>hi-</b>		Output Horizontal Input Offset Down
	<b>hi+</b>		Output Horizontal Input Offset Up
<b>vir</b> [#]	range from -20 to 20	Direct setting of Vertical Input Offset	
<b>vi-</b>		Output Vertical Input Offset Down	
<b>vi+</b>		Output Vertical Input Offset Up	

# HDMI 4x1™ Operating Instructions

Test Patterns	<i>t</i> [#]	0: normal display	MDIN150 Input test pattern (1920x1080i,720x480i,720x480p inputs)	
		1: horizontal ramp pattern		
		2: color bar pattern		
	<i>T</i> [#]	0: normal display		MDIN150 Output test pattern
		1: horizontal ramp pattern		
		2: color bar pattern		
		3: cross hatch pattern		
		4: color bar pattern		
		5: gray scale pattern		
		6: white window pattern		
7: horizontal ramp pattern				
8: wide horizontal ramp pattern				
9: wide vertical ramp pattern				
Factory default	<i>fd</i>	N/n	Setting all data to factory default	
		Y/y		
Native output	<i>n</i>		Make same output resolution with input	
Help	<i>H</i>		Print discriptions of all command	
	<i>s</i>		Print status of input output and menu values	
Audio Mute	<i>m</i>	0: set audio mute		
		1: release audio mute		
Power On/Off	<i>p</i>	0: power off	Power OFF	
		1: power on	Power ON	

## Technical Specifications

### General

- HDMI 4x1™ Switcher, Model HDMI 4x1:
  - 4-Inputs to 1-Output HDMI Switcher
- Crystal-clear switching of four (4) HDMI Inputs to one (1) HDMI Output
  - HDMI Type A 19-pin connector
  - To support DVI-D Video I/O, use HDMI<>DVI adapter cable(s)
  - Supports HDCP Copy Protection
  - HDMI repeater functionality with hot plug detection
- Switches Video and Audio with individual connectors for:
  - HDMI Video and Audio
  - Toslink Optical Audio
  - Digital PCM Audio
  - Analog stereo Left & Right Audio
- Can also be configured to process and scale any HDMI video input to match the native resolution of your display:
  - Using world-renowned Key Digital® Clear Matrix Pro™ technology
  - A full-function, high-quality Video Processor is included
  - Supports all popular source and display formats and resolutions

# HDMI 4x1™ Operating Instructions

- Easy to control and operate:
  - Convenient front-panel display and pushbuttons
  - vEasy-to-operate IR Remote Control
  - RS-232

## Video & Audio Inputs

- There are four (4) Inputs, on the rear of the product, labeled “1” through “4”
- Select “RGB” or Component (YPbPr) for each Input
- For each of the four (4) Inputs, there are the following connectors:
  - HDMI A/V: 1 x HDMI Type A 19-pin connector
    - Supports HDCP Copy Protection
    - To support DVI-D Video, use HDMI<>DVI adapter cable(s)
  - Digital Coaxial PCM Audio: 1 x RCA female
  - Optical Audio: 1 x Toslink
  - Analog stereo Left & Right Audio: RCA female (1 each color-coded Left & Right)

## Video & Audio Outputs

- There is one (1) Output, on the rear of the product, with the following connectors:
  - HDMI A/V: 1 x HDMI Type A 19-pin connector
    - • Supports HDCP Copy Protection
    - • To support DVI-D Video, use HDMI<>DVI adapter cable(s)
  - Digital Coaxial PCM Audio: 1 x RCA female
  - Optical Audio: 1 x Toslink
  - Analog stereo Left & Right Audio: RCA female (1 each color-coded Left & Right)

## Video Input Formats Supported

- Supports the following popular Input Formats:
  - 720 x 480i @ 60 Hz
  - 720 x 480p @ 60 Hz
  - 1280 x 720p @ 60 Hz
  - 1920 x 1080i @ 60 Hz
  - 576i @ 50 Hz
  - 576p @ 50 Hz
  - 720p @ 50 Hz
  - 1080i @ 50 Hz
- Accepts and automatically detects 60 Hz and 50 Hz input formats

