User Manual

EXT-H211L2-SRX-HDBT

18G HDMI 2.0 over HDBaseT Scaling Receiver

Version: EXT-H211L2-SRX-HDBT _2023V1.1

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till November 2023. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration, or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with good ventilation to avoid damage caused by overheating.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Table of Contents

1. Product Introduction

The EXT-H211L2-SRX-HDBT is a professional 18Gbps scaling receiver over HDBaseT. It features 1 HDBT input and 1 HDMI input which is designed with auto-switching or manual switching modes. The unit receives video, audio, RS-232 and IR over a single CAT6A cable. It is HDCP 2.3 compliant and supports selectable scaled resolutions from 1024x768 to 4096x2160. It is compatible with TiGHT AV matrix switcher MSW-H614A-HDBT, or point-to-point applications for signal long-distance transmission (up to1080p@70m and 4K@40m) between remote endpoints using TiGHT AV transmitter EXT-H101L2-TX-HDBT. It can be powered locally or remotely through compatible TiGHT AV transmitter or matrix switcher, or supply power for the transmitter when it is powered locally with included power adaptor. The scaling receiver also features EDID and HDCP management.

1.1 Key Features

- Supports 4K/60 4:4:4, HDR, HDCP2.3 compliant.
- Transmission distance is up to 1080p@70m and 4K@40m over CAT6A cable.
- Manual or automatic video switching between HDBaseT and HDMI 2.0 inputs.
- Advanced 4K scaling technology, output resolution selectable from 1024x768 to 4096x2160.
- Aspect Ratio control
- Two-way PoC, 24V PoC output and 12 ~ 48V wide range PoC input.
- Comprehensive EDID and HDCP management.
- Controllable by front panel and RS232.
- Supports RS232 pass-through mode when connected to compatible transmitters.
- Bi-directional IR pass-through.
- Compatible transmitter devices: EXT-H101L2-TX-HDBT and MSW-H614A-HDBT.

1.2 Package List

- 1x EXT-H211L2-SRX-HDBT
- 4x Rubber feet
- 1x Mounting Kit (Attached by default)
- 1x RS232 cable (3-pin to DB9)
- 1x Power adapter (DC 24V1.25A)
- 1x User Manual

Note: *Please contact your distributor immediately if any damage or defect in the components is found.*

1.3 Customer Service

TiGHT AV provide a limited warranty for the product within **five years** counting from date of purchase (The purchase invoice shall prevail).

For more information see TiGHT AV general Warranty Statement at https://tightav.com/warranty-statement or just scan the QR-code below.

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2. Technical Specification

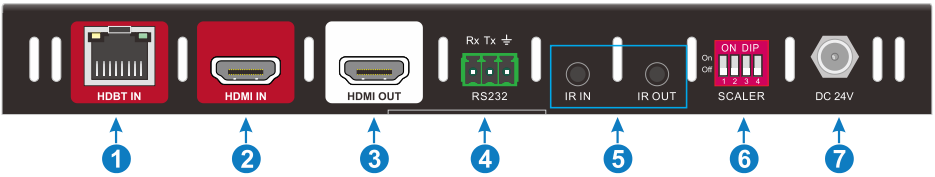
Input	
Inputs	One RJ45 port for HDBaseT input One HDMI 2.0 input for local source
HDBaseT range	1080p@60Hz 70m and 4K@60Hz 40m
Output	
Outputs	One HDMI 2.0 output for display
Out Resolution	Selectable from 1024x768 to 4096x2160
Control	
Control	(1) RS232 (1) Button (1) DIP Switch
Control Connector	(1) 3-pin terminal block (1) 4-pin dip switch
General	
Model Name	EXT-H211L2-SRX-HDBT
Power	DC24V 1.25A
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10%-90%
Power Consumption	30W Max (Powering TX)
Dimension (WxHxD)	210mm x 25mm x 115mm
Net Weight	755g
Shipping Dimension (WxHxD)	270mm x 54mm x 200mm
Shipping Weight	1300g
Compliance	FCC, CE
Environmental	RoHS, REACH, WEEE

