

Gefen

HDMI™ IR CAT-5 Extender

EXT-HDMIIR-CAT5

User Manual



www.gefen.com

1080P
PROGRESSIVE

HDMI™
HIGH DEFINITION MULTIMEDIA INTERFACE

CDTV

Blu-ray Disc™

ASKING FOR ASSISTANCE

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Notice

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INTRODUCTION

Congratulations on your purchase of the HDMI CAT-5 IR 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 CAT-5 IR Extender

Extending state-of-the-art digital video displays, computer monitors and IR control signals has never been easier.

Distances of up to 150 feet at 1080p resolution (300 feet at 1080i resolution) are guaranteed to perform beautifully, giving you a reliable method of all-digital extension while streamlining your installation cabling needs.

How It Works

At the A/V source end, you connect the HDMI CAT-5 IR Extender Sender unit to your HDMI source and its IR blaster to your devices IR eye using the supplied cables. At the remote end, your HDMI display connects to the HDMI IR Extender's Receiver unit. Two CAT-5 cables connect the Sender and the Receiver units to each other, allowing for up to 300 feet of A/V source extension. Power-cycle all equipment and you will experience remote HDTV extension with full IR control of your HDMI source.

For a sleeker appearance of your A/V equipment and greater installation flexibility, optional Gefen IR eye (EXT-RMT-EXTIR) can be used to completely hide the HDMI IR Receiver.

Note: The HDMI CAT-5 IR Extender system is HDCP compliant.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE HDMI CAT-5 IR EXTENDER

- 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.
- If EMI (Electromagnetic Interference) is present anywhere near the CAT-5, CAT-5e or CAT-6 video cables it may be necessary to use shielded cables. This is to prevent possible interference from degrading the video signal. Using shielded cable, however, will reduce the maximum distance that the cables can be extended.
- Extensions under 130 feet (40 meters) can use Auto Equalization (Auto EQ) which is on by default. Extensions over 130 feet (40 meters) will require you to manually equalize your signal (see page 9).
- IR repeater functionality is only from the receiving unit to the sending unit. IR data cannot be transmitted from the sending unit to the receiving unit.
- Each cable run must be one continuous run from one end to the other. No splices or use of punch down blocks.
- High quality Shielded 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 1.2 Compliant and HDMI 1.3 Compatible
- HDCP Compliant.

FEATURES

Features

- Supports resolutions up to 1080p, 2K, and 1920 x 1200
- Sends video up to 300 feet (1080i) / 150 feet (1080p) away
- Small and Compact, easy to install
- Improved compensation for cable skew
- A/V signals are sent digitally over CAT-5 cable for zero signal loss
- Eliminates equipment noise in the viewing environment
- Extends any IR device
- HDMI/HDCP Compliant

Package Includes

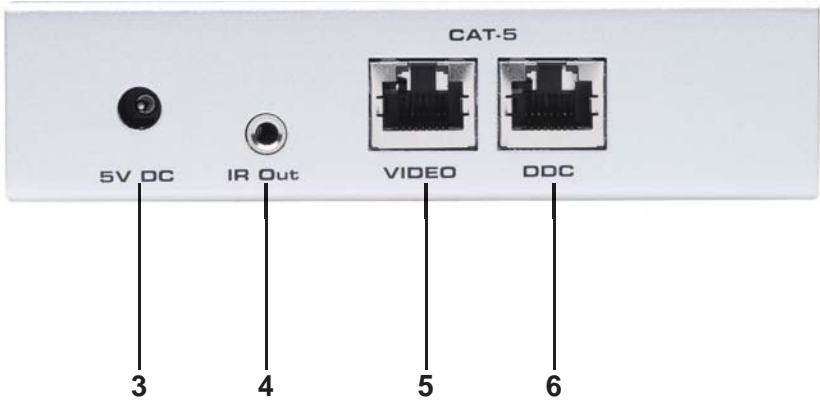
- (1) HDMI CAT-5 IR Sender
- (1) HDMI CAT-5 IR Receiver
- (1) 6 Foot HDMI Cable (M-M)
- (1) IR Blaster
- (2) 5V DC Power Supplies
- (1) Owner's Manual

SENDER PANEL LAYOUT

Front Panel



Back Panel



SENDER PANEL DESCRIPTIONS

1 LED Power Indicator

This LED will become active once the included 5V DC power supply is properly connected between the sender and an open wall power socket.

2 HDMI Input

This input will accept one HDMI source device that will be extended to the receiver's location.

3 5V DC Power Receptacle

This receptacle will require power from the included 5V DC power supply for proper operation.

