

Gefen

®

Extender for HDMI 1.3 over CAT5 with Ethernet

EXT-HDMI1.3-CAT5-ELR
User's Manual



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Notice

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CONTENTS

- 1 Introduction**
- 2 Operation Notes**
- 3 Features**
- 4 Sender Panel Descriptions**
- 5 Receiver Panel Descriptions**
- 6 Connecting and Operating the EXT-HDMI1.3-CAT5-ELR**
- 7 Network Cable Wiring Diagram**
- 8 DIP Switches**
- 9 DIP Switch Settings**
- 10 Mounting Plate Installation**
- 11 Terminology**
- 12 Specifications**
- 13 Warranty**

INTRODUCTION

Congratulations on your purchase of the Extender for HDMI 1.3 over CAT5 with Ethernet. 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 Extender for HDMI 1.3 over CAT5 with Ethernet

The Extender for HDMI 1.3 over CAT5 with Ethernet extends a Hi-Def Display with multi-channel digital audio and Ethernet at resolutions of up to 1080p60 at up to 330 feet (100 meters) away from a HDMI or DVI-D Source using one CAT-5 cable.

DVI-D is supported when used with an HDMI to DVI Adapter, providing greater flexibility and options when integrating several home theater components.

Extension of Ethernet connectivity enables internet or local area network access for HDTVs, home PCs, video game consoles, DVRs and any device that needs fast 10/100Base-T network access, at convenient locations.

The IR back-channel feature lets users control Hi-Def Sources as if they were located at the Display. IR commands are processed by the IR eye on the receiver, transmitted back over the CAT5 extension, and then sent to original A/V Source devices located by the sender unit using the IR Blaster (sold separately).

How It Works

Connect the Gefen Extender for HDMI 1.3 over CAT5 with Ethernet sender unit to the A/V and Ethernet Source devices such as infrastructure, routers and switches using short HDMI and CAT5 cables. Do the same operation between the Extender receiver and the extended HD Display and any network devices that you are connecting to. When the Extender sender and receiver units have been connected to Sources, Displays and network equipment, connect a single CAT5 extension cable between sender and receiver. The Extender sender and receiver units may be up to 330 feet apart.

Note: The Extender for HDMI 1.3 over CAT5 with Ethernet is fully HDMI and HDCP compliant.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE EXTENDER FOR HDMI 1.3 OVER CAT5 WITH ETHERNET

- The Extender for HDMI 1.3 over CAT5 with Ethernet units are housed in a metal box for better RF shielding.
- CAT-5 cables should not exceed 330 feet.
- Shielded CAT-6 with metal RJ-45 connectors are recommended to safeguard against random video flashes caused by electromagnetic interference (EMI).
- The Extender for HDMI 1.3 over CAT5 with Ethernet features the ability to generate compatible EDID and Hot Plug signals for troubleshooting purposes when dealing with difficult interfacing issues between Source devices and Displays. Please see the section on pages 8-9 that describes these capabilities.

FEATURES

Features

- Extends HDMI 1.3 at 1080p60 over Ethernet up to 330 feet along with Ethernet and IR commands
- Built-in IR extender function allows IR remote control of Source devices from remote viewing location by sending IR commands received in the vicinity of the Display back to the Source devices
- Supports resolutions up to 1080p60 and 1920 x 1200 @ 60 Hz
- Supports high bit-rate multi-channel audio formats (Dolby TrueHD / DTS Master Audio) embedded in the HDMI 1.3 signal
- Fully HDMI and HDCP compliant
- Extends Ethernet protocol from a network switch to a device up to 330 feet away
- Maximum Ethernet throughput of 100 Mbits/sec, Full Duplex mode
- Locking power connectors on the Extender units and power supplies for secure connections
- Eliminates equipment noise in the viewing environment
- All-digital signal transmission over the CAT5 cable for zero signal loss
- Built-in auto video signal equalization
- EDID and Hot Plug signal generation features for troubleshooting difficult Source-Display interfacing issues.

