4x4 USB 3.2 Gen 1 Matrix

User Manual

VER 1.0

Thank you for purchasing this product

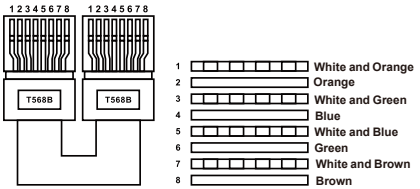
For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Caution

The product requires the use of UTP connectors. Please connect in direct interconnection method and do not cross connect.



Direct Interconnection Method

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1. Introduction

This is a 4x4 matrix allowing 4 USB devices to be shared between 4 host computers. It supports plug-and-play, and allows for a neat and tidy installation - the connecting cables are bundled to save the extra cost of purchasing USB cables. It is USB 3.2 Gen 1 compliant, which can support data transfer rate up to 5Gbps and backwards compatible with USB 2.0 and USB 1.1. It is perfect for high-bandwidth devices, such as USB docking stations or HD cameras. In addition, It also features TCP/IP port, RS-232 command port and select buttons, which can simplify desktop layout and allow the desired routes to be selected manually. With its compact and all-in-one design, you can create a space saving, convenient and productive work environment.

2. Features

- ☆ Enables 4 computers to share 4 USB 3.2 Gen 1 devices
- ☆ USB 3.2 Gen 1 compliant, supporting data transfer rates of up to 5Gbps
- ☆ LED indicates which host is active
- ☆ Over-current protection
- ☆ 5V/1.5A output for USB device ports
- ☆ USB device ports compliant with USB 3.2 Gen 1, USB 2.0 and USB 1.1
- ☆ Support USB Multiple Transaction Translator architecture
- ☆ Plug and Play – no drivers or external power adapter needed
- ☆ Multiplatform support – Windows, Linux and Mac
- ☆ Control via front panel buttons, IR remote, RS-232, and Web GUI

3. Package Contents

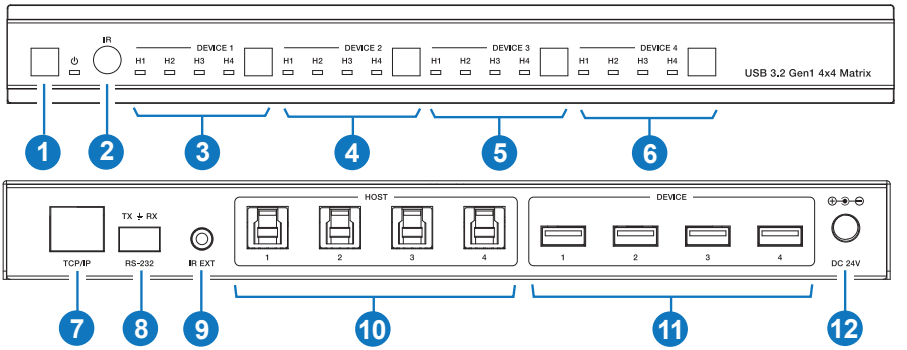
① 1 × 4x4 USB 3.2 Gen 1 Matrix
② 1 × 24V/2A Multinational Locking Power Supply
③ 1 × IR Remote
④ 1 × IR Wideband Receiver Cable (1.5m)
⑤ 4 × USB Cable (USB 3.0 Type A to Type B, 1.8m)
⑥ 1 × 3pin-3.81mm Phoenix Connector
⑦ 4 × Machine Screw (KM3*4)
⑧ 2 × Mounting Ear
⑨ 1 × User Manual

4. Specifications

Technical	
USB Protocol	USB 3.2 Gen 1
Data Transfer Rate	5Gbps
IR Level	5Vp-p
IR Frequency	Fixed 38KHz
Transmission Distance	3m/9.8ft for USB 3.2 Gen 1 5Gbps over passive cable
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connection	
Input ports	4× USB Host [USB 3.2 Gen 1 Type B, 9-pin female]
Output ports	4× USB Device [USB 3.2 Gen 1 Type A, 9-pin female]
Control ports	1 × TCP/IP [RJ45] 1 × RS-232 [3pin-3.81mm phoenix connector] 1 × IR EXT [3.5mm stereo mini-jack]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	270mm [W] × 166mm [D] × 30mm [H]
Weight	1.16kg
Power Supply	Input: AC 100-240V 50/60Hz, Output: DC 24V/2A (US/EU standard, CE/FCC/UL certified)
Power Consumption	13.2W (Max)
Operating Temperature	32 - 104°F / 0 - 40°C
Storage Temperature	-4 - 140°F / -20 - 60°C
Operating Humidity	20%~80% relative humidity, non-condensing
Storage Humidity	10%~90% relative humidity, non-condensing

