gofanco®

4x4 HDMI 2.0 Matrix Kit
User's Guide

P/N:Matrix44-HDBT

Thank you for purchasing from gofanco. Our products aim to meet all your connectivity needs wherever you go. For optimum performance and safety, please read the instructions carefully and keep this User's Guide for future reference. If you need more information about our products, please visit www.gofanco.com. For technical support, email us at support@gofanco.com. For drivers or manual download, please go to www.gofanco.com/downloads.

Important Safety Notices

Please read safety instructions carefully before installation and operation.

- Please pay close attention to all warnings and hints for this device

- Do not expose this unit to rain, heavy moisture, or liquid

- Do not put any items into the device or attempt to modify its operation

- Do not repair the device or open the enclosure without professional guidance to avoid electric shocks. Doing so may void your warranty

- Keep the product in a well-ventilated location to avoid damage from overheating

- Shut off power and make sure environment is safe before installation

- Do not plug the HDMI cables and IR cables in/out when the device is in use to avoid cable damage. Make sure they are plugged into the correct ports

- Use the included power adapter only. Make sure the specification matches if using 3rd-party DC power adapters

Introduction

The 4x4 HMI 2.0 Matrix Kit allows you to select and switch between any of the 4 HDMI source devices to display on any of the 4 HDMI displays simultaneously.

Features

- Select and switch between any of the 4 HDMI source devices to any of the 4 HDMI displays simultaneously
- 3 CAT6/7 outputs with 3 included Receivers and 1 HDMI output
- CAT6/7 outputs: Up to 70m (230ft) at 1080p and 4K
- HDMI 2.0 and HDCP 2.2 compliant. 18Gbps bandwidth and supports up to 4K@60Hz YUV 4:4:4
- Supports bi-directional IR control, PoC, powerful EDID management, advanced HDCP handling, and 4K to 1080p downscaling
- Controllable by front panel buttons, IR, RS232, and TCP/IP
- With PoC technology, the CAT 6/7 Receivers do not need power adapters, they can be powered from the Matrix Switcher over CAT cables

Installation Requirements

- HDMI source device (DVD player, set top box, PC, etc.)
- HDMI display device (SDTV/Monitor, HDTV/Monitor, projector, etc.)
- HDMI cables (not included)
- CAT cables (not included)

Package Contents

4x4 HDMI 2.0 Matrix Switcher

• 1x 4x4 HDMI 2.0 Matrix Switcher
• Surface mount accessories
• 4x Plastic pads
• 1x IR remote control
• 5x IR receiver cables
• 5x IR emitter cables
• 1x RS232 cable (Phoenix to 9-pin D-Sub)
• 1x Power adapter (24VDC/2.71A)
• 1x User manual

CAT 6/7 Receiver

• 3x CAT 6/7 Receivers

Product Layout

4x4 HDMI 2.0 Matrix Switcher

Figure 1: Matrix Switcher Front Panel Layout

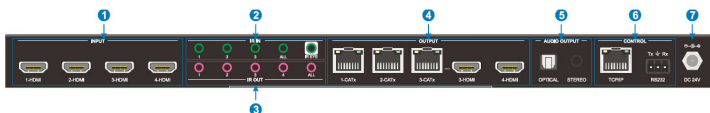| No.	Name	Description
①	**Power Indicator**	• Illuminates green when device powered on; • Turns red in standby mode.
②	**Lock Button & Indicator**	• Long press more than 3 seconds to lock/ unlock the front panel buttons. • Indicator illuminates red when front panel is locked.
③	**Output Select Button & Input Indicator**	• Total 4 output selector buttons, press the buttons to toggle input signal. • The indicator will turn green if the corresponding input is selected.

Figure 2: Matrix Switcher Rear Panel Layout

No.	Name	Description
①	INPUTS	4 HDMI inputs, connects with HDMI sources.
②	IR IN	3 IR inputs and 1 IR all-in, work with the receivers to support IR pass-through.
		1 IR EYE input, connects with external IR receiver for using the IR remote to control the Matrix Switcher.
③	IR OUT	4 IR outputs and 1 IR all-out, work with the receivers to support IR pass-through.
④	OUTPUTS	3 CATx outputs, connects with the receivers.
		#3 CATx outputs have a HDMI loopout.
		1 HDMI outputs, connects with a HDMI display.
⑤	AUDIO OUTPUTS	OPTICAL & STEREO audio output ports for audio de-embedded from HDMI output.
		Two audio output ports are de-embedded from the same video output.
⑥	TCP/IP & RS232	TCP/IP: RJ45 port to connect the control device (e.g. PC) to control the matrix by GUI.
		RS232: 3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
⑦	DC 24V	Connect with 24VDC power adaptor.

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CAT 6/7 Receiver

Figure 3: CAT 6/7 Receiver Front and Rear Panel Layout

No.	Name	Description
①	**DISPLAY**	Type-A female HDMI port to connect HDMI display device.
②	**CATx IN:**	RJ45 port to connect the CATx OUT port of transmitter by CATx cable. It supports 12V PoC and the receiver can be powered from the transmitter. The orange LED illuminates when there is a valid HDMI signal input. The green LED illuminates when power is applied.
③	**IR IN**	3.5mm mini jack to connect IR receiver for IR pass-through.
④	**IR OUT**	3.5mm mini jack to connect IR emitter for IR pass-through.

Hardware Installation

1. Power off all devices including your HDMI source(s) and HDMI display(s).

2. Connect your HDMI source device(s) to the Matrix Switcher's HDMI Input connectors with HDMI cables (HDMI cables not included).

