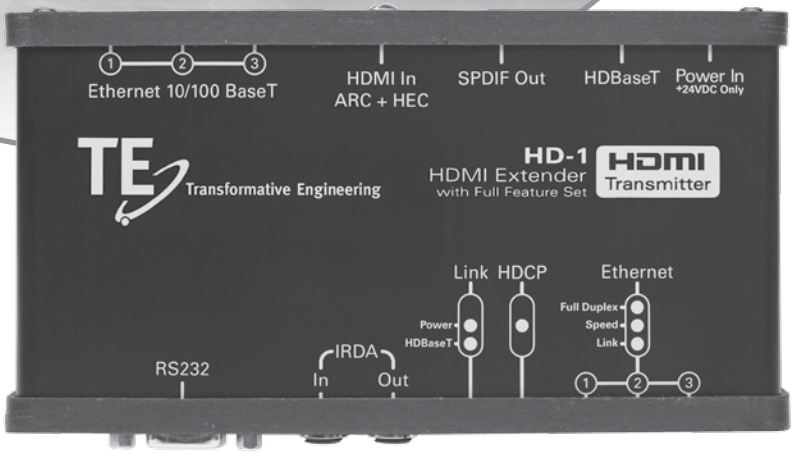
HD-1

HDMI Extender System

Installation Manual



Transformative Engineering

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INTRODUCTION

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:

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229 Carnegie Row
Norwood, MA 02062-5000
Telephone: 781-769-6410
Fax: 781-255-0975
Email: info@transformativeengineering.com

Introduction

Thank you for purchasing Transformative Engineering's HD-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 HDMI Certified HDBase-T technology. 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. 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.

Safety Information

SAFETY INFORMATION

- Do not expose this device to water, moisture, or liquids. Possible electric shock may result as well as failure of the unit to operate.
- Do not modify or disassemble the enclosed Power Supply. Doing so will void the warranty and potentially expose the user to dangerous voltages resulting in an electrical shock.
- Do not substitute or use any other Power Supply other than the enclosed unit, or a Transformative Engineering approved Replacement Part. Doing so will void the warranty and potentially expose the user to dangerous voltages resulting in an electrical shock.
- Do not disassemble either the Transmitter or Receiver for any reason. There are no user serviceable parts inside. Doing so will void the manufacturer's warranty. Also, our unique case is an integral part of the design of this unit and is responsible for cooling and circuitry shielding. Any modifications to this case will potentially cause malfunction and product failure.

KIT CONTENTS

(1) HD-1 Transmitter Unit (HD-1T)

(1) HD-1 Receiving Unit (HD-1R)

(1) 24V, 1A Power Supply

(4) Nylon "Tie-Wrap" Mounting terminals

(1) Installation Manual

Features

FEATURE SET

- HDMI 1.4a Extender
- Full HDCP Security
- EDID Protocol Integrity
- Ethernet Over HDMI (HEC)
- 6-Port Ethernet (10/100T) Switch
- Audio Return Channel (ARC)
- Full (Active 9-Pin) RS-232 Bi-Directional Pass-Thru
- Bi-Directional IR Pass-Thru with Power for Active Pickup
- TOSLINK Audio Take-Off (For ARC Compatibility with Legacy Components)
- Single 24V Power Supply for Robust Performance and ease of installation
- Optional Dual Power Supply configuration for special applications
- Extruded Aluminum Construction with Flexible Mounting Options

