CH-701TR

USB 2.0 Hub Transceiver with Audio/LAN

Operation Manual

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, 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 any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.
- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
RDV1	2020/04/07	Preliminary release
RDV2	2020/07/06	Updated cable distance specs

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1. INTRODUCTION

Currently, USB is the most prevalent interface standard in use today, and almost every webcam, storage device, and HID (Human Interface Device) uses it. Applications for USB are everywhere, so naturally the need to extend the range of a USB connection is just as common. This USB 2.0 Hub Transceiver with Audio/LAN provides a simple and efficient way to extend not only USB 2.0 signals, but also stereo audio, and LAN connectivity. These signals are extended as a high quality, uncompressed, data stream over a single Cat.5e cable with a maximum length of up to 100 meters (328 feet).

A typical system can support one USB host and up to 6 USB devices (3 on the transmitter side and 3 on the receiver side). The location of the USB host device is automatically set by hot plug detection, but can also be manually controlled using a front panel button. This unit supports bi-directional PoC (Power over Cable) and can receive, or provide, power from/to the connected unit.

2. APPLICATIONS

- Security and monitoring
- Industrial Control
- Conference room and boardroom KVM Extension

3. PACKAGE CONTENTS

- 2× USB 2.0 Hub Transceiver with Audio/LAN
- 1× 24V/2.7A DC Power Adapter
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

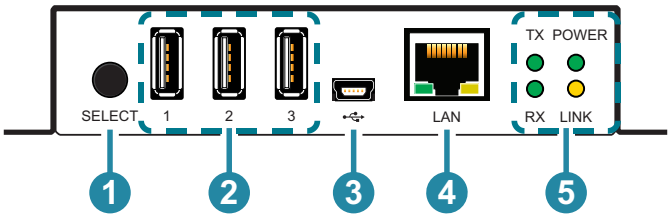
- The use of industry standard Cat.6, Cat.6A or Cat.7 cable is highly recommended.

5. FEATURES

- 1 USB 2.0 host and 3 USB 2.0 device ports
- 2 100BaseT LAN ports with switching hub functionality
- 2 3.5mm stereo audio ports (1 input, 1 output)
- HDB-AUX feature support: Stereo Audio, 100BaseT Ethernet, and PoC (bi-directional)
- Supports transmission distances of up to 100m over a single Cat.5e, or better cable
- Supports USB host connection auto detection
- All USB device ports on both the transmitting unit and receiving unit are active simultaneously, allowing for the connection of up to 6 USB 2.0 devices to a single host
- Supplies up to 1A to each USB port
- Unit can be powered directly, or via PoC from a compatible HDB-AUX unit
- When powered by a local power supply, the unit can provide power to a compatible HDB-AUX unit via PoC
- USB host selection is controllable via a front panel button

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



1. **SELECT Button:** Press this button to manually toggle the unit between Tx and Rx mode.

   Note: The connected transceiver device will also change modes.

2. **USB 2.0 (Type A) Device Ports:** Connect directly to standard USB devices such as a mouse, keyboard or flash drive to extend their USB functionality to the currently active USB Host Port.

   Note: These ports are always active, regardless of Tx/Rx mode.

3. **USB 2.0 (Mini B) Host Port:** Connect directly to a USB host such as a PC or laptop to extend their USB functionality to all currently connected USB devices.

   Note: This port is only active when the unit is in Rx mode. Connecting a live host to a unit that is in Tx mode will automatically switch the unit to Rx mode.

4. **LAN Port:** Connect to an Ethernet supporting device or to your local network, as appropriate, to extend the network to all LAN ports at both ends of the HDB-AUX connection.

5. **Status LED Block:**

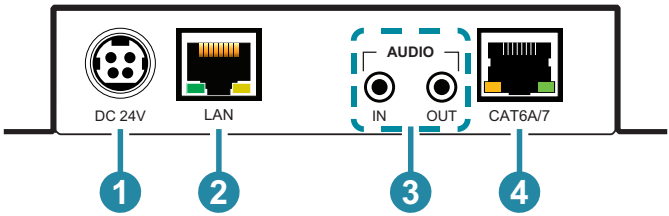
   TX LED: This LED will illuminate solidly when unit is in Tx mode.

   RX LED: This LED will illuminate solidly when unit is in Rx mode.

   POWER LED: This LED will illuminate to indicate the unit is on and receiving power.

   LINK LED: This LED will illuminate solidly when a live connection with a compatible receiver is active.

6.2 Rear Panel



1. **DC 24V Port:** Plug the 24V DC power adapter into this port and connect it to an AC wall outlet for power. (Optional).

   Note: This connection is not required if the unit is receiving PoC from a compatible transceiver.

2. **LAN Port:** Connect to an Ethernet supporting device or to your local network, as appropriate, to extend the network to all LAN ports at both ends of the HDB-AUX connection.

3. **AUDIO IN Port:** Connect to the analog stereo output of a device such as an audio player or PC.

