



# User Manual

## BG-UHD-88M18G

## BG-UHD-44M18G

HDMI 2.0 Matrix with

Audio Matrix / Downscaling / AOC Supported



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## Preface

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

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till September, 2019. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

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

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



## **SAFETY PRECAUTIONS**

To ensure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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# 1. Introduction

The BG-UHD-88M18G / BG-UHD-44M18G is a professional HDMI 2.0 Matrix Switcher with Audio Matrix. It includes HDMI inputs, HDMI outputs and outputs with down-scaling functions, which is designed for switching HDMI2.0 and HDCP2.3 compliant signals. It also features SPDIF and analog audio outputs for audio matrix.

The matrix switcher features comprehensive EDID management and advanced HDCP handling to ensure maximum functionality with a wide range of video sources.

The matrix switcher not only supports bi-directional IR, RS232 extension but also has IR, RS232, and TCP/IP control options.

## 1.1 Features

- HDMI 2.0 Matrix Switcher.
- Supports 4K/60 4:4:4, HDR, HDCP2.3 compliant.
- Audio Matrix, audio out can be de-embedded from arbitrary input or output.
- Individual volume adjustment on each L+R output.
- Supports 4K to 1080p down-scaling.
- HDMI out provides 2.5W to power Active Optical Cable (AOC).
- HDMI Output support up to 5V500mA for AOC cable
- Controllable by front panel, IR, RS232 and TCP/IP.

## 1.2 Package List

- 1x BG-UHD-88M18G or 1x BG-UHD-44M18G
- 6x Screws
- 1x RS232 cable (3-pin to DB9)
- 1x IR remote
- 1x User manual
- 2x Mounting ears
- 4x Plastic cushions
- 1x IR receiver
- 1x Power adaptor (DC 24V 2.71A)

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

## 2. Specification

|                             |   |
|-----------------------------|---|
| <b>Video</b>                | <b>BG-UHD-88M18G only</b>   |
| Video Input                 | (8) HDMI  |
| Input Connector             | (8) Type-A female HDMI  |
| HDMI Input Resolution       | Up to 4K@60Hz 4:4:4, HDR  |
| Video Output                | (8) HDMI  |
| Output Connector            | (8) Type-A female HDMI  |
| HDMI Output Resolution      | Up to 4K@60Hz 4:4:4, HDR10 and Dolby Vision   |
| HDMI Output                 | Supports up to 5V500mA for AoC cable  |
| HDMI Version                | Up to 2.0   |
| HDCP Version                | Up to 2.3   |
| HDMI Audio Signal           | LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through. |
| <b>Digital Audio Output</b> |   |
| Output                      | (8) Digital SPDIF audio   |
| Output Connector            | (8) Toslink connector   |
| Digital SPDIF Audio Format  | Supports PCM, Dolby Digital, DTS, DTS-HD  |
| Frequency Response          | 20Hz – 20KHz, ± 1dB   |
| Max Output Level            | ± 0.05dBFS  |
| THD+N                       | < 0.05%, 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0dBFS level (or max level)                                       |
| SNR                         | > 90dB, 20Hz-20KHz bandwidth  |
| Crosstalk Isolation         | < -70 dB, 10 kHz sine at 0 dBFS level (or max level before clipping)  |
| Noise                       | -90dB   |
| <b>Analog Audio Output</b>  |   |
| Output                      | (8) Analog L/R Audio  |
| Output Connector            | (8) L&R (RCA)   |
| Digital SPDIF Audio Format  | PCM 2CH   |
| Frequency Response          | 20 Hz to 20 kHz, ±1dB   |
| Max Output Level            | 2.0Vrms ± 0.5dB. 2 V = 16 dB headroom above -10dBV (316 mV) nominal consumer line level signal                    |
| THD+N                       | < 0.05%, 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0dBFS level (or max level)                                       |
| SNR                         | > 80dB, 20Hz-20 kHz bandwidth   |
| Crosstalk Isolation         | < -80 dB, 10 kHz sine at 0dBFS level (or max level before clipping)   |
| L-R level deviation         | < 0.05 dB, 1 kHz sine at 0dBFS level (or max level before clipping)   |
| Output load capability      | 1k ohm and higher (supports 10x paralleled 10k ohm loads)   |
| Noise                       | -80dB   |

|                       |   |
|-----------------------|---|
| <b>Control</b>        |   |
| Control port          | (1) FIRWARE, (1) IR EYE, (1) RS232, (1) TCP/IP,               |
| Control Connector     | (1) USB-A, (1) 3.5mm jack, (1) 3-pin terminal block, (1) RJ45 |
| <b>General</b>        |   |
| Transmission Distance | 4K/60Hz/444 5m,4K/60Hz/420 10m,1080P 15m                      |
| Bandwidth             | 18Gbps  |
| Operation Temperature | -5°C ~ +55°C  |
| Storage Temperature   | -25°C ~ +70°C   |
| Relative Humidity     | 10% ~ 90%   |
| External Power Supply | Input: AC 100V~240V, 50/60Hz; Output : 24V DC 2.71A           |
| Power Consumption     | 24W   |
| Dimension (W*H*D)     | 436.4mm*44mm*236mm  |
| Net Weight            | 3kg   |

### Video Resolution Down-scaling:

The product supports video resolution down-scaling, the 4K input can be automatically degraded to 1080p output for compatibility with 1080p display, shown in the below chart.

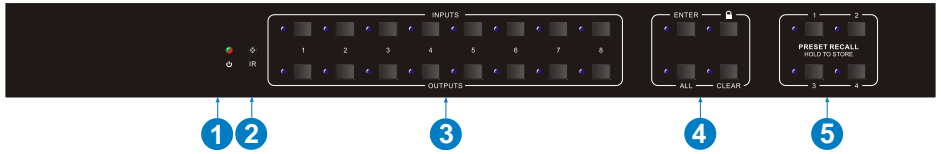
| # | Input      |         |             | Output      |                  |
|---|------------|---------|-------------|-------------|------------------|
|   | Resolution | Refresh | Color Space | Downscale   | 1080p Specs      |
| 1 | 3840x2160  | 60      | 4:4:4       | Not Support | 1080p@60Hz 4:4:4 |
| 2 | 3840x2160  | 30      | 4:4:4       | Not Support | 1080p@30Hz 4:4:4 |
| 3 | 3840x2160  | 24      | 4:4:4       | Not Support | 1080p@24Hz 4:4:4 |
| 4 | 3840x2160  | 60      | 4:2:0       | Not Support | 1080p@60Hz 4:4:4 |
| 5 | 3840x2160  | 30      | 4:2:0       | Support     | 1080p@30Hz 4:4:4 |
| 6 | 3840x2160  | 24      | 4:2:0       | Support     | 1080p@24Hz 4:4:4 |
| 7 | 3840x2160  | 60      | 4:2:2       | Support     | N/A              |
| 8 | 3840x2160  | 30      | 4:2:2       | Support     | N/A              |
| 9 | 3840x2160  | 24      | 4:2:2       | Not Support | N/A              |