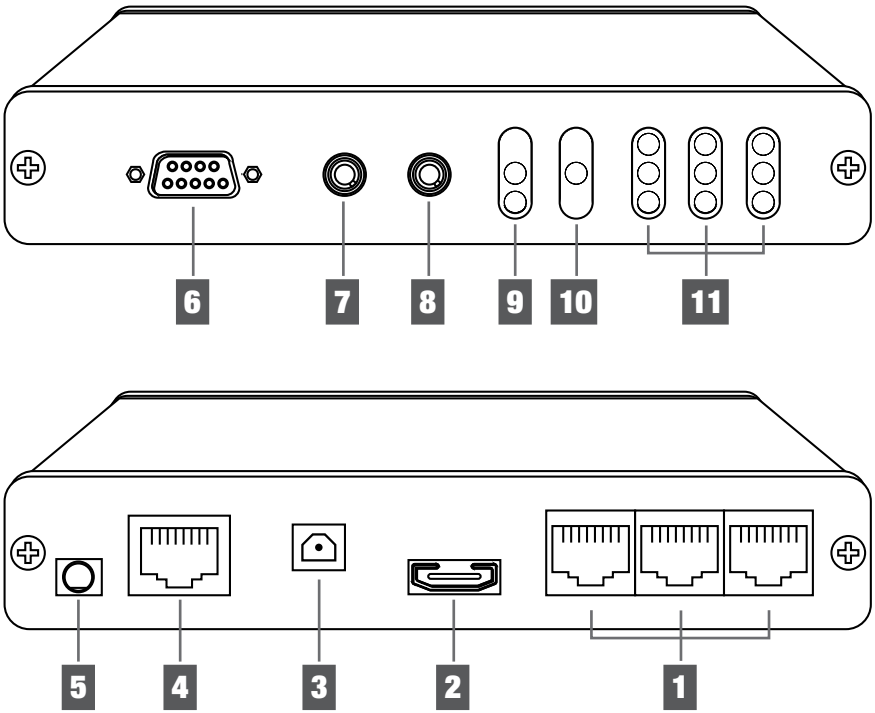
Specifications

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)
	RS232 – 9-Pin Fully Active (see Page 8)
	TOSLINK (For Audio Return)
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)
	RS232 – 9-Pin Fully Active (see page 8)
	TOSLINK (Digital Audio Out)
Maximum Distance (with CAT6):	100 Meters (328 Feet), @ 1080p
Power Supply (supplied):	24V, 1A, for connection to Transmitter Unit only
Dimensions (Each):	9.0” W x 1.1” H x 3.75” D
Weight:	1.25 Lbs (Each)