Package Includes

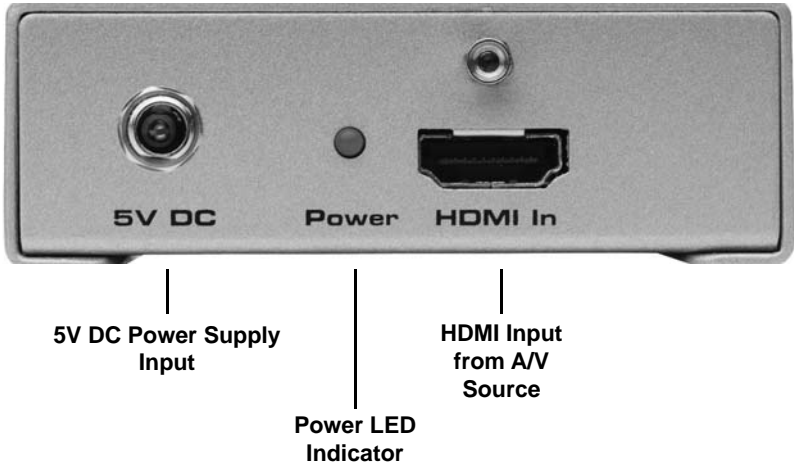
- (1) Extender for HDMI 1.3 over CAT5 with Ethernet Sender Unit
- (1) Extender for HDMI 1.3 over CAT5 with Ethernet Receiver Unit
- (1) 6 foot HDMI to HDMI locking cable (M-M)
- (2) 5V DC Power Supply with locking power connector
- (1) User's Manual

HDMI 1.3 Features

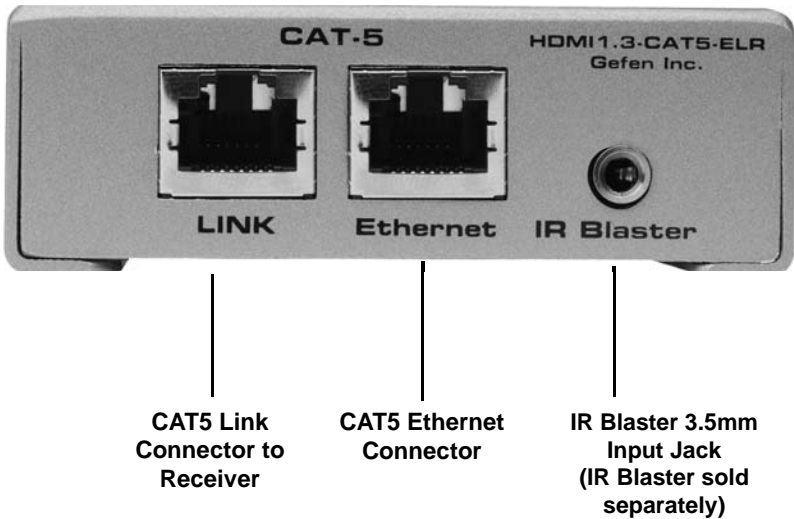
- 225 MHz (up to 12-bit YUV 444 @ 1080p)
- Dolby[™] TrueHD & DTS Master Audio
- Deep Color Supported (xv Color)
- Lip-Sync Pass-Through
- CEC Pass-Through

