

User Manual

2800 Series

HD-IP™

Digital Video via Ethernet



Audio  Authority®

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.

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Table of Contents

1.0 INTRODUCTION	4
2.0 CHECKING PACKAGE CONTENTS	5
3.0 GETTING THE BEST RESULTS.	5
4.0 APPLICATIONS	6
5.0 INSTALLATION	7
6.0 TROUBLESHOOTING	9
7.0 SPECIFICATIONS	10
8.0 LIMITED WARRANTY	11
9.0 REGULATORY COMPLIANCE	12
10.0 CONTACT INFORMATION	12

1.0 INTRODUCTION

Thank you for purchasing this 2800 Series HD-IP™ distribution system from Audio Authority®. The 2800 Series transmits HDMI® signals 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) allows this system to achieve almost lossless 1080p video quality.

Audio Authority audio/video switchers, converters, and distribution amps can be purchased at www.audioauthority.com or through authorized dealers.

1.1 HDMI® TECHNOLOGY

The Old: 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.

The New: HD-IP technology utilizes Ethernet standards to overcome the inherent limitations of TMDS. Enabling totally reliable cable runs up to 250 feet long, 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 the most discerning viewer.

1.2 SYSTEM FEATURES

- Gigabit Ethernet (GbE, 1000BASE-T) technology for better 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
- Installation is plug and play – no complex setup routines or programming
- Designed to function on a separate, dedicated Ethernet network
- Cat 5e max. distance: 200+ ft. (60m), Cat 6 max. distance: 250+ ft. (75m)
- 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
- Supports 720p and 1080p and embedded digital audio (2-channel PCM)
- IR can be transmitted over the UTP cable back to the source location
- Maximum number of sinks is 127 with HDCP protected content

2.0 CHECKING PACKAGE CONTENTS

Before connecting the 2800 system, please make certain the following items are in the shipping cartons. Note: the 2801 and 2811 are sold separately.

- 2801 Transmitter
- 2811 Receiver
- 5V DC Power Adapters
- User 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.

3.0 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.

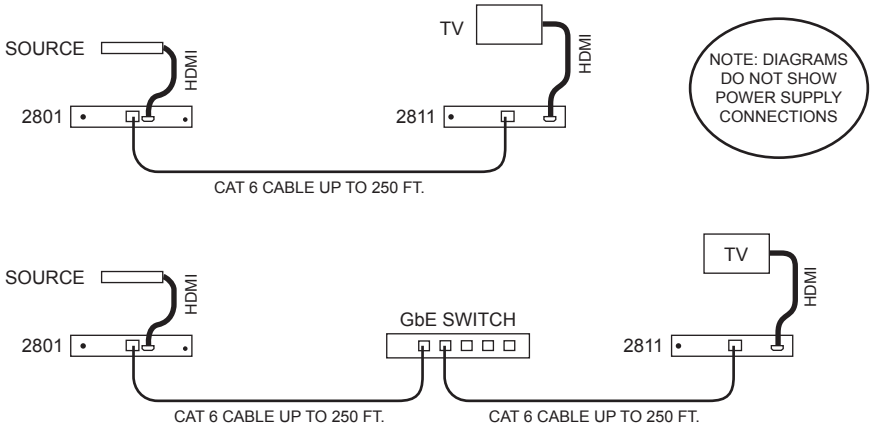
- **Dedicated network.** The 2800 Series is designed to operate on a *dedicated* Gigabit Ethernet network, not to be combined with other network traffic or with access to the internet.
- **Resolution tracking.** Set up the source to output the best resolution that all TVs are capable of displaying. The 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.
- **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 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.
- **Distance between the transmitter and the receiver.** Long distances are possible, but premium quality Cat 6 cables are necessary for the longest runs.
- **Source and TV connection cables.** Use short, premium HDMI cables; low quality cables are often unreliable. Always use good strain relief methods or locking cables 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.

4.0 APPLICATIONS

The 2800 Series is designed primarily for digital signage and showroom TV wall displays. It can be used in two main ways: as an extender (point to point) and as a distribution system (one to many or many to many).

