

M-A8 (GPS) instruction manual

Picture (Introduction):



I. Detailed parameters:

1. Power supply voltage: AC220V
2. Number of loads: DMX 8*512; TTL 8*1024 points
3. Synchronization mode: cascaded synchronization / GPS sync
4. Installation method: outdoor rainproof
5. Size: 250 x 155 x 43 unit (mm)
6. Weight: 1.35Kg
7. Load mode: SD card program
8. SD card format: FAT32 format
9. SD card capacity: 8G

Note: Format the SD before



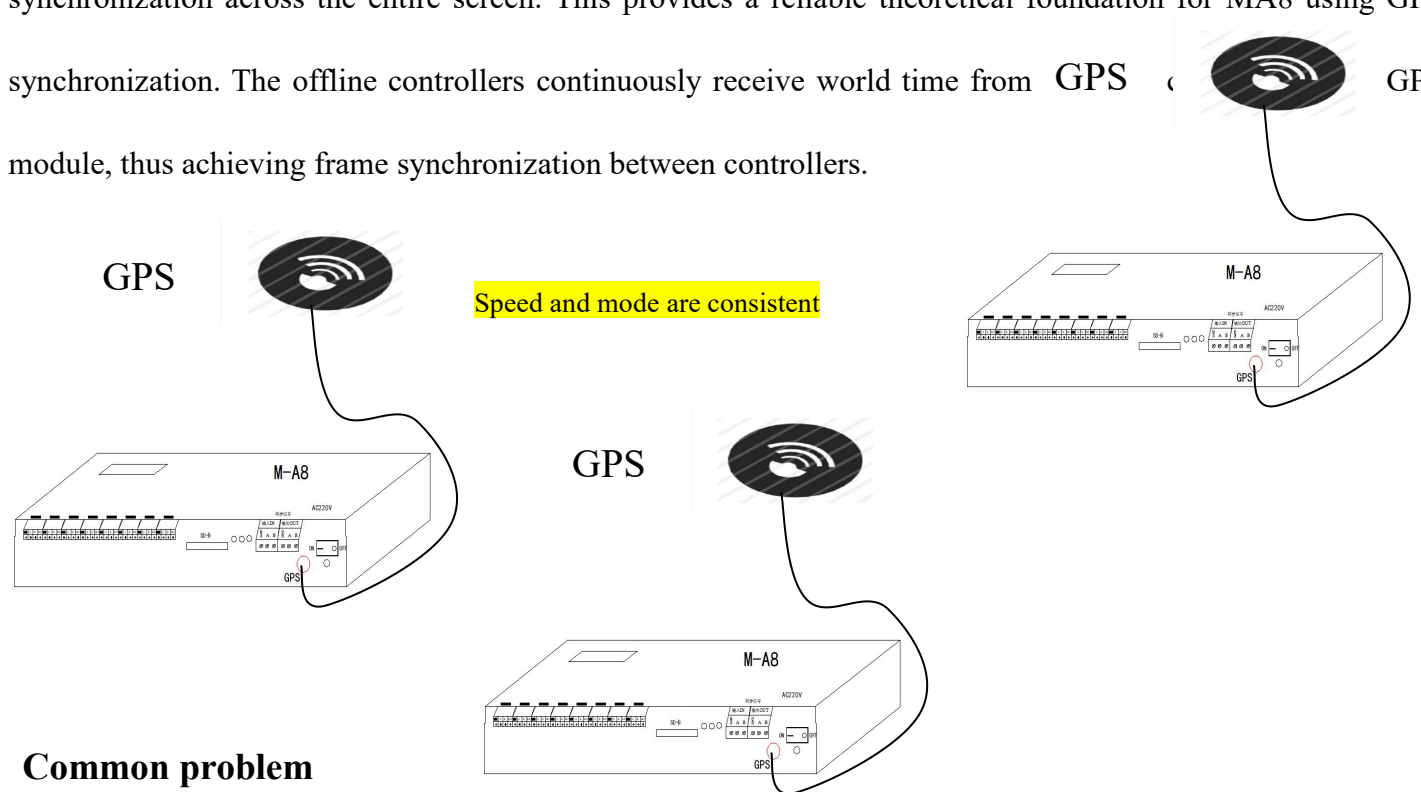
Ii. Features of GPS products:

1. Solve the problem that controllers cannot be synchronized due to the inability to install cables between buildings.
2. GPS timing method is adopted, and synchronization between controllers can be realized wherever satellite signals can be received, which is available worldwide.
- 3、 External antenna, the antenna is separated from the GPS synchronization module, can better, faster and more stable reception of satellite signals.

