INOGENI INOTOGGLE Toggle USB 3.0 Switcher User Guide

Toggle USB 3.0 Switcher
Version 1.7
User Guide

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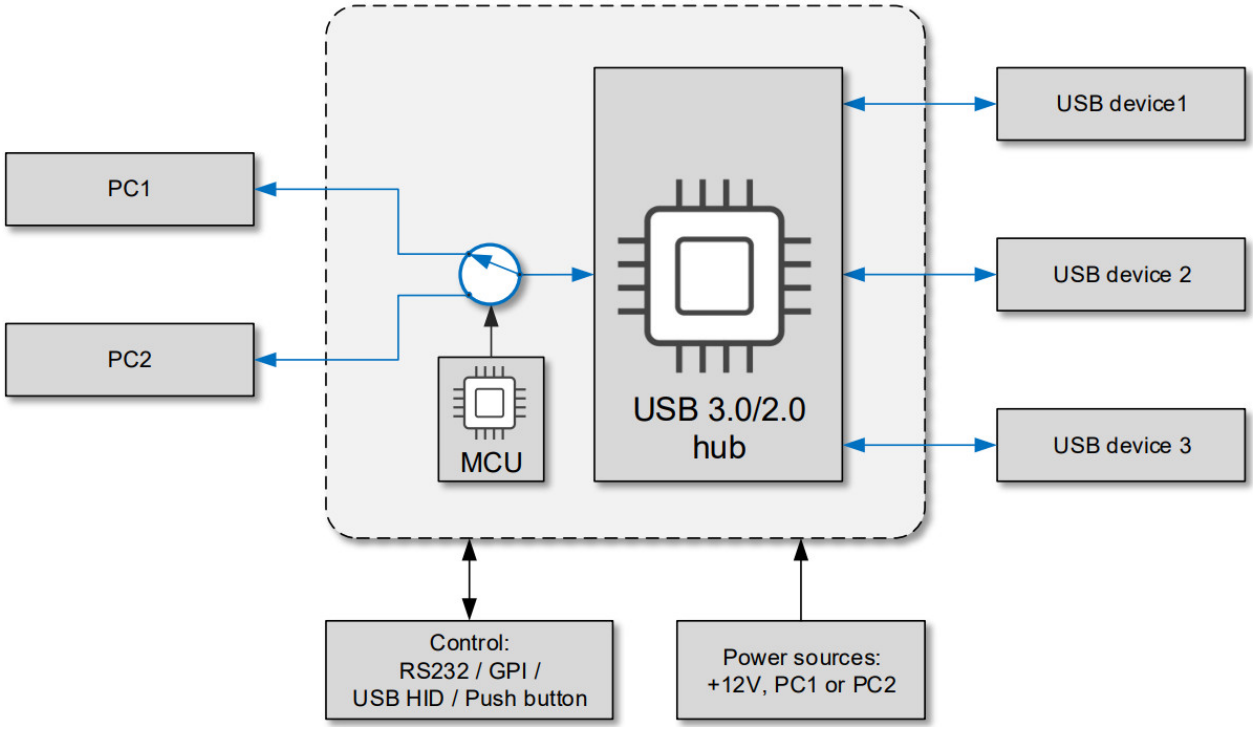
TYPICAL APPLICATION

Here is a typical connection diagram used for the TOGGLE device in a videoconferencing setup.

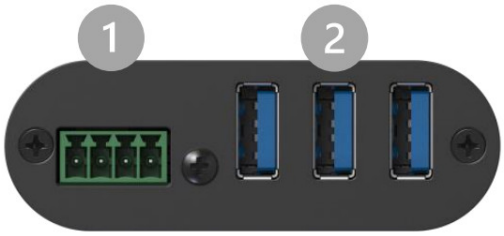
BLOCK DIAGRAM

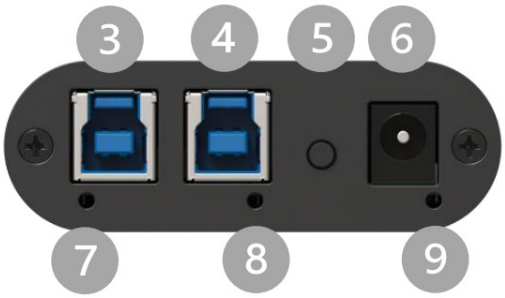
Here is a simple block diagram of the TOGGLE unit.



DEVICE INTERFACES

Here are the device's interfaces.





