KanexPro®

FLEX-MMX16

Single Plug-in Card Matrix Switcher

Version: Flex16_2016V1.0

Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till June 2016. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

All product function is valid till 2017-6-24.

Trademarks

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

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

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1. Introduction

The KanexPro FLEX-MMX16 is a 4K seamless video modular matrix designed with sixteen (16) adaptable PCIe slots for use with single 4K HDMI and HDBaseT™ input and output cards. System integrators can create a flexible and glitch-free AV system based on project requirements ranging from 15x1,8x8,4x8-to-1x15 input and output combinations supporting full HDCP 2.2 with PoH (Power over HDBaseT) up to 230 feet. The switcher is packed with its own built-in control system to switch and route via a built-in web based GUI or using TCP/IP (Ethernet network). RS-232 serial protocol can also be used for basic controlling and switching.

With powerful EDID to detect display information and HDCP 2.2 management, this adaptable matrix supports zero transfer switching with automatic scaling and independent routing of audio and video to compensate for any signal attenuation caused.

1.1 Features

- Flexible Matrix Switcher with 16 PCIE slots
- 12 I/O slots & 4 dedicated outputs
- 4K glitch-free seamless switching
- Supports video resolutions up to 4K, 1080p & WUXGA
- VGA, DVI, SDI, HDMI & HDBaseT card compatibility
- Auto-sensing of input or output signals
- Built-in EDID management
- HDCP 2.2 compliant
- Controllable via front panel buttons, IR, RS232 & TCP/IP
- Built-in web based GUI for quick access to control via network
- Adjustable output resolution
- Firmware upgrade via USB port
- 10 global presets
- Internal power supply (100Volt~240Volt AC, 50/60Hz)
- Backed by KanexPro 3-Year full parts & labor warranty

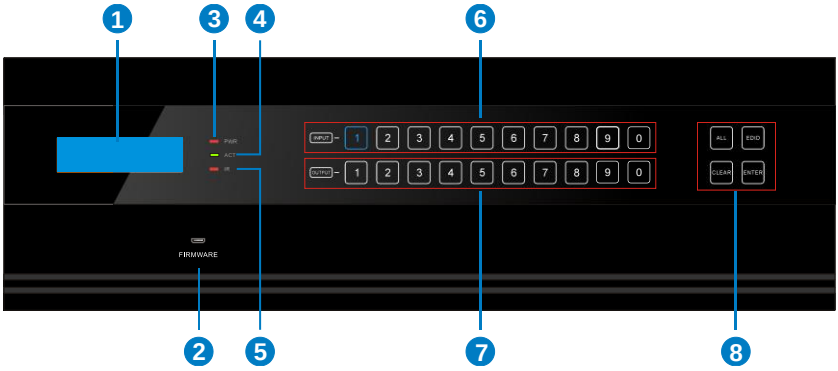
1.2 Package List

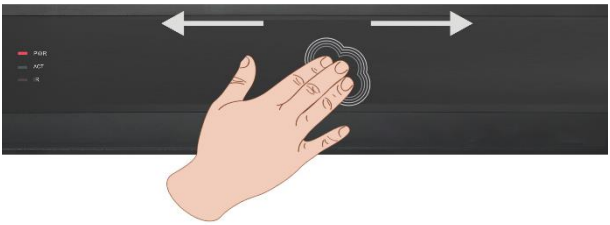
- 1 x Single Plug-in Card Matrix Switcher
- 1 x IR Receiver
- 2 x Mounting ears
- 1 x IR Remote
- 4 x Plastic cushions
- 2 x Pluggable Terminal Blocks
- 1 x Power Cord
- 1 x User Manual

Signal cards are sold and packed separately, all the items listed above are for the Matrix Switcher solely. Confirm all the accessories are included, if not, please contact with the dealers.

2. Panel Description

2.1 Front Panel



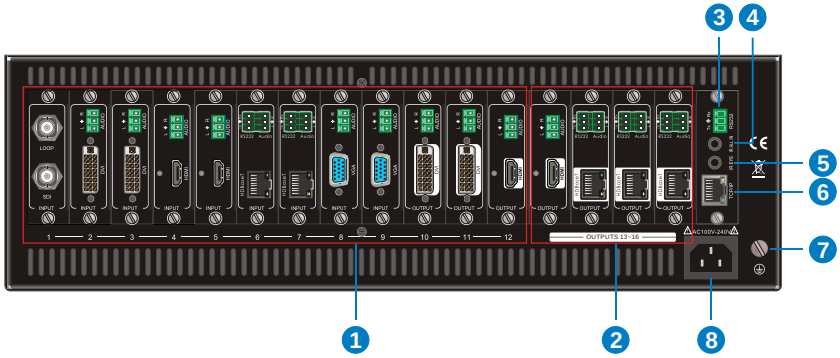
No.	Name	Description
	Description for Touch Screen	● Touch any button to awake touch screen and white backlight will appear. If without any operations within 8 seconds, touch screen will enter sleep mode and the white backlight will go out. Kindly note backlight time is can be customized. Note: Due to the buttons may not be able to touch successfully; the touch screen will not be awakened. In this case, please refer to the shown below to slide your finger left and right.  ● When the touch screen is awakened , press any button, the white backlight of this buttons will turn into blue. ● Press the button of IR remote, the corresponding button will appear blue backlight.
①	LCD screen	Display real-time operation status.
②	FIRMWARE	Micro USB port, used for firmware update.
③	PWR	Power indicator: ● OFF: No power.

		● RED: Normal work. ● Green: Standby.
④	ACT	RS232 Link indicator: OFF: No RS232 serial signal. Blinking Green: Transmit RS232 serial signal.
⑤	IR	IR indicator: ● OFF: No IR signal. ● Blinking red: when the built-in IR sensor receive IR signal.
⑥	INPUTS	Back-lit buttons for input selection, ranges from 0~9, 12 selectable channels in total.
□	OUTPUTS	Back-lit buttons for output selection, ranges from 0 ~ 9, 16 selectable channels in total.
□	MENU	**ALL**: Select all inputs/ outputs.
		EDID: EDID management button, enable input port to learn the EDID data from output devices.
		CLEAR: Withdraw an operation before it comes into effect/ exit inquiry mode.
		ENTER: confirm operation/ long-press (3s or more) to enter inquiry mode.

1) Input/ output channels are recognized as double-digit, so press channel 1~9 as 01~09, besides, the interval should not exceed 8s.

2) Operations will be automatically canceled 8s later unless pressing ENTER to confirm.

2.2 Rear Panel



No.	Name	Description
①	1~12 Card Slots	Flexible card slots, 12 in total, insert input/ output signal cards here.
②	13~16 Card Slots	4 in total, insert output signal cards here.
③	RS232	Serial control port, connect with the RS232 port of control device to control the Matrix Switcher or the 3rd party device connected to IN-HDBT &OUT-HTBT cards.
④	IR ALL IN	Input port for IR control signal, connect with IR receiver (5V, with carrier), and work with IR emitters connected to IR OUT of far-end HDBT receivers.
⑤	IR EYE	Connect with IR receiver (5V, with carrier) to control the switcher.
⑥	TCP/IP	TCP/IP control port, connect with control device (e.g. a PC).
□	Ground	Connect to grounding.
□	Power port	Connect with 100~240V AC outlet.

Pictures shown in this manual are only for reference.

2.3 Signal Cards

The Matrix Switcher boasts 12 card slot for flexible input& output signal card combinations, and 4 card slots for output signal cards, various signal card can be selected, including VGA, DVI, SDI, HDBT, HDMI, as per specific need. All the signal cards support seamless distribution and hot-plug.

The chart below shows all signal cards:

Input		**Output**	
Card	**Ports**	**Card**	**Ports**
FLEX-IN-VGA	VGA& Analog audio	OUT-VGA	VGA& Analog audio
FLEX-IN-DVI	DVI& Analog Audio	OUT-DVI	DVI& Analog Audio
FLEX-IN-SDI	SDI& Loop output	OUT-SDI	SDI& Loop output
FLEX-IN-HDBT	HDBT& Analog Audio& RS232	OUT-HDBT	HDBT& Analog Audio& RS232
FLEX-IN-HDMI	HDMI& Analog Audio	OUT-HDMI	HDMI& Analog Audio
FLEX-IN-HDMI-4K	4K HDMI& Analog Audio	OUT-HDMI-4K	4K HDMI& Analog Audio
FLEX-IN-HDBT-4K	4K HDBT& Analog Audio& RS232&IR	OUT-HDBT-4K	4K HDBT& Analog Audio& RS232&IR

4K seamless signal cards (IN-HDMI-4K & OUT-HDMI-4K, IN-HDBT-4K& OUT-HDBT-4K) cannot be used with other ordinary signal cards, because they are incompatible

2.3.1 FLEX-IN-VGA& FLEX-OUT-VGA

Single VGA signal card (refer to *6.2.1* for detailed specification)

VGA port supports VGA、CVBS、YPbPr;

Input card automatically recognizes input signal format;

Output signal format adjustable via commands or web-based GUI;

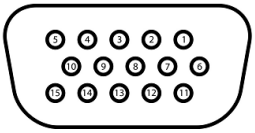
Output resolution adjustable via commands or web-based GUI:

- Resolution range for VGA signal: 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p (default), 1920x1200;
- Resolution range for YPbPr signal: 720p, 1080i, 1080p;
- Resolution range for CVBS signal: 480i, 576i;

Figure 2- 1 I-VG

Figure 2- 2 O-VG

Pin layout of the VGA connectors (female):



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 CVBS signal, insert converting cables according to specific pin definitions (see the figures below):

VGA- YPbPr:

Figure 2- 3 VGA-YPbPr converting guide

Pin	Signal	Pin	Signal
1	RED	6	GND
2	GREEN	7	GND
3	BLUE	8	GND
Other pins are not used.			

