Manuals+ — User Manuals Simplified.

INOGENI Toggle Rooms Xt User Guide

Contents

INOGENI Toggle Rooms Xt

USER GUIDE

VERSION HISTORY

- Version – 1.0
- Date – October 11, 2024
- Description – First release. Preliminary version.

TYPICAL APPLICATIONS

Here is a typical connection diagram used for the TOGGLE ROOMS device in a videoconferencing setup. ROOM PC MODE WITH BYOD CONTENT SHARING
In this mode, only the Room PC USB and HDMI connections are routed to the main USB and HDMI peripherals.

The Room PC is the system that is currently selected to the main USB and HDMI peripherals. However, if the user would like to send HDMI content from the laptop's USB-C or HDMI connection to the Room PC, it is possible to do so with the HDMI SHARE output connection.

BYOM (BRING YOUR OWN MEETING)

In this setup, the laptop is the system that is currently selected to the main USB and HDMI peripherals.

BLOCK DIAGRAM

Here is a simple block diagram to better understand the usage of the product.
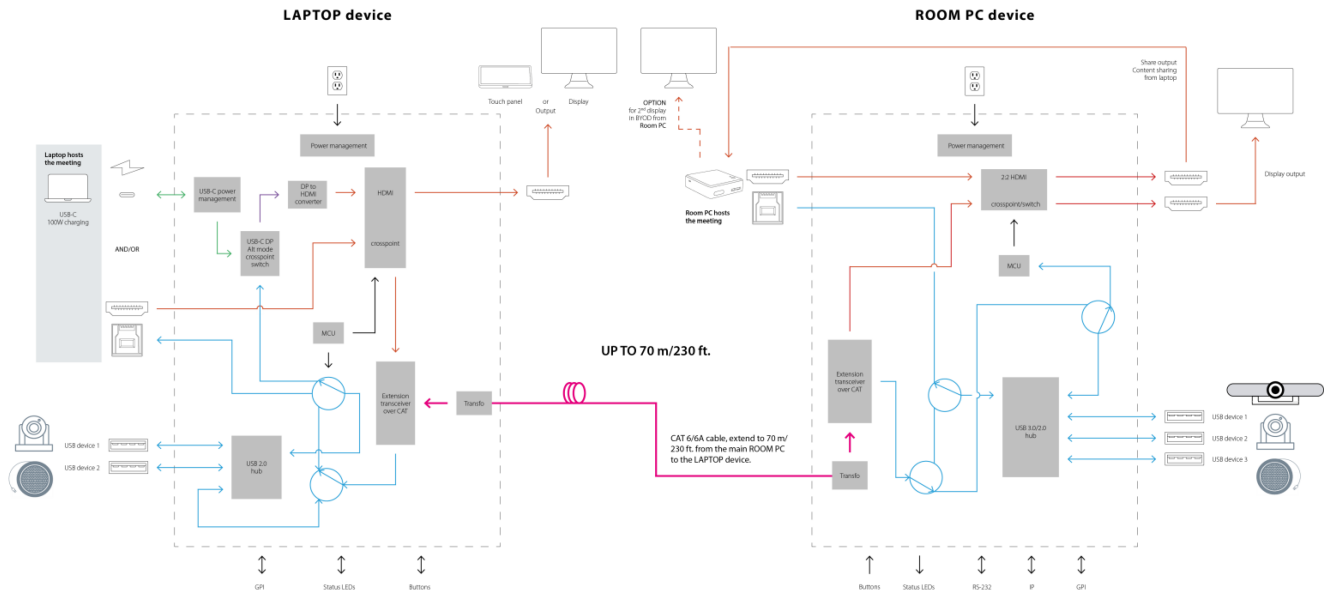
Figure 1: Basic block diagram when RoomPC and content sharing mode is activated.

CONNECTIVITY DIAGRAM

Here is a simple connectivity diagram showing

NEW TOGGLE ROOMS XT

USB/HDMI VIDEOCONFERENCE HOST SWITCHER
4K BYOD/BYOM for large room: 3 host switcher for USB/HDMI devices with an extension
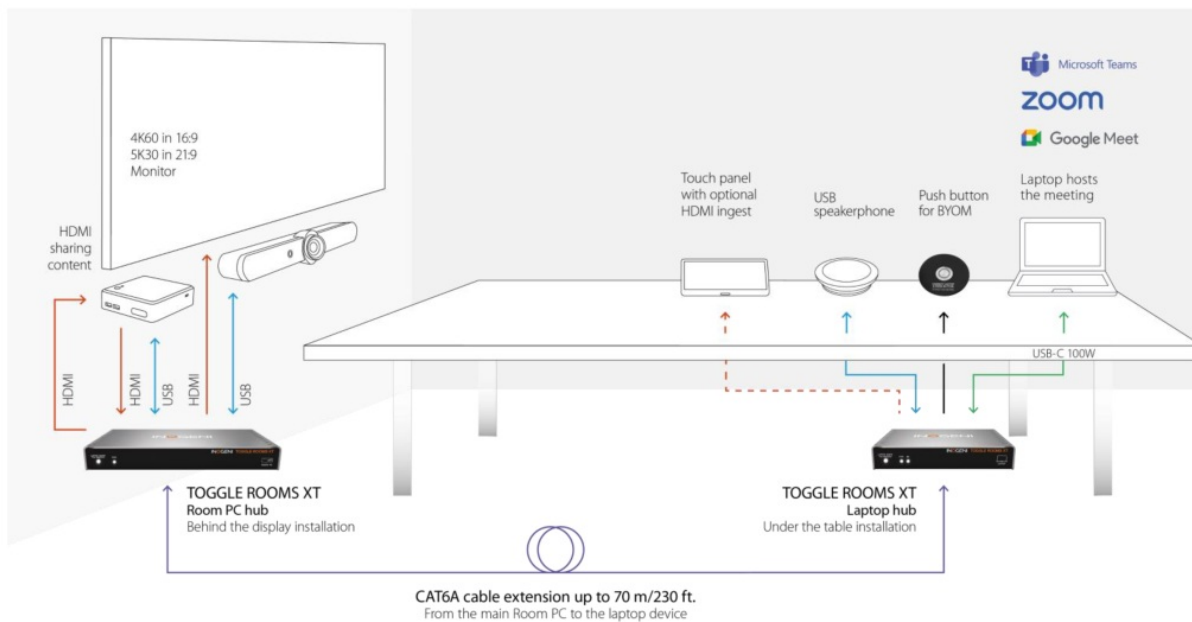
DEVICE INTERFACES

Here are the devices interfaces

LAPTOP HUB

ROOMPC HUB

Items		
LAPTOP HUB	**1**	LAPTOP HOST THE MEETING button. This button will connect HDMI and USB peripherals to the laptop connection for BYOM.
	2	PWR and charging status leds.
	3	USB-micro management connection.
	4	24VDC power input.
	5	HDBaseT link.
	6	USB-C laptop connection.
	7	USB-B laptop connection.
	8	HDMI laptop connection.
	9	HDMI laptop output connection.
	10	USB2.0 devices.
	11	GPI/button interface.
ROOMPC HUB	**12**	LAPTOP HOST THE MEETING button. This button will connect HDMI and USB peripherals to the laptop connection for BYOM.
	13	PWR status led.
	14	24VDC power input.
	15	HDBaseT link.
	16	USB-B Room PC connection.
	17	HDMI Room PC connection.
	18	USB3.0 devices.

19	HDMI display output.
20	HDMI share output from laptop.
21	LAN interface.
22	RS232 and remote interface.
23	GPI interface.

LEDS BEHAVIOR

Here are the LEDs behavior:

LAPTOP HOSTS THE MEETING	
OFF	Laptop not selected.

SOLID	Laptop selected.
	When user presses the button and a laptop is connected, there will be pulses on the integrated led to indicate which laptop is selected:
	   - **1x** pulse: the "Laptop USB-C" host is selected.
	   - **2x** pulses: the "Laptop USB-B + HDMI" host is selected.

BLINK	Error condition.
	  1. When the user tries to switch to laptop if this one is not present or if USB or HDMI connections are missing.
	  2. When the user tries to switch host if button is locked through our API.

PWR	
OFF	Device not powered.
SOLID	Device powered.
Charging ⟶	
OFF	Laptop is not charging.
SOLID	Laptop is charging.

OPERATING MODES

Here are the operating modes supported by the device. They will be explained here. ROOM PC MODE WITH BYOD CONTENT SHARING MODE
This is the default mode. In this mode, only the Room PC USB and HDMI connections are routed to the main USB and HDMI peripherals.

The Room PC is the system that is currently selected to the main USB and HDMI peripherals. However, if the user would like to send HDMI content from the laptop's USB-C or

HDMI connection to the Room PC, it is possible to do so with the HDMI SHARE output connection.

The user can also initiate a BYOM session on their laptop but a user trigger (front button, INO – BUTTON KIT or API call) needs to be done. BYOM MODE
In this mode, the laptop is the system that is automatically selected to the main USB and HDMI peripherals when detected. The Room PC is completely disconnected from the setup. When the laptop gets disconnected, the Room PC takes over until a new laptop is plugged in. CUSTOM MODE
In this mode, the user can configure the USB and HDMI switching modes independently.