3. Connect your CAT cables between the Matrix Switcher and CAT 6/7 Receivers.

4. Optional: Connect an HDMI display to the HDMI output of the Matrix Switcher using an HDMI cable (HDMI cable not included).

5. Connect an HDMI display to each CAT 6/7 Receiver's HDMI Out connector with an HDMI cable (HDMI cables not included).

6. Optional: Connect the IR Receiver cables and the IR emitter cables to the IR interface ports. This connection is needed only if you need to control your HDMI devices from the remote location. See IR Control, starting on page 9 for proper IR connection.

7. Optional: Connect an AVR amplifier to the S/PDIF or Toslink output port.

8. Optional: Connect speakers to the Matrix Switcher's L&R output port via RCA cable.

9. Optional: Connect the included RS232 cable between the Matrix Switcher's RS232 socket and your PC's serial port or a CAT cable between the matrix switcher's ethernet port and PC's ethernet port. This connection is needed only if matrix device control using a PC is required.

11. Plug the included power adapter into the Matrix Switcher's Power Jack, then plug the power adapter into a reliable power outlet.

12. Power on all connected devices. The 4x4 HDMI 2.0 Matrix Kit is ready for use.

Application Diagram

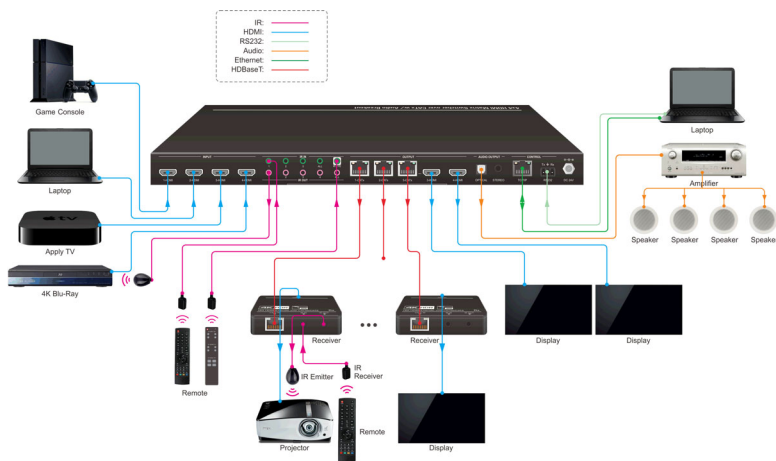The application diagram shows the most typical input and output devices used with the 4x4 HDMI 2.0 Matrix Kit.

Figure 4: Application Diagram

IR Control

Provides IR control of the connected devices. The IR feature is bidirectional so either the source device or the display device(s) can be remotely controlled.

IR Remote
Users can control the Matrix Switcher using the included remote. Connect an IR receiver cable to the IR Eye of the Matrix Switcher.

① Standby button:
Press it to enter/ exit standby mode.

② INPUTS:
Input channel selection buttons, same with the corresponding front panel buttons

③ OUTPUTS:
Output channel selection buttons, same with the corresponding front panel buttons.

④ Menu buttons:
- **ALL**: Select all inputs/outputs.
To convert an input to all outputs:
Example: Input 1 to all Outputs:
→ Press INPUTS 1 + ALL + ENTER
- **EDID management button:**
1) One input port follows the EDID data from one output port.
Example: Input 2 learns EDID data from output 4:
→ Press EDID + INPUTS 2 + OUTPUTS 4+ ENTER
2) All input ports learn EDID data from one output port.
Example: All input ports learn EDID data from output 3:
→ Press EDID + ALL + OUTPUTS 3 + ENTER
- **CLEAR:** Withdraw button.
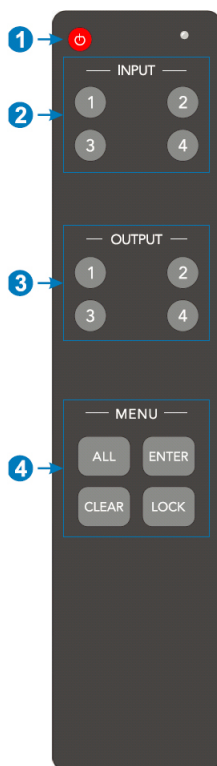- **ENTER:** Confirm operation.

Figure 5: IR Remote Layout

Controlling the Matrix Switcher

1) To convert one input to an output:

Example: Input 1 to Output 3

→ Press INPUTS 1 + OUTPUTS 3 + ENTER

> **NOTE:**
>
> Default status, on first boot up this matrix assigns the IR outputs to the corresponding HDMI input, meaning, IR out 1 is directly associated to HDMI input 1 and so on. When you switch an HDMI input to a different output, the corresponding IR OUT will be switched synchronously to allow the IR commands to be sent from the select zone back through the Matrix Switcher to the source.

2) To convert an input to several outputs:

Example: Convert Input 2 to Output 3 and 4

→ Press INPUTS 2 + OUTPUTS 3 + OUTPUTS 4 + ENTER

3) To convert an input to all outputs:

Example: Input 1 to all Outputs

→ Press INPUTS 1 + ALL + ENTER

By using IR & HDBaseT transmission technology, the HDMI HDBaseT 4x4 4K Matrix Kit has the functions as follows:

1) Control far-end output device from local.
2) Control local input/output device remotely.
3) Control the Matrix Switcher locally/remotely.