VGA- CVBS:

Figure 2- 4 VGA-C-Video converting guide

Pin	Signal	Pin	Signal
1	RED	6	GND
7	GND	8	GND
Other pins are not used.			

2.3.2 FLEX-IN-DVI& FLEX-OUT-DVI

Single DVI signal card (refer to *6.2.2* for detailed specification)

HDMI1.3& HDCP1.3 compliant, capable to transmit DVI/ HDMI signal;

Output resolution adjustable via commands or GUI: including auto, 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p (default), 1920x1200;

Input/ Output audio can be enabled/ disabled via commands (default settings: input audio: disabled; output audio: enabled)

Features EDID management and DDC communication.

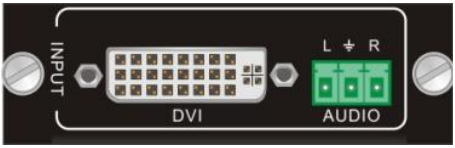


Figure 2- 5 IN-DVI

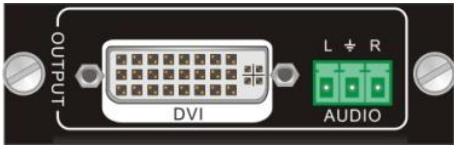
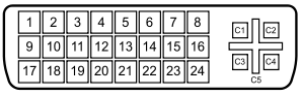


Figure 2- 6 OUT-DVI

Pin Layout of the DVI-IN 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	23	T.M.D. S. Clock +

	Shield		
12	T.M.D.S.Data3-	13	T.M.D.S.Data3+

2.3.3 FLEX-IN-SDI& FLEX-OUT-SDI

Single SDI input card (refer to *6.2.3* for detailed specification)

Transmit high-definition 3G-SDI/HD-SDI/SDI signal;

Resolution range: 1080p, 1080i, 720p;

Transmit 1080p signal up to 100m;

INPUT card: 1 loop output for local monitoring;

OUTPUT card: 1 SDI and 1 loop output.

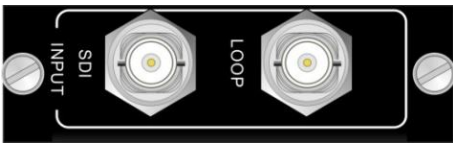


Figure 2- 7 IN-SDI

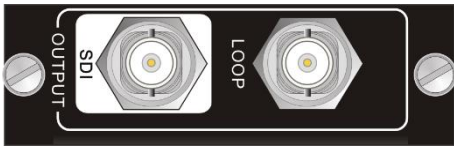
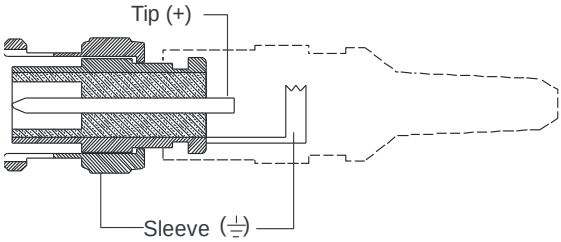


Figure 2- 8 OUT-SDI

The BNC connector is shown as the figure below.



BNC Connector

2.3.4 FLEX-IN-HDBT& FLEX-OUT-HDBT

HDBT signal card (refer to *6.2.4* for detailed specification)

HDMI1.3 &HDCP1.3 compliant;

Work with HDBT transmitter/ receiver to attain long-distance (up to 70m via qualified CAT6 cable) (up to 70m via qualified CAT6 cable) transmission for 1080p signal and bi-directional RS232 control;

Real-time work status indicator: green LED blinks once powered on; yellow LED lights when the port is connected to HDBT devices;

HDBT port supports PoE;

Comprehensive audio capacity with embedded HDMI audio and 1 auxiliary analog audio port, audio source selectable via RS232 command/ GUI;

Output resolution adjustable via command or GUI;

Support EDID management and DDC communication.

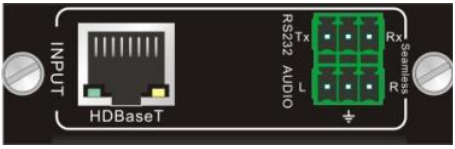


Figure 2- 9 IN-HDBT

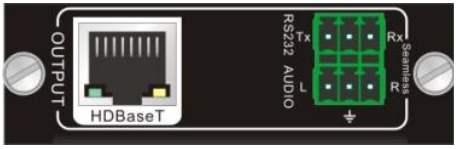
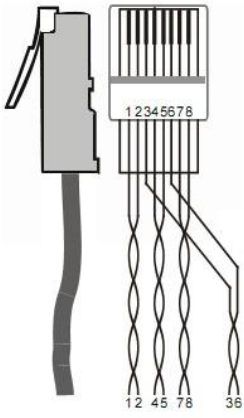


Figure 2- 10 OUT-HDBT

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

Twist the pure-color cables with their half-color cables.

2.3.5 FLEX-IN-HDMI& FLEX-OUT-HDMI

Single HDMI signal card (refer to *6.2.5* for detailed specification)

HDMI1.3& HDCP1.3 compliant, capable to transmit DVI/ HDMI signal;

Auto-detect input resolution;

Max resolution: 1080p@60Hz

Output resolution adjustable via commands or GUI: including auto, 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p (default), 1920x1200;

Support EDID Management and DDC communication;

Input audio source selectable via command, including HDMI embedded audio (default), and analog audio;

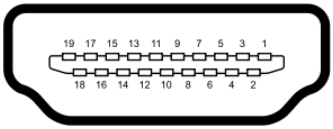
Analog output audio can be enabled/ disabled via commands (default: enabled);

Support EDID management& DDC communication.

Figure 2- 11 IN-HDMI

Figure 2- 12 OUT-HDMI

Pin layout of the HDMI connector (female).



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

2.3.6 FLEX-IN-HDMI-4K& OUT-HDMI-4K

Single 4K seamless HDMI signal card (refer to *6.2.6* for detailed specification).

HDMI2.0& HDCP2.2 compliant, capable to transmit HDMI/ DVI-I/DVI-D signal;

Auto-detect input resolution;

Max resolution: 4K×2K@60Hz;

The default output resolution is 4K×2K@30Hz and it can be adjusted via commands or GUI, support 4K×2K@60Hz、1024×768@60Hz、1920×1080p@60Hz、1280×720@60Hz;

Support EDID Management（default EDID: 4K×2K@30Hz）and DDC communication;

Input audio source selectable via command or GUI, including HDMI embedded audio (default), and external analog audio.

Figure 2- 13 IN-HDMI-4K

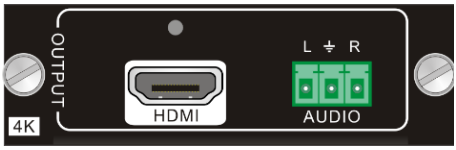


Figure 2- 14 OUT-HDMI-4K

HDMI connectors of IN-HDMI-4K & OUT-HDMI-4K are same with the IN-HDMI-4K & OUT-HDMI-4K's.

2.3.7 FLEX-IN-HTBT4K& FLEX-OUT-HTBT4K

4K seamless HDBT signal card (refer to *6.2.7* for detailed specification)

Max resolution: 4K×2K@60Hz;

Adaptive HDCP input and support HDCP2.2, the output signal support HDCP1.4;

Work with HDBT transmitter/ receiver to attain long-distance transmission (up to 70m via qualified CAT6 cable for 1080P or 40m for 4K signal);

Real-time work status indicator: yellow LED blinks once powered on; green LED lights when the port is connected to HDBT devices;

HDBT port supports PoE;

Input audio source selectable via command or GUI, including HDMI embedded audio (default), and external analog audio;

The default output resolution is 4K×2K@30Hz and it can be adjusted via commands or GUI, support 4K×2K@60Hz、1024×768@60Hz、1920×1080p@60Hz、1280×720@60Hz;

Support bi-directional RS232 control;

Support bi-directional IR control, compatible with 5V/12V IR receiver (default: 5V);

Support EDID Management（default EDID: 4K×2K@30Hz）and DDC communication.

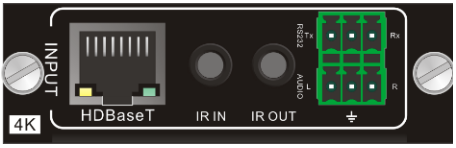


Figure 2- 15 FLEX-IN-HDBT4K

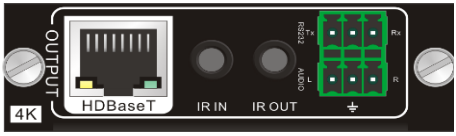


Figure 2- 16 FLEX-OUT-HDBT4K

HDBT connectors of IN-HDBT & OUT-HTBT are same with the IN-HDBT-4K & OUT-HDBT-4K's.

