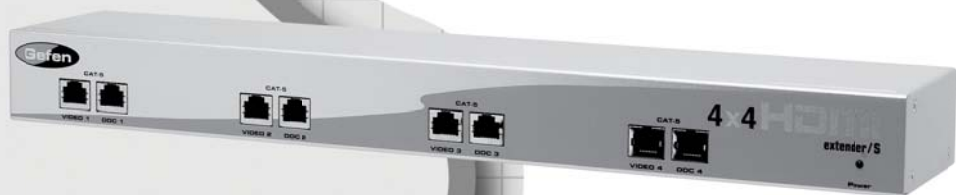


# Gefen

## HDMI™ CAT5 4X Extender

EXT-HDMI-CAT5-4X

User Manual



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

1080P  
PROGRESSIVE

HDMI™  
HIGH DEFINITION MULTIMEDIA INTERFACE

HD TV

HD DVD

Blu ray Disc™

## ASKING FOR ASSISTANCE

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### Technical Support:

Telephone (818) 772-9100  
(800) 545-6900

Fax (818) 772-9120

### Technical Support Hours:

8:00 AM to 5:00 PM Monday thru Friday.

### Write To:

Gefen Inc.  
c/o Customer Service  
20600 Nordhoff St  
Chatsworth, CA 91311

[www.gefen.com](http://www.gefen.com)  
[support@gefen.com](mailto:support@gefen.com)

### Notice

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

**HDMI CAT5 4X Extender** is a trademark of Gefen Inc.

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# INTRODUCTION

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Congratulations on your purchase of the HDMI CAT5 4X Extender. Your complete satisfaction is very important to us.

## **Gefen**

Gefen delivers innovative, progressive computer and electronics add-on solutions that harness integration, extension, distribution and conversion technologies. Gefen's reliable, plug-and-play products supplement cross-platform computer systems, professional audio/video environments and HDTV systems of all sizes with hard-working solutions that are easy to implement and simple to operate.

## **The Gefen HDMI CAT5 4X Extender**

The HDMI CAT5 4X Extender is the perfect solution for anyone who needs to send multiple (up to four) HDMI video sources to multiple (up to four) HDMI displays in remote locations at the same time.

The HDMI CAT5 4X Extender has 4 HDMI video inputs. The HDMI sources are sent to up to four HDMI CAT5 MS receivers via industry standard CAT-5, CAT-5e or CAT-6 cables. Distances of up to 300 feet for 1080i video, and 150 feet for 1080p video are possible. Signal auto-equalization is set by default and will provide optimal image reproduction for cable runs of 130 feet or less. Manual equalization is available for cable runs at greater distances.

## **How It Works**

Connect your HDMI video sources to the HDMI CAT5 4X Extender's inputs using the supplied HDMI cables. Run two CAT-5, CAT-5e or CAT-6 network cables from the HDMI CAT5 4X Extender to each of the HDMI CAT5 MS Receivers. Lastly, connect up to four HDMI displays to the HDMI CAT5 MS receivers at the remote locations.

## OPERATION NOTES

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### READ THESE NOTES BEFORE INSTALLING OR OPERATING THE HDMI CAT5 4X EXTENDER

