



MOD-MTX Series: Modular Matrix Switcher

INSTRUCTION MANUAL





SAFETY INFORMATION



1. To ensure the best results from this product, please read this manual and all other documentation before operating your equipment. Retain all documentation for future reference.
2. Follow all instructions printed on unit chassis for proper operation.
3. To reduce the risk of fire, do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid. Keep unit protected from rain, water and excessive moisture.
4. Make sure power outlets conform to the power requirements listed on the back of the unit before connecting.
5. Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Dust with a clean dry cloth.
6. Do not use the unit if the electrical power cord is frayed or broken. The power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
7. Do not force switched or external connections in any way. They should all connect easily, without needing to be forced.
8. Always operate the unit with the AC ground wire connected to the electrical system ground. Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.
9. AC voltage must be correct and the same as that printed on the rear of the unit. Damage caused by connection to improper AC voltage is not covered by any warranty.
10. Turn power off and disconnect unit from AC current before making connections.
11. Never hold a power switch in the "ON" position.
12. This unit should be installed in a cool dry place, away from sources of excessive heat, vibration, dust, moisture and cold. Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
13. Do not block fan intake or exhaust ports. Do not operate equipment on a surface or in an environment which may impede the normal flow of air around the unit, such as a bed, rug, carpet, or completely enclosed rack. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of foreign dust and matter.
14. To reduce the risk of electric shock, do not remove the cover. There are no user serviceable parts inside. Refer all servicing to qualified service personnel.
15. When moving the unit, disconnect input ports first, then remove the power cable; finally, disconnect the interconnecting cables to other devices.
16. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.
17. The equipment power cord should be unplugged from the outlet when left unused for a long period of time.
18. Save the carton and packing material even if the equipment has arrived in good condition. Should you ever need to ship the unit, use only the original factory packing.
19. Service Information Equipment should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged.
 - B. Objects have fallen, or liquid has been spilled into the equipment.
 - C. The equipment has been exposed to rain
 - D. The equipment does not appear to operate normally, or exhibits a marked change in performance
 - E. The equipment has been dropped, or the enclosure damaged.

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DEAR CUSTOMER

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.

PACKAGE CONTENTS

Before connecting the unit, it is necessary to unpack it from the shipping carton and inspect the unit for any damage. While the cards are hot-swappable, it is recommended to install the cards before connecting the unit. This will make the installation easier.

- MOD-MTX Modular Matrix Enclosure (including CPU Control Board and Removeable Dual Power Supplies)
- **(Optional)** Input Module Boards - HDMI, DVI, CAT5e/6/7 or VGA
- **(Optional)** Output Module Boards - HDMI, DVI or CAT5e/6/7
- IR Extender
- IR Blaster
- Remote Control (with Battery)
- (2) Power Cords
- Users Guide

SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

DISCLAIMERS

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INTRODUCTION & FEATURES

INTRODUCTION

The MOD-MTX Modular Matrix is designed to allow the switching and distribution of up to 32 source devices to up to 32 connected displays (model specific), either directly via HDMI, DVI or via CAT5e/6/7 outputs to compatible receivers, providing control options (dependent on module configuration).

Providing unparalleled levels of flexibility, with an advanced modular design these models can be setup in a wide variety of combinations allowing users the ability to tailor the Matrix to their requirements by simply adding or removing the input or output modules as required.

The Modular Matrix is supplied with dual removable internal power supply units (except MOD-MTX88-IP which has only one PSU) which allow for easy inspection and maintenance. Also included is a **DVI output for local monitoring** of the output allowing installers to easily monitor, test, and configure the Inputs and Outputs on installation.

In addition, this matrix also features IP control allowing users to access and control the matrix remotely and also allow additional options for integration of third-party control systems.

MOD-MTX MODULAR MATRIX SWITCHER CHASSIES

Models	Height	Maximum Slot	Power Supplies	RS-232 Control	Network Control
MOD-MTX88-IP	~4 in	1 input card slot & 1 output card slot	Single	✓	✓
MOD-MTX1616-IP	~5.7 in	2 input card slots & 2 output card slots	Dual	✓	✓
MOD-MTX3232-IP	~9.2 in	4 input card slots & 4 output card slots	Dual	✓	✓

SYSTEM REQUIREMENTS

- Up to 32 HDMI, DVI, CAT5e/6/7 or VGA source devices (dependent on module configuration) connected with appropriate cables
- Up to 32 displays (TV or monitor) or AV receivers equipped with HDMI, DVI, CAT5e/6/7 connection (dependent on module configuration) connected with appropriate cables
- Industry standard CAT5e/6/7 cable (for CAT5e/6/7 inputs/outputs)
- Compatible PoC HDBaseT™ Transmitters/Receivers for CAT5e/6/7
- Input/Output modules
- An overall good attitude on life!

FEATURES

- HDMI, HDCP 1.1 and DVI 1.0 compliant
- Interchangeable input and output modules
- Input and output module types can be mixed and added in multiples of (8) from 8x8 (1 Input module, 1 Output module) up to 32x32 (4 Input modules, 4 Output modules) with HDMI, DVI, CAT5e/6/7 and VGA (Input only) connection types
- Supports a wide range of PC and HDTV resolutions from VGA to WUXGA and 480i to 1080p and 4K2K@24/25/30
- Supports pass-through of LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio
- Supports control of the matrix via front panel, RS-232, Telnet and WebGUI controls and remote
- Supports (10) available preset settings
- Supports (3) EDID modes: Standard, Dynamic and Manual
- Dual removal power supply units (*Except the MOD-MTX8)
- Supports HDMI cable input lengths of up to ~50 ft/15M each way (1080p@8-bit resolution), ~33 ft/10M (1080p@12-bit resolution) or ~17 ft/5M (4K2K@30 resolution)
- Supports CAT5e/6/7 cable output lengths of up to ~330 ft/100M (1080p@8-bit/12-bit resolution) or ~230 ft/70M (4K2K@30 resolution) dependent on board capabilities
- HDBaseT 5Play™ convergence supports UHD Video, HD Audio, PoC, Ethernet and IR/RS-232 Control
- HDBaseT 4Play™ convergence supports HD Video, HD Audio, PoC and IR/RS-232 Control
- HDBaseT 3Play™ convergence supports HD Video, HD Audio and IR/RS-232 Control

MAIN UNITS

MOD-MTX88-IP



General			
Input Modular Slots	1	Output Modular Slots	1
Input Channels	8x HDMI or DVI or CAT5e/6/7 or VGA (dependent on module configuration)	Output Channels	8x HDMI or DVI or CAT5e/6/7 (dependent on module configuration)
Power Supply	AC 110~240V (US/EU standards, CE/ FCC/ UL certified)	Installation	Rack Mountable
Temperature	0°C~40°C/32°F~104°F	Storage Temperature	-20°C~60°C/-4°F~140°F
Relative Humidity	20~90% RH (non-condensing)	Power Consumption	40 W
Case Dimension (WxDxH)	19 x 15 x 4 in (482x380x100mm)	Product Weight	25 lb (11Kg)
Color	Black	Chassis Material	Metal

MAIN UNITS

MOD-MTX1616-IP



General			
Input Modular Slots	2	Output Modular Slots	2
Input Channels	16x HDMI or DVI or CAT5e/6/7 or VGA (dependent on module configuration)	Output Channels	16x HDMI or DVI or CAT5e/6/7 (dependent on module configuration)
Power Supply	2x AC 110~240V (US/EU standards, CE/ FCC/UL certified)	Installation	Rack Mountable
Temperature	0°C~40°C/32°F~104°F	Storage Temperature	-20°C~60°C/-4°F~140°F
Relative Humidity	20~90% RH (non-condensing)	Power Consumption	50 W
Case Dimension (WxDxH)	19 x 19 x 5.7 in (482x484x145mm)	Product Weight	32 lb (14.4Kg)
Color	Black	Chassis Material	Metal

MAIN UNITS

MOD-MTX3232-IP



General			
Input Modular Slots	4	Output Modular Slots	4
Input Channels	32x HDMI or DVI or CAT5e/6/7 or VGA (dependent on module configuration)	Output Channels	32x HDMI or DVI or CAT5e/6/7 (dependent on module configuration)
Power Supply	2x AC 110~240V (US/EU standards, CE/ FCC/UL certified)	Installation	Rack Mountable
Temperature	0°C~40°C/32°F~104°F	Storage Temperature	-20°C~60°C/-4°F~140°F
Relative Humidity	20~90% RH (non-condensing)	Power Consumption	70 W
Case Dimension (WxDxH)	19 x 19.4 x 9.2 in (482x494x233mm)	Product Weight	39 lb (17.7Kg)
Color	Black	Chassis Material	Metal

MOD-MTX SIGNAL CARD (CHANGEABLE CARDS)

The MOD-MTX series input and output cards for installation into the modular matrix switcher chassis are classified into the following models.