4.1.2 Force Carrier

a) Only if the IR receiver connected to HDBaseT receiver is with IR carrier, can the received IR signal be transferred to IR OUT port of the Matrix Switcher.

b) Only if the IR receiver connected to the Matrix Switcher is with IR carrier, can the received IR signal be transferred to IR OUT port of the Matrix Switcher.
If the IR receiver connected to HDBaseT receiver or the Matrix Switcher is without an IR carrier signal, send the command "%0901." to enter infrared carrier enforcing mode, and then IR signal can be transferred to IR OUT port.

Control the Matrix Switcher Locally

1.   Connect an IR Receiver cable to the IR Eye port of the Matrix Switcher.

2.   Point the included Remote Control at the IR Receiver Cable's IR eye to control the Matrix Switcher.
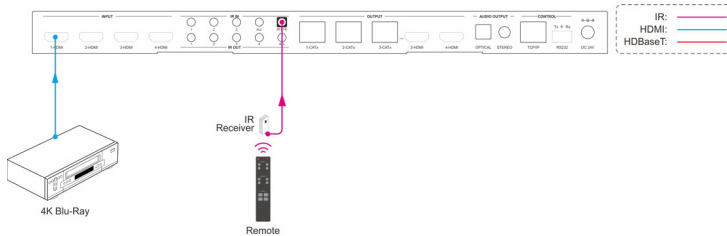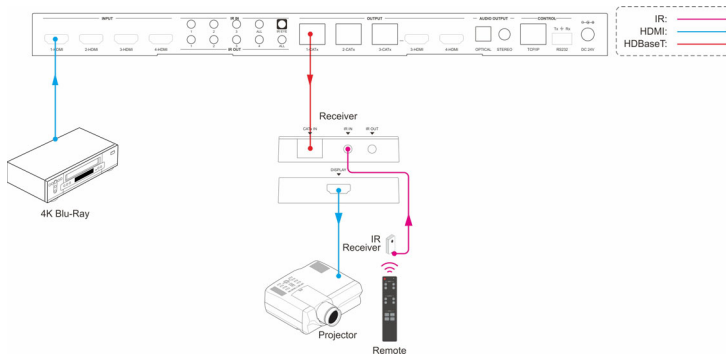

Figure 6: Controlling the Matrix Switcher Locally

Control the Matrix Switcher Remotely

1.   Connect an IR Receiver cable to the IR In port on each CAT 6/7 Receiver.

2.   Point the included Remote Control at the IR Receiver Cable's IR eye to control the Matrix Switcher.

Figure 7: Controlling the Matrix Switcher Remotely

Controlling the Display Device(s)

1. Connect an IR Receiver cable to the IR In port of the Matrix Switcher.

2. Connect an IR Emitter cable to the IR Out port on each CAT 6/7 Receiver.

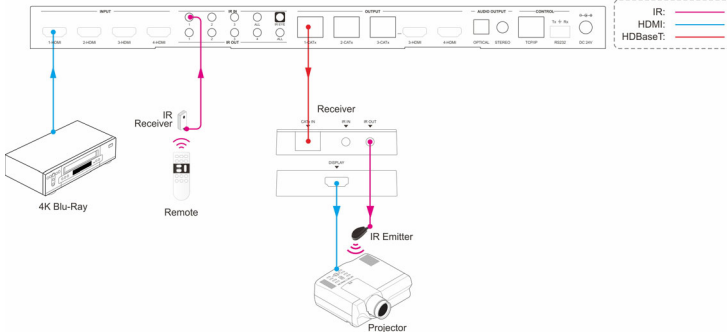3. Point the IR Emitter cable's IR eye in line with the IR receiver on the display device.

Figure 8: Display Device IR Control Connection Diagram

Controlling All Display Devices Simultaneously

1. Connect an IR Receiver cable to the IR All In port of the Matrix Switcher.

2. Connect an IR Emitter cable to the IR Out port on each CAT 6/7 Receiver.

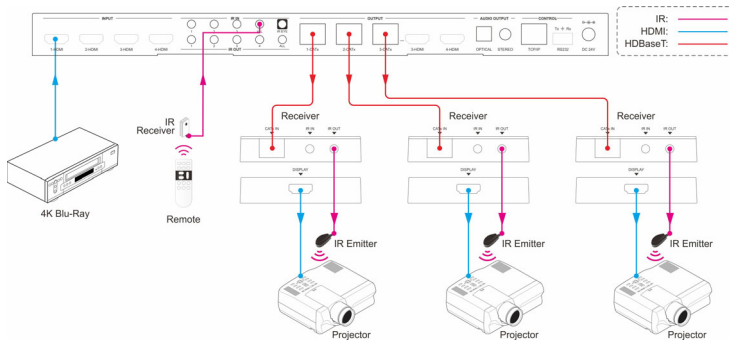3. Point the IR Emitter cable's IR eye in line with the IR receiver on the display device.

