**BrightLink**

*Premium A/V Connections*

**BL-PRO-MIX-88/1818/3232**

**Modular Matrix Switcher**

**Operation manual**

**Version：V1.01.01**

**2015-7**

# Contents

## Safety reminder

To protect the device and operating personnel from electrostatic discharge, you need to check and ensure that the device is properly grounded before the device is powered on.

Please observe the following when you install, use, or maintain this equipment.

Make sure the device is well grounded.

➢ POWER SUPPLY: Use single-phase three wire system AC 220V power supply, and ensure that the transmission system is well grounded.

➢ TRANSPORT & MAINTENANCE: To ensure the safety of operating personnel and the device, turn off the power supply and completely unplug all equipment before transporting or performing maintenance.

➢ Please turn off the main power switch when not in use for an extended period of time. This will increase the lifespan of the equipment.

➢ Do not place objects on the cables. Place cables neatly away from any persons who may step or trip on them.

➢ To avoid damaging the device, please turn off power supply before plugging or unplugging the power cable. Any damage caused by plugging / pulling cables without first turning off the power supply is outside the scope of the warranty.

➢ Do not operate the device in extremely cold or extremely hot environments.

➢ When working, the device may become very hot. Make sure that the work environment is ventilated and cool, otherwise it may be damaged from overheating.

➢ To avoid personal injury, accidents, or any further damage to the device, non-professional users must not dismantle or maintain the device without permission.

◆ Do not keep any corrosive chemicals or liquids on or around the device.

# 1. Introduction

BRIGHTLINK PRO-MIX series matrix is a seamless switching HD audio and video mixing matrix promoted by BRIGHTLINK, based on years of research in AV processing and switching technique. The matrix makes use of cutting edge electronics to ensure ultrafast switching and dependable, high-quality signal transmission.

Adopting a single-modular input/output design, the BRIGHTLINK PRO-MIX series matrix allows each card to represent one kind of signal. This helps users to achieve the most effective configuration and make the best use of resources.

BRIGHTLINK PRO-MIX series matrix supports the following inputs:

- 3G/HD/SD-SDI
- HDMI
- DVI
- VGA
- YPBPR
- CVBS

- Reticle (RJ45)
- Optical fiber
- Wireless signal input

BRIGHTLINK PRO-MIX series matrix supports the following outputs:

- 3G/HD/SD-SDI
- HDMI
- DVI
- VGA
- YPBPR
- CVBS
- Reticle (RJ45)
- Optical fiber
- Wireless signal output

All inputs and outputs support random seamless switching.

BRIGHTLINK PRO-MIX series matrix also supports audio signal input/output. It allows the analog audio to be embedded into HDMI signal, and the digital audio in HDMI signal to be de-embedded to analog audio. An additional feature of the PRO-MIX series is synchronous audio/video switching.

## 2. Product index

1. Supports N channels input, N channels output (N equals 8, 18, 32 according to the respective model).

2. Supports 3G/HD/SD-SDI, HDMI, DVI, VGA, YPBPR, CVBS, reticle, optical fiber signals input.

3. 3G/HD/SD-SDI adopts the BNC interface, and supports one channel 3G/HD/SD-SDI signal looping out. HDMI signal and DVI signal adopts the DVI

input interface. VGA, YPBPR, CVBS adopts the VGA input interface. Reticle signal adopts the standard RJ45 interface. There is a 120m transmission distance reticle and a 70m transmission distance reticle. Optical fiber signal adopts the single core LC fiber interface.

4. Supports HDMI1.3 protocol, supports DVI1.0 protocol, supports HDCP protocol.

5. Supports 640*480/60Hz---1920*1200/60Hz (VESA standard), 480i---1080p (HDTV standard) input. There are 16 kinds of output resolution ratios, and you can choose the appropriate ratio by toggle switch.

## 3. Connection and operation

1. Connect signal source such as Blu-ray player, game controller, A/V receiver, cables, satellite receiver, etc., to the HDMI input port of the matrix.

**Please do not hotplug!** Turn off power supply before plugging / unplugging cables. Connecting signal sources with power-on may cause circuit damage.

2. Connect the HDMI output port of the matrix to the HDMI input port of the HD display or HD projector. Note: it is recommended to use High-Speed HDMI Cable over long transmission distances.

3. First, power on the signal source (input device), then power on the matrix via the power supply.

4. Plug in power to each device in the same order.

5. After power on, every display device should display the specified signal (the default signal is NO.1 input signal). Make sure the devices are working normally.

Test the switching functions via the IR remote control. If any of the displays fail to receive signal correctly, enter the menu of the display and adjust resolution from MIN to MAX until the signal is displayed as normal. A 24 Hz vertical refresh rate may work better than 60 Hz or higher.

**Application:** The following diagram is an example application of the BL-PRO-MIX-1818 matrix switching system.
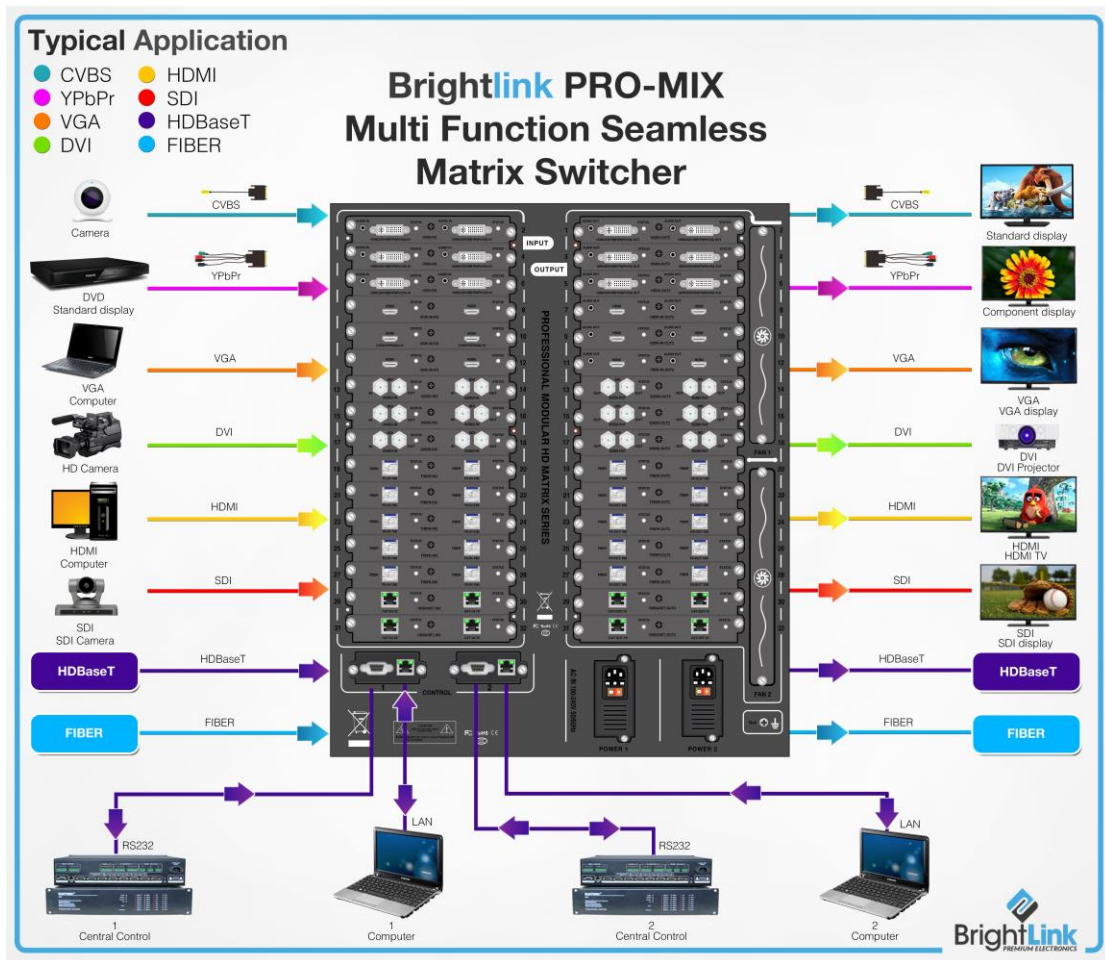