5. Operation Controls and Functions

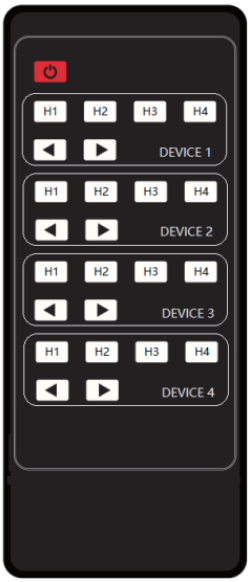
Front & Rear Panel



NO.	Name	Function Description
1	Power button & indicator	Short press the button to power on the matrix, and at this moment the LED is green; Long press the button for 3 seconds to set it to standby mode, and at this moment the LED is red.
2	IR	IR signal receiver, receiving the signal from the IR remote.
3	DEVICE 1 button & H1~H4 indicators	Press the button to switch the host in order of H1~H4 circularly for device 1. When the host is selected, the corresponding LED will be on.
4	DEVICE 2 button & H1~H4 indicators	Press the button to switch the host in order of H1~H4 circularly for device 2. When the host is selected, the corresponding LED will be on.
5	DEVICE 3 button & H1~H4 indicators	Press the button to switch the host in order of H1~H4 circularly for device 3. When the host is selected, the corresponding LED will be on.
6	DEVICE 4 button & H1~H4 indicators	Press the button to switch the host in order of H1~H4 circularly for device 4. When the host is selected, the corresponding LED will be on.
7	TCP/IP	100M LAN port for Web GUI and TCP/IP control, connected to a router or network switch.
8	RS-232	RS-232 serial port, connected to a PC or control system for RS-232 command control.
9	IR EXT	IR signal receiving port, connected with 38KHz IR Receiver cable. If the IR signal receiving window of the unit is blocked or the unit is installed in a closed area out of infrared line of sight, the IR receiver cable can be inserted to the “IR EXT” port to receive the IR remote signal.
10	HOST 1~4	USB-B host ports, connected to PC or host.

NO.	Name	Function Description
11	DEVICE 1~4	USB-A device ports, with output power up to 5V/1.5A, connected to USB devices such as U disk, keyboard or mouse. **Note:** The USB 3.2 Gen 1 ports do not support DisplayPort™ Video (DP Alt Mode) or Power Delivery (PD).
12	DC 24V	DC 24V/2A power input port.

6. IR Remote



⏻:

Power on the Matrix or set it to standby mode.

DEVICE 1:

Press H1\H2\H3\H4 button to select the host for DEVICE 1.

DEVICE 2:

Press H1\H2\H3\H4 button to select the host for DEVICE 2.

DEVICE 3:

Press H1\H2\H3\H4 button to select the host for DEVICE 3.

DEVICE 4:

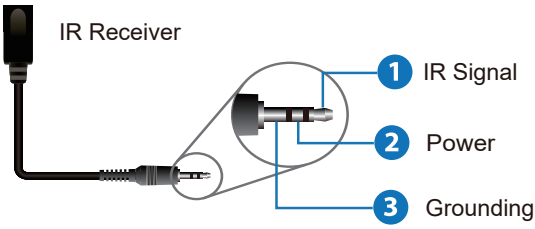
Press H1\H2\H3\H4 button to select the host for DEVICE 4.

◄ ►:

Press to select the last or next host.

7. IR Cable Pin Assignment

IR RECEIVER



8. Web GUI User Guide

The Matrix can be controlled by Web GUI. The operation method is shown as below:

Step 1: Get the current IP Address.

The default IP address is 192.168.0.100. You can get the current Matrix IP address via API command. Send the command “get ip addr” through an ASCII Command tool, then you’ll get the feedback information as shown below:

```
IP Mode: Static
IP: 192.168.0.100
Subnet Mask: 255.255.255.0
Gateway: 192.168.0.1
TCP/IP port=8000
Telnet port=23
Mac address: 00:1c:91:03:80:01
```

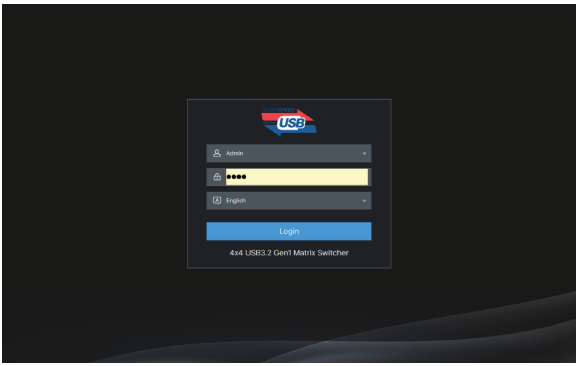
IP:192.168.0.100 in the above figure is the IP Address of the Matrix (the IP address is variable, depending on what the specific machine returns).