MOD-MTX Input cards

MODELS	INPUTS	SIGNAL FORMAT
5P-IN-8	8	HDBaseT™
HDMI-4K-IN-8	8	4K HDMI
HDMI-IN-8	8	HDMI
DVI-IN-8	8	DVI
VGA-IN-8	8	VGA

MOD-MTX Output cards

Models	OUTPUTS	SIGNAL FORMAT
5P-OUT-8	8	HDBaseT™
4P-OUT-8	8	HDBaseT™
3P-OUT-8	8	HDBaseT™
HDMI-4K-OUT-8	8	4K HDMI
HDMI-OUT-8	8	HDMI
DVI-OUT-8	8	DVI

CAT5E/6/7 CABLE SPECIFICATIONS

5P-IN-8 and 5P-OUT-8 Cable Distance:

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video Formats
CAT5e/6/7	~330 ft/100M	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p@60 Hz, 36-bit, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock)
	~230 ft/70M	>225 MHz	>5.3 Gbps (Ultra HD Video)	4K2K@30 Hz video formats

4P-OUT-8 Cable Distance:

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video Formats
CAT5e/6/7	~330 ft/100M	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p@60 Hz, 36-bit, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock)

3P-OUT-8 Cable Distance:

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video Formats
CAT5e/6/7	~197 ft/60M	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p@60 Hz, 36-bit, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock)

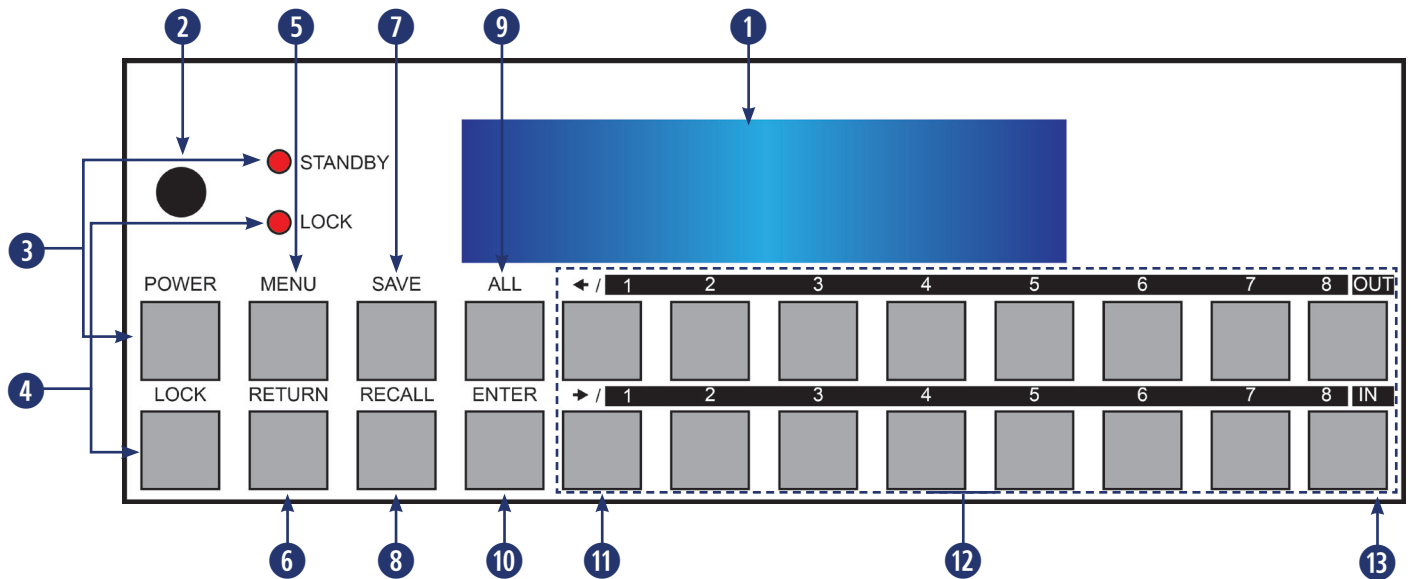
While cable distance is dependent on the quality of the cable that you use and the resolution, here is a general reference:

Cable	Distance	Cable	Distance
HDMI	~50 feet 15M	DVI	~23 feet 7M
VGA	~65 feet 20M	HDBaseT™	~230 feet 70M

- EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.
- The quality of CAT cable and the type of source/display devices has a major effect on how long transmission distance can be made.
- The actual transmission length is subject to your CAT cables. For resolution greater than 1080i or 1280x1024, a CAT6 cable is recommended.
- Cable distances are greatly reduced when using patch panels, couples, wall plates, and other intermediary devices. The best performance is from a contiguous CAT cable.
- The MOD-MTX is not compatible with EZ-45 connectors.

FRONT PANEL OPERATION

MOD-MTX88-IP: The front panel of MOD-MTX88-IP is shown as below.



1. LCM: Displays the setting information of each input/output and other setting information according to the selected mode.

2. IR WINDOW: Accepts the IR remote control signal for the matrix only.

3. POWER: Press this button to turn the matrix on or press it again to put the matrix into standby mode. The LED will illuminate when the unit is in standby mode.

Note: If the LED is flashing it means the temperature inside is too high and air circulation may have been restricted.

4. LOCK: Press this button to lock all the function buttons on panel. The LED will illuminate, to unlock press it again.

5. MENU: Press this button to enter the menu to change the following settings:

- **EDID:** Supports (3) EDID modes.

- 1. Standard Mode:** Uses the built-in EDID settings that support video up to 1080p@60 or WUXGA@60 (RB) video and LPCM 2CH audio.

- 2. Dynamic Mode:** Reads the EDID settings from the display connected to the lowest numbered output port.

- 3. Manual Mode:** Supports independent EDID settings by selecting the input and output ports.

- **IP:** Displays the setting information of IP address, IP Netmask and IP Gateway.

- **Temperature:** These figures show the internal temperature of the matrix.

- **LCM:** Supports LCM contrast range from 1 to 4.