Transmitter Connections

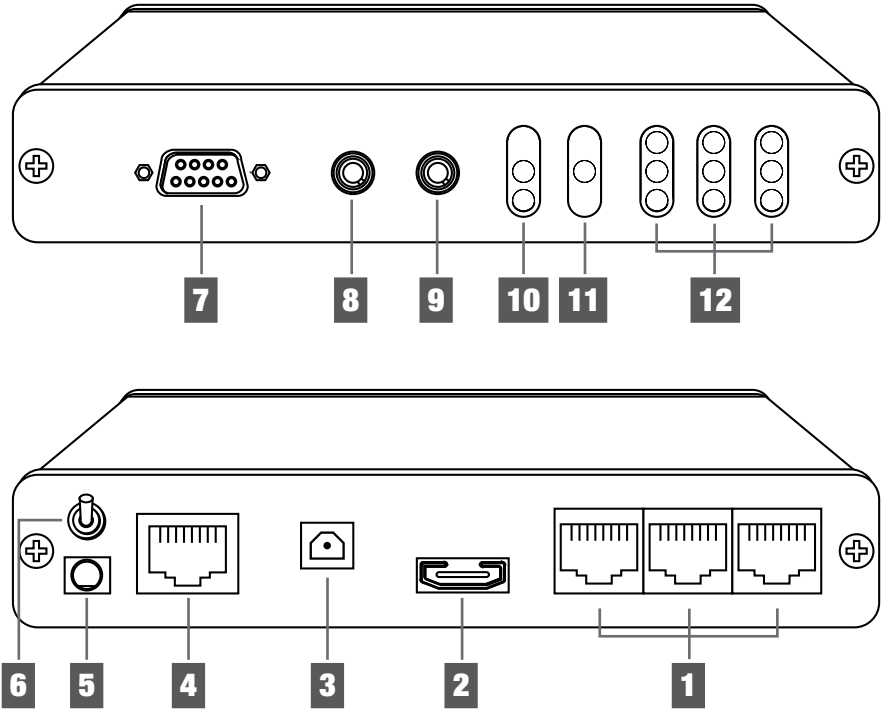
TRANSMITTER



1. Ethernet Input/Output Ports
2. HDMI Input
3. SPDIF Output
4. HDBase-T Link Connection
5. Power Input (required)
6. RS-232 Connection
7. IRDA IN
8. IRDA OUT
9. Link Indicators
10. HDCP Indicator
11. Ethernet Diagnostic Indicator

Receiver Connections

RECEIVER



1 Ethernet Input/Output Ports

2 HDMI Output

3 SPDIF Input

4 HDBase-T Link Connection

5 Power Input - For Optional 2nd Supply ONLY

6 ARC/SPDIF Switch

7 RS-232 Connection

8 IRDA IN

9 IRDA OUT

10 Link Indicators

11 HDCP Indicator

12 Ethernet Diagnostic Indicator

Transmitter Functions

TRANSMITTER FUNCTIONS - See pg 7

1 Ethernet Input/Output Ports – These Ports function as a Network Switch. Any port may be used as the input of your LAN source, the remaining ports on either side (Transmitter or Receiver) will output full 10/100T function.

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

3 SPDIF Output – This connects to the Digital Input of your Surround Processor/Receiver. This is enables you to retrieve the Digital signal being sourced from the other end (the HD-1 Receiver). This is used when your Surround Processor is NOT "ARC" compliant and the HDMI connection in it does NOT include the Audio Return Channel feature. See the interconnection Diagram for typical use.

4 HDBase-T Link Connection – Connect via Category 5e/6/7 cable to the HD-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 100 Meters.

5 Power Input – Utilizing the supplied 24V 1A Power Supply will power both Transmitter and Receiver when connected to the Transmitter. No Power Supply is normally required at the Receiver side. For special applications, an optional Power Supply (Part Number PS24-1) may be connected to the Receiver side as well. Power sourced at the Receiver side will NOT power the Transmitter.

Transmitter Functions

6 RS-232 Connection – Used for sending and receiving control and status signals to devices. Typically connected to a control system such as Crestron™ or AMX ™, this connection has all 9 pins activated.

7 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 on Page 14 for suggested use.

8 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.

9 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.

The single power supply MUST be connected at the Transmitter side. If the POWER lights are lit, and the “LINK” lights are not, no signals will be relayed. Please check your Category UTP cable for integrity and proper termination.

10 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

11 Ethernet Diagnostic Indicator –These lights indicate activity when connected to your LAN. The “Link” light shows that you are connected to a 10/100T network and it is being distributed to the HD-1 Receiver. The “Speed” light illuminates and blinks to show activity on the network. The “Full Duplex” light shows when there is Bi-Directional activity on the network.

RECEIVER FUNCTIONS - See Page 8

1 Ethernet Input/Output Ports – See “Transmitter” Definitions

2 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.

3 SPDIF Input – This connects to the Digital Output of your Display device. This enables you to send the Digital Audio from your TV or other device to your Surround Processor/Receiver. This is used when your Surround Processor is NOT “ARC” compliant and the HDMI connection in it does NOT include the Audio Return Channel feature. For example, if your TV is connected to the Internet and you are watching a streaming program via Netflix ™ or similar, the audio should be sent to your Surround Receiver for amplification. This provides a pathway to send this signal to the HD-1 Transmitter and then on to your Surround System. Most recent TV sets have a TOSLINK Digital output for this purpose. The newest TVs allow for this function thru the HDMI connector itself. This is known as Audio Return Channel (ARC). See the interconnection Diagram for typical use.

