

# ► HEX100CS-KIT

## 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.

## Safety And Performance Notice

The transmission distances of HDMI over UTP cables are measured using TE CONNECTIVITY 1427071-6

EIA/TIA-568-B termination (T568B) of cables is recommended for optimal performance.

To minimise interference of the unshielded twisted pairs in the CAT5e/6 cable do not run the HDBaseT / Cat5e/6/6a cabling with or in close parallel proximity to mains power cables.

Do not substitute or use any other power supply other than the enclosed unit, or a Blustream approved replacement.

Do not disassemble either the Transmission or Receiver units for any reason. Doing so will void the manufacturer's warranty.

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# Introduction

Our HEX100CS-KIT HDMI 2.0 4K 60Hz 4:4:4 (18Gbps) HDCP 2.2 HDBaseT™ extender set offers market leading features and outstanding value utilising CSC technology. The product extends HDMI, Bi-directional IR & RS-232 and Bi-directional PoC up to lengths of 100m (4K 70m). The Transmitter includes a HDMI loop-out for integrating local displays or cascading to multiple devices. The Receiver features simultaneous analogue stereo and digital coax audio breakout.

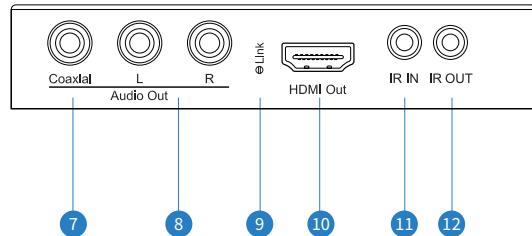
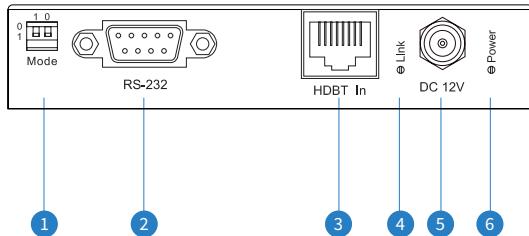
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## FEATURES:

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- Advanced HDBaseT™ technology offering distribution of video and audio over a single CAT cable
- Advanced Color Space Conversion (CSC) supports HDMI 2.0 18Gbps specification including HDR
- Supports 4K 60Hz 4:4:4 UHD video up to 70m
- Extends HDMI 1080P video up to 100m
- Features 1 x HDMI loop-out on HEX100CS-TX for integrating local displays or cascading to multiple devices
- Supports all industry standard video resolutions including VGA-WUXGA and 480i-4K
- Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications
- HDMI re-clocking on the HDBaseT™ Receiver to help solve HDMI, HDCP compatibility and handshaking issues
- HDMI audio breakout to analogue L/R audio and coaxial digital outputs concurrently
- Supports bi-directional RS-232 pass through
- Supports bi-directional IR pass through
- Supplied with Blustream 5V IR receiver and emitter
- Advanced EDID management
- HDCP 2.2 Support

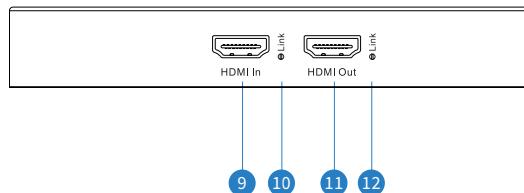
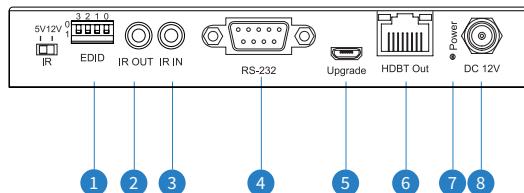
## Panel Description HEX100CS-RX



- 1 Mode dip-switch - To switch RS-232 serial port between pass-through and firmware update mode
- 2 RS-232 / serial connector
- 3 HDBaseT™ input
- 4 HDBaseT™ signal link indicator
- 5 DC 12V screw type connector
- 6 Power status indicator

- 7 Coaxial digital output - de-embedded from HDMI input
- 8 Analogue audio Left / Right output (3.5mm stereo jack) de-embedded from HDMI input. Supports stereo 2ch PCM audio only
- 9 HDMI signal link indicator
- 10 HDMI Output
- 11 IR IN (to Blustream 5V 3.5mm IR receiver)
- 12 IR OUT (to Blustream 5V 3.5mm IR emitter)

