KVMSwitchTech.com

4K|2K CAPABLE

MVID-MTX Series: Modular Matrix Switcher

INSTRUCTION MANUAL

MVID-MTX Modular Matrix Switcher Series

Thank you for purchasing the MVID-MTX Modular Matrix Switcher. You will find this unit easy to install and highly reliable but it is essential that you read this manual thoroughly before attempting to use the Modular Matrix Switcher.

118 W. Streetsboro Street, Ste. 125 | Hudson, OH 44236 | Toll Free: (866) 865-7737

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 qualifier 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.

CONTENTS

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.

- MVID-MTX Modular Matrix Switcher (w/ empty slot & empty cover)
- RS-232 cable
- IR remote w/ battery
- (4) Plastic cushions
- Power Cord
- User Manual

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

The information in this manual has been carefully checked and is believed to be accurate. We assume no responsibility for any infringements of patents or other rights of third parties which may result from its use.

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INTRODUCTION

KVMSwitchTech's MVID-MTX series is a high-performance video and audio modular matrix switcher supporting up to 64 input and 64 output signal sources. It supports different video signals with cross switching. Every video or audio signal is transmitted and switched independently to decrease signal attenuation (does not support A/V breakaway). MVID-MTX supports various changeable cards including HMDI, DVI, VGA, SDI and HDBaseT™ etc, and all the cards support hot plug & play. Users can choose to insert different signal cards for different applications.

The MVID-MTXs have a power fail memory, where upon power restoration, the last matrix configuration will be restored. It has RS-232 port for serial control and optional IP port for TCP/IP control, can be easily controlled by third-part devices.

With its flexible design, MVID-MTX can be used for different project and tend to be an all-in-one solution. It is the combo solution for multimedia conference rooms, control rooms, broadcasting rooms, shopping center etc. It will handle all the audiovisual management, including the switching, driving, scaling etc.

MVID-MTX MODULAR MATRIX SWITCHER MODELS

Models	Height	Maximum Slot	Power supplies	RS-232 control	Audio I/O	Network control
MVID-MTX88	2U	2 input card slots & 2 output card slots	Single	✓	Yes*	Optional
MVID-MTX1616	3U	4 input card slots & 4 output card slots	Dual	✓	No	Optional
MVID-MTX3232	5U	8 input card slots & 8 output card slots	Dual	✓	No	Optional
MVID-MTX6464	10U	16 input card slots & 16 output card slots	Dual	✓	No	Optional

*The MVID-MTX88 is unique in this series in that it comes with (8) analog audio Inputs and (8) analog audio Outputs already installed. These audio I/O's are independent of any other cards installed. You cannot do Audio/Video breakaway and they cannot be routed independently from other channels. For example, when you route HDMI Input 2 to HDMI Output 3, the analog audio Input 2 will also route to analog audio Output 3. This card is not available as a separate card for installation into the other chassis.

On **ALL** models (including MVID-MTX88) cards that have external audio I/O, you can select between the different audio Input sources. For example, the HDBaseT™ Input card has HDMI with embedded audio, and a 3.5mm analog stereo audio port. Using RS-232 commands, you can select the audio source as embedded or external. On the Output card, the embedded and external audio will be the same. You cannot do Audio/Video breakaway.

FEATURES

- Modular chassis with configurable I/O slots, ranging from 4x4 to 64x64
- Various I/O cards, includes HDMI, HDBaseT™, SD/HD/3G-SDI, DVI and VGA cards (Compatible with YUV, YC, CVBS & CVBC) to configure any matrix
- Truly cross-point switching, any input to any output, regardless of signal format
- Supports HDMI1.4a, supports 3D & HDCP compliant
- Integrated HDBaseT™ technology
- Controllable via front panel push buttons, RS-232 & optional TCP/IP, also compatible with 3rd party controlers
- LCD display

SPECIFICATIONS

MAIN UNIT

Control Parts		General	
Serial Control Port	RS-232, 9-pin female D connector	Power Supply	100VAC ~ 240VAC, 50/60Hz
Installation	Rack Mountable	Temperature	14~104°F (-10 ~+40°C)
Pin Configurations	2 = TX, 3 = RX, 5 = GND	Power Consumption	200W (max)
Front panel control	Buttons	Humidity	10% ~ 90%
Options	TCP/IP control by external device. Switcher does not include a build-in web server.		
	Case Dimension (WxHxD)	**Product Weight**	
MVID-MTX88	19 x 3.5 x 12.6 in (483x88x320mm) (2U high)	6.6 lb (3Kg)	
MVID-MTX1616	19 x 5.25 x 12.6 in (483x133x320mm) (3U high)	7.7 lb (3.5Kg)	
MVID-MTX3232	19 x 8.7 x 12.6 in (483x222x320mm) (5U high)	11 lb (5Kg)	
MVID-MTX6464	19 x 17.25 x 12.6 in (483x438x320mm) (10U high)	17.6 lb (8Kg)	

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

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

MVID-MTX SIGNAL CARD (CHANGEABLE CARDS)

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

MVID-MTX Input cards

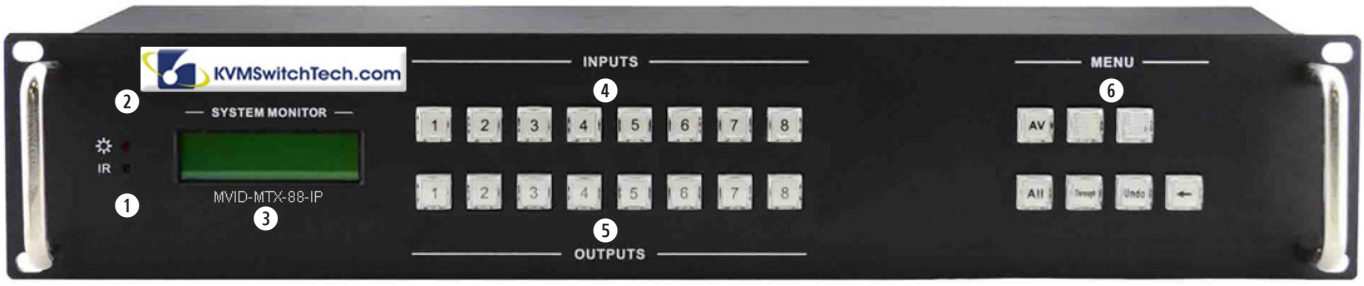
MODELS	INPUTS	SIGNAL FORMAT
DVI-IN-4	4	DVI
VGA-IN-4	4	VGA & STEREO AUDIO
3GSDI-IN-4	4 Inputs & 4 LOOP Outputs for each channel)	SDI
HDMI-4K-IN-4	4	HDMI & STEREO AUDIO
4K2KF-IN-4	4	OPTICAL FIBER
HDBT-4K-IN-4	4	HDBaseT™, RS-232, AUDIO

MVID-MTX Output cards

Models	OUTPUTS	Signal Format
DVI-OUT-4	4	DVI
VGA-OUT-4	4 VGA, 4 STEREO AUDIO	VGA & ANALOG AUDIO
3GSDI-OUT-4	4 Outputs & 4 LOOP Outputs for each channel)	SDI
HDMI-4K-OUT-4	4	HDMI & STEREO AUDIO
4K2KF-OUT-4	4	OPTICAL FIBER
HDBT-4K-OUT-4	4	HDBaseT™, RS-232, AUDIO

FRONT PANEL OPERATION

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



1. IR: IR sensor, receive IR signal sent from IR remote

2. POWER INDICATOR: Illuminate red once powered on

3. LCD SCREEN: Display real-time operation status

4. INPUTS: Buttons for input channels with green back-light indicating, ranges from 1~ 8, (8) selectable channels in total

5. OUTPUTS: Buttons for output channels with green back-light indicating, ranges from 1 ~ 8, (8) selectable channels in total

