

# ▶ Blustream Multicast IP250UHD-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. The IP250UHD is an industry leading 4K HDCP 2.2 HDMI distribution platform that using visually lossless compression technology, delivers HDMI, Dante audio connectivity, bi-directional IR, RS-232, USB/KVM and CEC up to lengths of 100m over standard network architecture, or greater distances using the in-built fibre SFP port.

The IP250UHD features dual RJ45 network ports for independent or combined HDMI and/or Dante signal distribution. The unit can be powered via PoE from the 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.

## Features

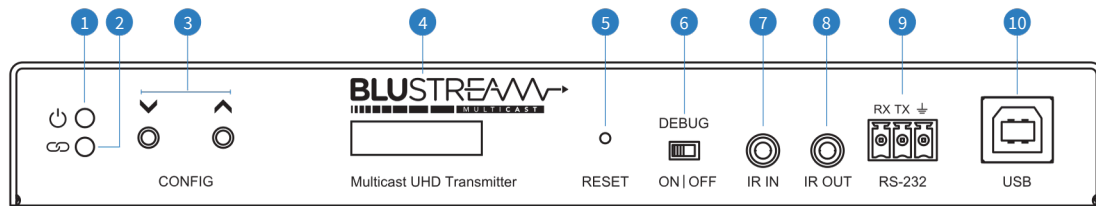
- Advanced UHD video over 1Gb Network
- Virtually unlimited system size
- Extends HDMI and Dante up to a distance of 100m over a single CAT cable
- Dual RJ45 network ports configurable for independent or combined HDMI and Dante signal distribution
- SFP port for independent or combined HDMI and Dante signal distribution over a single fibre cable
- Compatible with most 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 HDR input @ 4K 24 / 25 / 30Hz
- Features 1 x HDMI loop-out on IP250UHD-TX for integrating local displays or cascading to multiple devices
- In-built 2ch Dante transmitter for breakout of audio from HDMI source or local analogue audio input
- In-built 2ch Dante receiver for embedding of audio onto the HDMI signal or breakout to local analogue audio output
- 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 via copper or fibre interfaces (no network switch required)
  - One-to-many HDMI extender (no network switch required)
- Video up-scaling and down-scaling up to 4K 30Hz UHD video output
- Analogue L/R audio embedding and de-embedding on IP250UHD-TX Transmitter
- Analogue L/R audio breakout on IP250UHD-TX Transmitter and IP250UHD-RX Receiver
- Advanced signal management for independent routing of IR, RS-232, USB/KVM, audio and video
- OLED front panel display for advanced system information and manual configuration
- HDCP 2.2 compliant with advanced EDID management
- PoE (Power over Ethernet) to power Blustream products from PoE switch
- Local 24V power supply should network switch not support PoE (not included)
- Simple configuration via web-GUI through the ACM200 / ACM210
- RS-232, IR and Telnet/IP integration for control of Multicast system using Blustream ACM200 / ACM210
- 3rd party drivers available for major 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. For larger systems, we would also recommend separating Video over IP and Dante networks using the 2nd LAN port on these units to ensure performance of both elements can be configured within the chosen switch where settings may slightly differ on larger Dante systems.

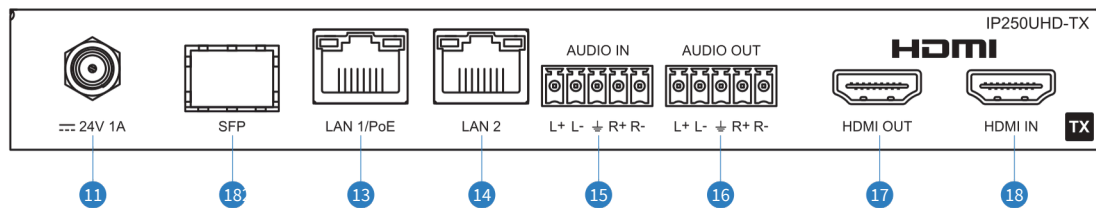
Please take care to make sure that you have read and understood the instructions in this manual and that you have setup your network switch correctly prior to connecting any Blustream Multicast products. Failure to do so will result in problems with configuration of the system and video performance.

# Panel Description - IP250UHD-TX Transmitter

## IP250UHD-TX Front Panel



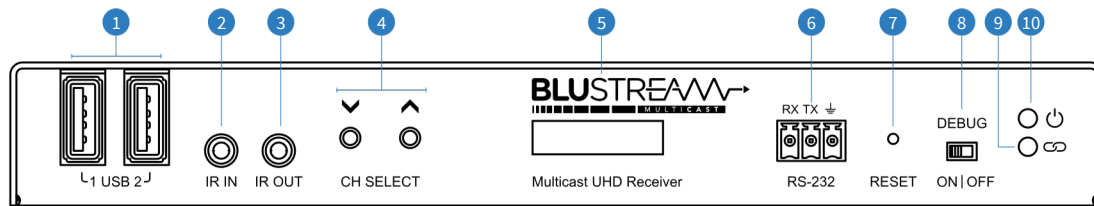
## IP250UHD-TX Rear Panel



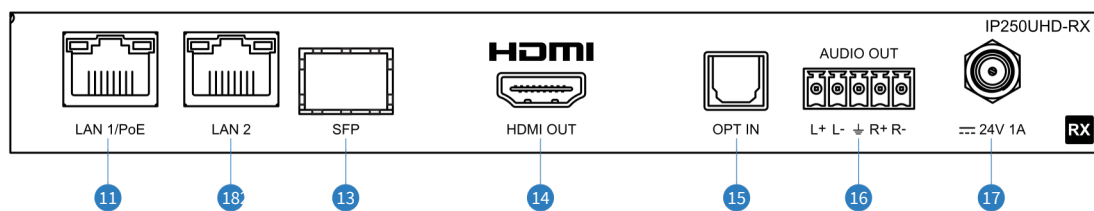
- 1 Power LED indicator
- 2 Link LED indicator - solid status light indicates a stable HDMI connection
- 3 Config select Up/Down - configure IP250UHD-TX manually and navigate through menu system
- 4 Status LCD - displays product information
- 5 Reset button - press and hold for 5 seconds to factory reset the product
- 6 Debug switch - used to gather debug information, leave in "Off" position during normal use
- 7 IR IN (IR input) – 3.5mm stereo jack. Transmits IR to any IP250UHD-RX receiver currently viewing the IP250UHD-TX, or to a single pre-defined Receiver for dedicated screen control (see Fixed Routing section). Please use supplied Blustream IRR 5V IR Receiver. When using the Blustream IRCAB cable (optional) ensure cable direction is correct
- 8 IR OUT - (IR output) - 3.5mm mono jack – routed IR from any IP250UHD-RX (zone output) allowing source control. Use supplied Blustream IRE1 5V IR emitter
- 9 Assignable bi-directional RS-232 port – connect to third party control device to extend RS-232 commands to any/multiple IP250UHD Multicast products RS-232 port
- q USB host connection for USB/KVM routing within Multicast system
- w Power port – use 24V 1A DC adaptor (sold separately) if not using a PoE network switch
- e SFP connection - connect to Layer 3 Managed switch SFP port for HDMI video and Dante audio distribution
- r LAN 1 connection (PoE) - connect to Layer 3 Managed switch for combined HDMI video and Dante audio distribution
- t LAN 2 connection - connect to Layer 3 Managed switch for independent HDMI video and/or Dante audio distribution
- y L/R Analogue audio line input - embed balanced or unbalanced analogue audio onto the HDMI or Dante signal
- u L/R Analogue audio line output - balanced or unbalanced 2ch audio breakout  
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
- i HDMI output – HDMI loop out to daisy chain the input signal or connect to local display
- o HDMI input – connect to a HDMI source

## Panel Description - IP250UHD-RX Receiver

### IP250UHD-RX Front Panel



### IP250UHD-RX Rear Panel



- 1 USB device connections for USB/KVM routing within Multicast system
- 2 IR IN (IR input) – 3.5mm stereo jack. Transmits IR to the IP250UHD-TX transmitter currently being viewed for IR source control. Please use supplied Blustream IRR 5V IR Receiver. When using the Blustream IRCAB cable (optional) ensure cable direction is correct
- 3 IR OUT - (IR output) - 3.5mm mono jack – routed IR from any IP250UHD-TX for IR control of the display (see Fixed Routing section). Use supplied Blustream IRE1 5V IR emitter
- 4 Channel select Up/Down - used to scroll through menu system, select sources (IP250UHD-TX) and setup IP250UHD-RX manually
- 5 Status LCD - displays product information
- 6 Assignable bi-directional RS-232 port – connect to third party control device to extend RS-232 commands to any or multiple IP250UHD Multicast products RS-232 port
- 7 Reset button - press and hold for 5 seconds to factory reset the product
- 8 Debug switch - used to gather debug information, leave in "OFF" position during normal use
- 9 Link LED indicator - solid status light indicates a stable HDMI connection
- q Power LED indicator
- w LAN 1 connection (PoE) - connect to Layer 3 Managed switch for combined HDMI video and Dante audio distribution
- e LAN 2 connection - connect to Layer 3 Managed switch for independent HDMI video or Dante audio distribution
- r SFP connection - connect to Layer 3 Managed switch SFP port for combined HDMI video and Dante audio distribution
- t HDMI output – connect to a HDMI display
- y Optical input - connect to TV's optical output to return TV audio via Dante to Transmitter or other Dante devices (2ch PCM audio support only)
- u L/R Analogue audio line output - balanced or unbalanced 2ch audio breakout  
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
- j Power port – use 24V 1A DC adaptor (sold separately) if not using a PoE network switch

## Network Port Configuration

The Blustream IP250UHD system features dual RJ45 LAN connections as well as an SFP connection to support greater cabling distances via the user of optic fibre cables. The Video signal and the Dante signal are distributed together via the LAN 1 RJ45 output, as well as via the SFP output simultaneously at the same time.

The LAN 2 RJ45 output can be configured to output either the Video signal or the Dante signal. This can be configured via the Web GUI of the specific Transmitter or Receiver. The chart below highlights this function:

VLAN MODE	LAN 1 / POE	LAN 2	SFP
0 (Default)	VoIP + Dante	Disabled	VoIP + Dante
1	VoIP	Dante	Disabled
2	VoIP/Dante	Follow PoE/LAN Port	VoIP + Dante

Note: The SFP ports should use UL Listed Optional Transceiver product, Rated 3.3Vdc, Laser Class 1.

## 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 IP250UHD-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** - Ethernet frames with more than 1,500 bytes of payload. Conventionally, jumbo frames can carry up to 9,000 bytes of payload.

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.