1. RS232 and GPIN interfaces
2. 3 x USB-A ports for devices
3. PC #1 USB-B port
4. PC #2 USB-B port
5. Push-button
6. +12V power input
7. PC #1 led indicator
8. PC #2 led indicator
9. Power indicator

LEDS BEHAVIOR

Here is the leds behavior:

PCx LEDs	
OFF	No PC connected.
SOLID	PC is currently selected.
ONE HOST BLINK	PC detected but not currently selected.
BOTH HOST BLINK	The user pushed the button, but the button is locked. Please see the SCLK command.
Power LED	
OFF	No power is present on board.
SOLID	Power detected.
BLINK	Over-current detected on USB devices.
LED Intensity	FULL intensity if power is provided through an external power supply.MEDIUM intensity if power is provided through USB connections (PC1 or PC2).

 **IMPORTANT:** If all leds are blinking in sync, this means the unit is in the upgrade process. This happens only while you upgrade the unit.

OPERATING MODES

There are two modes supported by the device. They will be explained here.

Automatic

This is the default mode. This mode will switch automatically to the last PC[1] connected. If the current PC is disconnected, the device will switch back to the other PC if it is detected. Push-button action and remote control are also supported.

Manual

The manual mode will enable you to force a specific PC selection. Push-button action and remote control are also supported. It is possible to turn OFF both PCs in manual mode.

These modes can be set through our INOGENI Control App or through the RS232 interface. The mode will be saved onboard the device.

[1]PC: any host computer or laptop.

SPECIFICATIONS

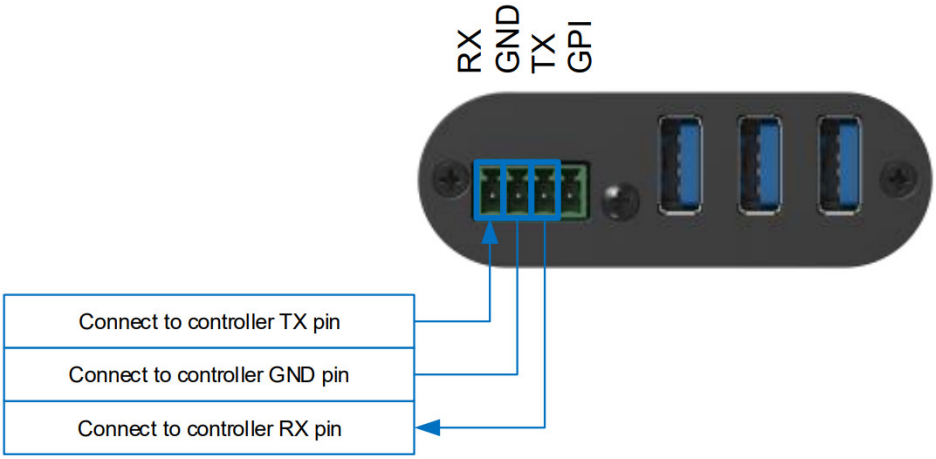
Here is the complete specification.

Physical details	
Dimensions (W x L x H)	70 x 83 x 23 mm
Power supply	12V
Power consumption	Up to 1.2A
Weight	113 g
Package content	2 x USB 3.0 Type-B to Type-A cables. 1 x terminal block connection. 1 x 12V power supply.
Operating temperature	0° to 45° C (32° to 113° F)
Storage temperature	-40° to 105° C (-40° to 221° F)
Origin	Canada
Warranty	2 years
General specifications	
USB host ports	2 x Type-B USB 3.0/2.0 compatible.
USB device ports	3 x Type-A USB 3.0/2.0 compatible.
Serial interface	Baud rate: 9600 For control purposes. See the Serial communication protocol section for more details.
Push-button	Physical switch to select the host.
GPIN	Contact-closure control. Controlled by open-drain IO (short to ground) or driven IO. Supported voltage range: 0V to +12V max. The voltage threshold is 0.7V for HW revision 2.0. The voltage threshold is 2.3V for HW revision 3.0+[2]
Device current limit	1.8A shared current limit for all 3 x USB device ports. You can monitor current consumption through RS232 and our Control App.
Software	
Upgrade	Field upgradable through our INOGENI Control App.
Control	Automatic, manual, or remote control. The current configuration is saved onboard.

[2]Please use the Control App from INOGENI to identify the hardware revision of your product.

SERIAL COMMUNICATION PROTOCOL

Here is the complete list of commands provided through the serial connection. The pinout is indicated on the enclosure.



