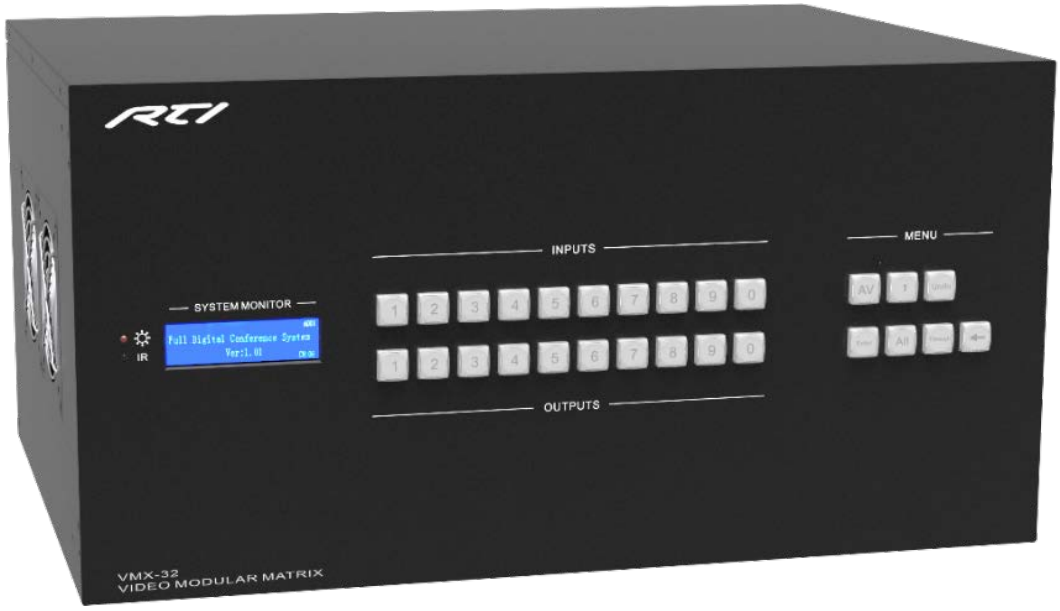
VMX-32

Modular Matrix Switcher 32x32



Operation Guide

Version: VMX-32 V1.4

Trademarks

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

Industry Canada Compliance Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Ce dispositif ne peut causer des interférences nuisibles.
2. Cet appareil doit accepter toute interférence reçue y compris des interférences qui peuvent provoquer un fonctionnement indésirable.

Safety Suggestions

Read and Follow Instructions. Read all safety and operating instructions before operating the unit.

Retain Instructions. Keep the safety and operating instructions for future reference.

Heed Warnings. Adhere to all warnings on the unit and in the operating instructions.

Heat. Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers that produce heat.

Power Sources. Connect the unit only to a power supply of the type described in the operating instructions, or as marked on the unit.

Power Cord Protection. Route power supply cords so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to the cord plugs at power receptacles and at the point at which they exit from the unit.

Water and Moisture. Do not use the unit near water—for example, near a sink, in a wet basement, near a swimming pool, near an open window, etc.

Object and Liquid Entry. Do not allow objects to fall or liquids to be spilled into the enclosure through openings.

Servicing. Do not attempt any service beyond that described in the operating instructions. Refer all other service needs to qualified service personnel.

Damage Requiring Service. The unit should be serviced by qualified service personnel when:

- The power supply cord or the plug has been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit does not appear to operate normally or exhibits a marked change in performance.
- The unit has been dropped or the enclosure has been damaged.

Limited Warranty

RTI warrants new products for a period of three (3) years (excluding consumables such as rechargeable batteries which are warrantied for one (1) year) from the date of purchase by the original purchaser (end user) directly from RTI / Pro Control (herein referred to as “RTI”), or an authorized RTI dealer.

Warranty claims may be initiated by an authorized RTI dealer using the original dated sales receipt or other proof of warranty coverage. In the absence of the receipt of purchase from the original dealer, RTI will provide warranty coverage extension of six (6) months from the date code of the product. Note: RTI warranty is limited to the provisions set forth in this policy and does not preclude any other warranties offered by third parties who are solely responsible for those other warranties.

Except as specified below, this warranty covers defects in product material and workmanship. The following are not covered by the warranty:

- Product purchased via unauthorized sellers or internet sites will not be serviced- regardless of purchase date.
- Damages caused by accident, misuse, abuse, neglect or acts of God.
- Cosmetic damage, including, but not limited to, scratches, dents and normal wear and tear.
- Failure to follow instructions contained in the Product Installation Guide.
- Damages due to products used in an application or environment other than that for which it was intended, improper installation procedures or adverse environmental factors such as incorrect line voltages, improper wiring, or insufficient ventilation.
- Repair or attempted repair by anyone other than RTI and Pro Control or authorized service partners.
- Failure to perform recommended periodic maintenance.
- Causes other than product defects, including lack of skill, competence or experience of user.
- Damage due to shipment of this product (claims must be made to the carrier).
- Altered unit or altered serial number: defaced, modified or removed.

RTI is also not liable for:

- Damages caused by its products or for failure of its products to perform, including any labor costs, lost profits, lost savings, incidental damages, or consequential damages.
- Damages based upon inconvenience, loss of use of the product, loss of time, interrupted operation, commercial loss, any claim made by a third party or made on behalf of a third party.
- Loss of, or damage to, data, computer systems or computer programs.

RTI’s liability for any defective product is limited to repair or replacement of the product, at the sole discretion of RTI.

In cases where the warranty policy conflicts with local laws, the local laws will be adopted.

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INTRODUCTION

ABOUT VMX-32

The VMX-32 is a high-performance modular matrix switch chassis for professional distribution of up to 32 video sources to 32 displays. The video format of the inputs and outputs can be customized to the exact needs of a project by utilizing the range of optional I/O cards for configurations.

The VMX-32 enables cross-point switching from any input to any output and supports high resolution video output up to 4K. The HDBaseT output cards deliver HDMI video over a Cat5e/Cat6 cable to an HDBaseT receiver up to 130 feet (40 meters) away.

With its flexible design, VMX-32 is the perfect solution for signal switching and distribution in commercial multimedia applications, such as conference rooms, control rooms, hotels, or retail spaces.

FEATURES

- Provides routing of up to 32 video sources to 32 displays / projectors.
- Optional input cards for HDMI, HDBaseT, DVI, VGA or SDI available.
- Optional output cards for HDMI, HDBaseT or VGA available
- HDCP 1.2 or 1.4 compliant, supporting HDMI 1.3/1.4*.
- Powerful EDID management.
- HDBaseT outputs transmit a 1080p video signal up to 230 feet (70m) or 4K up to 130ft (40m) over a Cat5E/6 cable.*
- Supports multiple control methods, including RS232, TCP/IP and the front panel buttons.
- LCD indicator shows connection status, switching status, HDCP status, and output resolution.
- Redundant power supply.
- Easy installation with rack-mount design.

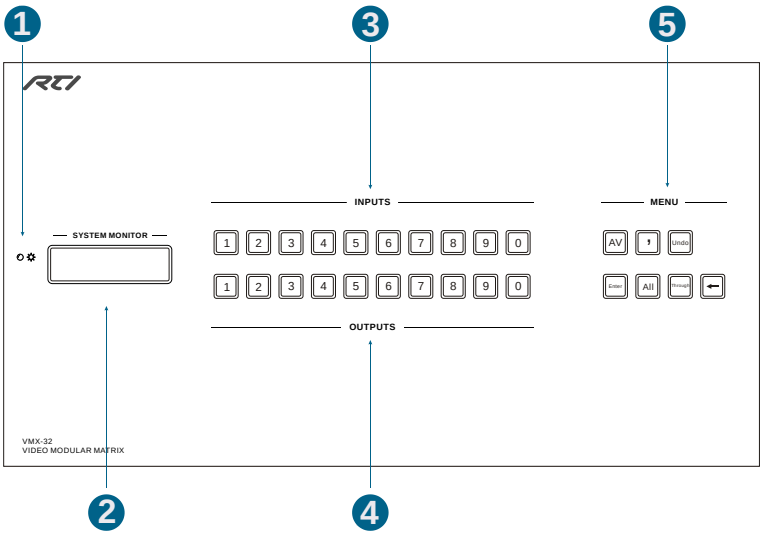
PACKAGE LIST

- 1 x VMX-32
- 1 x Power cord
- 1 x RS-232 cable
- 4 x Plastic cushions
- 1 x Reference Guide

Note: Please contact your distributor immediately if any damage or defects in the components is found.

