HT Series

HDBaseT Supercharged

HDMI 4K60 4:4:4 HDBaseT CAT Extenders

HDBT™

SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.

The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product.

The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.

Be careful with electricity:

- **Power Outlet:** To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use the power adapter and power connection cables designed for this unit.
- **Power Cord:** Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning:** For protection from lightning or when the product is left unattended for a long period, disconnect it from the power source.

Also follow these precautions:

- **Ventilation:** Do not block ventilation slots, if applicable, on the product, or place any heavy object on top of it. Blocking airflow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating:** Avoid stacking the Aurora product on top of a hot component, such as a power amplifier.
- **Risk of Fire:** Do not place unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections:** Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry:** To avoid electric shock, never stick anything in the slots on the case, or remove the cover.
- **Water Exposure:** To reduce the risk of fire or electric shock, do not expose to rain or moisture.
- **Cleaning:** Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD:** Handle this unit with proper ESC care. Failure to do so can result in failure.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two (2) conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

Trademarks

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TABLE OF CONTENTS

PACKAGE CONTENTS

Please make sure the following items are included within your package. Contact your dealer if any items are missing or damaged.

HTE-RX2

- HTE-RX2 x 1
- Wall/Desk Mount Ears with Screws x 4

HTE-TX2

- HTE-TX2 x 1
- Wall/Desk Mount Ears with Screws x 4

HTW-2

- HTW-2 x 1 (-W for white, -B for black)

Note: Some 2 gang electrical boxes or mud rings have curved or beveled corners that may prevent the HTW-2from properly fitting. Make certain to use a brand that fits the full dimensions listed in the specification section.

Optional Accessories

- PS0094-2 48V DC Wall Power Supply
- PS0081-1 48v DC Desktop PoE+ Injector

Note: Go to www.auroramm.com for latest manual and firmware.

OPTIONAL ACCESSORIES

- **IR Receiver CA0026-1**

- **IR Emitter CA0061-1**

- **RS-232 Adaptor CA0052-F2T3R**
  (3.5mm TRS to FEMALE DB89 2-TX 3-RX)
  RS-232 Adaptor CA0052-F3T2R
  (3.5mm TRS to FEMALE DB89 3-TX 3-RX)
  RS-232 Adaptor CA0052-M2T3R
  (3.5mm TRS to MALE DB9 2-TX 3-RX)
  RS-232 Adaptor CA0052-M3T2R
  (3.5mm TRS to MALE DB9 3-TX 2-RX)

INTRODUCTION

About

The HTW-2 transmitter wall plate, HTE-TX2 transmitter, and HTE-RX2 HDBaseT 2.0 products are part of Aurora's HT Series capable extending 4K60 4:4:4 & HDR (18Gbps) 100m (330′) with unshielded cable. The 2-gang low depth Decora™ wall plate is not only stylish but extremely functional with 3 inputs (1 VGA & 2 HDMI). All units have directional USB to allow a user to choose which side the host (PC) vs the device (peripheral) will be located. Built in IP port expansion allows any 3rd party control system to send commands directly to the unit for source switching, RS-232, and IR control. Aurora is the only product to allow a single PoE port power both the TX and RX at the same time with no wall supplies required for a very clean installation. For easier integration into an audio system, the HT Series is the only HDBaseT product to have optional Dante/AES67 up to 8 channels for surround sound. The Aurora HT Series re-invents the capabilities of HDBaseT beyond the typical point to point making it the ultimate HDBaseT integrator solution.

Features

- 4K60 4:4:4 18Gbps
- HDR (high Dynamic Range)
- HDCP 1.4/2.2
- 100m (330ft) with Unshielded Cable
- HDMI® 2.0/HDCP 2.2
- Audio DSP & Dante™/AES67 Options 2 or 8 Channel
- ARC Audio Return Channel and ARC into Dante/AES67 Industry First!
- Operate & Power both TX & RX from a single PoE Switch Port
- Auto Switching
- Two HDMI® Inputs & One VGA Input (HTW-2)
- Two HDMI® Inputs (HTE-TX2)
- Two HDMI® Outputs (HTE-RX2)
- 1G Local LAN Ports, 10/100 over the HDBaseT Connection
- USB 2.0 Device/Host with Selectable Direction
- IP Port Expansion Control, RS-232 & IR Control
- ReAX Control Option

Note: Refer to Technical Specifications section.

Warning: Do not plug RJ-45 HDBaseT output to non-HDBaseT complaint devices or damage may occur to either product.

HTE-TX2 Front & Rear

Front LED Indicators

- **POWER:** Lights green when power is present.
- **STATUS:** Will blink steady if unit is working properly.
- **HDBT:** Lights when HDBaseT RJ-45 has proper connection between an RX/TX pair. Blinks when in sleep mode.
- **HDMI:** Will light solid if HDMI is plugged in on both RX/TX and HDCP is present. If no HDCP, LED will blink.
- **TX:** RS-232 Transmit. Blinking rate and intensity will vary with baud rate.
- **RX:** RS-232 Receive. Blinking rate and intensity will vary with baud rate.
- **IR TX:** Blinks when emitting IR to device from IR Out Port.
- **IR RX:** Blinks when receiving IR from IR RX port.
- **USB Host:** When lit the rear micro USB port should be used and connected to the PC.
- **USB Device:** When lit the Front Dual USB ports should be used and connected to the peripherals like keyboard, mouse, memory stick, camera, etc.

Front Buttons

- **Function:** Press to scroll between various capabilities that can be modified with the select button.
- **Select:** Allows the changing of features based on the function mode selected.

Front Connections

- **Dual USB 2.0:** USB 2.0 connectors. Units USB Device LED must be lit for it to function properly with remote end. Can also be used to charge devices.

- **IR OUT:** Plug the IR emitter into this port and affix onto the device where its IR window is located.
- **IR IN:** Plug the IR receiver into this port. The front built in IR receiver will no longer work once the external receiver is plugged in. Note this port should be used with Aurora IR receiver model as other brands may not follow the correct pinout or voltage.
- **IR:** IR receiver capable of 32KHz to 60KHz range.

Rear Connections

- **48V DC:** Power connector for 25-watt 48VDC power supply (PS0094-2-S).

Note: Only 1 supply is required to power both units. Either side can send power to the other unit.

Note: If LAN PoE is utilized the 48VDC supply is not required.

- **RS-232:** Connect RS-232 device up to 115k baud.
- **LAN1/2:** 1Gbps LAN connection. LAN1 can use PoE or PoE+ from a PoE switch to power both the RX and TX units.
- **HDBaseT:** Connect CAT 5e/6/7 cable. Shielded cable is not necessary unless the environment has a lot of electrically noise.
- **HDMI Input 1/2:** Plug HDMI cable from source device like a Blu-ray player. Source can be selected from RS-232, Ethernet, Auto Sense Mode, or front buttons.
  Note: The HDMI cable should be rated for the bandwidth you are using.
- **Audio Line In/Out:** Euro Style connector for stereo line in and line out.
- **USB 2.0 Host:** Micro USB 2.0 Connector for connection to PC. Unit must be set for Host mode for it to properly operate.

Note: Some POE switches do not supply the full 15.4watts per port. Verify the total power rating of the switch. It should be at least 15.4W x (number of ports) and ideally 25.4W (PoE+) per port if USB peripherals are to be utilized.

Option Port

Inside the unit there is an option card connector for the Dante 2ch or 8ch option or the ReAX control system option. Only one of the cards can be installed into a unit. To access the port, power off unit and the 4 screws (2 on each side) must be removed. Take the cover off and insert the card in the proper orientation as indicated on the circuit board. Put cover back on and apply power. Don't forget to note the MAC address of the card to identify which unit it is in.

HTE-RX2 Front & Rear

Front LED Indicators

- **POWER:** Lights green when power is present.
- **STATUS:** Will blink steady if unit is working properly.
- **HDBT:** Lights when HDBaseT RJ-45 has proper connection between an RX/TX pair. Blinks when in sleep mode.
- **HDMI:** Will light solid if HDMI is plugged in on both RX/TX and HDCP is present. If no HDCP, LED will blink.
- **TX:** RS-232 Transmit. Blinking rate and intensity will vary with baud rate.
- **RX:** RS-232 Receive. Blinking rate and intensity will vary with baud rate.
- **IR TX:** Blinks when emitting IR to device from IR Out Port.
- **IR RX:** Blinks when receiving IR from IR RX port.
- **USB Host:** When lit the rear micro USB port should be used and connected to the PC.
- **USB Device:** When lit the Front Dual USB ports should be used and connected to the peripherals like keyboard, mouse, memory stick, camera, etc.

Front Buttons

- **Function:** Press to scroll between various capabilities that can be modified with the select button.
- **Select:** Allows the changing of features based on the function mode selected.

Front Connections

- **Dual USB 2.0:** USB 2.0 connectors. Units USB Device LED must be lit for it to function properly with remote end. Can also be used to charge devices.

- **IR OUT:** Plug the IR emitter into this port and affix onto the device where its IR window is located.
- **IR IN:** Plug the IR receiver into this port. The front built in IR receiver will no longer work once the external receiver is plugged in. Note this port should be used with Aurora IR receiver model as other brands may not follow the correct pinout or voltage.
- **IR:** IR receiver capable of 32KHz to 60KHz range.