Figure 9: Controlling All Display Devices Simultaneously

Controlling the Source Device

1. Connect an IR Emitter cable to the IR Out port of the Matrix Switcher.
2. Point the IR Emitter cable's IR eye in line with the IR receiver on the source device.
3. Connect an IR Receiver cable to the IR In port on each CAT 6/7 Receiver.
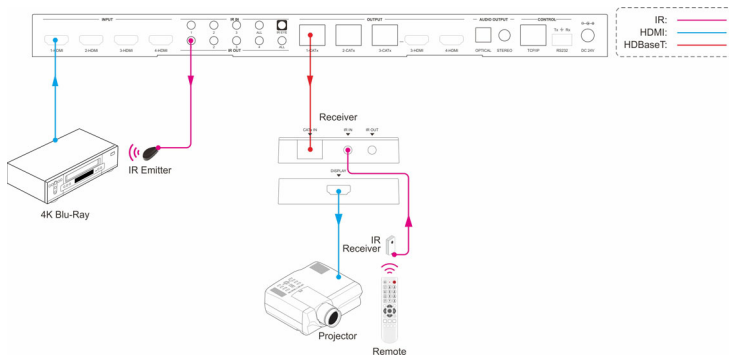
Single Source Device IR Control

Figure 10: Single Source Device IR Control Connection Diagram

Multiple to Multiple Device IR Control (Matrix)

1. Connect an IR Emitter cable to the IR All Out port of the Matrix Switcher.

2. Point the IR Emitter cable's IR eye in line with the IR receiver on the source device.

3. Connect an IR Receiver cable to the IR In port on each CAT 6/7 Receiver.
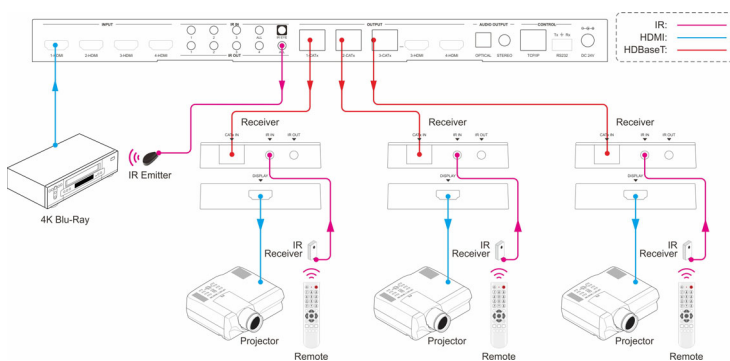

Figure 11: Multiple to Multiple Device IR Control Connection Diagram

GUI Control

The Matrix Switcher can be controlled by web GUI via TCP/IP port. The default IP settings are:

IP address: 192.168.0.178
Subnet Mask: 255.255.255.0

1. Connect your PC to the Matrix Swicher's PCP/IP Control Port.
2. Set the PC's network segment to the same setting as the Matrix Switcher.

Open the GUI by typing in 192.168.0.178 into your browser and login interface, as shown below, will open.

Username: admin

Password: admin

Type in the user name and password and click Login to enter the GUI.

Switching Tab

Use the 4x4 button grid on the page to set which inputs are directed to which outputs. For example, clicking the button Input 1 row and Output 1 column directs the source device connected to Input 1 to the display device connected to Output 1.

Use the 6 numbered buttons under Preset to save/load the layout presets.

- To save a given layout, first click one of the numbers buttons, then click Save.
- To load a saved layout, first click on of the numbered buttons, then click Recall.

Audio Tab
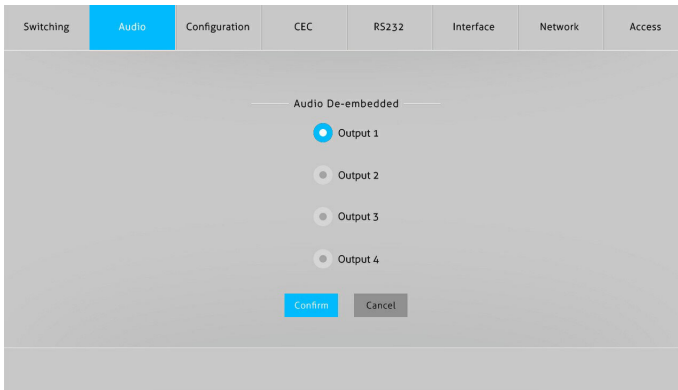
- Optical and Stereo audio output can be de-embedded from the 4 HDMI outputs.

Configuration Tab

1) PoC
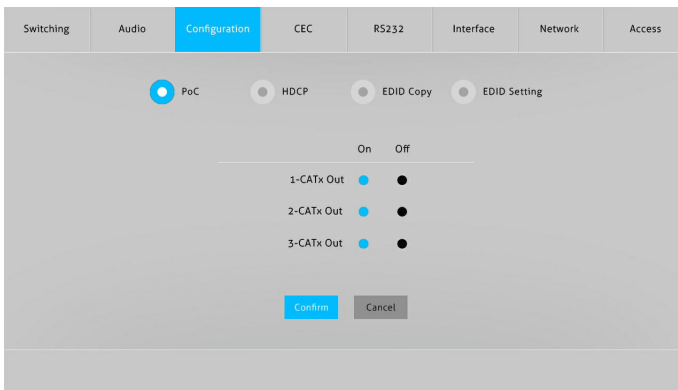
- Turns On/Off PoC to the CAT 6/7 receiver units

2) HDCP
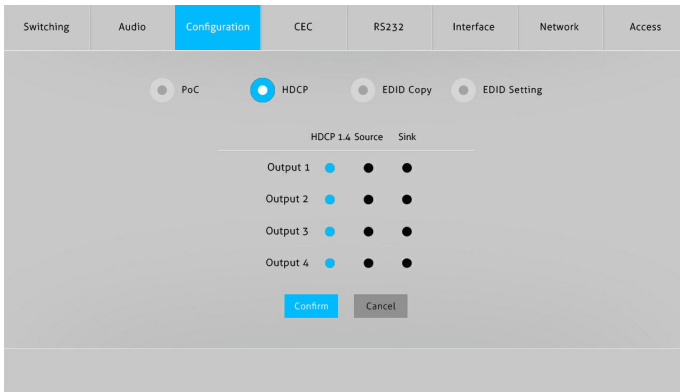
- HDCP setting for the 4 outputs

3) EDID Copy

- Copy the EDID of the selected display to one or more source devices

4) EDID Setting

- Select the compatible embedded EDID for the selected source device
- Upload user-defined EDID using the steps below:

  1. Prepare the EDID file (.bin) on the control PC.
  2. Select User-defined.
  3. Click on the box, then select the ".bin" file.
  4. Click Apply to upload the EDID.
  5. Click Confirm to save the setting.