PANEL DESCRIPTION

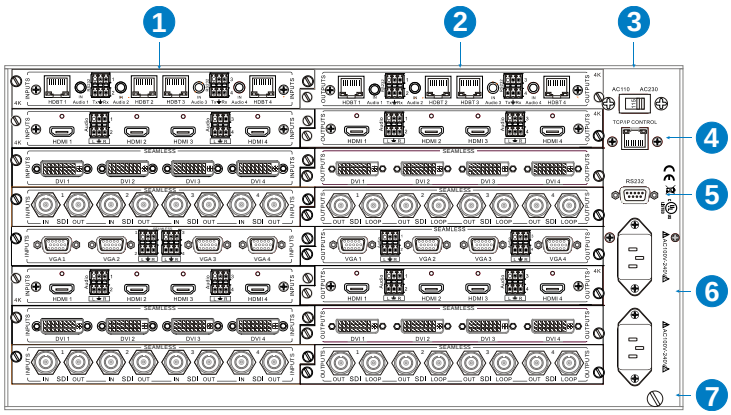
FRONT PANEL



No.	Name	Description
1	Power indicator	Illuminate red once powered on
2	LCD screen	Display real-time operation status
3	INPUTS	Back-lit buttons for input selection, ranges from 0~ 9, 32 selectable channels in total.
4	OUTPUTS	Back-lit buttons for output selection, ranges from 0 ~ 9, 32 selectable channels in total.
5	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 button, to backspace the last press.

REAR PANEL



No.	Name	Description
1	INPUTS	Input signal card slots, 8 in total IMPORTANT NOTE: Please remove power cord before installing signal cards.
2	OUTPUTS	Output signal card slots, 8 in total IMPORTANT NOTE: Please remove power cord before installing signal cards.
3	Power switch	Switch between AC110V and AC230V to access different power
4	TCP/IP	Used for TCP/IP control, connect to Ethernet network
5	RS232	Serial control port, connect with RS232 port of control device.
6	Power ports	Connect main alternating current power to one of the ports. The second port is an optional connection for redundant power (backup power supply in case primary power source is lost).
7	GND	Used for system grounding.

Note: There are 8 input and 8 output slots for VMX-32, and the input/output cards can be changed based on your needs.

INPUT/OUTPUT CARDS

The VMX-32 supports expansion through various changeable input/output cards of different signals including DVI, HDMI, VGA, HDBaseT, SDI etc. Here is a brief introduction to the changeable cards.

Model	Description
Input Cards	
VMX-IM1	1080p seamless HDMI input card with 4 HDMI and 4 external L+R audio ports.
VMX-ID1	1080p seamless DVI input card with 4 DVI ports.
VMX-IV1	1080p VGA input card with 4 VGA and 4 external L+R audio ports.
VMX-IS1	1080p seamless SDI input card with 4 SDI input and 4 loop output ports.
VMX-IM4	4K HDMI input card with 4 HDMI, and 4 external L+R audio ports.
VMX-IT4	4K HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
VMX-IT1	1080p HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
Output Cards	
VMX-OM1	1080p seamless HDMI output card with 4 HDMI and 4 external L+R audio ports.
VMX-OM4	4K HDMI output card with 4 HDMI and 4 external L+R audio ports.
VMX-OT1	1080p HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
VMX-OT4	4K HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
VMX-OV1	1080p seamless VGA output card with 4 VGA and 4 external L+R audio ports.

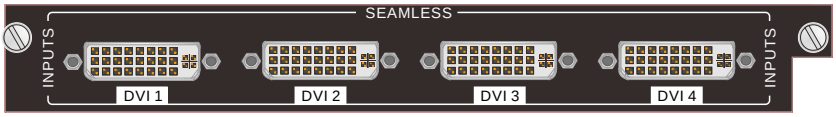
VMX-ID1

Seamless DVI input signal card.

It is fully compatible with HDMI1.3& HDCP, and supports seamless transmission for high-definition DVI, HDMI, VGA, AV, YPbPr signals. Signal format can be modified via RS232 commands.

It boasts embedded EDID management (only for HDMI/ DVI signal), supporting DDC.

VMX-ID1: seamless input card, maximum four input signal. It can automatically identify the format of input signal. Input signal can pass to output device through DVI signal output card.



Note: When connecting to VGA, YPbPr or C-VIDEO signal, insert converting cables according to specific pin definitions (see the figures below):

DVI- C-VIDEO:

Pin	Signal
C1	Yellow
C5	GND
Other pins are unused.	

DVI- YPbPr:

Pin	Signal	Pin	Signal
C1	RED	C2	GREEN
C3	BLUE	C5	GND
Other pins are unused.			

DVI- VGA (female):

Pin	Signal	Pin	Signal
C1	RED	C2	GND
C3	GREEN	C4	Horizontal Sync Analog
8	Vertical Sync Analog		
Other pins are unused.			

VMX-IM1 & VMX-OM1

Seamless HDMI signal card with auxiliary audio port. Provides real-time audio& video switching; support HDMI1.3 & HDCP1.2, compliant with DVI signal;

HDMI embedded audio and auxiliary stereo audio supports PCM format, audio source selectable via designed command (default: HDMI embedded audio);

Built in scaler handles various resolution, output resolution adjustable via command.

VMX-IM1: input card, maximum four input signal. Input signal can pass to output device through VMX-OM1, or other kinds of output cards.

VMX-OM1: output card, maximum four output signal, output signals from VMX-IM1, or other kinds of input cards.

Note: When VMX-OM1 works with input cards except VMX-IM1, to ensure reliable seamless output, adjust all the input signals to the same designed resolution: 1024x768, 1280x720, 1600x1200, 1920x1080, or 1920x1200.

VMX-IM4 & VMX-OM4

4K HDMI signal card.

Supports HDMI 1.4a & HDCP 1.4 compliance; Compatible with DVI signal; Support high-definition HDMI source up to 4kx2k, 1080p 3D compliance; It also boasts embedded EDID management.

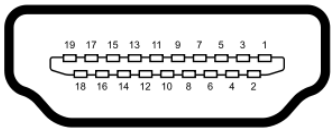
Provide auxiliary audio port as supplement to HDMI embedded audio, audio source selectable via command “AUDIO[X]I[Z].”, [X] stands for output port, [Z] stands for audio source (0 is for HDMI embedded audio, 1 is for analog audio)

VMX-IM4: input card, maximum four input signal. Input signal can pass to output device through VMX-OM4, or other kinds of output cards.

Note: When matching with output cards that do not support 4kx2k, adjust the input resolution to 1080p to enable reliable output.

VMX-OM4: output card, maximum four output signal, output signals from VMX-IM4, or other kinds of input cards, HDCP compliant status settable via RS232 command

Pin layout of the HDMI connectors (female).



