Linear®

Building On Innovation.

4X4 Matrix For HDMI™

Model # HDMI-MX-4X4

USER MANUAL

1080P PROGRESSIVE

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

HDTV

HD DVD

Blu-ray Disc™

www.linearcorp.com

RoHS

ASKING FOR ASSISTANCE

Technical Support:

Telephone	(800) 421-1587
	(760) 438-7000
Fax	(760) 438-7199

Technical Support Hours:
6:30 AM - 4:30 PM PST Monday through Friday.

Email:
techsupport@linearcorp.com

Website:
www.linearcorp.com

Notice

Linear LLC reserves the right to make changes in the hardware, packaging and any accompanying documentation without prior written notice.

© 2008 Linear LLC, All Rights Reserved

TABLE OF CONTENTS

1. Introduction / Operation Notes
2. Features
3. Panel Descriptions
4. Connecting And Operating the 4X4 Matrix For HDMI
5. RMT-16IR Remote Control Installation
6. IR Code Configuration
7. RS-232 Serial Control Interface
8. Rack Ears Installation Diagram
9. Wiring Diagram
10. Specifications
11. Warranty

INTRODUCTION

The Linear 4x4 Matrix for HDMI allows maximum versatility and flexibility for creating an integrated HD system. The 4x4 matrix routes digital audio and high definition digital video in resolutions up to 1080p from any of four HDMI sources to any combination of four displays through the matrix. It works with Blu-Ray / HD-DVD players, TiVo systems, Home Theater PCs, Satellite and Cable Set Top Boxes that can connect to an HDMI display. Each source is accessible for viewing on any combination of displays by selecting it with the supplied IR remote.

How It Works

You simply connect the sources to the Matrix's HDMI inputs. Then connect four displays to the Matrix's outputs. Once the sources, the matrix, and the displays are powered and connected, you use the IR remote to select which sources you want to view on which displays.

OPERATION NOTES

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

- HDMI/HDCP Compliant
- Compatible with all HDMI and DVI* displays
- Display information (EDID) is sent from the display connected to HDMI Output Port 1 to all sources connected to the 4X4 Matrix for HDMI. If a DVI display is connected to HDMI Output Port 1, the remaining HDMI Output Ports will be scanned in succession for an EDID from an HDMI display to use. If all displays connected to the 4X4 Matrix for HDMI are DVI displays, the EDID from the DVI display connected to HDMI Output Port 1 is used.
- Switching a display to a different source may cause all other displays currently viewing that source to momentarily flicker. This is caused by syncing/ handshaking operations.

NOTE: *When used with a HDMI to DVI adapter

Features

- Switch easily between any four HDMI sources
- Distributes any of the four inputs to any combination of the four HDMI output displays
- Supports resolutions up to 1080p, 2K and 1920 x 1200
- Extends the range of HDMI compliant devices by equalizing and reclocking the
- HDMI signal
- HDMI/HDCP compliant

Includes:

(1) 4x4 Matrix For HDMI
(4) HDMI 6 Ft Cables (M-M)
(1) 24V DC Power Supply
(1) User Manual
(1) RMT-16IR Remote Control
(1) Set Of Rack Ears

NOTE: *When used with a HDMI to DVI adapter

Front Panel

Power LED Indicator

IR Extender Eye Port

IR Sensor

Display 4 LED Indicator

Display 3 LED Indicator

Display 2 LED Indicator

Display 1 LED Indicator

Back Panel

RS-232 Serial Control Interface

24V DC Power Input

HDMI Outputs

HDMI Inputs*

*See note on page 4 for additional information

CONNECTING THE 4X4 MATRIX FOR HDMI

1. Connect the HDMI/DVI* sources (up to four) to the 4X4 Matrix For HDMI using the supplied HDMI cables.

2. Connect the HDMI/DVI* displays (up to four) to the 4X4 Matrix For HDMI using user supplied HDMI cables.

3. Plug the included 24V DC power supply into the 4X4 Matrix For HDMI.

4. Power on the displays.

5. Power on the sources. When powering on each source, please ensure that it is sending video to a connected and powered on display.

*When used with a HDMI to DVI adapter

NOTE: Display information (EDID) is sent from the display connected to HDMI Output Port 1 to all sources connected to the 4X4 Matrix for HDMI. If a DVI display is connected to HDMI Output Port 1, the remaining HDMI Output Ports will be scanned in succession for an EDID from an HDMI display to use. If all displays connected to the 4X4 Matrix for HDMI are DVI displays, the EDID from the DVI display connected to HDMI Output Port 1 is used.

OPERATING THE 4X4 MATRIX FOR HDMI

The 4X4 Matrix For HDMI switching can be controlled by either the included RMT-16IR remote control or by the RS-232 serial control interface on the rear of the unit.

