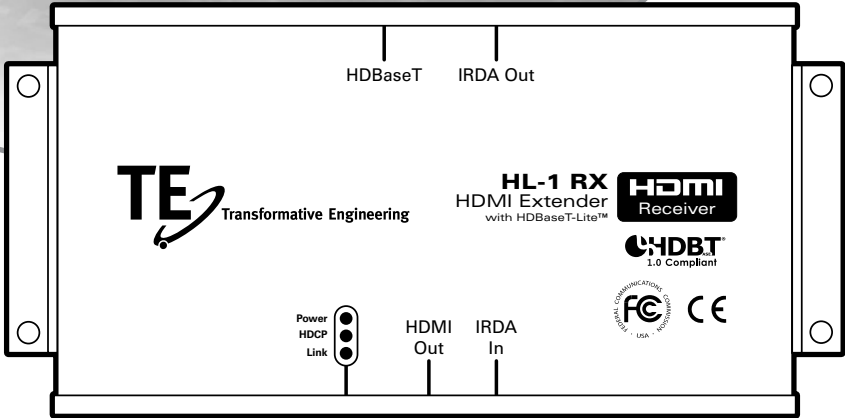


# HL-1

## HDMI Extender System

### Installation Manual





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# Introduction

## INTRODUCTION

Thank you for purchasing Transformative Engineering's HL-1 HDMI Extender Kit. This product incorporates many advanced technologies to accomplish full-function, 1.4a HDMI compliant extension of the High Definition MultiMedia Interface protocol over one length of Category 5e/6/7 wire. Among these is the newly certified HDBase-T technology, licensed here. This unique conversion of HDMI signals provides for the most reliable, stable and predictable method to transfer all HDMI requirements. More information on this technology may be found at the HDBase-T website, [www.hdbaset.com](http://www.hdbaset.com). We are proud to be an early Adopter Member of the Alliance.

Proper connection and attention to limitations of this (or any other) product will result in secure, reliable, and predictable results. The most important variable to success will depend on wire chosen as the interconnection between our Transmitter and Receiver. All Category wire is not created equal. It is vital that care is taken at all times to avoid kinks, crimps, nicks, and other abuse of the wire and jacket. Also, we highly recommend that all wire be sweep tested before and after installation to insure full bandwidth is not impaired. A sweep-test generator, such as the Fluke CableIQ Qualification Tester, or its equivalent, is suggested. Please be sure to specify Category 5e, or better, cable that meets a minimum of 400MHz bandwidth. Typical high-quality Category 6 cable performs from 550-850 MHz, and Category 7 cable should pass 1GHz or more.

This HDMI Extender will meet our rated specifications using CAT 5e/6/7 UTP cable. It will also perform with STP (shielded twisted pair) cable as well. **MOST FAILURES OR INCONSISTENT PERFORMANCE ARE THE RESULT OF INFERIOR WIRE OR IMPROPER TERMINATIONS.** The first step in diagnosing problems with this product should center on the connection and choice of the wire used.

Please follow the instructions and diagrams shown in this Manual. Any questions should be directed to your Dealer, Distributor, or to our Technical Department. Our Contact information is:

Transformative Engineering, Inc.  
229 Carnegie Row  
Norwood, MA 02062-5000  
Telephone: 781-769-6410  
Fax: 781-255-0975

Email: [info@transformativeengineering.com](mailto:info@transformativeengineering.com)



# Kit Contents

## **KIT CONTENTS**

- (1) HL-1 Transmitter Unit (HL-1TX)
- (1) HL-1 Receiving Unit (HL-1RX)
- (1) 24V 8.5Watt Power Supply
- (4) Nylon “Tie-Wrap” Mounting terminals
- (2) Heat-Transfer tape Strips
- (4) Metal Mounting Tabs & Screws
- (1) User Manual

# Features

## FEATURE SET

- HDMI 1.4a Extender
- Full HDCP Security
- EDID Protocol Integrity
- Bi-Directional IR Pass-Thru with Power for Active Pickup
- 24V Power Supply for Robust Performance
- Single Power Supply for Head-End Powering of Both Units
- Extruded Aluminum Construction with Flexible Mounting Options



