User Manual

USB-SW21

2x1 USB 3.2 10G Switcher

Version: USB-SW21_2025V1.2

Preface

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

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till January 13, 2025. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

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 A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

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

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

SAFETY PRECAUTIONS

To ensure the best performance 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 good ventilation to avoid damage caused by overheating.
- 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 use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Table of Contents

1. Product Introduction

The USB-SW21 from TiGHT AV is a professional USB Host switcher that allows you to connect up to 4 USB 3.2 Gen1/Gen2 devices. Users can switch these devices between two different hosts using either auto-switching or manual switching mode. For instance, in auto-switching mode, when a laptop is plugged in, it automatically takes precedence. Once the laptop is unplugged, the system seamlessly switches back to the conference room's computer.

This device is equipped with three USB Type A ports and one Type C port, perfect for connecting various USB peripherals like cameras, microphones, KVMs, and USB flash drives. The selectable USB maximum data rates of 5G or 10G can help address any issues related to cable lengths or other system limitations.

Furthermore, it supports remote control through IP, RS-232, or GPI. It also features an WEB UI for configuration and control

With its robust design and POE+ compatibility, the USB-SW21 is easy to install in any environment.

1.1 Key Features

- 2x1 USB 3.2 Gen1/Gen2 host switcher, backwards compatible with all prior USB versions
- Plug-And-Play, no drivers needs to be installed
- Two USB 3.2 Gen2 10G Type-C Host ports
- Four USB Device ports USB 3.2 Gen1/Gen2 hub with 1xType-C and 3xType-A interfaces
- USB Device ports can monitor power consumption and be turned on off per port
- Supports Auto-switching or Manual Switching mode
- Selectable maximum USB data rate, 5G or 10G support
- Supports PoE+ powering or via external DC 12V adapter (included)

- WEB UI for configuration and control
- Open API for TCP/IP and RS232 control
- GPI supporting Pulse Mode, Level Mode and Contact Closure Mode.

1.2 Package List

- 1x USB-SW21
- 4x Rubber feet
- 1x Mounting Kit (Attached by default)
- 1x 4-pin terminal block
- 1x RS232 cable (3-pin to DB9)
- 1x Power adapter (DC 12V2A) with EU&UK&US converter
- 1x User Manual

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

1.3 Customer Service

TiGHT AV provide a limited warranty for the product within **five years** counting from date of purchase (The purchase invoice shall prevail).
For more information see TiGHT AV general Warranty Statement at https://tightav.com/warranty-statement or just scan the QR-code below.

SCAN ME

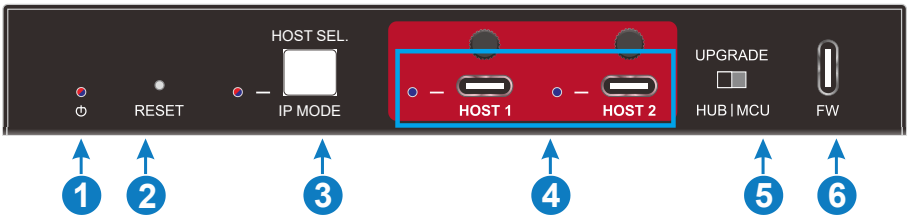
2. Technical Specification

Host	
Host Ports	(2) Female USB Type C
USB Specification	USB 3.2 Gen 1/2, USB 3.1 Gen 1/2, USB 3.0, USB 2.0, USB1.1
Max Data rate	10Gbps
Devices	
Device Ports	(3) Female USB Type A (1) Female USB Type C
Devices power	Shared 5V@2.6A (13W)
USB Specification	USB 3.2 Gen 1/2, USB 3.1 Gen 1/2, USB 3.0, USB 2.0, USB1.1
Max Data rate	10Gbps
Control	
Control	(1) RS232 (1) GPIO (1) Button
Control Connector	(1) 4-pin terminal block (1) White button
TCP/IP(POE+)	(1) RJ45 port, 10/100/1000 Base-T auto-negotiation. IEEE 802.3at (POE+) support
General	
Model Name	USB-SW21
Power	PoE+/DC12V 2A optional
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10%-90%
Power Consumption	18.5W (Max)
Dimension (WxHxD)	150mm x 21.7mm x 110mm
Net Weight	440g
Shipping Dimension (WxHxD)	300mm x 60mm x 145mm

