

KLQ-4KHMX0404

4x4 HDM I Matrix with Audio Outputs

User Manual

V1.0.3

Table of Contents

Introduction 2
Overview 2
Features 2
Package Contents 3
Specifications 4
Panel Description 5
Front Panel 5
Rear Panel 6
Installation and Wiring 7
Installation 7
Wiring 7

IR Remote Control 9
Access the Web Interface 11
Web Interface Introduction 12
General 12
Advanced 16

Introduction

Overview

This product is a 4x4 compact HDMI matrix switcher, specially designed for cost conscious projects and buyers. It features not only basic functions like cross-point switching and control (IR, RS-232, IP), but also advanced functions like auto-downscaling for each HDMI output when it is connected to 1080P display. There’re S/PDIF audio breakout for each HDMI output, so as to provide more audio feeds to multi-zone audio system.

Features

- 4 HDMI Inputs and 4 HDMI Outputs.
- All HDMI inputs and outputs support HDMI with HDR formats incl., HDR 10, HLG, DOLBY VISION up to 4K60 444.
- HDCP2.2 compliant
- With built-in 4K-1080P downscaler for each HDMI Output, the matrix can downscale 4K 60Hz 444 to 1080P@60 444. 4K downscaler can work automatically when the matrix is connected to 1080P display and can be set to ON/OFF by API commands.
- Each HDMI output has a S/PDIF audio breakout, and supports formats up to 5.1CH compressed and 2CH PCM audio.
- Supports smart EDID, each input can be assigned to smart EDID mode.
- Supports EDID presets, EDID copy and EDID write. By default, each input EDID is set as 4K60 444 HDR with 5.1CH encoded audio.
- Supports audio mute, four S/PDIF outputs can be muted separately by API commands.
- Supports upgrading firmware via both micro-USB and web UI (for MCU and web module).
- Rich control options, include RS-232, IR, web UI and front panel buttons.

Package Contents

- 1 x Matrix

- 1 x DC 12V Power Adapter with US Pins
- 1 x IR Remote
- 1 x IR Receiver Cable
- 1 x Phoenix Male Connector (3.5mm, 3-Pin)
- 2 x Mounting Brackets (with Screws)

Specifications

Technical	
Input/Output Port	4 x HDMI IN, 4 x HDMI OUT, 1 x RS-232, 1 x IP Control (RJ45), 4 x S/PDIF OUT (Digital), 1 x FW (Micro USB), 1 x DC 12V IN
Input/Output Signal Type	HDMI with 4K@60Hz 4:4:4, HDR 10, HLG & Dolby Vision, HDCP 2.2 **Note:** Dolby vision is not supported in downscaler mode.
Input/Output Resolution Supported	**VESA:** 800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8],1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8],1920x1200[8] **SMPTE:** 720x576P[6], 1280x720P[6,7,8], 1920x1080P[2,5,6,7,8], 3840x2160[2,3,5,6,8], 4096x2160[2,3,5,6,8] 2 = at 24 Hz, 3 = at 25 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = 60 Hz
Audio Format	**HDMI IN/OUT:** Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTSHD Master Audio and DTS:X **S/PDIF OUT:** Supports PCM 2.0/5.1, Dolby digital and DTS up to 5.1 Channel
Maximum Data Rate	18Gbps
Control Method	Front Panel Buttons, RS232, IR, LAN (Telnet &Web UI)

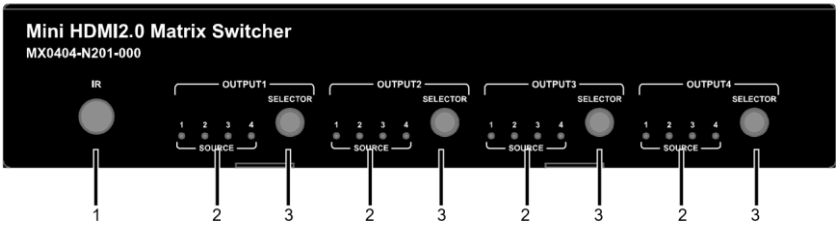
General	
Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge)/ ±4kV (Contact discharge)
Power Supply	DC 12V
Power Consumption (Max)	10.8W
Device Dimension (W x H x D)	215mm x 42mm x 120.2mm/8.46” x 1.65” x 4.73” (Without mounting brackets)”
Product Weight	0.54kg/1.19lb

