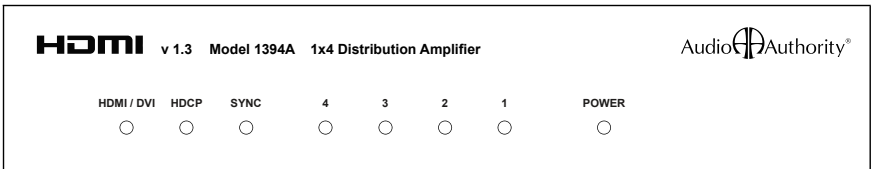


User Manual



Model 1394A and 1398A HDMI Distribution Amplifiers



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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 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. This statement does not affect the legal rights of the user in any way.

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HDCP (High-bandwidth Digital Content Protection) is licensed by Digital Content Protection, LLC.

1.0 INTRODUCTION

Thanks for purchasing this Model 1394A or 1398A distribution amplifier from Audio Authority. These distribution amplifiers are designed to split an HDMI® signal from one source to multiple HDMI displays without signal degradation or loss of encryption. The 1394A and 1398A are HDCP 1.1 compliant, and HDMI v1.3 compliant, supporting deep color video and Dolby TrueHD and DTS-HD Master Audio. Ultra high bandwidth, equalized inputs, and amplified outputs insure a flawless installation even with long cable runs. Audio Authority also offers an extensive line of audio and video switchers, converters and distribution amps available for purchase online at www.audioauthority.com.

1.1 FEATURES

- Distributes one HDMI source signal to multiple destinations
- Outputs may be cascaded to create an extensive distribution network up to 7 layers deep
- Supports up to 36 bit color depth /12 bits per color (TMDS channel)
- Supports 480i, 480p, 720p, 1080i, 1080p and multiple PC resolutions
- Supports Dolby Digital Plus, Dolby® Digital TrueHD and DTS-HD: Master Audio
- HDMI version 1.3 compliant, HDCP 1.1 compliant
- Originates EDID for the source or can re-transmit the EDID from a downstream HDMI sink
- Supports automatic discovery of display EDID
- Accepts most locking HDMI cables

2.0 CHECKING PACKAGE CONTENTS

Before attempting to use this DA, please check the packaging and make certain the following items are contained in the shipping carton:

- HDMI distribution Amplifier
- 5 VDC power adapter
- Jack screws for locking HDMI cables
- User manual

Note: please keep the original packing material in case the unit ever needs to be returned. If you find any items are missing, contact Audio Authority immediately. Have the model number and invoice available for reference when you call.

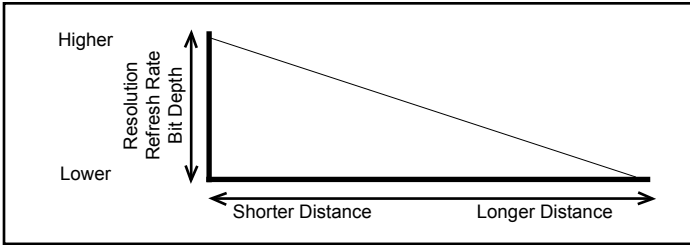
3.0 GETTING THE BEST RESULTS

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

- **Resolution tracking.** Set up the source to output the best resolution that all TVs are capable of displaying. Follow the instructions in 4.0 to insure that all TVs connected to the DA receive video signal. If the TVs have a wide range of resolution capabilities, the highest 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 that may yield poor results. Consider the source when planning and troubleshooting your system.
- **Output display devices.** The quality of the output signal depends largely upon the type and quality of the HDMI display devices used.
- **Distance between the DA sources and the display.** Long distances are possible, but premium quality cables and advanced HDMI extenders with DDC correction may be necessary for the longest runs.
- **Connection cables.** HDMI cable design and quality are extremely important in long cable runs where capacitance can severely degrade performance. Use premium cables; low quality cables are susceptible to interference. Always use locking cables or 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.

