User Manual

ALTIMIUM

SCA31TGB

Extender Scaler 3x1 + 1

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Version: SCA31TGB _2019V1.0

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Important Safety Instructions

1. Do not expose this apparatus to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

6. Clean this apparatus only with dry cloth.

2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

7. Unplug this apparatus during lightning storms or when unused for long periods of time.

3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.

8. Protect the power cord from being walked on or pinched particularly at plugs.

4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Only use attachments / accessories specified by the manufacturer.

5. Do not place sources of naked flames, such as lighted candles, on the unit.

10. Refer all servicing to qualified service personnel.

Table of Contents

Introduction

Overview

SCA31TGB is an advanced switching extender set featuring four inputs and UHD scaler. The included transmitter offers two HDMI inputs and one VGA input with stereo audio, and the receiver offers an HDMI input, enabling an additional AV source to be connected at the display location. The transmitter supports HDBT output up to 230ft/70m at 1080P and up to 131ft /40m at 4K@60Hz (YUV 4:2:0) over a CATX cable. The receiver supports the stereo audio de-embedding output from the HDMI output and connection with the audio system, such as an amplifier. Built-in scaler with resolutions up to 4K@60Hz YUV 4:4:4 ensures the optimal image quality for video signal output, and matches the native resolution of the display.

This extender set allows automatic and manual button switch among all inputs. It features CEC controller to automatically turn on/off the display by auto-detecting signal input. It also supports RS232 control to power on/off the display such as projector, and relay control to turn on/off projection screen via API commands. Its one way PoH enables the transmitter to receive power from the power-on receiver; only one power supply is needed.

SCA31TGB simplifies system integration in classrooms and small offices, and facilitates installation under conference tables and in lecterns, providing localized presentation switching support over long distances.

Features

- Two HDMI and one VGA inputs included on transmitter
- One HDMI input, one HDMI output along with one analog audio output included on receiver
- HDMI inputs support resolutions up to 4K@60Hz YUV 4:2:0 and HDCP 2.2; VGA input supports resolutions up to 1920 x 1200@60Hz
- Built-in 4K@60Hz YUV 4:4:4 scaler to match the native resolution of the display
- Supports automatic and manual button switch among all inputs
- Via a Cat 6a/7 cable, signal transmission up to 131ft/40m at 4K@60Hz (YUV 4:2:0) and 230ft/70m at 1080P
- Via a Cat 5e/6 cable, signal transmission up to 115ft/35m at 4K@60Hz (YUV 4:2:0) and 197ft/60m at 1080P
- HDMI audio de-embedded output with analog stereo
- Provides Telnet API control and configuration
- One-way PoH enables the transmitter to receive power from the power-on receiver (no additional power supply required at transmitter)
- Supports automatic CEC and API command to power on/off the display device
- Supports RELAY control to automatically turn on/off the projection screen

Package Contents

Before you start the installation of the product, please check the package contents as below:

- SCA31TGB (Transmitter Receiver Set) x1
- DC 12V 3A Power Supply x1
- Phoenix Male Connector (3.5mm, 3 Pins) x5
- Mounting Bracket x4

Specifications

Transmitter

Technical	
Input	2 x HDMI, 1 x VGA
Input Signal Type	• HDMI with 4K (4K@60Hz YUV 420), HDCP 2.2 • VGA
Input / Output Resolution Supported	VGA: $800x600^8$, $1024x768^8$, $1280x768^8$, $1280x800^8$, $1280x960^8$, $1280x1024^8$, $1360x768^8$, $1366x768^8$, $1440x900^8$, $1600x900^8$, $1600x1200^8$, $1680x1050^8$, $1920x1200^8$ HDMI: $800x600^8$, $1024x768^8$, $1280x720^8$, $1280x768^8$, $1280x800^8$, $1280x960^8$, $1280x1024^8$, $1360x768^8$, $1366x768^8$, $1440x900^8$, $1600x900^8$, $1600x1200^8$, $1680x1050^8$, $1920x1080^8$, $1920x1200^8$, $3840x2160P^{2,3,5,8(YUV4:2:0)}$, $4096x2160P^{2,3,5,8(YUV4:2:0)}$ 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz
Output	1x HDBT
Output Signal Type	HDBT
Audio Format	PCM 2.0
Control Method	Button and serial control