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

Receiver Functions

5 Power Input – Unnecessary in most instances. This is for Optional Supply (Part number PS24-1). Connection of Power Supply at the Transmitter side will provide sufficient power for all typical applications".

6 ARC/SPDIF Switch – This switch allows you to choose between sourcing your Audio Return either from an ARC-enabled HDMI Source, or the TOSLINK connector. Only most recently manufactured Displays (TVs) are ARC-enabled. Consult your TV's Owner's Manual to determine the correct position of this switch. This is only applicable if you are attempting to send Digital Audio back to the Transmitter, or "Head End".

7 RS-232 Connection – Refer to Item 6, above.

8 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 on Page 14 for suggested use.

9 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.

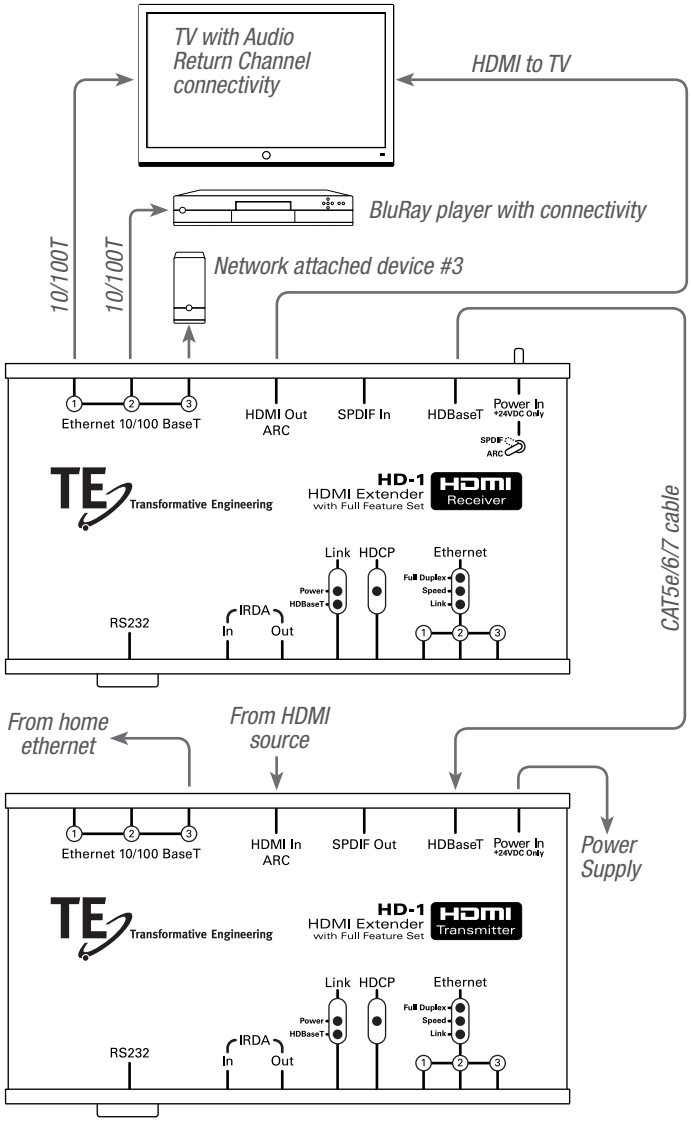
10 Link Indicator – Refer to Item 9, Above.

