

► MFP112

User Manual

Thank you for purchasing this product.

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



Surge protection device recommended

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

Safety And Performance Notice

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

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

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

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

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

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Introduction

Our MFP112 is a multi-format presentation switcher with in-built video scaling, audio embedding, audio de-embedding, EDID management and HDBaseT connectivity.

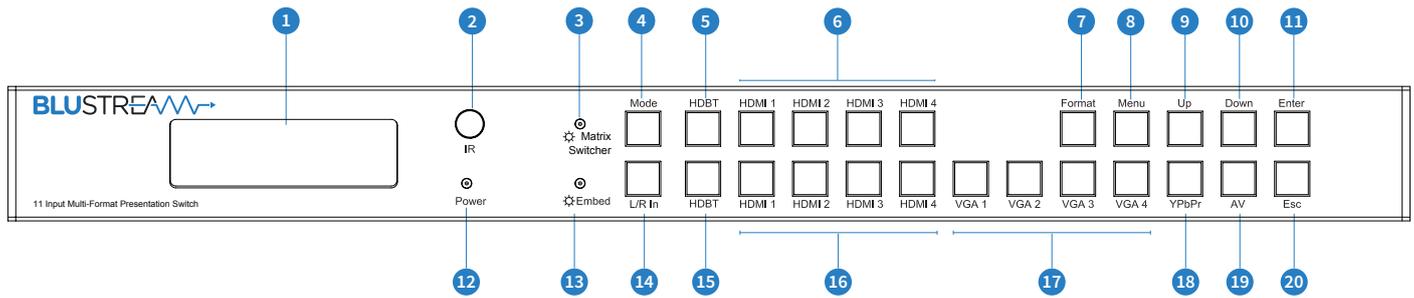
The MFP112 works in 2 modes - as an 11 input dual output switcher or as a 2 output matrix.

With control of the switcher using the front-panel push buttons, IR remote control, TCP/IP or RS-232 interface it is an ideal solution for commercial installations.

FEATURES:

- MFP112 Switcher can function in 2 modes:-
 - **Splitter** mode - Both HDMI output 1 & HDBaseT output 2 display the same selected input.
 - **Matrix Switcher** mode - HDMI/HDBaseT inputs are independently switchable to HDMI output 1 & HDBaseT output 2.
 - HDMI output 1 has access to HDBaseT input + HDMI inputs 1-4 ONLY (HDMI signal pass-through including 4K 30 Hz resolution).
 - HDBaseT output 2 is a scaled and formatted output (user configured) that has access to all HDMI, HDBaseT and Analogue video inputs with associated audio.
- Built-in video scaling, both up-scaling (maximum of 1080p) and down-scaling capabilities (including 4K 30Hz to lower resolutions).
- HDBaseT output (output 2) for distribution of video sources up to 100m distance (4K up to 70m) with bi-directional IR & RS-232 and LAN serving (*HDBaseT Receiver sold separately)
- HDBaseT input for integration of remote HDMI source up to 100m distance (4K up to 70m) with bi-directional IR & RS-232 & LAN serving (*HDBaseT Transmitter sold separately)
- Video inputs support all industry standard video resolutions including VGA-WUXGA and 480i-4K where applicable.
- Scaled video output resolutions include 720p, 1080P, 1280x1024, 1024x768, 1360x768, 1440x900 & 1680x1050.
- Audio embedding - Independent Analogue L/R audio input can be embedded to HDMI/HDBaseT outputs + Analogue L/R audio and Coaxial digital outputs concurrently (Feature available on HDMI/HDBaseT outputs 1 + 2 in **Splitter** mode and HDBaseT output 2 only in **Matrix Switcher** mode).
- HDMI audio breakout to Analogue L/R audio and Coaxial digital outputs concurrently (linked to HDBaseT output 2 when in **Matrix Switcher** mode). Note: input must be 2ch PCM for Analogue audio output to work, does not downmix 5.1ch audio signals.
- Volume control of HDMI, Analogue L/R audio and Coaxial digital outputs.
- Supports bitstream passthrough of multichannel surround sound including object-based audio formats in line with HDMI specifications
- Front panel display for status feedback.
- Control via front panel, IR and RS-232.
- 3rd Party drivers available for all major home control brands.
- Advanced EDID management.
- HDCP compliant.

