

# ▶ Blustream Multicast IP200UHD-TX/RX

## 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 are 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/6/6a cable do not run the 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 approved PoE network products or approved Blustream power supplies.

Do not disassemble any Blustream Multicast products for any reason. Doing so will void the manufacturer's warranty.

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## Introduction

Our UHD Multicast distribution platform allows virtually latency free (1 frame) distribution of HDMI video over a 1Gb Network switch. The IP200UHD is an industry leading 4K HDCP 2.2 HDMI distribution system that using visually lossless compression technology, delivers HDMI, Bi-directional IR, RS-232, USB/KVM and CEC up to lengths of 100m over standard network architecture. The IP200UHD units can be powered via PoE from a PoE Network switch or locally should the switch not support PoE.

With multiple configuration options available the Multicast solution is ideal for both commercial and residential installations. Furthermore our ACM200 with in-built web-GUI, AI2.0 Advanced Integration software, pre-built 3rd party control drivers, and simplified switch configuration guides simplify Multicast product installation, and negate the need for an understanding of complex network infrastructures.

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## Features

- Advanced UHD video over 1Gb Network
- Virtually unlimited system size
- Extends HDMI over a LAN network architecture
- Compatible with all common brands of layer 3 managed network switches
- Supports up to 4K HDR UHD video (3840 x 2160 @30Hz 4:4:4, 4096 x 2160 @24Hz 4:4:4, and 4K @60Hz 4:2:0)
- Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications.
- Features 4 operational modes:
  - Matrix distribution (requires 1Gb network switch)
  - Video Wall (requires 1Gb network switch)
  - One-to-one HDMI extender (no network switch required)
  - One-to-many HDMI extender (no network switch required)
- HDCP 2.2 Compliant
- Advanced EDID management
- Video up-scaling and down-scaling
- Analogue L/R audio embedding and de-embedding on IP200UHD-TX Transmitter
- Analogue L/R audio breakout on IP200UHD-RX Receiver
- Fully routable, bi-directional RS-232 and IR
- PoE (Power over Ethernet) to power Blustream products from PoE switch
- Local 24-56V power supply (should network switch not support PoE) - sold separately
- Simple configuration via web-GUI through the ACM200, or using AI2.0 Advanced Integration software
- RS-232, IR and Telnet/IP integration for control of Multicast system using Blustream ACM200
- 3rd Party drivers available for major home control brands

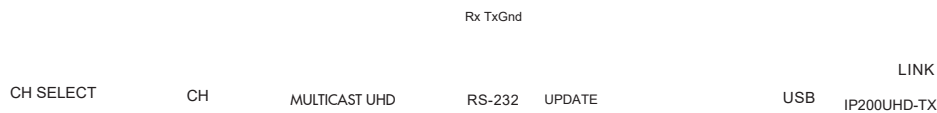
### **Please note:**

The Blustream Multicast system distributes HDMI video over Layer 3 Managed network hardware. It is advised that Blustream Multicast products are connected on an independent network switch to prevent interference or drop in signal performance due to other network products.

Please take care to make sure that you have read and understood the instructions in this manual and that you have setup your network switch correctly prior to connecting any Blustream Multicast products. Failure to do so will result in problems with configuration of the system and video performance.

# Panel Description - IP200UHD-TX Transmitter

## IP200UHD-TX Front Panel



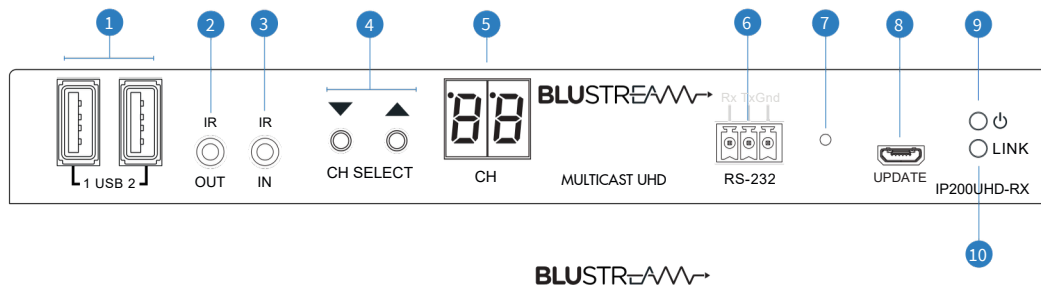
## IP200UHD-TX Rear Panel



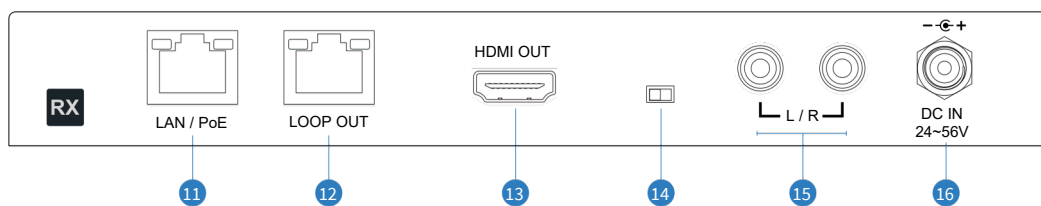
- 1 Channel select Up/Down - configure IP200UHD-TX manually and apply 'Programming mode'
- 2 Channel status window - displays product information
- 3 Assignable bi-directional RS-232 ports – connect to third party control device to extend RS-232 commands to any/multiple IP200UHD Multicast products RS-232 port
- 4 Firmware Micro USB port - update IP200UHD-TX MCU firmware
- 5 MCU firmware update switch - place Multicast product into firmware update mode
- 6 Reset button - press and hold for 5 seconds to factory reset the product
- 7 USB connection for USB/KVM routing within Multicast system
- 8 Power LED indicator
- 9 Link LED indicator - solid status light indicates a stable connection to the network switch
- q Power port – use 24-56V 1A DC adaptor (sold separately) if not using a PoE network switch
- w LAN Connection (PoE) - connect to Layer 3 Managed switch for HDMI video distribution
- e HDMI input – connect to a HDMI source
- r IR IN (IR input) – 3.5mm stereo jack. Transmits IR to any IP200UHD-RX receiver currently viewing the IP200UHD-TX. Please use supplied Blustream IRR 5V IR Receiver. When using the Blustream IRCAB cable (optional) ensure cable direction is correct
- t IR OUT - (IR output) - 3.5mm mono jack – routed IR from any IP200UHD-RX (zone output) allowing source control. Use supplied Blustream 5V IR emitters
- y L/R Analogue audio line input - embed Analogue audio onto HDMI signal
- u L/R Analogue audio line output - 2ch audio that supports 2ch PCM source inputs up to 192Khz

# Panel Description - IP200UHD-RX Receiver

## IP200UHD-RX Front Panel



## IP200UHD-RX Rear Panel



- 1 USB connections for USB/KVM routing within Multicast system
- 2 IR OUT - (IR output) - 3.5mm mono jack – routed IR to selected IP200UHD-TX (source Transmitter). Use supplied Blustream 5V IR emitters
- 3 IR IN (IR input) – 3.5mm stereo jack. Transmits IR to currently selected IP200UHD-TX transmitter allowing routed IR control of sources. Please use supplied Blustream IRR 5V IR Receiver. When using the Blustream IRCAB cable (optional) ensure cable direction is correct
- 4 Channel select Up/Down - used to scroll through sources (IP200UHD-TX), setup IP200UHD-RX manually, and apply 'Programming mode'
- 5 Channel status window - displays product information
- 6 Assignable bi-directional RS-232 port – connect to third party control device to extend RS-232 commands to any/multiple IP200UHD Multicast product RS-232 port
- 7 Reset button - press and hold for 5 seconds to factory reset the product
- 8 Firmware Micro USB port - update IP200UHD-RX MCU firmware
- 9 Power LED indicator
- q Link LED indicator - solid status light indicates a stable connection to the network switch
- w LAN Connection (PoE) - connect to Layer 3 Managed switch for HDMI video distribution
- e LOOP OUT - connect to LAN Connection on subsequent IP200UHD-RX unit for daisy-chain of video IP stream
- r HDMI output – connect to a HDMI display
- t MCU firmware update switch - place Multicast product into firmware update mode
- y L/R Analogue audio line output - breakout Analogue audio from HDMI signal  
 Please note: Source input must be PCM 2ch audio for analogue audio outputs to work. Multicast products do not down-mix 5.1ch audio signals  
 Audio outputs are fixed line level output and RX supports 96Khz audio formats only
- u Power port – use 24-56V 1A DC adaptor (sold separately) if not using a PoE network switch

## HDMI Over IP Network Configuration

The Blustream Multicast system distributes HDMI video over Layer 3 Managed network hardware. It is advised that Blustream Multicast products are connected to an independent network switch to prevent interference or drop in signal performance due to other network products bandwidth requirements.

Blustream Multicast products are not limited to certain brands of network hardware, but should a network switch that Blustream have not tested or written instructions for be used, ensure it supports the following network features:

**Multicast** - (one-to-many or many-to-many distribution) is group communication where information is addressed to a group of network devices simultaneously (Blustream IP200UHD-RX Receivers).

**Instant Leave / Fast Leave / Immediate Leave** - a feature associated with Multicast and means that as soon as an active connection is no longer required (the link between Transmitter and Receiver) the Multicast group and flow of track is stopped instantly. This prevents unnecessary flow of network traffic on the network switch.

**IGMP Snooping** - the process of listening to Internet Group Management Protocol (IGMP) network traffic. The feature allows a network switch to listen in on the IGMP conversation between hosts and routers (Transmitters and Receivers). By listening to this flow of traffic the switch maintains a map of which links need which IP multicast streams. Multicasts may be filtered from the links which do not need them and thus controls which ports receive specific multicast traffic.

**Jumbo Frames / Jumbo Packets / MTU (Maximum Transmission Unit)** - Ethernet frames with more than 1,500 bytes of payload. Conventionally, jumbo frames can carry up to 9,000 bytes of payload, but variations exist and some care must be taken when using the term. Many Gigabit Ethernet switches can support jumbo frames.

Please note: Blustream have worked with many network switch providers to create setup guides and saved configuration files to help configure the products to work with Multicast hardware. These configuration files can be downloaded from the Blustream website, by selecting the "LAN Switch Guides" button on any Multicast product page.

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## Configuration & Control of an IP200UHD Multicast System

AI 2.0 - Advanced Integration Software:

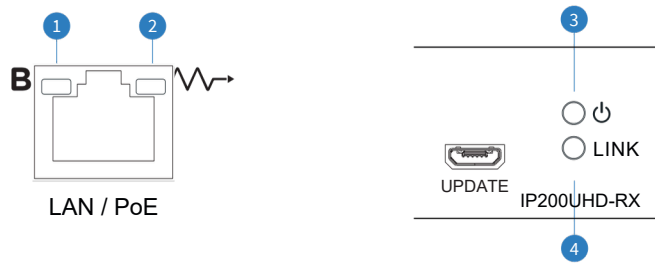
The AI 2.0 software has been designed as a tool for the simple and effective configuration of a Multicast system for the IP200UHD series of products where an ACM200 (Advanced Control Module) is not required. Use of the AI 2.0 software dramatically decreases the time required (compared to individually addressing each unit via the web-GUI) for the configuration of multiple Multicast Transmitters and Receivers as the program will communicate with multiple units simultaneously. Please download the supporting documentation for instructions on AI 2.0 from the Blustream website.

ACM200 - Advanced Control Module:

The Blustream ACM200 includes a web interface module for both configuration and control of a Multicast system. The web-GUI features 'drag and drop' source selection with video preview, control of independent routing of IR, RS-232, USB/KVM, CEC, Audio and Video. Pre-built Blustream product drivers simplify Multicast product installation and negate the need for an understanding of complex network infrastructures.

# Understanding Product Status Lights

Multicast products have several LED lights to indicate connectivity status, or to help diagnose connection problems.