Rear Connections

- **48V DC:** Power connector for 25-watt 48VDC power supply (PS0094-2-S).

Note: Only 1 supply is required to power both units. Either side can send power to the other unit.

Note: If LAN PoE is utilized the 48VDC supply is not required.

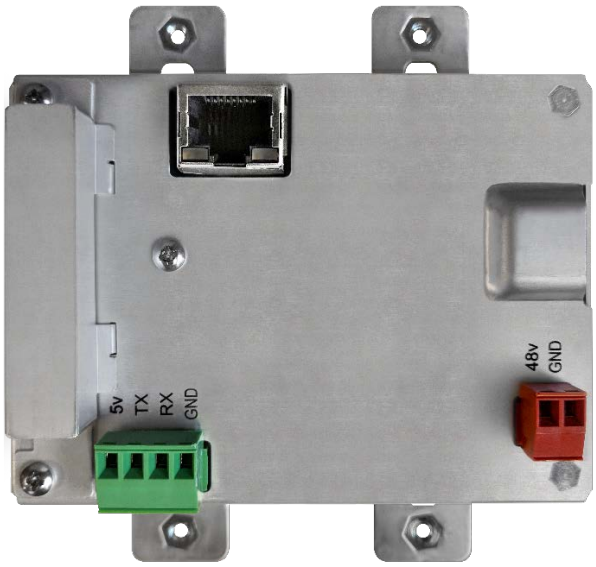
- **RS-232:** Connect RS-232 device up to 115k baud.
- **LAN1/2:** 1Gbps LAN connection. LAN1 can use PoE or PoE+ from a PoE switch to power both the RX and TX units.
- **HDBaseT:** Connect CAT 5e/6/7 cable. Shielded cable is not necessary unless the environment has a lot of electrically noise.
- **HDMI Output 1/2:** Plug HDMI cable from device like a LCD monitor. Both outputs will show the same signal. It is designed for loop through. ***Note: The HDMI cable should be rated for the bandwidth you are using.***
- **Audio Line In/Out:** Euro Style connector for stereo line in and line out.
- **USB 2.0 Host:** Micro USB 2.0 Connector for connection to PC. Unit must be set for Host mode for it to properly operate.

Note: Some POE switches do not supply the full 15.4watts per port. Verify the total power rating of the switch. It should be at least 15.4W x (number of ports) and ideally 25.4W (PoE+) per port if USB peripherals are to be utilized.

Option Port

Inside the unit there is an option card connector for the Dante/AES67 2ch or 8ch option or the ReAX control system option. Only one of the cards can be installed into a unit. To access the port, power off unit and the 4 screws (2 on each side) must be removed. Take the cover off and insert the card in the proper orientation as indicated on the circuit board. Put cover back on and apply power. Don't forget to note the MAC address of the card to identify which unit it is in.

HTW-2 Front & Rear



Front Left Side

- **In1 Button:** The blue backlit button will select the VGA.
- **DB15 VGA Connector:** VGA up to 1080p can be input. The VGA will be converted to HDMI and sent HDBaseT to the receiver unit. Note: See appendix for pin out information.
- **Line In:** Audio input for the VGA connector sources to be embedded in HDMI
- **Line Out:** Audio output for ARC, Loop out, or Dante option.
- **RJ-45 LAN Connector:** 1Gbps locally and 10/100 LAN via HDBaseT receiver unit.
- **IR Window:** Receiver for IR signals from remote ranging between 32KHz to 60KHz.

Front Right Side

- **In2 and In3 Buttons:** The buttons will select between HDMI In2 or HDMI In3 and will light accordingly.
- **HDMI Connectors:** Use with HDMI 2.0 or DVI sources like Blu-ray players, laptops, etc.
- **Dual USB 2.0 Connectors:** USB 2.0 480Mbps and supplies up to 1A of power between both ports. Great for charging port of USB devices like phones and certain tablets. When in USB Host Mode the bottom port is for PC (Type A to Type A cable is supplied) and upper port is charging only. When in Device mode both ports work on a hub for mouse, keyboard, camera, memory stick, etc.

Rear Connections

- **48V DC**: Power connector for 48V DC power supply. If remote device can supply power over HDBaseT then the local power is not required. Currently all receiver types from Aurora supply power over the

HDBaseT.

- **HDBaseT:** Connect CAT 5e/6/7 cable. Shielded cable is not necessary unless the environment has a lot of electrically noise.
- **RS-232:** Connect RS-232 device up to 115k baud. Note there is a 5v line as it is designed to power the DXB-8 8 button wall plate.

Note: Some 2 gang electrical boxes or mud rings have curved or beveled corners that may prevent the HTW-2 from properly fitting. Make certain to use a brand that fits the full dimensions listed in the specification section.

Note: Only 1 supply or PoE is required to power both units from RX which can send power to the wall unit.

Note: If LAN POE is utilized at the RX the 48VDC supply is not required.

Option Port

On the rear of the unit there is an option card connector for the Dante/AES67 2ch or 8ch option or the ReAX control system option. Only one of the cards can be installed into a unit. To access the port, power off unit and the 2 screws (1 on each side) must be removed. Take the cover off and insert the card in the proper orientation as indicated on the circuit board. Put cover back on and apply power. Don't forget to note the MAC address of the card to identify which unit it is in.

OPERATION

Source Selection

The HT Series can change between the various sources via front buttons, RS-232, LAN, and Auto-Sense. Once a source is selected the display will lock within a few seconds. The time to lock depends on the display but typical time can be from 3-5 seconds. Keep in mind the HTW-2 series does not scale so what comes in is what will go back out for both the VGA and the HDMI. Most modern displays have scalers and the HT Series can handle resolutions up to 4K60 4:4:4.

Auto Sense

The HT Series has Auto-Sense capability. Auto-Sense will automatically switch to the last HDMI or VGA input connected provided a hot-plug is provided from the source device. The HTW-2 factory default is enabled but can be disabled and saved in non-volatile memory via RS-232 command. In addition, the front button selection or RS-232 control will allow the HT Series to switch away until another new input is detected. For example, if a user has a laptop plugged into the VGA port and then connects a Blu-ray® player to the HDMI, the HTW-2 will automatically switch to the HDMI input. If after that the laptop is disconnected or signal is removed with function keys and reconnected the HTW-2 will switch back to the laptop. If an RS-232 command is received to switch to the opposite input the unit will do so as well. Whenever a source is changed the LED on the button will follow and the RS-232 ports will send a response string to let a remote device know that a change has occurred.

EDID Handling

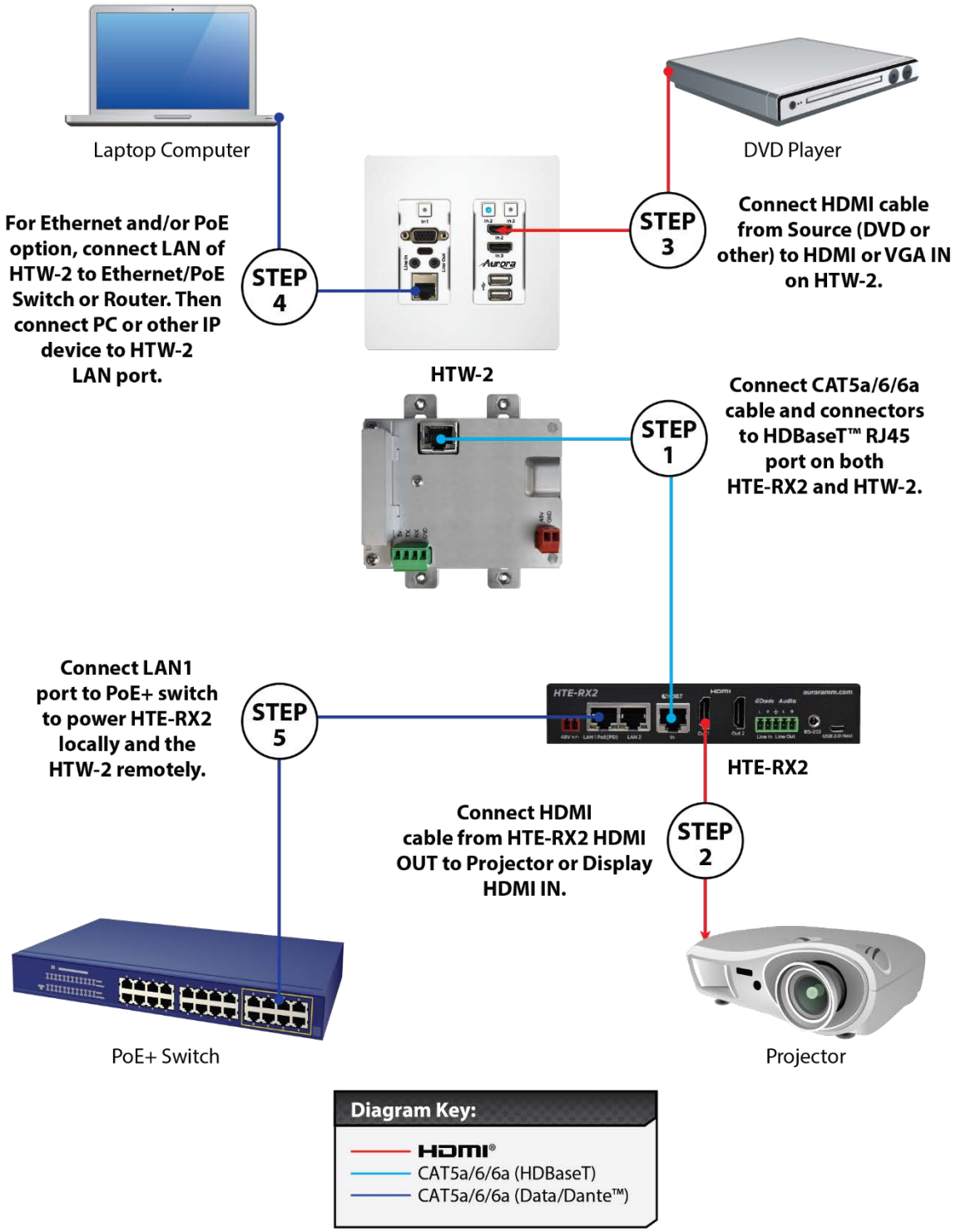
The HDMI port will retrieve the EDID from the destination device (ex. Projector, LCD, Matrix, etc.) via the HDBaseT connection to the receiver unit. The VGA port will use an internal EDID specific to the capabilities of the HTW-2 VGA port with 1080p being the recommended default.