AUTOMATIC

This mode will switch automatically to the last source (USB or HDMI) connected if the operation mode is set to Custom. If the current source is disconnected, the device will switch back to the other source if it is detected. Push-button action and remote control are also supported.

MANUAL

The manual mode will enable you to force a specific source selection. Push-button action and remote control are also supported.

MANUAL WITH FALLBACK

The manual mode with fallback supports the same features as the manual mode. It will only add the possibility to switch to the other detected source connection automatically if the selected source is disconnected.

USB FOLLOWS HDMI

In this mode, the USB host selection depends on the HDMI source selected. If the HDMI display switching mode is set to "Automatic", the selected USB host will be the one associated to the last detected HDMI display source.

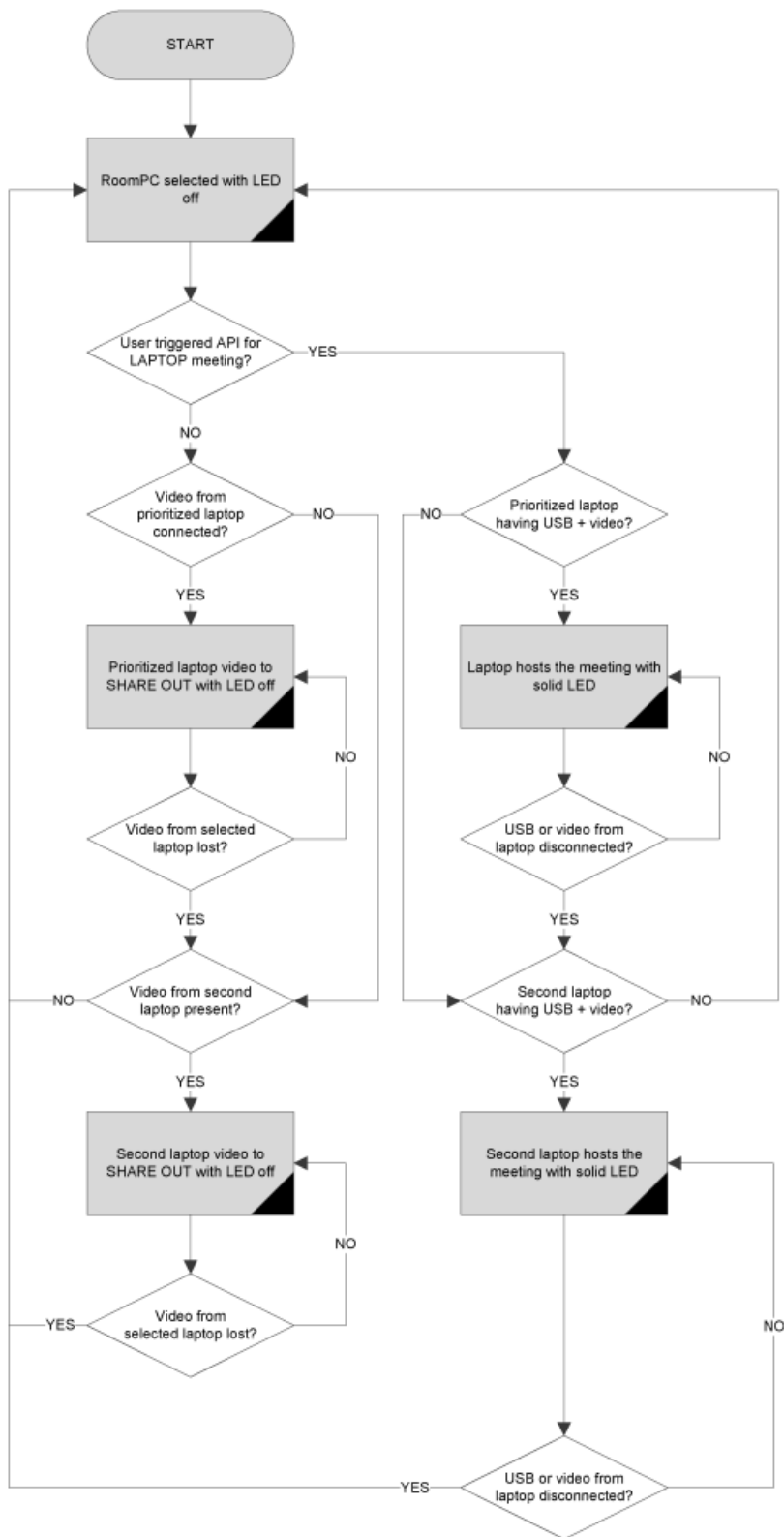Applicable only on the USB host switching mode.
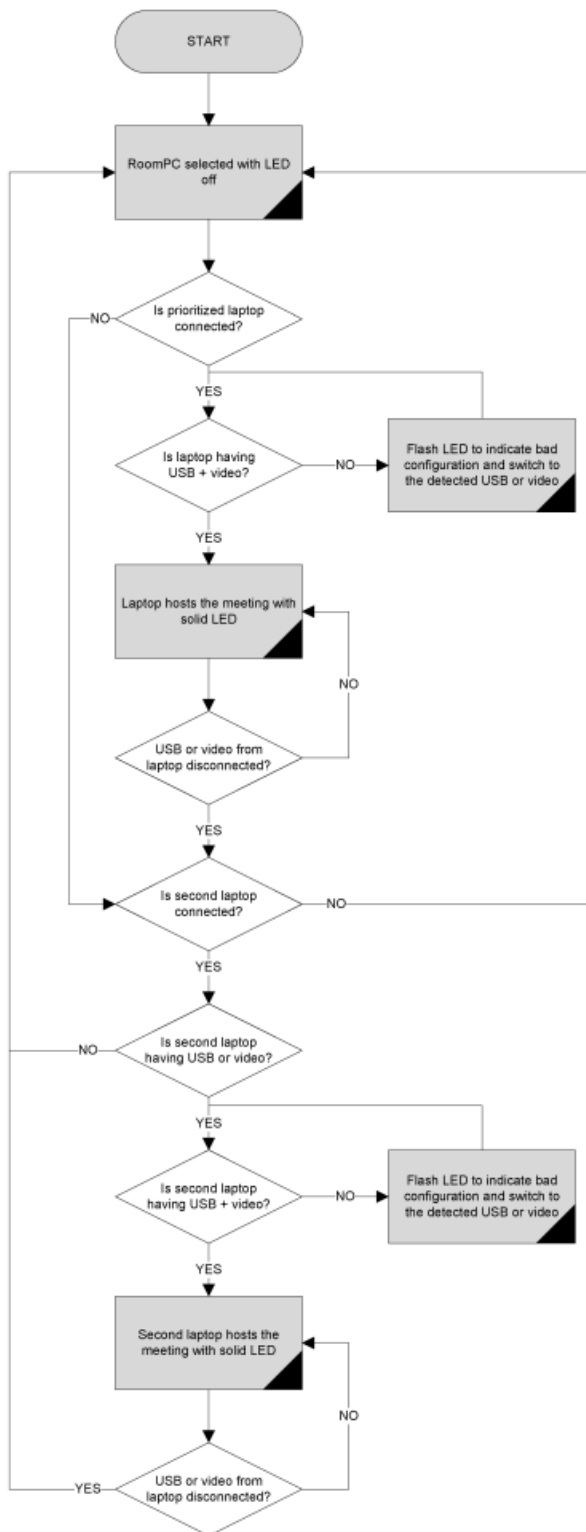
HDMI FOLLOWS USB

In this mode, the HDMI source selection depends on the USB host selected. If the USB host switching mode is set to "Automatic", the selected HDMI display source will be the one associated to the last detected USB host.

LEDYESRoom PC with BYOD Content sharingVideo

```
                    ┌──────────────┐
                    │    START     │
                    └──────┬───────┘
                           │
                    ┌──────▼───────┐
            ┌──────▶│ RoomPC selected with LED
            │       │      off      ◢│◀──────────────────────────────┐
            │       └──────┬───────┘                                 │
            │              │                                          │
            │         ◇ User triggered API for ◇───YES──────┐        │
            │         ◇ LAPTOP meeting?       ◇             │        │
            │              │                                 │        │
            │             NO                                 │        │
            │              │                                 │        │
            │         ◇ Video from      ◇                    │        │
            │         ◇ prioritized laptop ◇──NO──┐   ◇ Prioritized laptop ◇──NO──┐
            │         ◇ connected?      ◇         │   ◇ having USB + video? ◇      │
            │              │                      │        │                       │
            │             YES                     │       YES                      │
            │              │                      │        │                       │
            │       ┌──────▼───────┐              │  ┌─────▼────────┐              │
            │       │ Prioritized laptop video to│ │ │ Laptop hosts the meeting with│
            │       │ SHARE OUT with LED off  ◢│◀─┐│ │ solid LED           ◢│◀──┐  │
            │       └──────┬───────┘          │ ││ └─────┬────────┘          │  │
            │              │                  NO││       │                   NO │
            │         ◇ Video from selected ◇  │││  ◇ USB or video from ◇      │  │
            │         ◇ laptop lost?        ◇──┘││  ◇ laptop disconnected? ◇───┘  │
            │              │                    ││       │                          │
            │             YES                   ││      YES                         │
            │              │                    ││       │                          │
            │  NO──◇ Video from second ◇◀───────┘│  ◇ Second laptop ◇──NO──────────┘
            │       ◇ laptop present?  ◇         │  ◇ having USB + video? ◇
            │              │                                │
            │             YES                              YES
            │              │                                │
            │       ┌──────▼───────┐              ┌─────────▼──────┐
            │       │ Second laptop video to      │ Second laptop hosts the
            │       │ SHARE OUT with LED off  ◢│◀─┐│ meeting with solid LED ◢│◀──┐
            │       └──────┬───────┘          │   └──────┬─────────┘          │
            │              │                  NO         │                     │
            │         ◇ Video from        ◇   │                               NO
            │    YES──◇ selected laptop lost? ◇┘          │                     │
            │              │                              NO                    │
            │                                   ◇ USB or video from ◇           │
            └───────────────────────────YES────◇ laptop disconnected? ◇────────┘
```