Shipping Weight	910g
Compliance	FCC, CE
Environmental	RoHS, REACH, WEEE

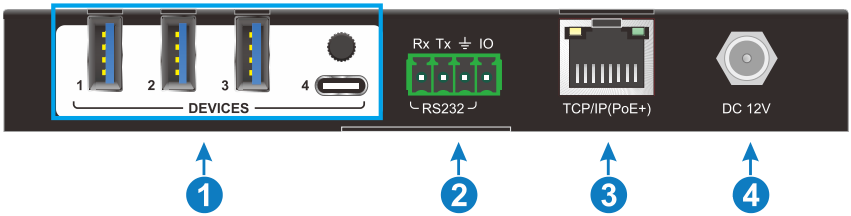
3. Panel Description

3.1 Front Panel



1. **Power Indicator:** The LED illuminates blue when power is supplied, illuminates red when standby and blinks when the device's shared power exceeds the acceptable limit.
2. **Reset Button:** Press and hold 5s for factory reset.
3. **HOST SEL. / IP MODE:** Blue/Red LED indicator along with a white button for selecting the host switch mode or IP mode. For further details, please consult section 5, Host-Sel./IP Mode.
4. **HOST:** Two host indicators illuminate in blue when switching to the current host; otherwise, they remain off. There are two USB 3.2 Gen 2 Type-C ports for connecting to host devices.
5. **Upgrade:** One dip switch for selecting upgrade mode, HUB or MCU.
6. **FW:** One USB Type-C port for firmware upgrade.

3.2 Rear Panel



1. **Devices:** Three USB Type-A ports and one USB Type-C port for connecting USB peripherals, such as cameras, microphones or USB memory sticks.
2. **RS232 and GPIO:** One 4-pin terminal block for RS232 or GPIO control.
3. **TCP/IP(PoE+)**: RJ45 port to TCP/IP control and support IEEE 802.3at-2009 PoE+ to power the USB-SW21.
4. **DC 12V:** Connects with included DC12V 2A power adapter.

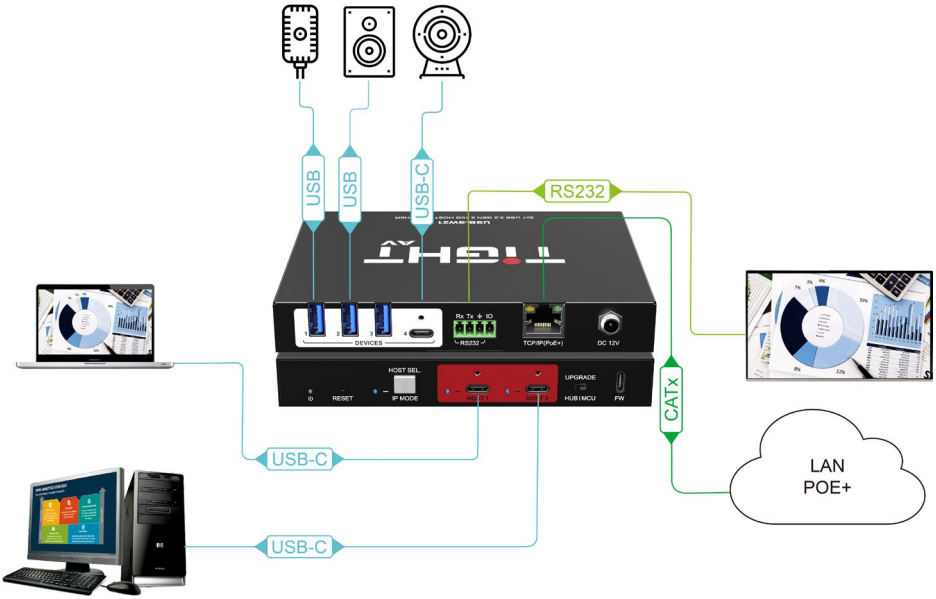
4. System Connection

4.1 Usage Precaution

- Ensure that all components and accessories are included prior to installation.
- The installation should take place in a clean environment with appropriate temperature and humidity levels.
- Verify that all power switches, plugs, sockets, and power cords are properly insulated and safe to use.
- Connect all devices before turning on the power

4.2 System Diagram Example

The following diagram illustrates an example of connections that can be utilized using the USB-SW21.