Factory Reset

Holding both buttons for 5 seconds will restore factory defaults. This will be confirmed by both buttons turning cyan. Keep in mind all stored settings into the non-volatile memory will revert to the factory defaults of each function accordingly.

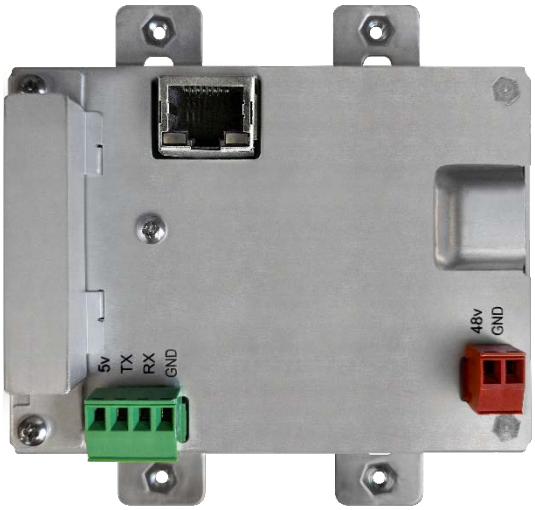
APPLICATIONS

Example 1 Typical HTW-2 Transmitter to HTE-RX2 Receiver



Example 2 DXB-8 Button Wall Control to HTW-2

DXB-8 wall controller connected to the HTW-2 Series. The DXB-8 serial port will connect and draw power from the HTW-2 via the 4 pin RS-232 connection. Any serial command can be programmed into the DXB-8 at any baud rate and sent through the HTW-2 to the HTE-RX receiver. This allows not only the switching of the HTW-2 to be controlled but the remote display device as well. Make certain the baud rates are set the same on the HTW-2 and the DXB-8. More information on the DXB-8 can be found on the Aurora website www.auroramm.com



Control Protocols

RS-232 Commands

! - Command, ? - Query, ~ Response

<CR> = 0x0D Hex / 13 Decimal

The serial command can be issued by the user via the local serial port of the device. !** is the command header used to specify the device. If !** is given as !20, then the command is intended for the TX/HTW devices. If the header !** is given as !30, then the command is intended for !30.

These commands are mainly used to control/configure the device. To query the device status/ configuration, refer Serial Query Commands.

If both TX and RX devices are connected, then the user can send serial commands from TX to RX by providing the serial header as !30. The TX will ignore the command and send it to the remote device. The remote RX will process the command and send the response back to the TX. The TX will output this response to the user. Similar is the case when !20 commands are issued to RX.

Note: By default, the configuration of the local serial port is Baud = 115200, Data bits = 8, Parity = None, Stop bits = 1.

Serial Command	String Format	Information
Reboot	!**REBOOT	Reboots the i.mx RT processor. Response: ~**REBOOT
Bootloader Update	!**BOOTUPDATE	Enable the bootloader update. Response: ~**BOOTUPDATE
Firmware Update.	!**WSUPDATE	Enter firmware update mode. Response: ~**WSUPDATE
Set Web Server IP Address	!**IPxxx:xxx:xxx:xxx<cr>	xxx = 000 – 255 Example: !**IP192.168.001.150<cr> Response: ~**IP192.168.001.150<cr>
Set Web Server Gateway	!**GWxxx:xxx:xxx:xxx<cr>	xxx = 000 – 255 Example: !**GW192.168.001.001<cr> Response: ~**GW192.168.001.001<cr>
Set Web Server Subnet Mask	!**SMxxx:xxx:xxx:xxx<cr>	xxx = 000 – 255 Example: !**SM255.255.255.000<cr> Response: ~**SM255.255.255.000<cr>
Debug Web Server Processor	!**DEBUGWSx<cr>	X = 0 or 1 0 = Off 1 = On Example: !**DEBUGWS1 Response: ~**DEBUGWS1<cr>
Debug Web Video	!**DEBUGMPx<cr>	X = 0 or 1 0 = Off

Serial Command	String Format	Information
Processor		1 = On Example: !**DEBUGMP1 Response: ~**DEBUGMP1<cr>
Serial Port Settings for external port	!**SP1,b,d,p,s<cr>	b = Baud Rate 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 d = Data Size 7 or 8 p = Parity N, E, O (None, Even, Odd) s = Stop Bits 1 or 2 Example: !**SP1,115200,8,N,1<cr> Response: ~**SP1,115200,8,N,1<cr>
Front Panel Lock	!**LOCKx<cr>	X = 0 or 1 0 = Lock is disabled. 1 = Lock is enabled (Front buttons do not work). Example: !**LOCK1<cr> Response: ~**LOCK1<cr>
IP mode change.	!**DHCPx<cr>	X = 0,1 or 2. 0 - DHCP mode. 1 - Static IP mode. 2 - AutoIP mode. Example: !**DHCP1<cr> Response: ~**DHCP1<cr>
IR carrier removal	!**IR_CARRIER_STRIPx<cr>	X = 0 or 1 1 - Removes carrier. 0 - Disabled. Example: !**IR_CARRIER_STRIP1<cr> Response: ~**IR_CARRIER_STRIP1<cr>
IR carrier inverse	!**IR_INVERSEx<cr>	X = 0 or 1 1 - Inverts carrier. 0 - Disabled. Example: !**IR_INVERSE1<cr> Response: ~**IR_INVERSE1<cr>
Audio Routing (In depth explanation at end of command table)	!**AUD<input_from>,<output_to>	**Input From** Line in - 1, Dante - 2, HDMI (TX Unit) - 3, Remote Audio (RX Unit) - 4, HDBT Extracted Video - 5, ARC (RX Unit) - 6 None - 0 **Output To** Lineout - 1, Dante - 2, HDMI - 3, Remote Audio- 4 Audio insertion will work only in HTE TX

Serial Command	String Format	Information
		Example usages Line in to Line out **!**AUD1,1** Line in to Dante **!**AUD1,2** Line in to HDMI(Only in TX) **!**AUD1,3** Line in to Remote Audio **!**AUD1,4**
Video Routing	!20VID_SRCx<cr>	X = 0 or 1 or 2 0 and 1 - HDMI. 2 - VGA (Only for HTE – wall plate). Example: !20VID_SRC1<cr> Response: ~20VID_SRC1<cr> ***Note: Only for HTE-TX and HTW board.***
Format the File system	!**FILESYS_DFLT<cr>	Defaults the file system. After defaulting, the device will reboot with /IR and /wwwpub directories present. Example: !**FILESYS_DFLT<cr> Response: ~**FILESYS_DFLT<cr>
Factory default HTE/HTW.	!**WPROC_DFLT<cr>	Factory defaults the HTE/HTW to default configuration. The default configuration is: *IP mode = Auto-IP* *Static ip = 192.168.1.10* *Static netmask = 255.255.255.0* *Static gw = 192.168.1.1* *Serial conf = 115200-8n1* *Password = admin* *Button Lock = Disabled* *IR Carrier removal = Disabled* *IR Carrier reversal = Disabled* *Port Processing mode = Extender mode* *USB mode (TX/HTW) = Host* *USB mode (RX) = Device* Example: !**WPROC_DFLT<cr> Response: ~**WPROC_DFLT<cr>
USB mode change.	!**USBx<cr>	Change USB mode. X = 0 or 1. 0 - Host. 1 - Device. Example: !**USB1<cr> Response: ~**USB1<cr>