BYOM

START

RoomPC selected with LED off

Is prioritized laptop connected? — NO

YES

Is laptop having USB + video? — NO → Flash LED to indicate bad configuration and switch to the detected USB or video

YES

Laptop hosts the meeting with solid LED

USB or video from laptop disconnected? — NO

YES

Is second laptop connected? — NO

YES

Is second laptop having USB or video? — NO

YES

Is second laptop having USB + video? — NO → Flash LED to indicate bad configuration and switch to the detected USB or video

YES

Second laptop hosts the meeting with solid LED

USB or video from laptop disconnected? — NO / YES

SPECIFICATIONS

Here is the complete specification.

Main feature	
Description	The TOGGLE ROOMS XT 4K60 USB/HDMI switcher effortlessly connects to five USB devices and an HDMI display. Seamlessly switching between 3 hosts, it automatically transitions to a connected laptop, providing convenient charging capabilities of up to 100W via USB-C. In addition, this versatile solution allows for remote control through RS-232 or GPI and ensures a seamless and user-friendly experience in any videoconference setting.
Link technology	HDBaseT 3.0
Link range	Up to 40 m when using 4K60 Up to 70 m when using 1080p60
Link medium	CAT6A U/FTP

| Laptop hub	
USB-C connector (host #1)	Supports USB-C DisplayPort Alternate Mode • DisplayPort up to 3840x2160p60 / 4096x2160p60 • USB 2.0 (480 Mbps) • Charges up to 100W • USB-C cable locking option
USB connector (host #2)	USB 2.0 Type-B
HDMI input connector (host #2)	Up to 3840x2160p60 / 4096x2160p60 Cable locking option
HDMI output connector	Up to 3840x2160p60 / 4096x2160p60 Cable locking option
USB devices connectors	USB 2.0 Type-A ports for peripherals
LINK connector	HDBaseT 3.0 interface
GPI	4-POS terminal block connector 2x Contact-closure control GPI: • Controlled by open-drain IO (short to ground) or driven IO • Supported voltage range: 0 to 12V max • Voltage threshold is 2.3V VOUT: • Able to power up the LED on the button of our INO-Button accessory • Logic-low level: 0 @ 0.5V • Logic-high level: 4.5 @ 5V
Power connector	24VDC/160W

Room PC hub	
LINK connector	HDBaseT 3.0 interface
USB connector (host #3)	USB 3.0 Type-B / 5 Gbps
HDMI input connector (host #3)	Up to 3840x2160p60 / 4096x2160p60 Cable locking option
HDMI display output	Up to 3840x2160p60 / 4096x2160p60 HDMI with cable locking option
HDMI share output	Up to 3840x2160p60 / 4096x2160p60 HDMI with cable locking option
USB devices	3x USB 3.0 Type-A ports. 1.8A shared between downstream ports
GPI	4-POS terminal block connector 2x Contact-closure control GPI: • Controlled by open-drain IO (short to ground) or driven IO • Supported voltage range: 0 to 12V max • Voltage threshold is 2.3V VOUT: • Able to power up the LED on the button of our INO-Button accessory • Logic-low level: 0 @ 0.5V • Logic-high level: 4.5 @ 5V
IP interface	10/100Mbps Supports DHCP or static addressing IP control available through RESTAPI and Telnet connections
RS-232 interface	4-pos terminal block connector Baud rates: 9600 [default], 19200, 38400 and 115200

	Data bits: 8
	Stop bits: 1
	Parity: None
	Flow control: None
Power connector	24VDC/36W

HDMI video

HDCP compliance	Compliant with HDCP2.3, HDCP2.2 and HDCP1.4
HDMI compliance	Compliant with HDMI2.0b, HDMI1.4 and DVI1.0
Sampling frequency	600MHz
Video scaling	Crosspoint switch supports video downscaling from 4K to 1080p.
Chroma subsampling	YUV/RGB 4:4:4, 4:2:2
CEC	Ability to send CEC commands to connected HDMI display sink.

HDMI audio

Audio	Audio passthrough from input to output
Formats	LPCM, Dolby Digital, DTS up to 192kHz

Control

Control options	Front button – For laptop selection RS232 GPI LAN USB

Compatibility

Operating system	NO driver installation necessary Windows 7 and above (32/64-bit) macOS 10.10 and above Linux (kernel v2.6.38 and above)

Physical details

Room PC hub - Dimensions (W x L x H)	25.10 cm x 11.57 cm x 3.26 cm 9.88" x 4.56" x 1.28"
Room PC hub - Power supply	36W (85-264VAC 50/60Hz to 24V/1.5A DC)
Room PC hub - Weight	760 g (1.68 lbs)
Laptop hub - Dimensions (W x L x H)	18.4 cm x 11.57 cm x 3.26 cm 7.24" x 4.56" x 1.28"
Laptop hub - Power supply	160W (85-264VAC 50/60Hz to 24V/6.67A DC)
Laptop hub - Weight	580 g (1.28 lbs)
Package contents	1 x TOGGLE ROOMS XT – ROOM PC device 1 x TOGGLE ROOMS XT – LAPTOP device 1 x USB-C to USB-C cable – 1.8 m /6 ft. 1 x USB 3.0 cable (USB-A to USB-B) – 1 m/3 ft. 3 x terminal block 4-pos 4 x mounting brackets 8 x M2.5 mounting screws for brackets on product 8 x screws for Toggle Rooms devices for table/wall mount 1 x power supply 85-264VAC 50/60Hz to 24V/6.67A DC for a LAPTOP hub 1 x power supply 85-264VAC 50/60Hz to 24V/1.5A DC for a ROOM PC hub 2 x international adapters included in the box (USA/CA or EU/UK/AU/BIS) 1 x Quick Start Guide / Thank You card 4 x PSU mounting bracket 8 x screws for PSU table/wall mount 8 x rubber feet
Operating temperature	0°C to 45°C 32°F to 113°F
Storage temperature	-40°C to 105°C -40°F to 221°F
Relative humidity	0% to 90% non-condensing

SERIAL COMMUNICATION PROTOCOL

Here is the complete list of commands provided through the serial connection. As written on the back of the device, here is the pinout of the terminal block.

Pin 1: Receive
Pin 2: GND
Pin 3: Transmit
Pin 4: 5V supply (for INOGENI Remote)
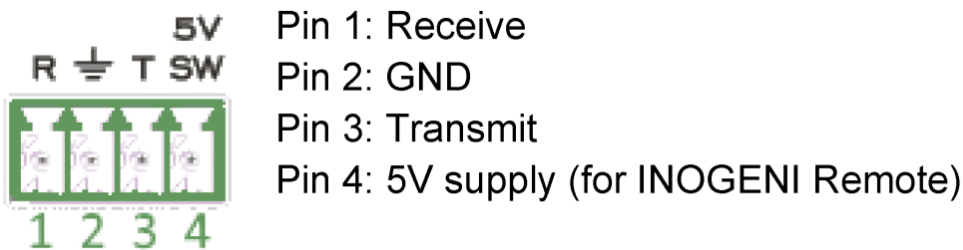
NOTE: The user needs to put a space character between the command name and argument.

You need to add a carriage return <CR> character and a line feed <LF> character at the end of the command string.
Typically, commands will return "ACK<CR><LF>" in case of success and "NACK<CR><LF>" in case of failure.
Baud rate: 9600 [default] // Data bits: 8 // Stop bits: 1 // Parity: None // Flow control: None
See the "API Commands" section for all the commands available.

REST API

You can enable a bearer authentication in the HTTP header (Authorization: Bearer <token>) through our configuration page to increase security on the API.
There will be a return code to each call with the following commands: 200 => success 400 => error 401 => authorization error
The return body will usually be JSON formatted with a "message" field containing a JSON string explaining the cause of the error or "success" in case of success. Note that we are using self-signed certificates.

It is also possible to embed arguments to an API call inside the URL to ease configuration with some control systems with the following topology:
GET https://<IP>/api/v1/<COMMAND>?<ARG1>=value&<ARG2>=value
where <COMMAND>, <ARG1> and <ARG2> are command and associated arguments.