5. Host-Sel. / IP Mode

5.1 Host-Sel.

Host-Selection Mode: To enable or disable host auto switching mode, press and hold button for 3s.

- Auto Switching mode, LED will turn static blue.
    - 1. Detecting a new input host, the unit will switch to this new host automatically.
    - 2. Removing the current host, the switcher will switch to the next active input.
- Manual Switching mode, LED will be off
    - Toggle host by pressing button once, web-ui control or by sending API command.

Note: In Auto Switching Mode a manual switch will override auto switching.

5.2 IP Mode

IP mode: Hold and press the button for 10s to enter IP Mode.

- IP Mode LED:
    - DHCP: LED is static red.
    - Static IP: The LED flashes red.
- Operation:
    - Press button again to switch between DHCP/Static mode.
    - Press and hold button 3s to exit IP Mode.

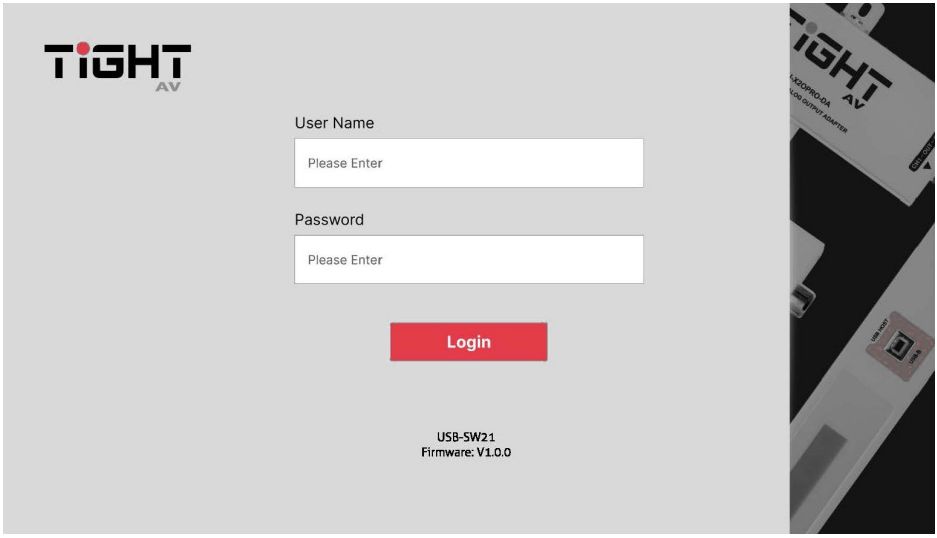
6. Web-UI Operation

The host switcher features a Web UI for configuration and control. configurated and controlled via a web-based GUI. To access it, open a web browser and enter the unit's IP address. USB-SW21 is by default set to DHCP IP addressing. See section 5.2 IP Mode if static IP address is needed. In static IP mode the unit will have below default IP settings:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

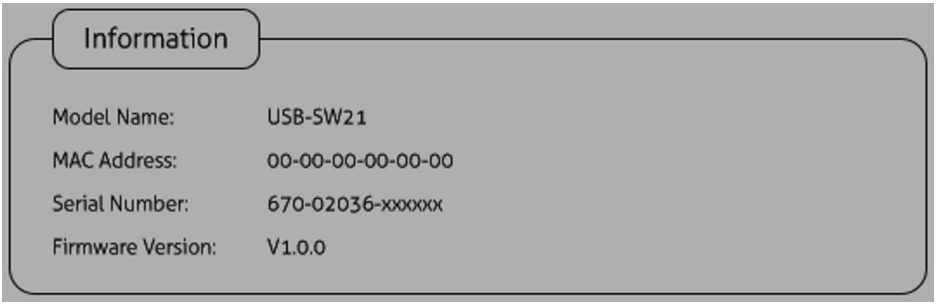
The default username is "admin," and the default password is also "admin." It is highly advisable to change the default password to enhance security.



