



4x4 HDMI Matrix

EXT-HDMI-444
USER MANUAL



ASKING FOR ASSISTANCE

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INTRODUCTION

Thank you for purchasing the 4x4 HDMI Matrix.

The 4x4 HDMI Matrix switches four HDTV sources to any four HDMI displays.

The 4x4 HDMI Matrix switcher has four HDMI inputs and four HDMI outputs. Matrix input #1 and the HDMI port of HDTV source #1 connects using a male to male HDMI cable. The HDMI port of HDTV source #2 connects to HDMI input #2. The HDMI port of HDTV source #3 connects to HDMI input #3. The HDMI port of HDTV source #4 connects to HDMI input #4. There are four (4) HDMI outputs connecting to four (4) different displays.

Note: The switching is done by using either the RMT-16-IR remote control or through the RS232 port. The 4x4 HDMI Matrix is rack mountable. Any HDTV with DVI inputs can be connected to the HDMI outputs of the matrix by using a DVI to HDMI adapter if the cable used is DVI.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE 4X4 HDMI MATRIX

- You should connect all the cables and power supply prior to connecting power to the HDTV sources and 4x4 HDMI Matrix.
- When powering the sources, the display needs to point to the source input.
- The 4x4 HDMI Matrix is housed in a metal box for better RF shielding.
- The 4x4 HDMI Matrix works with all DVI and HDMI displays.
- The 4x4 HDMI Matrix supports both AUDIO and VIDEO signals.
- The 4x4 HDMI Matrix is fully HDCP compliant.

FEATURES

Features

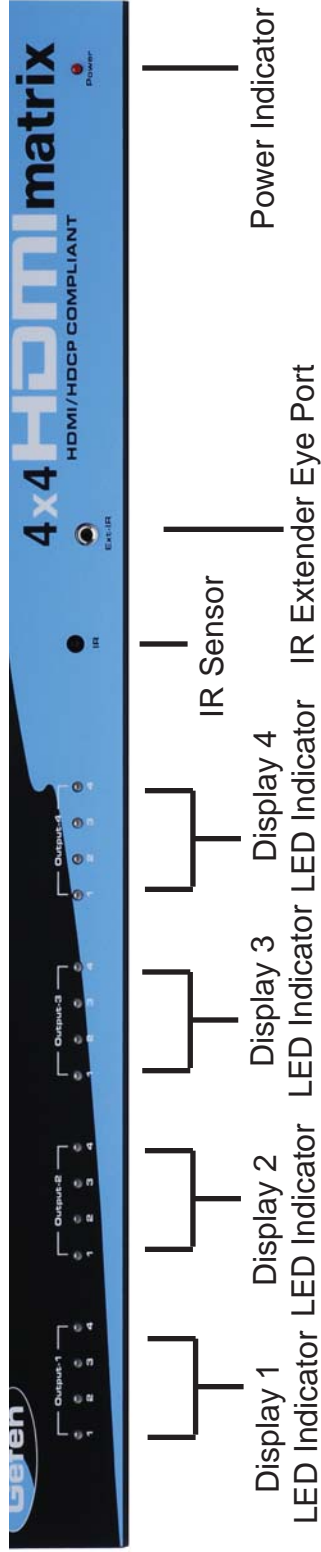
- Allows any HDMI display to view any source at any time
- Allows any source to be displayed on multiple displays at the same time
- Maintains resolutions up to 1080p, 2K, and 1920x1200
- Maintains highest HDMI single link video resolution
- Maintains highest HDMI digital audio signal
- Supports HDCP compliant devices
- HDMI or DVI to HDMI cables are used to connect the inputs and the matrix output
- Each display's inputs can be switched with the IR remote control or through RS232

Includes:

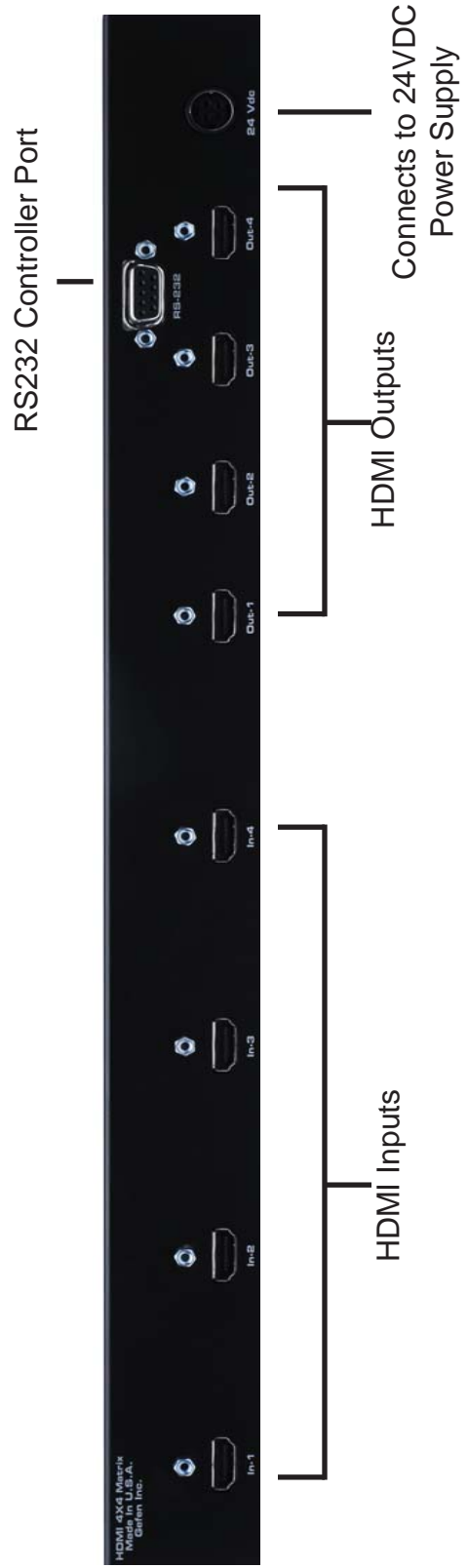
- (1) 4x4 HDMI Matrix
- (4) HDMI 6 Cables (M-M)
- (1) 24VDC Power Supply
- (1) User Manual
- (1) RMT-16IR Remote Control
- (1) Rack Ears