For example, using the usbHost command, you can issue the following request:

GET https://<IP>/api/v1/usbHost?host=1
This request will set the USB host to laptop USB-C port.

The following commands allow to perform password management and bearer token management. The authentication used is basic auth, and we use the same user and password as the webpage (default user=admin and password=[SERIAL_NUM] where [SERIAL_NUM] is the serial number of the device located under the unit).

Command URL / Description	Body arguments	Return body

HTTP POST
https://<IP>/api/v1/
changeUsername?
username=<newUsername>
 	
Change the username to <newUsername>.
		{
		    "message": <String>
		}

HTTP POST
https://<IP>/api/v1/
changePassword?
password=<newPassword>
 	
Change the password to <newPassword>.
		{
		    "message": <String>
		}

HTTP GET
https://<IP>/api/v1/
getAccessToken
 	
Return the bearer token.
		{
		    "token": <String>
		}
		
		If no bearer token is set, the "token" field will be null.

HTTP POST
https://<IP>/api/v1/
generateAccessToken
 	
Generate random access token.
		{
		    "message": <String>
		}

The bearer token is generated using a random process. The format of the bearer token only supports the following:
–
Alphanumeric (A to Z) upper and lowercase characters.
–
Numbers 0-9.
See the "API Commands" section for all the commands available.

TELNET

You can use any telnet application to communicate with the device using TCP. Make sure to use the right IP address and port 23.
Use the serial communication protocol to configure the device.
The quit command can be used to ask server for disconnection.
See the "API Commands" section for all the commands available.

API COMMANDS

Here is the list of the RS232 and RESTAPI commands available for the device. The two interfaces share the same API.

	TX	When command have all body arguments, it will apply the configuration to the device.
	RX	When command does not have any body arguments or only first argument is provided, it will return information from the device.

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return
AUTOHDMICECPWR – autoHdmiCecPwr	Get/Set the automatic CEC power control of the connected display. When enabled, the device will turn on/off the display depending on the actual state of the HDMI source routed to the display.	TX	`<enable>`	ACK`<CR><LF>`	enable=`<enable>`	{ "message": `<String>` }
	`<enable>` options: 0 => OFF 1 => ON	RX		ENABLE=`<enable>`**`<CR><LF>`** ACK`<CR><LF>`		{ "enable": `<enable>`, "message": `<String>` }
BAUDRATE – baudrate	Set RS232 baud rate. `<baudrate>` options: 0 => 9600 1 => 19200 2 => 38400 3 => 115200	TX	`<baudrate>`	ACK`<CR><LF>`	baudrate=`<baudrate>`	{ "message": `<String>` }
		RX		BAUDRATE=`<baudrate>`**`<CR><LF>`** ACK`<CR><LF>`		{ "baudrate": `<baudrate>`, "message": `<String>` }
BTNLOCK – btnLock	Get/Set the button lock status. `<lockState>` options: 0 => Not locked 1 => Locked	TX	`<lockState>`	ACK`<CR><LF>`	btnLock=`<lockState>`	{ "message": `<String>` }
		RX		BTNLOCK=`<lockState>`**`<CR><LF>`** ACK`<CR><LF>`		{ "btnLock": `<lockState>`, "message": `<String>` }
CECPASSTHROUGHEN – cecPassthroughEn	Get/Set CEC passthrough setting from source to display. This setting allows CEC commands to be sent or not from the video source to the connected display. Manual CEC commands will continue to work regardless of this setting.	TX	`<enable>`	ACK`<CR><LF>`	enable=`<enable>`	{ "message": `<String>` }
	`<enable>` options: 0 => OFF 1 => ON [default]	RX		ENABLE=`<src>``<CR><LF>` ACK`<CR><LF>`		{ "enable": `<host>`, "message": `<String>` }
CECTOGGLEMUTE – cecToggleMute	Toggle mute control.	TX		ACK`<CR><LF>`		{ "message": `<String>` }
CECVOLDOWN – cecVolDown	Decrease display volume.	TX		ACK`<CR><LF>`		{ "message": `<String>` }
CECVOLUP – cecVolUp	Increase display volume.	TX		ACK`<CR><LF>`		{ "message": `<String>` }
DISPLAYSRC – displaySrc	Get/Set which HDMI source to be routed to display output. `<src>` options:	TX	`<src>`	ACK`<CR><LF>`	displaySrc=`<src>`	{ "message": `<String>` }

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return
	0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI 3 => OFF	RX		DISPLAYSRC=`<src>``<CR><LF>` ACK`<CR><LF>`		{ "displaySrc": `<src>`, "message": `<String>` }
DISPLAYSWMODE – displaySwMode	Get/Set HDMI display source switching mode. The operation mode must be set to "Custom" to use this. `<swMode>` options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback 3 => HDMI follows USB mode	TX	`<swMode>`	ACK`<CR><LF>`	displaySwMode=`<swMode>`	{ "message": `<String>` }
		RX		DISPLAYSWMODE=`<host>`**`<CR><LF>`** ACK`<CR><LF>`		{ "displaySwMode": `<swMode>`, "message": `<String>` }
EDID – edid	Set specific EDID modes to be reported to video source. `<src>` options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI `<edid>` options: 0 => Passthrough 1 => User EDID 2 => 3840x2160p60 3 => 3840x2160p50 4 => 3840x2160p30 5 => 3840x2160p25 6 => 1920x1080p60 7 => 1920x1080p50 8 => 1280x720p60 9 => 1280x720p50 10 => 5120x2160p30 11 => 5120x2160p25	TX	`<src>` `<edid>`	ACK`<CR><LF>`	src=`<src>` edid=`<edid>`	{ "message": `<String>` }
		RX		EDID=`<edid>``<CR><LF>` ACK`<CR><LF>`	src=`<src>`	{ "edid": `<edid>`, "message": `<String>` }
EDIDHDMIOUT – edidHdmiOut	Get/Set the EDID from the sink and report it to the associated source. This will put the EDID mode of the associated source to "User EDID". `<sink>` options: 0 => Display 1 => SHARE OUT `<src>` options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI `<edidHdmiOut>` => formatted 256 bytes array	TX	`<sink>` `<src>`	ACK`<CR><LF>`	src=`<sink>` src=`<src>`	{ "message": `<String>` }
		RX	`<sink>`	EDIDUSR=`<edidUsr>` `<CR><LF>` ACK`<CR><LF>`	sink=`<sink>`	{ "edidHdmiOut": `<edidHdmiOut>`, "message": `<String>` }
EDIDUSR – edidUsr	Set specific EDID modes to be reported to video source. `<src>` options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI `<edidUsr>` => formatted 256 bytes array	TX	`<src>` `<256 bytes array>`	ACK`<CR><LF>`	src=`<src>` edidUsr=`<256 bytes array>`	{ "message": `<String>` }
		RX	`<src>`	EDIDUSR=`<edidUsr>``<CR><LF>` ACK`<CR><LF>`	src=`<src>`	{ "edidUsr": `<edidUsr>`, "message": `<String>` }

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return

GPICFG – `gpiCfg`	Get/Set the GPI configuration.
	
	NOTE:
	In pulse mode, a short to GND on this pin will trigger the function.
	The function will be executed on GPI falling edge. GPI rising edge has no effect.
	
	In level mode, the function will be executed on short to GND and open states.
	
	<gpi> options:
	1 => GPI1
	2 => GPI2
	
	<mode> options:
	0 => Pulse mode [default]
	1 => Level mode
		TX	`<gpi> <mode> <function>`	ACK**\<CR>\<LF>**	gpi=<gpi>
					mode=<mode>
					function=<function>
						{
						    "message": \<String>
						}

	<function> options:
	0 => Disabled.
	1 => BYOM mode control [default GPI1]
	      SHORT = LAPTOP
	      OPEN = ROOMPC
	2 => USB host control [default GPI2]
	      SHORT = LAPTOP
	      OPEN = ROOMPC
	3 => Display video source control
	      SHORT = LAPTOP USB-C/HDMI
	      OPEN = ROOMPC
	4 => Share output video source control
	      SHORT = LAPTOP USB-C
	      OPEN = LAPTOP HDMI
		RX	`<src>`	MODE=<mode>**\<CR>\<LF>**
				FUNCTION=<function>**\<CR>\<LF>**
				ACK**\<CR>\<LF>**
					gpi=<gpi>	{
						    "mode": \<mode>,
						    "function": \<function>,
						    "message": \<String>
						}

HDCPCTL – `hdcpCtl`	Get/Set the HDCP setting.
	
	<src> options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop HDMI
		TX	`<src> <hdcp>`	ACK**\<CR>\<LF>**	src=<src>
					hdcp=<hdcp>
						{
						    "message": \<String>
						}

	<hdcp> options:
	0 => Disabled
	1 => HDCP v1.4
	2 => HDCP v2.2
	3 => Auto
		RX	`<src>`	HDCP=<hdcp>**\<CR>\<LF>**
				ACK**\<CR>\<LF>**
					src=<src>	{
						    "hdcp": \<hdcp>,
						    "message": \<String>
						}

HELP – `help`	Return commands list with description.	RX		List of all the supported commands.		List of all the supported commands.

