



INOGENI TOGGLE ROOMS

User guide

Version 0.3

March 15, 2024

VERSION HISTORY

Version	Date	Description
0.1	January 17, 2024	Preliminary user guide for device launch.
0.2	January 24, 2024	- Added new options to set built-in EDIDs - Updated RESTAPI and serial commands for EDID and EDIDUSR.
0.3	March 15, 2024	- Updated the connectivity diagram

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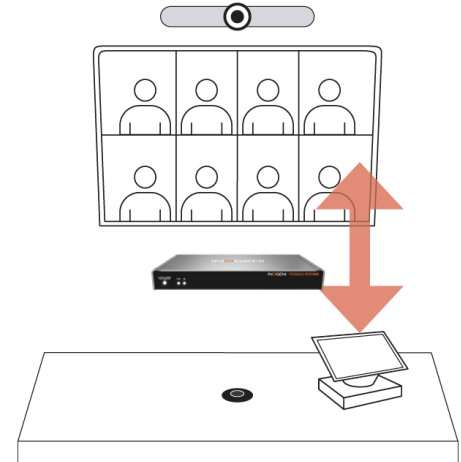
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TYPICAL APPLICATIONS

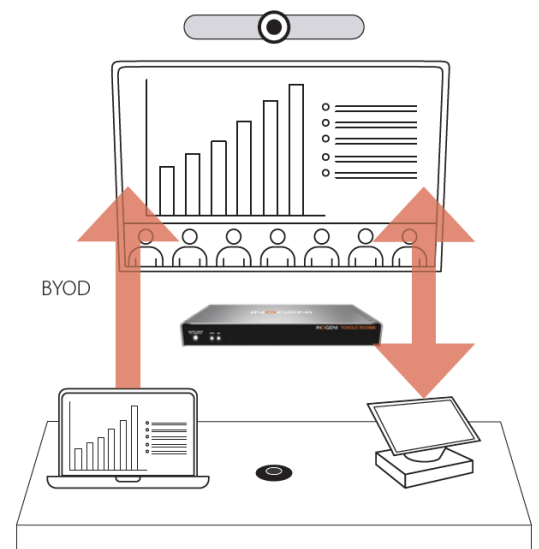
Here is a typical connection diagram used for the TOGGLE ROOMS device in a videoconferencing setup.

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.

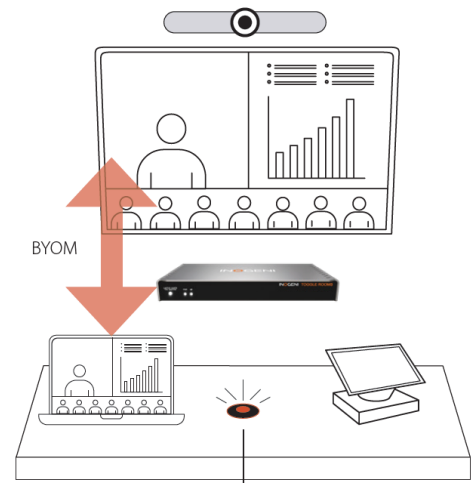


The Room PC is the system that is currently selected to the main USB and HDMI peripherals. However, if the user would like to send HDMI content from the laptop's USB-C or HDMI connection to the Room PC, it is possible to do so with the HDMI SHARE output connection.



BYOM MODE

In this mode, the laptop is the system that is currently selected to the main USB and HDMI peripherals. The Room PC is completely disconnected from the setup.