## Configuration & Control of an IP250UHD Multicast System

Blustream recommend the use of an ACM200 / ACM210 for configuration and control of the IP250UHD Multicast system.

The Blustream ACM includes a web interface module for simple 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, Audio and Video. Pre-built Blustream product drivers simplify Multicast product installation and negate the need for an understanding of complex network infrastructures. We recommend every IP250UHD Multicast system utilises an ACM. Please see the ACM User Manual for further information.

# Understanding Product Status Lights

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

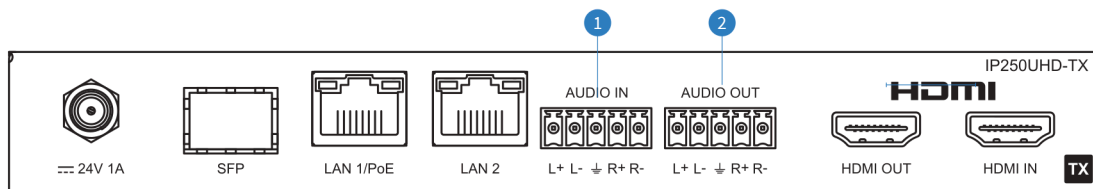


## Multicast Status Lights

- 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 (5-pin Phoenix connector)

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. It is also possible to embed the analogue audio input onto Dante audio to be transmitted independently throughout the 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 ACM web-GUI or front panel of the unit.

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 (5-pin Phoenix connector)

The analogue line level output can be used to breakout the embedded 2ch analogue source audio from the HDMI input signal or from any Dante audio device on the network.

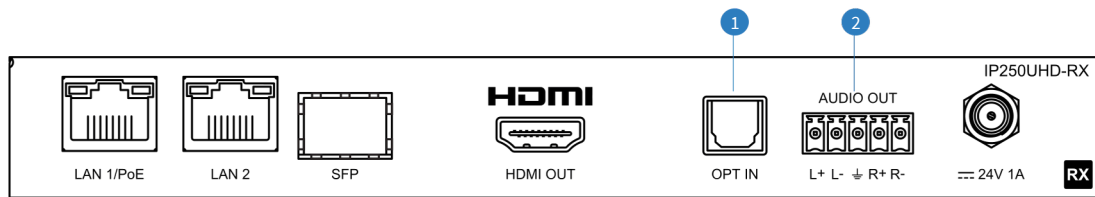
Please note: The source input must be PCM 2ch audio for the analogue audio output to work. The Blustream Multicast products do not down-mix 5.1ch audio signals.

It is possible to route the audio of the IP250UHD-RX as follows:

IP250UHD-TX INPUT	IP250UHD-TX OUTPUT
Analogue Input	HDMI Audio Output (to RX)
Analogue Input	Dante Output
HDMI Audio Input (TX)	Analogue Output
HDMI Audio Input (TX)	HDMI Audio Output (to RX)
HDMI Audio Input (TX)	Dante Output
Dante Input	Analogue Output
Dante Input	HDMI Audio Output (to RX)

# Audio Connections - Receiver

## Receiver Audio Breakout



### 1 Optical In (S/PDIF Toslink)

The IP250UHD-RX Multicast Receiver features an optical audio input that can be embedded onto the Dante Audio transmitter within the unit. This can allow the optical audio from a display be sent to any IP250UHD-TX or any Dante enabled device on the network, to effectively act as an audio return channel.

Please note: The Optical input must be PCM 2ch audio as the Dante chipset utilised can only support 2ch audio. The Blustream Multicast products do not down-mix 5.1ch audio signals.

### 2 Analogue L/R Line Level audio output (5-pin Phoenix connector)

The IP250UHD-RX Multicast Receiver includes audio breakout from the selected HDMI source to associated Analogue L/R audio outputs. Extracted audio can either be concurrent with the corresponding HDMI video output, or Dante can be used to select any Dante audio source on the network.

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.

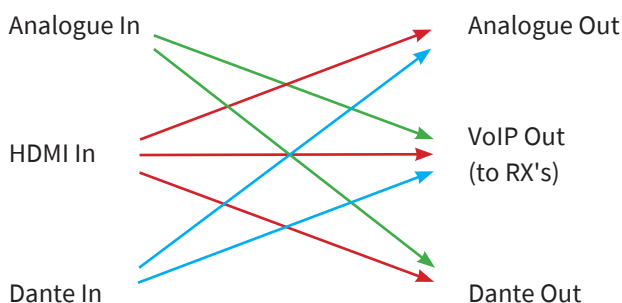
It is possible to route the audio of the IP250UHD-RX as follows:

IP250UHD-RX INPUT	IP250UHD-RX OUTPUT
S/PDIF Optical Input	Dante Output
HDMI Audio Input (from TX)	Analogue Output
HDMI Audio Input (from TX)	HDMI Audio Output (RX)
HDMI Audio Input (from TX)	Dante Output
Dante Input	Analogue Output
Dante Input	HDMI Audio Output (RX)

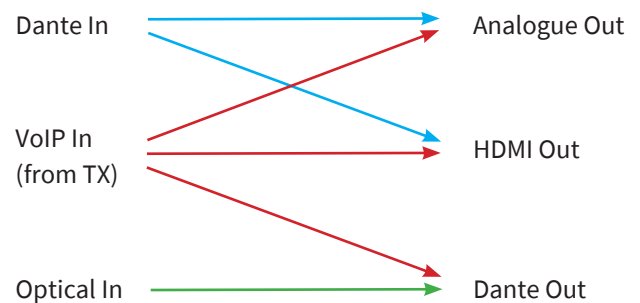
# Dante Audio Routing Capabilities

With varying combinations of how audio can be transmitted and received through the Multicast and Dante system, see below graphical overview of the differing routes audio distribution can be achieved with the IP250UHD system:

### Transmitter



### Receiver



## Interoperability

The IP250UHD units can be used in conjunction, or added into existing IP100UHD and IP200UHD Multicast systems. IP200UHD products are interchangeable with IP250UHD units, with the exception of USB (IP100UHD only), Dante audio and Optical audio functionality. However, the following needs to be considered prior to adding in IP250UHD products to an existing IP100UHD Blustream Multicast system:

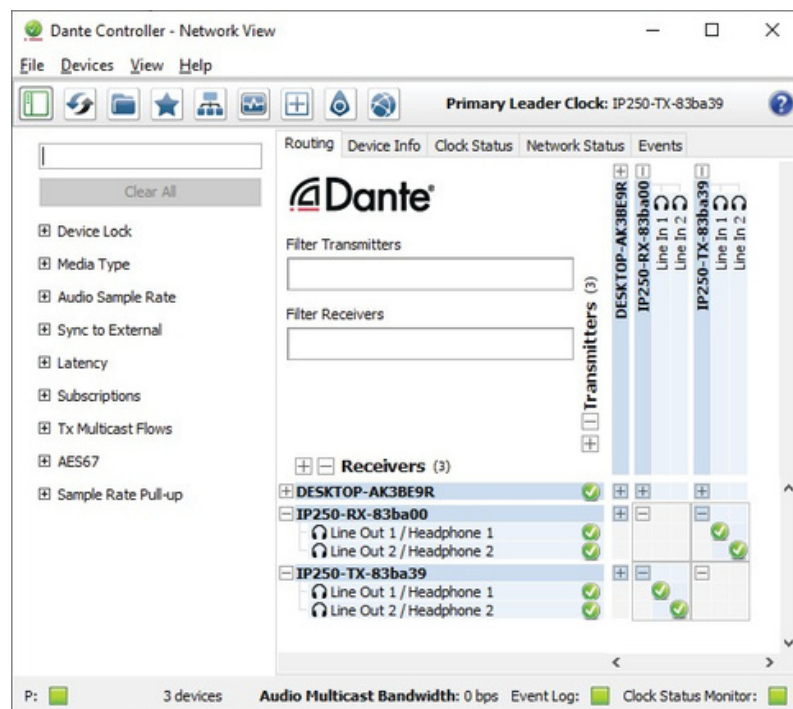
- USB / KVM connectivity and routing is not available with Blustream IP100UHD units.
- The firmware version of all IPxxxUHD units should be the same for the full feature set of the Multicast system to be used, and the units to work seamlessly together.
- For firmware versions of the IP100UHD-TX / RX 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 Blustream on the email address noted below.

## Dante Controller

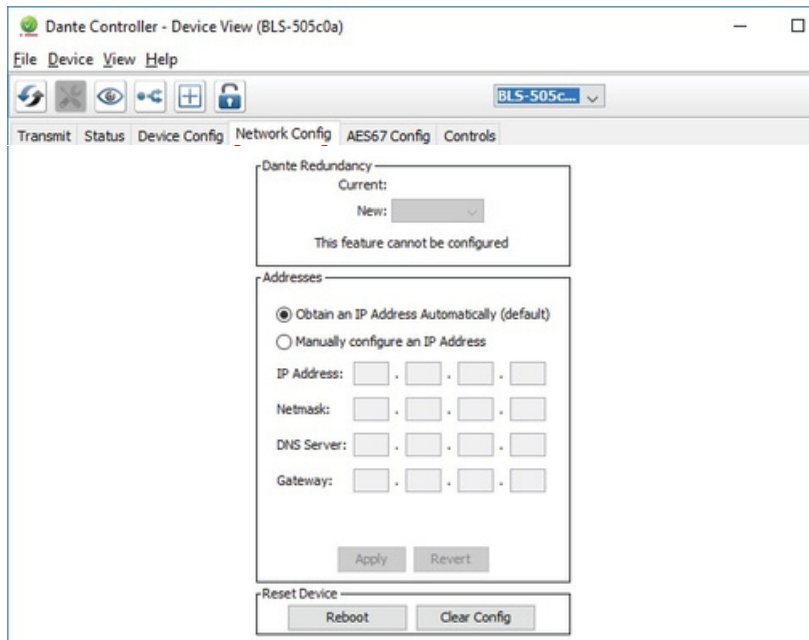
Dante Controller software is required in order to setup and configure the IP250UHD devices as well as control your Dante network. Audinate provide extensive training videos and documentation on their website. This can be found here: <http://www.audinate.com/products/software/dante-controller>

Upon connecting your IP250UHD unit to a compatible network, the Dante Controller software should automatically discover the devices. The IP250UHD will appear in Dante Controller with a name denoted with "IP250-TX" or "IP250-RX". On the "Routing" screen you can create audio routing between Dante transmitters and receivers in your system.

Please ensure your PC is on the same network as your Dante devices. Dante is not able to transmit over WiFi and it is recommended to hardwire into the Dante network. Having multiple network devices enabled can also confuse the Dante Controller software so it is recommended to disable WiFi during configuration.