11 HDCP Indicator – Refer to Item 10, above

12 Ethernet Diagnostic Indicator – Refer to Item 11, above

Connection Diagrams

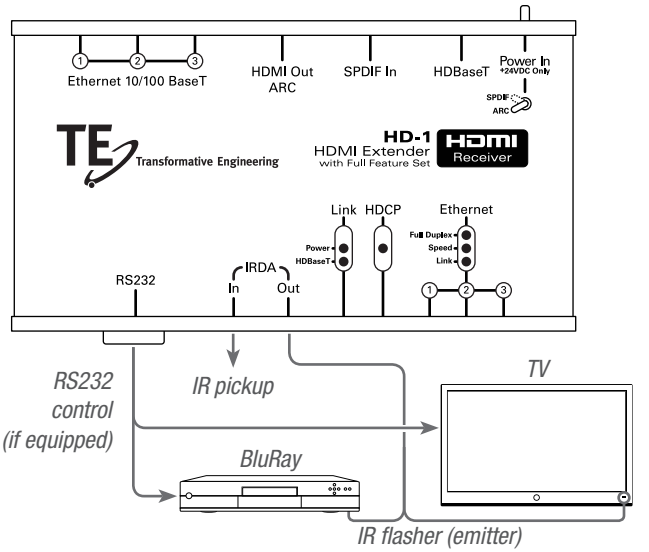
1. Standard Configuration Signal



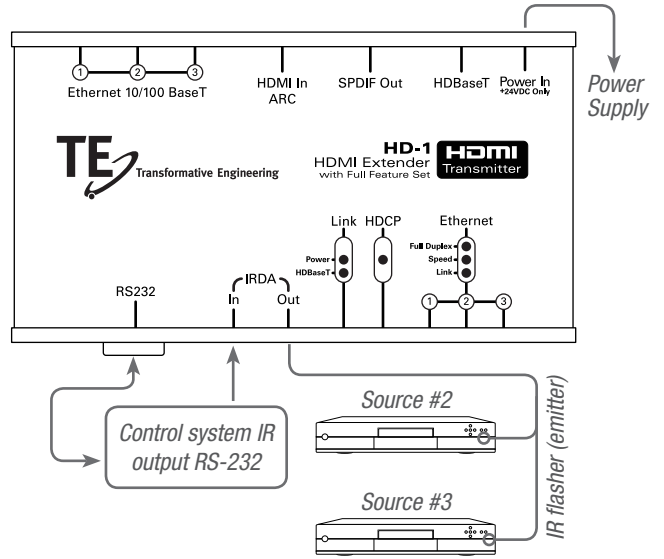
Connection Diagrams

2. Standard Configuration Control

Local Room



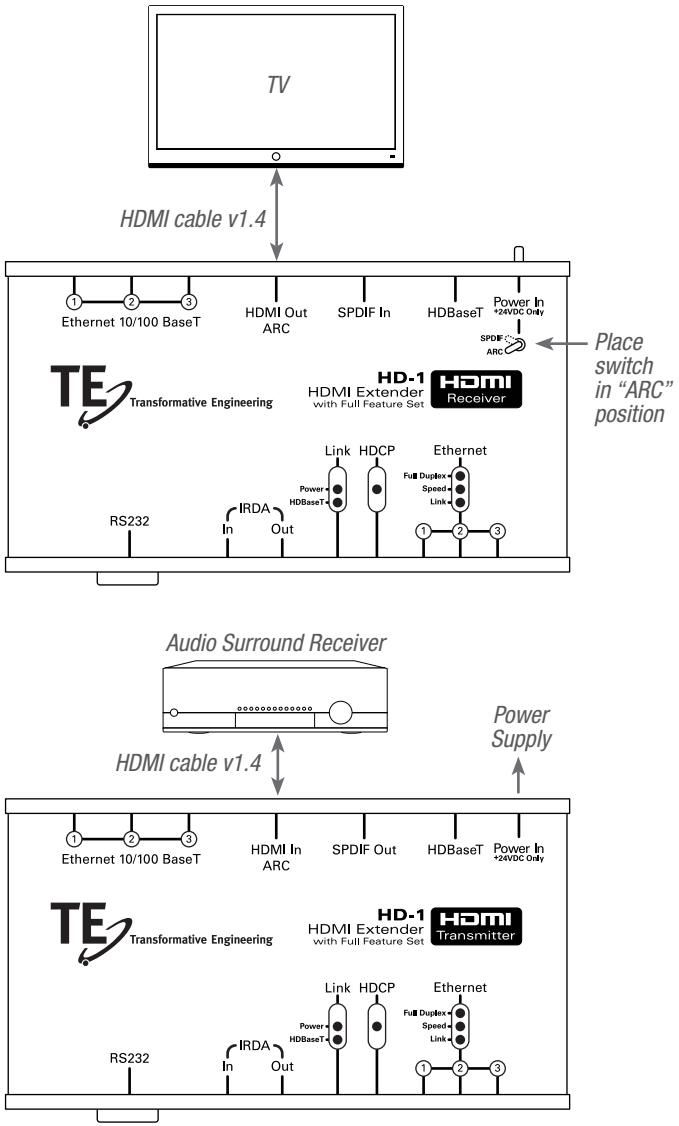
Head End



Connection Diagrams

3. Audio Return Path

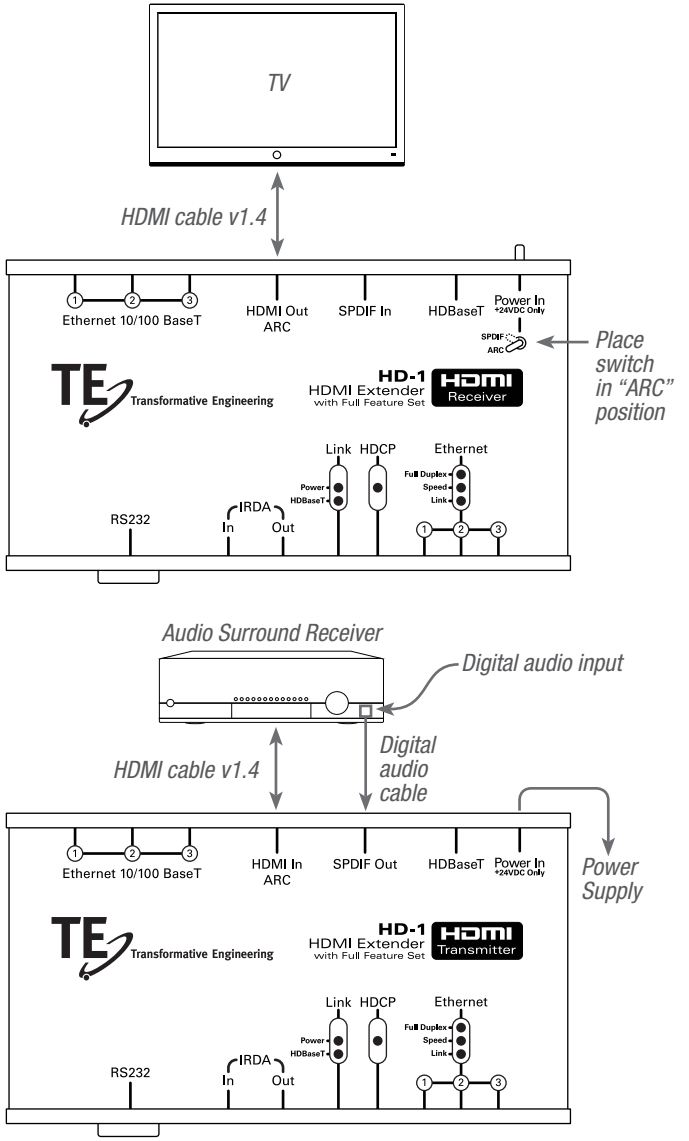
3a. TV w/ ARC, Surround Receiver w/ ARC



Connection Diagrams

3. Audio Return Path

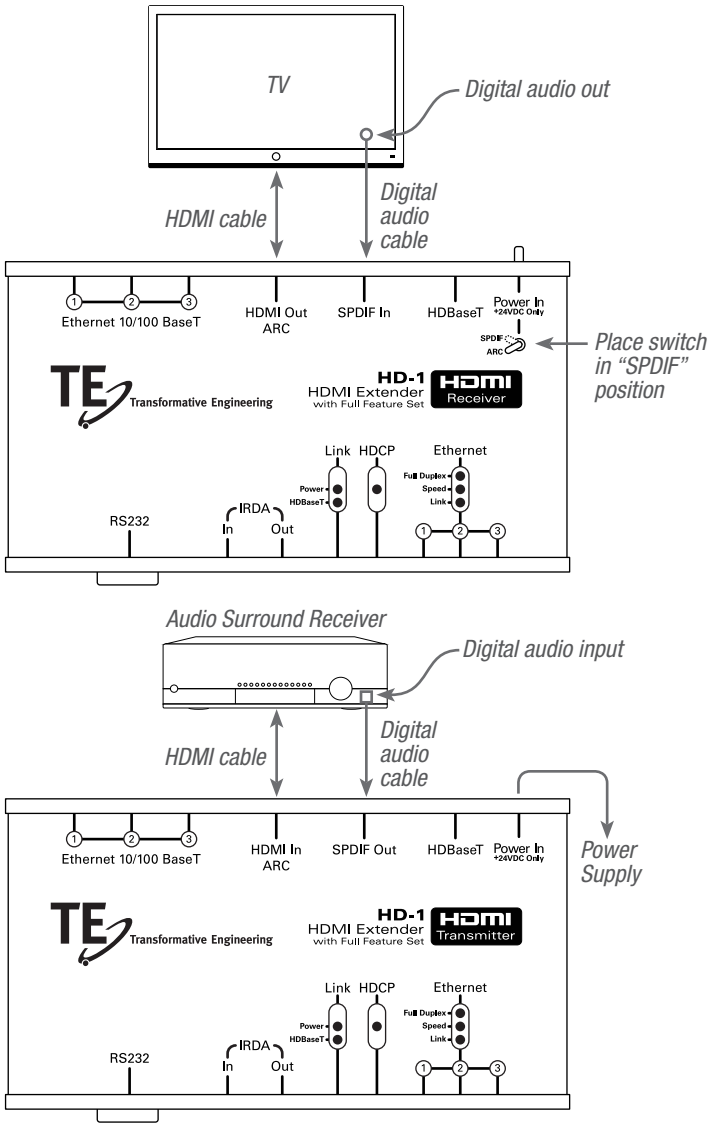
3b. TV with ARC, Surround Receiver without ARC



Connection Diagrams

3. Audio Return Path

3c. TV without ARC, Surround Receiver without ARC



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.

WARRANTY

A. Limited Warranty

