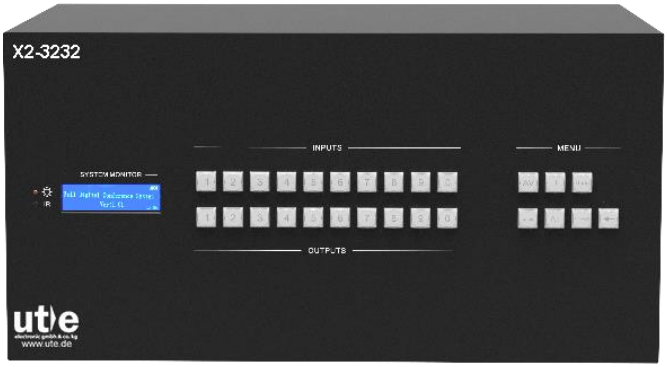
User Manual

X2-3232

Modular Matrix Switcher 32x32



Version: X2-3232_2018V2.9

Preface

Read this user manual carefully before using the product. Pictures are shown in this manual for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till July, 2018. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

All product function is valid till 2018-07-05.

Trademarks

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FCC Statement

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. It 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 commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

To ensure 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.

Table of Contents

1. Introduction

1.1. Product Introduction

The X2-3232 is a high-performance video and audio modular matrix switcher supporting max 32 input signal sources and 32 output display synchronously. It supports different video signals with cross switching. Every video or audio signal is transmitted and switched independently to decrease signal attenuation. The matrix supports various changeable cards including HMDI, DVI, VGA, SDI and HDBaseT etc. Users can choose to insert different signal card for different application.

The matrix have power fail memory function and audio can break away from or follow the video to switch. It has RS232 port for serial control and optional IP port for TCP/IP control, can be easily controlled by third-part devices.

With its flexible design, the matrix 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.

1.2. Features

- Modular chassis with configurable I/O slots, ranging from 4x4 to 32x32.
- Various I/O cards, includes HDMI, HDBaseT, SD/HD/3G-SDI, DVI and VGA cards (Compatible with YUV, YC & CVBC.) to configure any matrix.
- Truly cross-point switching, any input to any output, regardless signal format.
- Supports HDMI1.4 and 1080P 3D.
- Integrated HDBaseT technology.
- Controllable via button, RS232 & optional TCP/IP, also compatible with 3rd parties control.
- HDCP compliant.
- LCD display.

1.3. Signal Card

The matrix supports multiple signal cards as listed in the following charts:

Signal	Model	Description
VGA	X2-4I-VA	1080P seamless VGA input card with 4 VGA and 4 external L+R audio ports.
	X2-4O-VG	1080P VGA output card with 4 VGA and 4 external stereo audio ports.
	X2-4O-VS	1080P seamless VGA output card with 4 VGA and 4 external L+R audio ports.
HDMI	X2-4I-HS	1080P seamless HDMI input card with 4 HDMI and 4 external L+R audio ports.
	X2-4O-HS	1080P seamless HDMI output card with 4 HDMI and 4 external L+R audio ports.
	X2-4I-UH	4K HDMI input card with 4 HDMI, and 4 external L+R audio ports.
	X2-4O-UH	4K HDMI output card with 4 HDMI and 4 external L+R audio ports.
SDI	X2-4I-SS	1080P seamless SDI input card with 4 SDI input and 4 loop output ports.
	X2-4O-SS	1080P seamless SDI output card with 4 SDI output and 4 loop output ports.
DVI	X2-4I-DV	1080P DVI input card with 4 DVI ports
	X2-DO-DV	1080P DVI input card with 4 DVI ports
	X2-4I-DS	1080P seamless DVI input card with 4 DVI ports.
	X2-4O-DS	1080P seamless DVI output card with 4 DVI ports.
HDBaseT	X2-4I-BT	4K HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
	X2-4O-BT	4K HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
	X2-4I-BTS	1080P seamless HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.

	X2-4O-BTS	1080P seamless HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.
OPTICAL	X2-4I-UFS	1080P seamless OPTICAL input card with 4 OPTICAL ports.
	X2-4O-UFS	1080P seamless OPTICAL output card with 4 OPTICAL ports.

1.4. Package List

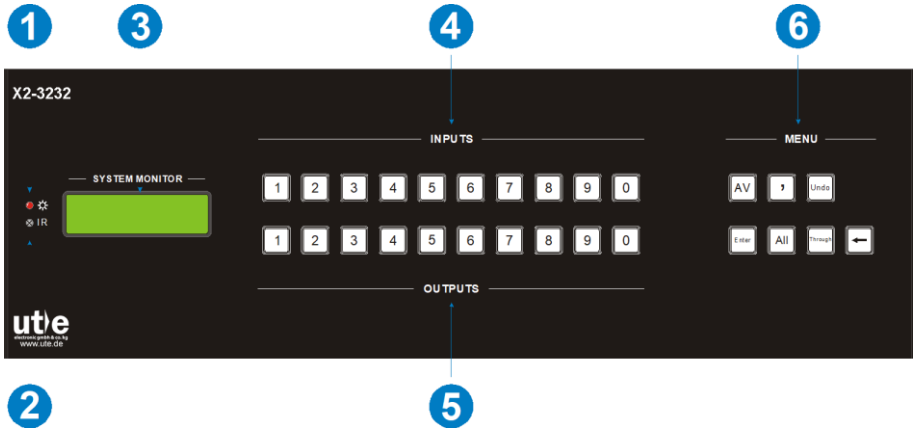
- 1x X2-3232: Modular Matrix Switcher 32x32
- 1x IR Remote
- 1x RS232-CBL-DB9F-3P: RS232 Cable
- 4x Plastic Cushions
- 1x Power Cord
- 1 x User Manual

Notes:

- Please confirm if the product and the accessories are all included, if not, please contact with the dealers.
- Please contact your dealer immediately if any damage or defect in the components is found.

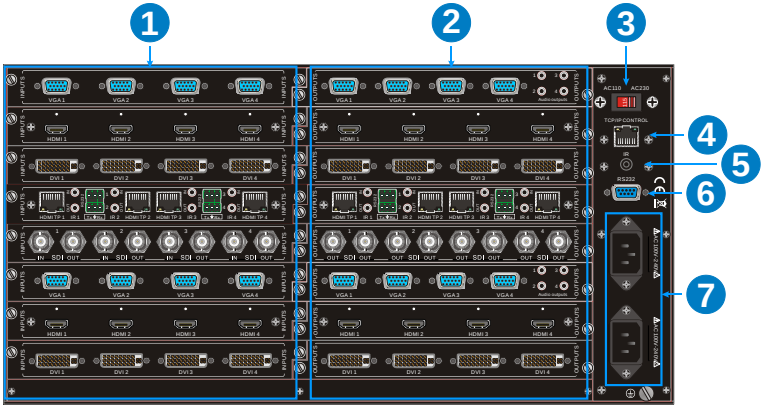
2. Panel Description

2.1. Matrix Front Panel



No.	Name	Description
①	IR	Built-in IR sensor to receive IR signal sent from IR remote.
②	Power LED	The LED illuminates red when power is applied.
③	LCD Screen	Shows real-time operation status.
④	INPUTS	Back-lit buttons for input selection, ranges from 0~ 9, 32 selectable channels in total.
⑤	OUTPUTS	Back-lit buttons for output selection, ranges from 0 ~ 9, 32 selectable channels in total.
⑥	MENU	**AV:** Switch 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.

2.2. Matrix Rear Panel



No.	Name	Description
①	INPUTS	Signal card slots to insert necessary input cards.
②	OUTPUTS	Signal card slots to insert necessary output cards.
③	Power Switch	Switch between AC110V and AC230V to access different power.
④	TCP/IP	(Optional) Used for TCP/IP control port.
⑤	IR	IR input to connect IR receiver.
⑥	RS232	Serial control port, connect with RS232 port of control device.
⑦	Power Ports	Connect with household alternating current power, including one redundant power.

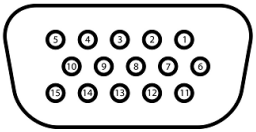
Note: There are only 8 input and 8 output slots for the matrix, which enables only 8 input cards and 8 output cards to be installed. The input/output cards can be changed based on your requirements and supports hot plug and play.

2.3. Signal Card

The X2-3232 supports expansion through various changeable input/ output cards of different signals including DVI, HDMI, VGA, twisted pair, SDI etc. Here is a brief introduction to the changeable cards.