## Panel Description HEX100CS-TX



- 1 EDID DIP switch (UP=0, DOWN=1)
- 2 IR OUT (to Blustream 5V 3.5mm IR emitter)
- 3 IR IN (to Blustream 5V 3.5mm IR receiver)
- 4 RS-232 / Serial connector
- 5 USB Upgrade port - For future use
- 6 HDBaseT output
- 7 Power status indicator
- 8 DC 12V screw type connector

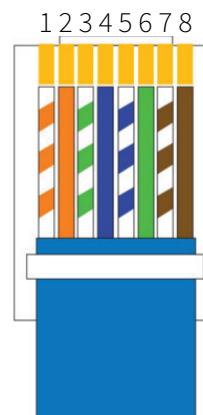
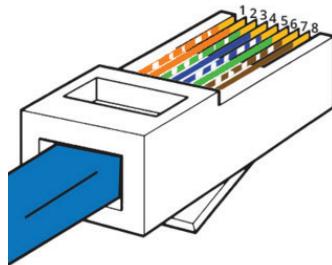
- 9 HDMI input
- 10 HDMI link indicator
- 11 HDMI output
- 12 HDMI link indicator

## Terminating the interconnecting HDBaseT CAT cable

It is important that the interconnecting CAT cable between the Blustream HDBaseT™ products is terminated using the correct RJ45 pin configuration. The link CAT cable **MUST** be a ‘straight’ (pin-to-pin) CAT cable and it is advised that this is wired to the T568B wiring standard as this format is less prone to EMI (Electro-Magnetic Interference).

When installing CAT cables it is advised that you use the best possible CAT cable quality possible. HDMI distribution products will only work if used with CAT5e standard cable or above. Blustream recommends using a CAT6 cable for your installations, especially when running over longer distances, in areas of high EMI, or with 4K signal distribution.

RJ45 Pin-Out  
T568B



## Understanding the Transmitter / Receiver status lights

The Blustream HEX100CS-KIT extender solutions include status LED indicators on both the Transmitter and Receiver products to show all connections are active and to help diagnose possible problems.

Receiver:

- The HDMI signal link light will be off when there is no connection with a display / sink
- The HDMI link light will be on when there is an active connection with a display
- The HDBaseT™ link light will be off when there is no CAT cable / active HDBaseT™ connection on the RJ45 HDBaseT™ input
- The HDBaseT™ link light will blink if there is an unstable connection between the Transmitter and Receiver
- The HDBaseT™ link light will be lit when a CAT cable is connected to the HDBaseT™ RJ45 output on the Transmitter and an active connection is achieved with the Receiver

Transmitter:

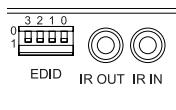
- The Input HDMI signal link light will be off when there is no connection with a source device
- The Output HDMI signal link light will be off when there is no connection with a display / sink
- The Input HDMI link light will be on when there is an active connection with a source device
- The Output HDMI link light will be on when there is an active connection with a display / sink
- The HDBaseT™ link light will be off when there is no CAT cable / active HDBaseT™ connection on the RJ45 HDBaseT™ output
- The HDBaseT™ link light will blink if there is an unstable connection between the Transmitter and Receiver
- The HDBaseT™ link light will be lit when a CAT cable is connected to the HDBaseT™ RJ45 output on the Transmitter and an active connection is achieved with the Receiver

## 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 extender EDID settings can be achieved using the product dip-switches on the end of the HEX100CS-TX. EDID dip-switch settings are shown below.

### Global EDID settings



Dip-switch position '0' = Off

Dip-switch position '1' = On

### EDID Dip-switches

- [DIP]=0000: HDMI 1080p@60Hz, Audio 2ch PCM
- [DIP]=0001: HDMI 1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY
- [DIP]=0010: HDMI 1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
- [DIP]=0011: HDMI 1080i@60Hz, Audio 2ch PCM
- [DIP]=0100: HDMI 1080i@60Hz, Audio 5.1ch PCM/DTS/DOLBY
- [DIP]=0101: HDMI 1080i@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
- [DIP]=0110: HDMI 4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 2ch PCM
- [DIP]=0111: HDMI 4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
- [DIP]=1000: HDMI 4K@60Hz 4:2:0+4K@30Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
- [DIP]=1001: HDMI 4K@60Hz 4:4:4, Audio 2ch PCM
- [DIP]=1010: HDMI 4K@60Hz 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
- [DIP]=1011: HDMI 4K@60Hz 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
- [DIP]=1100: DVI 1280x1024@60Hz, Audio None
- [DIP]=1101: DVI 1920x1080@60Hz, Audio None
- [DIP]=1110: DVI 1920x1200@60Hz, Audio None
- [DIP]=1111: Copy EDID of output

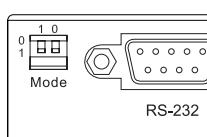


## Mode Dip-switches (Receiver RS-232 function)

Mode dip-switch settings are used to alter the use of the RS-232 connection of the HDBaseT™ Receiver. The RS-232 connection can be used as bi-directional pass-through of serial commands between HDBaseT™ Transmitter and Receiver or for updating product firmware.