Front Panel

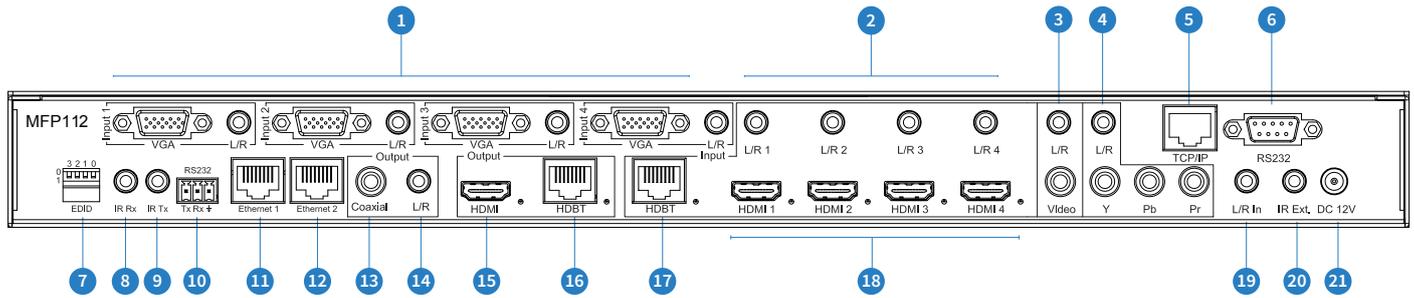


- 1 LCD display - Shows the status of input-output selection, EDID info etc.
- 2 IR receiver window.
- 3 Matrix Switcher LED indicator - When the LED is lit, **Matrix Switcher** mode is active and both HDMI outputs switch independently. When the LED is not lit the Matrix switcher is in **Splitter** mode and both HDMI outputs will display the same selected video input.
- 4 Mode button - Press to switch between **Matrix Switcher** and **Splitter** modes.
- 5 HDBaseT input selection button for HDMI output 1 when in **Matrix Switcher** mode.
- 6 HDMI input selection buttons for HDMI output 1 when in **Matrix Switcher** mode.
- 7 Format set button - Press to change the output resolution.
- 8 Menu button - Press to enter EDID set mode, volume setting or F/W information.
- 9 Up selection button - Press to change segment's value.
- 10 Down selection button - Press to change segment's value.
- 11 Enter button - Press to confirm the settings.
- 12 Power LED indicator - Indicate the status of power.
- 13 Embed LED indicator - When the LED is lit, **Audio embed** mode is active. When active the L/R Analogue input will be embedded onto the HDMI/HDBaseT outputs. In **Splitter** mode analogue audio is embedded to both of the HDMI/HDBaseT outputs with the ability to adjust the volume. In **Matrix Switcher** mode Analogue audio will only be embedded onto HDBaseT output 2.
- 14 L/R in selection button - Press to embed the Analogue L/R audio input to the HDMI/HDBaseT outputs (as above).
- 15 HDBaseT input selection button - Press to select the HDBaseT input switched to output 2 in **Matrix Switcher** mode, or both HDMI/HDBaseT outputs in **Splitter** mode.
- 16 HDMI input selection buttons 1 to 4 - Press to select the HDMI input switched to output 2 in **Matrix Switcher** mode, or both HDMI/HDBaseT outputs in **Splitter** mode.
- 17 VGA input selection buttons 1 to 4 - Press to select the VGA input with associated Analogue L/R audio switched to output 2 in **Matrix Switcher** mode, or both HDMI/HDBaseT outputs in **Splitter** mode.
- 18 YPbPr (Component video) input selection button - Press to select the YPbPr input with associated Analogue L/R audio input.
- 19 AV input selection button - Press to select the Composite video AV input with associated Analogue L/R audio input.
- 20 ESC-Press to exit the menu.

Notes:

- Volume can be changed using IR, TCP/IP & RS-232 control or from the front panel UP and DOWN buttons when in the volume menu.

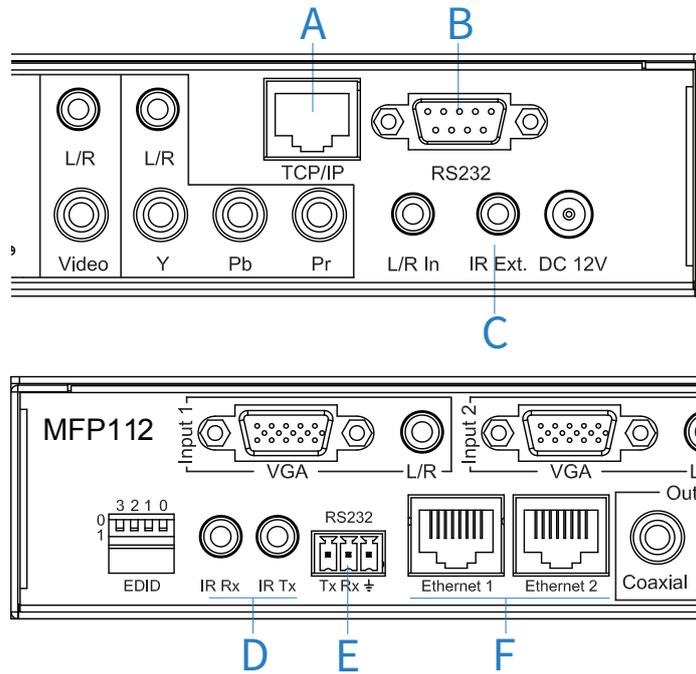
Rear Panel



- 1 VGA inputs 1-4 - VGA inputs with associated L/R analogue audio input.
- 2 L/R in 1-4 - Connect L/R analogue audio inputs to replace original HDMI audio with analogue audio on HDMI inputs 1-4.
- 3 AV input - Composite video input with associated L/R analogue audio input.
- 4 Component (YPbPr) input - YPbPr input with associated L/R analogue audio input.
- 5 TCP/IP port - For control of the switcher from PC or control processor.
- 6 RS232 port - For control of the switcher from PC or control processor.
- 7 EDID Dip-switches - For manual EDID management - See page 14 for EDID settings.
- 8 IR RX - For IR distribution *TO* a connected Blustream HDBaseT TX and/or RX (see 'MFP112 control ports' for further explanation).
- 9 IR TX - For IR distribution *FROM* a connected Blustream HDBaseT TX and/or RX (see 'MFP112 control ports' for further explanation).
- 10 2-way RS-232 - For bi-directional RS-232 distribution to a connected compatible Blustream HDBaseT TX and/or RX (see 'MFP112 control ports' for further explanation).
- 11 Ethernet port 1- For LAN distribution to a connected compatible Blustream HDBaseT TX and/or RX (see 'MFP112 control ports' for further explanation).
- 12 Ethernet port 2- For LAN distribution to a connected compatible Blustream HDBaseT TX and/or RX (see 'MFP112 control ports' for further explanation).
- 13 Coaxial digital audio output - Extracted audio will always follow HDBaseT output 2 source selection.
- 14 Analogue audio outputs - Extracted audio will always follow HDBaseT output 2 source selection. Note: input must be 2ch PCM for Analogue audio output to work, does not downmix 5.1ch audio signals.
- 15 HDMI output (output 1).
- 16 HDBaseT output (output 2).
- 17 HDBaseT input.
- 18 HDMI input 1 to 4 - Connect to HDMI sources.
- 19 L/R In - Enables Analogue audio to be embedded onto both HDMI/HDBaseT outputs in **Splitter** mode and HDBaseT output 2 in **Matrix Switcher** mode.
- 20 IR Ext. - Connect to Blustream IR receiver or control processor when using Blustream IRCAB cable (sold separately).
- 21 Power port - Use supplied 12V/5A DC power supply.