## 4. BRIGHTLINK PRO-MIX E88 Standard configuration

◆      Please inspect the outer packaging before using this product. If there is any

fault or visible damage, feel free to contact us and we will take all steps necessary

to repair or replace defective components.

| NO. | Name | Quantity | Unit |
|-----|------|----------|------|
| 1 | BRIGHTLINK PRO-MIX 88 Matrix | 1 | pcs |
| 2 | Dryer 50g | 1 | pcs |
| 3 | AC power adapter | 2 | pcs |
| 4 | Certification | 1 | pcs |
| 5 | Warranty card | 1 | pcs |
| 6 | User manual | 1 | pcs |

## 5. Specification

| Model | BL-PRO-MIX-88 | BL-PRO-MIX-1818 | BL-PRO-MIX-3232 |
|-------|---------------|-----------------|-----------------|
| Name | 8x8 mixed matrix | 18x18 mixed matrix | 32x32 mixed matrix |
| Resolution ratio | Input resolution support 640*480/60HZ---1920*1200/60HZ (VESA standard ), 480I---1080P(HDTV standard), Output resolution support: 16 common signal option (pick through drawing code switch) | | |
| Input ports | Support 3G/HD/SD-SDI, HDMI, DVI, VGA, YPBPR, CVBS, twisted-pair, fiber-optic | | |
| Output ports | Support 3G/HD/SD-SDI, HDMI, DVI, VGA, YPBPR, CVBS, twisted-pair, fiber-optic | | |
| ESD Protection | human-body model：  ± 8kV (Air-Gap Discharge)        ± 4kV (contact discharge) | | |
| ESD Protection | 100-240V 50/60HZ | | |
| Control Methods | Front panel buttons, RS232, LAN | | |
| Bandwidth | 10.2GBPS | | |
| Dimension(mm) | 480X370X110 | 480X370X228(W/H/D) | 480X370X484(W/H/D) |
| Weight | 10kg | 20kg | 35kg |
| Operating Temperature | -10℃---50℃ | | |
| Storage Temperature | -25℃---55℃ | | |
| No-load power | 10W | 45W | 60W |

# 6. Description of operation and function

## 6.1 Description of front panel

### a. BL-PRO-MIX-88 front panel
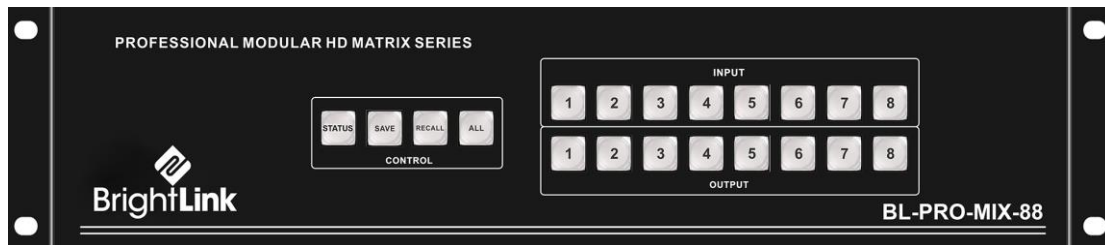


**Figure 6.1.1 – front panel**

1. INPUT: Input selection buttons 1~8. These allow you to select input ports.

To select input 3, press button 3 on the INPUT row. To cancel the selection, press button 3 again. To select another input port, press any other input button.

2. OUTPUT: Output selection buttons 1~8. These allow you to select output ports.

To select output 3, press button 3 on the OUTPUT row. To cancel the selection, press button 3 again. To select another output port, press any other output button.

3. STATUS button: STATUS displays the current input and output status.

4. SAVE button: SAVE lets you save the current scene as a preset.

5. RECALL button: RECALL lets you recall / load a saved scene.

6. ALL button: ALL enables all outputs on the selected input.
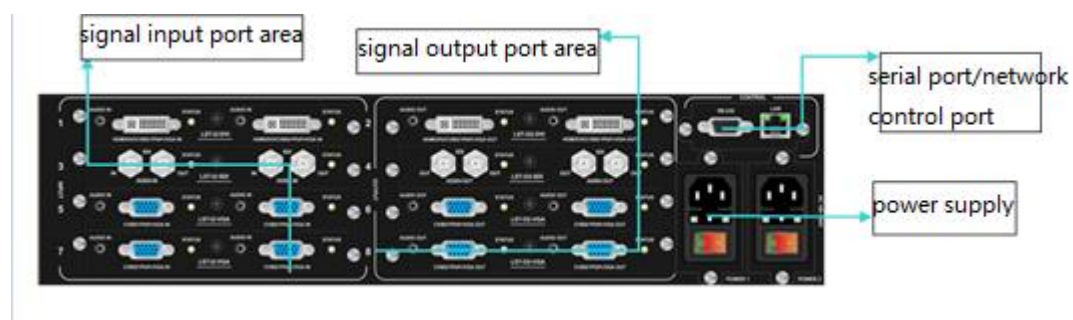


**Figure 6.1.2 – back panel**

1. LAN: This port is the link for the TCP/IP control method. Connect to an active Ethernet link with an RJ45 terminated cable.

2. RS232: This port allows you to connect the matrix to PC with an RS232 serial null modem cable.

3. INPUT/OUTPUT Area: Signal I/O interface ports. Connect your input / output devices here.

4. Power Supply: Use the included DC adapter to power the matrix switcher.
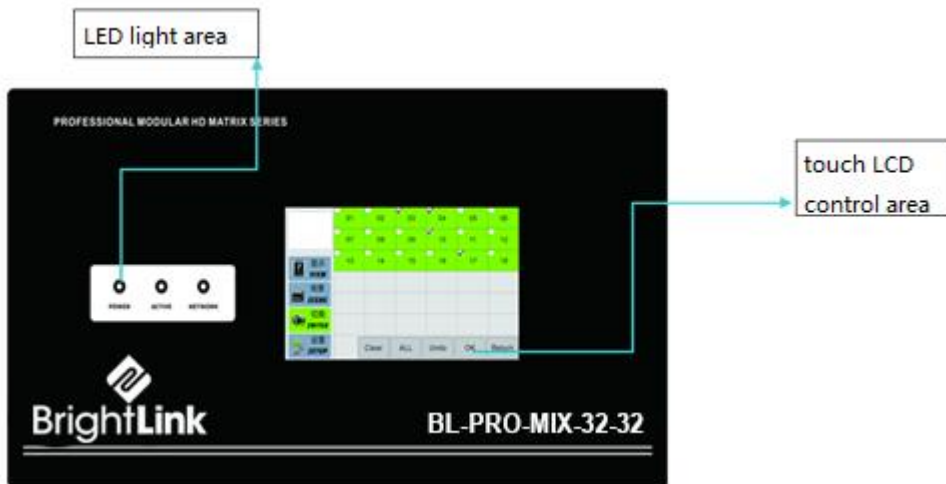
# b. BL-PRO-MIX-1818 front panel



**Figure 6.1.3 – front panel**

POWER: Power LED.

ACTIVE: Data Transmitting Indicator.

NETWORK: Network connected Status Indicator.