**Note:** Only last four outputs (output 5, output 6, output 7 and output 8) have down-scaling function.



### 3. Panel Description

#### 3.1 Front Panel



**Note:** Image shown is of model BG-UHD-88M18G

| No. | Name  | Description  |
|-----|---|--|
| ①   | <b>Power Indicator</b>  | <ul style="list-style-type: none"> <li>● Illuminates green when device powered on;</li> <li>● Turns red in standby mode.</li> </ul>  |
| ②   | <b>IR sensor</b>  | Built-in IR sensor, receives IR signal sent from IR remote.  |
| ③   | <b>INPUT selector button</b><br><b>OUTPUT selector button</b> | <ul style="list-style-type: none"> <li>● Total 8 input selector buttons, press one of buttons to switch input source.</li> <li>● Total 8 output selector buttons, press the buttons to select output channel.</li> </ul> |
| ④   | <b>ENTER button</b>   | Confirm operation.   |
|     | <b>LOCK button</b>  | Press this button for 3 seconds to lock/unlock all front buttons.  |
|     | <b>ALL button</b>   | Select all outputs to convert an input to all outputs:<br>→ Press INPUTS 1 + ALL + ENTER   |
|     | <b>CLEAR button</b>   | Withdraw button.   |
| ⑤   | <b>PRESET RECALL</b><br><b>HOLD TO STORE</b>                  | <ul style="list-style-type: none"> <li>● Press and hold the button 1~4 to save the current switching status to the corresponding preset 1~4.</li> <li>● Press the button 1~4 to recall the saved preset 1~4.</li> </ul>  |

### 3.2 Rear Panel



**Note:** Image shown is of model BG-UHD-88M18G

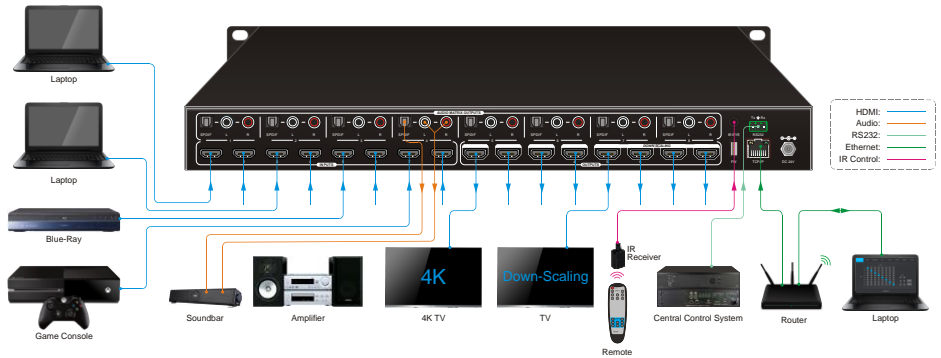
| No. | Name                        | Description  |
|-----|-----------------------------|--|
| ①   | <b>INPUTS</b>               | HDMI input ports, 8 in total, connects with HDMI sources.  |
| ②   | <b>OUTPUTS</b>              | 8 in total, connects with HDMI displays. The latter four HDMI ports have down-scaling function.  |
| ③   | <b>AUDIO MATRIX OUTPUTS</b> | <b>SPDIF:</b> Audio output ports for de-embedded HDMI audio, 8 in total.<br><b>L&amp;R (RCA):</b> Audio output ports for de-embedded HDMI audio, 8 pairs in total. |
| ④   | <b>IR EYE</b>               | Connects with external IR receiver for using the IR remote to control the Matrix Switcher.   |
| ⑤   | <b>RS232</b>                | 3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.   |
| ⑥   | <b>FIREWARE</b>             | USB-A port for updating firmware.  |
| ⑦   | <b>TCP/IP</b>               | RJ45 port to connect the control device (e.g. PC) to control the matrix by GUI.  |
| ⑧   | <b>DC 24V</b>               | Connect with 24VDC 2.71A power adaptor.  |

## 4. System Connection

### 4.1 Usage Precaution

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

### 4.2 System Diagram



**Note:** Image shown is of model BG-UHD-88M18G

## 5. Panel Button Control

### 5.1 I/O Connection Switching

The front panel features eight input selection buttons and eight output selection buttons for switching I/O connection.

#### 1) To convert 1 input to 1 output:

Example: Input 1 to Output 3

→ Press **INPUTS 1 + OUTPUTS 3 + ENTER** button.

#### 2) To convert 1 input to 2~7 outputs:

Example: Input 1 to Output 3, Output 6, Output 7.

→ Press **INPUTS 1 + OUTPUTS 3, Output 6, Output 7 + ENTER** button.

#### 3) To convert 1 input to 8 outputs:

Example: Convert Input 2 to all outputs

→ Press **INPUTS 2 + ALL** button + **ENTER** button.

**Note:** Indicators of the pressed buttons will blink blue for three times if the conversion is done, then it will be off. If the conversion failed, they will be off immediately.

### 5.2 I/O Connection Inquiry

Press **OUTPUTS** button 1, 2, 3, 4,5,6,7 or 8 to inquiry its corresponding input, and then the indicator of the input button will turn blue.

### 5.3 LOCK Function

Long press the **LOCK** button for three seconds, all buttons on the front panel disable to work. And then long press the **LOCK** button for three seconds again or unlock on GUI control, the front panel button will unlock.

### 5.4 PRESET RECALL Function

Press and hold the **PRESET 1~4** at least three seconds to save the current switching status to the corresponding preset 1~4.

Press the **PRESET 1~4** to recall the saved preset 1~4.

**Note:** The matrix switcher supports six presets, but only preset 1~4 can be saved and recalled by button control. Please manage other preset by GUI control or RS232 control.

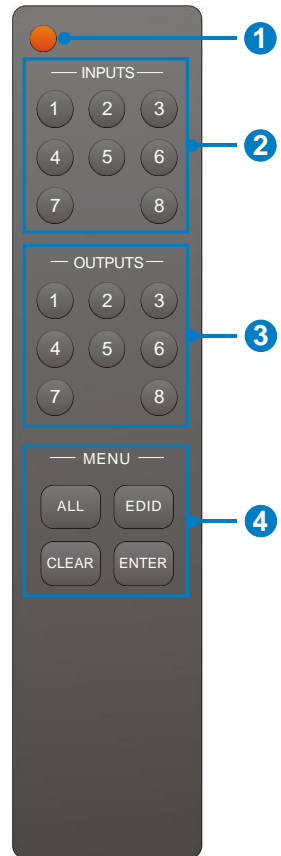
## 5.5 CLEAR Button

Please press the **CLEAR** button if want to withdraw an operation before the **ENTER** button comes into effect, meanwhile, the matrix will return to the previous status.

## 6. IR Remote Control

The Matrix Switcher features one built-in IR receiver to receive IR signal from IR remote to enable IR control. If the external IR receiver or other IR control device need to be used, the IR EYE port on rear panel can be connected.

- ① Standby button:  
Press it to enter/ exit standby mode.
- ② INPUTS:  
Input channel selection buttons, same with the corresponding front panel buttons
- ③ OUTPUTS:  
Output channel selection buttons, same with the corresponding front panel buttons.
- ④ Menu buttons:
  - **ALL**: Select all inputs/outputs.  
To convert an input to all outputs:  
Example: Input 1 to all Outputs:  
→ Press INPUTS 1 + ALL + ENTER
  - **EDID management button**:
    - 1) One input port follows the EDID data from one output port.  
Example: Input 2 learns EDID data from output 4:  
→ Press EDID + INPUTS 2 + OUTPUTS 4+ ENTER
    - 2) All input ports learn EDID data from one output port.  
Example: All input ports learn EDID data from output 3:  
→ Press EDID + ALL + OUTPUTS 3 + ENTER
  - **CLEAR**: Withdraw button.
  - **ENTER**: Confirm operation.