BLOCK DIAGRAM

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

TOGGLE ROOMS BYOD/BYOM switcher

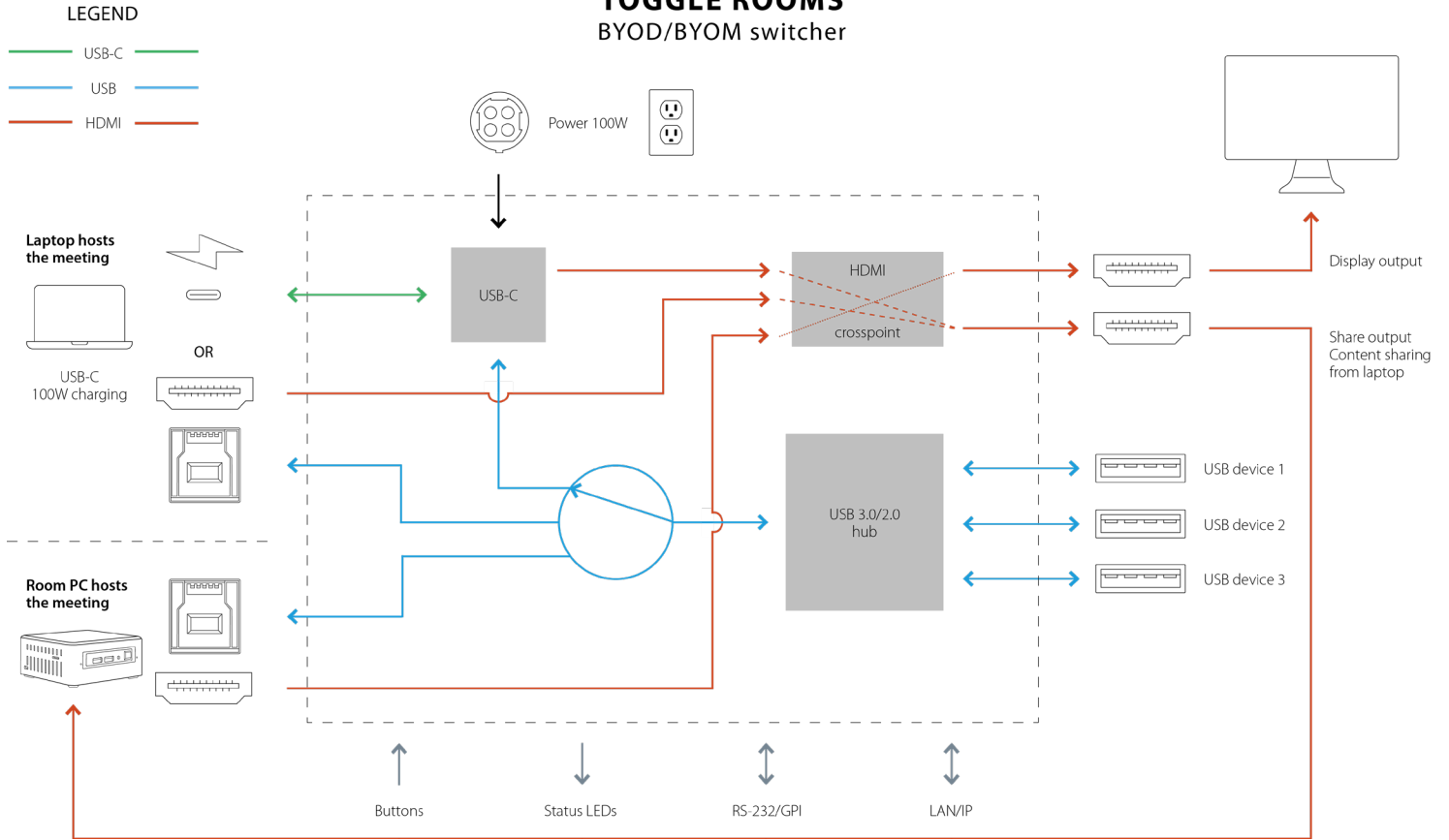
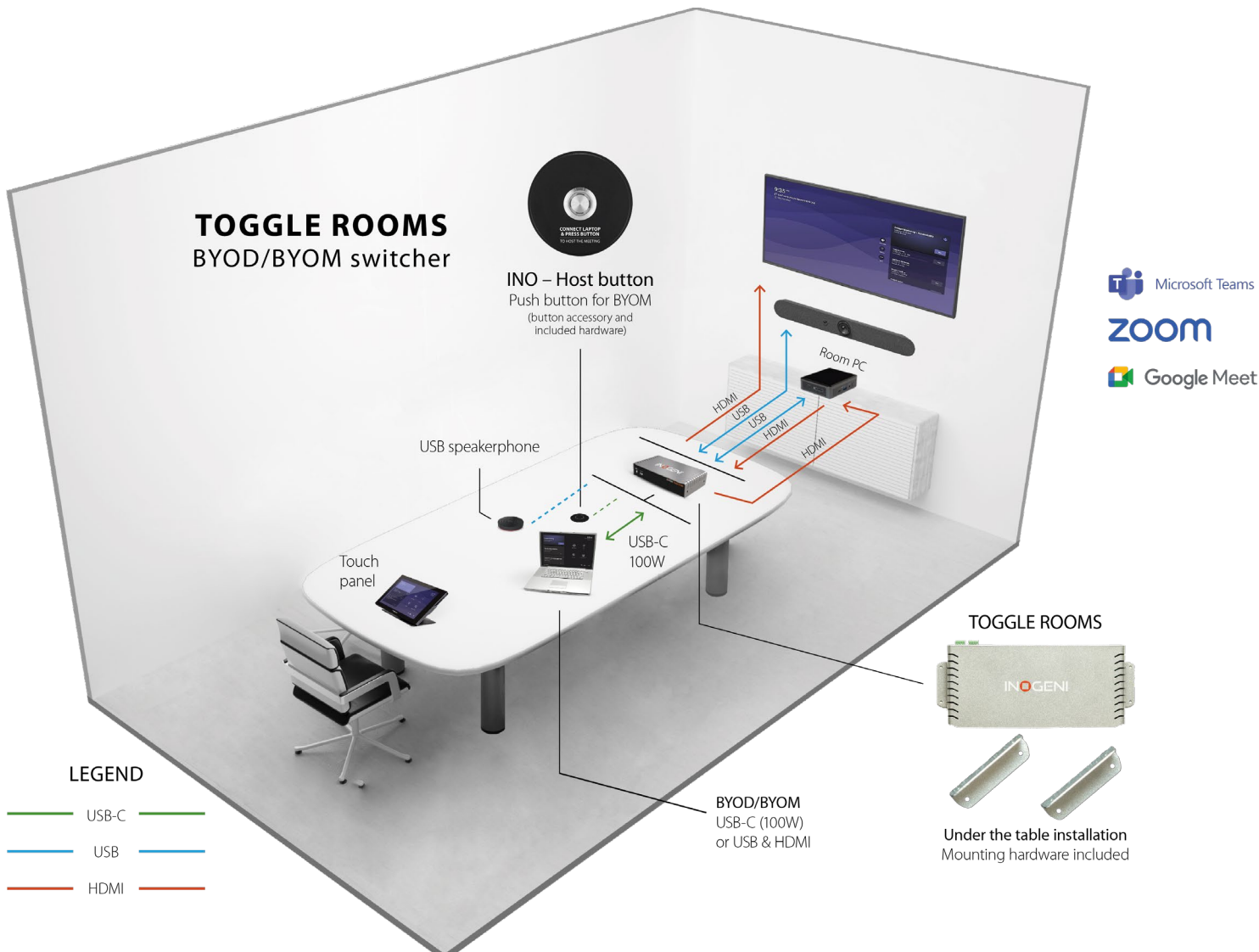


Figure 1: Basic block diagram

CONNECTIVITY DIAGRAM

Here is a simple connectivity diagram showing



Here are the devices interfaces.



Figure 2: Front side connections




Figure 3: Back side connections

Items	
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	24VDC power input.
4	USB-C laptop connection.
5	USB-B laptop connection.
6	HDMI laptop connection.
7	USB-B Room PC connection.
8	HDMI Room PC connection.
9	USB devices.
10	HDMI share output from laptop.
11	HDMI display output.
12	LAN interface.
13	RS232 and remote interface.
14	GPI/button interface.

LEDS BEHAVIOR

Here are the LEDs behavior:

LAPTOP HOSTS THE MEETING	
OFF	Laptop not selected.
SOLID	Laptop selected.
BLINK	Error condition. <ol style="list-style-type: none">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

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

AUTOMATIC

This is the default mode. This mode will switch automatically to the last source (USB or HDMI) connected if the operation mode is set to BYOM. 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.

SPECIFICATIONS

Here is the complete specification.

Physical details	
Dimensions (W x L x H)	25.11 cm x 10.97 cm x 3.26 cm 9.89" x 4.32" x 1.28"
Weight	770g
Power supply	160W (85-264VAC 50/60Hz to 24V/6.67A DC)
Power supply dimensions (W x L x H)	175 mm x 72 mm x 35 mm 6.89" x 2.83" x 1.38"
Package contents	1 x Toggle Rooms 1 x USB-C to USB-C cable – 6ft 1 x USB3.0 cable (USB-A to USB-B) – 3ft 2 x terminal block 4-pos 2 x mounting brackets 4 x M2.5 mounting screws for brackets on product 4 x screws for Toggle Rooms table/wall mount 1 x 24V/160W PSU 1 x AC power cord 1 x country-specific power plug (USA/CA or EU/UK/AU/BIS) 1 x PSU mounting brackets 4 x screws for PSU table/wall mount 1 x quickstart guide 4 x rubber feet
Operating temperature	0° to 45° C (32° to 113° F)
Storage temperature	-40° to 105° C (-40° to 221° F)
Relative humidity	0% to 90% non-condensing
Mounting options	Ability to mount under the table or on a wall.
UPC code	051497418694
Origin	Canada
Warranty	2 years

HOST - LAPTOP	
1x USB-C connector	Supports USB-C DisplayPort Alternate Mode <ul style="list-style-type: none"> - DisplayPort up to 3840x2160p60 / 4096x2160p60 - USB3.0 (USB 3.1 Gen 1 / 5 Gbps) - USB2.0 (480 Mbps) - Charging up to 100W - USB-C cable locking option
1x USB connector	USB 3.0 Type-B
1x HDMI connector	Up to 3840x2160p60 / 4096x2160p60 Cable locking option.

HOST - ROOMPC	
1x USB connector	USB 3.0 Type-B
1x HDMI connector	Up to 3840x2160p60 / 4096x2160p60. Cable locking option.