3. Panel Description

3.1 Front Panel

1. **LED:**
   - **Power Indicator:** The LED illuminates green when power is applied.
   - **HDBT Indicator:** The LED illuminates blue when the unit switches to HDBT input.
   - **HDMI Indicator:** The LED illuminates blue when the unit switches to HDMI input.
   - **AUTO Indicator:** The LED illuminates blue when the unit enters auto-switching mode and will be off when entering manual switching mode.
2. **Select Button:** Black button for input selection. Please refer to section 5. Video-switching for more information.
3. **RS232 DIP Switch:** 3-pin switch for RS232 mode selection.
4. **FW:** Micro-USB port for firmware upgrade.

3.2 Rear Panel



1. **HDBT IN:** 1x RJ45 connector. Connects to the TiGHT AV matrix or transmitter over CAT6A cables. The LINK LED illuminates yellow when there is a valid HDBaseT link between the transmitter device and the receiver. The LED illuminates green when video transmits encrypted with HDCP. It will blink green when video transmits without HDCP encryption and will be off when there is no valid video signal.
2. **HDMI IN:** 1xType-A HDMI port to connect with HDMI source.
3. **HDMI OUT**: 1 x Type-A HDMI port to connect with HDMI display.
4. **RS232**: 3-pin terminal block for RS232 control.
5. **IR**: 2 x 3.5mm mini jack for IR pass-through.
6. **SCALER**: 4-Pin dip switch for output resolution adjustment.
7. **DC 24V:** Connects with included DC24V 1.25A power adapter.

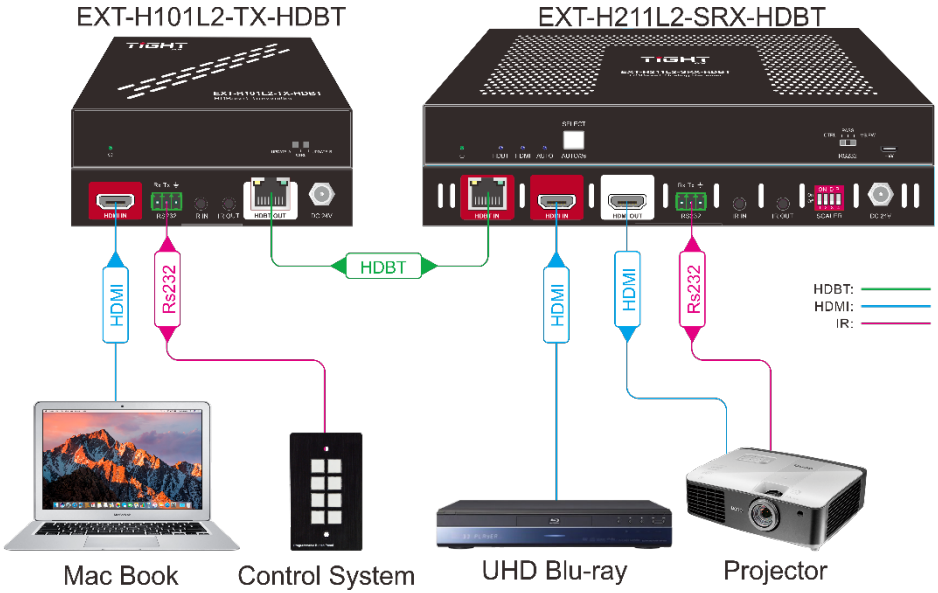
4. System Connection

4.1 Usage Precaution

- Make sure all components and accessories are included before installation.
- The system should be installed in a clean environment with proper temperature and humidity.
- All the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before system powers on.

4.2 System Diagram

The following diagram illustrates an example of connections that can be utilized using the EXT-H211L2-SRX-HDBT and transmitter EXT-H101L2-TX-HDBT.



5. Video-switching

5.1 Manual Switching

Press the button on the front panel to select HDBT IN or HDMI IN.