Front Panel



Back Panel

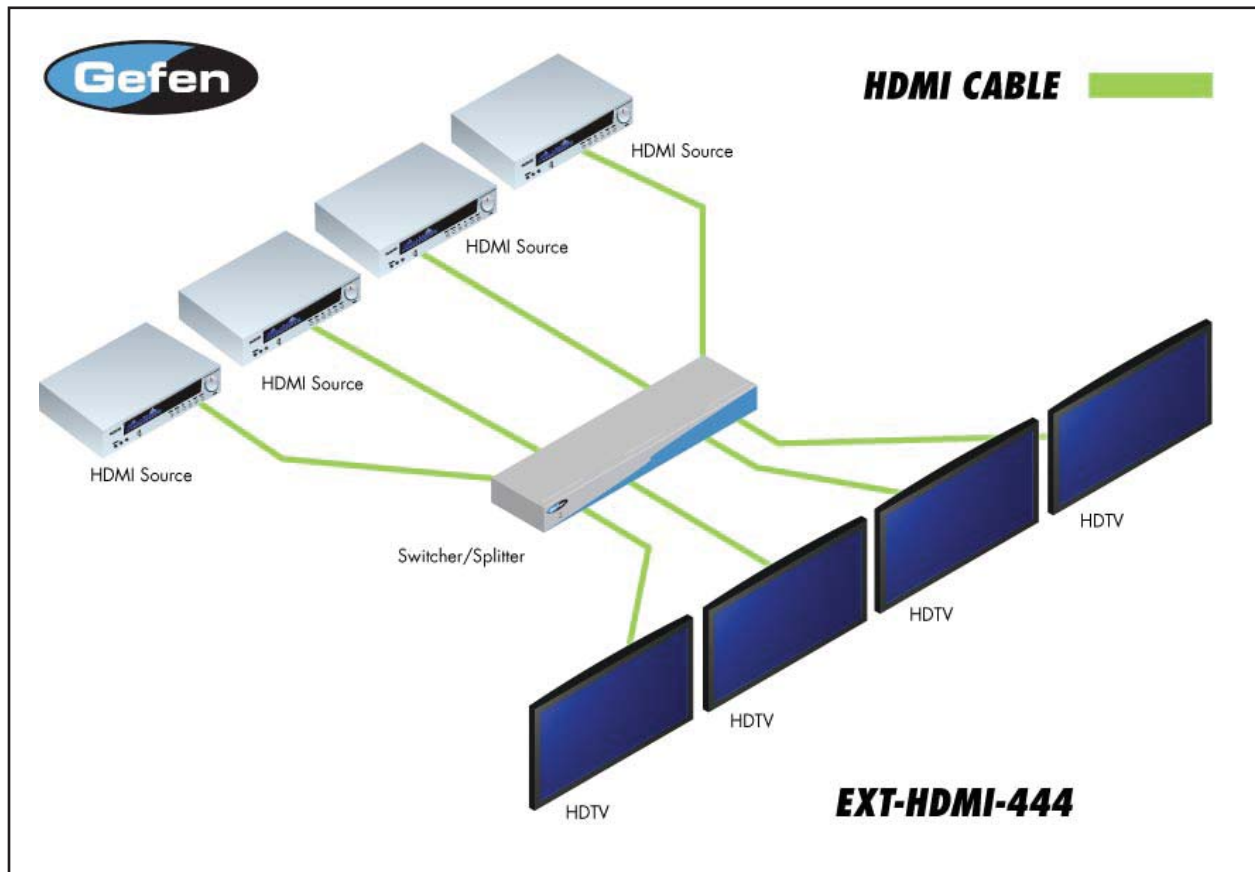


USING THE 4X4 HDMI MATRIX

- 1 Connect all the sources to the HDMI inputs on the 4x4 HDMI Matrix, using the supplied cables.
- 2 Connect the HDMI/DVI displays to the outputs on the 4x4 HDMI Matrix.
- 3 Connect the 24VDC power supply to the 4x4 HDMI Matrix
- 4 Controlling the 4x4 HDMI Matrix using the RMT16-IR:

Pressing Buttons...	Switches...
1-4	Display 1 to view Source 1, 2, 3, or 4
5-8	Display 2 to view Source 1, 2, 3, or 4
9-12	Display 3 to view Source 1, 2, 3, or 4
13-16	Display 4 to view Source 1, 2, 3, or 4

Connection Diagram for the 4x4 HDMI Matrix:

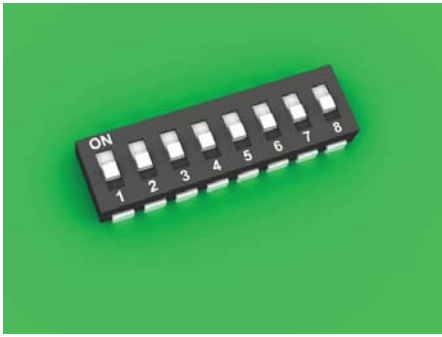


RMT16-IR INSTALLATION

1. Remove battery cover from the back of the RMT16-IR remote.
2. Verify that dip switches 1 & 2 are in the down (OFF) position.
3. Insert the battery, hold the battery so that you can see the positive side facing up. The side that is not marked must be facing down.
4. Test the RMT16-IR remote by pressing ONLY one button at a time. The indicator light on the remote will flash once each time you press a button. **WARNING:** Do not press multiple buttons simultaneously and do NOT press buttons rapidly. These actions will cause the remote to reset and steps 1-4 will have to be repeated.

Note: The RMT16-IR ships with two batteries. One battery is required for operation, the second battery is complimentary.





DIP SWITCH EDID GUIDE

Extended display identification data (EDID) is a data structure provided by a display to describe its capabilities to any source that asks for it. The EDID includes manufacturer name, product type, timings supported by the display, display size, luminance data, (for digital displays only) pixel mapping data, supported audio channels and formats. This information is used by the source to cater its output to resolutions and audio formats that are supported by the display.

Additional EDID modes are available and configured using a combination of dip switches 1, 2, and 5. Please refer below for the different EDID modes.