HDMI DISPLAY output	
Resolution	Up to 3840x2160p60 / 4096x2160p60.
Connector	HDMI with cable locking option.

HDMI SHARE output	
Resolution	Up to 3840x2160p60 / 4096x2160p60.
Connector	HDMI with cable locking option.

USB devices	
Connectors	3 x USB3.0 Type-A ports.
Power	1.8A shared between downstream ports.

Control	
Control options	Front button – for laptop selection RS232 GPI LAN USB
IP interface	10/100Mbps Supports DHCP or static addressing. IP control available through RESTAPI and telnet connections.
RS232 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
GPI interface	4-pos terminal block connector 2x Contact-closure control. GPI: <ul style="list-style-type: none"> - Controlled by open-drain IO (short to ground) or driven IO. - Supported voltage range: 0 to 12V max. - Voltage threshold is 2.3V. VOUT: <ul style="list-style-type: none"> - 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

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.

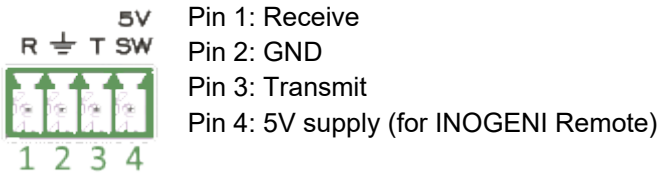
HDMI audio	
Audio	Audio passthrough from input to output
Formats	LPCM, Dolby Digital, DTS up to 192kHz

Certifications	
Device	FCC, CE, UKCA, RoHS, IEC62368, RCM, SoV
Power supply	FCC, CE, UKCA, RoHS, IEC62368, RCM, CCC, CB, EAC, VI, UL
TAA-compliance	Yes

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)

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.



NOTE: The user needs to put a **space character** between the command name and argument.

ARG	Lists all the available options for the arguments to be used with the command.
RX	When command does not have any argument or only first argument is provided, it will return information from the device.
TX	When command have all arguments, it will apply the configuration to the device.

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


Command	REQ/ ARG	Arguments	Return	
HELP Return commands list with description.	RX	N/A	List of all the supported commands.	
RSTR Restore default settings (including password and REST API token).	RX	N/A	ACK <CR><LF>	
REBOOT Reboot the device.	RX	N/A	ACK <CR><LF>	
VERSION Return firmware version.	RX	N/A	MAJOR=<Integer> <CR><LF> MINOR=<Integer> <CR><LF> ACK <CR><LF>	
STATUS Return laptop and RoomPC information, display and share output timings.	RX	N/A	List of all the status of the device.	
USBHOST Get/Set USB host to use.	ARG	<host> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop USB-B 3 => OFF		
		TX	<host>	ACK <CR><LF>
		RX	N/A	USBHOST=<host> <CR><LF> ACK <CR><LF>
DISPLAYSRC Get/Set which HDMI source to be routed to display output.	ARG	<src> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI 3 => OFF		
		TX	<src>	ACK <CR><LF>

Command	REQ/ ARG	Arguments	Return
	RX	N/A	DISPLAYSRC=<src><CR><LF> ACK<CR><LF>
SHARESRC Get/Set which HDMI source to be routed to share output.	ARG	<src> options: 0 => RoomPC [Not supported in automatic mode] 1 => Laptop USB-C 2 => Laptop USB-B 3 => OFF	
	TX	<src>	ACK<CR><LF>
	RX	N/A	SHARESRC=<src><CR><LF> ACK<CR><LF>
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 enter BYOM mode. When BYOM mode is set, the device will automatically switch all HDMI and USB peripherals to the laptop as soon as it is detected. When Custom mode is set, the user can set the USB, display and share source switching modes independently.	ARG	<opMode> options: 0 => RoomPC with BYOD/content sharing [default] 1 => BYOM 2 => Custom	
	TX	<opMode>	ACK<CR><LF>
	RX	N/A	OPMODE=<opMode><CR><LF> ACK<CR><LF>
USBHOSTSWMODE Get/Set USB host switching mode. The operation mode must be set to “Custom” to use this.	ARG	<swMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback	
	TX	<swMode>	ACK<CR><LF>
	RX	N/A	USBHOSTSWMODE=<swMode><CR><LF> ACK<CR><LF>
DISPLAYSWMODE Get/Set HDMI display source switching mode. The operation mode must be set to “Custom” to use this.	ARG	<swMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback	
	TX	<swMode>	ACK<CR><LF>
	RX	N/A	DISPLAYSWMODE=<swMode><CR><LF> ACK<CR><LF>
SHARESWMODE Get/Set HDMI share source switching mode. The operation mode must be set to “Custom” to use this.	ARG	<swMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback	
	TX	<swMode>	ACK<CR><LF>
	RX	N/A	SHARESWMODE=<swMode><CR><LF> ACK<CR><LF>
PRIORUSBHOST Get/Set USB laptop priority. Only applicable when USB host switching mode is automatic.	ARG	<host> options: 0 => Last detected host 1 => Laptop USB-C 2 => Laptop USB-B	
	TX	<host>	ACK<CR><LF>
	RX	N/A	PRIORUSBHOST=<host><CR><LF> ACK<CR><LF>
PRIORDISPLAYSRC	ARG	<src> options: 0 => Last detected source 1 => Laptop USB-C 2 => Laptop HDMI	

Command	REQ/ ARG	Arguments	Return
Get/Set laptop display source priority. Only applicable when display source switching mode is automatic.	TX	<src>	ACK<CR><LF>
	RX	N/A	PRIORDISPLAYSRC=<src><CR><LF> ACK<CR><LF>
PRIORSHARESRC Get/Set laptop share source priority. Only applicable when share source switching mode is automatic.	ARG	<src> options: 0 => Last detected source 1 => Laptop USB-C 2 => Laptop HDMI	
	TX	<src>	ACK<CR><LF>
	RX	N/A	PRIORSHARESRC=<src><CR><LF> ACK<CR><LF>
	NETWORK Get/Set network settings.	ARG	<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>
	RX	N/A	MODE=<mode><CR><LF> IP=<ip><CR><LF> NETMASK=<netmask><CR><LF> GATEWAY=<gateway><CR><LF> ACK<CR><LF>
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.	ARG	<hostname> option: String defined hostname to be shown on the network and USB HID interface. This string must not have space characters.	
	TX	<hostname>	ACK<CR><LF>
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.	ARG	<enable> options: 0 => OFF 1 => ON	
	TX	<enable>	ACK<CR><LF>
	RX	N/A	ENABLE=<enable><CR><LF> ACK<CR><LF>
CECPOWER Power ON/OFF the display.	ARG	<ctrl> options: 0 => power off 1 => power on	
	TX	<ctrl>	ACK<CR><LF>
CECTOGGLEMUTE Toggle mute control.	TX		ACK<CR><LF>
CECVOLUP Increase display volume.	TX		ACK<CR><LF>