4.0 PLANNING A DISTRIBUTION SYSTEM

- Each display should be tested with the source(s) being used to ensure basic compatibility before connecting them to a distribution amp and/or switcher. Not all HDMI components and displays are compatible.
- Since all of the displays will be receiving the same video signal resolution and format (e.g. 1080p@60Hz) from the source, make sure the source is set up to output the highest resolution that **all of the displays can accept**. For instance, if one of the displays connected to the distribution system can only accept a maximum input resolution of 720p, all of the displays will receive only 720p video signals. You may consider creating two or three separate distribution systems with different sources and different output resolutions so that you can adequately demonstrate the highest resolution HDTV sets.



- HDMI cable lengths of up to 100 ft. between amplifiers may be possible, when premium cables are utilized. Use of high resolutions, refresh rate, or deep color may limit maximum cable run length.
- Since HDMI connectors can sometimes become loose, use locking HDMI cables or mount the switcher or distribution amplifier to a flat surface and add strain relief tie-downs a few inches away from every HDMI cable connector.

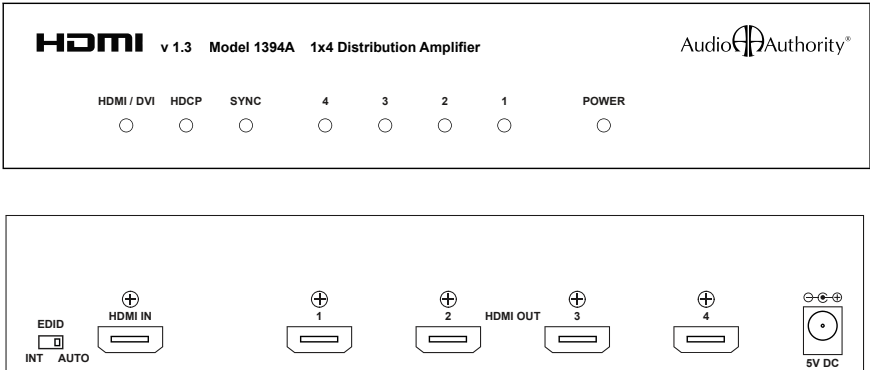
4.1 Large HDMI Distribution Systems

If you plan to install a very large HDMI signal distribution network, you should carefully plan to work within the HDCP system limitations. Audio Authority can help you design a distribution system that suits your needs and is easy to install and operate.

- Each system is limited to 128 HDCP Rx “nodes” including the first Rx node.
- Every HDMI device with an HDCP Rx chip counts as one node, including TVs, distribution amps, and switchers.
- HDCP limits the number of “layers” to 7. That means there can only be six switchers and/or distribution amps between a source and any TV. For this reason, a “hub and spoke” system architecture may be more appropriate than a “daisy chained” architecture.
- A distribution system feeding the highest number of displays allowable using two, four, and eight output distribution amps has a capacity of 108 TVs. The distribution amplifiers add up to 17 HDCP Rx nodes, and the source is one node, so the total number of downstream nodes in this system is 127.

5.0 CONNECTING THE HARDWARE

Please study the front and rear panel drawings and become familiar with the signal input, outputs and power input. The 1394A and 1398A are functionally identical except for the number of outputs.



The 1394A has a single HDMI input and four HDMI outputs. The 1398A has eight outputs. The Power LED indicates that the unit is receiving power.

- Connect an HDMI approved cable from the HDMI source to the input of the DA. Cable lengths should be kept as short as possible.
- Connect the outputs of the DA to their destination devices.
- Connect the power adapter to the AC source and then to the DA.
- Turn on the HDMI source and HDMI destination devices and observe the source signal on the inputs of all of the destination devices. The DA's front panel LEDs will light, indicating which outputs are active.
- Make certain that the HDMI cables are securely plugged into the source and display devices as well as the HDMI DA. Always use high quality cables, and the shortest length possible, for best results.
- Leave the EDID switch on the rear of the DA set to the factory default setting (AUTO).

The unit begins to function as soon as the AC adapter is connected to the unit and AC power. There is no power switch; no other operator interventions necessary.

Note: Proper operation of HDMI distribution amplifiers depends on the use of high quality HDMI cables with low loss, high bandwidth signal handling capabilities. The distance specification cannot be guaranteed unless cables used throughout the system meet these high standards.

