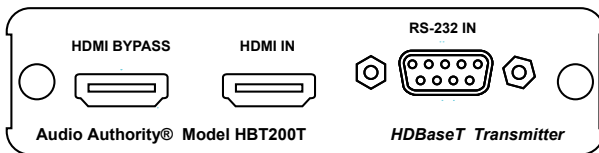


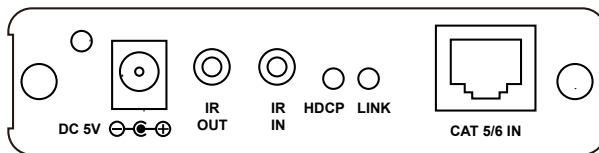
User Manual



Model HBT200T and Model HBT200R HDMI® and Control Signal Extension System



Model HBT200T



Model HBT200R



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.

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

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

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 HBT200 series signal extender from Audio Authority®, perfect for use in homes, restaurants, classrooms, boardrooms, and retail stores. This system is designed to extend HDMI® and control signals over a single Cat 5e/6 cable up to 330 feet without compression. The HBT200 series supports two-way IR and RS-232 signal transmission in addition to uncompressed HDMI audio/video formats. Supports 3D content, deep color video and Dolby TrueHD and DTS-HD Master Audio. Fully HDMI and HDCP compliant.

Audio Authority also offers an extensive line of audio and video switchers, converters and distribution amps available for purchase online at audioauthority.com.

1.1 FEATURES

- Extends HDMI signals, plus bi-directional RS-232 and IR, via one UTP cable
- Extension range up to 330 feet (100m)
- Resolutions up to 1080p@60Hz including 480i, 480p, 720p, 1080i, 1080p and multiple PC resolutions
- Supports 3D content
- Supports up to 36 bit color depth /12 bits per color (TMDS channel)
- Dolby Digital Plus, Dolby® Digital TrueHD and DTS-HD: Master Audio, up to 7.1 channels
- HDMI version 1.4 compliant, HDCP 1.1 compliant, DVI 1.0 compliant
- CEC signal transmission (Consumer Electronics Control)

2.0 CHECKING PACKAGE CONTENTS

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

- Model HBT200T transmitter
- 5 VDC, 2.6A power adapter
- Model HBT200R receiver
- 5 VDC, 2.6A power adapter
- IR Emitter
- IR Receiver
- User manual

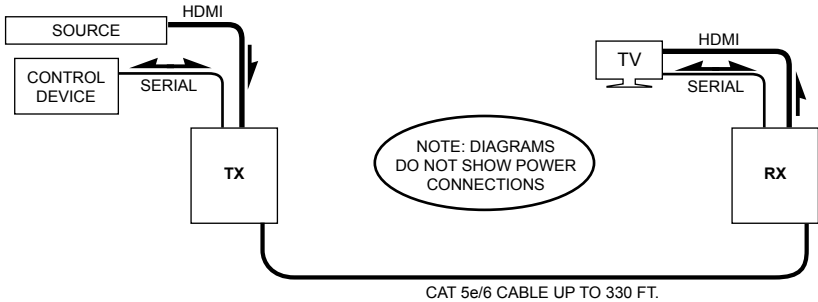
Note: please keep the original packing material in case the unit ever needs to be returned. If you find any items are missing, contact Audio Authority immediately. Have the model number and invoice available for reference when you call.

3.0 APPLICATIONS

The diagrams below illustrate connections and functions for HBT200 Series extension applications. These functions can be combined in the same system.

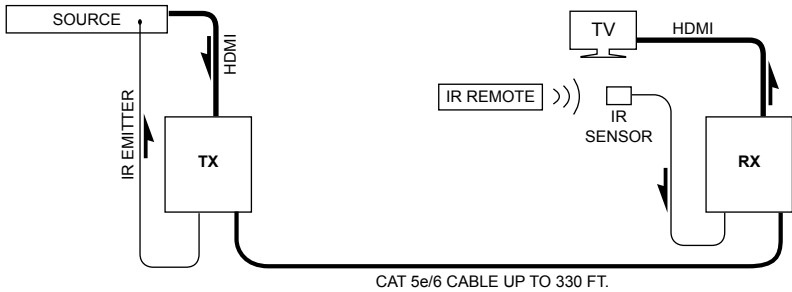
Serial Control

A control system sends RS-232 commands to the TV to control on/off, input selection, etc. The TV can respond with a confirmation message.