Transformative Engineering, Inc. warranties this product for period of (3) Three Years for both Parts and Labor (under normal use) for Materials and Workmanship. We warrant that this product will perform as designed ONLY for all functions and features described at the time of sale. This warranty period shall be defined as from date of sale to the end user and must be documented with a proof-of-purchase. Transformative Engineering reserves the right, after inspection, to determine if misuse or abuse has occurred, which voids the warranty. Transformative Engineering reserves the right to repair or exchange any unit(s) which fail under the terms of the warranty.

B. Liability

Transformative Engineering, Inc., its Distributors and Dealers can not be held liable for any damages (including but not limited to) special, incidental, consequential, direct or indirect, of personal or business injury resulting from the use of or inability to use this product. Such damages including, but not limited to Personal Injury, Loss of Business (and profits), or any ancillary liability brought by third-party action against Suppliers, Distributors, Dealers, or End-Users shall be limited to the actual cost paid by you for this product.

Any modification, improper application, or installation outside of our recommended guidelines shall result in no liability whatsoever and shall result in no remedy. Any use of this product to circumvent the applicable laws of The United States legal codes regarding Digital Content Copyright, and Intellectual Property Rights and their infringement are made solely at the risk of the user. Transformative Engineering, Inc., its Distributors and Dealers can not be held liable for any illegal use of this product.

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