For the details of ASCII control, please refer to “9. API Commands”.

Step 2: Connect the TCP/IP port of the Matrix to a PC with an UTP cable, and set the IP address of the PC to be in the same network segment with the Matrix.

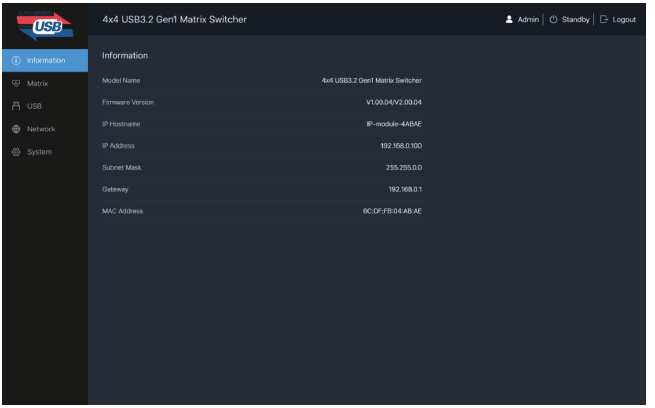
For example, if its IP address is 192.168.62.106, the IP address of PC must be set to 192.168.62.xxx; if its IP address is 192.168.0.100, the IP address of PC must be set to 192.168.0.xxx.

Step 3: Enter the IP address of the Matrix into your browser on the PC. After entering the Web GUI page, there will be a Login page, as shown below:



Select the username "Admin", enter the default password "1234", select the desired language, and then click the "Login". The web page provides the following tabs for navigating the interface:

■ Information Page

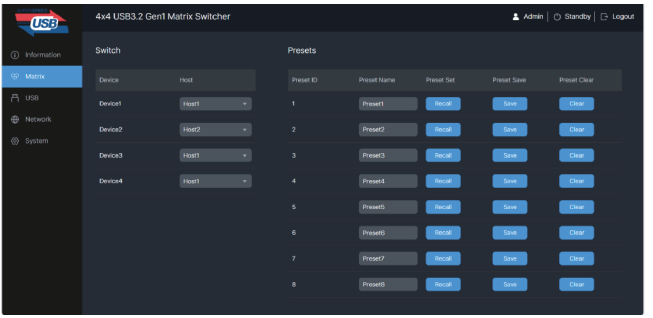


The Information page provides basic information about the Model, the installed firmware version and the network settings of the device.

The buttons at the top right of the web interface are always available:

- Clicking the Logout button will log out of current user.
- Clicking the Standby button will set the matrix to standby mode.

■ Matrix Page



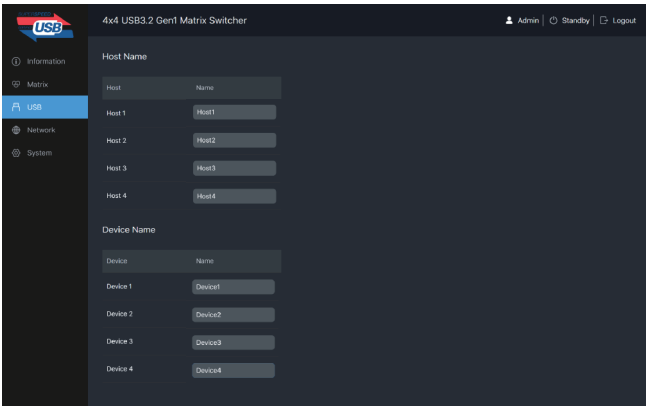
You can do the following operations on the Matrix page:

① **Switch:** Select the host for device1/2/3/4.

② **Presets:** Recall, save and clear the presets. 8 presets are allowed to be set.

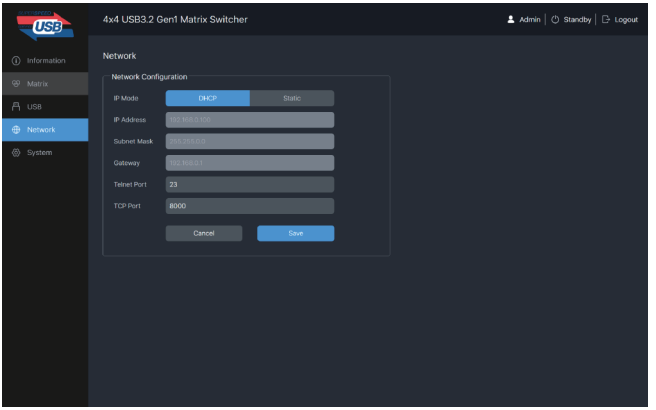
For example, a group of devices and hosts is configured, and click "Save" button to save this preset and name it "Preset1" or other. Then you can recall or clear it via clicking Recall or Clear if needed.