Note: The antenna of GPS global synchronization module must be placed outdoors, not in indoor closed space.

Iii. Working principle:

The GPS+MA8+MA8 offline control system, or the independent offline main control synchronization of GPS+MA8, GPS+MA8, and GPS+MA8, uses software to automatically split the screen. Each controller operates independently yet uniformly, requiring only time synchronization between controllers to achieve frame synchronization across the entire screen. This provides a reliable theoretical foundation for MA8 using GPS synchronization. The offline controllers continuously receive world time from GPS module, thus achieving frame synchronization between controllers.



Common problem

handling:

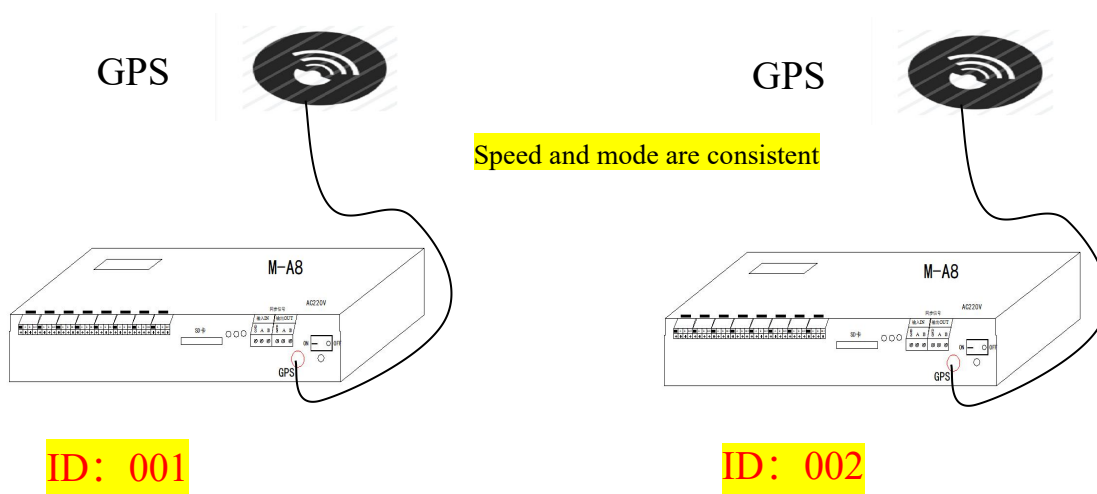
Question 1: After power on, two or more GPS are not synchronized

A: 1) The antenna of GPS global synchronization module is not pulled outdoors, and the synchronization module cannot receive satellite synchronization signal.

2) Due to the large number of pixels in the controller, it cannot achieve the frame frequency that can be synchronized by the GPS global synchronization module.

4、Operation mode (GPS synchronization is divided into two schemes)

Solution 1: The same effect file sets different ID numbers and copies the SD card without any difference



Refer to the following controller operation steps for how to set the specific ID number

Option 2: The same ID number has different effect files (program partition) and

MP节目分区软件 13.2

节目文件列表

OFF001.arm

第二步

设置分区个数 3

第三步

复用数据 第3区

3号控制器

第四步

打开脱机节目

节目回放

打开分区表

保存分区表

输出文件

名称

1

2

3

the SD card copies the files separately

The controller SD card copies the corresponding files respectively:

Controller 1-----Folder 1-----OFF001.arm

Controller 2-----Folder 2---OFF001.arm

Controller 3-----Folder 3-----OFF001.arm

V. Features of M-A8 system

1. Gray level control from level 32 to level 65536, and software Gamma correction processing.
 - 2、 Supports various point, line and surface light sources, supports various rules and irregular processing.
 3. The controller port can be DMX 8*512pixels; TTL 8*1024pixels.
 4. Use AC220V AC power, with multiple units cascaded and synchronized. During cascade synchronization, only the first controller is operated; subsequent controllers act as sub-controllers. When using Simple LED program software for multi-unit synchronization, multiple program files are exported. The last digit of each file name corresponds to the sequential copy onto the respective controller. The controller identifies the corresponding program content based on the ID number.
 - 5、 The output port of the controller provides three protections to ensure that the output port of the controller is not burned out under conditions such as short circuit and reverse connection of the controlled lamp.
 - 6、 The controller has built-in effects and can test the load lamps (both RGB/RGBW lamps are supported).
 - 7、 The controller has the function of DMX512 write address and address test, and the single port or all ports carry DMX512 IC write address, and the address test of lamps is carried out.
- The controller provides LCD display screen, which can display the model, ID and working

status of the control.

8、 When a single unit is used or multiple units are used simultaneously, the controller must be equipped with an SD card. The program copy of the SD card must be copied and then set the corresponding ID number of the controller. The controller will automatically read the corresponding part of the program content in the program.

9、 The communication between controllers uses the international standard 485 protocol.

10、 **The controller has a new one-click reset function. On the main interface, press the loop (OK) key and speed + select keys at the same time.**

6. Meaning of digital display screen and key:

Menu displayed	Digital display	liquid-crystal display	Chinese translation
①	1-c P	Set Chip x x x x	Set the chip
②	2-b r,g-22	Set Bright 100%	Set the brightness and gamma value
③	3-r F	Set RF Mode	Set the RF band
④	4-r g b	Set RGB Mode	Set up the lighting channel
⑤	5-R T C	RTC :1970-00-00	Timing function
⑥	6:d-0 1	ID :01	Set the ID number
⑦	7: c 150	AC Delay: 150MS	a-c cycle
⑧	8:50 HZ	WorkMode:50HZ	service frequency

⑨	9: V 605	VER 6.05	Version serial number
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Key name	meaning
velocity +/-	Switch speed directly on the main screen, and select up and down buttons in other states.
pattern +/-	Switch the controller built-in program and SD card program directly on the main interface.
coding (ADR)	Lamp address, make the lamp sequence normal.
test (Test)	There are five kinds of test effects in total, to check whether the signal is smooth and whether the power supply is sufficient, and whether the code is correct.
recurrence (OK)	After setting the above items, you must press the OK (OK) key to confirm, save, return, and exit.
Menu (MENU)	Settings: chip, brightness, RF band, channel, time, ID number, synchronization frequency, operating frequency, version number

Vii. Main interface display instructions:

ID:01 BRI:100% SD:02 Speed:05 D	Card reading mode
ID:01 BRI:100% F1:01 Speed:05 F	Built-in mode

① ID: 01 represents that the number of the current controller is 01, which is the first controller, and the maximum is 255.

② BRI: 99% BRI is the abbreviation of bright, which represents brightness. That is, the current

control brightness is 99%, and the maximum is 100%

③ F1:05 F1 is the first two letters of file, which represents the built-in mode. That is, it is the fifth built-in mode.

SD: 05 SD is the abbreviation of SD card, which represents the SD card file mode, that is, playing the fifth file of the SD card.

④ Speed:03 is the English word for speed, which means that the current speed is level 3; you can directly switch by pressing up and down keys. The larger the number, the faster it is.

⑤ F: represents a single built-in mode run; E: represents all built-in program loops.

D: represents the running of a single SD card file; A: represents the loop of all SD card programs.

Viii. Operation steps

1. Set the chip (CHIP): The chip is the model of the lamp used. The commonly used chip models in the market are as follows:

UCS1903,UCS1904,UCS2909,UCS2903,UCS1912,TM1803,TM1804

TM1809, TM1914 (continuation of breakpoint), WS2811, WS2812, WS2818 (continuation of breakpoint)

SM16703, SK6812, SK6814, GS8206 (breakpoint continuation), GS8205 (breakpoint continuation)

UCS5603 (Breakpoint continuation) and P9883 (Breakpoint continuation) Each controller needs to select the chip model for use

UCS512C series, B series, D series; SM16512, TM512AC

The chip selection operation steps are as follows:

Step 1: Press the menu button once to set the chip interface

1.Set Chip UCS1903

Step 2: Press the Loop (OK) key to enter the chip selection interface

Chip:UCS1903

Step 3: Press the speed +/-key to switch the chip number and select the corresponding model of the lamp.