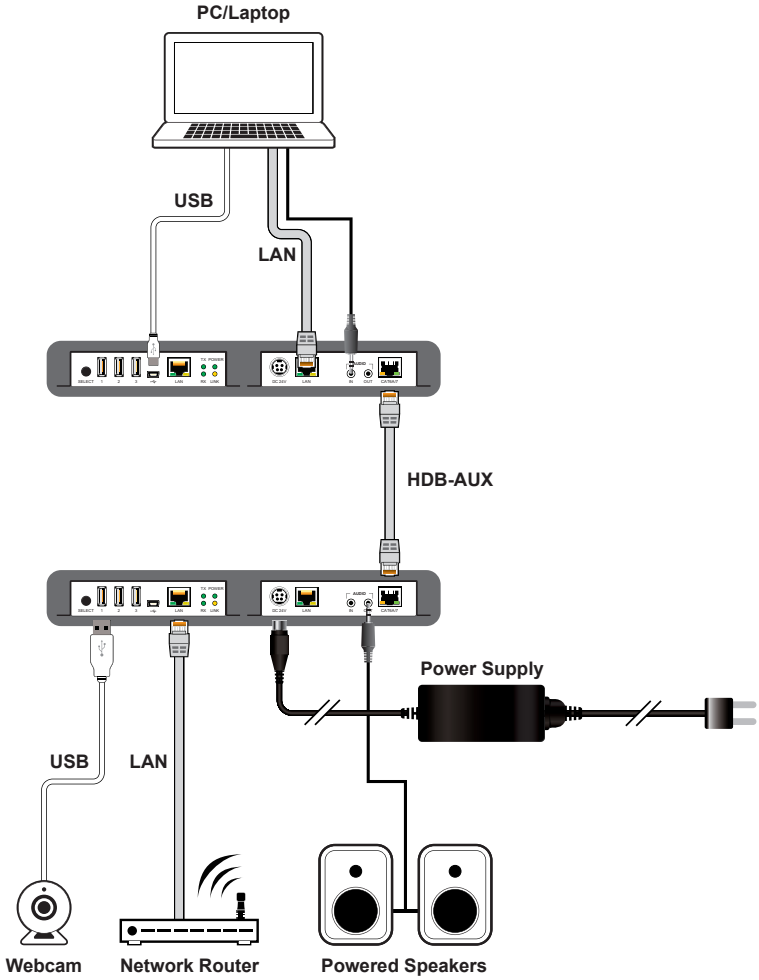
   Note: Audio is passed directly the Audio Out port on the unit at the other end of the HDB-AUX connection.

   AUDIO OUT Port: Connect to powered speakers or an amplifier for analog stereo audio output.

4. **CAT6A/7 Port:** Connect to a compatible HDB-AUX transceiver with a single cable for transmission of all data signals. Bi-directional power via PoC is supported when connected to a compatible unit.

   Note: The PoC function is designed to receive or transmit power between compatible units only. Other brands are not compatible.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDB-AUX Bandwidth	500Mbps
Input Ports	1×Analog Stereo (3.5mm)
Output Ports	1×Analog Stereo (3.5mm)
Bi-Directional Port	1×HDB-AUX (RJ-45)
Pass-through Ports	3×USB 2.0 (Type A)
	1×USB 2.0 (Mini B)
	2×LAN (RJ-45)
Power Supply	24V/2.7A DC
	(US/EU standards, CE/FCC/UL certified)
	or PoC from a connected transceiver
ESD Protection (HBM)	±8kV (Air Discharge)
	±4kV (Contact Discharge)
Dimensions (W×H×D)	128mm×25mm×108mm [Case Only]
	128mm×28mm×117mm [All Inclusive]
Weight	370g
Chassis Material	Metal (Steel)
Chassis Color	Black
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)
Power Consumption	52W(Max)

8.2 Audio Specifications

8.2.1 Analog Audio

Analog Input	
Max Audio Level	2Vrms
Impedance	10kΩ
Type	Unbalanced

Analog Output	
Max Audio Level	2Vrms
THD+N	< −80dB@0dBFS 1kHz (A-wt)
SNR	> 80dB@0dBFS
Frequency Response	< ±1dB@20Hz~20kHz
Crosstalk	< −80dB@10kHz
Impedance	470Ω
Type	Unbalanced

8.3 Cable Specifications

Cable Length	
Ethernet Cable	
Cat.5e/6	100m
Cat.6A/7	100m

8.4 HDB-AUX Features

HDB-AUX Feature Set	Transmitter Mode
Audio Extension	Supported
LAN Extension	Supported
Send power to Receiver	Supported (PoC)
Accept power from Receiver	Supported (PoC)
IR Extension	Unsupported
RS-232 Extension	Unsupported
USB 2.0 Extension	Supported

HDB-AUX Feature Set	Receiver Mode
Audio Extension	Supported
LAN Extension	Supported
Send power to Transmitter	Supported (PoC)
Accept power from Transmitter	Supported (PoC)
IR Extension	Unsupported
RS-232 Extension	Unsupported
USB 2.0 Extension	Supported

9. ACRONYMS

ACRONYM	COMPLETE TERM
AVoIP	Audio/Video over IP
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
dB	Decibel
Gbps	Gigabits per second
kHz	Kilohertz
KVM	Keyboard/Video/Mouse
LAN	Local Area Network
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MHz	Megahertz
PD	Powered Device
PoC	Power over Cable
PSE	Power Sourcing Equipment
SNR	Signal-to-Noise Ratio
THD+N	Total Harmonic Distortion plus Noise
USB	Universal Serial Bus
VoIP	Video over IP
Ω	Ohm

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