BG-UHD-44M

4X4 HDMI 2.0a Matrix

User Manual

TABLE OF CONTENTS

INTRODUCTION..... 1
FEATURES 1
SPECIFICATIONS 2
PACKAGE CONTENTS 3
PANEL DESCRIPTIONS 3
CONNECTION DIAGRAM 4
HARDWARE INSTALLATION 4
OPERATION APPROACH..... 5
EDID LEARNING 20
FAQ 21
WARRANTY..... 22
SECOND YEAR ASSURANCE…..…..…..…..…..…..…..…..…..…..…..…..…..…..…..…..…...23
MISSION STATEMENT…..…..…..…..…..…..…..…..…..…..…..…..…..…..…..…..…..…24

INTRODUCTION

The **BG-UHD-44M HDMI 2.0a Matrix** provides the most flexible and cost-effective solution in the market to route high definition video sources plus multi-channel (up to 7.1-channel) digital audio from any of the four HDMI sources to the remote displays at the same time. BG-UHD-44M18G supports HDR and the true 4K2K video! Besides, BG-UHD-44M18G supports auto downscale from 4K2K to 1080P. With this benefit function, the matrix device compatibility will be better.

With the upmost HDR/4K2K@60 4:4:4 8bits and high definition audio support, BG-UHD-44M18G is well suited for use in home theater, conference room presentation systems, or other similar setting or application.

FEATURES

- HDMI2.0a compliant
- Supports 4K2K@60 4:4:4 8bits
- Supports HDR[1], which is 4K2K@60 4:2:0 10bits[2]
- HDCP 2.2 and 1.4 compliant
- Wide frequency range: 25MHz~600MHz
- Video bandwidth: 18Gbps
- Supports resolution downscaling from 4K2K to 1080P*
- Supports default EDID and EDID learning from display
- Supports xvYCC, x.v.Color & Deep Color
- Allows any source to be displayed on multiple displays at the same time
- Allows any HDMI display to view any HDMI source at any time
- Micro-USB firmware update for expanding compatibility
- Supports Dolby Digital, DTS-HD and Dolby TrueHD audio
- The matrix switcher can switch every output channels from any HDMI inputs by Push button, IR remote control, RS-232, IP control, cloud & echo control.
- Easy installation with rack-mounting
- Fast response time – 6~8 seconds for channel switch

1. HDR = High Dynamic Range.
2. The video bandwidth of 4K2K@60 4:2:0 10bits (HDR) is 384 MHz, and the 4K2K@60 4:4:4 8bits is 594MHz.

* NOT supports
(1) Resolution downscaling from 4K2K@60 4:2:2 to 1080P
(2) Frame rate conversion
(3) 4K2K@60 4:2:2 to 4K2K@60 4:2:0

BBG-UHD-44M18G can bypass 4K HDR data content, but can NOT process it and make HDR content 100% fit into 1080p

SPECIFICATIONS

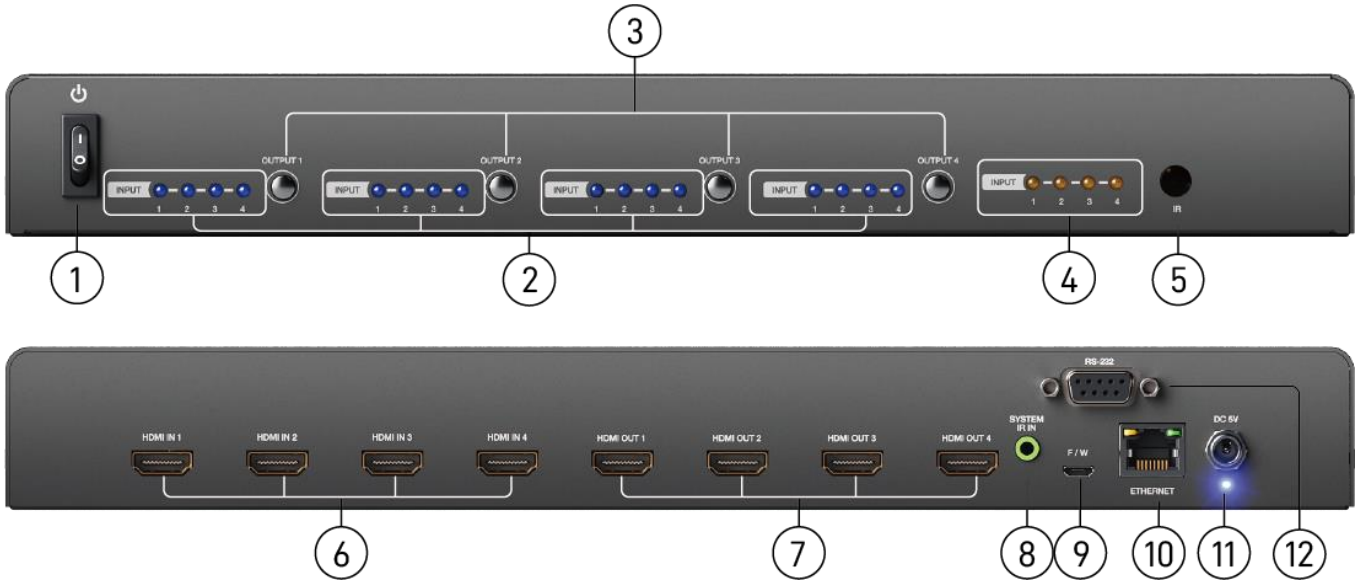
Model Name		BG-UHD-44M18G
Technical		
Role of usage		True 4x4 matrix
HDMI compliance		HDMI 2.0a
HDCP compliance		HDCP 2.2 / 1.4
Video bandwidth		Single-link 600MHz [18Gbps]
Video support		HDR 4K2K@60(4:2:0 10bits) / 4K2K@60 (4:4:4 8bits)
Audio support		DTS-HD Master Audio, Dolby TrueHD Dolby Digital, DTS, DVD-Audio, LPCM, SACD, MPCM
ESD protection		Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]
PCB stack-up		6-layer board [impedance control — differential 100Ω; single 50Ω]
Firmware update		Feasible via Micro-USB and RS-232 port
Input		4x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver
Output		4x HDMI
HDMI Input selection		Push-in button/ IR remote control/ RS-232 control/ IP control/ Cloud control
IR remote control		Electro-optical characteristics: □= 25° / Carrier frequency: 38kHz
HDMI connector		Type A [19-pin female]
RJ-45 connector		WE/SS 8P8C(Reverse Mode)
RS-232 connector		DE-9 [9-pin D-sub female]
USB connector		Micro USB
3.5mm connector		IR receiver / IR blaster
Mechanical		
Housing		Metal enclosure
Dimensions [L x W x H]	Model	340 x 123 x 44mm [1'1" x 4.8" x 1.7"]
	Package	494 x 225 x 70mm [1'6" x 8.9" x 2.8"]
	Carton	510 x 380 x 252mm [1'7" x 1'2" x 10"]
Weight	Model	1181g [2.6 lbs]
	Package	1837g[4 lbs]
Fixedness		Wall-mounting case
Power supply		5V 4A DC
Power consumption		12 Watt [max]
Operation temperature		0~40°C [32~104°F]
Storage temperature		-20~60°C [-4~140°F]
Relative humidity		20~90% RH [no condensation]

PACKAGE CONTENTS

- 1x BG-UHD-44M18G
- 1x IR receiver
- 1x DC 5V 4A
- 1x IR Remote control*
- 1x Rack-mounting ear set
- 1x Installation software CD
- 1x User Manual

* Additional IR remote controllers and IR blasters can be purchased as optional accessories to control the HDMI sources located separately.