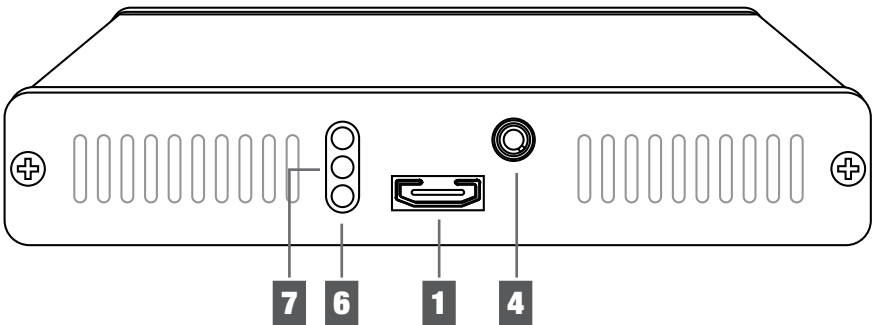
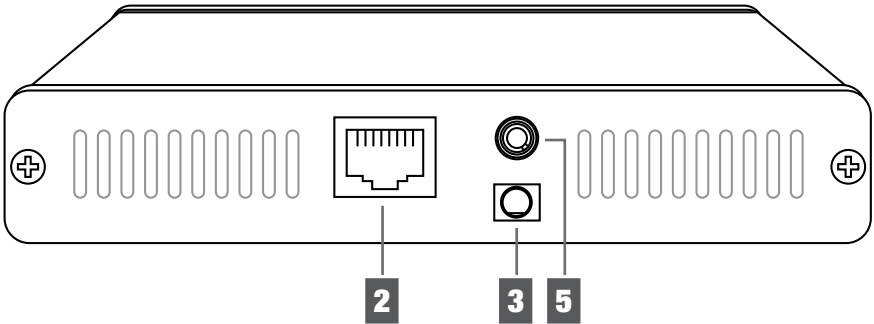
# Specifications

## SPECIFICATIONS

Input Signal:	HDMI Version 1.0 thru 1.4a Ethernet (10/100T) IR Signal – Pass Thru (Industry Compatible) IR Powered Pickup – Ring (Ground), Tip (Signal), Sleeve (+12VDC) (see page 8)
Video Formats Supported:	480i/576i/480p/576p/720p/1080i/1080p
Audio Formats Supported:	All HDMI Supported Formats, including DTS-HD, Dolby-HD, DVD-A, Dolby TrueHD, 8-CH LPCM
Output Signal:	HDMI Version 1.0 thru 1.4a Ethernet (10/100T) X 6 IR Signal – Pass Thru (Xantech Compatible) (See page 8)
Maximum Distance (with CAT6):	70 Meters (230 Feet), @ 1080p
Power Supply X1 (supplied):	24 VDC, 8.5 Watts, Each
Dimensions (Each)	9.0" W x 1.1" H x 3.75" D
Weight:	1.0 Lbs (Each)