General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Power Supply	DC 12V 3A
Power Consumption (Max)	3.75W (2K Full loaded); 4.45W (4K Full loaded)
Device Dimension (W x H x D)	194.7mm x 20mm x 94mm/ 7.67" x 0.79" x 3.7"
Product Weight	0.5kg/1.10lb
Certification	CE, FCC

Receiver

Technical	
Input	1 x HDBT, 1 x HDMI
Input Signal Type	• HDBT port: HDBT • HDMI port: HDMI, HDCP 2.2
Input Resolution Supported	VGA: 800×600^8, 1024×768^8, 1280×768^8, 1280×800^8, 1280×960^8, 1280×1024^8, 1360×768^8, 1366×768^8, 1440×900^8, 1600×900^8, 1600×1200^8, 1680×1050^8, 1920×1200^8 HDMI: 800×600^8, 1024×768^8, 1280×720^8, 1280×768^8, 1280×800^8, 1280×960^8, 1280×1024^8, 1360×768^8, 1366×768^8, 1440×900^8, 1600×900^8, 1600×1200^8,

	1680x1050[8], 1920x1080[8], 1920x1200[8], 3840x2160P[2,3,5,8(YUV4:2:0)], 4096x2160P[2,3,5,8(YUV4:2:0)] 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz
Output	1x HDMI
Output Signal Type	HDMI, HDCP 2.2
Output Resolution Supported	1024x768[8], 1280x720[8], 1280x800[8], 1280x1024[8], 1920x1080[8], 1920x1200[8], 3840x2160P[5,8] 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = at 60 Hz
Audio De-embedding Output Format	Stereo audio
Control Method	Button, telnet and serial control
General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	±8kV(Air-gap discharge)/ ±4kV(Contact discharge)
Power Supply	DC 12V 3A

| Power Consumption (Max)	2K Full loaded: • RX powers TX: 18.95W • Powers TX and RX separately: 12.15W 4K Full loaded: • RX powers TX: 21.55W • Powers TX and RX separately: 13.95W
Device Dimension (W x H x D)	223.2mm x 25mm x 154.2mm/ 8.79" x 0.98" x 6.07"
Product Weight	0.94kg/2.07lb
Certification	CE, FCC

Cable Specifications:

Note: Altimium recommends the use of T568B straight-through Category cables.

| Cable Type	Range	Supported Video
HDMI	Input: 49ft/15m Output: 33ft/10m	1080P@60Hz
	Input: 33ft/10m	4K@60Hz 4:2:0 8bit
	Output: 16ft/5m	4K@60Hz 4:4:4 8bit
CAT5e/CAT6	197ft/60m	1080P@60Hz 36 bpp
	115ft/35m	1080P@60Hz 48 bpp 1080P@60Hz 3D 4K@60Hz 4:2:0 8bit
CAT6a/CAT7	230ft/70m	1080P@60Hz 36 bpp
	131ft/40m	1080P@60Hz 48 bpp 1080P@60Hz 3D 4K@60Hz 4:2:0 8bit

Panel Layout

Transmitter

Front Panel
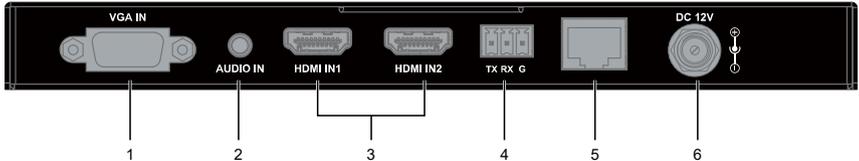
| No.	Name	Description
1	VGA IN	Connect to the VGA source.
2	AUDIO IN	Audio input, embedded with the VGA source.
3	HDMI IN 1-2	Connect to the HDMI source.
4	RS232	For API command control
5	HDBT OUT	Connect to the receiver via a CATX cable.
6	DC 12V	Connect to DC 12V power supply. **Note:** When receiver is powered on, the connected transmitter requires no additional power adapter.