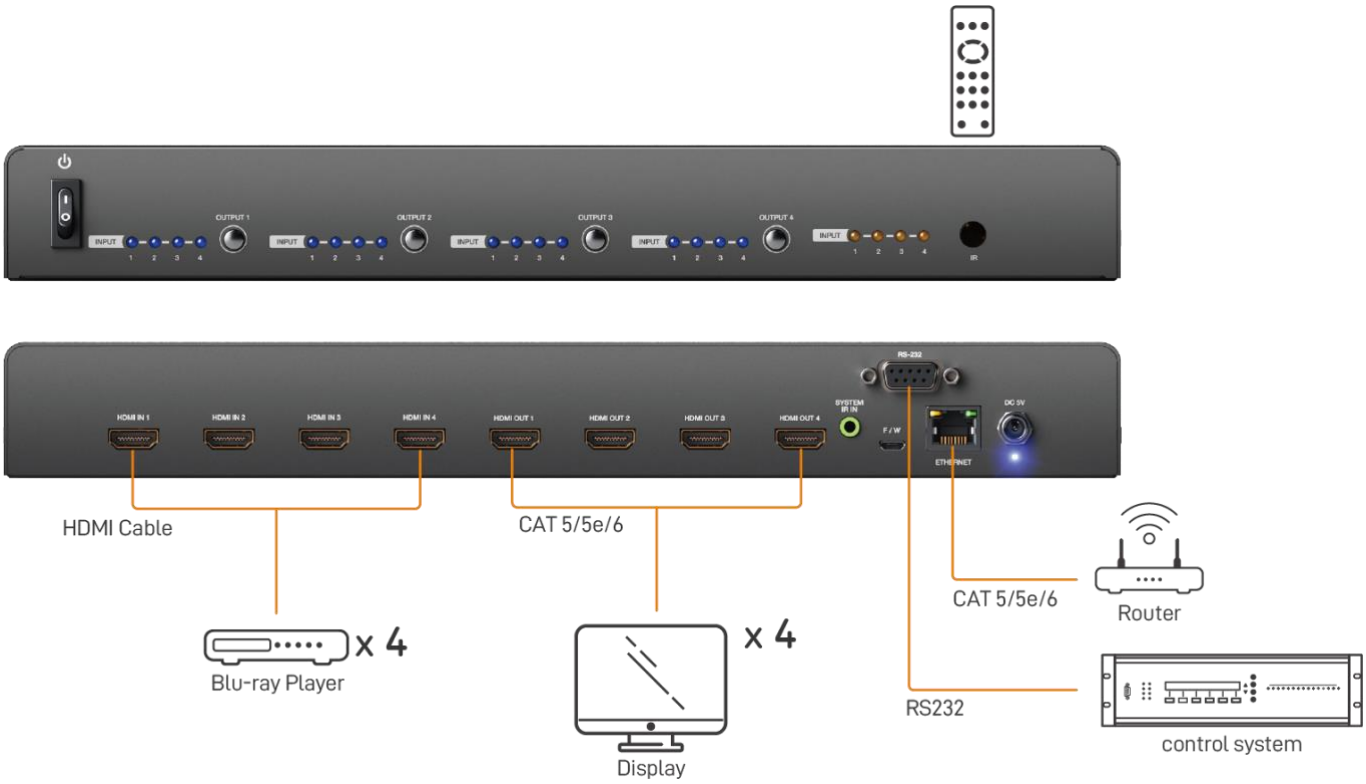
PANEL DESCRIPTIONS



1. **Power Switch**
2. **Selected Source Status LED:** When users use port channel push button, the indicator LED will show the selected source.
3. **Port 1-4 Channel Push Button:** Select input channel
4. **Source Status:** Input source detection LED
5. **IR SENSOR:** IR sensor for receiving the IR commands from IR remote
6. **INPUT 1-4:** HDMI inputs
7. **OUTPUT 1-4:** HDMI outputs
8. **System IR Receiver:** Ext. IR receiver
9. **Micro USB:** Micro-USB port for F/W update
10. **Ethernet:** Ethernet control port
11. **+5V DC:** 5V DC power jack

12. RS-232: RS-232 control port (for software control and firmware update)

CONNECTION DIAGRAM



HARDWARE INSTALLATION

BG-UHD-44M18G as master

1. Connect all sources to HDMI Inputs on the 4x4 HDMI Matrix BG-UHD-44M18G.
2. Connect all displays to HDMI Outputs on the 4x4 HDMI Matrix BG-UHD-44M18G.
3. Connect the +5V 4A DC power supply to the 4x4 HDMI Matrix BG-UHD-44M18G.

OPERATION APPROACH

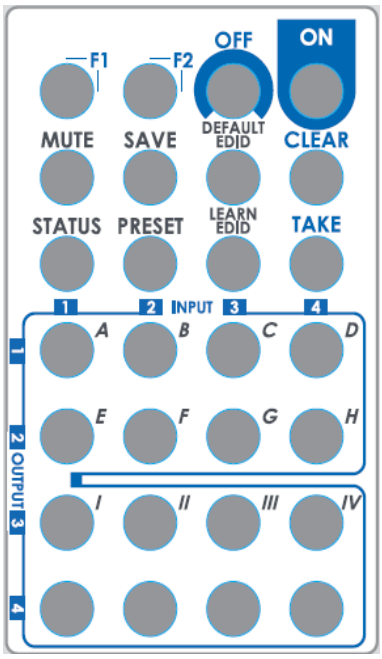
Method A: Push-in Button

IN/OUT MAP

(1) Use Port 1-4 Channel Push Button to select the source

(2) Input1~4 can be selected in order

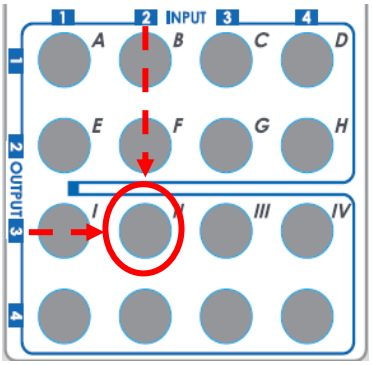
Method B: IR Remote Control



Button	Function
OFF	Standby mode
ON	Power on the matrix switcher
MUTE	Turn off output's video and audio
STATUS	Preset output status
SAVE	Save current mapping mode
PRESET	Preset mapping mode
DEFAULT EDID	Begin default EDID selection
LEARN EDID	Begin EDID learning from one output
CLEAR	Clear the previous IR operation procedure
TAKE	Trigger the previous setting
F1	Reserved
F2	Reserved

1. IN/OUT Switch

Operation	Procedure
IN/OUT Switch	**Push the button on the checkerboard to select input & output port**
Ex: Input 2 To Output 3	Push the red circle button as below to select input 2 to output 3



2. Example of function key

Operation	Procedure
Mute Output	**Mute + A~D(Output 1~4) + Take**
Ex: Mute Output 3	1.Press “MUTE” button 2.Press number key “C” to select Output 3 3.Press “TAKE” button
Output Status	**Status + A~D(Output 1~4) + Clear**
Ex: Output 4 (Input 2)	1.Press “STATUS” button 2.Press number key “D” to select Output 4 3.Press “CLEAR” button
Save Current Mapping	**Save + A~H(1-8 storage site) + Take**
Ex: Save current mapping to 5	1.Press “SAVE” button 2.Press number key “E” to select the storage site 5 3.Press “TAKE” button
Preset Mapping	**Preset + A~H(1-8 storage site) + Take**
Ex: Preset saved mapping from 5	1.Press “PRESET” button 2.Press number key “E” to select the storage site 5 3.Press “TAKE” button
Learn default EDID	**Default EDID + A~H(1-8 default EDID) + I~IV(input 1~4) + Take**
Ex: Default EDID 2 Input 3	1.Press “DEFAULT EDID” button 2.Press number key “B” to select default EDID 2 3.Press number key “III” to select Input 3 4.Press “TAKE” button
Learn Output EDID	**Learn + A~B(Output 1~2) + Ⅰ ~Ⅳ(input 1~4) + Take**
Ex: Learn Output 4 Input 3	1.Press “LEARN” button 2.Press number key “D” to select Output 4 3. Press number key “III” to select Input 3 4.Press “TAKE” button