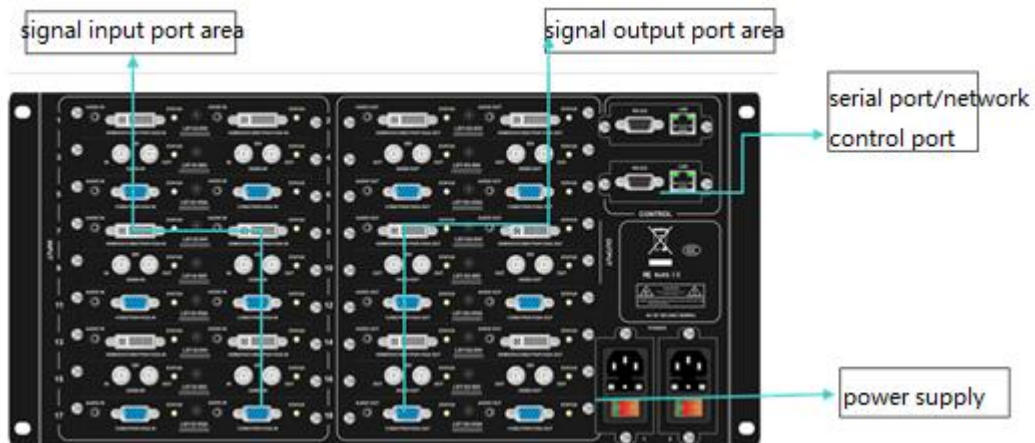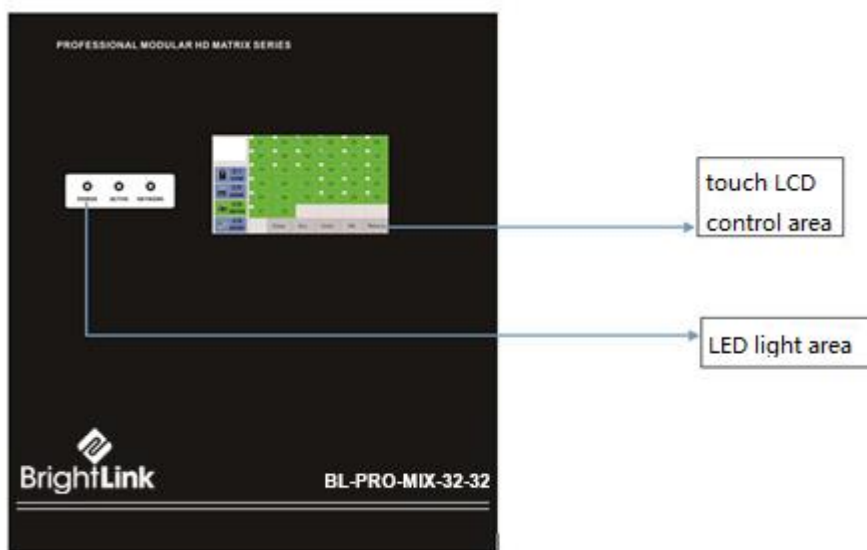Touchscreen LCD: Use the touchscreen LCD to control the in-out of the BRIGHTLINK PRO-MIX.



**Figure 6.1.4 – back panel**

1. LAN: This port is the link for the TCP/IP control method. Connect to an active Ethernet link with an RJ45 terminated cable.

2. RS232: This port allows you to connect the matrix to PC with an RS232 serial null modem cable.

3. INPUT/OUTPUT Area: Signal I/O interface ports. Connect your input / output devices here.

4. Power Supply: Use the included DC adapter to power the matrix switcher.
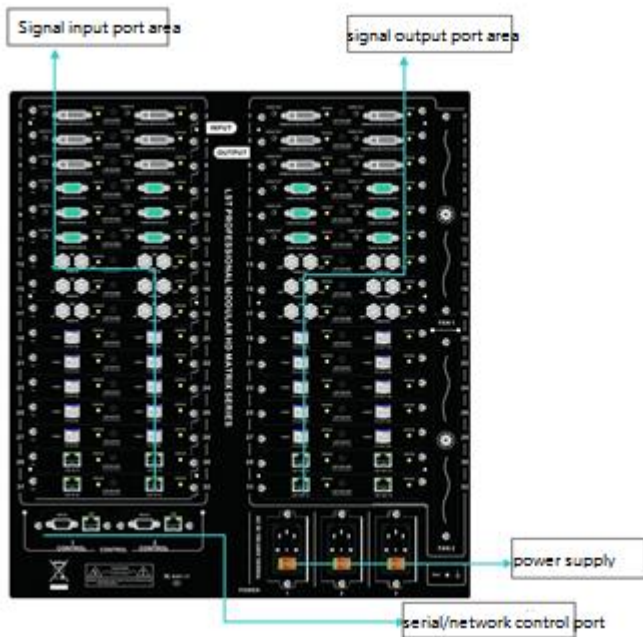
# c. BL-PRO-MIX-3232 front panel



**Figure 6.1.5 – front panel**

POWER: Power LED.

ACTIVE: Data Transmitting Indicator.

NETWORK: Network connected Status Indicator.

Touchscreen LCD: Use the touchscreen LCD to control the in-out of the BRIGHTLINK PRO-MIX.

**Figure 6.1.6 – back panel**

1. LAN: This port is the link for the TCP/IP control method. Connect to an active Ethernet link with an RJ45 terminated cable.

2. RS232: This port allows you to connect the matrix to PC with an RS232 serial null modem cable.

3. INPUT/OUTPUT Area: Signal I/O interface ports. Connect your input / output devices here.

4. Power Supply: Use the included DC adapter to power the matrix switcher.

# 6.2 Operating Instructions

## a. BL-PRO-MIX-88 Button Instructions

**Switching:** Switch inputs and outputs by pressing buttons 1 to 8 on the front panel.

*Example 1*: To switch the Channel 1 input to Channel 1, 3, 4 outputs, press button "1" on the Input row, then press buttons "1,3,4" in the Output row.

*Example 2*: To switch the Channel 2 input to all Channel outputs, press button "2" in the Input row, then press button "ALL" in the Control area.

You may view the status of inputs and outputs by pressing the "STATUS" button. The indicator LED will light up for each active channel.

**Scene Saving:** To save the current input / output configuration, use the Scene Saving function provided by the "SAVE" button.

*Example*: From Example 1 above, the Channel 1 input and Channel 1, 3, 4 outputs are linked together. Now, in order to save this scene, simply press the "SAVE" button, then choose any number on the board to assign the scene number.

**Scene Recall:** Press the "RECALL" button, and then press the number that you chose when saving the scene. This will load the saved scene.

## b. BL-PRO-MIX-1818/E3232 Touch LCD Instructions
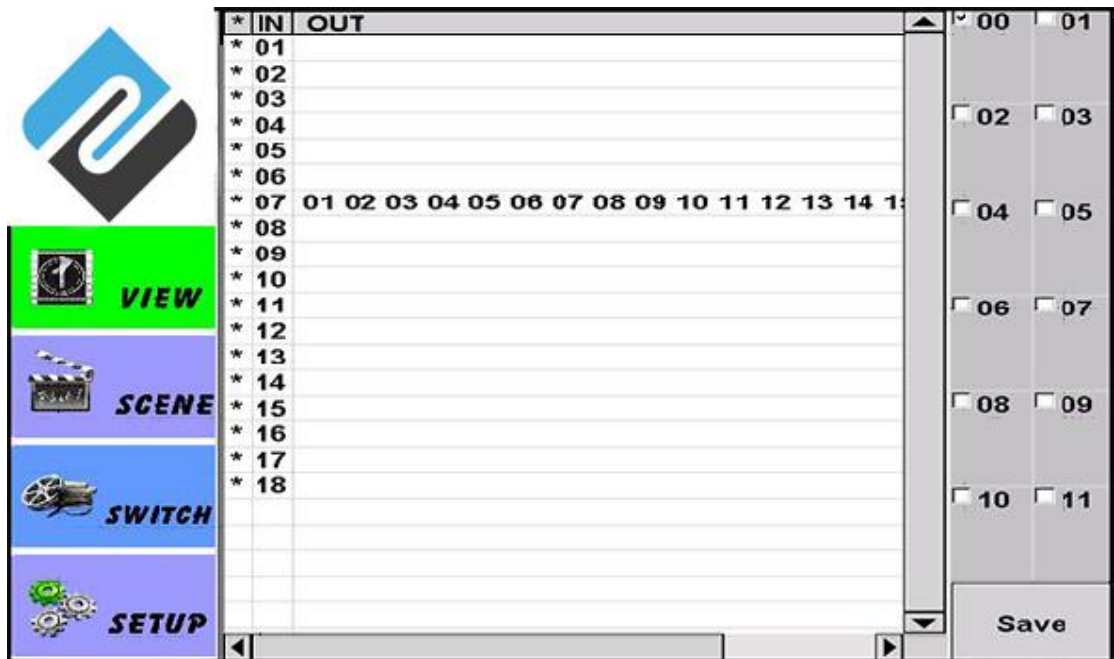
**Figure 6.2.1 – View screen**

Press "View" on the touchscreen LCD to check the current I/O status. You may save the scene from here by selecting a scene number from 00 to 11; see Figure 6.2.1.