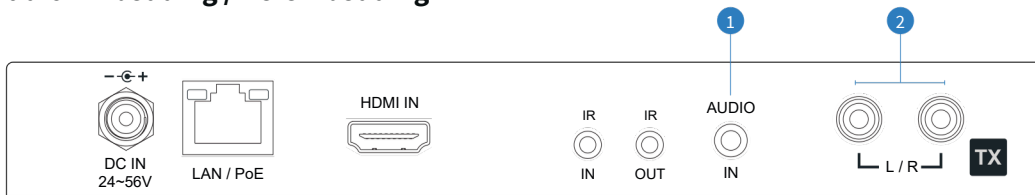


## Multicast Status Lights

- 1 LAN PoE status light - solid Orange indicates PoE from the network switch powering the Multicast product
- 2 LAN status light - solid Green indicates active network connection
- 3 Power status light - Off = No power, Flashing = Product booting, On = Power on
- 4 Link status light - Off = No connection to network, Flashing = not connected to any device (another Multicast product or network switch), On = Connected to Multicast device or network switch

# Audio Connections - Transmitter

## Transmitter Audio Embedding / De-embedding



### 1 Audio In - Analogue L/R Line Level audio input (3.5mm jack)

The analogue line level input can be used to replace the original HDMI audio of the source connected to the Multicast Transmitter with analogue L/R 2ch line level audio. The embedded analogue audio is then distributed with the adjacent HDMI video signal throughout the Multicast system.

Switching between original HDMI audio and embedded line level analogue 2ch audio is achieved using Blustream serial/Telnet/IP commands, or by selecting the Audio Source within the ACM200 web-GUI or AI 2.0 software.

Please note: It is only possible to select EITHER HDMI audio or local analogue line input. It is not possible to distribute both audio sources simultaneously.

### 2 Audio Out - Analogue L/R Line Level audio output (2x RCA)

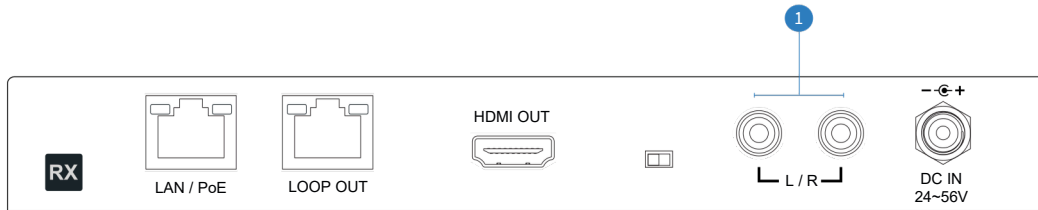
The analogue line level output can be used to breakout the embedded 2ch analogue source audio from the HDMI input signal.

Please note: The source input must be PCM 2ch audio for the analogue audio output to work. The Blustream Multicast products do not down-mix 5.1ch audio signals.

# Audio Connections - Receiver

## Receiver Audio Breakout

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### 1 Analogue L/R Line Level audio output

The IP200UHD-RX Multicast Receiver includes audio breakout from the selected HDMI source to associated Analogue L/R audio outputs. Extracted audio will be concurrent with the corresponding HDMI video output.

Please note: The HDMI stream must be PCM 2ch audio for Analogue L/R audio output to work. The Blustream Multicast products do not down-mix 5.1ch audio signals.

## Interoperability

The IP200UHD units can be used in conjunction, or added into existing IP100UHD Multicast systems. The following needs to be considered prior to adding in IP200UHD products to an existing (IP100UHD) Blustream Multicast system:

- USB / KVM connectivity and routing is not available with Blustream IP100UHD units.
- The firmware version of all IPxxxUHD units should be the same for the full feature set of the Multicast system to be used, and the units to work seamlessly together.
- For firmware versions of the IP100UHD-TX / RX that are currently loaded with the firmware A1.3.4 or lower, the internal MCU of the unit must be updated before updating the firmware to a later version.  
The MCU firmware update can only be undertaken by a member of the Blustream Support Team, and is not available for installers / integrators to carry out. Please contact us on the email address noted below.

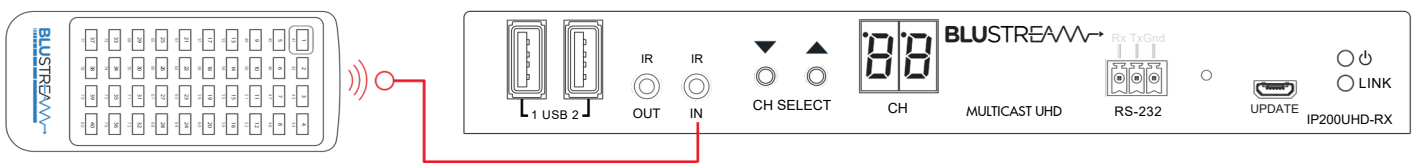
# InfraRed Control

The Blustream Multicast system can be controlled using local IR hardware connected directly to the IP200UHD-RX Receiver. This prevents the need for a third party control solution. Only the source selection feature is available using local IR control through the Receiver. For advanced features such as video wall mode, audio embedding etc RS-232 or TCP/IP control will need to be used.

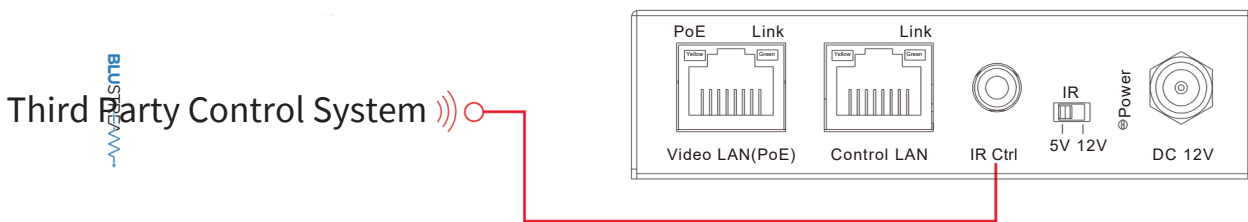
Blustream have created 80x IR commands allowing source selection of up to 80x IP200UHD-TX Transmitters. For systems larger than 80x source devices (IP200UHD-TX) the ACM200 control module is recommended.

For the complete database of Multicast IR commands, please visit the Blustream website page for any Multicast product, click on the "Drivers & Protocols" button, and navigate to the folder named "Multicast IR Control".

## Infrared Control of IP200UHD-RX using REM100 (sold separately):



## Infrared Control using Third Party Control System and ACM200



# Remote Control - REM100

### Input (Transmitter) Selection

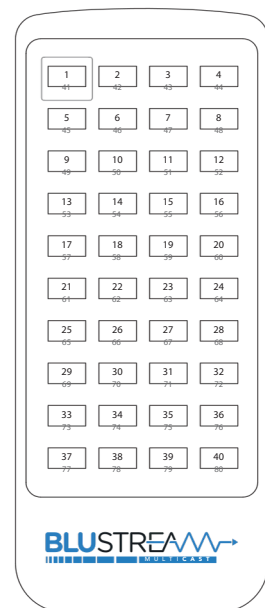
The Blustream REM100 remote control can be used at any Blustream Multicast RX Receiver product and can select up to 80x source inputs (Transmitters).

Using the remote:

Sources 1-40 are selected using the input selection buttons 1-40.

Sources 41-80 are selected by first activating the 'secondary control mode' which is achieved by pressing and holding source button 1 (top left) for 5 seconds. Once this mode is active the buttons 1-40 are now selecting sources 41-80.

To return control back to source inputs 1-40 simply press and hold source button 1 for 5 seconds to revert to 'main control mode'.



# InfraRed Distribution

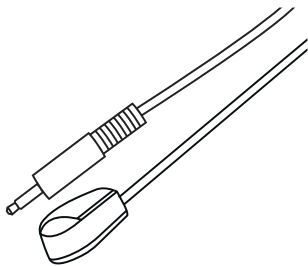
The Blustream range of Multicast products include multiple options for control and routing of IR.

**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 Blustream IR-CAB cable for IR conversion.**

Each Blustream Multicast Transmitter and Receiver is supplied with both an IR Receiver and Emitter, details below:

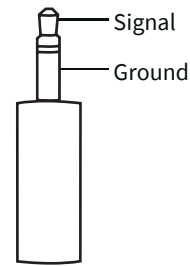
IR Emitter - IR1 & IR2 (IR2 sold separately)

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



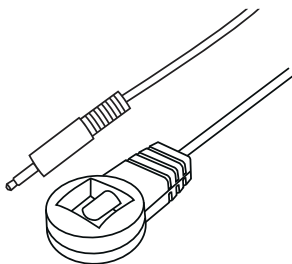
Infrared 3.5mm Pin-Out

IR Emitter - Mono 3.5mm

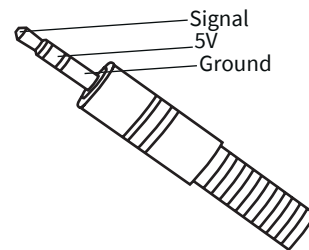


IR Receiver - IRR

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



IR Receiver - Stereo 3.5mm

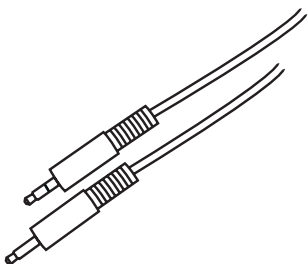


IR Control Cable - IR-CAB (sold separately)

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.

Please note: Cable is directional as indicated



# InfraRed Pass-Through (Source Control)

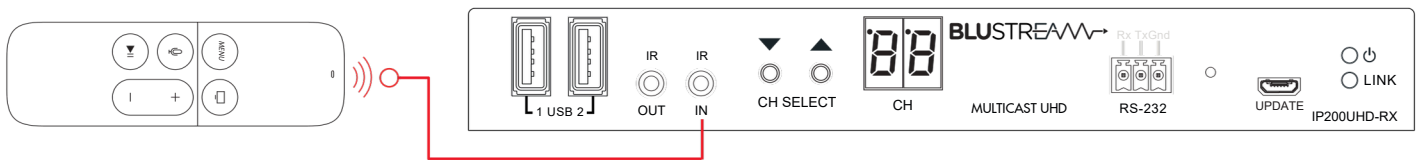
The Multicast products feature InfraRed pass-through allowing users to use an original source remote to control the sources located in another area.

The IR signal is routed discreetly to the source that is currently selected, meaning that individual source control can be achieved with installations consisting of multiple source equipment of the same type, i.e. - multiple Satellite boxes of the same make / model.

Please note: The IR pass-through features are available in all modes of Multicast use (matrix mode, video-wall, one-to-one, and one-to-many)

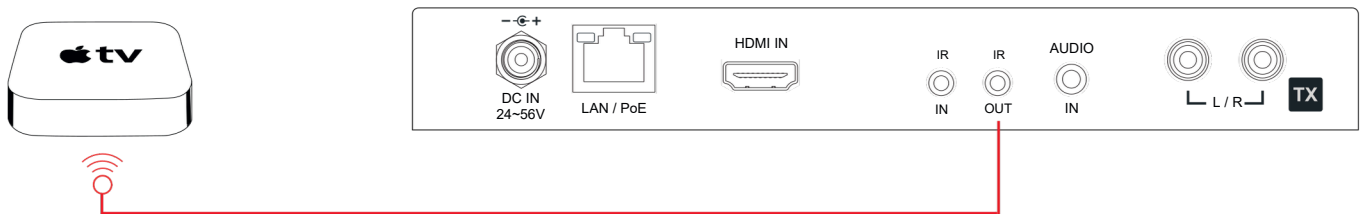
### Connections:

The IRR - IR receiver is connected to the IR IN socket on the IP200UHD-RX.



The IR1 - IR emitter is connected to the IR OUT socket on the IP200UHD-TX and the bud should be located directly on top of the IR receiver window of the source device.

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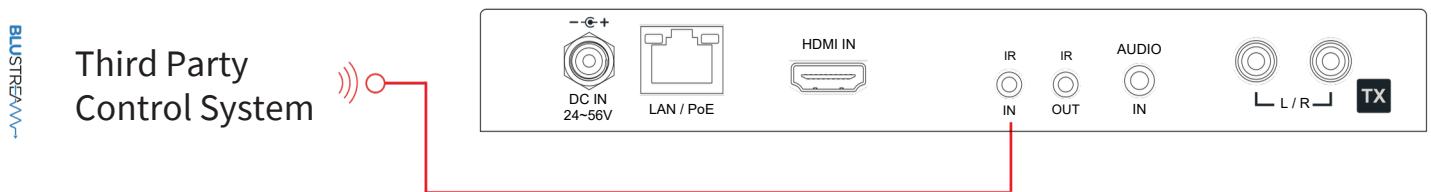
# InfraRed Pass-Through (Display Control)

With both the AI 2.0 Advanced Configuration software, or the ACM200, IR can be routed independently from any IP200UHD-TX to any IP200UHD-RX unit for display control, regardless of the current video stream routing between a receiver and another transmitter.