2.3.1. VGA Signal Cards

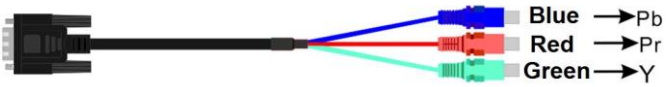
Pin layout of female VGA connector:



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

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

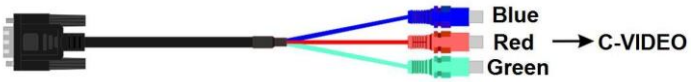
VGA- YPbPr:



Pin	Signal	Pin	Signal
1	RED	6	GND
2	GREEN	7	GND
3	BLUE	8	GND

Other pins are not used.

VGA- C-VIDEO:

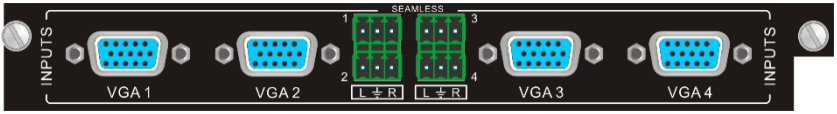


Pin	Signal	Pin	Signal
1	RED	6	GND
7	GND	8	GND

Other pins are not used.

2.3.1.1. X2-4I-VA: 1080P seamless VGA input card

1080P seamless VGA input card with 4 VGA and 4 external L+R audio ports.



X2-4I-VA

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports video upscaling, converting input video to 1080P or 1920x1200P.
- Supports input resolution selection.
- Manually select VGA (RGBHV), YPbPr, S-VIDEO or C-VIDEO signal format.
- Compatible with HDMI and DVI signal input.
- Supports YCBCR or RGB chrominance space.
- Supports VGA input signal auto correction.
- Supports 4 external L+R audio inputs and audio channel control.

2.3.1.2. X2-4O-VG: 1080P seamless VGA input card w. audio ports

1080P seamless VGA input card 4 VGA and 4 external stereo audio ports.

X2-4O-VG

- Only supports VGA video format.
- The bandwidth is up to 350MHz (-3dB).
- The default output resolution is 1920x1080P@60Hz.
- Supports 4 external stereo audio outputs.

2.3.1.3. X2-4O-VS: 1080P seamless VGA output card w. audio ports

1080P seamless VGA output card with 4 VGA and 4 external L+R audio ports.

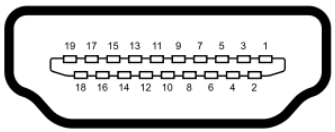
X2-4O-VS

- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports output resolution selection.
- Manually select VGA (RGBHV), YPbPr, S-VIDEO or C-VIDEO signal format.
- Supports 4 external L+R audio outputs and audio channel control.
- When it is used with X2-4I-VA input card, the ratio of input and output is 1:1.
- Supports NTSC or PAL.

🕮 **Note**: When the X2-4O-VS output card is used with the seamless input card except X2-4I-AV, the video resolution of all input sources should be set to same resolution by RS232 commands to ensure the seamless output.

2.3.2. HDMI Signal Cards

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

2.3.2.1. X2-4I-HS: 1080P seamless HDMI input card

1080P seamless HDMI input card with 4 HDMI and 4 external L+R audio ports.

X2-4I-HS

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports HDMI 1.3 and HDCP 1.2.
- Compatible with DVI signal input.
- Supports input resolution selection, and it is up to 1920x1080P@60Hz.
- Supports image brightness, contrast, chrominance, sharpness, color temperature, aspect ratio, and image mode setting.
- Supports 4 external L+R audio inputs and audio channel control.

2.3.2.2. X2-4O-HS: 1080P seamless HDMI output card

1080P seamless HDMI output card with 4 HDMI and 4 external L+R audio ports.

X2-4O-HS

- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports HDMI 1.3 and HDCP 1.2.
- Supports output resolution selection, and it is up to 1920x1080P@60Hz.
- Supports 4 external L+R audio outputs and audio channel control.

📖 **Note**: When the X2-4O-HS output card is used with the seamless input card except X2-4I-HS, the video resolution of all input sources should be set to same resolution by RS232 commands to ensure the seamless output.

2.3.2.3. X2-4I-UH: 4K HDMI input card

4K HDMI input card with 4 HDMI, and 4 external L+R audio ports.

X2-4I-UH

- Supports HDMI 1.4 and HDCP 1.4.
- Compatible with DVI signal.
- Input resolution is up to 4Kx2K, and supports 1080P 3D.
- Synchronously switch audio and video.
- Supports 4 external L+R audio inputs and audio channel control.

Note: When the X2-4I-UH input card is used with the 1080P output card, the video resolution must be set to 1080P to ensure reliable output.

2.3.2.4. X2-4O-UH: 4K HDMI output card

4K HDMI output card with 4 HDMI, and 4 external L+R audio ports.

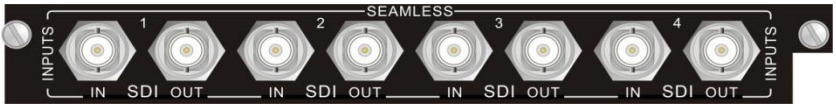
X2-4O-UH

- Supports HDMI 1.4 and HDCP 1.4.
- Compatible with DVI signal.
- Output resolution is up to 4Kx2K, and supports 1080P 3D.
- Synchronously switch audio and video.
- Supports 4 external L+R audio outputs.

2.3.3. SDI Signal Cards

2.3.3.1. X2-4I-SS: 1080P seamless SDI input card

1080P seamless SDI input card with 4 SDI input and 4 loop output ports.

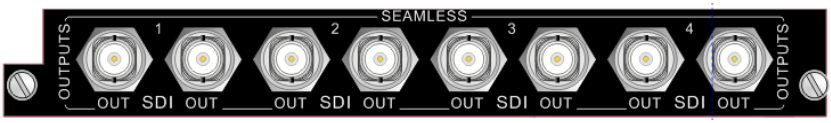


X2-4I-SS

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports input resolution selection, and the input resolution can be upscaled to 1920x1080P@60Hz.
- Automatically recognize SDI, HD-SDI or 3G-SDI signal format.
- Supports image brightness, contrast, chrominance, sharpness, color temperature, aspect ratio, and image mode setting.

2.3.3.2. X2-4O-SS: 1080P seamless SDI output card

1080P seamless SDI output card with 4 SDI output and 4 loop output ports.



X2-4O-SS

- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports output resolution selection, it is up to 1920x1080P@60Hz.
- Automatically recognize SDI, HD-SDI or 3G-SDI signal format.

📖 **Note:** When the X2-4O-SS output card is used with the seamless input card except X2-4I-SS, the video resolution of all input sources should be set to same resolution by RS232 commands to ensure the seamless output.

2.3.4. DVI Signal Cards

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

Pin	Function	Pin	Function
1	T.M.D.S.Data2-	13	T.M.D.S.Data3+
2	T.M.D.S.Data2+	14	+5V Power
3	T.M.D.S. Data 2/4 Shield	15	Ground (return for +5V, Hsync and Vsync)
4	T.M.D.S. Data 4-	16	Hot Plug Detect
5	T.M.D.S. Data 4+	17	T.M.D.S. Data 0-
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield
8	Analog Vertical Sync	20	T.M.D.S.Data5-
9	T.M.D.S.Data1-	21	T.M.D.S.Data5+
10	T.M.D.S.Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S.Data1/3 Shield	23	T.M.D. S. Clock +
12	T.M.D.S.Data3-	13	T.M.D.S.Data3+
C1	RED	C2	Analog Green
C3	Analog Blue	C4	Horizontal Sync Analog
C5	GND		

📖 **Note**: Pin C1~C5 are not used in X2-4I-DV & X2-4O-DV.

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.

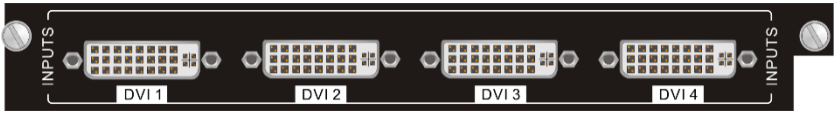
✓ DVI- VGA (female):

Pin	Signal	Pin	Signal
C1	RED	C2	GND
C3	GREEN	C4	Horizontal Sync Analog
8	Vertical Sync Analog		

Other pins are unused.

2.3.4.1. X2-4IDV: 1080p DVI input card

1080P DVI input card with 4 DVI ports.

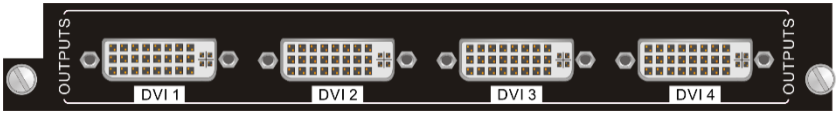


X2-4I-DV

- Supports HDMI 1.3 and HDCP, but not supporting analogy signal.
- Supports input resolution up to 1920x1080P@60Hz.
- Supports embedded EDID management and DDC.