6.0 TROUBLESHOOTING

- For 1080p resolution, first make certain that the input cable is as short as possible and none of the output cables are more than 30 meters long. HDMI cable design and quality are extremely important in long cable runs where capacitance can severely effect performance. Our 1391A Extender/DDC Corrector may be a necessary accessory to use in extreme length applications.
- Make certain that the distribution amplifier is receiving power by looking at the power LED. It should be illuminated and not flickering on and off. Intermittent operation generally means a problem with the DC power adapter or low AC voltage being applied to the DC adapter's input.
- If some lower resolution TVs do not display a picture, make sure the source is producing a resolution low enough that all TVs can accept it. Try 720p, or 1080i and, if possible, manually set your source to the desired resolution. In some cases, hot-plugging a high resolution display may actually reset the source to a resolution that cannot be accepted by some other TVs. You may need to separate your distribution system into separate 1080p, and 1080i systems with a source for each system.
- If you still experience problems using the distribution amplifier, you should attempt to determine what is wrong by first attaching the source device directly to each of the destination devices in turn using the same cables you are using with the expanded system. This is a way of determining if the problem is due to bad cables or a problem with the other devices. If you are unable to obtain a signal using this simplified path, suspect the cables, the source device or the destination device.
- Remember that HDMI devices communicate with one another so the source device and all destination devices must be fully HDMI capable. In addition, HDCP encryption requires processing dependent on the equipment you have connected to both the source and destination devices.

If a problem still persists after trying the above suggestions, contact the Audio Authority Technical Service department via email: support@audioauthority.com, or call 800-322-8346 or 859-233-4599.

7.0 SPECIFICATIONS

| | | |
|-------------------------|------------------------------|--|
| Compliance | HDMI | 1.3 compliant |
| | HDCP | 1.1 compliant |
| Video Inputs | HDMI (all models) | 1x via HDMI connector (Type A) |
| Video Output | 1394 HDMI | 4x via HDMI connector (Type A) |
| | 1398 HDMI | 8x via HDMI connector (Type A) |
| Audio Output | HDMI | HD-Audio, including Dolby® TrueHD & DTS-HD: Master Audio, Dolby Digital Plus |
| | Audio bandwidth | 20Hz to 20 KHz |
| General | Data rate | 2.25Gbps (single link) |
| | TMDS clock speed | 225MHz |
| | Color depth | 10/12 bit color depth display |
| | Supported PC/DVI resolutions | Up to 1920x1200 |
| | Supported video resolutions | 480i, 480p, 576i, 576p, 720p, 1080i and 1080p |
| | Compliance | HDMI V1.3, HDCP V1.1, DVI V1.0 |
| | Signal equalization | Internal |
| Maximum Cable Distances | Source to DA | 20m (60') for 1080p/8-bit 15m (45') for 1080p/12-bit |
| | DA to display | 15m (45') for 1080p/8-bit 10m (30') for 1080p/12-bit |
| Warranty | Limited warranty | 1 year parts and labor |
| Mechanical | 1394 (H-W-D, inches) | 2 x 8.6 x 5.8 (including feet) |
| | 1398 (H-W-D, inches) | 2 x 19 x 6.3 (including feet) |
| | 1394 weight | 1.88lbs (0.85kg) net |
| | 1398 weight | 4.4 lbs (2kg) net |
| Environmental | Operating temperature | 0° to +50°C (+32° to +122°F) |
| | Operating humidity | 10% to 90%, non-condensing |
| | Storage temperature | 0° to +50°C (+32° to +122°F) |
| | Storage humidity | 10% to 90%, non-condensing |
| Power Requirement | External power supply | 5VDC@2A (1394), 5VDC@5A (1398) |
| Regulatory Approvals | HDMI DAs | FCC, CE, RoHS |
| | Power supply | UL, CUL, CE, PSE, GS, RoHS |
| Accessories Included | AC power adapter | USA |
| | Jack screws | For locking cables |
| | Instruction manual | |

8.0 LIMITED WARRANTY

Should any consumer product from Audio Authority fail 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 1394A, and 1398A distribution amplifiers have been tested for compliance with appropriate FCC and CE rules and regulations and are also RoHS compliant.

The power adaptor/supplies have been tested for compliance with UL, CE and CSA rules and regulations and are also RoHS compliant.

10.0 CONTACT INFORMATION

Should 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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