SUPERLIGHTINGLED

GC-5016

16 port fully isolated ART-NET

Online & Offline Controller

Product specification sheet

Brief introduction

GC-5016 is a 16 port ART-NET controller that can be connected online and offline。Can be connected to computer for real-time preview, can be connected to MADRIX ART-NET, can be inserted into a card for offline playback, and can be connected to DMX console。Industry leading specifications with 16 output ports, capable of outputting TTL and SPI data signals。GC-5016 uses FPGA as the core processor to achieve high load, high frame rate, and high grayscale control with the powerful data computing capability of FPGA。GC-5016 can read programs from SD cards and run them offline, plug and play, making it a stable and highly applicable offline LED controller。

GC-5016 is the first single 16 port offline controller launched in the industry, and adopts fully isolated output, which can achieve a single load of more than 16000 pixels, which is very beneficial for construction site wiring。

GC-5016 has an external console triggering function, which can be connected to the console and KTV intelligent lighting control box. It is very suitable for bar and KTV private room lighting control, accepting console commands to call programs, adjusting speed and brightness。

GC-5016 is suitable for various landscape lighting, building outlines, bars, KTVs, and other LED lighting projects。 Combined with our independently developed multifunctional editing software 'FAST LED', and compatible with lighting software such as MADRIX, ARENA,XLights, MadMapper, etc， It can achieve any color gradient, jumping, chasing, image, video, text and other effects, and is currently widely used in LED lighting projects such as office buildings, hotels, store signs, bars, KTVs, restaurants, ice rinks, banquet halls, etc。