- The HDMI CAT5 4X Extender and HDMI CAT5 MSR units are housed in a metal box for better RF shielding.
- The maximum cable extension is 300 feet (91 meters) for video resolutions of 1080i and below.
- The maximum cable extension is 150 feet (45 meters) for video resolutions of 1080p.
- The DDC cable (for each pair or extensions) does not need to be run if the source does not require HDCP or DDC. In this scenario, a single CAT-5, CAT5e or CAT-6 cable for the video can be run. If DDC is still required while HDCP is not, the use of an EDID storage device (part# EXT-DVI-EDIDN, EXT-DVI-EDIDP) can be used to transmit DDC information back to the source with this single cable solution.
- If EMI is present anywhere near the CAT-5, CAT-5e or CAT-6 video cable runs, it may be necessary to use shielded cable. This is to prevent possible interference from degrading the video signal. Using shielded cable, however, will reduce the maximum distance that the cable can be run.
- Power supply for the receiver should not be connected unless the CAT-5, CAT-5e or CAT-6 cable runs exceed 180 feet, or you are using the single CAT-5, CAT-5e or CAT-6 cable solution listed above.
- Extensions under 130 feet can use Auto EQ (which is on by default). Extensions over 130 feet will require you to manually EQ your signal (see page 5).
- Each cable run must be one continuous run from one end to the other. No splices or use of punch down blocks.
- High quality CAT-6 cabling should be used for maximum performance.
- Do not use stranded or low/no skew cabling. Solid core cabling should be used for maximum performance.
- HDMI \ HDCP Compliant.

# FEATURES

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## Features

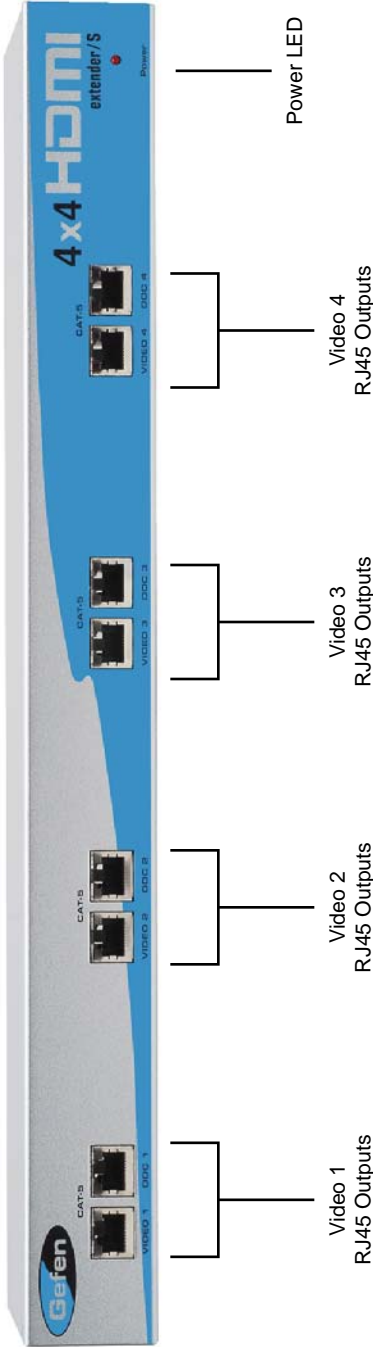
- Easily distribute four HDMI sources to four remote HDMI displays
- Extends video signals up to 300 feet over CAT-5, CAT-5e or CAT-6 network cable
- Maintains 1920 x 1200, 1080p, and 2k resolution video

## Package Includes

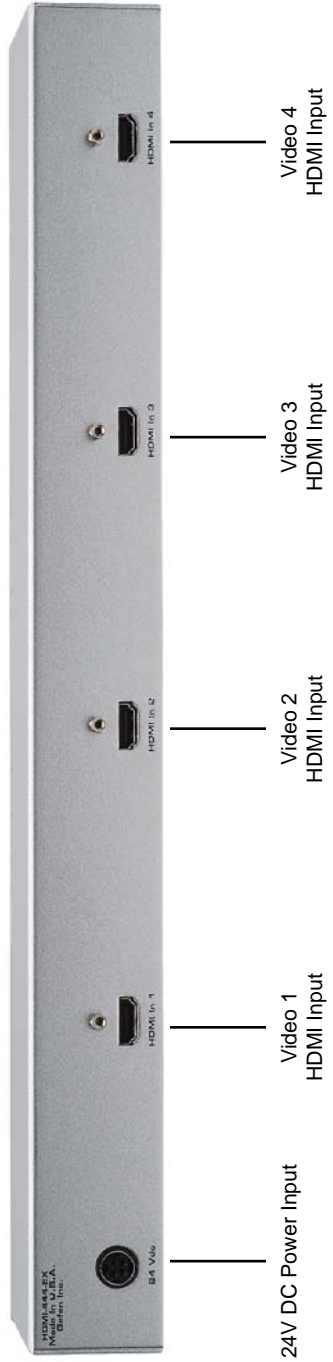
- (1) 4x HDMI CAT5 Sender
- (4) HDMI CAT5 MS Receivers
- (4) 6 Foot HDMI Cable (M-M)
- (4) 5V Dc Power Supply
- (1) 24V Dc Power Supply
- (1) Set Of Rack Ears

