2800 SERIES

HD-IP™

Digital Video via Ethernet

Models 2801, 2811

Audio Authority®

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WARNINGS
• Read these instructions before installing or using this product.
• To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.
• This product must be installed by qualified personnel.
• Do not open the cover—there are no user-serviceable parts inside.
• Do not expose this unit to excessive heat.
• Install only in dry, indoor locations.
• Clean the unit only with a dry or slightly dampened soft cloth.

LIABILITY STATEMENT
Every effort has been made to ensure that this product is free of defects. Audio Authority® cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights are reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

Audio Authority reserves the right to revise any of its hardware and software following its policy to modify and/or improve its products where necessary or desirable.

HD-IP™
Digital Video via Ethernet

INTRODUCTION

Thank you for purchasing this 2800 Series HD-IP™ distribution system from Audio Authority®. The 2800 Series transmits HDMI® signals from one source over a dedicated Gigabit network via Cat 5e/6 cables to achieve distances many times those possible using an HDMI cable. Ultra high speed GbE (Gigabit Ethernet) preserves ultra high quality 720p or 1080p video content. This manual presents one to one, and one to many configurations.

HDMI® TECHNOLOGY AND THE HD-IP ADVANTAGE

Standard HDMI® devices transmit video and audio using a signaling method called TMDS (Transition Minimized Differential Signaling). TMDS was designed for short cable runs, like those necessary to connect a cable box to an HDTV in an entertainment center. Unfortunately, TMDS has some limitations. Very high frequency signals like HDMI tend to "roll off" as cable runs get longer. Since differential pairs are used for each of the three color channels and the separate clock channel, differences in individual wire lengths inside HDMI cables can cause timing errors and blank screens.

HD-IP technology utilizes Ethernet standards to overcome the inherent limitations of TMDS. Enabling reliable cable runs up to 250 feet and farther, easy distribution of signals, and robust signal integrity, transmitting HDMI signals over IP networks redefines the possibilities for HDMI video distribution. Compliant with HDCP 2.0 specifications, this technology supports copy protection with 128-bit AES encryption and overcomes traditional key verification limitations, enabling very large system sizes while maintaining full HDCP compliance. Audio Authority's Gigabit infrastructure means that the picture quality is virtually indistinguishable from the source, suitable for a wide range of applications.

CHECKING PACKAGE CONTENTS

Before connecting the 2800 system, please make certain the following items are in the their respective shipping cartons.

2801 Transmitter	2811 Receiver
• 5V 2A power adapter	• 5V 2A power adapter
• Two mounting Plates	• Two mounting Plates
• Self adhesive rubber feet	• Self adhesive rubber feet
• Product manual	• Product manual

Note: Please retain the original packing material and invoice in case you need to return the unit. If you find any items are missing, contact Audio Authority immediately. Have the model number and invoice available for reference when you call.
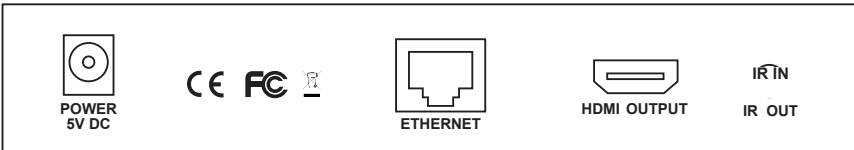
SYSTEM FEATURES

- Supports 720p and 1080p and embedded digital audio (2-channel PCM)
- Gigabit Ethernet (GbE, 1000BASE-T) technology for excellent picture quality
- Uses off-the-shelf GbE network switches for distribution
- Requires only one UTP cable per position (Cat 5e or Cat 6)
- Quick synchronization means maximum up-time
- Basic installation is plug and play – no complex setup routines or programming
- Designed to function on a separate, dedicated Gigabit Ethernet network
- Cascading multiple network switches and cable runs allows maximum distribution distances of 1000+ ft. (300m) when necessary
- HDMI version 1.3 and HDCP version 2.0 compliant
- IR can be transmitted over the UTP cable back to the source location