By default the IP250UHD unit is shipped with its Dante network settings set to obtain an IP Address automatically. This means that if a DHCP server is present on your network, it will provide the unit with an IP Address. If no DHCP server is present then the unit will receive a default Dante IP Address in the 169.254.xxx.xxx range. To change the IP Address of the unit, you must enter the “Network Config” menu in the “Device Info” screen of the Dante Controller software.

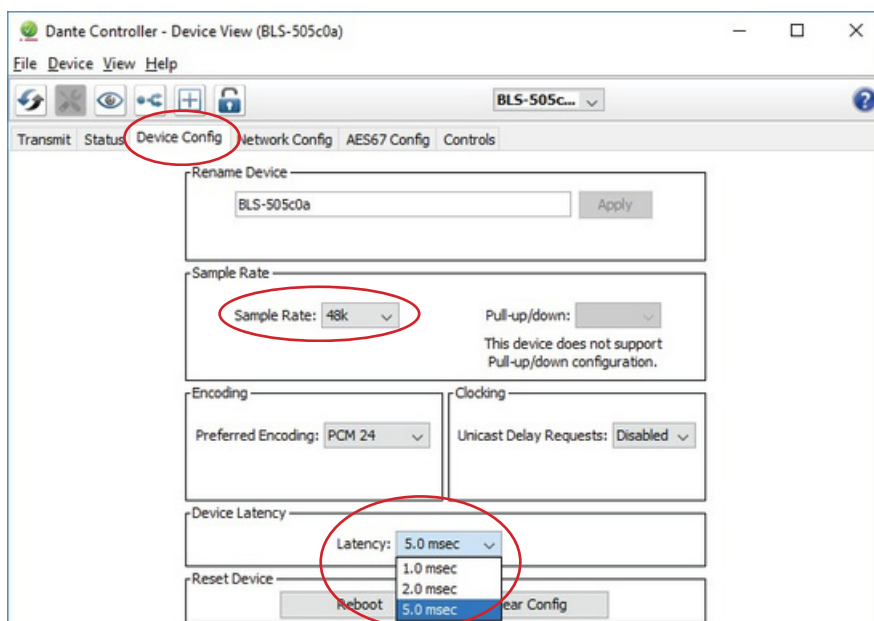


## Advanced Dante Settings

It is also possible to change the settings of the IP250UHD unit under the “Device Info” screen in the Dante Controller software. To do so, select the “Device Config” menu.

The sample rate and latency can be adjusted here. Please note that Dante products can only transmit or receive audio from other Dante products that are set up with the same sample rate. A mismatch in sample rate may stop audio from transmitting.

Under the “Device Config” screen we can also adjust the network device latency from 1, 2 or 5 milliseconds.



# InfraRed Control

The Blustream Multicast system can be controlled using local IR hardware connected directly to the IP250UHD-RX Receiver. This prevents the need for a third party control solution for switching. 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 be required.

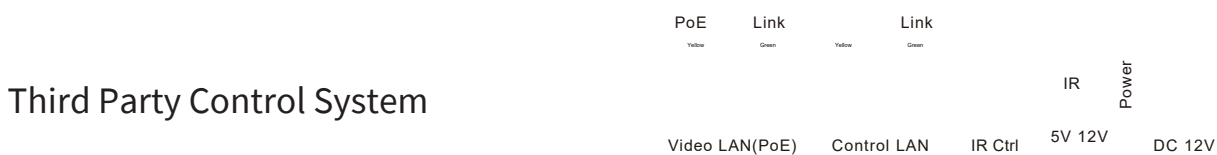
Blustream have created 80x IR commands allowing source selection of up to 80x IP250UHD-TX Transmitters. For systems larger than 80x source devices (IP250UHD-TX) the ACM control module is required.

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 IP250UHD-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.

1	2	3	4
41	42	43	44
5	6	7	8
45	46	47	48
9	10	11	12
49	50	51	52
13	14	15	16
53	54	55	56
17	18	19	20
57	58	59	60
21	22	23	24
61	62	63	64
25	26	27	28
65	66	67	68
29	30	31	32
69	70	71	72
33	34	35	36
73	74	75	76
37	38	39	40
77	78	79	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

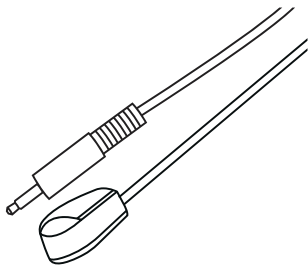
The Blustream range of Multicast products include multiple options for control and routing of IR.

**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 IRCAB cable for IR conversion.**

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

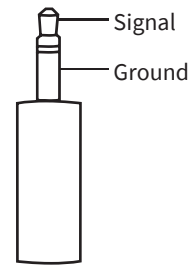
IR Emitter - IER1 & IRE2 (IRE2 sold separately)

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



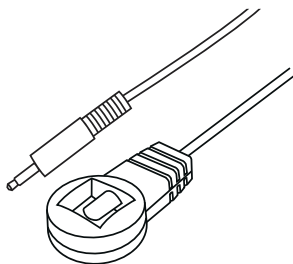
Infrared 3.5mm Pin-Out

IR Emitter - Mono 3.5mm

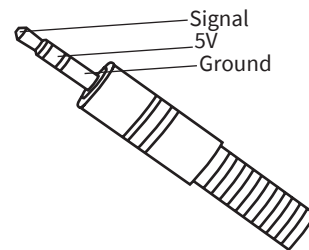


IR Receiver - IRR

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



IR Receiver - Stereo 3.5mm

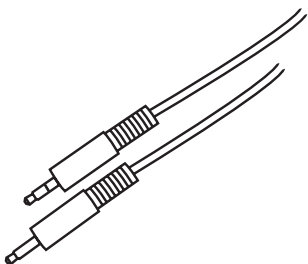


IR Control Cable - IRCAB (sold separately)

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.

Please note: Cable is directional as indicated



## InfraRed Pass-Through (Source Control)

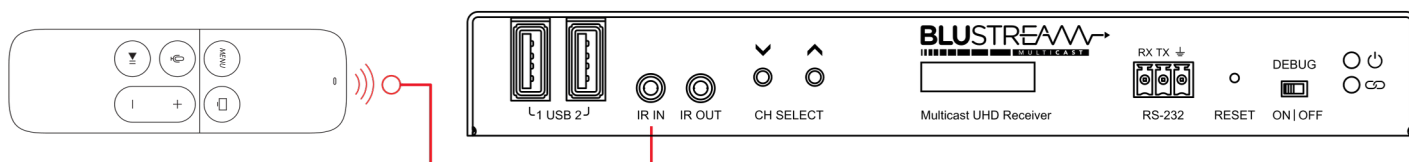
The Multicast products feature InfraRed pass-through allowing users to use an original source remote to control the sources located remotely.

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.

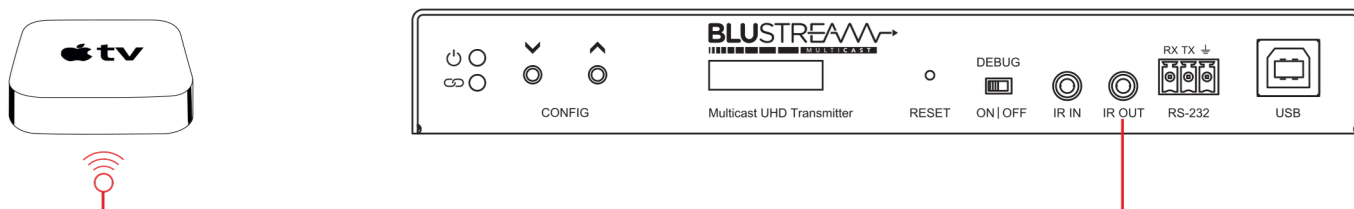
Please note: The IR pass-through features are available in all modes of Multicast use (matrix mode, video-wall, one-to-one, and one-to-many)

### Connections:

The IRR - IR receiver is connected to the IR IN socket on the IP250UHD-RX.



The IRE1 - IR emitter is connected to the IR OUT socket on the IP250UHD-TX and the bud should be located directly on top of the IR receiver window of the source device.



# InfraRed Pass-Through (Display Control)

Using the ACM control module, IR can be routed independently from any IP250UHD-TX to any IP250UHD-RX unit for display control, regardless of the current video stream routing between a receiver and another transmitter.

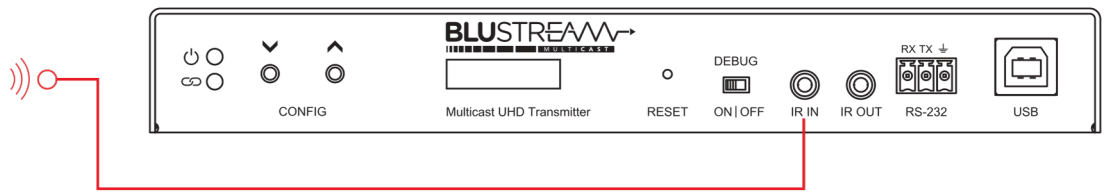
Instructions for the configuration of Fixed Routing can be found in the ACM User Manual, downloadable from the Blustream website. The commands for fixed routing can be found at the rear of these manuals.

### Connections:

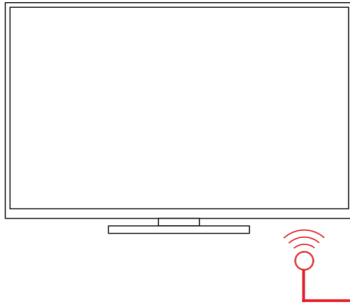
When using third party 12V IR control solutions please use Blustream IRCAB cable for IR conversion from 12V to 5V. If the control system uses a 5V IR line, then a straight-through stereo 3.5mm cable can be used. Connect the IR output of the third party control system to the IR IN of the IP250UHD-TX.

BLUSTREAM

Third Party Control System



The IRE1 - IR emitter is connected to the IR OUT socket on the IP250UHD-RX and the bud should be located directly on top of the IR receiver window of the display device.