Command	REQ/ ARG	Arguments	Return
CECVOLDOWN Decrease display volume.	TX		ACK<CR><LF>
EDID Set specific EDID modes to be reported to video source.	ARG	<p><src> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><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</p>	
	TX	<src> <edid>	ACK<CR><LF>
	RX	<src>	EDID=<edid><CR><LF> ACK<CR><LF>
EDIDUSR Set user EDID to be sent to specified source. Must have set the according video source EDID in user EDID mode.	ARG	<p><src> options 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><edidusr> => formatted 256 bytes array</p>	
	TX	<src> <256 bytes array>	ACK<CR><LF>
	RX	<src>	EDIDUSR=<edidusr><CR><LF> ACK<CR><LF>
USBC4K60EN Get/Set the USB-C working mode.	ARG	<p><mode> options: 0 => Disable 4K60 [default] 1 => Enable 4K60</p>	
NOTE: Enabling DisplayPort signal to support 4K60 will disable USB3.0 connectivity on USB-C port. USB2.0 will remain active.	TX	<mode>	ACK<CR><LF>
Disabling this option will allow user to support USB3.0 and 4K30 video.	RX	N/A	USBC4K60EN=<mode><CR><LF> ACK<CR><LF>
HDCPCTL Get/Set the HDCP setting.	ARG	<p><src> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><hdcpc> options: 0 => Disabled 1 => HDCP v1.4 2 => HDCP v2.2 3 => Auto</p>	
	TX	<src> <hdcpc>	ACK<CR><LF>
	RX	<src>	HDCP=<hdcpc><CR><LF> ACK<CR><LF>

Command	REQ/ ARG	Arguments	Return
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 <function> options: 0 => Disabled. 1 => BYOM mode control [default GPI1] SHORT = BYOM 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 => Laptop video source control SHORT = LAPTOP USB-C OPEN = LAPTOP HDMI	
	TX	<gpi> <mode> <function>	ACK<CR><LF>
	RX	<gpi>	MODE=<mode><CR><LF> FUNCTION=<function><CR><LF> ACK<CR><LF>
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.	ARG	<vout> options: 0 => Controlled by firmware. 1 => Logic-low. 2 => Logic-high.	
	TX	<vout>	ACK<CR><LF>
	RX	N/A	VOUT=<vout><CR><LF> ACK<CR><LF>
BAUDRATE Set RS232 baud rate.	ARG	<baudrate> options 0 => 9600 1 => 19200 2 => 38400 3 => 115200	
	TX	<baudrate>	ACK<CR><LF>
	RX	N/A	BAUDRATE=<baudrate><CR><LF> ACK<CR><LF>
BTNLOCK Get/Set the button lock status.	ARG	<lockState> options: 0 => Not locked 1 => Locked	
	TX	<lockState>	ACK<CR><LF>
	RX	N/A	BTNLOCK=<lockState><CR><LF> ACK<CR><LF>
SCALER Get/Set the scaler options over the HDMI video outputs.	ARG	<output> options: 0 => Display output 1 => Share output <enable> options: 0 => OFF 1 => ON	
	TX	<output> <enable>	ACK<CR><LF>
	RX	<output>	ENABLE=<enable><CR><LF> ACK<CR><LF>

Command	REQ/ ARG	Arguments	Return																																				
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.																																					
	ARG																																						
		<table border="1"> <thead> <tr> <th><devices></th> <th>USB #1</th> <th>USB #2</th> <th>USB #3</th> </tr> </thead> <tbody> <tr><td>0</td><td>OFF</td><td>OFF</td><td>OFF</td></tr> <tr><td>1</td><td>ON</td><td>OFF</td><td>OFF</td></tr> <tr><td>2</td><td>OFF</td><td>ON</td><td>OFF</td></tr> <tr><td>3</td><td>ON</td><td>ON</td><td>OFF</td></tr> <tr><td>4</td><td>OFF</td><td>OFF</td><td>ON</td></tr> <tr><td>5</td><td>ON</td><td>OFF</td><td>ON</td></tr> <tr><td>6</td><td>OFF</td><td>ON</td><td>ON</td></tr> <tr><td>7</td><td>ON</td><td>ON</td><td>ON</td></tr> </tbody> </table>	<devices>	USB #1	USB #2	USB #3	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	
	<devices>	USB #1	USB #2	USB #3																																			
	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																																				
TX	<host> <devices>	ACK<CR><LF>																																					
RX	<host>	DEVICES=<devices><CR><LF> ACK<CR><LF>																																					
AUTOHDMICEPWR 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.		<enable> options: 0 => OFF 1 => ON																																					
	TX	<enable>	ACK<CR><LF>																																				
	RX	N/A	ENABLE=<enable><CR><LF> ACK<CR><LF>																																				
HTTPEN Get/Set HTTP control setting.		<enable> options: 0 => OFF 1 => ON																																					
	TX	<enable>	ACK<CR><LF>																																				
	RX	N/A	ENABLE=<enable><CR><LF> ACK<CR><LF>																																				

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

ARG	Lists all the available options for the arguments to be used with the command.
RX	When command does not have any body arguments or only first argument is provided, it will return information from the device.
TX	When command have all body arguments, it will apply the configuration to the device.

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.

Here is the complete list of commands supported through the REST API (excluding password change, firmware update, bearer token get/set):




Command URL / Description	REQ/ ARG	Body arguments	Return body
HTTP GET https://<IP>/api/v1/help Return commands list with description.	RX	N/A	JSON object with multiple fields
HTTP GET/POST https://<IP>/api/v1/rstr Restore default settings (including password and REST API token).	RX	N/A	{ "message": <String> }
HTTP GET/POST https://<IP>/api/v1/reboot Reboot the device.	RX	N/A	{ "message": <String> }
HTTP GET https://<IP>/api/v1/version Return firmware version.	RX	N/A	{ "major": <Integer>, "minor": <Integer> }
HTTP GET https://<IP>/api/v1/status Return laptop and RoomPC information, display and share output timings.	RX	N/A	JSON object with multiple fields
HTTP GET/POST https://<IP>/api/v1/usbHost Get/Set USB host to use.		<usbHost> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop USB-B 3 => OFF	
	TX	usbHost=<host>	{ "message": <String> }
	RX	N/A	{ "usbHost": <host>, "message": <String> }


Command URL / Description	REQ/ ARG	Body arguments	Return body	
HTTP GET/POST https://<IP>/api/v1/ displaySrc	ARG	<displaySrc> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI 3 => OFF		
		TX	displaySrc=<src>	{ "message": <String> }
		RX	N/A	{ "displaySrc": <src>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ shareSrc	ARG	<shareSrc> options: 0 => RoomPC [Not supported in automatic mode] 1 => Laptop USB-C 2 => Laptop HDMI 3 => OFF		
		TX	shareSrc=<src>	{ "message": <String> }
		RX	N/A	{ "shareSrc": <src>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ opMode	ARG	<opMode> options: 0 => RoomPC with BYOD/content sharing [default] 1 => BYOM 2 => Custom		
		TX	opMode=<opMode>	{ "message": <String> }
		RX	N/A	{ "opMode": <opMode>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ usbHostSwMode	ARG	<usbHostSwMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback		
		TX	usbHostSwMode=<swMode>	{ "message": <String> }
		RX	N/A	{ "usbHostSwMode": <swMode>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ displaySwMode	ARG	<displaySwMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback		

