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gofanco®

# PRO-Matrix44-SC

4K HDR 4x4 Matrix with Downscale Support

# User's Guide


1 YEAR WARRANTY RoHS

Made in Taiwan

Congratulations for owning a gofanco product. Our products aim to meet all your connectivity needs wherever you go.

Have fun with our products!

Please read this manual carefully before first use.

If you need more information about our products, please visit www.gofanco.com.

For technical support, please email us at support@gofanco.com.

For drivers/manuals download, please go to http://www.gofanco.com/download.

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# 1. Safety and Notice

Please read all of these instructions carefully before you use the device. Save this manual for future reference.

The **PRO-Matrix44-SC** **4K HDR 4x4 Matrix with Downscale Support** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the PRO-Matrix44-SC should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

## 2. Introduction

The **PRO-Matrix44-SC** **4K HDR 4x4 Matrix with Downscale Support** 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. The PRO-Matrix44-SC supports HDR and true 4K2K video! Besides, PRO-Matrix44-SC supports auto downscale from 4K2K to 1080P.

With the latest HDMI 2.0 video & audio support, the PRO-Matrix44-SC is well suited for home theaters, conference rooms, or other similar settings or applications.

## 3. Features

- HDMI 2.0a compliant
- Supports 4K2K@60 4:4:4 8bits
- Supports HDR*(4K2K@60 4:2:0 10bits**)
- HDCP 2.2 compliant 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
- Connect up to four HDMI source devices and independently distribute any source to any of the four HDMI displays
- Micro-USB firmware update for expanded compatibility
- Supports Dolby Digital, DTS-HD and Dolby TrueHD audio
- Switching methods: Push buttons, IR remote, RS-232, IP control, cloud & echo control
- Surface & rack mountable
- 6-8 seconds channel switch response time

* HDR = High Dynamic Range.

** 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

**PRO-Matrix44-SC can bypass 4K HDR data content, but can NOT process it and make HDR content 100% fit into 1080p**

## 4. Package Contents

- 1x PRO-Matrix44-SC
- 1x DC 5V 4A
- 1x IR Remote control*
- 1x Rack-mounting ear set
- 1x IR Receiver
- 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.

## 5. Specifications

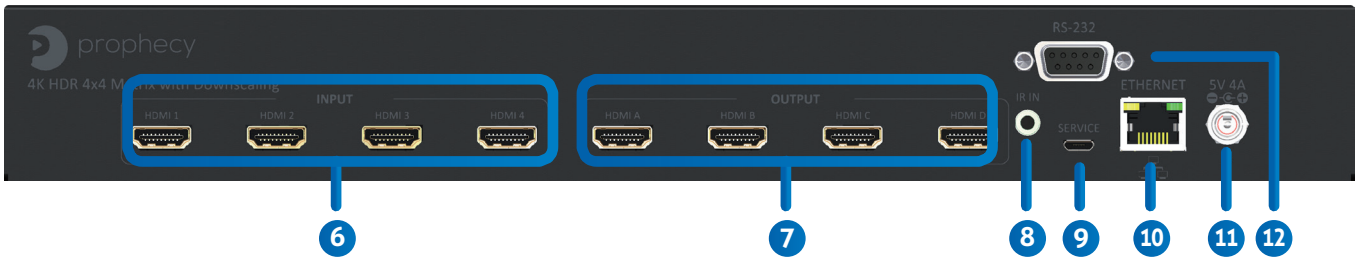
| Item | | Description |
|---|---|---|
| **Technical** | | |
| Role of usage | | True 4x4 matrix |
| HDMI compliance | | HDMI 2.0a |
| HDCP compliance | | HDCP 1.4/ HDCP 2.2 |
| Video bandwidth | | Single-link 594MHz [18Gbps] |
| Video support | | HDR 4K2K@60(4:2:0 10bits)/ 4K2K@60 (4:4:4 8bits) |
| 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] |
| 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: π= 25° / Carrier frequency: 38kHz |
| HDMI connector | | Type A [19-pin female] |
| RJ-45 connector | | WE/SS 8P8C with 2 LED indicators |
| RS-232 connector | | DE-9 [9-pin D-sub female] |
| USB connector | | Micro USB |
| 3.5mm connector | | [System IR] Receives IR commands from remote control |
| **Mechanical** | | |
| Housing | | Metal enclosure |
| Dimensions [L x D 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 Watts [max] |
| Operation temperature | | 0~40°C [32~104°F] |
| Storage temperature | | -20~60°C [-4~140°F] |
| Relative humidity | | 20~90% RH [no condensation] |

## 6. Panel Description

Front Panel

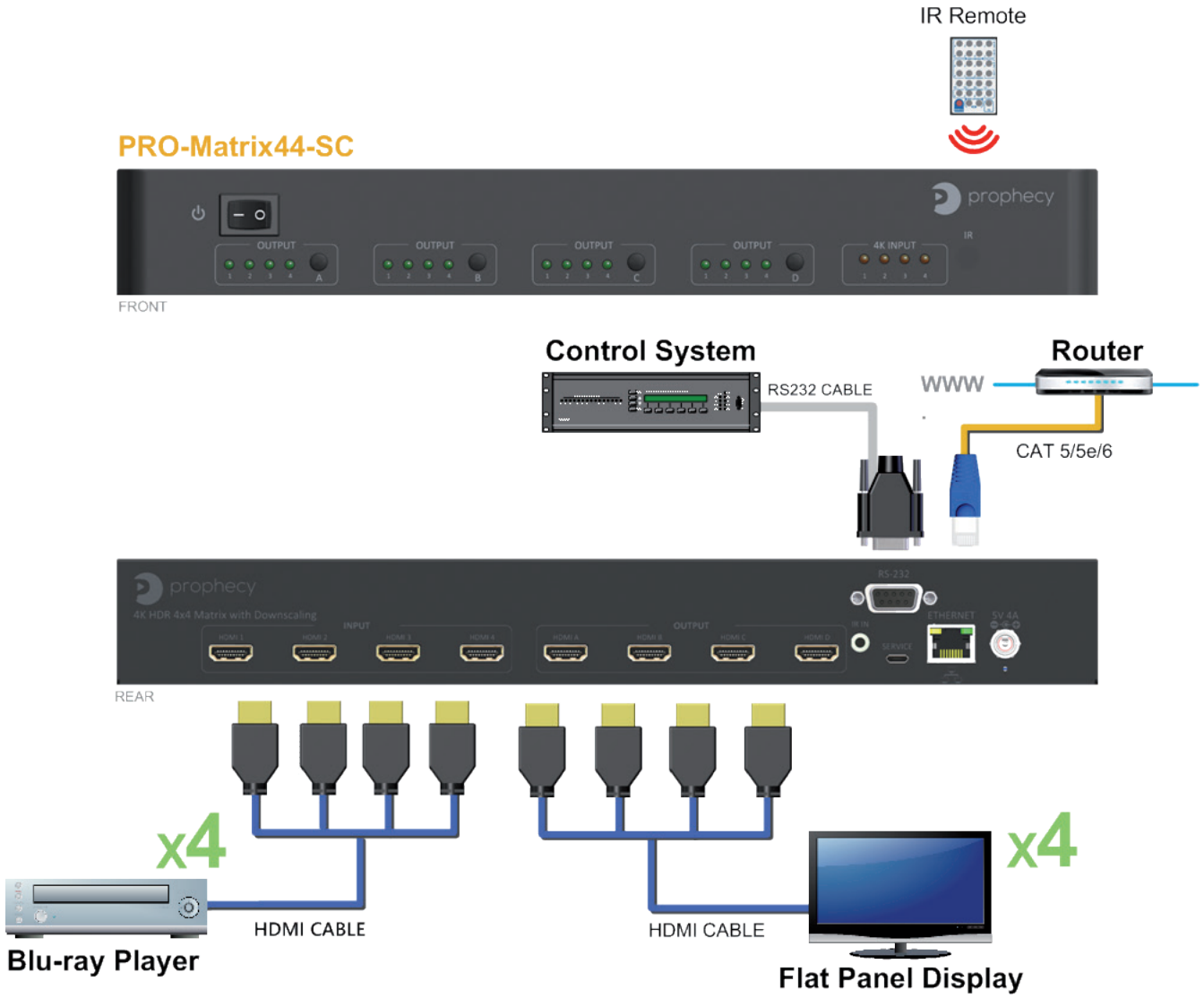

1. **Power Switch**
2. **Selected Source Status LED:** When users use port channel push button, the indicator LED will show the selected source.
3. **Port 1-4 Channel Push Button:** Select input channel
4. **Source Status:** 4K Input source detection LED
5. **IR SENSOR:** IR sensor for receiving the IR commands from IR remote