Method C: Software Control through RS-232 port

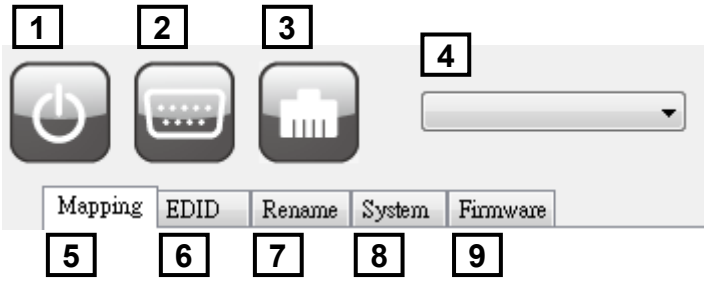
1. System Requirement

(1) OS Information: MS Win XP/7/8.1/10

(2) Baud rates: 115200

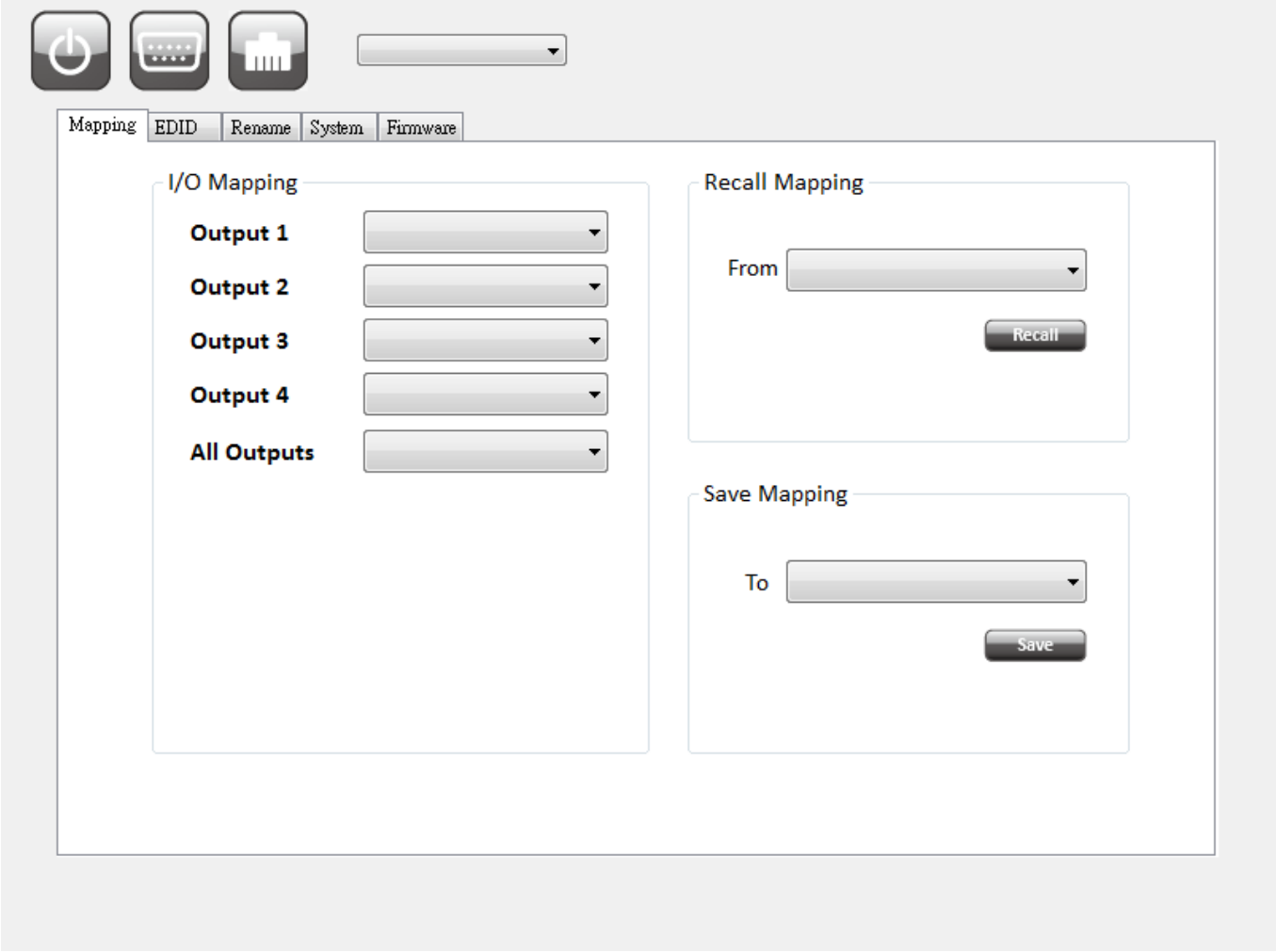
(3) Software size: 1 MB

(4) Minimum RAM requirement: 256 MB



1	Power ON/ Standby mode
2	Control SW via RS-232
3	Control SW via Network
4	COM Port Selection
5	I/O Mapping Tab
6	EDID Tab
7	Rename I/O Tab
8	System Tab
9	Firmware Update Tab

1. I/O Mapping Tab

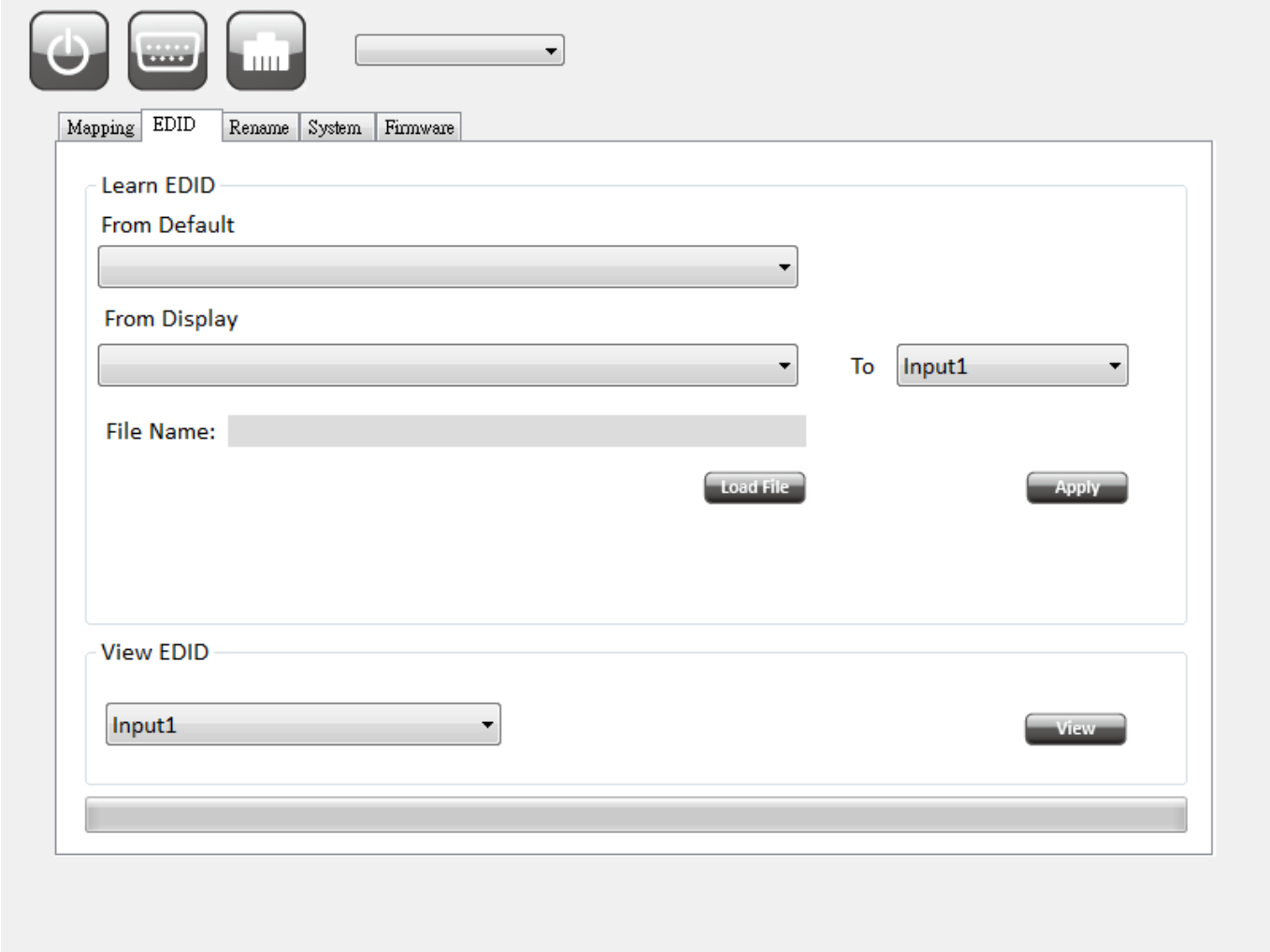


- I/O Mapping:
  - Switch the input for each output

- Recall Mapping:
  - Select the stored Mapping(1-8)
  - Click “Recall” button to recall previous mapping which are saved