6. AV: Transfer video and audio signal synchronously

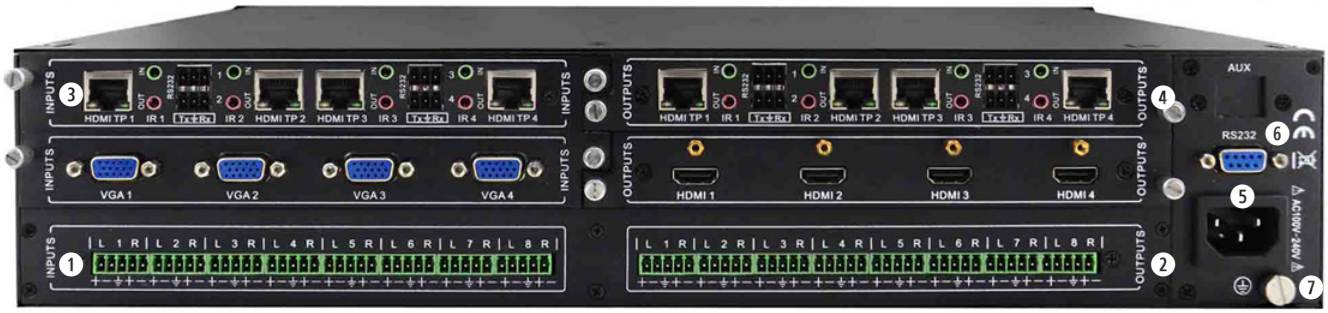
ALL: Select all input/output channel

THROUGH: To transfer the signals directly to the corresponding output channels

UNDO: Undo button, to resume to the status before the command just performed

←: Backspace - to backspace the latest press

BACK PANEL OPERATION



1. INPUTS: Audio input slot

2. OUTPUTS: Audio output slot

3. INPUTS: Input signal card slots, (2) in total

4. OUTPUTS: Output signal card slots, (2) in total

5. POWER PORTS: Connect with household alternating current power

6. RS-232: Serial control port, connect with RS-232 port of control device

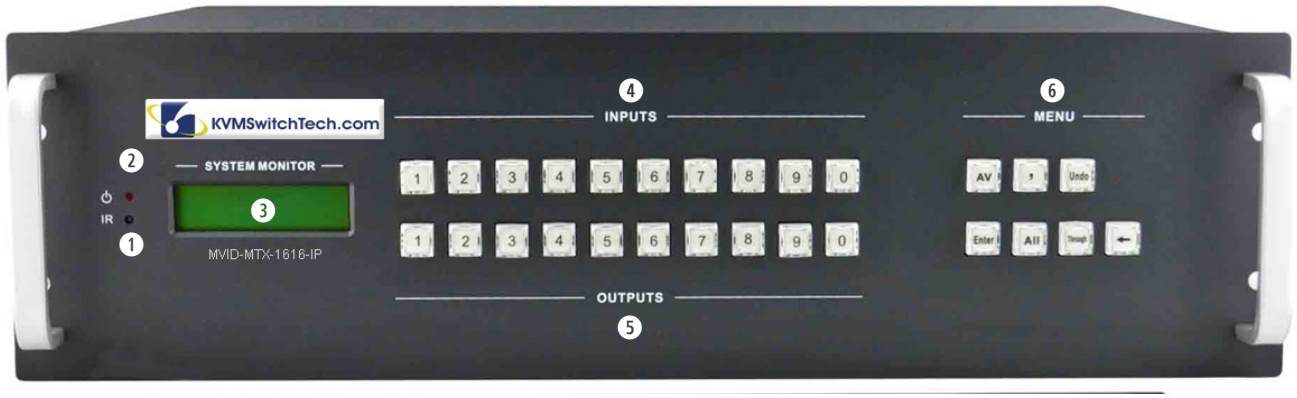
7. GND CONNECTOR: Used for system grounding

8. TCP/IP (Optional): Used for TCP/IP control port

Note: There are only (2) input and (2) output slots for MVID-MTX88, which enables only (2) input cards and (2) output cards to be installed. The input/output cards can be changed based on your requests and supports hot plug and play.

FRONT PANEL OPERATION

MVID-MTX1616/MVID-MTX3232/MVID-MTX6464: The switcher models MVID-MTX1616, MVID-MTX3232, and MVID-MTX6464 share the same function buttons, the only difference is the chassis height and number of I/O's. The front panel of MVID-MTX1616/3232/6464 is shown as below.



1. IR: IR sensor, receive IR signal sent from IR remote

2. POWER INDICATOR: Illuminate red once powered on

3. LCD SCREEN: Display real-time operation status

4. INPUTS: Buttons for input channels with green back-light indicating, ranges from 0~ 9, 32 selectable channels in total

5. OUTPUTS: Buttons for output channels with green back-light indicating, ranges from 0 ~ 9, 32 selectable channels in total

6. MENU AV: Transfer video and audio signal synchronously

,: division button, to divide the output channels when switching to more than one channel

ENTER: Confirm switching operation. Operation will not be executed by the matrix without confirmation

ALL: To transfer an input channel to all output channels

THROUGH: To transfer the signals directly to the corresponding output channels

UNDO: Undo button, to resume to the status before the command just performed

←: Backspace - to backspace the latest press

BACK PANEL OPERATION

1. INPUTS: Input signal card slots

2. OUTPUTS: Output signal card slots

3. POWER SWITCH: Switch between AC110V and AC230V to access different power

4. POWER PORTS: Connect with household alternating current power, including one redundant power

5. RS-232: Serial control port, connect with RS-232 port of control device

6. TCP/IP (Optional): Used for TCP/IP control port

FRONT PANEL BUTTON CONTROL

MVID-MTX88

Users can control MVID-MTX88 rapidly and directly with its front panel buttons. Here is a brief operation guide to front panel buttons.

Format: "Input Channel" + "Switch Mode" +"Output Channel"

Note:

1. **"Switch Mode":** Audio & Video synchronal (AV) or separate switching mode (Audio/ Video)
2. **"Input Channel":** Fill with the number of input channel to be controlled
3. **"Output Channel":** Fill with the number of output channels to be controlled. Press **"All"** to select all the outputs
4. The input/output channels on the rear panel are counting from left to right, top to bottom
5. The input delay time between (2) numbers of every input & output channel must be less than (5) seconds; otherwise the operation will be cancelled.

***Example*:**

1. To transfer input (1) to output (11), press input **"1"**, output **"0" "1"**.
2. To transfer signals from input (1) to all output channels, press buttons in this order: **"1", "All".**

Functional Buttons:

UNDO Button: return to the previous status

Example: Input (6) is connecting with output (6), press input **"6" + "AV"+ output 4** to change the connection. Press **"Undo"** to enable input (6) to reconnect with output (6).

⟵ **Button:** If you press buttons **"1", "AV", "2", "⟵"** in order, then **"2"** will be canceled.

THROUGH Button: get straight I/O connection, e.g. input 1 > output 1, input 2 > output 2. Press **"Input Channel"+"Through"**

Example: If you press buttons **"ALL", "THROUGH"** in order, then the result will be like input 1 > output 1, input 2 > output 2, input 3 > output 3 … input 8 > output 8.

MVID-MTX

Users can control the MVID-MTX rapidly and directly with its front panel buttons. To switch AV/ A/ V signal, please operate the buttons under the following format:

Format: "Input Channel" + "AV" +"Output Channel"+"Enter"

Note:

1. **"Switch Mode":** Audio & Video synchronal (AV) or separate switching mode (Audio/ Video)
2. **"Input Channel":** Fill with the number of input channel to be controlled
3. **"Output Channel":** Fill with the number of output channels to be controlled. Press **"All"** to select all the outputs
4. **"," Button:** Use to separate multiple I/O channels, and press **"ENTER"** button to confirm the operation
5. The input/output channels on the rear panel are counting from left to right, top to bottom.
6. The input delay time between (2) numbers of every input & output channel must be less than (5) seconds; otherwise the operation will be cancelled.

Example:

1. To transfer input (1) to output (11), press input **"1"**, output **"0" "1"**.
2. To transfer signals from input (1) to all output channels, press buttons in this order: **"1", "All".**

Functional Buttons:

UNDO Button: return to the previous status

Example: Status 1: Input 6 > output 6

Press input **"6" + "AV"+ output 4** to change the connection. Press **"Undo"** to return to Status 1.

⟵ **Button:** Backspace the last operation

Example: If you press buttons **"1", "AV", "2", "⟵"** in order, then **"2"** will be canceled.

THROUGH Button: Get straight I/O connection, e.g. input 1 > output 1, input 2 > output 2. **Format: "Input Channel"+"Through"**

***Example*:** If you press buttons **"ALL", "THROUGH"** in order, then the result will be like input 1 > output 1, input 2 > output 2, input 3 > output 3 … input 16 > output 16.

CHANGEABLE CARDS INTRODUCTION & INSTALLATION

The various MVID-MTX chassis units are designed to work with various changeable input/ output cards, which can be installed in any MVID-MTX empty slot (these cards are hot-swappable). Cards are connection specific, designed to accept signals such as DVI, HDMI, VGA, HDBaseT™, and SDI.

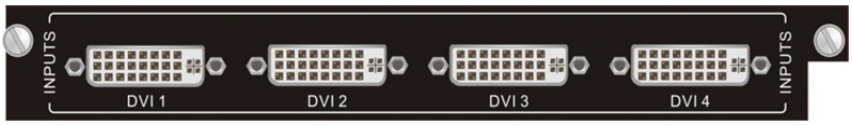
DVI CARD

DVI-IN-4 & DVI-OUT-4

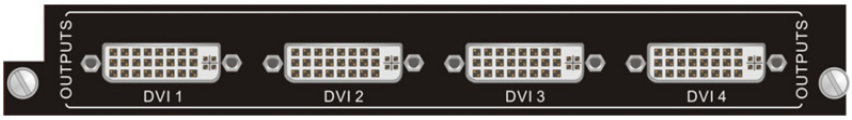
Input		Output	
Input	(4) DVI	Output	(4) DVI
Input Connector	Female DB24+5	Output Connector	Female DB24+5
Input Level	T.M.D.S. 2.9V/3.3V	Output Level	T.M.D.S. 2.9V/3.3V
Input Impedance	75Ω	Output Impedance	75Ω
General			
Gain	0 dB	Bandwidth	340 MHz (10.2 Gbit/s)
Video Signal	DVI 1.0/HDMI 1.3 full digital T.M.D.S signal	Switching Speed	200ns (Max)
Crosstalk	<-50dB@5MHz	Max Time-delay	5nS (±1nS)
EDID and DDC	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data using DVI and HDMI standards. EDID and DDC signals are actively buffered		
HDCP	Compliant with HDCP using DVI and HDMI 1.3 standards		

- Fully compatible with HDMI 1.3 and HDCP, but does not support analogy signal
- Embedded EDID management technology, supporting DDC

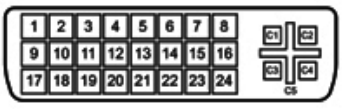
DVI-IN-4: Is an input card which accepts a maximum of (4) separate DVI input signals. Input signals can be passed to output devices through DVI-OUT-4, or passed through to other types of outputs, through other output cards in the series.