Command URL / Description	REQ/ ARG	Body arguments	Return body
Get/Set HDMI display source switching mode. The operation mode must be set to "Custom" to use this.	TX	displaySwMode=<swMode>	{ "message": <String> }
	RX	N/A	{ "displaySwMode": <swMode>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/shareSwMode	ARG	<shareSwMode> options: 0 => Automatic mode [default] 1 => Manual mode 2 => Manual mode with fallback	
	TX	shareSwMode=<swMode>	{ "message": <String> }
Get/Set HDMI share source switching mode. The operation mode must be set to "Custom" to use this.	RX	N/A	{ "shareSwMode": <swMode>, "message": <String> }
	HTTP GET/POST https://<IP>/api/v1/priorUsbHost	ARG	<host> options: 0 => Last detected host 1 => Laptop USB-C 2 => Laptop USB-B
TX		<host>	{ "message": <String> }
Get/Set USB laptop priority. Only applicable when USB host switching mode is automatic.	RX	N/A	{ "priorUsbHost": <host>, "message": <String> }
	HTTP GET/POST https://<IP>/api/v1/priorDisplaySrc	ARG	<src> options: 0 => Last detected source 1 => Laptop USB-C 2 => Laptop HDMI
TX		<src>	{ "message": <String> }
Get/Set laptop display source priority. Only applicable when display source switching mode is automatic.	RX	N/A	{ "priorDisplaySrc": <src>, "message": <String> }
	HTTP GET/POST https://<IP>/api/v1/priorShareSrc	ARG	<src> options: 0 => Last detected source 1 => Laptop USB-C 2 => Laptop HDMI
TX		<src>	{ "message": <String> }
Get/Set laptop share source priority. Only applicable when share source switching mode is automatic.	RX	N/A	{ "priorShareSrc": <src>, "message": <String> }
	HTTP GET/POST https://<IP>/api/v1/network	ARG	<mode> options: static => addressing is static dhcp => use DHCP addressing
If mode is static, ip and netmask are required while gateway is optional.			
Get/Set network settings.	ARG	<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	

Command URL / Description	REQ/ ARG	Body arguments	Return body
	TX	mode=<mode> ip=<ip> netmask=<netmask> gateway=<gateway>	{ "message": <String> }
	RX	N/A	{ "mode": <static,dhcp>, "ip": <ip>, "netmask": <netmask>, "gateway": <gateway>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ hostname	ARG	<hostname> option: String defined hostname to be shown on the network and USB HID interface. This string must not have space characters.	
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=<hostname>	{ "message": <String> }
	RX	N/A	{ "hostname": <hostname>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ cecPassthroughEn	ARG	<enable> options: 0 => OFF 1 => ON	
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=<enable>	{ "message": <String> }
	RX	N/A	{ "enable": <enable>, "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ cecPower	ARG	<ctrl> options: 0 => power off 1 => power on	
Power ON/OFF the display.	TX	ctrl=<ctrl>	{ "message": <String> }
HTTP GET/POST https://<IP>/api/v1/ cecToggleMute	TX	N/A	{ "message": <String> }
Toggle mute control.			
HTTP GET/POST https://<IP>/api/v1/ cecVolUp	TX	N/A	{ "message": <String> }
Increase display volume.			
HTTP GET/POST https://<IP>/api/v1/ cecVolDown	TX	N/A	{ "message": <String> }
Decrease display volume.			

Command URL / Description	REQ/ ARG	Body arguments	Return body
<p>HTTP GET/POST https://<IP>/api/v1/ edid</p> <p>Set specific EDID modes to be reported to video source.</p>	ARG	<p><src> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><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</p>	<p>TX src=<src> edid=<edid></p> <pre>{ "message": <String> }</pre> <p>RX src=<src></p> <pre>{ "edid": <edid>, "message": <String> }</pre>
<p>HTTP GET/POST https://<IP>/api/v1/ edidUsr</p> <p>Set user EDID to be sent to specified source. Must have set the according video source EDID in user EDID mode.</p>	ARG	<p><src> options 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><edidUsr> => Filetype formatted 256 bytes array</p>	<p>TX src=<src> edidUsr=<256 bytes array></p> <pre>{ "message": <String> }</pre> <p>RX src=<src></p> <pre>{ "edidUsr": <edidUsr>, "message": <String> }</pre>
<p>HTTP GET/POST https://<IP>/api/v1/ usbc4K60En</p> <p>Get/Set the USB-C working mode.</p> <p>NOTE: Enabling DisplayPort signal to support 4K60 will disable USB3.0 connectivity on USB-C port. USB2.0 will remain active.</p> <p>Disabling this option will allow user to support USB3.0 and 4K30 video.</p>	ARG	<p><mode> options: 0 => Disable 4K60 [default] 1 => Enable 4K60</p>	<p>TX usbc4K60En=<mode></p> <pre>{ "message": <String> }</pre> <p>RX N/A</p> <pre>{ "usbc4K60En": <mode>, "message": <String> }</pre>
<p>HTTP GET/POST https://<IP>/api/v1/ hdcpCtl</p> <p>Get/Set the HDCP setting.</p>	ARG	<p><src> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI</p> <p><hdcp> options: 0 => Disabled 1 => HDCP v1.4 2 => HDCP v2.2 3 => Auto</p>	

Command URL / Description	REQ/ ARG	Body arguments	Return body
	TX	src=<src> hdcpc=<hdcpc>	{ "message": <String> }
	RX	src=<src>	{ "hdcpc": <hdcpc>, "message": <String> }
<p>HTTP GET/POST https://<IP>/api/v1/gpiCfg</p> <p>Get/Set the GPI configuration.</p> <p>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.</p> <p>In level mode, the function will be executed on short to GND and open states.</p>	<p>ARG</p> <p><gpi> options: 1 => GPI1 2 => GPI2</p> <p><mode> options: 0 => Pulse mode [default] 1 => Level mode</p> <p><function> options: 0 => Disabled. 1 => BYOM mode control [default GPI1] SHORT = BYOM 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 => Laptop video source control SHORT = LAPTOP USB-C  OPEN = LAPTOP HDMI</p>	<p>TX</p> <p>gpi=<gpi> mode=<mode> function=<function></p>	<p>{ "message": <String> }</p> <p>{ "mode": <mode>, "function": <function>, "message": <String> }</p>
<p>HTTP GET/POST https://<IP>/api/v1/vout</p> <p>Get/Set the VOUT level.</p> <p>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.</p>	<p>ARG</p> <p><vout> options: 0 => Controlled by firmware. 1 => Logic-low. 2 => Logic-high.</p>	<p>TX</p> <p>vout=<vout></p>	<p>{ "message": <String> }</p> <p>{ "vout": <vout>, "message": <String> }</p>
<p>HTTP GET/POST https://<IP>/api/v1/baudRate</p> <p>Set RS232 baud rate.</p>	<p>ARG</p> <p><baudrate> options 0 => 9600 1 => 19200 2 => 38400 3 => 115200</p>	<p>TX</p> <p>baudrate=<baudrate></p>	<p>{ "message": <String> }</p> <p>{ "baudrate": <baudrate>, "message": <String> }</p>
<p>HTTP GET/POST https://<IP>/api/v1/lockState</p>	<p>ARG</p> <p><lockState> options: 0 => Not locked 1 => Locked</p>		