6.1 Start

6.1.1 Information

- Lists the unit essential information including device name, model name, IP address, MAC address, host name, unique serial number and firmware version.

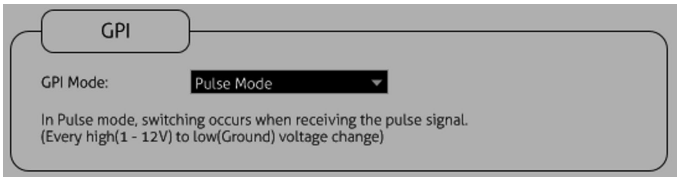


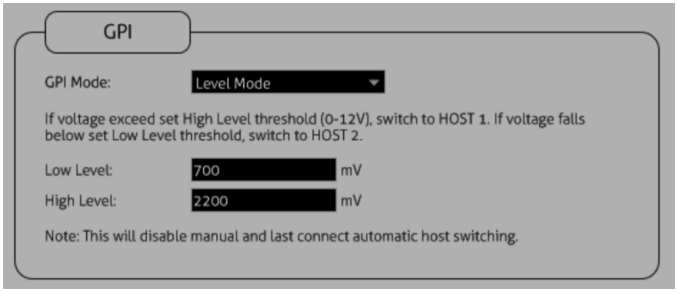
6.1.2 Host Switch

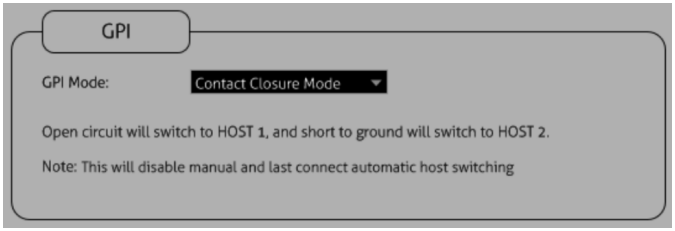
- **Auto Switching:** Enable or disable host auto switching mode.
- **Manual Host Switch:** Manually switch between Host 1 and Host 2.

6.2 Control

6.2.1 GPI





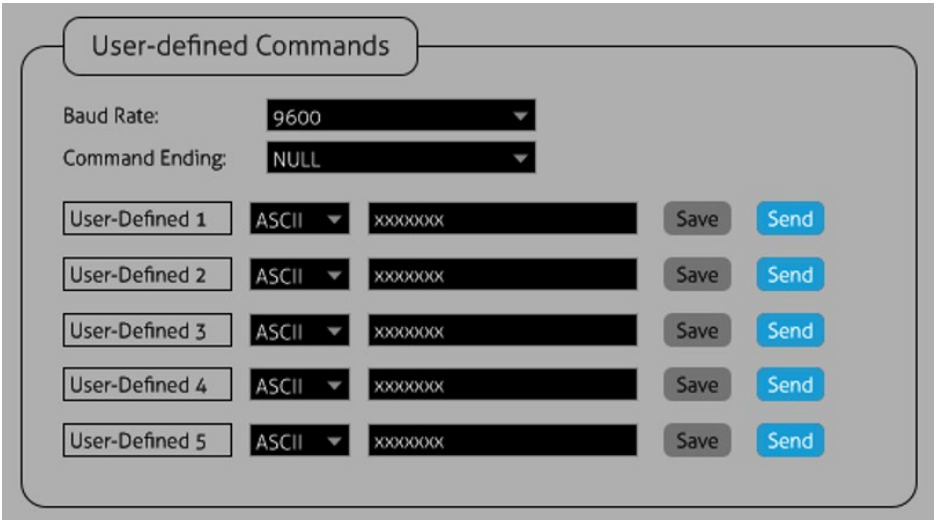


The GPI has three modes used for host switching: Pulse Mode, Level Mode, Contact Closure Mode.

- **Pulse Mode:** Host switching occurs when receiving a pulse signal. For every high (1–12V) to low (Ground) voltage change.
- **Level Mode:** If voltage exceed set High Level threshold (0-12V), switch to HOST 1. If voltage falls below set Low Level threshold, switch to HOST 2.
- **Contact Closure Mode:** Open circuit will switch to HOST 1, and short to ground will switch to HOST 2.