SENDER PANEL DESCRIPTIONS

Sender Front Panel

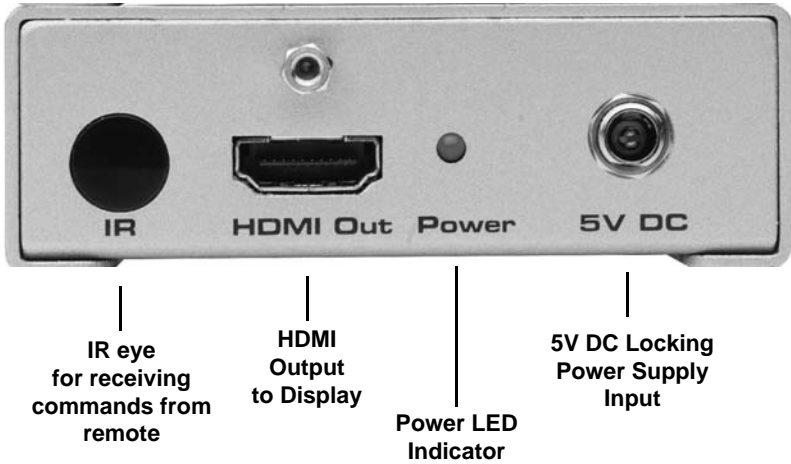


Sender Back Panel

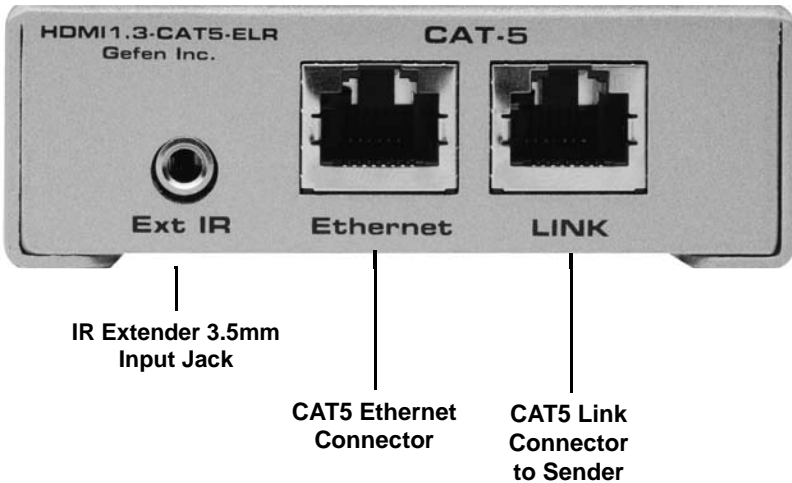


RECEIVER PANEL DESCRIPTIONS

Receiver Front Panel



Receiver Back Panel



CONNECTING AND OPERATING THE EXT-HDMI1.3-CAT5-ELR

1. The Extender for HDMI 1.3 over CAT5 with Ethernet has two parts, a sender unit and a receiver unit. Position the sender unit near the HDMI Source and the receiver near the Display. Connect the HDMI Source to the sender with the provided locking HDMI cable. Connect the Display to the receiver unit with a user-supplied HDMI cable.
2. Connect Ethernet from the device/router to the Ethernet input port on the Extender's sender unit with a user-supplied CAT-5, CAT-5e or CAT-6 cable. Connect the Ethernet output port on the receiver to the remote device/router with a user-supplied CAT-5, CAT-5e or CAT-6 cable.
3. Connect the sender and receiver units together using one user-supplied CAT-5e or CAT-6 cables.

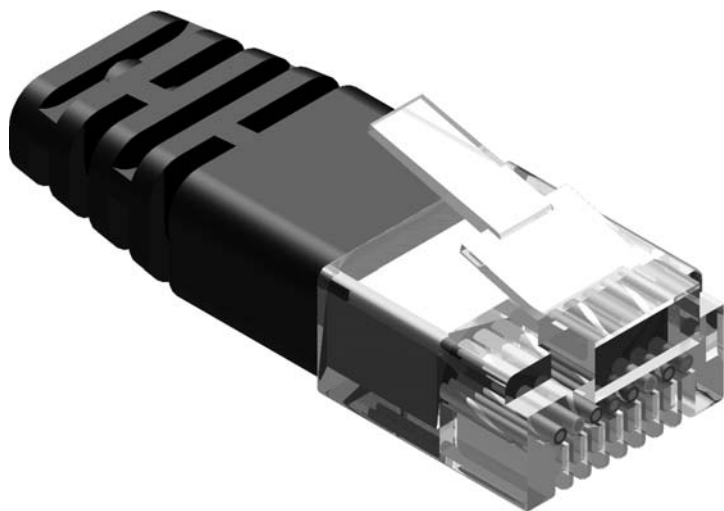
NOTE: If terminating network cables in the field, please adhere to the TIA/EIA568B specification. Please see the next page (7).

4. Screw in the two threaded 5V DC power supplies' power tips into the Extender's sender and receiver units, being careful not to overtighten the locking connectors. Plug the two power supplies' AC adaptors into available wall outlets. The Sender and Receiver units will now power up.