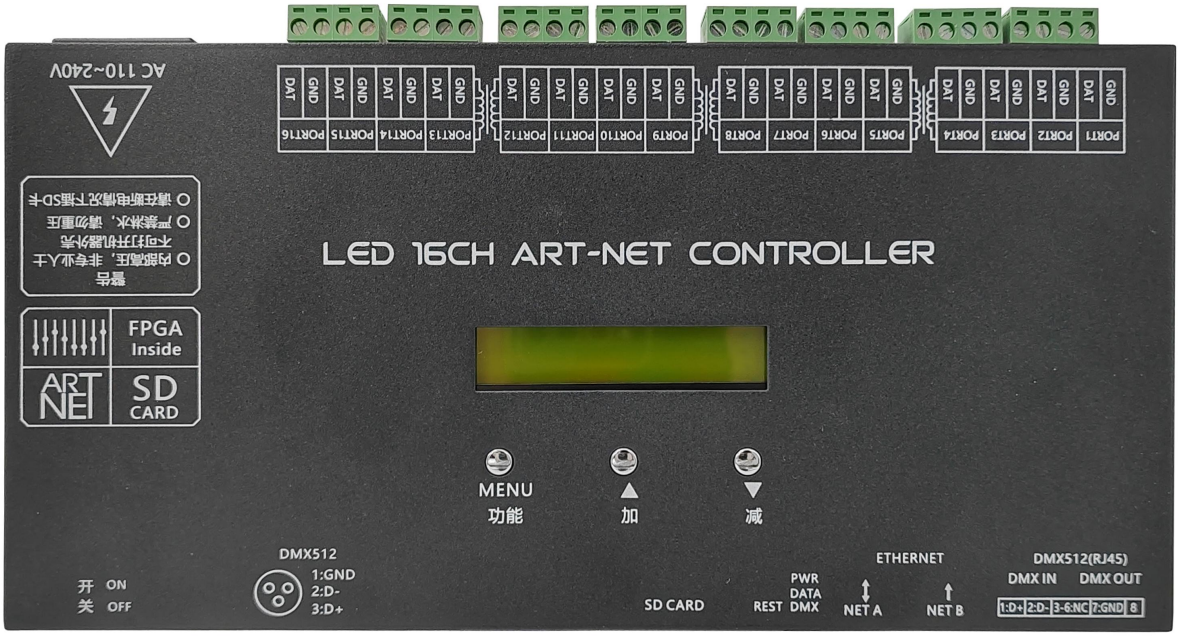
Performance characteristics

- FPGA, as the core processor, truly achieves high load, high speed, and high grayscale control
- Can be online or offline, supports ART-NET, supports DMX console, plug and play
- LCD display screen, displaying parameters and address codes, combined with button settings for address codes and parameters
- Leading specifications in the industry, with a single 16 port output，Each port can carry a maximum of 1024 pixels, and a single unit can carry a maximum of 16384 (SPI) pixels
- Supports various types of lighting driver ICs: UCS series, TM series, LX series, GW series, TLS series, MY series, and other LED industry driver ICs
- The output interface adopts a fully isolated scheme to completely isolate the mutual interference between ports caused by power supply and lines
- Supports RGBW four-color control and various specialized controls, RGBW can choose energy-saving mode and brightening mode
- Supports true high grayscale control, up to 65536 grayscale control, and supports gamma correction
- Supports large capacity SD cards and up to 64 program files
- **Support external DMX512 console control for real-time operation**
- **Support the overlay of background color on the control panel push rod, support the addition of flicker on the control panel, and support the reverse execution of the control panel**
- **Support ART-NET MADRIX online playback, can record ART-NET and generate offline copy files**

Specification parameters

- Power input: AC 110-240V
- Power consumption: 3W
- DMX trigger interface: RJ45 (DMX512) + 3-core XLR head
- Input network port: RJ45 (ART-NET)
- Output interface: 16x2pin (TTL)
- Output signal: TTL
- Output mode: full port electromagnetic isolation
- Working temperature: -20 ℃~65 ℃
- Product size: L278 × W140 × H39 mm
- Weight (gross weight): 1.5 Kg

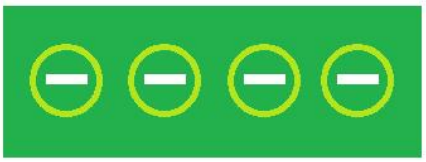
Controller Interface Description



Switch DMX512 SD card /indicator light/network port/DMX512

PORT 1-16 AC 110V-240V

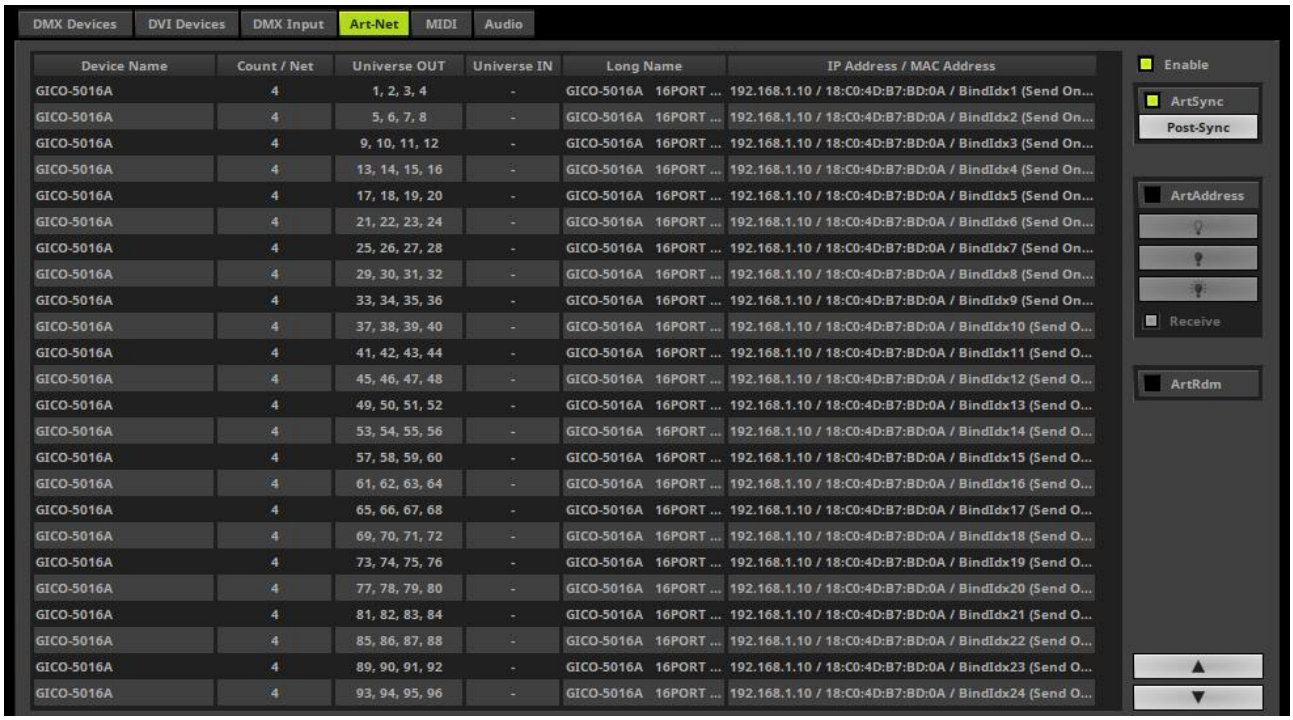
Port wiring: Each 4PIN terminal includes two output ports