Note: Level Mode and Contact Closure Mode will disable both manual switching and automatic host switching.

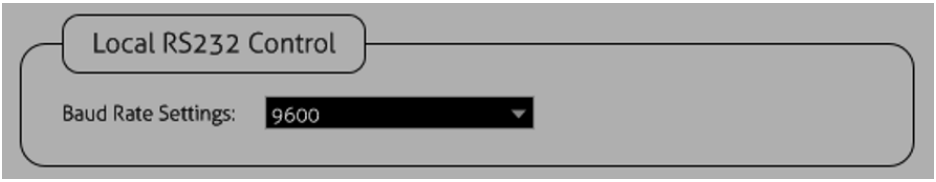
6.2.2 User-defined Commands



User-defined Commands are stored commands that can be triggered from WEB-UI or API commands to control a third-party device on the local RS232 port of the unit.

- Baud Rate: 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- Command Ending: NULL, CR, LF or CR+LF can be chosen.
- Format: ASCII and HEX.
- User-defined Command: Type the control command in this box for the third-party device which is connected to the RS232 port of the unit.

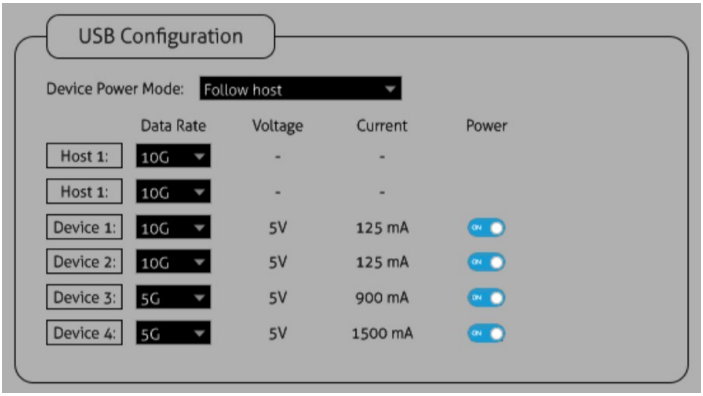
6.2.3 Local RS232 Port



Set the RS232 port baud rate when used as local control of the USB-SW21.

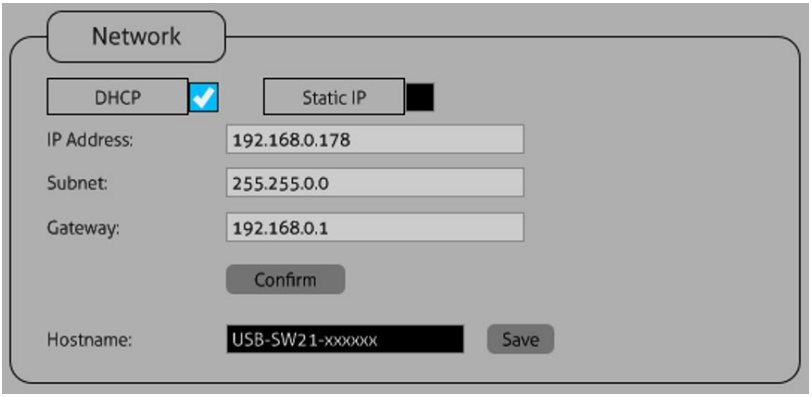
6.3 Configuration

6.3.1 USB Configuration



- **Device Power Mode:**
    - Follow host: A connected Host device is required to provide power on the USB device ports.
    - Always on: The USB device ports are always providing power.
- **Data Rate:** Set maximum data rate supported by the ports 10Gbps or 5Gbps.. Limiting data rate to 5Gbps can sometimes help to overcome poor cable quality or length limitations.
- Shows live voltage and current details for each device port.
- Manually enable or disable power supply for each device port individually.