To access the Dip Switches, remove all screws from the bottom and sides of the Gefen unit. Remove the hex screw heads from each side of the RS-232 port and above each HDMI connector. Carefully slide the unit apart. The 8 Bank of Dip Switches are located on the main PCB. Once adjustments are complete, slide the unit back together and replace all removed screws.

EDID Mode 0 (Switch 1=OFF Switch2=OFF Switch5=ON)
-EDID is copied from the first HDMI port

EDID Mode 1 (Switch 1=ON Switch2=OFF Switch5=ON)
-Same as Mode 0 and adds basic audio support

EDID Mode 2 (Switch 1=OFF Switch2=ON Switch5=ON)
-Same as Mode 0 and adds full audio support

EDID Mode 3 (Switch 1=ON Switch2=ON Switch5=OFF)
-EDID is generated based on the common video and audio features of all of the connected devices

EDID Mode 4 (Switch 1=OFF Switch2=ON Switch5=OFF)
-Same as Mode 3 and adds basic audio support

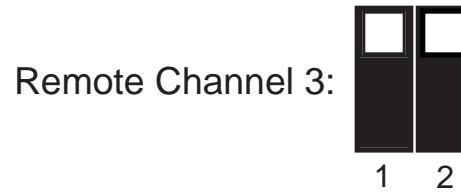
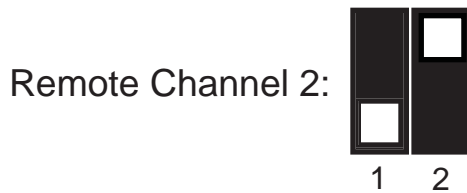
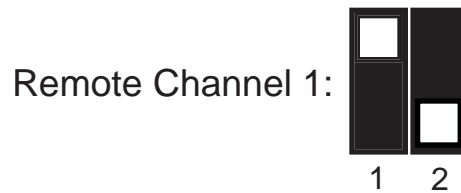
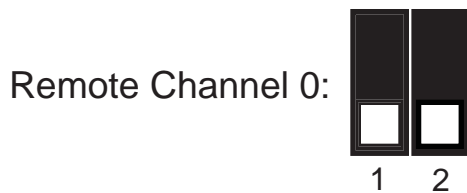
EDID Mode 5 (Switch 1=ON Switch2=OFF Switch5=OFF)
-Same as Mode 3 and adds full audio support

EDID Mode 6 (Switch 1=OFF Switch2=OFF Switch5=OFF) DEFAULT
-EDID is generated based on the common video features of all of the connected devices and the combined audio features of all of the connected devices

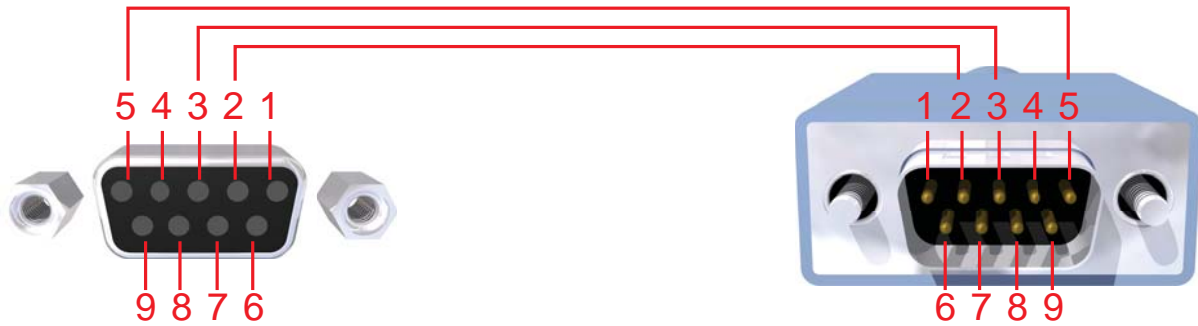
IR CODES

In the event of IR conflicts, please do the following:

1. Remove the battery cover from the back of the RMT16-IR remote.
2. Locate the Dip Switches above the batteries
3. Switch the Dip Switches on the RMT16-IR to any of the combinations pictured below.
4. Dip Switches 1 and 2 in the RMT16-IR correspond with Dip Switches 3 and 4 inside the 4x4 HDMI Matrix respectively. Switch the switches inside the 4x4 HDMI Matrix to match the same Remote Channel as the RMT16-IR. The 4x4 Matrix is now set to a new IR Code.



