Kramer Electronics, Ltd.

USER MANUAL

Model:

PT-101H4

HDMI Repeater and Format Converter

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1   Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer Pico TOOLS™ **PT-101H4** *HDMI Repeater and Format Converter[2]* which is ideal for:

- Multimedia installations
- Home cinema installations

The package includes the following:

- **PT-101H4** *HDMI Repeater and Format Converter*
- Power adapter (5V DC output)
- This user manual[3]

2   Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[4]

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4:

Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan

Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack
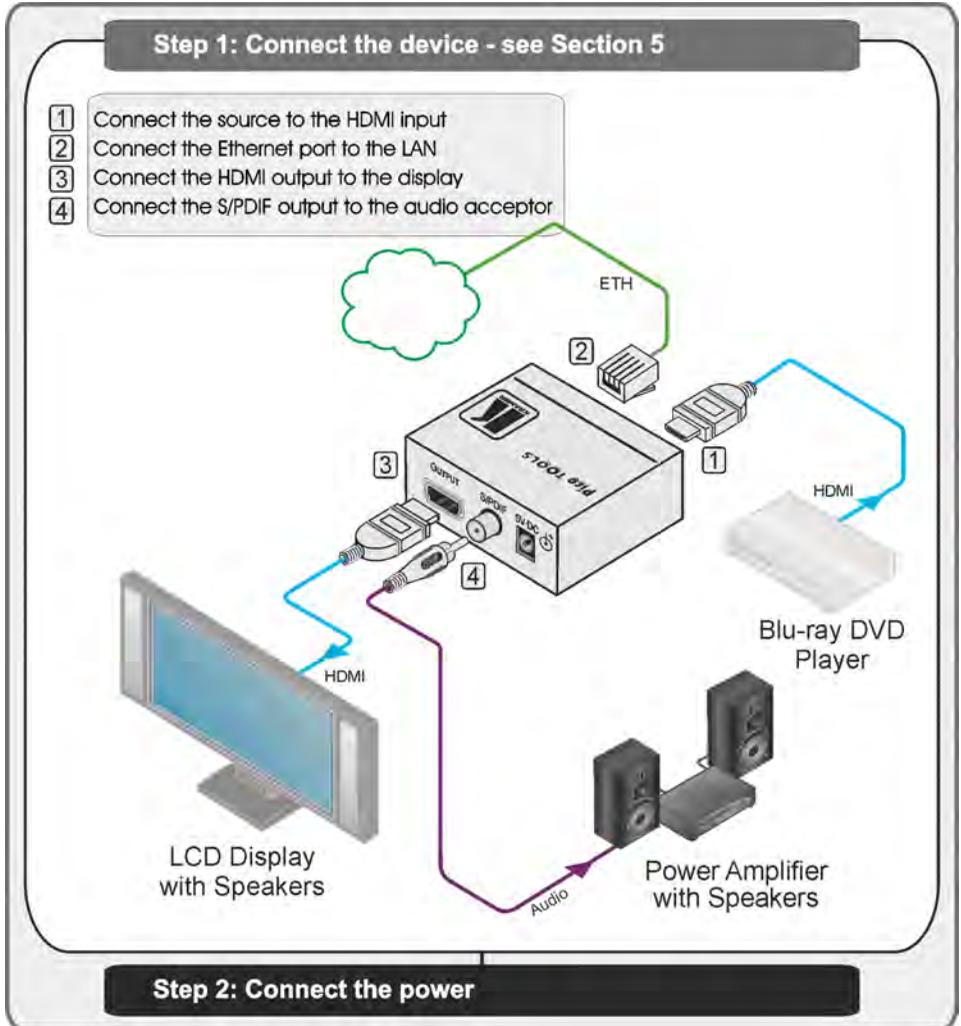
Adapters; GROUP 11: Sierra Products

2 Only "PT-101H4 HDMI Repeater" is printed on the front panel of the device

3 Download up-to-date Kramer user manuals from http://www.kramerelectronics.com

4 The complete list of Kramer cables is available from http://www.kramerelectronics.com

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

3 Overview

The Kramer **PT-101H4** *HDMI Repeater and Format Converter* is a high quality HDMI repeater that provides connectivity to an:

- HDMI display device
- Ethernet LAN
- S/PDIF digital audio device

The Kramer **PT-101H4** *HDMI Repeater and Format Converter*:

- Extends the transmission range to up to 35m (115ft) with 1080p @60Hz resolution
- Features reclocking and equalization
- Provides HDMI support on the output
- Supports up to 2.25Gbps bandwidth
- Combines an HDMI 1.3 signal with Ethernet to produce an HDMI (1.4 HEAC) signal[1]
- Outputs S/PDIF audio from the Audio Return Channel of the HDMI output signal
- Passes the HPD[2] and CEC[3] signals from the display to the source device
- Provides EDID PassThru—Passes EDID/HDCP signals from source to display

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital[4] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality.