4 IR Out (Blaster)

The included IR transmitter (blaster) connects to this output port. The IR blaster's IR emitter will need to be placed on or near the IR receiver of a device for proper relaying of commands from the receiver.

5 Video CAT-5 Port

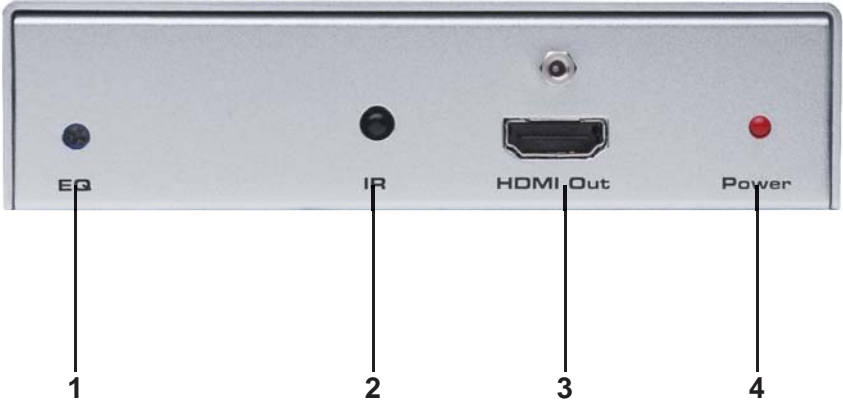
This port is used to connect the sending and receiving units together for Video traffic. Use a CAT-5, CAT-5e or CAT-6 cable. When field terminating cable please adhere to the TIA/EIA-568-B specification (page 12).

6 DDC CAT-5 Port

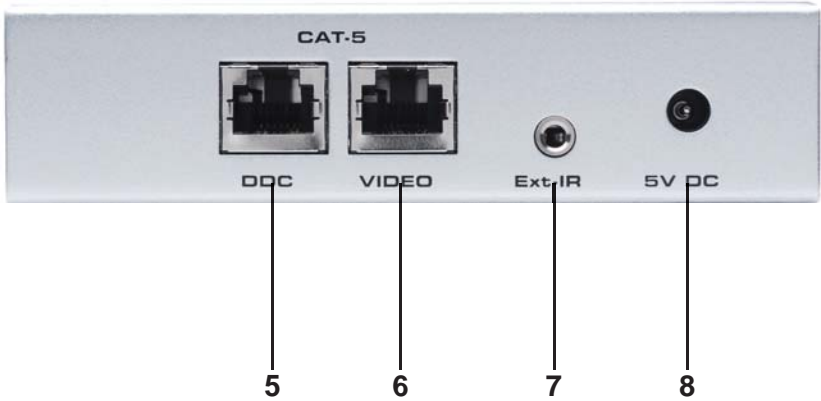
This port is used to connect the sending and receiving units together for DDC traffic. Use a CAT-5, CAT-5e or CAT-6 cable. When field terminating cable please adhere to the TIA/EIA-568-B specification (page 12).

RECEIVER PANEL LAYOUT

Front Panel



Back Panel



RECEIVER PANEL DESCRIPTIONS

1 Equalization Adjustment

This Trim Pot is used to adjust the equalization that compensates for the differences that are present in cable qualities and skews. Automatic equalization (Auto EQ) is available and is set to on by default. Cable lengths that exceed 130 feet (40 meters) should not use Auto EQ.

2 Infrared (IR) Receiver

This IR receiver will relay IR commands from the receiving unit to the sending unit for output to a IR transmitter (blaster) on a IR controllable device.

3 HDMI Input

This input will accept one HDMI source device that will be extended to the receiver's location.

4 LED Power Indicator

This LED will become active once the included 5V DC power supply is properly connected between the sender and an open wall power socket.

5 Video CAT-5 Port

This port is used to connect the sending and receiving units together for Video traffic. Use a CAT-5, CAT-5e or CAT-6 cable. When field terminating cable please adhere to the TIA/EIA-568-B specification (page 12).

6 DDC CAT-5 Port

This port is used to connect the sending and receiving units together for DDC traffic. Use a CAT-5, CAT-5e or CAT-6 cable. When field terminating cable please adhere to the TIA/EIA-568-B specification (page 12).

7 Infrared (IR) Receiver Extension Port

This port will accept an optionally purchased IR extension cable (Gefen part# EXT-RMT-EXTIR). This is useful for installations where the IR receiver, located on the front panel (Item 2 on this page), is not in line-of-sight with the IR remote control used to relay commands to the device at the sender's location.