# Transmitter Connections

## TRANSMITTER



**1** HDMI Input

**5** IRDA OUT

**2** HDBase-T Link Connection

**6** Link Indicators

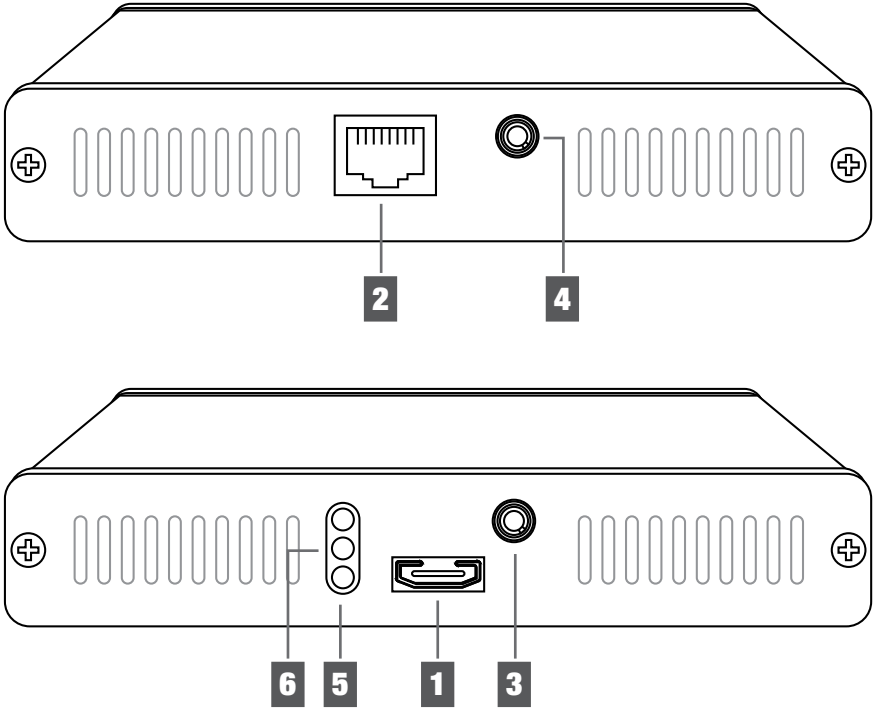
**3** Power Input

**7** HDCP Indicator

**4** IRDA IN

# Receiver Connections

## RECEIVER



**1** HDMI Output

**4** IRDA OUT

**2** HDBase-T Link Connection

**5** Link Indicators

**3** IRDA IN

**6** HDCP Indicator



# Transmitter Functions

## TRANSMITTER FUNCTIONS - See pg 7

**1 HDMI Input** – Connect this to your HDMI Source – Cable Box, Disc Player, etc.

**2 HDBase-T Link Connection** – Connect via Category 5e/6/7 cable to the HL-1 Receiver Unit ONLY. DO NOT CONNECT THIS RJ-45 CONNECTOR TO ETHERNET. DAMAGE TO THIS PRODUCT AND YOUR NETWORK MAY RESULT. Recommended minimum length is 2 Meters up to our maximum rated specification of 70 Meters.

**3 Power Input** – Utilizing the supplied 24V 8.5W supply, connect at the Transmitter side where indicated. No Power Supply is then necessary at the Receiver side.

**4 IRDA In** – Used for connecting to a 12V Powered Infra-Red Pickup Device via 3-conductor mini-jack, or to IR encoded signal for Pass-Thru to the IRDA OUT at the Receiver end. Contact TE to purchase an adaptor if you are using a lower voltage IR device. See Diagram above for suggested use.

**5 IRDA Out** – Used for connecting to an Infra-Red Emitter for controlling a device at this end. The IR Signal would originate from the Receiver end either from a Powered Pickup or an IR Pass-Thru.

**6 Link Indicators** – These lights show that communication has been properly established with the HDBase-T Receiver. No other connections need be made for these lights to indicate your connection is secure. If the “POWER” light is not on, you should check that both power supplies are properly connected.

# Receivers Functions

**7 HDCP Indicator** – This light shows that a valid HDMI connection has been made, “handshake” has taken place, and there is a High Definition Copy Protect flag in operation. Attempts to copy Digital content will not be allowed. Any connection to a non-compliant Digital copy device will cause this light to go off, and will result in the loss of signal.

## RECEIVER FUNCTIONS - See Page 8

**1 HDMI Output** – Connect this to your Display device – TV, Projector, etc. All video signals input to the HDMI Input on the Transmitter will appear here.

**2 HDBase-T Link Connection** – Refer to Item (4) above.

**3 IRDA In** – Used for connecting to a Powered Infra-Red Pickup Device (Industry compatible) via 3-conductor mini-jack, or to IR encoded signal for Pass-Thru to the IRDA OUT at the Transmitter end. See Diagram above for suggested use.

**4 IRDA Out** – Used for connecting to an Infra-Red Emitter for controlling a device at this end. The IR Signal would originate from the Transmitter end either from a Powered Pickup or an IR Pass-Thru.

**5 Link Indicator** – Refer to Item 9, Above.

**6 HDCP Indicator** – Refer to Item 10, above

# Troubleshooting

## **TROUBLESHOOTING**

As mentioned previously, most malfunctions can be addressed by careful examination of the Category cable terminations and suitability of the UTP cable itself. Once the “Link” lights are on, this system is operating normally. Lack of function should be traced to a failure in HDMI interconnection cables or device settings. If all this has been examined with no resolution of your problem, please contact our Technical Support Department at 781-769-6410 or via email at: [info@transformativeengineering.com](mailto:info@transformativeengineering.com).



# Warranty

## WARRANTY

Transformative Engineering, Inc. guarantees this product for Two Years from your original purchase. We guarantee performance and operation to published specifications including all parts and labor. We do not warranty against mis-use or abuse. To obtain warranty service, please contact our Technical Support Department at 781-769-6410 or via email at: [info@transformativeengineering.com](mailto:info@transformativeengineering.com).



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