Rear Panel




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)

## 7. Connection Diagram




## 8. Hardware Installation

### PRO-Matrix44-SC as master

1. Connect all sources to HDMI Inputs on the 4x4 HDMI Matrix PRO-Matrix44-SC.
2. Connect all displays to HDMI Outputs on the 4x4 HDMI Matrix PRO-Matrix44-SC.
3. Connect the +5V 4A DC power supply to the 4x4 HDMI MatrixPRO-Matrix44-SC.

# 9. Operation Approach

## Method A: Push-in Button

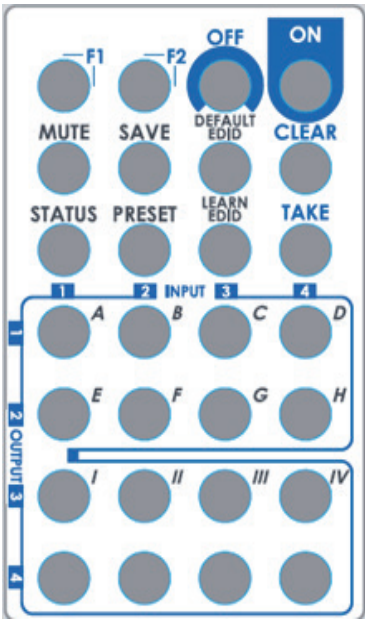
**IN/OUT MAP**

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

(2) Input1~4 can be selected in order

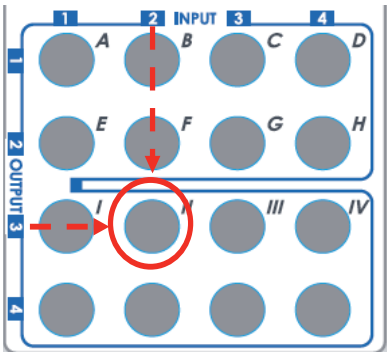
## Method B: IR Remote Control

| 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 |



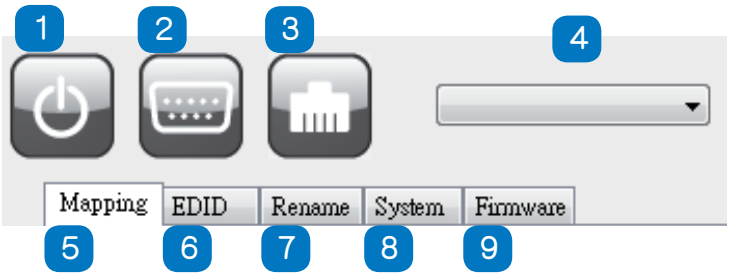
## 2. Example of function key

| 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

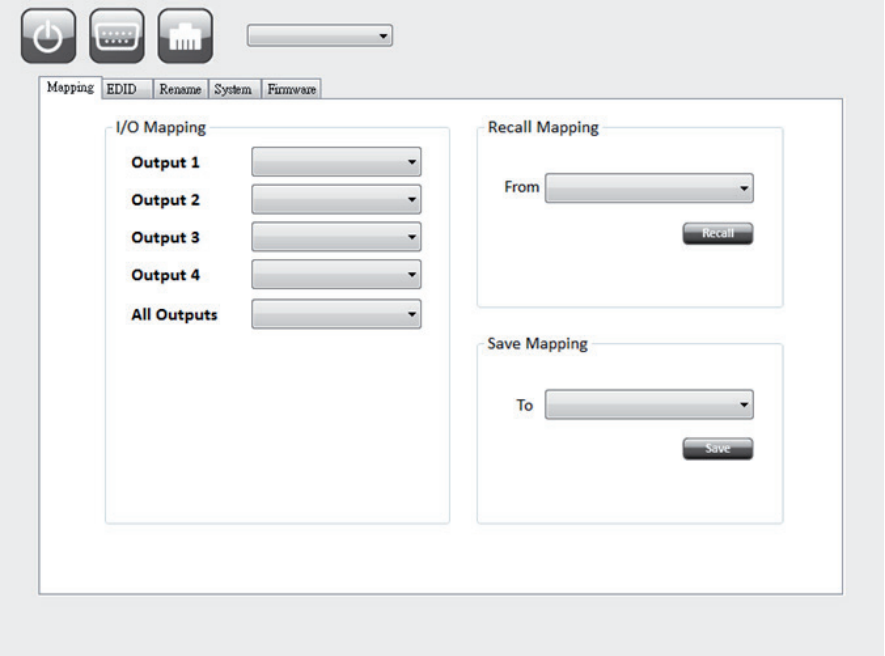
### System Requirement

(1) OS Information: MS WinXP/7/8.1/10
(2) Baud rates: 115200
(3) Software size: 1 MB
(4) Minimum RAM requirement: 256 MB