■ USB Page



You can rename each host or device on the USB page.
The maximum length of Name is 16 characters.

■ Network Page

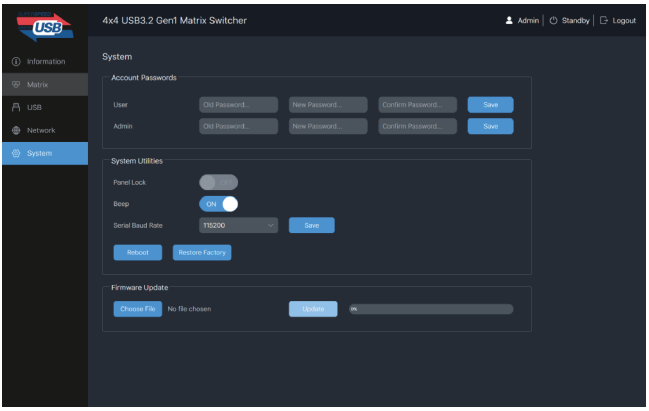


You can modify the IP Mode/IP Address/Gateway/Subnet Mask/Telnet Port/ Domain Name as required on the Network page. Click “Save” to save the settings, and then it will come into effect.

If the Mode is “DHCP”, it will search and be filled with the IP Address assigned by the router automatically. You can't modify it now.

If the Mode is “Static”, you can set manually the IP Address/Gateway/Subnet/Telnet Port as required.

■ System Page



You can do the following operations on the System page:

① **Account Passwords:** Enter the correct Old Password, New Password, and Confirm Password, and then click “Save”.

Note: Input rules for changing passwords:

(1) The password can’t be empty.

(2) New Password can’t be the same as Old Password.

(3) New Password and Confirm Password must be the same.

② **System Utilities:**

Panel Lock: Enable or disable the select buttons on the front panel.

Beep: Turn on or turn off the beep.

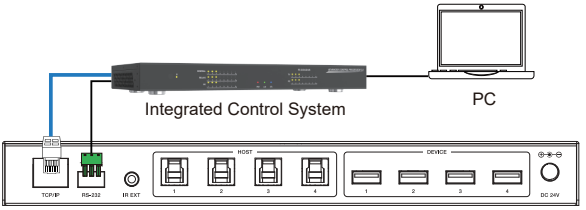
Serial Baud Rate: Set and save the baud rate: 4800/9600/19200/38400/115200/57600.

You can also reboot or restore factory via clicking the corresponding buttons.

③ **Firmware Update:** Support update for MCU and Web. Choose the update file first, and then click Update.

9. API Commands

The product also supports API commands control. Connect the RS-232 port of the matrix to a control system. The connection method is as follows.



Then, open a Serial Command tool on PC connected to the control system and send ASCII command to control the Matrix. The ASCII command list is shown below.

ASCII Command				
Serial port protocol. Baud rate: 115200 (default), Data bits: 8bit, Stop bits:1, Check bit: 0				
x,y,z, XXX are parameters				
Error Code describe: E00 -> unkown command, E01 -> parameter out of range				
Command Code	**Function Description**	**Example**	**Feedback**	**Default**
System Setting				
?	List all commands	?		
help	List all commands	help		
status	Get device current status	status	get the unit all status: power, beep, USB crosspoint, network status	
get model	Get device model	get model	4x4 USB 3.2 Gen 1 Matrix	
get version	Get firmware version	get version	mcu fw version: 1.00.00 web gui version: 1.00.00	
set power x	Power on/off the device(z=0~1)	set power x	power on system initializing... mcu fw version: 1.00.00 web gui version: 1.00.00 initialization finished!	power 1
get power	Get current power state	get power	power on /power off	