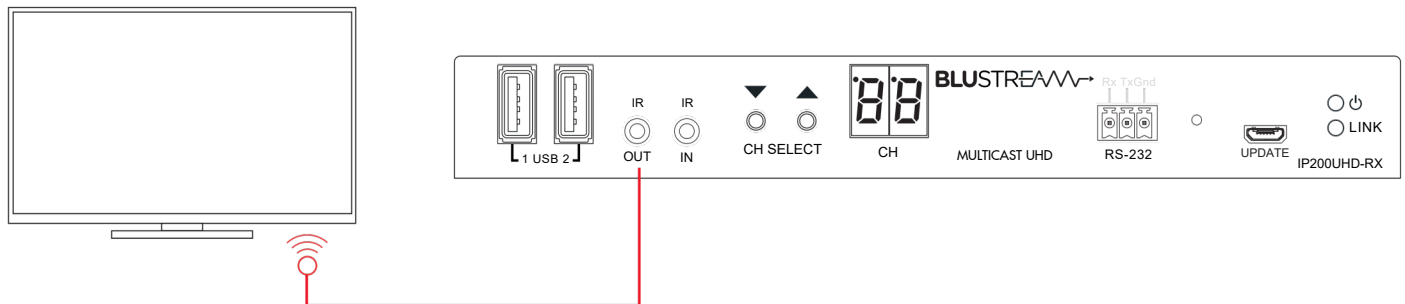
Instructions for the configuration of Fixed Routing can be found in the AI2.0 User Manual, or the ACM200 User Manual, both are downloadable from the Blustream website. The commands for fixed routing can be found at the rear of these manuals.

### Connections:

When using third party 12V IR control solutions please use Blustream IR-CAB cable for IR conversion from 12V to 5V. If the control system uses a 5V IR line, then a straight-through stereo 3.5mm cable can be used. Connect the IR output of the third party control system to the IR IN of the IP200UHD-TX.



The IR1 - IR emitter is connected to the IR OUT socket on the IP200UHD-RX and the bud should be located directly on top of the IR receiver window of the display device.

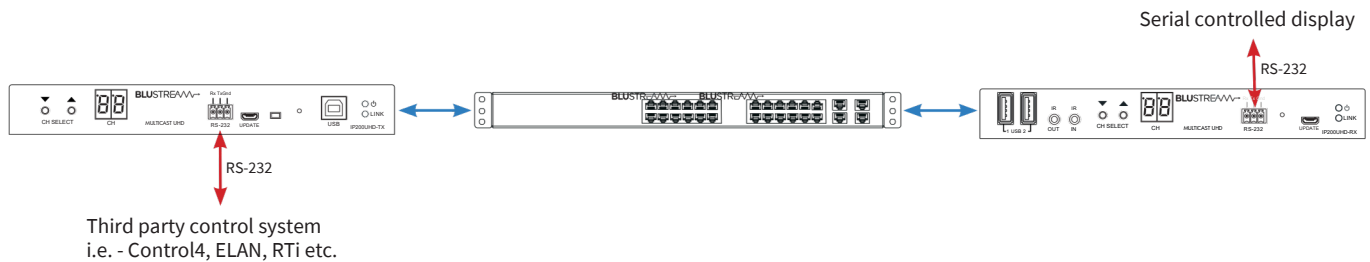


# RS-232 (Serial) Bi-Directional Pass-Through

Multicast products feature bi-directional RS-232 pass-through for control of products using serial commands. There are multiple methods for distribution of RS-232 using the Blustream Multicast solution which include:

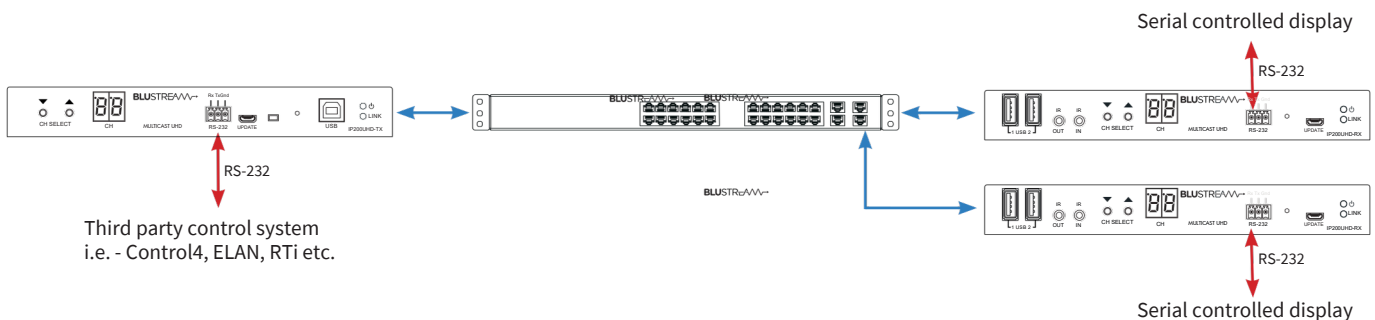
## 1) Type-1 Redirection Mode: 1-to-1 routed RS-232

A link is programmed that creates an open connection between ANY Multicast product in the system (Transmitters or Receivers). Once established the RS-232 commands can be sent in either direction between products. Multiple links can be created between Multicast products for additional independent product control.



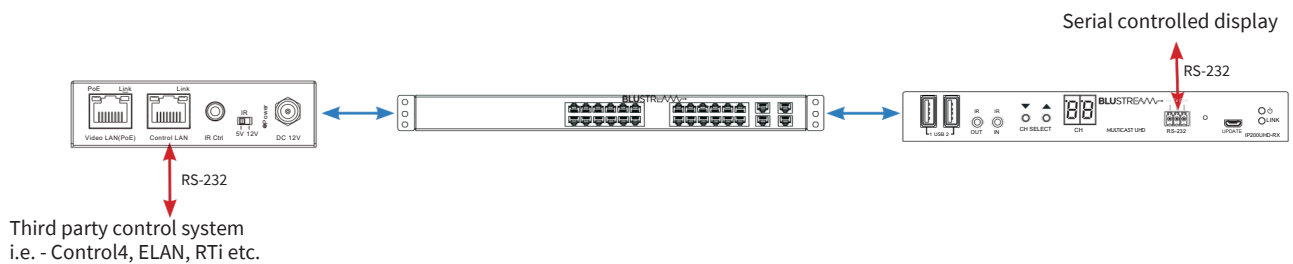
## 2) Type 2 Dumb Redirection Mode - 1-to-many routed RS-232

A link is opened when a receiver(s) is connected to a transmitter in the system. Once established the RS-232 commands can be sent in either direction between products, allowing a single command to be sent to 1 or many receivers at the same time i.e. - All displays powered on.



## 3) Type 2 Guest Mode - Telnet/IP conversion to RS-232

This method of control converts a Telnet/IP control command into an RS-232 command. A link is programmed that creates an open connection between an ACM200 control module and any IP200UHD-TX or RX (Transmitter or Receiver) product in the system. Telnet/IP commands are sent into the ACM200 from a third party control solution. This is then converted into an RS-232/serial command for control of third party products.



Please note: Only one method of RS-232 pass-through can be used at the same time. It is not possible to mix different methods of RS-232 control simultaneously.

## Type-1 Redirection Mode - 1-to-1 Routed RS-232

The Multicast products feature bi-directional RS-232 pass-through for control of products using serial commands from a fixed RX/TX to another. This is also known as Type 1, 1 to 1 routed RS-232 mode. To utilise this enable Type 1 RS-232 mode as follows:

### Type 1 RS-232 Mode Set Up

- 1) Connect to the Web GUI of the IP200UHD-TX or RX to enable Type 1 mode for by entering its IP Address in a web browser and navigate to the Functions' tab. For example: 169.254.6.1 is the default IP address for RX ID 1.
- 2) Check the checkbox for 'Enable Serial over IP'
- 3) Select the checkbox for 'Type 1'

**Serial over IP**

**Enable Serial over IP**

**Operation Mode:**

**Type 1** (Need extra control instruction. For advanced usage.)

Type 2 (Recommended. Dumb redirection.)

Type 2 guest mode

**Baudrate Setting for Type 2:**

Baudrate: 115200

Data bits: 8

Parity: None

Stop bits: 1

Apply

- 4) Select the System tab and navigate to the Utilities section. Select the Reboot button to restart the Multicast unit.

System | Video Wall | Network | Functions

Version Information:

Update Firmware:

Utilities:

**Commands**

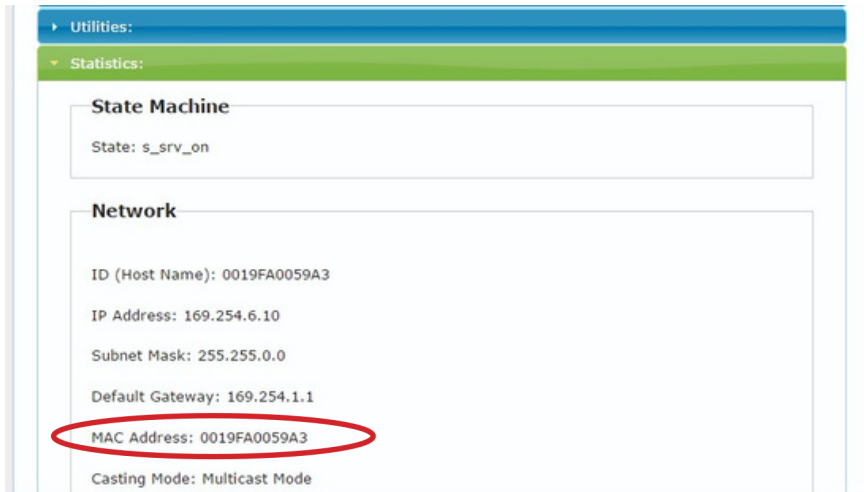
Factory Default | **Reboot**

**Console API Command**

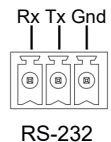
Apply

## Type-1 Redirection Mode - 1-to-1 Routed RS-232

- Connect to the WebGUI of Multicast product, and navigate to the Statistics section under the System menu and note the product's MAC Address. Use this MAC Address to create the routed RS-232 connection.



- Next, send the following messages directly into the Blustream Multicast TX or RX serial port. The command will open a connection between the Blustream products. Connect a computer or control system serial port (or USB to serial cable) directly to the 3-Pin serial connection on the TX or RX product.



- Use a serial control program to send the below commands into the Multicast TX/RX product. Please note: Some serial command programs require the carriage return <CR> to be entered after the commands. Some programs will automatically add this.
- Using the PC serial command program enter the following commands:

**0E** (in hex format)

This will put the unit into command mode and a command prompt will be displayed ">".

- Send the connect command as follows:

**ast\_c <MAC ADDRESS> <BAUD>8N1**  
**<CR>**

Where <MAC ADDRESS> is the MAC Address of the target device (TX or RX) that was collected earlier and <BAUD> is the baudrate of the device to be communicated with.

For example: `ast_c 0019FA0059A3 115200-8N1`  
 <CR>

- A start message showing the connection has been established will be displayed.

```
ast_c 0019FA005900 115200-8N1

Finding client (ast3-client0019FA005900.local)...Connecting...

=====<Start of ast3-client0019FA005900.local>=====
```

Commands can now be sent to/from the device.