# SENDER PANEL DESCRIPTIONS

## Front Panel



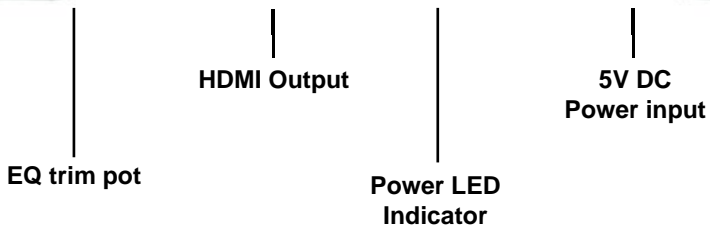
## Back Panel



# RECEIVER PANEL DESCRIPTIONS

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## Front Panel



## Back Panel



# **CONNECTING AND OPERATING THE HDMI CAT5 4X EXTENDER**

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## **How to Connect the HDMI CAT5 4X Extender**

1. Connect your sources (up to four) to the HDMI CAT5 4X Extender unit's HDMI inputs using the supplied HDMI cables.
2. Connect your displays (up to four) to the HDMI CAT5 MSR receiver unit's HDMI outputs using user supplied HDMI cables.
3. Connect both CAT-5, CAT-5e or CAT-6 cables (DDC and Video) between the HDMI CAT5 4X Extender and each HDMI CAT5 MSR receiver.

**NOTE:** If field terminating network cable, please adhere to the TIA/EIA-568-B standard. Please see page 9 for more information.

4. Plug the 24V power supply into the HDMI CAT5 4X Extender sender.

**NOTE:** In most scenarios, the 5V DC external power supply for the receiving units will not be required. Operational power is supplied by the sending unit via the connected DDC CAT-5, CAT-5e or CAT6 cable. If the power LED indicator on the receiving units are not on, please check to make sure that the RJ-45 cables are not crossed (DDC to video and video to DDC) or the cable run exceeds 180 feet.

5. Power on the displays.
6. Power on the sources.

**NOTE:** If an image is not being shown on the display, please check all cabling for proper connections and follow the steps outlined below and in the next section.

## **HDMI CAT5 4X EXTENDER CONFIGURATION**

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The HDMI CAT5 4X Extender and HDMI CAT5 MSR receivers have built-in auto equalization that will automatically tune out any unwanted video noise. This feature is reliable with premium cable runs up to a maximum of 130 feet. It may be necessary to disable this feature if there is either no video being displayed on initial start-up, there is video noise in the image, or the cable run exceeds 130 feet. First, verify that all the proper connections have been made and that all devices are powered on before attempting to disable auto equalization. Please follow the section on the next page to manually equalize the video signal.

## MANUAL EQUALIZATION PROCEDURE

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The HDMI CAT5 4X Extender and HDMI CAT5 MSR receiver units both have sets of dip switches located on the underside of their casings. There is a piece of silver metallic tape that must be removed to expose these dip switches. The HDMI CAT5 4X Extender unit carries 4 banks of 4 dip switches. Each HDMI CAT5 MSR receiver carries one bank of 4 dip switches. Dip switches 1 and 2 on both the sending and receiving units are used in this procedure. Dip switches 3 and 4 are not used. By default, dip switch 2 on each bank of the HDMI CAT5 4X Extender should be in the ON position, and all dip switches on each HDMI CAT5 MSR receiving unit should be in the OFF position (Auto EQ On). To turn off auto equalization, turn dip switch 1 on the receiving units to the ON position (Auto EQ off). With these settings, please follow the steps below to equalize the picture.