CEC Tab

1) Input Device Control
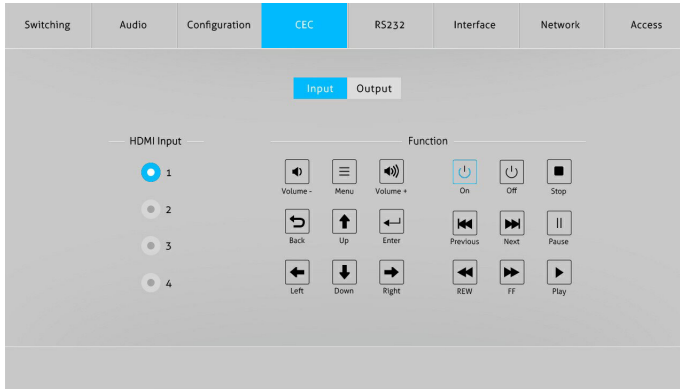
- Select one input device to be controlled, and then press function buttons. **Note**: Can not control two or more source devices simultaneously

2) Output Device Control

- Select one output device to be controlled, and then press function buttons. **Note**: Can not control two or more output devices simultaneously

RS232 Tab

- ASCII or HEX command format can be selected
- Baud Rate: Supports 2400, 4800, 9600, 19200, 38400, 57600, 115200
- Command Ending: Null, CR, LF, or CR+LF
- Command: Type the command in this box to control the device that is connected to the RS232 port

Interface Tab

- Modify the title bar label
- Modify the button labels

Network Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access

MAC Address: 44-33-4C-C9-35-12

DHCP | | | Static IP

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Confirm

- Select Static IP or DHCP
- Modify the static IP address, Subnet Mask, and Gateway

Access Tab

Switching	Audio	Configuration	CEC	RS232	Interface	Network	Access

Credentials

Password: admin   Confirm

Firmware Upgrade

C:\\   Confrim

Front Panel Lock

ON | | | OFF

- Modify the Login password
- Upgrade the firmware
- Lock or unlock the front panel buttons

RS232 Control

Connect the control PC's RS232 serial port to the Matrix Switch's RS232 port using the included RS232 cable.

RS232 Control Software

Works with most serial command and monitoring software such as CommWatch.

- Download CommWatch or the serial command software of your choice
- Installation: Copy the control software files and paste them to the hard drive of your PC
- Uninstallation: Delete all control software files from the PC

Basic Settings

1. Connect all input and output devices as needed, then connect the PC to the Matrix Switcher.
2. Double click the software icon to run the control software. The icon is shown below.

The examples shown on this page and the following page are from CommWatch serial command software.

Control Software Interface

Set the COM port, Baud rate, data bit, stop bit, and parity. Enter commands into the Command Sending Area.
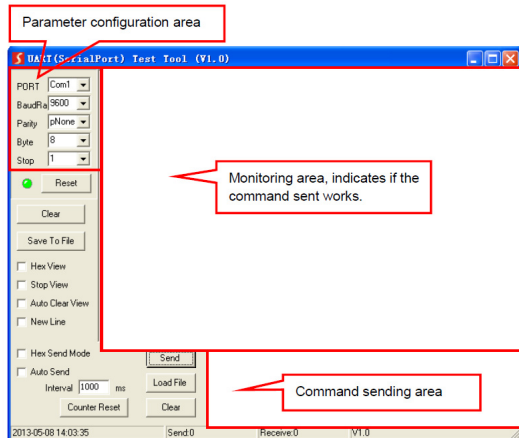
RS232 Commands

- Default settings: Baud rate: 9600, Data bit: 8, Stop bit: 1, Parity bit: none
- Commands are case sensitive
- Command inside "[ ]" are for easy recognition only and not added to the real command. Other symbols including, ".", ",", "/", "%", "^", are parts of the command
- Feedback listed in the column "Feedback Example" are for reference only, and may vary according to the operation

System Commands

Command	Function	Feedback Example
PowerON.	Power on	Power ON!
PowerOFF.	Power off	Power OFF!
/*Name.	Query the name of matrix	Matrix44-HDBT
/*Type.	Query the model of matrix	HDMI 2.0 4x4 Matrix Switcher
/^Version.	Query the version of firmware	V1.0.0 CPLD:V1.0.0
RST.	Reset to factory default.	Factory Default!

Control Managment

Command	Function	Feedback Example
OUT[xx]:[YY].	Switch input source to output port. [xx]=00~04, xx=01~04 is the number of output port, if the xx=00, it means all output ports. [YY]=01~04, YY=01~04 is the number of input port.	Output 01 Switch To In 01! Audio Out 01 Switch To Video Out 01!
@OUT[xx].	Enable HDMI 5V of output port. [xx]=00, 04~05. xx=04 4th output port, 05 is the HDMI loop out of third output. xx=00,	Turn ON Output 04! Turn ON Output 05!