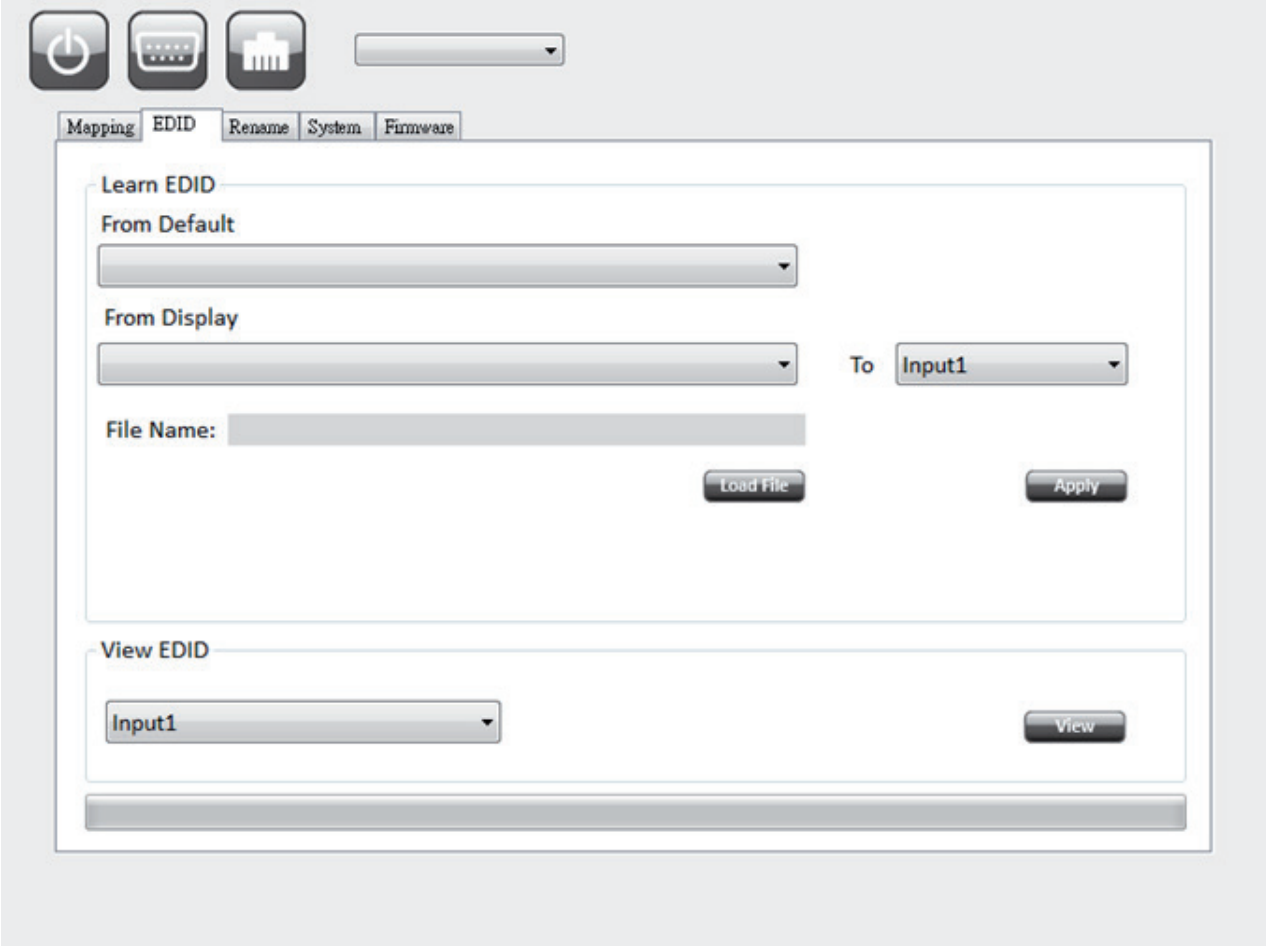

| | |
|---|---|
| 1 | Power ON/ Standby mode |
| 2 | Control SW via RS-232 |
| 3 | Control SW via Network |
| 4 | COM Port Selection |
| 5 | I/O Routing Button |
| 6 | EDID Button |
| 7 | Rename I/O Button |
| 8 | Network Setting & Default Reset Button |
| 9 | Firmware Update Button |

### 1. I/O Routing Button



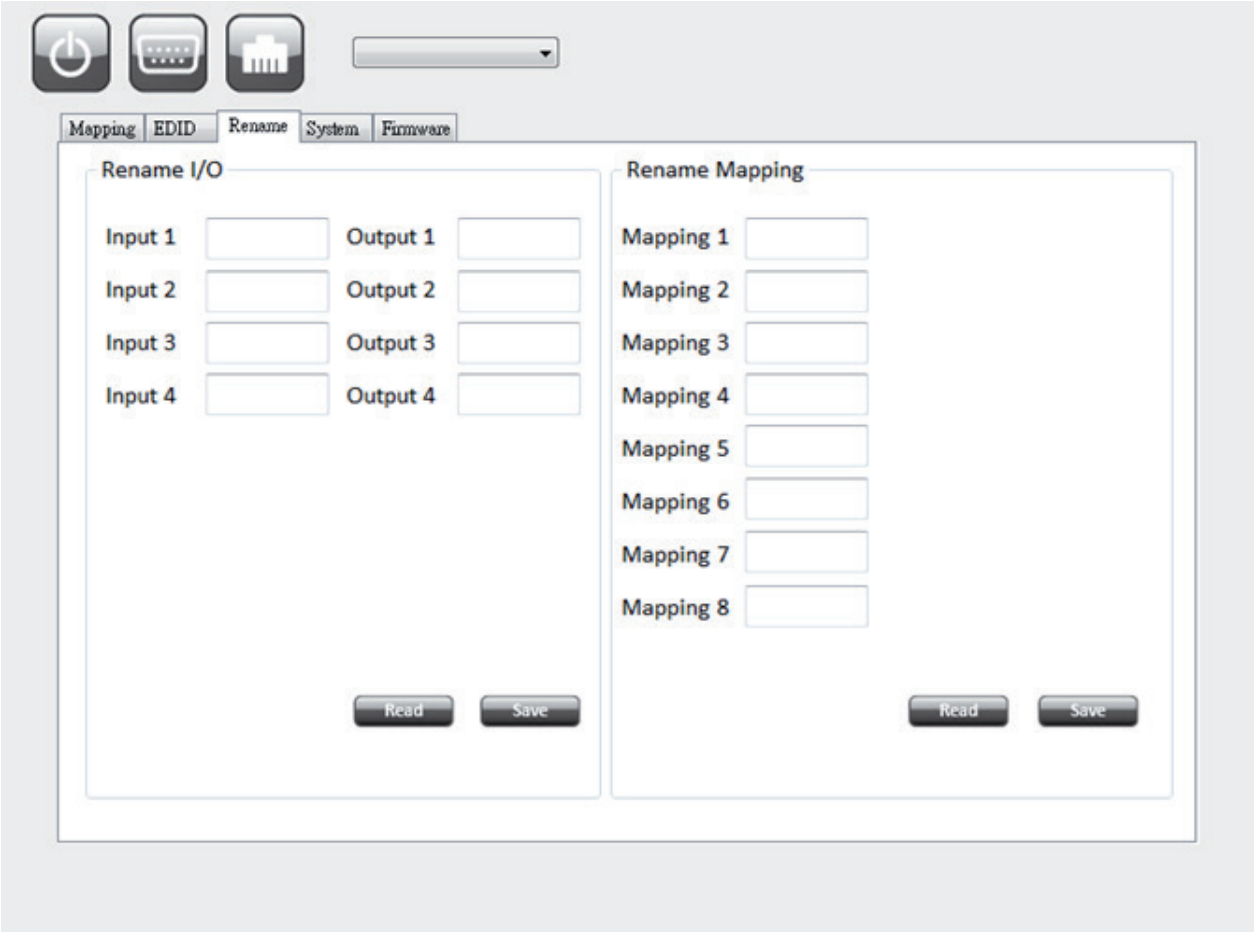

- **I/O Mapping:**
  Switch the input for each output
- **Recall Mapping:**
  (1) Select the stored Mapping(1-8)
  (2) Click "Recall" button to recall previous mapping which are saved
- **Save Mapping:**
  (1) Select Mapping(1-8)
  (2) Click "Save" button to save current mapping