Transmitter – Model 2801

POWER 5V DC   CE FC   ETHERNET   HDMI INPUT   IR OUT

Receiver – Model 2811

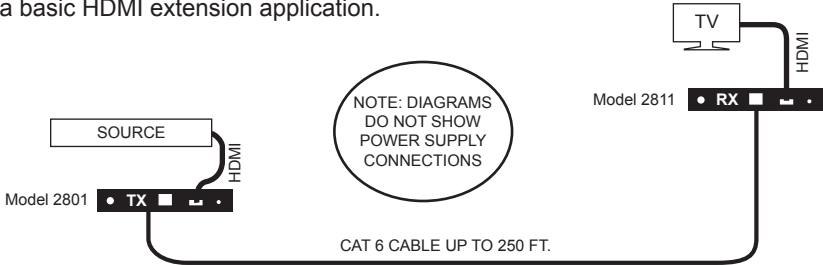POWER 5V DC   CE FC   ETHERNET   HDMI OUTPUT   IR IN   IR OUT
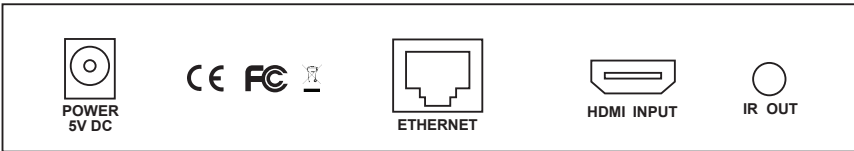
APPLICATIONS

HD-IP is designed to function as an HDMI extender (point to point), or as a distribution system via a dedicated network (single source).

HDMI EXTENSION

In extension applications (point to point), the transmitter may be connected directly to the receiver, for distances up to 250 ft. (75m), using Cat 6 cable. Cat 5 cable may also be used, but range varies depending on the quality of the cable. A GbE network switch can be added in a Cat 6 path to effectively double the range.

The example below depicts the HD-IP system in a basic HDMI extension application.

NOTE: DIAGRAMS DO NOT SHOW POWER SUPPLY CONNECTIONS

SOURCE — HDMI — Model 2801 TX

TV — HDMI — Model 2811 RX

CAT 6 CABLE UP TO 250 FT.

In this configuration, HDMI cables connect the source and display equipment to the respective 2801 Transmitter and 2811 Receiver. A Cat 5 or 6 UTP cable connects the 2801 to the 2811. Properly terminated Cat 6 cables will result in the longest possible range. Terminate the cables to either the EIA 568A or 568B standard for best performance. Correct pairing is vital, and should always be checked with a network cable tester. The DIP switches on the 2801 and 2811 should all be in the DOWN position.

USING THE IR PATHWAY

IR signals can be passed from a 2811 Receiver back to the 2801 Transmitter to control the source equipment. Most 3rd party IR receivers are compatible with the system when used with a connecting block. Be advised that environmental conditions such as Plasma/LCD televisions, fluorescent lighting and sunlight might adversely affect the performance of your IR receivers.

1. With power disconnected from the 2811 Receiver, connect your IR receiver and its power supply to a standard 12V IR connecting block. Connect a MONO 3.5mm cable from the emitter output of the connecting block to the 2811's 3.5mm IR port. Pin out is shown.

2. With power disconnected from the 2801 Transmitter, connect a standard IR emitter to the 2801's IR 3.5mm IR port. Pin out is shown.

Tip = (+)

Sleeve = (−)

IR CONNECTION
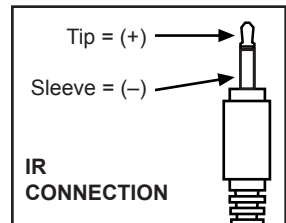
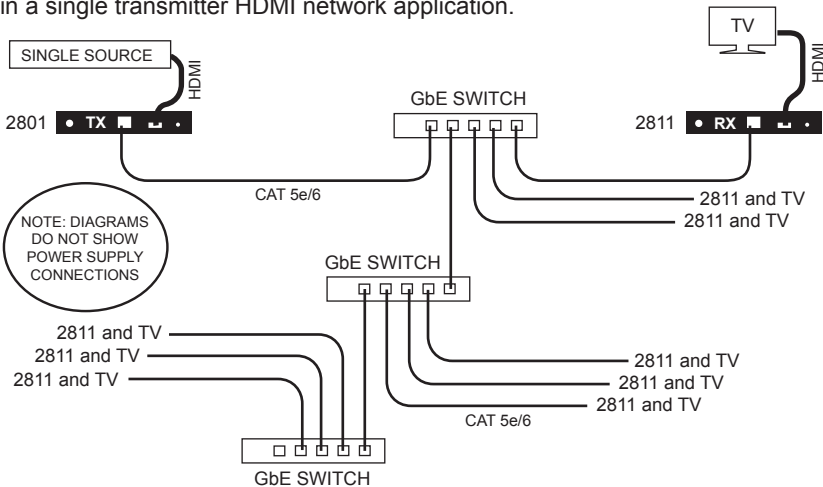*NOTE: The 2800 system may not be compatible with all IR equipment.*

DISTRIBUTION NETWORK

In distribution network applications, a single transmitter (or multiple transmitters) may be connected to several receivers, for distances up to 250 ft. (75m) using Cat 6 cable. Cat 5 cable may also be used, but distances will vary depending on the quality of the cable used. A Gigabit Ethernet (GbE) switch is used in the Cat 6 path to distribute the video signals.