To recall a previously-saved scene, press the "Scene" button and select the scene number. You can review all the data, as shown in Figure 6.2.2.
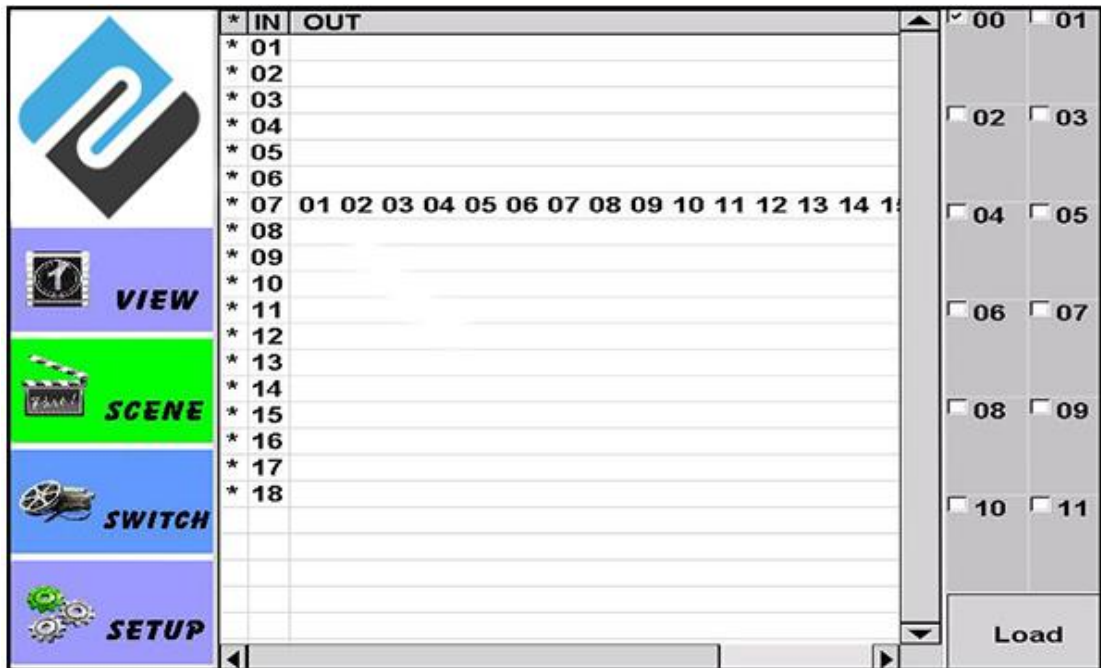
**Figure 6.2.2 – Scene Recall**

To configure input and output switching, press the "Switch" button.

*Example:* Figure 6.2.3 shows the "Switch" screen with input Channel 02 selected. Once an input is selected, the list of output ports will now automatically pop-up, as shown in Figure 6.2.4.

Choose the desired output port/s by ticking the appropriate checkbox. To cancel an output port selection, simply untick the checkbox.

When you are happy with the output selections you have made, press "OK".
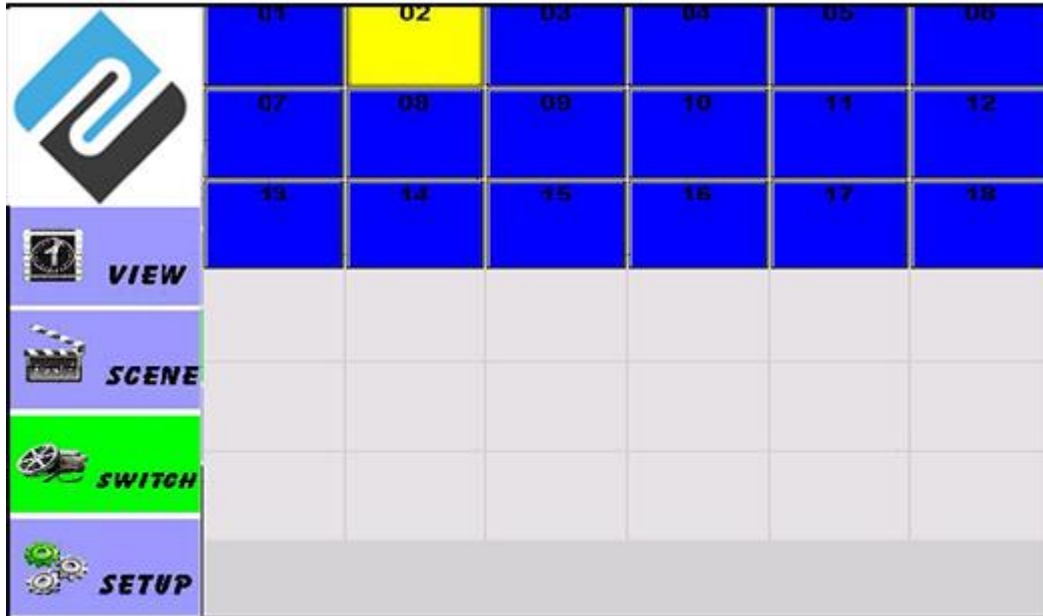
**Figure 6.2.3 – Input selection menu**



**Figure 6.2.4 – Selection screen of output port**

Click the "Setup" button on the touch screen to configure the device's network settings (IP address / Subnet mask / Gateway). See Figure 6.2.5.
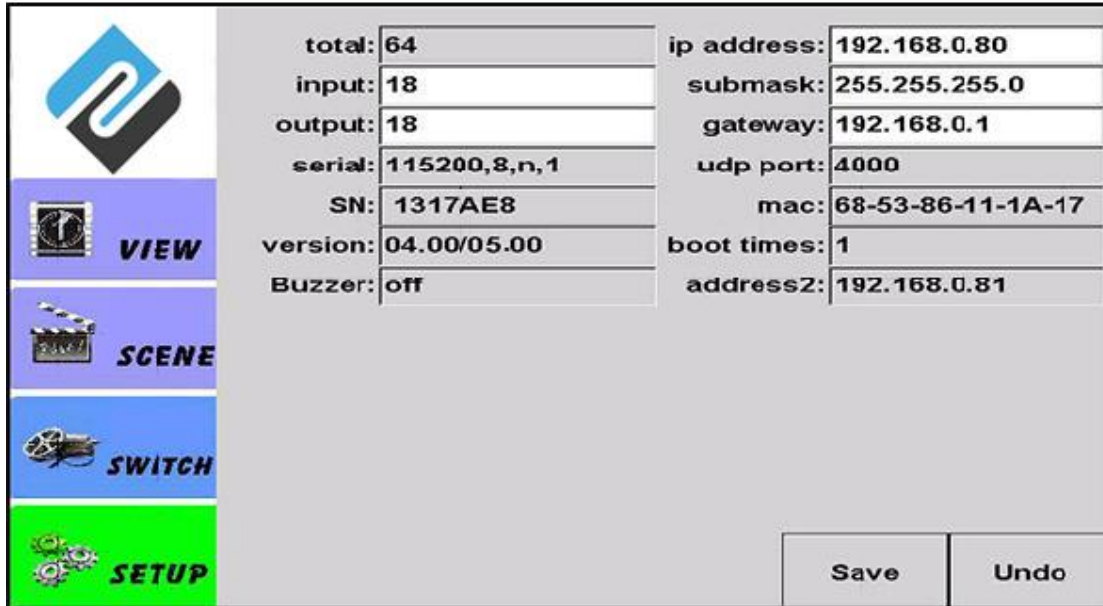
**Figure 6.2.5 – Device setup screen**

**Remark:** The touch screen operation method for the BL-PRO-MIX-3232 is identical to that of the BL-PRO-MIX-1818. Please refer to BL-PRO-MIX-1818's operation method to use.