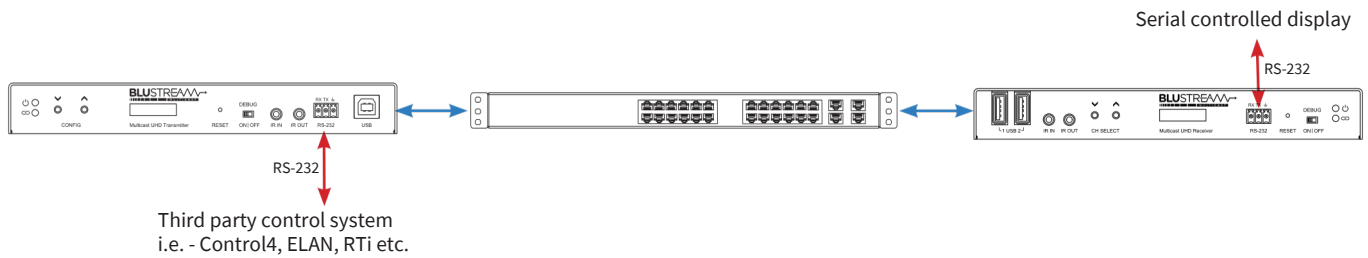
# RS-232 (Serial) Bi-Directional Pass-Through

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:

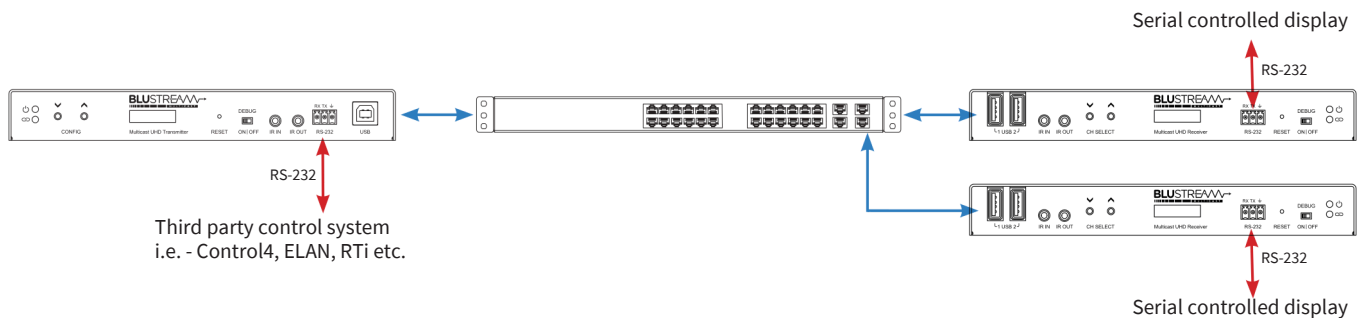
## 1) Type-1 Redirection Mode: 1-to-1 routed RS-232

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.



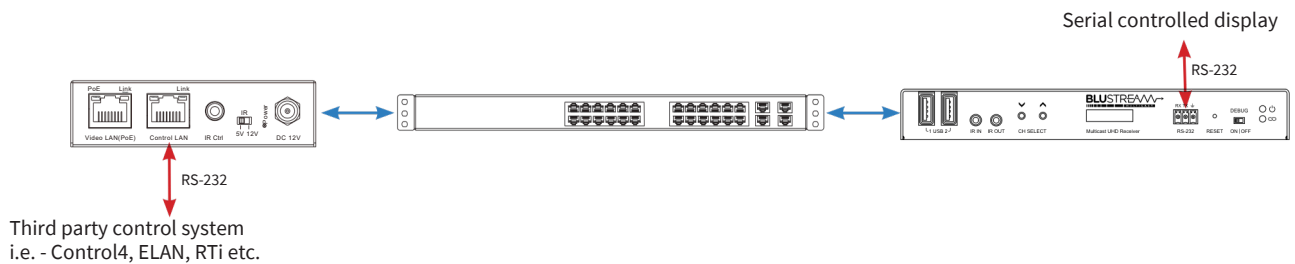
## 2) Type 2 Dumb Redirection Mode - 1-to-many routed RS-232

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 ACM control module and any IP250UHD-TX or RX (Transmitter or Receiver) product in the system. Telnet/IP commands are sent into the ACM 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 individual web-GUI of the IP250UHD-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**

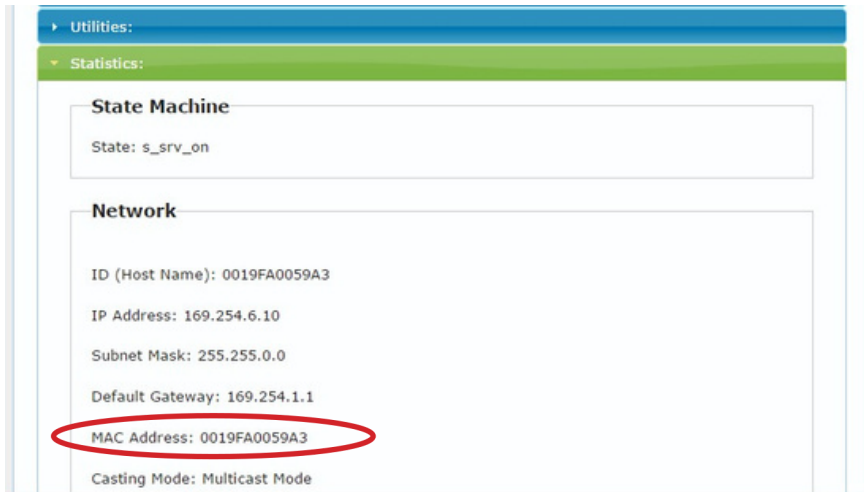
Factory Default Reboot

**Console API Command**

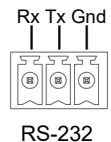
Apply

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

- Connect to the web-GUI 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)

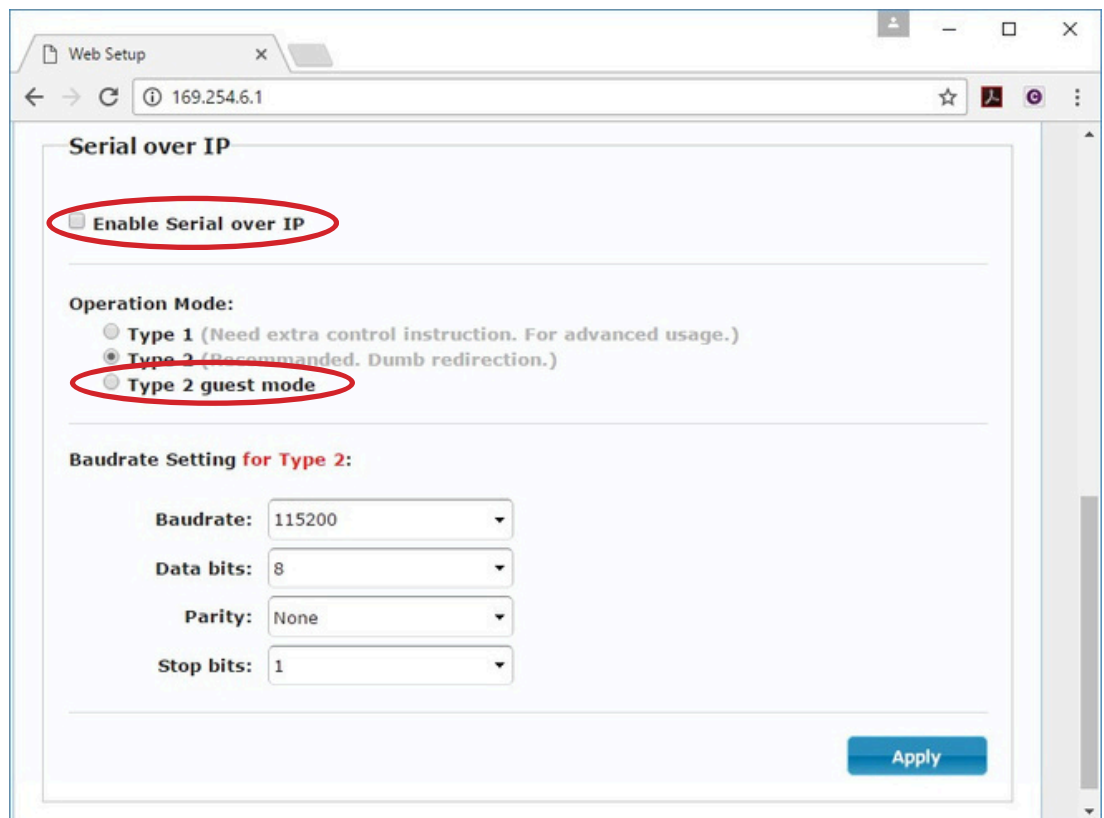
Please note: As soon as the IP250UHD-TX or -RX sees the command '0E' (even if part of a third party command) it will close serial communication between the Multicast products.

## 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 ACM. 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 IP250UHD-TX and RX unit in order to use this functionality. Connect to the web-GUI of the IP250UHD-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 ACM and an IP250UHD-TX or RX unit send the following command via IP or RS-232:  
INxxxGUEST            Connect to TX xxx in Guest Mode from the ACM  
OUTxxxGUEST         Connect to RX xxx in Guest Mode from the ACM  
Example:            Transmitter one is ID 001, meaning 'IN001GUEST' will allow bi-directional Serial or TCP/IP commands between ACM and Transmitter 001.
- 2) Once a connection is established, any characters sent from the ACM will be transmitted to the IP250UHD-TX or RX it is connected with, and vice versa.
- 3) To close the connection send the command: CLOSEACMGUEST

## 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 (TX), and Scaler output selection (RX).

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

Please note: Advanced features such as video wall creation cannot be setup via manual configuration, and requires the ACM web-GUI.

### Manually configuring an IP250UHD-TX:

- 1) Power the IP250UHD 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 will display 'Boot up' whilst booting and display the TX Name when complete. This will be 'Source000' if the unit has default settings.
- 2) Put the IP250UHD-TX into 'Manual Configuration' mode - once the product is powered press both the 'UP' and 'DOWN' channel buttons on the front panel at the same time for 5 seconds to enter 'Manual Configuration' mode. The front display of the product will show 'Manual Configuration' when it is in this mode. Release both buttons when 'Manual Configuration' is displayed.



- 3) Assign the Transmitter ID (IP address) - once the product is in Manual Configuration mode the display will begin to show 'Choose TX No.' to indicate the assigning of the transmitters identity. The identity number will also be the IP address that is automatically assigned, so is of utmost importance that an individual ID is not equal to another TX unit in the system that has already been 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 TX 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 show 'Set TX EDID' 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. The EDID format (resolution and audio format) will be shown on the display. A full list of EDID settings can be found on the 'EDID Control' page.

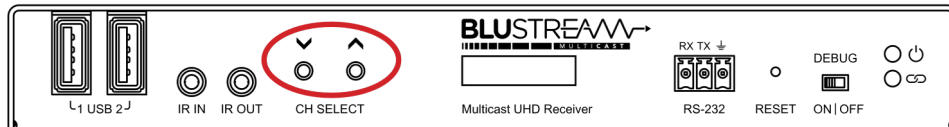
Once the required EDID has been selected, press both Channel 'UP' and 'DOWN' buttons together to finalise the manual configuration process.