RS-232 INTERFACE



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are used on the RS-232 serial interface

Binary Table

ASCII	Corresponding RMT16-IR Button	Binary	ASCII	Corresponding RMT16-IR Button	Binary
1	1	0011 0001	9	9	0011 1001
2	2	0011 0010	a	10	0110 0001
3	3	0011 0011	b	11	0110 0010
4	4	0011 0100	c	12	0110 0011
5	5	0011 0101	d	13	0110 0100
6	6	0011 0110	e	14	0110 0101
7	7	0011 0111	f	15	0110 0110
8	8	0011 1000	g	16	0110 0111

Additional control of the EDID modes and IR channel are possible using the RS-232 interface. For any of these modes to be successfully written to the EEPROM, all Dip Switches must be in the OFF position.

ASCII	EDID Mode
m0	0
m1	1
m2	2
m3	3
m4	4
m5	5
m6	6

ASCII	Remote Channel
r1	1
r2	2
r3	3
r4	4

OK is printed out on the screen when a mode has successfully been changed.

RS232 Settings:

Bits per second 19200
 Data bits 8
 Parity None
 Stop bits 1
 Flow Control None

4x4 HDMI MATRIX RACK MOUNT DIAGRAM



SPECIFICATIONS

Video Amplifier Bandwidth	165 MHz
Input Video Signal	1.2 volts p-p
Input DDC Signal	5 volts p-p (TTL)
Single Link Range	1080p / 1920 x 1200
HDMI Input/Output Connector	Type A 19-pin Female
Remote Control Port	RS-232 Female, Mini-Stereo
Power Consumption	60 watts (max)
Power Supply	24V DC
Dimensions	17" W x 1.75" H x 5.875" D
Shipping Weight	10 lbs.

TERMINOLOGY

DDC

Short form for Display Data Channel. It is a VESA standard for communication between a monitor and a video adapter. Using DDC, a monitor can inform the video card about its properties, such as maximum resolution and color depth. The video card can then use this information to ensure that the user is presented with valid options for configuring the display.

DDWG

Digital Display Working Group DDWG are the creators of the DVI specification.

DVI

Digital Visual Interface. Connection standard developed by Intel for connecting computers to digital monitors such as flat panels and DLP projectors. A consumer electronics version, not necessarily compatible with the PC version, is used as a connection standard for HDTV tuners and displays. Transmits an uncompressed digital signal to the display. The latter version uses HDCP copy protection to prevent unauthorized copying.

HDCP

High-Bandwidth Digital Content Protection. Created by Intel, HDCP is used with HDTV signals over DVI and HDMI connections and on D-Theater D-VHS recordings to prevent unauthorized duplication of copy written material.

HDMI

The High-Definition Multi-media Interface (HDMI) is an industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any compatible digital audio/video source, such as a set-top box, DVD player, and A/V receiver and a compatible digital audio and/or video monitor, such as a digital television (DTV).

HDTV

High-Definition Television. The high-resolution subset of our DTV system. The ATSC defines HDTV as a 16:9 image with twice the horizontal and vertical resolution of our existing system, accompanied by 5.1 channels of Dolby Digital audio. The CEA defines HDTV as an image with 720 progressive or 1080 interlaced active (top to bottom) scan lines. 1280:720p and 1920:1080i are typically accepted as high-definition scan rates.

RS-232

Recommended Standard 232. This is the de facto standard for communication through PC serial ports. It can refer to cables and ports that support the RS232 standard.

VESA

Video Electronic Standards Association, a consortium of manufacturers formed to establish and maintain industry wide standards for video cards and monitors. VESA was instrumental in the introduction of the Super VGA and Extended VGA video graphics standards with a refresh rate of 70 Hz, minimizing flicker and helping to reduce user eyestrain and fatigue.

WARRANTY

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, please visit Gefen's Warranty web page at <http://www.gefen.com/kvm/aboutus/warranty.jsp>

PRODUCT REGISTRATION

Please register your product online by visiting Gefen's web site at <http://www.gefen.com/kvm/Registry/Registration.jsp>

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Rev X1

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