- To disconnect, send the control message **0E** (in hex format)

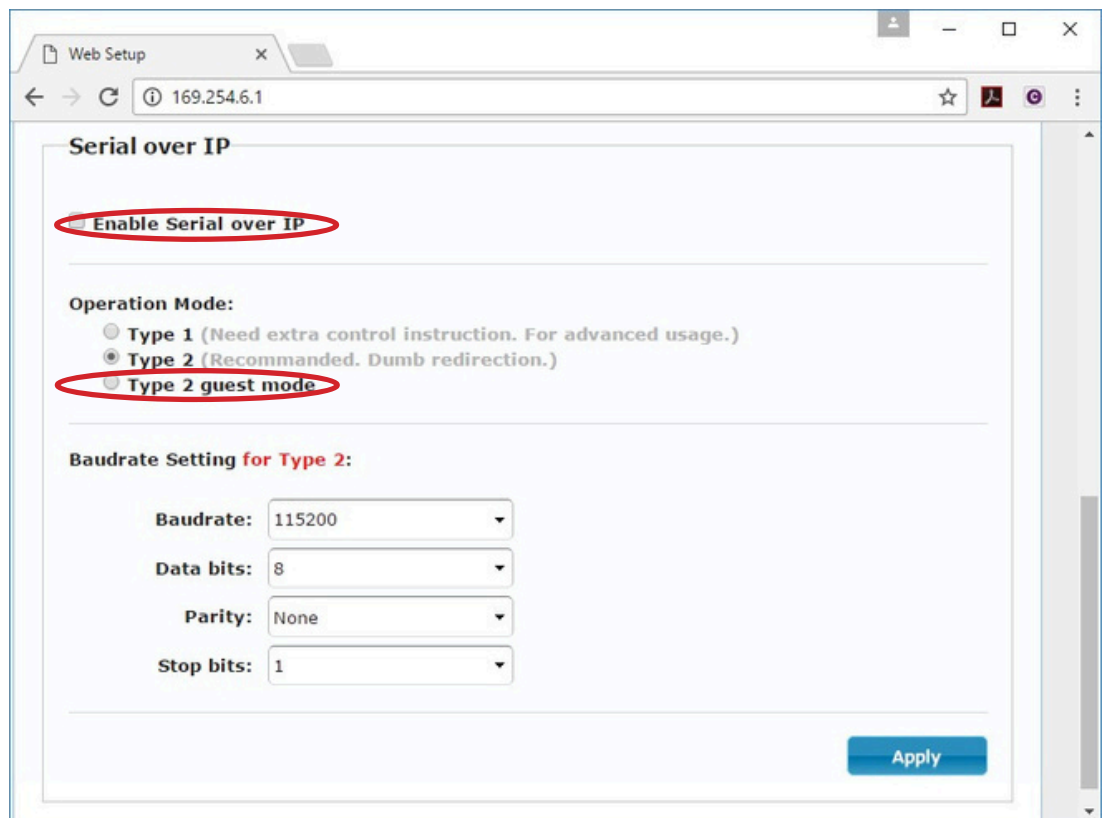
Please note: As soon as the IP200UHD-TX or -RX sees the command '0E' (even if part of a third party command) it will close serial communication between the Multicast products.

## Type 2 Guest Mode - Telnet/IP Conversion To RS-232

Multicast products feature bi-directional RS-232 pass-through for control of products using serial commands from the ACM200. This is also known as RS-232 Guest Mode. To utilise this, enable Guest Mode first as follows.

### RS-232 Guest Mode Set Up

- 1) Guest Mode must be enabled in each IP200UHD-TX and RX unit in order to use this functionality. Connect to the Web GUI of the IP200UHD-TX or RX to enable Guest Mode for by entering the products IP Address in a web browser, and navigate to the Functions tab. For example: 169.254.6.1 is the default IP address for RX ID 1.
  - 2) Check the checkbox for 'Enable Serial over IP'
  - 3) Select the checkbox for 'Type 2 guest mode'
- Ensure all Baudrate settings are correct for the product to be controlled.



### RS-232 Guest Mode Communication

- 1) To open a Guest Mode connection between the ACM200 and an IP200UHD-TX or RX unit send the following command via IP or RS-232:  
INxxxGUEST            Connect to TX xxx in Guest Mode from the ACM200  
OUTxxxGUEST         Connect to RX xxx in Guest Mode from the ACM200  
Example:             Transmitter one is ID 001, meaning 'IN001GUEST' will allow bi-directional Serial or TCP/IP commands between ACM200 and Transmitter 001.
- 2) Once a connection is established, any characters sent from the ACM200 will be transmitted to the IP200UHD-TX or RX it is connected with, and vice versa.
- 3) To close the connection send the escape command 0x02 (02 in Hex). If using Telnet, close the connection by pressing CTRL + B.

## Manual Configuration of Multicast Products

The Blustream Multicast system can be configured without the need of a computer, allowing basic setup options such as addressing of products (IP configuration), EDID selection, and Scaler output selection.

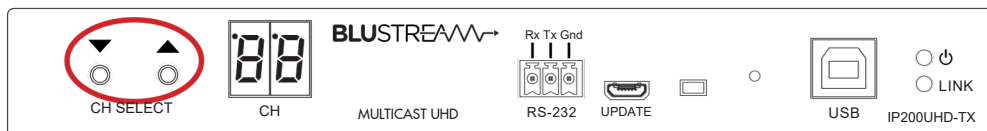
Manual configuration does not require the product to be connected to a network switch in order to be set-up, it only requires the units to be powered either by local power supply (24-54V 1A) or by a PoE switch/power injector. This means total configuration can easily be achieved offsite without any network hardware in place.

Please note: Advanced features such as video walls cannot be setup via manual configuration, and requires AI2.0 or the ACM200 web-GUI.

### Configuring the IP200UHD-TX:

1) Power the IP200UHD Transmitter - to configure the Multicast Transmitter first connect the product to a power supply (local or PoE network) and wait for the product to boot-up. The front panel LED display will rotate whilst booting and display a 2 digit number when complete. This will be '00' if the unit has default settings.

2) Put the IP200UHD-TX into 'Local Configuration' mode - once the product is powered press both the 'UP' and 'DOWN' channel buttons on the front panel at the same time for 6 seconds to enter 'Local Configuration' mode. The LCD front display of the product will show 'LC' when it is in this mode.



3) Assign the Transmitter ID (IP address) - once the product is in Local Configuration (LC) mode the display will begin to flash with a lowercase 't' to indicate the assigning of the transmitters identity. The identity will also be the IP address that is automatically assigned, so is of utmost importance that an individual ID not equal to another TX unit in the system is assigned:

- The first ID that should be assigned is ID001 = 169.254.3.1 (IP address 1)
  - The second ID that should be assigned is ID002 = 169.254.3.2 (IP address 2)
- and so on....

Once the ID number has been selected and is correct, confirm the selection by pressing both Channel 'UP' and 'DOWN' buttons at the same time to move on to setting the EDID.

4) Set the EDID - once the product is in EDID configuration mode the display will begin to flash with a lowercase 'e' to indicate that the assigning of an EDID value is about to commence. Use the 'UP' or 'DOWN' arrows to select the EDID setting required. A full list of EDID settings can be found on page 20 'EDID Control'.

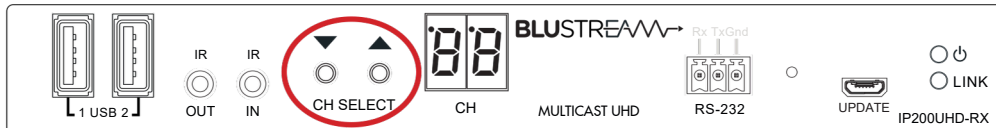
For example: if the display shows '00' the EDID will be 1080p 2ch.

Once required EDID has been selected, press both Channel 'UP' and 'DOWN' buttons together to finalise the manual configuration.

The Multicast Transmitter will reboot with the new settings applied.

### Configuring the IP200UHD-RX:

- 1) Power the IP200UHD Receiver - to configure the Multicast Receiver first connect the product to a power supply (local or PoE network) and wait for the product to boot up. The front panel LED display will rotate whilst booting and display a 2 digit number when complete. This will be '00' if the unit has default settings.
- 2) Put the IP200UHD-RX into 'Local Configuration' mode - once the product is powered press both the 'UP' and 'DOWN' channel buttons on the front panel at the same time for 6 seconds to enter 'Local Configuration' mode. The LCD front display of the product will show 'LC' when it is in this mode.



- 3) Assign the Receiver ID (IP address) - once the product is in Local Configuration (LC) mode the display will begin to flash with a lowercase 'r' to indicate the receivers identity is going to be assigned. The identity will also be the IP address that is automatically assigned, so is of utmost importance that an individual ID not equal to another RX unit in the system is assigned:

- The first Receiver ID assigned is ID001 = 169.254.6.1 (IP address 1)
- The second Receiver ID is ID002 = 169.254.6.2 (IP address 2)

and so on....

Once the ID number has been selected and is correct, confirm the selection by pressing both Channel 'UP' and 'DOWN' buttons at the same time to move on to setting the scaled output.

- 4) Set the Video Scaler of the Receiver - once the product ID has been configured the display will begin to flash with an 's' to indicate that the scaler output is next to be configured. Use the 'UP' or 'DOWN' arrows to select the scaler setting required. A full list of scaler settings can be found on page 21 'Scaler Output Control'.

For example: if the display shows '10' the Scaler output will be 4K 30Hz.

Once the Scaler output that is required for the display connected to the HDMI output of the RX has been set, press both Channel 'UP' and 'DOWN' buttons at the same time to move onto setting permissions.

- 5) Setting Permissions - after the scaler output has been set, the permissions of the Receiver now need to be configured. The display in the unit will start to flash with the letters 'CH'. Use the 'UP' or 'DOWN' arrows to select the permission number required.

Permissions allow for the Receiver to be set up so that it can / cannot access Transmitters within the system. If the system has 6x TX units and the RX is set to 05, the Receiver will have access to the first 5x transmitters (ID's 001 - 005) and not any other Transmitter after. The number set will equal the last Transmitter in the system that can be accessed.

Setting the permission value to '00' ignores the permissions and will mean that the Receiver being manually configuring can therefore access ALL transmitters in the system.

Once the permission value required has been selected, press both Channel 'UP' and 'DOWN' buttons to finalise the manual configuration.

The Multicast Receiver will then reboot with the new settings applied.

Please note: permissions and users can also be set-up and controlled when using the ACM200 web-GUI.

## 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 device. From this information the source will discover what the best audio and video resolutions need to be output.

In a normal Matrix based system, issues can arise when multiple displays or video matrix switching is introduced because of the increased number of variables.

In the Blustream Multicast system each source device only communicates with a single Blustream IP200UHD-TX Transmitter meaning there is only a single EDID handshake. As each Blustream Multicast IP200UHD-RX Receiver has its own in-built video scaler, it is advised that the source EDID is set to output the best video signal possible as this can

be down-scaled (as required) at each IP200UHD-RX Receiver.

Configuration of Multicast EDID settings can be achieved in several ways:

- 1) During the manual configuration of the IP200UHD-TX Transmitter - see previous pages
- 2) Using the Blustream Multicast AI 2.0 Advanced Integration software
- 3) Using the Multicast Web-GUI interface (by addressing the unit via it's IP Address within a browser)
- 4) Using the Web-GUI of the Blustream ACM200
- 5) Using RS-232 commands via the Blustream ACM200

When configuring the EDID during manual setup, or using RS-232 commands the following table indicates EDID

EDID	MULTICAST TRANSMITTER EDID SETTINGS
00	Default EDID (Pass-through)
01	HDMI 1080i@60Hz, Audio 2ch PCM
02	HDMI 1080i@60Hz, Audio 5.1ch PCM/DTS/DOLBY
03	HDMI 1080i@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
04	HDMI 1080p@60Hz, Audio 2ch PCM
05	HDMI 1080p@60Hz, Audio 5.1ch PCM/DTS/DOLBY
06	HDMI 1080p@60Hz, Audio 7.1ch PCM/DTS/DOLBY/HD
07	HDMI 1080p@60Hz / 3D, Audio 2ch PCM
08	HDMI 1080p@60Hz / 3D, Audio 5.1ch PCM/DTS/DOLBY
09	HDMI 1080p@60Hz / 3D, Audio 7.1ch PCM/DTS/DOLBY/HD
10	4K2K 4:2:0, Audio 2ch PCM
11	4K2K 4:2:0, Audio 5.1ch PCM/DTS/DOLBY
12	4K2K 4:2:0, Audio 7.1ch PCM/DTS/DOLBY/HD
13	4K2K 4:4:4, Audio 2ch PCM
14	4K2K 4:4:4, Audio 5.1ch PCM/DTS/DOLBY
15	4K2K 4:4:4, Audio 7.1ch PCM/DTS/DOLBY/HD
16	DVI 1280x1024@60Hz, Audio None
17	DVI 1920x1080@60Hz, Audio None
18	DVI 1920x1200@60Hz, Audio None

Please note: The Blustream Multicast products do not down-mix 5.1ch audio signals. Should the end-points (displays) only support 2ch PCM, set the EDID value to match audio formats supported throughout the system.