Control Managment Cont'd

Command	Function	Feedback Example
	means all output ports.	
$OUT[xx].	Disable HDMI 5V of output port. [xx]=00, 04~05. xx=04 4th output port, 05 is the HDMI loop out of third output. xx=00, means all output ports.	Turn OFF Output 04! Turn OFF Output 05!
IRFVON.	Enable IR switch to follow video switch.	IR Follow Video ON!
IRFVOFF.	Disable IR switch to follow video switch.	IR Follow Video OFF!
IR[xx]:[YY].	Switch the remote IR IN to local IR OUT. [xx]=01~04, is the number of IR output port. [YY]=00~03. 01~03 is the number of IR input port of receiver, YY=00, means all IR input ports.	Local 01 IR Out Switch To Remote 01 IR IN!
IRRCM[xx]ON.	Enable IR of CATx receiver to control the MCU. [xx]=00~03. 01~03 is the number of IR input port of receiver, YY=00, means all IR input ports.	IR Remote 03 Control MCU ON!
IRRCM[xx]OFF.	Disable IR of CATx receiver to control the MCU. [xx]=00~03. 01~03 is the number of IR input port of receiver, YY=00, means all IR input ports.	IR Remote 03 Control MCU OFF!
PCAT[xx]:ON.	Enable PoC output on CATx to power the receiver. [xx]=00~03. xx=01~03 is the number of CATx output port, xx=00, means all CATx output ports.	CAT 03 Power ON!
PCAT[xx]:OFF.	Disable PoC output on CATx to power the receiver. [xx]=00~03. xx=01~03 is the number of CATx output port,. xx=00, means all CATx output ports.	CAT 03 Power OFF!

Query Commands

Command	Function	Feedback Example
GetGuiIP.	Query GUI IP	GUI_IP:192.168.0.178!
SetGuiIP:xxx. xxx.xxx.xxx.	Set GUI IP	SetGuiIP:192.168.0.178!
Baudratexxxx .	Set the baud rate of local serial port. xxxx=115200, 57600, 38400, 19200,or 9600	Baudrate9600. Set Local RS232 Baudrate Is 9600!
STA.	Query Status	GUI Or RS232 Query Status: HDMI 2.0 4x4 Matrix Switcher Matrix44-HDBT V1.0.0 Power ON! …
STA_POUT.	Query 5V Status of output port.	Turn ON Output 04! Turn ON Output 05!
STA_IN.	Query 5V Status of input port.	IN 1 2 3 4 LINK N N N N TMDS N N N N
STA_OUT.	Query HPD Status of output.	OUT 1 2 3 4 5 LINK Y Y Y Y Y
STA_VIDEO.	Query the input source of output port.	Output 01 Switch To In 01! Output 02 Switch To In 02! Output 03 Switch To In 04! Output 04 Switch To In 01!
STA_HDCP.	Query current using HDCP model of all output ports. 01-04 represents output port 1-4. 05 represents HDMI loopout of third output.	OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 03 HDCP MAT Display! OUT 04 HDCP MAT

Query Commands Cont'd

Command	Function	Feedback Example
		Display! OUT 05 HDCP MAT Display!
STA_IR.	Query the IR status.	IR Follow Video OFF! Local 03 IR Out Switch To Remote 01 IR IN! Local 02 IR Out Switch To Remote 02 IR IN! Local 01 IR Out Switch To Remote 03 IR IN!
STA_IRRCM.	Query the status of receiver's IR control the MCU.	IR Remote 01 Control MCU ON! IR Remote 02 Control MCU ON! IR Remote 03 Control MCU ON!
STA_TEMP.	Query the temperature of PCBA board.	The Board Temperature is 26 Celcius degree!
STA_PCAT.	Query the PoC output on CATx out.	CAT 01 Power OFF! CAT 02 Power OFF! CAT 03 Power OFF!
PresetSta[xx].	Query the scene. xx = 01-09, represents 9 scene.	Preset 09 Sta: Out 01 In 01! Out 02 In 04! Out 03 In 05! Out 04 In 04!
PresetSave[xx].	Save the scene. xx = 01-09, represents 9 scene.	Preset 01 Save Success! Preset 01 Sta: Out 01 In 01! Out 02 In 01! Out 03 In 01! Out 04 In 01!
PresetRecall[xx].	Scene recall	Preset 02 Recall: Output 01 Switch To In 02! Output 02 Switch To In 02! Output 03 Switch To In 02! Output 04 Switch To In

Lock/Unlock Commands

Command	Function	Feedback Example
Lock.	Lock the front panel buttons.	Front Panel Locked!
Unlock.	Unlock the front panel buttons.	Front Panel UnLock!

Audio Commands

Command	Function	Feedback Example
AUDIO[00]:[YY] .	SPDIF OUT and ANALOG OUT(They are same input audio source at one group) select which input audio source. [yy]=01~04, means de-embedded audio from 1-4 output.	Audio Out Switch To Video Out 04!

HDCP Commands

Command	Function	Feedback Example
HDCP[xx]ON.	Force able and output HDCP 1.4. [xx]=00~05, xx=01~04 is the number of output port, 05 represents HDMI loopout of third output. if the xx =00, it means all output ports.	OUT 01 HDCP ON!
HDCP[xx]OFF.	Force disable the output HDCP. [xx]=00~05, xx=01~04 is the number of output port, 05 represents HDMI loopout of third output. if the xx=00, it means all output ports.	OUT 01 HDCP OFF!
HDCP[xx]MAT.	Output HDCP follows the display. [xx] =00~05, xx=01~04 is the number of output port, 05 represents HDMI loopout of third output. if the xx =00, it means all output ports.	OUT 01 HDCP MAT Display!