## 7. GUI Control

The matrix switcher can be controlled via TCP/IP. The default IP settings are:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Type **192.168.0.178** in the internet browser, it will enter the below log-in webpage:



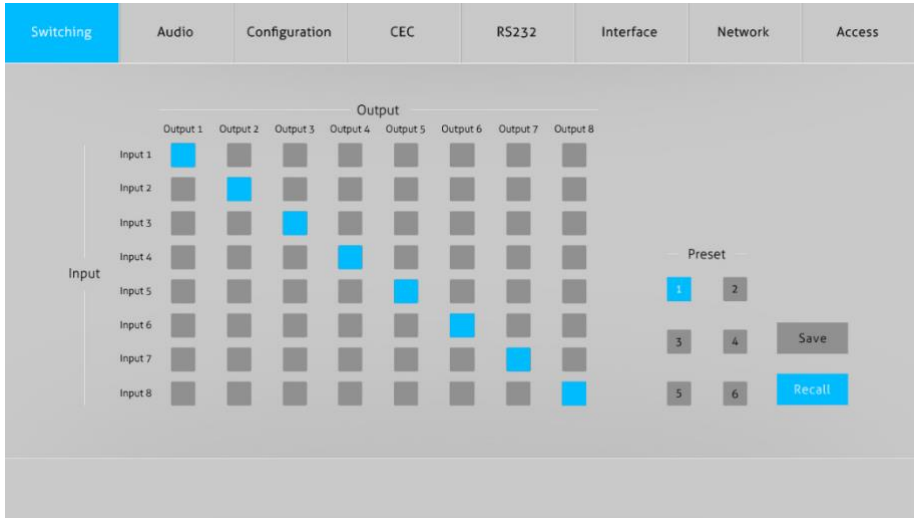
The screenshot shows a login page with a light gray background. At the top, there is a label "User Name" above a white input field with a gray border and the placeholder text "Please Enter". Below this is a label "Password" above another white input field with a gray border and the placeholder text "Please Enter". In the center, there is a blue rectangular button with the text "Login" in white. At the bottom center, the text "GUI: V1.0.0" and "Firmware: V1.0.0" is displayed in a small, dark font.

**Username:** admin

**Password:** admin

Type the user name and password, and then click **Login** to enter the section for video switching.

## 7.1 Switching Tab



Use the 8x8 button grid on the page to set which inputs are directed to which outputs. For example, clicking the button on the Input 1 row and Output 1 column, directs input 1 to output 1.

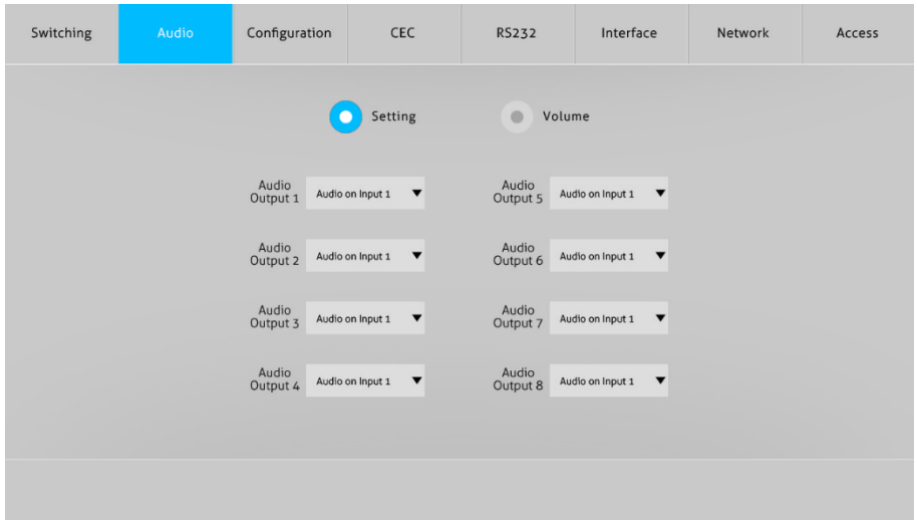
Use the 6 numbered buttons under scene area to save and load layout presets.

- To save a given layout, first click one of the numbered buttons, then click the **Save** button.
- To load a previously saved layout, first click one of the numbered buttons, then click the **Recall** button.



## 7.2 Audio Tab

### 1) Audio Setting

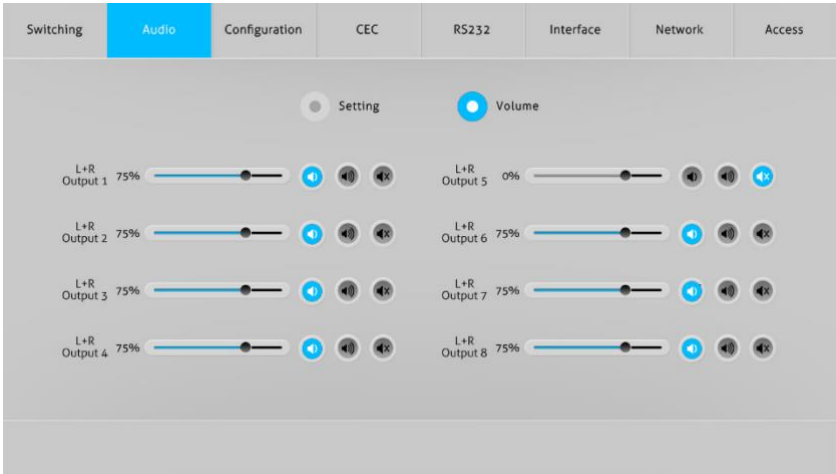


- There are sixteen sources can be selected for eight digital SPDIF output ports.

| Audio Output Ports | Audio Sources    |                   |
|--------------------|------------------|-------------------|
|                    | Input Breakout   | Output Breakout   |
| SPDIF 1 & Analog 1 | Audio on Input 1 | Audio on Output 1 |
| SPDIF 2 & Analog 2 | Audio on Input 2 | Audio on Output 2 |
| SPDIF 3 & Analog 3 | Audio on Input 3 | Audio on Output 3 |
| SPDIF 4 & Analog 4 | Audio on Input 4 | Audio on Output 4 |
| SPDIF 5 & Analog 5 | Audio on Input 5 | Audio on Output 5 |
| SPDIF 6 & Analog 6 | Audio on Input 6 | Audio on Output 6 |
| SPDIF 7 & Analog 7 | Audio on Input 7 | Audio on Output 7 |
| SPDIF 8 & Analog 8 | Audio on Input 8 | Audio on Output 8 |



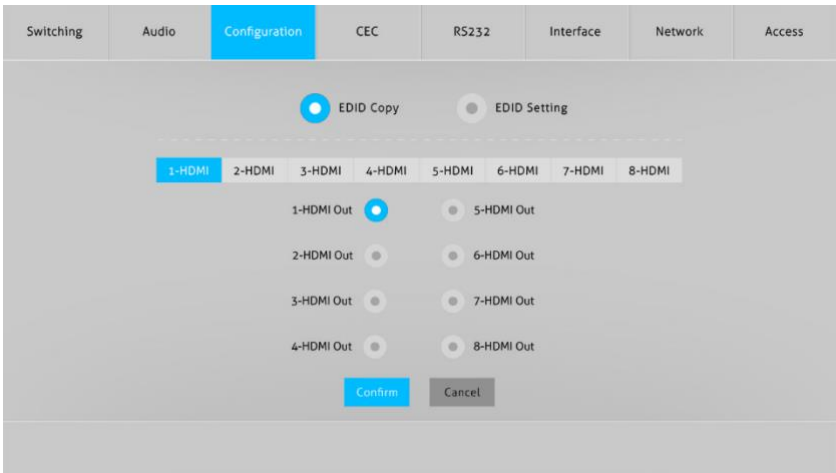
## 2) Audio Volume



- Eight pairs analog L/R audio to control their outputs volume.