5.2 Auto Switching

Press and hold the button more than 3 seconds to enter or exit auto mode. The auto-switching mode abides by the following principles:

1. Once detecting a new input signal, the unit would switch to this new signal automatically.

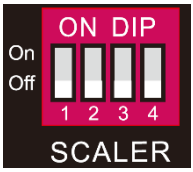
2. The unit has power-off memory function. If the last switching mode is auto-switching, once rebooted, the unit will automatically enter auto-switching mode. If the last displayed signal is still available, the unit will output the signal. If not, the unit will detect all the input signals with priority from HDBT IN to HDMI IN. When detection of the first valid video signal, it will switch it to the output.

3. Once removing the current signal, the receiver will switch to the next active input.

4. 5V/TMDS detection (Default is TMDS detection, see section 7.2 Commands for more information).

Note: Support switching the input by RS232 commands even there is no input signal, but the front panel button can't.

6. Output Resolution



The switch represents "0" when in the lower (Off) position, and it represents "1" while putting the switch in the upper (On) position.

Switch Status	Output Resolution
0000	Reads EDID of the display and scales automatically.
0001	1024x768@60Hz
0010	1280x720@60Hz

0011	1280x800@60Hz
0100	1440x900@60Hz
0101	1600x1200@60Hz
0110	1680x1050@60Hz
0111	1920x1080@60Hz
1000	1920x1200@60Hz
1001	3840x2160@24Hz
1010	3840x2160@30Hz
1011	3840x2160@50Hz
1100	3840x2160@60Hz
1101	4096x2160@24Hz
1110	4096x2160@60Hz
1111	Set the output's resolution by RS232 commands

7. Device Control

7.1 RS232

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The machine can be controlled by sending RS232 commands.

The list of commands is used to control the machine. A RS232 control software (e.g. Docklight) needs to be installed on the control PC in order to send RS232 commands.

After installing the RS232 control software, please set the parameters of COM port, baud rate, data bit, stop bit and the parity bit correctly.

Communication protocol: RS232 Communication Protocol default values

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

7.2 Commands

Command	Function	Feedback Example
		setoutputscale:01

setoutputscale:xx	Set the output resolution xx: 00 - 24 (out format) 00: Sink EDID 01 - 1024x768@60Hz 02 - 1280x720@50Hz 03 - 1280x720@60Hz 04 - 1280x800@60Hz 05 - 1366x768@60Hz 06 - 1440x900@60Hz 07 - 1600x1200@60Hz 08 - 1680x1050@60Hz 09 - 1920x1080@30Hz 10 - 1920x1080@50Hz 11 - 1920x1080@59Hz 12 - 1920x1080@60Hz 13 - 1920x1200@60Hz 14 - 2560x1440@60Hz 15 - 3840x2160@24Hz 16 - 3840x2160@25Hz 17 - 3840x2160@30Hz 18 - 3840x2160@50Hz 19 - 3840x2160@59Hz 20 - 3840x2160@60Hz 21 - 4096x2160@24Hz 22 - 4096x2160@50Hz 23 - 4096x2160@59Hz 24 - 4096x2160@60Hz	setoutputscale:01 ok/error
videomute	Mute video output	videomute videomute ok
videounmute	Unmute video output	videounmute videounmute ok

cecin,x,[bb],[cc]:[dd] cecout,[bb],[cc]:[dd]	cecin or cecout is the commands to send CEC to an input or output port x: input port 1 - HDBT 2 - HDMI bb、cc、dd are all hexadecimal data >bb:Represents device type >cc: Represents CEC function category >dd: represents the specific data under the function (See section 7.3 CEC Table for CEC codes)	cecin,1,04,44:42 cecout,04,44:41 cecin,1,04,44:42 ok/error cecout,04,44:41 ok/error
setedid,x:zz	Set EDID zz for input x x: 0 - 2 (input port) 0 - all input port 1 - HDBT input port 2 - HDMI input port zz: 00 - 12 (EDID) 00 - Sink EDID 01 - 1920x1080@60 8bit Stereo 02 - 1920x1080@60 8bit High Definition Audio 03 - 3840x2160@30Hz 8bit Stereo Audio 04 - 3840x2160@30Hz Deep Color High Definition Audio 05 - 3840x2160@60Hz 4:2:0 Deep Color Stereo Audio 06 - 3840x2160@60Hz Deep Color Stereo Audio (default EDID) 07 - 3840x2160@60Hz Deep Color High Definition Audio 08 - 3840x2160@60Hz Deep Color HDR LPCM 6CH 09 - User-defined EDID 1	setedid,1:03 setedid,1:03 ok/error