2.3.4.2. X2-4O-DV: 1080P DVI output card

1080P DVI output card with 4 DVI ports.

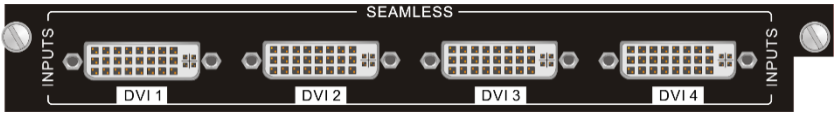


X2-4O-DV

- Supports HDMI 1.3 and HDCP, but not supporting analogy signal.
- Supports input resolution up to 1920x1080P@60Hz.
- Supports embedded EDID management and DDC.

2.3.4.3. X2-4I-DS: 1080P seamless DVI input card

1080P seamless DVI input card with 4 DVI ports.

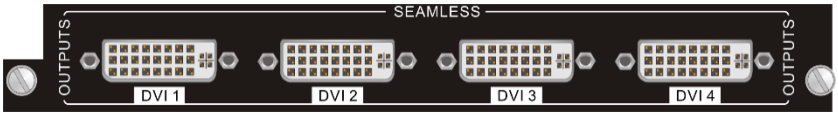


X2-4I-DS

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports HDMI 1.3 and HDCP 1.4.
- Automatically recognize DVI, HDMI, VGA, YPbPr and C-VIDEO signal format.
- Supports input resolution selection, and it is up to 1920x1080P@60Hz.
- Supports image brightness, contrast, chrominance, sharpness, color temperature, aspect ratio, and image mode setting.
- Supports embedded EDID management and DDC channel.

2.3.4.4. X2-4O-DS: 1080P seamless DVI output card

1080P seamless DVI output card with 4 DVI ports.



X2-4O-DS

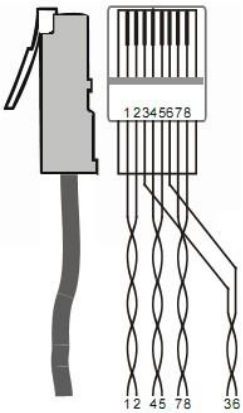
- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports HDMI 1.3 and HDCP 1.4.
- Manually select VGA (RGBHV), YPbPr, or C-VIDEO signal format.
- Supports output resolution selection, and it is up to 1920x1080P@60Hz.
- Supports embedded EDID management and DDC channel.
- Supports NTSC or PAL

2.3.5. HDBaseT Signal Cards

How the indicators work:

Color	Definition	Status
Yellow	Power LED	The LED illuminates yellow when power is applied.
Green	Link LED	The LED illuminates green when the port is successfully connected to other device by CATx cable.

Pin layout of the HDBT connector:



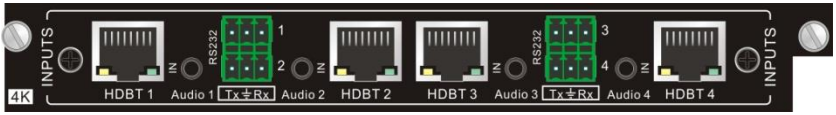
Pin	Color
1	orange white
2	orange
3	green white
4	blue
5	blue white
6	green
7	brown white
8	brown

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.

2.3.5.1. X2-4I-BT: 4K HDBaseT input card

4K HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.



X2-4I-BT

- Supports HDBT 1.0, HDMI 1.4 and HDCP 1.4.
- Input resolution is up to 4Kx2K, and supports 1080P 3D.
- It is used with HDBaseT transmitter to extend video signal, and the transmission distance can up to 70 meters at 1080P, or 40 meters at 4Kx2K.
- Features 4 RS232 ports for two-way RS232 pass-through.
- The RS232 baud rate supports 2400, 4800, 9600, 19200, 38400, 57600,115200.
- Supports 4 external stereo audio inputs and audio channel control.

Note: When the X2-4I-BT input card is used with the 1080P output card, the video resolution must be set to 1080P to ensure reliable output.

2.3.5.2. X2-4O-BT: 4K HDBaseT output card

4K HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.

X2-4O-BT

- Supports HDBT 1.0 and HDCP 1.4.
- Output resolution is up to 4Kx2K, and supports 1080P 3D.
- It is used with HDBaseT receiver to extend video signal, and the transmission distance can up to 70 meters at 1080P, or 40 meters at 4Kx2K.
- Features 4 RS232 ports for two-way RS232 pass-through.
- The RS232 baud rate supports 2400, 4800, 9600, 19200, 38400, 57600,115200.
- Supports 4 external stereo audio outputs and audio channel control.

2.3.5.3. X2-4I-BTS: 1080P seamless HDBaseT input card

1080P seamless HDBaseT input card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.

X2-4I-BTS

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports HDBT1.0 and HDCP 1.3.
- Supports input resolution selection, and the default is 1920x1080P@60Hz.
- It is used with HDBaseT transmitter to extend video signal, and the transmission distance can up to 70 meters at 1080P.
- Supports image brightness, contrast, chrominance, sharpness, color temperature, aspect ratio, and image mode setting.
- Features 4 RS232 ports for two-way RS232 pass-through.
- The RS232 baud rate supports 2400, 4800, 9600, 19200, 38400, 57600,115200.
- Supports 4 external stereo audio inputs and audio channel control.

2.3.5.4. X2-4O-BTS: 1080P seamless HDBaseT output card

1080P seamless HDBaseT output card with 4 HDBT, 4 RS232 and 4 external stereo audio ports.

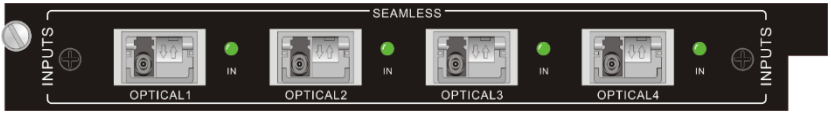
X2-4O-BTS

- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports HDBT1.0 and HDCP 1.3.
- Supports output resolution selection, and the default is 1920x1080P@60Hz.
- It is used with HDBaseT receiver to extend video signal, and the transmission distance can up to 70 meters at 1080P.
- Features 4 RS232 ports for two-way RS232 pass-through.
- The RS232 baud rate supports 2400, 4800, 9600, 19200, 38400, 57600,115200.
- Supports 4 external stereo audio outputs and audio channel control.

2.3.6. Optical Signal Cards

2.3.6.1. X2-4I-UFS: 1080P seamless OPTICAL input card

1080P seamless OPTICAL input card with 4 OPTICAL ports.

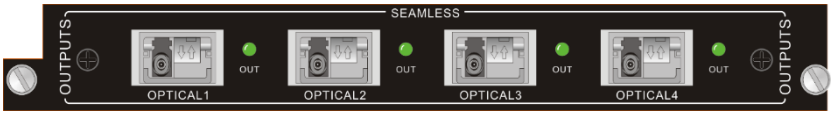


X2-4I-UFS

- Supports seamless switching, it can be used in combination with other seamless output signal card.
- Supports input resolution selection, and it is up to 1920x1080P@60Hz.
- Compatible with HDMI and DVI signal input.
- It is used with optical fiber transmitter to extend video signal, and the transmission distance can up to 2 kilometers by single-mode optical fiber cable, or 300 meters by multi-mode optical fiber cable.
- Supports image brightness, contrast, chrominance, sharpness, color temperature, aspect ratio, and image mode setting.
- The input signal cannot be transmitted with HDCP.
- The input card does not support DDC channel.

2.3.6.2. X2-4O-UFS: 1080P seamless OPTICAL output card

1080P seamless OPTICAL output card with 4 OPTICAL ports.



X2-4O-UFS

- Supports seamless switching, it can be used in combination with other seamless input signal card.
- Supports output resolution selection, and it is up to 1920x1080P@60Hz.
- It is used with optical fiber receiver to extend video signal, and the transmission distance can up to 2 kilometers by single-mode optical fiber cable, or 300 meters by multi-mode optical fiber cable.
- The input signal cannot be transmitted with HDCP.
- The input card does not support DDC channel.