DVI-OUT-4: Is an output card, which provides a maximum of (4) separate DVI output signals. Input signals can come from an DVI-IN-4, or from other kinds of input cards in the series.



Pin Layout of the DVI-I connector (Dual-Link). (Female)



PIN	Function	PIN	Function	PIN	Function
1	T.M.D.S.Data2-	9	T.M.D.S.Data1-	17	T.M.D.S. Data 0-
2	T.M.D.S.Data2+	10	T.M.D.S.Data1+	18	T.M.D.S. Data 0+
3	T.M.D.S. Data 2/4 Shield	11	T.M.D.S.Data1/3 Shield	19	T.M.D.S. Data 0/5 Shield
4	T.M.D.S. Data 4-	12	T.M.D.S.Data3-	20	T.M.D.S.Data5-
5	T.M.D.S. Data 4+	13	T.M.D.S.Data3+	21	T.M.D.S.Data5+
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (return for +5V, Hsync and Vsync)	23	T.M.D. S. Clock +
8	Analog Vertical Sync	16	Hot Plug Detect	24	T.M.D.S .Clock-

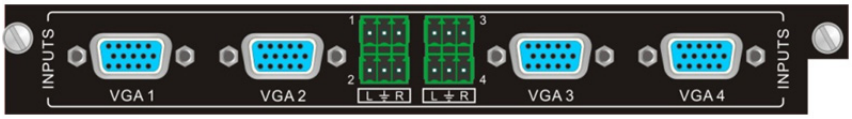
VGA SIGNAL CARD

VGA-IN-4/VA-IN-4 & VGA-OUT-4

Video Input		Video Output	
Input	(4) VGA	Output	(4) VGA
Input Connector	Female 15 pin HD	Output Connector	Female 15 pin HD
Input Level	0.5 ~ 2.0Vp-p	Output Level	0.5 ~ 2.0Vp-p
Input Impedance	75Ω	Output Impedance	75Ω
Audio Input		**Audio Output**	
Input	(4) STEREO AUDIO	Output	(4) STEREO AUDIO
Input Connector	3P Captive connector	Output Connector	3.5mm Stereo audio connector
CMRR	>90dB @20Hz ~ 20KHz	CMRR	>90dB @20Hz ~ 20KHz
Input Impedance	>10KΩ	Output Impedance	>10KΩ
General			
Gain	0 dB	Bandwidth	350MHz (-3dB), fully load
Video Signal	VGA-UXGA, RGBHV, RGBS, RGsB, RsGsBs, component video, S-video & composite video		
Crosstalk	<-50dB@5MHz	Switching Speed	200ns (Max)
EDID and DDC	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data using DVI and HDMI standards. EDID and DDC signals are actively buffered		
HDCP	Compliant with HDCP using DVI and HDMI 1.4a standards		

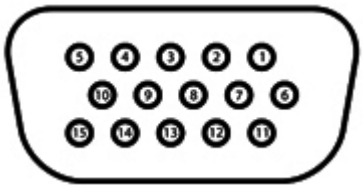
- Scales all inputs to 1080p
- Compatible with C-Video, YUV, YC (Factory preset function)
- Supports RGBHV, RGsB, RGBS, RsGsBs, YUV, YC and Composite video

VGA-IN-4: Is an input card which accepts a maximum of (4) separate VGA inputs and (4) stereo audio inputs. Input signal can pass to output device through other output cards in the series. (Resolutions Supported: 1920x1080p; XGA (1024x768); 1280x720p; WXGA (1280x800).



VGA-OUT-4: Is an output card, which provides a maximum of (4) separate VGA output signals.

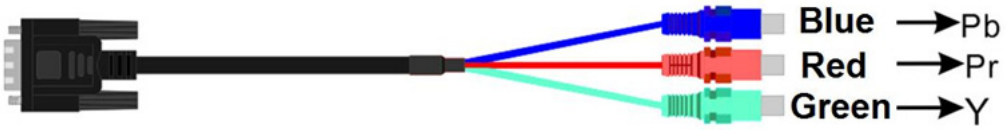
Pin layout of the VGA connectors (female):



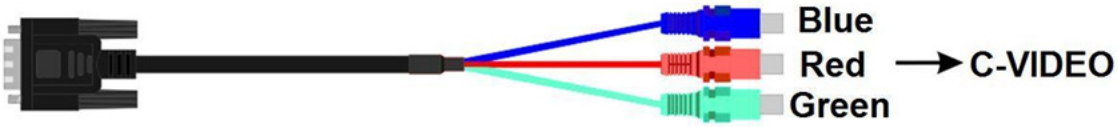
PIN	Signal Name	PIN	Signal Name
Pin 1	RED	Pin 9	KEY/PWR
Pin 2	GREEN	Pin 10	GND
Pin 3	BLUE	Pin 11	ID0/RES
Pin 4	ID2/RES	Pin 12	ID1/SDA
Pin 5	GND	Pin 13	HSync
Pin 6	RED_RTN	Pin 14	VSync
Pin 7	GREEN_RTN	Pin 15	ID3/SCL
Pin 8	BLUE_RTN		

Connect the devices via VGA converting cable as shown:

- Connect with Component Video (YPbPr) Source



- Connect with Composite Video (C-VIDEO) Source



(4) Male VGA to female YPbPr cable (Only included with the VGA-IN-4/ANI-IN-VA cards)
(4) Male VGA to female S-video & RCA (C-video) cable (Only included with the VGA-IN-4/ANI-IN-VA cards)

Component Video Dongle

S-Video or Composite Video Dongle

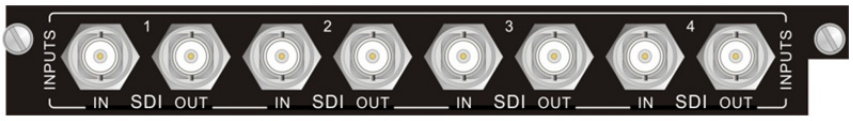
SDI SIGNAL CARD

3GSDI-IN-4 & 3GSDI-OUT-4

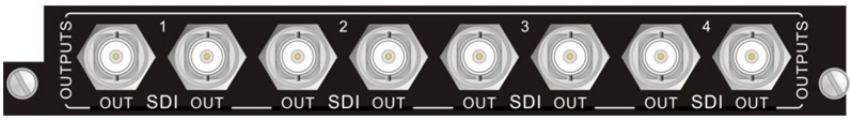
Input		Output	
Input	(4) SDI	Output	(4) SDI
Input Connector	Female BNC	Output Connector	Female BNC
Input Level	0.8Vp-p ± 10%	Output Level	0.8Vp-p ± 10%
Input Impedance	75Ω	Output Impedance	75Ω
General			
Gain	Unity	Transmission Distance	300M (Max)
Video Standard	SMPTE 292M, SMPTE 259M, SMPTE 424M, ITU-RBT.601, ITU-RBT.1120		
Audio Bits per Sample	18 bits per channel, 2 channels (L, R)		
Input Return Loss	< -14dB@1MHz ~ 1.5GHz	Maximum Data Rate	2.97 Gbps
Data Rate Lock	Auto	Data Type	8bit, 10bit

- Compatible with various different SDI signal formats, including SD/HD/3G-SDI (adaptive)
- Every port has looping output for local monitoring

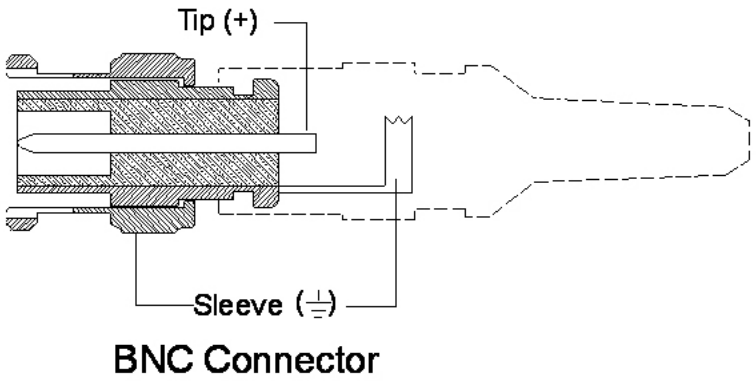
3GSDI-IN-4: Is an input card which accepts a maximum of (4) separate SDI input signals. Input signal can be passed to output device through 3GSDI-OUT-4, or passed through other output cards in the series. This card is unique when compared to the other input cards in that it provides a “through” connection for daisy-chainging video devices. Each input signal can be immediately sent back out (“looping” it), without switching capability, to go to individual monitors.



3GSDI-OUT-4: Is an output card which provides a maximum of (4) separate SDI output signals. Input signals can come from an 3GSDI-IN-4, or from other kinds of input cards in the series.



The BNC connector is shown as the figure below.