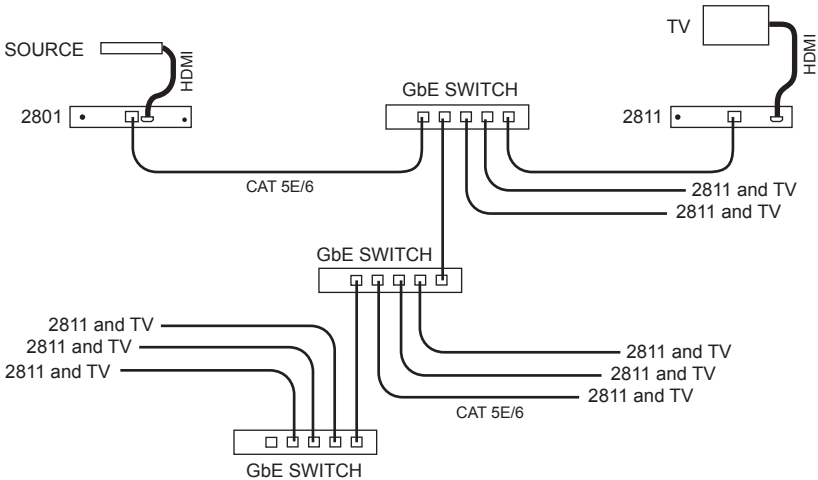
4.1 EXTENSION

In extension applications, the transmitter may be connected directly to the receiver, for distances up to 250 ft. (75m), using Cat 6 cable. A GbE network switch can be added in the Cat 6 path to double that distance.



4.2 VIDEO DISTRIBUTION

One-to-many signal distribution applications, GbE switches can be used in various configurations to distribute HDMI signals from one source to many video displays.

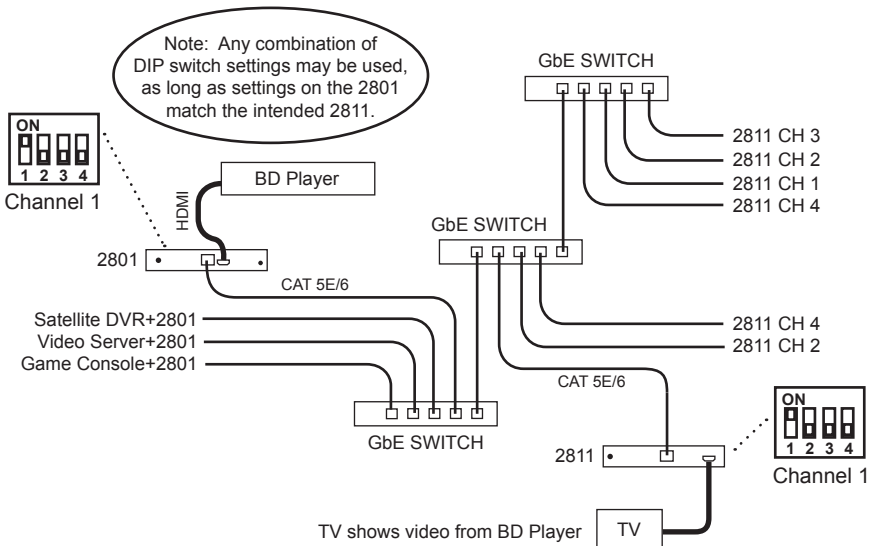


4.3 DISTRIBUTION USING MULTIPLE SOURCES

The HD-IP system uses virtual LAN technology to distribute multiple source signals on the same network – a managed switch is not required. To use multiple sources on one network, each source must have its own virtual LAN or “channel” as designated by DIP switches on 2801 and 2811. Power down the system and set the DIP switches as shown.

Apply power to activate the settings. In this example, multiple 2811s all set to channel #1 receive signals from the Blu-ray player, while 2811s on channel 2 receive signals from the Satellite DVR.

SOURCE	CH	2801 DIP	2811 DIPs
Blu-ray Disc	1	1=ON	1=ON
Satellite DVR	2	2=ON	2=ON
Video Server	3	3=ON	3=ON
Game Console	4	4=ON	4=ON

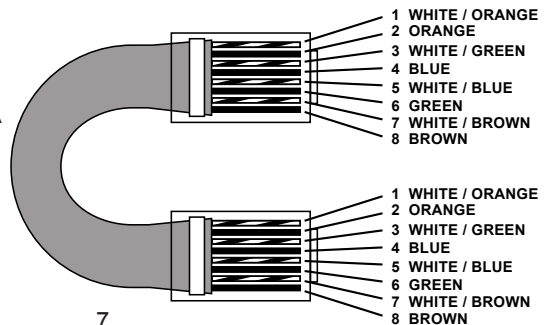


5.0 INSTALLATION

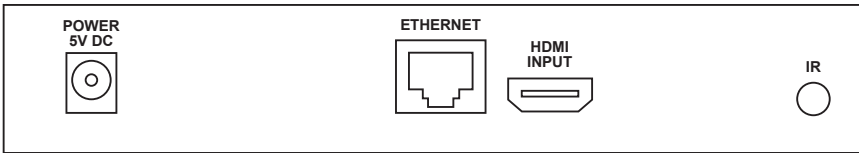
Before connecting the 2800 system, verify that all display devices on the receiving end can support the output resolution and signal format from the source by connecting it directly to the source device via a short, known good, HDMI cable.

