CH-517RXHS

HDMI Scaler over CAT5e/6/7 Receiver with LAN/ RS-232/IR/Bidirectional PoE

HDBT

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.

REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VR0	01/11/13	Preliminary release
VS1	09/10/13	Updated text/diagrams

CONTENTS

1. INTRODUCTION

The CH-517RXHS is an HDBaseT™ Receiver Scaler designed to scale the incoming video signal first, before outputting to its HDMI port. There is an Optical port providing additional audio extraction feature. Besides video and audio from the Transmitter, it also takes in 2-way IR, RS-232 and bidirectional LAN serving, over a single run of CAT5e/6/7 cable at a distance up to 100 meters. Control is via on-panel buttons or IR remote control and there is an On-screen Display (OSD) providing selection and system information. The device provides a full range of output resolutions, up to 1080p and WUXGA (RB). The bidirectional Power over Ethernet (PoE) function provides greater flexibility in installations.

2. APPLICATIONS

- Up-scale HDMI output to HDTV/PC resolutions
- Up-scale standard definition video to High-Definition TVs/displays
- Extend the operating distance of an HDMI signal
- Lecture room/Showroom/Meeting room/Classroom display and control

3. PACKAGE CONTENTS

- CAT5e/6/7 to HDMI with LAN/IR/RS-232/Bidirectional PoE Receiver
- 1×IR Receiver
- 1×IR Blaster
- 24 V/2.7 A DC Power Adaptor
- Remote Control (CR-128)
- Operation Manual

4. SYSTEM REQUIREMENTS

HDBaseT compatible Transmitter (input) and output to display with an HDMI input connection.

5. FEATURES

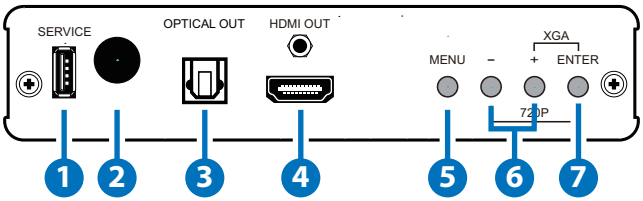
- Supports HDMI scaling to a wide range of HDTV or PC resolutions up to 1080p and WUXGA (RB)
- Reception of uncompressed data over a single CAT5e/6/7 cable up to 100m/328ft
- HDBaseT™ 5Play convergence: uncompressed high definition Video and Audio, LAN serving, Bidirectional Power over Ethernet (PoE) and controls (IR & RS-232 bypass)
- Supports IR, Remote control, RS-232 (bypass) and on-panel controls
- Provides bidirectional 24V DC power to or receive from compatible PoE Transmitter through CAT5e/6/7 cable
- Supports Ethernet transmission rates up to 100 Mbps
- Supports HDMI, Optical (S/PDIF) audio sampling rates up to 48kHz
- Supports HDMI and Optical (S/PDIF) audio up to LPCM 2CH

Note:

1. *This system was tested with CAT6/23AWG cables, results may vary with cables of a different specification.*
2. *The PoE function is designed for powering compatible Transmitter units only—non-PoE Transmitters will need their own power supply. Transmitters from other brands may not be compatible.*
3. *DO NOT connect the LAN connection to the CAT5e/6/7 port. Doing so may cause a power shutdown and may damage the device.*

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



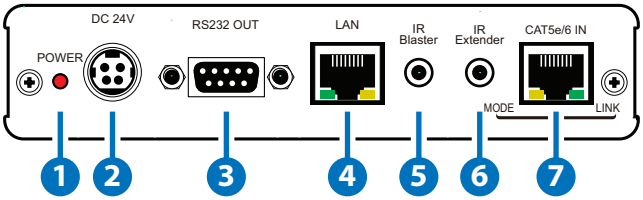
1. **SERVICE:** Reserved for manufacturer use only.
2. **IR RECEIVER WINDOW:** Receives only the IR signal from the supplied remote control.
3. **OPTICAL OUT:** Connect to an amplifier or active speakers with an optical cable.
4. **HDMI OUT:** Connect to an HDMI TV/Monitor
5. **MENU:** Press this button to enter the On-Screen Display (OSD) menu.
6. **–/+:** Use these buttons to navigate down and up in the on-screen menu.
7. **ENTER:** Press this button to confirm the selection.

   Note:

   Pressing '–' (MINUS) and ENTER simultaneously will immediately switch the output resolution of the device to 720p60.