6. RETURN: Press this button to return back or exit the current selection.

7. SAVE: Press this button to store the present Input/Output configuration to one of the 8 available preset locations.

8. RECALL: Press this button to recall a previously stored preset setting.

9. ALL: Press this button to assign all outputs to one input.

10. ENTER: Press this button to confirm a setting or selection in the menu.

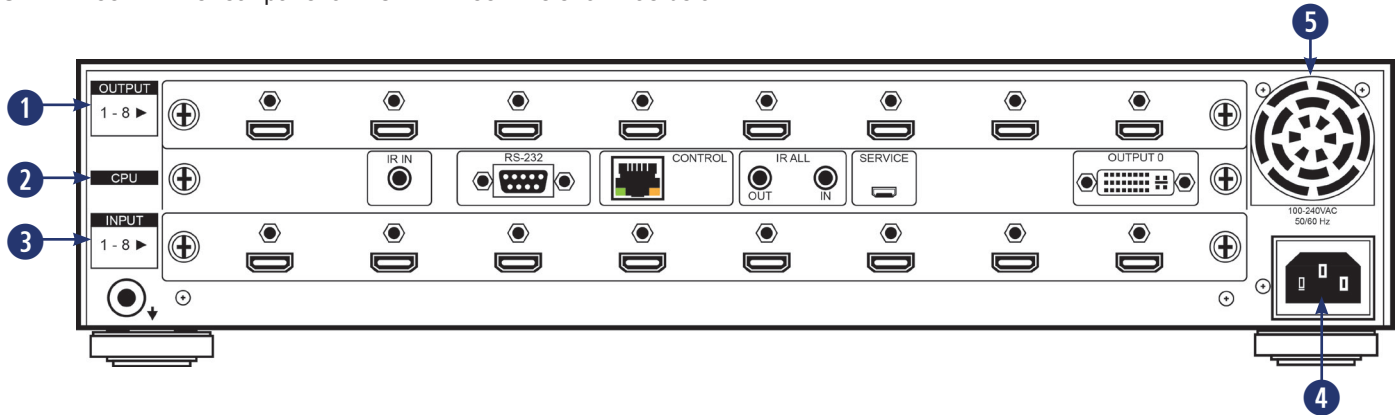
11. PAGE (◀/▶): Use these buttons to cycle through the LCM's pages for displaying the current I/O status or when entering into the settings menu.

12. NUMBERS (1~8): Use to select the appropriate numbered input or output.

13. OUT/IN: Press to assign the source to be displayed on the required output. The sequence should be OUT/IN→Select the Input→OUT/IN→a Select the output→Enter.

REAR PANEL OPERATION

MOD-MTX88-IP: The rear panel of MOD-MTX88-IP is shown as below.



Note: The above panel is an example of 8x8 HDMI configuration.

1. OUTPUTS 1~8: Install an Output module as required for connection to up to (8) displays (TV or monitor) or CAT5e/6/7 outputs or compatible HDBaseT™ receivers (dependent on module configuration).

2. CPU (Control Board):

- **IR IN:** For IR control of the matrix only. Connect to the IR Extender for IR signal reception of the IR remote control of the matrix. Ensure that the remote being used is within the direct line-of-sight of the IR Extender.
- **RS-232:** Connect to a PC/Laptop with a D-sub 9-pin cable for RS- 232 command sending and controlling over the Matrix.
- **CONTROL:** Connect to an active network for LAN serving and Telnet/WebGUI control. LAN serving on compatible HDBaseT™ input/output modules and transmitters/receivers only.
- **ALL IR OUT:** Connect the IR output to the IR Blaster for IR signal transmission of the equipment to be controlled. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.
- **ALL IR IN:** Connect the IR input to the IR Extender for IR signal reception of the IR remote control of the equipment to be controlled. Ensure that remote being used is within the direct line- of-sight of the IR Extender.

Note: For IR control of the HDBaseT™ input/output modules and transmitters/receivers only. IR signals received by all IR Extenders connected to the transmitters/receivers will be transmitted by all IR Blasters connected to the transmitters/receivers.

- **SERVICE:** Firmware update only.
- **OUTPUT 0:** Connect to DVI equipped display or to an HDMI equipped display (with DVI to HDMI adaptor) for local monitoring of the output signal.

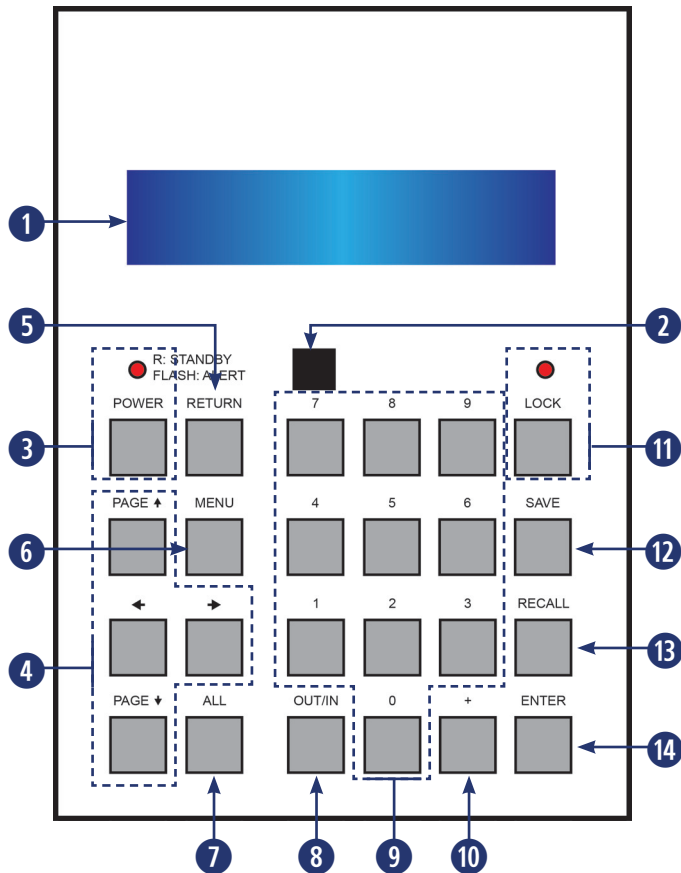
3. INPUT 1~8: Install an Input module as required for up to (8) source devices or CAT5e/6/7 inputs for compatible HDBaseT™ transmitters (dependent on module configuration).

4. POWER SUPPLY: The matrix will automatically turn on when connected to an active power supply.

5. VENTILATION FAN: This fan will automatically operate when the matrix is switched on. Do not block the exhaust of the fan or cover it with any object. Please allow adequate space around the unit for air to circulate freely.

FRONT PANEL OPERATION

MOD-MTX1616-IP/MOD-MTX3232-IP: The front panel for both the MOD-MTX1616-IP and the MOD-MTX3232-IP is shown as below.



- 1. LCM:** Display the setting information of each input/output and other setting information according to the selected mode.
- 2. IR WINDOW:** Accepts the IR remote control signal for the matrix only.
- 3. POWER:** Press this button to turn the matrix on or press it again to put the matrix into standby mode. The LED will illuminate when the unit is in standby mode.
Note: If the LED is flashing it means the temperature inside is too high and air circulation may have been restricted.
- 4. PAGE (▲/▼/◀/▶):** Use these buttons to cycle through the LCM's options for displaying the current I/O status or when entering into the settings menu.
- 5. RETURN:** Press this button to return back or exit the current selection.

6. MENU: Press this button to enter the menu to change the following settings:

- **EDID:** Supports (3) EDID modes.
 - 1. Standard Mode:** Uses the built-in EDID settings that support video up to 1080p@60 or WUXGA@60 (RB) video and LPCM 2CH audio.
 - 2. Dynamic Mode:** Reads the EDID settings from the display connected to the lowest numbered output port.
 - 3. Manual Mode:** Supports independent EDID settings by selecting the input and output ports.
 - **IP:** Displays the setting information of IP address, IP Netmask and IP Gateway.
 - **Temperature:** These figures show the internal temperature of the matrix.
 - **LCM:** Supports LCM contrast range from 1 to 4.

7. ALL: Press this button to assign the same input to all outputs.

8. OUT/IN: Press to assign the source to be displayed on the required output. The sequence should be OUT/IN→Select the Input→OUT/IN→a Select the output→Enter.

9. NUMBERS (0~9): Use to select the appropriate numbered input or output.

10. PLUS (+): Press this button when multiple outputs are required for a selected input. This button only works in conjunction with the OUT/ IN button.

11. LOCK: Press this button to lock all the function buttons on panel. The LED will illuminate, to unlock press it again.