"Applying Configuration" will be shown on the display and then the Multicast Transmitter will reboot with the new settings applied.

### Manually configuring the IP250UHD-RX:

1) Power the IP250UHD 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 will display 'Boot up' whilst booting and display a the RX Name when complete. This will be 'Receiver000' if the unit has default settings.

2) Put the IP250UHD-RX into 'Manual Configuration' mode - once the product is powered press both the 'UP' and 'DOWN' channel buttons on the front panel at the same time for 5 seconds to enter 'Manual Configuration' mode. The LCD front display of the product will show 'Manual Configuration' when it is in this mode. Release both buttons when 'Manual Configuration' is displayed.



3) Assign the Receiver ID (IP address) - once the product is in Manual Configuration mode the display will show 'Choose RX No.' to indicate the receiver identity number that is going to be assigned. The identity number 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 that has already been assigned:

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

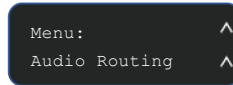
4) Set the Video Scaler of the Receiver - once the product ID has been configured the display will show 'Set Scaler Res' to indicate that the scaler output is next to be configured. Use the 'UP' or 'DOWN' arrows to select the scaler setting required. The scaler resolution will be shown on the display.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

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

"Applying Configuration" will be shown on the display and then the Multicast Receiver will reboot with the new settings applied.

# Front Panel Menu System - Transmitter

The BlustreamMulticastSystem allows you to adjust keysettingsand view configuration information through the front panel LED display. To access the configuration menu, press and hold the 'UP' arrow button on the front panel of the unit for 5 seconds. The front display of the product will show 'Menu' when it is in the configuration menu.



Using the 'UP' and 'DOWN' buttons you can navigation through the menu system on screen. To select a menu item, hold both 'UP and 'DOWN' arrows together for 5 seconds. The Transmitter menu system layout is as follows:

TOP MENU	SUB MENU	SELECTION	NOTES	
Audio Routing	Analogue Out	HDMI In	Select HDMI audio input to Analogue output	
		Dante In	Select Dante audio input to Analogue output	
		Back	Return to previous menu	
	HDMI Out	Analogue In	Select Analogue input to HDMI output	
		HDMI In	Select HDMI input to HDMI output	
		Dante In	Select Dante input to HDMI output	
		Back	Return to previous menu	
	Dante Out	Analogue In	Select Analogue input to Dante output	
		HDMI In	Select HDMI input to Dante output	
		Back	Return to previous menu	
	EDID	EDID 00	1080P, 2CH Stereo	Select 1080P, 2CH Stereo Audio EDID
		EDID 01	1080P, 5.1CH Audio	Select 1080P, 5.1CH Audio EDID
EDID 02		1080P, 7.1CH Audio	Select 1080P, 7.1CH Audio EDID	
EDID 03		1080i, Stereo 2CH	Select 1080i, Stereo 2CH EDID	
EDID 04		1080i, 5.1CH Audio	Select 1080i, 5.1CH Audio EDID	
EDID 05		1080i, 7.1CH Audio	Select 1080i, 7.1CH Audio EDID	
EDID 06		1080P 3D, 2CH Stereo	Select 1080P 3D, 2CH Stereo EDID	
EDID 07		1080P 3D, 5.1CH Audio	Select 1080P 3D, 5.1CH Audio EDID	
EDID 08		1080P 3D, 7.1CH Audio	Select 1080P 3D, 7.1CH Audio EDID	
EDID 09		4K 30Hz 4:4:4, 2CH Stereo	Select 4K 30Hz 4:4:4, 2CH Stereo EDID	
EDID 10		4K 30Hz 4:4:4, 5.1CH Audio	Select 4K 30Hz 4:4:4, 5.1CH Audio EDID	
EDID 11		4K 30Hz 4:4:4, 7.1CH Audio	Select 4K 30Hz 4:4:4, 7.1CH Audio EDID	
EDID 12		DVI 1280x1024	Select DVI 1280x1024 EDID	
EDID 13		DVI 1920x1080	Select DVI 1920x1080 EDID	
EDID 14		DVI 1920x1200	Select DVI 1920x1200 EDID	
EDID 15		Default EDID	Select Default EDID (4k/60hz/4:2:0)	
EDID 16		4K 60Hz 4:2:0, 2CH Stereo	Select 4K 60Hz 4:2:0, 2CH Stereo EDID	
EDID 17		4K 60Hz 4:2:0, 5.1CH Audio	Select 4K 60Hz 4:2:0, 5.1CH Audio EDID	
EDID 18		4K 60Hz 4:2:0, 7.1CH Audio	Select 4K 60Hz 4:2:0, 7.1CH Audio EDID	
	Back	-	Return to previous menu	
IP Info	IP Address	IP: 169.254.3.1	Shows product IP address	
	Subnet	255.255.0.0	Shows product subnet mask	
	Gate way	169.254.1.1	Shows product gateway IP address	
	MAC	34D0B82143F9	Shows product MAC address	
	Back	-	Return to previous menu	
Dante Info	Name	Tx ID 001	Shows Dante device name	
	MAC	001DC183BA39	Shows Dante device MAC address	
	Back	-	Return to previous menu	
F/W Info	ASpeed	ASpeed: A7.4.2	Shows ASpeed firmware version	
	Web UI	A2.0	Shows Web GUI firmware version	
	MCU	A1.7	Shows MCU firmware version	
	Back	-	Return to previous menu	
Exit			Exits configuration menu	

# Front Panel Menu System - Receiver

The process to access the menu system of the receiver is the same as the transmitter however the layout is as follows:

TOP MENU	SUB MENU	ITEMS	NOTES
Audio Routing	Analogue Out	HDMI In	Select HDMI audio input to Analogue output
		Dante In	Select Dante audio input to Analogue output
		Back	Return to previous menu
	HDMI Out	HDMI In	Select HDMI input to HDMI output
		Dante In	Select Dante input to HDMI output
		Back	Return to previous menu
	Dante Out	HDMI In	Select HDMI input to Dante output
		Optical In	Select Optical input to Dante output
		Back	Return to previous menu
Scaler	Scaler 00	Pass Through	Select 1080P, 2CH Stereo Audio EDID
	Scaler 01	1080P 50Hz	Select 1080P, 5.1CH Audio EDID
	Scaler 02	1080P 60Hz	Select 1080P, 7.1CH Audio EDID
	Scaler 03	720P 60Hz	Select 1080i, Stereo 2CH EDID
	Scaler 04	720P 50Hz	Select 1080i, 5.1CH Audio EDID
	Scaler 05	1280x1024 60Hz	Select 1080i, 7.1CH Audio EDID
	Scaler 06	1024x768 60Hz	Select 1080P 3D, 2CH Stereo EDID
	Scaler 07	1360x768 60Hz	Select 1080P 3D, 5.1CH Audio EDID
	Scaler 08	1440x900 60Hz	Select 1080P 3D, 7.1CH Audio EDID
	Scaler 09	1680x1050 60Hz	Select 4k 30Hz 4:4:4, 2CH Stereo EDID
	Scaler 10	4k 30Hz	Select 4k 30Hz 4:4:4, 5.1CH Audio EDID
	Scaler 11	4k 24Hz	Select 4k 30Hz 4:4:4, 7.1CH Audio EDID
	Back	-	Return to previous menu
			*Receiver will reset if Scaler setting is selected
Max Channel	Max TX	Selection from 0-99	Select the max channels (TX) this device can view *Receiver will reset when Max Channel is selected
Viewing Mode	Matrix	-	Shows product status is in Matrix mode
	Video Wall	-	Shows product status is in Video Wall mode
	Back	-	Return to previous menu
IP Info	IP Address	IP: 169.254.3.1	Shows product IP address
	Subnet	255.255.0.0	Shows product subnet mask
	Gate way	169.254.1.1	Shows product gateway IP address
	MAC	34D0B82143F9	Shows product MAC address
	Back	-	Return to previous menu
Dante Info	Name	Tx ID 001	Shows Dante device name
	MAC	001DC183BA39	Shows Dante device MAC address
	Back	-	Return to previous menu
F/W Info	ASpeed	ASpeed: A7.4.2	Shows ASpeed firmware version
	Web UI	A2.0	Shows Web UI firmware version
	MCU	A1.7	Shows MCU firmware version
	Back	-	Return to previous menu
Exit			Exits configuration menu

## 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 IP250UHD-TX Transmitter meaning there is only a single EDID handshake. As each Blustream Multicast IP250UHD-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 IP250UHD-RX Receiver (max 4K 60Hz 4:2:0 or 4K 30Hz 4:4:4).

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

- 1) During the manual configuration of the IP250UHD-TX Transmitter - see previous pages
- 2) Using the Multicast web-GUI interface (by addressing the unit via it's IP Address within a browser)
- 3) Using the web-GUI of the Blustream ACM
- 4) Using IP / RS-232 commands via the Blustream ACM

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

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

Please note: The Blustream Multicast products do not down-mix 5.1ch audio signals. Should the end-points (displays) only support 2ch PCM, or Dante audio features are used, 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 IP250UHD-RX Receiver - see previous pages
- 2) Using the Multicast web-GUI interface (by addressing the unit via it's IP Address within a browser)
- 3) Using the web-GUI of the Blustream ACM
- 4) Using IP / RS-232 commands via the Blustream ACM

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 1080p@50Hz HDMI
01	1080p@60Hz HDMI 720p@60Hz HDMI 720p@50Hz HDMI 1280x1024@60Hz HDMI	
02	1024x768@60Hz HDMI 1360x768@60Hz HDMI 1440x900@60Hz HDMI 1680x1050@60Hz	
03	HDMI 2160p@30Hz HDMI 2160p@24Hz	
04		
05		
06		
07		
08		
09		
10		
11		

Please note: the maximum output resolution of the IP250UHD-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 IP250UHD-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) / [www.blustream-us.com](http://www.blustream-us.com)

The 'Downloads' tab contains all of the relevant data you will need to configure your IP2xxUHD system.

Key Features	Specifications	Box Contents	Downloads	Control Drivers	Firmware	Enquiry
						
						
						

## IP250UHD Firmware Update

Prior to commencing installation of your Multicast system, it is important that the Blustream IP250UHD-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 IP250UHD firmware can be achieved in 2 ways:

- 1) Using the 'Firmware Update' feature in the ACM. This is the easiest method.
- 2) Using the individual IP250UHD-TX or RX web-GUI interfaces.