BNC Connector

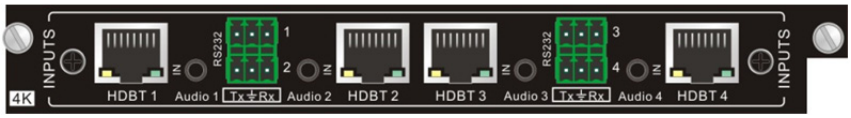
HDBASET™ CARD

HDBT-4K-IN-4 & HDBT-4K-OUT-4

Input		Output	
Input	(4) RJ45	Output	(4) RJ45
Input Connector	Female RJ45 / 3.5mm mini jack for IR (3) poles captive screw connector for RS-232	Output Connector	Female RJ45 / 3.5mm mini jack for IR (3) poles captive screw connector for RS-232
Input Impedance	75Ω	Output Impedance	75Ω
General			
Gain	0dB ~ 10dB@100MHz	Bandwidth	6.75Gbps
Resolution Range	800x600 ~ 1920x1200	Transmission Distance	70M(Max)
SNR	>70dB@ 100MHz-100M	Return Loss	<-30dB@ 5KHz
THD	< 0.005%@1KHz	Min. ~ Max. Level	< 0.3V ~ 1.45Vp-p
HDMI Standard	Support HDMI1.4 and HDCP	Differential Phasic Error	±10° @ 135MHz_100M

- Supports hot-plug, HDTV, compatible with HDBaseT™ 1.0, HDMI 1.4a & HDCP 1.4
- Wide resolution range from 480p to **4K2K**, 1080p 3D compliant
- Extends HDBaseT™ signal up to 70M at 1080p or 40M at **4K2K**
- Bi-directional RS-232 transmission on single cable
- Auxiliary audio ports support stereo signal
- Embedded EDID management technology

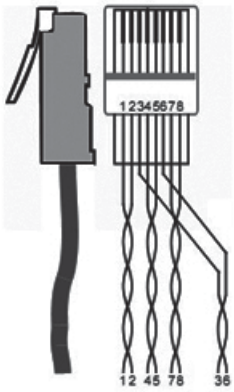
HDBT-4K-IN-4: Is an input card which accepts a maximum of input (4) separate HDMI signals. Input signals can be passed to output devices through HDBT-4K-OUT-4, or pass through to other types of output cards in the series. This card needs to work in conjunction with an TRA-HDB-2P HDBaseT™ Transmitter*.



HDBT-4K-OUT-4: Is an output card which provides a maximum of (4) separate output signals. Input signals can come from HDBT-4K-IN-4, or from other kinds of input cards in the series. This card needs to work in conjunction with an REC-HDB-2P HDBaseT™ Receiver*.

Provision is made within the card for passing RS-232 and IR over the same CAT5e/6 (or better) cable. These are specific to the HDBaseT™ channel. They do not have to be used for the HDBaseT™ channel to function, but are provided for those situations where they are needed. Please note that this is separate of the RS-232 and IR channels that are provided for the MVID-MTX Matrix unit's controls.

Pin layout of the RJ45 connectors: (2) different connection standards can be chosen; connectors on both ends of the same cable should use the same standard.



When using STP, Cable connectors MUST be metal, and the shielded layer of cable MUST be connected to the connector's metal shell, to well share the grounding.

TIA/EIA T568A		TIA/EIA T568B	
PIN	**CABLE COLOR**	**PIN**	**CABLE COLOR**
1	green white	1	orange white
2	green	2	orange
3	orange white	3	green white
4	blue	4	blue
5	blue white	5	blue white
6	orange	6	green
7	brown white	7	brown white
8	brown	8	brown

For more information on the TRA-HDB-2P and REC-HDB-2P please see our website.

HDMI 4K2K CARD

HDMI-4K-IN-4 & HDMI-4K-OUT-4

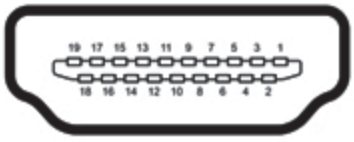
Video Input		Audio Input	
Input	(4) HDMI	Input	(4) ANALOG
Input Connector	Female HDMI	Input Connector	3.5mm pluggable terminal block
Min.~ Max. Level	T.M.D.S. 2.9V~3.3V	Input Impedance	75Ω
Input Impedance	100Ω (Differential)	Frequency Response	20Hz~20KHz
Video Output		**Audio Output**	
Output	(4) HDMI	Output	(4) STEREO
Output Connector	Female HDMI	Output Connector	3.5mm Stereo audio connector
Min.~ Max. Level	T.M.D.S. 2.9V~3.3V	Output Impedance	75Ω
Output Impedance	100Ω (Differential)	Frequency Response	20Hz~20KHz
General			
Gain	0dB ~ 10dB@100MHz	Bandwidth	6.75Gbps
Max Resolution	4K2K	Crosstalk	<-50dB@5MHz
Transmission Distance	1080p ≤ 70M / 4K2K ≤ 40M	Switching Speed	200ns (Max)
Work Temperature	-10°C~ +40°C	Reference Humility	10%~90%
SNR	>70dB@100MHz-100M	Return Loss	<-30dB@ 5KHz
Supported Audio Format	Embedded HDMI Audio: Stereo, Dobly Digital, DTS, DTS-HD / Analog Audio: Stereo only		
HDMI Standard	Supports HDMI 1.4& DVI 1.0		
DID& HDCP Management	Compliant with HDCP 1.4 / Supports manual EDID management		

- Supports hot-plug, HDMI 1.4 & HDCP 1.4 compliance
- Compatible with DVI signal
- Supports high-definition HDMI source up to 4K2K, 1080p 3D compliance
- Provides auxiliary audio port as supplement to HDMI embedded audio
- Embedded EDID management technology

HDMI-4K-IN-4: Is an input card which accepts a maximum of input (4) separate HDMI signals. Input signals can be passed to output devices through HDMI-4K-OUT-4, or pass through to other types of output cards in the series.

HDMI-4K-OUT-4: Is an output card which provides a maximum of (4) separate output signals. Input signals can come from HDMI-4K-IN-4, or from other kinds of input cards in the series. HDCP compliant status settable via RS-232 commands.

Pin layout of the HDMI connectors (Female)



PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	TMDS Data 2+	8	TMDS Data 0 Shield	15	DDC Clock
2	TMDS Data 2 Shield	9	TMDS Data 0-	16	DDC Data
3	TMDS Data 2-	10	TMDS Clock+	17	Ground
4	TMDS Data 1+	11	TMDS Clock Shield	18	+5V Power
5	TMDS Data 1 Shield	12	TMDS Clock-	19	Hot Plug Detect
6	TMDS Data 1-	13	CEC	20	SHELL
7	TMDS Data 0+	14	No Connect		

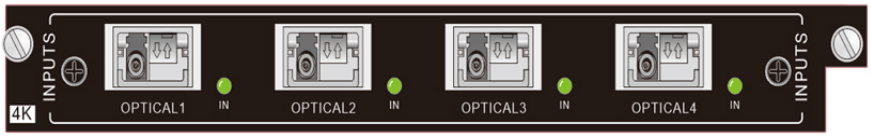
4K2K FIBER CARD

4K2KF-IN-4 & 4K2KF-OUT-4

Input		Output	
Input	(4) Fiber Optical	Output	(4) Fiber Optical
Input Connector	SPF Fiber Optical Connector	Output Connector	SPF Fiber Optical Connector
Fiber Type	Multi-mode, Single mode	Fiber Type	Multi-mode, Single mode
General			
Data Rate	10.2 Gbps	Color Depth	8bit, 10bit, 12bit, 16bit
Work Temperature	0°C~55°C	Reference Humility	10%~90%
Optical Fiber Mode			
Connector	LC connector	Resolution	Up to 4K2K
Transmission Distance	1Km (Single mode transmission, using Single Mode Optical Module and OM3 Single Mode Fiber Cable) 300M (Multi-mode transmission, using Single/ Multi mode Optical Module and OM3 Multi-Mode Fiber Cable)		
Data Rate	10.2Gbit/s		

- Support hot-plug; High bandwidth: 10.2Gbps
- Compliant with HDMI 1.4
- Capable to transmit **4K2K** & 1080p 3D (max) signals
- Supports multi-mode transmission up to 300m and single mode transmission up to 1Km

4K2KF-IN-4: Is an input card which accepts a maximum of input (4) separate signals. Corresponding indicator illuminates green when there is an input signal. Input signals can come from 4K2KF-OUT-4, or from other kinds of output cards in the series.



4K2KF-OUT-4: Is an output card which provides a maximum of (4) separate output signals. Input signals can come from 4K2KF-IN-4, or from other kinds of input cards in the series. Corresponding indicator illuminates green when there is output signal.

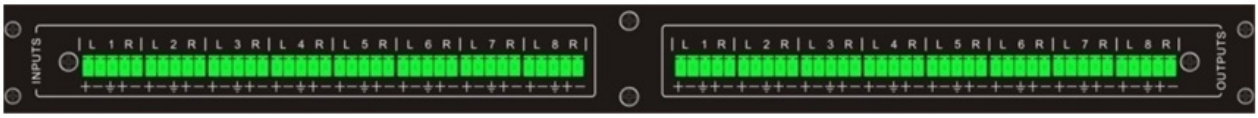
Note: Use the 4K2KF-IN-4 & 4K2KF-OUT-4 with an optical fiber transmitter/receiver.