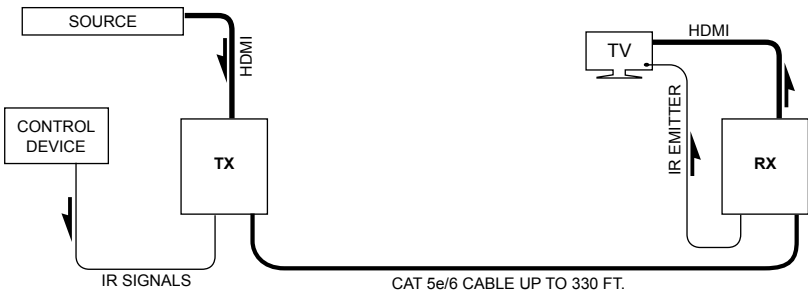
Source Control Via IR

A remote control in the zone sends IR signals back to the head end to control equipment such as a media player, satellite receiver or cable box.



TV Control Via IR

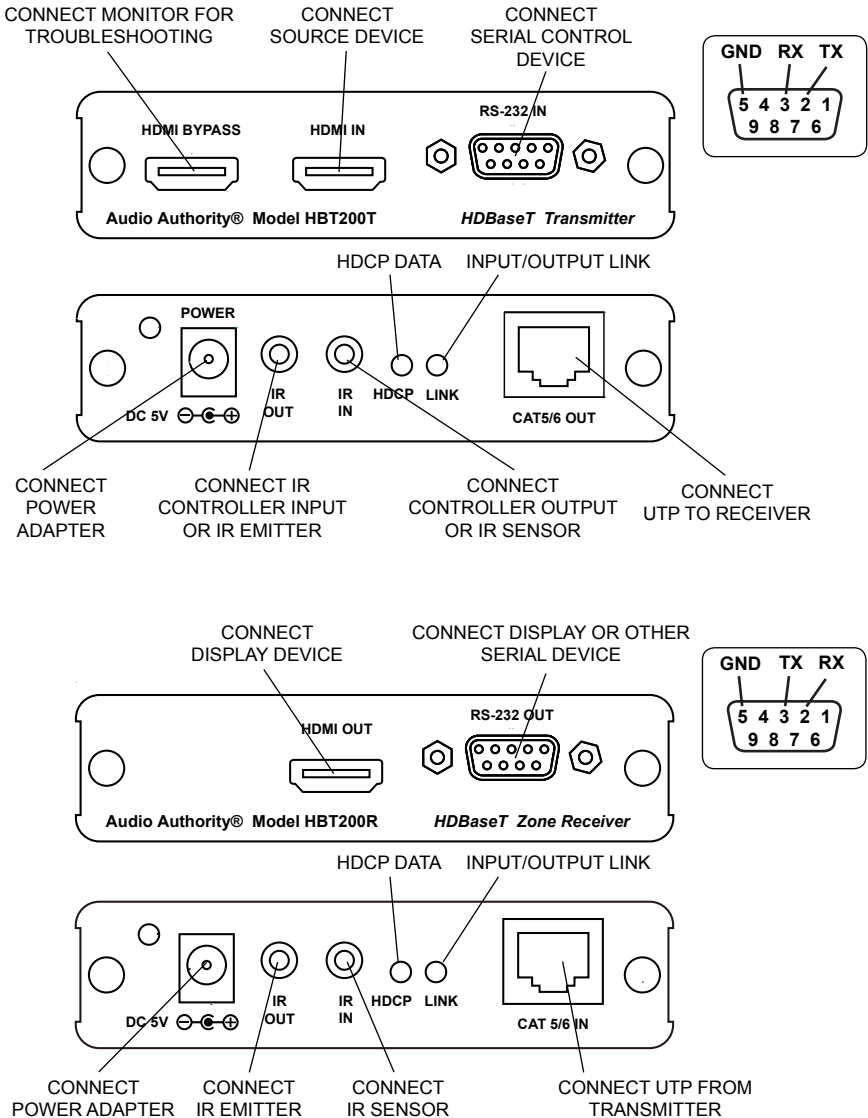
A control system at the head end sends IR signals to the TV in the zone for on/off and input selection, etc. This application is useful for RF control systems or systems with wired keypads.



4.0 CONNECTIONS AND INDICATORS

The transmitter and receiver panels are shown below. Note the following:

- **HDMI BYPASS** this port is provided for troubleshooting purposes. If a display device is connected to the BYPASS port the Cat 5 output is disabled.
- **RS-232** ports provide a 2-way communication pathway via the Cat 5 cable.
- **HDCP** indicator lights red when content is HDCP encrypted, and flashes when content is not encrypted.
- **LINK** indicator lights yellow when video source and display are connected.