NOTE: If the power LED indicator on the receiver unit is not on, please check to make sure that the RJ-45/CAT5 cables are not crossed (Ethernet to CAT5 Link instead of Ethernet to Ethernet, for instance).

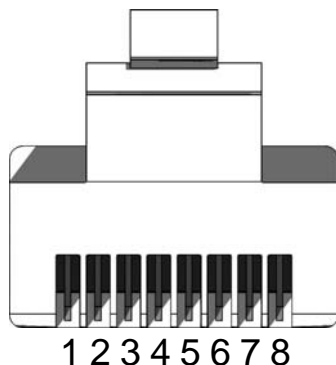
5. Power on the Display and the Source. A vibrant HD picture will be seen, accompanied by multichannel digital audio (if the Display is capable of audio).
6. Should difficulties be encountered when interfacing specific brands of equipment, please use the features described on pages 8 and 9 which will aid in troubleshooting and/or which may enable intended operation of the A/V equipment in question.

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 are allowed since their use can cause a break in the electronic signal.

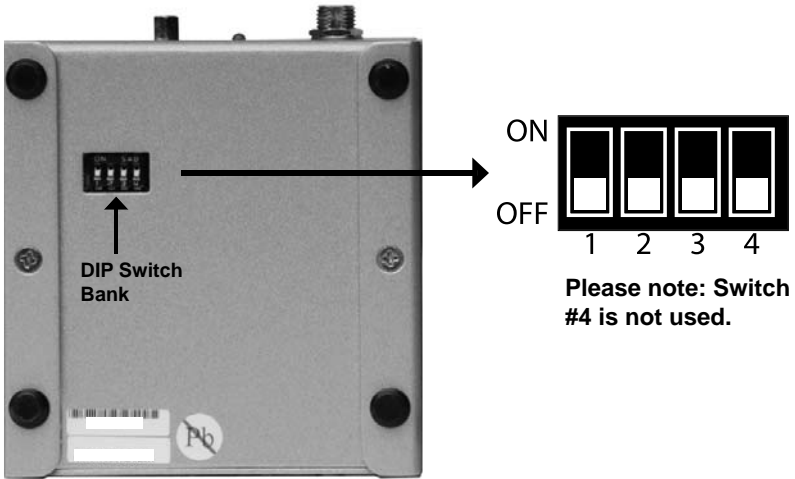
DIP SWITCHES

Underneath the EXT-HDMI1.3-CAT5-ELR there is a small bank of four (4) configuration switches known as DIP (dual inline package) Switches.

The DIP Switches allow advanced control over the behavior of the EXT-HDMI1.3-CAT5-ELR which may be necessary when troubleshooting or interfacing different brands of hardware. The DIP Switches allow control over the EDID data, the Hot Plug Detect (HPD) status signal, and the HDCP copy protection protocol (please see the Glossary on page 11 for an explanation of related Terminology).

The DIP Switches may be accessed by gently removing the strip of silver-grey tape covering the DIP Switch bank on the underside of the Receiver unit. Please refer to the photo immediately below:

Receiver Unit (underside)



Switches 1-3 are used to set behavioral parameters of the Extender. Switches should only be moved with a small pointed object such as a toothpick or a small screwdriver.

DIP SWITCH SETTINGS

DIP 1

ON (default)

- DDC and HPD are passed through. Both the connection status and the full A/V capabilities of the display. The HPD status will also be detected by the source device.

OFF

- Local EDID is used instead of the EDID from the display device. EDID features newer than HDMI 1.3 are removed when the display is read. This provides a general EDID which is compatible with more displays.

DIP 2*

ON

- HPD follows upstream HPD towards the source. The HPD signal will reflect the connection status between the display device and the source device. If the source or display is temporarily disconnected then reconnected, there will be a delay of 20 - 30 seconds before the A/V content is restored to the display.

OFF (default)

- The HPD signal remains high regardless of the downstream HPD state. If the source or display device does not properly handle HPD (no picture after connecting / reconnecting source or display), set this DIP switch to the OFF position.