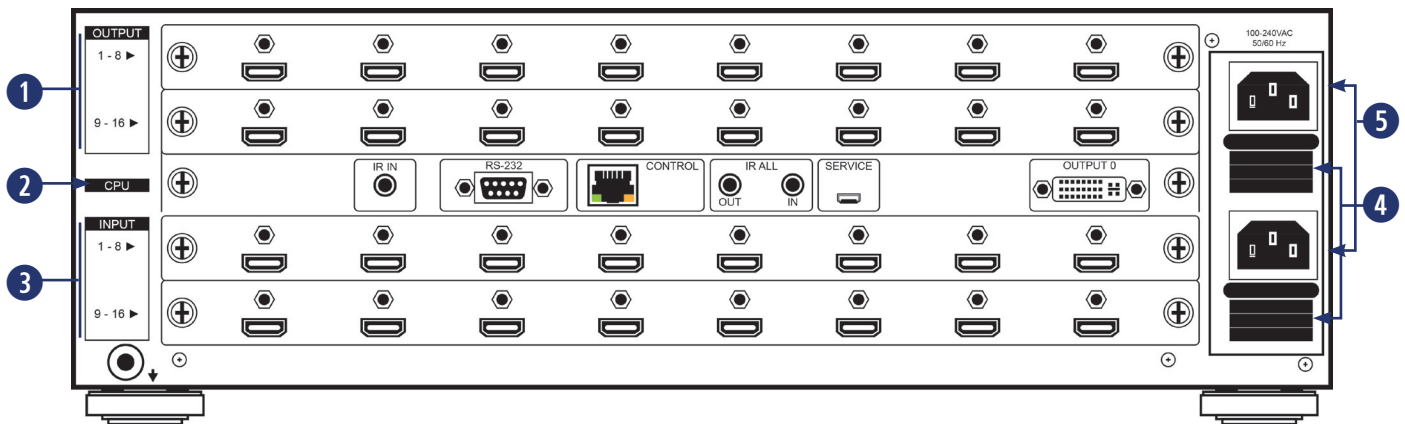
12. SAVE: Press this button to store the present Input/Output configuration to one of the 10 available preset locations.

13. RECALL: Press this button to recall a previously stored preset setting.

14. ENTER: Press this button to confirm a setting or selection in the menu.

REAR PANEL OPERATION

MOD-MTX1616-IP: The rear panel for the MOD-MTX1616-IP is shown as below.



Note: The above panel is an example of 16x16 HDMI configuration.

1. OUTPUT 1~16: Install up to (2) Output modules as required for up to (16) displays (TV or monitor) or CAT5e/6/7 outputs for compatible HDBaseT™ receivers (dependent on module configuration).

2. CPU (Control Board):

- **IR IN:** For IR control of the matrix only. Connect to the IR Extender for IR signal reception of the IR remote control of the matrix. Ensure that the remote being used is within the direct line-of-sight of the IR Extender.
- **RS-232:** Connect to a PC/Laptop with a D-sub 9-pin cable for RS-232 command sending and controlling over the Matrix.
- **CONTROL:** Connect to an active network for LAN serving and Telnet/WebGUI control. LAN serving on compatible HDBaseT™ input/output modules and transmitters/receivers only.
- **ALL IR OUT:** Connect the IR output to the IR Blaster for IR signal transmission of the equipment to be controlled. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.
- **ALL IR IN:** Connect the IR input to the IR Extender for IR signal reception of the IR remote control of the equipment to be controlled. Ensure that remote being used is within the direct line- of-sight of the IR Extender.

Note: For IR control of the HDBaseT™ input/output modules and transmitters/receivers only. IR signals received by all IR Extenders connected to the transmitters/receivers will be transmitted by all IR Blasters connected to the transmitters/receivers.

- **SERVICE:** Firmware update only.
- **OUTPUT 0:** Connect to DVI equipped display or to an HDMI equipped display (with DVI to HDMI adaptor) for local monitoring of the output signal.

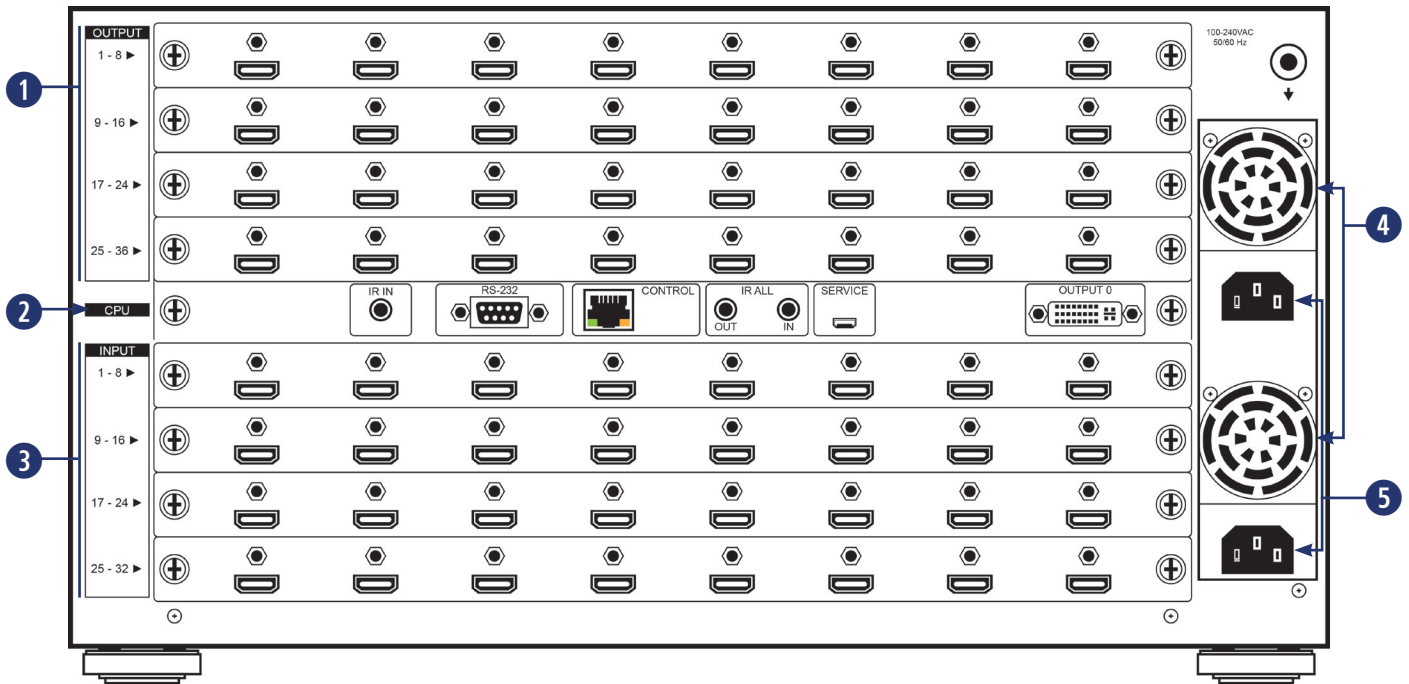
3. INPUT 1~16: Install up to (2) Input modules as required for connection to up to (16) source devices or CAT5e/6/7 inputs for compatible HDBaseT™ transmitters (dependent on module configuration).

4. VENTILATION FAN: This fan will automatically operate when the matrix is switched on. Do not block the exhaust of the fan or cover it with any object. Please allow adequate space around the unit for air to circulate freely.

5. POWER SUPPLY: The matrix will automatically turn on when connected to an active power supply.

REAR PANEL OPERATION

MOD-MTX3232-IP: The rear panel for the and the MOD-MTX3232-IP is shown as below.



Note: The above panel is an example of 32x32 HDMI configuration.

1. OUTPUT 1~32: Install up to (4) Output modules as required for up to (32) displays (TV or monitor) or CAT5e/6/7 outputs for compatible HDBaseT™ receivers (dependent on module configuration).