HDCP Commands Cont'd

Command	Function	Feedback Example
HDCP[xx]BYP.	Output HDCP follows input HDCP. Input has HDCP, output is HDCP1.4. Input doesn't have HDCP, output is without HDCP. [xx] =00~05, xx=01~04 is the number of output port, 05 represents HDMI loopout of 6th output. if the xx =00, it means all output ports.	OUT 01 HDCP BYPASSS!

EDID Management

Command	Function	Feedback Example
EDIDMInit.	Restore the factory default EDID data for each input.	All Input EDID Set Default!
EDIDUpgrade[xx].	Upgrade EDID via Serial Port ● [xx]=00~04 xx=01~04 is the number of the port(able EDID user-defined for corresponding HDMI input), if the xx=00, it means all ports(able EDID user-defined for all HDMI inputs). **Note:** EDID user-defined can be used once, if switch to another EDID or exit, it will not be saved. ● [xx]=U. xx=U means user-defined for built-in EDID(It can be saved in machine for using at any time). ***Note:*** *It can user-defined only one built-in EDID, after finishing it, machine still use previous built-in EDID.* When received commands, machine will remind EDID file (.bin) to send within 10 seconds. ***Note:*** *In order to guarantee the data to be normal received, need*	File size: 256 Baud rate:115200bps Quired time: About 0 second Please wait... Send Completed！ User Define EDID Upgrade OK By RS232 Or GUI!

EDID Management Cont'd

Command	Function	Feedback Example
	to disconnect all CATx output *before sending the command(s)*	
EDID/[xx]/[yy].	Input ports xx use built-in EDID yy [xx]=00~04 xx=01~04 is the number of the input port, if the xx=00, it means all input ports. [yy]=01~09 yy=01~08, it means built-in EDID that can not be user-defined, if the yy=09, it means user-defined EDID.	Input 03 EDID Upgrade OK By 01 Internal EDID!
EDIDGOUT[XX].	Read and print EDID of HDMI output, [XX]= 01~05, 01~04 is the number of the output port, 05 represents HDMI loopout of third output.	EDIDOUT04: ……
EDIDM[xx]B[yy].	Input port [yy] follows the EDID from output port [xx]. [xx]=01~05 xx=01~04 is the number of the output port, 05 represents HDMI loopout of third output.. [yy]=00~04 yy=01~04 is the number of input port, if the yy=00, it means all input ports.	Input 03 EDID Upgrade OK By 01 EXT EDID!
/+[x]:[YYY].	Send serial data to local. [X]= 1--2400；2--4800；3--9600；4--19200；5--38400；6--57600；7--115200. [YYY] means the data you want to send.	YYY.
EDIDSTA[xx].	Query EDID status of Input port. [xx]=00~04, xx=01~04 is the number of input port, if the xx=00, it means all input ports. *Note:* ● *If built-in EDID09 is not user-*	Input 01 EDID From 01 Internal EDID! Input 02 EDID From 02 Internal EDID! Input 03 EDID From 03 Internal EDID!

EDID Management Cont'd

Command	Function	Feedback Example
	defined, when querying it, the input port will use EDID6 Internal EDID instead. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From 06 Internal EDID!". ● *If built-in EDID09 is user-defined, when querying it, the input port will use the user-defined EDID. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From User Define EDID!".* ● *If directly user-define the port EDID, when querying it, the input port will use the user-defined EDID. For example, send "EDIDSTA03.", and the result is "Input 3 EDID From User Define EDID!"*	Input 04 EDID From 06 Internal EDID!

CEC Control

CEC enable source and display devices can be controlled by sending the following commands.

- [I] represents the input port. [O] represents output port

- [AA] represents port number. The HDMI input ports are 01-04. The HDMI ouput ports are 04-05, 05 standing for the HDMI loop-out of the 3rd HDMI output

- [AA] is "FF" for sending the command to all input or output ports

- [BB] represents the device type (e.g. TV: 40/20/80; Blu-ray: 04/08)

- [CC] represents the CEC funtion type (e.g. "44": remote control

- [DD] represents the command from the table below

Input Source Commands

Command	Description	Command Example and Response
CECI[AA][BB][CC]00.	Confirm operation (Enter).	CECI02044400
		CEC Input 02 Send Success!
CECI[AA][BB][CC]01.	UP direction.	CECI01044401.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]02.	DOWN direction.	CECI01044402.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]03.	LEFT direction.	CECI03044403.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]04.	RIGHT direction.	CECI03044404.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]09.	Back to submenu.	CECI03044409.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0A.	Enter main menu.	CECI0304440A.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0D.	Exit menu.	CECI0204440D.
		CEC Input 02 Send Success!
CECI[AA][BB][CC]6D.	Power on.	CECI0204446D.
		CEC Input 02 Send Success!
CECI[AA][BB][CC]6C.	Power off.	CECI0204446C.
		CEC Input 02 Send Success!

Display Device Commands

Command	Description	Command Example and Response
CECO[AA][BB][CC]41.	Volume up.	CECO04404441. CEC Output 04 Send Success!
CECO[AA][BB][CC]42.	Volume down.	CECO04404442. CEC Output 04 Send Success!
CECO[AA][BB][CC]43.	Mute	CECO04404443. CEC Output 04 Send Success!
CECO[AA][BB]04.	Power on.	CECO048004. CEC Output 04 Send Success!
CECO[AA][BB]36.	Power off.	CECO048036. CEC Output 04 Send Success!