3. System Connection

3.1 Usage Precautions

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

3.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with the Matrix Switcher:

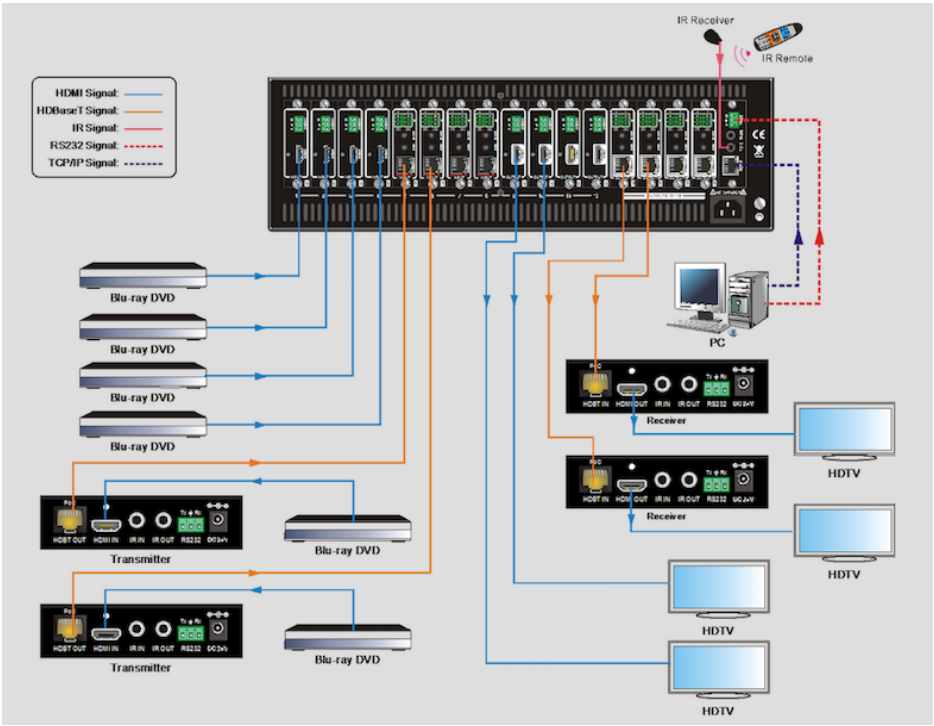


Figure 3- 1 Connection Diagram

Note: System Diagram shown in this manual are for reference only, more specific schemes depend on real devices.

3.3 Connection Procedures

Step1. Insert necessary signal cards to the card slots.

Step2. Connect source device(s) (e.g. Blue-ray DVD) to corresponding input ports.

Step3. Connect displays to corresponding output ports.

Step4. Connect amplifier/ speaker to audio output ports.

Step5. Connect an IR Receiver to **IR EYE** to enable IR control.

Step6. Connect control device (e.g. a PC) to the RS232 port to enable serial control.

Step7. Connect control device (e.g. a PC) to the TCP/IP port to enable TCP/IP control.

Step8. Insert 100~240V AC outlet via the included power cord.

3.4 Application

Ideally used for live events, command & control centers, simulation centers, large AV conference rooms for up-to-second viewing of critical information and high –resolution imagery

4. Operations

4.1 Front Panel Control

The Matrix Switcher provides with convenient front panel button control for I/O switch, EDID management, and system inquiry. Here we make a brief introduction to the operations.

4.1.1 Switching I/O connection

Input/ output channels are recognized in double-digit, press 01~09 for channel 1~9.

1) To convert one input to an output:

Operation: “INPUT” + “OUTPUT” + “ENTER”

Example: transfer input 1 to output 5:

2) To convert an input to several outputs:

Operation: “INPUT” + “OUTPUT” + “OUTPUT” +… + “ENTER”

Example: Switch input 2 to output 2, 4

3) To convert an input to all outputs:

Operation: “input” + “ALL” + “ENTER”

Example: Convert input 2 to all outputs

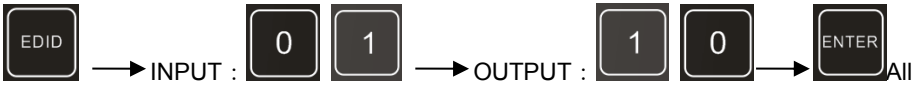
4.1.2 EDID Learning

The Matrix Switcher features EDID management to maintain compatibility between all devices.

- One input port learns the EDID data of one output port

Operation: “EDID” + “INPUT” + “OUTPUT” + “ENTER”.

Example: Input 1 learns EDID data from output 10.



input ports learn EDID data from one output port

Operation: “EDID” + “ALL” + “OUTPUT” + “ENTER”

Example: All input ports learn EDID data from output 6

4.1.3 Inquiry

Press and hold the button “ENTER” for 3 seconds to enter system inquiry mode. The chart below shows information that can be inquired:

Function Items	Description	Example
Check customer serial	Interface shown after entering inquiry mode, customer serial can be changed via RS232 command.	K181201E01A15070 001 customer
Check output resolution	In inquiry mode, press output channel to check its resolution	Resolution: out02 1920×1080P
Correspondence between inputs and outputs	“**OUTPUT**” + “**ENTER**”	Matrix Switch AV: 06 ->08

4.1.4 Clear operation

Function: clear the previous operations before pressing **ENTER** to enforce it. Press **CLEAR** can only erase the operations not confirmed by pressing **ENTER**.

1) Input/ output channels are recognized in double-digit, press 01~09 instead of 1~9.

2) The input delay time between two numbers of every input& output channel must be less than 8 seconds; otherwise the operation will be cancelled.

3) The input/output channels on the rear panel are counting from left to right no matter whether there is signal card.

4.2 IR Control

Connect an IR receiver to **IR EYE** on the rear panel, users can control the switcher with the included IR remote (shown as below):

① Standby: enter/ exit standby mode

② INPUTS: input selection buttons, channels 1~9 should be pressed as 01~09

③ Function Buttons: share the same operation with front panel buttons

④ ENTER:

- confirm operation
- long-press (3 seconds or more) to enter inquiry mode

Note: navigation buttons are unavailable.

⑤ OUTPUTS: output selection buttons, channels 1~9 should be pressed as 01~09

4.3 RS232 Control

The Matrix Switcher provides with one RS232 port for serial port control. Connect the Matrix Switcher to the control device (e.g. a PC) with RS232 cable and set the correct parameters, the control device is capable to control the Matrix Switcher via designed software.

4.3.1 Installation/uninstallation of RS232 Control Software

Installation: Copy the control software file to the computer connected with the Matrix Switcher.

Uninstallation: Delete all the control software files in corresponding file path.

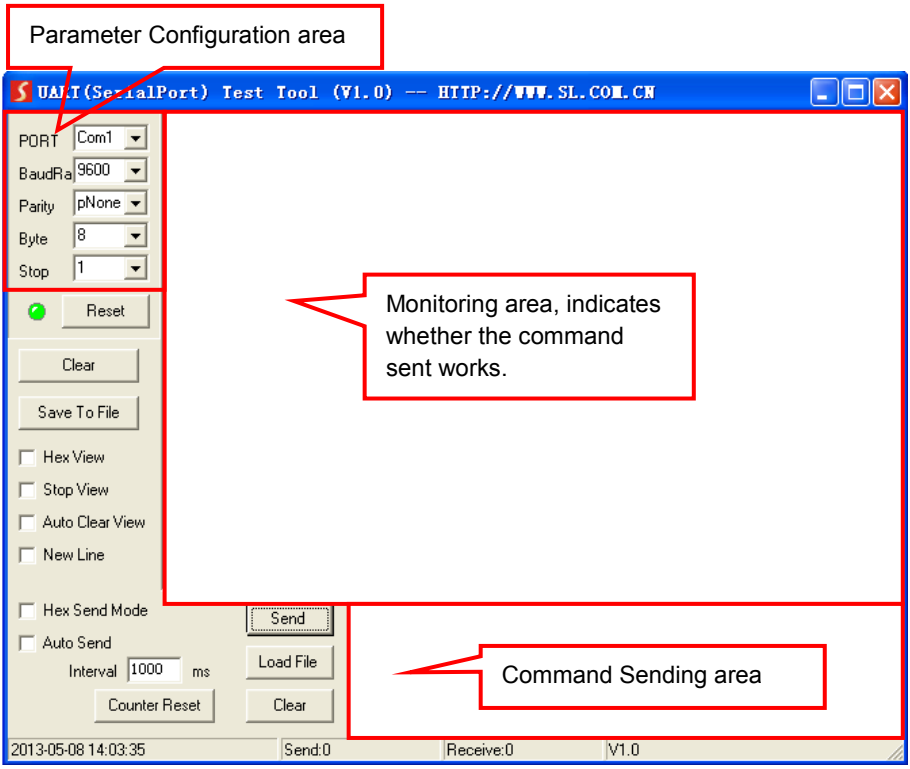
4.3.2 Basic Settings

Firstly, connect the Matrix Switcher with an input device and an output device. Then,

connect it with a computer which is installed with RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed 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, only then will you be able to send command in Command Sending Area.

4.3.3 RS232 Communication Commands

1. Case insensitive.
2. In following commands, “[”and “]” are symbols for easy reading and do not need to be typed in actual operation.
3. Type in the complete commands including ending symbol “.” or “;”.
4. For input/ output channels 1~9 in the commands, type in 01~09 instead of 1~9.
5. After sending command “%0911.” to restore factory default, wait for 10s or so before you reboot the device. Or the restoration may fail, and it will prompt “Default failed, please try again!” in the feedback.

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

Command	Description	Feedback
System Command		
/*Type;	Inquire the model	DX16
/%Lock;	Lock the front panel buttons	System Locked!
/%Unlock;	Unlock the front panel buttons	System Unlock!
/^Version;	Inquire the firmware version	VX.X.X
/:MessageOff;	Turn off the feedback from the com port. It only shows “switcher OK”.	/:MessageOff;
/:MessageOn;	Turn on the feedback from the com port.	/:MessageOn;
DIMLightTime: xx.	Changes the back light time	xx=01~99;
Operation Command		
Undo.	Cancel the previous operation.	Undo Ok!
Demo.	Switch to the “demo” mode, 02->01, 2->2, 3->3 … and so on.	Demo Mode AV: 02-> 01 ……
[x]All.	Transfer signal from Input [x] to all outputs	02 To All.
All@.	Switch on all the outputs	All Open.
All$.	Switch off all the outputs	All Closed.
[x]@.	Switch on output [x]	02 Open.
[x]$.	Switch off output [x]	01 Closed.