2. CPU (Control Board):

- **IR IN:** For IR control of the matrix only. Connect to the IR Extender for IR signal reception of the IR remote control of the matrix. Ensure that the remote being used is within the direct line-of-sight of the IR Extender.
- **RS-232:** Connect to a PC/Laptop with a D-sub 9-pin cable for RS-232 command sending and controlling over the Matrix.
- **CONTROL:** Connect to an active network for LAN serving and Telnet/WebGUI control. LAN serving on compatible HDBaseT™ input/output modules and transmitters/receivers only.
- **ALL IR OUT:** Connect the IR output to the IR Blaster for IR signal transmission of the equipment to be controlled. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.
- **ALL IR IN:** Connect the IR input to the IR Extender for IR signal reception of the IR remote control of the equipment to be controlled. Ensure that remote being used is within the direct line- of-sight of the IR Extender.

Note: For IR control of the HDBaseT™ input/output modules and transmitters/receivers only. IR signals received by all IR Extenders connected to the transmitters/receivers will be transmitted by all IR Blasters connected to the transmitters/receivers.

- **SERVICE:** Firmware update only.
- **OUTPUT 0:** Connect to DVI equipped display or to an HDMI equipped display (with DVI to HDMI adaptor) for local monitoring of the output signal.

3. INPUT 1~32: Install up to (4) Input modules as required for connection to up to (32) source devices or CAT5e/6/7 inputs for compatible HDBaseT™ transmitters (dependent on module configuration).

4. VENTILATION FAN: This fan will automatically operate when the matrix is switched on. Do not block the exhaust of the fan or cover it with any object. Please allow adequate space around the unit for air to circulate freely.

5. POWER SUPPLY: The matrix will automatically turn on when connected to an active power supply.

REMOTE CONTROL

- 1. **POWER:** ON/OFF selection
- 2. **OUTPUT:** Output port selection
- 3. **INPUT:** Input port selection
- 4. **ENTER:** Press to confirm the present input/output selection
- 5. **CLEAR:** Press to clear the present input/output selection

Channels should be entered using **two** digits.

For example: entering channel 2 would be "02"

To enter a cross point:

Enter Output channel, then Input channel followed by Enter

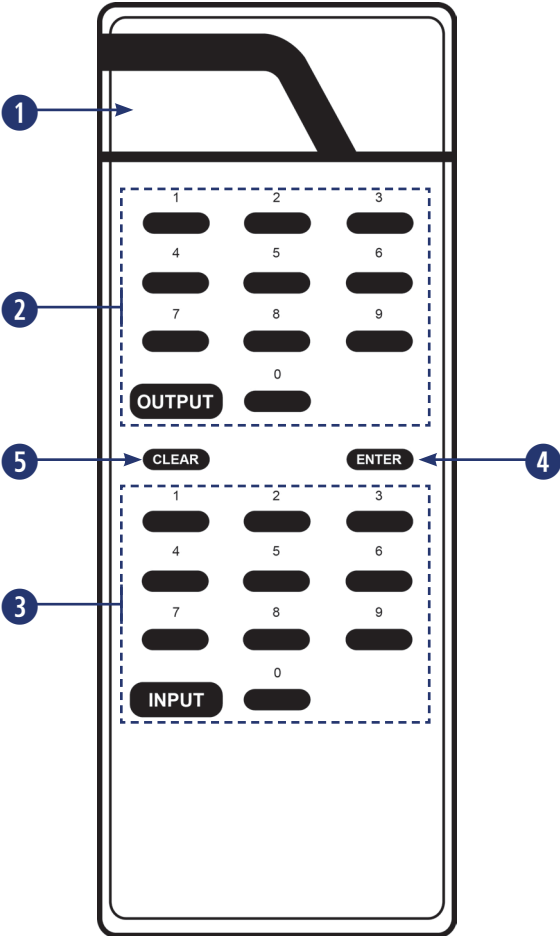
For example: To route Input 3 to Output 5

- 05 (Output buttons)
- 03 (Input buttons)
- ENTER

For example: To route Input 29 to Output 6

- 06 (Output buttons)
- 29 (Input buttons)
- ENTER

The **CLEAR** button will delete the last number entered.



INPUT AND OUTPUT MODULES

INPUT MODULES

5P-IN-8

8 Port HDBaseT™ Input Module



SPECIFICATIONS

Video Bandwidth	300 MHz/10.2 Gbps
Features	HD Video/Audio, PoC, Ethernet, IR/RS-232 Pass Thru
Input Ports	8x CAT5e/6/7, 1x LAN
Ethernet Speed	100 Mbps
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30 Hz
IR Frequency	30~50 Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	45W+ 10W PoC/each port

HDMI-4K-IN-8

8 Port 4K HDMI Input Module



SPECIFICATIONS

Video Bandwidth	300 MHz/10.2 Gbps
Input Ports	8x HDMI
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	22W

HDMI-IN-8

8 Port HDMI Input Module



SPECIFICATIONS

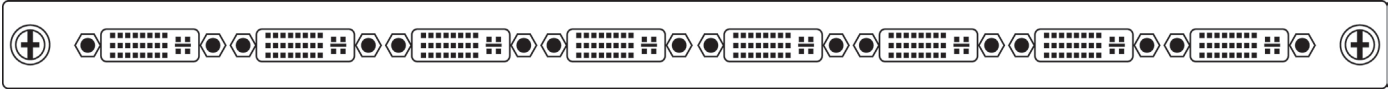
Video Bandwidth	225 MHz/6.75 Gbps
Input Ports	8x HDMI
Video Resolutions	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	20W

INPUT AND OUTPUT MODULES

INPUT MODULES

DVI-IN-8

8 Port DVI Input Module

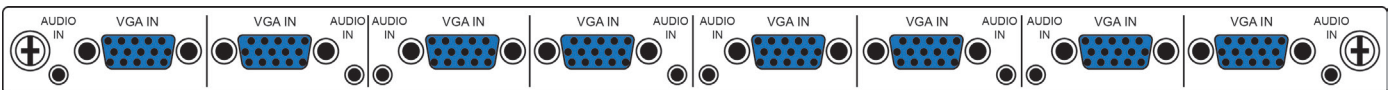


SPECIFICATIONS

Video Bandwidth	225 MHz/6.75 Gbps
Input Ports	8×DVI
Video Resolutions	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	20W

VGA-IN-8

8 Port VGA Input Module



SPECIFICATIONS

Input Ports	8x VGA, 8x 2.5mm Audio Phone Jack
Video Resolutions	PC: VGA~WUXGA@60 (RB)
Audio Transmission	Stereo 2.5mm phone jack (included 2.5mm to 3.5mm adaptor)
Power Consumption	22W

INPUT AND OUTPUT MODULES

OUTPUT MODULES

5P-OUT-8

8 Port HDBaseT™ Output Module

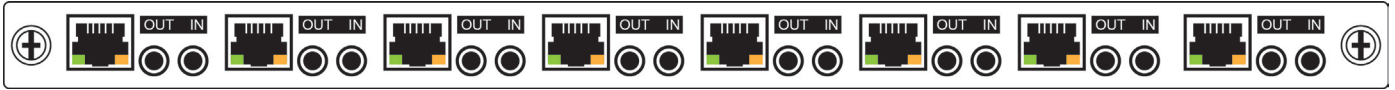


SPECIFICATIONS

Video Bandwidth	300 MHz/10.2 Gbps
Features	HD Video/Audio, PoC, Ethernet, IR, RS-232 Pass Thru
Output Ports	8x CAT5e/6/7, 1x LAN, 8x IR Extender, 8x IR Blaster
Ethernet Speed	100 Mbps
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p & 4K2K@30 Hz
IR Frequency	30~50 Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	45W+ 10W PoC/each port

4P-OUT-8

8 Port HDBaseT™ Output Module



SPECIFICATIONS

Video Bandwidth	225 MHz/6.75 Gbps
Features	HD Video/Audio, PoC, IR, RS-232 Pass Thru
Output Ports	8x CAT5e/6/7, 8x IR Extender, 8x IR Blaster
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p
IR Frequency	30~50 Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	43W+ 10W PoC/each port