6.3.2 Network



Network configuration/information:

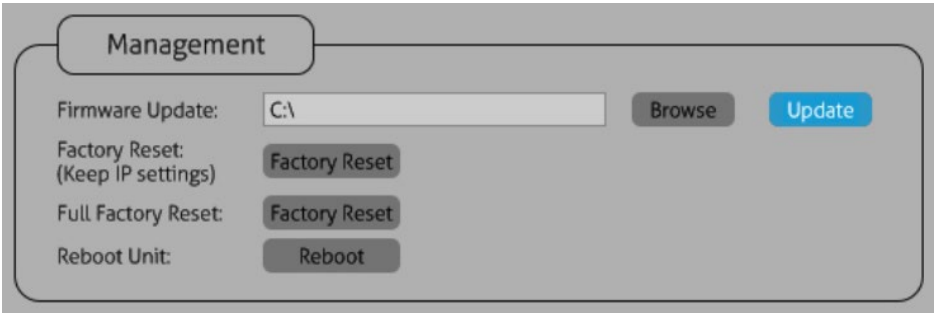
- IP mode selections: DHCP or Static IP.
- IP Address, Subnet and Gateway configuration/information.
- Hostname: Supports user-defined Hostname for easy identification on the network.

6.4 Security

6.4.1 Credentials

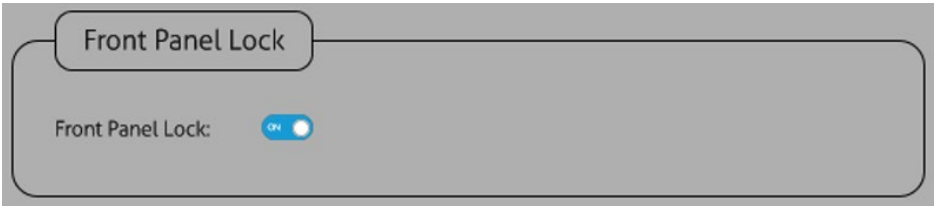
Credentials: Modify the GUI login user name and password.

6.4.2 Management



Management: For Firmware Update, Factory Reset (Keep IP settings), Full Factory Reset and Reboot unit operation.

6.4.3 Front Panel Lock



Front panel lock: Locks the front panel buttons.

7. Device Control

7.1 RS232

Establish a connection between the RS232 port and a control device, such as a PC or control system using an RS232 cable. A comprehensive list of commands is available for device control. To send these commands from a PC, it is necessary to install RS232 control software, such as Docklight. Once the RS232 control software is installed, ensure that the COM port parameters, including baud rate, data bits, stop bits, and parity bits, are configured accurately.

Communication protocol: RS232 communication protocol default parameters.

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

7.2 TCP/IP Control

The device can be controlled over a network connection using TCP/IP protocol. Default TCP/IP communication protocol parameters:

Default IP-Address: 192.168.0.178

Default Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

TCP Port Number: 4001

7.3 API Commands

API definitions:

Command ending symbol <CR>

Feedback ending with symbols <CR><LF>

Delimiter symbol "!"

Please type the command carefully due to case sensitivity.

Command	Function	Response Example
set,x	Host selection. x = 1,2 means host 1 or host 2.	set,1
		set,1 ok
getset	Query the host selection.	getset
		set,1!
autoswitch,z	Set the auto switch mode on or off.	autoswitch,off
		autoswitch,off ok
getautoswitch	Query the auto switch mode.	getautoswitch
		autoswitch,on!
poweron	Exit standby mode.	poweron
		poweron ok
poweroff	Enter standby mode.	poweroff
		poweroff ok

getstatus	Query system status.	getstatus USB-SW21! 670-02036-0100060C66F8! firmware,V1.0.0! ……
getfirmware	Query firmware version.	getfirmware firmware,V1.0.0!
getsn	Query the unit serial number.	getsn 670-020360C66F8!
reset	Factory reset the device but Keep IP settings.	reset reset ok USB-SW21 V1.0.0 ip,192.168.0.100
resetfull	Factory reset the device including IP settings.	resetfull resetfull ok USB-SW21 V1.0.0 ip,192.168.0.100
reboot	Reboot the device.	reboot reboot ok
fplock,z	Enable or disable front panel lock. z=on/off	fplock,on fplock,on ok
getfplock	Query front panel lock status.	getfplock fplock,on!
setip,zz	Set IP address "zz" of the device. Note: IP mode will be set to static.	setip,192.168.0.178 setip,192.168.0.178 ok
getip	Query IP Address of the device.	getip setip,192.168.0.178!
setipstatic	Set IP mode to Static.	setipstatic ip,192.168.0.178 setipstatic ok