- Save Mapping:
  - Select Mapping(1-8)
  - Click “Save” button to save current mapping

2. EDID Tab



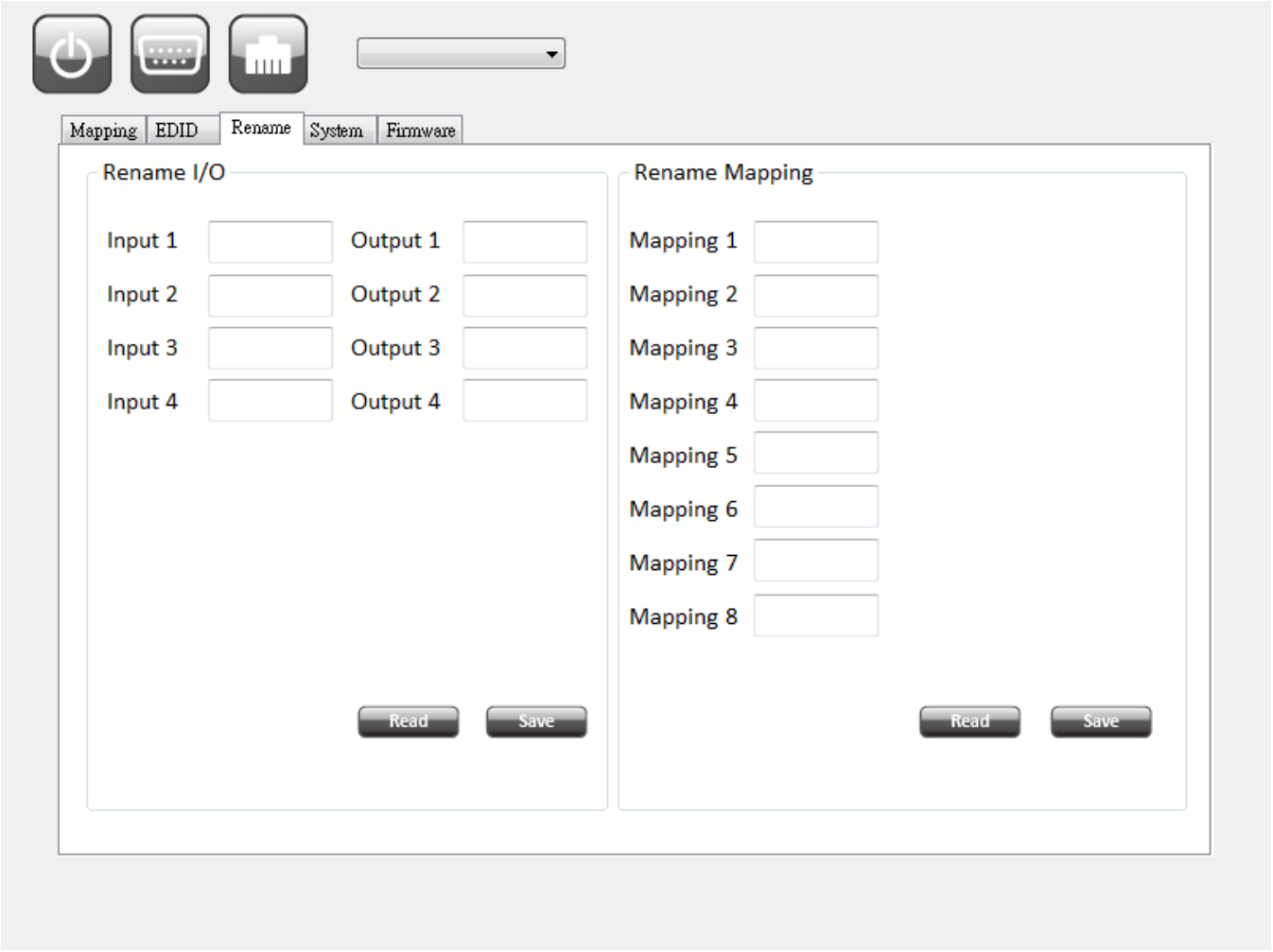
- Learn EDID from Default to Input
  - Select Default EDID(1-17 Default EDID)
  - Select designated Input
  - Click “Apply” button to learn from default EDID

- Learn EDID from Display to Input
  - Select output
  - Select designated Input
  - Click “Apply” button to learn from display EDID

- Load EDID File to Input
  - Click “Load File” button to select the EDID file from computer
  - Select designated Input
  - Click “Apply” button to load EDID File and learn to input

- View EDID information
  - Select Input ,HDMI output or EDID file
  - Click “View” button to read and analyze the EDID information

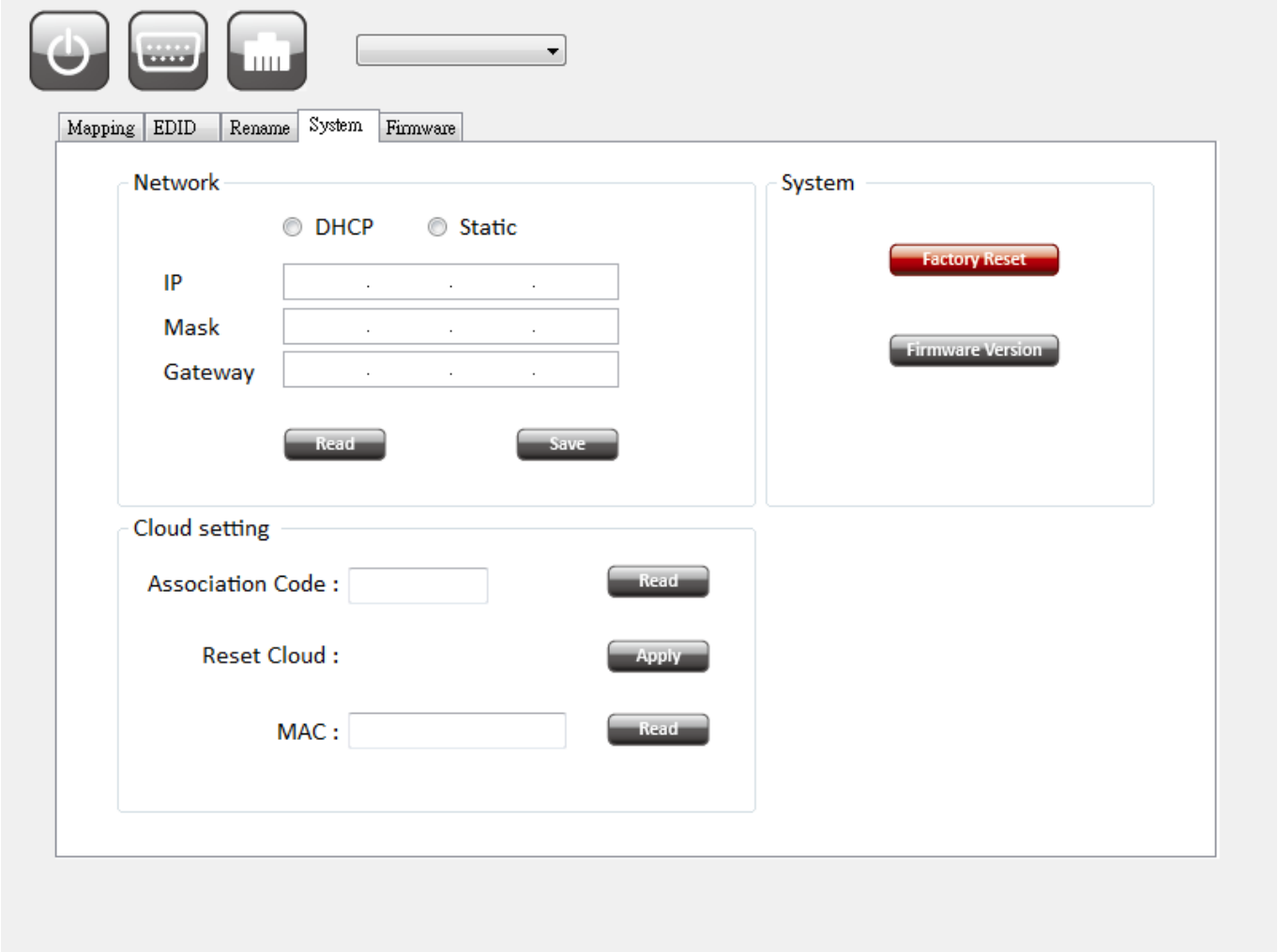
3. Rename I/O Tab



- Rename I/O:
  - Rename the Inputs
  - Rename the Outputs

- Rename Mapping:
  - Rename the Mappings

4. System Tab



- Network-DHCP mode
  - Select DHCP and click “Read” button to automatically get the IP address

- Network-Static mode
  - Select Static and then key in the “IP”, “MASK”, “GATEWAY” information. After setting IP address, please click “Save” button to save IP address Information

- “Read” Button *The default IP address is 192.168.1.70
  - Read the IP address from the device

- “Save” Button
  - Save the IP address which is manually entered

- Cloud setting-Association Code
  - To get an “association code”. The device can use this code to pair with cloud server.