Resolution Downscaling

The matrix supports video resolution downscaling on HDMI outputs. 4K (4096x2160/3840x2160) input can be automatically degraded to 1080p output for compatibility with 1080p display, shown in the below chart.

	Input			Output	
#	Resolution	Refresh	Color Space	Downscale	1080p Specs
1	4K	60Hz	4:4:4	Support	1080p@60Hz 4:4:4
2	4K	50Hz	4:4:4	Support	1080p@50Hz 4:4:4
3	4K	30Hz	4:4:4	Support	1080p@30Hz 4:4:4
4	4K	25Hz	4:4:4	Support	1080p@25Hz 4:4:4
5	4K	24Hz	4:4:4	Support	1080p@24Hz 4:4:4
6	4K	23Hz	4:4:4	Support	1080p@23Hz 4:4:4
7	4K	60Hz	4:2:0	Support	1080p@60Hz 4:4:4
8	4K	50Hz	4:2:0	Support	1080p@50Hz 4:4:4
9	4K	30Hz	4:2:0	Support	1080p@30Hz 4:4:4
10	4K	25Hz	4:2:0	Support	1080p@25Hz 4:4:4
11	4K	24Hz	4:2:0	Support	1080p@24Hz 4:4:4
12	4K	23Hz	4:2:0	Support	1080p@23Hz 4:4:4
13	4K	60Hz	RGB	Support	1080p@60Hz RGB
14	4K	50Hz	RGB	Support	1080p@50Hz RGB
15	4K	30Hz	RGB	Support	1080p@30Hz RGB
16	4K	25Hz	RGB	Support	1080p@25Hz RGB
17	4K	24Hz	RGB	Support	1080p@24Hz RGB
18	4K	23Hz	RGB	Support	1080p@23Hz RGB

FAQ & Troubleshooting

Problems	Potential Causes	Solutions
Color washed out or no video signal	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	Fail or loose connection.	Make sure the connection is good
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 display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are locked.	Send command /%Unlock; or select unlock in GUI interface to unlock.
Cannot control the device via IR remote	The battery is dead.	Install a new battery
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver.	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR EYE port is not with carrier.	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	Fail or loose power connection.	Check whether the cables are connected correctly.
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.

Specifications

Video	
Video Input	(4) HDMI
Input Connector	(4) Type-A female HDMI
HDMI Input Resolution	Up to 4K@60Hz 4:4:4, HDR
Video Output	(3) CATx, (2) HDMI
Output Connector	(3) RJ45, (2) Type-A female HDMI
HDMI Output Resolution	Up to 4K@60Hz 4:4:4, HDR10
CATx Output distance	Up to 70m
HDCP Version	Up to 2.2
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Audio Output	
Output	(1) Digital SPDIF audio, (1) Analog stereo audio
Output Connector	(1) Toslink connector, (1) 3.5mm Jack
Digital SPDIF Audio Format	Supports PCM, Dolby Digital, DTS, DTS-HD
Analog Stereo Audio Format	Supports PCM
Frequency Response	20Hz – 20KHz,±3dB
Max Output Level	±0.05dBFS
THD+N	< 0.1%, 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0dBFS level (or max level)
SNR	> 90dB, 20Hz-20KHz bandwidth
Crosstalk Isolation	< -70 dB, 10 kHz sine at 0 dBFS level (or max level before clipping)
Noise	-90dB
Control	
Control port	(1) IR EYE, (1) RS232, (1) TCP/IP,
Control Connector	(1) 3.5mm jack, (1) 3-pin terminal block, (1) RJ45
General	
Transmission Distance	4K/60Hz/444 5m,4K/60Hz/420 10m,1080P 15m
Bandwidth	18Gbps
Operation Temperature	-5℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humidity	10% ~ 90%
External Power Supply	Input: AC 100V~240V, 50/60Hz; Output : 24V DC 2.71A
Power Consumption	26W
Dimension (W*H*D)	380mm*28.5mm*167mm
Net Weight	1.6kg

Receiver	
Input	(1) CATx IN
Input Connector	(1) RJ45
Output	(1) DISPLAY
Output Connector	(1) 19-pin type-A female HDMI
Control	(1) IR IN, (1) IR OUT
Control Connector	(2) 3.5mm mini jacks
General	
Video Resolution	Up to 4K@60Hz 4:4:4, HDR 10
HDMI Audio Format	Supports LPCM 2ch, LPCM 5.1ch, LPCM 7.1ch, Dolby Digital 2ch, Dolby Digital 5.1ch, DTS 2ch, DTS 5.1ch, DTS 96/24 5.1ch.
Transmission Distance	4K/1080p ≤ 70 meters (230ft) *Note that the CATx cable length should not be less than 15 meters for best video output..*
HDMI Version	HDMI V2.0
HDCP Version	HDCP 2.2 compliant. (The HDCP of output follows the HDCP version of display device.)
EDID	EDID management
Power Supply	Input: 100VAC~240VAC, 50/60Hz; Output: 12VDC 1A
Power Consumption	4W (Max)
Operation Temperature	-5~55℃
Storage Temperature	-25~70℃
Relative Humidity	10%-90%
Dimensions (W*H*D)	80mm x 16.8mm x 80mm
Net Weight	70g

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