## 2. EDID Button



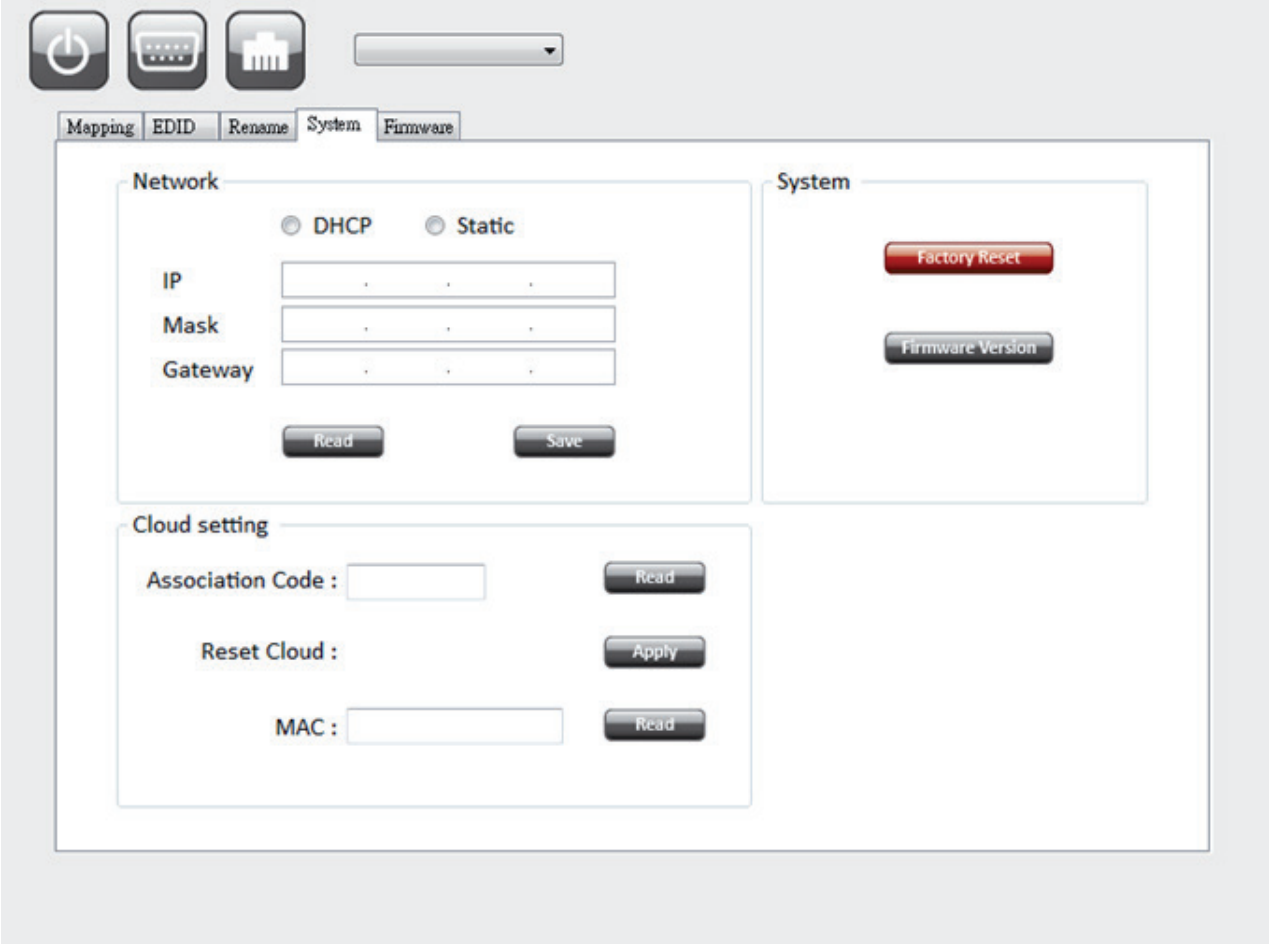

- **Learn EDID from Default to Input**
  (1) Select Default EDID(1-17 Default EDID)
  (2) Select designated Input
  (3) Click "Apply" button to learn from default EDID
- **Learn EDID from Display to Input**
  (1) Select output
  (2) Select designated Input
  (3) Click "Apply" button to learn from display EDID
- **Load EDID File to Input**
  (1) Click "Load File" button to select the EDID file
  (2) Select designated Input
  (3) Click "Apply" button to load EDID File
- **View EDID**
  (1) Select Input, HDMI output or EDID file
  (2) Click "View" button to read and analyze the EDID

## 3. Rename I/O Button




- **Rename I/O:**
  (1) Rename the Inputs
  (2) Rename the Outputs
- **Rename Mapping:**
  (1) Rename the Mappings

## 4. System Button

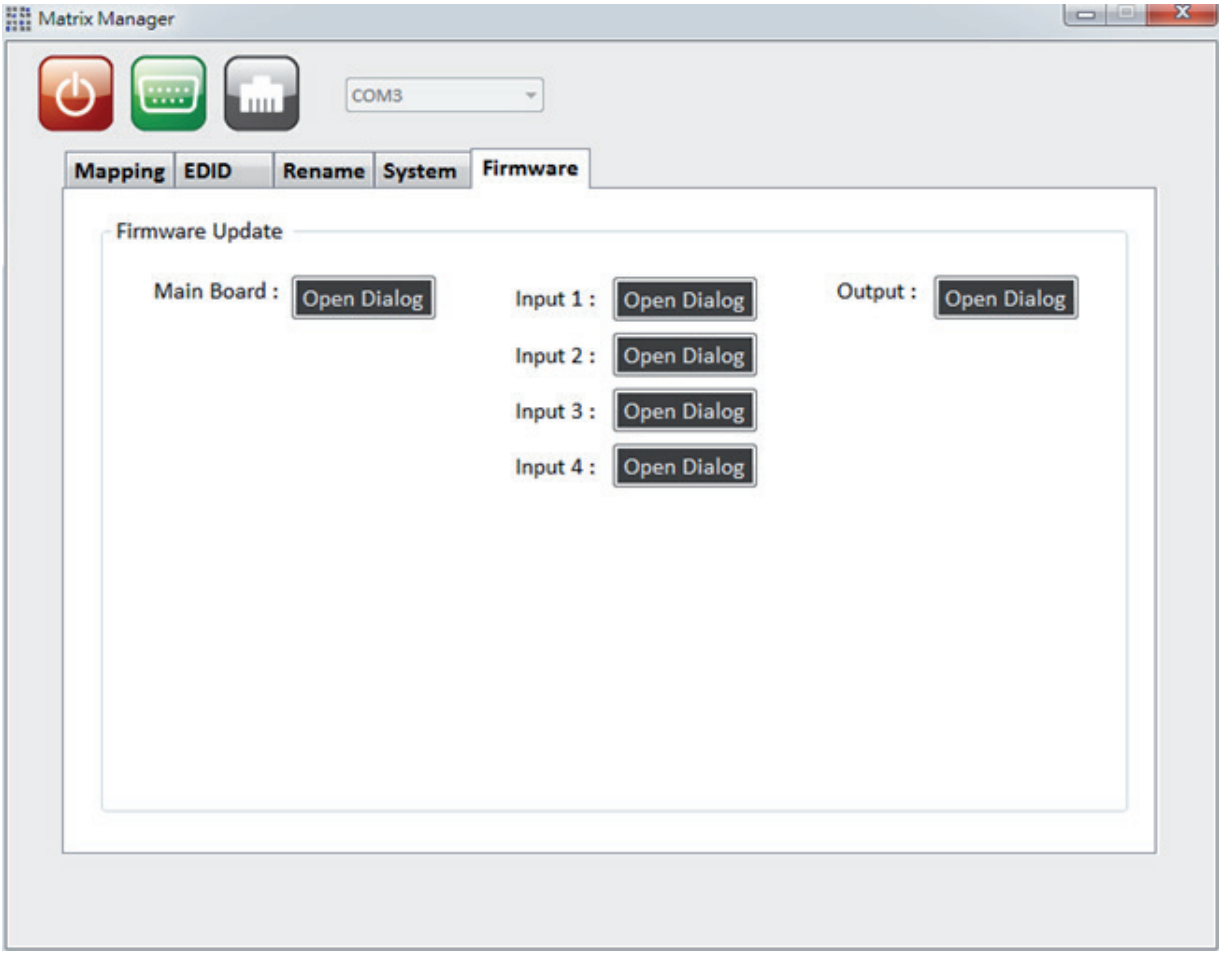



- **Network-DHCP mode**
  Select DHCP and click "Read" button to automatically get the IP address Information
- **Network-Static mode**
  Click Static and then key in the "IP", "MASK", "GATEWAY" information. After setting IP address, please click "Save" button to save IP address Information
- **"Read" 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 Button