MFP112 Control Ports

The MFP112 main communication ports are located on the rear panel and includes the following connections:-



Connections:

- A. TCP/IP – For control of Presentation Switcher (RJ45 Connector)
- B. RS-232 – For control of Presentation Switcher (9 pin serial connection)
- C. Global IR Input 3.5mm stereo jack - For control of Presentation Switcher
- D. IR Output (3.5mm mono jack) & IR Input (3.5mm stereo jack) for 2-way IR pass-through with HDBaseT Transmitter and/or Receiver. *Note - Default IR routing is to HDBaseT Transmitter (Source). IR routing can be set to TX only, RX only, Both (TX + RX) or off. Please see ‘MFP112 Control Protocols’
- E. RS-232 2-way (Phoenix Connector) for 2-way RS-232 pass-through with HDBaseT Transmitter and/or Receiver. *Note - Default RS-232 routing is to HDBaseT Transmitter (Source). IR routing can be set to TX only, RX only, Both (TX + RX) or off. Please see ‘MFP112 Control Protocols’
- F. Ethernet – Either Ethernet ports (RJ45 Connections) can be connected to a network router/switcher and used to extend the network to a compatible Blustream HDBaseT transmitter and Receiver. The unused Ethernet port on the MFP112 will loop-out the Ethernet connection to further extend the ethernet network to additional third party hardware

TCP/IP

The Blustream Presentation Switcher can be controlled via TCP/IP.
 For full list of protocols please see ‘MFP112 Control Protocols’ located at the rear of this manual.
 A ‘Straight-through’ RJ45 patch lead should be used

RS-232 2-Way

The Blustream Presentation Switcher can be controlled via supplied 3-pin Phoenix to 9-pin serial cable.
 For full list of protocols please see ‘MFP112 Control Protocols’ located at the rear of this manual.
 Details of RS232 pin assignment and communication are adjacent:

BLUSTREAM RS-232		REMOTE CONTROL CONSOLE	
PIN	Assignment	PIN	Assignment
1	NC	1	NC
2	Tx	2	Rx
3	Rx	3	Tx
4	NC	4	NC
5	GND	5	GND
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
9	NC	9	NC

Baud Rate: 57600 bps

Data Bit: 8-bit

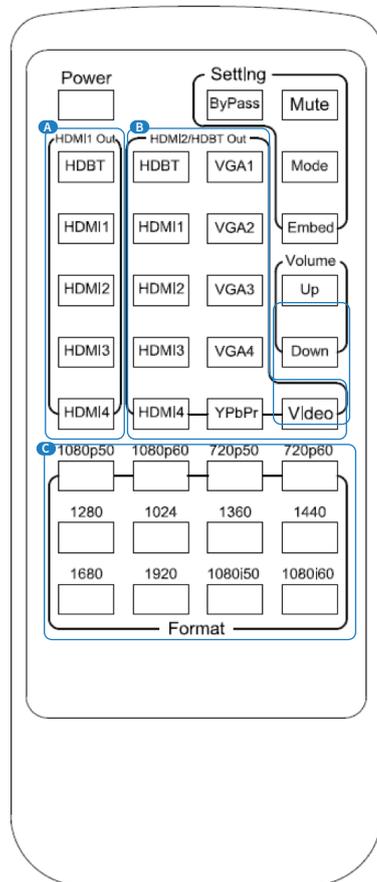
Parity: None

Stop Bit: 1-bit

Flow Control: None

Remote Control Description

The MFP112 is supplied with a Blustream IR remote control which can be used to make the following control and configuration changes:



OUTPUT AND INPUT SELECTION

- A Source selection for HDMI output 1 when in **Matrix Switcher** mode.
- B Source selection for HDMI output 2 when in **Matrix Switcher** mode or both HDMI outputs when in **Splitter** mode.

VIDEO OUTPUT RESOLUTION

- C The MFP112 includes in-built video scaler. To change the HDMI output video resolution press the required resolution button on the bottom of the Blustream remote control.

Settings

- D. **Bypass:** Audio on HDMI outputs is from HDMI input selected.
- E. **Mute:** Mutes the audio on all outputs (HDMI, Coaxial digital and Analogue audio).
- F. **Mode:** Switches between **Matrix Switcher** mode and **Splitter** mode.
- G. **Embed:** Audio on HDMI outputs is from L/R Analogue audio input (3.5mm Jack).

VOLUME CONTROL

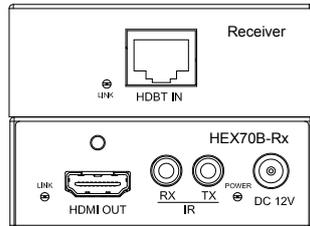
- H. Adjust the audio Volume on all outputs (HDMI, Coaxial digital and Analogue audio).

MFP112 HDBaseT Receiver Options

There are four HDBaseT receiver options that are compatible with the HDBaseT output on the MFP112:-

HEX70B-RX

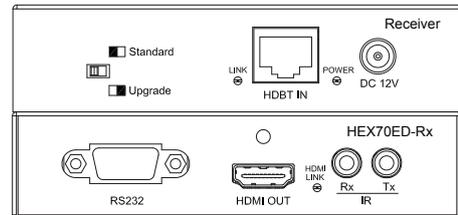
Basic HDBaset Receiver with 2-way IR pass-through. Supports display distances up to 70m @ 1080P.



- HDBaseT input/HDMI output
- IR Output 3.5mm Mono jack
- IR Input 3.5mm Stereo jack

HEX70ED-RX

Mid-Level HDBaseT receiver which has the same features as the HEX70B receiver but with added 2-way RS-232 control.