Serial Command	String Format	Information
		Note: ***If a video stream is in progress, then it will be stopped for a moment.***
Line in volume	!**LINEIN_VOL<0-100><cr>	~**LINEIN_VOL<0-100><cr> Eg: !**LINEIN_VOL88<cr>
Line Out volume	!**LINEOUT_VOL<0-100><cr>	~**LINEOUT_VOL<0-100><cr> Eg: !**LINEOUT_VOL88<cr> Response: ~**LINEOUT_VOL88<cr>
Line in Mute	!**LINEIN_MUTE<cr>	Mutes the Linein Eg; !**LINEIN_MUTE<cr> Response: ~**LINEIN_MUTE<cr>
Line out Mute	!**LINEOUT_MUTE<cr>	Mutes the Line out Eg; !**LINEOUT_MUTE<cr> Response: ~**LINEOUT_MUTE<cr>
Button Push	!**BTN_PUSH<button_num><cr>	Simulates a button push Eg: !**BTN_PUSH1<cr> Response: ~**BTN_PUSH1<cr>
Button release	!**BTN_REL<button_num><cr>	Simulates a button release !**BTN_REL1<cr> Response: ~**BTN_REL1<cr>
Set button led	!**BTN_LED<button_num>,<press_mode>,<color><cr>	Button_num: 1,2, 3 press_mode: press, release color: r,g,b,y,c,m,w, n corresponding to red, green, blue, yellow, cyan, magenta, white, none Eg: !**BTN_LED1,p,r Response: ~**BTN_LED1,p,r
Set button mode	!**SET_BTN_MODE<button_num>,<press_mode>,<button_mode><cr>	Button_num: 1,2, 3 press_mode: press, release button_mode: 1,2,3 corresponding to default, serial, tcp Eg: !**SET_BTN_MODE1,p,1 Response: ~**SET_BTN_MODE1,p,1
Clear button mode	!**CLR_BTN_MODE<button_num>,<press_mode>,<button_mode><cr>	Button_num: 1,2, 3 press_mode : press, release button_mode: 1,2,3 corresponding to default, serial, tcp Eg: !**CLR_BTN_MODE1,p,1 Response: ~**CLR_BTN_MODE1,p,1

Table 1. Serial commands

Audio Command Usage Detail

HT Series has two independent audio streams.

1. Audio that is embedded in the video.
2. Independent audio stream.

There are 4 audio inputs in HTW-2/HTE-TX, 6 audio inputs for HTE-RX and 4 audio outputs for both TX and RX.

Input	Meaning
1	Line in
2	Dante
3 (Applicable only in TX)	HDMI audio from selected HDMI port
4	Independent Remote Audio (Audio that is coming from the remote device(rx/tx) via independent audio stream)
5 (Applicable only in RX)	Audio extracted from HDBT stream video at RX
6 (Applicable only in RX)	Arc audio at RX

Output	Meaning
1	Lineout
2	Dante
3 (Applicable only in TX)	Audio that goes along with the video (HDBT video stream)
4	Independent Remote Audio (Audio that should reach the remote device(tx/rx) via independent audio stream)

Below are the commands that can be used for routing audio for some common scenarios.

Command	Input	Output
!20AUD	1(line in)	1(line out)
!30AUD	2(dante)	2(dante)
	3(hdmi)	3(stream_audio)
	4(remote_audio)	4(remote_audio)
	5(arc at Rx)	

!**AUD1,1 - Line in to Lineout
!**AUD1,2 - Line in to Dante
!**AUD1,3 – Line in to Stream Audio (only applicable in tx)
!**AUD1,4 – Line in to Remote Audio

!**AUD2,1 - Dante to Lineout
!**AUD2,2 - Dante to Dante
!**AUD2,3 - Dante to Stream Audio (only applicable in tx)
!**AUD2,4 - Dante to Remote Audio

Only applicable in Tx
!**AUD3,1 - HDMI audio to Lineout
!**AUD3,2 - HDMI audio to Dante
!**AUD3,3 - HDMI audio to Stream Audio (only applicable in tx) - Default case when the device is factory defaulted for HDMI sources
!**AUD3,4 - HDMI audio to Remote Audio

!**AUD4,1 - Remote audio to Lineout
!**AUD4,2 - Remote audio to Dante
!**AUD4,3 - Remote audio to Stream Audio (only applicable in tx)
!**AUD4,4 - Remote audio to Remote Audio

Only applicable in RX
!**AUD5,1 - Arc to Lineout
!**AUD5,2 - Arc to Dante
!**AUD5,4 - Arc to Remote Audio

Audio Insertion at HTE-RX from Line-in or Dante to HDMI:

There is no provision to locally insert the Audio on the HTE-RX to HDMI but the is a way to achieve the functionality. For inserting the Line in or Dante audio at HTE-RX to HDMI-RX output, user needs to send it to remote HTE-TX/HTW-2 and then select at the TX the remote audio to be inserted to the HDMI. Following commands can be used to achieve this:

- Route the corresponding Line in or Dante audio at HTE RX to remote stream
  - !30AUD1,4 (Line-in to remote Audio)
  - !30AUD2,4 (Dante to remote Audio)
- At HTE TX insert the remote audio to HDMI stream
  - !20AUD4,3 (Remote audio to HDMI stream)

Brief Description of Button mode and Button Color

Each button has 3 independent modes and these modes can be set for press and release separately. The default functionality for buttons in TX for release is input switching. Each mode can be independently set as well as cleared.
Button_numbers are 1,2 for box version and 1,2 & 3(for wall plate)
Press_modes are press and release
Button_modes are tcp, serial and default
button_color: none, white, red, green, blue, yellow, magenta, cyan

Set commands

Button_num -1,2,3(for wallplate)
p/r -press/release
r-red, b-blue,g-green,y-yellow,n-none,w-white,c-cyan,m-magenta

Set button led color for press and release

!**BTN_LED<button_num>,<p/r>,<r,g,b,w,m,c,y,n,w>
r-red, g-green b-blue w-white m-magenta y-yellow n-none c-cyan

Simulate a button release using serial command_mode
!**BTN_REL<button_num>

simulate a button push using serial command
!**BTN_PUSH<button_num>

set button mode
!**SET_BTN_MODE<button_num>,<p/r>,<1/2/3> 1-default, 2-serial 3-tcp

clear button mode
!**CLR_BTN_MODE<button_num>,<p/r>,<1/2/3> 1-default, 2-serial 3-tcp

Query Commands

Query Button Mode for press/release

?**BTN_MODES<button_num>,<p/r>
eg: ?20BTN_MODES1,P

Query Button LED Color for press/release

?**BTN_LED<button_numb><p/r>
eg: ?20BTN_LED2,P

Serial Query Commands

These serial commands are used to query the device status/configuration. The headers used are the same as that in Serial commands.

Serial Query Command	String Format	Information
Web Server IP Address	?**IP<cr>	X = 000 - 255 Response: ~**IPxxx:xxx:xxx:xxx<lf>
Web Server Subnet Mask	?**SM<cr>	X = 000 - 255 Response: ~**SMxxx:xxx:xxx:xxx<lf>
Web Server Gateway	?**GW<cr>	X = 000 - 255 Response: ~**GWxxx:xxx:xxx:xxx<lf>
Web Server MAC Address	?**WSMAC<cr>	x = web server MAC (xx:xx:xx:xx:xx:xx) Response: ~**WSMAC:x<lf>
Serial Port Settings	?**SP1<cr>	Response: ~**SP1,b,d,p,s<lf> b = Baud Rate 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 d = Data Size 7 or 8 p = Parity N, E, O (None, Even, Odd) s = Stop Bits 1 or 2
USB Mode	?**USBx<cr>	x = 0 or 1 (0 = Host TX, 1 = Device) Response: ~**USBx<lf>
Serial Number	?**SNUM<cr>	x = serial number Response: ~**SNUMx<lf>
Debug Web Server Processor	?**DEBUGWS<cr>	X = 0 or 1 0 - Off 1 - On Response: ~**DEBUGWS<lf>
IP mode query	?**DHCP<cr>	Response: ~**DHCPx<lf> x = 0, 1 or 2 0 - DHCP 1 - Static 2 - AutoIP
Front panel lock query	?**LOCK<cr>	Response: ~**LOCKx<lf> X = 0 or 1 0 - Unlocked. 1 - Locked.
Application version	?**VER1<cr>	Response: ~**VER1:a.b.c<lf> Version is ‘a.b.c’.
Explore version	?**VER2<cr>	Response: ~**VER2:a<lf> Version is ‘a’. ***Note: Only for HTE-RX board.***
Protocol API version	?**VER3<cr>	Response: ~**VER3:a.b.c<lf> Version is ‘a.b.c’. For current document, it will be 1.0.0.
Bootloader presence	?**BOOTAVAIL<cr>	Response: ~**BOOTAVAILx<cr> x = 0 or 1 0 - Absent

Serial Query Command	String Format	Information
		1 - Present
IR Inverse	?**IR_INVERSE<cr>	Response: ~**IR_INVERSEx<lf> x = 0 or 1 0 - Not Inverted 1 = Inverted IR
IR Carrier	?**IR_CARRIER_STRIP<cr>	Response: ~**IR_CARRIER_STRIPx<lf> x = 0 or 1 0 - Carrier present 1 = Carrier absent
Video Source for HTE-TX & HTW-2	?20VID_SRC<cr>	Response: ~20VID_SRCx<lf> x = 0 or 1 or 2
Audio Routing	?**AUD	~**AUD-Line_Out-none, Dante-none, Stream_Source-video_src_audio, Remote_Audio-line_in, Line_in_vol-100, Line_out_vol-92, Line_in_mute-0, Line_out_mute-0
Button Modes	?**BTN_MODES<button_num><press_mode><cr>	Query the button mode. Button_num: 1,2,3 Press_mode: press,release ?**BTN_MODES1,p
Button LED Colour	?**BTN_LED<button_num><press_mode>	Returns the button led color. ?BTN_LED1,p Response ~BTN_LED1,p,r

RPC Commands

A user can issue RPC commands to control the device. The RPC command will have the following format:

method=<function_name>&param1=<parameter1>&param2=< parameter1>…

- The *method* field is the RPC function name.
- The *paramX* field is the parameter field. Parameter depends on the function used. The number of parameters will also vary. X = 0 or 1 or 2… depending on the function.