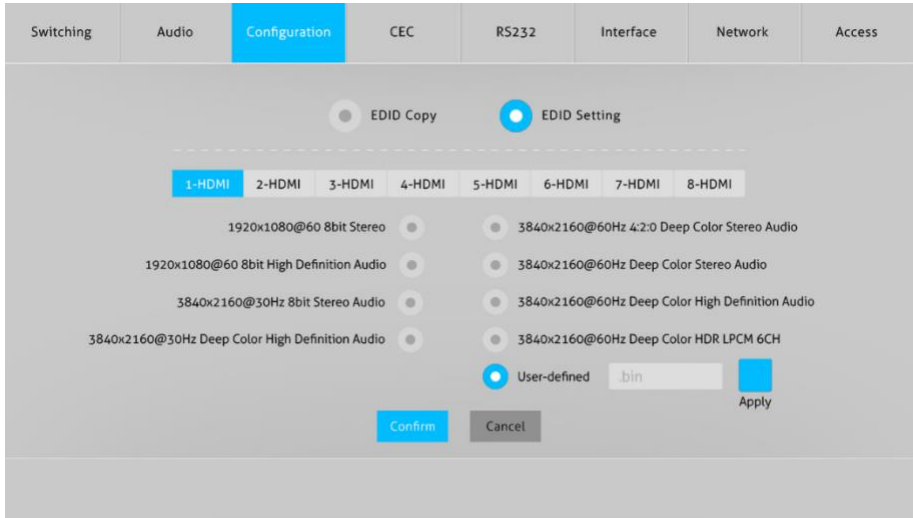
## 7.3 Configuration Tab

### 1) EDID Copy



- Copy the EDID of the selected output device to one or more input source device.

## 2) EDID Setting

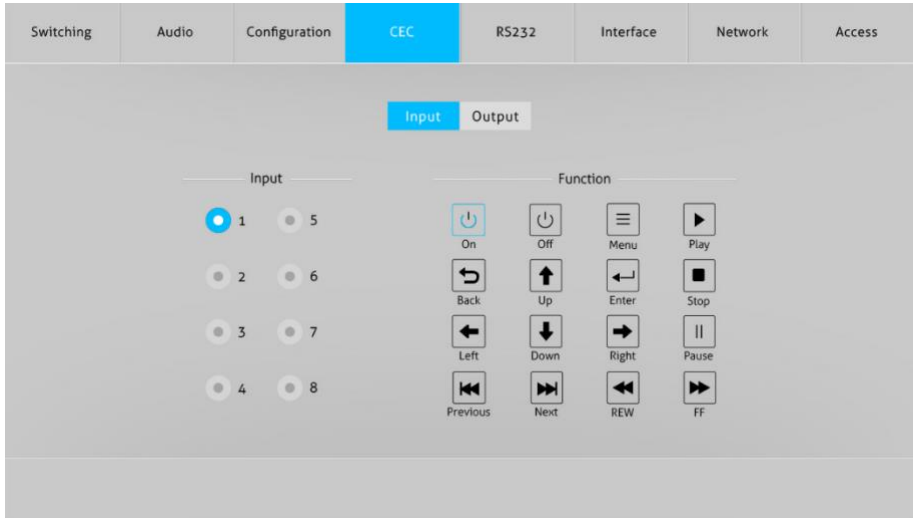


- Select the compatible built-in EDID for the selected input source.
- Upload user-defined EDID by the below steps:
  - 1) Prepare the EDID file (.bin) on the control PC.
  - 2) Select the **User-defined**.
  - 3) Click the box  , and then select the EDID file (.bin) according to the tooltip.
  - 4) Click **Apply** to upload the user-defined EDID, and then click **Confirm** to save setting.

## 7.4 CEC Tab

If the input source devices, output display devices support CEC, they can be controlled via the following CEC interface.

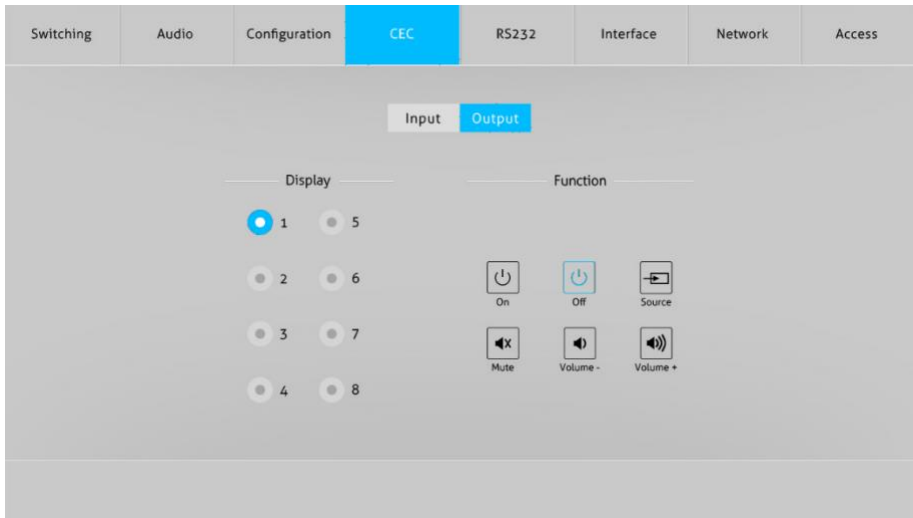
### 1) Input Source Device Control



- Select one input source device to be controlled, and then press function buttons.

**Note:** It cannot control two or more input source devices simultaneously.

## 2) Output Display Device Control



- Select one output device to be controlled, and then press function buttons.

**Note:** *It cannot control two or more output devices simultaneously.*

## 7.5 RS232 Tab

The screenshot shows the RS232 configuration interface. At the top, there is a navigation bar with tabs: Switching, Audio, Configuration, CEC, RS232 (highlighted in blue), Interface, Network, and Access. Below the tabs, the configuration options are as follows:

- Format selection: ASCII (selected with a blue radio button) and HEX (unselected with a grey radio button).
- Baud Rate: A dropdown menu currently set to 9600.
- Command Ending: A dropdown menu currently set to NULL.
- Command: A text input field containing the placeholder text 'xxxxxx'.
- Buttons: A blue 'Confirm' button and a grey 'Cancel' button.

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

## 7.6 Interface Tab

|           |       |               |     |       |                  |         |        |
|-----------|-------|---------------|-----|-------|------------------|---------|--------|
| Switching | Audio | Configuration | CEC | RS232 | <b>Interface</b> | Network | Access |
|-----------|-------|---------------|-----|-------|------------------|---------|--------|

Title Bar Label:

Button Labels:

| Input |                                      |    |                                      | Output |                                       |    |                                       |
|-------|--------------------------------------|----|--------------------------------------|--------|---------------------------------------|----|---------------------------------------|
| 1:    | <input type="text" value="Input 1"/> | 5: | <input type="text" value="Input 5"/> | 1:     | <input type="text" value="Output 1"/> | 5: | <input type="text" value="Output 5"/> |
| 2:    | <input type="text" value="Input 2"/> | 6: | <input type="text" value="Input 6"/> | 2:     | <input type="text" value="Output 2"/> | 6: | <input type="text" value="Output 6"/> |
| 3:    | <input type="text" value="Input 3"/> | 7: | <input type="text" value="Input 7"/> | 3:     | <input type="text" value="Output 3"/> | 7: | <input type="text" value="Output 7"/> |
| 4:    | <input type="text" value="Input 4"/> | 8: | <input type="text" value="Input 8"/> | 4:     | <input type="text" value="Output 4"/> | 8: | <input type="text" value="Output 8"/> |

- Modify the title bar label.
- Modify the button labels.