3P-OUT-8

8 Port HDBaseT™ Output Module



SPECIFICATIONS

Video Bandwidth	225 MHz/6.75 Gbps
Features	HD Video/Audio, IR, RS-232 Pass Thru
Output Ports	8x CAT5e/6/7, 8x IR Extender, 8x IR Blaster
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p
IR Frequency	30~50 Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	43W

INPUT AND OUTPUT MODULES

OUTPUT MODULES

HDMI-4K-OUT-8

8 Port 4K HDMI Output Module



SPECIFICATIONS

Video Bandwidth	300 MHz/10.2 Gbps
Output Ports	8x HDMI
Video Resolutions	PC: VGA~WUXGA HDTV: 480i~1080p, 4K2K@30Hz
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	22 W

HDMI-OUT-8

8 Port HDMI Output Module

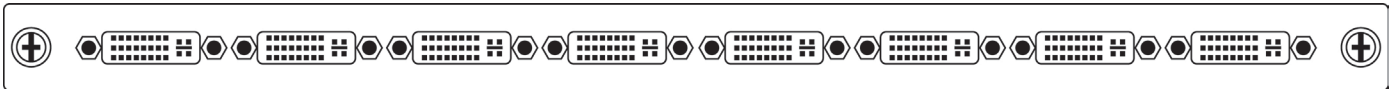


SPECIFICATIONS

Video Bandwidth	225 MHz/6.75 Gbps
Output Ports	8x HDMI
Video Resolutions	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	20 W

DVI-OUT-8

8 Port DVI Output Module



SPECIFICATIONS

Video Bandwidth	225 MHz/6.75 Gbps
Output Ports	8xDVI
Video Resolutions	PC: VGA~WUXGA@60 (RB) HDTV: 480i~1080p
Audio Transmission	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192kHz Fs sample rate)
Power Consumption	20 W

TRANSMITTER & RECEIVER OPTIONS

TRANSMITTERS & RECEIVERS

MANUFACTURE PART#	TYPE	BODY TYPE	4K	3D	HD AUDIO	IR	RS-232	ETHERNET	POC*	EXTERNAL POWER	1080P/UHD CABLE LENGTH
REC-315XL	Receiver	stand alone	✓	✓	✓	1-WAY	✓	-----	-----	5V	60 / 35M
TRA-315XL	Transmitter	stand alone	✓	✓	✓	1-WAY	✓	-----	-----	5V	60 / 35M
REC-605XPLBD	Receiver	stand alone	✓	✓	✓	2-WAY	✓	-----	✓	24V	60 / 35M
TRA-605XPLBD	Transmitter	stand alone	✓	✓	✓	2-WAY	✓	-----	✓	24V	60 / 35M
REC-705WP	Receiver	wall plate	✓	✓	✓	2-WAY	✓	✓	✓	-----	100 / 70M
REC-705XBD	Receiver	stand alone	✓	✓	✓	2-WAY	✓	✓	✓	24V	100 / 70M
TRA-705XBD	Transmitter	stand alone	✓	✓	✓	2-WAY	✓	✓	✓	24V	100 / 70M

*Requires Input or Output card with PoC (PoC)