Transmission Distance

Cable Type	Range	Supported Video
HDMI	Input: 15m/50ft Output: 10m/33ft	1080P@60Hz 24bpp
	Input/Output: 10m/33ft	4K@30Hz 4:4:4 24bpp 4K@60Hz 4:2:0 24bpp
	Input/Output: 3m/10ft	4K@60Hz 4:4:4 24bpp

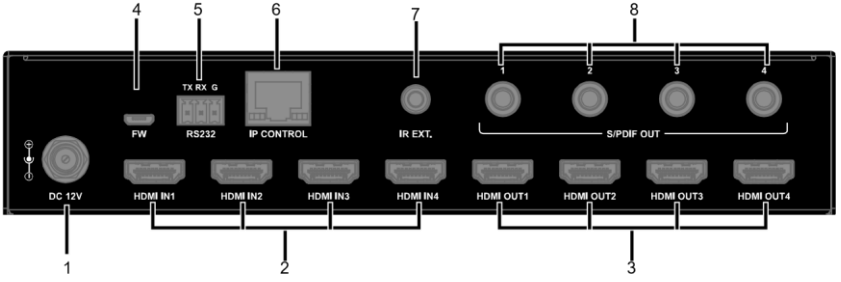
Panel Description

Front Panel



No.	Name	Description
1	IR Window	Receive IR signals.
2	INPUT LED (1-4)	**On:** The current HDMI input is selected. **Off:** The current HDMI input is not selected.
3	OUTPUT Select Button	Click to select input source for OUTPUT (1-4).

Rear Panel



No.	Name	Description
1	DC 12V	Connect to the DC 12V power adapter provided.
2	HDMI IN 1-4	Connect to HDMI sources such as Blu-ray Player.
3	HDMI OUT 1-4	Connect to HDMI displays.
4	FW	For firmware upgrade.
5	RS232	Connect to a control PC or control system for RS232 serial control.
6	IP CONTROL	Connect to local area network or a control system for telnet or Web UI control.
7	IR Ext.	Connect to the IR receiver cable provided.

8	S/PDIF OUT 1-4	Connect to audio devices such as AV system for digital de-embedded audio output from HDMI OUT 1-4.

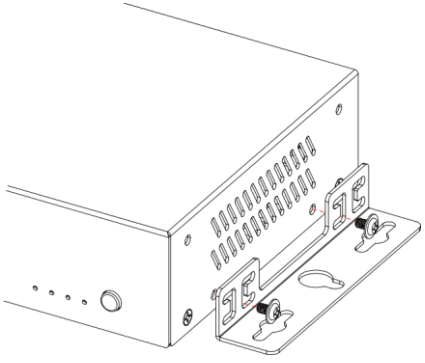
Installation and Wiring

Installation

Note: Before installation, please ensure the device is disconnected from the power source.

Steps to install the matrix on a suitable location:

1. Attach the installation bracket to the enclosure using the screws provided in the package separately.
2. The bracket is attached to the enclosure as shown.



3. Repeat steps1-2 for the other side of the unit.
4. Attach the brackets to the surface you want to hold the unit against using the screws (provided by others).

Wiring

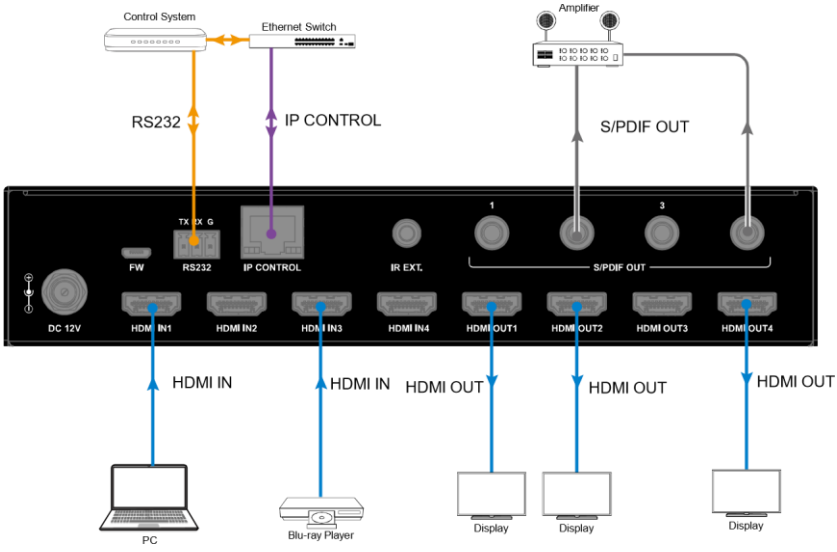
Steps for device wiring:

1. Connect HDMI IN

   Connect the HDMI sources (such as PC, Blu-ray player, Apple TV, 4K media player, etc) to the HDMI IN 1-4.
2. Connect HDMI OUT

   Connect HDMI display device (such as TV, projector, LED/LCD display) to the HDMI OUT 1-4.
3. Connect S/PDIF OUT

   Connect audio devices to S/PDIF OUT (1-4) ports, S/PDIF OUT ports can output audio de-embedding from HDMI OUT 1-4.
4. Connect for additional control options:
   - RS232 control: Connect a control PC or control system to RS232 port of the matrix.
   - IR control: The matrix can be controlled through IR signal by pointing the IR remote provided at front panel IR window directly. Alternatively, connect the IR receiver cable provided to IR Ext. of the matrix for IR extension, and have its head secured in a place accessible to the matrix remote.
   - LAN (Web UI/Telnet) Control: Connect IP CONTROL port of the matrix to a local network with DHCP server, and connect the control PC or control system to the same network.
5. Connect the DC 12V power cord provided.
6. Power on all attached devices.

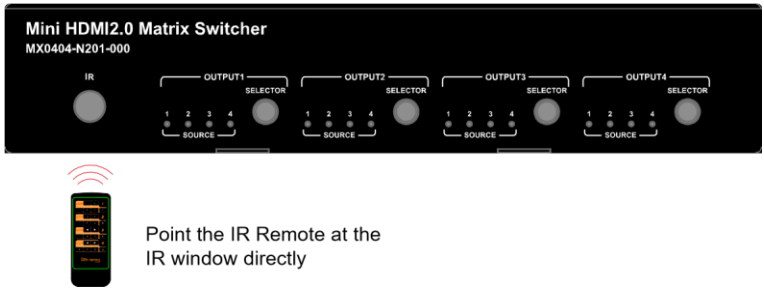


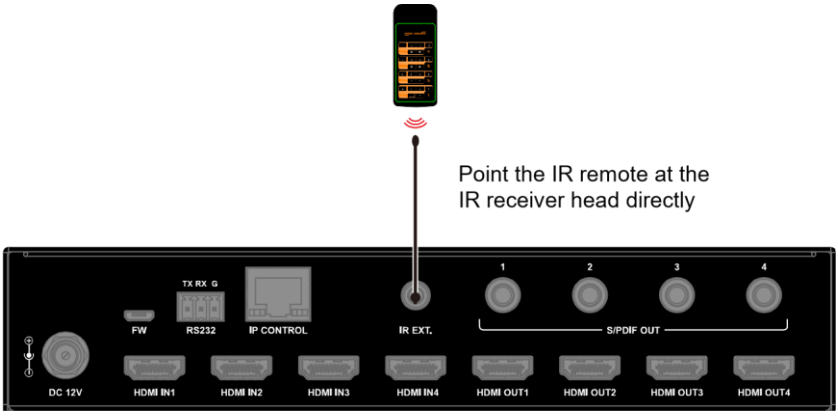
IR Remote Control

You can switch among multiple inputs for each output display by pointing the matrix IR remote directly at the IR window on the front panel or the IR receiver connected to the rear panel.

Steps for IR Remote Operation:

1. Point the matrix IR Remote directly at the IR window on front panel or at the IR receiver connected to the rear panel. As shown in the following picture:





2. Locate the target output you want to switch inputs for on the remote, numbered 1-4 vertically along the right side.
3. Press the desired input number to select the corresponding input source for your target output.

Select previous input for Output 1

Select next input for Output 1

Output 1

Select specific input for Output 1

4. To cycle through multiple inputs for your target output, press the previous (◀) or next (



(

Virtual IR Code Supported by Default Switching Code):

(Matrix

▶) button.

Code	IN1	IN2	IN 3	IN 4
OUT 1	0X80	0X81	0X82	0X83
OUT 2	0X90	0X91	0X92	0X93
OUT 3	0XA0	0XA1	0XA2	0XA3
OUT 4	0XB0	0XB1	0XB2	0XB3

RS232 Control

Advanced users may need to control the matrix through RS232 serial communication. Connect a control PC or control system to the RS232 port of the Matrix. API command for RS232 control is available in the separate

document "*API Command Set_MX0404-N201-000*". A professional RS232 serial interface software (e.g. Serial Assist) may be needed as well.