Configuration of Mode settings can be achieved using the product dip-switches on the end of the HEX100CS-RX. Mode dip-switch settings are shown below.

### Mode settings (RS-232)



Dip-switch position '0' = Off

Dip-switch position '1' = On

### MODE Dip-switches

- [DIP]=00: Serial pass-through
- [DIP]=01: Update HDBaseT™ firmware
- [DIP]=10: Update MCU firmware
- [DIP]=11: Dual mode - Serial pass-through and MCU firmware update

## Infrared (IR) Distribution

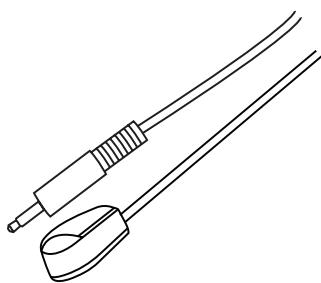
The Blustream range of HDBaseT™ products include multiple options for control and routing of IR.

**IMPORTANT: Blustream Infrared products are all 5V and NOT compatible with alternative manufacturers Infrared solutions. When using third party 12V IR control solutions please use the optional Blustream IRCAB cable for IR conversion.**

Each Blustream Matrix and HDBaseT™ receiver is supplied with necessary IR hardware required and includes:

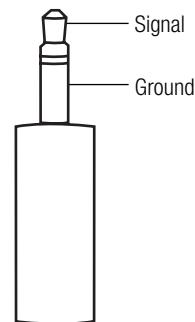
### IR Emitter - IR1 & IR2 (IR2 sold separately)

Blustream 5V IR Emitter designed for discrete IR control of hardware



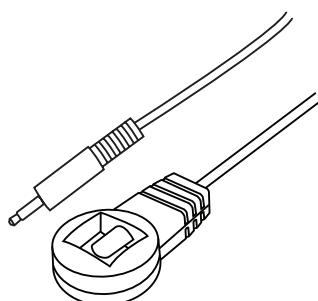
### Infrared 3.5mm Pin-Out

IR Emitter - Mono 3.5mm

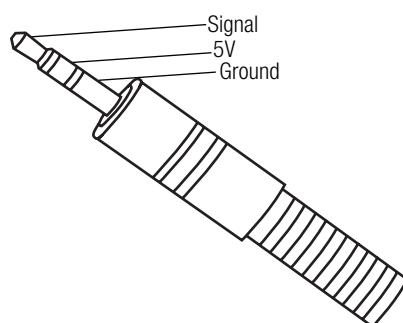


### IR Receiver - IRR

Blustream 5V IR receiver to receive IR signal and distribute through Blustream products



