

# ► HEX31WP-TX / HEX31WPB-TX / HEX31WPW-TX

## User Manual

## Thank you for purchasing this product.

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.



## Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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# Introduction

Our HEX31WP HDMI / USB-C wall plate HDBaseT™ Transmitter is a multi-format 4K input switcher solution delivering HDMI and USB-C inputs up to 70m at 1080p (40m at 4K 60Hz 4:2:0). The HEX31WP-TX features both manual or automated source selection and includes display on / off control via CEC, RS-232 and IR (via compatible HDBaseT™ Receiver / Matrix). The HEX31WP-TX has been designed to work with all Blustream HDBaseT™ Receiver and Matrix solutions, be installed in both UK and European backboxes, and can be powered locally or from compatible Blustream HDBaseT™ products.

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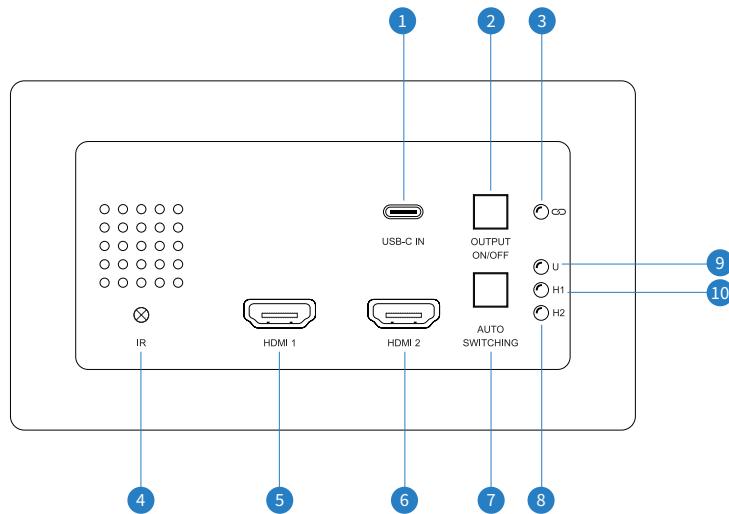
## FEATURES:

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- Features 2 x HDMI & 1 x USB-C inputs with manual / auto source selection
- Advanced HDBaseT™ technology offering distribution of video and audio over a single CAT cable
- Supports 4K UHD video up to 40m (3840 x 2160 @30Hz 4:4:4, 4096 x 2160 @24Hz 4:4:4, and 4K @60Hz 4:2:0)
- Extends HDMI at 1080p up to a distance of 70m
- USB-C input for Video / Audio interface with Windows®, Mac® & Chromebook™ PC's as well as tablets or smartphones using the same connector type
- Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications
- Input selection via front panel and RS-232
- Programmable ON / OFF button utilising IR, RS-232 or CEC for control of display device at HDBaseT™ Receiver
- Supports 12V-48V PoC from compatible Blustream HDBaseT™ Receiver / Matrix products
- Bi-directional RS-232 pass through
- Supports IR pass-through to HDBaseT™ device
- Compatible with all Blustream HDBaseT™ Receiver / Matrix products\*
- Magnetic faceplate surround allowing both UK & EU backbox compatibility
- HDCP 2.2 compliant

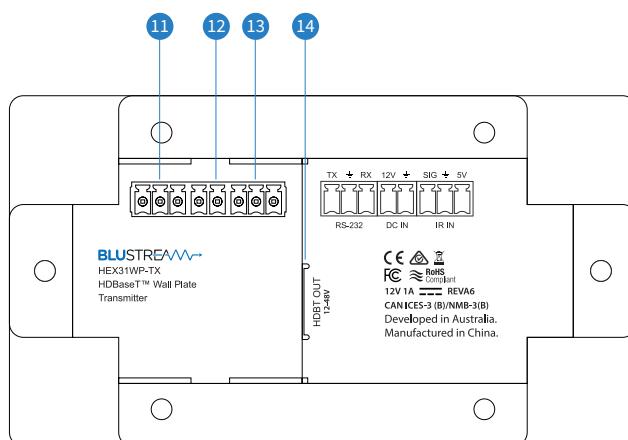
\*Technical performance is subject to the features supported on the connected HDBaseT™ device