[x1]V[x2],[x3],[x4] …	Transfer signal from input [x1] to output [x2],[x3],[x4].., separate output channels with “,”	AV: 01->07 AV: 01->08 …
Save[Y].	Save the present operation to the preset command [Y], [Y]=0~9	Save To F1
Recall[Y].	Recall the preset command [Y]	Recall From F1 AV: 02->04 AV: 02->06 …
Clear[Y].	Clear the preset command [Y]	Clear F1
EDIDMInit.	Reset factory default EDID	EDIDMInit.
EDIDM[X]B[Y].	Manage EDID, enable input [Y] learn EDID data from output [X]	EDIDM07B03
PWON.	Work normally	PWON
PWOFF.	Enter standby mode	PWOFF
STANDBY.	Enter standby mode, can be awaken via front panel button operations	STANDBY

/+[Y]/[X]:******.	Set communication between PC and HDBaseT receiver. ① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) **a.** Y = 1 ~ 16, send this command to the corresponding HDBaseT receiver to control far-end device when the Matrix Switcher is working properly. **b.** Y = A ~ P, send this command to the corresponding HDBaseT receiver when the Matrix Switcher is PWON. **c.** Y = a ~ p, send this command to the corresponding HDBaseT receiver when the Matrix Switcher is PWOFF. ② X is for baud rate, its value ranges from 1 to 7 (1=2400 ; 2=4800 ; 3=9600 ; 4=19200 ; 5=38400 ; 6=57600 ; 7=115200 ③ ***** is for data (max 48 Byte).	601% Volume of MIC : 60 (****** and feedback from HDBT receiver)
CustomerSerial:11111111111111111111.	Set the customer serial number	customer serial is 1111111111111111111
HDCPON.	Open HDCP for all output cards.	HDCP ON
HDCPOFF.	Close HDCP for all output cards.	HDCP OFF
%0911.	Reset factory default	Factory Default
Inquiry Command		
Status[x].	Inquire the respective input for output [x]	AV:01-> 02
Status.	Inquire respective inputs for all outputs	AV:01->02 AV:03->06 … …
CheckInKatype.	Get the input signal card type *-- no available input signal card/ output card, 1--VGA, 2--DVI, 4--BT, 5--SDI, 6--HDMI	Channel IN:*11*4**11*4*.

CheckOutKatype.	Get the output signal card type *-- no available output signal card/ input card, 1--VGA, 2--DVI, 4--BT, 6--HDMI	Channel OUT: ***4*62**1**.
%9961.	Get current keylock status	System Unlock!/ System Locked!
%9962.	Inquire current working status	PWON/STANDBY /PWOFF
%9963.	Return all input& output connection status	Port 01 02 03 04 Mode In In In In Port 05 06 07 08 Mode In Ou In In Port 09 10 11 12 Mode Ou Ou In Ou Port 13 14 15 16 Mode Ou Ou Ou Ou
%9964.	Inquire the IP	IP: 192.168.0.178
%9973.	Return resolutions of all outputs	Resolution Out02 1920x1080P 60 Resolution Out04 1920x1080P 60 … …
%9974.	Get current HDCP Status of output port. “X” means input port or no signal cards. “Y” means the output signal traffic with HDCP; “N” means not.	Out 01 02 03 04 HDCP X X X X Out 05 06 07 08 HDCP X N X X Out 09 10 11 12 HDCP N N X N Out 13 14 15 16 HDCP N N N N
%9975.	Get current input& output card correspondence status	Out 01 02 03 04 In 00 00 00 00 Out 05 06 07 08 In 00 01 00 00 Out 09 10 11 12 In 01 01 00 01 Out 13 14 15 16 In 01 01 01 01

%9976.	Get the output card type	Channel 6 output mode is Digital Channel 9 output mode is Digital … …
%9978.	Inquire output resolution configuration mode (manual/ auto EDID)	Channel xx is auto/manual signal format
%9979.	Inquire the customer serial number	customer serial is 1111111111111111111
%9981.	Inquire input/output type of current inserted cards Note: If there is no card inserted in a slot, it will show “Nc” instead of In/ Ou.	Port 01 02 03 04 Mode In In In In Port 05 06 07 08 Mode In Ou In In Port 09 10 11 12 Mode Ou Ou In Ou Port 13 14 15 16 Mode Ou Ou Ou Ou Channel status has changed
%8800.	Get the command sent to port 1 when PWON	Port 1: 1A1. when PWON
%8801.	Get the command sent to port 2 when PWON	Port 2: 1A1. when PWON
%8802.	Get the command sent to port 3 when PWON	Port 3: 1A1. when PWON
%8803.	Get the command sent to port 4 when PWON	Port 4: 1A1. when PWON
%8804.	Get the command sent to port 5 when PWON	Port 5: 1A1. when PWON
%8805.	Get the command sent to port 6 when PWON	Port 6: 1A1. when PWON
%8806.	Get the command sent to port 7 when PWON	Port 7: 1A1. when PWON
%8807.	Get the command sent to port 8 when PWON	Port 8: 1A1. when PWON

%8808.	Get the command sent to port 9 when PWON	Port 9: 1A1. when PWON
%8809.	Get the command sent to port 10 when PWON	Port 10: 1A1. when PWON
%8810.	Get the command sent to port 11 when PWON	Port 11: 1A1. when PWON
%8811.	Get the command sent to port 12 when PWON	Port 12: 1A1. when PWON
%8812.	Get the command sent to port 13 when PWON	Port 13: NO Data when PWON
%8813.	Get the command sent to port 14 when PWON	Port 14: NO Data when PWON
%8814.	Get the command sent to port 15 when PWON	Port 15: NO Data when PWON
%8815.	Get the command sent to port 16 when PWON	Port 16: NO Data when PWON
%8816.	Get the command sent to port 1 when PWOFF	Port 1: 2A1. when PWOFF
%8817.	Get the command sent to port 2 when PWOFF	Port 2: 2A1. when PWOFF
%8818.	Get the command sent to port 3 when PWOFF	Port 3: 2A1. when PWOFF
%8819.	Get the command sent to port 4 when PWOFF	Port 4: 2A1. when PWOFF
%8820.	Get the command sent to port 5 when PWOFF	Port 5: 2A1. when PWOFF
%8821.	Get the command sent to port 6 when PWOFF	Port 6: 2A1. when PWOFF
%8822.	Get the command sent to port 7 when PWOFF	Port 7: 2A1. when PWOFF
%8823.	Get the command sent to port 8 when PWOFF	Port 8: 2A1. when PWOFF
%8824.	Get the command sent to port 9 when PWOFF	Port 9: 2A1. when PWOFF

%8825.	Get the command sent to port 10 when PWOFF	Port 10: 2A1. when PWOFF
%8826.	Get the command sent to port 11 when PWOFF	Port 11: 2A1. when PWOFF
%8827.	Get the command sent to port 12 when PWOFF	Port 12: 2A1. when PWOFF
%8828.	Get the command sent to port 13 when PWOFF	Port 13: NO Data when PWOFF
%8829.	Get the command sent to port 14 when PWOFF	Port 14: NO Data when PWOFF
%8830.	Get the command sent to port 15 when PWOFF	Port 15: NO Data when PWOFF
%8831.	Get the command sent to port 16 when PWOFF	Port 16: NO Data when PWOFF
Commands for Signal Cards		
OUT-VGA		
USER/O/[x]:0110 %;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111 %;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%
USER/O/[x]:0710 %;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute/Channel 11 audio output is unmute
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0810 %;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out08 1920x1080I
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0822 %;	Set the resolution of output [x] to 800x600 60Hz	Resolution Out08 800x600
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0826 %;	Set the resolution of output [x] to 1280x1024 60Hz	Resolution Out08 1280x1024

USER/O/[x]:0837 %;	Set the resolution of output [x] to 1920x1200 60Hz	Resolution Out08 1920x1200
USER/O/[x]:0838 %;	Set the resolution of output [x] to 1280x800 60Hz	Resolution Out08 1280X800
USER/O/[x]:0900 %;	Set the resolution of CVBS output [x] to 480i	Resolution Out 01 720x480 I
USER/O/[x]:0901 %;	Set the resolution of CVBS output [x] to 576i	Resolution Out 02 720x576 I
USER/O/[x]:0201 %;	Set the signal format of VGA output [x] to YPBPR	Resolution Out08 1920x1080P YPbPr
USER/O/[x]:0202 %;	Set the signal format of VGA output [x] to VGA	Resolution Out08 1920x1080P VGA
USER/O/[x]:0203 %;	Set the signal format of VGA output [x] to CVBS	Resolution Out08 720x480 I CVBS
IN-DVI		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 01 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 01 in audio command is:0707%
USER/I/[x]:0708%;	Get the audio source of input [x]	Channel 08 in audio is HDMI
OUT-DVI		
USER/O/[x]:0110 %;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111 %;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%
USER/O/[x]:0710 %;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute/Channel 11 audio output is unmute
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0810 %;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out08 1920x1080I

USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0822 %;	Set the resolution of output [x] to 800x600 60Hz	Resolution Out08 800x600
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0826 %;	Set the resolution of output [x] to 1280x1024 60Hz	Resolution Out08 1280x1024
USER/O/[x]:0837 %;	Set the resolution of output [x] to 1920x1200 60Hz	Resolution Out08 1920x1200
USER/O/[x]:0838 %;	Set the resolution of output [x] to 1280x800 60Hz	Resolution Out08 1280X800
OUT-SDI		
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out02 1280x720 P
USER/O/[x]:0810 %;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out02 1920x1080I
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out02 1920x1080P
IN-HDBT		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 04 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 04 in audio command is:0707%
USER/I/[x]:0708%;	Get the audio source of input [x]	Channel xx in audio is HDMI/ANALOG
OUT-HDBT		
USER/O/[x]:0108 %;	Enable analog audio output for channel [x]	Channel 02 out audio command is:0108%
USER/O/[x]:0109 %;	Disable analog audio output for channel [x]	Channel 02 out audio command is:0109%
USER/O/[x]:0710 %;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out02 1280x720 P

USER/O/[x]:0810 %;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out02 1920x1080I
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out02 1920x1080P
USER/O/[x]:0822 %;	Set the resolution of output [x] to 800x600 60Hz	Resolution Out08 800x600
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0826 %;	Set the resolution of output [x] to 1280x1024 60Hz	Resolution Out08 1280x1024
USER/O/[x]:0837 %;	Set the resolution of output [x] to 1920x1200 60Hz	Resolution Out08 1920x1200
USER/O/[x]:0838 %;	Set the resolution of output [x] to 1280x800 60Hz	Resolution Out08 1280X800
USER/O/[x]:0101 %;	Set the resolution of output [x] through auto EDID (after detected new output, automatically capture the output device's EDID)	Resolution Out 02 Auto
USER/O/[x]:0103 %;	Set the output signal to HDMI and neglect hot-plug detection	0103%
USER/O/[x]:0104 %;	Set the output signal to DVI and neglect hot-plug detection	0104%
USER/O/[x]:0105 %;	Capture the best resolution of far-end display connected to output [x] and enable hot-plug detection	0105%
IN-HDMI		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 04 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 04 in audio command is:0707%
USER/I/[x]:0708%;	Get the audio source of input [x]	Channel xx in audio is HDMI/ANALOG
OUT-HDMI		
USER/O/[x]:0110 %;	Enable analog audio output for output [x]	Channel 11 out audio command is:0110%
USER/O/[x]:0111 %;	Disable analog audio output for output [x]	Channel 11 out audio command is:0111%

USER/O/[x]:0710 %;	Inquire analog audio output status for output [x]	Channel 11 audio output is mute/Channel 11 audio output is unmute
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0810 %;	Set the resolution of output [x] to 1080I 30Hz	Resolution Out08 1920x1080I
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0822 %;	Set the resolution of output [x] to 800x600 60Hz	Resolution Out08 800x600
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0826 %;	Set the resolution of output [x] to 1280x1024 60Hz	Resolution Out08 1280x1024
USER/O/[x]:0837 %;	Set the resolution of output [x] to 1920x1200 60Hz	Resolution Out08 1920x1200
USER/O/[x]:0838 %;	Set the resolution of output [x] to 1280x800 60Hz	Resolution Out08 1280X800
IN-HDMI-4K		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 04 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 04 in audio command is:0707%
USER/I/[x]:0408%;	Restore the signal card to its factory default settings.	
OUT-HDMI-4K		
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768

USER/O/[x]:0840 %;	Set the resolution of output [x] to 3840x2160 30Hz	Resolution Out08 3840x2160 30Hz
USER/O/[x]:0841 %;	Set the resolution of output [x] to 3840x2160 60Hz	Resolution Out08 3840x2160 60Hz
USER/I/[x]:0408%;	Restore the signal card to its factory default settings.	
IN-HDBT-4K		
USER/I/[x]:0706%;	Set the audio source of input [x] to HDMI embeded audio	Channel 04 in audio command is:0706%
USER/I/[x]:0707%;	Set the audio source of input [x] to analog audio	Channel 04 in audio command is:0707%
USER/I/[x]:0408%;	Restore the signal card to its factory default settings.	
OUT-HDBT-4K		
USER/O/[x]:0804 %;	Set the resolution of output [x] to 720P 60Hz	Resolution Out08 1280x720P
USER/O/[x]:0813 %;	Set the resolution of output [x] to 1080P 60Hz	Resolution Out08 1920x1080P
USER/O/[x]:0824 %;	Set the resolution of output [x] to 1024x768 60Hz	Resolution Out08 1024x768
USER/O/[x]:0840 %;	Set the resolution of output [x] to 3840x2160 30Hz	Resolution Out08 3840x2160 30Hz
USER/O/[x]:0841 %;	Set the resolution of output [x] to 3840x2160 60Hz	Resolution Out08 3840x2160 60Hz
USER/I/[x]:0408%;	Restore the signal card to its factory default settings.	

4.4 TCP/IP Control

The Matrix Switcher boasts TCP/IP port for IP control.

Default settings: Unit is DHCP enabled and acquires IP if on the network

Press ALL button for 3 sec or more to enquire IP address

Static IP: 192.168.0.178; Subnet Mast: 255.255.255.0; Gateway: 192.168.0.1; Serial Port: 4001.

IP& gateway can be changed as you need, Serial Port cannot be changed.

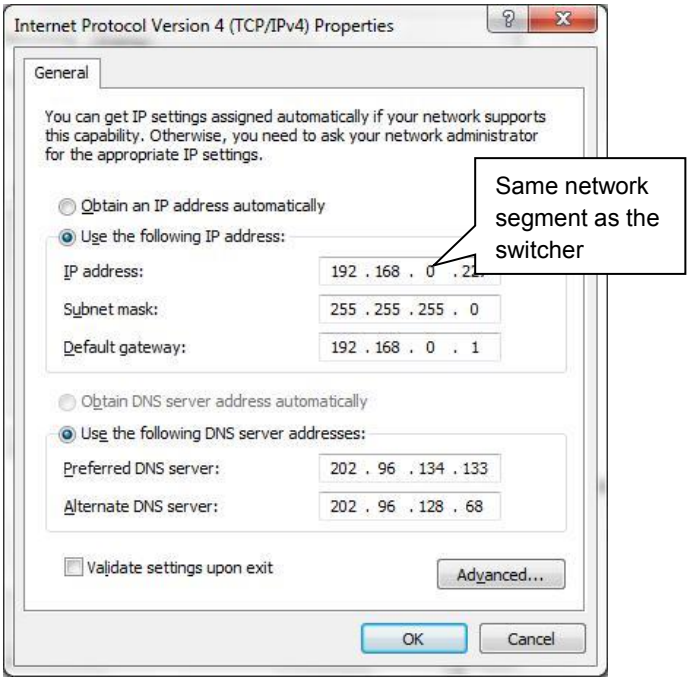
Connect the Ethernet port of control device and TCP/IP port of the Matrix Switcher, and set same network segment for the 2 devices, users are able to control the device via web-based GUI or designed TCP/IP communication software.

4.4.1 Control Modes

The Matrix Switcher can be controlled by PC without Ethernet access or PC(s) within a LAN.

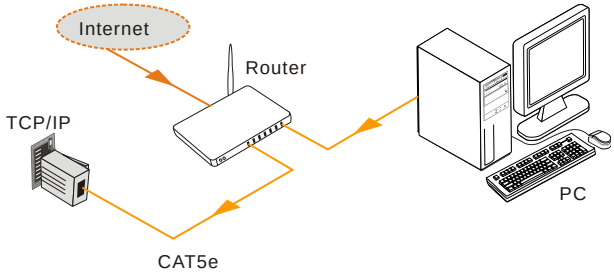
- **Controlled by PC without Ethernet access**

Connect a computer to the TCP/IP port, and set its network segment to the same as the Matrix Switcher's.



- **Controlled by PC(s) in LAN**

Connect the Matrix Switcher, a router and several PCs to setup a LAN (as shown in the following figure). Set the network segment of the Matrix Switcher to the same as the router's, then PCs within the LAN are able to control the Matrix Switcher.



Follow these steps to connect the devices:

Step1. Connect the TCP/IP port of the Matrix Switcher to Ethernet port of PC with straight-thru CAT5e/6.

Step2. Set the PC's network segment to the same as the Matrix Switcher's.

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

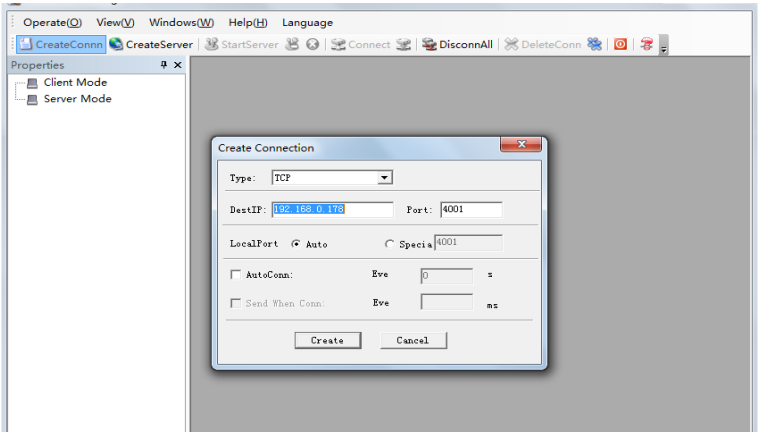
Step4. Set the PC's network segment to the original ones.

Step5. Connect the Matrix Switcher and PC(s) to the router. PC(s) within the LAN is able to control the Matrix Switcher asynchronously.