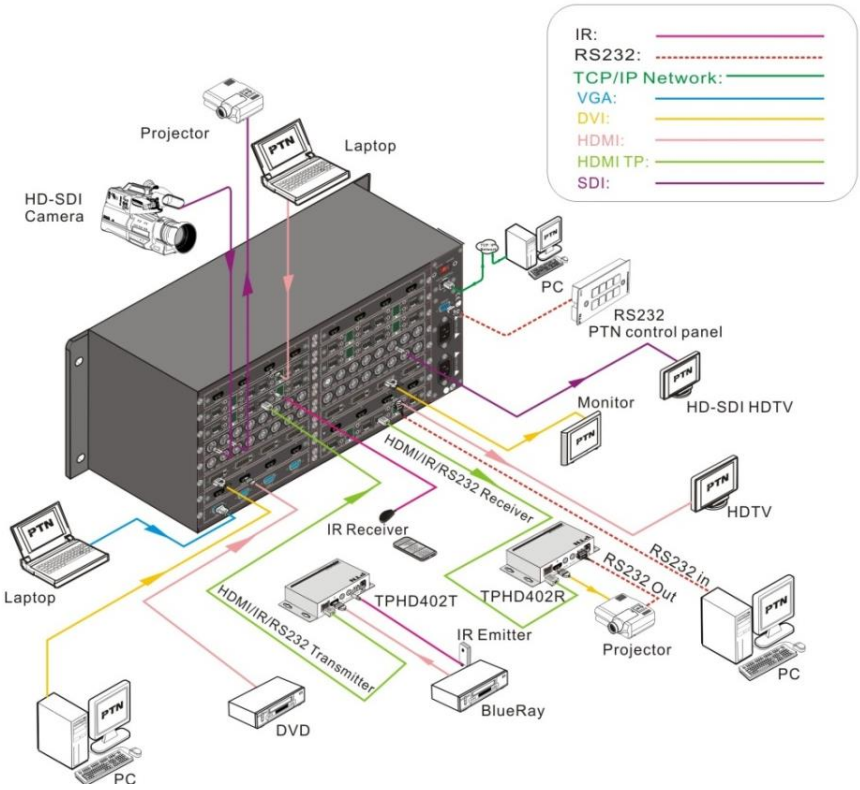
📖 **Note:** Before using the X2-4I-UFS and X2-4O-UFS, the firmware program of matrix front-board and back-board needs to be upgraded. Please seek technical assistance from our technical support.

3. System Connection

3.1. Usage Precaution

- 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.

3.2. Connection Diagram X2-3232



Note: All the input and output signal cards don't support hot-plug, but the input and output ports on the signal cards support.

4. Button Control

The matrix can be rapidly controlled with its front panel buttons. To switch AV signal, please operate the buttons under the following format:

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

Notes:

- "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:

- To transfer input 1 to output 11, press input "1", output "1" "1" and "Enter".
- To transfer signals from input 1 to all output channels, press buttons in this order: "1", "All".

Other Functional Buttons:

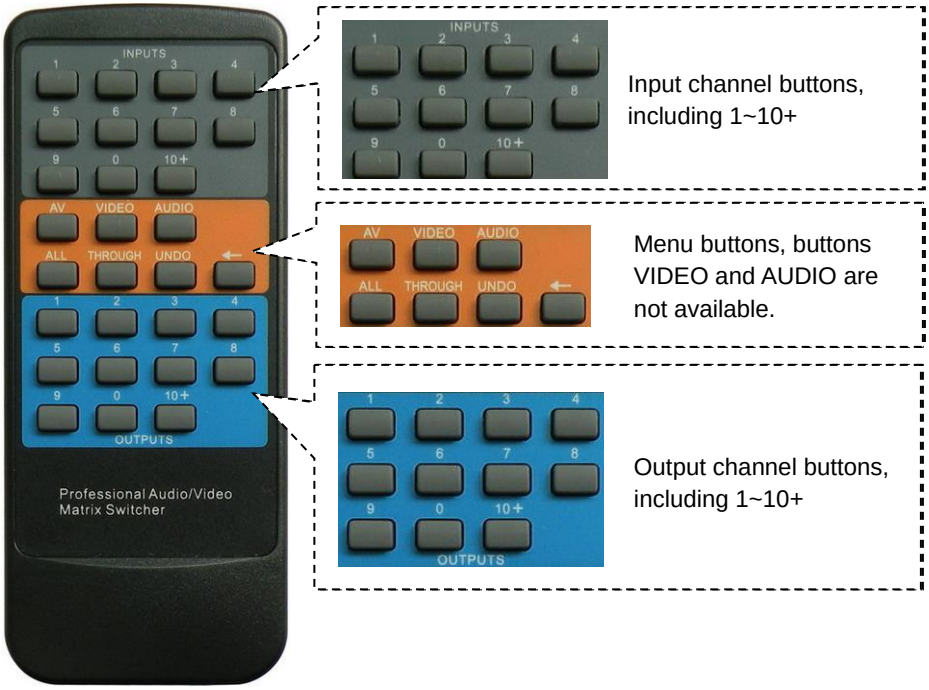
Buttons	Description	Operation
UNDO	return to the previous status	Status 1: Input 6 -> output 6 Press input "6" + "AV"+ output 4 to change the connection. Press "Undo" to return to Status 1.
←	Backspace the last operation	If you press buttons "1", "AV", "2", "←" in order, then "2" will be canceled.
THROUGH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

5. IR Remote Control

With the IR remote, the matrix 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:

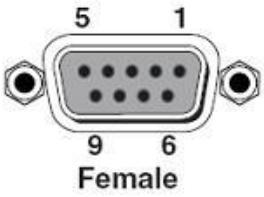
"**Input Channel**" + "**Switch Mode**" +"**Output Channel**"



6. RS232 Control

6.1. RS232 Communication Port

Except the front control panel and IR remote, the matrix can 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

6.2. RS232 Control Software

When the matrix 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.

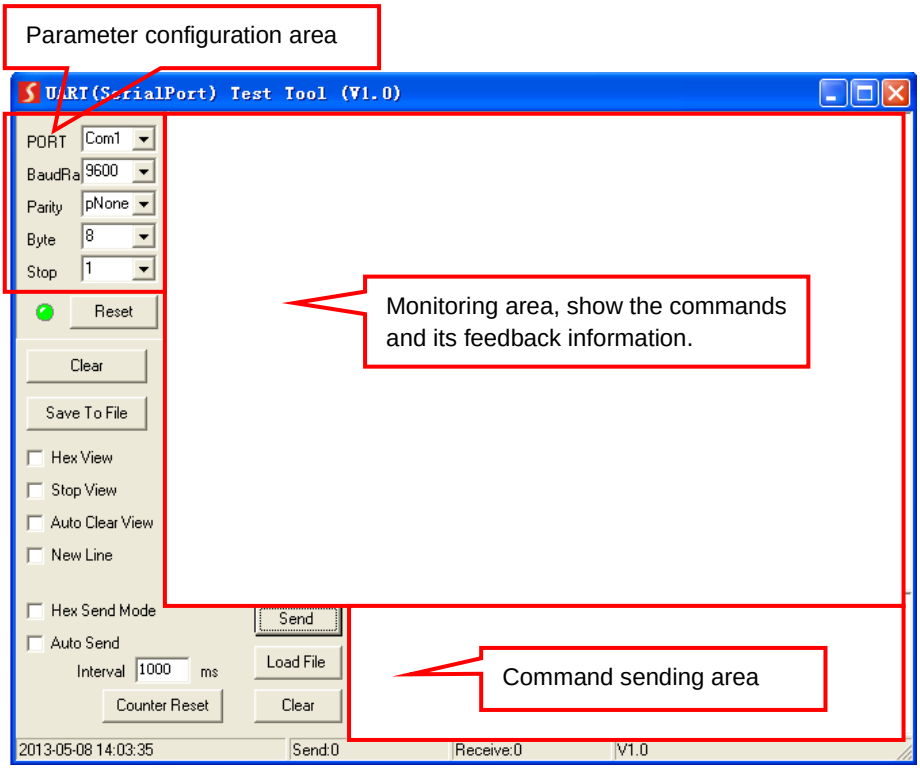
6.2.1. Installation/ uninstallation of RS232 Control Software

- **Installation:** Copy the control software file to the computer connected with the Transmitter.
- **Uninstallation:** Delete all the control software files in corresponding file path.

6.2.2. Basic Setting

Connect the matrix to all input devices and output devices needed, then connect it to a PC which is installed with RS232 control software. Double-click the software icon to run this software. Please refer the software **CommWatch.exe** as example. The icon is shown as below:

The interface of the control software is showed as below:



Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly (Baud rate: 9600 , Data bit: 8 , Stop bit: 1 , Parity bit: none), then the RS232 commands can be sent in Command Sending Area.

6.3. RS232 Communication Command

With this command system, users are able to control and operate the matrix with RS232 software remotely.