- Cloud-Reset Cloud
  - To reset cloud after a successful pairing

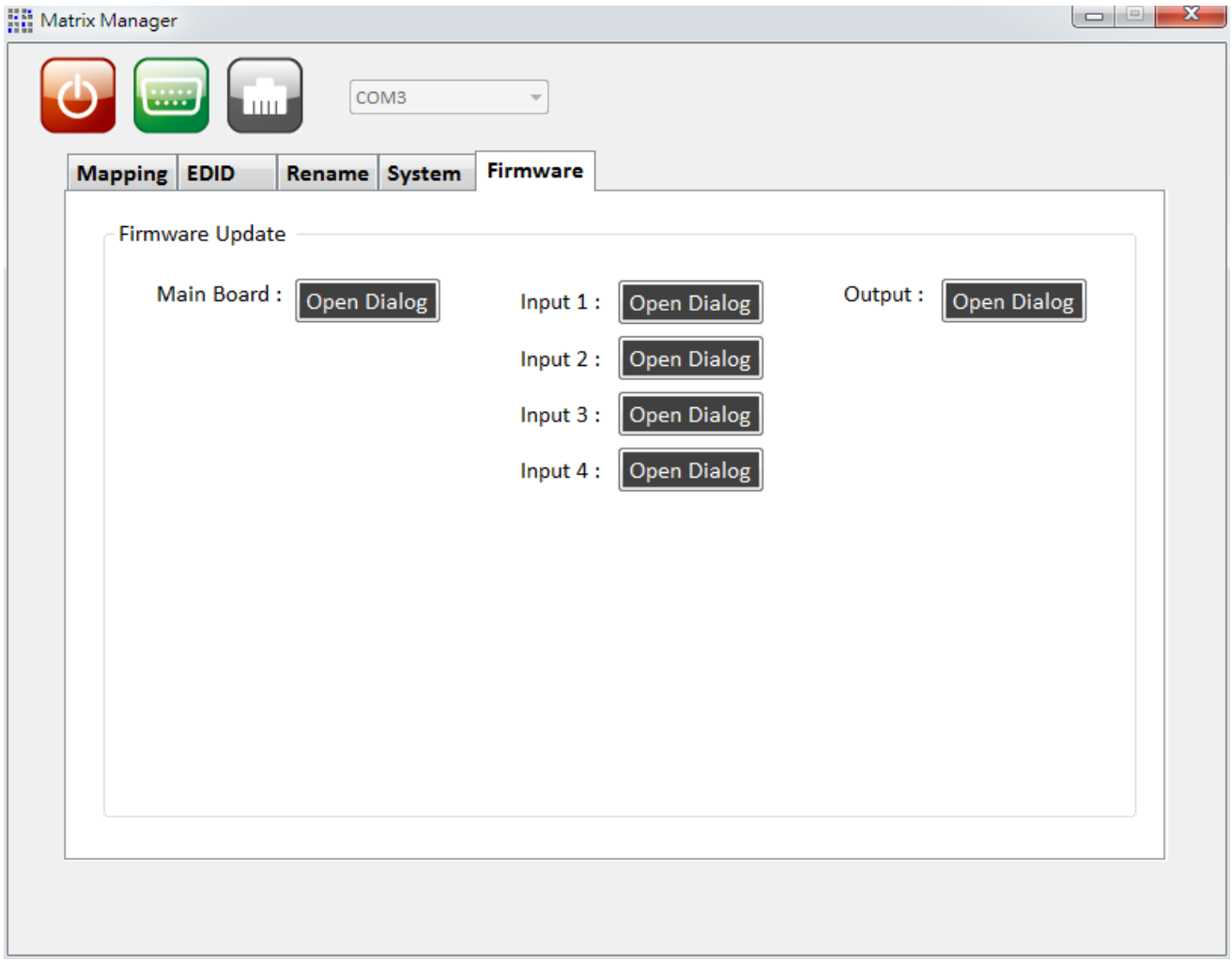
- MAC
  - Read the device’s MAC address information

- System-Factory Reset
  - To do factory default reset

- Firmware Version
  - To get the F/W version information

5. Firmware Update Tab

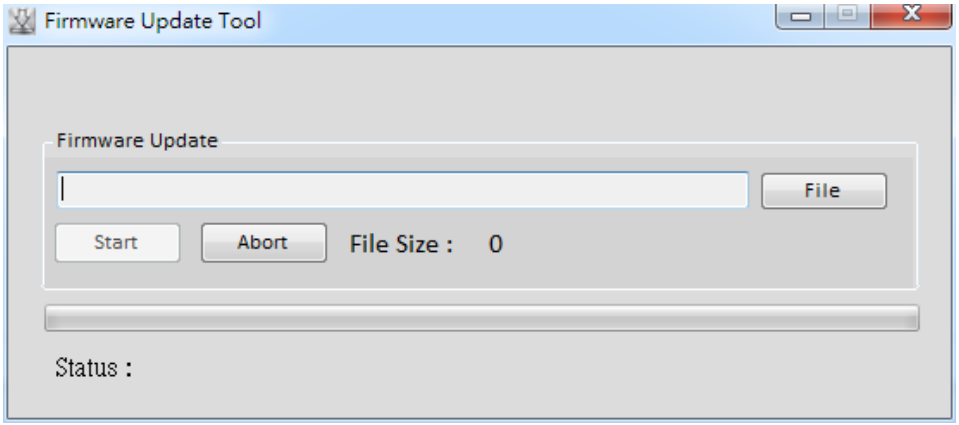
Before you start to update, please make sure you have secured the connection between your computer COM port and the device.


Matrix Manager
COM3
Mapping
EDID
Rename
System
Firmware
Firmware Update
Main Board :
Open Dialog
Input 1 :
Open Dialog
Input 2 :
Open Dialog
Input 3 :
Open Dialog
Input 4 :
Open Dialog
Output :
Open Dialog

➢ Main Board

Using RS-232 to USB cable connect the device and your PC/laptop.

- Click the Open Dialog button to open the Firmware Update Tool window.



- Click the File button to select the file which you want to write into device.
- Click the Start button and the firmware will start to update.
- After updating, please power cycle the device.

➢ Input

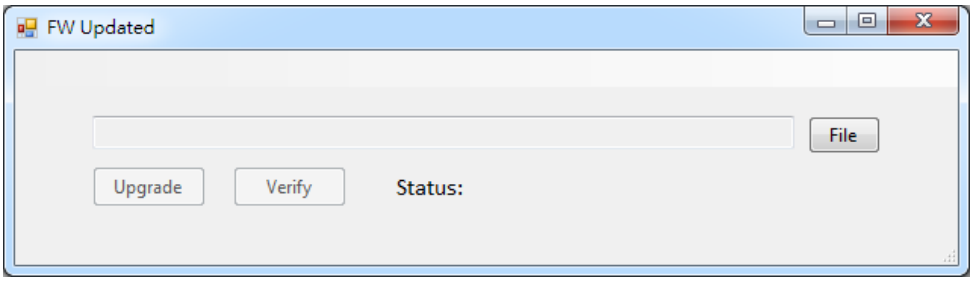
Using Micro-USB to USB cable connect the device and your PC/laptop.