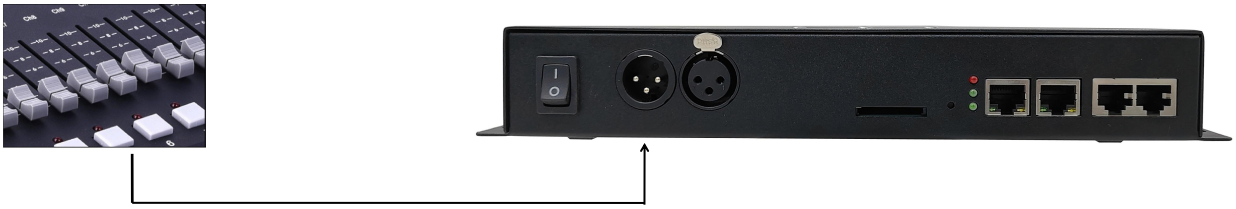
①：GND ②：DAT ③：GND ④：DAT

Application method 1: ART-NET real-time control

- The standard 568B-Category 5 Ethernet cable is used for connecting the network cable
- The controller's IP address is factory default 192.168.1.10 (supports software configuration of any IP)
- The default output of the controller is 6 universes per port, which is 1020 RGB pixels
- Connect to MADRIX, it is recommended to use version 5.0 or above. Simply search for the device and it can be used. By default, a single device will search for 96 universes



Application Method 2: Offline playback with SD card, can be connected to DMX512 console