# Scaler Output Control

The Blustream Multicast Receiver has an in-built video scaler which can both up-scale and downscale video signals allowing for differing image resolutions at each display.

Configuration of Multicast Scaler settings can be achieved in several ways:

- 1) During the manual configuration of the IP200UHD-RX Receiver - see previous pages
- 2) Using the Blustream Multicast AI 2.0 sAdvanced Integration software
- 3) Using the Multicast Web-GUI interface (by addressing the unit via it's IP Address within a browser)
- 4) Using the Web-GUI of the Blustream ACM200
- 5) Using RS-232 commands via the Blustream ACM200

When configuring the Scaled output during manual setup, or using RS-232 commands, the following table indicates Scaler settings.

SCALER	MULTICAST RECEIVER SCALER SETTINGS	Pass Through - allows native source
00	resolution to pass-through to display * (default setting)	HDMI 2160p@30Hz HDMI
01	2160p@24Hz HDMI 1080p@60Hz HDMI 1080p@50Hz HDMI 720p@60Hz HDMI	
02	720p@50Hz HDMI 1280x1024@60Hz HDMI 1024x768@60Hz HDMI 1360x768@60Hz HDMI	
03	1440x900@60Hz HDMI 1680x1050@60Hz	
04		
05		
06		
07		
08		
09		
10		
11		

Please note: the maximum output resolution of the IP200UHD-RX is 4K @ 30Hz. Where a source resolution is equal to 4K @ 50Hz or 60Hz, the output resolution is automatically scaled to 4K @ 25Hz or 30Hz (half the value of the input frame rate) when the scaler output is left as 'Pass Through'.

It is recommended to try as best as possible to match frame rates throughout the system to reduce the potential of juddery images.

Display settings can also negatively affect motion on an output image from an IP200UHD-RX. Settings such as 'Motion Smoothing' should be turned off to avoid this issue. Alternatively, setting the display to 'Game Mode' will turn off all additional processing within a display.

## Supporting Documentation & Downloads

Therelevant supporting documents for Blustream Multicast products can be found on the Blustream website:  
[www.blustream.co.uk](http://www.blustream.co.uk) / [www.blustream.com.au](http://www.blustream.com.au)

The following download buttons are available on the IP200UHD-TX and RX pages for supporting documentation:

DOWNLOAD  
SCHEMATIC



Download example schematics of the IP200UHD products in differing scenarios. These are available towards the back of this guide.

DRIVERS &  
PROTOCOLS



The 'Drivers & Protocols' download section features all supporting documentation, firmware versions, control information, instruction / user guides etc.

AI 2.0  
ADVANCED INTEGRATION  
SOFTWARE



Download the Blustream AI 2.0 Advanced Integration software program for use with the IP200UHD series of products where an ACM200 is not being used

AI 2.0  
USER GUIDE



Download the User Guide for AI 2.0

LAN SWITCH  
GUIDES



Download the latest set-up guides Blustream have written for a variety of LAN switches that can be used with the IP200UHD products

DOWNLOAD  
FIRMWARE



Download the latest firmware releases for the IP200UHD-TX and RX

## IP200UHD Firmware Update

Prior to commencing installation of your Multicast system, it is important that the Blustream IP200UHD-TX/RX products are pre-loaded with the latest firmware. The latest firmware can be found on the Blustream Website - see previous page.

Updating the IP200UHD firmware can be achieved in 2 ways:

- 1) Using the 'Firmware Update' feature in the 'Advanced' section of the AI 2.0 software. This is the easiest method.
- 2) Using the IP200UHD-TX or RX Web-GUI interface.

The below instructions are a step-by-step guide to upgrading the firmware in each Multicast product for new units that are yet to be configured. The firmware update process must be completed one-by-one due to all products being shipped with the same standard factory set default IP address. Failure to do so may result in corrupting the firmware in the products, resulting in product failure.

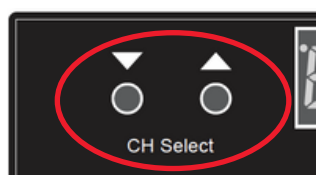
Prior to upgrading the firmware in Blustream Multicast products using either of the above methods it is important to first complete the below instructions.

- 1) In order to communicate with the Blustream Multicast hardware a computer will need to be physically connected to either:
  - a) A PoE network switch using an Ethernet network cable which is in turn connected to the Blustream IP200UHD-TX or RX product
  - b) The Blustream IP200UHD product directly which must be powered locally using a 24-56V DC 1A power supply (sold separately)

2) **IMPORTANT:** Prior to connecting the Blustream Multicast IP200UHD product to your network switch/local power supply, it is recommended that the product is forced into 'Firmware Upgrade Mode'. Firmware Upgrade Mode stops the Multicast product from streaming video and activates a status for updating the firmware.

To activate Firmware Upgrade Mode:

- a) Whilst un-powered, press both the 'CH SELECT UP' and 'CH SELECT DOWN' buttons located on the product front panel at the same time



- b) Whilst holding down these buttons, insert the PoE network cable, or local 24-56V DC power supply
- c) Do not release the buttons until the product shows 'PG' in the status window on the front panel

Please note: Product firmware can be updated without 'Firmware Upgrade Mode' but any streaming service to/from the product must be stopped before proceeding with the firmware upgrade. Failure to do so may result in loss of firmware transmission packets due to un-necessary traffic on the network.

3) In order to communicate with the Blustream IP200UHD product a computer must also be in the same IP range as the Blustream IP200UHD-TX/RX's default IP address. Instructions to update a computer's IP range can be found in the 'Changing your computer IP address' instructions towards the rear of this guide.

The default IP address of all new Multicast IP200UHD-TX/RX is:

**169.254.100.254**

## Accessing the IP200UHD Web-GUI Interface

Each Blustream Multicast product is shipped with a fixed IP address of 169.254.100.254. Once the PC network is amended to work in the same IP range as the fixed IP of the Multicast products, it is possible to communicate directly with the built-in web server in each Multicast IP200UHD Transmitter or Receiver.

Following configuration using either: AI 2.0 software, ACM200 Web-GUI, by manual configuration, or the Web-GUI interface of the product, the unit will have a different IP address to that of the factory default. The IP address of a configured Multicast product can be found by pressing and holding the 'UP' channel button on the product for approx. 6 seconds, the product IP address will be shown using the front panel display by displaying each of the 4 numeric parts of the IP address in order.

Please note: there is a single dot in the top left hand portion of each of the digital 8-segment numeric displays. To obtain a 3-digit number from a 2-digit numeric display, the two dots are used to determine the first number / digit of the possible 3 digits of an IP address. For example: the IP address: 169.254.3.101 would be displayed as:

. 6 9    .. 54    03    . 01

The Blustream Multicast AI2.0 'Search' feature and the 'Scan' feature of the ACM200 web-GUI can also be used to show all connected Multicast products within a system. Entering the fixed IP address (for new units), or the configured IP address of a configured unit, into a web browser on a PC, gives access to the units configuration for monitoring, resetting, firmware upgrading, or further configuration.

On entering the unit IP address into a web browser, a username and password prompt will be displayed.

Enter the username: **blustream**

Enter this password: **1 2 3 4**

### Transmitters:

The first product to be assigned an IP address when using the Blustream AI 2.0, or the ACM200 Web-GUI, will be given the IP address of 169.254.3.1. The next Transmitter will be assigned an IP address of 169.254.3.2 and so on....

Once the IP range of 169.254.3.x is filled (254 units), the unit will be auto-assigned of an IP address from 169.254.4.1 and so on...

Once the IP range of 169.254.4.x is filled (254 units), the unit will be auto-assigned of an IP address from 169.254.5.1 up to 169.254.5.254 - this gives a maximum configuration of 762x transmitters in any system using AI 2.0 or the ACM200 Web-GUI.

### Receivers:

The first product to be assigned an IP address when using the Blustream AI 2.0, or the ACM200 Web-GUI, will be given the IP address of 169.254.6.1. The next Receiver will be assigned an IP address of 169.254.6.2 and so on....

Once the IP range of 169.254.6.x is filled (254 units), the unit will be auto-assigned of an IP address from 169.254.7.1 and so on...

Once the IP range of 169.254.7.x is filled (254 units), the unit will be auto-assigned of an IP address from 169.254.8.1 up to 169.254.8.254 - this gives a maximum configuration of 762x receivers in any system using AI 2.0 or the ACM200 Web-GUI.

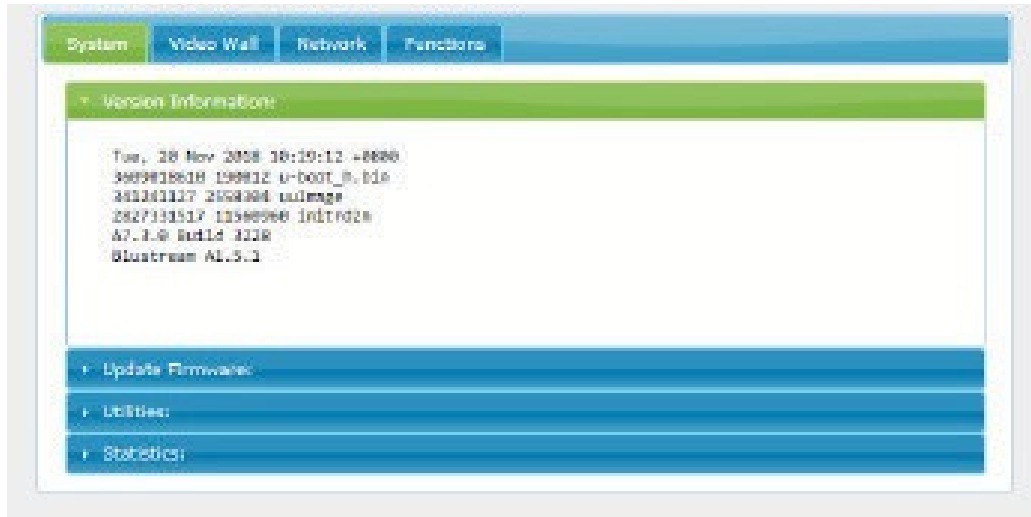
This part of the guide will explain the use of directly communicating with an individual unit. It is assumed the IP address of the unit is known. The Web-GUI is similar in function to the Blustream AI 2.0 software with the majority of options on the Web-GUI being concurrently available within the software, however the units Web-GUI should primarily be used as a tool for checking configuration, or problem solving, rather than as a method for setting up a new system.

## Multicast Web-GUI - IP200UHD

Themenstructure for the built-in Web-GUI is as follows...

**System** (same for both TX and RX):

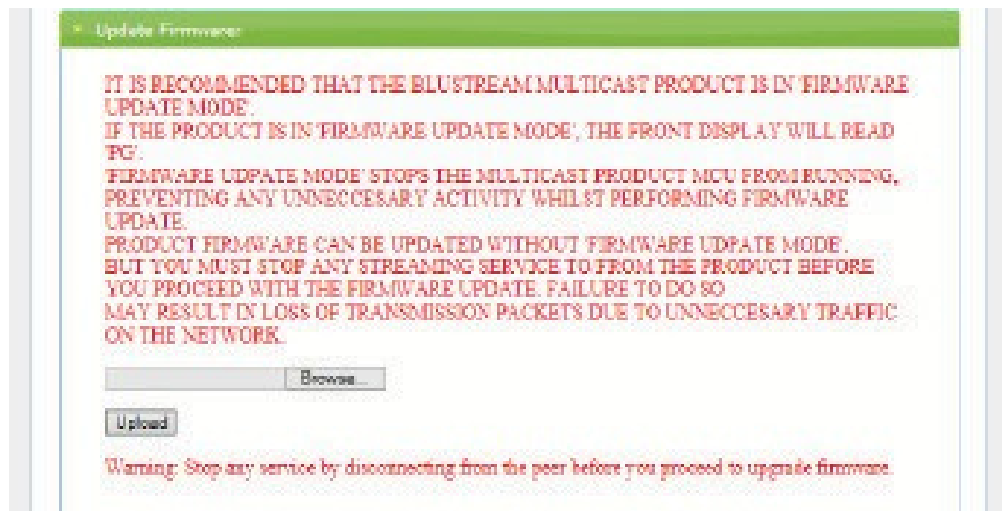
Version Information: an overview of the individual unit, including model number and firmware version.