The following are the RPC commands.

1.1.1 GetApiVersion

Command:

GetApiVersion

Parameters:

Nil

Response:

Success:

status=1&response1=a.b.c

a.b.c is the api version.
It will be 1.0.0 for the devices following this document.

1.1.2 GetFirmwareVersion

Command:

GetFirmwareVersion

Parameters:

Nil

Response:

Success:

status=1&response1=a.b.c

a.b.c is the version.
a - Major.
b - Minor.
c – SubMinor.

1.1.3 GetSerialNumber

Command:

GetSerialNumber

Parameters:

Nil

Response:

Success:

status=1&response1=X

X is an 8-digit number.

1.1.4 *Reboot*

Command:

Reboot

Parameters:

Nil

Response:

Success:

status=1

If success, then device will perform soft reboot.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If factory default is in progress, then device won't reboot.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

1.1.5 *EnterUpdateMode*

Command:

EnterUpdateMode

Parameters:

Nil

Response:

Success:

status=1

If success, then device will enter to update mode. RPC commands can't be used now.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If factory default is in progress, then device won't enter update mode.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

1.1.6 SetDefaultConfig

Command:

SetDefaultConfig

Parameters:

Nil

Response:

Success:

status=1

On success, device will perform factory default. All the device configuration will be set to default. After factory default, device will reboot.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

1.1.7 Net_GetIPAddress

Command:

Net_GetIPAddress

Parameters:

Nil

Response:

Success:

status=1&response1=a.b.c.d

Returns IP address represented in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots. e.g. 172.16.254.1

1.1.8 Net_GetSubnetMask

Command:

Net_GetSubnetMask

Parameters:

Nil

Response:

Success:

status=1&response1=a.b.c.d

Returns subnet mask represented in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots. e.g. 225.225.0.0

1.1.9 Net_GetMac

Command:

Net_GetMac

Parameters:

Nil

Response:

Success:

status=1&response1=a.b.c.d.e.f

Returns the mac id of the device.

1.1.10 Serial_Send

Command:

Serial_Send

Parameters:

param1: <Serial Port>

Can be 1 or 2.
1 - Local Port.
2 - Extender port.

param2: <Serial Data>

Serial data to send.

param3: <timeout>

Not used.

Response:

Success:

status=1

Serial data has been sent.

Failure: No response at all.

Try reducing the string length.

1.1.11 Serial_Read

Command:

Serial_Read

Parameters:

param1: <Serial Port>

Can be only 1.

1 - Local Port.

Response:

Success:

status=1&response1=<Serial Data>

Note: If no data is present, then response will be '*status=1&response1=*'.

Serial_ReadBufferCount can be used to get the number/count of the remaining data.

1.1.12 Serial_ClearReadBuffer

Command:

Serial_ClearReadBuffer

Parameters:

param1: <Serial Port>

Can be only 1.

1 - Local Port.

Response:

Success:

status=1

The buffer has been cleared.

1.1.13 Serial_ReadBufferCount

Command:

Serial_ReadBufferCount

Parameters:

param1: <Serial Port>

Can be only 1.

1 - Local Port.

Response:

Success:

status=1&response1=<Count>

Count represents the no of characters yet to be read using *Serial_Read*, present in the buffer.

1.1.14 Serial_GetSettings

Command:

Serial_GetSettings

Parameters:

Nil

Response:

Success

status=1&response1==<baud_rate>,<data_bits><parity><stop_bits>

The field <parity> will be "Odd", "Even" or "None".

Example response:
status=1&response1=115200,8,None,1

Note:

This is the serial configuration of the local port of the device. The serial configuration of the extender port is fixed to

* Baud rate: *115200*
* Data bits : *8*
* Parity : *None*
* Stop bits : *1*

1.1.15 Serial_SetSettings

Command:

Serial_SetSettings

Parameters:

param1: <Baud_Rate>,<data_bits>,<parity>,<stop_bits>

Valid baud rates: 15200, 57600, 38400, 19200, 14400, 9600, 4800, 2400, 1200.

Valid data bits: 8, 7.

Valid parity: O, E, N. (O – Odd, E – Even, N – None).

Valid stop bits: 1, 2.

Response:

Success

status=1&response1==<baud_rate>,<data_bits><parity><stop_bits>

The field <parity> will be "O", "E" or "N".

Example response:
status=1&response1=115200,8,N,1

Note:

This is the serial configuration of the local port of the device. The serial configuration of the extender port is fixed to

* Baud rate: *115200*
* Data bits : *8*
* Parity : *None*
* Stop bits : *1*

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

1.1.16 Serial_SetPortCount

Command:

Serial_SetPortCount

Parameters:

Nil

Response:

Success:

status=1&response1=2

HTE/HTW has 2 serial ports – local and remote (which will be another HTE/HTW).

1.1.17 Serial_SetManualMode

Command:

Serial_SetManualMode

Parameters:

Nil

Response:

Success:

status=1

Device has been set to manual mode.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

Note:

Only local serial port (1) is supported in manual mode.

1.1.18 Serial_SetExtenderMode

Command:

Serial_SetExtenderMode

Parameters:

Nil

Response:

Success:

status=1

Device has been set to extender mode.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.
*status=0&faultCode=2&Invalid_**
FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

1.1.19 Serial_SetPushPortMode

Command:
Serial_SetPushPortMode

Parameters:
param1: <Remote IP>
The <Remote IP> should be in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots.
e.g. 172.16.254.1

param2: <Remote Serial Port>
Port number of the remote device.
Valid range: 1 <= Remote serial port <= 12.

Response:
Success:
status=1
Device has been set to Push to Port mode.

Failure: System busy.
status=0&faultCode=1&Invalid_state system busy
If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.
*status=0&faultCode=2&Invalid_**
FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

Failure: Invalid request.
status=0&faultCode=1&Invalid_request
The no. of parameters passed is not correct. The command needs 2 parameters.

Eg: method=Serial_SetPushPortMode&param1=192.168.1.10&param2=5

Failure: Invalid parameter.
status=0&faultCode=1&Invalid_parameter
Invalid parameters were passed. Either IP address is invalid or <remote_serial_port> value is out of range.

1.1.20 Serial_SetPushVarMode

Command:

Serial_SetPushVarMode

Parameters:

param1: <Remote IP>

The <Remote IP> should be in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots.
e.g. 172.16.254.1

param2: <Variable name>

Name of variable in the remote device.
Valid range: 1 <= length of variable name <= 16.

Response:

Success:

status=1

Device has been set to Push to Variable mode.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

Failure: Invalid request.

status=0&faultCode=1&Invalid_request

The no. of parameters passed is not correct. The command needs 2 parameters.

Eg:
method=Serial_SetPushVarMode&param1=192.168.1.10&param2=tempVariable

Failure: Invalid parameter.

status=0&faultCode=1&Invalid_parameter

Invalid parameters were passed. Either IP address is invalid or length of the variable is greater than 16 or no variable name was passed at all.

1.1.21 Serial_SetTelnetClientMode

Command:

Serial_SetTelnetClientMode

Parameters:

param1: <Remote IP>

The <Remote IP> should be in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots.
e.g. 172.16.254.1

param2: <Remote Socket Port>

The remote port for the client to connect (where the telnet server is listening for incoming connections).
0 < remote socket port < 65536.

param3: <timeout>

Not used.

Response:

Success:

status=1

Device has been set to Telnet Client mode.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

Failure: Invalid request.

status=0&faultCode=1&Invalid_request

The no. of parameters passed is not correct. The command needs 2 parameters.

Eg: method=Serial_SetTelnetClientMode&param1=192.168.1.10&param2=9303

Failure: Invalid parameter.

status=0&faultCode=1&Invalid_parameter

Invalid parameters were passed. Either IP address is invalid or invalid port number was given.

1.1.22 Serial_SetTelnetServerMode

Command:

Serial_SetTelnetServerMode

Parameters:

param1: <Remote IP>

The <Remote IP> should be in dot-decimal notation, consisting of four decimal numbers, each ranging from 0 to 255, separated by dots.
e.g. 172.16.254.1

param2: <Local Socket Port>

The remote port for the client to connect (where the telnet server is listening for incoming connections).
0 < local socket port < 65536.
Local socket port can't be 6970 or 80.

Response:

Success:

status=1

Device has been set to Telnet Server mode.

Failure: System busy.

status=0&faultCode=1&Invalid_state system busy

If a mode change for remote session was requested and that request is still in progress, then this error -system busy- will be returned. Please try again after some time.

Failure: Event queue full/failed to create event.

*status=0&faultCode=2&Invalid_**

FaultCode 2 implies that internal event queue is full. If internal event queue is full, then device won't accept any event. Please try again after some time.