# 6.3 Using the Host PC software

The BL-PRO-MIX matrix switcher can be controlled remotely by PC using either a RS232 COM Serial Port connection or TCP/IP LAN connection. To start the host software, copy "Client.exe" to your computer and then double-click to launch it.

The software interface should appear, as shown in Figure 6.3.1.
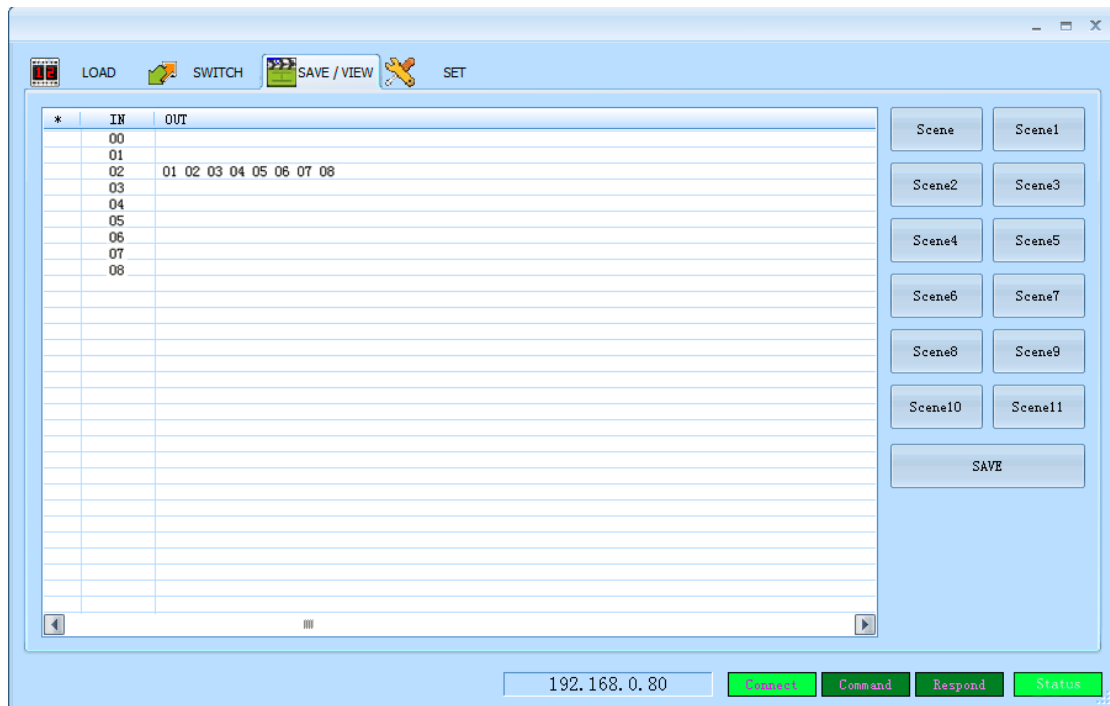
**Figure 6.3.1**

# a. Control Method 1: Serial Port RS232 control

Step 1: Connect the computer's RS232 port to the matrix's RS232 port with a Straight (i.e. Direct / Crossover) RS232 cable.

Step 2: Determine the COM port number of the matrix as it appears to the computer. To find this information on Windows, open up Device Manager and view the Ports (COM & LPT) list.

Step 3: Click the "SET" tab in the matrix software application. In the "CONNECT" panel, make sure the COM option is ticked, and then select the appropriate COM port – for example, COM8.

Step 4: In the "SET" panel on the left side of the screen, click the "Load" button. If the connection is successful, parameters of the matrix will now appear on the interface. See Figure 6.3.2.
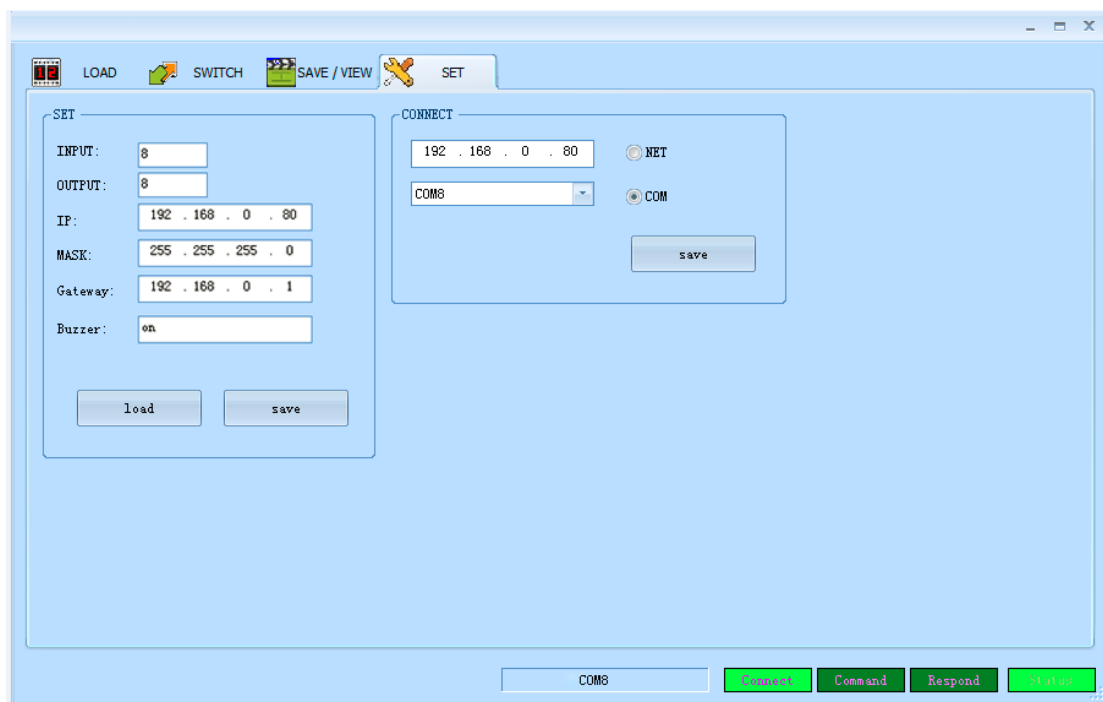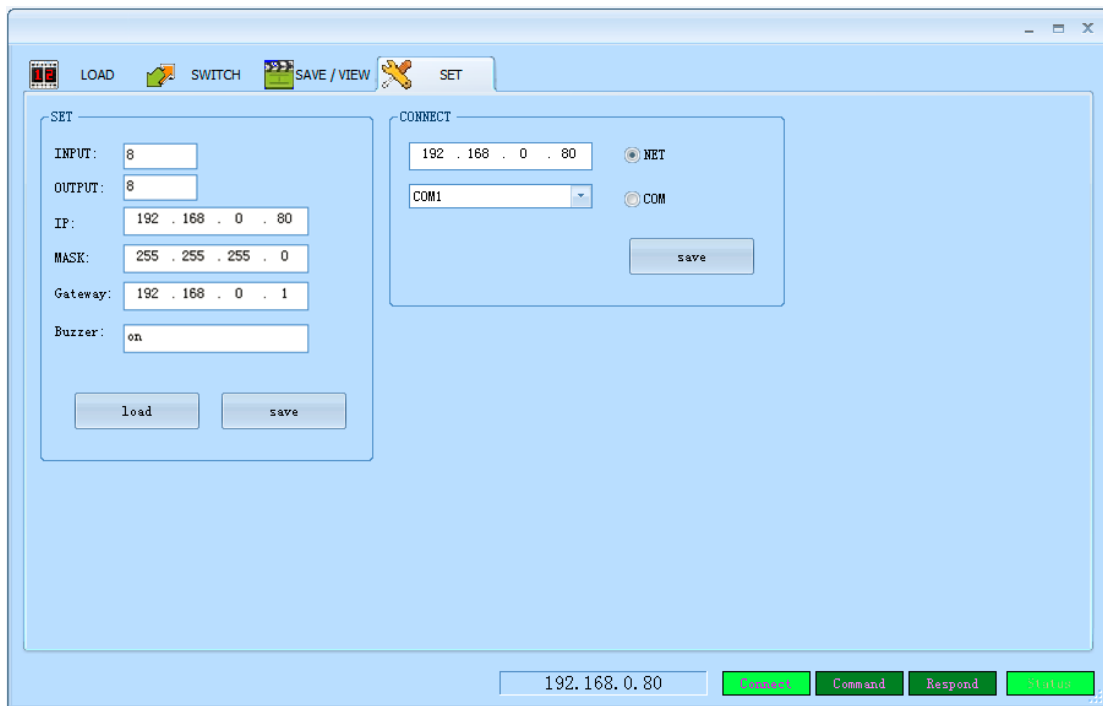