Chip selection correspondence table			
01: MDX512 500K	02: MDX512 250K	03: UCS1903	04: SK6812
05: SM6703	06: TM1804	07: UCS2904	08: WS2811
09: WS2812	10: TM1914	11: P9883S	12: GS8206
13: GS8205	14: UCS5603	15: DXM512-W	16: TM1923
17: TM1814			

Step 4: Press the cycle (OK) button and save it to the controller. The lamp will start to work.

2. Switch mode (MODE):

It can be divided into SD card program mode and built-in effect mode, which can be switched between. If you don't like the built-in effects that come with the controller, programmers need to design programs and copy them onto the SD card; if simple outline effects don't require much variation in style, you can use the built-in effects directly, totaling 86 types.

SD card program mode: it is designed through program software, according to customer requirements, or designed by the designer himself.

Hold the OK key on the main screen for 3 seconds to switch between the two modes.

Operating steps in SD card mode:

Step 1: Press the Loop (OK) key for 3 seconds. The interface displays the following to enter SD card mode.

ID:01 BRI:100%
SD:02 Speed:05 D

D represents a single

Step 2: Click the Loop (OK) button to switch between SD card program single file loop and all files loop

ID:01 BRI:100%
SD:02 Speed:05 A

A represents the loop of all

Step 3: Press the mode +/-key to switch modes. (You can only switch freely in a single mode)

(The +/-button is disabled in loop mode, so be sure to switch to single play.)

Built-in effect mode:

(The controller can be plugged in or not, and the built-in effect can be called up. In short, it has nothing to do with the SD card.)

The controller itself has built-in effect programs, which are relatively simple and mainly used to test whether the lamp is smooth and whether the controller is working normally. If you want more gorgeous effects, you need to write program files and place them on the SD card. Some simple contours can be used with built-in effects.

The specific operation steps are as follows:

Step 1: Long press the OK key for 3 seconds until the interface is displayed

ID:01 BRI:100%
F1:01 Speed:05 F

F stands for a single built-in

Step 2: Press the MODE (+/-) key to switch between built-in programs, a total of 86 modes (only in the case of a single mode can you switch freely).

ID:01 BRI:100%
F1:86 Speed:05 F

Step 3: Press the speed +/-key to switch the program speed 1-5, the larger the number, the faster the speed.

ID:01 BRI:100%
F1:02 Speed:04 F

Step 4: Press the OK key to switch between single file loop and all file loop of the built-in program.

ID:01 BRI:100%
F1:02 Speed:05 E

E represents the built-in loop

3. Adjust brightness (Bright): Only the overall brightness can be adjusted, from 5% to 100%. The higher the percentage, the higher the brightness.

The brightness adjustment steps are as follows:

Step 1: Press the menu key twice to appear the interface

2.Set Bright
BRI:100% GM=2.2

Step 2: Press the Loop (OK) key to enter the brightness adjustment interface

Bright 100%

Step 3: Press the speed +/-key (binary) to switch the digital level.

Bright 99%

Switch the digital level by pressing the MODE (+/-) key (10 decimal). The higher the value, the higher the brightness 5%----100%.

Bright 90%

Step 4: Press the OK (OK) button to save it to the controller, and the lamp will be adjusted to the selected corresponding brightness.

4. Set the gamma value:

Step 1: Press the menu (MENU) and press 2 times. The interface will be displayed



2.Set Bright
BRI:100% GM=2.2

Step 2: Press the cycle /OK key twice to enter the interface for adjusting the gamma value



Bright 100%
gamma2.2

Step 3: Press the speed +/-key (1 decimal) to switch the gamma value (1.0-5.0), press the mode +/-key (10 decimal) to adjust the corresponding value, and press the loop/OK to save and return to the main interface.

6. Set the channel:(the channel refers to the front and back order of R, G and B of the lamp, there are a total of 7 orders)

Step 1: Press the menu key four times to display the interface



4.Set RGB Mode
RGB

Step 2: Press the cycle (OK) key to enter the channel adjustment interface



channe1 :RGB

Step 3: Press the speed +/-key to switch channels (RGB, RBG, GBR, GRB, BGR, BRG, RGBW)

Step 4: Press the OK (OK) button to save and return to the main interface

7、 Set time: (battery is required to start the timing function)

Step 1: Press the menu (MENU) and press key 5 times to display the interface



5.RTC:1970-00-00
00:00:00

Step 2: Press the Loop (OK) key to enter the time setting interface

A blue rectangular box with the white text "RTC:1970" centered inside.