AUDIO CARD

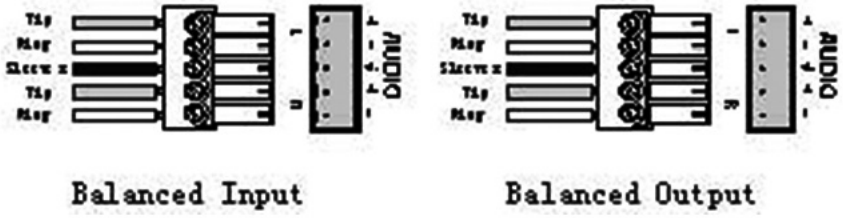
MVID-MTX88 Only

Input		Output	
Input	(8) STEREO	Output	(8) STEREO
Input Connector	3.5mm captive screw connectors (5) pole	Output Connector	3.5mm captive screw connectors (5) pole
Input Impedance	>10KΩ	Output Impedance	50Ω
General			
Frequency Response	20Hz~20KHz, ±0.5dB	CMRR	>90dB@20Hz~20KHz
Stereo Channel Separation	>80dB@1KHz	THD + Noise	1% @1KHz 0.3%@20KHz at nominal level

- 8x8 stereo audio cross point switching card
- Supports the balanced/unbalanced audio, by different connection
- It is **NOT** a hot plug card, fixed on the chassis

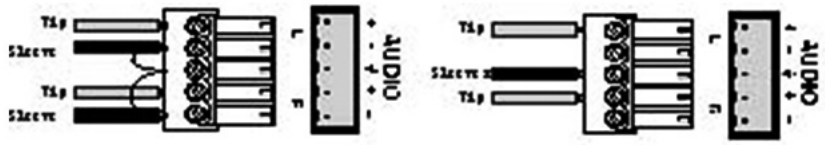


Balanced Audio Connection:



Balanced Input　　Balanced Output

Unbalanced Audio Connection:



Unbalanced Input　　Unbalanced Output

IR REMOTE CONTROL

With the IR remote, MVID-MTX could be controlled remotely. As the function buttons on the IR remote are the same with the ones on the front panel, the IR remote shares the same operations and commands with the control panel.

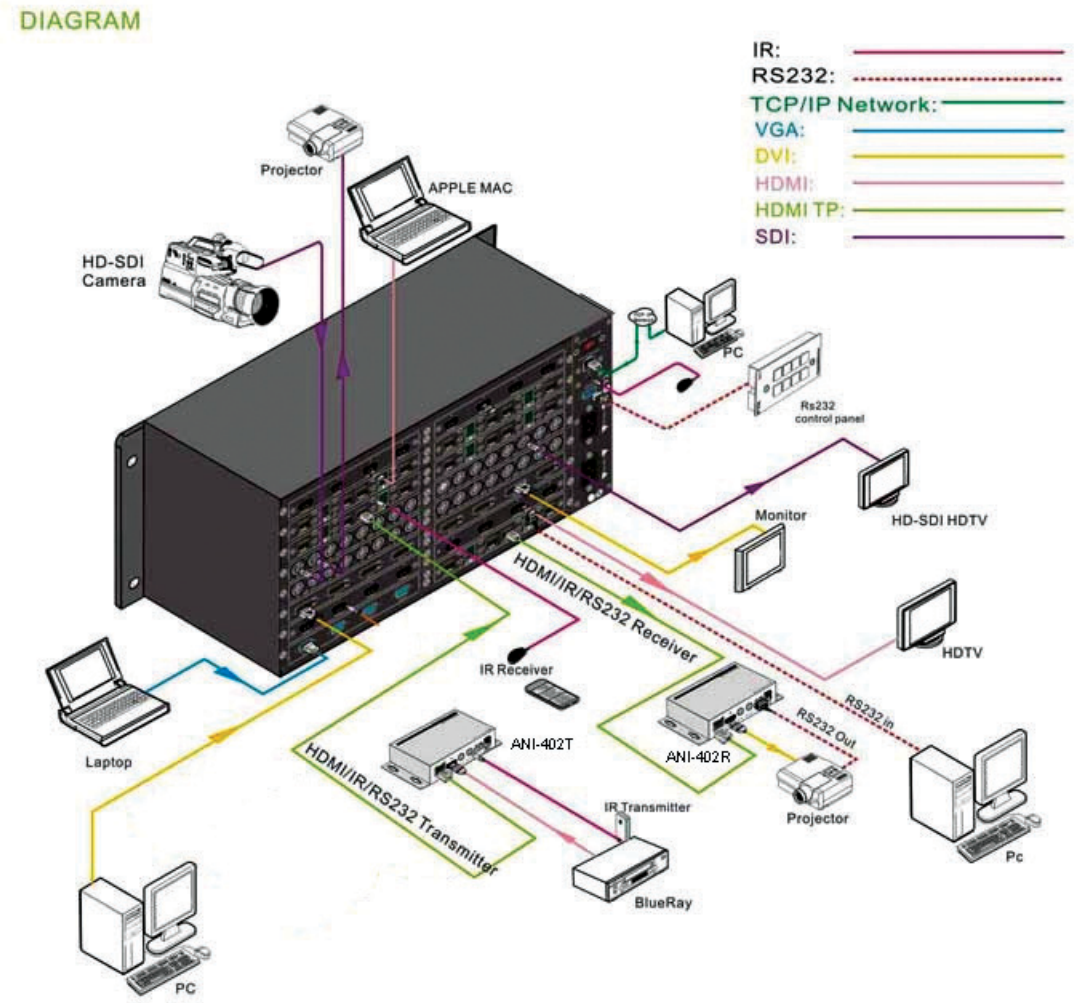
Press the buttons under below format:

“Input Channel” + “Switch Mode” +“Output Channel”

USAGE PRECAUTIONS

1. System should be installed in a clean environment and has a prop temperature and humidity.
2. All of the power switches, plugs, sockets and power cords should be insulated and safe.
3. All devices should be connected before power on.

CONNECTION DIAGRAM

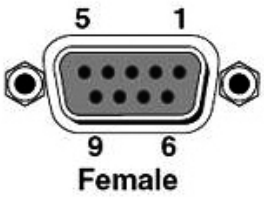


APPLICATION

MVID-MTX series has a good application in various occasions, such as radio & television, multi-media meeting room, big screen displaying, television education and command & control center etc.

CONNECTION OF RS-232 COMMUNICATION PORT

Besides the front control panel and IR remote, the MVID-MTX can also be controlled by far-end control system or through the Ethernet control via the RS-232 communication port. This RS-232 communication port is a female 9-D connector. The definition of its pin layout is shown in the table below.



NO.	PIN	FUNCTION
1	N/u	Unused
2	Tx	Transmit
3	Rx	Receive
4	N/u	Unused
5	Gnd	Ground
6	N/u	Unused
7	N/u	Unused
8	N/u	Unused
9	N/u	Unused

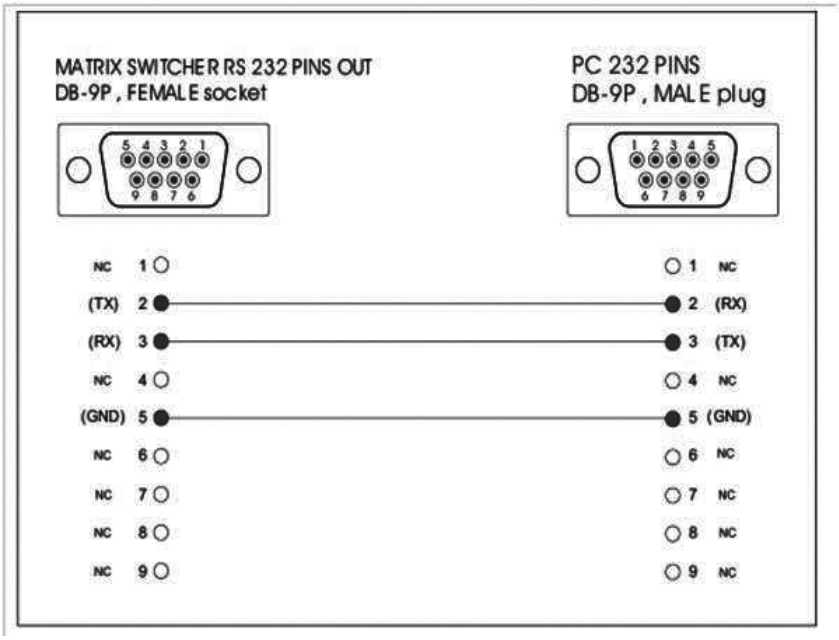
When the MVID-MTX connects to the RS-232 port of a computer with control software, users can control it by that computer. To control the switcher, users need to use RS-232 control software.

http://www.kvmswitchtech.com/32x32-multi-video-format-matrix-switch-with-hdmi-dvi-sdi-vga-fiber-optic-support-and-tcpip-control-p50198.htm

REMOTE COMMAND SYSTEM FROM A PERSONAL COMPUTER

The MVID-MTX Matrix series can be controlled remotely from a personal computer. The control signal is brought into the MVID-MTX Matrix through the RS-232 connector on the back panel of the unit. The commands are input through software that comes with the MVID-MTX Matrix, once installed in the computer.