1. Insert a small flat head tool into the trim pot on the receiver unit.
2. Turn the trim pot in a clockwise fashion until it comes to a stop. Do not force the trim pot beyond this point. Doing so may render the trim pot useless.
3. Slowly turn the trim pot counter-clockwise in millimeter increments until the image stabilizes and all video noise disappears.
4. Carefully remove the adjustment tool.

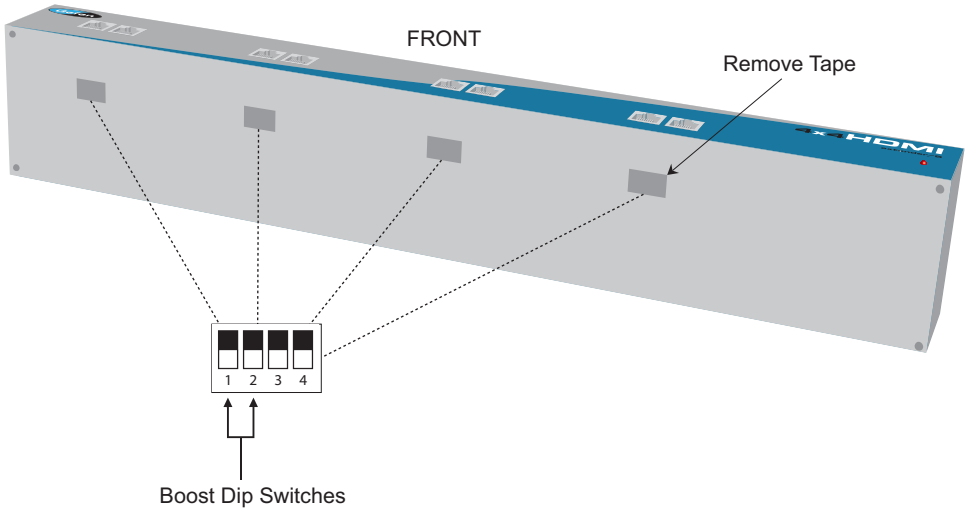
**NOTE:** If your cable run is beyond 130 feet, or the steps above do not produce any video, it may be necessary to increase the boost from the sending unit. Use the chart below to increase the senders to medium boost by changing the HDMI CAT5 4X Extender's dip switches. Once a new boost setting is set, repeat steps 1 through 4 from above. If this still does not produce and image, increase the boost to high and repeat the EQ process.

Sender Dip Switch Settings		
Setting	Switch 1	Switch 2
Medium Boost	OFF	OFF
No Boost (Default)	OFF	ON
High Boost	ON	OFF
NOT USED	ON	ON