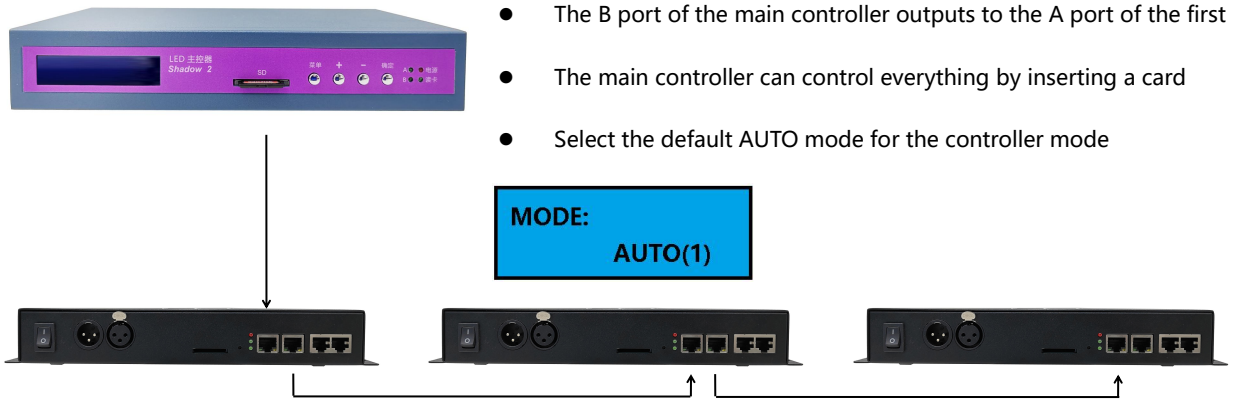


The DMX console can be connected to either a XLR DMX IN or an RJ45 DMX IN

XLR DMX IN Line sequence: 1: GND 2:D- 3:D+

RJ45 DMX IN Line sequence: 1: D+ 2: D- 7: GND

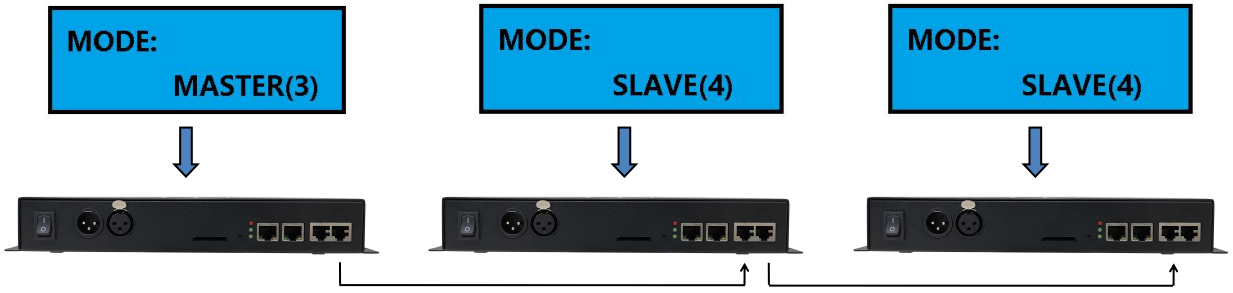
Application mode 3: Main controller with multiple 5016



- The B port of the main controller outputs to the A port of the first 5016
- The main controller can control everything by inserting a card
- Select the default AUTO mode for the controller mode

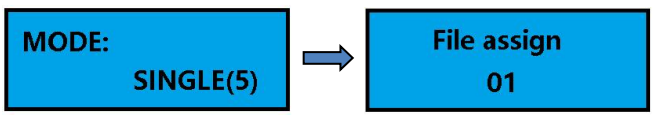
Application mode 4: Multiple 5016 series self-propelled synchronizers

- The first 5016 is set to master mode, while the remaining 5016 are all set to slave mode
- Multiple 5016 devices are connected in series through Ethernet cables using DMX512 ports
- Each 5016 requires card insertion, and the number of programs stored on each card must be consistent and at least greater than 2



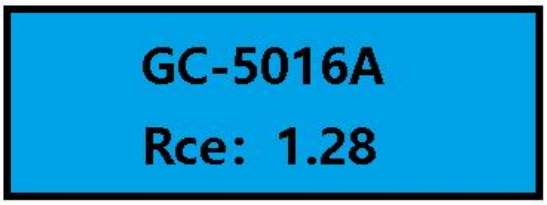
Application method 5: SD card single player playback, optional multi track loop or single track loop

Automatic mode, all SD card contents automatically loop



Single track mode: Specify a file as a single loop and select it in the File assign interface

Controller parameter settings



- The main interface consists of a LCD screen and three buttons。
- Press the MENU key to enter the function selection, where ▼ and ▲ represent the addition and subtraction of parameters。Pressing MENU again will switch to the next parameter。