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 IP250UHD-TX or -RX product
  - b) The Blustream IP250UHD product directly which must be powered locally using a 24-56V DC 1A power supply (sold separately)
- 2) In order to communicate with the Blustream IP250UHD product a computer must also be in the same IP range as the Blustream IP250UHD-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 IP250UHD-TX/RX is:

**169.254.100.254**

## Accessing the IP250UHD 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 IP250UHD Transmitter or Receiver.

Following configuration using the ACM 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 front panel of the device should display its IP address.

The 'Scan' feature within the 'Project' menu of the ACM web-GUI can also be used to show all connected Multicast products within a system. Entering the fixed IP address (for a singular new unit), 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 the password: **1 2 3 4**

### Transmitters:

The first product to be assigned an IP address when using the ACM 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 the ACM200 web-GUI.

### Receivers:

The first product to be assigned an IP address when using the ACM 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 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 units web-GUI is similar in function to the ACM with many of the options in the web-GUI being concurrently available within the ACM, 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 - IP250UHD

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

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

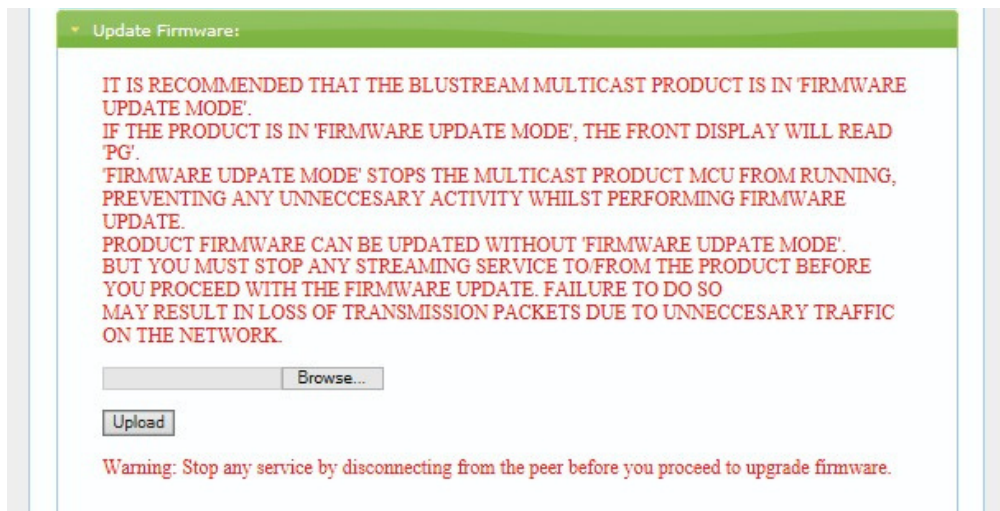
Version Information: an overview of the individual unit, including model number and firmware version.



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 IP250UHD-TX or IP250UHD-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 relevant '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.

Please note: DO NOT unplug the power or network connection to the IP250UHD-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):

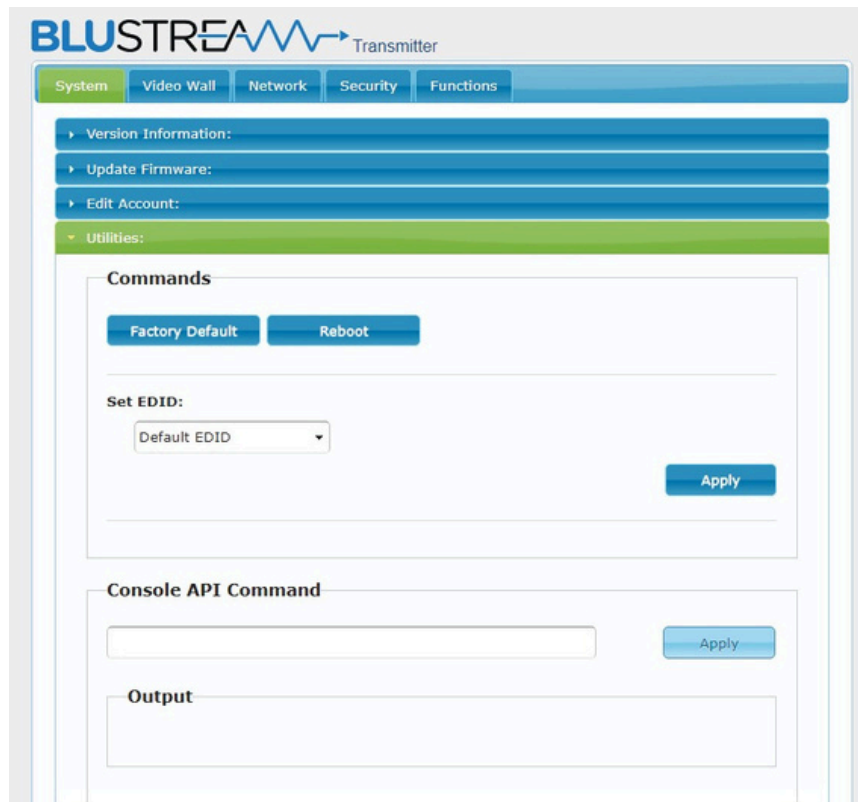
Factory Default - resets the Transmitter or Receiver to factory settings. The IP address will revert to: 169.254.100.254 once the unit has rebooted.

Reboot - reboots the Transmitter or Receiver unit.

Set EDID (Transmitter units only) - as per page 22 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 the ACM 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.

The Lan 2 RJ45 port can also be allocated to output either VoIP or Dante signals.

Please note: amending the IP address of Multicast products may prevent other Multicast equipment or the ACM from being able to communicate with the unit.

**Casting mode** (same for both TX and RX):

Allows you to specify if the device broadcasts or transmits in Multicast mode or Unicast mode.

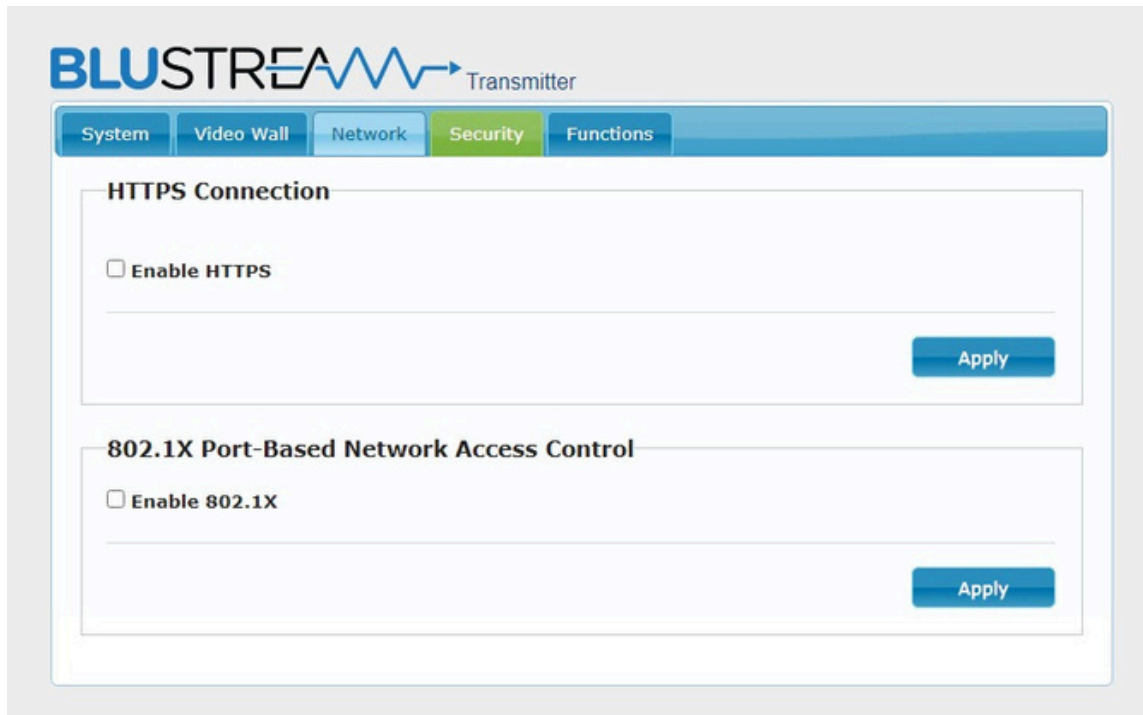
It is recommended to leave this setting in Multicast mode. Changing this to Unicast mode may only allow the device to be transmitted to 1 other device on the network.

The screenshot displays the web-GUI for a Blustream Transmitter, specifically the 'Network' configuration page. The interface includes a navigation bar with tabs for System, Video Wall, Network, Security, and Functions. The 'Network' tab is active, showing the 'IP Setup' section. In this section, 'IP Mode1:' is set to 'Static'. Below this, there are input fields for 'IP Address' (169.254.3.2), 'Subnet Mask' (255.255.0.0), and 'Default Gateway' (169.254.3.1). A 'Lan 2 port allocation' dropdown menu is set to 'Dante'. An 'Apply' button is located at the bottom right of the IP Setup section. The 'Casting Mode' section below shows 'Multicast' selected, with 'Unicast' also available. A checkbox for 'Auto select USB operation mode per casting mode (recommended)' is unchecked. Another 'Apply' button is at the bottom right of the Casting Mode section.

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

Enable HTTPS - changes the method of accessing the web Gui of Transmitter or Receiver to use HTTPS instead of HTTP. The web address of the device will need to be prefixed with HTTPS:// in order to access the web GUI once enabled.

Enable 802.1X - enabling this feature will enable 802.1X functionality. Your network infrastructure will need to support this to allow this function to operate correctly.



The screenshot displays the web interface for a BLUSTREAM Transmitter. At the top left is the BLUSTREAM logo with the word "Transmitter" to its right. Below the logo is a navigation bar with five tabs: "System", "Video Wall", "Network", "Security", and "Functions". The "Security" tab is currently selected and highlighted in green. The main content area is divided into two sections. The first section is titled "HTTPS Connection" and contains a checkbox labeled "Enable HTTPS" which is currently unchecked. Below the checkbox is a horizontal line, and to the right of this line is a blue "Apply" button. The second section is titled "802.1X Port-Based Network Access Control" and contains a checkbox labeled "Enable 802.1X" which is also unchecked. Below this checkbox is another horizontal line, and to the right is a second blue "Apply" button.

**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: allows you to assign the source input (Analogue in, HDMI in, Dante in) for each of the available audio outputs (Receiver out / Analogue out / Dante out).

