

# Linear®

*Building On Innovation.*

## 4X2 Switcher For **HDMI™**

Model # HDMI-SW-4X2M

USER MANUAL



**1080P**  
PROGRESSIVE

**HDMI**  
HIGH DEFINITION MULTIMEDIA INTERFACE

**GDTV**

**HD DVD**

**Blu-ray™**

[www.linearcorp.com](http://www.linearcorp.com)





## ASKING FOR ASSISTANCE

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**Notice**

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

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# INTRODUCTION

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The Linear 4x2 Switcher for HDMI routes high definition video in multiple resolutions up to 1080p plus multichannel digital audio from any of four sources. Four inputs accommodate the simultaneous connection of up to four high definition video sources, such as satellite systems and Blu-ray and HD-DVD players. Two outputs send the high definition audio/video signals up to two high definition displays. A digital audio output port is available if you need to direct the audio to an audio receiver. Switching is done via the IR remote that is provided with the unit.

## How It Works

You simply connect all your sources to the switcher's HDMI inputs. Then connect up to two displays on the switcher's HDMI outputs. Once the sources, the Switcher and the display(s) are powered and connected, you simply select which source you want to view using the IR remote.

# OPERATION NOTES

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## READ THESE NOTES BEFORE INSTALLING OR OPERATING THE 4X2 SWITCHER FOR HDMI

- **Display information (EDID) is sent from the display connected to HDMI output port 1 to all of the sources connected to the 4X2 Switcher for HDMI. If there is no display connected to HDMI output port 1, the EDID from the display connected to HDMI Output Port 2 will be used. (See note on page 4 for additional information)**
- The 4X2 Switcher For HDMI can only mirror one input video signal at a time to both display outputs. The user can choose which of the four HDMI inputs will be displayed on both HDMI outputs
- HDMI/HDCP compliant
- Compatible with all HDMI and DVI\* displays

**NOTE:** When used with a HDMI to DVI adapter.

# FEATURES

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## Features

- Switch easily between any four HDMI sources
- Outputs are mirrored to two HDMI Displays simultaneously
- Additional digital coax audio output is extracted from the HDMI input for easy connection to a multi-channel audio receiver
- Extends the range of HDMI compliant device by equalizing and reclocking the HDMI signal
- Supports resolutions up to 1080p, 2K and 1920 x 1200
- HDMI/HDCP compliant

## Includes:

- (1) 4X2 Switcher For HDMI
- (4) 6 ft HDMI cables (M-M)
- (1) 5V DC Power Supply
- (1) RMT4-IR remote
- (1) User's Manual



**NOTE:** \*When used with a HDMI to DVI Adapter

# PANEL DESCRIPTIONS

## Front Panel



Input LED  
Indicator

IR Eye  
IR Eye  
Extension Port

Power LED  
Indicator

## Back Panel



HDMI  
Input 1

HDMI  
Input 2

HDMI  
Input 3

HDMI  
Input 4

RS-232  
Serial Control  
Interface

HDMI  
Output 1\*

HDMI  
Output 2

Digital Coaxial  
Output

5V DC Power  
Input

\*See note on page 4

## CONNECTING THE 4X2 SWITCHER FOR HDMI

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### How to Connect the 4X2 Switcher For HDMI

1. Connect the supplied cables from the HDTV HDMI sources (up to four) into the HDMI input ports of the 4X2 Switcher for HDMI.
2. Connect the displays (up to two) to the HDMI output ports\* of the 4X2 Switcher for HDMI using user supplied cable(s).
3. Optionally, connect an external audio processor to the 4X2 Switcher For HDMI using a user supplied digital coaxial cable.
4. Plug the 5V DC power supply into the 4X2 Switcher For HDMI.

**NOTE:** \*Display information (EDID) is sent from the display connected to HDMI Output Port 1 to all of the sources connected to the 4X2 Switcher for HDMI. If there is no display connected to HDMI output port 1, the EDID from the display connected to HDMI output port 2 will be used. The source will output resolutions and timings according the EDID that is being fed by the 4X2 Switcher for HDMI. Therefore, all of the connected displays must be capable of accepting the timings and resolution output by the source. It is recommended that the display with the lowest native resolution be connected to HDMI output port 1. This is to ensure that a compatible video signal will be able to be displayed on all connected monitors.

## OPERATING THE 4X2 Switcher For HDMI

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Switching between the inputs on the 4X2 Switcher For HDMI is done using either the supplied RMT4-IR remote or through the RS-232 serial control interface.

### IR Remote Control

Pressing button one on the remote will select the HDMI source that is connected to HDMI input port one. Pressing two on the remote will select the HDMI source that is connected to HDMI input port two. Pressing button three on the remote will select the HDMI source that is connected to HDMI input port three. Pressing four on the remote will select the HDMI source that is connected to HDMI input port four.