## 7.7 Network Tab

The screenshot shows the 'Network' configuration page. At the top, there is a navigation bar with tabs: Switching, Audio, Configuration, CEC, RS232, Interface, Network (selected), and Access. The main content area displays the MAC Address as 44-33-4C-C9-35-12. Below this, there are two radio buttons for 'DHCP' (selected) and 'Static IP'. Under the 'Static IP' section, there are four input fields: 'IP Address' with the value 192.168.0.178, 'Subnet Mask' with 255.255.255.0, and 'Gateway' with 192.168.0.1. A 'Confirm' button is located at the bottom of the configuration area.

- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

## 7.8 Access Tab

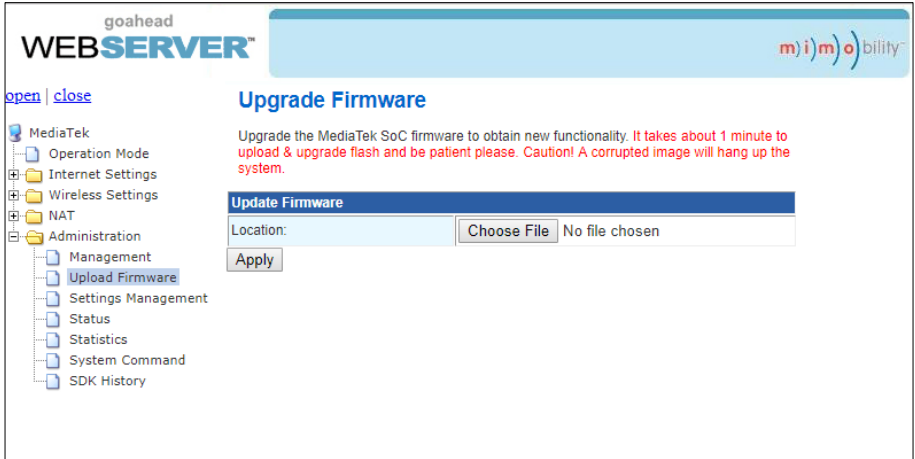
The screenshot shows the 'Access' configuration page. At the top, there is a navigation bar with tabs: Switching, Audio, Configuration, CEC, RS232, Interface, Network, and Access (selected). The main content area is divided into two sections. The first section, 'Credentials', has a 'Password' field containing 'admin' and a 'Confirm' button. The second section, 'Front Panel Lock', has a toggle switch currently set to 'ON' (indicated by a blue bar) between 'ON' and 'OFF' labels.

- Modify the login password.
- Lock or unlock the front panel buttons.

## 7.9 GUI Upgrade

Please visit at <http://192.168.0.178:100> for GUI online upgrade.

Type the username and password (the same as the GUI log-in setting, modified password will be available only after rebooting) to login the configuration interface. After that, click **Administration** in the source menu to get to **Upload Firmware** as shown below:



Select the desired update file and press **Apply**, it will start upgrading then.



## 8. RS232 Control

### 8.1 RS232 Control Software

- **Installation** Copy the control software file to the computer connected with BG-UHD-88M18G.
- **Uninstallation** Delete all the control software files in corresponding file path.

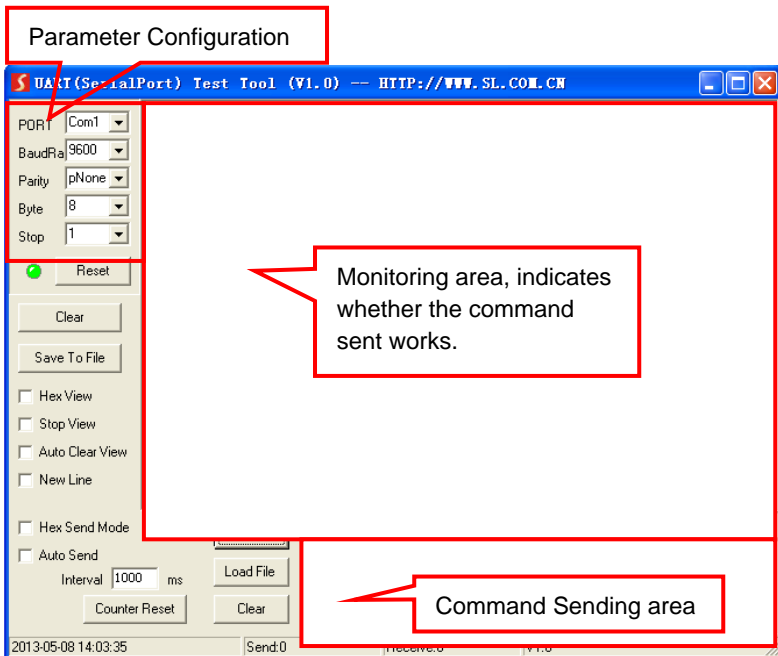
### 8.2 Basic Settings

Firstly, connect BG-UHD-88M18G with necessary input devices and output devices. Then, connect it with a PC installed RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:



The interface of the control software is showed as below:



Set the parameters (baud rate, data bit, stop bit and parity bit) correctly to ensure reliable RS232 control.

### 8.3 RS232 Communication Commands



- Case-sensitive.
- “[, ]” in the commands are for easy recognition only and not necessary in real operations. Other symbols including “., “,” “/”, “%”, “,” “^”. are parts of the commands.
- Feedbacks listed in the column “Feedback Example” are only for reference, feedbacks may vary according to different operations.

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

#### 8.3.1 System Commands

| Command           | Function                      | Feedback Example                 |
|-------------------|-------------------------------|----------------------------------|
| <b>PowerON.</b>   | Power on                      | Power ON!<br>Front Panel Unlock! |
| <b>PowerOFF.</b>  | Power off                     | Power OFF!                       |
| <b>/#Name.</b>    | Query the name of matrix      | BG-UHD-88M18G                    |
| <b>/#Type.</b>    | Query the model of matrix     | PTN                              |
| <b>/^Version.</b> | Query the version of firmware | V1.0.0<br>CPLD:V1.0.0            |
| <b>RST.</b>       | Reset to factory default.     | Factory Default!                 |

#### 8.3.2 Control Management

| Command          | Function  | Feedback Example   |
|------------------|---|--|
| <b>DS[xx]ON.</b> | Able output devices down-scaling function.<br>[xx]=00~04,<br>xx=01~04 is the corresponding number of output 5,6,7 or 8 port, if the xx=00, it means all output 5~8 ports. | HDMI OUT 05 Down Scale ON!<br>HDMI OUT 06 Down Scale ON!<br>HDMI OUT 07 Down Scale ON!<br>HDMI OUT 08 Down Scale ON! |

| Command              | Function   | Feedback Example   |
|----------------------|--|--|
| <b>DS[xx]OFF.</b>    | Disable output devices down-scaling function.<br>[xx]=00~04,<br>xx=01~04 is the corresponding number of output 5,6,7 or 8 port, if the xx=00, it means output 5~8 ports.                     | HDMI OUT 05 Down Scale OFF!<br>HDMI OUT 06 Down Scale OFF!<br>HDMI OUT 07 Down Scale OFF!<br>HDMI OUT 08 Down Scale OFF!   |
| <b>OUT[xx]:[YY].</b> | Output port select input port.<br>[xx]=00~08,<br>xx=01~08 is the number of output port, if the xx=00, it means all output ports.<br><br>[YY]=01~08,<br>YY=01~08 is the number of input port. | Output 01 Switch To In 01!<br>Analog Out 01 Switch To Video Out 01!<br>Analog Out 02 Switch To Video Out 01!<br>Output 02 Switch To In 01!<br>Output 03 Switch To In 01!<br>Output 04 Switch To In 01!<br>Output 05 Switch To In 01!<br>Output 06 Switch To In 01!<br>Output 07 Switch To In 01!<br>Output 08 Switch To In 01! |
| <b>@OUT[xx].</b>     | Able HDMI 5V of output port.<br>[xx]=00~08,<br>xx=01~08 is the number of output port, if the xx=00, it means all output ports.   | Turn ON Output 01!<br>Turn ON Output 02!<br>Turn ON Output 03!<br>Turn ON Output 04!<br>Turn ON Output 05!<br>Turn ON Output 06!<br>Turn ON Output 07!<br>Turn ON Output 08!   |
| <b>\$OUT[xx].</b>    | Disable HDMI 5V of output port.<br>[xx]=00~08,<br>xx=01~08 is the number of output port, if the xx=00, it means all output ports.  | Turn OFF Output 01!<br>Turn OFF Output 02!<br>Turn OFF Output 03!<br>Turn OFF Output 04!<br>Turn OFF Output 05!<br>Turn OFF Output 06!<br>Turn OFF Output 07!<br>Turn OFF Output 08!   |