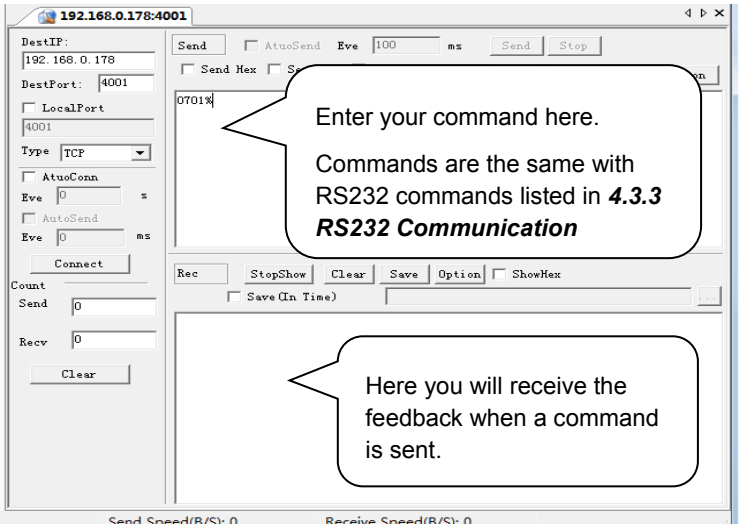
4.4.2 Control via TCP/IP communication software

(Exampled by TCPUDP software)

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



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



4.4.3 Control via web-based GUI

The Matrix Switcher provides with built-in GUI for convenient TCP/IP control. GUI allows users to interact with the Matrix Switcher through graphical icons and visual indicators.

Access GUI interface through any one of the following methods:

1) Access through UPnP: Go to **My Network Place** in your PC, and click the icon named the Matrix Switcher.

2) Access through web browser: type the IP of the device (default: 192.168.0.178, changeable) in the browser

PCs running Windows XP system may occur issues in finding UPnP icon, follow these steps to switch on UPnP protocol:

1) Add UPnP component: go to "**Control Panel**" -> double-click "**Add/ Delete Programs**" -> double-click "Add/ Delete windows component" ->tick "UPnP" -> click "Next" -> click "OK"

2) Enable Windows Firewall: go to "**Control Panel**" -> double-click "**Windows Firewall**" -> click "Others" -> tick "UPnP framework"

3) Enable UPnP auto-starting: go to "**Control Panel**" -> double-click "**Administrative Tools** " -> double-click "Services" -> find and click **SSDP Discovery Servic** and **Universal Plug and Play Device Host** -> click "OK"

   UPnP will now automatically start when you turn on your computer.

4) Reboot the device.

The log-in interface is shown below:

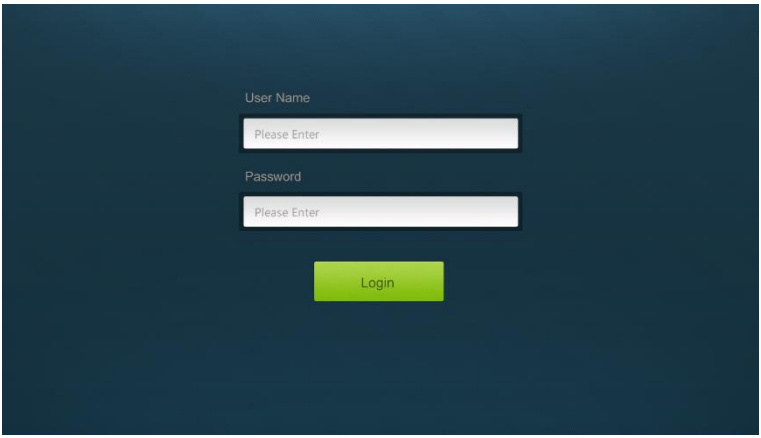


Figure 4- 1 Log-in

There are 2 selectable accounts to log in. Type the right name and password in relative column and click **Login** to enter configuration interfaces.

- **Name**: admin; **Password**: admin (default setting, changeable via GUI)
- **Name**: user; **Password**: user (default setting, changeable via GUI)

It will enter scene management interface (left) after log-in, which provides direct scene switch. The chart below illustrates the main structure of GUI interfaces:

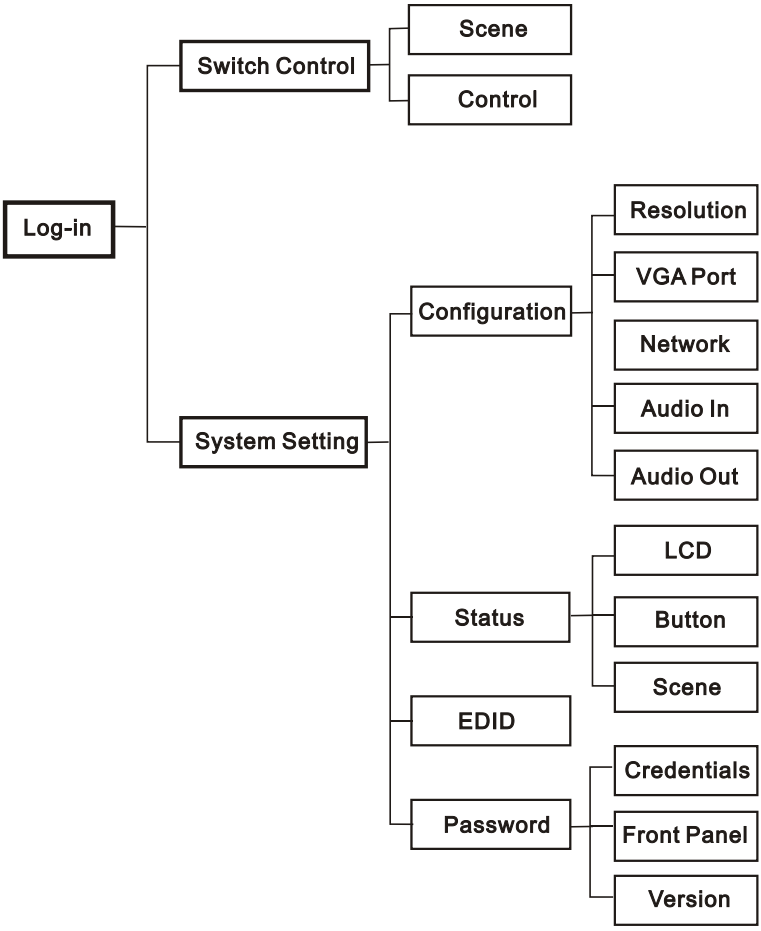


Figure 4- 2 GUI Structure

The web-based GUI system can be divided into Switch Control and System Setting menu, but log in as user will only access Switch Control.

- Click at the left-bottom corner to enter Switch Control menu.
- Click at the left-bottom corner to enter System Setting menu.

4.4.3.1. Switch Control

This menu boasts 3 selectable interfaces in total, including scene switch interface and I/O switch interface.

1. Scene Switch:

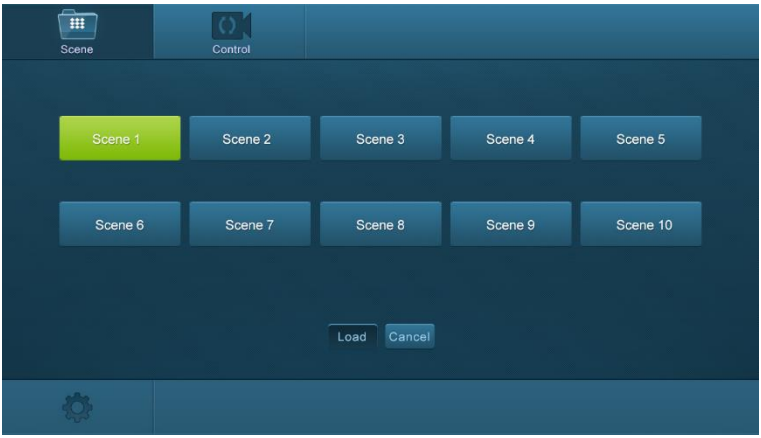


Figure 4- 3 Scene Switch

All ten scenes are shown in above interface. Select a scene and then click "**Load**" can invoke the selected scene. Click "**cancel**" to cancel the current operation.

2. I/O Switch：

Figure 4- 4 I/O Switch

The button matrix displays every possible connection between every input and output; users can carry on the connections by clicking corresponding button. **For example:**

Step1: Select button1 at INPUT column

Step2: Select button 10 at OUTPUT column (If all OUTPUT ports in needed, you only need to click “All”.)

Step3: Choose a scene that you want to save.

Step4: Click “**Confirm**” to save the setting or Click “**Clear**” to clear set up.

4.4.3.2. System Setting

This menu boasts 4 submenu items in total, including configuration, status, EDID and password.

1. Configuration: 5 submenu items in total, including Resolution, VGA Port, Network, Audio In and Audio Out

1) Configure output resolution

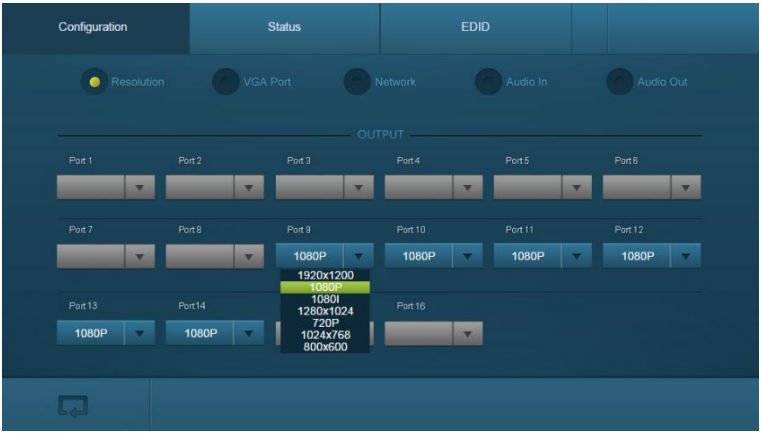


Figure 4- 5 Configuration-Resolution

In this interface, you can set output resolution.