RS-232 Cable Pins Used

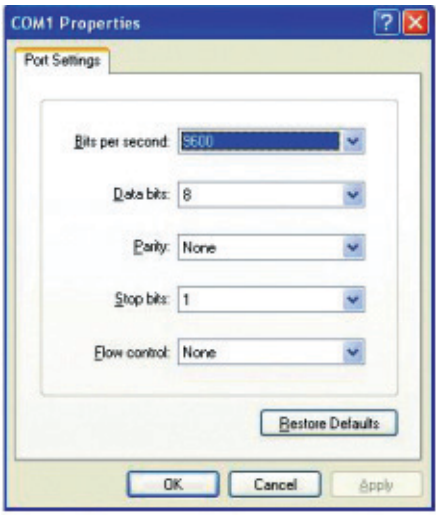


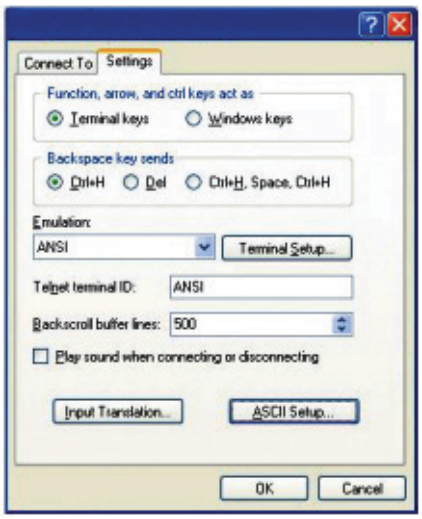
Communications Protocol:

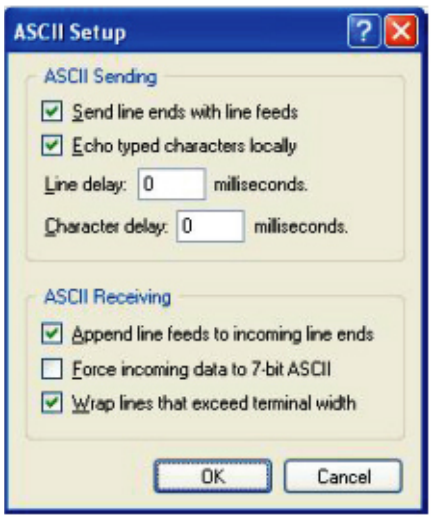
1. Transmission Rate: 9600 bps
2. Data Format: 8 data bits, No parity , 1 start bit, and 1 stop bit
3. Flowing Control: None

Also known as: 9600,8,n,1

Proper settings for the computer's communication protocol are shown in the screen shots below:







RS-232 COMMUNICATION COMMANDS

With this command system, users are able to control and operate theMVID-MTX with RS-232 software remotely.
Communication protocol: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none.

Command Types	Command Codes	Functions
Commands for Main Unit	/*Type;	Inquire the models information.
	/%Lock;	Lock the keyboard of the control panel on the Matrix.
	/%Unlock;	Unlock the keyboard of the control panel on the Matrix.
	/^Version;	Inquire the version of firmware
	/:MessageOff;	Turn off the feedback command from the com port. It will only show the “switcher OK”.
	/:MessageOn;	Turn on the feedback command from the com port.
	Undo.	To cancel the previous operation.
	Demo.	Switch to the “demo” mode, 1>1, 2>2, 3>3 … and so on.
	[x]All.	Transfer signals from the input channel [x] to all output channels
	All#.	Transfer all input signals to the corresponding output channels respectively.
	All$.	Switch off all the output channels.
	[x]#.	Transfer signals from the input channel [x] to the output channel [x].
	[x]$.	Switch off the output channel [x].
	All@.	Switch on all the output.
	[x]@.	Switch on output [x].
	[x1]V[x2].	Transfer the video signals from the input channel [x1] to the output channel [x2].
	[x1]A[x2].	Transfer the audio signals from the input channel [x1] to the output channel [x2].
	[x1]B[x2].	Transfer signal from the input channel [x1] to the output channel [x2].
	Status[x].	Inquire the input channel to the output channel [x].
	Status.	Inquire the input channel to the output channels one by one.
	Save[Y].	Save the present operation to the preset command [Y]. [Y] ranges from 0 to 9.
	Recall[Y].	Recall the preset command [Y].
	Clear[Y].	Clear the preset command [Y].
	PWON.	Work normally.
	PWOFF.	Enter in standby mode.
	HDCPON.	Turn on the HDCP output.
	HDCPOFF.	Turn off the HDCP output.
	/V00.	Inquire the version of backboard software.
	UpgradeIntEDID[x].	Upgrade built-in EDID data. Supports 6 types of EDID data (see Note 6). When the switcher gets the command, it will show a message to send EDID file (.bin file).
	EDIDUpgrade[x].	Upgrade EDID data of input ports. When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be canceled after 10 seconds.
	EDID/[x]/[y].	Set the EDID data of input port [x] to built-in EDID data of type [y]. The value of [y] varies from 1~6. The EDID data types are same as mentioned above.
	EDIDG[x].	Get EDID data from output channel X and display the data on serial port control software. [x] is the output port number.
	EDIDMInit.	Recover the factory default EDID data for every input channel.
	EDIDM[X]B[Y].	Manually EDID switching. Enable input [Y] to learn the EDID data of output[X]. If there is problem learning the EDID data, it will automatically set the default EDID data for input [Y].
	USER/[Y]/[X]:*****;	Custom command for signal cards, [Y]=I/O; [X]= port number; *****: User-definable command, e.g. 0623%
	0911%.	Restore factory default. All I/O connection will be restored to straight through: 1>1, 2>2,…; saved operation status will remain the same.

ANI-IN-DVS

Command Types	Command Codes	Functions
Commands for Signal Cards	USER/I/[x]:02xx%;	Set the brightness of input [x] to xx, xx=00~99
	USER/I/[x]:03xx%;	Set the contrast of input [x] to xx, xx=00~99
	USER/I/[x]:04xx%;	Set the saturation of input [x] to xx, xx=00~99
	USER/I/[x]:05xx%;	Set the sharpness of input [x] to xx, xx=00~99
	USER/I/[x]:0606%;	(For 4I-DS/ VA) Auto-adjust VGA input signal
	USER/I/[x]:0607%;	Set picture's color temperature
	USER/I/[x]:0608%;	Configure image scale
	USER/I/[x]:0614%;	Configure picture mode
	USER/I/[x]:0617%;	Restore input [x] to factory default.
	USER/I/[x]:0619%;	Set the resolution of input [x] to 1360x768, HD
	USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768, XGA
	USER/I/[x]:0627%;	Set the resolution of input [x] to 1280x720, 720P
	USER/I/[x]:0628%;	Set the resolution of input [x] to 1280x800, WXGA
	USER/I/[x]:0629%;	Set the resolution of input [x] to 1920x1080, 1080P
	USER/I/[x]:0620%;	Set the resolution of input [x] to 1920x1200, WUXGA
	USER/I/[x]:0621%;	Set the resolution of input [x] to 1600x1200, UXGA
	USER/I/[x]:0698%;	Software update
	USER/I/[x]:0686%;	Set the output signal of input [x] to HDMI
	USER/I/[x]:0687%;	Set the output signal of input [x] to DVI

ANI-OUT-DVS

Command Types	Command Codes	Functions
Commands for Signal Cards	USER/O/[x]:0201%;	Set the input source of output [x] to YPbPr
	USER/O/[x]:0202%;	Set the input source of output [x] to VGA
	USER/O/[x]:0203%;	Set the input source of output [x] to C-VIDEO
	USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720P @60Hz
	USER/O/[x]:0813%;	Set the resolution of output [x] to 1280x1080P @60Hz
	USER/O/[x]:0824%;	Set the resolution of output [x] to 1024x768 @60Hz
	USER/O/[x]:0826%;	Set the resolution of output [x] to 1280x1024 @60Hz
	USER/O/[x]:0837%;	Set the resolution of output [x] to 1920x1200 @60Hz
	USER/O/[x]:0106%;	Switch on the HDCP compliance of output [x]
	USER/O/[x]:0107%;	Switch off the HDCP compliance of output [x]
	GetResolution[x].	Capture output resolution of output [x]
	GetVGAPortMode[x].	Inquire the output status of VGA port [x]
	USER/O/[x]:0617%;	Restore output [x] to factory default.

VA-IN-4

Command Types	Command Codes	Functions
Commands for Signal Cards	USER/I/[x]:0622%;	Set the signal of input channel [x] to VGA.
	USER/I/[x]:0623%;	Set the signal of input channel [x] to YCBCR.
	USER/I/[x]:0624%;	Set the signal of input channel [x] to SVIDEO.
	USER/I/[x]:0625%;	Set the signal of input channel [x] to CVIDEO.
	USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768@60Hz.
	USER/I/[x]:0627%;	Set the resolution of input [x] to 1280X720@60Hz.
	USER/I/[x]:0628%;	Set the resolution of input [x] to 1280X800@60Hz.
	USER/I/[x]:0619%;	Set the resolution of input [x] to 1360X768@60Hz.
	USER/I/[x]:0621%;	Set the resolution of input [x] to 1600X1200@60Hz.
	USER/I/[x]:0629%;	Set the resolution of input [x] to 1920X1080@60Hz.
	USER/I/[x]:0620%;	Set the resolution of input [x] to 1920X1200@60Hz.
	USER/I/[x]:0617%;	Restore input [x] to factory default.
	USER/I/[x]:0606%;	Auto-adjust VGA signal
	USER/I/[x]:0698%;	Update software

HDBT-4K-IN-4 / HDMI-4K-IN-4

Command Types	Command Codes	Functions
Commands for Signal Cards	AUDIO[X]I[Z].	X is the input port. Z is 0 or 1 (0 means select HDMI embedded audio, 1 means select external audio) For example, when useing HDMI-4K-IN-4 input card plugged in to slot number (2). Sending the command “AUDIO6I1.” to the matrix will select Input Channel 6, External audio. When using HDBT-4K-IN-4 input card, plugged in to the first slot. Sending command “AUDIO3I0.” to the matrix will select Input Channel 3, HDMI embedded audio.

Note:

1. Please disconnect all the twisted pairs before sending command EDIDUpgrade[X].
2. In above commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.
3. Please remember to end the commands with the ending symbols "." or ";".
4. Type the command carefully, it is case-sensitive.
5. Commands pertaining to EDID only avails for signal cards that support EDID management.
6. The switcher boasts 6 in-built EDID data, the chart below illustrates the detailed information:

No.	Detailed Information
1	1080p 2D 5.1CH
2	1080p 2D 2.0CH
3	720p 2D 5.1CH
4	720p 2D 2.0CH
5	4K2K 2D 5.1CH
6	4K2K 2D 2.0CH

Update in-built EDID data by sending command UpgradeIntEDID[x]..