	10 - User-defined EDID 2 11 - User-defined EDID 3 12 - User-defined EDID 4	
getedidin,x	Query EDID of input [x] x = 0 - 2 0 - all inputs 1 - HDBT input port 2 - HDMI input port	getedidin,0 edid,1:03 internal! edid,2:06 internal!
setuseredid:xx	Upload user-defined EDID for input xx = U1 ~ U4 U1 - user-define EDID 1 U2 - user-define EDID 2 U3 - user-define EDID 3 U4 - user-define EDID 4	setuseredid:U1 setuseredid:U1 ok/error
poweron	Enter standby mode	poweron poweron ok
poweroff	Exit standby mode	poweroff poweroff ok
hdcpfollowdisplay	HDCP follows the display version (default)	hdcpfollowdisplay hdcpfollowdisplay ok
hdcpfollowinput	HDCP follows inputs	hdcpfollowinput hdcpfollowinput ok
hdcp,on	HDCP always on for output	hdcp,on hdcp,on ok
gethdcp	Query status of HDCP on output	gethdcp hdcpfollowinput!
setaspectmode:z	Set the horizontal and vertical ratio of the output signal z:1 - 2 (mode) 1 - Keep the original aspect ratio of the source (default) 2 - Follow the aspect ratio of the display	setaspectmode:1 setaspectmode:1 ok
hdbtpoweron	Turn on the HDBT 24V POC (default)	hdbtpoweron hdbtpoweron ok

hdbtpoweroff	Turn off the HDBT 24V POC	hdbtpoweroff
		hdbtpoweroff ok
setbaudrate:z	Set local serial port baud rate z:3 - 7 3 - 9600 4 - 19200 5 - 38400 6 - 57600 7 - 115200	setbaudrate:3
		setbaudrate:3 ok
setdetectmode:z	Input port signal detection mode z:1 - 2 1 - 5V 2 - TMDS(default)	setdetectmode:1
		setdetectmode:1 ok
autoswitchon	Turn on autoswitch	autoswitchon
		autoswitchon ok
autoswitchoff	Turn off autoswitch	autoswitchoff
		autoswitchoff ok
getautoswitch	Query autoswitch mode	getautoswitch
		autoswitchoff!
set,x	Switch video input x x: input port 1 - HDBT input port 2 - HDMI input port	set,1
		set,1 ok/error
reset	factory data reset	reset
		reset ok
getstatus	Query system status and port status	getstatus
		ext-h211l2-srx-hdbt! firmware:1.0.0a! set,1,2! hdcp,off! fplock:off! hdbtpower:off! dial-up:1111! setbaudrate:3! edid,1:3 internal!

		edid,2:6 internal! setaspectmode:1! setoutfrmt:1! setdetectmode:1! autoswitchon! videounmute!
fplockon	Turn on the front panel lock	fplockon
		fplock:on ok
fplockoff	Turn off the front panel lock	fplockoff
		fplock:off ok
getfplock	Query the front panel lock status	getfplock
		fplock:on!

7.3 CEC Table

CEC Function	Command
CEC_RC_SELECT	00
CEC_RC_UP	01
CEC_RC_DOWN	02
CEC_RC_LEFT	03
CEC_RC_RIGHT	04
CEC_RC_RIGHT_UP	05
CEC_RC_RIGHT_DOWN	06
CEC_RC_LEFT_UP	07
CEC_RC_LEFT_DOWN	08
CEC_RC_ROOT_MENU	09
CEC_RC_SETUP_MENU	0A
CEC_RC_CONTENTS_MENU	0B
CEC_RC_FAVORITE_MENU	0C
CEC_RC_EXIT	0D
//	0E - 1F Reserved
CEC_RC_0	20
CEC_RC_1	21