The screenshot shows the BLUSTREAM Transmitter web interface. The 'Functions' tab is selected. The 'Video over IP' section contains the following settings:

- Enable Video over IP
- Enable Video Wall
- Maximum Bit Rate: Best Effort
- Maximum Frame Rate: Capture up to 100% of frames (slider at 100%)

The 'Audio over IP' section contains a table for assigning source inputs to outputs:

	Analogue In	HDMI In	Dante In
Receiver Output	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Analogue Output	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dante Output	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Functions (Receiver):**

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

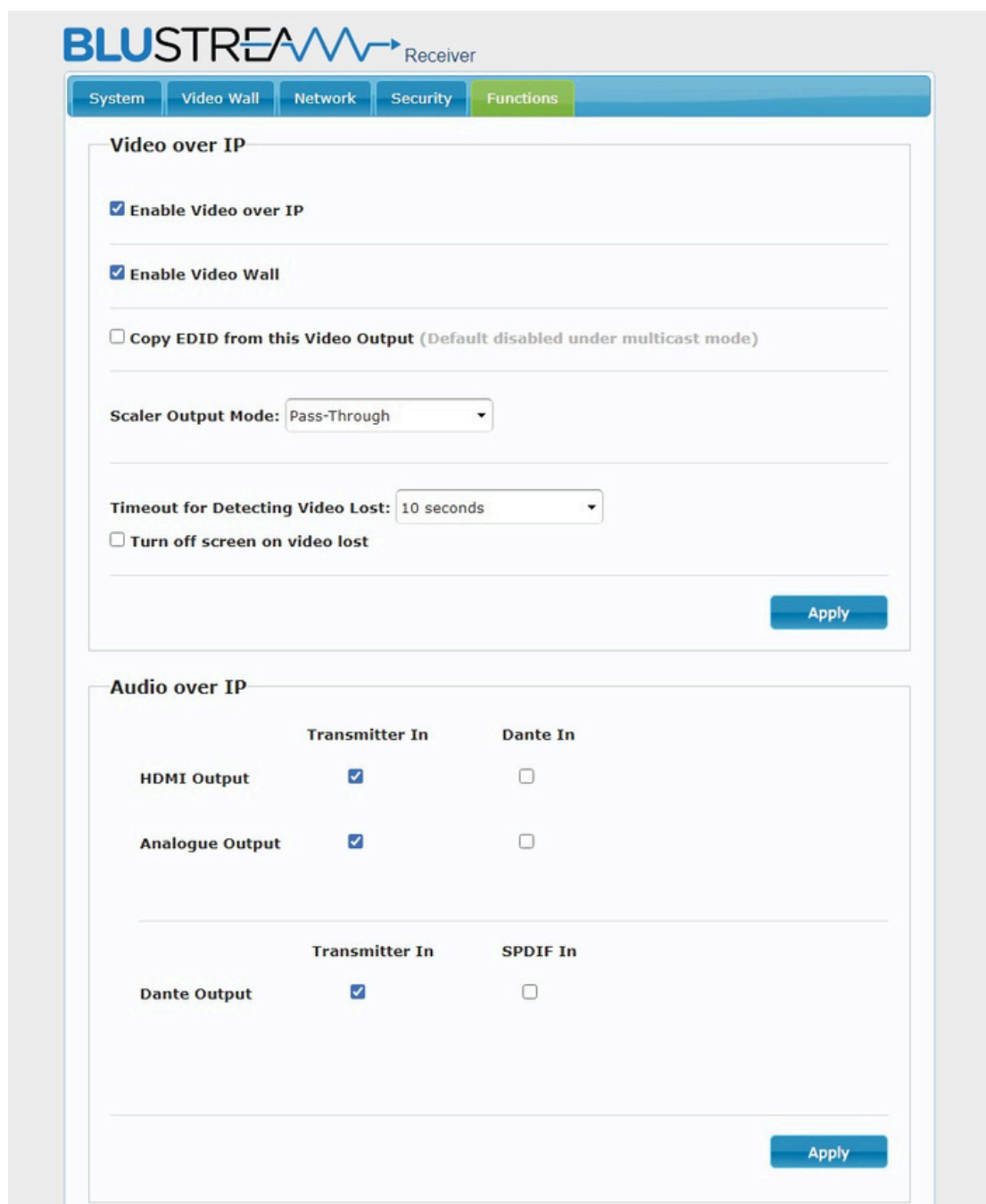
Enable Video Wall: on by default. Un-checking this will remove Video Wall functionality from the unit.

Copy EDID from the Video Output: we recommend using the ACM web-GUI to perform the Copy EDID function within a system.

Scaler Output Mode: as per page 23, 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: allows you to assign the source input (Transmitter in or Dante in) for each of the available audio outputs (HDMI out or Analogue out), as well as for the Dante out ( Transmitter in or SPDIF in).



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

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.

### USB over IP

Enable USB over IP

---

**Operation Mode:**

Auto select mode (Recommended, choose per network casting mode)

Active on link (Unicast network's default mode)

Active per request (Multicast network's default mode)

---

**Compatibility Mode:**

Mouse not responding well (Check when USB mouse responding is slow and queer)

K/M over IP (Uncheck when mouse/keyboard/touch panel not working as expected)

---

Apply

### 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:

Data bits:

Parity:

Stop bits:

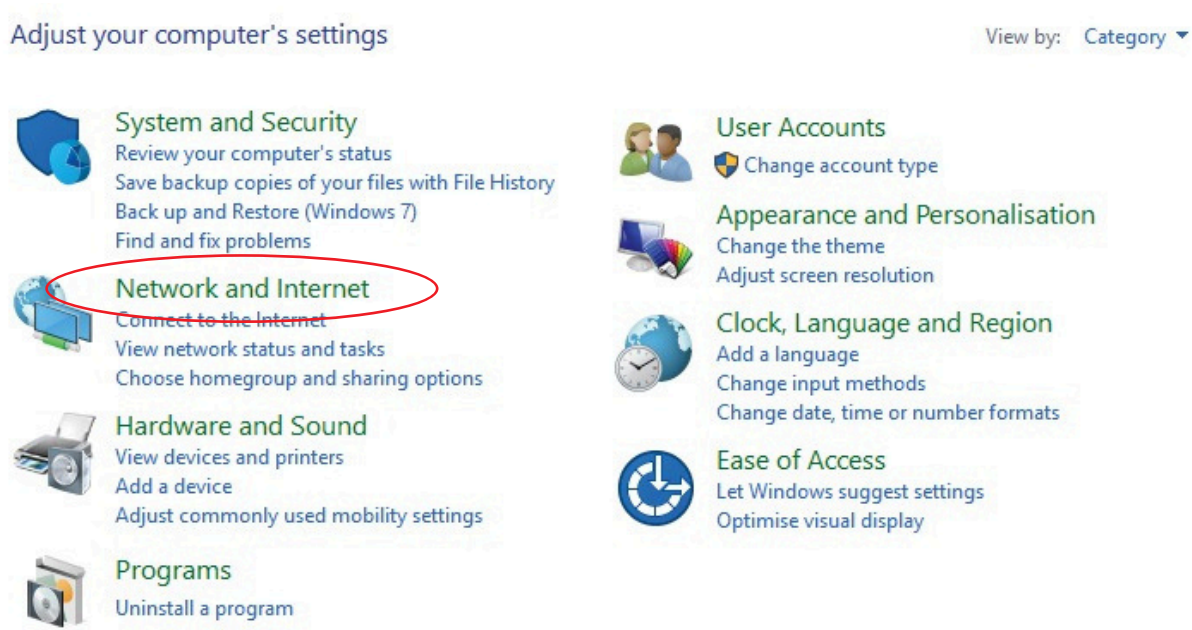
---

Apply

## 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'.



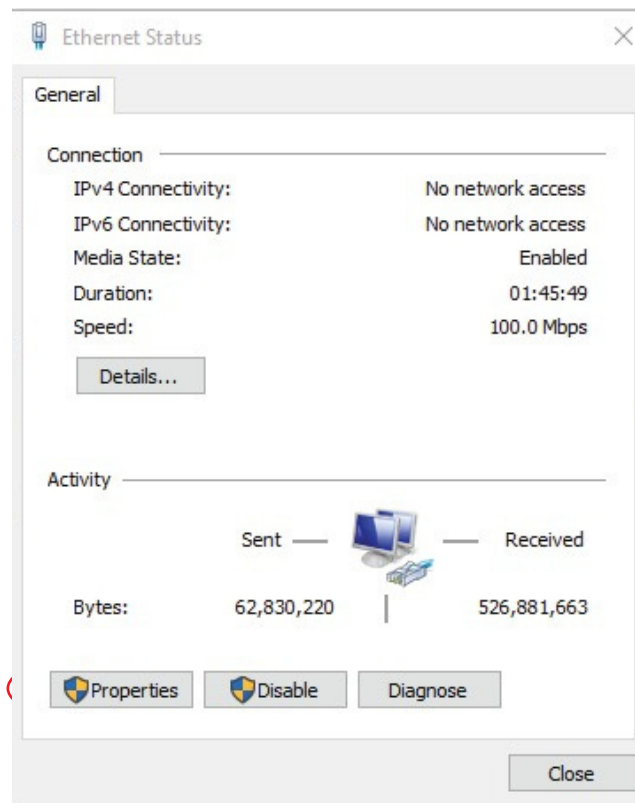
- 5) Select 'NETWORK AND SHARING CENTER'.



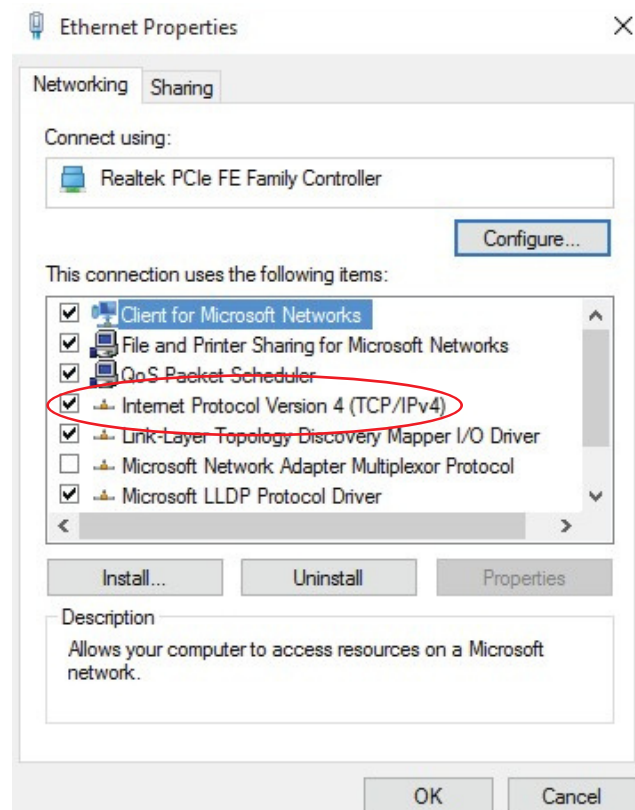
- 6) Under 'View your Active Networks' see connection types available.  
Select 'Local Area Connection' as this is the method of communication being used with the switch.