setipdhcp	Set IP mode to DHCP.	setipdhcp setipdhcp ok ip,192.168.0.100
getipmode	Query IP mode of the device.	getipmode setipdhcp
setsubnet,zz	Set network subnet mask "zz" of the device.	setsubnet,255.255.255.0 ip,192.168.0.178 setsubnet,255.255.255.0 ok
getsubnet	Query network subnet mask of the device.	getsubnet setsubnet,255.255.255.0!
setgateway,zz	Set network default gateway "zz" of the device.	setgateway,192.168.0.1 ip,192.168.0.178 setgateway,192.168.0.1 ok
getgateway	Query network default gateway of the device.	getgateway setgateway,192.168.0.1!
getmac	Query device mac address.	getmac mac,40-D6-3C-3F-F4-84!
sethostname,zz	Set the network hostname. zz = hostname	sethostname,sw-21 sethostname,sw-21 ok
gethostname	Query the network hostname.	gethostname sethostname,sw-21!
setdevicespeed,y:z	Sets the USB speed for the device y=0 or 1~4 y=0 means all device ports z = 0,1 0 = USB 3.2 Gen 1 (5 Gbps) 1= USB 3.2 Gen 2 (10 Gbps default)	setdevicespeed,1:1 setdevicespeed,1:1 ok
getdevicespeed	Query the USB device port speed.	getdevicespeed setdevice1speed,0! setdevice2speed,0! setdevice3speed,0! setdevice4speed,0!

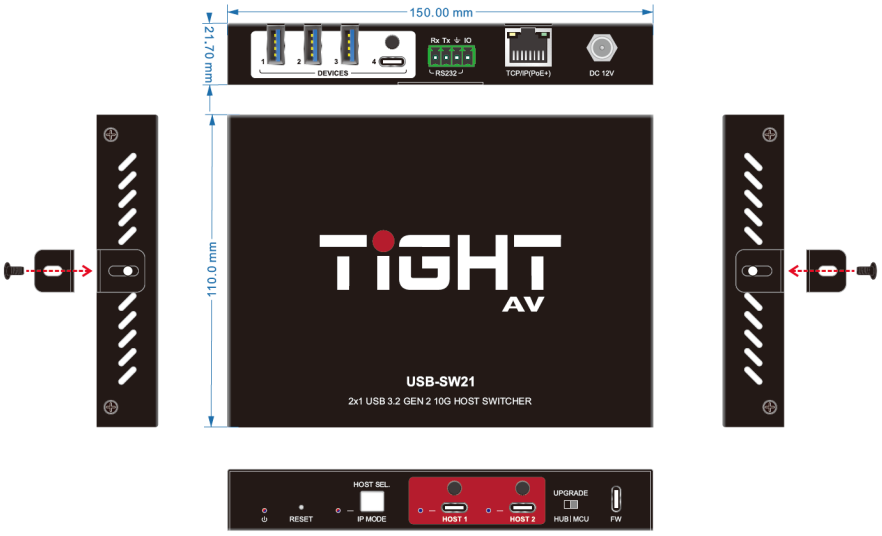
sethostspeed,y:z	Sets the USB peed for the host y=0 or 1~2 y=0 means all host ports z = 0,1 0 = USB 3.2 Gen 1 (5 Gbps) 1= USB 3.2 Gen 2 (10Gbps default)	sethostspeed,2:1 sethostspeed,2:1 ok
gethostspeed	Query the USB host port speed.	gethostspeed sethostspeed,1!
devicepowermode,z	Set the device ports power mode. z=0,1 0 - Follow Host 1 - Always On	devicepowermode,1 devicepowermode,1 ok
getdevicepowermode	Query device ports power mode.	getdevicepowermode devicepowermode,0!
devicepower,y:z	Set device power per device port. y=0 ~ 4, 0 - all device ports. z=on, off	devicepower,1:on devicepower,1:on ok
getdevicecurrent,y	Query device power per port. y=0 ~ 4, 0 - all device ports.	getdevicecurrent,0 device1 current:4mA voltage:5.1V! device2 current:194mA voltage:5.1V! device3 current:73mA voltage:5.1V! device4 current:1mA voltage:5.1V!
setgpimode,z	Set GPI mode. z=0,1,2 0 - pulse mode 1 - level mode 2 - contact closure mode	setgpimode,2 setgpimode,2 ok
getgpimode	Query GPI mode.	getgpimode setgpimode,0!