- Click the Open Dialog button to enter the software page.
- Open firmware update software and then device will start to update firmware automatically.
- After update process is done, software will show “Success” message and then be closed automatically.
- Click the Open Dialog button to update next input port.
- Plug and unplug the Micro-USB cable. Repeat the step 2 ~ step 5, until finishing all the input port firmware update.

➢ Output

Using RS-232 to USB cable connect the device and your PC/laptop.

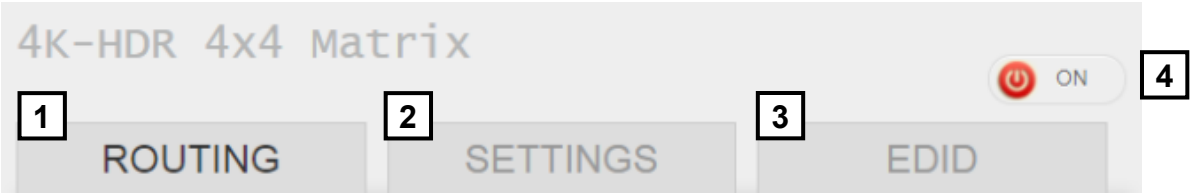
- Click the Open Dialog button to open the FW Updated window.



- Click the File button to select the file which you want to write into device.
- Click the Upgrade button and the firmware will start to update.
- After updating, please power cycle the device.

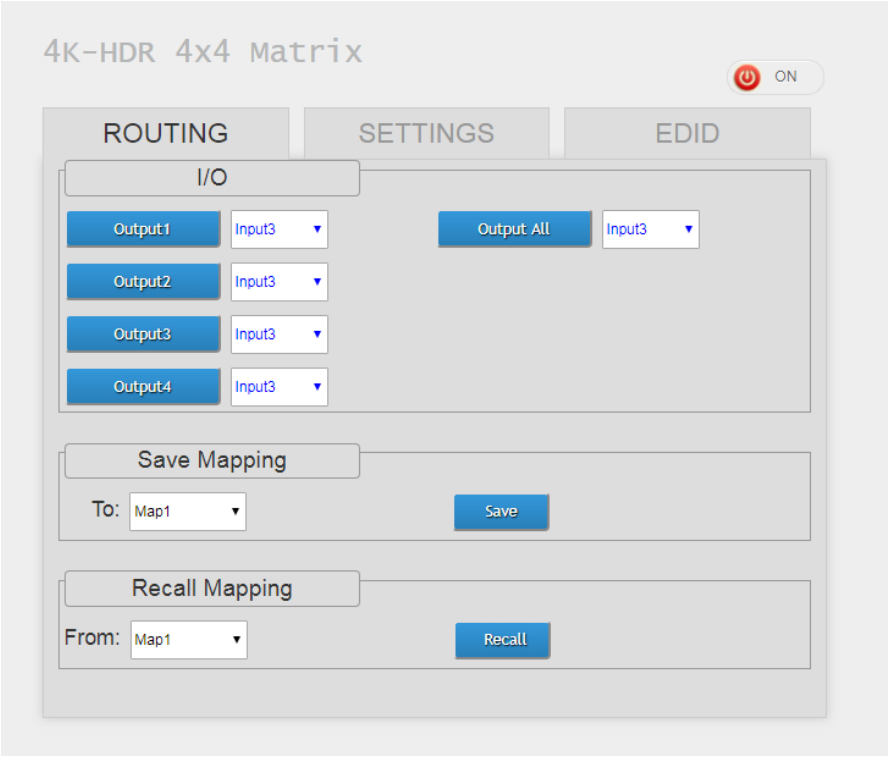
Method D: Web Interface Control

The default IP address: 192.168.1.70



1	I/O Routing Tab
2	Rename I/O, Mapping Tab
3	EDID Tab
4	Power ON/Standby mode

1. I/O Routing Tab



- I/O:

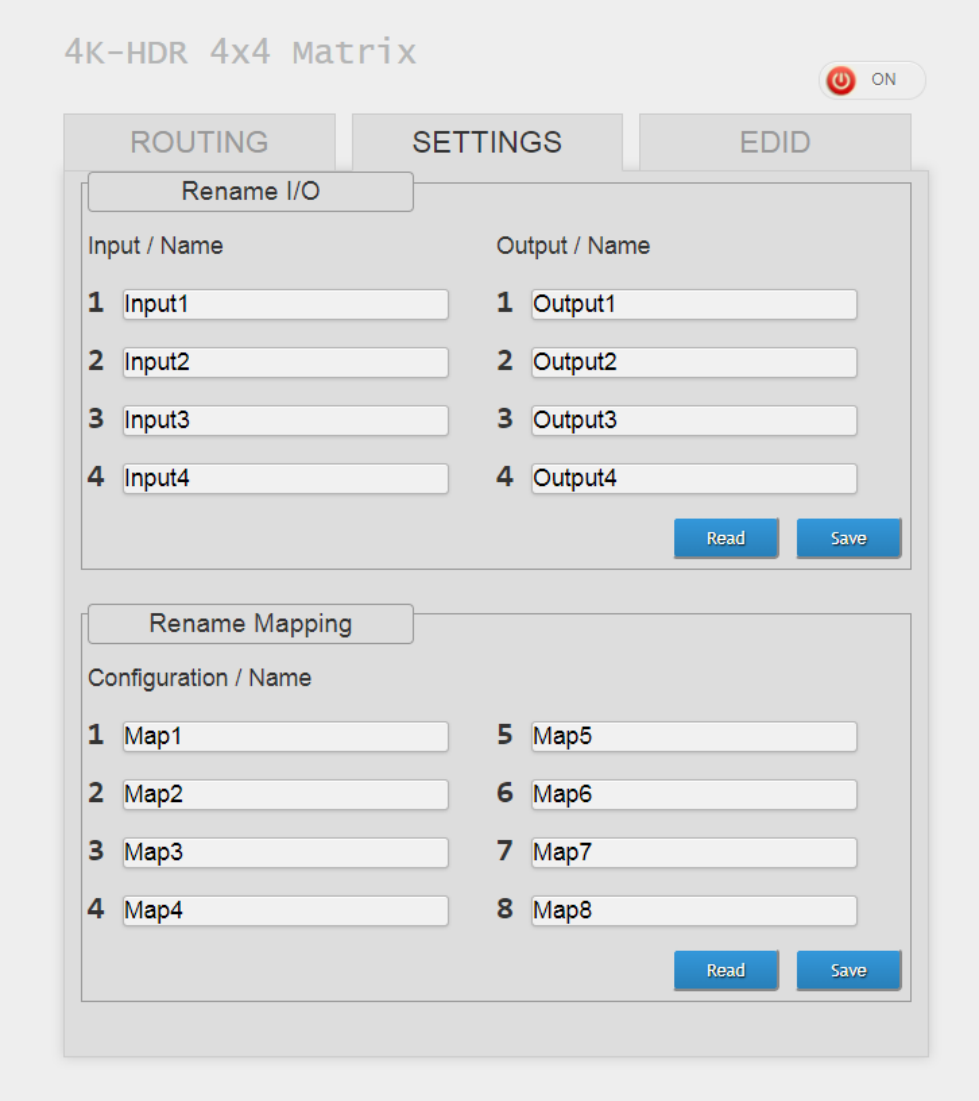
  Switch the input for each output

- Save Mapping
  - Select Mapping 1~8
  - Click “Save” button to save current mapping