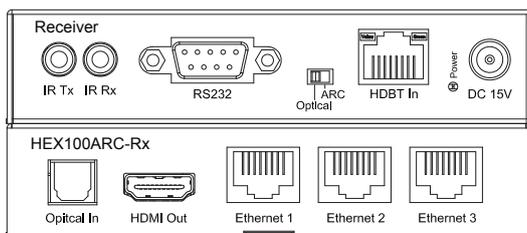


- HDBaseT input/HDMI output
- 2-way RS-232 (9-pin serial)
- IR Output 3.5mm Mono jack
- IR Input 3.5mm Stereo jack

HEX100ARC-RX

Premium HDBaseT receiver which features 2-way IR & RS-232 and Ethernet extension. Supports display distances up to 100m @ 1080P*.

(*Note - ARC feature not supported on MFP112)

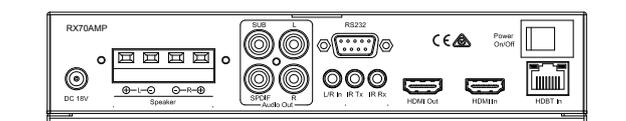


- HDBaseT input/HDMI Output
- Optical Audio input (Toslink)
- 2-way RS-232 (9-pin serial)
- IR Output 3.5mm Mono Jack
- IR Input 3.5mm Mono Jack
- 3x 10/100 Ethernet connections (RJ45)

*NOTE - When powering the receiver from the MFP112 switcher the distance is limited to 30M due to difference in voltage. To achieve 100m extension you must power the HEX100ARC-RX locally using Blustream 15V DC adaptor (sold seperately)

RX70AMP

The RX70AMP is a combination of HDBaseT receiver and Class D digital audio amplifier (30W per channel). The unit has local HDMI and Analogue audio inputs as well as supporting HDMI ARC (Audio Return Channel) with compatible products (ARC to RX70AMP only). Should you wish to use alternate power amplification the unit has variable analogue outputs. Control of the unit is possible via front panel or by bi-directional RS-232 or IR control. Supports display distances up to 70m @ 1080P.



- HDBaseT input/HDMI output
- HDMI Local input for connection of local source
- 2.1 Stereo audio output @ 30W per channel (capable of drive 4, 6 & 8 Ohm speakers) & analogue Subwoofer output (RCA)
- Variable analogue line level outputs (RCA)
- Digital Coaxial S/PDIF output
- Local analogue L/R audio input 3.5mm Stereo Jack
- 2-way RS-232 (9-pin serial)
- IR Output 3.5mm Mono Jack
- IR Input 3.5mm Stereo Jack
- Built-in IR receiver on front panel of unit

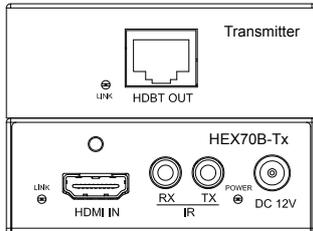
Note - RX70AMP must be powered locally

MFP112 HDBaseT Transmitter Options

When it is a requirement that source equipment is to be located away from the central Blustream MFP112 switcher there are four Blustream HDBaseT Transmitters that that can be partnered with the HDBaseT Input port and allow source equipment to be located at distances of up to 100m*:-

HEX70B-TX

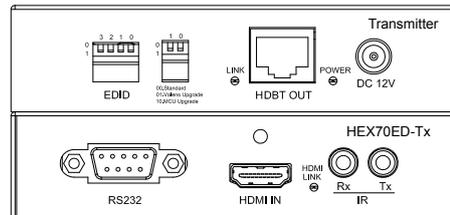
Basic HDBaset Transmitter with 2-way IR pass-through. Supports display distances up to 70m @ 1080P.



- HDMI input/HDBaseT output
- IR output 3.5mm Mono jack
- IR input 3.5mm Stereo jack

HEX70ED - TX

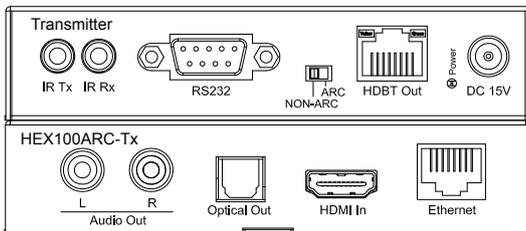
HDBaseT Transmitter which features 2-way IR & RS-232, EDID management and display distances up to 70m @ 1080P.



- HDBaseT input/HDMI output
- 2-way RS-232 (9-pin serial)
- IR output 3.5mm Mono jack
- IR input 3.5mm Stereo jack

HEX100ARC - TX

Premium HDBaseT Transmitter which features 2-way IR & RS-232 and distances up to 100m @ 1080P*.

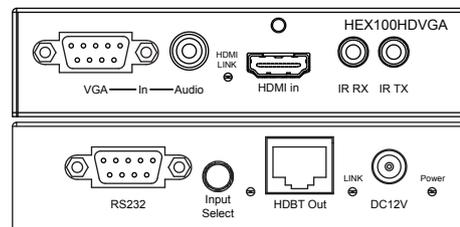


- HDMI input/HDBaseT output
- 2-way RS-232 (9-pin serial)
- IR output 3.5mm Mono Jack
- IR input 3.5mm Stereo jack

*NOTE - When powering the transmitter from the MFP112 switcher the distance is limited to 30M due to difference in voltage. To achieve 100m extension you must power the HEX100ARC-TX locally using Blustream 15V DC adaptor (sold separately)

HEX100HDVGA - TX

Premium HDBaseT Transmitter which features selectable HDMI or VGA+audio inputs and 2-way IR & RS-232. Supports distances up to 100m @ 1080P.