**Update Firmware:** it may be necessary to update the firmware of the Blustream Multicast products. It is advised to check the Blustream website to see if any firmware updates have been uploaded. Download these files and save them to a PC. To update the Blustream IP200UHD-TX or IP200UHD-RX please follow the below instructions:

Click 'Update Firmware'

- 1) Click 'Browse...' and open the folder in which the firmware files have been saved.



- 2) Select the require 'Transmitter.BIN' or 'Receiver.BIN' file
- 3) Click 'Upload' which will begin the firmware upgrade process
- 4) Once the upgrade has completed, disconnect the network cable/power and reconnect to reboot the product. The Transmitter/Receiver display will no longer display 'PG' when complete.

Please note: DO NOT unplug the power or network connection to the IP200UHD-TX or RX during upgrade as this may result in failure to upgrade the firmware, which may lead to possible failure of the unit.

The firmware upgrade process will take several minutes. Do not connect any other Blustream Multicast product to the network that has the same IP address during this time.

**Utilities** (same for both TX and RX):

Factory Default - resets the Transmitter or Receiver to factory settings. The IP address will revert to: 169.254.100.254 once the unit has rebooted.

Reboot - reboots the Transmitter or Receiver unit.

Set EDID (Transmitter units only) - as per page 20, fix the EDID value for a Transmitter (source).

Console API Command - only to be used as instructed by a member of the Blustream Technical Support team.

Output - feedback from the API command inserted above.

**Statistics:**

Network - detailed information about the connection status of the Transmitter or Receiver (unit ID, IP address, subnet, gateway, MAC address, casting mode (Multicast / Unicast), link status and link mode). Changes to the units IP address details can only be viewed from this section, please refer to the Network tab to amend the IP structure of the unit (not recommended).

Video (Transmitter units) -

- EDID Used - the EDID structure being used between source and Transmitter.
- Local Video Output - connection status of the video signal being received from the source device.
- Video Timing Information - detailed information of the media being accepted from the source: Resolution, Pixel rate, HDMI blanking information, Colour Depth, HDCP, Window sizes, Scan mode and Signal Type / Aspect Ratio

Video (Receiver units) -

- Local Video Output - connection status of the video signal being received from the source device, HDMI mode, Signal type, Feature support, and Preferred timing
- EDID Used - the EDID structure being used between Receiver and display device.
- Video Timing Information - Timing / Frame rate conversion, Resolution, Pixel rate, HDMI blanking information, Colour Depth, HDCP, Window sizes, Scan mode and Signal Type / Aspect Ratio

**Video Wall:**

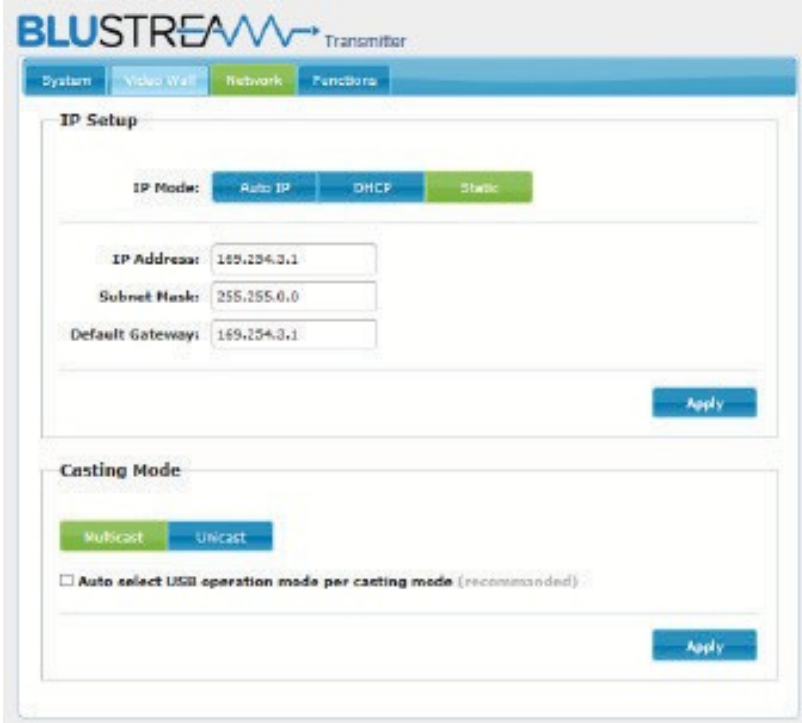
It is recommended that Video Wall arrays are configured and managed using AI 2.0, or the ACM200 Web-GUI software only.

**Network** (same for both TX and RX):

Allows for the IP address details for the unit to be amended to fit with alternative IP address ranges (not recommended).

The unit can be set to Unicast (one-to-one), or Multicast (one-to-many, or many-to-many). Unicast would only be used where there are multiple point-to-point extenders on the same network where matrix functionality is not required. All Blustream units are shipped with Multicast set as default.

Please note: amending the IP address of Multicast products may prevent other Multicast equipment, and the AI 2.0 software from being able to communicate with the unit.



The screenshot displays the web interface for a BLUSTREAM Transmitter. The top navigation bar includes tabs for System, Video Wall, Network, and Functions. The main content area is divided into two sections:

- IP Setup:** This section allows for configuring network parameters. It features three radio buttons for IP Mode: Auto IP (selected), DHCP, and Static. Below these are three input fields: IP Address (169.254.3.1), Subnet Mask (255.255.0.0), and Default Gateway (169.254.3.1). An Apply button is located at the bottom right of this section.
- Casting Mode:** This section allows for selecting the casting mode. It features two radio buttons: Multicast (selected) and Unicast. Below these is a checkbox labeled "Auto select USB operation mode per casting mode (recommended)". An Apply button is located at the bottom right of this section.

**Functions (Transmitter):**

Enable Video over IP: on by default. Do not un-check this box.

Enable Video Wall: on by default. Un-checking this will remove Video Wall functionality from the unit.

Maximum Bit Rate: adjust to reduce the amount of data per second that is sent by the Transmitter. Reducing this from 'Best Effort' will result in a reduction of image quality. It is recommended to keep this setting at 'Best Effort'.

Maximum Frame Rate: adjust to reduce the number of frames captured by the Transmitter from the source. Reducing this from 100% (slider to the right), will result in a reduction of the motion performance of a Multicast Receivers output when accepting a stream from the Transmitter. It is recommended to keep this setting at 100%.

Audio over IP: choose the source of the embedded audio for the stream (Auto / Line In / HDMI).

USB over IP: individual settings for the use of USB / KVM over Multicast. Choose between differing operational and compatibility modes.

Serial over IP: enable RS232 pass-through from the Transmitter, utilise this section to configure the serial settings of the system.

**Functions (Receiver):**

Enable Video over IP: on by default. Do not un-check this box.

Enable Video Wall: on by default. Un-checking this will remove Video Wall functionality from the unit.

Copy EDID from the Video Output: we would recommend using AI 2.0 or the ACM200 Web-GUI to perform the Copy EDID function within a system.

Scaler Output Mode: as per page 21, set the scaled output to match the maximum resolution of the display connected where the display cannot accept the full resolution of the source device.

Timeout for Detecting Video Lost: 10 seconds by default. Adjust this setting to hold the last frame of media received by the Receiver device before reverting to the Blustream Multicast splash screen where source device is turned off, or the connection is lost between the source and Transmitter.

Audio over IP: choose the source of the embedded audio for the stream (Auto / Line In / HDMI)

USB over IP: individual settings for the use of USB / KVM over Multicast. Choose between differing operational and compatibility modes.

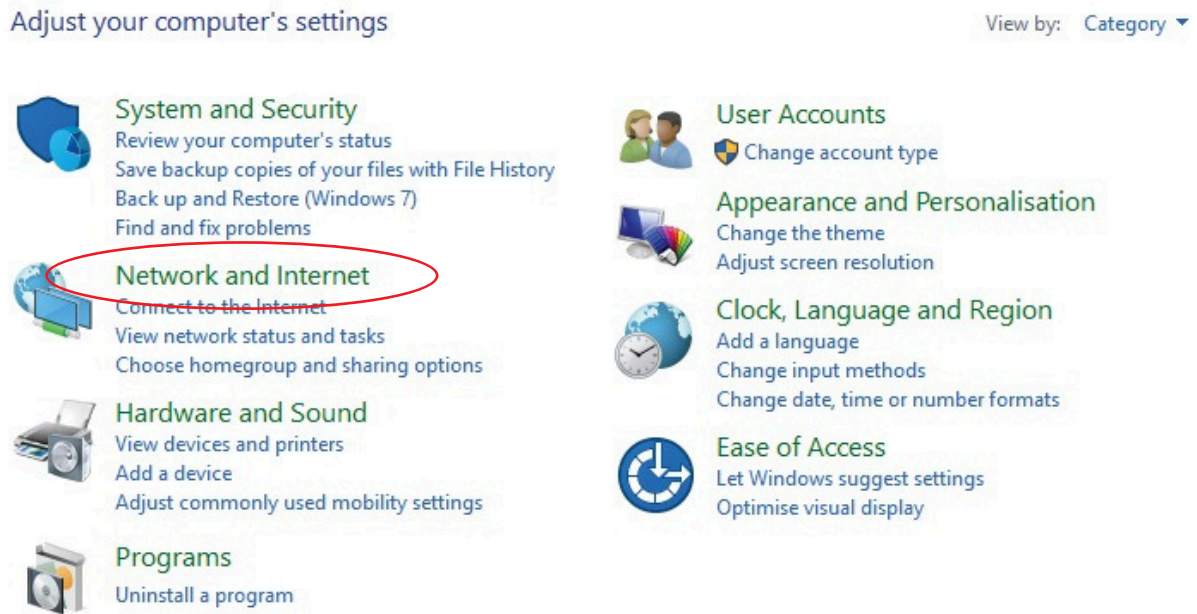
Serial over IP: enable RS232 pass-through from the Transmitter, utilise this section to configure serial settings of the system.

Please note: within any of the Transmitter or Receiver web-GUI sections, click 'Apply' to save new or amended settings.

# Changing a Computer IP address

To communicate with the Control Network or Multicast Video Network, the IP Address of the computer being used may need to be amended to communicate with the either network.

- 1) Connect the computer to the Multicast network switch using an Ethernet cable.
- 2) In the Windows toolbar navigate to 'CONTROL PANEL'.
- 3) Select 'NETWORK AND INTERNET'.



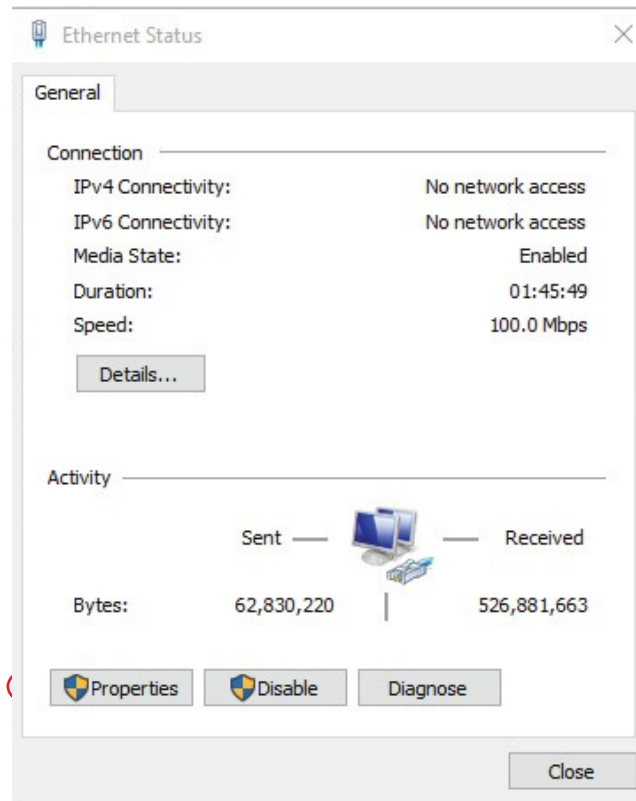
- 5) Select 'NETWORK AND SHARING CENTER'.