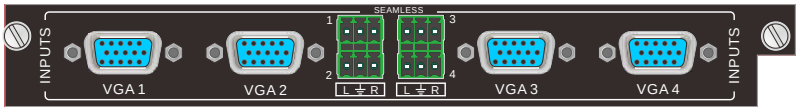
No.	Signal	No.	Signal
1	TMDS Data 2+	**20**	SHELL
2	TMDS Data 2 Shield	**19**	Hot Plug Detect
3	TMDS Data 2-	**18**	+5V Power
4	TMDS Data 1+	**17**	Ground
5	TMDS Data 1 Shield	**16**	DDC Data
6	TMDS Data 1-	**15**	DDC Clock
7	TMDS Data 0+	**14**	No Connect
8	TMDS Data 0 Shield	**13**	CEC
9	TMDS Data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

VMX-IV1

VGA signal card.

Scale all inputs to 1080p or 1920x1200; Supports VGA (RGBHV) output; 4 stereo audio inputs.

VMX-IV1: input card, maximum four VGA inputs and four stereo audio inputs. Input signal can pass to output device through any kinds of output cards.



VMX-OV1

Seamless VGA signal output card.

The output resolution can be selected by RS232 commands. 4 stereo audio inputs.

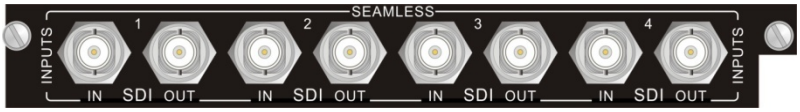
VMX-OV1: input card, maximum four VGA inputs and four stereo audio inputs. Input signal can pass to output device through any kinds of output cards.

VMX-IS1

Seamless SDI signal card

It is compatible with different SDI signal formats, including SD/HD/3G-SDI (adaptive), support seamless transmission for high-definition signal up to 1080p. Auto-detect input resolution and scale to 1080p@60Hz (default resolution, adjustable via command). Every port has loop output for local monitoring.

VMX-IS1: input card, maximum four input signal. Input signal can pass to output device through SDI signal output card.



VMX-IT1 & VMX-OT1

Seamless 1080p Twisted pair card; Support 1080p@60Hz., compatible with HDMI1.4 and HDCP1.4;

Extend HDBT signal up to 70m at 1080p; Bi-directional RS232 transmission on single cable; Audio source selectable via corresponding command; Auxiliary audio ports support stereo signal. It also boasts embedded EDID management.

VMX-IT1: input card, maximum input four HDBT signal. Input signal can pass to output device through VMX-OT1, or other kinds of output cards, need to work with HDBT transmitters.

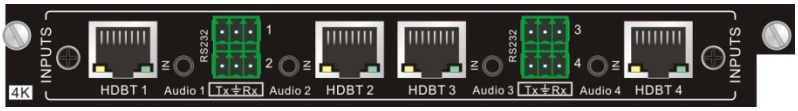
VMX-OT1: output card, maximum output four HDBT signal, output signals from VMX-IT1, or other kinds of input cards, need to work with HDBT receivers.

VMX-IT4 & VMX-OT4

4K HDBaseT card

Supports HDTV, compatible with HDBT 1.0, HDMI1.4a & HDCP1.4; Wide resolution range from 480p~ 4kx2k, 1080p 3D compliant; Extend HDBT signal up to 70m at 1080p or 40m at 4k; Bi-directional RS232 transmission on single cable; Audio source selectable via corresponding command; Auxiliary audio ports support stereo signal. It also boasts embedded EDID management.

VMX-IT4: input card, maximum input four HDBT signal. Input signal can pass to output device through VMX-OT4, or other kinds of output cards, need to work with HDBT transmitters.



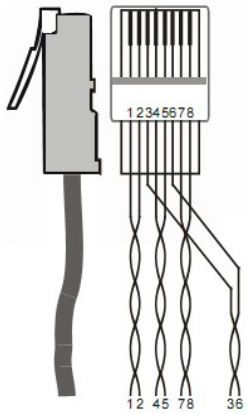
Note: When matching with output cards that do not support 4kx2k, adjust the input resolution to 1080p to enable reliable output.

VMX-OT4: output card, maximum output four HDBT signal, output signals from VMX-IT4, or other kinds of input cards, need to work with HDBT receivers.

How the indicators work:

Color	Definition	Status
Yellow	Power Indicator	Blink once powered on; Turn off when there is no power.
Green	Link Indicator	Light when the port is connected with CAT5e/6;Turn off when there is no connection.

Pin layout of the HDBT connector:



Pin	Color
1	orange white
2	orange
3	green white
4	blue
5	blue white
6	green
7	brown white
8	brown

1st Group	4--5
2nd Group	1--2
3rd Group	3--6
4th Group	7--8

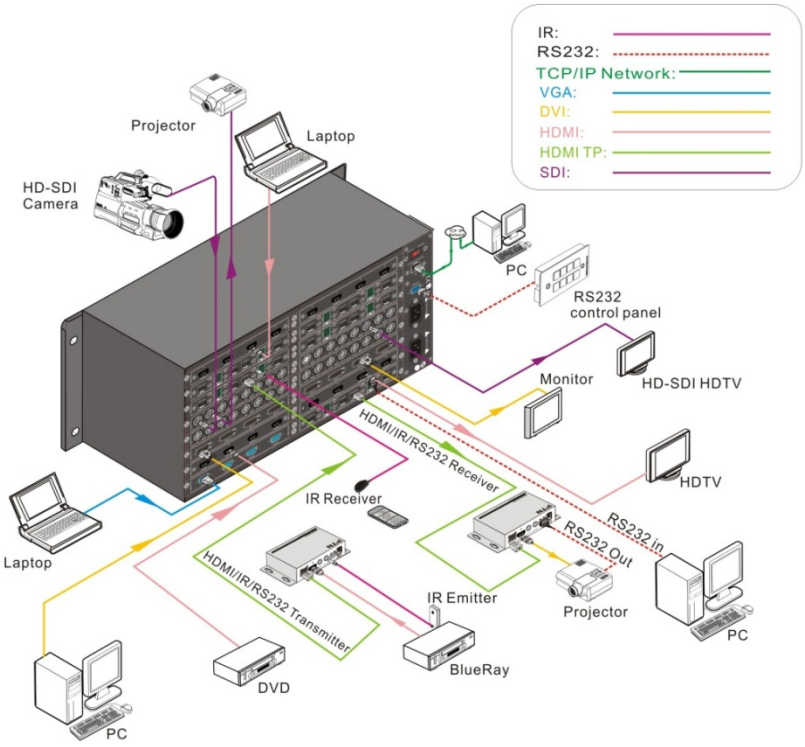
Note: Cable connectors MUST be metal one, and the shielded layer of cable MUST be connected to the connector's metal shell, to well share the grounding.

SYSTEM CONNECTION

USAGE PRECAUTIONS

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

CONNECTION DIAGRAM



Note: All input/output signal cards don't support hot-plug.

CONTROL OPERATIONS

FRONT PANEL BUTTON CONTROL

Users can control the VMX-32 directly with its front panel buttons. To switch AV signal, please operate the buttons under the following format:

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

Note:

- "Input Channel": Fill with the number of input channel to be controlled,
- "Output Channel": Fill with the number of output channels to be controlled. Press "All" to select all the outputs.
- Use "," button to separate multiple I/O channels, and press "ENTER" button to confirm the operation.
- The input/output channels on the rear panel are counting from left to right, top to bottom.
- The input delay time between two 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 "**1**" "**1**" and "**Enter**".
2) To transfer signals from input 1 to all output channels, press buttons in this order: "**1**", "**All**".

Other Functional Buttons:

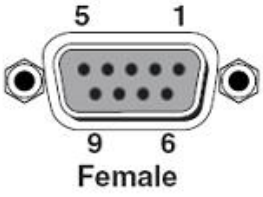
Buttons	Description	Operation
UNDO	Return to the previous status	Status 1: Input 6 -> output 6 Press input "6" + "AV" + output 4 to change the connection. Press "Undo" to return to Status 1.
←	Backspace the last operation	If you press buttons "1", "AV", "2", "←" in order, then "2" will be canceled.
THROUGH	Get straight I/O connection, e.g. input 1-> output 1, input 2-> output 2.	Format: "Input Channel" + "Through" 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.