Examples:

1. Transfer signals from an input channel to all output channels: [x]All.
Example: Send "3All." to transfer signals from the input 3 to all output channels.

2. Transfer all input signals to corresponding output channels respectively: All#.
Example: If this command is carried out, the status of matrix will be: 1->1, 2->2, 3->3, 4->4…… 8->8….

3. Switch off all the output channels: All$.
Example: After running this command, there will be no signals on all the outputs.

4. Switch off the detail feedback command from the COM port: /:MessageOff;
But, it will leave the "switch OK" as the feedback, when you switch the matrix.

5. Switch on the detail feedback command from the COM port: /:MessageOn;
It will show the detail switch information when it switch. Example: when switch 1->2, it will feedback "AV01 to 02".

6. Transfer signals from an input channel to corresponding output channel: [x]#.
Example: "5#." to transfer signals from the input5 to the output5.

7. Switch off an output channel: [x]$.
Example: "5$." to switch off the output 5.

8. Switch signal: [x1] B[x2].
Example: "12B12,13,15." to transfer signal from the input12 to the output No.12,13,15.

9. Inquire the input channel to the output channel [x]: Status[x].
Example: Send "Status3." to inquire the input channel to the output 3.

10. Inquire the input channel to the output channels one by one: Status.
Example: "Status." to inquire the input channel to the output channels one by one.

11. Save the present operation to the preset command [Y]: Save[Y].
Example: "Save7." to save the present operation to the preset command No.7.

12. Recall the preset command [Y]: Recall[Y].
Example: "Recall5." to recall the preset command No.5.

13. Clear the preset command [Y]: Clear[Y].
Example: "Clear5." to clear the preset command No.5.

14. EDID management command:. EDIDM[X]B[Y].
Example: "EDIDM5B3." to enable input 3 to learn the EDID data of output 5.

15. Command for signal cards: USER/[Y]/[X]***.**
Example: "USER/I/7:0623%;" to set the input 7 to support YPbPr signal, the card is plugged in the second input slot of the matrix.

MANAGE TCP/IP SETTINGS

TCP/IP default settings: IP is 192.168.0.178, Gateway is 192.168.0.1.

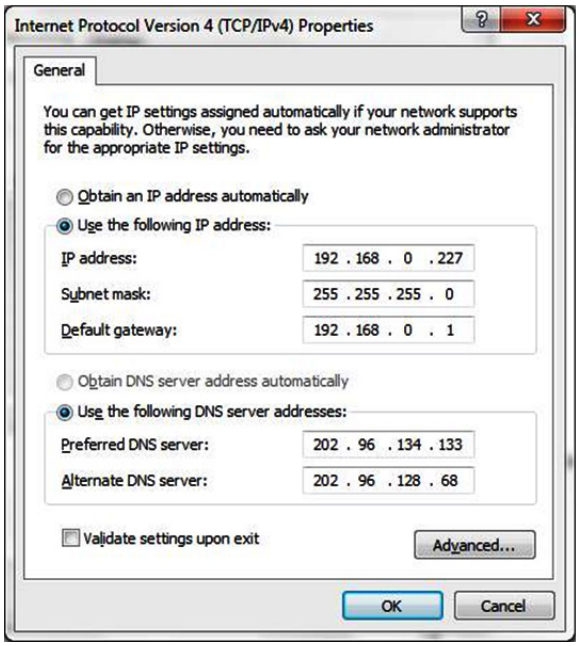
To manage the IP address, you first need a PC that can connect to the same sub-net.

Note that most modern computers will interpret the correct pins when connected in this fashion. Should you experience any difficulties then you should switch to an Ethernet Crossover cable.

Step1. Connect a computer to the Ethernet port of the MVID-MTX

Step2. Set the PC's IP and gateway to the same sub-net as the default static IP of the MVID-MTX.

- In the example below the IP address is set to 192.168.0.227 and the default gateway is set to 192.168.0.1.
- Ignore DNS server settings.

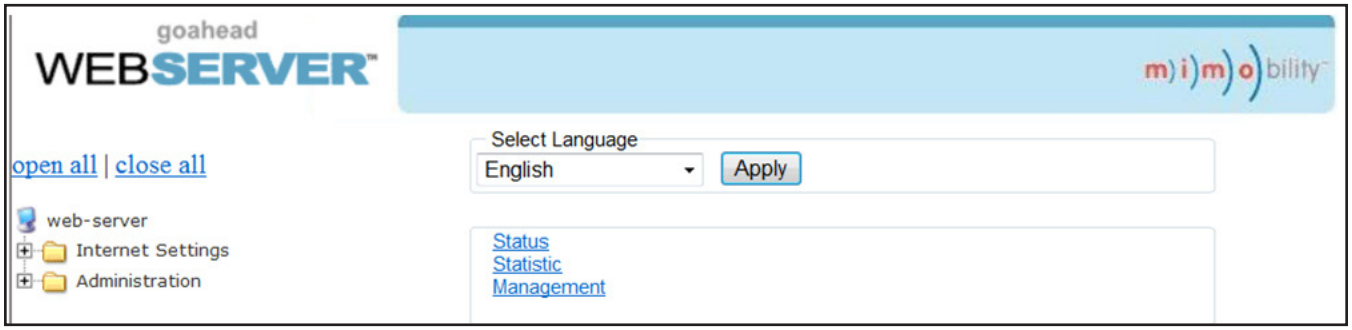


Same IP as the switcher

Step3. Click on OK

Step4. Enter http://192.168.0.178:100 in Internet Explorer, you will see the LOGIN page.

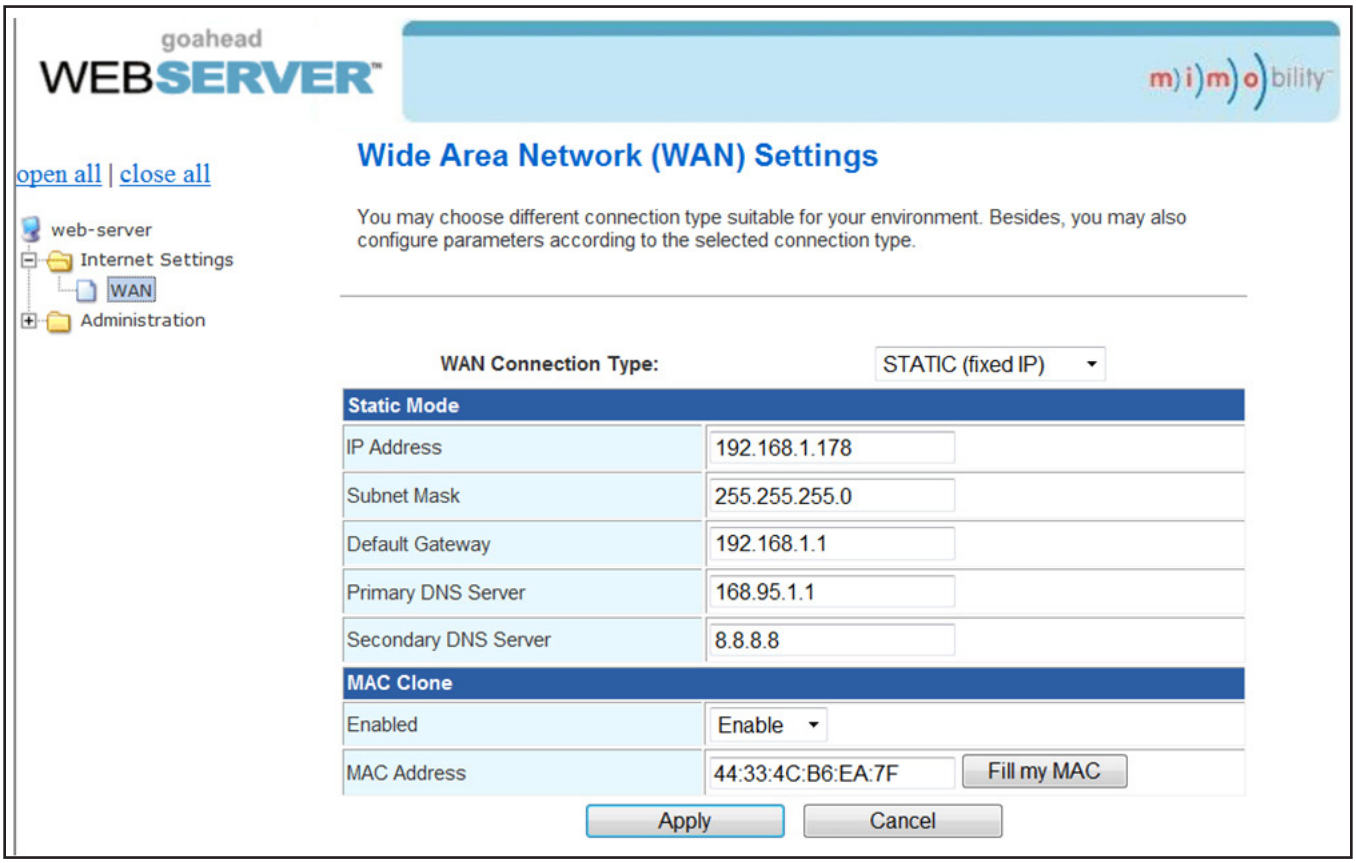
Step5. Enter user name **"admin"** and password **"admin"**, then press the Enter button on your keyboard. Then you can enter the configuration page to configure the IP port.