Notes:

- Please disconnect all the twisted pairs 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 matrix 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	4kx2k 2D 5.1CH
6	4kx2k 2D 2.0CH

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

6.3.1. Communication protocol:

RS232 Communication Protocol:

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

6.3.2. System Control Command

Command	Description	Feedback
/*Type;	Get the system model.	xxxxx
/%Lock;	Lock front panel buttons.	System Locked!
/%Unlock;	Unlock front panel buttons.	System Unlock!
/^Version;	Get the firmware version.	Vx.x.x
/:MessageOff;	Disable feedback message	Closed The Message Return.
/:MessageOn;	Enable feedback message (Default)	Enabled The Message Return.
Undo.	Cancel the previous operation	Undo
Demo.	Switch to testing mode, switch AV 1>1, 2>2 and so on...	Demo Mode AV: 01->001 … …
PWON.	Power on the system.	PWON
PWOFF.	Turn the system to standby mode.	PWOFF
/V00.	Get the backboard software version.	Vx.x.x
%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.	

6.3.3. Signal Switching Command

Command	Description	Feedback
[x]All.	Switch input [x] AV to all outputs.	01 To All
All#.	Switch all input signal to the corresponding output channel	All Through.
All$.	Switch off all outputs.	All Closed.
[x]#.	Switch input [x] to output [x].	01 Through.
[x]$.	Switch off the output [x].	AV: 01 Closed.
All@.	Switch on all outputs.	All Open.
[x]@.	Switch on the output [x].	01 Open.
[x]V[y1](&[y2]….).	Switch input [x] only video to output [y1] (and all target output in [y2] and so on).	V: 01->001
[x1]B[y1](&[y2]….).	Switch input [x] AV signal to output [y1] (and all target output in [y2] and so on).	AV: 01->001
Status[x].	Get the input channel on output [x].	V: 01->001 A: 01->001
Status.	Get the input channel on output channel one by one.	V: 01->001 A: 01->001 … …c

6.3.4. Preset Command

Command	Description	Feedback
Save[Y].	Store the current status to preset [Y]. [Y] ranges from 1 to 9.	Save To F8
Recall[Y].	Recall preset [Y]	Recall From F8 V: 01->001 A: 01->001 … …
Clear[Y].	Clear the preset [Y]	Clear F8

6.3.5. EDID Management Command

Command	Description	Feedback
UpgradeIntEDID[x].	Upgrade built-in EDID data. When the command applied, system prompts to upload the EDID file (.bin). [x] ranges 1 – 6.	Prompt to upload EDID file …….. Upload EDID to system completed
EDIDUpgrade[x].	Upgrade the EDID data of the input port [x]. When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds.	Prompt to upload EDID file …….. Upload EDID to input card completed
EDID/[x]/[y].	Set the built-in EDID data type [y] to input port [x]. [y]= 1~6.	Set system EDID[y] to input [x]
EDIDG[x].	Get the EDID data from output port [x] and display on serial port.	
EDIDMInit.	Reset all input card EDID to all input card	EDIDMInit
EDIDM[x]B[y].	Set the EDID data of output [x] on input [y].	EDIDM2B1

6.3.6. X2-4I-VA Input Card Command

Command	Description	Feedback
USER/I/[x]:0622%;	Set the input [x] to VGA signal.	0622%
USER/I/[x]:0623%;	Set the input [x] to YPbPr signal.	0623%
USER/I/[x]:0624%;	Set the input [x] to S-VIDEO signal.	0624%
USER/I/[x]:0625%;	Set the input [x] to C-VIDEO signal.	0625%
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 of of input [x] to YCBCR.	0684%
USER/I/[x]:0685%;	Set the color space of of input [x] to RGB.	0685%
USER/I/[x]:0686%;	Set the signal format of input [x] to HDMI.	0686%
USER/I/[x]:0687%;	Set the signal format of input [x] to DVI.	0687%
USER/I/[x]:0626%;	Set the resolution of input [x] to 1024x768p@60Hz.	0626%
USER/I/[x]:0627%;	Set the resolution of input [x] to 1280x720P@60Hz.	0627%
USER/I/[x]:0628%;	Set the resolution of input [x] to 1280x800P@60Hz.	0628%
USER/I/[x]:0619%;	Set the resolution of input [x] to 1360x768p@60Hz.	0619%
USER/I/[x]:0621%;	Set the resolution of input [x] to 1600x1200P@60Hz.	0621%
USER/I/[x]:0629%;	Set the resolution of input [x] to 1920x1080P@60Hz.	0629%
USER/I/[x]:0620%;	Set the resolution of input [x] to 1920x1200P@60Hz.	0620%
USER/I/[x]:0617%;	Restore the input [x] signal card to factory default.	0617%
USER/I/[x]:0606%;	Automatically calibrate the VGA signal of input [x].	0606%
USER/I/[x]:0698%;	Upgrade the software of input [x].	0698%

6.3.7. X2-4O-VS Output Card Command

Command	Description	Feedback
USER/O/[x]:0201%;	Set the output [x] to YPbPr signal.	0201%
USER/O/[x]:0202%;	Set the output [x] to VGA signal.	0202%
USER/O/[x]:0203%;	Set the output [x] to C-VIDEO signal.	0203%
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] to1280x720P@24Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to1920x1080i@60Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to1920x1080i@59Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to1920x1080i@50Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x]	Resolution

Command	Description	Feedback
	to1920x1080P@59Hz.	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

Command	Description	Feedback
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]:0837%;	Set the resolution of output [x] to 1920x1200P@60Hz.	Resolution Ou01 1920x1200
USER/O/[x]:0839%;	Set the resolution of output [x] to 1600x900P@60Hz.	Resolution Ou01 1600x900
GetVGAPortMode[x].	Get the port status of output [x].	
USER/O/[x]:0900%;	Set the CVBS output [x] to NTSC (60Hz).	
USER/O/[x]:0901%;	Set the CVBS output [x] to PAL (50Hz).	

6.3.8. X2-4I-HS Input Card Command

Command	Description	Feedback
USER/I/[x]:02xx%;	Set the image brightness of input [x] to xx, xx=00~99.	0299%
USER/I/[x]:03xx%;	Set the image contrast of input [x] to xx, xx=00~99.	0399%
USER/I/[x]:04xx%;	Set the image saturation of input [x] to xx, xx=00~99.	0499%
USER/I/[x]:05xx%;	Set the image sharpness of input [x] to xx, xx=00~99.	0599%
USER/I/[x]:0607%;	Set the image color temperature of input [x] to user/cool/medium/warm.	0607%
USER/I/[x]:0608%;	Set the image 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%;	Restore the input [x] signal card 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%;	Upgrade the software of input [x].	0698%
USER/I/[x]:0711%;	Select HDMI embedded audio as audio source for input [x].	0711%

Command	Description	Feedback
USER/I/[x]:0712%;	Select external analog audio input as audio source for input [x].	0712%

6.3.9. X2-4O-HS Output Card Command

Command	Description	Feedback
USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720P@60Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0824%;	Set the resolution of output [x] to 1024x768p@60Hz.	Resolution Ou01 1024x768
USER/O/[x]:0826%;	Set the resolution of output [x] to 1280x1024p@60Hz.	Resolution Ou01 1280x1024
USER/O/[x]:0837%;	Set the resolution of output [x] to 1920x1200P@60Hz.	Resolution Ou01 1920x1200
GetResolution[x].	Get the resolution of output [x].	
USER/O/[x]:0617%;	Restore the output [x] signal card to factory default.	
USER/O/[x]:0110%;	Enable the analog audio output [x].	0110%
USER/O/[x]:0111%;	Disable the analog audio output [x].	0111%

6.3.10. X2-4I-UH Input Card Command

Command	Description	Feedback
AUDIO[x]I[z].	Select audio source for input [x] [x] is port number; [z] stands for audio source, it can be 0 (embedded HDMI audio) or 1 (analog audio)	AUDIO1I0.

6.3.11. X2-4I-DS Input Card Command

Command	Description	Feedback
USER/I/[x]:02xx%;	Set the image brightness of input [x] to xx, xx=00~99.	0299%
USER/I/[x]:03xx%;	Set the image contrast of input [x] to xx, xx=00~99.	0399%
USER/I/[x]:04xx%;	Set the image saturation of input [x] to xx, xx=00~99.	0499%
USER/I/[x]:05xx%;	Set the image sharpness of input [x] to xx, xx=00~99.	0599%
USER/I/[x]:0606%;	Automatically calibrate the VGA signal of input [x].	0606%
USER/I/[x]:0607%;	Set the image color temperature of input [x] to user/cool/medium/warm.	0607%
USER/I/[x]:0608%;	Set the image 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%;	Restore the input [x] signal card 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	0629%

Command	Description	Feedback
	1920x1080 1080P.	
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%;	Upgrade the software of input [x].	0698%
USER/I/[x]:0686%;	Set the signal format of input [x] to HDMI.	0686%
USER/I/[x]:0687%;	Set the signal format of input [x] to DVI.	0687%

6.3.12. X2-4O-DS Output Card Command

Command	Description	Feedback
USER/O/[x]:0201%;	Set the output [x] to YPbPr signal.	0201%
USER/O/[x]:0202%;	Set the output [x] to VGA signal.	0202%
USER/O/[x]:0203%;	Set the output [x] to C-VIDEO signal.	0203%
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] to1280x720P@24Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to1920x1080i@60Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to1920x1080i@59Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to1920x1080i@50Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x]	Resolution

Command	Description	Feedback
	to1920x1080P@59Hz.	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

Command	Description	Feedback
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]:0837%;	Set the resolution of output [x] to 1920x1200P@60Hz.	Resolution Ou01 1920x1200
USER/O/[x]:0839%;	Set the resolution of output [x] to 1600x900P@60Hz.	Resolution Ou01 1600x900
GetVGAPortMode[x].	Get the port status of output [x].	
USER/O/[x]:0900%;	Set the CVBS output [x] to NTSC (60Hz).	
USER/O/[x]:0901%;	Set the CVBS output [x] to PAL (50Hz).	