### IR Receiver - Stereo 3.5mm

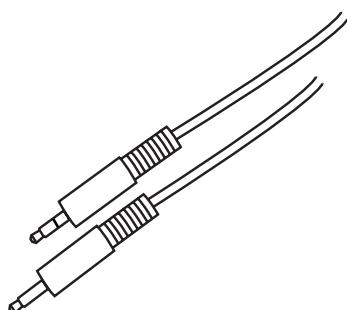


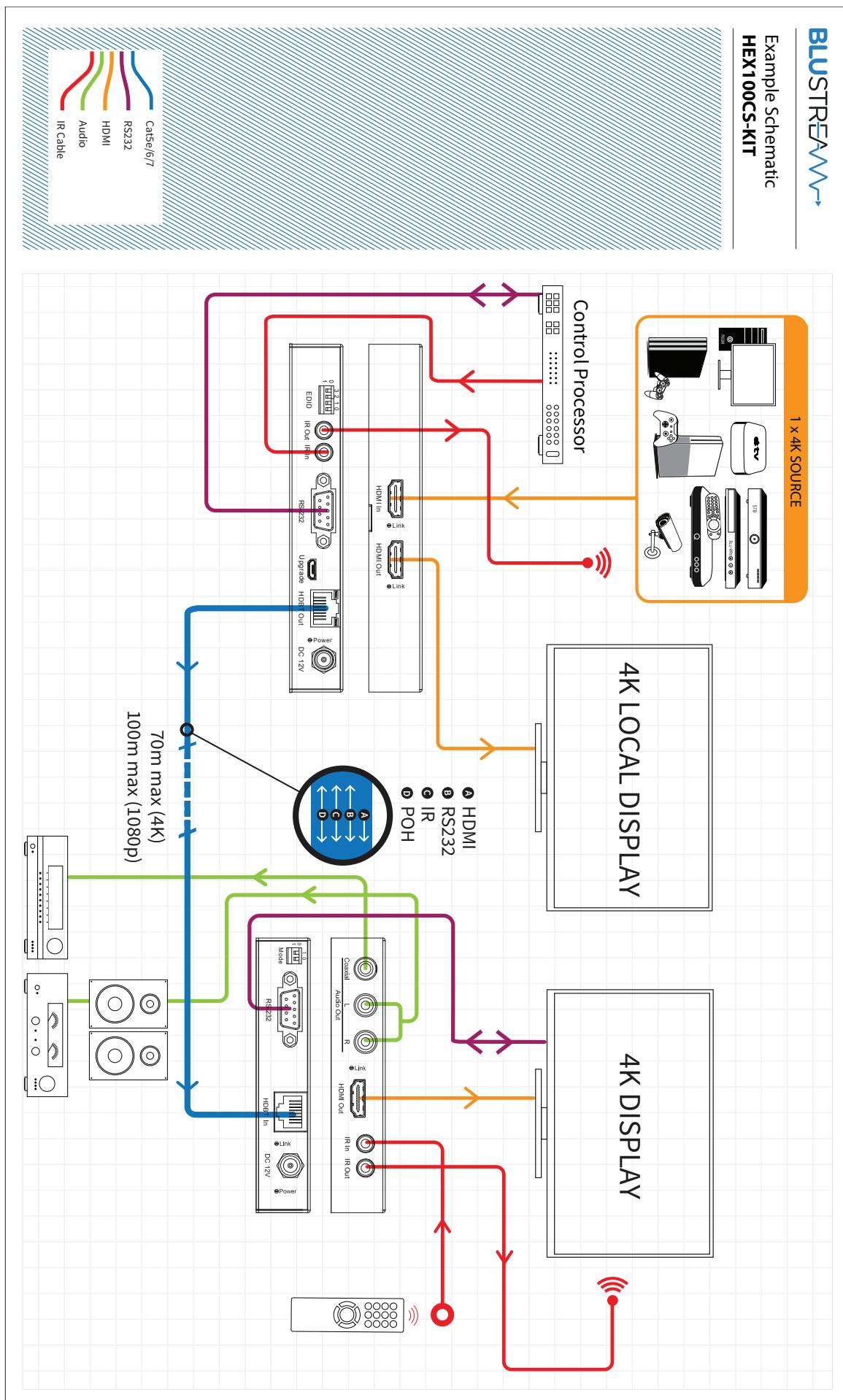
### IR Control Cable - IRCAB (sold separately)

Blustream IR Control cable 3.5mm Mono to 3.5mm Stereo for linking third party control solutions to Blustream products.

Compatible with 12V IR third party products.

Note: Cable is directional as indicated





# Specifications

## HEX100CS-TX

- Video input: 1 x HDMI Type A, female
- Video output: 1 x HDBaseT™ RJ45 connector
- 1 x HDMI Type A, female
- RS-232 serial port: 1 x DB9 female connector
- IR input: 1 x 3.5mm stereo jack
- IR output: 1 x 3.5mm mono jack
- EDID DIP switch: 4-PIN
- Mounting kit included
- Dimensions excl connections (W x D x H):  
143mm x 134mm x 22mm
- Shipping weight (Kit): 0.5 kg
- Power: 12V/2A DC, screw type connector
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)

## HEX100CS-RX

- Video input: 1 x HDBaseT™ RJ45 connector
- Video output: 1 x HDMI Type A, female
- Audio output: 1 x 3.5mm L/R analogue audio & 1 x digital coaxial (RCA)
- RS-232 serial port: 1 x DB9 female connector
- IR input: 1 x 3.5mm stereo jack
- IR output: 1 x 3.5mm mono jack
- Mounting kit included
- Dimensions excl connections (W x D x H):  
113mm x 124mm x 22mm
- Shipping weight (Kit): 0.4 kg
- Power: 12V/2A DC, screw type connector
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)

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

# Package Contents

## HEX100CS-KIT

- 1 x HEX100CS-TX and 1 x HEX100CS-RX
- 1 x 12V/2A DC power supply
- 1 x IR emitter (IRE)
- 1 x IR receiver (IRR)
- 2 x Mounting bracket sets
- 1 x Quick reference guide

## HEX100CS-RX (when sold individually)

- 1 x HEX100CS-RX
- 1 x Mounting bracket set

# 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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