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)'



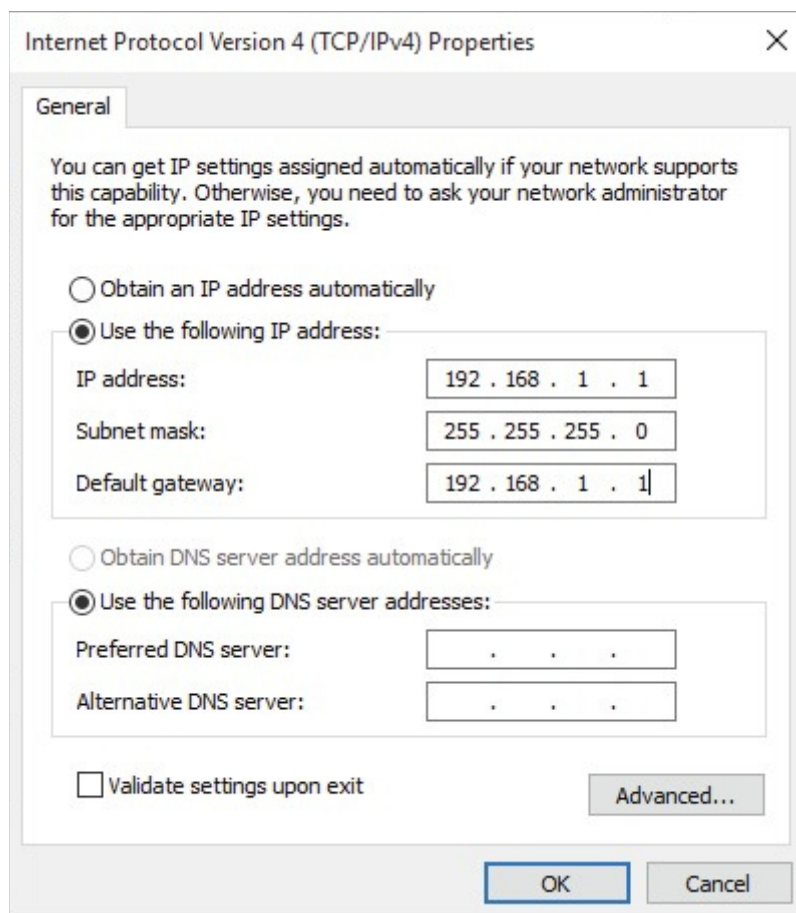
- 9) A. Under the 'General' tab select 'USE THE FOLLOWING IP ADDRESS'
- B. Enter the following FIXED IP network details for the configuration of the Network Switch or the ACM (check with the manufacturer of the LAN switch if this address is relevant in advance)

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 Blustream Multicast products

IP Address	169.254.1.1
Subnet Mask	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 the ACM or the Multicast Transmitter or Receiver web-GUI's.

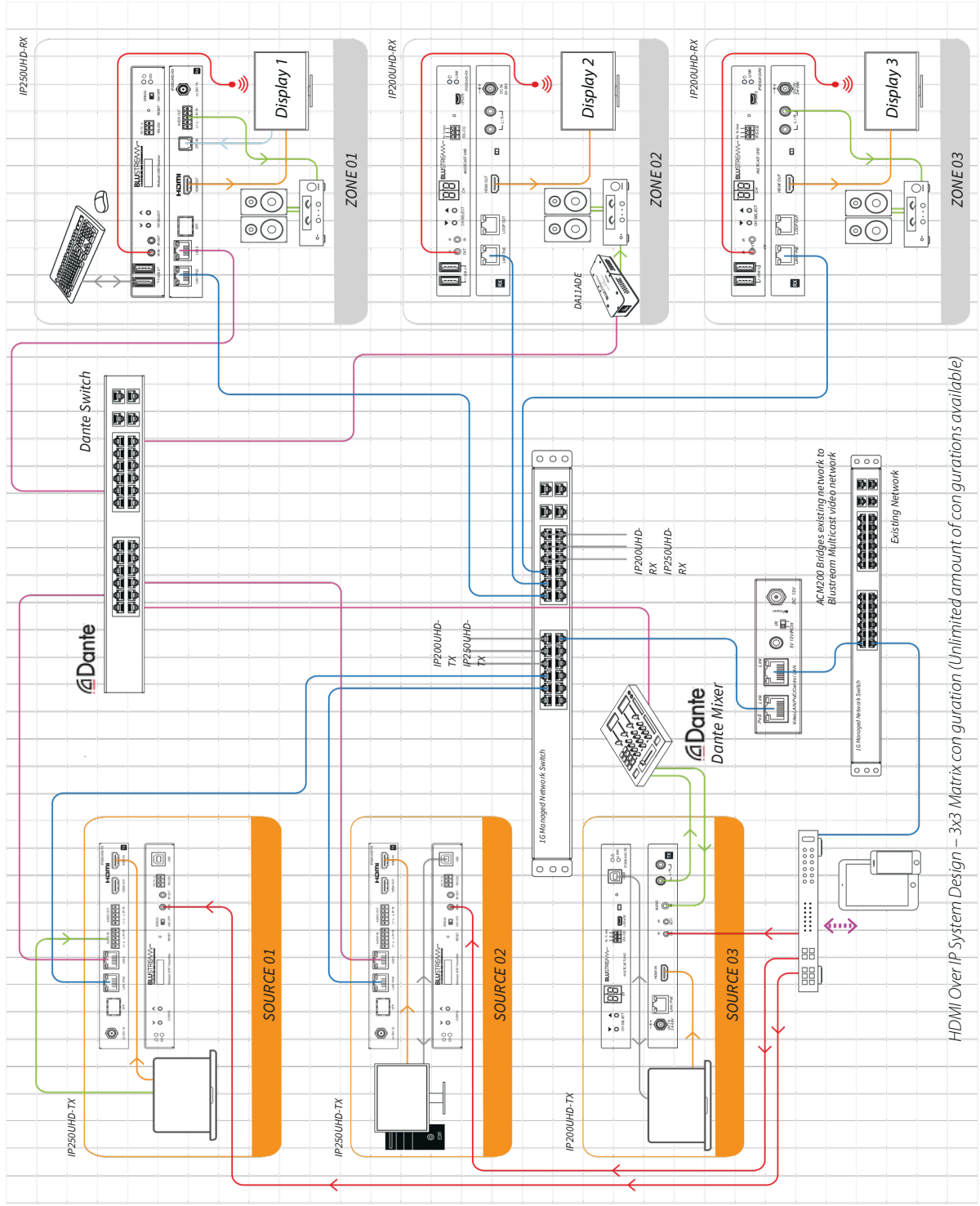


- 10) Click 'OK' and exit the network setup
- 11) Enter the default Network Switch, ACM or Blustream Multicast address into a web browser and check for connection to the unit. If the Transmitter and Receiver products have already been configured, enter the address of one of these (it is advised to use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

# Application Diagram - Matrix Configuration



Example Schematic  
**IP250UHD TX/RX**  
 3 x 3 Matrix Configuration



HDMI Over IP System Design – 3x3 Matrix configuration (Unlimited amount of configurations available)

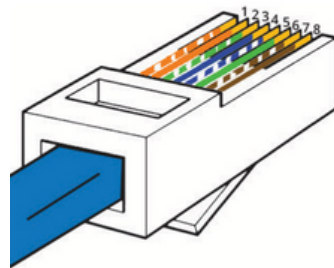
- Optical
- Video LAN
- Dante LAN
- HDMI
- Stereo Audio
- IR Cable
- USB Cable

## 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.

### RJ45 Pin-Out T568B



## Specifications

### IP250UHD-TX

- Video input: 1 x HDMI Type A, female
- Video output: 1 x LAN RJ45 connector, 1x HDMI Type A, female
- Audio input: 1 x 5-pin Phoenix connector
- Audio Output Connectors: 1 x 5-pin Phoenix connector
- Ethernet port: 2 x LAN RJ45 connector
- Fibre Port: 1 x SFP connector (fibre module not supplied)
- RS-232 serial port: 1 x 3-pin Phoenix connector
- USB/KVM Port: 1 x USB-Type B
- IR input: 1 x 3.5mm stereo jack
- IR output: 1 x 3.5mm mono jack
- Mounting kit included
- Dimensions (W x D x H): 190mm x 139mm x 25mm
- Shipping weight (Kit): 1kg
- Operating temperature: 32°F to 122°F (0°C to 50°C)
- Storage temperature: -4°F to 185°F (-20°C to 85°C)
- Operating altitude: < 2000m

### IP250UHD-RX

- Video Input Connectors: 1 x LAN RJ45 connector,
- Video Output Connectors: 1 x HDMI Type A, female
- Audio input: 1 x Optical (S/PDIF)
- Audio Output Connectors: 1 x 5-pin Phoenix connector
- Ethernet port: 2 x LAN RJ45 connector
- Fibre Port: 1 x SFP connector (fibre module not supplied)
- RS-232 serial port: 1 x 3-pin Phoenix connector
- USB/KVM Port: 2 x USB-Type A
- IR Input ports: 1 x 3.5mm stereo jack
- IR Output ports: 1 x 3.5mm mono jack
- Mounting kit included
- Dimensions (W x D x H): 190mm x 134mm x 25mm
- Shipping weight (Kit): 1kg
- Operating temperature: 32°F to 122°F (0°C to 50°C)
- Storage temperature: -4°F to 185°F (-20°C to 85°C)
- Operating altitude: < 2000m

## Package Contents

### IP250UHD-TX

- 1 x IP250UHD-TX
- 1 x Mounting kit for IP250UHD-TX
- 1 x 5v IR receiver (IRR)
- 1 x Serial 3-pin Phoenix connector
- 2 x Audio Input/Output 5-pin Phoenix connector

### IP250UHD-RX

- 1 x IP250UHD-RX
- 1 x Mounting kit for IP250UHD-RX
- 1 x 5v IR emitter (IRE1)
- 1 x 5v IR receiver (IRR)
- 1 x Serial 3-pin Phoenix connector
- 1 x Audio Output 5-pin Phoenix connector

## 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.

### CANADA, AVIS D'INDUSTRY CANADA (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

### 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** 

 **FutureVisuals**