6.3.13. X2-4I-SS Input Card Command

Command	Description	Feedback
USER/I/[x]:02xx%;	Set the image brightness of input [x] to xx, xx=00~99.	0299%
USER/I/[x]:03xx%;	Set the image contrast of input [x] to xx, xx=00~99.	0399%
USER/I/[x]:04xx%;	Set the image saturation of input [x] to xx, xx=00~99.	0499%
USER/I/[x]:05xx%;	Set the image sharpness of input [x] to xx, xx=00~99.	0599%
USER/I/[x]:0606%;	Automatically calibrate the VGA signal of input [x].	0606%
USER/I/[x]:0607%;	Set the image color temperature of input [x] to user/cool/medium/warm.	0607%
USER/I/[x]:0608%;	Set the image 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%;	Restore the input [x] signal card 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%;	Upgrade the software of input [x].	0698%

6.3.14. X2-4O-SS Output Card Command

Command	Description	Feedback
USER/O/[x]:0804%;	Set the resolution of output [x] to 1280x720P@60Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0806%;	Set the resolution of output [x] to 1280x720P@50Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to1920x1080i@60Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to1920x1080i@50Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	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

6.3.15. X2-4I-BT Input Card Command

Command	Description	Feedback
AUDIO[x]I[z].	Select audio source for input [x] [x] is port number; [z] stands for audio source, it can be 0 (embedded HDMI audio) or 1 (analog audio)	AUDIO1I0.

6.3.16. X2-4I-BTS Input Card Command

Command	Description	Feedback
USER/I/[x]:02xx%;	Set the image brightness of input [x] to xx, xx=00~99.	0299%
USER/I/[x]:03xx%;	Set the image contrast of input [x] to xx, xx=00~99.	0399%
USER/I/[x]:04xx%;	Set the image saturation of input [x] to xx, xx=00~99.	0499%
USER/I/[x]:05xx%;	Set the image sharpness of input [x] to xx, xx=00~99.	0599%
USER/I/[x]:0606%;	Automatically calibrate the VGA signal of input [x].	0606%
USER/I/[x]:0607%;	Set the image color temperature of input [x] to user/cool/medium/warm.	0607%
USER/I/[x]:0608%;	Set the image 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%;	Restore the input [x] signal card 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%;	Upgrade the software of input [x].	0698%
USER/I/[x]:0686%;	Set the signal format of input [x] to	0686%

Command	Description	Feedback
	HDMI.	
USER/I/[x]:0711%;	Select HDMI embedded audio as audio source for input [x].	0711%
USER/I/[x]:0712%;	Select external analog audio input as audio source for input [x].	0712%

6.3.17. X2-4O-BTS Output Card Command

Command	Description	Feedback
USER/O/[x]:0110%;	Enable the analog audio output [x].	0110%
USER/O/[x]:0111%;	Disable the analog audio 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] to1280x720P@24Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to1920x1080i@60Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to1920x1080i@59Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to1920x1080i@50Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x] to1920x1080P@59Hz.	Resolution Ou01 1920x1080P

Command	Description	Feedback
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

Command	Description	Feedback
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]:0837%;	Set the resolution of output [x] to 1920x1200P@60Hz.	Resolution Ou01 1920x1200
USER/O/[x]:0839%;	Set the resolution of output [x] to 1600x900P@60Hz.	Resolution Ou01 1600x900

6.3.18. X2-4I-UFS Input Card Command

Command	Description	Feedback
USER/I/[x]:02xx%;	Set the image brightness of input [x] to xx, xx=00~99.	0299%
USER/I/[x]:03xx%;	Set the image contrast of input [x] to xx, xx=00~99.	0399%
USER/I/[x]:04xx%;	Set the image saturation of input [x] to xx, xx=00~99.	0499%
USER/I/[x]:05xx%;	Set the image sharpness of input [x] to xx, xx=00~99.	0599%
USER/I/[x]:0607%;	Set the image color temperature of input [x] to user/cool/medium/warm.	0607%
USER/I/[x]:0608%;	Set the image 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%;	Restore the input [x] signal card 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%;	Upgrade the software of input [x].	0698%
USER/I/[x]:0686%;	Set the signal format of input [x] to HDMI.	0686%
USER/I/[x]:0687%;	Set the signal format of input [x] to DVI.	0687%

6.3.19. X2-4O-UFS Output Card Command

Command	Description	Feedback
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] to1280x720P@24Hz.	Resolution Ou01 1280x720 P
USER/O/[x]:0810%;	Set the resolution of output [x] to1920x1080i@60Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0811%;	Set the resolution of output [x] to1920x1080i@59Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0812%;	Set the resolution of output [x] to1920x1080i@50Hz.	Resolution Ou01 1920x1080I
USER/O/[x]:0813%;	Set the resolution of output [x] to1920x1080P@60Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0814%;	Set the resolution of output [x] to1920x1080P@59Hz.	Resolution Ou01 1920x1080P
USER/O/[x]:0815%;	Set the resolution of output [x] to 1920x1080P@50Hz.	Resolution Ou01 1920x1080P

Command	Description	Feedback
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

Command	Description	Feedback
USER/O/[x]:0833%;	Set the resolution of output [x] to 1440x900P@75Hz.	Resolution Ou01 1440x900 P
USER/O/[x]:0837%;	Set the resolution of output [x] to 1920x1200P@60Hz.	Resolution Ou01 1920x1200
USER/O/[x]:0839%;	Set the resolution of output [x] to 1600x900P@60Hz.	Resolution Ou01 1600x900

Examples:

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

7. TCP/IP Control (Optional)

7.1. Control Mode

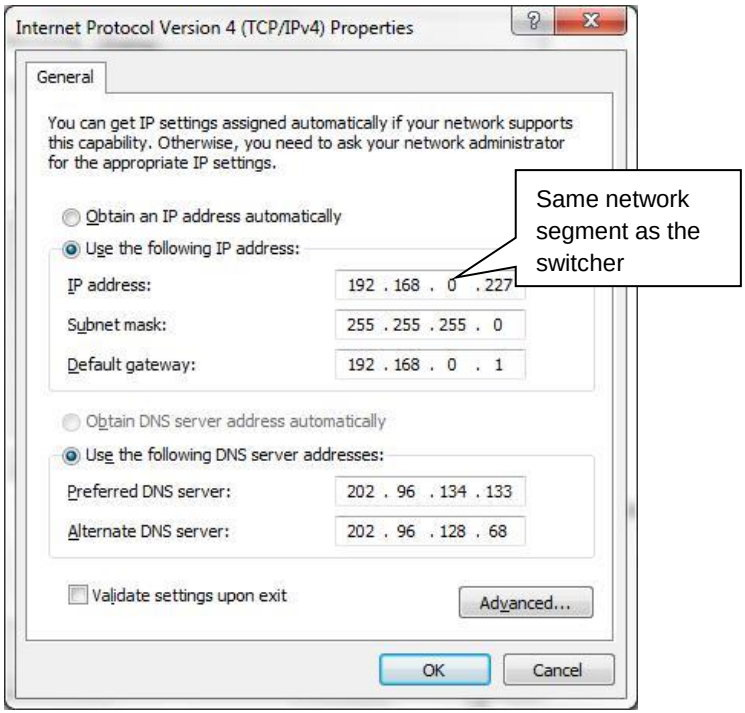
TCP/IP default settings:

- IP: 192.168.0.178,
- Gateway is 192.168.0.1,
- Serial Port: 4001.

IP and Gateway can be changed as you need, Serial Port cannot be changed.