**Figure 6.3.2**

# b. Control Method 2: LAN Port control

Step 1: Connect the computer's Ethernet LAN port to the matrix's LAN port with an RJ45 Ethernet cable.

Step 2: Click the "SET" tab in the matrix software application. In the "CONNECT" panel, make sure the NET option is ticked and fill in the IP address for the matrix.
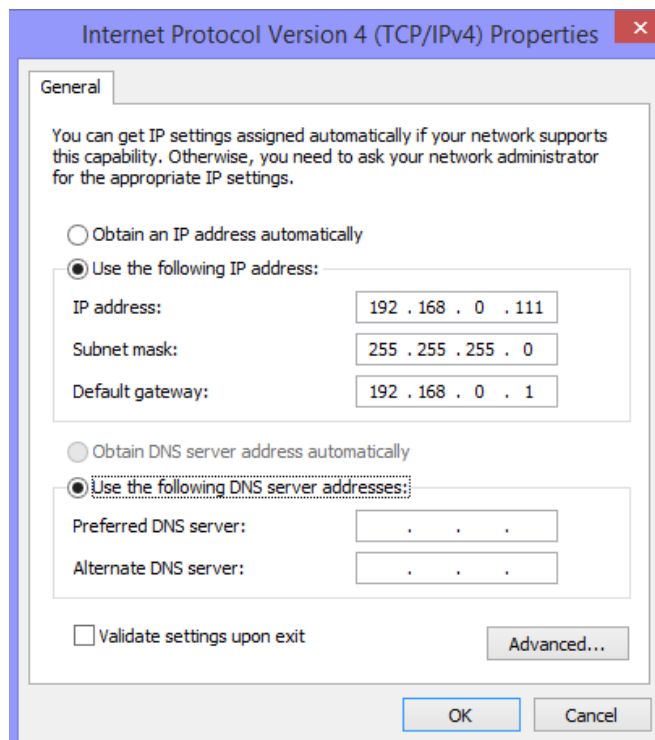
Step 3: In the "SET" panel on the left side of the screen, click "Save". If the connection is successful, the status bar is displayed as green.

Step 4: Click "Load" to load the matrix parameters, as seen in Figure 6.3.3.



Please note: It is necessary to configure the PC's IP address when we use LAN port control mode. See Figure 6.3.4.

The factory address for the 192.168.0.80, must set the address to a 192.168.0.XXX default IP matrix is therefore you PC's IP number in the range.
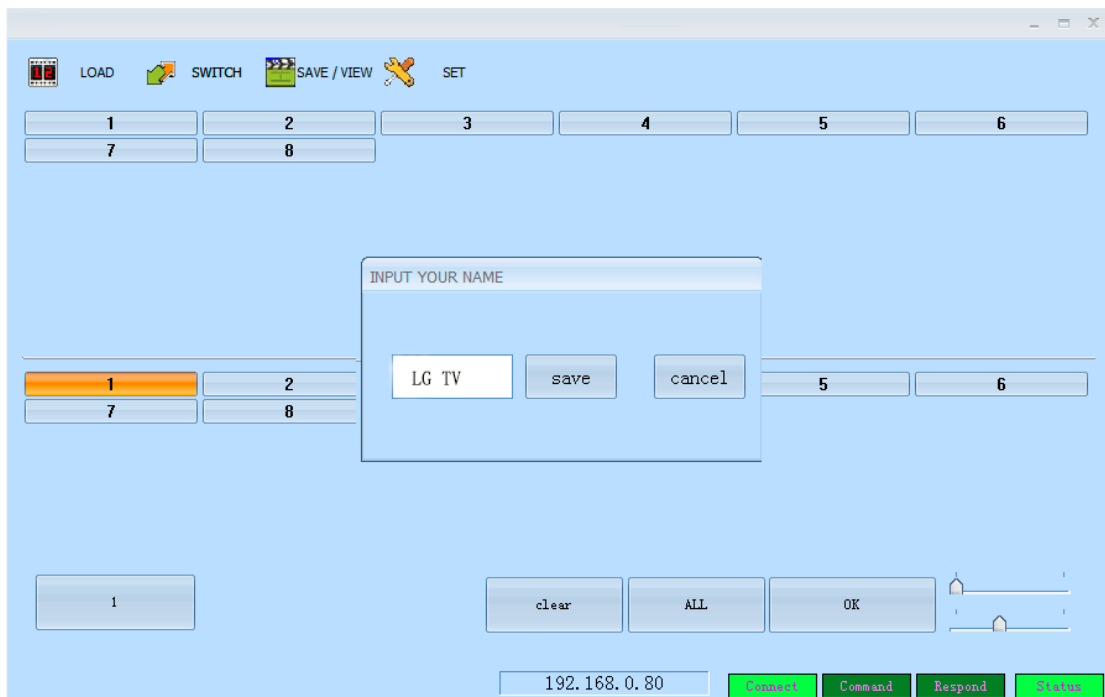
**Figure 6.3.4**

# 6.4 PC operation: Changing input/output labels

To change INPUT signal names, first click "SWITCH" to enter the switching interface. Now, select input No.1 and double click it. A dialog box as shown in Figure 6.4.1 pops up. Change the name of the No.1 input signal and then save it.
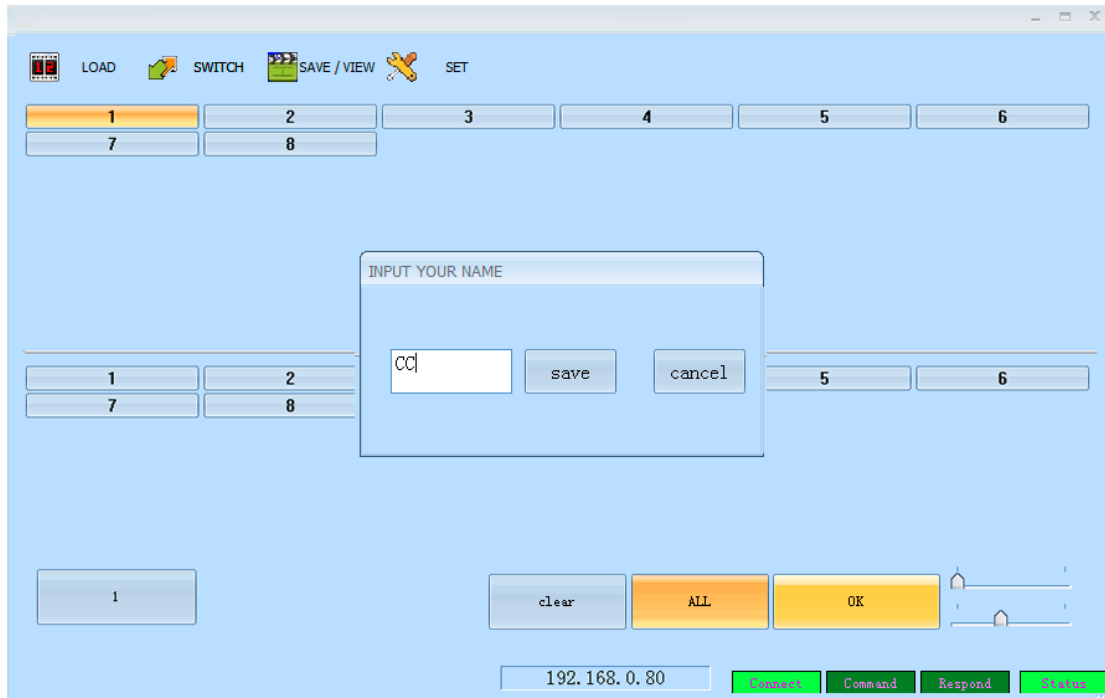
**Figure 6.4.1**