DIP 3*

ON

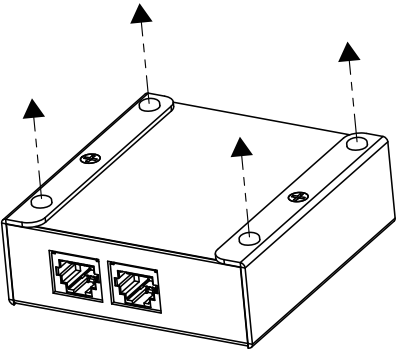
- HDCP is disabled. In this state, the source cannot access the display via DDC. Only the local EDID is read by the source device.

OFF (default)

- HDCP is enabled.

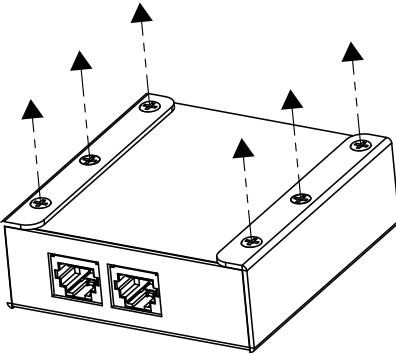
**DIP switch is only functional when DIP switch 1 is set to OFF.*

MOUNTING PLATE INSTALLATION



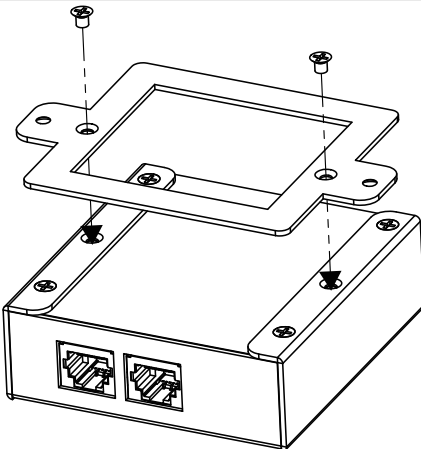
1

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



2

Remove the screws.



3

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

TERMINOLOGY

CAT-5/CAT5e

Category 5 cable, commonly known as Cat 5, is an unshielded twisted pair type cable designed for high signal integrity. The actual standard defines specific electrical properties of the wire, but it is mostly known as being rated for its Ethernet capability of 100 Mbit/s. Its specific standard designation is EIA/TIA-568. Cat 5 cable typically has 3 twists per inch of each twisted pair of 24 gauge copper wires within the cable. **CAT-5e** is similar to Cat 5 cable, but is enhanced to support speeds of up to 1000 Megabits/sec.

DDWG

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

DVI

Digital Visual Interface. A digital video standard established by DDWG, designed to carry uncompressed digital video signals to a Display.

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).

HDCP

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

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-def scan rates.

HPD

Hot Plug Detect. HPD is an electronic status signal which is used to signal the presence of absence of a Display device on the output of a digital audio/video interface, usually an A/V media player, scaler, splitter, etc.

EDID

Electronic Data Information Display. EDID is an electronic ID containing the capabilities of an audio/video output device such as an HDTV. Source devices will read the EDID of a Display or output device in order to know what resolution(s) should be used to draw a picture and how many channels to use when playing audio.

DDC

Display Data Channel. Provides information which allows rendering of a video picture.

SPECIFICATIONS

Video Amplifier Bandwidth	225 MHz
Input Video Signal	1.2 Volts p-p
Input DDC Signal	5 Volts p-p (TTL)
Max. Video Resolution Supported	1080p60 / 1920x1200@60 Hz
Max. Ethernet Data Transfer Rate.....	100 Mbps
Ethernet Packet Transmission Mode (Duplex):	Full
HDMI Input/Output Connector Type	Type A 19 Pin Female
Link Connector	RJ-45 Shielded
Power Input Connector :	5V DC locking jack
Power indicator LED:	Red (active when unit is powered)
Power Consumption	10 Watts (max) per unit
Power Supply	5V DC
Dimensions	3.4" D x 3.25" W x 1.25" H
Shipping Weight	3 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.

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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