HOSTBUTTON – `hostButton`	This function gives the same functionality as the front button or the INO – BUTTON KIT action.	TX		ACK**\<CR>\<LF>**		{
						    "message": \<String>
						}

HOSTMEETING – `hostMeeting`	This function allows the device to switch USB and HDMI connections to the provided host connection. This is a momentary control. As soon as there are events over USB and HDMI signals, the preconfigured modes will take over. This control is similar to the actual front button and also when user is using the INO – BUTTON KIT.
	
	<host> options:
	0 => RoomPC
	1 => Laptop USB-C
		TX	`<host>`	ACK**\<CR>\<LF>**	host=<host>	{
						    "host": \<host>,
						    "message": \<String>
						}

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return
	2 => Laptop USB-B/HDMI					
HOSTNAME – hostname	Get/Set the hostname of the device. This command will change the device name when probed over the network and the name of the USB HID interface	TX	<hostname>	ACK**<CR><LF>**	hostname=<hostname>	{ "message": <String> }
	<hostname> option: String defined hostname to be shown on the network and USB HID interface. This string must not have space characters.	RX		HOSTNAME=<src>**<CR><LF>** ACK**<CR><LF>**		{ "hostname": <host>, "message": <String> }
HTTPEN – httpEn	Get/Set HTTP control setting.	TX	<enable>	ACK**<CR><LF>**	enable=<enable>	{ "message": <String> }
	<enable> options: 0 => OFF 1 => ON	RX		ENABLE=<enable>**<CR><LF>** ACK**<CR><LF>**		{ "enable": <enable>, "message": <String> }
LAPTOPSRC – laptopSrc	Get/Set the video source routed to LAPTOP HDMI output.	TX	<src>	ACK**<CR><LF>**	laptopSrc=<src>	{ "message": <String> }
	<src> options: 1 => Laptop USB-C 2 => Laptop HDMI 3 => OFF	RX		LAPTOPSRC=<src>**<CR><LF>** ACK**<CR><LF>**		{ "laptopSrc": <src>, "message": <String> }
LINKSTATUS – linkStatus	Get HDBaseT link status <status> indicates the link status. <len> indicates the estimated length. <q> indicates the quality factor. <chX> indicate de measurement of the associated pair A, B, C or D. <ret> indicates the retransmission rate over the link.	TX		HDBTLINK=<status>**<CR><LF>** HDBTCABLEL=<len>**<CR><LF>** HDBTCABLEQ=<q>**<CR><LF>** HDBTMAXERR=<cha>, <chb> <chc>, <chd>**<CR><LF>** HDBTMSE=<cha>, <chb> <chc>, <chd>**<CR><LF>** HDBTMSEWINDOW=<cha>, <chb> <chc>, <chd>**<CR><LF>** HDBTRETRANRATE=<ret>**<CR><LF>** ACK**<CR><LF>**		{ "hdbtLink": <status> "hdbtCableL": <len> "hdbtCableQ": <q> "hdbtMaxErr": <cha>, <chb> <chc>, <chd> "hdbtMse": <cha>, <chb> <chc>, <chd> "hdbtMseWindow": <cha>, <chb> <chc>, <chd> "hdbtRetranRate": <ret>, "message": <String> }
NETWORK – network	Get/Set network settings. <mode> options: static => addressing is static dhcp => use DHCP addressing If mode is static, IP and netmask are required while gateway is optional. <ip> option: String defined IP address. Example: 192.168.0.20 <netmask> option: String defined netmask address. Example: 255.255.0.0 <gateway> option: String defined gateway address. Example: 192.168.0.1	TX	<mode> <ip> <netmask> <gateway>	ACK**<CR><LF>**	mode=<mode> ip=<ip> netmask=<netmask> gateway=<gateway>	{ "message": <String> }
		RX		MODE=<mode>**<CR><LF>** IP=<ip>**<CR><LF>** NETMASK=<netmask>**<CR><LF>** GATEWAY=<gateway>**<CR><LF>** ACK**<CR><LF>**		{ "mode": <static,dhcp>, "ip": <ip>, "netmask": <netmask>, "gateway": <gateway>, "message": <String> }

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return

OPMODE – opMode	Get/Set operation mode.
	
	By default, the device will operate in RoomPC / BYOD mode – RoomPC USB and HDMI peripherals selected, and laptop sends video content only to SHARE output. The user will need to trigger our API or use the GPI interface to connect USB and HDMI to the laptop.
	
	When BYOM mode is set, the device will automatically switch all HDMI and USB peripherals to the laptop as soon as it is detected. The RoomPC is always selected if there is no laptop detected.
	
	When Custom mode is set, the user can set the USB, display and share source switching modes independently.
	
	\<opMode\> options:
	0 => RoomPC with BYOD/content sharing [default]
	1 => BYOM
	2 => Custom
		TX	\<opMode\>	ACK\<CR\>\<LF\>	opMode=\<opMode\>	{
						  "message": \<String\>
						}

		RX		OPMODE=\<src\>\<CR\>\<LF\>
				ACK\<CR\>\<LF\>
						{
						  "opMode": \<opMode\>,
						  "message": \<String\>
						}

PRIORDISPLAYSRC – priorDisplaySrc	Get/Set display source priority.
	Only applicable when operation mode is set to "Custom" and display source switching mode is set to "automatic" or "manual with fallback".
	
	\<src\> options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop HDMI
	3 => Last detected source [default]
		TX	\<src\>	ACK\<CR\>\<LF\>	priorDisplaySrc=\<src\>	{
						  "message": \<String\>
						}

		RX		PRIORDISPLAYSRC=\<src\>\<CR\>\<LF\>
				ACK\<CR\>\<LF\>
						{
						  "priorDisplaySrc": \<host\>,
						  "message": \<String\>
						}

PRIORHOSTMEETING – priorHostMeeting	Get/Set host system priority. The function will select which computer to use as the prioritized source, including USB and video associated to the same computer.
	Only applicable when operation mode is set to "RoomPC / BYOD content sharing" and "BYOM".
	
	\<host\> options:
	1 => Laptop USB-C
	2 => Laptop USB-B/HDMI
	3 => Last detected laptop [default]
		TX	\<host\>	ACK\<CR\>\<LF\>	host=\<host\>	{
						  "message": \<String\>
						}

		RX		PRIORHOSTMEETING=\<host\>\<CR\>\<LF\>
				ACK\<CR\>\<LF\>
						{
						  "priorHostMeeting": \<host\>,
						  "message": \<String\>
						}

PRIORLAPTOPSRC – priorLaptopSrc	Get/Set laptop source priority.
	
	\<src\> options:
	1 => Laptop USB-C
	2 => Laptop HDMI
	3 => Last detected laptop [default]
		TX	\<src\>	ACK\<CR\>\<LF\>	priorLaptopSrc=\<src\>	{
						  "message": \<String\>
						}

		RX		PRIORLAPTOPSRC=\<src\>\<CR\>\<LF\>
				ACK\<CR\>\<LF\>
						{
						  "priorLaptopSrc": \<src\>,
						  "message": \<String\>
						}

API command (RS232 - RESTAPI)	Description		RS232 payload	RS232 return	RESTAPI payload	RESTAPI return

PRIORSHARESRC - **priorShareSrc**	Get/Set share source priority.
	Only applicable when operation mode is set to "Custom" and share source switching mode is set to "automatic" or "manual with fallback".
		TX	`<src>`	ACK**<CR><LF>**	priorShareSrc=`<src>`	{
						  "message": `<String>`
						}

	`<src>` options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop HDMI
	3 => Last detected source [default]
		RX		PRIORSHARESRC=`<src>`**<CR><LF>**
				ACK**<CR><LF>**
						{
						  "priorShareSrc": `<host>`,
						  "message": `<String>`
						}

PRIORUSBHOST - **priorUsbHost**	Get/Set USB priority.
	Only applicable when operation mode is set to "Custom" and USB host switching mode is set to "automatic" or "manual with fallback".
		TX	`<host>`	ACK**<CR><LF>**	priorUsbHost=`<host>`	{
						  "message": `<String>`
						}

	`<host>` options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop USB-B
	3 => Last detected host [default]
		RX		PRIORUSBHOST=`<host>`**<CR><LF>**
				ACK**<CR><LF>**
						{
						  "priorUsbHost": `<host>`,
						  "message": `<String>`
						}

REBOOT - **reboot**	Reboot the device.	TX		ACK**<CR><LF>**		{
						  "message": `<String>`
						}

RSTR - **rstr**	Restore default settings (including password and REST API token).	TX		ACK**<CR><LF>**		{
						  "message": `<String>`
						}

SCALER - **scaler**	Get/Set the scaler options over the HDMI video outputs.
	