IR Remote Control

The supplied RMT-16IR remote control has 16 buttons control which HDMI source is being routed to the 4 display output ports. Please use the table below for the IR remote control table.

RMT-16IR Button	*HDMI Display Output Port*	*Connects to HDMI Input Port*
1	1	1
2	1	2
3	1	3
4	1	4
5	2	1
6	2	2
7	2	3
8	2	4
9	3	1
10	3	2
11	3	3
12	3	4
13	4	1
14	4	2
15	4	3
16	4	4

RS-232 Serial Control

Please see page 7 for information on using the RS-232 serial control interface

RMT-16IR REMOTE CONTROL INSTALLATION

1. Remove battery cover from the back of the RMT-16IR remote.

2. Verify that dip switches 1 & 2 are in the down (OFF) position. (see next page)

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 RMT-16IR 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 RMT-16IR ships with two batteries. Only one battery is required for operation, the other battery is complimentary.

The optional IR extender allows you to relocate your HDMI Switcher and still retain IR control. Linear part# IR-EXTENDER

How to Resolve IR Code Conflicts

In the event that IR commands from other remote controls conflict with the supplied RMT-16IR remote control, changing the remote channel will alleviate this issue. The RMT-16IR remote control and the 4X4 Matrix for HDMI have DIP SWITCHES for configuring the remote channel that both units use to communicate. These settings must match each other for proper operation. The 2 DIP SWITCH bank on the RMT-16IR is located underneath the battery cover. The 8 DIP SWITCH bank for the 4X4 Matrix For HDMI is located inside of the unit. *DIP SWITCH 1 and 2 on the RMT16-IR correspond to DIP SWITCH 3 and 4 on the 4x4 Matrix For HDMI.

NOTE: *DIP SWITCHES 1, 2, and 5 through 8 are not used on the 4X4 Matrix for HDMI.

Because the procedure for changing channels requires the main unit to be disassembled, this procedure should only be done if there are IR conflicts present in your setup.

Disconnect power from unit before starting. Remove all cabling from unit. To open the 4X4 Matrix for HDMI Unit, remove all screws from the sides and underside of the unit. Remove the hex nuts above each HDMI connector and on the RS-232 serial connector. Slide the unit apart carefully to expose the internal PCB and the 8 DIP SWITCH bank.

When DIP SWITCH adjustments are complete, carefully slide the unit back together. Being careful not to over tighten the hex nuts, screw them back in above each HDMI connector and on the RS-232 serial connector. Screw all of the screws from the sides and underside of the unit back into the unit, again being careful not to over tighten the screws. Plug all cabling back into its proper location on the unit. Reconnect power to the unit and test for IR conflicts.

Remote

Remote Channel 1: Default

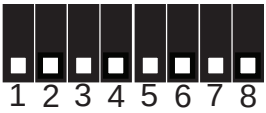
Remote Channel 2:

Remote Channel 3:

Remote Channel 4:

4X4 Matrix for HDMI

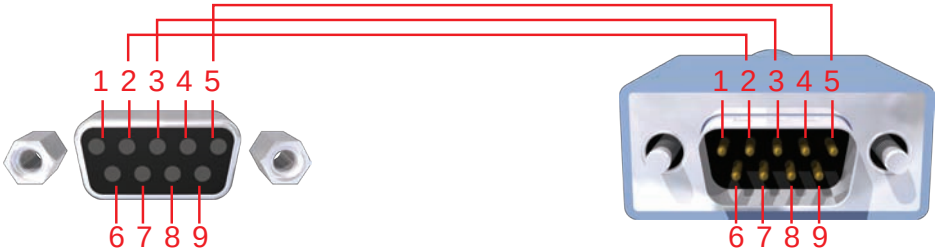
Remote Channel 1: Default



Remote Channel 2:

Remote Channel 3:

Remote Channel 4:



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are needed to operate RS-232 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

Terminal Settings

Bits per second 19200

Data bits 8

Parity ..... None

Stop bits 1

Flow Control ..... None

RACK EARS INSTALLATION DIAGRAM

Rack mount ears are provided for installation of this unit into a 1U rack mount space.