Rear Panel

No.	Name	Description
1	FW UPDATE	Connect to a PC for firmware update or API command control.
2	POWER LED (Red)	**On:** The transmitter is powered on. **Off:** The transmitter is powered off.
3	STATUS LED (Blue)	**Blinking:** The transmitter is working properly. **Off:** The transmitter is not working properly.
4	HDCP LED (Green)	**On:** HDCP protected content is being transmitted. **Blinking:** Non-HDCP protected content is being transmitted. **Off:** No content is being transmitted.
5	LINK LED (Green)	**On:** The link between transmitter and receiver is normal. **Blinking:** The link between transmitter and receiver is abnormal. **Off:** No link
6	AUTO LED (Blue)	**On:** Input auto switch function is activated. **Off:** Input auto switch function is inactivated.
7	AUTO Button	Press to activate/inactivate auto switch function.
8	VGA IN LED	**Solid violet:** The input has signal and is selected. **Solid orange:** The input has signal but is not selected. **Solid blue:** The input has no signal but is selected. **Off:** The input has no signal and is not selected.
9	VGA IN Button	Press to select the VGA input.
10	HDMI IN1 LED	**Solid violet:** The input has signal and is selected. **Solid orange:** The input has signal but is not selected. **Solid blue:** The input has no signal but is

| No.	Name	Description
		selected.
		Off: The input has no signal and is not selected.
11	HDMI IN1 Button	Press to select the HDMI input 1.
12	HDMI IN2 LED	**Solid violet:** The input has signal and is selected.
		Solid orange: The input has signal but is not selected.
		Solid blue: The input has no signal but is selected.
		Off: The input has no signal and is not selected.
13	HDMI IN2 Button	Press to select the HDMI input 2.

Receiver

Front Panel
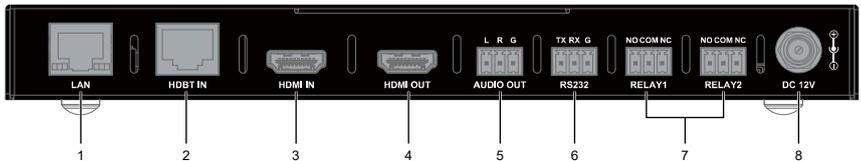
No.	Name	Description
1	LAN	Connect to a PC for Telnet API command control.
2	HDBT IN	Connect to the transmitter via a CATX cable.
3	HDMI IN	Connect to the HDMI source.
4	HDMI OUT	Connect to the HDMI display.
5	AUDIO OUT	Connect to the audio receiver for HDMI audio de-embedding output such as amplifier.
6	RS232	Connect to the display device for RS232 control.
7	RELAY 1-2	Connect to the projection screen for API command control.

No.	Name	Description
8	DC 12V	Connect to DC 12V power supply.

<u>Rear Panel</u>
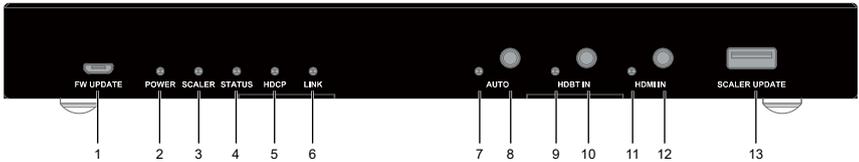
| No.	Name	Description
1	FW UPDATE	Connect to a PC for firmware update or API command control.
2	POWER LED (Red)	**On:** The receiver is powered on. **Off:** The receiver is powered off.
3	SCALER LED (Blue)	**Blinking:** The scaler module is working properly. **Off:** The scaler module is not working properly.
4	STATUS LED (Blue)	**Blinking:** The receiver is working properly. **Off:** The receiver is not working properly.
5	HDCP LED (Green)	**On:** HDCP protected content is being transmitted. **Blinking:** Non-HDCP protected content is being transmitted. **Off:** No content is being transmitted.
6	LINK LED (Green)	**On:** The link between transmitter and receiver is normal. **Blinking:** The link between transmitter and receiver is abnormal. **Off:** No link
7	AUTO LED (Blue)	**On:** Input auto switch function is activated (default).