- **OUT-DVI、OUT-HDBT& OUT-HDMI**: 800x600、1024x768、720p、1280x1024、1080i、1080p、1920x1200.
- **OUT-VGA** (options vary according to different signal format):
  - VGA: 800x600、1024x768、720p、1280x1024、1080i、1080p、1920x1200
  - YPbPr: 720p, 1080i, 1080p
  - CVBS: 480i, 576i

- **OUT-HDMI-4K& OUT-HDBT-4K**: 4K×2K@60Hz、4K×2K@30Hz、1024×768@60Hz、1920×1080p@60Hz、1280×720@60Hz.

2) Configure VGA port

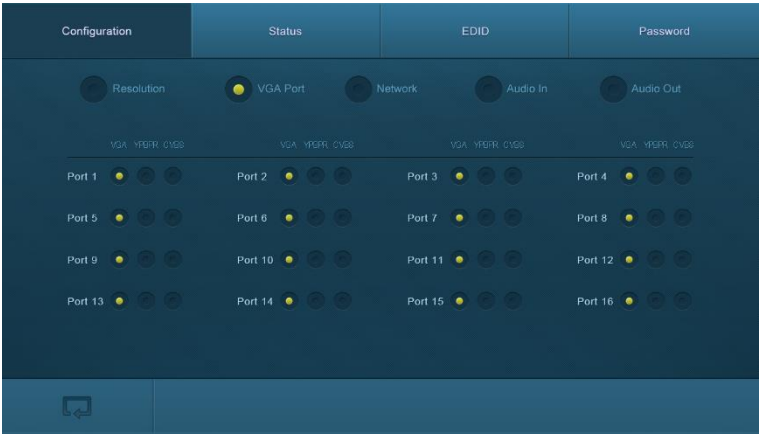


Figure 4- 6 Configuration-VGA Port

In this interface, you can set the signal format for VGA port(s): including VGA, YPBPR, and CVBS

3) Configure network

Figure 4- 7 Configuration-Network

In this interface, you can set DHCP (automatically assign IP by router) or static IP (manually set IP).

4) Configure audio input

Figure 4- 8 Configuration-Audio In

In this interface, you can switch on/ off audio input for IN-VGA、IN-DVI、IN-HDBT、IN-HDMI、I-HDMI-4K and I-HDBT-4K.

5) Configure audio output

Figure 4- 9 Configuration-Audio Out

In this interface, you can switch on/ off audio output for OUT-VGA、OUT-DVI、OUT-HDBT、OUT-HDMI.

🕮 Operations in Audio IN/ Out configuration interface:

Icon Status	Description
	**Audio IN**: select HDMI embedded audio as input source
	Audio OUT: enable analog audio output
	**Audio IN**: select HDMI embedded audio as input source
	Audio OUT: disable analog audio output

Press the button to switch between the 2 states.

2. Status: 3 submenu items in total, including LCD, Button, and Scene

1) Configure LCD display

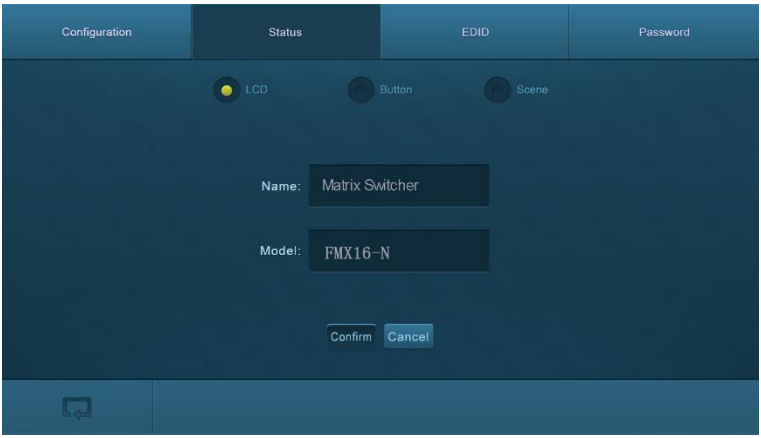


Figure 4- 10 Status-LCD

In this interface, you can configure LCD display information: max at 16 numbers/ letters.

2) Set button labels

Figure 4- 11 Status-Button

In this interface, you can set button labels: max at 7 numbers/ letters/ Chinese characters.

3) Name scene

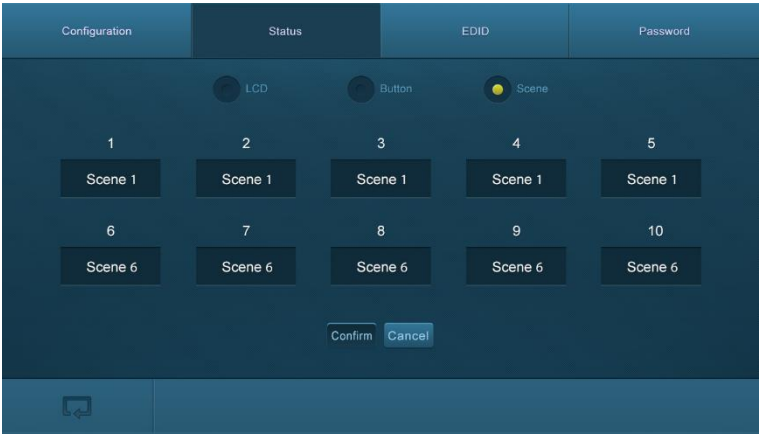


Figure 4- 12 Status-Scene

In this interface, name scenes: max at 7 numbers/ letters/ Chinese characters.

3. EDID: EDID management interface, enable 1/all input(s) capture and learn the EDID data from 1 output

Figure 4- 13 EDID Management

In this interfaces, you can:

- 1 input learns EDID from 1 output: **Output** + **Input** + **Confirm**
- All inputs learn EDID from 1 output: **Output** + T**o All Inputs**
- Undo the previous input: click **Cancel**

4. Password:

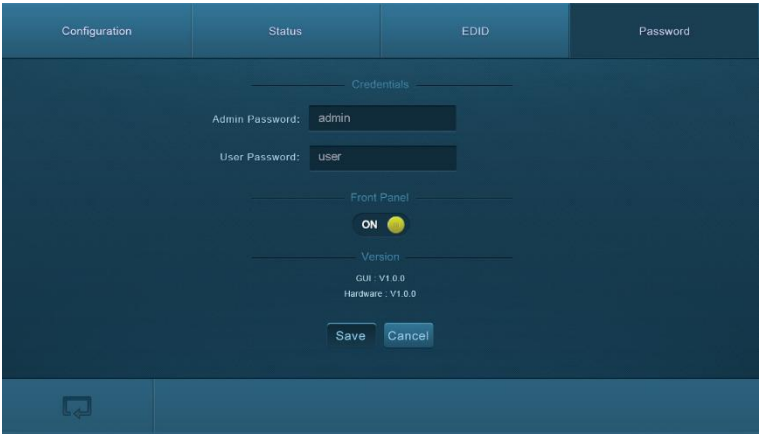


Figure 4- 14 Password Setting

In this interfaces, you can:

- Set password: max at 10 numbers/ letters
- Configure front panel lock status
- Inquire GUI& Hardware versions

Remember to click **Save** to save the settings.

🕮 Notes on the front panel icon:

Icon Status	Description
	Front panel button unlock
	Front panel button locked

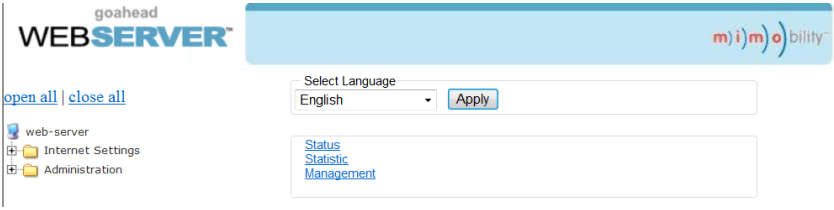
Press the button to switch between the 2 states.

🕮 Clear the cache of the browser beforehand to ensure reliable GUI operation.

4.4.4 Port Management

Type the designed website 192.168.0.178:100 (Default, changeable via GUI) in your browser. Enter correct username and password (same with GUI name and password) to log in the Webserver:

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.

5. Firmware Upgrade

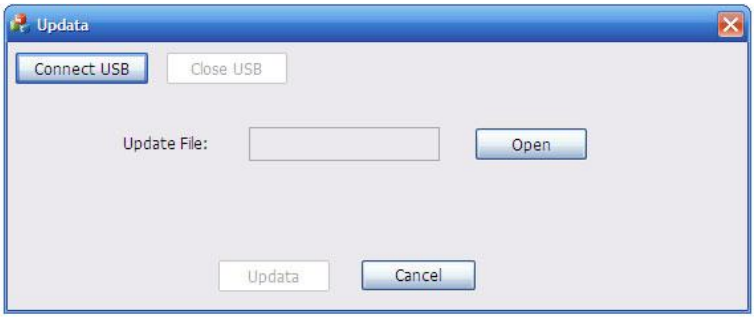
The switcher boasts a USB port for online firmware upgrade on the front panel. Follow these steps to upgrade firmware:

Step1. Copy the upgrade software and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of the switcher and the PC via USB cable.

Step3. Double-click the update software icon (see as below).

It will enter the upgrade interface shown as below:



Step4. Click **Connect USB**.

Step5. Click **Open** to load the upgrade file, then click **Updata** to start firmware upgrading.