RS232 CONTROL

CONNECTION OF RS232 COMMUNICATION PORT

VMX-32 can be controlled by a control system 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 VMX-32 connects to the RS232 port of a computer with control software, users can control it by that computer. To control the switcher, users need to use RS232 control software.

RS232 COMMUNICATION COMMANDS

To control the VMX-32 using serial communication from a control system, wire the RS-232 output of the control system to the RS-232 DB9 connector. Visit the rticorp.com dealer website to access the driver store and follow the instructions for installation.

Note:

- Please disconnect all the cables before sending command EDIDUpgrade[X].
- In the commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.
- Please remember to end the commands with the ending symbols "." or ";".
- Type the command carefully, it is case-sensitive.
- Commands pertaining to EDID only avails for signal cards that support EDID management.
- The VMX-32 has 6 built-in 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	4kx2k 2D 5.1CH
6	4kx2k 2D 2.0CH

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

Communication protocol: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none.

Command	Description	Feedback
/*Type;	Inquire the models information.	VMX-32
/%Lock;	Lock front panel buttons.	System Locked!

/%Unlock;	Unlock front panel buttons.	System Unlock!
/^Version;	Inquire the firmware version.	Vx.x.x
/:MessageOff;	Turn off the feedback command from the com port. It will only show “switcher OK”.	Closed The Message Return.
/:MessageOn;	Turn on the feedback command from the com port.	Enabled The Message Return.
Undo.	Cancel the previous operation.	Undo
Demo.	Switch to the “demo” mode, 1->1, 2->2, 3->3 … and so on.	Demo Mode AV: 01->001 … …
[x]All.	Transfer signals from the input channel [x] to all output channels	01 To All
All#.	Transfer all input signals to the corresponding output channels respectively.	All Through.
All$.	Switch off all the output channels.	All Closed.
[x]#.	Transfer signals from the input channel [x] to the output channel [x].	01 Through.
[x]$.	Switch off the output channel [x].	AV: 01 Closed.
All@.	Switch on all the output.	All Open.
[x]@.	Switch on output [x].	01 Open.
[x1]V[x2].	Transfer the video signals from input [x1] to output [x2].	V: 01->001
[x1]B[x2].	Transfer audio& video signal from input [x1] to output [x2].	AV: 01->001
Status[x].	Inquire the input channel to the output channel [x].	V: 01->001 A: 01->001
Status.	Inquire the input channel to the output channels one by one.	V: 01->001

		A: 01->001 … …
Save[Y].	Save the present operation to the preset command [Y]. [Y] ranges from 0 to 9.	Save To F8
Recall[Y].	Recall the preset command [Y].	Recall From F8 V: 01->001 A: 01->001 … …
Clear[Y].	Clear the preset command [Y].	Clear F8
PWON.	Work normally.	PWON
PWOFF.	Enter in standby mode.	PWOFF
HDCPON.	Turn on the HDCP output.	HDCPON
HDCPOFF.	Turn off the HDCP output.	HDCPOFF
/V00.	Inquire the version of backboard software.	Vx.x.x
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]. [y]= 1~6.	
EDIDG[x].	Get EDID data from output [x] and display the data on serial port control software.	
EDIDMInit.	Reset factory default EDID for every input channel.	EDIDMInit

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].	EDIDM2B1
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.	
VMX-IM1		
USER/I/[x]:02xx%;	Set the brightness of input [x] to xx, xx=00~99	02xx%
USER/I/[x]:03xx%;	Set the contrast of input [x] to xx, xx=00~99	03xx%
USER/I/[x]:04xx%;	Set the saturation of input [x] to xx, xx=00~99	04xx%
USER/I/[x]:05xx%;	Set the sharpness of input [x] to xx, xx=00~99	05xx%
USER/I/[x]:0607%;	Set picture's color temperature	0607%
USER/I/[x]:0608%;	Configure image scale	0608%
USER/I/[x]:0614%;	Configure picture mode	0614%
USER/I/[x]:0617%;	Restore input [x] to factory default.	0617%
USER/I/[x]:0619%;	Set the resolution of input [x] to 1360x768, HD	0619%
USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768, XGA	0626%
USER/I/[x]:0627%;	Set the resolution of input [x] to 1280x720, 720P	0627%
USER/I/[x]:0628%;	Set the resolution of input [x] to 1280x800, WXGA	0628%
USER/I/[x]:0629%;	Set the resolution of input [x] to 1920x1080, 1080P	0629%
USER/I/[x]:0620%;	Set the resolution of input [x] to 1920x1200, WUXGA	0620%
USER/I/[x]:0621%;	Set the resolution of input [x] to 1600x1200, UXGA	0621%
USER/I/[x]:0698%;	Software update	0698%

USER/I/[x]:0686%;	Set the output signal of input [x] to HDMI	0686%
USER/I/[x]:0711%;	Select HDMI embeded audio as audio source	0711%
USER/I/[x]:0712%;	Select analog audio as audio source	0712%
VMX-OM1		
USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720P @60Hz	Resolution Out03 1280x720P
USER/O/[x]:0813%;	Set the resolution of output [x] to 1280x1080P @60Hz	Resolution Out03 1920x1080P
USER/O/[x]:0824%;	Set the resolution of output [x] to 1024x768 @60Hz	Resolution Out03 1024x768
USER/O/[x]:0826%;	Set the resolution of output [x] to 1280x1024 @60Hz	Resolution Out03 1280x1024
USER/O/[x]:0837%;	Set the resolution of output [x] to 1920x1200 @60Hz	Resolution Out03 1920x1200
USER/O/[x]:0617%;	Restore output [x] to factory default.	0617%
GetResolution[x].	Capture output resolution of output [x]	
USER/O/[x]:0110%;	Enable analog audio output	0110%
USER/O/[x]:0111%;	Disable analog audio output	0111%
VMX-IV1		
USER/I/[x]:0648%;	Switch on audio of input [x]	0648%
USER/I/[x]:0649%;	Switch off audio of input [x]	0649%
USER/I/[x]:0684%;	Set the color space to YCBCR	0684%
USER/I/[x]:0685%;	Set the color space to RGB	0685%
USER/I/[x]:0686%;	Set the input signal to HDMI	0686%

USER/I/[x]:0687%;	Set the input signal to DVI	0687%
USER/I/[x]:0622%;	Set the signal of input channel [x] to VGA.	0622%
USER/I/[x]:0623%;	Set the signal of input channel [x] to YCBCR.	0623%
USER/I/[x]:0624%;	Set the signal of input channel [x] to SVIDEO.	0624%
USER/I/[x]:0625%;	Set the signal of input channel [x] to CVIDEO.	0625%
USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768@60Hz.	0626%
USER/I/[x]:0627%;	Set the resolution of input [x] to 1280X720@60Hz.	0627%
USER/I/[x]:0628%;	Set the resolution of input [x] to 1280X800@60Hz.	0628%
USER/I/[x]:0619%;	Set the resolution of input [x] to 1360X768@60Hz.	0619%
USER/I/[x]:0621%;	Set the resolution of input [x] to 1600X1200@60Hz.	0621%
USER/I/[x]:0629%;	Set the resolution of input [x] to 1920X1080@60Hz.	0629%
USER/I/[x]:0620%;	Set the resolution of input [x] to 1920X1200@60Hz.	0620%
USER/I/[x]:0617%;	Restore input [x] to factory default.	0617%
USER/I/[x]:0606%;	Auto-adjust VGA signal	0606%
USER/I/[x]:0698%;	Update software	0698%
VMXOV1		
USER/O/[x]:0800%;	Set the resolution of output [x] to 720x480i@60Hz.	Resolution Ou01 720x480 I
USER/O/[x]:0801%;	Set the resolution of output [x] to 720x576i@50Hz.	Resolution Ou01 720x576 I
USER/O/[x]:0802%;	Set the resolution of output [x] to 720x480p@60Hz.	Resolution Ou01 720x480 P
USER/O/[x]:0803%;	Set the resolution of output [x] to 720x576p@50Hz.	Resolution Ou01 720x576 P
USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720p@60Hz.	Resolution Ou01 1280x720 P