No.	Name	Description
		Off: Input auto switch function is inactivated.
8	AUTO Button	Press to activate/inactivate auto switch function.
9	HDBT IN LED	**Solid violet:** The input has signal and is selected. **Solid orange:** The input has signal but is not selected. **Solid blue:** The input has no signal but is selected. **Off:** The input has no signal and is not selected.
10	HDBT IN Button	Press to select HDBT input.
11	HDMI IN LED	**Solid violet:** The input has signal and is selected. **Solid orange:** The input has signal but is not selected. **Solid blue:** The input has no signal but is selected. **Off:** The input has no signal and is not selected.
12	HDMI IN Button	Press to select HDMI input.
13	SCALER UPDATE	For scaler module update

Connections and Installations

1. Connect the VGA (such as PC) and HDMI sources (such as Blu-ray player, Apple TV, 4K media player, etc) to the VGA IN, AUDIO IN and HDMI IN ports of the transmitter respectively.

2. Connect the HDBT OUT of the transmitter to the HDBT IN of the receiver via a qualified CAT5e/6/6a/7 cable.

3. Connect an HDMI source (such as BYOD system) to the HDMI IN port of the receiver.

4. Connect the HDMI display device (such as projector) to the HDMI OUT of the receiver.

5. Connect an audio receiver to the AUDIO OUT of the receiver.

6. Connect the projection screen to the RELAY1 and RELAY2 of the receiver to control the screen.

7. Connect a PC to the LAN port of the receiver for Telnet control.

8. Connect the included DC 12V power supply to the receiver. One-way PoH enables the power to be sent from receiver to transmitter along a single CATX cable, and no additional power adapter is required at the transmitter.

PC STB Blu-ray player

VGA IN AUDIO IN HDMI IN HDMI IN

VGA IN

AUDIO IN HDMI IN1 HDMI IN2 TX RX G DC 12V

Transmitter

CATX Cable

LAN HDBT IN HDMI IN HDMI OUT AUDIO OUT RS232 RELAY1 RELAY2 DC 12V

L R G TX RX G NO COM NC NO COM NC

Receiver

Telnet Control

HDMI IN HDMI OUT AUDIO OUT RELAY RELAY

Amplifier

BYOD

PC BYOD System Projector Projection Screen
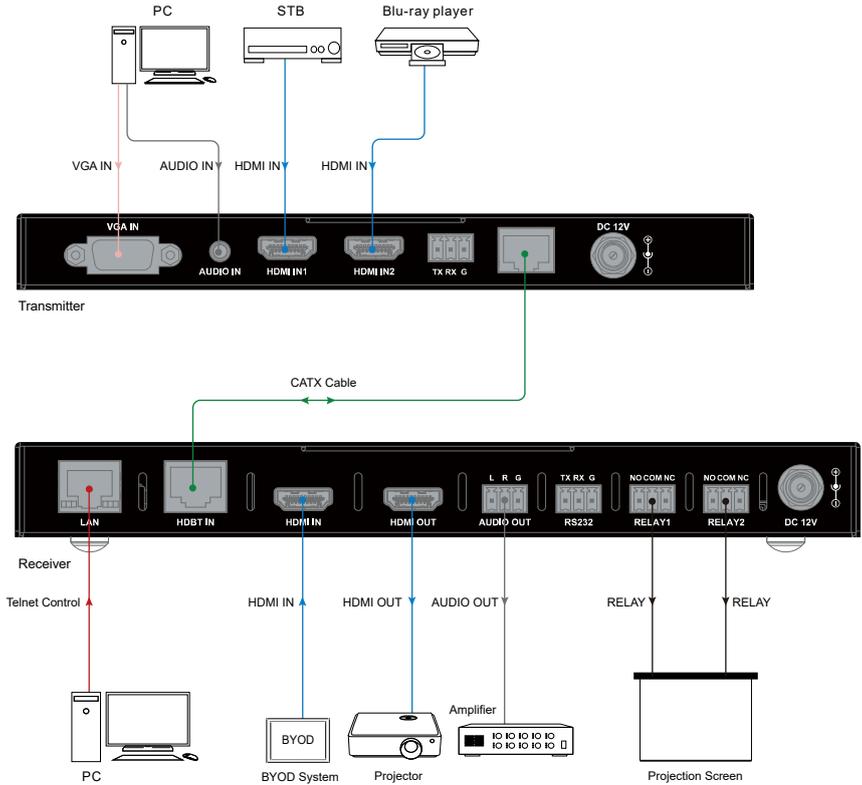
Input Source Switch

This extender set supports auto and manual button switch between the HDBT and HDMI inputs.