setgpilevellow,zzz	Set the low levels voltage in the level mode. zzz unit is mV. zzz = 0~12000	setgpilevellow,700 setgpilevellow,700 ok
setgpilevelhigh,zzz	Set the high levels voltage in the level mode. zzz unit is mV. zzz = 0~12000	setgpilevelhigh,2200 setgpilevelhigh,2200 ok
getgpilevel	Query GPI level mode settings.	getgpilevel setgpilevellow,700! setgpilevelhigh,2200!
setbaudrate,z	Set local serial port baud rate. z = 1~7 1 = 2400, 2 = 4800, 3 = 9600, 4 = 19200, 5 = 38400, 6 = 57600 7 = 115200	setbaudrate,7 setbaudrate,7 ok
getbaudrate	Query baud rate settings.	getbaudrate setbaudrate,7!
setusercommandascii,y:zzz	Set the user defined ascii commands. y=1~3 means user defined command number. zzz = asill command	setusercommandascii,1:poweron setusercommandascii,1:poweron ok
setusercommandhex,y:zzz	Set the user defined hex commands. y=1~3 means user defined command number. zzz = hex command	setusercommandhex,1:75736263 setusercommandhex,1:75736263 ok
setusercommandbaudrate,z	Set user-defined commands baud rate z = 1~7 1 = 2400, 2 = 4800, 3 = 9600, 4 = 19200, 5 = 38400, 6 = 57600 7 = 115200	setusercommandbaudrate,7 setusercommandbaudrate,7 ok

getusercommandbaudrate	Query current user-defined commands baud rate.	getusercommandbaudrate setusercommandbaudrate,7!
setusercommandend,z	Set user-defined commands ending z = 0~3 0= NULL, 1 = CR 2 = LF, 3 = CR + LF	setusercommandend,1 setusercommandend,1 ok
getusercommandend	Query current user-defined commands ending z = 0~3 0= NULL, 1 = CR 2 = LF, 3 = CR + LF	getusercommandend setusercommandend,1!
sendusercommand,z	Send out the user-defiend command 1-3 with configured baud rate and ending z = 1~3 1 = User-defined Command 1 2 = User-defined Command 2 3 = User-defined Command 3	sendusercommand,3 sendusercomand,3 ok
sendascii,x:zzz	Send the ascii command zzz on the local RS232 port using the specified baud rate x. 1 = 2400, 2 = 4800, 3 = 9600 4 = 19200, 5 = 38400, 6 = 57600, 7 = 115200	sendascii,3:POWON<CR> POWON

sendhex,x:zzzz	Send the hex command zzz on the local RS232 port using the specified baud rate x. x = 1 - 7 1 = 2400, 2 = 4800, 3 = 9600, 4 = 19200, 5 = 38400, 6 = 57600 7 = 115200	sendhex,3:aa bb AA BB

8. Drawings and Dimensions



9. Environment and recycling information

9.1 Disposal of electric and electronic devices EC Directive 2012/19/EU

This product is not to be treated as regular household waste but must be returned to a collection point for recycling electric and electronic devices. Further information is available from your municipality, your municipality's waste disposal services, or the retailer where you purchased your product.

9.2 Packaging recycling information

20 PAP	SCATOLA CORRUGATED PAPER BOX	RACCOLTA CARTA MIXED PAPER AND CARD
22 PAP	BUSTA PER ACCESSORI ACCESSORIES BAG	RACCOLTA CARTA MIXED PAPER AND CARD
22 PAP	PIATTINA ANIMATA CABLE TIE	RACCOLTA CARTA MIXED PAPER AND CARD

Verifica le disposizioni del tuo comune
Check the regulations of your municipality

Note: This manual is recycled as paper (mixed paper and card).