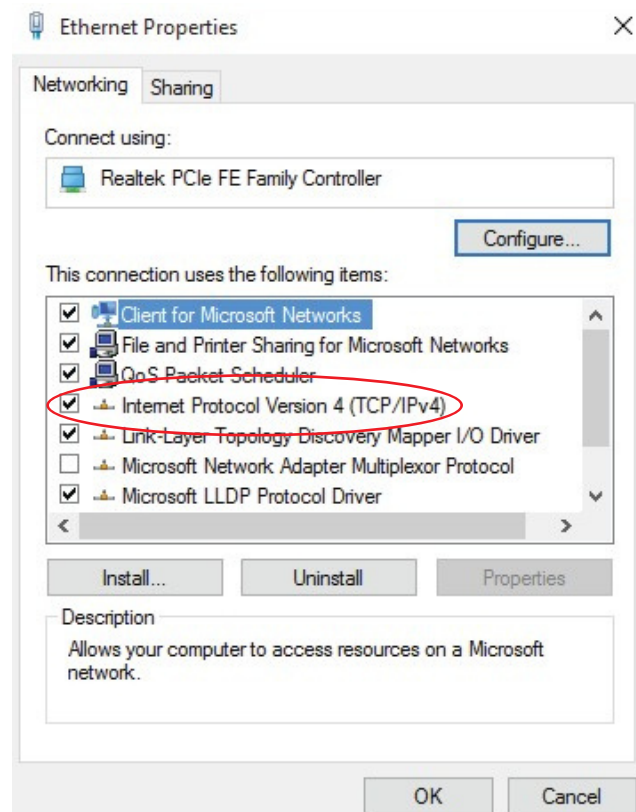
- 6) Under 'View your Active Networks' see connection types available.  
Select 'Local Area Connection' as this is the method of communication being used with the switch.



7) In the next window select 'PROPERTIES'



- 8) A. In the 'NETWORKING' window highlight/select 'INTERNET PROTOCOL VERSION 4 (TCP/IPv4)'
- B. Select 'PROPERTIES', or double click on 'INTERNET PROTOCOL VERSION 4 (TCP/IPv4)'



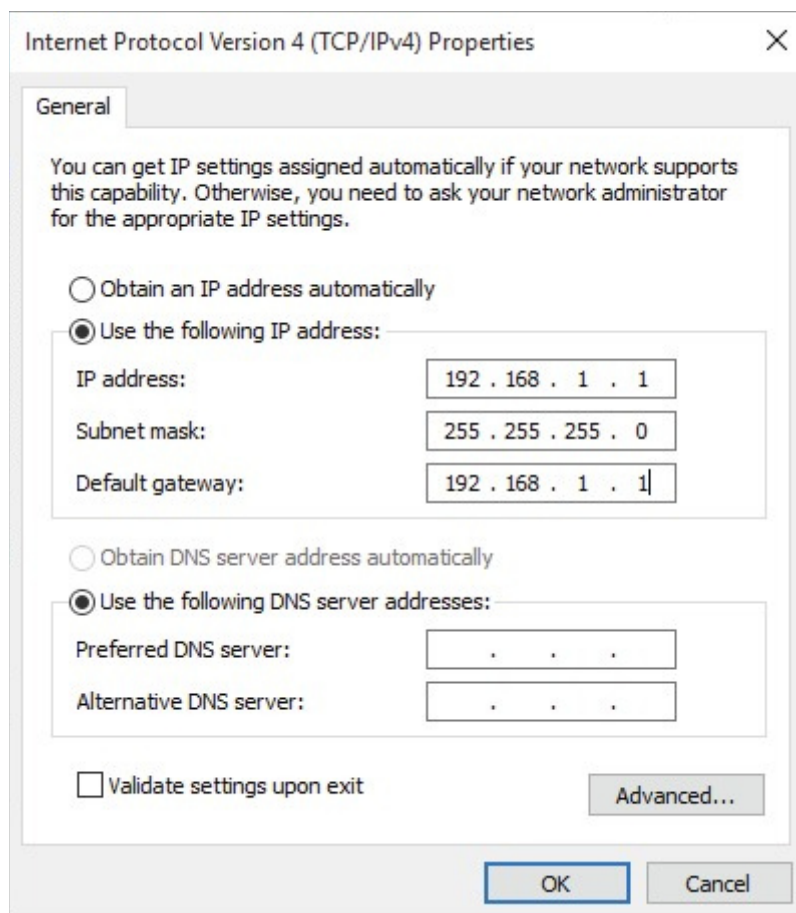
- 9) A. Under the 'General' tab select 'USE THE FOLLOWING IP ADDRESS'
- B. Enter the following FIXED IP network details for the configuration of the Network Switch or the ACM200 (check with the manufacturer of the LAN switch if this address is relevant in advance)

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.169.1.1

- C. Enter the following FIXED IP network details for AI 2.0 or Blustream Multicast products

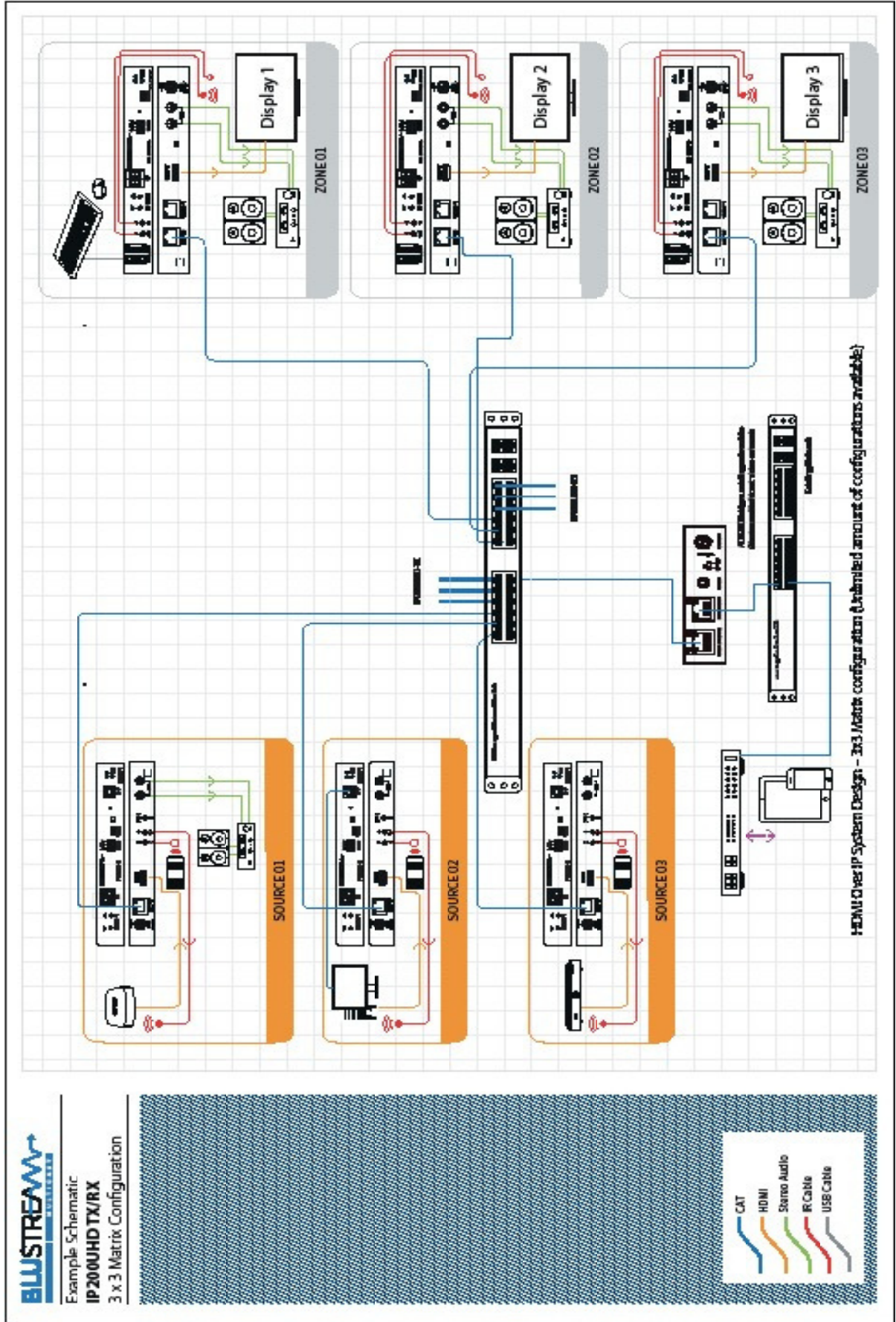
IP Address	169.254.1.10
Subnet Mask	0 255.255.0.0
Default Gateway	169.254.1.1

It is important to have the IP address range of the PC configured to the correct range when setting up the LAN switch. Once configuration of the LAN switch has been completed, the IP address range of the PC will need to be amended if using AI 2.0 or the Multicast Transmitter or Receiver web-GUI's.

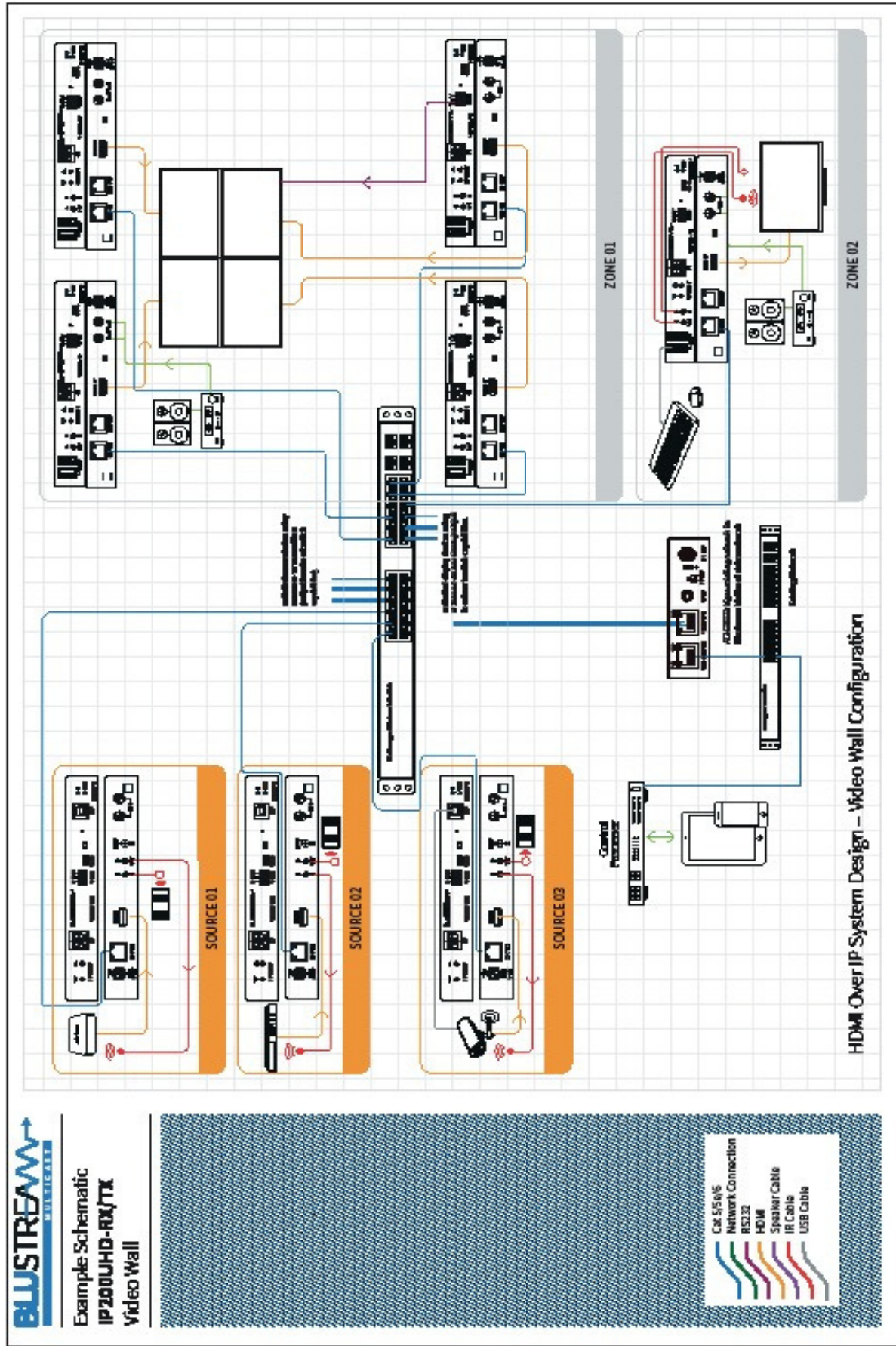


- 10) Click 'OK' and exit the network setup
- 11) Enter the default Network Switch, ACM200 or Blustream Multicast address into a web browser and check for connection to the unit. If the Transmitter and Receiver products have already been configured, enter the address of one of these (it is advised to use 169.254.3.1 - this will be the first default Transmitter IP address).