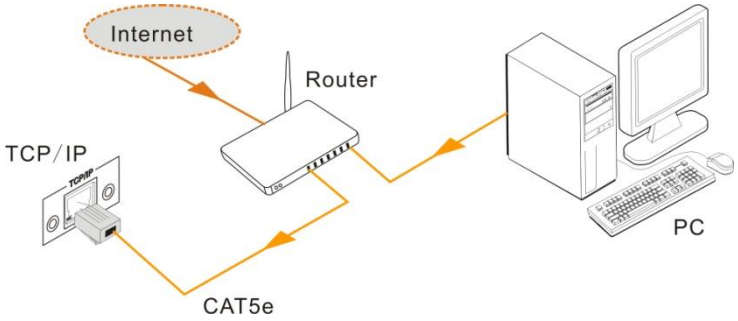
7.1.1. Controlled by Single PC

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



7.1.2. Controlled by PC(s) in LAN

The matrix can be connected with a router to make up a LAN with the PC(s), this make it able to be controlled in a LAN. When control, just make sure the matrix's network segment is the same with the router. Please connect as the following figure for LAN control.



Step1. Connect the TCP/IP port of the matrix to Ethernet port of PC with twisted pair.

Step2. Set the PC's network segment to the same as the matrix. Do please remember the PC's original network segment.

Step3. Set the matrix's network segment to the same as the router.

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

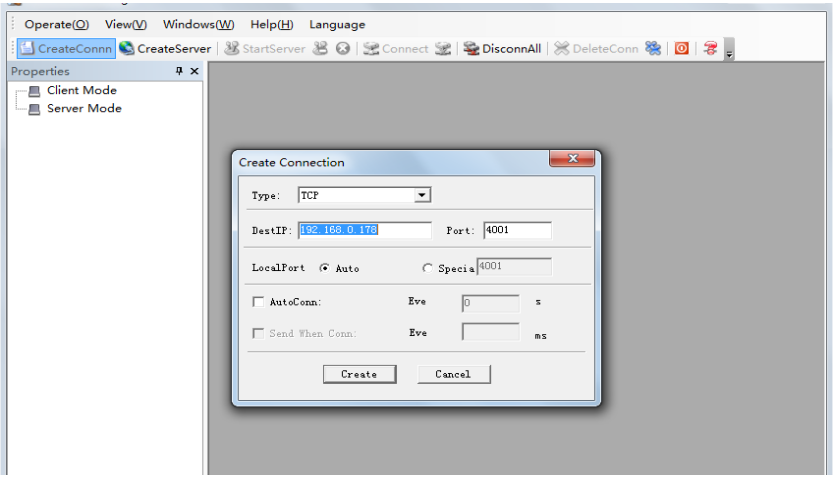
Step5. Connect the matrix and PC(s) to the router. In the same LAN, each PC is able to control the matrix synchronously.

Then it's able to control the device via a TCP/IP communication software.

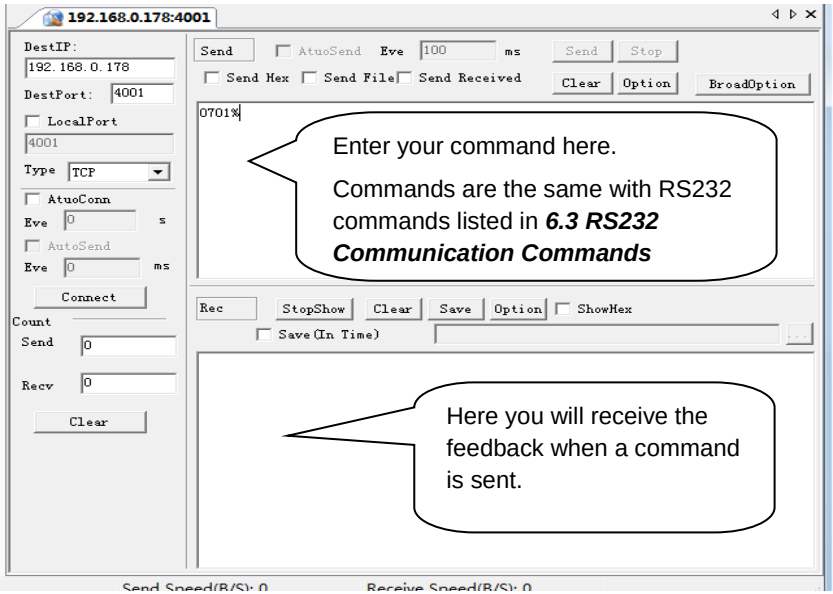
7.2. TCP/IP Communication Software

(Exampled by TCPUDP software)

1) Connect a computer and the matrix 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 matrix (default IP: 192.168.0.178, port:4001):



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

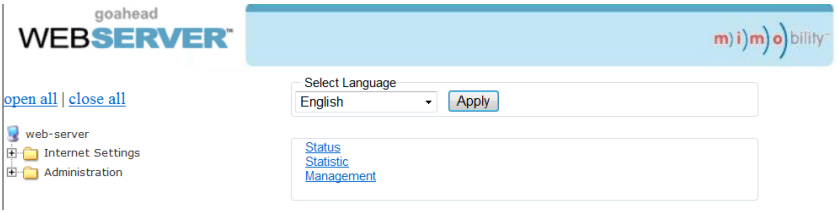


7.3. TCP/IP Configuration

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.

8. Specification

8.1. Main Unit

Control parts	
Serial Control Port	RS-232, 9- female D connector
Configuration	2 = TX, 3 = RX, 5 = GND
Installation	Rack Mountable
Front Panel Control	Buttons
Option	TCP/IP control
General	
Power Supply	100VAC ~ 240VAC, 50/60Hz
Power Consumption	60W (Max, no load)
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10%-90%
Dimension (W*H*D)	483mm x 222mm x 320mm (5U high)
Net Weight	About 7.5KG

8.2. Changeable Signal Cards

8.2.1. VGA Signal Cards

8.2.1.1. X2-4I-VA

Video	
Input	(4) VGA
Input Connector	(4) Female 15-pin HD VGA
Input Level	0.5 ~ 2.0Vp-p
Input Impedance	75Ω
Audio	
Input	(4) Audio
Input Connector	(4) 3-pin pluggable terminal block
CMRR	20Hz ~ 20KHz
Input Impedance	>10KΩ
General	
Gain	0 dB
Bandwidth	YPbPr:170MHz; C-video:150MHz; VGA:170MHz
Video Signal Format	VGA (RGBHV), YPbPr, S-video, C-video
Audio Signal Format	PCM
Resolution	Up to 1080P@60Hz
Crosstalk	<-50dB@5MHz

8.2.1.2. X2-4O-VG

Video	
Output	(4) VGA
Output Connector	(4) Female 15-pin HD VGA
Output Level	0.5 ~ 2.0Vp-p
Output Impedance	75Ω
Audio	
Output	(4) Audio
Output Connector	(4) 3.5mm mini jack
CMRR	20Hz ~ 20KHz
Output Impedance	75Ω
General	
Bandwidth	350MHz (-3dB)
Crosstalk	<-50dB@5MHz
Video Signal Format	VGA
Audio Signal Format	PCM
Resolution	Up to 1080P@60Hz
Crosstalk	<-50dB@5MHz

8.2.1.3. X2-4O-VS

Video	
Output	(4) VGA
Output Connector	(4) Female 15-pin HD VGA
Output Level	0.5 ~ 2.0Vp-p
Output Impedance	75Ω
Audio	
Output	(4) Audio
Output Connector	(4) 3-pin pluggable terminal block
CMRR	20Hz ~ 20KHz
Output Impedance	75Ω
General	
Gain	0 dB
Bandwidth	340MHz(-3dB)
Video Signal Format	VGA (RGBHV), YPbPr, C-video
Audio Signal Format	PCM
Resolution	Up to 1080P@60Hz
Crosstalk	<-50dB@5MHz

8.2.2. HDMI Signal Cards

8.2.2.1. X2-4I-HS

Video	
Input	(4) HDMI, (4) Audio
Input Connector	(4) Female 19-pin type-A HDMI, (4) 3-pin pluggable terminal block
Color Depth	8, 10, 12 bit
General	
Video Signal Format	HDMI, DVI
Audio Signal Format	PCM
Resolution	Up to 1080P@60Hz
Bandwidth	6.75 Gbps
Standard	HDMI 1.3 and HDCP 1.2
EDID and DDC	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data

8.2.2.2. X2-4O-HS

Video & Audio	
Output	(4) HDMI, (4) Audio
Output Connector	(4) Female 19-pin type-A HDMI, (4) 3-pin pluggable terminal block
Color Depth	8 bit
General	
Video Signal Format	HDMI, DVI
Audio Signal Format	PCM
Resolution	Up to 1080P@60Hz
Bandwidth	6.75 Gbps
Standard	HDMI 1.3 and HDCP 1.2
EDID and DDC	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data