USER/O/[x]:0805%;	Set the resolution of output [x] to 1280x720p@59Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0806%;	Set the resolution of output [x] to 1280x720p@50Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0807%;	Set the resolution of output [x] to 1280x720p@30Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0808%;	Set the resolution of output [x] to 1280x720p@25Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0809%;	Set the resolution of output [x] to 1280x720p@24Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to 1920x1080i@60Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to 1920x1080i@59Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to 1920x1080i@50Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to 1920x1080p@60Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x] to 1920x1080p@59Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0815%;	Set the resolution of output [x] to 1920x1080p@50Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0816%;	Set the resolution of output [x] to 1920x1080p@30Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0817%;	Set the resolution of output [x] to1920x1080p@29Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0818%;	Set the resolution of output [x] to1920x1080p@25Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0819%;	Set the resolution of output [x] to1920x1080p@24Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0820%;	Set the resolution of output [x] to640x480p@60Hz	Resolution Ou01 640x480 P

USER/O/[x]:0821%;	Set the resolution of output [x] to640x480p@75Hz	Resolution Ou01 640x480 P
USER/O/[x]:0822%;	Set the resolution of output [x] to800x600p@60Hz	Resolution Ou01 800x600
USER/O/[x]:0823%;	Set the resolution of output [x] to800x600p@75Hz	Resolution Ou01 800x600 P
USER/O/[x]:0824%;	Set the resolution of output [x] to1024x768p@60Hz	Resolution Ou01 1024x768
USER/O/[x]:0825%;	Set the resolution of output [x] to1024x768p@75Hz	Resolution Ou01 1024x768 P
USER/O/[x]:0826%;	Set the resolution of output [x] to1280x1024p@60Hz	Resolution Ou01 1280x1024
USER/O/[x]:0827%;	Set the resolution of output [x] to1280x1024p@75Hz	Resolution Ou01 1280x1024P
USER/O/[x]:0828%;	Set the resolution of output [x] to1360x768p@60Hz	Resolution Ou01 1360x768P
USER/O/[x]:0829%;	Set the resolution of output [x] to1366x768p@60Hz	Resolution Ou01 1366x768P
USER/O/[x]:0830%;	Set the resolution of output [x] to1400x1050p@60Hz	Resolution Ou01 1400x1050P
USER/O/[x]:0831%;	Set the resolution of output [x] to1600x1200p@60Hz	Resolution Ou01 1600x1200P
USER/O/[x]:0832%;	Set the resolution of output [x] to1440x900p@60Hz	Resolution Ou01 1440x900 P
USER/O/[x]:0833%;	Set the resolution of output [x] to1440x900p@75Hz	Resolution Ou01 1440x900 P
USER/O/[x]:0837%;	Set the resolution of output [x] to1920x1200p@60Hz	Resolution Ou01 1920x1200
USER/O/[x]:0839%;	Set the resolution of output [x] to1600x900p@60Hz	Resolution Ou01 1600x900
USER/O/[x]:0201%;	Set the video format of output [x] to YPbPr	0201%
USER/O/[x]:0202%;	Set the video format of output [x] to VGA	0202%
USER/O/[x]:0203%;	Set the video format of output [x] to C-VIDEO	0203%

GetVGAPortMode[x].	Get the output [x] port status	
USER/O/[x]:0900%;	Set the CVBS signal to NTSC, and the refresh rate is 60Hz(625 lines)	
USER/O/[x]:0901%;	Set the CVBS signal to PAL, and the refresh rate is 50Hz(525 lines)	
VMX-IS1		
USER/I/[x]:02xx%;	Set the brightness of input [x] to xx, xx=00~99	02xx%
USER/I/[x]:03xx%;	Set the contrast of input [x] to xx, xx=00~99	03xx%
USER/I/[x]:04xx%;	Set the saturation of input [x] to xx, xx=00~99	04xx%
USER/I/[x]:05xx%;	Set the sharpness of input [x] to xx, xx=00~99	05xx%
USER/I/[x]:0607%;	Set picture's color temperature	0607%
USER/I/[x]:0608%;	Configure image scale	0608%
USER/I/[x]:0614%;	Configure picture mode	0614%
USER/I/[x]:0617%;	Restore input [x] to factory default.	0617%
USER/I/[x]:0619%;	Set the resolution of input [x] to 1360x768, HD	0619%
USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768, XGA	0626%
USER/I/[x]:0627%;	Set the resolution of input [x] to 1280x720, 720P	0627%
USER/I/[x]:0628%;	Set the resolution of input [x] to 1280x800, WXGA	0628%
USER/I/[x]:0629%;	Set the resolution of input [x] to 1920x1080, 1080P	0629%
USER/I/[x]:0620%;	Set the resolution of input [x] to 1920x1200, WUXGA	0620%
USER/I/[x]:0621%;	Set the resolution of input [x] to 1600x1200, UXGA	0621%
USER/I/[x]:0698%;	Software update	0698%
VMX-ID1		
USER/I/[x]:02xx%;	Set the brightness of input [x] to xx, xx=00~99	02xx%
USER/I/[x]:03xx%;	Set the contrast of input [x] to xx, xx=00~99	03xx%
USER/I/[x]:04xx%;	Set the saturation of input [x] to xx, xx=00~99	04xx%

USER/I/[x]:05xx%;	Set the sharpness of input [x] to xx, xx=00~99	05xx%
USER/I/[x]:0606%;	(For VMX-ID1/ VA) Auto-adjust VGA input signal	0606%
USER/I/[x]:0607%;	Set picture's color temperature	0607%
USER/I/[x]:0608%;	Configure image scale	0608%
USER/I/[x]:0614%;	Configure picture mode	0614%
USER/I/[x]:0617%;	Restore input [x] to factory default.	0617%
USER/I/[x]:0619%;	Set the resolution of input [x] to 1360x768, HD	0619%
USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768, XGA	0626%
USER/I/[x]:0627%;	Set the resolution of input [x] to 1280x720, 720P	0627%
USER/I/[x]:0628%;	Set the resolution of input [x] to 1280x800, WXGA	0628%
USER/I/[x]:0629%;	Set the resolution of input [x] to 1920x1080, 1080P	0629%
USER/I/[x]:0620%;	Set the resolution of input [x] to 1920x1200, WUXGA	0620%
USER/I/[x]:0621%;	Set the resolution of input [x] to 1600x1200, UXGA	0621%
USER/I/[x]:0698%;	Software update	0698%
USER/I/[x]:0686%;	Set the output signal of input [x] to HDMI	0686%
USER/I/[x]:0687%;	Set the output signal of input [x] to DVI	0687%
VMX-IM4/BT		
AUDIO[X]I[Z].	Select audio source for input [X] [X] is port number; [Z] stands for audio source, can be 0 (embedded HDMI audio) or 1 (analog audio)	AUDIO1I0.
VMX-IT1		
USER/I/[x]:02xx%	Set the image brightness of input [x] to xx (0~99)	02xx%
USER/I/[x]:03xx%	Set the image contras of input [x] to xx (0~99)	03xx%
USER/I/[x]:04xx%	Set the image saturation of input [x] to xx (0~99)	04xx%
USER/I/[x]:05xx%	Set the image sharpness of input [x] to xx (0~99)	05xx%