Failure: Invalid parameter.

status=0&faultCode=1&Invalid_parameter

Invalid parameters or no parameters were passed.

ReAX TCP Commands

The device parameters can be controlled by ReAX commands. A TCP server is running at the port 6970 which listens for the ReAX command and responds in JSON format accordingly.

ReAX Command	String Format	Information
set_audio_route	set_audio_route <route_from> <route_to>	Modify or set the audio routing in HTE. **Route From:** none, linein, dante, hdmi, remote_audio, arc Route To Lineout, dante, stream_audio, remote_audio We can insert audio to stream_audio only from TX and not from RX. Eg: set_audio_route linein lineout set_audio_route linein stream_audio
set_volume	Set_volume <audio_port> <volume_level>	Controls the linein and lineout volume. Audio_port: linein, lineout Volume_level: 0-100, mute, unmute set_volume linein mute set_volume lineout 85
set_ip	set_ip <ip_mode> <ip_addr> <subnet> <gateway>	Configure the IP address of the device Ip_mode: DHCP, static, auto_ip Eg: set_ip static 192.168.1.101 255.255.0.0 192.168.1.1 set_ip auto_ip set_ip DHCP
send_ir	send_ir <filename> <command_name>	Filename: Name of the file containing pronto codes. Command_name: Name of the IR command Eg: Send_ir sony.wir PLAY
list_ir_groups	list_ir_groups	Lists the IR files stored in the device; Eg: list_ir_groups
list_ircmds	list_ircmds <file_name>	Lists the IR commands listed in an IR File. list_ircmds sony.wir
get_audio_route	get_audio_route	Displays the full info of the Audio routing in the device of the current selected source Eg: get_audio_route
get_volume	get_volume <audio_port>	Returns the Volume of the Line in audio or Lineout audio. Audio_port: linein, lineout Eg: get_volume linein
config_rs232	config_rs232 <port_no.> <baud_rate> <data_bit> <stop_bit> <parity> <hand_shaking> <signal_level>	Baud Rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Port Number: 1 baud_rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Data_bit: 7, 8 Parity: n,o,e Handshaking: none, software signal_level: RS232 Example: config_rs232 1 115200 8 1 n none RS232

set_video_source	set_video_source <video_port>	Video_port: hdmi1, hdmi2, vga Eg: Set_video_source hdmi1 Set_video_source vga
get_video_source	get_video_source	Returns the current video source that is being streamed. Eg: get_video_source
set_button_mode	set_button_mode <button_number> <press_mode> <button_mode>	Configures the button mode to send serial, TCP commands and default functionality all in a single press/release or any combination button_number: 1,2,3 (only for wallplate) press_mode: press, release button_mode: TCP, serial, default Note: The command that has to be send on pressing/releasing a button has to be configured via a separate ReAX command Eg: set_button_mode 1 release TCP set_button_mode 1 release serial
get_button_mode	Get_button_mode <button_num> <press_mode>	Returns all the modes that are set against a button press/release. Button_num: 1,2,3 Press_mode: press, release Eg: get_button_mode 2 release
clear_button_mode	clear_button_mode <button_num> <press_mode>	Clears the button from the mode that is selected with command Button_num: 1,2,3 Press_mode: press, release Eg: Clear_button_mode 1 serial Clear_button_mode 1 default
set_button_color	set_button_color <button_num> <press_mode> <button_color>	Only for wallplate: Configures the button color: Colors can be selected from red, blue, green, white, yellow, cyan, magenta, none set_button_color 1 press green set_button_color 1 release blue
set_button_param	set_button_param <button_number> <press_mode> <command_mode> <command_string> <port/ip_addr> <telnet_port>	Set the button parameters that is used when a button is pressed or released corresponding to the mode set against that button. Button_num: 1,2,3 press_mode; press, release command_mode: serial, TCP command_string: string with length of max 256 length with support for escape characters enclosed in double quotes port: serial_port number in case of serial mode ip_addr: ip address in case in case of TCP telnet_port: Tcp port to which connection should be established before sending. Eg: Set_button_param 1 press serial 1 “abc123” Set_button_param 1 release TCP 192.168.1.10 5000
get_ip	get_ip	Returns the Current IP of the device

		Eg: get_ip
get_ip_static	get_ip_static	Returns the last saved static IP address Eg; get_ip_static
set_remote_session	set_remote_session <mode> <ip_addr> <mode_specific_param>	Configures the port processing method for the device. Mode: telnet_client, telnet_server, extender, manual, push_to_port, push_to_var Ip: ip address Port : tcp port Serial_port: serial port number. Eg: set_remote_session telnet_client <ip> <port> Set_remote_session telnet_server <port> Set_remote_session extender Set_remote_session manual Set_remote_session push_to_port <ip> <serial_port> Set_remote_session push_to_var <ip> <var>
get_button_param	get_button_param <button_num> <press_mode> <command_mode>	Query the string stored against a mode(tcp/serial) in button press/release Button_num: 1,2,3 Press_mode: press, release Command_mode: TCP, serial Eg: Get_button_param 1 release TCP
get_button_color	get_button_color <button_num> <press_mode>	Button_num: 1,2,3 Press_mode: press, release Eg; get_button_color 1 press

Audio Routing Set Commands

Command	**Input**	**Output**
set_audio_route	none	lineout
	linein	dante
	dante	stream_audio(applicable only in tx)
	hdmi	remote_audio
	remote_audio	
	arc	

Line in to various outputs

set_audio_route linein lineout
set_audio_route linein dante
set_audio_route linein stream_audio (only in Tx)
set_audio_route linein remote_audio

Dante to various outputs
set_audio_route dante lineout
set_audio_route dante dante
set_audio_route dante stream_audio(only in Tx)
set_audio_route dante remote_audio

Input video audio to various outputs - Applicable only at TX
set_audio_route hdmi lineout
set_audio_route hdmi dante
set_audio_route hdmi stream_audio(default option)
set_audio_route hdmi remote_audio

Remote Audio (audio that comes from Rx in case of Tx and Tx in case of Rx) to Various outputs
set_audio_route remote_audio lineout
set_audio_route remote_audio dante
set_audio_route remote_audio stream_audio(only in Tx)
set_audio_route remote_audio remote_audio

Arc to Various outputs - Applicable only at RX
set_audio_route arc lineout
set_audio_route arc dante
set_audio_route arc remote_audio

Note: for TCP commands

"arc" as input is applicable only for HTE RX

"hdmi" as input is only applicable for TX as input video audio is only available at Tx. In wall plate it is available only for HDMI inputs and not VGA inputs

stream_audio as output is only applicable for TX as we do not support audio insertion to video at RX side.

Eg: set_audio_route <xxxx> **stream_audio** (not valid for rx)
set_audio_route **hdmi** <xxx> (not valid for rx) as input video source is only present at tx side
set_audio_route **arc** <xxx> (not valid for TX)

Audio Routing Query Command

get_audio_route

Note

To Support Audio Insertion to the video at RX side we have to do it by first inserting the audio at rx side to remote audio. It will reach the Tx and at the tx we should insert the remote audio to stream_audio.

For Eg: To insert the line in at RX to the stream video at RX enter the following commands

1) Insert line in to remote audio at Rx - **!**AUD1,4** or **set_audio_route linein remote**
2) Insert remote audio to stream audio at Tx - **!**AUD4,3** or **set_audio_route remote_audio stream_audio**

Brief Description of Button mode and Button Color

Each button has 3 independent modes and these modes can be set for press and release separately. The default functionality for buttons in TX for release is input switching. Each mode can be independently set as well as cleared.
Button_numbers are 1,2 for box version and 1,2 & 3(for wall plate)
Press_modes are press and release
Button_modes are tcp, serial and default
button_color: none, white, red, green, blue, yellow, magenta, cyan

TCP mode means a TCP msg can be send when we press/release a button
serial mode means a serial message can be send when we press/release a button

Telnet commands

Set Button Modes

set_button_mode <button_number> <press_mode> <button_Mode>

Eg:
set_button_mode <button_number> <press_mode> <button_Mode>
set_button_mode 1 press tcp
set_button_mode 1 release tcp

Clear Button Modes
clear_button_mode <button_mode> <press_mode> <button_mode>

Eg:

clear_button_mode 1 release tcp

Query button mode
get_button_mode <button_number> <press_mode>

Set Button Color

set_button_color <button_number> <press_mode> <button_color>

Eg:

set_button_color 1 release white
set_button_color 1 press blue

Query Button Color

get_button_color <button_number> <press_mode>
get_button_color 1 release

Set Button Parameters

set_button_param <button_number> <press_mode> <command_mode> <command_string>
<serial_port/ip_addr> <tcp_port(optional only in case of tcp)>
set_button_param 2 release serial "abc\r" 1
set_button_param 1 press tcp "abc123\r" 192.168.1.10 6780

Query Button Parameters

get_button_param <button_number> <press_mode> <command_mode>
get_button_param 2 press serial

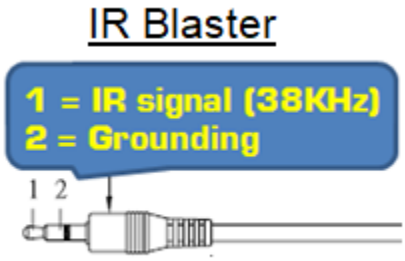
IR EXTENDERS

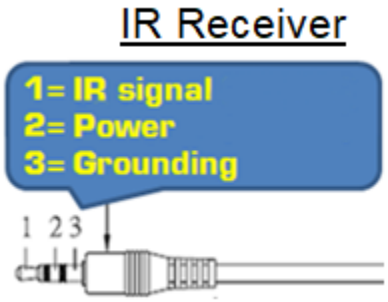
IR Connections

- **IR Blaster/Emitter.** Plug in an IR blaster to emit all IR command signals received from the IR receiver to control the associated devices with built-in IR sensor.
- **IR Receiver.** Plug in an IR receiver to receive all IR command signals from the IR remote controls of the associated devices.