Step 2: Set the x year, x month, x day, x hour, x minute and x second according to the speed +/-key and cycle (OK) key in turn,

Then press the loop (OK) to save to the controller and return to the main screen.

8. Set ID: When multiple controllers are used synchronously, users can choose to set the ID number for each controller themselves or write separate programs for each controller during programming. If an ID number needs to be set, it should be done in sequence. For single-use controllers, the ID number is 1, as the program will set the port number on the drawing side; for example, ports within the range of 1-8 are definitely the first controller.

The steps to set the ID are as follows:

Step 1: Press the menu key six times to display the interface

A blue rectangular box with the white text "6.ID:01" centered inside.

Step 2: Press the Loop (OK) key to enter the ID Settings interface

A blue rectangular box with the white text "device id:1" centered inside.

Step 3: Switch the number (1-99) according to the speed +/-key (base 1) mode +/-key (base 10), and select the number corresponding to the controller.

Step 4: Press the Loop (OK) button to save and return to the main screen.

9. Set the AC frequency:

Step 1: Press the menu key 7 times to display the interface

7.AC Delay:150ms

Step 2: Press the cycle (OK) key to enter the AC frequency setting interface

AC Delay:150ms

Step 3: Switch the number (0-999) according to the speed +/-key (base 1) mode +/-key (base 10), and select the number corresponding to the controller.

Step 4: Press the Loop (OK) button to save and return to the main screen.

10. Write code operation

(For DMX512 lamps, the manufacturer may write addresses for individual lamps during the lamp test, but when the lamps are installed on the actual construction site, the installation method and installation sequence will be different, which will lead to duplication or deviation of the original lamp address code. Therefore, it is necessary to use the controller to carry out unified coding operation for the installed lamps.)

Before operation, it is necessary to determine the chip model of the lamp, the chip coding channel, and check whether the wiring of the controller is correct and the direction of the lamp is correct. After determining these, start the operation to write code.

The specific coding operation steps are as follows:

Step 1: Press the Write code (ADR) key to enter the chip selection state

1.UCS512B3

Step 2: Press the speed +/-key to switch the chip

Write the chip selection table

Ste	01: UCS512B3	07: Hi512A4	13: SM16512P
	02: UCS512C*	08: Hi512D	14: SM17500
	03: UCS512D	09: TM512AC	15: SM17512
	04: UCS512E	10: TM512AD	16: SM17522
	05: UCS512F	11: TM512AL	17: GS8512
	06: Hi512A0	12: SM16512	18:GS8512--

p 3: Press the OK key of the loop to enter the channel selection. The interface TD=3 represents 3 channels

1.UCS512B3
TD=3

At this time, you can press the speed +/-keys to switch between channels, and press the write code (ADR) key to return to the previous operation.

Step 4: After confirmation, press the loop OK button to enter port selection. CH=1-8 represents all ports

1.UCS512B3
TD=3 CH=1-8

Step 5: Press the speed +/-keys to select the port to write the address code. CH=1: The first port, CH=2: The second port

In turn, there are a total of 8 ports; in the case of cascaded synchronization, all controllers after the first controller follow the selection of the first controller.

Press the Write Code (ADR) key to return to the previous operation.

Step 6: After the channel and port are confirmed to be correct:

Press the OK key to start writing code



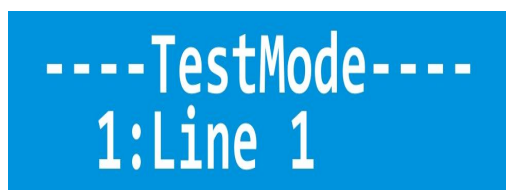
WriteAddr CH:1-8
UCS512B3 TD:3

The representative is writing code. The coding port is 1 to 8 ports, and the coding chip: UCS512B3. TD represents the channel, which is 3 channels.

In the process of writing code, pay attention to whether the lamp has changed its state of writing code. After writing code, it will automatically switch back to the test interface.