5.1 CAT 5E/6 CABLES

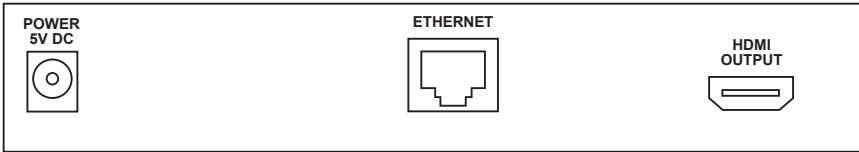
To terminate Cat 5e or Cat 6 cables, use standard EIA-568A or B pairing. Correct pairing is vital, and should always be checked with a network cable tester. The correct pairing is straight through, pin-to-pin, as shown.



Transmitter – Model 2801



Receiver – Model 2811



5.2 CONNECTING THE HARDWARE

1. Determine DIP switch settings if appropriate (see 4.3 Using Multiple Sources).
2. Connect the HDMI® source device's output to the HDMI INPUT connector of the 2801 Transmitter, using a short, high quality, HDMI cable.
2. Connect a correctly terminated and tested Cat 5e/6 cable to the ETHERNET connector of the Transmitter. Do not connect the AC adapter until the UTP cables are correctly connected to both the transmitter and the receiver.

Again, always test the HDMI source on the intended display with a known good HDMI cable before connecting the distribution system. This precaution insures that the source can be (and is) set to a resolution that is compatible with the display, and that both are functioning correctly together.

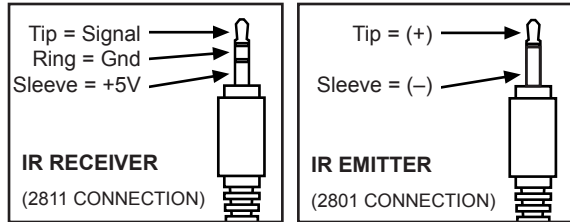
3. At remote locations, connect the appropriate UTP cable to the ETHERNET connectors of the 2811 Receiver.
4. Connect the HDMI OUTPUT of the 2811 to the HDMI input of the video display or other device, using the appropriate cable. Connect IR equipment (if used) at this time – see below.
5. Connect the supplied AC adapters first to the 2801 Transmitter and 2811 Receivers (and to any Ethernet Switches) and then to the AC outlets.
6. Turn on the source device and video displays. The source video signal should appear on the displays. If not, consult the Troubleshooting guide.

5.3 IR PASS THROUGH

IR signals can be passed from the 2811 Receiver location(s) back to the 2801 Transmitter location (single Transmitter systems only) to control the source equipment. The HD-IP system may not be compatible with all IR equipment.

Note: IR signals cannot be passed reliably when more than one 2801 Transmitter is used in a network.

1. With power disconnected from the 2811 Receiver, connect a standard IR receiver to the 2811's 3.5mm IR port. Pin out is shown below.
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.



6.0 TROUBLESHOOTING

- **Poor image quality:** Some sources, such as cable and satellite receivers, compress output resulting in poor image quality. Connect the source directly to a display via a short HDMI® cable to compare. 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 7). 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. If this test is 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.

7.0 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 (1920x1200, 1080p/60Hz)
TMDS clock speed *	225MHz
Data bit rate *	2.25Gbps
Maximum range	250 ft. (75m) direct connection 1000 ft. (300m) via 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	
Transmitter and Receiver	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 Gigabit Ethernet 1000BASE-T network switch
MECHANICAL	
Dimensions: H-W-D inches (mm)	1.25 x 6.35 x 4.5 (32x162x115mm)
ACCESSORIES INCLUDED	
Power Adapter	5 VDC@2A
User Manual	Printed, 12 pages
WARRANTY	
Limited Warranty	1 year parts and labor

*Applies to HDMI connectors, not Ethernet portion of system.

8.0 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.

8.1 WARRANTY SERVICE PROCEDURES

If you suspect a product defect, contact Audio Authority's Technical Service Department at 800-322-8346 or 859-233-4599 for assistance in verifying the problem. If a defect or potential defect is suspected, a replacement unit will be shipped immediately on a defect-exchange basis and a Return Authorization Number will be issued for the return of the defective product. Replacement units are sent out at the Manufacturer's Suggested Retail Price which is debited to the Customer's Credit Card at the time of shipment. Once we receive the defective unit back at the factory, it will be evaluated under the conditions of this warranty and if found to be in-warranty, a full credit will be issued to the Customer's Credit Card. Return freight charges for the defective unit are the customer's responsibility. Please contact our Technical Service Department for complete details concerning all in and out of warranty service matters.

We appreciate your confidence in our products and services and will always strive to meet or exceed your needs.

9.0 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. This product and its power supply are RoHS compliant.

10.0 CONTACT INFORMATION

If you have questions or require assistance with this product in areas not covered by this manual, please contact Audio Authority using the information below.

Audio Authority Technical Service
800-322-8346 M-F 8:30 AM to 5:00 PM, EST
International: 859-233-4599 Fax: 859-233-4510
Send email to: support@audioauthority.com

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