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 for Video Transmission

- Connect an HDMI approved cable from the HDMI source to the input of the HBT200T, and from the HBT200R to the display device.
- Make certain that the HDMI cables are securely plugged into the source and display devices as well as the HBT200 units. Always use high quality cables, and the shortest length possible, for best results.
- Connect the HBT200T and HBT200R power adapters to the AC source and then to the extenders.
- Turn on the HDMI source and HDMI destination devices and observe the source signal on the inputs of all of the destination devices. Check the LED indicators on the transmitter and receiver to verify proper operation.
- The unit begins to function as soon as the AC adapter is connected to the unit and AC power. There is no power switch.

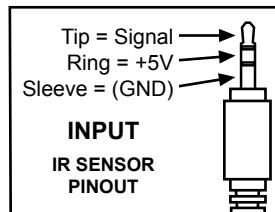
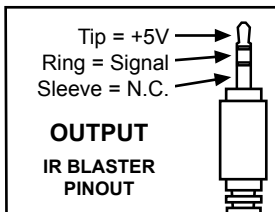
5.2 Wiring the System for Control Signal Transmissions

Serial and/or IR control signals may be transmitted over the Cat 5e/6 cable without impacting video performance.

For two-way serial control, use a standard serial cable (pinout shown on page 6) at each end of the HBT200 system.

To control a TV or other device at the receiver end (zone location) connect an IR sensor or control device output to the HBT200T IR input, and connect an IR emitter to the HBT200R output (see illustrations).

To control a source or other device at the head end (transmitter location) connect an IR sensor to the HBT200R IR input, and connect the HBT200T IR output to the device via 3.5mm patch cord or IR emitter.



6.0 TROUBLESHOOTING

- For 1080p resolution, first make certain that the input cable is as short as possible and none of the HDMI cables are more than three meters long. HDMI cable design and quality are extremely important in long cable runs where capacitance can severely effect performance.
- Make certain that the HBT200 units are 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 the display does not show a video signal, check to see if it is on the wrong input.
- If you still experience problems, troubleshoot by first attaching the source device directly to the destination device using the same cables you are using on the input and output of the extension 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	1.4 compliant with 3D, 4k x 2k support
	HDCP	1.1 compliant
Video Input	HDMI	1x via HDMI connector (Type A)
Video Output (HBT200T)	HDMI bypass (for testing only)	1x via HDMI connector (Type A)
Video Output (HBT200R)	HDMI output	1x via HDMI connector (Type A)
Extension Input/Output	Modular connector	Cat 5e/6 UTP cable, EIA-568B termination
Audio Output	HDMI	Dolby® TrueHD and DTS-HD: Master Audio
Control Signals	IR Frequency	20-60-KHz
	Baud Rate (RS-232)	
General	Data rate	2.25Gbps (single link)
	TMDS clock speed	225MHz
	Color depth	8/10/12 bit color depth display
	Supported PC/DVI resolutions	Up to 1920x1200 reduced blanking
	Supported video resolutions	480i, 480p, 576i, 576p, 720p, 1080i and 1080p
Maximum Cable Distances	Transmitter to receiver	100m (330') for 1080p/12-bit Using category 5e or 6 cable
	Source to transmitter	15m (45') for 1080p/8-bit 15m (45') for 1080p/12-bit
	Receiver to display	15m (45') for 1080p/8-bit 10m (30') for 1080p/12-bit
Warranty	Limited warranty	1 year parts and labor
Mechanical	Dimensions, inch WxDxH	4 x 4.2 x 1 inches (102 x 107 x 25 mm)
	Weight (TX or RX)	8.45 / 8.6 oz. (240g / 245g)
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) ±4kV (contact discharge)
Power Consumption	TX / RX	2W / 6W
Regulatory Approvals	TX / RX Extender Unit	FCC, CE, RoHS
	Power adapter	US/EU standards, CE/FCC/UL certified
Accessories Included	AC power adapter (x2)	5V / 2.6A DC locking, USA
	Instruction manual	Printed

8.0 LIMITED WARRANTY

If any Audio Authority product 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

Model HBT200T and HBT200R have been tested for compliance with appropriate FCC and CE rules and regulations and are also RoHS compliant.

The power adapters 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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