### 8.3.3 Query Commands

| Command                         | Function   | Feedback Example   |
|---------------------------------|--|--|
| <b>GetGuiIP.</b>                | Query GUI IP   | GUI_IP:192.168.0.178!  |
| <b>SetGuiIP:xxx.xx.xxx.xxx.</b> | Set GUI IP   | SetGuiIP:192.168.0.178!  |
| <b>Baudratexxxx.</b>            | Set the baud rate of local serial port.<br>xxxx=115200, 57600, 38400,<br>19200,or 9600 | Baudrate9600.  |
|                                 |  | Set Local RS232 Baudrate Is 9600!  |
| <b>STA.</b>                     | Query Status   | GUI Or RS232 Query<br>Status:<br>PTN<br>BG-UHD-88M18G<br>V1.0.0<br>Power ON!<br>Front Panel UnLock!<br>Local RS232 Baudrate Is<br>115200!<br>GUI_IP:192.168.0.150!<br>... .. |
| <b>STA_POUT.</b>                | Query 5V Status of output port.  | Turn ON Output 01!<br>Turn ON Output 02!<br>Turn ON Output 03!<br>Turn ON Output 04!<br>Turn ON Output 05!<br>Turn ON Output 06!<br>Turn ON Output 07!<br>Turn ON Output 08! |
| <b>STA_IN.</b>                  | Query 5V Status of input port.   | IN 1 2 3 4 5 6<br>7 8<br>LINK Y Y N Y Y<br>Y Y   |
| <b>STA_OUT.</b>                 | Query HPD Status of output.  | OUT 1 2 3 4 5 6<br>7 8<br>LINK Y N Y Y Y Y<br>Y Y  |
| <b>STA_VIDEO.</b>               | Query the input source of output port.   | Output 01 Switch To In 01!<br>Output 02 Switch To In 02!<br>Output 03 Switch To In 04!<br>Output 04 Switch To In 01!   |

| Command                  | Function   | Feedback Example   |
|--------------------------|--|--|
|                          |  | Output 05 Switch To In 03!<br>Output 06 Switch To In 06!<br>Output 07 Switch To In 04!<br>Output 08 Switch To In 07!   |
| <b>STA_HDCP.</b>         | Query current using HDCP model of all output ports.<br>01-08 represents output port 1-8. | OUT 01 HDCP PASSIVE!<br>OUT 02 HDCP PASSIVE!<br>OUT 03 HDCP MAT<br>DISPLAY!<br>OUT 04 HDCP BYPASS!<br>OUT 05 HDCP PASSIVE!<br>OUT 06 HDCP PASSIVE!<br>OUT 07 HDCP PASSIVE!<br>OUT 08 HDCP PASSIVE!   |
| <b>STA_AUDIO.</b>        | Query audio switch and volume status of analog audio.                                    | Audio Out 01 Switch To<br>Video Out 05!<br>Analog Out 01 Volume<br>UnMute!<br>Analog Out 01 Volume 50!<br>Audio Out 02 Switch To<br>Video Out 05!<br>Analog Out 02 Volume<br>Mute!<br>Analog Out 02 Volume 32!<br>...<br>Analog Out 08 Volume<br>Mute!<br>Analog Out 08 Volume 75! |
| <b>PresetSta[xx].</b>    | Save the scene   | Preset 09 Save Success!<br>Preset 09 Sta:<br>Out 01 In 01!<br>Out 02 In 04!<br>Out 03 In 05!<br>Out 04 In 04!<br>Out 05 In 06!<br>Out 06 In 03!<br>Out 07 In 06!<br>Out 08 In 08!  |
| <b>PresetRecall[xx].</b> | Scene recall   | Preset 09 Recall:<br>Output 01 Switch To In 02!<br>Output 02 Switch To In 02!  |

| Command | Function | Feedback Example   |
|---------|----------|--|
|         |          | Output 03 Switch To In 02!<br>Output 04 Switch To In 02!<br>Output 05 Switch To In 04!<br>Audio Out 01 Switch To Video Out 05!<br>Audio Out 02 Switch To Video Out 05!<br>Audio Out 03 Switch To Video Out 05!<br>Audio Out 04 Switch To Video Out 05!<br>Audio Out 05 Switch To Video Out 05!<br>Audio Out 06 Switch To Video Out 05!<br>Audio Out 07 Switch To Video Out 05!<br>Audio Out 08 Switch To Video Out 05!<br>Output 06 Switch To In 04!<br>Output 07 Switch To In 04!<br>Output 08 Switch To In 04! |

### 8.3.4 Lock/unlock Commands

| Command | Function                        | Feedback Example    |
|---------|---------------------------------|---------------------|
| Lock.   | Lock the front panel buttons.   | Front Panel Locked! |
| Unlock. | Unlock the front panel buttons. | Front Panel UnLock! |

### 8.3.5 Audio Commands

| Command                  | Function  | Feedback Example  |
|--------------------------|---|---|
| <b>AUDIO[xx]:[YY].</b>   | <p>SPDIF OUT and ANALOG OUT(They are same input audio source at one group) select which input audio source.</p> <p>[xx]=00~08<br/>xx=01~08 is the number of the output port, if the xx=00, it means all output ports.</p> <p>[yy]=01~16<br/>yy=01~08, it means de-embedded audio from HDMI1-8 input, if the yy=09~16, it means de-embedded audio from HDMI1-8 output.</p> | <p>Audio Out 01 Switch To Video Out 05!</p> <p>Audio Out 02 Switch To Video Out 05!</p> <p>Audio Out 03 Switch To Video Out 05!</p> <p>Audio Out 04 Switch To Video Out 05!</p> <p>Audio Out 05 Switch To Video Out 05!</p> <p>Audio Out 06 Switch To Video Out 05!</p> <p>Audio Out 07 Switch To Video Out 05!</p> <p>Audio Out 08 Switch To Video Out 05!</p> |
| <b>AVOLUME[xx]:[YY].</b> | <p>[xx]=00~08<br/>xx=01~08 is the number of the Analog output port, if the xx=00, it means all Analog output ports.</p> <p>[YY]="V+" means volume up,<br/>[YY]="V-" means volume down,<br/>[YY]="MU" means Mute,<br/>[YY]="UM" means UnMute,<br/>[YY]=00-100 means setting volume</p>   | <ol style="list-style-type: none"> <li>1. Analog Out 01 Volume 55!</li> <li>2. Analog Out 02 Volume 32!</li> <li>3. Analog Out 01 Volume Mute!</li> <li>4. Analog Out 01 Volume UnMute!</li> <li>5. Analog Out 01 Volume 50!</li> </ol>   |