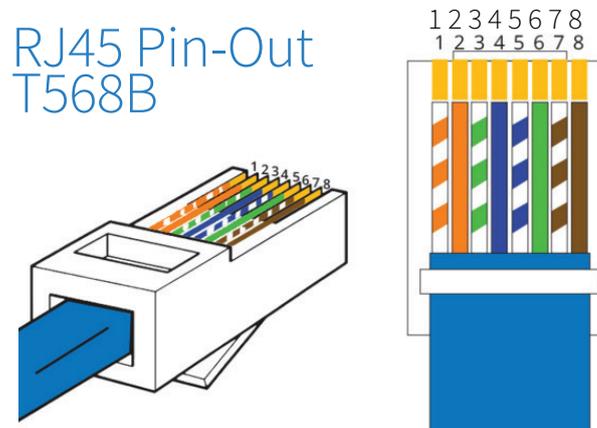


- HDMI & VGA+ audio input/ HDBaseT output
- 2-way RS-232 (9-pin serial)
- IR output 3.5mm Mono jack
- IR input 3.5mm Stereo jack
- Input select button (toggle between VGA+audio and HDMI inputs)
- Auto signal sensing switching between HDMI & VGA/audio inputs

Terminating the interconnecting HDBaseT CAT cable

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

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



Understanding the RX/MFP112 HDBaseT status lights

The Blustream HDMI extender solution includes status LED indicators on both the Transmitter and Receiver products to show all connections are active and to help diagnose possible problems.

Understanding the status lights:-

Blustream MFP112 Switcher:

- The HDBaseT link light will be off when there is no CAT cable/Blustream Receiver connected to the RJ45 output (applies to both the HDBaseT output and HDBaseT inputs ports)
- The HDBaseT link light will blink if there is an unstable connection between the Blustream switcher and HDBaseT Receiver/Transmitter
- The HDBaseT link light will be lit when a CAT cable is connected to the HDBaseT RJ45 input/output and an active connection is achieved with a Blustream HDBaseT Transmitter/Receiver.

Blustream Receiver (RX):

- The HDMI link light will be off when there is no connection with a display
- The HDMI link light will be on when there is an active connection with a display (NOTE - Not all HDBaseT RX feature a HDMI status LED)
- The HDBaseT link light will be off when there is no CAT cable/active HDBaseT connection on the RJ45 HDBaseT input
- The HDBaseT link light will blink if there is an unstable connection between the Blustream switcher and HDBaseT receiver
- The HDBaseT link light will be lit when a CAT cable is connected to the HDBaseT RJ45 output on the switcher and an active connection is achieved with the Blustream HDBaseT Receiver.

*NOTE - The same rules apply when using a Blustream HDBaseT transmitter with the MFP112 HDBaseT input port

Blustream Support department are on hand to assist with signal distribution issues should they arise - please email us at one of the email addresses below.

Infrared (IR) Distribution

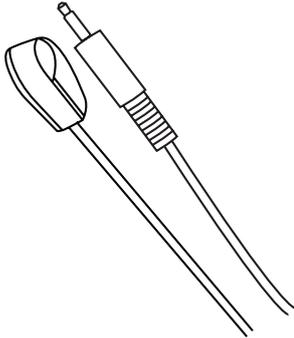
The Blustream range of matrix and switcher products include multiple options for control and routing of IR.

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 supplied Blustream IRCAB cable for IR conversion.

Each Blustream Matrix solution is supplied with all necessary IR hardware required and includes:

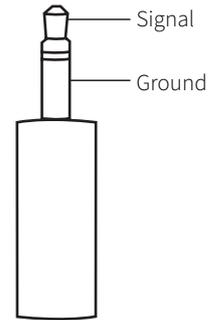
IR Emitter

Blustream IR Emitter designed for discrete IR control of hardware



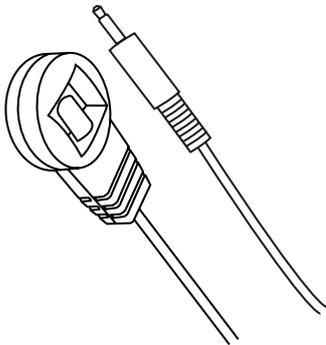
Infrared 3.5mm Pin-Out

IR Emitter - Mono 3.5mm

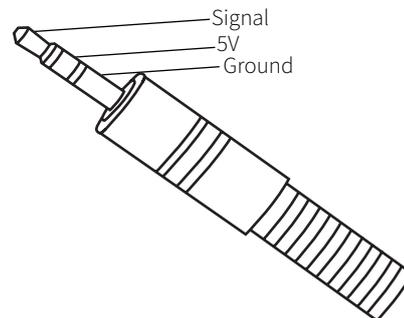


IR Receiver

Blustream IR receiver to receive IR signal and pass-through Blustream products



IR Receiver - Stereo 3.5mm

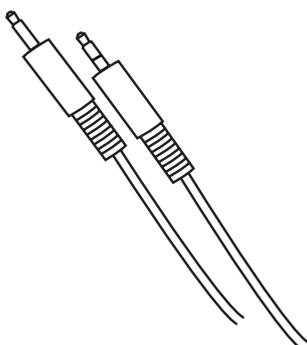


IR Control Cable

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

Will work with 12v IR third party products.

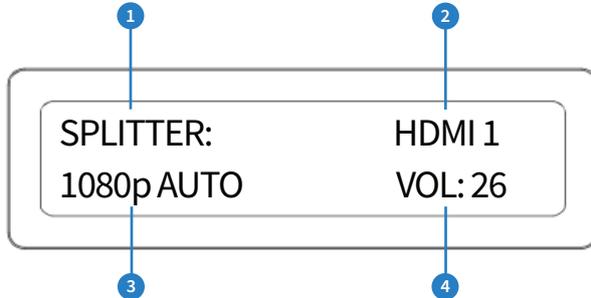
Note: Cable is directional as indicated



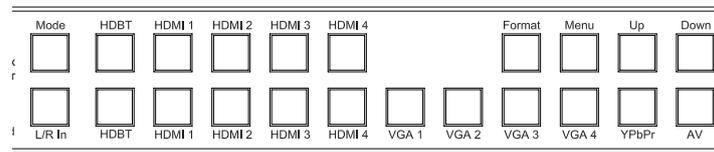
Matrix Front Panel Display

The front panel display gives information on the current status of the switcher:

Matrix Splitter Mode:

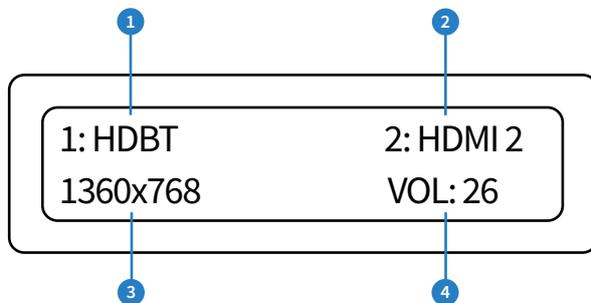


- 1 Switcher mode - Switcher is in 'Splitter' mode
- 2 Source selected = HDMI input 1
- 3 Current output resolution = 1080p AUTO
- 4 Current Volume = Volume level 26



Source selection buttons when in 'Splitter' mode

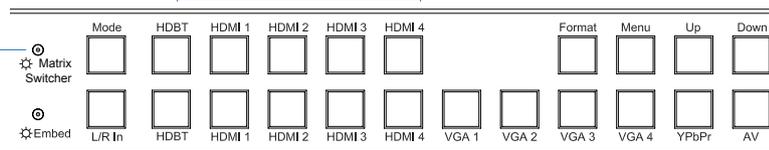
Matrix Switcher Mode:



- 1 Switcher mode - Switcher is in 'Matrix Switcher' mode
Output 1 = HDBT input source
- 2 Output 2 = HDMI input 2
- 3 Current output resolution = 1080p AUTO
- 4 Current Volume = Volume level 26

Source selection buttons for HDMI output 1 when in 'Matrix Switcher' mode
(HDMI inputs 1-4 + HDBaseT input are straight pass-through with no scaling)

'Matrix Switcher mode'
Status LED will be lit when this mode is active



Source selection buttons for HDBaseT output 2 when in 'Matrix Switcher' mode

Adjusting the video output resolution

The MFP112 has an in-built video scaler allowing you to alter the resolution of the video output.

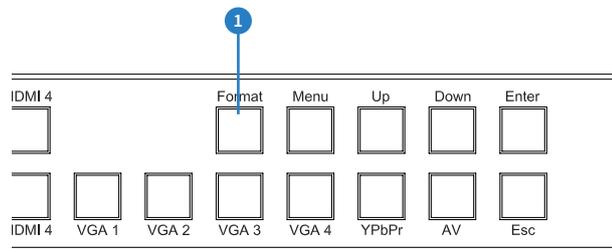
When in **'Splitter'** mode both the HDMI outputs (output 1) and HDBaseT (output 2) can be processed via the video scaler, allowing you to alter the resolution of both outputs. (*Note - This is subject to turning on/off the scaler using the 'Bypass' command - see page 17 for further details).

When in **'Matrix Switcher'** mode only the HDBaseT output (output 2) can be processed via the video scaler. The HDMI output (output 1) is a straight pass-through video signal with no video scaling. HDMI output 1 has access to the HDBaseT input and 4x HDMI inputs only when in this mode. (*Note - HDBaseT output 2 can bypass the video scaler when selecting the HDBaseT or HDMI 1-4 inputs using the 'Bypass' command - see page 17 for further details).

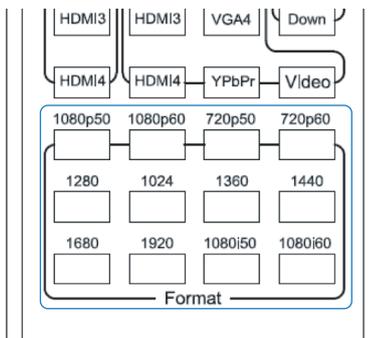
Changing the output video resolution

The MFP112 video output resolution can altered in 3 ways:

- 1 Front panel control - Press the 'FORMAT' button to scroll through output resolutions



- 2 MFP112 remote control



The MFP112 remote control has fixed output video resolutions. To change the resolution simply select the required video format required.

- 3 Using Blustream RS-232/Telnet commands - Please see page 17 for detailed commands

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 then from this information the source will determine what the best resolution is to output.

While the objective of EDID is to make connecting a digital display to a source a simple plug and play procedure issues do arise when multiple displays or video matrix switching is introduced because of the increased number of variables.

By pre-determining the video resolution and audio format of the source and display device you can potentially work around compatibility issues associated with some display and source combinations.

The EDID configuration can be altered in 2 ways:

- 1 Using EDID dip-switches on the rear panel of the unit. Please see table below for settings.
Note: You must power-cycle the switcher after changes have been made in order for the EDID settings to update.
- 2 Using Matrix Front Panel Buttons
 - a. Press **MENU** button
 - b. Panel will display 'EDID settings'. Press **SELECT** button
 - c. Select the input you wish to fix the EDID on or select 'All'. Use **UP/DOWN** buttons to toggle selection and **SELECT** button to confirm
 - d. Select video resolution required (4K, 1080p, 3D etc). Use **UP/DOWN** buttons to toggle selection and **SELECT** button to confirm
 - e. Select audio format required (2.0, 5.1, 7.1). Use **UP/DOWN** buttons to toggle selection and **SELECT** button to confirm