- Recall Mapping
  - Select the stored Mapping 1~8

- Click “Recall” button to recall previous saved mapping

2. Rename I/O, Mapping Tab



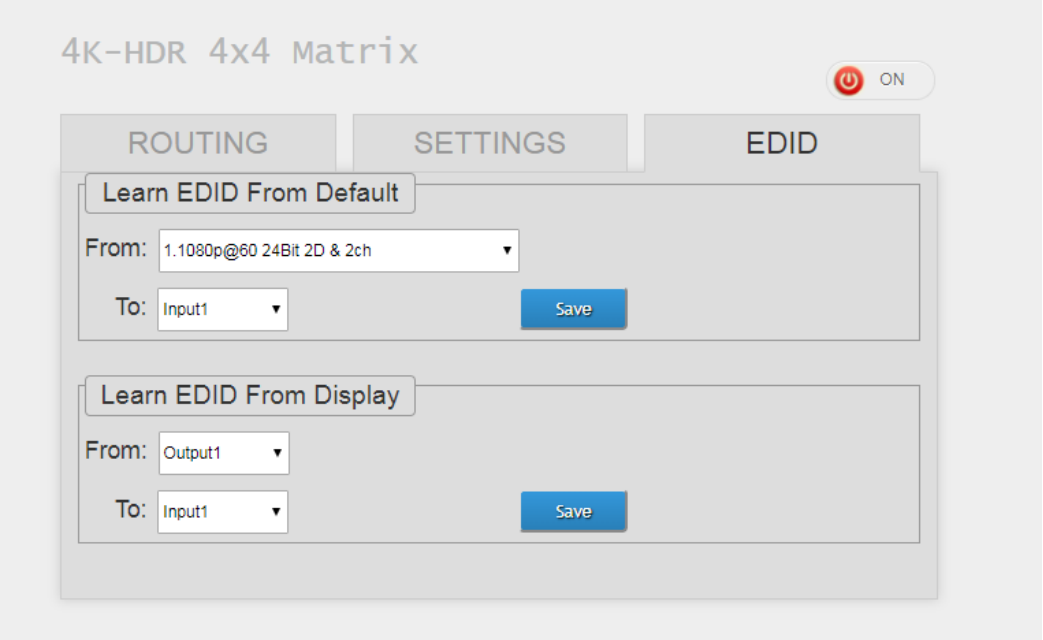
➢ Rename I/O:

- Rename the Inputs
- Rename the Outputs

➢ Rename Mapping:

- Rename the Mappings

3. EDID Tab



- Learn EDID from Default
  - Select Default EDID (1-17 default EDID)
  - Select input
  - Click “Send” button to learn default EDID

- Learn EDID from Display
  - Select output
  - Select input
  - Click “Send” button to learn display EDID

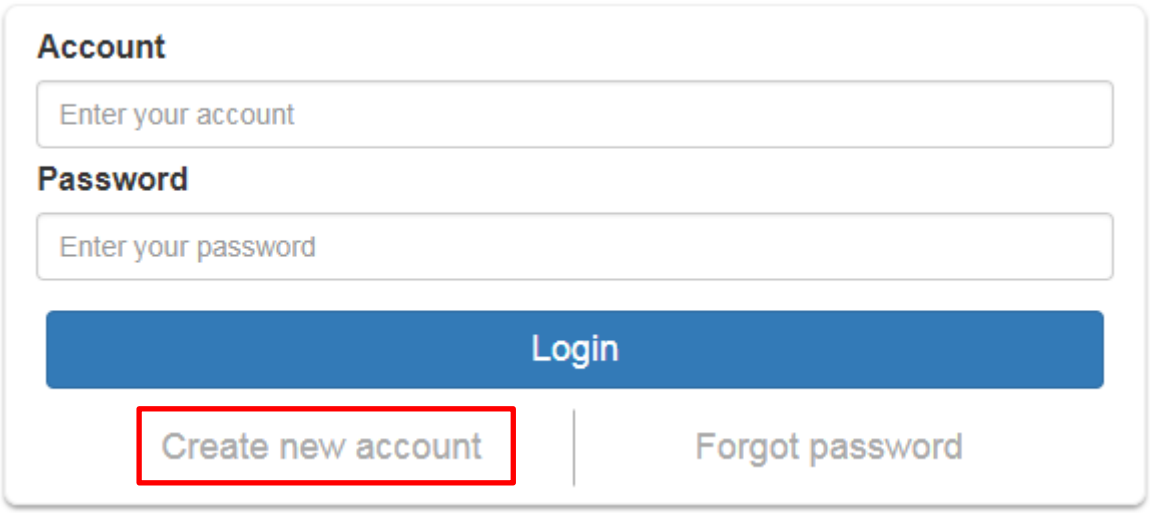
4. Power ON / Standby mode

Method E: Cloud Control (Eagleyes) through Ethernet port

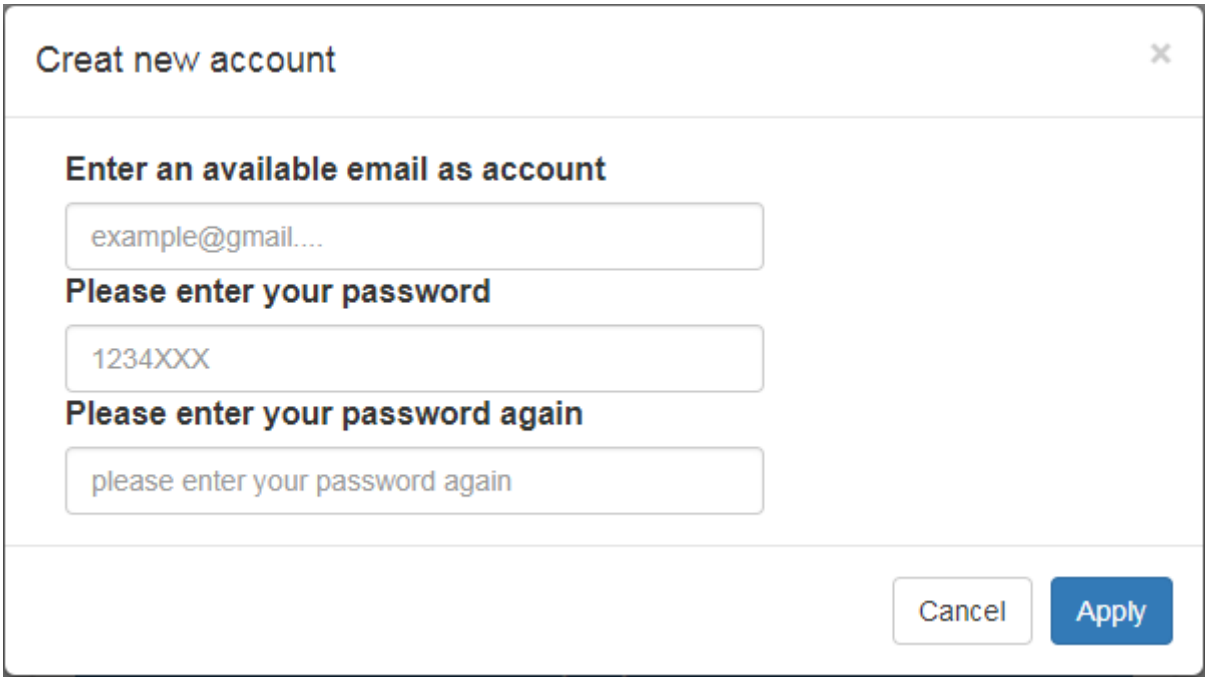
Create Account

The first time to use the Eagleyes service, please create a new account.

1. Access Eagleyes (http://www.eagleyes.io) and click “Create new account”.

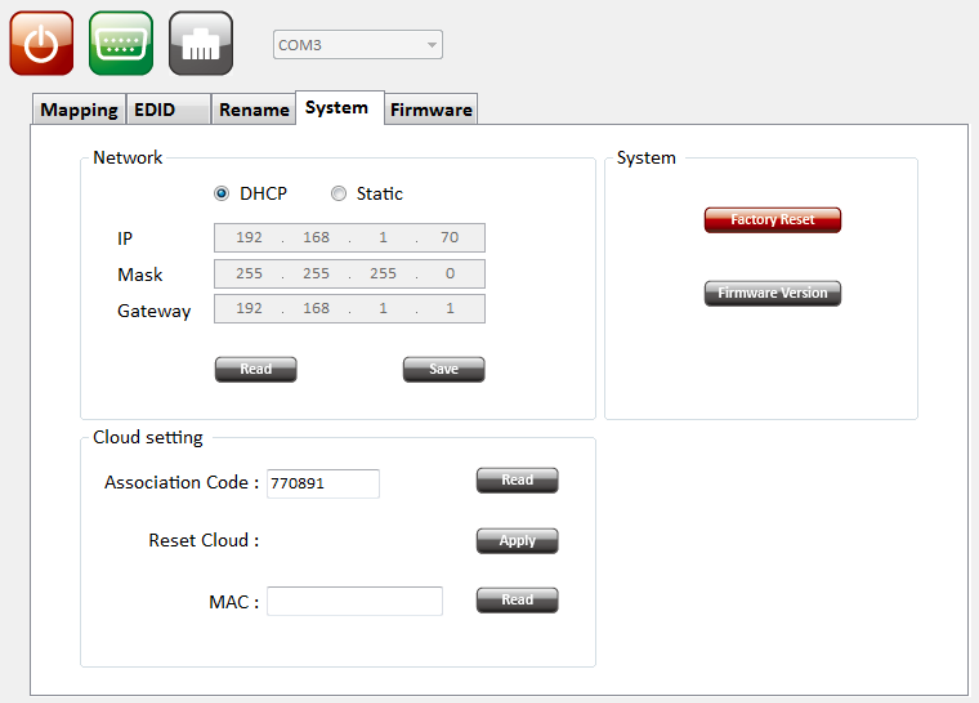


2. The Registration page will pop up and please fill in your email and password information to create your private account.