Command Code	Function Description	Example	Feedback	Default
System Setting				
set beep x	Enable/disable buzzer function,z=0~1(z=0 beep off, z=1 beep on)	set beep 0	beep on beep off	beep on
get beep	Get buzzer state	get beep	beep on / beep off	
set lock x	Lock/unlock front panel button,z=0~1(z=0 lock off,z=1 lock on)	set lock 0	panel button lock on panel button lock off	panel button lock off
get lock	Get panel button lock state	get lock	panel button lock on/off	
set baud rate x	Set RS232 baudrate x=1~6(1:115200, 2:57600, 3:38400, 4:19200, 5:9600, 6:4800)	set baud rate 1	baudrate:115200	baudrate: 115200
get baud rate	Get the serial port baud rate of rs02 module	get baud rate	baudrate:115200	
reboot	Reboot the device	reboot	reboot... system initializing... mcu fw version: 1.00.00 web gui version: 1.00.00 initialization finished!	
reset	Reset to factory defaults	reset	reset to factory defaults system initializing... mcu fw version: 1.00.00 web gui version: 1.00.00 initialization finished!	
USB Matrix Setting				
set device x in host y	Route usb device x to host y (x=1~4, y=1~4) x=1. device 1 x=2. device 2 x=3. device 3 x=4. device 4 y=1. host1 y=2. host2 y=3. host3 y=4. host4	set device 1 in host 1	set device 1 in host 1	device 1->host 1 device 2->host 1 device 3->host 1 device 4->host 1
get device x in host	Get device x selected host(x=1~4)	get device 1 in host	device 1 in host 3	
set save preset x	Save matrix state of all device and the host to preset z, z=1~8	set save preset 1	save to preset 2: device1 connect to host1 device2 connect to host1 device3 connect to host1 device4 connect to host1	no preset

Command Code	Function Description	Example	Feedback	Default
USB Matrix Setting				
set recall preset x	Call saved preset z scenarios, z=1~8	set recall preset 1	recall from preset 1: device1 connect to host1 device2 connect to host1 device3 connect to host1 device4 connect to host1	no preset
set clear preset x	Clear stored preset z scenarios, z=1~8	set clear preset 1	clear preset 1	no preset
get preset x	Get preset z information, z=1~8	get preset 1	preset 1: device 1->host 1 device 2->host 2 device 3->host 3 device 4->host 4	
Network Setting				
get ipconfig	Get the current ip configuration	get ipconfig	ip mode: static ip: 192.168.0.100 subnet mask: 255.255.255.0 gateway: 192.168.0.1 tcp/ip port=8000 telnet port=23 mac address: 00:1c:91:03:80:01	
get mac addr	Get network mac address	get mac addr	mac address: 00:1c:91:03:80:01	
set ip mode z	Set network ip mode to static ip or dhcp, z=0~1 (z=0 static, z=1 dhcp)	set ip mode 0	set ip mode:static. (please use "s net reboot!" command or repower device to apply new config!)	ip mode:dhcp
get ip mode	Get network ip mode	get ip mode	ip mode: static	
set ip addr xxx.xxx.xxx.xxx	Set network ip address	set ip addr 192.168.0.100	set ip address: 192.168.0.100 (please use "s net reboot!" command or repower device to apply new config!) dhcp on, device can't config static address, set dhcp off first.	ip address: 192.168.0.100
get ip addr	Get network ip address	get ip addr	ip address: 192.168.0.100	

Command Code	Function Description	Example	Feedback	Default
Network Setting				
set subnet xxx.xxx.xxx.xxx	Set network subnet mask	set subnet 255.255.255.0	set subnet mask: 255.255.255.0 (please use "s net reboot!" command or repower device to apply new config!) dhcp on, device can't config subnet mask, set dhcp off first.	subnet mask: 255.255.0.0
get subnet	Get network subnet mask	get subnet	subnet mask: 255.255.255.0	
set gateway xxx.xxx.xxx.xxx	Get network gateway	set gateway 192.168.0.1	set gateway: 192.168.0.1 (please use "s net reboot!" command or repower device to apply new config!) dhcp on, device can't config gateway, set dhcp off first.	gateway: 192.168.0.1
get gateway	Get network gateway	get gateway	gateway:192.168.0.1	
set tcp/ip port x	Get network tcp/ip port (x=1~65535)	set tcp/ip port 8000	set tcp/ip port:8000	tcp/ip port: 8000
get tcp/ip port	Get network tcp/ip port	get tcp/ip port	tcp/ip port:8000	
set telnet port x	Set network telnet port(x=1~65535)	set telnet port 23	set telnet port:23	telnet port:23
get telnet port	Get network telnet port	get telnet port	telnet port:23	
set net reboot	Reboot network modules	set net reboot	network reboot… ip mode: static ip: 192.168.0.100 subnet mask: 255.255.255.0 gateway: 192.168.0.1 tcp/ip port=8000 telnet port=23 mac address: 00:1c:91:03:80:01	

10. Application Example