8.2.2.3. X2-4I-UH

Video & Audio	
Input	(4) HDMI, (4) Audio
Input Connector	(4) Female 19-pin type-A HDMI, (4) 3-pin pluggable terminal block
Input Level	T.M.D.S. 2.9V~3.3V
Input Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Gain	0dB
Resolution	Up to 4Kx2K
Transmission Distance	1080P≤70m, 4Kx2K ≤ 40m
SNR	>70dB@ 100MHz-100M
Return Loss	<-30dB@ 5KHz
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
Standard	HDMI 1.4 and HDCP 1.4
EDID	Support manual EDID management

8.2.2.4. X2-4O-UH

Video & Audio	
Output	(4) HDMI, (4) Audio
Output Connector	(4) Female 19-pin type-A HDMI, (4) 3-pin pluggable terminal block
Output Level	T.M.D.S. 2.9V~3.3V
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Gain	0dB
Resolution	Up to 4Kx2K
Transmission Distance	1080P≤70m, 4Kx2K ≤ 40m
SNR	>70dB@ 100MHz-100M
Return Loss	<-30dB@ 5KHz
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
Standard	HDMI 1.4 and HDCP 1.4
EDID	Support manual EDID management

8.2.3. SDI Signal Cards

8.2.3.1. X2-4I-SS

Video	
Input	(4) SDI
Input Connector	(4) Female BNC
Color Depth	8, 10, 12 bit
Input Level	T.M.D.S 2.9V ~ 3.3V
Input Impedance	75Ω
General	
Video Signal Format	SDI, HD-SDI, 3G-SDI
Resolution	Up to 1080P@60Hz
Transmission Distance	1080P≤60m
Color Depth	8, 10, 12 bit
Bandwidth	6.75Gpbs

8.2.3.2. X2-4O-SS

Video	
Output	(4) SDI
Output Connector	(4) Female BNC
Color Depth	8 bit
Output Level	T.M.D.S 2.9V ~ 3.3V
Output Impedance	75Ω
General	
Video Signal Format	SDI, HD-SDI, 3G-SDI
Resolution	Up to 1080P@60Hz
Transmission Distance	1080P≤60m
Color Depth	8, 10, 12 bit
Bandwidth	6.75Gpbs

8.2.4. DVI Signal Cards

8.2.4.1. X2-4I-DV

Video	
Input	(4) DVI
Input Connector	(4) Female DB24+5
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 1.0/ HDMI 1.3 full digital T.M.D.S signal
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

8.2.4.2. X2-4O-DV

Video	
Output	(4) DVI
Output Connector	(4) Female DB24+5
output Level	T.M.D.S. 2.9V~3.3V
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.)
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

8.2.4.3. X2-4I-DS

Video	
Input	(4) DVI
Input Connector	(4) Female DB24+5
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 Format	DVI, HDMI, VGA, C-VIDEO, YPbPr
Max Time-delay	5nS (±1nS)
Crosstalk	<-50dB@5MHz
Color Depth	8 bit
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

8.2.4.4. X2-4O-DS

Video	
Output	(4) DVI
Output Connector	(4) Female DB24+5
output Level	T.M.D.S. 2.9V~3.3V
Output Impedance	75Ω
General	
Gain	0 dB
Bandwidth	340 MHz (10.2 Gbit/s)
Video Signal Format	DVI, HDMI, VGA ,C-VIDEO, YPbPr
Max Time-delay	5nS (±1nS)
Crosstalk	<-50dB@5MHz
Color Depth	8 bit
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

8.2.5. HDBaseT Signal Cards

8.2.5.1. X2-4I-BT

Video	
Input	(4) HDBT, (4) Audio, (4) RS232
Input Connector	(4) Female RJ45 (with dual-color indicator), (4) 3.5mm mini jack, (4) 3-pin pluggable terminal block,
Input Level	T.M.D.S 2.9V～3.3V
Input Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Protocol	TCP/IP
Gain	0dB
Bandwidth	10.2Gbps
Resolution	Up to 4Kx2K
Crosstalk	<-50dB@5MHz
Transmission Distance	1080P≤70m, 4Kx2K ≤ 40m
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	HDBT 1.0, HDMI 1.4 and HDCP 1.4
EDID	Support manual EDID management

8.2.5.2. X2-4O-BT

Video	
Output	(4) HDBT, (4) Audio, (4) RS232
Output Connector	(4) Female RJ45 (with dual-color indicator), (4) 3.5mm mini jack, (4) 3-pin pluggable terminal block,
Output Level	T.M.D.S 2.9V～3.3V
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Protocol	TCP/IP
Gain	0dB
Bandwidth	10.2Gbps
Resolution	Up to 4Kx2K
Crosstalk	<-50dB@5MHz
Transmission Distance	1080P≤70m, 4Kx2K ≤ 40m
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	HDBT 1.0, HDMI 1.4 and HDCP 1.4
EDID	Support manual EDID management

8.2.5.3. X2-4I-BTS

Video	
Input	(4) HDBT, (4) Audio, (4) RS232
Input Connector	(4) Female RJ45 (with dual-color indicator), (4) 3.5mm mini jack, (4) 3-pin pluggable terminal block,
Input Level	T.M.D.S 2.9V～3.3V
Input Impedance	70Ω
Frequency Response	20Hz～20K Hz
General	
Protocol	TCP/IP
Gain	0dB
Bandwidth	10.2Gbps
Resolution	Up to 1080P@60Hz
Crosstalk	<-50dB@5MHz
Transmission Distance	1080P≤70m
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	HDBT 1.0, HDMI 1.3 and HDCP 1.3
EDID	Support manual EDID management

8.2.5.4. X2-4O-BTS

Video	
Output	(4) HDBT, (4) Audio, (4) RS232
Output Connector	(4) Female RJ45 (with dual-color indicator), (4) 3.5mm mini jack, (4) 3-pin pluggable terminal block,
Output Level	T.M.D.S 2.9V～3.3V
Output Impedance	75Ω
Frequency Response	20Hz～20K Hz
General	
Protocol	TCP/IP
Gain	0dB
Bandwidth	10.2Gbps
Resolution	Up to 1080P@60Hz
Crosstalk	<-50dB@5MHz
Transmission Distance	1080P≤70m
Audio Signal Format	Embedded HDMI audio: PCM, Dobly Digital, DTS, DTS-HD Analog audio: PCM
HDMI Standard	HDBT 1.0, HDMI 1.3 and HDCP 1.3
EDID	Support manual EDID management

8.2.6. Optical Signal Cards

8.2.6.1. X2-4I-UFS

Video	
Input	(4) Fiber Optical
Input Connector	(4) SPF Fiber Optical
Fiber Type	Multi-mode, Single mode
General	
Data Rate	10.2 Gbps
Color Depth	8bit, 10bit, 12bit, 16bit
Optical Fiber Mode	
Connector	LC connector
Resolution	Up to 1080P
Transmission Distance	2km (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

8.2.6.2. X2-4O-UFS

Video	
Output	(4) Fiber Optical
Output Connector	(4) SPF Fiber Optical
Fiber Type	Multi-mode, Single mode
General	
Data Rate	10.2 Gbps
Color Depth	8bit, 10bit, 12bit, 16bit
Optical Fiber Mode	
Connector	LC connector
Resolution	Up to 1080P
Transmission Distance	2km (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

9. 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 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.	Contact an authorized/ your dealer for repairing.
IR remote does not work	Run out of battery.	Change for another battery.
	IR remote is broken.	Contact an authorized/ your 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 RS232 port	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters.
	Broken RS232 port.	Contact an authorized/ your 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.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support (info@ute.de).

10. After-sales/ Customer Service

If there appear some problems when running the Modular Matrix Switcher 32x32, please check and deal with the problems referring to this user manual. Any transport costs are borne by the users during the warranty.

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. There terms and conditions may be changed without prior notice.

1) **Product Limited Warranty:** We warrants that its products will be free from defects in materials and workmanship for two years**,** which starts from the first day you buy this product (The purchase invoice shall prevail).
   Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

2) **Scope**
   These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

3) **What the warranty does not cover (Warranty Exclusion)**
   - Warranty expiration.
   - Factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear.
     - Use of supplies or parts not meeting our specifications.
     - No certificate or invoice as the proof of warranty.
     - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
     - Damage caused by force majeure.
     - Servicing not authorized by distributor.
     - Any other causes which does not relate to a product defect.
   - Shipping fees, installation or labor charges for installation or setup of the product.

4) **Documentation**
   Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defeat has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of dealer.

5) **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.
   - Product version and name.
   - Detailed failure situations.
   - The formation of the cases.

Remarks: For any questions or problems, please try to get help from your local dealer or our customer support (info@ute.de).

U.T.E. electronic GmbH & Co. KG

Tel: +49-2302-28283-0

Fax: +49-2302-28283-10

Email: info@ute.de

Website: www.ute.de