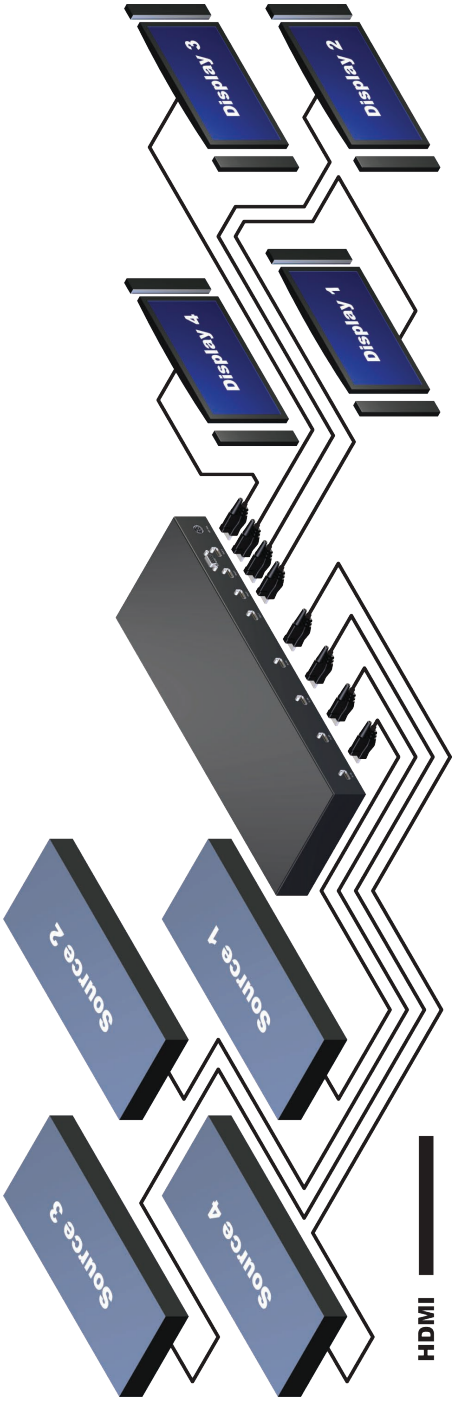
1. Locate the side screws on the unit.
2. Remove the front 2 screws that are located closest to the front of the unit.
3. Using the removed screws, screw the rack mounting bracket into the unit.
4. Repeat the procedure on the opposite side of the unit.

1

2

3

4



Maximum HDMI cable length is 15 ft at 1080P resolution without the use of an HDMI-SB or HDMI-CAT5-EXT

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 Connector..... Type A 19 pin female

Remote Control Port..... RS232 female, mini-stereo

Power Consumption..... 60 Watts (max)

Dimensions..... 17”W x 1.75”H x 5.875”D

Rack Mountable..... 1U rack space

Shipping Weight..... 7 lbs.

WARRANTY

Note: These products are designed to be installed and serviced by trained professional installation companies.

Linear LLC warrants this product to be free from defects in material and workmanship. For the term of the warranty, see the list of products below. The Warranty Expiration Date is reflected by a date code that is affixed to all of Linear's products. This warranty extends only to wholesale customers who buy direct from Linear or through Linear's normal distribution channels. Linear does not warrant this product to consumers. Consumers should inquire from their selling dealer as to the nature of the dealer's warranty. There are no obligations or liabilities on the part of Linear LLC for consequential damages arising out of or in connection with use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation or reinstallation. All implied warranties, including implied warranties for merchantability and implied warranties for fitness, are valid only until warranty expiration date as labeled on the product. This Linear LLC Warranty is in lieu of all other warranties express or implied. Some states and countries do not allow limitations or how long an implied warranty lasts or the exclusion or limitation or incidental or consequential damages, so the above exclusions may not apply. The Linear LLC warranty gives specific legal rights in addition to other rights, which may exist and vary from state to state and country to country.

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-421-1587 for an RPA# and other important details.

Consumers: If you have trouble locating your installing company, please contact Linear LLC at 1-800-421-1587 and we will assist you with locating a service and Installation Company.

The following warranty period applies to this set of Linear branded products.

1. Linear High Definition Video products — Two (2) years. There is no warranty offered on the batteries supplied with the IR remote Control.

The warranty is limited to repair or replacement of products returned, freight prepaid, to Linear LLC. There is NO PROVISION FOR LABOR COST OR OTHER REIMBURSEMENTS OF ANY KIND.

1. Failures due to product abuse, negligence, improper installation, improper use, and electrical surge including damage from lightning, water damage or other damage due to natural disasters are not covered by the warranty.

2. The warranty shall also be voided by any tampering with the date code, labels or other markings on the product.

3. Products that are damaged in transit to Linear LLC due to improper packaging or by the carrier (shipping company) will not be covered under the warranty. If the product was damaged or lost by the carrier, it is the sender's responsibility to create a claim against the carrier.

4. The user is responsible for all labor costs associated with removing, reinstalling and returning the product to Linear LLC.

5. Linear LLC, at its option, will repair or replace the defective product.

6. Replacements will be made from B-Stock. If an exact replacement is not available Linear LLC, at its option will select the nearest equivalent product. The user is responsible for freight charges to Linear LLC.

7. Linear LLC will return warranted repaired or replacements by UPS Ground or an equivalent service. A customer may pay the additional costs for second day or next-day service.

HDMI-MX-4X4

Building On Innovation.
(760) 438-7000
(800) 421-1587 FAX (800) 468-1340
www.linearcorp.com

Rev A