   Pressing '+' (PLUS) and ENTER simultaneously will immediately switch the output resolution of the device to XGA (1024×768).

6.2 Rear Panel



1. **POWER LED:** This LED will illuminate when the device is connected to an active power supply.
2. **DC 24V:** Connect the 24V DC power supply to the unit and plug the adaptor into an AC outlet. Only one unit requires powering if both the Transmitter and Receiver are both PoE compatible.
3. **RS-232 OUT:** Connect to the device that is to be controlled (via D-Sub 9 pin female cable) by RS-232 commands.
4. **LAN:** Connect to an active network for LAN serving. When any compatible LAN equipped receivers are connected, this allows the network access (including internet access if available) to be shared between any connected LAN equipped receivers. Connect any Ethernet equipped device e.g. a Smart TV or games console to the LAN port of a receiver for that device to share the network/internet access.

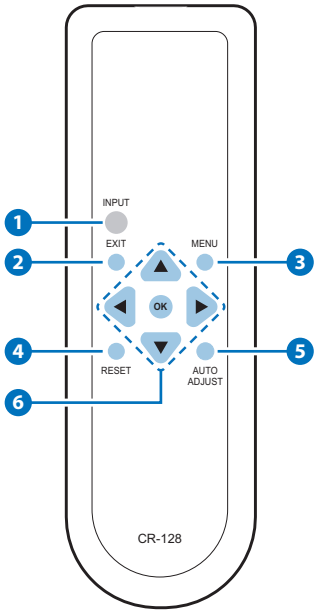
   Warning: DO NOT connect the LAN connection to the CAT5e/6/7 port. Doing so may cause a power shutdown and may damage the device.
5. **IR Blaster:** Connect the supplied IR Blaster cable for IR signal transmission. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.
6. **IR Extender:** Connect to the supplied IR Receiver cables for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR Extender.
7. **CAT5e/6/7 IN:** Connect to the Transmitter unit with a Single CAT5e/6 cable for receiving all data signals.

   MODE LED: This LED will illuminate when the power is connected.

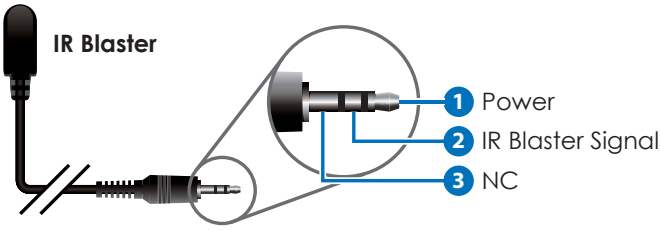
   LINK LED: This LED will illuminate when connected to a Transmitter unit that is connected to a source that is outputting a signal.

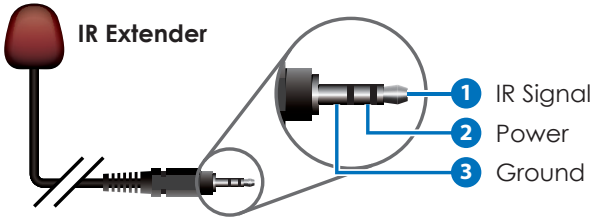
6.3 Remote Control

1. **INPUT:** Not functional.
2. **EXIT:** Press this button to exit the menu or escape the current selection under OSD.
3. **MENU:** Press this button to exit the menu or the current selection in the on-screen menu.
4. **RESET:** Press this button to return the device to the factory default settings.
5. **AUTO ADJUST:** Not functional.
6. **OK & ▲▼◄►:** Press 'OK' to confirm the selection or use the directional buttons to navigate the on-screen menus.



6.4 IR Cable Pin Assignment





6.5 RS-232 Pin Definitions

PIN	DEFINE TX / RX
1	N/C
2	TxD/RxD
3	RxD/TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 9600bps