	`<output>` options:
	0 => Display output
	1 => Share output
	
	`<enable>` options:
	0 => OFF
	1 => ON
		TX	`<output> <enable>`	ACK**<CR><LF>**	output=`<output>`
					enable=`<enable>`
						{
						  "message": `<String>`
						}

		RX	`<output>`	ENABLE=`<enable>`**<CR><LF>**
				ACK**<CR><LF>**
					output=`<output>`	{
						  "enable": `<enable>`,
						  "message": `<String>`
						}

SHARESRC - **shareSrc**	Get/Set which HDMI source to be routed to share output.
	
	`<src>` options:
	0 => RoomPC [Not supported in automatic mode]
	1 => Laptop USB-C
	2 => Laptop HDMI
	3 => OFF
		TX	`<src>`	ACK**<CR><LF>**	shareSrc=`<src>`	{
						  "message": `<String>`
						}

		RX		SHARESRC=`<src>`**<CR><LF>**
				ACK**<CR><LF>**
						{
						  "shareSrc": `<src>`,
						  "message": `<String>`
						}

SHARESWMODE - **shareSwMode**	Get/Set HDMI share source switching mode. The operation mode must be set to "Custom" to use this.
	
	`<swMode>` options:
	0 => Automatic mode [default]
	1 => Manual mode
	2 => Manual mode with fallback
	3 => HDMI follows USB mode
		TX	`<swMode>`	ACK**<CR><LF>**	shareSwMode=`<swMode>`	{
						  "message": `<String>`
						}

		RX		SHARESWMODE=`<host>`**<CR><LF>**
				ACK**<CR><LF>**
						{
						  "shareSwMode": `<swMode>`,
						  "message": `<String>`
						}

API command (RS232 - RESTAPI)	Description	RS232 payload	RS232 return	RESTAPI payload	RESTAPI return
STATUS – status	Return laptop and RoomPC information, display and share output timings.	RX	List of all the status of the device.		List of all the status of the device.

USBC4K60EN – usbc4K60En	Get/Set the USB-C working mode.
	
	NOTE:
	Enabling DisplayPort signal to support 4K60 will disable USB3.0 connectivity on USB-C port. USB2.0 will remain active.
	
	Disabling this option will allow user to support USB3.0 and 4K30 video.
	
	<mode> options:
	0 => Disable 4K60 [default]
	1 => Enable 4K60
		TX <mode>	ACK<CR><LF>	usbc4K60En=<mode>	{
					  "message": <String>
					}

		RX	USBC4K60EN=<mode><CR><LF>
			ACK<CR><LF>
					{
					  "usbc4K60En": <mode>,
					  "message": <String>
					}

USBDEVEN – usbDevEn	Get/Set the power on USB devices ports according to specific hosts.
	
	<host> options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop HDMI
	3 => When no host detected
	
	<devices> options:
	Bitmask to enabled ports.
		TX <host> <devices>	ACK<CR><LF>	host=<host>
				devices=<devices>
					{
					  "message": <String>
					}

	<devices> USB1 USB2 USB3
	0 OFF OFF OFF
	1 ON OFF OFF
	2 OFF ON OFF
	3 ON ON OFF
	4 OFF OFF ON
	5 ON OFF ON
	6 OFF ON ON
	7 ON ON ON
		RX <host>	DEVICES=<devices><CR><LF>
			ACK<CR><LF>
				host=<host>	{
					  "devices": <devices>,
					  "message": <String>
					}

USBHOST – usbHost	Get/Set USB host to use.
	
	<host> options:
	0 => RoomPC
	1 => Laptop USB-C
	2 => Laptop USB-B
	3 => OFF
		TX <host>	ACK<CR><LF>	usbHost=<host>	{
					  "message": <String>
					}

		RX	USBHOST=<host><CR><LF>
			ACK<CR><LF>
					{
					  "usbHost": <host>,
					  "message": <String>
					}

USBHOSTSWMODE – usbHostSwMode	Get/Set USB host switching mode. The operation mode must be set to "Custom" to use this.	TX <swMode>	ACK<CR><LF>	usbHostSwMode=<swMode>	{
					  "message": <String>
					}

API command (RS232 - RESTAPI)	Description	RS232 payload	RS232 return	RESTAPI payload	RESTAPI return

	<swMode> options:
	0 => Automatic mode [default]
	1 => Manual mode
	2 => Manual mode with fallback
	3 => USB follows HDMI mode
		RX	USBHOSTSWMODE=<host><CR><LF>
			ACK<CR><LF>
					{
					  "usbHostSwMode": <swMode>,
					  "message": <String>
					}

VERSION – version	Return firmware version.	RX	MAJOR=<Integer><CR><LF>
			MINOR=<Integer><CR><LF>
			ACK<CR><LF>
					{
					  "major": <Integer>,
					  "minor": <Integer>
					}

VOUT – vout	Get/Set the VOUT level.
	
	NOTE:
	By default, the firmware will drive this output to power up a led when enabling the BYOM mode. If the user wants to override this behavior, it is possible by changing the <vout> option.
		TX <vout>	ACK<CR><LF>	vout=<vout>	{
					  "message": <String>
					}

	<vout> options:
	0 => Controlled by firmware.
	1 => Logic-low.
	2 => Logic-high.
		RX	VOUT=<vout><CR><LF>
			ACK<CR><LF>
					{
					  "vout": <vout>,
					  "message": <String>
					}

INOGENI MAESTRO APPLICATION

You can use our INOGENI Maestro application to monitor firmware information and upgrade your unit. WEB INTERFACE
A web interface will be available at launch. This section will be populated soon. NOTE: You need to use the USB-B to USB-A cable provided with the box for the Maestro application to detect the unit. This is a preview of the upcoming Maestro application. More detailed configurations will be added to an updated version of the user guide.

INOGENI INO – BUTTON KIT

You can use our INOGENI INO – BUTTON KIT to trigger the BYOM mode of the TOGGLE ROOMS.

Here is the connectivity diagram of the INO – BUTTON KIT to the TOGGLE ROOMS.
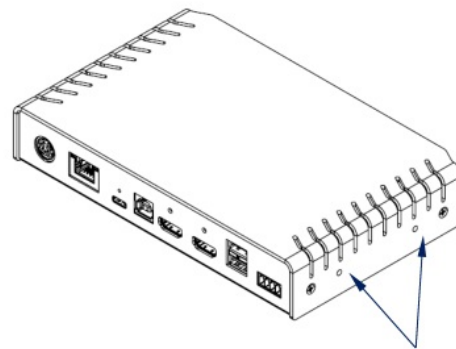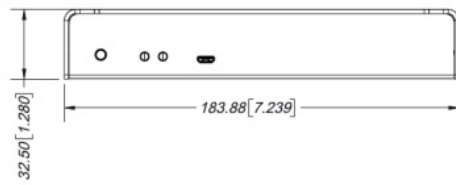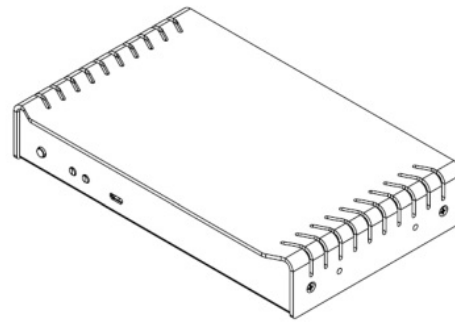
Here is also the timing diagram of the GPI and VOUT interfaces. When the GPI1 interface is shorted to GND, the VOUT signal will act like this depending on the laptop selected. Each cycle is 250ms.
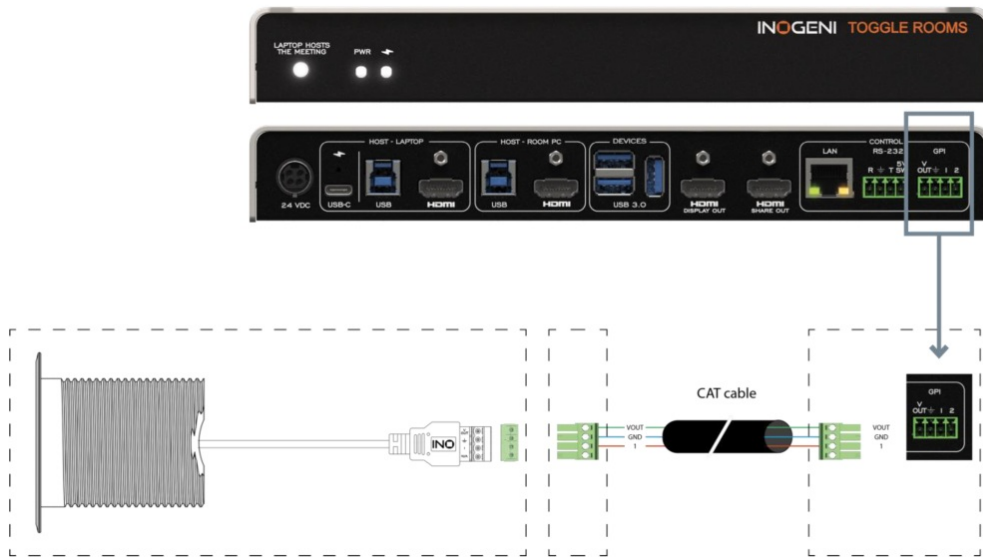
Here is also the timing diagram of the GPI and VOUT interfaces. When the GPI1 interface is shorted to GND, the VOUT signal will act like this depending on the laptop selected. Each cycle is 250ms