USER/I/[x]:0607%	Set the image color temperature of input [x] to (user/cool/medium/warm)	0607%
USER/I/[x]:0608%	Set the aspect ratio of input [x] to (16:9/4:3/Auto/Panorama/Just scan/Zoom2/Zoom1)	0608%
USER/I/[x]:0614%	Set the image mode of input [x] to (user/Dynamic/Standard/mild)	0614%
USER/I/[x]:0617%	Factory default	0617%
USER/I/[x]:0619%	Set the resolution of input [x] to 1360x768 HD	0619%
USER/I/[x]:0626%	Set the resolution of input [x] to 1024x768 XGA	0626%
USER/I/[x]:0627%	Set the resolution of input [x] to 1280x720 720P	0627%
USER/I/[x]:0628%	Set the resolution of input [x] to 1280x800 WXGA	0628%
USER/I/[x]:0629%	Set the resolution of input [x] to 1920x1080 1080P	0629%
USER/I/[x]:0620%	Set the resolution of input [x] to 1920x1200 WUXGA	0620%
USER/I/[x]:0621%	Set the resolution of input [x] to 1600x1200 UXGA	0621%
USER/I/[x]:0698%	Firmware upgrade	0698%
USER/I/[x]:0686%	Set the signal format of input [x] to HDMI	0686%
USER/I/[x]:0711%	Select the HDMI emedded audio, and the external audio port is output the HDMI embedded audio.	0711%
USER/I/[x]:0712%	Select the external audio input.	0712%
VMX-OT1		
USER/O/[x]:0110%	Enable the stereo audio of output [x].	0110%
USER/O/[x]:0111%	Disable the stereo audio of output [x].	0111%
USER/O/[x]:0800%;	Set the resolution of output [x] to 720x480i@60Hz	Resolution Ou01 720x480 I
USER/O/[x]:0801%;	Set the resolution of output [x] to 720x576i@50Hz	Resolution Ou01 720x576 I
USER/O/[x]:0802%;	Set the resolution of output [x] to 720x480p@60Hz	Resolution Ou01 720x480 P
USER/O/[x]:0803%;	Set the resolution of output [x] to 720x576p@50Hz	Resolution Ou01 720x576 P

USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720p@60Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0805%;	Set the resolution of output [x] to 1280x720p@59Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0806%;	Set the resolution of output [x] to 1280x720p@50Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0807%;	Set the resolution of output [x] to 1280x720p@30Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0808%;	Set the resolution of output [x] to 1280x720p@25Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0809%;	Set the resolution of output [x] to 1280x720p@24Hz	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to 1920x1080i@60Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to 1920x1080i@59Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to 1920x1080i@50Hz	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to 1920x1080p@60Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x] to 1920x1080p@59Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0815%;	Set the resolution of output [x] to 1920x1080p@50Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0816%;	Set the resolution of output [x] to 1920x1080p@30Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0817%;	Set the resolution of output [x] to 1920x1080p@29Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0818%;	Set the resolution of output [x] to 1920x1080p@25Hz	Resolution Ou01 1920x1080P
USER/O/[x]:0819%;	Set the resolution of output [x] to 1920x1080p@24Hz	Resolution Ou01 1920x1080P

USER/O/[x]:0820%;	Set the resolution of output [x] to 640x480p@60Hz	Resolution Ou01 640x480 P
USER/O/[x]:0821%;	Set the resolution of output [x] to 640x480p@75Hz	Resolution Ou01 640x480 P
USER/O/[x]:0822%;	Set the resolution of output [x] to 800x600p@60Hz	Resolution Ou01 800x600
USER/O/[x]:0823%;	Set the resolution of output [x] to 800x600p@75Hz	Resolution Ou01 800x600 P
USER/O/[x]:0824%;	Set the resolution of output [x] to 1024x768p@60Hz	Resolution Ou01 1024x768
USER/O/[x]:0825%;	Set the resolution of output [x] to 1024x768p@75Hz	Resolution Ou01 1024x768 P
USER/O/[x]:0826%;	Set the resolution of output [x] to 1280x1024p@60Hz	Resolution Ou01 1280x1024
USER/O/[x]:0827%;	Set the resolution of output [x] to 1280x1024p@75Hz	Resolution Ou01 1280x1024P
USER/O/[x]:0828%;	Set the resolution of output [x] to 1360x768p@60Hz	Resolution Ou01 1360x768P
USER/O/[x]:0829%;	Set the resolution of output [x] to 1366x768p@60Hz	Resolution Ou01 1366x768P
USER/O/[x]:0830%;	Set the resolution of output [x] to 1400x1050p@60Hz	Resolution Ou01 1400x1050P
USER/O/[x]:0831%;	Set the resolution of output [x] to 1600x1200p@60Hz	Resolution Ou01 1600x1200P
USER/O/[x]:0832%;	Set the resolution of output [x] to 1440x900p@60Hz	Resolution Ou01 1440x900 P
USER/O/[x]:0833%;	Set the resolution of output [x] to 1440x900p@75Hz	Resolution Ou01 1440x900 P
USER/O/[x]:0834%;	Set the resolution of output [x] to 1680x1050p@60Hz	Resolution Ou01 1680x1050P
USER/O/[x]:0837%;	Set the resolution of output [x] to 1920x1200p@60Hz	Resolution Ou01 1920x1200

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$.**
   Example: After running this command, there will be no signals on all the outputs.
4. **Switch off the detail feedback command from the COM port: /:MessageOff;**
   But, it will leave the “switch OK” as the feedback, when you switch the matrix.
5. **Switch on the detail feedback command from the COM port: /:MessageOn;**
   It will show the detail switch information when it switch. Example: when switch 1->2, it will feedback “AV01 to 02”.
6. **Transfer signals from an input channel to corresponding output channel: [x]#.**
   Example: “5#.” to transfer signals from the input 5 to the output 5.
7. **Switch off an output channel: [x]$.**
   Example: “5$.” to switch off the output 5.
8. **Switch signal: [x1] B[x2].**
   Example: “12B12,13,15.” to transfer signal from the input 12 to output 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.

TCP/IP CONTROL

To control the VMX-32 using TCP/IP protocol from an RTI control system or PC, wire the Ethernet port of VMX-32 to the Ethernet Network. Visit the rticorp.com dealer website to access the driver store and follow the instructions for installation.

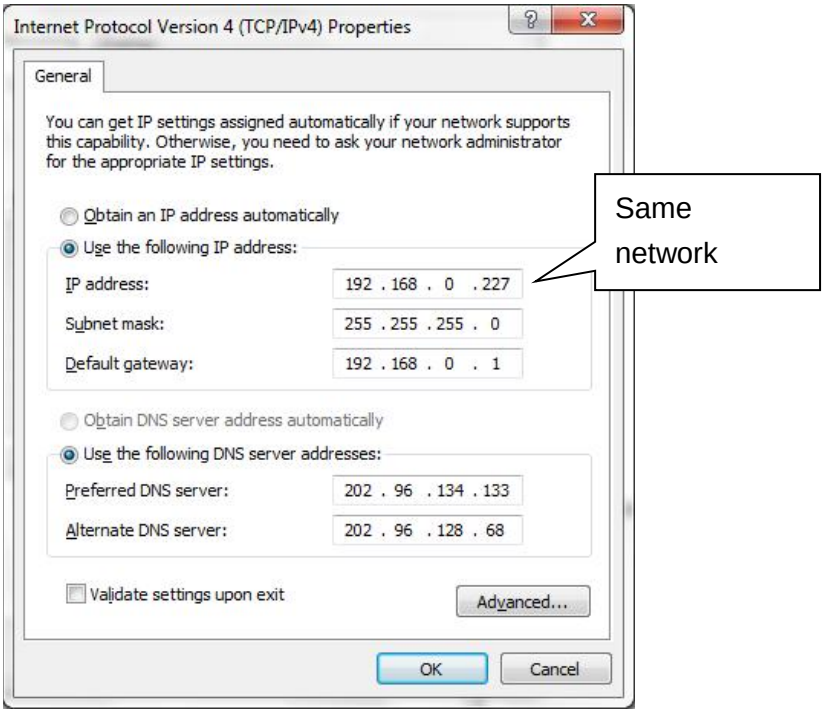
IP SETTINGS

TCP/IP default settings: IP is 192.168.0.178, Gateway is 192.168.0.1, and Serial Port is 4001. IP & Gateway can be changed as you need, Serial Port cannot be changed.