Auto Switch

Press AUTO button, auto switch function will be activated immediately.

Priority: HDMI 1 > HDMI 2 > VGA (for transmitter); HDBT > HDMI (for receiver).

1. When multiple sources are inserted, power on all devices, the input in top priority will be selected.
2. When a source is removed, the input will be switched to the source in top priority automatically.
3. When a new source is inserted, the input will be switched to the new source automatically.

Note: The auto switch function will be activated by default once all devices are powered on.

Manual Button Switch

Transmitter

Receiver
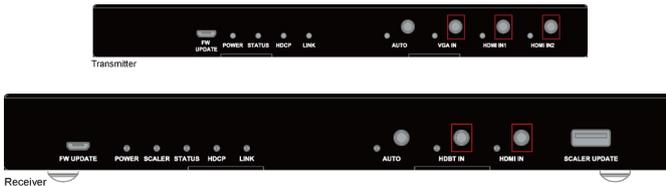
Users can manually switch to specific inputs among the multiple sources by pressing the corresponding buttons on the rear panel of both units (see buttons in red frames above). When the manual switch function is triggered, the auto switch function will be inactivated simultaneously.

API Command Control

SCA31TGB support API command control via RS232, FW UPDATE and LAN ports.

Example:

To power on/off the connected display like projector in real time via API commands, here list the following steps for users' reference.

1.   Connection

➢   Control at transmitter

Connect a PC to the RS232/FW UPDATE port of the transmitter, and connect a projector to the RS232 port of any other HDBT receiver.
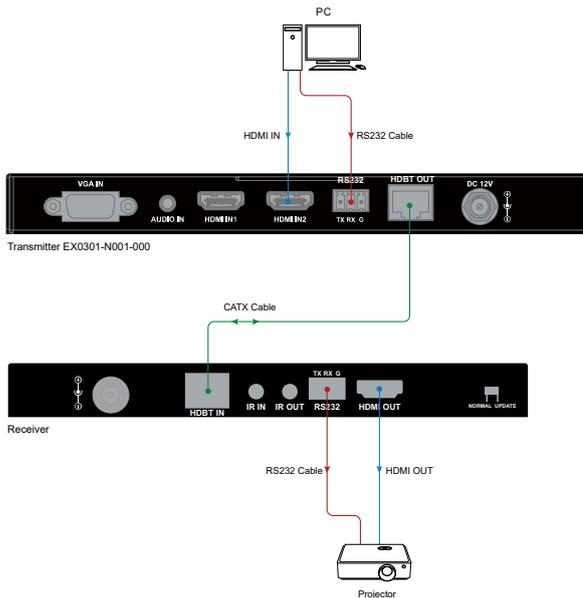
> ➢ Control at receiver
>
> Connect a PC to the LAN/FW UPDATE port, and a projector to the RS232 port of receiver
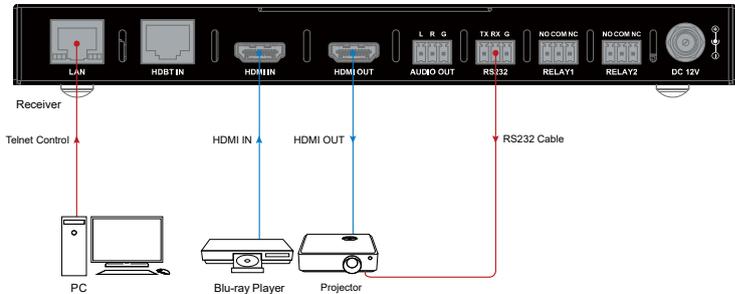
2. Set serial port parameters

Suppose the RS232 control codes for your connected projector are as follows,

Baudrate: 9600

Power on: 50 57 52 20 4F 4E 0D 0A

Power off: 50 57 52 20 4F 46 46 0D 0A

First, open your serial debugging tool in the PC, set the UART baudrate to 9600.