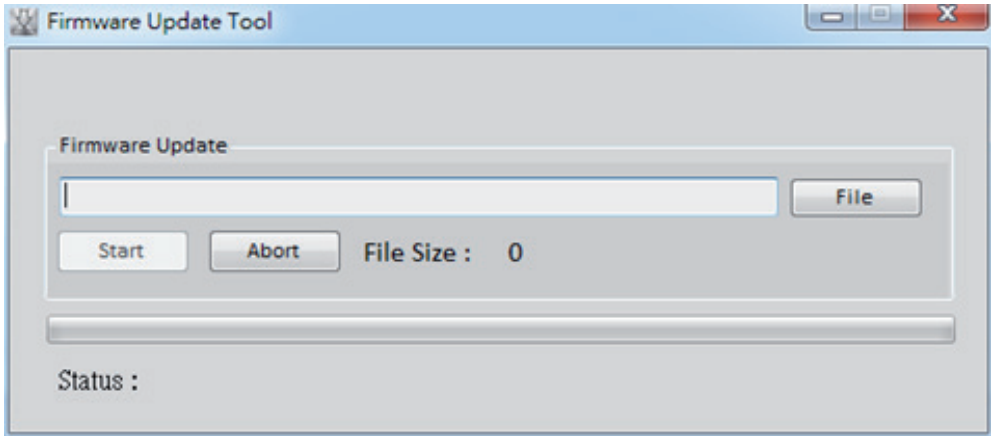
Before you start to update, please make sure you have secured the connection between your computer COM port and the device.



- **Main Board**

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

  (1) Click the **"Open Dialog"** button to do firmware update, the firmware update window of main board shows up as below




  (2) Click the **"File"** button to select the file which you want to write into device

  (3) Click the **"Start"** button and the main board firmware will start to update

  (4) After updating, please power cycle the device

- **Input**

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

  (1) Click the **"Open Dialog"** button to enter the software page

  (2) Open firmware update software and then device will start to update firmware automatically.

  (3) After update process is done, software will show "Success" message and then be closed automatically.

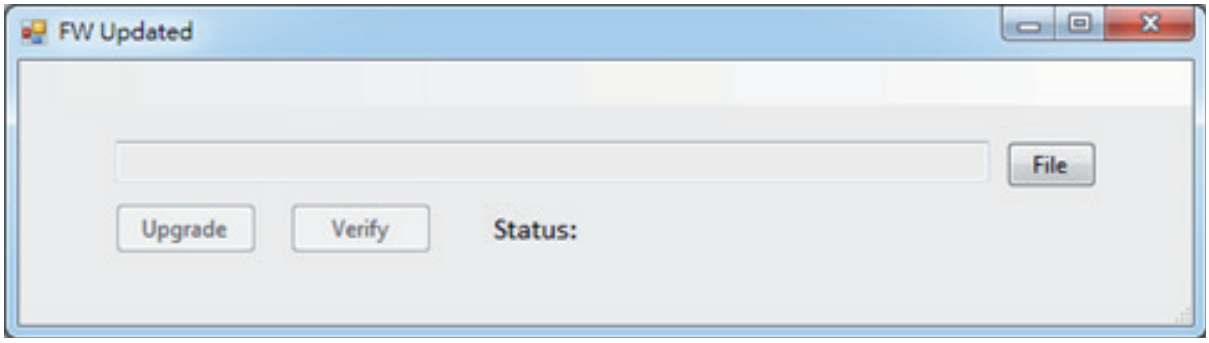
  (4) Click the **"Open Dialog"** button to update next input port.

  (5) 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.**

  (1) Click the **"Open Dialog"** button to open the FW Updated window.




  (2) Click the **"File"** button to select the file which you want to write into device

  (3) Click the **"Upgrade"** button and the firmware will start to update

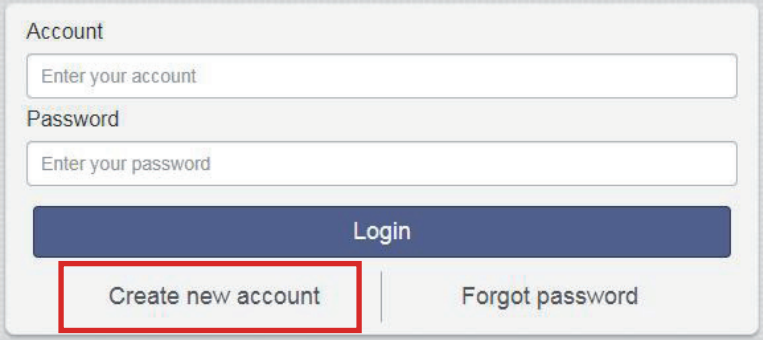
  (4) After updating, please power cycle the device

## Method D: Control through "intriCloud" on internet

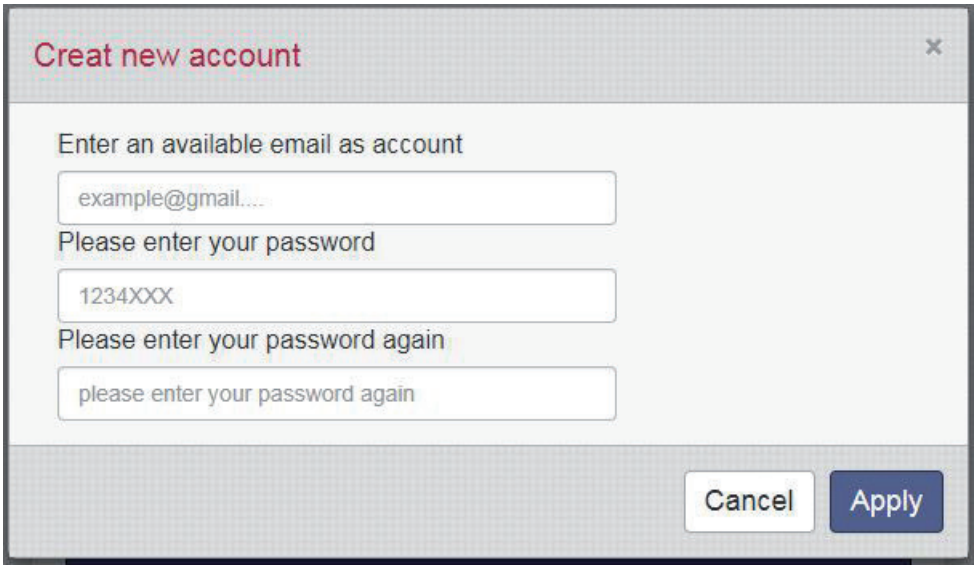
- **Create Account**

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

  1. Access intriCloud (www.intri.cloud) 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 intriCloud**

1. First, please make sure the Matrix is connected to your Ethernet with internet access.

2. Connect the Matrix to your Windows computer (Windows 10) via a USB Type A (male) to USB Mini-B 5-pin (male) cable (cable not included). The Matrix will add a Prolific USB to Serial COM port. Use this COM port in Step 4.

3. Run the application "Matrix_Serial from the included CD-ROM and the application pictured below will open. *Note: if your system doesn't have a CD-ROM, go to **www.gofanco.com/download**, search for this product by its part# PRO-Matrix44-SC, and click on "Control Programs" to download the software.

4. Select the proper COM port from the drop down box, then click the serial port icon on the upper left corner of the application box to connect to the Matrix, when the icon turns green select the System tab.