Baud rate: 9600 // Data bits: 8 // Stop bits: 1 // Parity: None // Flow control: None

Commands	Arguments	Return	Function description
FW	NA	“FW_VER: X.Y” where X = MAJOR and Y = MINOR version .	Get a firmware version.
SLCK	0,1	NA	Set/unset button LOCK
GLCK	NA	0,1	Get button LOCK status.
SH	0,1,2	NA	Select PC. 0=OFF 1=PC1 2=PC2
GH	NA	0,1,2	Get PC selected. 0=OFF 1=PC1 2=PC2
GCAUSE	NA	“HOST_OFF“ “HOST_CHG“ “BTN“ “CMD“	Get last PC switching cause: – HOST_OFF: No inputs selected. The PC selection process is changing between PC1 and PC2 or both hosts are OFF. HOST_CHG: PC1 or PC2 appeared/disappeared in mode AUTO; – BTN: Button has been used to change PC selection. – CMD: RS232 command has been used to change PC selection.
GHV	1,2	“X.YZV“ Where X = units value YZ = decimal value	Get PCx voltage.
GDI	1,2,3	“X.YZA“ Where X = units value YZ = decimal value	Get device X current.
SGMOD	0,1	NA	Set GPIN mode: (pulse =’0’, level = ‘1’)
GGMOD	NA	0,1	Get GPIN mode (pulse =’0’, level = ‘1’)

GHPW	1,2,3	0,1	Get HUB power status. If report ‘0’, then the HUB had turned OFF t he specified USB port (overcurrent).
SAVE	NA	NA	Save settings.
SEV	0,1	NA	Set/clear events (prints).
SM	0,1	NA	Set/clear manual mode. (auto=’0’, manual=’1’)
GM	NA	0,1	Get manual mode status.
DEF	NA	NA	Force factory default settings
RST	NA	NA	Reset MCU.
H	NA	List of all command s	Get user help.

You need to add a carriage return character “\r” at the end of the command string.
All commands without return values will append 2 possible answers: “ACK\n\r” or “NACK\n\r”.
All commands with return values will return the following pattern:

- If command is recognized: “[value]\n\rACK\n\r”
- If a command is not recognized: “NACK\n\r”

NOTE: The user needs to put a space character between the command name and argument. For example, when the user wants to choose HOST#2, you need to send “SH 2\r” to the device. Please note the space character.

GPIN MODE

With the introduction of firmware 1.1+, there are two (2x) GPIN modes: pulse mode and level mode.

- The GPIN pulse mode is the factory default. Each transition from HIGH to LOW on the GPIN pin will force a PC change. See the following picture for the explanation of the mode.

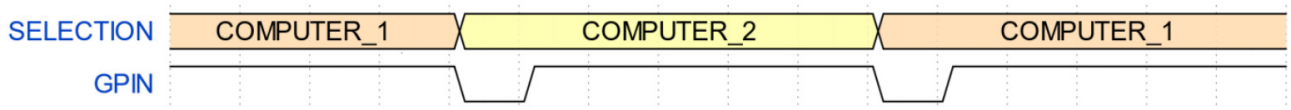


Figure 1 : GPIN Pulse Mode

- The GPIN level mode uses a level “0” (short to ground) and “1” (open or voltage higher than a threshold) to select a specific PC.

  o A level “0” or short to ground: PC2 is selected.

  o A level “1” or open: PC1 is selected.

IMPORTANT NOTES ABOUT GPIN

- It is recommended to set the Toggle in manual mode with the UART command “sm” when using the GPIN (especially with level mode). If the Toggle is used in auto mode, any changes on the PCx side will affect the PC selected even if the GPIN level mode is used.
- It is also recommended to lock the button with the UART command “slck” when the GPIN is used in level mode.
- For Toggle with a hardware revision of 2.0, you need to connect the external power supply to use the GPIN. The Control App software from INOGENI will report the exact hardware revision.