CEC_RC_2	22
CEC_RC_3	23
CEC_RC_4	24
CEC_RC_5	25
CEC_RC_6	26
CEC_RC_7	27
CEC_RC_8	28
CEC_RC_9	29
CEC_RC_DOT	2A
CEC_RC_ENTER	2B
CEC_RC_CLEAR	2C
//	2D - 2F Reserved
CEC_RC_CHANNEL_UP	30
CEC_RC_CHANNEL_DOWN	31
CEC_RC_PREVIOUS_CHANNEL	32
CEC_RC_SOUND_SELECT	33
CEC_RC_INPUT_SELECT	34
CEC_RC_DISPLAY_INFORMATION	35
CEC_RC_HELP	36
CEC_RC_PAGE_UP	37
CEC_RC_PAGE_DOWN	38
//	39 - 3F Reserved
CEC_RC_POWER	40
CEC_RC_VOLUME_UP	41
CEC_RC_VOLUME_DOWN	42
CEC_RC_MUTE	43
CEC_RC_PLAY	44
CEC_RC_STOP	45
CEC_RC_PAUSE	46
CEC_RC_RECORD	47
CEC_RC_REWIND	48

CEC_RC_FAST_FORWARD	49
CEC_RC_EJECT	4A
CEC_RC_FORWARD	4B
CEC_RC_BACKWARD	4C
CEC_RC_STOP_RECORD	4D
CEC_RC_PAUSE_RECORD	4E
//	4F Reserved
CEC_RC_ANGLE	50
CEC_RC_SUB_PICTURE	51
CEC_RC_VIDEO_ON_DEMAND	52
CEC_RC_ELECTRONIC_PROGRAM_GUIDE	53
CEC_RC_TIMER_PGRMING	54
CEC_RC_INITIAL_CONFIGURATION	55
CEC_RC_SELECT_BROADCAST_TYPE	56
CEC_RC_SELECT_SOUND_PRESENTATION	57
//	58 - 5F Reserved
CEC_RC_PLAY_FUNCTION	60
CEC_RC_PAUSE_PLAY_FUNCTION	61
CEC_RC_RECORD_FUNCTION	62
CEC_RC_PAUSE_RECORD_FUNCTION	63
CEC_RC_STOP_FUNCTION	64
CEC_RC_MUTE_FUNCTION	65
CEC_RC_RESTORE_VOLUME_FUNCTION	66
CEC_RC_TUNE_FUNCTION	67
CEC_RC_SELECT_DISK_FUNCTION	68
CEC_RC_SELECT_AV_INPUT_FUNCTION	69
CEC_RC_SELECT_AUDIO_INPUT_FUNCTION	6A
CEC_RC_POWER_TOGGLE_FUNCTION	6B
CEC_RC_POWER_OFF_FUNCTION	6C

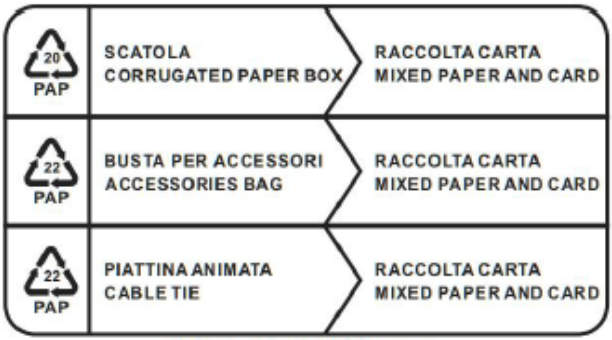
8. Drawings and Dimensions

9. Environment and recycling information

9.1 Disposal of electric and electronic devices EC Directive 2012/19/EU

This product is not to be treated as regular household waste but must be returned to a collection point for recycling electric and electronic devices. Further information is available from your municipality, your municipality's waste disposal services, or the retailer where you purchased your product.

9.2 Packaging recycling information



Verifica le disposizioni del tuo comune
Check the regulations of your municipality

Note: This manual is recycled as paper (mixed paper and card).