Step 7: After the above code writing operation is completed, if there is no need to reset the chip channel after changing the lamp or repairing it, the controller will add a one-key code writing function. The specific operation is as follows:

Long press the write code (ADR) key. The controller interface will automatically display all the contents of the last write code operation, start the automatic write code operation, and complete the automatic adjustment to the test point interface, which is consistent with the following test operation.



----TestMode----
1:Line 1

Note: Check whether the lamp is running down one point at a time in order or manually switching to add one point at a time. If the order is normal, it is successful; if not, continue writing code or find out why the code is not written successfully.

Step 8: Press the OK key to return to the main interface.

Common reasons for unsuccessful coding:

- ①、The direction of the lamp is not right. Although DMX512 is parallel bidirectional transmission signal, the direction of writing code is unidirectional.
- ②、The wiring problem of the lamp, the wrong wire sequence, check the controller port and lamp wire sequence.
- ③、The power supply of the lamp is insufficient, resulting in the inability to drive the chip to write code.
- ④ The signal line of the lamp is too long, exceeding the effective distance range of the chip.

11. Test Settings (Test):

The test function is needed in the following situations: ① Not knowing the number of lamps ② Not knowing the sequence of lamp channels RGB, RBG, GBR, GRB, BGR, BRG, RGBW ③ whether there are any bad pixels ④ Whether the power supply for the lamps is sufficient ⑤DMX512 Whether the lamp codes are written correctly and whether they are in disorder) All the issues mentioned above can be tested using the test function.

Channel 3: refers to the lamp with R, G and B mixed; Channel 4: refers to the lamp with R, G, B and W mixed. Specific operating steps of the test function:

①, point by point test

Step 1: Press the Test (Test) key to enter the lamp channel test interface



RGB Mode:RGB

Indicates the test of a 3-channel lamp.

Step 2: Press the speed +/-key to switch the test status of the lamps in the 3/4 channel (take the 3-channel test as an example).

Step 3: Enter the interface by pressing the Loop (OK) key



RGB Mode:RGB
PORT:ALL

ALL indicates that all ports are tested.

Step 4: Press the speed +/-key to switch between individual ports.

Step 5: Press the Loop (OK) key to enter the test interface



----TestMode----
1:Line 1

Step 6: Press the speed +/-key to manually test a single point, and press the menu key to automatically measure a point.

When running automatically, press the menu key at will, and the bouncing number stops at 1,

Then press the speed +/-key to manually add or subtract numbers (manual mode).