Before executing the API command through RS232 serial connection, please ensure RS232 interface of the device and the control PC are configured correctly.

Parameters	Value
Baud Rate	115200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

Web UI Control

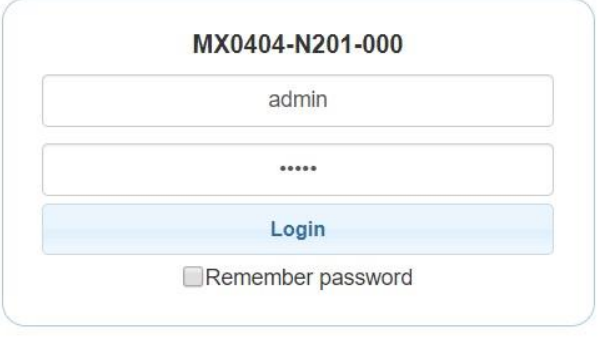
The Web UI designed for the matrix is available for switching control, general and advanced settings. The Web UI is accessible through a browser with latest version, e.g. Chrome, Firefox, Safari, Opera, IE10+, etc.

Access the Web Interface

1. Connect the IP Control port of the matrix to the Ethernet switch, and connect your PC to the same network.

   Note: The IP mode of the matrix is DHCP, please ensure the Ethernet switch is connected to a DHCP server.

2. Use the tool such as SmartSetGUI to search the IP address of the device or send API command to get IP address (See the separate document “API Command Set_MX0404-N201-000”).
3. Input the IP address in your browser and press Enter to enter the login page.
4. Enter the username and password in the following login page, then click “Login”. The default username and password are both “**admin**”.



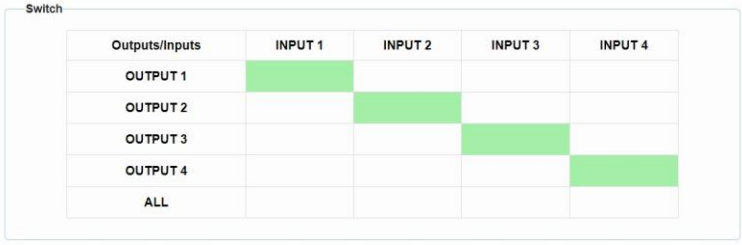
Web Interface Introduction

The main screen includes General and Advanced Setting.

General

The General Page includes: Switch, EDID, EDID Read, CEC, Audio Mute, HDCP, Preset.

(1) Switch



The Switch section manages distribution of input sources to output displays.

By default, Input 1 corresponds to Output 1, Input 2 corresponds to Output 2, Input (n) corresponds to Output (n), n = 1, 2, 3, 4.

Click the button in the table to select the input for the output display (button turns from white to green once selection is done).

ALL: Click to switch INPUT (n) for all OUTPUTs.

(2) EDID



This section allows you to configure EDID settings of each input port.

Select the item from the drop-down menu, then click “Apply” to take effect.

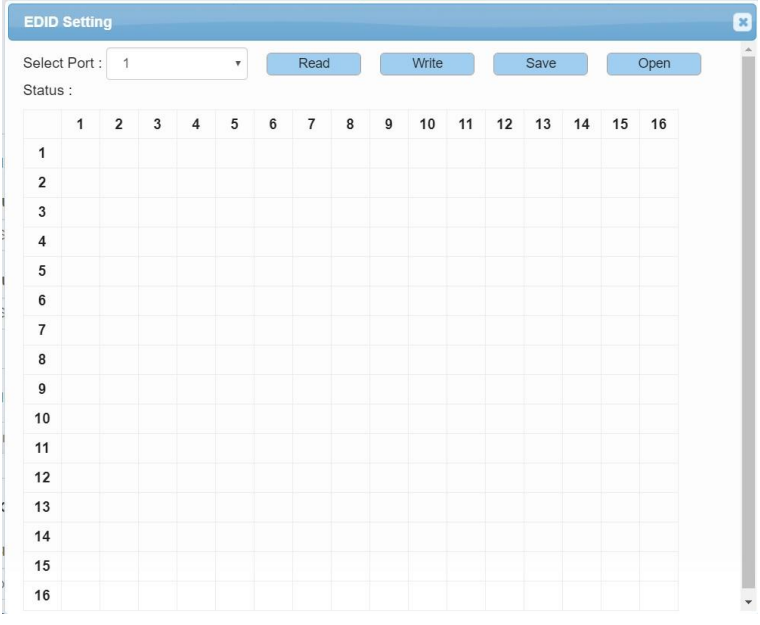
Note: If EDID copy fails, the input EDID will be 4K@30Hz 2.0ch audio.