> ➢ Control at transmitter: enter command "*SET UART_INFO 9600 tx*" and end it up with CR/LF, click "Send".
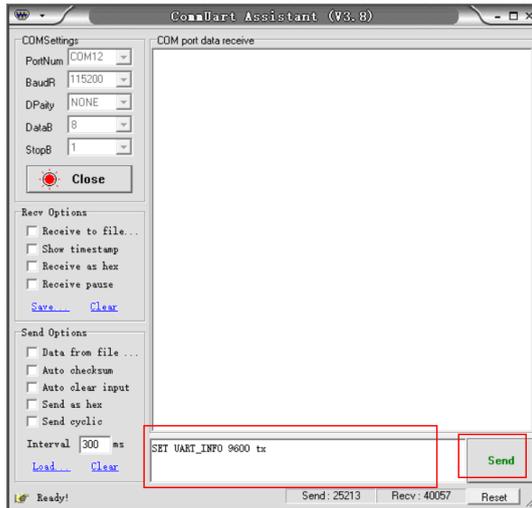
➢ Control at receiver: enter command "*SET UART_INFO 9600 rx*" and end it up with CR/LF, click "Send".
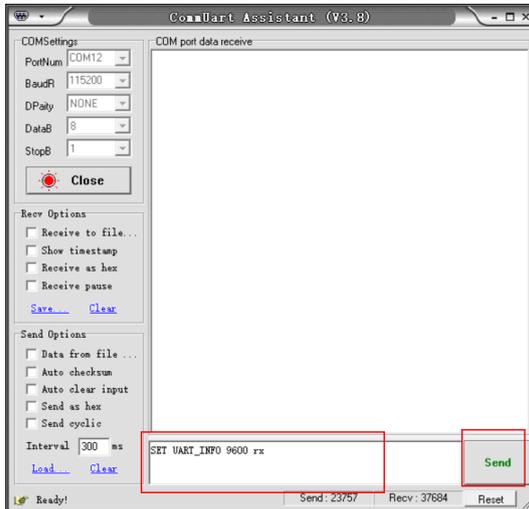
Second, set the serial data sending type to hexadecimal format.

➢ Control at transmitter: enter "*SET UART_DATATYPE hex tx*", end it up with CR/LF, and then click "Send".
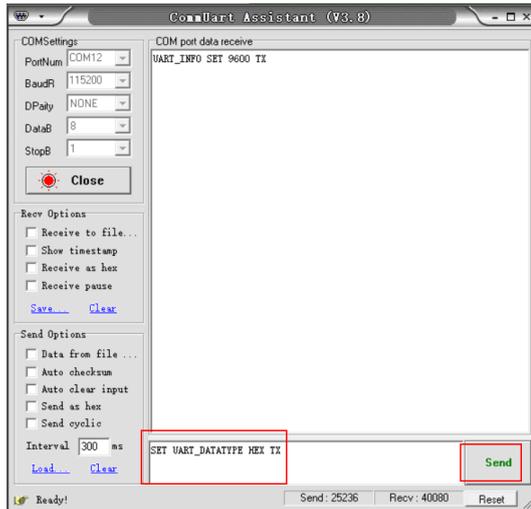
➢ Control at receiver: enter "*SET UART_DATATYPE hex rx*", end it up with CR/LF, and then click "Send".
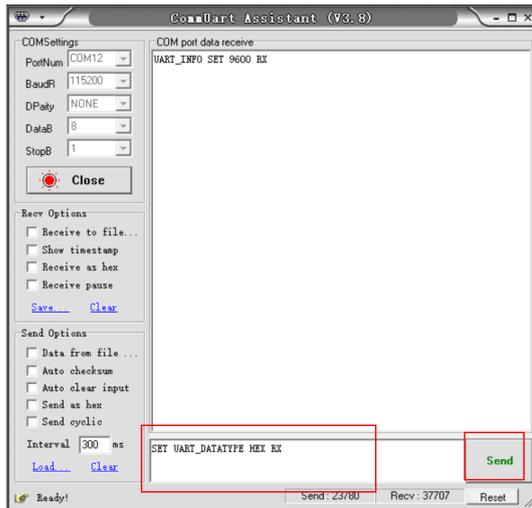
Third, edit UART command in hexadecimal format.