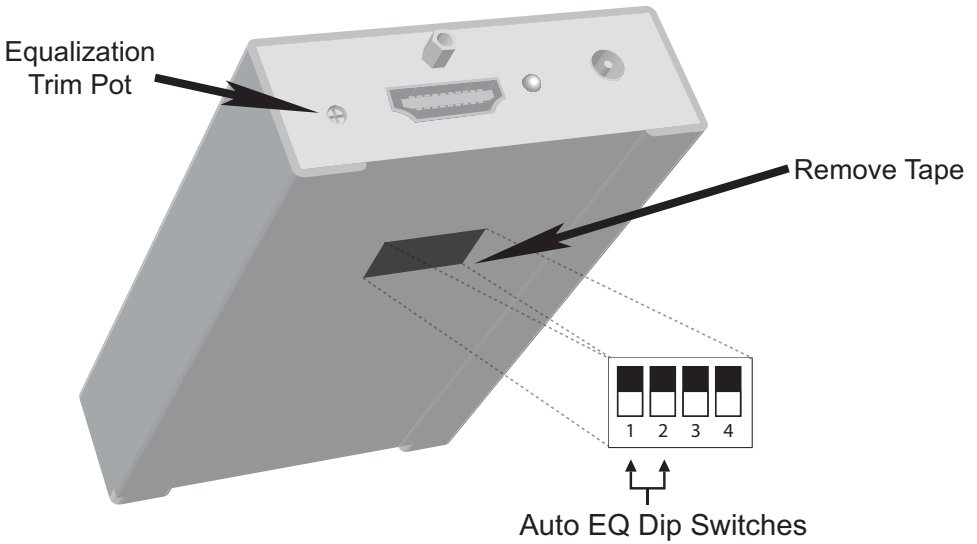
Receiver Dip Switch Settings		
Setting	Switch 1	Switch 2
Manual EQ	ON	OFF
Auto EQ (Default)	OFF	OFF

# DIP SWITCH LOCATION DIAGRAM

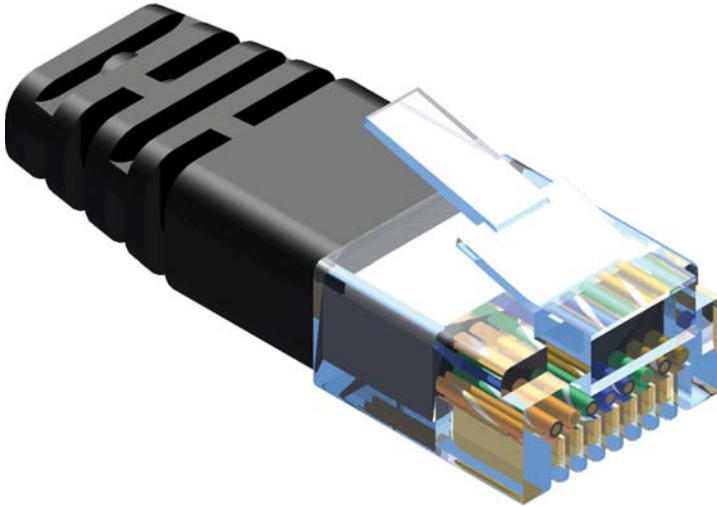
## HDMI CAT5 4X Extender



## HDMI CAT5 MSR

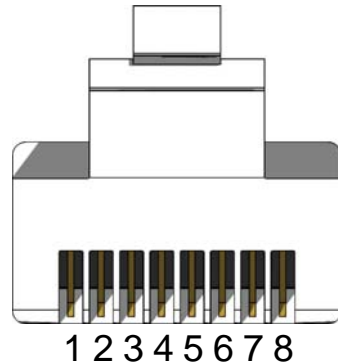


## NETWORK CABLE WIRING DIAGRAM



Gefen has specifically engineered their products to work with the TIA/EIA-568-B specification. Please adhere to the table below when field terminating cable for use with Gefen products. Failure to do so may produce unexpected results and reduced performance.

Pin	Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown



CAT-5, CAT-5e, and CAT-6 cabling comes in stranded and solid core types. Gefen recommends using solid core cabling. CAT-6 cable is also recommended for best results.

Each cable run must be one continuous run from one end to the other. No splices or use of punch down blocks.