②. Test the RGB channel

Step 7: Press the Test (Test) key, and the interface is displayed



----TestMode----
2:Red

glow

Press the Test (Test) key to display the interface



----TestMode----
3:Green

Green Flash

Press the Test (Test) key to display the interface



----TestMode----
4:Blue

blue ligh

Press the Test (Test) button, and the interface is displayed

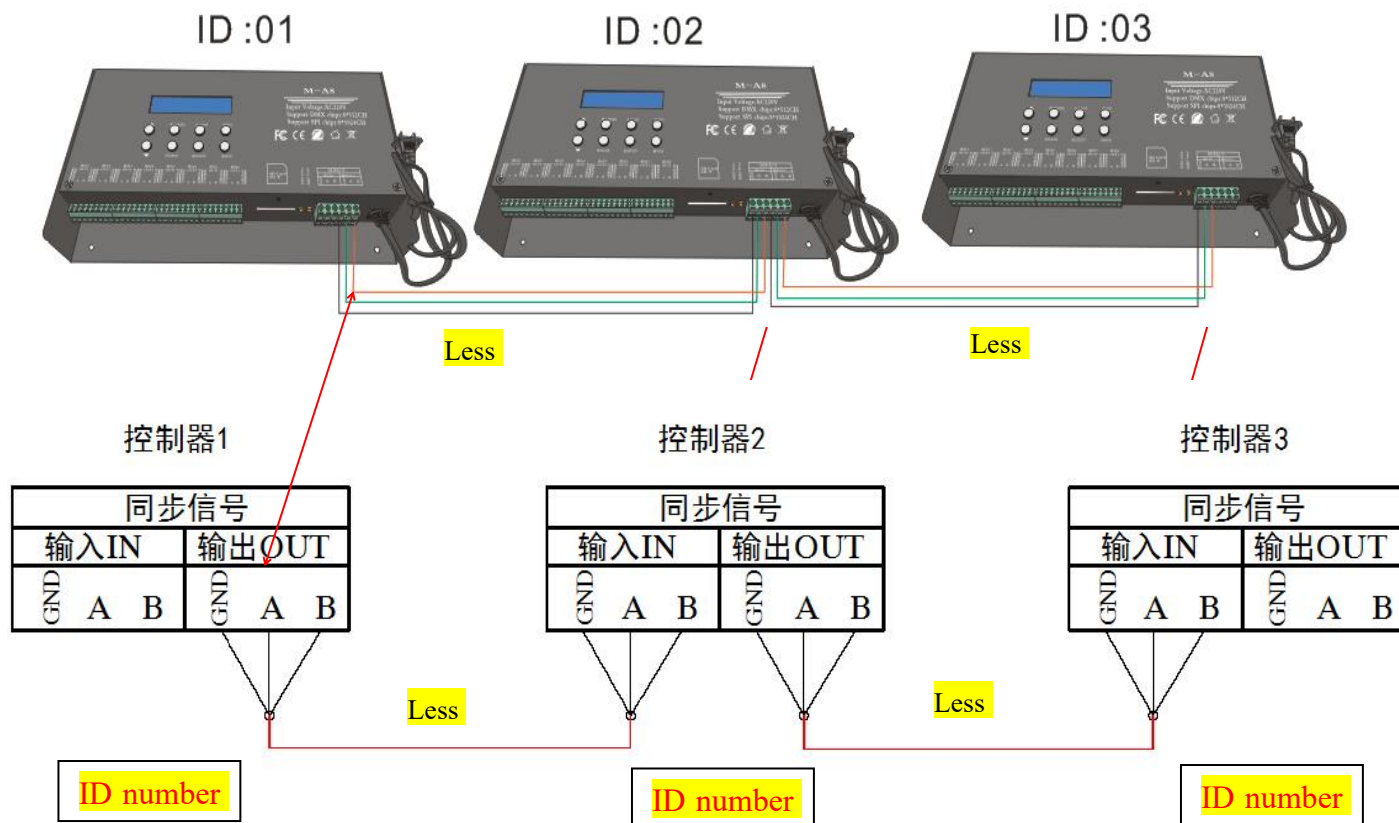


----TestMode----
5:White

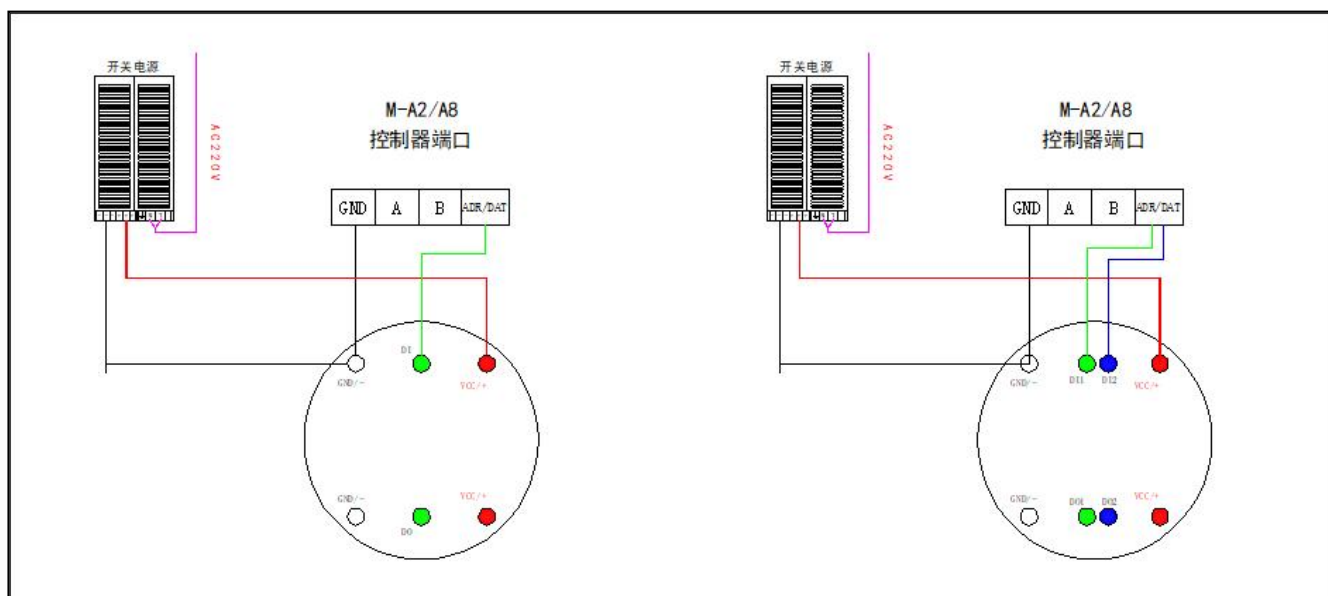
white light

Step 8: After the test is completed, press the loop (OK) key and return to the main interface. (Note: Mode 2, 3, 4 and 5 can be used to test the channel sequence of the lamp)

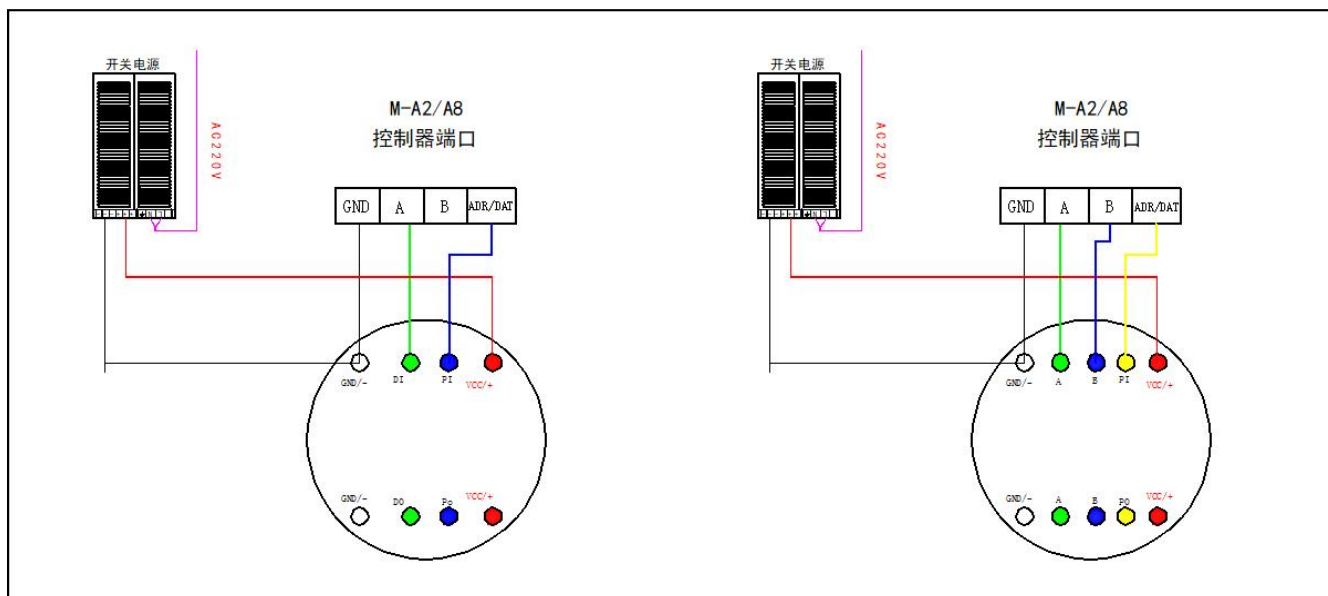
9. Cascaded schematic diagram:



Port wiring diagram: TTL series



Port wiring diagram: DMX512 series



X. Common precautions

1. Each controller is the main controller with card control; after cascading, only the first one needs to be controlled, and the buttons of the subsequent controllers do not need to be operated; however, before cascading, the ID number of each controller needs to be set.
2. The way the controller makes programs is consistent with the form of main control and sub-control, but it cannot be used at the same time with M-C8 and D8.
3. The controller is synchronized with GPS, and currently only supports the GPS positioning signal of Beidou satellite. When using it, the GPS module antenna should be placed in an open area outside to ensure the stability of GPS receiving signal without being covered.