Note:

1. To ensure available control, the COM number of the PC should be 1~9.

2. If the update progress bar can't go on, please cut off power, and then restart this machine to update firmware again.

6. Specification

6.1 Main Unit

Connectors			
Control	1 IR EYE, 1 RS232, 1 TCP/IP	Card Slot	16 PCI-E
Control Connectors	1 3.5mm mini jack, 1 3-pin pluggable terminal block, 1 RJ45		
General			
Standards	HDMI 1.4 & HDCP1.3	Resolution	1080p (max)
Power Supply	100~240V AC	Power Consumption	13w（no load）
Temperature	0~50℃	Reference Humidity	10%~90%
Dimension (W*H*D)	483mm x 132mm x 320mm		

6.2 Signal Cards

6.2.1 IN-VGA& OUT-VGA

INPUT		**OUTPUT**	
Input	1 VGA, 1 Audio	Output	1 VGA, 1 Audio
Input Connector	1 Female 15 pin HD 1 3-pin pluggable terminal block	Output Connector	1 Female 15 pin HD 1 3-pin pluggable terminal block
Power Consumption	4.6w	Power Consumption	4w
General			
Video Signal	VGA, CVBS, YPbPr	Switching Speed	﹤100ns
Output Resolution	**VGA:** 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p, 1920x1200 **YPbPr**: 720p, 1080i, 1080p **CVBS**: 480i, 576i		
Working Temperature	0~50℃	Reference Humidity	10%～90%

6.2.2 IN-DVI& OUT-DVI

INPUT		**OUTPUT**	
Input	1 DVI, 1 Audio	Output	1 DVI, 1 Audio

Input Connector	1 Female DB24+5/ HDMI 1 3-pin pluggable terminal block	Output Connector	1 Female DB24+5/ HDMI 1 3-pin pluggable terminal block
Power Consumption	4.5w	Power Consumption	3.5w
General			
Working Temperature	0~50℃	Reference Humidity	10%～90%
Switching Speed	﹤100ns	Standard	HDMI1.3 & HDCP
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p, 1920x1200		

6.2.3 IN-SDI& OUT-SDI

Input		**Output**	
Input	1 SDI	Output	1 SDI 2 SDI LOOP
Connector	Female BNC	Output Connector	Female BNC
Output	1 SDI LOOP		
Output Connector	Female BNC		
General			
Signal	3G-SDI/HD-SDI/SDI	Resolution	1080p (max)
Transmission Distance	(1080p)≤160m	Data Type	8 & 10 & 12bit
Working Temperature	0~50℃	Reference Humility	10%~90%
Power Consumption	6.1w		

6.2.4 IN-HDBT& OUT-HDBT

INPUT		**OUTPUT**	
Input	1 HDBT, 1 Audio	Output	1 HDBT, 1 Audio
Input Connector	1 Female RJ45 1 3-pin pluggable terminal block	Output Connector	1 Female RJ45 1 3-pin pluggable terminal block
Power Consumption	13.5w	Power Consumption	14w

General			
Transmission Distance	(1080p)≤70m	Switching Speed	﹤100ns
Working Temperature	0~50℃	Reference Humidity	10%~90%
Standard	HDMI1.3, DVI1.0 & HDCP1.3		
Audio	PCM		
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p, 1920x1200		

6.2.5 IN-HDMI& OUT-HDMI

INPUT		OUTPUT	
Input	1 HDMI, 1 Analog audio	Output	1 HDMI, 1 Analog audio
Input Connector	1 19-pin Type A Female HDMI 1 3-pin pluggable terminal block	Output Connector	1 19-pin Type A Female HDMI 1 3-pin pluggable terminal block
Power Consumption	5w	Power Consumption	2.7w
General			
Switching Speed	﹤100ns	Standard	HDMI1.3 & HDCP1.3
Working Temperature	0~50℃	Reference Humidity	10%～90%
EDID	Supports EDID Management		
Output Resolution	Auto, 800x600, 1024x768, 1280x720p, 1280x800, 1280x1024, 1920x1080I, 1920x1080p, 1920x1200		

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

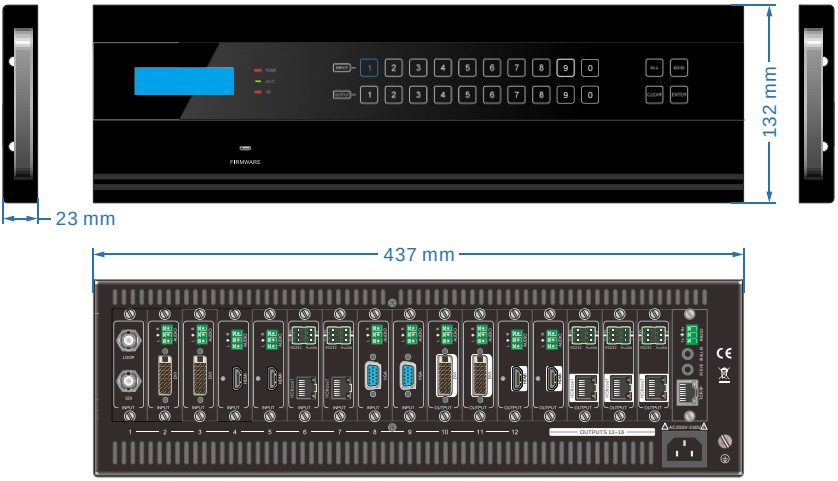
INPUT		OUTPUT	
Input	1 HDMI, 1 Analog audio	Output	1 HDMI, 1 Analog audio
Input Connector	1 19-pin Type A Female HDMI 1 3-pin pluggable terminal block	Output Connector	1 19-pin Type A Female HDMI 1 3-pin pluggable terminal block
Power Consumption	4w	Power Consumption	1.5w
General			

Switching Speed	﹤100ns	Standard	HDMI2.0& HDCP2.2
Working Temperature	0~50℃	Reference Humidity	10%～90%
EDID	Supports EDID Management		
Output Resolution	Auto, 4K×2K@60Hz、4K×2K@30Hz、1024×768@60Hz、1920×1080p@60Hz、1280×720@60Hz		

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

INPUT		**OUTPUT**	
Input	1 HDBT, 1 Analog audio, 1 RS232, 1 IR IN, 1 IR OUT	Output	1 HDBT, 1 Analog audio, 1 RS232, 1 IR IN, 1 IR OUT
Input Connector	1 Female RJ45 2 3-pin pluggable terminal block 2 3.5mm mini jack	Output Connector	1 Female RJ45 2 3-pin pluggable terminal block 2 3.5mm mini jack
Power Consumption	15w	Power Consumption	17w
General			
Transmission Distance	1080p≤70m(Cat6); 4K×2K≤40m(Cat6)	Switching Speed	﹤100ns
Working Temperature	0~50℃	Reference Humility	10%~90%
Standard	HDMI2.0 & HDCP2.2		
Audio	PCM		
EDID	Supports EDID Management		
Output Resolution	Auto, 4K×2K@60Hz、4K×2K@30Hz、1024×768@60Hz、1920×1080p@60Hz、1280×720@60Hz		

7. Panel Drawing



8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color losing or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
No HDMI signal output in display while local input is working normally	Loose cable connection	Reconnect the devices and make sure they're well contacted.
	The display doesn't support the resolution	Set output resolution to other supportive ones or Auto.
Splash screen in output devices	Poor quality of the connecting cable	Change for another cable of good quality.
	Poor contact at the input/ output end	Reconnect the devices and make sure they're well contacted.
Cannot control the device via front panel buttons	Front panel buttons are locked	Send "/%Unlock;" to unlock.
Cannot control the Matrix Switcher by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	The Matrix Switcher is broken	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.

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

9. After-sales Service

1) If their appears some problems when running HDMI Twisted Pair PoC Extender, please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.

2) You can email to our after-sales department or make a call, please tell us the following information about your cases.
- Product version and name.
- Detailed failure situations.
- The formation of the cases.

3) We offer products for all three-year warranty, which starts from the first day you, buy this product (The purchase invoice shall prevail).

4) Any problem is same with one of the following cases listed; we will not offer warranty service but offer for charge.
- Beyond the warranty.
- Damage due to incorrectly usage, keeping or repairing.
- Damage due to device assembly operations by the maintenance company non-assigned.
- 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.

5) This document is just a user manual released with the product, not a quality guarantee. Any corrections or new function introductions added, we will update this document without further notice.

Remarks: For any questions or problems, please try to get help from your local distributor.

● Warranty

A. LIMITED WARRANTY

KanexPro ™ warrants that (a) its products (the “Product”) will perform greatly in agreement with the accompanying written materials for a period of 36 months (3 full year) from the date of receipt and (b) that the product will be free from defects in materials and workmanship under normal use and service for a period of 1 year.

B. CUSTOMER REMEDIES

KanexPro’s entire liability and Customer’s exclusive remedy shall be, at KanexPro option, either return of the price paid for the product, or repair or replacement of the Product that does not meet this Limited Warranty and which is returned to KanexPro with a copy of customers’ receipt. This Limited Warranty is void if failure of the Product has resulted from accident, abuse, or misapplication. Any replacement Product will be warranted for the remainder of the original warranty period of 1 year, whichever is longer.

C. NO OTHER WARRANTIES

To the maximum extent permitted by applicable law, kanexPro disclaims all other warranties, either express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the product and any related written materials. This limited warranty gives customers specific legal rights. Customers may have other rights depending on the jurisdiction.

D. NO LIABILITY FOR DAMAGES

To the maximum extent permitted by applicable law, in no event shall KanexPro be liable for any damages whatsoever (including without limitation, special, incidental, consequential, or indirect damages for personal injury, loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use this product, even if KanexPro has been advised of the possibility of such damages.