Command URL / Description	REQ/ ARG	Body arguments	Return body																																				
btnLock Get/Set the button lock status.	TX	btnLock=<lockState>	{ "message": <String> }																																				
	RX	N/A	{ "btnLock": <lockState>, "message": <String> }																																				
HTTP GET/POST https://<IP>/api/v1/scaler Get/Set the scaler options over the HDMI video outputs.	ARG	<output> options: 0 => Display output 1 => Share output <enable> options: 0 => OFF 1 => ON																																					
	TX	output=<output> enable=<enable>	{ "message": <String> }																																				
	RX	output=<output>	{ "enable": <enable>, "message": <String> }																																				
HTTP GET/POST https://<IP>/api/v1/usbDevEn Get/Set the power on USB devices ports according to specific hosts.	ARG	<host> options: 0 => RoomPC 1 => Laptop USB-C 2 => Laptop HDMI 3 => When no host detected. <devices> options: Bitmask to enabled ports.  <table border="1" data-bbox="639 1121 1523 1367"> <thead> <tr> <th><devices></th> <th>USB #1</th> <th>USB #2</th> <th>USB #3</th> </tr> </thead> <tbody> <tr><td>0</td><td>OFF</td><td>OFF</td><td>OFF</td></tr> <tr><td>1</td><td>ON</td><td>OFF</td><td>OFF</td></tr> <tr><td>2</td><td>OFF</td><td>ON</td><td>OFF</td></tr> <tr><td>3</td><td>ON</td><td>ON</td><td>OFF</td></tr> <tr><td>4</td><td>OFF</td><td>OFF</td><td>ON</td></tr> <tr><td>5</td><td>ON</td><td>OFF</td><td>ON</td></tr> <tr><td>6</td><td>OFF</td><td>ON</td><td>ON</td></tr> <tr><td>7</td><td>ON</td><td>ON</td><td>ON</td></tr> </tbody> </table>	<devices>	USB #1	USB #2	USB #3	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	
	<devices>	USB #1	USB #2	USB #3																																			
	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																																				
TX	host=<host> devices=<devices>	{ "message": <String> }																																					
RX	host=<host>	{ "devices": <devices>, "message": <String> }																																					
HTTP GET/POST https://<IP>/api/v1/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.	ARG	<enable> options: 0 => OFF 1 => ON																																					
	TX	enable=<enable>	{ "message": <String> }																																				
	RX	N/A	{ "enable": <enable>, "message": <String> }																																				
HTTP GET/POST https://<IP>/api/v1/	ARG	<enable> options: 0 => OFF 1 => ON																																					

Command URL / Description	REQ/ ARG	Body arguments	Return body
httpEn Get/Set HTTP control setting.	TX	enable=<enable>	{ "message": <String> }
	RX	N/A	{ "enable": <enable>, "message": <String> }

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>		{ "message": <String> }
Change the username to <newUsername>.		
HTTP POST https://<IP>/api/v1/ changePassword? password=<newPassword>		{ "message": <String> }
Change the password to <newPassword>.		
HTTP GET https://<IP>/api/v1/ getAccessToken		{ "token": <String> }
Return the bearer token.		If no bearer token is set, the "token" field will be null.
HTTP POST https://<IP>/api/v1/ generateAccessToken		{ "message": <String> }
Generate random access token.		

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.

You can use any telnet application in order to communicate with the device using TCP. Make sure to use the right IP address and **port 23**. You can configure the telnet connection with a username/password to increase security.

Use the serial communication protocol to configure the device.

The `quit` command can be used to ask server for disconnection.

INOGENI MAESTRO APPLICATION

You can use our INOGENI Maestro application to monitor firmware information and upgrade your unit.



NOTE: You need to use the USB-B to USB-A cable provided with the box for the Maestro application to detect the unit.

INOGENI Maestro Device controller

TOGGLE ROOMS

GENERAL

Firmware version	1.23.4.2
MAC	E4:5F:01:EA:77:4D
IP	192.168.0.1
USB Speed	USB 3.0
Serial number	KC52370089
USB HOST	ROOM PC
Selected USB host	ROOM PC

INPUTS

USB-C Display port	3840 X 2160P @ 60HZ
Laptop HDMI	3840 X 2160P @ 60HZ
Room PC HDMI	3840 X 2160P @ 60HZ

OUTPUTS

Display	3840 X 2160P @ 60HZ
Share	3840 X 2160P @ 60HZ

STATUS | **SETTINGS** | **SYSTEM** | **PREVIEW** | **REBOOT DEVICE** | **LAPTOP HOSTS THE MEETING** | **RESOURCES**

GENERAL

Firmware Version	1.23.4.2
Hardware Revision	1.0
MAC Address	E4:5F:01:EA:77:4D
IP Mode	192.168.0.1
IP Address	192.168.0.81
Subnet mask	255.255.255.0
Gateway	192.168.0.1

VIDEO INPUTS

Laptop USB-C	Resolution: 3840x2160p @ 60Hz
HDCP	OFF
EDID mode	Passthrough
Laptop HDMI	Resolution: 3840x2160p @ 60Hz
HDCP	OFF
EDID mode	Passthrough
Room PC	Resolution: 3840x2160p @ 60Hz
HDCP	OFF
EDID mode	1080p60

DEVICE CONFIGURATION

Operation mode	Custom
DISPLAY switching mode	Manual with fallback
SHARE switching mode	Manual with fallback
USB switching mode	Manual with fallback
Selected DISPLAY source	Room PC
Selected SHARE source	Room PC
Selected USB host	Room PC
USB-C port speed	USB 3.0

VIDEO OUTPUTS

Display	Monitor: Solotech Monitor
Selected source	OFF
Share	Monitor: INOGENI Monitor
Selected source	OFF

DEVICE DETECTED

Room INOGENI	TOGGLE ROOMS
Connection IP	192.168.0.1
Firmware version	1.23.4.2
Room PRO AV	SHARE2U
Connection IP	192.168.0.1
Firmware version	1.23.4.2
Other	^

INOGENI Maestro Device controller

TOGGLE ROOMS

GENERAL

Firmware version	1.23.4.2
MAC	E4:5F:01:EA:77:4D
IP	192.168.0.1
USB Speed	USB 3.0
Serial number	KC52370089
USB HOST	ROOM PC
Selected USB host	ROOM PC

INPUTS

USB-C Display port	3840 X 2160P @ 60HZ
Laptop HDMI	3840 X 2160P @ 60HZ
Room PC HDMI	3840 X 2160P @ 60HZ