## Front Panel Description



- ① USB-C Input - Type C USB port to connect to USB-C source device
- ② Output ON / OFF Button - Triggers the output on / off sequence (see Output On / Off section on next page)
- ③ HDBaseT™ link status indicator - Illuminates when the Transmitter is connected to the Receiver / Matrix successfully
- ④ IR Receiver - Built in IR sensor for IR pass through
- ⑤ HDMI Input 1 - Type A HDMI port to connect HDMI source device
- ⑥ HDMI Input 2 - Type A HDMI port to connect HDMI source device
- ⑦ Auto Switching Button - Press to change source, hold for 3 seconds to enable / disable auto signal sense switching
- ⑧ HDMI Input 2 Indicator - Illuminates when HDMI 2 input is connected
- ⑨ USB Input Indicator - Illuminates when USB-C input is connected
- ⑩ HDMI Input 1 Indicator - Illuminates when HDMI 1 input is connected

## Rear Panel Description



- ⑪ RS-232 - 3-pin phoenix connector for RS-232 pass through to / from compatible HDBaseT™ Receiver / Matrix products
- ⑫ 12V DC Input - 2-pin phoenix connector to connect to Blustream 12V power supply (supplied)
- ⑬ IR Receiver Input - 3-pin phoenix connector to connect to Blustream IR Receiver (phoenix block supplied, IR Receiver not supplied)
- ⑭ HDBaseT™ Output - RJ45 HDBaseT™ port to connect to the HDBaseT™ input port of the compatible Blustream HDBaseT™ Receiver / Matrix device

# Output On/Off Function

The HEX31WP-TX features a variety of ways that the unit can be automated to, or allow for, the powering of the display connected to the HDBaseT™ receiver.

## Output On/Off Button

The Output On/Off button can be programmed to power on, or off, the display connected to the HDBaseT™ Receiver via CEC, IR or RS-232 as required by the user. The default setting on the unit is enabled for CEC (Consumer Electronic Control), but disabled for IR and RS-232. When triggered, the Display On/Off button will be illuminated. When removing the last source device connection from the HEX31WP-TX, the display will (by default) remain powered.

The default function can be disabled (or re-enabled) as required - see below. Or refer to the RS-232 command section of this user manual on page 08 for the full list of function commands.

### Output On/Off via CEC

As outlined above, the HEX31WP-TX wallplate, by default, will send out a Power On command via CEC automatically when a video signal is sensed by the unit.

To disable this automatic feature via RS-232, send the following command:

CECAUTO OFF

To enable this automatic feature via RS-232, send the following command:

CECAUTO ON

### Output On/Off via IR Learning

The HEX31WP-TX can be programmed to issue an IR command, via HDBaseT™ to the connected display device, when it either detects a new signal / loss of signal, or when pressing the Output On/Off button on the wall plate. To learn an IR command into the unit, follow these steps:

- 1) Press and hold both Output On/Off and Auto Switching buttons simultaneously for approximately 3 seconds until both of the button LED's flash alternately.
- 2) Use the Output On/Off button to select between the command to be set as follows:
  - A quick flashing LED for the Output On/Off button indicates that Output On mode is selected
  - A slow flashing LED for the Output On/Off button indicates that Output Off mode is selected
- 3) Within 30 seconds, point the IR remote control that you wish to learn at the IR sensor on the HEX31WP-TX and press the respective button on the IR remote control.
- 4) The Output On/Off button LED will stop flashing, and remain lit to indicate that the IR command has been learnt.
- 5) Press and hold the Auto Switching button for approximately 3 seconds until both the button LED's turn off to exit IR learning mode. The unit will return to normal operation 5 seconds after.

### Output On/Off via RS-232

To enable RS-232 commands to be triggered on signal sense/loss or via the Output On/Off button, send the following commands via RS-232 to the unit:

- 1) To configure a command to be sent on signal sense, use the following RS-232 command:  
RS232ON y:z:a

- 2) To configure a command to be sent on signal loss, use the following RS-232 command:  
RS232OFF y:z:a

where: y = a: ASCII, h: HEX

z = 1: 2400, 2: 4800, 3: 9600, 4: 19200, 5: 38400, 6: 57600 (Default), 7: 115200

a = RS-232 command to be sent

You can also disable the RS232ON/OFF command by replacing y:z:a with DISABLE in the above commands.

## Auto Switching

The HEX31WP-TX can automatically switch sources based on when an input signal is detected or lost. This feature will automatically switch to any new source that is connected to the HEX31WP-TX, and subsequently will switch back to the previous source when a signal is lost.