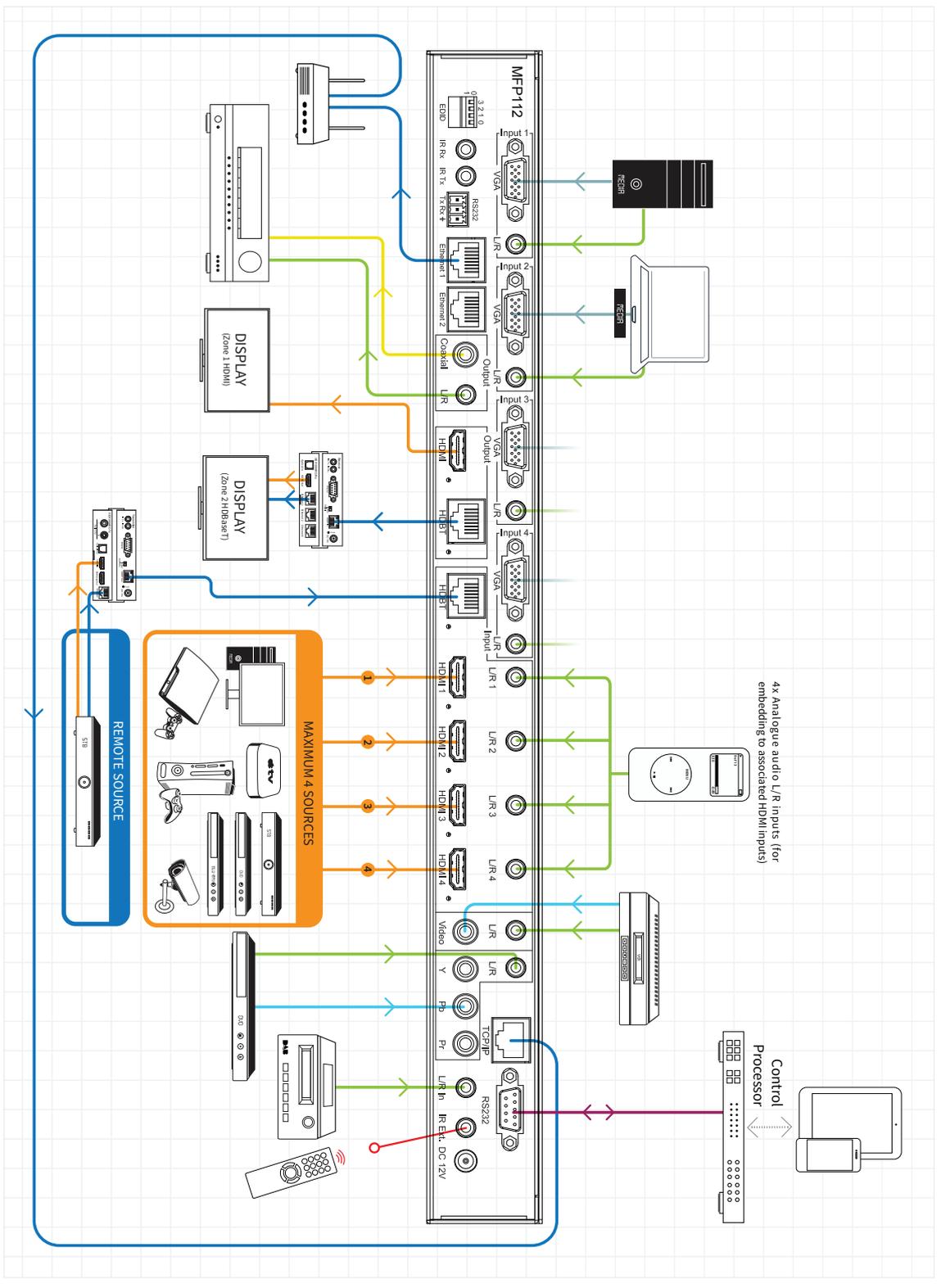
EDID Dip-switch settings:

[DIP]=0000:	HDMI 1080p@60Hz, Audio 2CH PCM
[DIP]=0001:	HDMI 1080p@60Hz, Audio 5.1CH PCM/DTS/Dolby
[DIP]=0010:	HDMI 1080p@60Hz, Audio 7.1CH PCM/DTS/Dolby/HD
[DIP]=0011:	HDMI 1080i@60Hz, Audio 2CH PCM
[DIP]=0100:	HDMI 1080i@60Hz, Audio 5.1CH PCM/DTS/Dolby
[DIP]=0101:	HDMI 1080i@60Hz, Audio 7.1CH PCM/DTS/Dolby/HD
[DIP]=0110:	HDMI 1080p 3D@60Hz, Audio 2CH PCM
[DIP]=0111:	HDMI 1080p 3D@60Hz, Audio 5.1CH PCM/DTS/Dolby
[DIP]=1000:	HDMI 1080p 3D@60Hz, Audio 7.1CH PCM/DTS/Dolby/HD
[DIP]=1001:	HDMI 4K@30Hz, Audio 2CH PCM
[DIP]=1010:	HDMI 4K@30Hz, Audio 5.1CH PCM/DTS/Dolby
[DIP]=1011:	HDMI 4K@30Hz, Audio 7.1CH PCM/DTS/Dolby/HD
[DIP]=1100:	DVI 1280x1024, Audio 2CH PCM
[DIP]=1101:	DVI 1920x1080, Audio 5.1CH PCM/DTS/Dolby
[DIP]=1110:	DVI 1920x1200, Audio 7.1CH PCM/DTS/Dolby/HD
[DIP]=1111:	HDMI EDID copy (EDID copied from HDMI output 2 display)

NOTE: If the source selected is a VGA input the switcher will automatically output the best resolution possible.

BLUSTREAM

Example Schematic
MFP112



Specifications:

Video Input Connectors: 4x HDMI Type A, 1x HDBaseT RJ45, 4x VGA, 1x Component (YPbPr), 1x Composite

Video Output Connectors: 1x HDMI Type A, 1x HDBaseT RJ45

Audio Input Connectors: 11x 3.5mm Analogue audio stereo jack

Audio Output Connectors: 1x 3.5mm Analogue audio stereo jack, 1x SPDIF Coaxial digital

RS-232 serial port: 1x DB 9 connector (Switcher control), 1x 3-pin Phoenix connector for RS-232 pass-through to HDBT RX/TX

IR Input ports: 2x 3.5mm stereo jack

IR Output ports: 1x 3.5mm mono jack

Casing Dimensions (W x H x D): 438mm x 225mm x 45mm, without feet

Dimensions including connections (W x H x D): 438mm x 235mm x 45mm

Shipping Weight: 1.5Kg

Operating Temperature: 32°F to 104°F (0°C to 40°C)

Storage Temperature : -4°F to 140°F (-20°C to 60°C)

Power Supply: DC 12V/5A

Package Contents:

- 1x MFP112
- 1x 12V/5A power supply
- 1x Remote control
- 4x IR Receivers
- 3x IR Emitters
- 1x IR control cable - 3.5mm-3.5mm cable
- 1x Serial cable - 9-pin RS-232 to 3-pin phoenix connector
- 1x 1U rack mount kit
- 1x User manual

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.