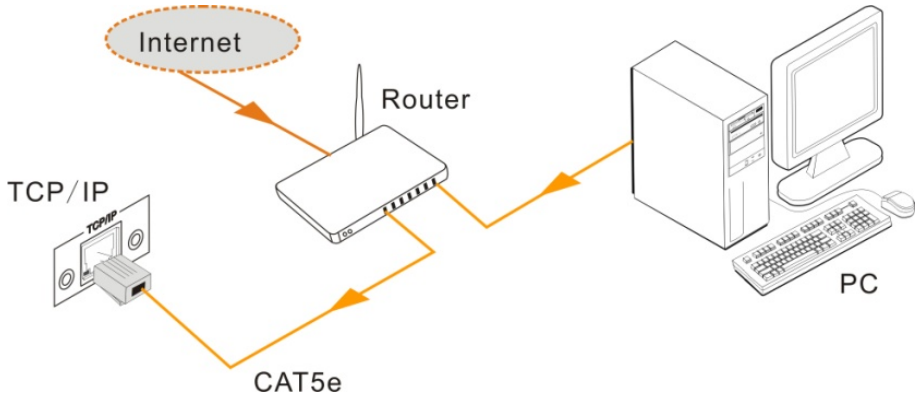
NOTE: Network settings may also be adjusted using the web interface (see Web Interface section)

- **Controlled by Single PC**

Connect a computer to the TCP/IP port of the VMX-32, and set its network segment to the same as the default IP of the VMX-32 (192.168.0.178).



- **Controlled by PC(s) in LAN**
- The VMX-32 can be connected to a router to allow control via the LAN. The VMX-8's network segment must be the same with the router. Connect as the following figure for LAN control.



Step1. Connect the TCP/IP port of the VMX-32 to Ethernet port of PC with twisted pair.

Step2. Set the PC's network segment to the same as the VMX-32. Remember the PC's original network segment.

Step3. Set the VMX-32's network segment to the same as the router.

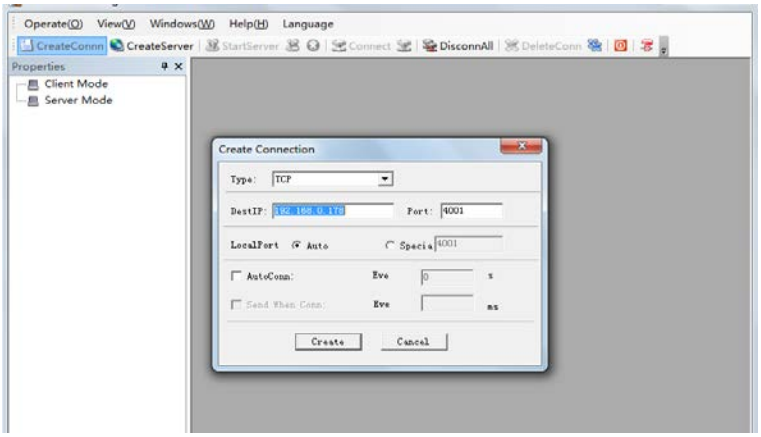
Step4. Set the PC's network segment to the original one.

Step5. Connect the VMX-32 and PC(s) to the router. In the same LAN, each PC is able to control the VMX-32 asynchronously via a TCP/IP communication software.

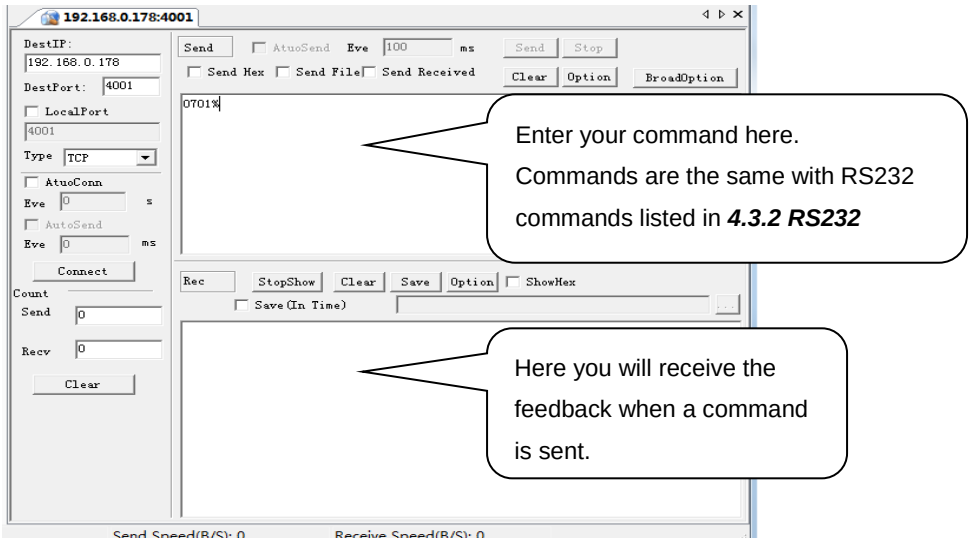
CONTROL VMX-32 VIA TCP/IP COMMUNICATION SOFTWARE

(Exampled by TCPUDP software)

1) Connect a computer and the VMX-32 to the same network. Open the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of the VMX-32 (default IP: 192.168.0.178, port:4001):



2) After connect successfully, we can enter commands to control the VMX-32, as below:

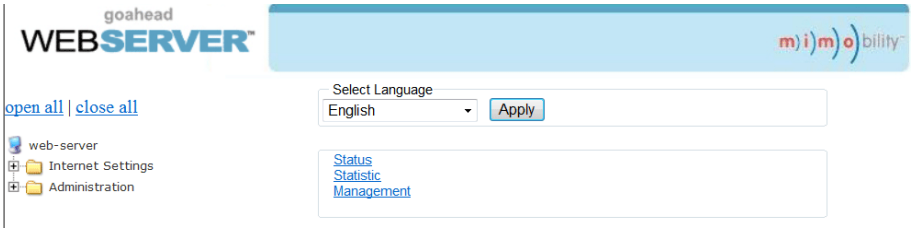


WEB INTERFACE

Type the designed website 192.168.0.178:100 in your browser. Enter correct username and password to log in the WebServer:

Username: admin; **Password**: admin

Here is the main configuration interface of the WebServer:



In this interface, you can:

- Change website display language
- Modify network settings: Go to Internet Settings -> WAN
- Upgrade TCP/IP module: Go to Administration -> Upload Program -> Select program file -> Start upgrading
  Reboot the device after upgrading.