SINGLE TRANSMITTER NETWORK

The 2800 system can distribute a single source signal to multiple displays on the same network using a standard Gigabit Ethernet switch (GbE) – a managed switch is not required. In this application, the number of displays is only limited by the number of available ports on the GbE switch.

The example below depicts the 2800 system
in a single transmitter HDMI network application.

SINGLE SOURCE
HDMI

TV
HDMI

GbE SWITCH

2801 ● TX ■ ▬ •   2811 ● RX ■ ▬ •

CAT 5e/6

2811 and TV
2811 and TV

NOTE: DIAGRAMS DO NOT SHOW POWER SUPPLY CONNECTIONS

GbE SWITCH

2811 and TV
2811 and TV
2811 and TV

2811 and TV
2811 and TV
2811 and TV

CAT 5e/6

GbE SWITCH

In this configuration, HDMI cables connect the source and display equipment to the 2801 Transmitter and 2811 Receivers. Cat 5e/6 cables connect the 2801 and 2811s to the GbE switch. GbE switches may be cascaded to accommodate large HDMI network systems or allow for future system expansion. Properly terminated Cat 6 cables will generally provide better results at longer distances. All UTP cables should be terminated to either the EIA 568A or 568B standard for best performance. Correct pairing is essential, and should always be checked with a network cable tester. The DIP switches on the 2801 and 2811s should all be in the DOWN position.

USING THE IR PATHWAY

IR signals can be passed from 2811 Receivers back to the 2801 Transmitter to control the source equipment. Most 3rd party IR receivers are compatible with the system when used with a connecting block. Be advised that environmental conditions such as Plasma/LCD televisions, fluorescent lighting and sunlight might adversely affect the performance of your IR receivers and prevent proper operation of IR control through the 2800 system.

1. With power disconnected from the 2811 Receiver, connect your IR receiver and its power supply to a standard 12V IR connecting block. Connect a MONO 3.5mm cable from the emitter output of the connecting block to the 2811's 3.5mm IR port. Pin out is shown.

Tip = (+)

Sleeve = (–)

IR CONNECTION

2. With power disconnected from the 2801 Transmitter, connect a standard IR emitter to the 2801's IR 3.5mm IR port. Pin out is shown.
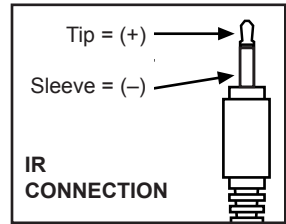
NOTE: The 2800 system may not be compatible with all IR equipment.

TROUBLESHOOTING

- **Poor image quality:** For the best results, always use high quality 720p or 1080p content. Some sources, particularly cable and satellite providers, transmit compressed video resulting in poor image quality. Consider the source material when planning and troubleshooting your system. The 2800 Series does not require any adjustment.

- **Intermittent signal dropout:** make sure the 2800 Series is not connected to any other devices, or sharing a network with other traffic, especially with access to the internet. Make sure all 2801 transmitters are set to a unique "channel" (see page 12). Also make sure no AC wiring is installed within two feet of the 2800 Series network cables.

- **No surround sound (multi-channel audio):** this system does not support multi-channel digital audio transmission; adjust the source to output 2-channel PCM digital audio.

- **No picture:** perform the verifications below.

  - Check the HDMI cables at input and output connections to see if any of the connectors have become loose.

  - Make certain 2801 and 2811 units are connected to live AC outlets and check the power indicators on all units.

  - Use a network cable tester to make certain your Cat 5e/6 cable is terminated correctly and the RJ-45 connectors are securely attached to the cable at both ends. Check for cable defects or damage.

  - Connect the display device directly to the source using the HDMI cable from the 2801 end, then test with the 2811 connection cable. If an image is present under those circumstances then the display, the source, and the HDMI cables can be eliminated as the cause of the problem.

  - If the above circumstances do not produce a picture, test using a short, known good HDMI cable, and set up the source to output a resolution that the display can accept (720p or 1080p). If successful, connect the 2800 Series again, making sure the source resolution is the same as the test.

If you encounter difficulty, contact the Audio Authority Technical Service via email: support@audioauthority.com, or call 800-322-8346 or 859-233-4599.