RS232 and Telnet Commands

The Blustream MFP112 can be controlled via serial and TCP/IP. The following pages list all available serial commands for the MFP112. Details of RS232 pin assignment can be found on page 06.

Commonly used Serial commands:

There are several commands that are commonly used for control and testing:-

- STATUS** Status will give feedback on Matrix such as zones on, type of connection etc
- PON** Power on
- POFF** Power off
- OUTxxON** (xx is the zone number you wish to turn on)
 Example:- OUT01ON (This would turn output one back on)
- OUTxxFRyy** (xx is the zone out, yy is the input)
 Example:- OUT01FR04 (This would switch output 1 to source input 4)

Common Mistakes

- Carriage return – Some programs do not require the carriage return where as other will not work unless sent directly after the string. In the case of some Terminal software the token <CR> is used to execute a carriage return. Depending on the program you are using this token maybe different. Some other examples that other control systems deploy include \r or 0D (in hex)
- Spaces – Blustream commands do not require space between commands unless specified. There may be some programs that require spacing in order to work.
 - How the string should look is as follows OUT01ON
 - How the string may look if spaces are required: OUT{Space}01{Space}ON
- Baud rate or other serial protocol settings not correct - please see Page 5 for Matrix settings

RS232 Command	Description
?	Print Help Information
HELP	Print Help Information
STATUS	Print System Status And Port Status
PON	Power On, System Run On Normal State
POFF	Power Off, System Run On Power Save State
IRON/OFF	Set System IR Control On Or Off
KEYON/OFF	Set System KEY Control On Or Off
DBGON/OFF	Set Debug Mode On Or Off
BEEPON/OFF	Set Onboard Beep On Or Off
RESET	Reset System To Default Setting (Type “Yes” To Confirm, “No” To Discard)
OUTxxFRyy	Set OUTPUT:xx From INPUT:yy
OUTSP/MX	Set OUTPUT To Splitter or Matrix Mode
EDIDxxCPyy	Copy EDID from output (yy) to input (xx) Both yy & xx can be set individually (01-08) or as ALL (00)

RS232 and Telnet Commands (continued)

RS232 Command	Description
EDIDxxDFzz	<p>Set Input:xx EDID To Default EDID:zz xx=00: Select All INPUT Port xx=[01...04]: Select One INPUT Port yy=[01...02]: Select One OUTPUT Port zz=00: HDMI 1080p@60Hz, Audio 2CH PCM zz=01: HDMI 1080p@60Hz, Audio 5.1CH PCM/DTS/DOLBY zz=02: HDMI 1080p@60Hz, Audio 7.1CH PCM/DTS/DOLBY/HD zz=03: HDMI 1080i@60Hz, Audio 2CH PCM zz=04: HDMI 1080i@60Hz, Audio 5.1CH PCM/DTS/DOLBY zz=05: HDMI 1080i@60Hz, Audio 7.1CH PCM/DTS/DOLBY/HD zz=06: HDMI 1080p@60Hz/3D, Audio 2CH PCM zz=07: HDMI 1080p@60Hz/3D, Audio 5.1CH PCM/DTS/DOLBY zz=08: HDMI 1080p@60Hz/3D, Audio 7.1CH PCM/DTS/DOLBY/HD zz=09: HDMI 4K2K, Audio 2CH PCM zz=10: HDMI 4K2K, Audio 5.1CH PCM/DTS/DOLBY zz=11: HDMI 4K2K, Audio 7.1CH PCM/DTS/DOLBY/HD zz=12: DVI 1280x1024@60Hz, Audio None zz=13: DVI 1920x1080@60Hz, Audio None zz=14: DVI 1920x1200@60Hz, Audio None</p>
AUDSCAORG	Scaler Audio Input Follow Port Selection
AUDSCAANA	Scaler Audio Input From Analog L/R Signal
AUDxx	"Set Scaler Audio Volume xx=[00...30]: Volume Value"
IR232 vw	<p>Send MFP112 IR and RS232 commands to HDBaseT RX/TX/Both: vv=OFF: Disconnect With Valens vv=RRX: Remote Valens RX vv=RTX: Remote Valens TX vv=BOTH: Both Valens TX & RX</p>
OUTBYPON/OFF	<p>"Only applicable to HDBaseT & HDMI1-4 inputs In Splitter mode: When BYP is ON video is pass through without scaling When BYP is OFF video is scaled at set resolution In Matrix mode HDMI output (out1) is pass-through without scaling. Bypass command is only applicable to HDBaseT out when in this mode"</p>
OUTFREQmm	<p>"Set Output Frequency Mode (when resolution is 720p or 1080p): mm=AUTO: Output freq auto matches Input freq mm=FORCE: Set Output freq manually (using previous RES rr Select command)"</p>
AUDHDMIyyORG	Select between HDMI audio or associated L/R analogue audio. AUDHDMIyyORG sets to original HDMI audio
AUDHDMIyyANA	Select between HDMI audio or associated L/R analogue audio. AUDHDMIyyANA sets audio to associated embedded L/R analogue audio
AUDHDMIyyAUTO	Select between HDMI audio or associated L/R analogue audio. AUDHDMIyyAUTO sets audio to embedded L/R analogue audio when DVI video or HDMI audio when HDMI.
OUTRESrr	<p>"Set Scaler Output Resolution rr=01: 1080P@50Hz rr=02: 1080P@60Hz rr=03: 720P@60Hz rr=04: 720P@50Hz rr=05: 1280x1024@60Hz rr=06: 1024x768@60Hz rr=07: 1360x768@60Hz rr=08: 1440x900@60Hz rr=09: 1680x1050@60Hz</p>



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