MECHANICAL SPECIFICATION

You can find the mechanical specification of the device. All dimensions are in mm [in]. LAPTOP HUB

M2.5 screw
holes for
brackets

Figure 2: Top plate dimensions of laptop hub

4X ⌀ $4.22^{+0.080}_{0.000}$ [$0.166^{+.003}_{-.000}$] THRU

4X ⌀ $4.22^{+0.080}_{0.000}$ [$0.166^{+.003}_{-.000}$] THRU

4x M2.5
mounting
holes

130.38 [5.133]

3.40 [.134]

61.72 [2.430]

25.83 [1.017]

126.98 [4.999]

26.70 [1.051]

166.38 [6.550]

66.68 [2.625]
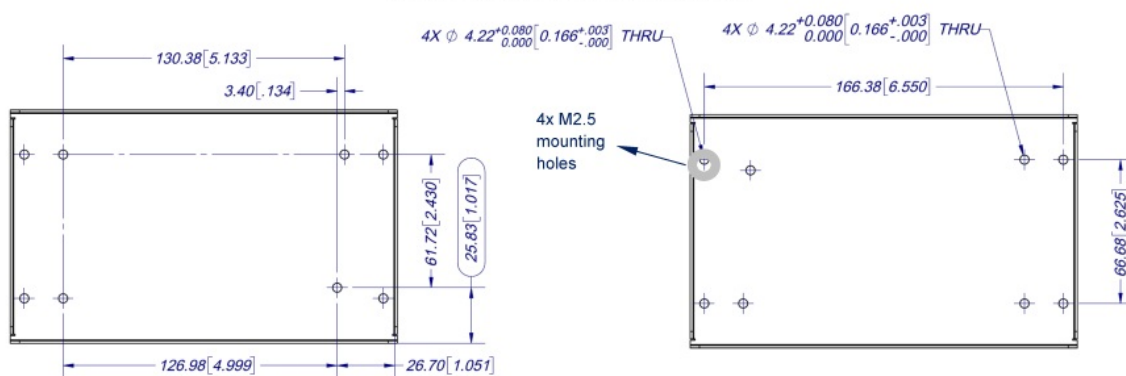
Figure 3: Bottom plate dimensions and holes positions of laptop hub

ROOMPC HUB
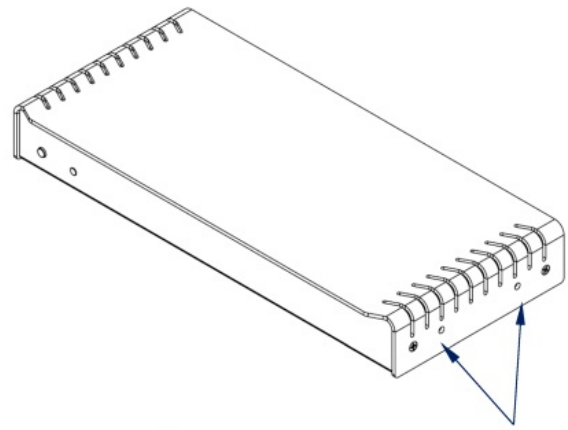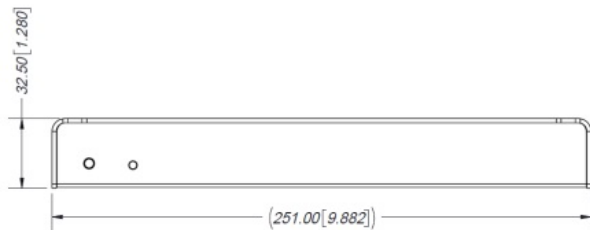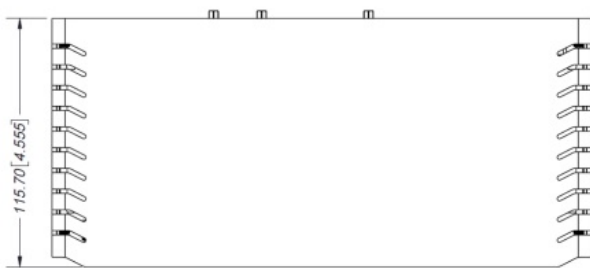
Figure 4: Top plate dimensions of RoomPC hub

M2.5 screw holes for brackets
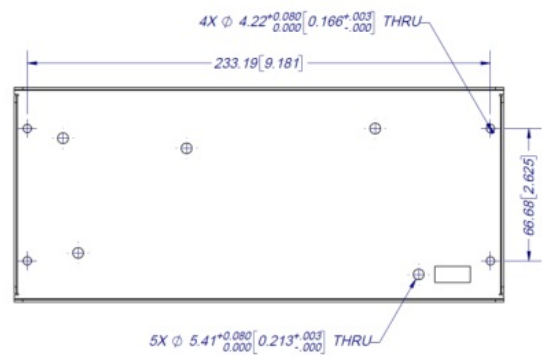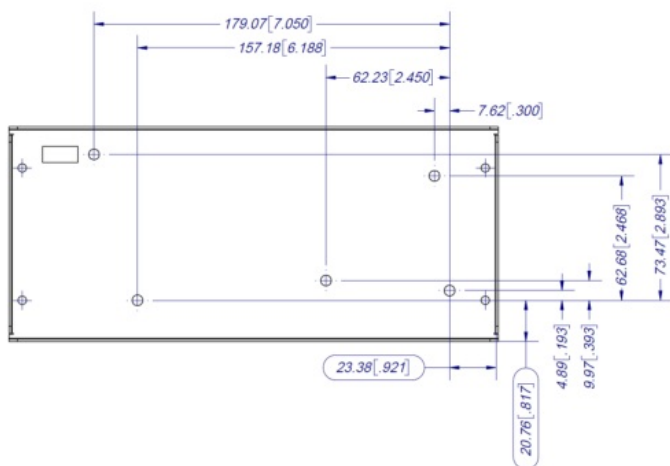
Figure 5: Bottom plate dimensions and holes positions of Room PC hub

MOUNTING BRACKET
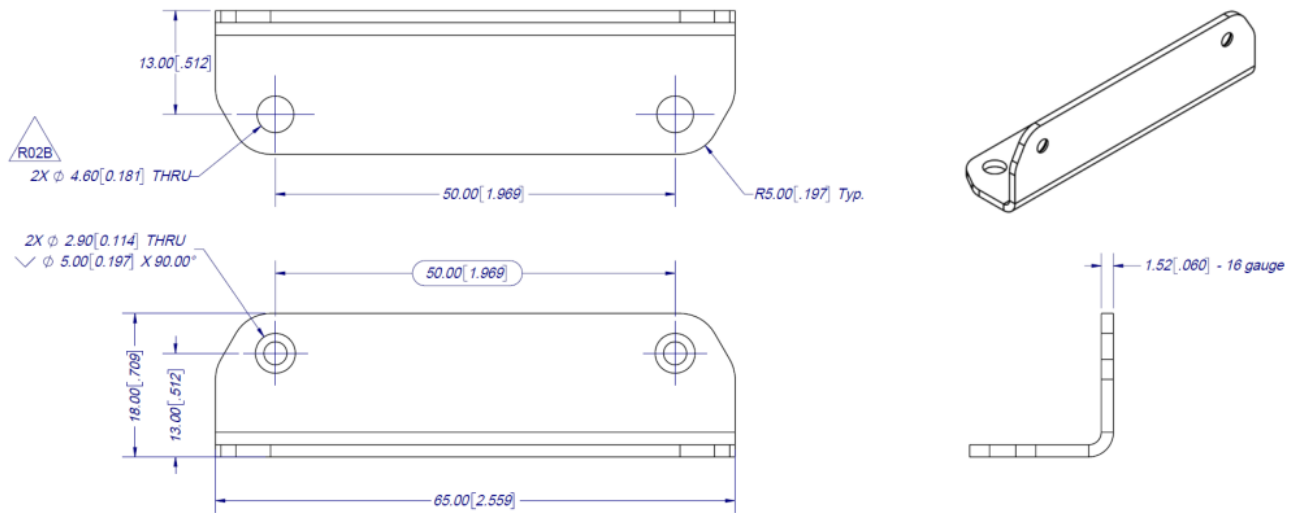
Figure 6: Bracket dimensions