Set power on command: enter "*SET UART_HEX on 50 57 52 20 4F 4E 0D 0A*" and end it up with CR/LF, click "Send".
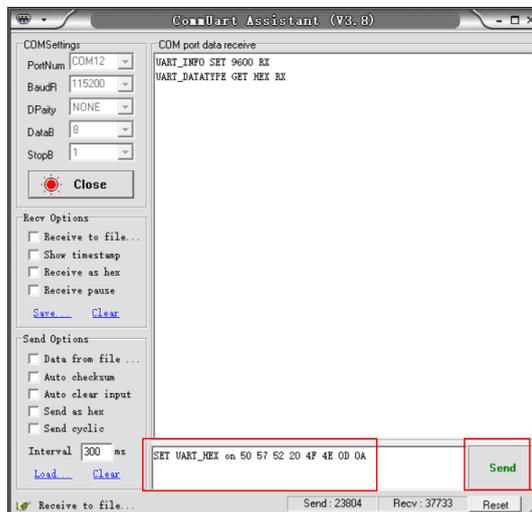
Set power off command: enter "*SET UART_HEX off 50 57 52 20 4F 46 46 0D 0A*" and end it up with CR/LF, click "Send".
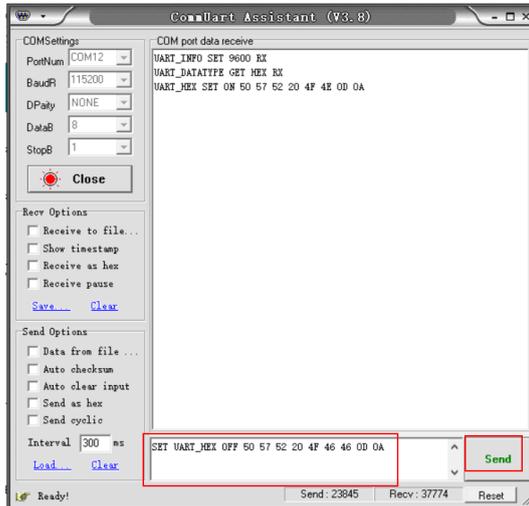

3. Set UART to power on/off to control the projector
   ➢ Control at transmitter
     To turn on the projector: enter "*SET UART_PWR all on tx*", end it up with CR/LF, and then click "Send".
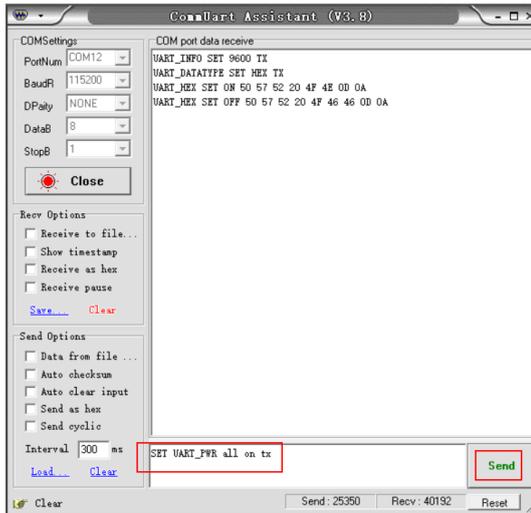
To turn off the projector: enter "*SET UART_PWR all off tx*", end it up with CR/LF, and then click "Send".
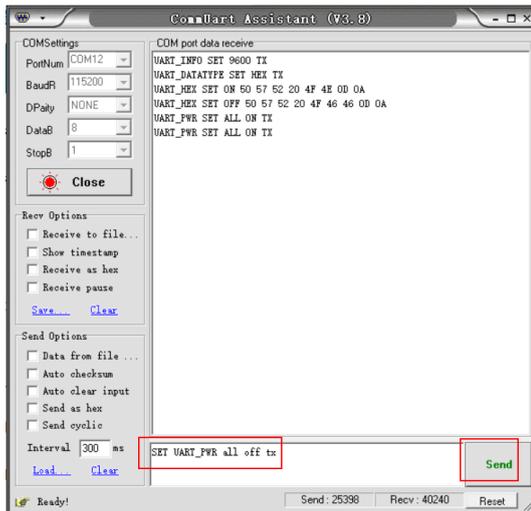