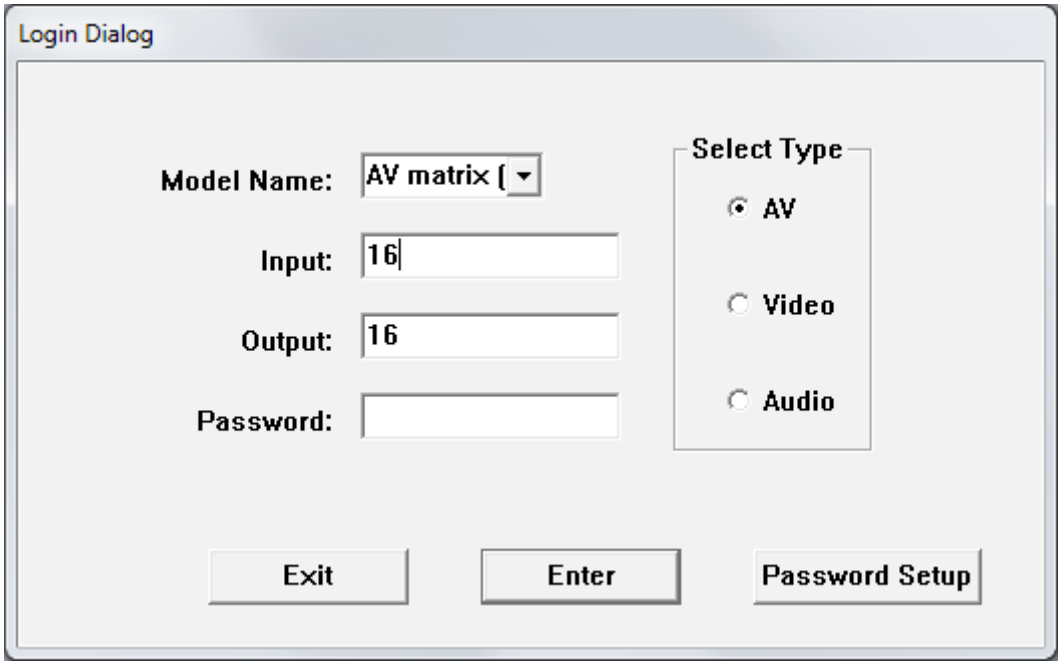
Step6. Change IP

- **Change IP**

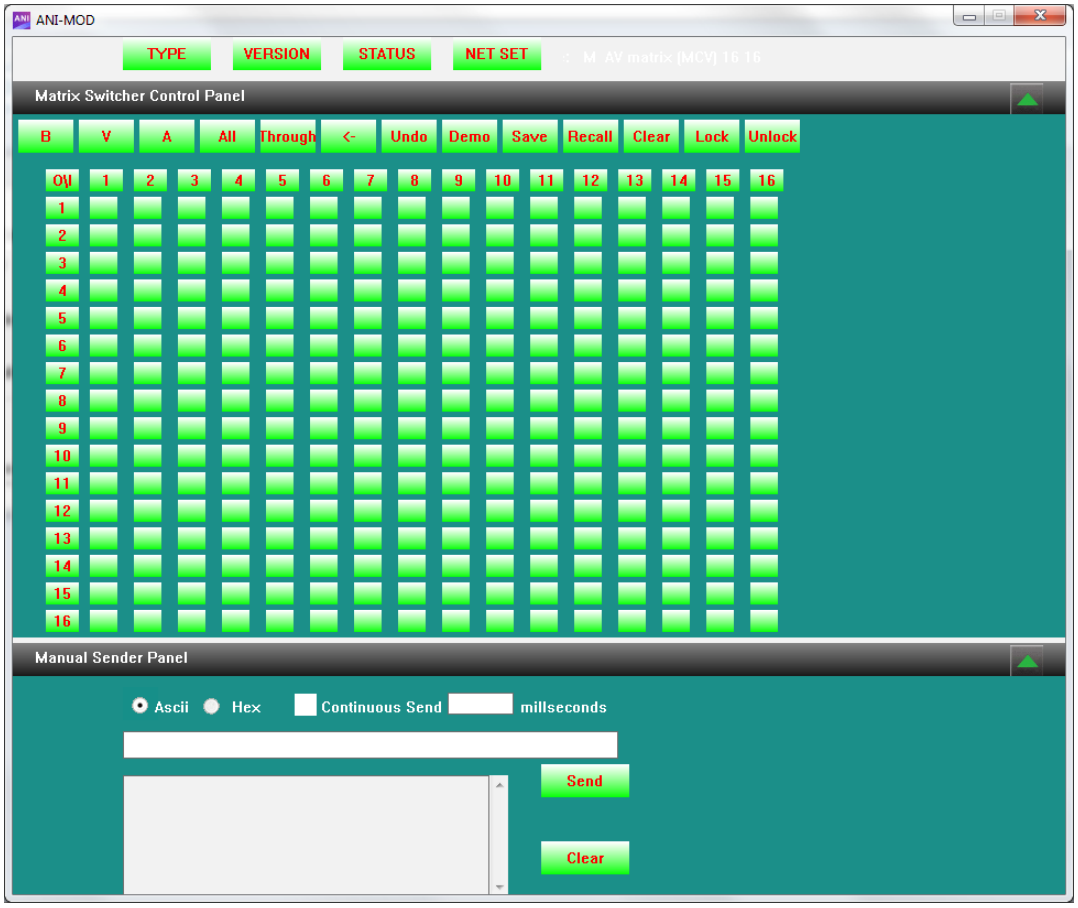
a) Select the tab **"Internet Settings: WAN"** to change the IP settings.



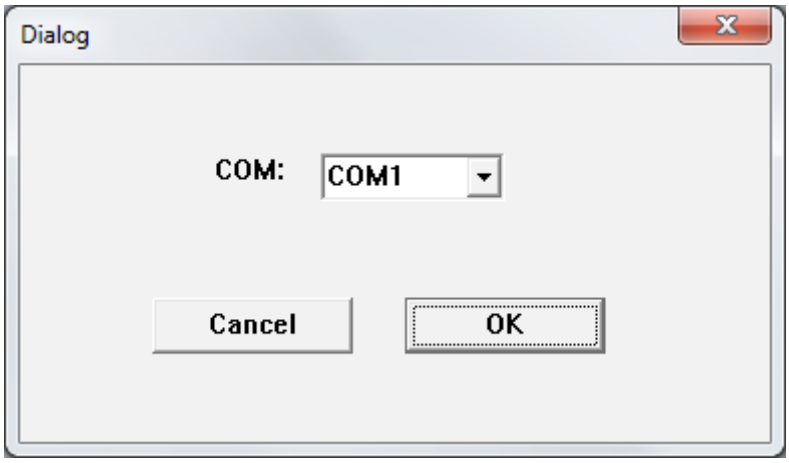
b) Press the button Apply to save your settings.



Set your matrix size (Model Name has no affect)

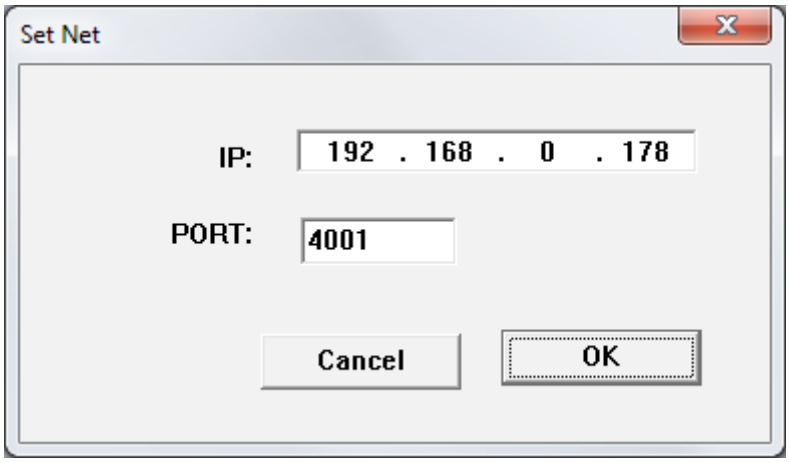


Control switcher using cross points



Select from the detected available COM ports

OR



Select connection via TCP/IP

SAFETY OPERATION GUIDE

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

TROUBLESHOOTING & MAINTENANCE

Problems	Causes	Solutions
Output image with ghost	Bad quality of the connecting cable	Try another high quality cable
	Impropriate image setting of the displayer	Adjust corresponding image settings
Output image with color losing or no video signal output	Fail connection	Reconnect the displayer and the matrix
No output image when switching	No signal at the input / output end	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection	Make sure the connection is good
	The switcher is broken	Send it to authorized dealer for repairing.
IR remote does not work	Run out of battery	Change for another battery
	IR remote is broken	Send it to authorized dealer for repairing.
POWER indicator doesn't work or no respond to any operation	Fail connection of power cord.	Make sure the power cord connection is good.
EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.
Cannot control the device by control device (e.g. a PC) through RS-232 port	Wrong RS-232 communication parameters	Type in correct RS-232 communication parameters.
	Broken RS-232 port	Send it to authorized dealer for checking.
Cannot control the device by front panel buttons while can control it through RS-232 port	The front panel buttons are locked	Send command 50605% to unlock the front panel buttons.
Cannot control the device by RS-232 / IR remote / front panel buttons	The device has already been broken.	Send it to authorized dealer for repairing.

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