36W POWER SUPPLY BRACKET
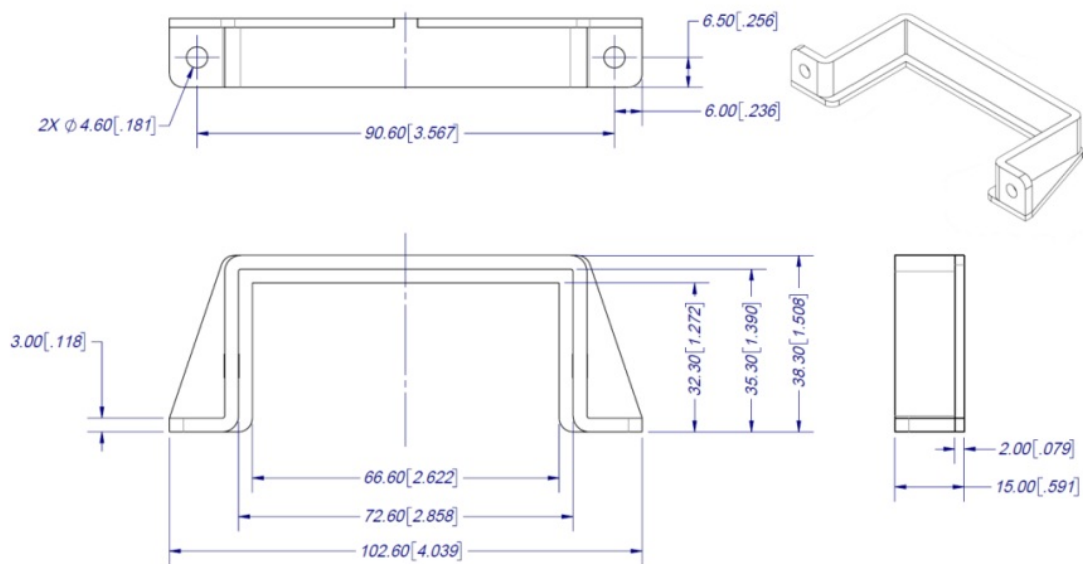
Figure 7: Power supply 160W bracket dimensions

DIP SWITCHES

Here you can find the behavior of the DIP switches located at the back of the unit.
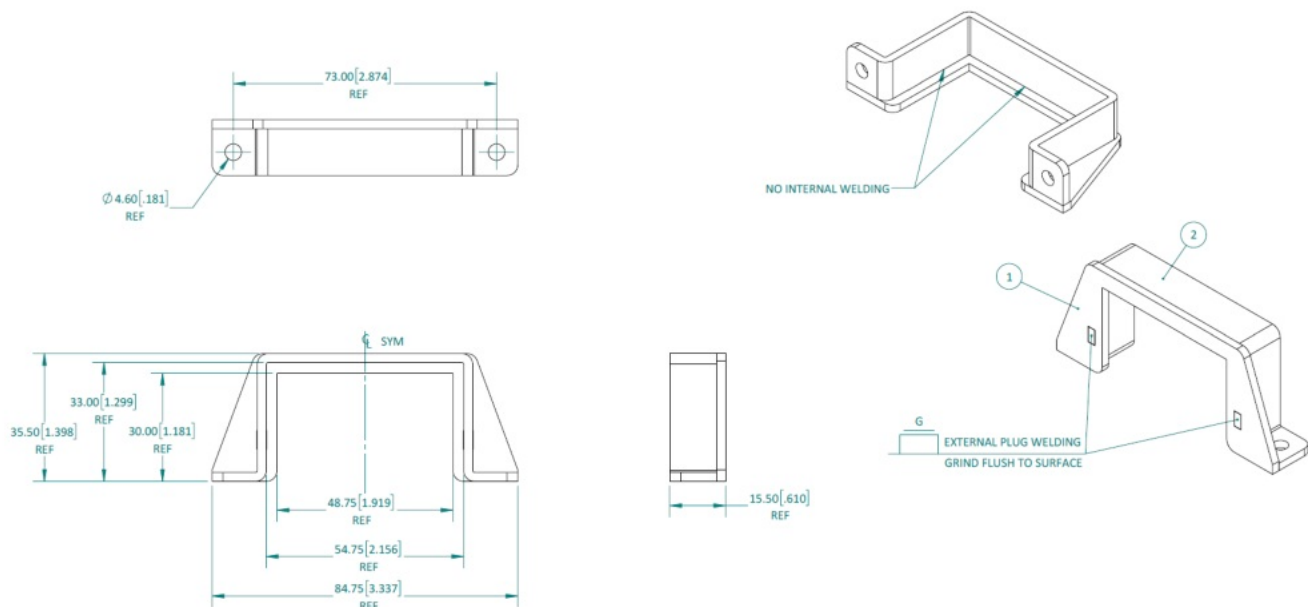
Figure 8: Power supply 36W bracket dimensions

DIP SWITCHES

Here you can find the behavior of the DIP switches located at the back of the unit.

Switch	Position	Description
SW1	OFF	For future use.
	ON	
SW2	OFF	For future use.
	ON	
SW3	OFF	For future use.
	ON	
SW4	OFF	For future use.
	ON	
SW5	OFF	Reserved.
	ON	
SW6	OFF	Disable 5V on RS232 terminal block.
	ON	Enable 5V on RSs232 terminal block. This switch must be set to power up the connected remote.

TROUBLESHOOTING SECTIONYU

Here is the troubleshooting section for the device.

Problem	Resolution
My laptop is not charging using my USB-C cable.	Check if the cable is rated to support USB-C power delivery. Also check if the cable used is among the ones that we already support. Visit https://inogeni.com/product/toggle-rooms/ for the complete list. Make also sure that tour BIOS and your system chipset drivers are up to date.
The device does not automatically switch USB host and HDMI source.	By default, the device is operating in "RoomPC with BYOD / content sharing" mode to avoid disruption of a current video meeting. See "Operation mode" API to properly set the operation you need.
My device is switching HDMI video slowly.	If your EDID mode is set to "passthrough", the device is handshaking the EDID from the connected display to the source. This will take some time. To minimize video switching time, it is recommended to configure the EDID mode of the video sources to a preset EDID (e.g. 1080p60).
The Maestro software is not able to detect my device.	If you are connected to Toggle Rooms through the laptop connections (USB-C or USB-B/HDMI), please make sure the laptop is selected by using the front "LAPTOP HOSTS THE MEETING" button. When laptop is selected, this button will light up. The Maestro software will connect to the device through USB, this is why the device is not detected if the host is not properly selected.

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 question about our products.

- Extensive Knowledge Base to learn from other customers' experiences. © Copyright 2024 by INOGENI INC. All Rights Reserved. INOGENI name and logo are trademarks or registered trademarks of

INOGENI. Use of this product is subject to the terms and conditions of the license and limited warranty in effect at the time of purchase. Product specifications can change without notice. INOGENI, Inc. 1045 Avenue Wilfrid-Pelletier Suite 101 Québec, QC, Canada, G1W0C6 **418-651-3383**

CERTIFICATIONS

FCC Radio Frequency Interference Statement Warning This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

IC Statement

This Class A digital apparatus complies with Canadian CAN

ICES-3(A)/**NMB-3(A).**

CE Statement

We, INOGENI Inc., declare under our sole responsibility that the Toggle Rooms, to which this declaration relates, is in conformity with European Standards EN 55032, EN 55035, and RoHS Directive 2011/65/EU + 2015/863/EU.

UK
CA

UKCA Statement

This device is compliant with the Electromagnetic Compatibility Regulations 2016 No. 1091 as part of the requirements leading to the UKCA marking.

WEEE Statement

The European Union has established regulations for the collection and recycling of all waste electrical and electronic equipment (WEEE). Implementation of WEEE regulations may vary slightly by individual EU member states. Please check with your local and state government guidelines for safe disposal and recycling or contact your national WEEE recycling agency for more information.

RCM Statement

This device is compliant with Regulator Compliance Mark (RCM) certification.

Specifications:

- Product: INOGENI TOGGLE ROOMS XT
- User guide Version: 1.0
- Date: October 11, 2024

QUICK Product Usage Instructions:

1. Typical Applications:

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

ROOM PC MODE WITH BYOD CONTENT SHARING:

In this mode, only the Room PC USB and HDMI connections are routed to the main USB and HDMI peripherals. The Room PC is the system currently selected to the main USB and HDMI peripherals. To send HDMI content from the laptop's USB-C or HDMI connection to the Room PC, use the HDMI SHARE output connection.

BYOM (BRING YOUR OWN MEETING):

In this setup, the laptop is the system currently selected to the main USB and HDMI peripherals.

2. Block Diagram:

Here is a simple block diagram to better understand the usage of the product:

3. Connectivity Diagram:

Here is a simple connectivity diagram showing how the product interfaces with various devices.

4. Device Interfaces:

LAPTOP HUB:

- 1. LAPTOP HOST THE MEETING button
- 2. PWR and charging status LEDs
- 3. USB-micro management connection

ROOMPC HUB:

- 14. 24VDC power input
- 15. HDBaseT link

5. LEDs Behavior:

Here are the LEDs behaviors for LAPTOP HOSTS THE MEETING OFF, SOLID, BLINK, PWR OFF SOLID, and Charging OFF SOLID.

Frequently Asked Questions (FAQ):

Q: What do the different LED behaviors indicate?

A: The LED behaviors indicate whether the laptop is selected, charging status, and error conditions. For example, solid LED indicates laptop selected, blinking LED indicates error conditions, and so on.

Documents / Resources

INOGENI Toggle Rooms Xt [pdf] User Guide
Toggle Rooms Xt, Rooms Xt, Xt

References

- ⬡ **TOGGLE ROOMS | Inogeni**
- ⬡ **Software tools - Support | INOGENI**
- **User Manual**