In particular, HDMI[5]:

- Provides a simple[6] interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD/plasma television (DTV) over a single lengthy[7] cable

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1 For Ethernet connectivity, an HDMI 1 4 version output cable must be used

2 Hot Plug Detect

3 Consumer Electronics Control

4 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

5 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

6 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

7 HDMI technology has been designed to use standard copper cable construction at up to 15m

- Supports standard, enhanced, high-definition video, and multi-channel digital audio[1] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable[2], and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

HDMI has the capacity to support:
- Existing high-definition video formats (720p, 1080i and 1080p @60), as well as standard definition formats such as NTSC or PAL

3.2 About HDCP

The High-Bandwidth Digital Content Protection (HDCP) standard (developed by Intel), protects digital video and audio signals transmitted over DVI or DVI connections between two HDCP-enabled devices to eliminate the reproduction of copyrighted material. To protect copyright holders (such as movie studios) from having their programs copied and shared, the HDCP standard provides for the secure and encrypted transmission of digital signals.

3.3 Defining EDID

The Extended Display Identification Data (EDID[3]) is a data-structure provided by a display to describe its capabilities to a graphics card (that is connected to the display's source). The EDID enables the **PT-101H4** to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, product type, timing data supported by the display, display size, luminance data and (for digital displays only) the pixel mapping data.

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1 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats
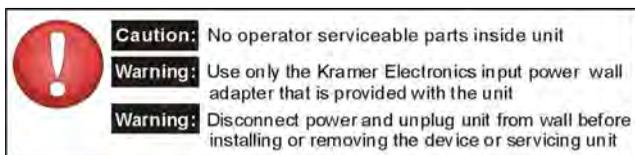
2 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

3 Defined by a standard published by the Video Electronics Standards Association (VESA)

3.4 Recommendations for Achieving the Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching and elevated noise-levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **PT-101H4** away from moisture, excessive sunlight and dust

Caution:	No operator serviceable parts inside unit
Warning:	Use only the Kramer Electronics input power wall adapter that is provided with the unit
Warning:	Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

4 Defining the PT-101H4 HDMI Repeater and Format Converter

Figure 1 and Table 1 define the **PT-101H4**.
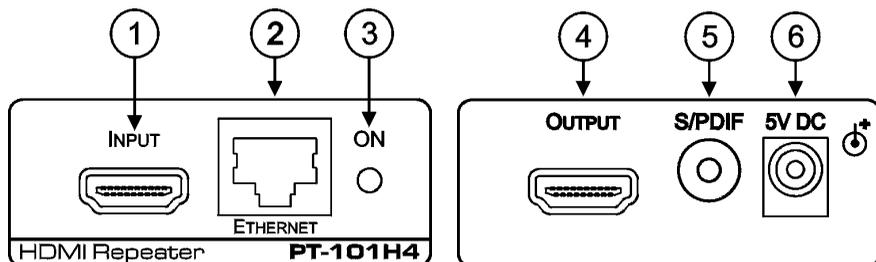
Figure 1: PT-101H4 HDMI Repeater and Format Converter

Table 1: PT-101H4 HDMI Repeater and Format Converter Features

#	Feature	Function
1	*INPUT* HDMI Connector	Connect to the HDMI source
2	*ETHERNET* CAT 5 RJ-45 Connector	Connect to the Ethernet LAN
3	*ON* LED	Lights red when the unit receives power and no devices are connected; lights orange when receiving power and a device is connected to either the input or output; lights green when receiving power and both the input and output are connected to devices
4	*OUTPUT* HDMI Connector	Connect to the HDMI acceptor
5	*S/PDIF* RCA Connector	Connect to the digital audio acceptor
6	*5V DC* Power Connector	Connect to the power adapter, center pin positive

5 Connecting the PT-101H4 HDMI Repeater and Format Converter

To connect the **PT-101H4** *HDMI Repeater and Format Converter* as illustrated in the example in Figure 2:

1. Connect the HDMI source (for example, a Blu-ray disc player) to the INPUT HDMI connector on the front of the **PT-101H4**.
2. Connect the ETHERNET RJ-45 connector[1] on the front of the **PT-101H4** to the LAN using CAT 5 Twisted Pair cable.
3. Connect the OUTPUT HDMI connector on the rear of the **PT-101H4** to the HDMI acceptor (for example, an HDMI display).
4. Connect the S/PDIF RCA connector on the rear of the **PT-101H4** to the digital audio acceptor (for example, a home theater system).
5. Connect[2] the 5V DC power adapter to the power socket on the **PT-101H4** and to the mains electricity.
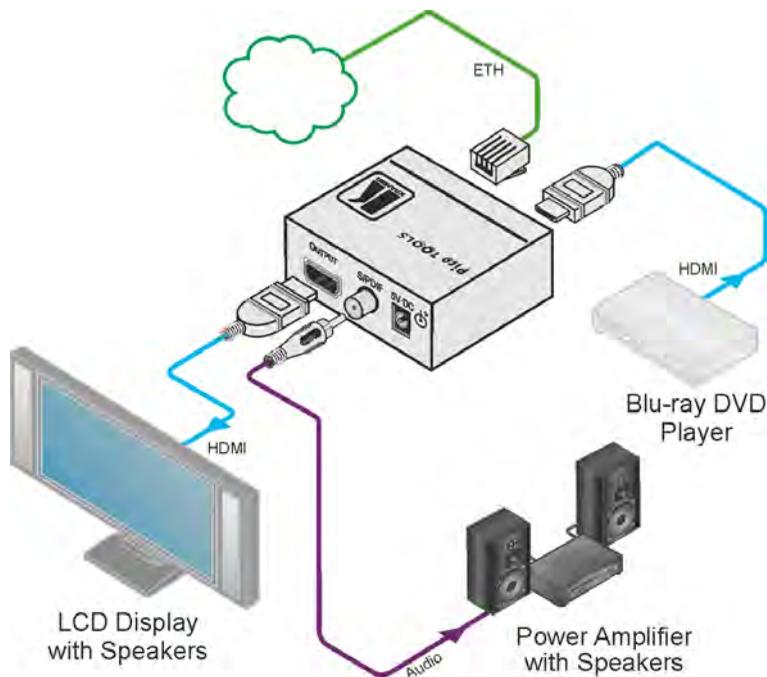
Figure 2: Connecting the PT-101H4 HDMI Repeater and Format Converter

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1 For Ethernet connectivity, an HDMI 1.4 version output cable must be used

2 Not shown in Figure 2

6 Technical Specifications

Table 2 includes the technical specifications[1].

Table 2: Technical Specifications of the PT-101H4 HDMI Repeater and Format Converter

INPUT:	1 HDMI connector 1 Ethernet on an RJ-45 TP connector
OUTPUTS:	1 HDMI connector 1 S/PDIF on an RCA connector
BANDWIDTH:	Supports up to 2.25Gbps bandwidth per graphic channel
COMPLIANCE WITH HDMI STANDARD:	Input: HDMI Output: HDMI and HDCP
POWER SOURCE:	5V DC, 450mA
DIMENSIONS:	6.2cm x 5cm x 2.4cm (2.44" x 1.97" x 0.94"), W, D, H
WEIGHT:	0.3kg. (0.67lbs) approx.
ACCESSORIES:	Power supply
OPTIONS:	Kramer HDMI cables[2]: regular cable - C-HM/HM; flat cable – C-HM/HM/FLAT(1.3), RK-3T 19" rack adapter

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1 Specifications are subject to change without notice

2 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

EN-50081:	"Electromagnetic compatibility (EMC);
	generic emission standard
	Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard
	Part 1: Residential, commercial and light industry environment"
CFR-47:	FCC* Rules and Regulations:
	Part 15: "Radio frequency devices
	Subpart B Unintentional radiators"

CAUTION!

⊠   Servicing the machines can only be done by an authorized Kramer technician Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment

⊠   Use the supplied DC power supply to feed power to the machine

⊠   Please use recommended interconnection cables to connect the machine to other components
      * FCC and CE approved using STP cable (for twisted pair products)

**For the latest information on our products and a list of
Kramer distributors visit** www.kramerelectronics.com
**where updates to this user manual may be found.
We welcome your questions, comments and feedback.**

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