To enable or disable this feature, press and hold the the Auto Switching button for 3 seconds. The Auto Switching button LED will blink to confirm this command has been received.

The Auto Switching button will remain lit when auto switching is enabled.

When the HEX31WP-TX is powered via HDBT from a product such as the SW41HDBT switcher, the signal trigger mode must be set to PoC. This must be done via sending the command TRGPOCPWR via RS-232 to the HEX31WP-TX, using the supplied DB9 to phoenix cable and serial software such as Putty, Hercules or SSCOM.

Further information how to achieve this can be found on the RS-232 Configuration page.

Note: This function requires HEX31WP-TX firmware version 1.0.1b or later.

## USB Type C

The USB-C input of the HEX31WP-TX gives instant connectivity with laptops and smart devices with USB-C, negating the requirement of having to use USB-C to HDMI adaptors to obtain AV connectivity.

Not all USB-C cables support the transfer of Video and Audio. A type 3.1 USB-C cable must be used to ensure AV can be transferred over the USB-C cable. The cables supplied with laptops or mobile devices are normally reserved for charging only and are generally not type 3.1.

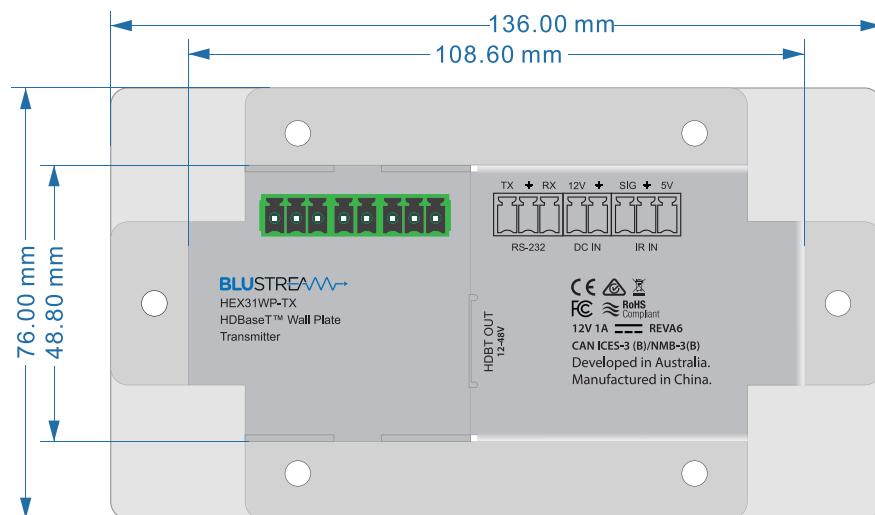
The USB-C input of the HEX31WP-TX does not support charging of mobile devices.

## Mounting the HEX31WP-TX

The HEX31WP-TX has been designed to fit into a standard UK or European double-gang backbox. The mounting holes are hidden under the magnetic faceplate on the left / right (for UK backboxes), and top / bottom (for EU backboxes). A minimum backbox depth of 40mm is required, however, due to the normal operating temperature of HDBaseT™ equipment, we would recommend using a deeper backbox (47mm) to assist with additional heat displacement and air circulation to the rear of the unit.

Prior consideration should be made to the choice of backbox, with particular emphasis to the location/s of cable entry so that the maximum bend radius of the CAT cable is not exceeded.

If mounting the wallplate into a counter top, table top, or lecturn, a backbox may not necessarily be required. Please see below technical drawing of the unit for overall and cut-out dimensions:



## EDID Control

EDID (Extended Display Identification Data) is a data structure that is used between a display and a source. This data is used by the source to find out what audio and video resolutions are supported by the display. By pre-determining the video resolution and audio format of the source and display device you can reduce the time needed for EDID hand shaking thus making switching quicker and more reliable. Configuration of the EDID settings for each input can be achieved using the following RS-232 commands to specify the required EDID:

**EDIDxxDFzz**

Where xx = Input: 00 refers to ALL inputs; 01 = input 1 (HDMI 1); 02 = input 2 (HDMI 2); 03 = input 3 (USB-C)

zz = EDID as shown below:

zz=00: HDMI 1080p@60Hz, Audio 2ch PCM  
zz=01: HDMI 1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY  
zz=02: HDMI 1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD  
zz=03: HDMI 1080i@60Hz, Audio 2ch PCM  
zz=04: HDMI 1080i@60Hz, Audio 5.1ch PCM/DTS/DOLBY  
zz=05: HDMI 1080i@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD  
zz=06: HDMI 1080p@60Hz/3D, Audio 2ch PCM  
zz=07: HDMI 1080p@60Hz/3D, Audio 5.1ch PCM/DTS/DOLBY  
zz=08: HDMI 1080p@60Hz/3D, Audio 7.1ch PCM/DTS/DOLBY/HD  
zz=09: HDMI 4K2K@30Hz, Audio 2ch PCM  
zz=10: HDMI 4K2K@30Hz, Audio 5.1ch PCM/DTS/DOLBY  
zz=11: HDMI 4K2K@30Hz, Audio 7.1ch PCM/DTS/DOLBY/HD  
zz=12: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 2ch PCM  
zz=13: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 5.1ch PCM/DTS/DOLBY  
zz=14: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 7.1ch PCM/DTS/DOLBY/HD  
zz=15: DVI 1280x1024@60Hz, Audio None  
zz=16: DVI 1920x1080@60Hz, Audio None  
zz=17: DVI 1920x1200@60Hz, Audio None  
zz=18: DVI 1920x1200@60Hz, Audio 2ch  
zz=19: Copy User EDID 1 - see below  
zz=20: Copy User EDID 2 - see below  
zz=21: EDID Pass through

## Loading A Custom EDID

A custom EDID file can be loaded into the HEX31WP-TX. Some custom EDID's can be found on Blustream's website, or use a 3rd party EDID tool to create a custom EDID. To load an EDID onto the HEX31WP-TX complete the following steps:

- 1) Rename the EDID file to be "EDID.bin"
- 2) Copy the EDID.bin file to a USB drive
- 3) Connect the USB drive to the HEX31WP-TX Micro-USB upgrade port (a USB to Micro USB cable may be required)
- 4) Connect your PC to the HEX31WP-TX RS-232 port via a serial RS-232 cable, see page 06 for RS-232 information
- 5) Send the command: **EDID SAVE zz** (where zz = 19 or 20 - see above) to save the EDID from the USB onto the HEX31WP-TX into EDID position 19 or 20
- 6) Send the command: **EDID 00 DF zz** to recall the EDID for all inputs where zz is the position the EDID (19 or 20)

## RS-232 Configuration

The RS-232 port is used for configuration / control of the product, including pass through of RS-232 commands to a compatible Blustream HDBaseT™ Receiver / Matrix device.

The default RS-232 communication settings are:

Baud rate: 57600

Data bit: 8

Stop bit: 1

Parity bit: none

### Common Mistakes

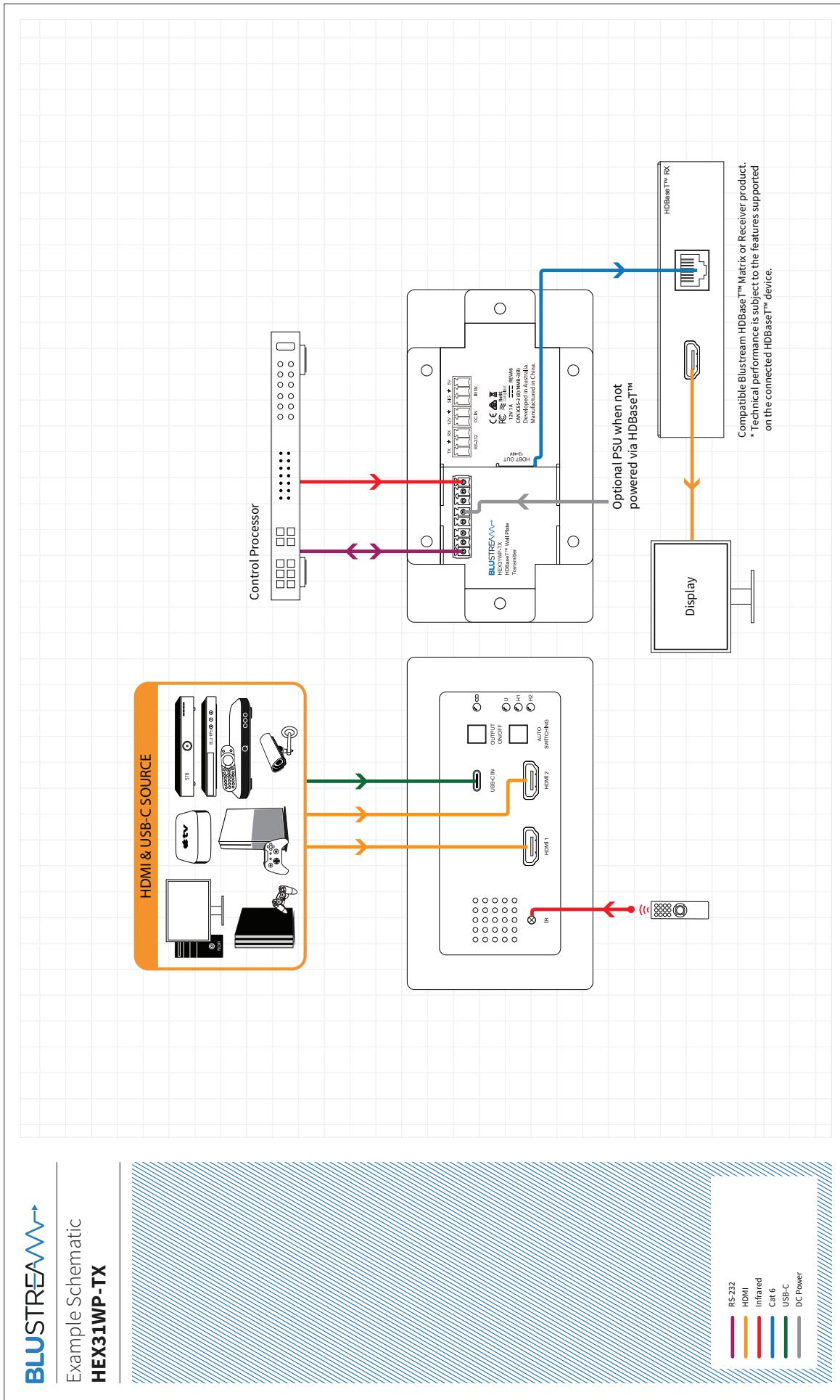
- Carriage return – Some programs do not require the carriage return where as other will not work unless sent directly after the string. In the case of some Terminal software the token <CR> is used to execute a carriage return. Depending on the program you are using this token maybe different. Some other examples that other control systems deploy include \r or 0D (in hex)
- Spaces – Blustream commands do not require space between commands unless specified. There may be some programs that require spacing in order to work.
  - How the string should look is as follows OUT01FR02
  - How the string may look if spaces are required: OUT{Space}01{Space}FR{Space}02
- Baud rate or other serial protocol settings not correct - please confirm the settings being used match the RS-232 configuration settings above.

## RS-232 Commands

?	Print Help Information
HELP	Print Help Information
STATUS	Print System Status And Port Status
INSTA	Print All Input Status
OUTSTA	Print All Output Status
CTRLSTA	Print All Control Status
TRGSTATUS	Print Auto Trigger Status
RESET	Reset System To Default Setting
KEY ON/OFF	Set System Key Control On Or Off
IR ON/OFF	Set System IR Passthrough Control On Or Off
NOSIGDLY xxx	Set No Signal Delay Timeout to xxx
TRGLOCALPWR	Set Auto Trigger Power To Local
TRGPOCPWR	Set Auto Trigger Power To PoC
AUTOTRG x	Set The Trigger Method x On Input To Perform Auto Switching x = 1 - HDMI (5V) x = 2 - HDMI (TMDS)
OUT xx FR yy	Set Output xx From Input yy Input: yy [01-03] 01 = HDMI 1 02 = HDMI 2 03 = USB-C
OUT xx SWITCH yy	Set Output xx Auto Switching To aa aa = AUTO aa = MAN