REC-315XL - RECEIVER



TRA-315XL - TRANSMITTER



REC-605XPLBD - RECEIVER



TRA-605XPLBD - TRANSMITTER



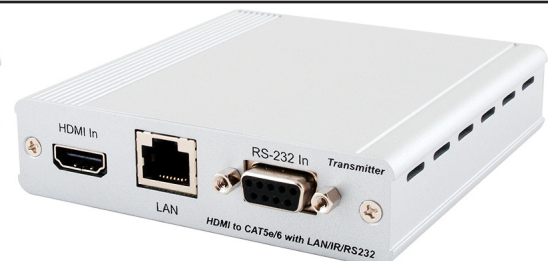
REC-705WP - RECEIVER



REC-705XBD - RECEIVER

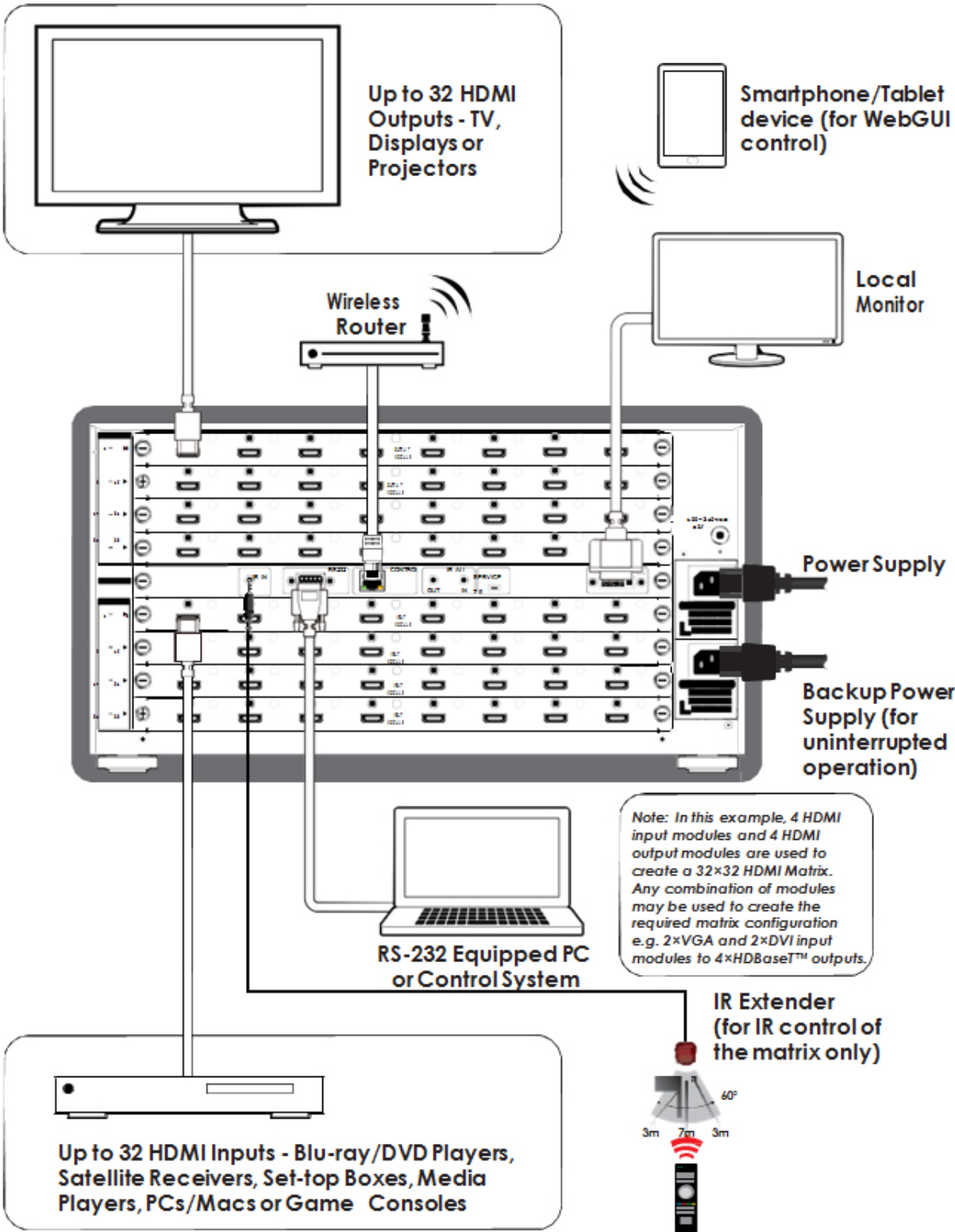


TRA-705XBD - TRANSMITTER

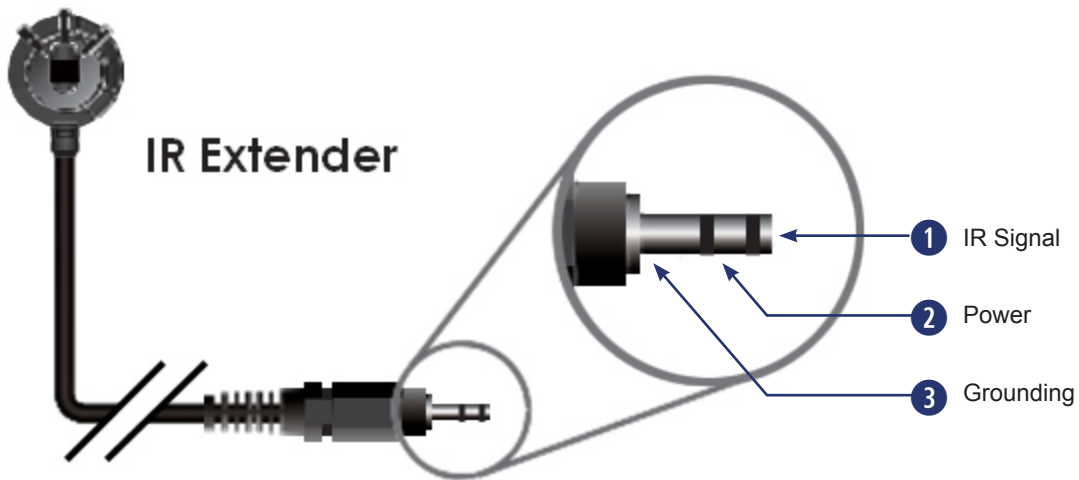
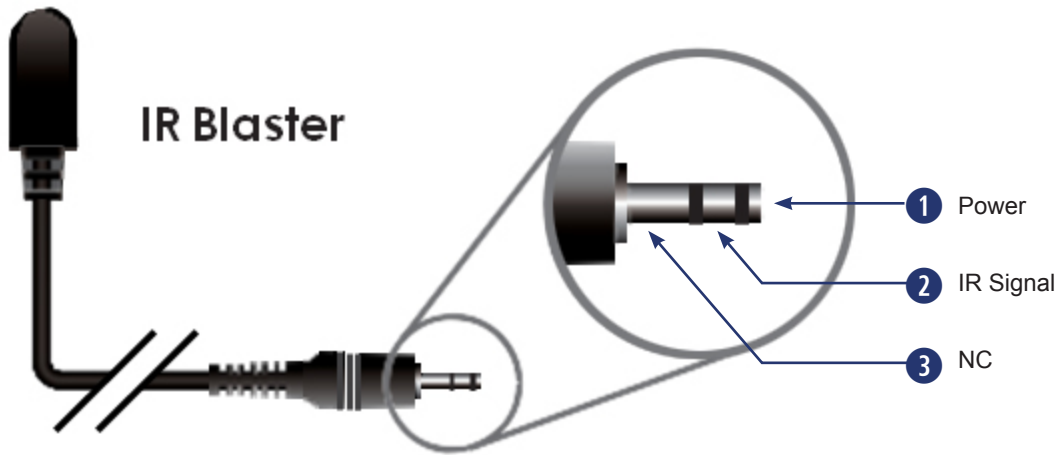


CONNECTION DIAGRAM

EXAMPLE INSTALLATION (32x32 HDMI MATRIX)



IR CABLE PIN ASSIGNMENTS



MATRIX	
Pin	Definition
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC



RS-232 CONTROLLER	
Pin	Definition
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 19200bps Data Bit: 8 bits

Parity: None

Stop Bit: 1

Flow Control: None

RS-232 AND TELNET COMMANDS

Command Codes	Functions
P1	Power on
P0	Power off
Oxly	Set output (x=1~32) to input (y=1~32)
ALLOUT x	Set all outputs to input (x=1~32)
ACTIVE	Report active I/O channels
INDETECT	Input channels detection indicator
OUTDETECT	Output channels detection indicator
PORTSTATUS	Report all output connection status
HDCPON x	Set input port (x=1~32) HDCP to 'on'
HDCPOFF x	Set input port (x=1~32) HDCP to 'off'
HDCPONALL	Set all input port's HDCP to 'on'
HDCPOFFALL	Set all Input port's HDCP to 'off'
HDCPSTATUS	Show the HDCP status of all outputs (0=disabled, 1=enable)
MUTEO x	Mute video for output (x=1~32)
UNMUTEO x	Unmute video for output (x=1~32)
MUTEI x	Mute video for input (x=1~32)
UNMUTEI x	Unmute video for input (x=1~32)
MUTEALL	Mute all outputs
UNMUTEALL	Unmute all outputs
MUTESTATUS	Show the mute status of all outputs
HPDL x	Pull the input (x=1~8) hot-plug-detect signal to 'low'.
HPDH x	Pull the input (x=1~8) hot-plug-detect signal to 'high'
HPDLALL	Set the hot-plug-detect of all inputs to 'low'
HPDHALL	Set the hot-plug-detect of all inputs to 'high'
HPDSTATUS	Report the hot-plug-detect signal status of all inputs
EDIDMODE x y	Set the EDID mode of input (x=1~32) to y (1~3) <i>*See Page 22 for details.</i>
EDIDMODEALL x	Set the EDID mode of all input to x (1~3)
EDIDPORT y x (note positions of x and y do not follow convention)	Set the EDID mode of assigned port input (y=1~32) to output (x=1~32)
EDIDPORTALL x	The EDID mode of all ports is assigned to output (x=1~32)
EDIDSTATUS	Report the status of the EDID modes of all inputs
IRMASKOUT x y z*	Set the IR routing of HDBaseT™ output modules to the displays attached to receivers or the remote control of source devices attached to transmitters (x=sink/src, y=1~32/all) and allow the IR channel on/off (z=0/1)
IRMASKCPU x y z*	Set the IR routing of CPU control board to the displays attached to receivers, the remote control of source devices attached to transmitters or all IR signals control of CPU (x=sink/src/out, y=1~32/all) and allow the IR channel on/off (z=0/1)
SHOWIRMASKOUT x y*	Show the IR routing of HDBaseT™ output module(s) (x=sink/src, y=1~32/all)

RS-232 AND TELNET COMMANDS

Command Codes	Functions
SHOWIRMASKCPU x y*	Show the IR routing of CPU control board (x=sink/src/out, y=1~32/all)
UART x y "str"	Write UART string to output port (x=in/out, y=1~32, "str"="string")
UARTBAUD x y	Set the UART Baud rate of output (x=1~32, y=rate)
STATUSUART	Show the UART Baud rate of output
TEMPSTATUS	Show temperature sensor values y1 and y2
SETIPADDR	Set the IP address (x.x.x.x)
SETSNMASK	Set the Subnet Mask address (x.x.x.x)
SETGWADDR	Set the Gateway address (x.x.x.x)
IPCONFIG	Show the current IP configuration
RSTIP	Reset the IP configuration to default values (DHCP)
BUZZER x	Set the buzzer (0=mute, 1=unmute)
REBOOT	Reboot the system
SAVETO x	Save as preset x (1~10) **See below for details.
RECALLTO x	Recall the preset x (1~10) **See below for details.
RESET	Reset the system to O1I1, O2I2, O3I3, O4I4, O5I5, etc.
VERSION	Show the firmware version

Note:

- 1. HELP:** Show command list.
- 2. Commands will be not executed unless followed by a carriage return. Commands are not case-sensitive.**
- 3. Commands with one asterisk (*) will function on compatible HDBaseT™ input/output modules and transmitters/receivers only. 'sink'=the connected Receiver(s), 'src'=the connected Transmitter(s), 'out'=the CPU control board and 'all'=all IR ports.**

*EDID: SUPPORTS 3 EDID MODES

- 1. Standard Mode:** Uses the built-in EDID settings that support video up to 1080p@60 or WUXGA@60 (RB) video and LPCM 2CH audio.
- 2= Dynamic Mode:** Reads the EDID settings from the display connected to the lowest numbered output port. For example, if output 2 6 8 9 are connected, the EDIE of output 2 will be used. When output 2 is unplugged, the EDID of output 6 will be used. When using Dynamic mode, make sure the EDID of the lowest port can be supported by all output displays.
- 3= Manual Mode:** Supports independent EDID settings by selecting the input and output ports.