By default, input EDID is set as 4K@60Hz 5.1ch audio With HDR.

(3) EDID Read



Click “Enter” to open the EDID Setting page.



Select Port: Click from the drop-down menu to choose an Output/Input port (1-4) for EDID setting.

Read: Click to read the EDID of the Output port you choose.

Write: Click to write the read EDID of the Output port or the uploaded EDID to the selected Input. You can choose an input port in “Select Port” to write. **Save:** Click to save the read EDID of the output as a bin file to a desired location.

Open: Click to upload an EDID file from your local PC. Then you can choose an input port in “Select Port” and click "Write" to write the uploaded EDID information to the selected input.

(4) CEC



Output Port: Select one OUTPUT (1-4) port or all from the drop-down menu to control.

Note: When Output port is set to “all”, the Auto CEC and Delay Time (min) settings are disabled.

Manual (ON/OFF): Click “ON/OFF” button to power on/off the CEC-enabled display immediately.

Auto CEC: Click “ON/OFF” button to set Auto CEC control enable/disable.

The default setting is “ON”.

Delay Time (min): Click the up/down arrow to set the time for the display to power off automatically when no signal is present. Then click “Apply” to take effect. For example, if Auto control is set as on and the time is set to 2 minutes, click “Apply”, the output display will power off automatically when there’s no signal at the display for 2 minutes.

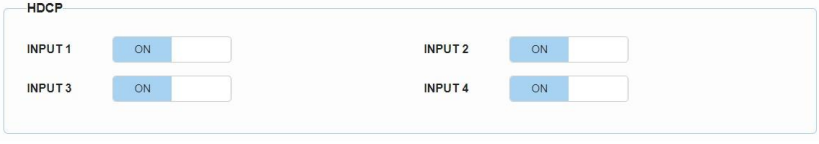
(5) Audio Mute



This section allows you to set Audio output (1-4) mute/unmute. The default setting is unmute.

Note: The S/PDIF OUT 1-4 is following the audio output of HDMI OUT.

(6) HDCP



HDCP Support allows you to enable or disable HDCP compatibility of each input. By default, HDCP Support is switched ON at each input and content protected by HDCP standard will be received.

(7) Preset



The Preset section saves or loads the General settings to or from the matrix.

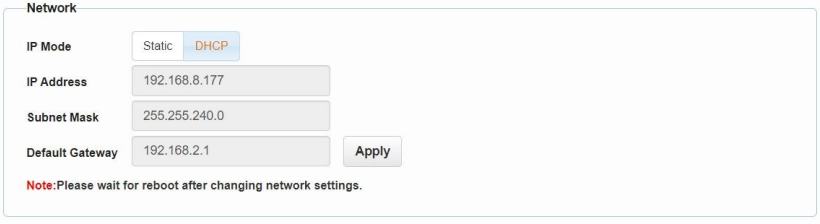
Advanced

The Advanced page includes: Network, Login Password, Custom Web UI Logo, WEB Firmware Upgrade, ARM

Firmware Upgrade, MCU Firmware Upgrade, System, Firmware Version.

(1) Network

Network is used to toggle between the dynamic and static IP addressing.



DHCP: When enabled, the IP address of the Matrix is assigned automatically by the DHCP server connected.

Static: When enabled, set up the IP address manually.

Apply: Click to enable the network setting.

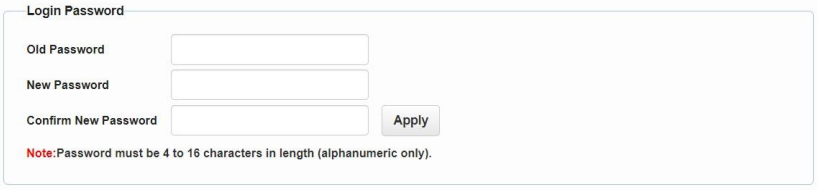
The default setting is DHCP.

Note:

- When “Static” is selected, please ensure your PC is in the same network segment as the Matrix, i.e. the IP address of your PC should be set as 192.168.xxx.xxx (x is suggested among 2 to 253).
- Please wait for about 30s for the Matrix’s LAN module to reboot and reconnect after the network setting is changed.