SETTINGS

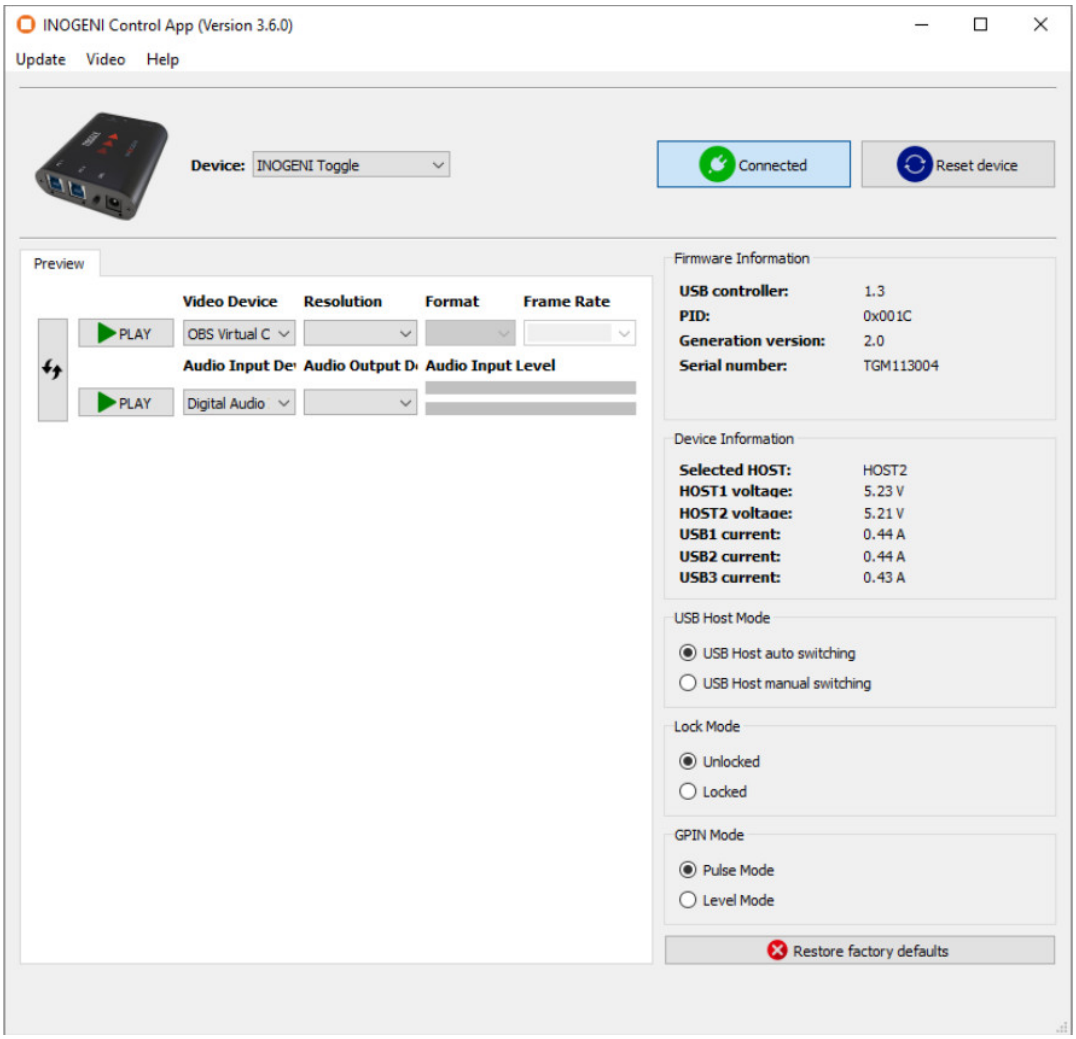
Some settings can be saved with the “SAVE” command. These settings are:

- Presence or absence of events on serial ports. Events are used for diagnostics. An event returned by the unit always starts with the string “EVT:” The “SEV” serial command is used to enable/disable the events. This command also automatically saves this setting inside the device.
- Manual or automatic mode for PC selection. The “SM” command is used to switch between manual and automatic modes. This command also automatically saves this setting inside the device.
- If manual mode is selected and the GPIN level mode is disabled: the specific PC selected is also saved. The “SH” command is used to select between PC1, PC2, or OFF. This command also automatically saves this setting inside the device.
- If the button is locked or not. The “SLCK” command is used to select between these modes. *This command also automatically saves this setting inside the device with firmware 1.3+.
- If the GPIN level mode is selected or not. The command “SGMOD” is used to select between these modes. *This command also automatically saves this setting inside the device with firmware 1.3+.
- The “DEF” command restores the default settings of the device. It will take effect immediately. The factory default settings are:
  1) No events.
  2) Automatic mode for PCx selection.
  3) GPIN_LEVEL disabled.
  4) Button is unlocked.
- The user can change settings with both the serial port commands and with the ControlApp (see next section).

INOGENI CONTROL APP

You can use our Control App to monitor firmware information, and upgrade and configure your unit.

 **NOTE:** You need to use the USB-B to USB-A cable provided with the box for the Control App to detect the unit.



SUPPORT

Engineered by video professionals, for video professionals, it is your most compatible USB 3.0 device. INOGENI expertise at your fingertips:

- Expert Technical Support team at support@inogeni.com for immediate help or if you have any technical questions about our products.
- Extensive Knowledge Base to learn from other customers' experiences.

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Documents / Resources

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