## RS-232 Commands Continued...

EDID xx DF zz	EDID xx DF zz Set Input xx EDID To Default EDID zz xx=[00]: All Input Port, [01...03]: Input Port zz=00: HDMI 1080p@60Hz, Audio 2ch PCM zz=01: HDMI 1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY zz=02: HDMI 1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD zz=03: HDMI 1080i@60Hz, Audio 2ch PCM zz=04: HDMI 1080i@60Hz, Audio 5.1ch PCM/DTS/DOLBY zz=05: HDMI 1080i@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD zz=06: HDMI 1080p@60Hz/3D, Audio 2ch PCM zz=07: HDMI 1080p@60Hz/3D, Audio 5.1ch PCM/DTS/DOLBY zz=08: HDMI 1080p@60Hz/3D, Audio 7.1ch PCM/DTS/DOLBY/HD zz=09: HDMI 4K2K@30Hz, Audio 2ch PCM zz=10: HDMI 4K2K@30Hz, Audio 5.1ch PCM/DTS/DOLBY zz=11: HDMI 4K2K@30Hz, Audio 7.1ch PCM/DTS/DOLBY/HD zz=12: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 2ch PCM zz=13: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 5.1ch PCM/DTS/DOLBY zz=14: HDMI 4K2K@60Hz 4:2:0 8 bit, Audio 7.1ch PCM/DTS/DOLBY/HD zz=15: DVI 1280x1024@60Hz, Audio None zz=16: DVI 1920x1080@60Hz, Audio None zz=17: DVI 1920x1200@60Hz, Audio None zz=18: HDMI 1920x1200@60Hz, 2ch/6ch PCM zz=19: Copy User EDID 1 zz=20: Copy User EDID 2 zz=21: EDID Passthrough
EDID xx CP yy	Set Input xx EDID Copy From Output yy xx = Input on product (00 refers to ALL inputs, 01 = input 1 etc) yy = Output on product (00 refers to ALL outputs, 01 = output 1 etc)
EDIDSAVE zz	Save EDID File From USB Into User Slot zz zz=19: User EDID 1 zz=20: User EDID 2
CECAUTO ON/OFF	Set Auto CEC Commands When Detecting Video Input Signal On Or Off
OUT xx CEC INPUT yy	Send Output xx CEC Input yy Command
OUT xx CEC VOLUP	Send Output xx CEC Vol Up Command
OUT xx CEC VOLDOWN	Send Output xx CEC Vol Down Command
OUT xx CEC MUTE	Send Output xx CEC Mute Toggle Command
OUT xx CEC PON	Send Output xx CEC Power On Command
OUT xx CEC POFF	Send Output xx CEC Power Off Command
OUT xx CEC yy:yy:yy	Send Output xx CEC yy:yy:yy Command
RS232BAUD z	Set RS-232 Baud rate To x z = 1: 2400, 2: 4800, 3: 9600, 4: 19200, 5: 38400, 6: 57600 (default), 7: 115200
RS232ON y:z:a	When Detecting A Triggering Signal, Automatically Send y Type Of Command a To The Third-party Device Whose Baud Rate Is z y = a ASCII, h HEX z = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200 a = RS232 command
RS232OFF y:z:a	When Not Detecting A Triggering Signal, Automatically Send y Type Of Command a To The Third-party Device Whose Baud Rate Is z
RS232ON DISABLE	Disable Automatic RS-232 Commands When Detecting Signal
RS232OFF DISABLE	Disable Automatic RS-232 Commands When Not Detecting Signal



# Specifications

## HEX31WP-TX

- **Video Input Connectors:** 2 x HDMI Type A, 19-pin, female; 1 x USB-C Type C, 24-pin, female
- **Video Output Connectors:** 1 x HDBaseT™ RJ45 connector
- **RS-232 serial port:** 1 x 3-Pin Phoenix connector
- **IR Input port:** 1 x 3-Pin Phoenix connector
- **Product upgrade:** 1 x Micro USB, female
- **Local power input:** 1 x 2-Pin Phoenix connector
- **Casing Dimensions (W x H x D):** 136mm x 76mm x 44mm (without faceplate)
- **Faceplate Dimensions (W x H x D):** 146mm x 86mm x 6mm
- **Backbox Mounting Depth:** 40mm (minimum), 47mm (recommended)
- **Shipping Weight:** 1.0kg
- **Operating Temperature:** 32°F to 104°F (-5°C to +55°C)
- **Storage Temperature:** -4°F to 140°F (-25°C to +70°C)
- **Power Supply:** 12V/1A DC

**NOTE:** Specifications are subject to change without notice. Weights and dimensions are approximate.

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# Package Contents

## HEX31WP-TX

- 1 x HEX31WP-TX
- 1 x 12V/1A DC Power Supply
- 1 x Magnetic Faceplate
- 1 x RS-232 to Phoenix Control Cable
- 1 x Quick Reference Guide

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# Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

# Certifications

## FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**CAUTION** - changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## CANADA, INDUSTRY CANADA (IC) NOTICES

This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

## CORRECT DISPOSAL OF THIS PRODUCT

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.



**BLUSTREAM** 

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