### RS-232 Serial Control Interface

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



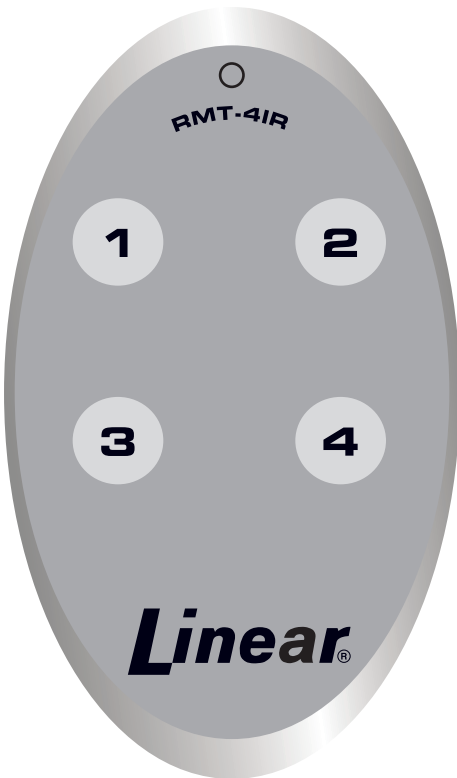
## RMT4-IR INSTALLATION

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1. Remove battery cover from the back of the RMT4-IR remote.
2. Verify that dip switches 1 & 2 are in the down (OFF) position. (See page 6)
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 RMT4-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 RMT4-IR ships with two batteries. One battery is required for operation, the second battery is complimentary.



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

# IR CODE CONFIGURATION

## How to Resolve IR Code Conflicts

In the event that IR commands from other remote controls conflict with the supplied RMT-4IR remote control, changing the remote channel will alleviate this issue. The RMT-4IR remote control and the 4X2 Switcher 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-4IR is located underneath the battery cover. The 8 DIP SWITCH bank for the 4X2 Switcher for HDMI is located inside of the unit. \*DIP SWITCH 1 and 2 on the RMT-4IR correspond to DIP SWITCH 3 and 4 on the 4X2 Switcher for HDMI.

**NOTE:** \*DIP SWITCHES 1, 2, and 5 through 8 are not used on the 4X2 Switcher 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.

To open the 4X2 Switcher 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.

### Remote



Remote Channel 1:  
Default



Remote Channel 2:



Remote Channel 3:



Remote Channel 4:



### 4X2 Switcher For HDMI

Remote Channel 1:  
Default



Remote Channel 2:



Remote Channel 3:



Remote Channel 4:



# RS-232 SERIAL CONTROL INTERFACE



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

## Binary Table

ASCII	Input	Binary
1	1	0011 0001
2	2	0011 0010
3	3	0011 0011
4	4	0011 0100

## Terminal Settings

Bits per second ..... 19200

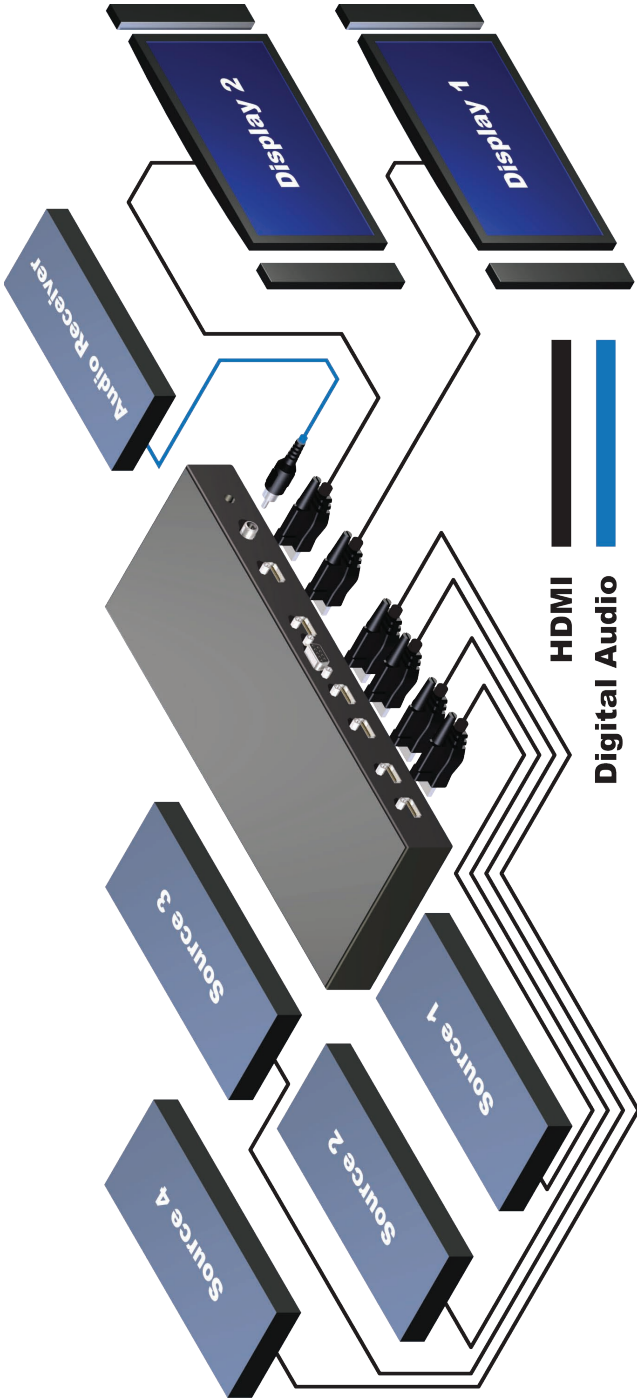
Data bits ..... 8

Parity ..... None

Stop bits .....1

Flow Control ..... None

# WIRING DIAGRAM



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

## SPECIFICATIONS

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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
Digital Audio Output .....	SPDIF
Remote Control Port .....	RS232 female, mini-stereo
Power Consumption .....	20 Watts (max)
Dimensions .....	11"W x 1.25"H x 4.25"D
Shipping Weight .....	5 lbs.

## WARRANTY

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**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-SW-4X2M



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Rev A