### 8.3.6 HDCP Compliance

| Command             | Function   | Feedback Example  |
|---------------------|--|---|
| <b>HDCP[xx]ON.</b>  | <p>Force able and output HDCP 1.4.</p> <p>[xx]=00~08,<br/>xx=01~08 is the number of output port, if the xx =00, it means all output ports.</p> | <p>OUT 01 HDCP ON!</p> <p>OUT 02 HDCP ON!</p> <p>OUT 03 HDCP ON!</p> <p>OUT 04 HDCP ON!</p> <p>OUT 05 HDCP ON!</p> <p>OUT 06 HDCP ON!</p> <p>OUT 07 HDCP ON!</p> <p>OUT 08 HDCP ON!</p> |
| <b>HDCP[xx]OFF.</b> | <p>Force disable the output HDCP.</p>  | <p>OUT 01 HDCP OFF!</p> <p>OUT 02 HDCP OFF!</p>   |

| Command             | Function  | Feedback Example   |
|---------------------|---|--|
|                     | [xx]=00~08,<br>xx=01~08 is the number of output port, if the xx=00, it means all output ports.  | OUT 03 HDCP OFF!<br>OUT 04 HDCP OFF!<br>OUT 05 HDCP OFF!<br>OUT 06 HDCP OFF!<br>OUT 07 HDCP OFF!<br>OUT 08 HDCP OFF!   |
| <b>HDCP[xx]MAT.</b> | Output HDCP follows the display.<br>[xx] =00~08,<br>xx=01~08 is the number of output port, if the xx =00, it means all output ports.  | OUT 01 HDCP MAT Display!<br>OUT 02 HDCP MAT Display!<br>OUT 03 HDCP MAT Display!<br>OUT 04 HDCP MAT Display!<br>OUT 05 HDCP MAT Display!<br>OUT 06 HDCP MAT Display!<br>OUT 07 HDCP MAT Display!<br>OUT 08 HDCP MAT Display! |
| <b>HDCP[xx]PAS.</b> | Output HDCP follows the value and status of input source device.<br>[xx] =00~08,<br>xx=01~08 is the number of output port, if the xx =00, it means all output ports.  | OUT 01 HDCP PASSIVE!<br>OUT 02 HDCP PASSIVE!<br>OUT 03 HDCP PASSIVE!<br>OUT 04 HDCP PASSIVE!<br>OUT 05 HDCP PASSIVE!<br>OUT 06 HDCP PASSIVE!<br>OUT 07 HDCP PASSIVE!<br>OUT 08 HDCP PASSIVE!                                 |
| <b>HDCP[xx]BYP.</b> | Output HDCP follows input HDCP. Input has HDCP, output is HDCP1.4. Input doesn't have HDCP, output is without HDCP.<br>[xx] =00~08,<br>xx=01~08 is the number of output port, if the xx =00, it means all output ports. | OUT 01 HDCP BYPASS!<br>OUT 02 HDCP BYPASS!<br>OUT 03 HDCP BYPASS!<br>OUT 04 HDCP BYPASS!<br>OUT 05 HDCP BYPASS!<br>OUT 06 HDCP BYPASS!<br>OUT 07 HDCP BYPASS!<br>OUT 08 HDCP BYPASS!   |



### 8.3.7 EDID Management

| Command                 | Function  | Feedback Example  |
|-------------------------|---|---|
| <b>EDIDMInit.</b>       | Restore the factory default EDID data for each input.   | All Input EDID Set Default!<br>System Initialization.....<br>PTN1111<br>BG-UHD-88M18G<br>V1.0.0<br>Power ON!<br>Front Panel UnLock!                                   |
| <b>EDIDUpgrade[xx].</b> | <p>Upgrade EDID via Serial Port</p> <ul style="list-style-type: none"> <li>[xx]=00~08</li> </ul> <p>xx=01~08 is the number of the port(able EDID user-defined for corresponding HDMI input), if the xx=00, it means all ports(able EDID user-defined for all HDMI inputs).</p> <p><b>Note:</b> EDID user-defined can be used once, if switch to another EDID or exit, it will not be saved.</p> <ul style="list-style-type: none"> <li>[xx]=U.</li> </ul> <p>xx=U means user-defined for built-in EDID(It can be saved in machine for using at any time).</p> <p><b>Note:</b> <i>It can user-defined only one built-in EDID, after finishing it, machine still use previous built-in EDID.</i></p> <p>When received commands, machine will remind EDID file (.bin) to send within 10 seconds.</p> <p><b>Note:</b> <i>In order to guarantee the data to be normal received, need to disconnect all HDBaset before sending the command(s)</i></p> | <p>File size: 256<br/>Baud rate:115200bps<br/>Quired time: About 0 second<br/>Please wait...<br/>Send Completed! User Define EDID Upgrade OK<br/>By RS232 Or GUI!</p> |
| <b>EDID/[xx]/[yy].</b>  | Input ports xx use built-in EDID yy<br>[xx]=00~08<br>xx=01~08 is the number of the input port, if the xx=00, it means all input ports.  | Input All EDID Upgrade<br>OK By 09 Internal EDID!   |

| Command                | Function  | Feedback Example   |
|------------------------|---|--|
|                        | [yy]=01~09<br>yy=01~08, it means built-in EDID that cannot be user-defined, if the yy=09, it means user-defined EDID.   |  |
| <b>EDIDGOUT[XX].</b>   | Read and print EDID of HDMI output, [XX]=01~08 is the number of the output port.  | EDIDOUT04:<br>.....  |
| <b>EDIDM[xx]B[yy].</b> | Input port [yy] follows the EDID from output port [xx].<br>[xx]=01~08<br>xx=01~08 is the number of the output port.<br>[yy]=00~08<br>yy=01~08 is the number of input port, if the yy=00, it means all input ports.  | Input 06 EDID Upgrade<br>OK By 01 EXT EDID!  |
| <b>/+[X]/[yy]:xxx.</b> | Send serial data to local.<br>[X]= 1--2400; 2--4800; 3--9600;<br>4--19200; 5--38400; 6--57600;<br>7--115200.<br>[yy] means the output port that sent serial data, yy=01 means local output.   | xxx.   |
| <b>EDIDSTA[xx].</b>    | Query EDID status of Input port.<br>[xx]=00~08,<br>xx=01~08 is the number of input port, if the xx=00, it means all input ports.<br><b>Note:</b> <ul style="list-style-type: none"> <li>● <i>If built-in EDID09 is not user-defined, when querying it, the input port will use EDID6 Internal EDID instead. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From 06 Internal EDID!".</i></li> <li>● <i>If built-in EDID09 is user-defined, when querying it,</i></li> </ul> | Input 01 EDID From 01 Internal EDID!<br>Input 02 EDID From 02 Internal EDID!<br>Input 03 EDID From 03 Internal EDID!<br>Input 04 EDID From 06 Internal EDID!<br>Input 05 EDID From 06 Internal EDID!<br>Input 06 EDID From 06 Internal EDID!<br>Input 07 EDID From 06 Internal EDID!<br>Input 08 EDID From User Define EDID! |

| Command | Function   | Feedback Example |
|---------|--|------------------|
|         | <p><i>the input port will use the user-defined EDID. For example, send "EDID/03/09.", "EDIDSTA03.", and the result is "Input 03 EDID From User Define EDID!".</i></p> <ul style="list-style-type: none"> <li>● <i>If directly user-define the port EDID, when querying it, the input port will use the user-defined EDID. For example, send "EDIDSTA03.", and the result is "Input 3 EDID From User Define EDID!"</i></li> </ul> |                  |

### 8.3.8 CEC Control

If the input sources, HDBaseT output devices and local HDMI output devices are supports CEC, they can be controlled by sending the following command instead of IR remote.