(2) Login Password

This section allows you to change login password.



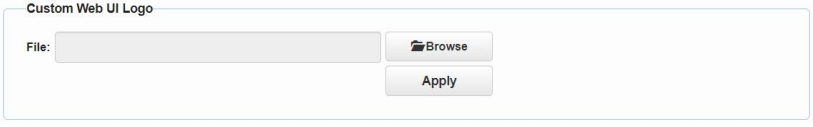
The default password is “admin”.

Apply: Click to save the changes.

Note: The new password must be 4 to 16 characters in length (alphanumeric only).

(3) Custom Web UI Logo

Custom Web UI Logo allows you to create your own logo for the Web UI you are using.



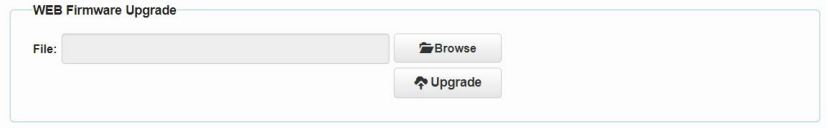
To create customized Web UI logo:

1. Click “Browse” button to browse the LOGO file.
2. Click “Apply”, When the operation is successful, the new logo will appear on the upper left corner of the screen and the login page.

(4) WEB Firmware Upgrade

1) Click “Browse” for the update file.
2) Click "Update" to start the Web UI upgrade.
3) The matrix LAN Module will update and reboot automatically when Web UI is completed. Please wait for about 30s and then refresh and log in again.

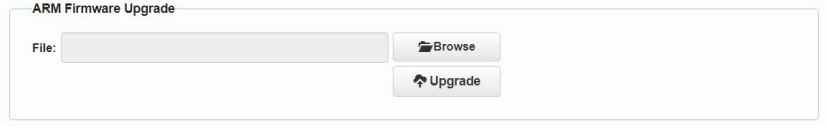
Note: DO NOT disconnect the matrix during update process.



(5) ARM Firmware Upgrade

1) Click “Browse” for the update bin file.
2) Click "Upgrade" to start the ARM Firmware upgrade.
3) The matrix will upgrade and reboot automatically when upgrading ARM is completed. Please wait for about 30s and then refresh and log in again.

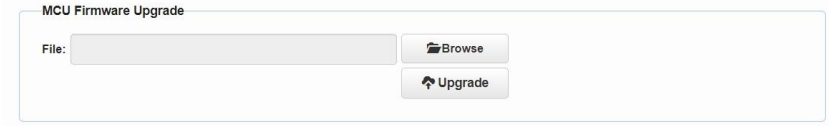
Note: Do not power off the device when upgrading.



(6) MCU Firmware Upgrade

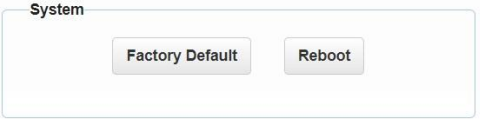
1) Click “Browse” for the update bin file.
2) Click "Upgrade" to start the MCU Firmware upgrade.
3) The matrix will upgrade and reboot automatically when upgrading MCU is completed. Please wait for about 30s and then refresh and log in again.

Note: Do not power off the device when upgrading.



(7) System

This section allows you to reset the device to factory default settings or reboot the device.



To reset the device to factory default settings:

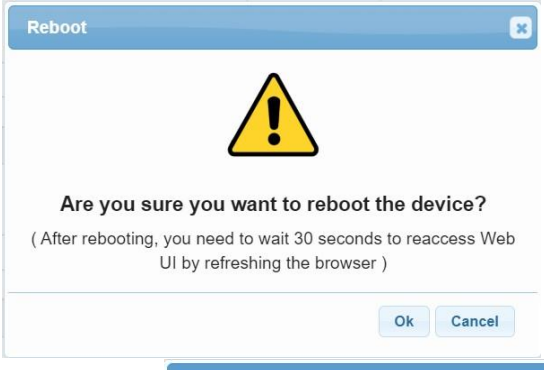
Click the “Factory Default” icon, the following window will be popped up, click “Ok” to reset the device to factory default.



Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

To reboot the device:

Click the “Reboot” icon, the following window will be popped up, click “Ok” to reboot the device.





Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

(8) Firmware Version



This section allows you to obtain information of the current firmware in use.