Note: If you are not using an approved Aurora branded receiver, make certain you do not exceed the 5v signal level limitation as some devices use 12v. Also, IR Receiver must be 30K-60KHz inverted 5V signal. Failure to do so will result in damage.

IR Jack Pinout

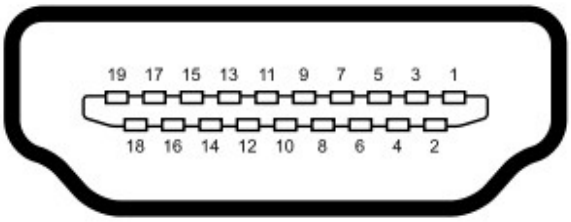




Note: Emitters must be mono or have ring and sleeve tied to ground. Receivers must be stereo plug. Ring is 5v power. If using another brand receiver, note carrier frequency must be present, IR signal inverted, and IR signal cannot exceed 5v or damage to port may occur.

CONNECTOR PIN DEFINITION

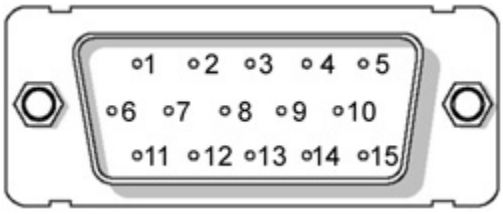
HDMI



Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	**Pin 8**	TMDS Data0 Shield	**Pin 15**	SCL
Pin 2	TMDS Data2 Shield	**Pin 9**	TMDS Data0–	**Pin 16**	SDA
Pin 3	TMDS Data2–	**Pin 10**	TMDS Clock+	**Pin 17**	DDC/CEC Ground
Pin 4	TMDS Data1+	**Pin 11**	TMDS Clock Shield	**Pin 18**	+5 V Power
Pin 5	TMDS Data1 Shield	**Pin 12**	TMDS Clock–	**Pin 19**	Hot Plug Detect
Pin 6	TMDS Data1–	**Pin 13**	CEC		
Pin 7	TMDS Data0+	**Pin 14**	Reserved (N.C. on device)		

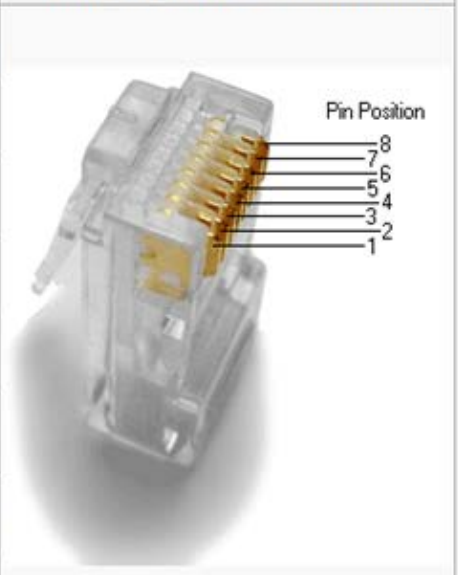
VGA



Pin 1	Red (Pr)	Pin 8	Ground	Pin 15	SCL
Pin 2	Green (Y, S-Video C)	Pin 9	5v		
Pin 3	Blue (Pb)	Pin 10	SYNC Ground		
Pin 4	Composite (S-Video Y)	Pin 11	NC		
Pin 5	Ground	Pin 12	SDA		
Pin 6	Ground	Pin 13	Horizontal Sync		
Pin 7	Ground	Pin 14	Horizontal Sync		

CAT5e/6/7

T568A and T568B Wiring

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (socket is reversed)
1	3	2	tip	white/green stripe	white/orange stripe	
2	3	2	ring	green solid	orange solid	
3	2	3	tip	white/orange stripe	white/green stripe	
4	1	1	ring	blue solid	blue solid	
5	1	1	tip	white/blue stripe	white/blue stripe	
6	2	3	ring	orange solid	green solid	
7	4	4	tip	white/brown stripe	white/brown stripe	
8	4	4	ring	brown solid	brown solid	

APPENDIX 1

Troubleshooting

Problem	Solution
1. No Video Signal.	a. Check that the power plug is properly inserted into a functioning power outlet. Keep in mind the HT Series can be powered locally or remotely via HDBaseT PoH. b. Make certain source is on. c. Verify pin-out of connector at each end.
2. LED is not lit on either button	a. Check 48v power supply is plugged in locally or at the far end receiver unit. b. Check to see if Wall supply is plugged into wall outlet. c. Make certain wall outlet has power. d. Make certain RS-232 command for LED state is not set to none for both buttons.
3. LAN Not Working	a. Verify receiver unit is capable of LAN.
4. IR not working	a. Verify using proper emitter at receiver unit. Use Aurora branded accessories for best results.
5. USB not charging	a. Total power between the 2 ports is 5 watts. If exceeded the current protection will kick in until within specification. Try connecting one device at a time to make certain it works before plugging in 2 devices.
6. USB not working	a. Make certain proper power supply wattage is being used to power both HTW-2 and the receiver. Refer to technical specifications for more info on power consumption.
7. Unit not working	a. Check if remote receiver is supplying power. b. Make certain proper power supply wattage is being used to power both HTW-2 and the receiver. Refer to technical specifications for more info on power consumption.
8. Certain functions listed in manual do not function	a. Make certain unit has latest firmware
9. 720p or 1080p is too big for screen (Over scanned)	a. The HT Series does not scale. Check the display's settings for over-scan mode. Displays cannot tell the difference between a video source and a PC source. In turn they usually have a setting in the menus to deal with this. Check under Aspect Ratio settings, PC / Video mode, etc. Note if you plug the VGA directly into display and compare to input of HTW-2 it is not a proper test. The HTW-2 is connected through the HDMI input not VGA of the display. The display will handle the signal different as the display will know not to over scan a VGA signal. HDMI is treated as a video source first and as a PC source secondary when dealing with video resolutions.

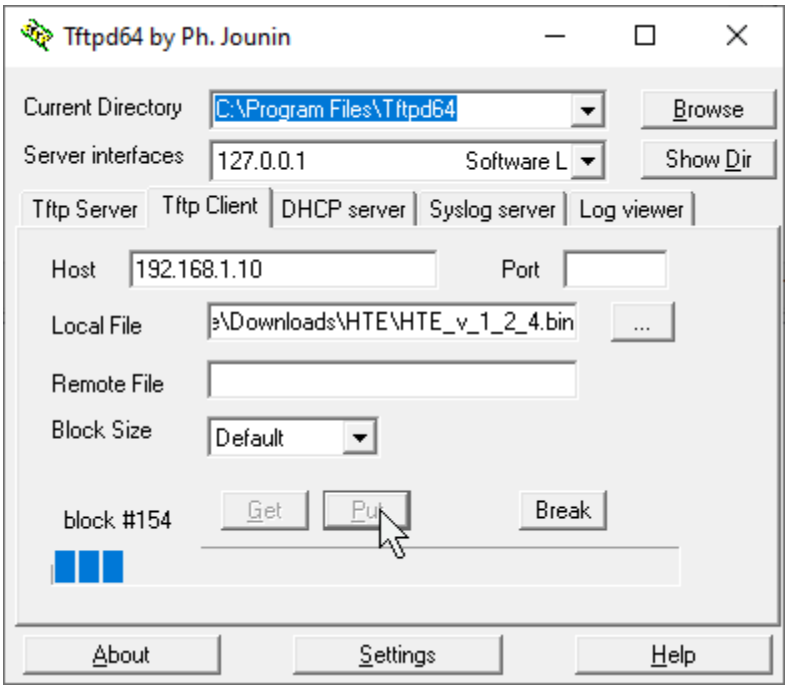
- All transmission distances are measured using West Penn cable as per Appendix 3. The transmission distance is defined as the distance between the video source and the display.
- To reduce the interference among the unshielded twisted pairs of wires in UTP cable, you can use shielded STP cables to improve EMI problems, which is worsen in long transmission.

APPENDIX 2 Firmware Update

The HT Series device can be put to bootloader mode in one of the following ways:

- Press and hold the FUNC button when the board is powered on.
- Issue !**WSUPDATE<cr> command via serial port. !** is !20 for TX /HTW and !30 for RX.
- Select '*Start Update*' from the device's webpage.
- Issue the '*EnterUpdateMode'* RPC command.