#### CEC[I/O][AA][BB][CC][DD].

- The "[I]" represents the input port. The "[O]" represents the output port.
- The "[AA]" represents the port number. The HDMI input ports are 01~08. The HDMI output ports are 01~08.
- The "[AA]" is "FF" for sending command to all input or output ports.
- The "[BB]" represents the device type (e.g. TV: 40/20/80; Blu-ray DVD: 04/08).
- The "[CC]" represents the CEC function type (e.g. "44": Remote control).
- The "[DD]" represents the specific command from the table below.

#### ✓ Control the input source:

| Command             | Description                | Command Example and Response |
|---------------------|----------------------------|------------------------------|
| CECI[AA][BB][CC]00. | Confirm operation (Enter). | CECI02044400                 |
|                     |                            | CEC Input 02 Send Success!   |
| CECI[AA][BB][CC]01. | UP direction.              | CECI01044401.                |
|                     |                            | CEC Input 01 Send Success!   |

|                            |                  |                            |
|----------------------------|------------------|----------------------------|
| <b>CECI[AA][BB][CC]02.</b> | DOWN direction.  | CECI01044402.              |
|                            |                  | CEC Input 01 Send Success! |
| <b>CECI[AA][BB][CC]03.</b> | LEFT direction.  | CECI03044403.              |
|                            |                  | CEC Input 03 Send Success! |
| <b>CECI[AA][BB][CC]04.</b> | RIGHT direction. | CECI03044404.              |
|                            |                  | CEC Input 03 Send Success! |
| <b>CECI[AA][BB][CC]09.</b> | Back to submenu. | CECI03044409.              |
|                            |                  | CEC Input 03 Send Success! |
| <b>CECI[AA][BB][CC]0A.</b> | Enter main menu. | CECI0304440A.              |
|                            |                  | CEC Input 03 Send Success! |
| <b>CECI[AA][BB][CC]0D.</b> | Exit menu.       | CECI0204440D.              |
|                            |                  | CEC Input 02 Send Success! |
| <b>CECI[AA][BB][CC]6D.</b> | Power on.        | CECI0204446D.              |
|                            |                  | CEC Input 02 Send Success! |
| <b>CECI[AA][BB][CC]6C.</b> | Power off.       | CECI0204446C.              |
|                            |                  | CEC Input 02 Send Success! |

✓ **Control the output display device:**

| <b>Command</b>             | <b>Description</b> | <b>Command Example and Response</b> |
|----------------------------|--------------------|-------------------------------------|
| <b>CECO[AA][BB][CC]41.</b> | Volume up.         | CECO05404441.                       |
|                            |                    | CEC Output 05 Send Success!         |
| <b>CECO[AA][BB][CC]42.</b> | Volume down.       | CECO05404442.                       |
|                            |                    | CEC Output 05 Send Success!         |
| <b>CECO[AA][BB][CC]43.</b> | Mute               | CECO05404443.                       |
|                            |                    | CEC Output 05 Send Success!         |
| <b>CECO[AA][BB]04.</b>     | Power on.          | CECO038004.                         |
|                            |                    | CEC Output 03 Send Success!         |
| <b>CECO[AA][BB]36.</b>     | Power off.         | CECO038036.                         |
|                            |                    | CEC Output 03 Send Success!         |

## 9. Firmware Upgrade

Please follow the steps as below to upgrade firmware by the **FIRMWARE** port on the rear panel:

- 1) Prepare the latest upgrade file and rename it as "08010000.APP" on PC.
- 2) Power off the switcher, and connect the **FIRMWARE** port of switcher to the PC with USB cable.
- 3) Power on the switcher, and then the PC will automatically detect a U-disk named of "BOOTDISK".
- 4) Double-click the U-disk, a file named of "READY.TXT" would be showed.
- 5) Directly copy the latest upgrade file 08010000.APP (.bin) to the "BOOTDISK" U-disk.
- 6) Reopen the U-disk to check the filename "READY.TXT" whether automatically becomes "SUCCESS.TXT", if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file (.bin) should be confirm again, and then follow the above steps to update again.
- 7) Remove the USB cable after firmware upgrade.
- 8) After firmware upgrade, the switcher should be restored to factory default by sending command.

## 10. Troubleshooting and Maintenance

| Problems  | Potential Causes  | Solutions  |
|---|---|--|
| Color losing or no video signal output                | The connecting cables may not be connected correctly or it may be broken.       | Check whether the cables are connected correctly and in working condition.   |
|   | Fail or loose connection.   | Make sure the connection is good   |
| No output image when switching                        | No signal at the input / output end.  | Check with oscilloscope or multimeter if there is any signal at the input/ output end.                                       |
|   | Fail or loose connection.   | Make sure the connection is good.  |
|   | The display doesn't support the input resolution.                               | Switch for another input source or enable the display to learn the EDID data of the input.                                   |
| Cannot control the device via front panel buttons     | Front panel buttons are locked.   | Send command /%Unlock; or select unlock in GUI interface to unlock.  |
| Cannot control the device via IR remote               | The battery has run off.  | Change for new battery.  |
|   | The IR remote is broken.  | Send it to authorized dealer for repairing.  |
|   | Beyond the effective range of the IR signal or not pointing at the IR receiver. | Adjust the distance and angle and point right at the IR receiver.  |
|   | The IR receiver connected to IR EYE port is not with carrier.                   | Change for an IR receiver with carrier.  |
| Power Indicator remains off when powered on           | Fail or loose power connection.   | Check whether the cables are connected correctly.  |
| There is a blank screen on the display when switching | The display does not support the resolution of the video source.                | Switch again.  |
|   |   | Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution. |

**Note:** If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.



## 11. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. These terms and conditions may be changed without prior notice.

### 1) Warranty

The limited warranty period of the product is one year.

### 2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

### 3) Warranty Exclusions:

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
  - ✓ Normal wear and tear.
  - ✓ Use of supplies or parts not meeting our specifications.
  - ✓ No certificate or invoice as the proof of warranty.
  - ✓ The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
  - ✓ Damage caused by force majeure.
  - ✓ Servicing not authorized by distributor.
  - ✓ Any other causes which does not relate to a product defect.
- Shipping fees, installation or labor charges for installation or setup of the product.

### 4) Documentation:

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defect has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

**Remarks:** For further assistance or solutions, please contact your local distributors



## 12. Warranty Information (Second Year Assurance)

BZBGear wants to assure you peace of mind. We're so confident in the quality of our products that along with the manufacturer's one-year limited warranty, we are offering free second-year warranty coverage upon registration\*!

Taking advantage of this program is simple, just follow the steps below:

1. Register your product within 90 days of purchase by visiting [BZBGear.com/warranty](http://BZBGear.com/warranty).
2. Complete the registration form. Provide all necessary proof of purchase details, including serial number and a copy of your sales receipt.

For questions, please call 1.888.499.9906 or email [support@bzbgear.com](mailto:support@bzbgear.com).

For complete warranty information, please visit [BZBGear.com/warranty](http://BZBGear.com/warranty) or scan the QR code below.



\*Terms and conditions apply. Registration is required.

### **13. Mission Statement**

BZBGear manifests from the competitive nature of the audiovisual industry to innovate while keeping the customer in mind. AV solutions can cost a pretty penny, and new technology only adds to it. We believe everyone deserves to see, hear, and feel the advancements made in today's AV world without having to break the bank. BZBGear is the solution for small to medium-sized applications requiring the latest professional products in AV.

We live in a DIY era where resources are abundant on the internet. With that in mind, our team offers system design consultation and expert tech support seven days a week for the products in our BZBGear catalog. You'll notice comparably lower prices with BZBGear solutions, but the quality of the products is on par with the top brands in the industry. The unparalleled support from our team is our way of showing we care for every one of our customers. Whether you're an integrator, home theater enthusiast, or a do-it-yourselfer, BZBGear offers the solutions to allow you to focus on your project and not your budget.