➢ Control at the receiver

To turn on the projector, enter "*SET UART_PWR all on rx*", end it up with CR/LF, and then click "Send".
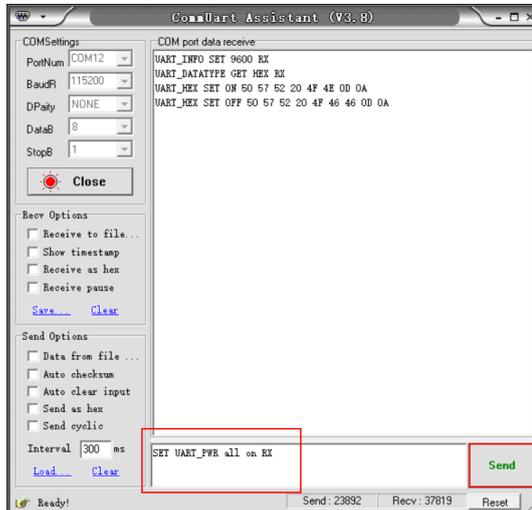
To turn off the projector, enter "*SET UART_PWR all off rx*", end it up with CR/LF, and then click "Send".
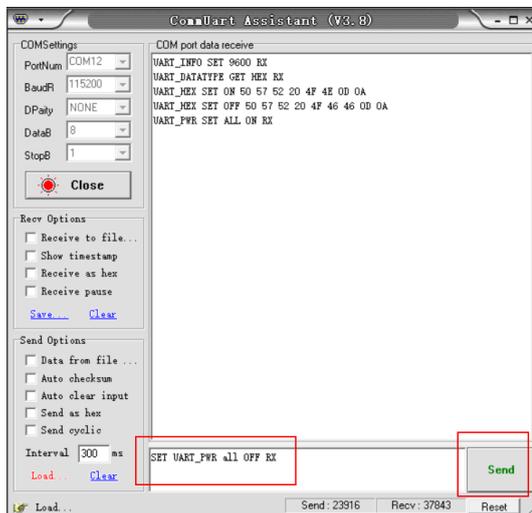
Please refer to the *API Command Set* document for more commands if required.

Trouble Shooting

Steps of Regular Troubleshooting Routine

1. **Power**: Please make sure all devices are powered on (the sources, transmitter, receiver and display).

2. **Indicator**: Please make sure LED indicators of the transmitter and receiver are normal according to user manual.

3. **Devices**: Please make sure picture can be shown normally when connecting the source to the display directly.

4. **Cable**: Plug in and out HDMI/Cat X cable or try another HDMI/Cat X cable.

    •   Please make sure the specific cable length is within the transmission range listed in below table based on different resolutions.

Resolution and Transmission Range			
Resolution / Cable	1080P@60	4K@60 420 /4K@30	4K@60 444
HDMI IN	49ft	33ft	N/A
HDMI OUT	33ft	16ft	16ft
Cat 5e/6	197ft	115ft	N/A
Cat 6a/7	230ft	131ft	N/A

    •   Cat 5e/6/6a/7 cable is recommended. Do not use Cat 5 cable. Please make sure the two connectors of one Cat X cable are the same standard (EIA/TIA 568B).

5. **Compatibility**: Please test other source and display devices to determine if it is a compatibility issue.

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Warranty Terms and Conditions

For the following cases Altimium shall charge for the service(s) claimed for the products if the product is still remediable and the warranty card becomes unenforceable or inapplicable.

1. The original serial number (specified by Altimium) labeled on the product has been removed, erased, replaced, defaced or is illegible.

2. The warranty has expired.

3. The defects are caused by the fact that the product is repaired, dismantled or altered by anyone that is not from a Altimium authorized service partner. The defects are caused by the fact that the product is used or handled improperly, roughly or not as instructed in the applicable User Guide.

4. The defects are caused by any force majeure including but not limited to accidents, fire, earthquake, lightning, tsunami and war.

5. The service, configuration and gifts promised by salesman only but not covered by normal contract.

6. Altimium preserves the right for interpretation of these cases above and to make changes to them at any time without notice.

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