8 5V DC Power Receptacle

This receptacle will require power from the included 5V DC power supply for proper operation.

CONNECTING AND OPERATING THE HDMI CAT-5 IR EXTENDER

How to Connect the HDMI CAT-5 IR Extender

1. Connect a HDMI cable (supplied) between the HDMI source device's output and the HDMI CAT-5 IR Extender sending unit's input.
2. Optionally, connect the mini-plug from the included IR transmitter (blaster) to the HDMI CAT-5 IR Extender sending unit. Remove the adhesive on the IR blaster located on the opposite end of the cable. Place the IR blaster on or near the IR receiver of the device that is intended for control by the IR remote control at the receiver's location.
3. Connect the sending and receiving units together using a pair of CAT-5, CAT-5e or CAT-6 cables. Use one cable to link the VIDEO ports together and the other cable to link the DDC ports together.

NOTE: When field terminating cabling please adhere to the TIA/EIA-568-B specifications (page 12). Please ensure that the cables are not crossed; i.e. VIDEO to the DDC ports or DDC to the VIDEO ports.

4. Connect a HDMI cable (user supplied) between the HDMI capable device's input (i.e. display) and the HDMI CAT-5 IR Extender receiving unit's output.
5. Connect both of the included 5V DC power supplies between the HDMI CAT-5 IR Extender sending and receiving units and open wall power sockets.
6. Initialize (power on) the output device (i.e. display) first and the source device second.

IR Relay Feature

If the IR transmitter (blaster) is connected to a device, step 2 above, it will be possible to relay IR commands from the receiver to the connected device at the sender's location. Simply point the connected device's IR remote at the IR receiver on the HDMI CAT-5 IR Extender receiving unit and it will relay all button presses back to the sender and out through the IR transmitter (blaster). Ultimately, this will allow the user to control a single device from the extended location.

ADJUSTING THE HDMI CAT-5 IR EXTENDER

Auto Equalization (Auto EQ)

The HDMI CAT5 Extender has advanced equalization circuitry to compensate for the differences that are present in CAT-5 (CAT-5e or CAT-6) cable quality and skew. Auto EQ is enabled by default. In some cases Auto EQ may not result in an optimal video signal. If either of the two following conditions are experienced, Auto EQ will have to be disabled and manual adjustment procedures will need to be applied.

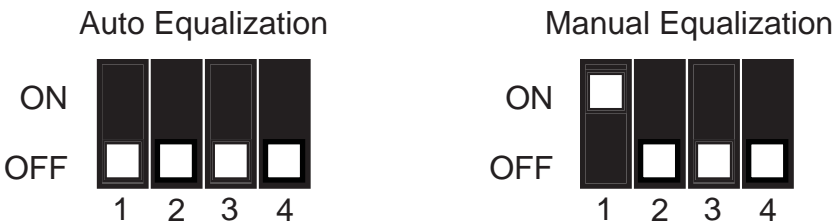
1. The CAT-5, CAT-5e or CAT-6 cable length exceeds 130 feet (40 meters). This distance estimate is based on high quality CAT-6 cabling. The actual distance at which Auto EQ will operate is based on the cabling used.
2. There is no video output from the HDMI CAT-5 IR Extender receiving unit upon initialization of all connected devices.

Manual Equalization

Manual equalization uses two settings (Boost and Equalization) to produce an optimal video signal. These two adjustment options will need to be jointly adjusted as they are related to each other.

Setting Manual Equalization

Manual equalization is set by accessing a bank of 4 DIP switches on the underside of the HDMI CAT-5 IR Extender receiving unit. The bank of 4 DIP switches is located underneath a piece of metallic colored tape. Remove this tape to expose the DIP switches. Only DIP switch 1 is used on this bank. DIP switches 2 through 4 are not used. Auto EQ is on by default (DIP switch 1 is OFF). To turn OFF Auto EQ and enter manual equalization mode, turn DIP switch 1 ON. Please see the illustration below.