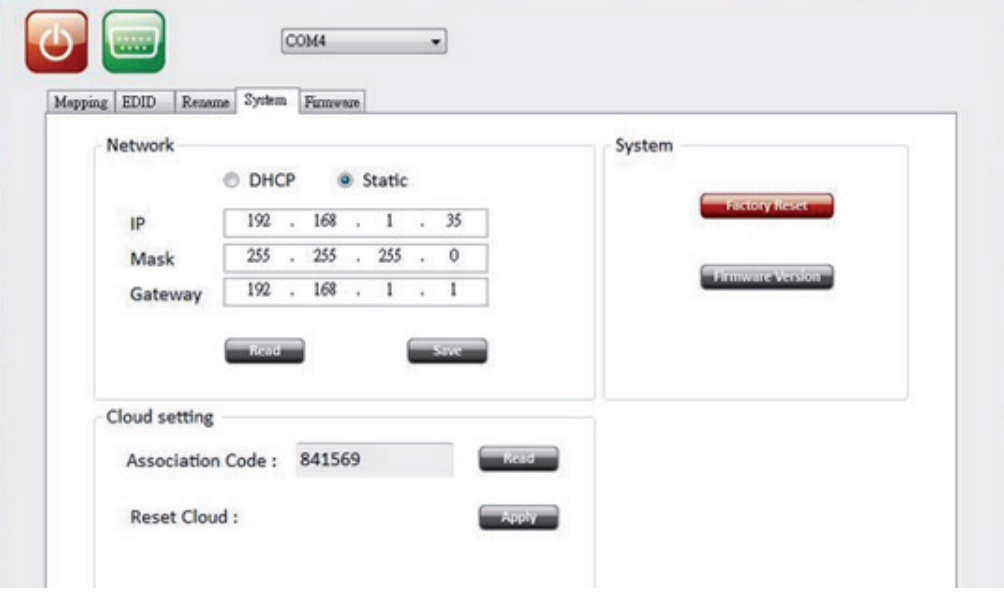
5. Select DHCP, if your network has a DHCP server, otherwise select Static.

   Please wait 10-15 seconds after making the selection before going to the next step.

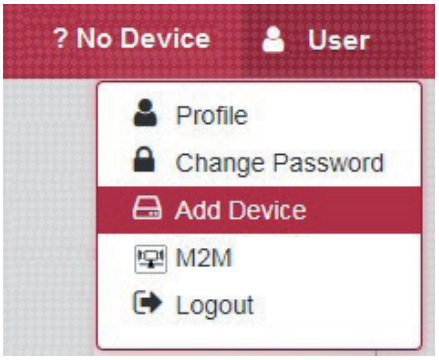
   5a) For DHCP, the IP address is automatically assigned, click Read to display the settings.

   5b) For Static, enter the IP address, Mask, and Gateway, then click Save. (Please see your Network admin for the proper settings)

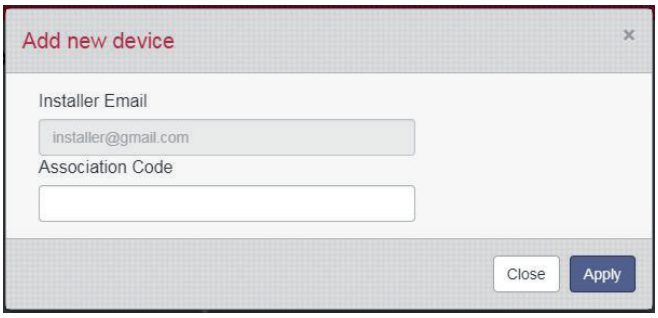
1. In Cloud setting, click on Read to obtain an Association Code. Write down this code, you'll need it to configure your intriCloud account later.




2. Access your intriCloud account and log in to your account. On the upper right corner, click "Add Device".



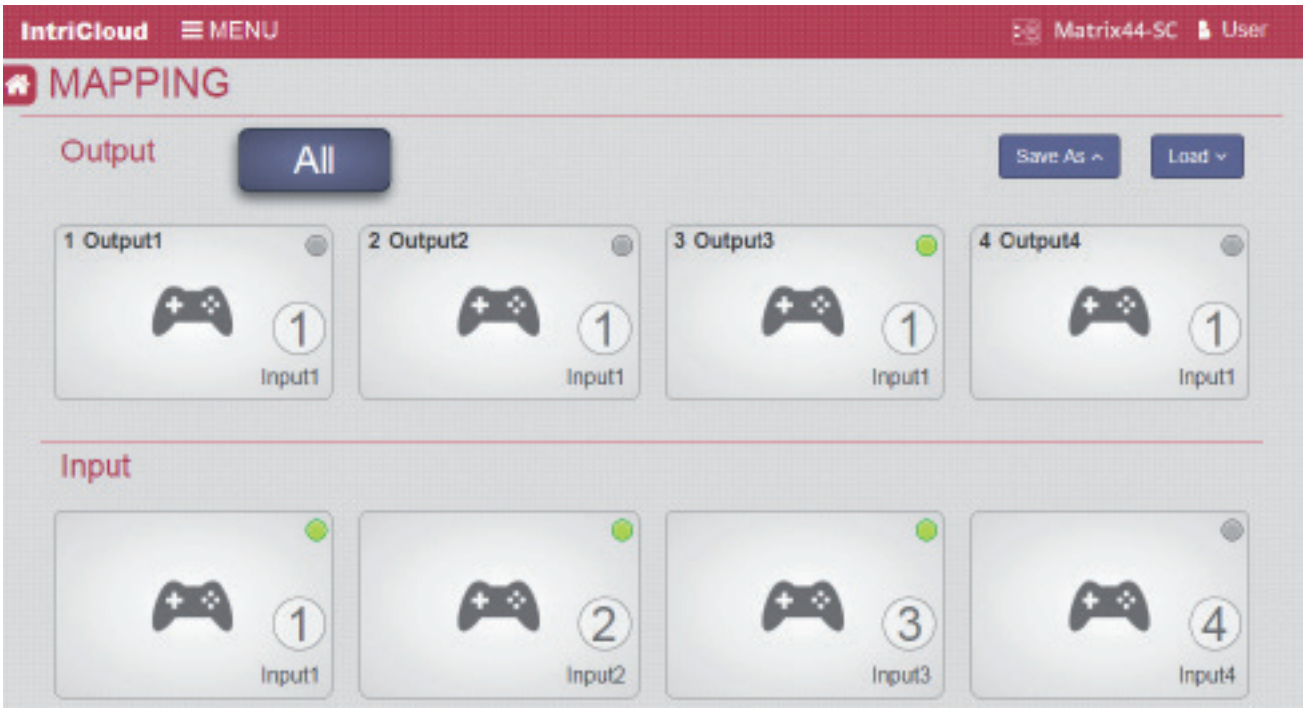

3. Enter the Association code and click Apply for pairing with your Matrix.



1. After adding the device, the device name will show on the upper right corner. You can click the button to switch to device control.