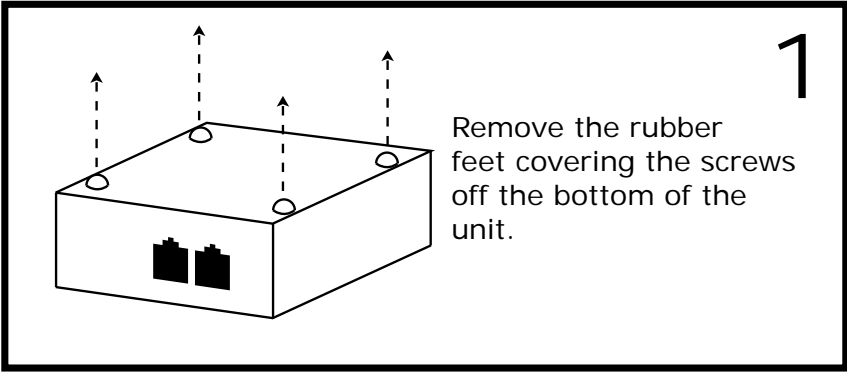
## RACK MOUNT INSTALLATION

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

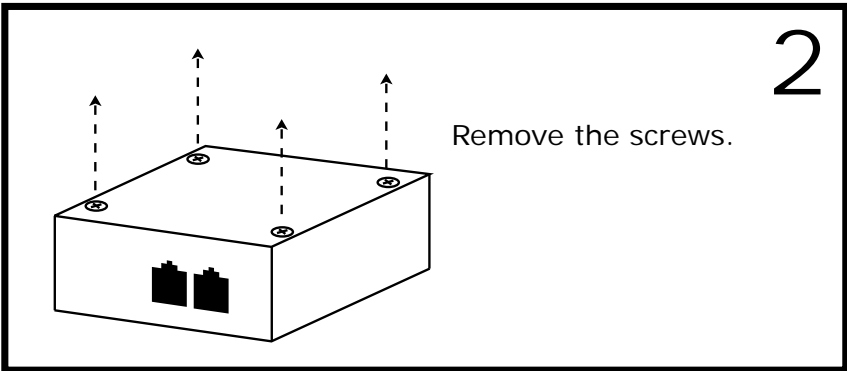
1. Locate the side screws on the unit.
2. Remove the front 2 screws that are located closest to the front of the unit.
3. Using the removed screws, screw the rack mounting bracket into the unit.
4. Repeat the procedure on the opposite side of the unit.



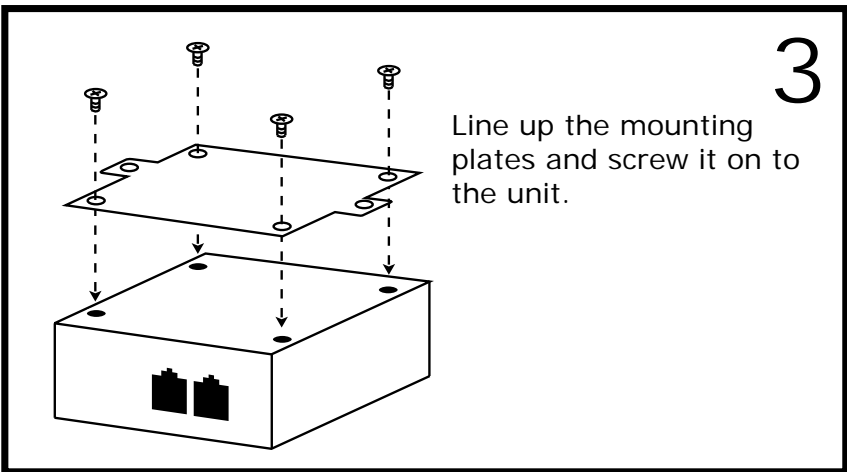
# Mounting Plate Installation



Remove the rubber feet covering the screws off the bottom of the unit.



Remove the screws.



Line up the mounting plates and screw it on to the unit.

## SPECIFICATIONS

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Video Amplifier Bandwidth .....	4 x 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 .....	Type A 19 Pin Female
Link Connector .....	RJ-45
Power Consumption .....	60 watts (max)
Transmitter Power Supply .....	24V DC
Receiver Power Supply .....	5V DC
Dimensions .....	17" W x 1.75" H x 5.875" D
Shipping Weight .....	10 lbs.