OUTPUTS

Display	3840 X 2160P @ 60HZ
Share	3840 X 2160P @ 60HZ

SETTINGS | **SYSTEM** | **PREVIEW** | **REBOOT DEVICE** | **LAPTOP HOSTS THE MEETING** | **RESOURCES**

DEVICE CONFIGURATION

Operation mode: RoomPC + BYOD Content sharing | BYOM | **Custom**

DISPLAY switching mode	Automatic	SHARE switching mode	Automatic	USB switching mode	Automatic
Manual	Manual with fallback				

HDMI / USB routing

Selected DISPLAY source	Room PC	Selected SHARE source	Room PC	Selected USB source	Room PC
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USB-C configuration

USB 3.0 support	On	Bulle contextuelle	CeritioSe dunt, sinclae voluptat.
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DEVICE DETECTED

Room INOGENI	TOGGLE ROOMS
Connection IP	192.168.0.1
Firmware version	1.23.4.2
Room PRO AV	SHARE2U
Connection IP	192.168.0.1
Firmware version	1.23.4.2
Other	^

Figure 4: INOGENI Maestro application preview

MECHANICAL SPECIFICATION

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

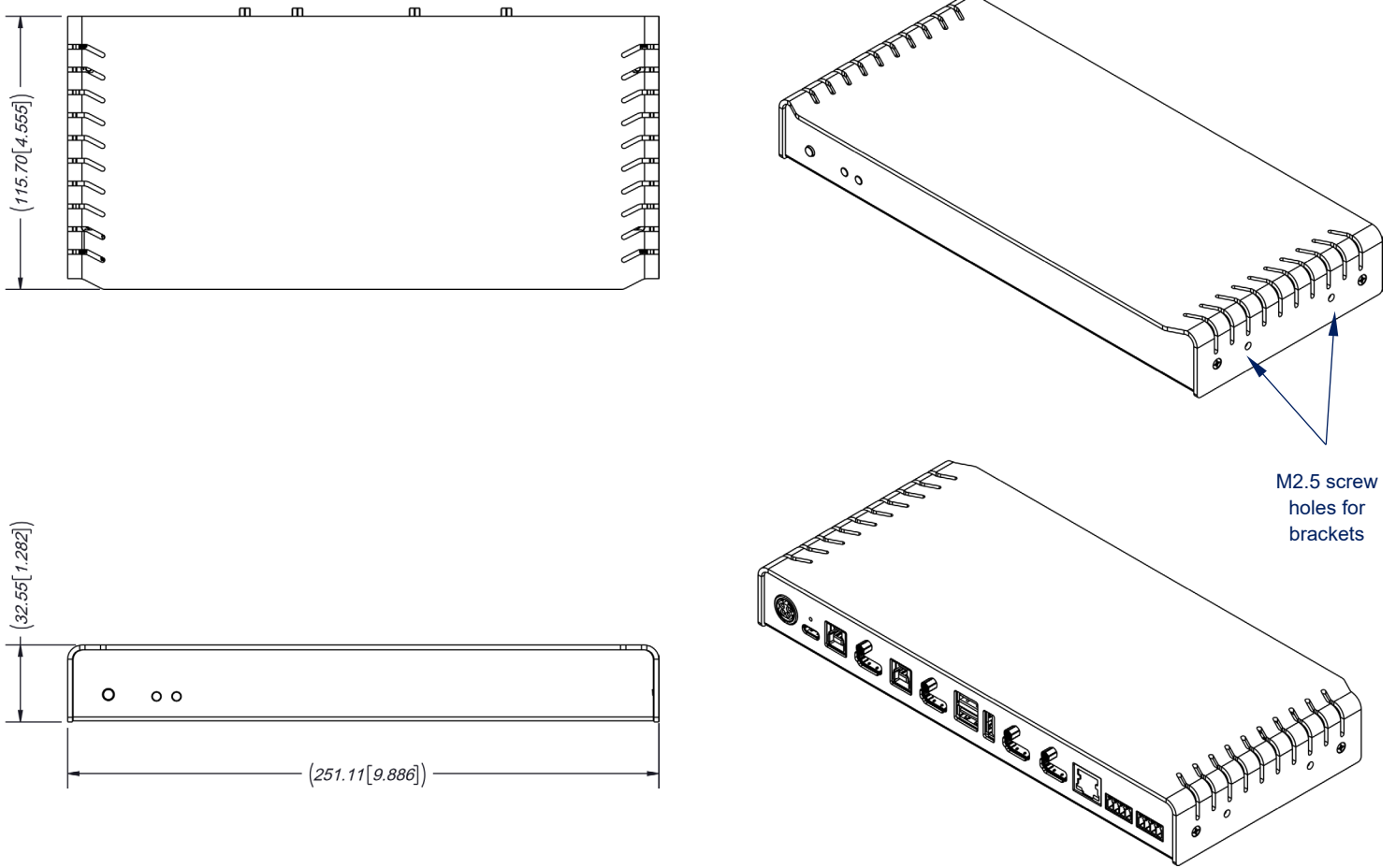


Figure 5: Top plate dimensions

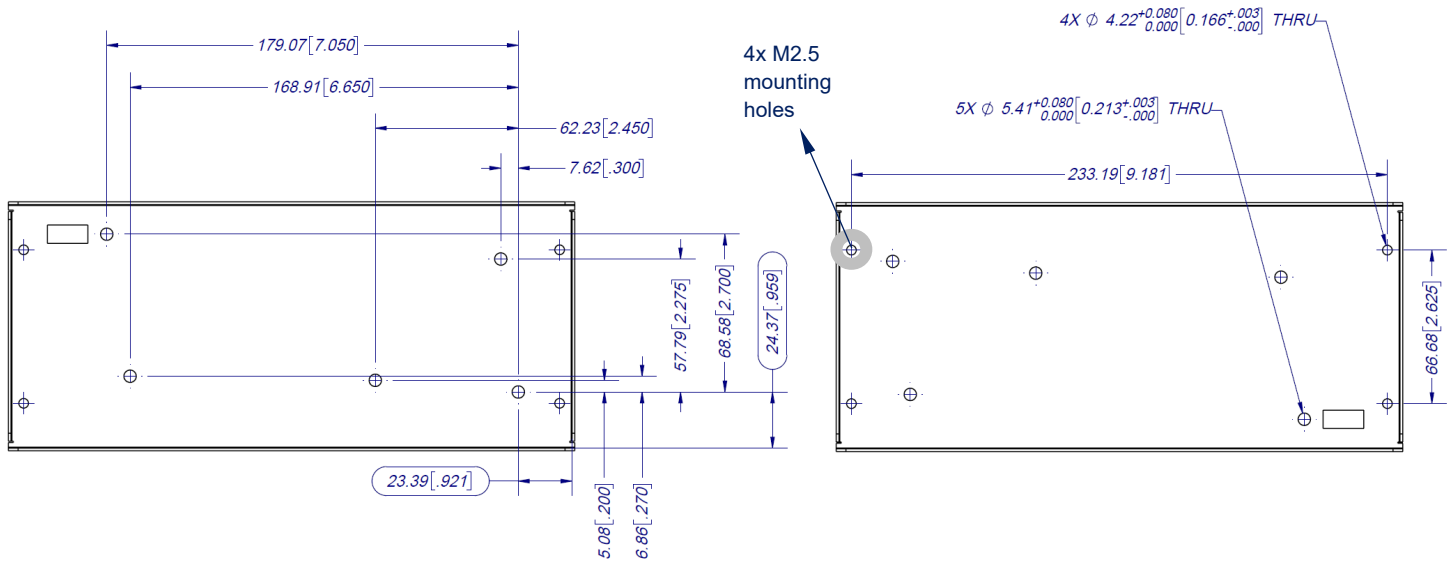


Figure 6: Bottom plate dimensions and holes positions

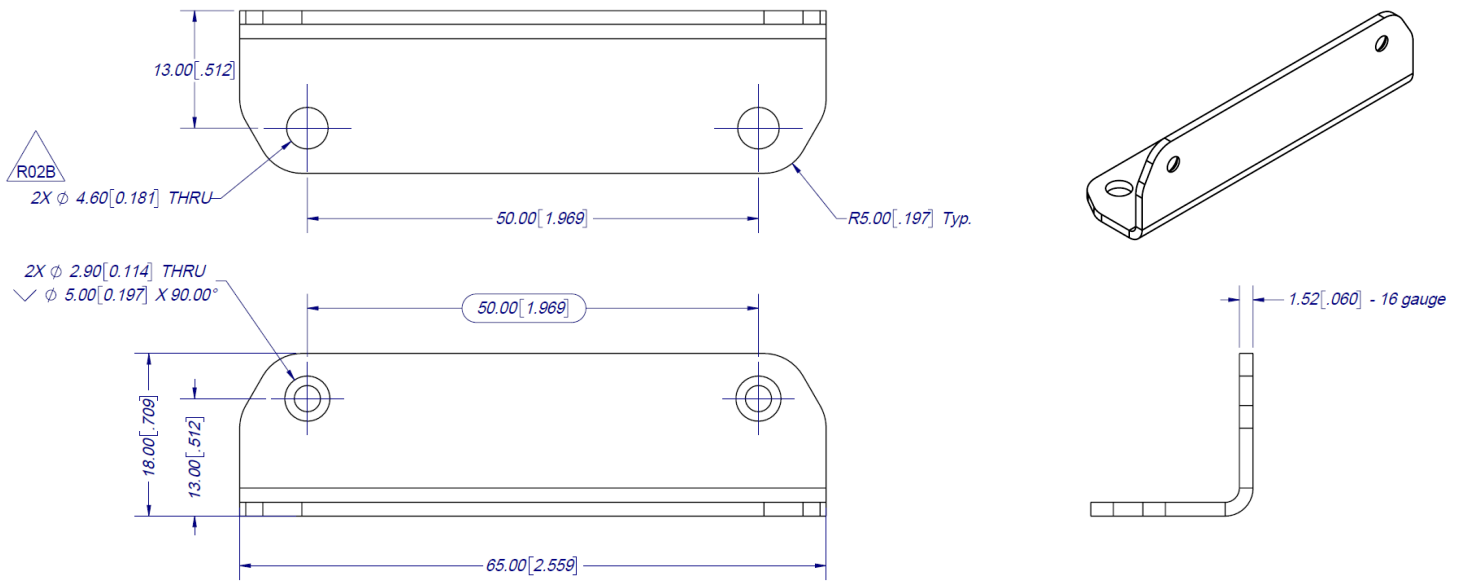


Figure 7: Bracket dimensions

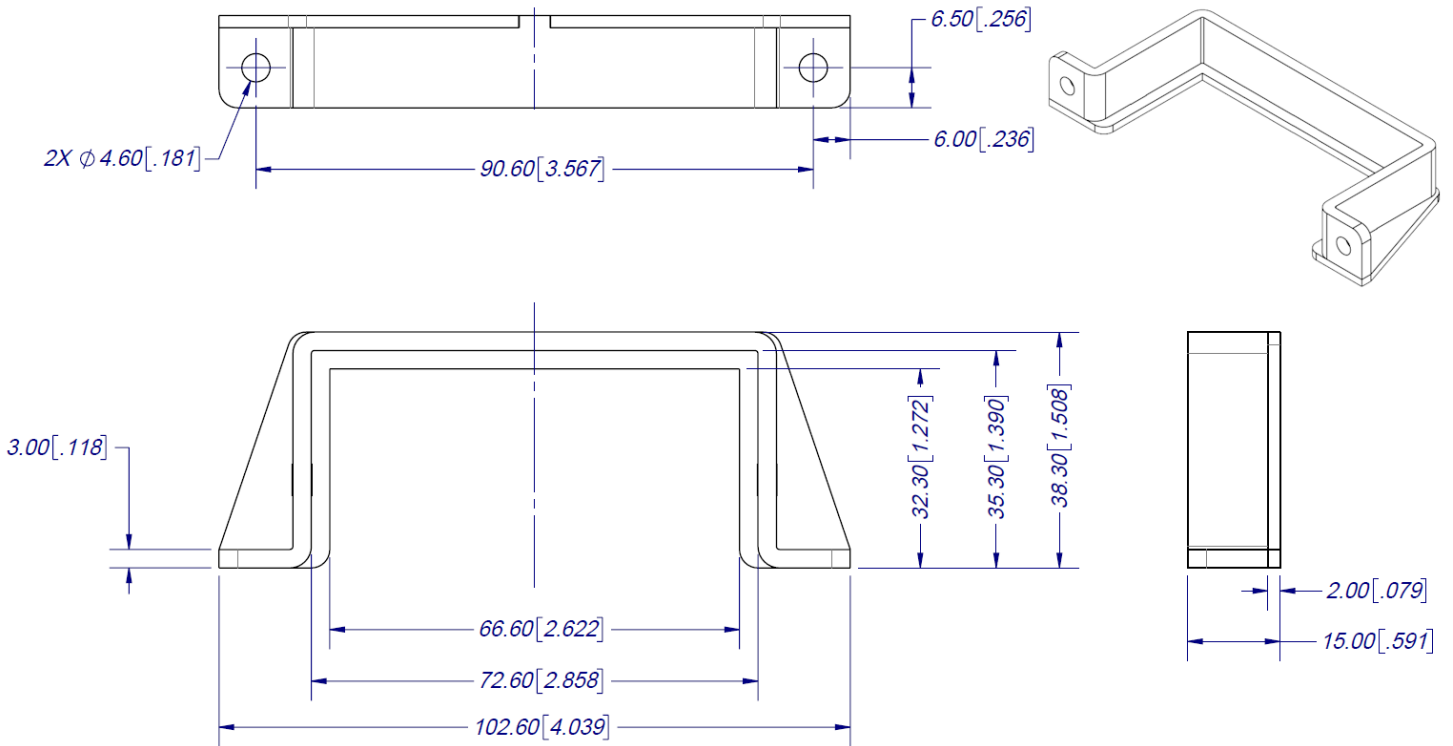


Figure 8: Power supply bracket dimensions

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 terminal block
	ON	Enable 5V on terminal block. This switch must be set to power up the connected remote.

TROUBLESHOOTING SECTION

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.
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.

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.

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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.



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.