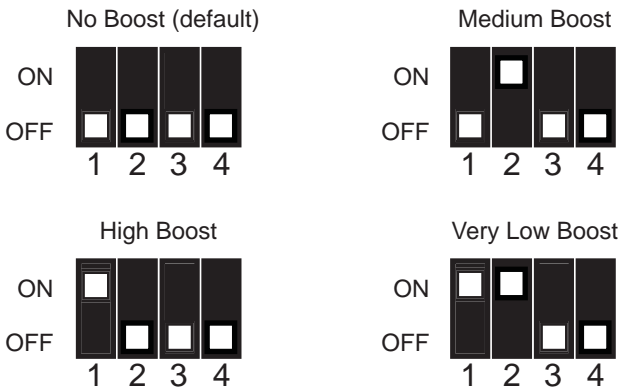


ADJUSTING THE HDMI CAT-5 IR EXTENDER

Boost

The boost setting will affect the amount of pre-emphasis that will be applied to the video signal. This setting is located on the HDMI CAT-5 IR Extender sending unit and has 4 distinct strength settings. This setting is mainly related to the distance of CAT-5, CAT-5e or CAT-6 cabling used but is also affected by the quality and skew of the cabling. The boost settings are set using a bank of DIP switches on the underside of the HDMI CAT-5 IR Extender sending unit. The bank of 4 DIP switches is located underneath a piece of metallic colored tape. Remove this tape to expose the DIP switches. Only DIP switches 1 and 2 are used on this bank. DIP switches 3 and 4 are not used. The default position of all DIP switches are OFF (no boost). Please see the table and illustration below for configuration options.

Sender Dip Switch Settings		
Setting	Switch 1	Switch 2
No Boost (Default)	OFF	OFF
Medium Boost	OFF	ON
High Boost	ON	OFF
Very Low Boost	ON	ON



Equalization

The equalization setting will tune the signal effectively eliminating any video noise. This setting is located on the HDMI CAT-5 IR Extender receiving unit in the form of a Trim Pot adjustment dial. To adjust the equalization follow the instructions below.

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 break the trim pot.
3. Slowly turn the trim pot counter-clockwise in millimeter increments until the image stabilizes and all video noise is eliminated.
4. Carefully remove the adjustment tool.

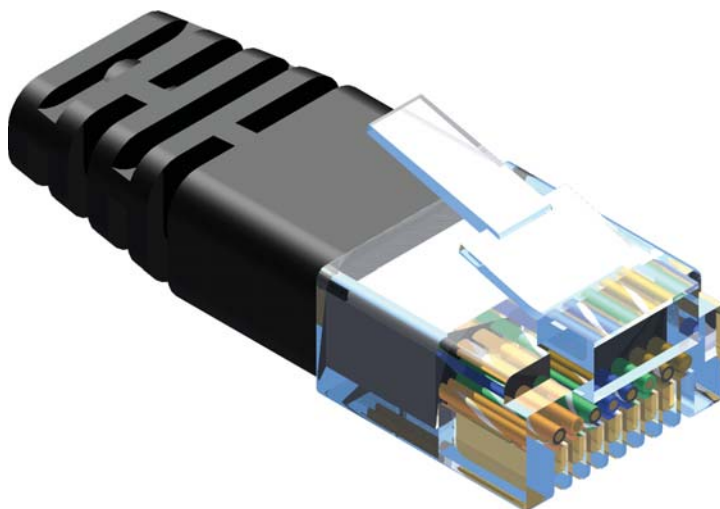
ADJUSTING THE HDMI CAT-5 IR EXTENDER

Adjustment Procedure

Please follow the steps below to manually adjust the equalization.

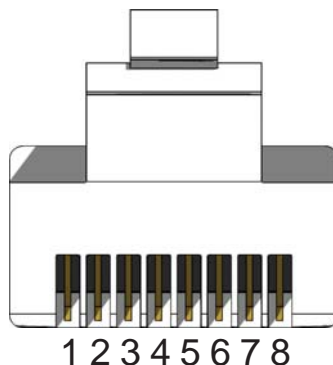
1. Turn on manual equalization mode.
2. Attempt to equalize the signal using the equalization Trim Pot on the receiving unit. If video output is not visible or is unsatisfactory after rotating the Trim Pot dial through it's entire range proceed to step 3.
3. Increase the boost setting using the DIP switches on the sending unit.
4. Re-attempt to equalize the signal using the equalization Trim Pot on the receiving unit with the new boost setting. If video output is still not visible or is unsatisfactory after rotating the Trim Pot dial through it's entire range repeat steps 3 and 4 until the video output stabilizes and all video noise is eliminated.

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.

SPECIFICATIONS

Single-Link Range	1080p/1920x1200
Input Video Signal	1.2V p-p
Input DDC Signal	5V p-p (TTL)
HDMI Connector	Type A 19-pin Female
Link Connector	RJ-45 Shielded
Power Supply	5V DC
Power Consumption	10 Watts (maximum per unit)
Dimensions	3.4 x 5.9 x 1.3 inches
Shipping Weight	4 lbs.

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.



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