2. The intriCloud is ready for use.

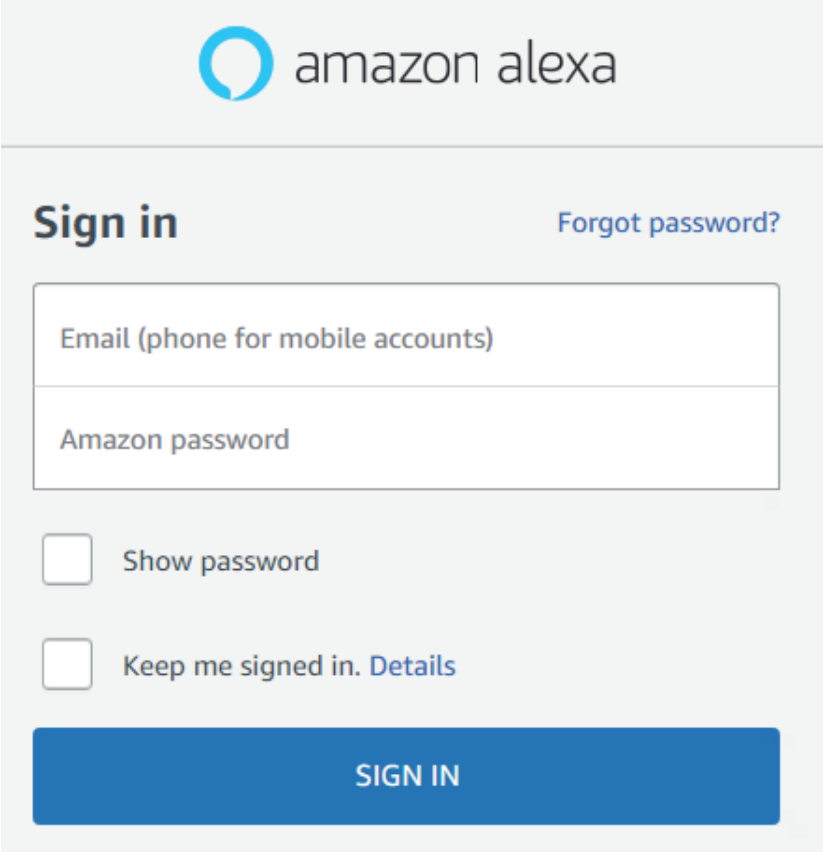
3. Drag and drop any Input to any Output to change viewing options



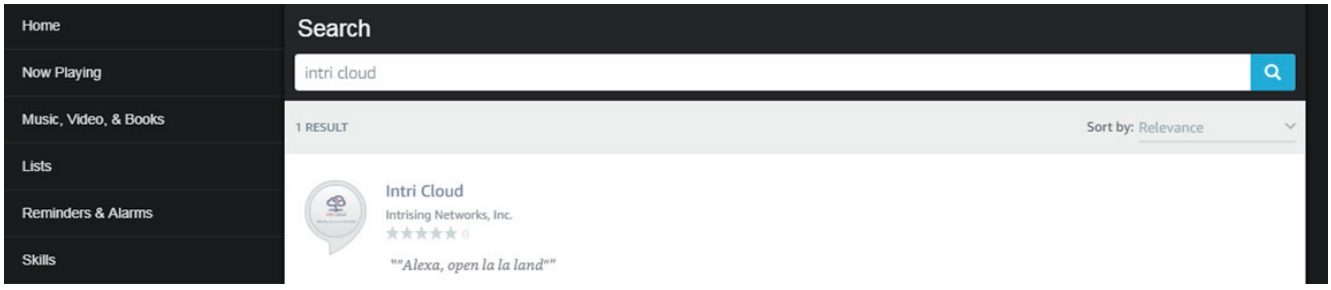
## Method E: Amazon Echo (Alexa) control

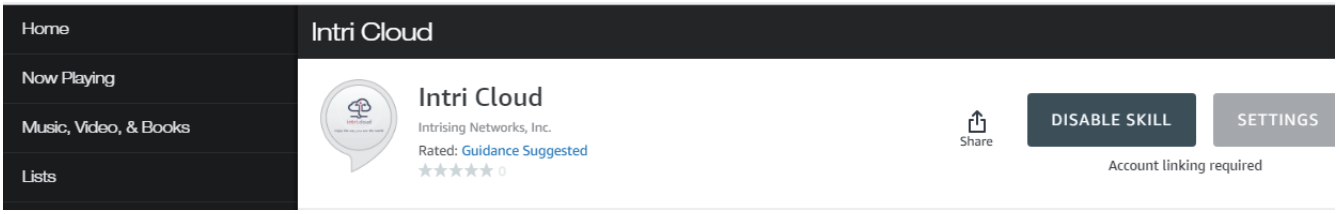
- **Connecting your intriCloud to Alexa. Make sure your Echo device is linked to your Amazon account before continuing.**

1. Go to alexa.amazon.com. Create an account or login using an existing amazon account.

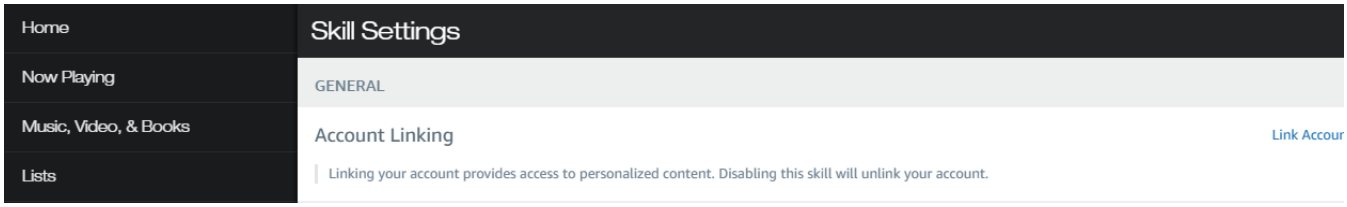


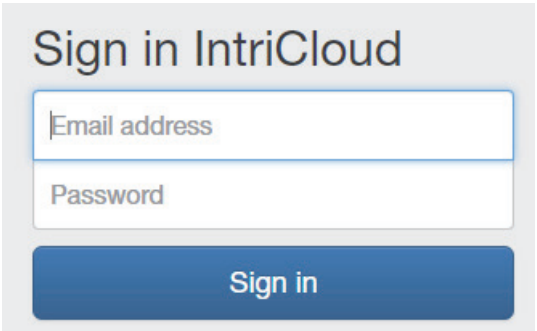
2. Install intriCloud for Echo. Search using keyword **"Intri Cloud"** in Skills page and click **"Enable"**. Then go to Settings (next to "Disable Skills") to link it.

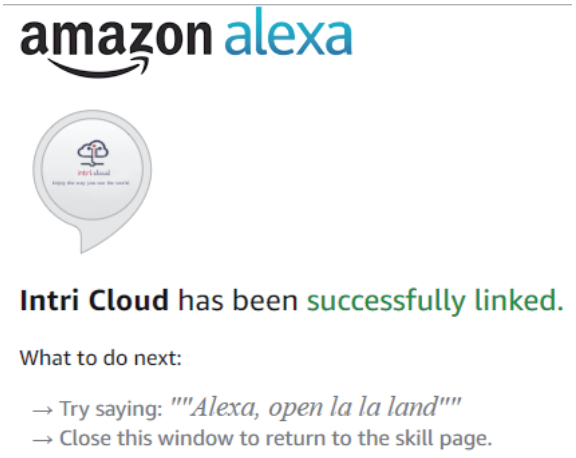



3. Click **"Link Account"** and the "IntriCloud" sign in box will pop up. Type in your Intri Cloud account and password, to successfully link Intri Cloud and Amazon Alexa.



- **Voice Control**

  Step 1. "**Alexa, open la la land**" (into IntriCloud)

  Step 2. "**list device**" (What device connected to your IntriCloud )

  Step 3. "**select device**" (Select the device which you want to control)

  Step 4. "**play (input) on (output)**" (adjust your display array)

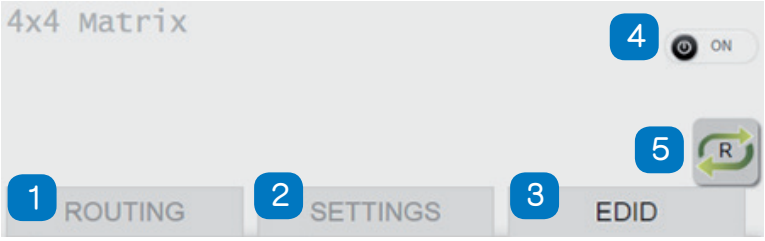
- **Voice Commands**

| Command | description |
|---|---|
| open la la land | into Intri Cloud |
| list device | show out what device connected to Intri Cloud |
| select device | select the device which you want to control |
| play "input" on "output" | adjust your display array |
| play "input" on all | play a HDMI source on all displays |
| mute "output" | close a HDMI output |
| mute all | close all HDMI output |

Notes: **"Input"** & **"Output"** should be the name which displays in RS232 Rename page or Intri Cloud website Mapping page.