**SAVE/RECALL FUCTIONS

The Save/Recall fuction will save the current matrix cross points and also any changes to the EDID modes or assigned ports.

SETUP PROCEDURE FOR 4K2K UHD

The default EDID setting, regardless of I/O cards is 1080p. Because EDID determines when a source can output a 4K2K signal, the matrix switcher must be told which source and display to use for EDID information exchange. These changes are done using the front panel of the matrix or via Telnet.

Using the Telnet command “**EDIDSTATUS**” will return a result like this.

telnet-> edidstatus

EDID Mode: (1) INTERNAL (2) DYNAMIC (3) MANUAL

I01:1 I02:1 I03:1 I04:1 I05:1 I06:1 I07:1 I08:1
 I09:1 I10:1 I11:1 I12:1 I13:1 I14:1 I15:1 I16:1
 I17:1 I18:1 I19:1 I20:1 I21:1 I22:1 I23:1 I24:1
 I25:1 I26:1 I27:1 I28:1 I29:1 I30:1 I31:1 I32:1

EDID Assigned Port:

I01:01 I02:02 I03:03 I04:04 I05:05 I06:06 I07:07 I08:08
 I09:09 I10:10 I11:11 I12:12 I13:13 I14:14 I15:15 I16:16
 I17:17 I18:18 I19:19 I20:20 I21:21 I22:22 I23:23 I24:24
 I25:25 I26:26 I27:27 I28:28 I29:29 I30:30 I31:31 I32:32

telnet->

Say you have a UHD Blu-Ray player connected to Input #4, and your UHD display is on Output #10

You first send Telnet **EDIDMODE 4 10**

The matrix will confirm with

“**EDIDMODE 4 10**”

Example: telnet-> edidmode 4 10

EDIDMODE 4 10

telnet->

This changes the EDID of the matrix switcher from Internal to External on Input #4

Then you would send Telnet **EDIDPORT 4 10**

The matrix will confirm with “**The EDID of In Port 4 is assigned to Out Port 10.**”

Example: telnet-> edidport 4 10

The EDID of In Port 4 is assigned to Out Port 10.

telnet->

After making these changes, you Telnet **REBOOT**

The matrix will power down and back up.

You can map the EDID from any UHD source to any UHD display, in any combination.

When you map a UHD source to a UHD display, the UHD source will work with all your UHD but only in UHD. You can continue to route a 1080 signal to any of the UHD displays and have video, but you cannot route a UHD source to a non-UHD display and have video. This is because you mapped the UHD source to be, well, UHD.

TELNET CONTROL

Before attempting to use the Telnet control, please ensure that both the Matrix (via the 'LAN /CONTROL' port) and the PC/Laptop are connected to the same active networks.

To access the Telnet control in Windows 7, click on the 'Start' menu and type "cmd" in the Search field then press enter.



- **Under Windows XP** go to the 'Start' menu and click on "Run", type "cmd" with then press enter.



- **Under Mac OS X**, go to Go→Applications→Utilities→Terminal

Once in the command line interface (CLI) type "telnet", then the IP address of the unit and "23", then hit enter.

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>telnet 192.168.5.80 23
```

Note: The IP address of the Matrix can be displayed on the unit's LCM monitor by pressing the MENU button twice.

This will bring us into the unit which we wish to control. Type “help” to list the available commands.

```
telnet-> help

      P0 : Power Off
      P1 : Power On
      RESET : System Reset to 01I1,02I2,03I3,04I4,05I5....
      0xxIxx(x:01~8) : Output 0~8 set to Input 1~8
      ALLOUT xx(x:01~8) : All Output set to Input 1~8
      MUTE xx(x:0~8) : Video mute command at output interface
      UNMUTE xx(x:0~8) : Video unmute command at output interface
      MUTEALL : Mute all outputs
      UNMUTEALL : Unmute all outputs
      SHOWMUTE : Show mute status of all output(0=not muted,1=muted)
      RDMUTE xx(x:0~8) : Read MUTE Status at Output
      HPDLOW xx(x:01~8) : Pull the Hot-Plug-Detect signal to 'LOW'
      HPDHIGH xx(x:01~8) : Pull the Hot-Plug-Detect signal to 'HIGH'
      HPDLOW ALL : Set All Input HPD to Low
      HPDHIGH ALL : Set All Input HPD to High
      SHOWHPD : Report ALL Input Hot-Plug-Detect signal status
      STATUSHPD x(x:1~8) : Show HPD status of input(x)
      SHOWTEMP : Show temperature sensor values y1, y2
      STATUSIN xx(x:01~8) : Report Input connection status
      STATUSOUT xx(x:0~8) : Report Output connection status
      STATUSALL : Report ALL Output connection status
      STATUSEDID : Report ALL Input EDID mode&port
      SETEDIDMODE ii mm(ii:01~8 mm:1~3) : Set EDID mode(mm) to Input(ii)
      SETEDIDMODE ALL mm (mm=1~3) : The EDID mode(mm) of All Input(ii)
      SETEDIDPORT ii pp(ii:01~8 pp:01~8) : Set EDID Assigned Port(pp) to Input(ii)
      SETEDIDPORT ALL mm (pp=01-8) : The EDID of All Inports is assigned to Output
      pp
      ACTIVE : Report I/O active channels
      INDETECT : Input channels detect indicator
      OUTDETECT : Output channels detect indicator
      IPCONFIG : Display the current IP config
      SETIP <IP> <SubNet> <GW> : Setting IP.SbuNet.GateWay(Static IP)
      RSTIP : IP Configuration Was Reset To Factory Defaults(DHCP)
      SETIPADDR <IP> : Setting IP address
      SETSNMASK <SubNet> : Setting subnet mask
      SETGWADDR <GW> : Setting gateway IP address
      R
```

Type “IPCONFIG” To show all IP configurations. To reset the IP, type “RSTIP” and to use a static IP, type “SETIP” (For a full list of commands, see Section 6.4).

Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive. If the IP is changed then the IP Address required for Telnet access will also change accordingly.

On a PC/Laptop that is connected to the same active network as the Matrix, open a web browser and type the unit's IP address on the web address entry bar. The browser will display the unit's Status, Control and User Setting pages.

The 'Status' tab is active, showing the following information:

- Power Status:** Power Status: OFF
- IP Status:** IP Address, NetMask Address, GateWay Address, MAC Address, Http Port Number, Telnet Port Number
- Matrix Status:** A grid of 32 ports, each with an 'OutPut Port' and 'InPut Port' label.

Click on the 'Control' tab to control power, input/output ports, EDID and reset mode.

The 'Control' tab is active, showing the following controls:

- Power Control:** PowerON, PowerOFF buttons
- Matrix Control:** A grid of 32 ports, each with an 'OutPut Port' label and a 'Select Input Port' dropdown menu.
- System Reset:** Reset button

Click on the 'User Setting' tab allows you to reset the IP configuration. The system will ask for a reboot of the unit each time any of the settings are changed. The IP address needed to access the WebGUI control will also need to be changed accordingly on the web address entry bar

The 'User Setting' tab is active, showing the 'IP Address Selection' section:

- Address Type:** DHCP/Static IP
- Static IP Address:** Input fields for IP address
- Subnet Mask:** Input fields for subnet mask
- Default Gateway:** Input fields for default gateway
- Update Settings:** Button to save changes

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