## Video Output Formats Supported

- Supports the following popular Output Formats:
  - 640 x 480p @ 60 Hz
  - 720 x 480i @ 60 Hz
  - 720 x 480p @ 60 Hz
  - 1920 x 540 p @ 60 Hz
  - 1280 x 720p @ 60 Hz
  - 1368 x 768p @ 60 Hz
  - 1280 x 768p @ 60 Hz
  - 1400 x 1050p @ 60 Hz
  - 1920 x 1080i @ 60 Hz
  - 1920 x 1080p @ 60 Hz
  - 576i @ 50 Hz
  - 576p @ 50 Hz
  - 720p @ 50 Hz
  - 1080i @ 50 Hz
  - Pass-through mode (output = input)
- The output frame rate will be the same as the input frame rate, and supports 60 Hz and 50 Hz input formats

# HDMI 4x1™ Operating Instructions

## Video Processing Functions

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- Sharpness, Brightness, Contrast
- Saturation, Hue
- H & V Size, Position, Input Offset
- Zoom (Output Aspect Ratio processing), including options to prevent monitor burn-in for Letterbox or Pillarbox images:
  - Full
  - Letterbox, Pillarbox
  - Horizontal Zoom, Vertical Zoom, Horizontal and Vertical Zoom
- Built-in Test patterns help you set-up your video system (all patterns available through the front-panel LCD and pushbuttons, as well as RS-232):
  - White pattern
  - Cross pattern
  - Cross hatch
  - Color bars
  - Gray scale
  - White window
  - Horizontal ramp
  - Wide horizontal ramp
  - Wide vertical ramp

## Status and Control

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- Store your custom settings for each of the four (4) HDMI Inputs
- Convenient front-panel display and pushbuttons
- Easy-to-operate IR Remote Control
- Discrete IR commands available
  - Rear-panel remote input
- RS-232:
  - Crestron, AMX, CNMSX-PRO compatible
  - Firmware upgradeable, with rear-panel switch to go into “Program Mode”

## Connectors

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- Each Input and the Output is comprised of the following connectors:
  - RHDHMI: 1 x HDMI Type A 19-pin connector
  - RDigital Coaxial PCM Audio: 1 x RCA female
  - ROptical Audio: 1 x Toslink
  - RAnalog stereo Left & Right Audio: RCA female (1 each color-coded Left & Right)
- RS-232C: D-sub 9-pin

## Mechanical

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- No fan noise
- Rack mountable: 1U
- Product Size: 17 x 11 x 1.5 inches (excluding ears)
- Product Weight: 8 lbs. (excluding external power supply)
- Enclosure type: Metal
- Input power: External power supply included (6 Volt DC @ 5 Amps, 110-240 VAC, 50-60 Hz)

# HDMI 4x1™ Operating Instructions

## HOW TO CONTACT KEY DIGITAL®

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### Repairs and Warranty Service:

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- Should your HDMI 4x1™ require warranty service, please contact Key Digital® to obtain a Returned Materials Authorization (RMA) number
- Please contact us at either:
  - 1-914-667-9700
  - email [tech@keydigital.com](mailto:tech@keydigital.com)

### Technical Support:

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- For technical questions about using our products, please contact us at either:
  - 1-914-667-9700 or Toll-free 1-888-258-2028
  - email [tech@keydigital.com](mailto:tech@keydigital.com)

### Customer Support

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- For customer support questions about using our products, please contact us at either:
  - 1-914-667-9700
  - email [customersupport@keydigital.com](mailto:customersupport@keydigital.com)

## WARRANTY

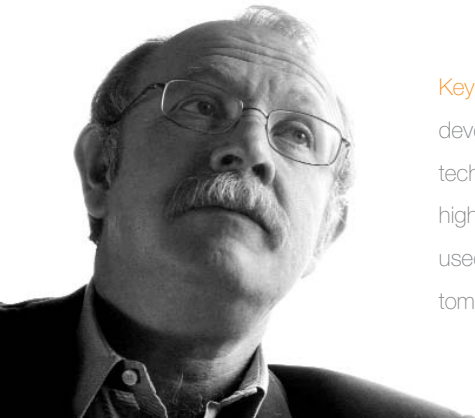
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All Key Digital® products are built to high manufacturing standards and should provide years of trouble-free operation. They are backed by a limited two-year parts and labor warranty.

# HDMI 4x1™ Operating Instructions



The Experts in Digital Video Technology and Solutions.



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. Our products are used by professional broadcasters, corporations, custom installers, home theater retailers, and consumers.

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