To change OUTPUT signal names, first click "SWITCH" to enter the switching interface. Now, select out No.1 and double click it. A dialog box as shown in Figure 6.4.2 pops up. Change the name of the No.1 output signal and then save it.
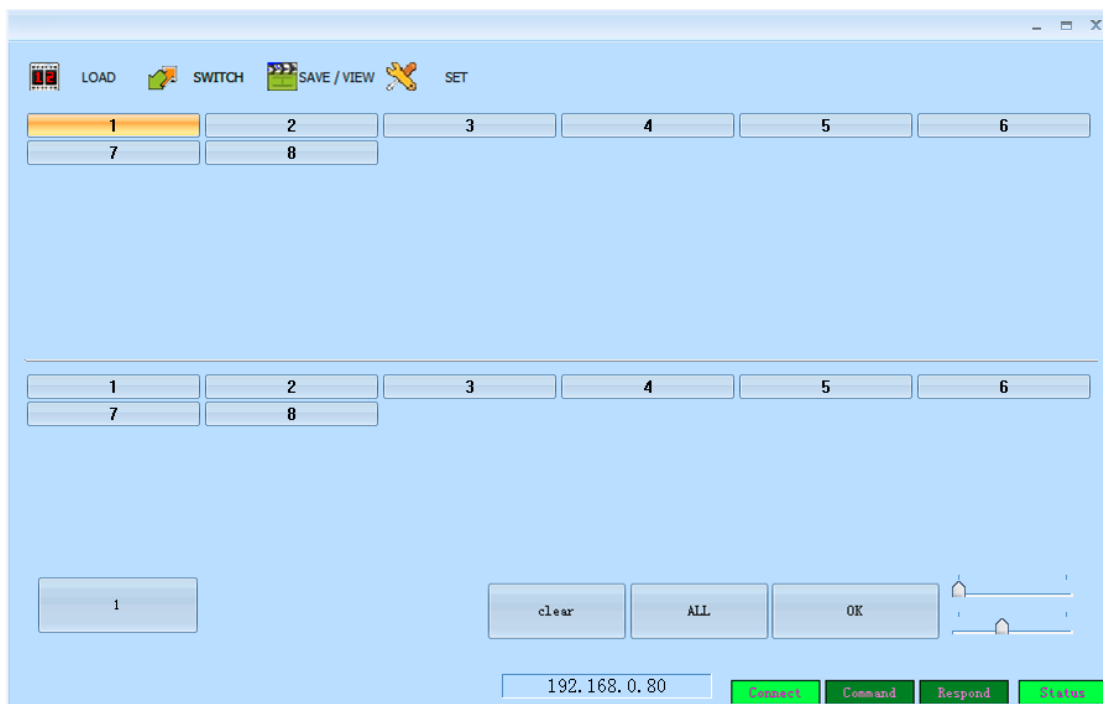
**Figure 6.4.2**

# 6.5 Switching operation of matrix

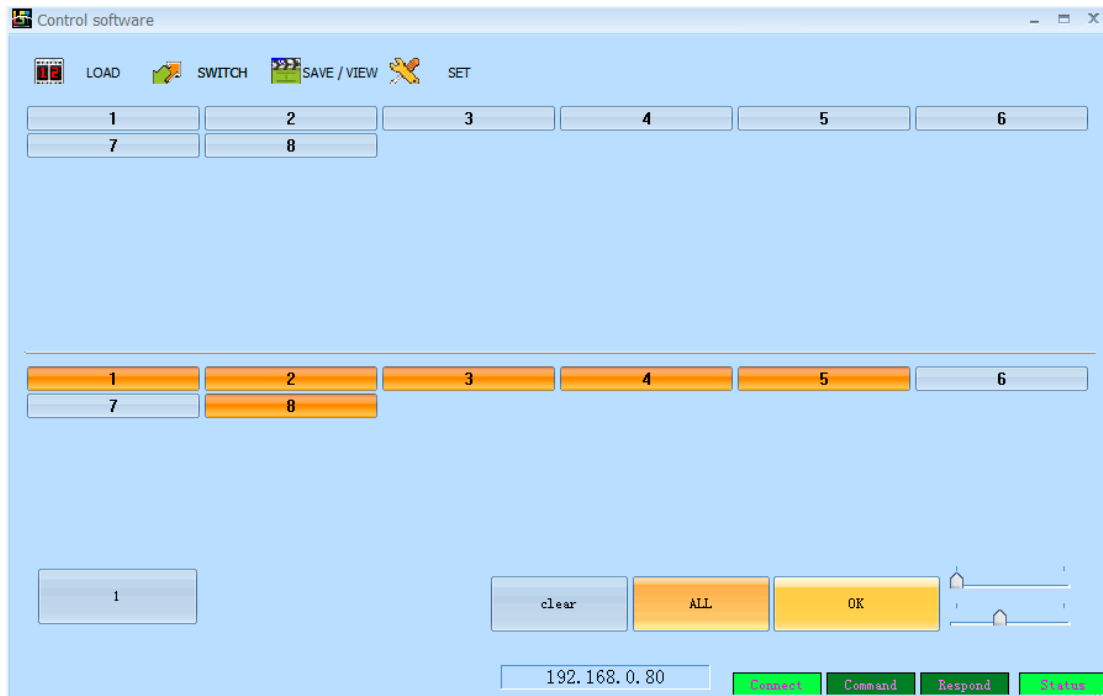Press "SWITCH" to enter the switching interface. Choose the input port first, then choose the needed output port on the pop-up interface (the selected port turns yellow). See Figure 6.5.1.

Click the number again to cancel the output port, and the port turns grey. You can choose multiple ports at a time. After all selections have been made, press "OK" to activate the switching operation.



**Figure 6.5.1**

**Figure 6.5.2**

The No.1 input channel can be switched to No.1, 2, 3, 4, 5, 8 output channels by operating as demonstrated in Figure 6.5.1 and 6.5.2.

# 6.6 Save scene operation of matrix

Press "SAVE/VIEW" to enter the Save/View interface. See Figure 6.6.1. Press "Previous" to check the current configuration of the matrix.

To save a specific scene, for example Scene1, choose "Scene1" and then press "Load". This will load and save the scene's current I/O configuration.

If "Scene1" has been saved before, then we should be able to view the saved configuration.