Data bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

6.6 RS-232 Commands

COMMAND	DESCRIPTION	
S OUTPUT 0~25	0=Native	12=1600×1200
	1=640×480	13=1920×1080
	2=800×600	16=1920×1200
	3=1024×768	17=480p
	5=1360×768	18=720p@60
	6=1280×720	19=1080p@60
	7=1280×800	20=1080i@60
	8=1280×1024	22=576p
	9=1440×900	23=720p@50
	10=1400×1050	24=1080p@50
	11=1680×1050	25=1080i@50
R OUTPUT	Reports the numerical equivalent for the OUTPUT setting (as listed above)	
S SIZE 0~6	0=OVERSCAN	4=LETTER BOX
	1=FULL	5=UNDER 2
	2=BEST FIT	6=UNDER 1
	3=PAN SCAN	
R SIZE	Reports the numerical equivalent for the SIZE setting (as listed above)	
S CONTRAST 0~60	Sets the numerical value for the CONTRAST setting (0-60)	
R CONTRAST	Reports the numerical value for the CONTRAST setting (0-60)	
S BRIGHTNESS 0~60	Sets the numerical value for the BRIGHTNESS setting (0~60)	
R BRIGHTNESS	Reports the numerical value for the BRIGHTNESS setting (0~60)	
S HUE 0~60	Sets the numerical value for the setting (0~60)	
R HUE	Reports the numerical value for the setting (0~60)	

COMMAND	DESCRIPTION	
S SATURATION 0~60	Sets the numerical value for the SATURATION setting (0~60)	
R SATURATION	Reports the numerical value for the SATURATION setting (0~60)	
S SHARPNESS 0~30	Sets the numerical value for the SHARPNESS setting (0~30)	
R SHARPNESS	Reports the numerical value for the SHARPNESS setting (0~30)	
S NR 0~3	0=OFF	2=MIDDLE
	1=LOW	3=HIGH
R NR	Reports the numerical equivalent for the NOISE REDUCTION setting (as listed above)	
S AUDIO DELAY 0~3	0=OFF	2=110ms
	1=40ms	3=150ms
R AUDIO DELAY	Reports the numeric equivalent for AUDIO DELAY setting (as listed above)	
S AUDIO MUTE 0/1	0=ON	1=MUTE
R AUDIO MUTE	Reports the numeric equivalent for AUDIO MUTE setting (as listed above)	
S KEY LOCK 0/1	0=ENABLE	1=DISABLE
R KEY LOCK	Reports the numeric equivalent for KEY LOCK setting (as listed above)	
FW	Checks the FIRMWARE version	
S RESET 1	Sets the numerical equivalent for the RESET setting (as left)	

Note:

1. *RS-232 commands will not execute unless followed with carriage return and LF (Line Feed).*
2. *Commands are not case-sensitive.*
3. *Resolutions 1~16 are RGB encoded and 17~25 are YUV encoded.*
4. *Digital audio supports LPCM 2CH only, please ensure the source input audio is set to send LPCM 2CH audio in order to avoid unwanted audio noise.*

6.7 OSD Menu

1ST LAYER	2ND LAYER	3RD LAYER
DISPLAY	OUTPUT	Native
		640x480 60
		800x600 60
		1024x768 60
		1360x768 60
		1280x720 60
		1280x800 60
		1280x1024 60
		1440x900 60
		1400x1050 60
		1680x1050 60
		1600x1200 60
		1920x1080 60
		1920x1200 60
		720x480P 60
		1280x720P 60
		1920x1080I 60
		1920x1080P 60
		720x576P 50
		1280x720P 50
		1920x1080I 50
		1920x1080P 50

1ST LAYER	2ND LAYER	3RD LAYER
SIZE	SIZE	OVER SCAN
		FULL
		ASPECT RATIO
		PAN SCAN
		LETTER BOX
		UNDER 2
		UNDER 1
	MODE INFO	INFO
		ON
		OFF
	COLOR	R
		G
		B
		R OFFSET
		G OFFSET
		B OFFSET
	CONTRAST	0~60
	BRIGHTNESS	0~60
	HUE	0~60
	SATURATION	0~60
	SHARPNESS	0~60
	NR	**OFF**
		LOW
		MIDDLE
		HIGH
AUDIO	VOLUME	0~100
	DELAY	**OFF**
		40mS
		110mS
		150mS