SPECIFICATION

MAIN UNIT

Control parts	
Serial control port	RS-232, 9- female D connector
Configurations	2 = TX, 3 = RX, 5 = GND
Installation	Rack Mountable
Front panel control	Buttons
Options	TCP/IP control
General	
Power Supply	100VAC ~ 240VAC, 50/60Hz
Power Consumption	220W (Max)
Temperature	-10 ~ +40℃
Humidity	10% ~ 90%
Dimension (W*H*D)	483mm x 222mm x 320mm (5U high)
Weight	About 5Kg (without signal cards)

SIGNAL CARDS

VMX-ID1

VMX-ID1	
Input	4 DVI
Input Connector	Female DB24+5/HDMI
Input Level	T.M.D.S. 2.9V~3.3V
Input Impedance	75Ω
General	
Gain	0 dB

Bandwidth	340 MHz (10.2 Gbit/s)
Video Signal	DVI,HDMI,VGA,C-VIDEO,YPbPr
Switching Speed	200ns (Max.)
Max Time-delay	5nS (±1nS)
Crosstalk	<-50dB@5MHz
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

VMX-IM1 & VMX-OM1

VMX-IM1	
Input	4 HDMI 4 Analog Audio
Input Connector	19-pin Type-A Female 3-pin pluggable terminal block
Power Consumption	8W
Color Depth	8, 10, 12 bit
VMX-OM1	
Output	4 HDMI 4 Analog Audio
Output Connector	19-pin Type-A Female 3-pin pluggable terminal block
Power Consumption	12W
Color Depth	8 bit
General	
Video Signal	HDMI, DVI
Audio Signal	PCM
Bandwidth	6.75 Gbps
Standards	HDMI1.3& HDCP1.2
Work Temperature	0~50℃
Relative Humility	10%~90%
EDID and DDC	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data

VMX-IV1

Video	
Input	4 VGA
Input Connector	Female 15 pin HD
Input Level	0.5 ~ 2.0Vp-p
Input Impedance	75Ω
Audio	
Input	4 Stereo Audio
Input Connector	3-pin Pluggable Terminal Block
CMRR	>90dB @20Hz ~ 20KHz
Input Impedance	>10KΩ
General	
Gain	0 dB
Bandwidth	YPbPr:170MHz; C-video:150MHz; VGA:170MHz
Video Signal	VGA (RGBHV), YPbPr, S-video, C-video& CVBS
Switching Speed	200ns (Max.)
Crosstalk	<-50dB@5MHz

VMX-IS1

Input	
Input	4 SDI
Input Connector	Female BNC

Output	
Output	4 SDI
Output Connector	Female BNC
General	
Audio Signal	SDI, HD-SDI, 3G-SDI
Color Depth	8, 10, 12 bit
Transmission Distance	1080p≤100M
Max Resolution	1080p
Bandwidth	6.75Gbps
Power Consumption	8.7W
Work Temperature	0~50°C
Relative Humility	10%~90%

VMX-IM4 & VMX-OM4

VMX-IM4	
Video Input	
Input	4 HDMI
Input Connector	Female HDMI
Min.～Max. Level	T.M.D.S. 2.9V~3.3V
Input Impedance	100Ω (Differential)
Audio Input	
Input	4 Analog
Input Connector	3.5mm pluggable terminal block
Input Impedance	75Ω
Frequency Response	20Hz～20K Hz

VMX-OM4	
Video Output	
Output	4 HDMI
Output Connector	Female HDMI
Min.～Max. Level	T.M.D.S. 2.9V~3.3V
Output Impedance	100Ω (Differential)
Audio Output	
Output	4 Stereo
Output Connector	3.5mm Stereo audio connector
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Gain	0dB
Max Resolution	4Kx2K
Transmission Distance	1080P≤70m; 4Kx2K ≤ 40m
Switching Speed	200ns (Max.)
Work Temperature	0~50°C
Relative Humility	10%～90%
SNR	>70dB@ 100MHz-100M
Return Loss	<-30dB@ 5KHz
Supported Audio Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	Support HDMI1.4& DVI1.0
EDID& HDCP Management	Compliant with HDCP 1.4; Support manual EDID management

VMX-IT4 & VMX-OT4

VMX-IT4	
Video Input	
Input	4 HDBT
Input Connector	4 Female RJ45 (with dual-color indicator)
Min.～Max. Level	T.M.D.S 2.9V～3.3V
Input Impedance	100Ω (Differential)
Audio Input	
Input	4 Stereo
Input Connector	3.5mm Stereo audio connector
Input Impedance	75Ω
Frequency Response	20Hz～20K Hz
VMX-OT4	
Video Output	
Output	4 HDBT
Output Connector	4 Female RJ45 (with dual-color indicator)
Min.～Max. Level	T.M.D.S 2.9V～3.3V
Output Impedance	100Ω (Differential)
Audio Output	
Output	4 Stereo
Output Connector	3.5mm Stereo audio connector
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
Control Part	
Control Signal	4 RS232

Control Connector	3-pin pluggable terminal block
Protocol	TCP/IP
General	
Gain	0dB
Bandwidth	10.2Gbps
Max Resolution	4Kx2K
Crosstalk	<-50dB@5MHz
Transmission Distance	1080P≤70m; 4Kx2K ≤ 40m
Switching Speed	200ns (Max.)
Work Temperature	0~50˚C
Relative Humility	10%～90%
Supported Audio Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	Support HDMI1.4a
HDMI Version	1.4
HDCP Version	1.4
EDID Management	Manual EDID management

VMX-IT1 & VMX-OT1

VMX-IT1	
Video Inputs	
Input	4 HDBT
Input Connector	4 Female RJ45 (with dual-color indicator)
Min.～Max. Level	T.M.D.S 2.9V～3.3V
Input Impedance	100Ω (Differential)

Audio Input	
Input	4 Stereo
Input Connector	3.5mm Stereo audio connector
Input Impedance	75Ω
Frequency Response	20Hz～20K Hz
VMX-OT1	
Video Output	
Output	4 HDBT
Output Connector	4 Female RJ45 (with dual-color indicator)
Min.～Max. Level	T.M.D.S 2.9V～3.3V
Output Impedance	100Ω (Differential)
Audio Output	
Output	4 Stereo
Output Connector	3.5mm Stereo audio connector
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
Control Part	
Control Signal	4 RS232
Control Connector	3-pin pluggable terminal block
Protocol	TCP/IP
General	
Gain	0dB
Bandwidth	10.2Gbps
Max Resolution	4Kx2K
Crosstalk	<-50dB@5MHz

Transmission Distance	1080p≤70m
Switching Speed	200ns (Max.)
Work Temperature	0~50℃
Relative Humility	10%～90%
Supported Audio Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Version	1.4
HDCP Version	1.4
EDID Management	Manual EDID management

TROUBLESHOOTING & MAINTENANCE

Problems	Potential 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 display 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.
	Failed or loose connection.	Make sure the connection is good
	The switcher is broken.	Send it to authorized dealer for repair.
POWER indicator doesn't work or no respond to any operation	Failed 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.
	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters.

Cannot control the device by control device (e.g. a PC) through RS232 port	Broken RS232 port.	Send it to authorized dealer for checking.
Cannot control the device by front panel buttons while can control it through RS232 port	The front panel buttons are locked.	Send command **50605%** to unlock the front panel buttons.
Cannot control the device by RS232 / IR remote / front panel buttons	The device has already been broken.	Send it to authorized dealer for repairing.

If your problem persists after following the above troubleshooting steps, seek further help from an authorized dealer or our technical support.

CONTACTING RTI

For news about the latest updates, new product information, and new accessories, please visit our web site at:

www.rticorp.com

For general information, you can contact RTI at:

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Shakopee, MN 55379

Tel. (952) 253-3100

Fax (952) 253-3131

info@rticorp.com

SERVICE & SUPPORT

If you are encountering any problems or have a question about your RTI product, please contact RTI Technical Support for assistance (see the Contacting RTI section of this guide for contact details).

RTI provides technical support by telephone or e-mail. For the highest quality service, please have the following information ready, or provide it in your fax or e-mail.

- Your Name
- Company Name
- Telephone Number
- E-mail Address
- Product model and serial number (if applicable)

If you are having a problem with hardware, please note the equipment in your system, a description of the problem, and any troubleshooting you have already tried.

Please do not return products to RTI without a return authorization.

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