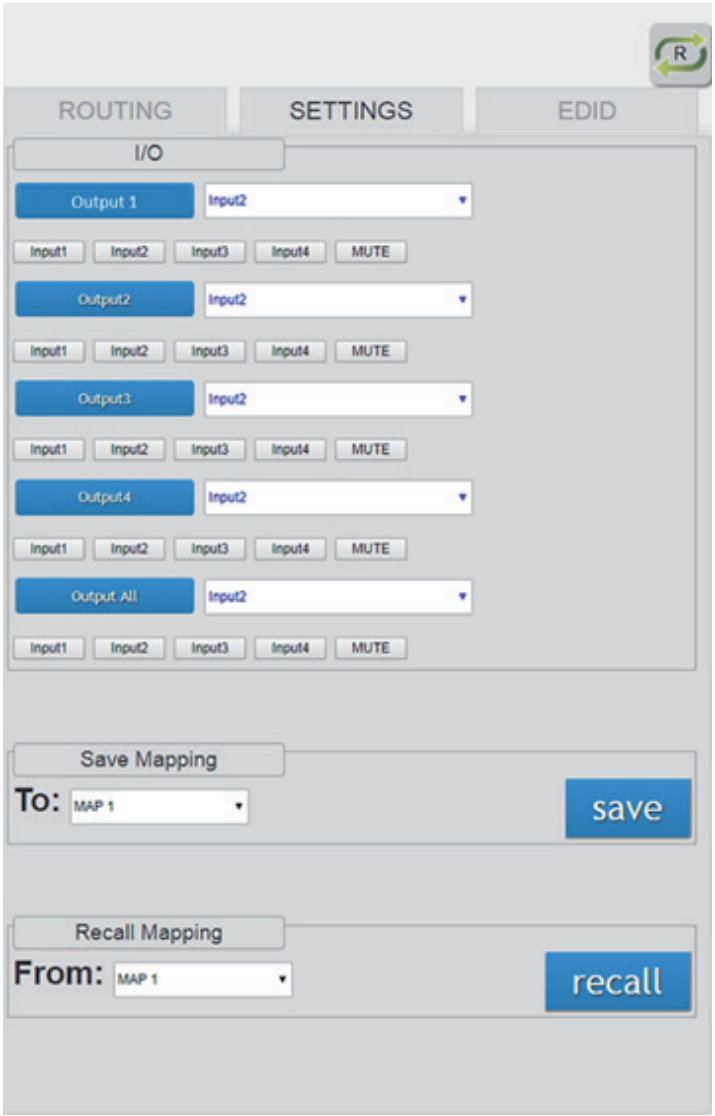
## Method F: Web Interface Control

**The default IP address:** 192.168.1.70



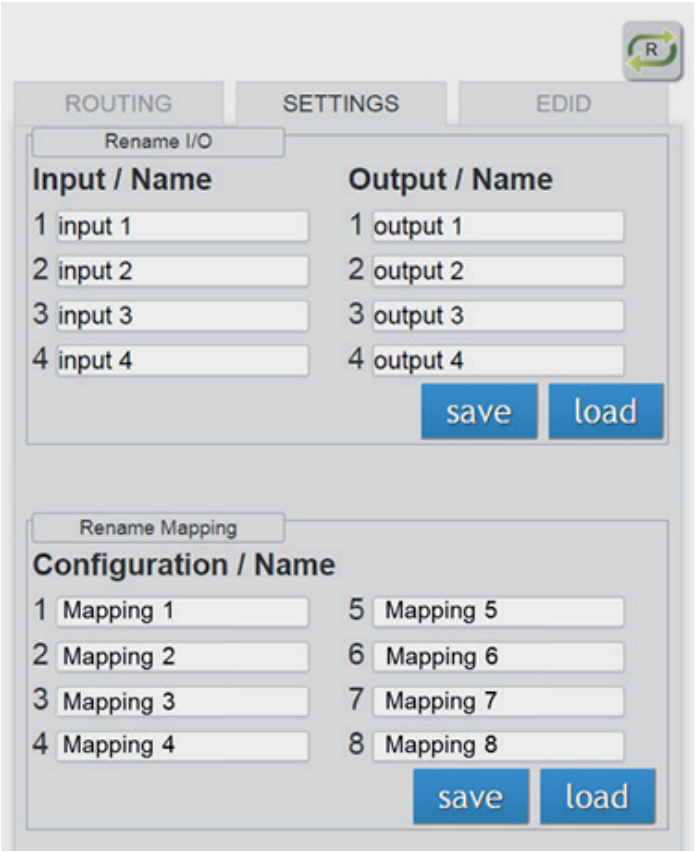

| | |
|---|---|
| 1 | I/O Routing Tab |
| 2 | Rename I/O, mapping Tab |
| 3 | EDID Tab |
| 4 | Power ON/Standby mode |
| 5 | Refresh I/O status |

### 1. I/O Routing Tab



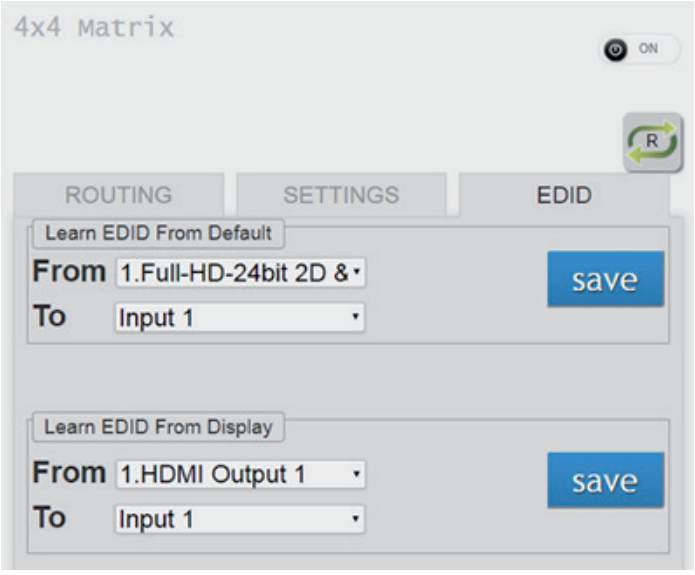

- **I/O:**
  Switch the input for each output
- **Save Mapping**
  (1) Select Mapping 1~8
  (2) Click "Save" button to save current mapping
- **Recall Mapping**
  (1) Select the stored Mapping 1~8
  (2) Click "Recall" button to recall previous saved mapping

## 2. Rename I/O, Mapping Tab




- **Rename I/O:**
  (1) Rename the Inputs
  (2) Rename the Outputs
- **Rename Mapping**
  Rename the Mappings

## 3. EDID Tab




- **Learn EDID from Default**
  (1) Select Default EDID
  (1-17 default EDID)
  (2) Select input
  (3) Click **"Send"** button to learn default EDID
- **Learn EDID from Display**
  (1) Select output
  (2) Select input
  (3) Click **"Send"** button to learn display EDID

## 4. Power ON / Standby mode

## 5. Refresh I/O Status

## 10. 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 seventeenembedded 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)

# 11. FAQ

**Q .Can every TV work with the HDMI matrix?**

**A .** Basically, the answer is YES. But if your TV can not 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 .** Thefactory 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.

## 12. Limited Warranty

The SELLER warrants the **PRO-Matrix44-SC 4K HDR 4x4 Matrix with Downscale Support** 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 PRO-Matrix44-SC features and specifications is subject to change without further notice.**

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