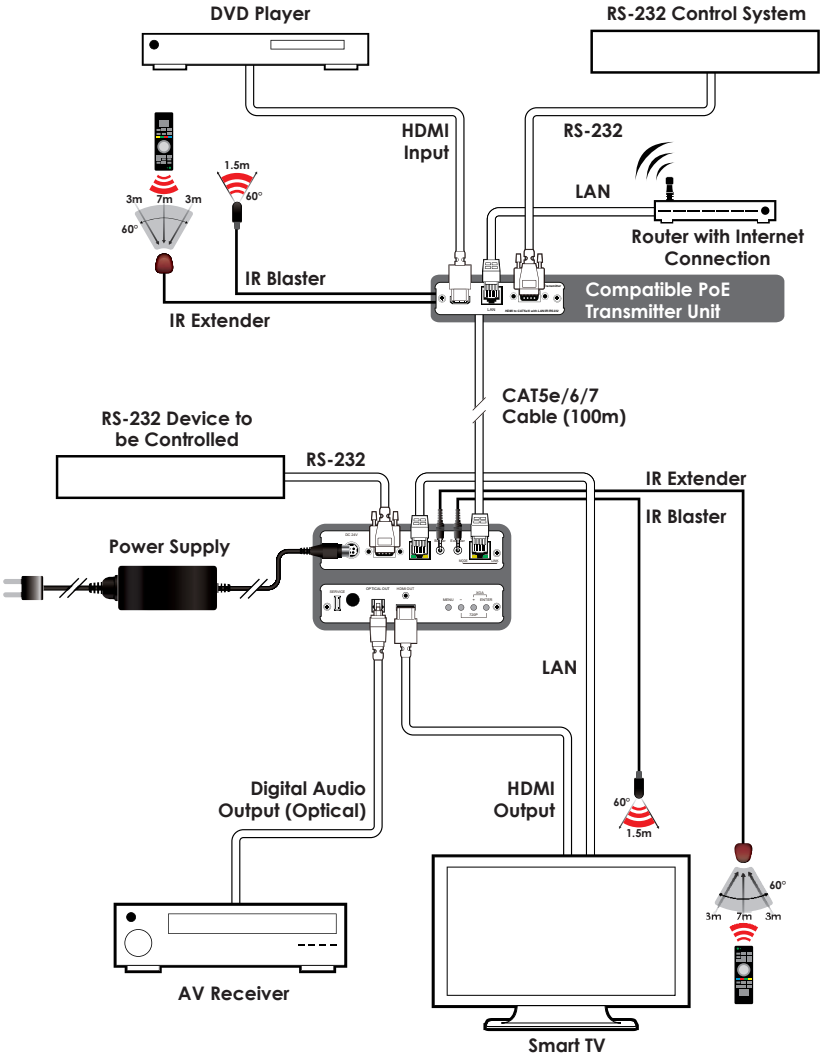
1ST LAYER	2ND LAYER	3RD LAYER
	SOUND	**ON**
		MUTE
SETUP	FACTORY RESET	NO
		YES
	KEY LOCK	OFF
		ON
INFORMATION	INPUT	
	OUTPUT	
	REVISION	

Note: Items in ***Bold*** *are the default setting.*

6.8 Input Resolutions Support

INPUT RESOLUTION	HDMI
480i/576i	✓
480p/576p	✓
720p@50/60 Hz	✓
1080i@50/60 Hz	✓
1080p@50/60 Hz	✓
VGA@60/72/75 Hz	✓
SVGA@56/60/72/75 Hz	✓
XGA@60/70/75 Hz	✓
SXGA@60/75 Hz	✓
UXGA@60 Hz	✓
1280×800@60 Hz	✓
1680×1050@60 Hz (RB)	✓
1920×1080@60 Hz	✓

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

Ethernet Speed	100 Mbps
Input Video Bandwidth	300MHz / 10.2Gbps
Output Video Bandwidth	165MHz / 1.65Gbps
Input Ports	1×CAT5e/6/7, 1×IR Extender
Output Ports	1×HDMI, 1×IR Blaster, 1×Optical, 1×RS-232, 1×LAN
CAT5e/6/7 Output Cable Distance	Up to 100 Meters
HDMI Resolutions Support	HD: Up to 1080p@60 Hz PC: Up to WUXGA (RB)
Audio Sampling Rate	Up to 48 kHz or LCPM 2CH
CAT5e/6/7 Resolutions Support	HD: Up to 1080p@60 Hz PC: Up to WUXGA (RB)
IR Frequency	30~50 kHz
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Dimensions	145 mm (W)×192 mm (D)×30 mm (H)/ Jacks Excluded 145 mm (W)×202.75 mm (D)×30 mm(H)/Jacks Included
Weight	608 g
Chassis Material	Aluminum
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	14 W

8.2 CAT5e/6/7 Cable Specification

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video
CAT5e/6/7	100 m	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p, 60 Hz, 36 bits, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).

9. ACRONYMS

ACRONYM	COMPLETE TERM
CAT5e	Category 5 Cable
CAT6	Category 6 Cable
CAT7	Category 7 Cable
HDMI	High-Definition Multimedia Interface
IR	Infrared
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduce blanking)

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