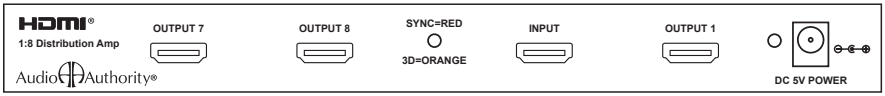
User Manual

Model 1398B

HDMI®

Distribution Amplifier



Audio Authority®

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.

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.

WARNINGS

Please read all instructions before attempting to unpack or install or operate this equipment, and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through module openings or empty slots, as you may damage parts.
- Do not attach the power supply cabling to building surfaces.
- Do not allow anything to rest on the power cabling or allow it to be abused by persons walking on it.
- To protect the equipment from overheating, do not block the slots and openings in the module housing that provide ventilation.

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1.0 INTRODUCTION

Thanks for purchasing this Model 1398B signal 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 1398B is HDCP 1.1 compliant, and HDMI v1.3 compliant, supporting 3d content, 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

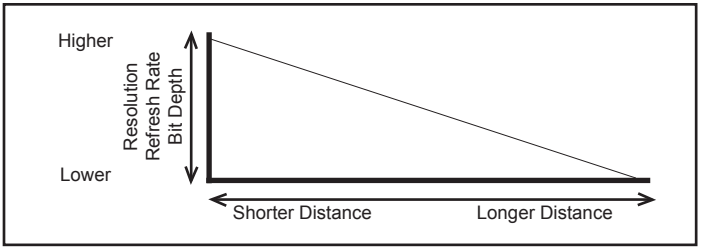
- Distributes one HDMI source signal to multiple destinations
- CEC Auto-Reset feature can be used to keep all displays set to input 1
- Outputs may be cascaded to create an extensive distribution network up to seven layers deep
- HDCP keysets allow each output to work independently when connected to an HDMI display; supports automatic discovery of display EDID
- Supports 3D content; LED indicates 2D HDMI (red) or 3D (orange).
- Supports up to 36 bit color depth /12 bits per color (TMDS channel)
- Supports resolutions up to 1080p@24/60Hz including 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, DVI 1.0 compliant
- Maximum HDMI cable length, source to input: 15m with 1080p/8bits resolution, or 10m with 1080p/12bits resolution (using 24AWG cables)
- Maximum HDMI cable length, output to display: 15m with 1080p/8bits or 1080p/12bits resolution (using 24AWG cables)
- Equipment used for 3D cable length tests: PlayStation 3, 40” Samsung LED UA40B700 12 bits LCD TV.
- Figures provided in this manual are for reference only, actual figures may depend on the source and display used along with the cables specifications.

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, 6A power adapter
- 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 be aware of system limitations related to content protection. 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 Rx “nodes” including the first Rx node.
- Every device with an Rx chip counts as one node, including TVs, distribution amps, and switchers.
- The number of “layers” is limited to seven. That means the number of switchers and/or distribution amps between a source and any TV must be six or fewer. 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 Rx nodes, and the source is one node, so the total number of downstream nodes in this system is 127.

4.2 About 3D Content Distribution

- When the input signal contains 3D data all connected displays must support 3D content in order to display an image.
- Distributing 3D content also implies that all viewers have the 3D glasses available for the appropriate TV. If this is not the case, 3D content may not be a good choice for general signal distribution.

5.0 INSTALLATION

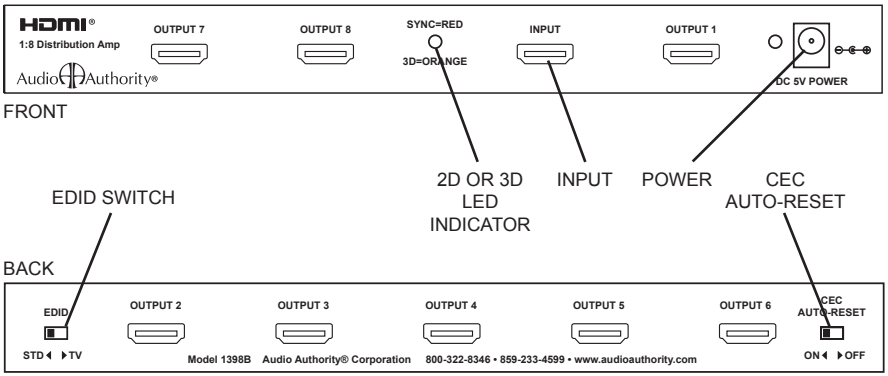
Study the front and rear panel drawings and become familiar with the controls, signal input, outputs and power input.

5.1 Wiring the System

- Connect an HDMI approved cable from the HDMI source to the input of the 1398B. Cable lengths should be kept as short as possible.
- Connect the outputs of the 1398B to their displays or other devices.
- Connect the power adapter to the AC source and then to the 1398B.

- Make certain that the HDMI cables are securely plugged into the source and display devices as well as the 1398B. Always use high quality cables, and the shortest length possible, for best results.
- Turn on the HDMI source and HDMI destination devices and observe the source signal on the inputs of all of the destination devices. The 1398B front panel LED lights up, indicating 2D or 3D sync.
- The unit begins to function as soon as the AC adapter is connected to the unit and AC power. There is no power switch.• 2D/3D LIGHT: This LED turns red when the input signal is not 3D. If the input signal is 3D the LED changes to orange.

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.



5.2 Operation

1. **CEC AUTO-RESET:** Triggers a periodic reset via the Consumer Electronics Control circuit. Use this feature when one display may send a signal to other displays changing their settings. When CEC AUTO-RESET is on, the 1398B switches each display to its HDMI input #1 every 8-10 minutes. It does not work on displays that do not support CEC, or if CEC is turned off.
2. **EDID* SWITCH:** Leave on TV setting, which supports 3D content, unless some TVs do not sync with the source. In TV mode the 1398B reads the EDID on output 1 and records it, then allows the source to send matching HDMI signals to the other seven HDMI outputs. In STD mode the 1398B uses its built-in EDID, which is set at 1080p@60/12bits for video and LPCM 2Ch for audio. Use this setting when there is a problem getting the source to send a signal to all of the connected displays.

* Extended Display Identification Data

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 some displays are not receiving video signal, or lose signal, check to see if they are on the wrong input. One display may be sending out a CEC command, changing the inputs on other displays. Turn on the 1398B CEC AUTO-RESET (see page 7), or turn the displays' CEC feature off.
- If you still experience problems using the distribution amplifier, troubleshoot 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 reduced blanking
	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	15m (45') 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	Dimensions(mm)	240 (W) x 103 (D) x 25(H)
	Weight(g)	225
Environmental	Operating Temperature	0°C~40°C / 32°F~104°F
	Storage Temperature	-20°C~60°C / -4°F~140°F
	Relative Humidity	20 ~ 90% RH (non-condensing)
	ESD Protection (Human body model)	±8kV (air-gap discharge) ±6kV (contact discharge)
Power Requirement	External power adapter	5VDC@6A
Regulatory Approvals	HDMI DAs	FCC, CE, RoHS
	Power adapter	US/EU standards, CE/FCC/UL certified
Accessories Included	AC power adapter	5V / 6A DC locking, USA
	Instruction manual	Printed

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

Model 1398B distribution amplifiers have been tested for compliance with appropriate FCC and CE rules and regulations and are also RoHS compliant.

The power adaptor has been tested for compliance with UL, CE and CSA rules and regulations and is 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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