# Application Diagrams - Matrix Configuration



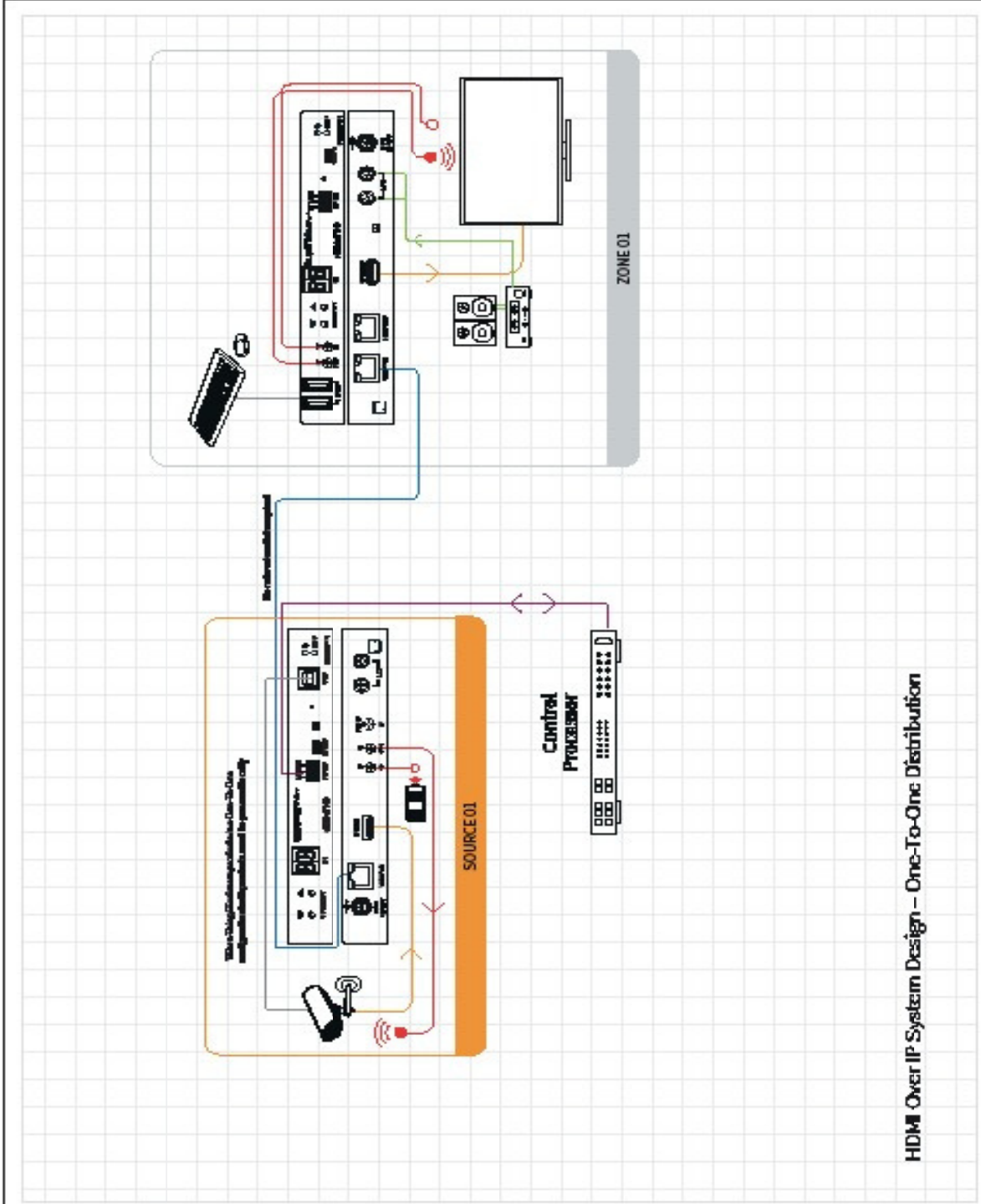
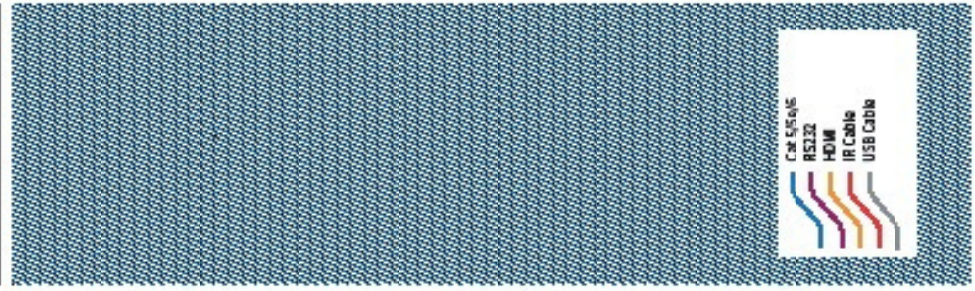
# Application Diagrams - Video Wall Configuration



# Application Diagrams - 1 to 1 Configuration



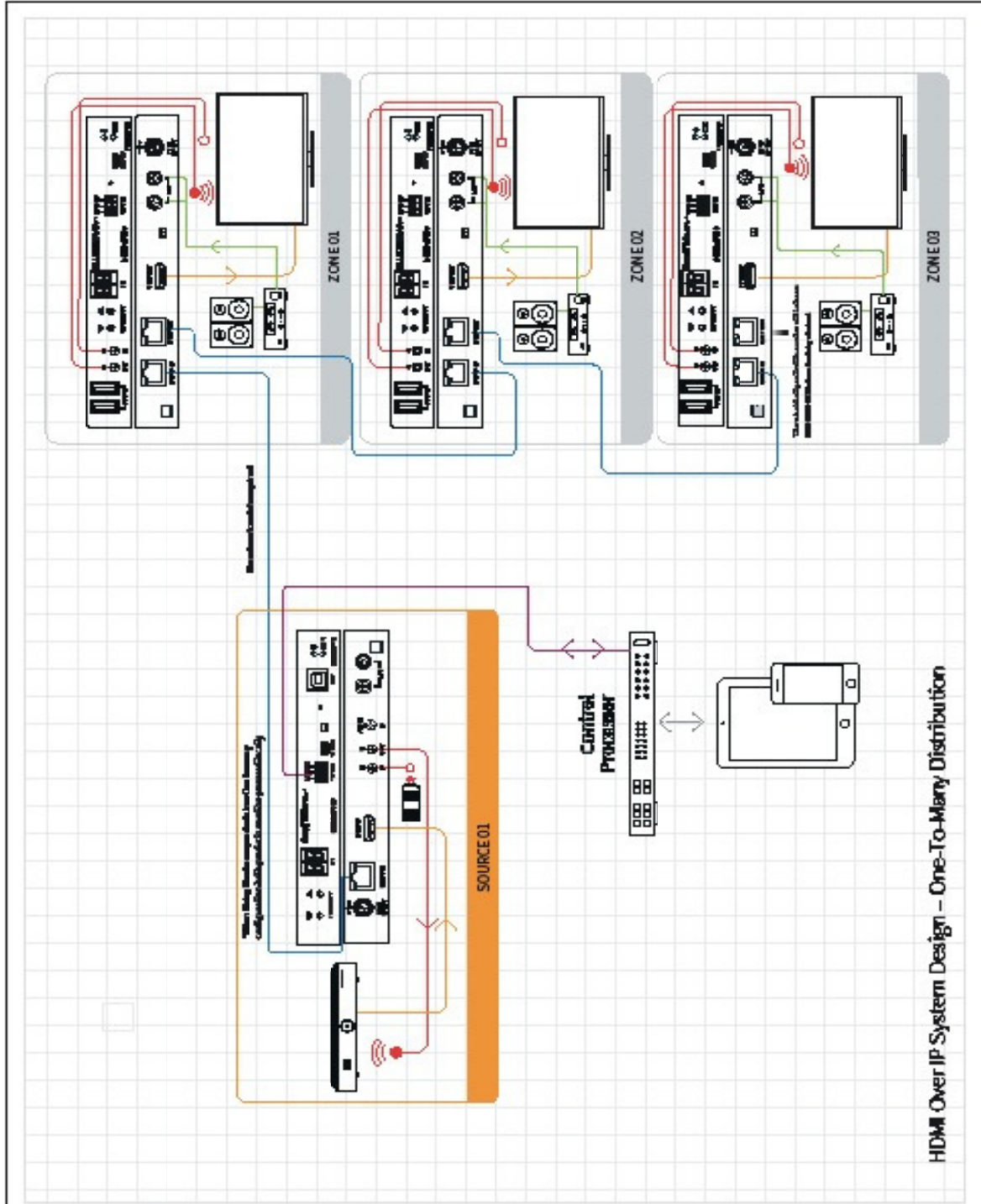
Example Schematic  
IP200UHD-RX/TX  
One-To-One



HDMI Over IP System Design – One-To-One Distribution

# Application Diagrams - 1 to Many Configuration

**BLUSTREAM**  
**IP200UHD-RX/TX**  
**One-To-Many**

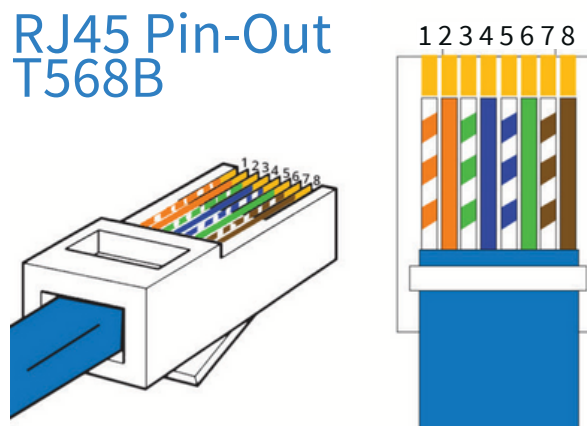


HDMI Over IP System Design - One-To-Many Distribution

## Terminating the interconnecting Network CAT cable

It is important that the interconnecting CAT cable between the Blustream Multicast products is terminated using the correct RJ45 pin configuration. The link CAT cable should 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 to use the best 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 installations, especially when running over longer distances, in areas of high EMI, or with 4K signal distribution.



## Specifications

### IP200UHD-TX

- Video input: 1x HDMI type A, female
- Video output: 1x LAN RJ45 connector
- Audio input: 1x 3.5mm L/R analogue audio
- Audio output: 2x RCA L/R analogue audio
- Ethernet output: 1x LAN RJ45 connector (PoE)
- USB / KVM: 2x USB, type B
- RS-232 serial port: 1x 3-pin phoenix connector
- Mounting kit included
- Dimensions (W x D x H): 190mm x 114mm x 25mm
- Shipping weight (Kit): 0.8kg
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)

### IP200UHD-RX

- Video input: 1x LAN RJ45 connector,
- Video output: 1x HDMI type A, female
- Audio output: 2x RCA L/R analogue audio
- Ethernet port: 1x LAN RJ45 connector (video extension)
- USB / KVM: 2x USB, type A
- RS-232 serial port: 1x 3-pin phoenix connector
- IR input: 1x 3.5mm stereo jack
- IR output: 1x 3.5mm mono jack
- Firmware Update: 1x Micro B USB
- Mounting kit included
- Dimensions (W x D x H): 190mm x 114mm x 25mm
- Shipping weight (Kit): 0.8kg
- Operating temperature: 32°F to 104°F (0°C to 40°C)
- Storage temperature: -4°F to 140°F (-20°C to 60°C)

## Package Contents

### IP200UHD-TX

- 1x IR Emitter
- 1x Mounting kit for IP200UHD-TX
- 1x 5v IR receiver (IRR)
- 1x ID sticker

### IP200UHD-RX

- 1x IP200UHD-RX
- 1x Mounting kit for IP200UHD-RX
- 1x 5v IR emitter (IR1)
- 1x 5v IR receiver (IRR)
- 1x ID sticker

## 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.

Notes...

**BLUSTREAM** 