Once in update mode, TFTP the firmware



Enter the IP address of the unit into the 'Host' field and select the firmware file (HTE_v_#_#_#.bin) from the 'Local File' field in the 'Tftp Client' tab of TFTPd. Please wait about 10 seconds after entering firmware update mode before clicking 'Put'. If the update does not start immediately, click 'Break' and then 'Put' again. If you do not know the IP address of the unit, plug in a serial cable and the IP address will appear in your terminal at baud rate 115200 upon entering firmware update mode.

Link to TFTPd program: https://bitbucket.org/phjounin/tftpd64/downloads/Tftpd64-4.64-setup.exe

APPENDIX 3 VGA Supported Timing

525p@60	640x480@60	1152x864@75
625p@50	640x350@70	1280x768@60
720p@60	640x350@85	1280x800@60
720p@50	640x480@72.80	1280x960@60
720p@24	640x480@75	1280x960@85
720p@25	640x480@85	1280x1024@60.02
720p@30	720x400@70	1280x1024@75.02
1080i@60	720x400@85	1280x1024@85.02
1080i@50	800x600@56.25	1360*768@60
1080i@100	800x600@60.31	1440x900@60
1080p@60	800x600@72.19	1400x1050@60
1080p@50	800x600@75	1600x1200@60
1080p@30	800x600@85.06	1680x1050@60
1080p@23.976	848x480@60	1920x1200@60
1080p@24	1024x768@43	
1080p@25	1024x768@60	
	1024x768@70.07	
	1024x768@75.03	
	1024x768@85	

APPENDIX 4

Technical Specifications

Model Name	HT Series
Technical	**HTE-TX2/RX2**
Distance	328ft 100m – 1080p 60Hz 24 & 36bit CAT 5e/6/6a/7 328ft 100m – 1080p 60Hz 48bit CAT 6a/7 328ft 100m – 4k2k 60Hz 4:4:4 CAT 6a/7 CAT 5e/6 will achieve 328ft 100m for pixel clock <=225MHz CAT 5e/6 will achieve 230ft 70m for pixel clock >225MHz CAT 6a/7 will achieve 328ft 100m for pixel clock >225MHz
Max Resolution	4K60 4:4:4
Color Depth	24bit 5e/6/6a/7, 36bit 5e/6, 48bit 5e/6/6a/7
RS-232	300 – 115kbps
IR without LXC	30K-60KHz
LAN	2 – 1Gbps local, 10/100 over HDBaseT Link
LAN POE+	Port 1 PoE+
HDMI	3D, HDCP 2.2 Compliant
Front LED Status	Power, Status, HDMI, HDBaseT, RS-232 TX/RX, IR In/Out, USB Host/Device
Front Selections	Function & Select
LAN Connectors	Dual RJ-45 8P8C with 2 LED indicators each
HDBaseT Connector	RJ-45 WE/SS 8P8C
RS-232 Connector	3.5mm TRS TX- TIP, RX- Ring, GND- Sleeve
IR Connector	Receiver: 3.5mm TRS Signal- TIP, 5V- Ring, GND- Sleeve Transmitter: 3.5mm TS Signal- TIP, GND- Sleeve
HDMI Connector	Type A 19 pin
Audio Connectors	5 Pin 3.81mm Euro Line In/Line Out
Power Connector	2 pin 3.81mm Euro
Option Slot	Internal Dante/AES67 Option: IPE-DTE-1 (2 Ch), IPE-DTE-2 (8 Ch) ReAX Option: IPE-ReAX-1
Mechanical	**HTE Units**
Housing	Black Aluminum Enclosure

Dimensions [L x W x H]	151.13mm x 90.17mm x 29.21mm [5.95" x 3.55" x 1.15"]
Weight	.628lbs [284.856kg] TX & RX
Mounting	Wall-mounting and Rack Mounting
Power Supply	48VDC (Only 1 required on either TX or RX)
Power Consumption	7 Watts (TX), 8 Watts (Rx) No USB/ 12.9 Watts with USB [max]
Operation Temperature	0~40°C [32~104°F]
Storage Temperature	-20~60°C [-4~140°F]
Relative Humidity	20~90% RH [no condensation]
Package Contents	1x HTE-TX2 1x HTE-RX2 2 x Wall / Desk Mount Ears with Screws
Options	IR Receiver 30K-60KHz (CA0062-1) IR Emitter (CA0061-1) PS0094-2 48v DC 25 Watt Power Supply PS0081-1 48V PoE+ 25 Watt Power Supply IPE-DTE-1 Dante/AES67 2 Channel IPE-DTE-2 Dante/AES67 8 Channel IPE-ReAX-1 ReAX IP Control Card

Note: Specifications subject to change without notice.

Model Name	HTW-2
Technical	**HTW-2 Wall Plate**
Video Distance (HDBaseT)	328ft 100m – 1080p 60Hz 24 & 36bit CAT 5e/6/6a/7 328ft 100m – 1080p 60Hz 48bit CAT 6a/7 328ft 100m – 4k2k 60Hz 4:4:4 CAT 6a/7 CAT 5e/6 will achieve 328ft 100m for pixel clock <=225MHz CAT 5e/6 will achieve 230ft 70m for pixel clock >225MHz CAT 6a/7 will achieve 328ft 100m for pixel clock >225MHz
Max Resolution	1080p 60Hz 1920 x 1200 @ 60Hz 4k x 2k @ 60Hz 4:4:4
Color Depth	24bit 5e/6/6a/7, 36bit 5e/6, 48bit 5e/6/6a/7
RS-232	300 - 115kbps
IR Window	30kHz-60Khz
LAN	10/100
HDMI	3D, HDCP 2.2 Compliant
Front Selections	3 Backlit Buttons (Red, Green, Blue)
LAN Connectors	Front RJ-45 with 2 LED indicators (Only yellow LED is active)
HDBaseT Connector	Rear RJ-45 WE/SS 8P8C
RS-232 Connector	4 pin 3.81mm Euro Rear
HDMI Connector	Two Type A 19 pin
VGA Connector	15 Pin High Density
Audio Connectors	3.5mm Line In/Line Out
Power Connector	2 pin 3.81mm Euro

Option Slot	Dante/AES67 Option: IPE-DTE-1 (2 Ch), IPE-DTE-2 (8 Ch) ReAX Option: IPE-ReAX-1
Mechanical	**HTW-2**
Housing	Aluminum front with aluminum rear enclosure
Dimensions [L x W x D]	3.728” x 2.83” (4.331” with tabs) x 1.404”
Weight	1.13g [2.5lbs]
Mounting	Wall-mounting Decora® 2 Gang
Power supply	48V DC
Power consumption	8 Watts without USB 12.9 Watts with USB
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]
Package Contents	1x HTW-2 1x Paintable White Wall Plate 1x User Manual
Options	PS0094-2 48v DC 25 Watt Power Supply PS0081-1 48V PoE+ 25 Watt Power Supply IPE-DTE-1 Dante/AES67 2 Channel IPE-DTE-2 Dante/AES67 8 Channel IPE-ReAX-1 ReAX IP Control Card

Specifications subject to change without notice.

APPENDIX 5

Cabling

Aurora extender products have been tested utilizing shielded cabling. Although our products will work fine without shielded cable it is highly recommended for environmental reasons as the signals are high frequency and can radiate as well as be susceptible to external frequencies and possibly cause noise or disruption in the image. Unshielded cabling will work fine in a conduit as it will provide the shielding. We have found not all cable is created equal even though they appear similar. This can affect distance and overall performance. Below is a list of cables that have been officially tested with our products by the manufacturer of the cable.

West Penn Wire

CAT 6 Shielded - HDBaseT Certified - Only in Black
4246F – CMR, 254246F – CMP (Plenum)

CAT 6a Shielded HDBaseT Certified - Only in Black
4246AF – CMR, 254246AF – CMP (Plenum)

Both CAT 6 and CAT 6a Shielded Cables utilized a Modular Plug Kit:
90170-BI - Includes: 100 Connectors, 100 Boots, Crimp Tool, External round Crimp Tool, Strip Tool

CAT 6 Unshielded - Colors
4246 – CMR, 254246 - CMP (Plenum)
Connector: 32-6EZP

CAT5e Shielded - Blue or Gray
4245F – CMR, 254245F - CMP (Plenum)
Connector: 32-EZSTP

CAT 5e Unshielded- 12 Colors
4245-CMR, 254245 - CMP (Plenum)
Connectors: 32-EZP

APPENDIX 6

Warranty

Limited 5 Year Warranty

Aurora Multimedia Corporation (“Manufacturer”) warrants that this product is free of defects in both materials and workmanship for a period of 5 years as defined herein for parts and labor from date of purchase. This Limited Warranty covers products purchased in the year of 2019 and after. Motorized mechanical parts (Hard Drives, DVD, etc.), mechanical parts (buttons, doors, etc.), remotes and cables are covered for a period of 1 year. Touch screen displays are covered for 1 year; touch screen overlay components are covered for 90 days. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

A. The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,

B. The product has not been operated in accordance with procedures specified in operating instructions: or,

C. The product has been repaired and or altered by other than manufacturer or authorized service center; or,

D. The product's original serial number has been modified or removed; or,

E. External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product; or,

F. Part(s) are no longer available for product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

No other warranty, express or implied other than Manufacturer's shall apply.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.

Aurora Multimedia Corporation

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