CONSIDERATIONS FOR GETTING THE BEST RESULTS

Many factors influence the quality and reliability of an HDMI® signal distribution installation. The following are the main factors to consider, and basic precautions that will ensure the best possible performance.

- **Dedicated network.** The 2800 Series is designed to operate on a *dedicated* Gigabit Ethernet network, not to be combined with other network traffic competing for access to the internet.

- **Resolution tracking.** The 2800 Series supports 720p and 1080p. If some TVs in the network are not capable of accepting 1080p, the higher resolution sets may not be shown to their best advantage. Set up the source to output the best resolution that all TVs are capable of displaying, or use one source with 720p resolution output, and another with 1080p output (See page 7).

- **Source resolution and video/sound quality.** Sources, such as satellite receivers or cable boxes, can output at low resolutions or deliver extremely compressed video material, yielding poor results. Consider the source material when planning and troubleshooting your system.

- **Display devices.** The perceived quality of the video image depends heavily upon the type and quality of the TVs or projectors used. High quality displays should be expected to produce a noticeably better image, given high quality source material.

- **Distance between the transmitter and the receiver.** Long distances are possible, but premium quality Cat 6 cables are necessary for the longest runs. When necessary, insert a network switch to extend long cable runs.

- **Source and TV connection cables.** Use short, high quality HDMI cables. Always use good strain relief methods to prevent cables from becoming loose over time.

- **Interference from nearby electrical devices** can have an adverse effect on signal quality. For example, older computer monitors often emit very high electromagnetic fields that can interfere with the performance of nearby video equipment.

SPECIFICATIONS

DIGITAL AUDIO/VIDEO I/O	
2801 Transmitter	1x via HDMI connector – HDMI input
2811 Receiver	1x via HDMI connector – HDMI output
CAT 5E/6 CONNECTIONS I/O	
2801 Transmitter	1x via RJ-45 – Cat 5e/6 output
2811 Receiver	1x via RJ-45 – Cat 5e/6 input
VIDEO PERFORMANCE	
Minimum resolution	720p
Maximum resolution	1080p (1920x720, 1080p/60Hz)
TMDS clock speed (HDMI)	225MHz
Data bit rate (HDMI)	2.25Gbps
Maximum range	250 ft. (75m) direct connection 1000 ft. (300m) extended via three GbE switches
AUDIO PERFORMANCE	
Digital Audio	2-channel PCM audio only
ENVIRONMENTAL	
Operating Temperature	0° to +50° C (+32° to +122° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-10° to +70° C (12° to +158° F)
Storage Humidity	10% to 90%, non-condensing
REGULATORY APPROVALS	
2801 and 2811	HDMI, HDCP, RoHS
Power Supply	UL, CUL, CE, PSE, GS, RoHS
NETWORK REQUIREMENTS	
Cat 5, Cat 5e or Cat 6	Network grade, premium
Network Switch Compatibility	Standard or Managed Gigabit Ethernet 1000BASE-T network switch depending on application
MECHANICAL	
Product Weight (Net)	2801 / 2811: 2.25 lb. (1kg)
Dimensions: H-W-D inches (mm)	2801 and 2811: 1.25 x 6.35 x 4.5 (32x162x115)
ACCESSORIES INCLUDED	
Power Adapter	5 VDC@2A 2801/2811
User Manual	Printed, 12 pages
WARRANTY	Limited Warranty: 1 year parts and labor

LIMITED WARRANTY

If any consumer product from Audio Authority® fails due to defects in materials or workmanship within one year from the date of the original sale to the end-user, Audio Authority guarantees that we will replace the defective product at no cost. Freight charges for the replacement unit will be paid by Audio Authority (ground service only). A copy of the invoice showing the item number and date of purchase (proof-of-purchase) must be submitted with the defective unit to constitute a valid in-warranty claim.

Units that fail after the warranty period has expired may be returned to the factory for repair at a nominal charge, if not damaged beyond the point of repair. All freight charges for out-of-warranty returns for repair are the responsibility of the customer. Units returned for repair must have a Return Authorization Number assigned by the factory.

This is a limited warranty and is not applicable for products which, in our opinion, have been damaged, altered, abused, misused, or improperly installed. Audio Authority makes no other warranties either expressed or implied, including limitation warranties as to merchantability or fitness for a particular purpose. Additionally, there are no allowances or credits available for service work or installation performed in the field by the end user.

REGULATORY COMPLIANCE

The 2801 and 2811 comply with HDMI® and HDCP rules and regulations. Power supplies included have been tested for compliance with UL, CUL, CE, PSE, and GS rules and guidelines.

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