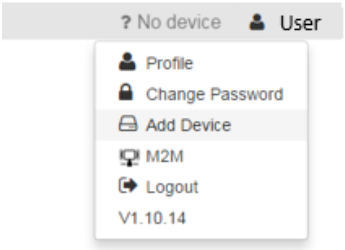


Add Device to Eagleyes

1. Firstly, please make sure the device is connected to the Ethernet. Then please executing the software with device to get the association code (Note: the status of software is connected).

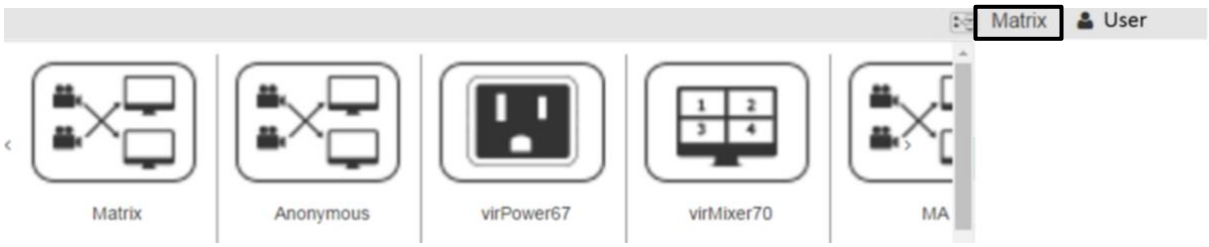


2. Access Eagleyes (http://www.eagleyes.io) or download Eagleyes APP and then log in your account on the right top corner. Click **Add device** to add the device which you just got its association code.



3. Enter the Installer Email for online support in the future, and the Association Code for pairing with your device.

4. After adding the device, the list of device related to your account will show on the right top corner. You can click the button to switch device for control.



EDID LEARNING

The EDID learning function is only necessary whenever you encounter any display on the HDMI output port that cannot play audio and video properly. Because the HDMI source devices and displays may have various level of capability in playing audio and video, the general principle is that the source device will output the lowest standards in audio format and video resolutions to be commonly acceptable among all HDMI displays. In this case, a 720p stereo HDMI signal output would be probably the safest choice. Nevertheless, the user can force the matrix to learn the EDID of the lowest capable HDMI display among others to make sure all displays are capable to play the HDMI signals normally.

There are **THREE methods** to do EDID Learning as below,

1. IR Remote Control: Please refer to the **Operation Approach\Method B: IR Remote Control**
2. Software Control: Please refer to the **Operation Approach\Method C: Software Control through RS-232 port**
3. Web Interface Control: Please refer to the **Operation Approach\Method D: Web Interface Control**

There are **seventeen embedded default EDID** as below,

1. Full-HD(1080p@60)-24bit 2D & 2ch
2. Full-HD(1080p@60)-24bit 2D & 7.1ch
3. Full-HD(1080p@60)-24bit 3D & 2ch
4. Full-HD(1080p@60)-24bit 3D & 7.1ch
5. HD(1080i@60)(720p@60)-24bit 2D & 2ch
6. HD(1080i@60)(720p@60)-24bit 2D & 7.1ch
7. Full-HD(1080p@60)-36bit 2D & 2ch
8. Full-HD(1080p@60)-36bit 2D & 7.1ch
9. Full-HD(1080p@60)-24bit 2D & 2ch & Dolby 5.1ch
10. 4k2k@30 2ch
11. 4k2k@30 7.1ch
12. 4k2k@30-3D-PCM2CH(2ch)
13. 4k2k@30-3D-BITSTR(7.1ch)
14. 4k2k@60-420-3D-PCM2CH(2ch)
15. 4k2k@60-420-3D-BITSTR(7.1ch)
16. 4k2k@60-3D-PCM2CH(2ch)
17. 4k2k@60-3D-BITSTR(7.1ch)

FAQ

Q Can every TV work with the HDMI matrix?

A Basically, the answer is YES. But if your TV cannot support 1080p, please refer the EDID LEARNING section to learn EDID from your TV.

Q What is EDID? Why do I need to learn EDID?

A EDID contains the whole information of the display such as the resolution and audio setting which this display can support. Therefore, based on the EDID information, media player will pick up the most suitable resolution and audio setting to the display. In order to faithfully transmit the EDID information from display to the media player, learning EDID from display to this device is necessary.

Q What should I do to learn EDID for the matrix?

A Due to the limitation of HDMI, the source device can only output one format of video and audio. In other words, the source device cannot output 720p and 1080p video at the same time, or output stereo and surround sound at the same time. Therefore, you may need to manually setup each HDMI input for desirable audio/video output format. The mechanism of EDID Learning is to pick up the HDMI display with the lowest capability among the ones you would use for this input source. For example, if user would like to play the Input-2 upon output-2, output-3 and output-4, and only output-3 cannot support 1080p [support up to 720p only], please learn the EDID from the display connected to the output-3 at the Input-2 port. Of course, if outpt-3 would get the HDMI signals from every HDMI input, please learn EDID information from output3 to all four HDMI inputs. For more information about EDID Learning, please refer to EDID LEARNING section.

Q My TV can support 1080p, but why there is no audio?

A The factory default EDID of this device is 1080p &2ch audio. However, there would be a problem after you change to use 1080p & 7.1ch if the TV cannot support 7.1ch audio. Please use the default EDID,1080p &2ch audio.

Q When I set an audio amplifier (AV receiver) between TV and the matrix to extract 7.1ch audio, but why there is still no audio?

A Basically, the default EDID of the chosen input can support 7.1ch audio, but the problem is that the EDID of the amplifier still cannot match the default setting. Therefore, the best method is to learn EDID from the amplifier directly. Please refer to EDID LEARNING section and follow the steps to learn the EDID. When learning EDID from the amplifier, user just needs to connect the matrix and amplifier. **Please don't connect HDMI cable between amplifier and TV when the EDID learning is proceeding.**

Q When I play the same content upon multi-displays, why only the TV equipped with amplifier can have 7.1ch audio, and the others don't have 7.1ch audio even no stereo?

A Due to the limitation of HDMI, the source only can choose one video and one audio format to play, which can be either 1080p and 7.1ch or 1080p and stereo audio. It means when the user sets the matrix at 1080p and 7.1ch, the source will only play the content under this format. Therefore if the TV cannot decode 7.1ch audio, there is definitely no audio.

WARRANTY

The SELLER warrants the **BG-UHD-44M18G 4x4HDMI 2.0a matrix** free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1-year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surge. This warranty is offered by the SELLER for its BUYER with direct transaction only. This warranty is void if the warranty seal on the metal housing is broken.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables and power adapters are limited to a 30 day warranty and must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the BG-UHD-44M18G features and specifications is subject to change without further notice.**

SECOND YEAR ASSURANCE

BZB Gear 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.

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 1.888.660.2962 or email support@bzbgear.com.

For complete warranty information, please visit BZBGear.com/warranty or scan the QR code below.

*Terms and conditions apply. Registration is required.

MISSION STATEMENT

BZB Gear 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. BZB Gear 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 BZB Gear catalog. You'll notice comparably lower prices with BZB Gear 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, BZB Gear offers the solutions to allow you to focus on your project and not your budget.