Note: Scenes saved in "Previous" are the current configuration, which changes according to the matrix's newly saved configuration.
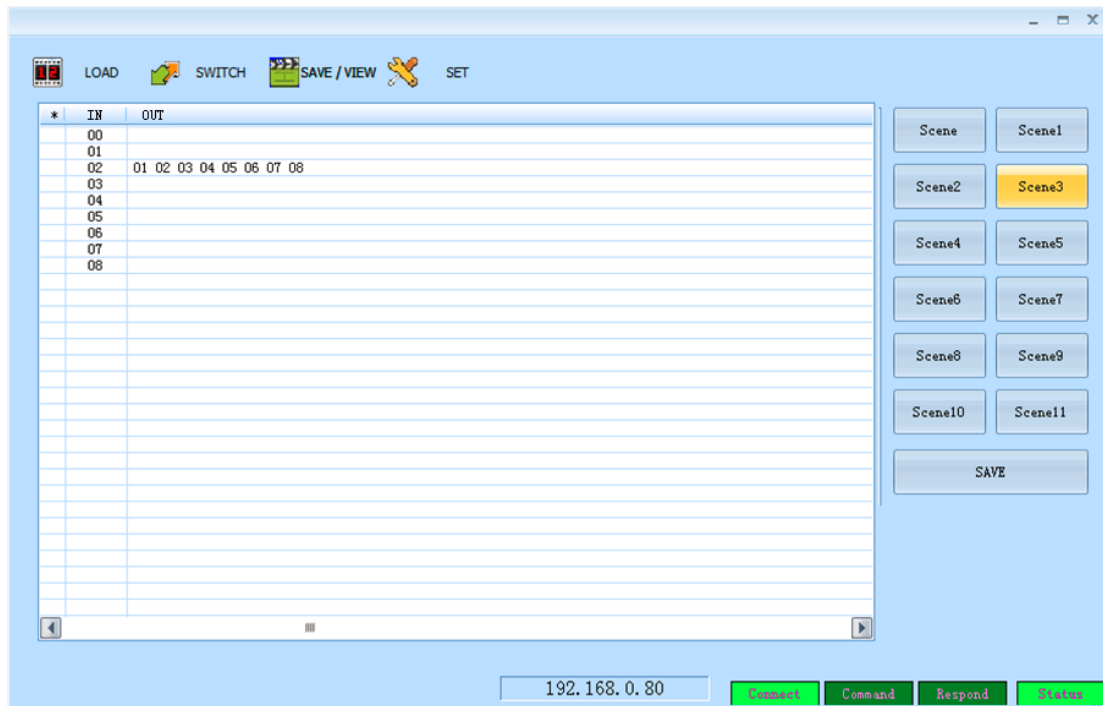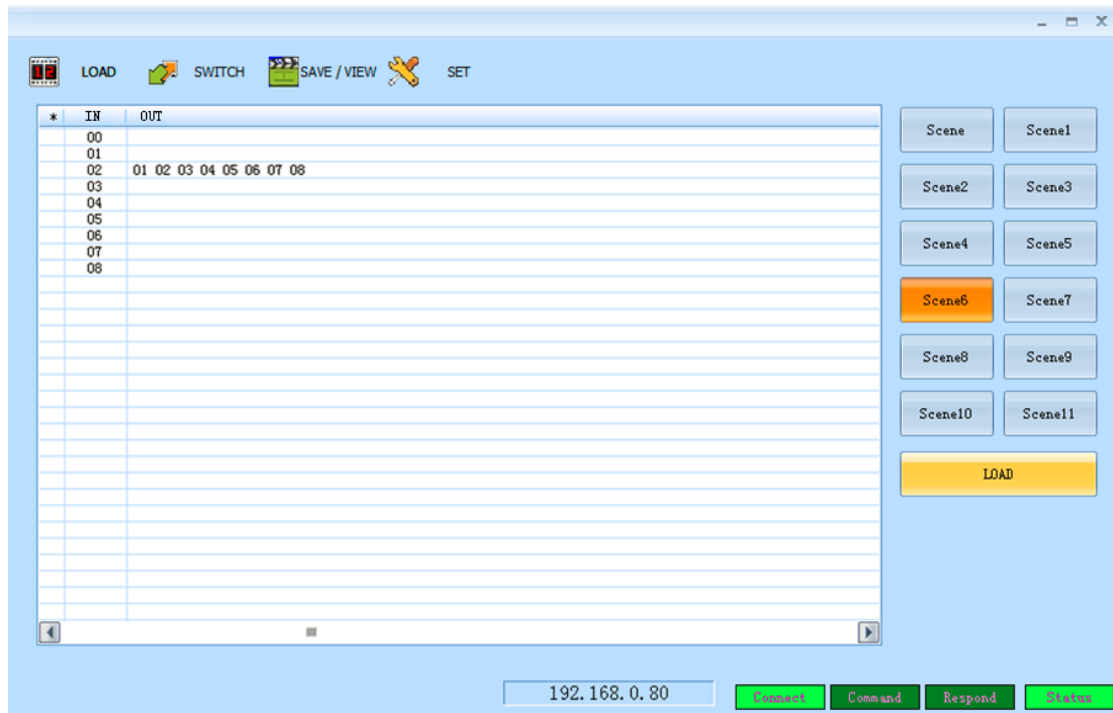
**Figure 6.6.1**

# 6.7 Load scene operation of matrix

Press "LOAD" to enter the Load Scene interface. See Figure 6.7.1.

Choose "Scene1" and then press "Load" to load the scene saved in "Scene1". To verify the scene has been loaded correctly, check the specific configuration of the loaded scene on the right side of the interface.

**Figure 6.7.1**

# 6.8 FAQ

**1. Serial Port operation is out of order / cannot control the switching**

Possible causes: The serial port is damaged or not connected properly, the serial cables are not of the correct type, or the serial connection has not been initialized.

Solution: Make sure the RS232 ports are connected using a crossover / null modem serial cable, and double-check the connection of the PC software serial port. See Section 6.3.a for instructions on setting up the serial COM port.

**2. Common troubleshooting**

Power failure: Check the power fuses and power cabling.

Signal interference: Make sure the cables and plugs are firmly connected, the cables meet the working requirements of your setup, the system is well-grounded, and the AC power between devices have the same grounding system.

Accidental damage: Please send back to the manufacturer for repair.

# 7. Communication protocol and control instruction code

Communication protocol: (Baud rate 115200, data bits 8, stop bit 1, no parity bit)

| Type | Control instruction | Functional description |
|---|---|---|
| **Operating instructions** | aXb.take. | Switch a channel input to b channel output |
| | aX1-b.take. | Switch a channel input to 1-b channel output |
| | aXb1,b2,b3.take. | Switch a channel input to b1,b2,b3 channel output |
| | a1Xb1.a2Xb2.a3Xb3.take. | Switch a1,a2,a3 channels input to corresponding b1,b2,b3 channels output |
| | Save[Y]. | Save current scene to [Y], [Y] means number keys from 1 to8 |
| | Recall[Y]. | Recall the input/output switching saved in [Y], [Y] means number keys from 1 to 8 |
| | Buzzer on. | Turn on buzzer |
| | Buzzer off. | Turn off buzzer |

**Remarks:**

1. "a" represents input , "b" represents output. The subscript "1", "2", "3" in the instruction are not input characters.

Numerical range of a and b is decided according to the matrix type. For example, BRIGHTLINK PRO-MIX32*32 matrix has up to 32 input/output channels. Any channel out of range of 1-32 would be regarded as an input error.

2. Do not forget the last punctuation ("."). Every instruction ends with the punctuation "." . Punctuations are all English character punctuations.

3. Pay attention to the letter case. (Save/Recall/Buzzer: These 3 words should be capitalized.)

## 7.1 Code Examples

1. Input "1X2.take." to switch No. 1 channel input to No. 2 channel output.

2. Input"1X1-5.take." to switch No. 1 channel input to No. 1-5 channels output.

3. Input "1X3,4,5.take." to switch No. 1 channel input to No. 3,4,5 channel output.

4. Input "4X3.5X4.6X5.take." to switch No. 4,5,6 channel input to No. 3,4,5 channel output.

5. Save current scene: Save[Y].

*Example*: Input "Save7." to save the current scene to No.7 storage unit.

6. Load the saved code: Recall[Y].

*Example*: Input "Recall7." to load the scene saved in No.7 storage unit.

7. Turn on and turn off the buzzer.

*Example*:

Buzzer on: The buzzer is turned on, and we hear buzzing when switching.

Buzzer off: The buzzer is turned off, and we hear no buzzing when switching.

# 8. Version and manufacture information

| Description of version（Document number：DOC-*BRIGHTLINK PRO-MIX-0001#） | | |
|---|---|---|
| **Date** | Version number | **Description** |
| July,2015 | V1.01.01 | First version |