Parameter 1: Speed

Enter the speed interface, use the ▼ and ▲ keys to set the speed value, and press the number to automatically save it。

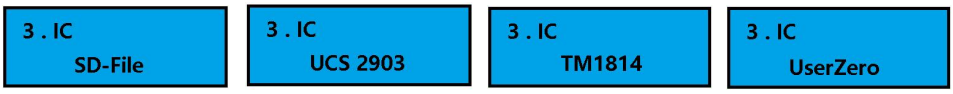
Parameter 2: Bright

Enter the brightness interface, use the ▼ and ▲ buttons to set the brightness value, and press the number to automatically save it。

Parameter 3: IC type

Enter the IC settings interface, and use the ▼ and ▲ buttons to select the IC that needs to be controlled. Once selected, it will be automatically saved。

ART-NET operation and SD card playback require selecting the correct IC type for this parameter。



- Choosing SD-File means that the IC type is determined by the SD card file。
- Choosing UCS 2903 is a conventional TTL zeroing code IC。
- Choose TM1814, which is RGBW four-color TM1814 type。
- Choosing UserZero is a TTL duty cycle adjustable type, suitable for some interference situations, which can be offset by adjusting the duty cycle to eliminate interference。

Parameter 4: Mode Operating Mode

Enter the mode settings interface, and press the ▼ and ▲ keys to select the mode. Once selected, it will automatically save。

1. Auto：Self driving loop, ART-NET, external console automatic switching, all default modes can be used。
2. DMX IN : The controller receives signals from the control panel or central control DMX512 and does not light up when there is no DMX signal。
3. Master：Multiple self-propelled synchronous machines connected in series, serving as the first host. Multiple controllers connected in series with DMX ports。
4. Slave： Multiple self-propelled machines are connected in series for synchronization, and all subsequent machines are used as slaves. Multiple controllers connected in series with DMX ports。
5. Single：Single loop mode, can select a program's single loop。

Parameter 5: IP Add Controller IP Address

The IP address is only used for ART-NET online work

Enter the IP address interface, press the ▼ and ▲ keys to modify the IP address. The value set here is the last digit of the IP address, and the first three digits default to 192.168.1.XXX。Once set, it will be automatically saved. The controller can also configure other IP addresses with just one click through computer software。

Parameter 6: DMX Add Controller DMX Address

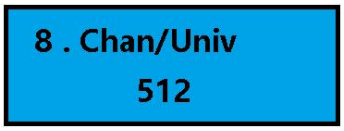
The DMX address is only used for external DMX console work

Enter the DMX address setting interface, and use the ▼ and ▲ keys to set the address value. Once selected, it will be automatically saved。

Parameter 7: Univ/Port (Universe for each port)

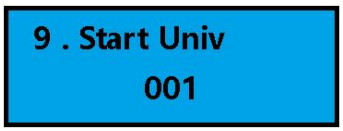
Enter the Univ/Port settings interface, and press the ▼ and ▲ keys to set the Univ/Port value. In most cases, this parameter is set to the default value of 006, which means that each port outputs 6 universes, or 1020 RGB pixels. Once selected, it will be automatically saved。

Parameter 8: Chan/Univ (channels for each universe)



Enter the Chan/Univ settings interface, and use the ▼ and ▲ keys to set the Chan/Univ value. In most cases, this parameter is set to the default value of 512, which represents the standard output of 512 channels for each universe. Once selected, it will be automatically saved。

Parameter 9: Start Universe



Enter the Start Univ settings interface, and press the ▼ and ▲ keys to set the Start Univ value. This parameter defaults to 001 at the factory, indicating that the controller starts outputting from the first universe when ART-NET is working. Once selected, it will be automatically saved. When using multiple devices, one click configuration can be done on the computer。

Parameter 10: File assign (program number)

Enter the File assignment settings interface, and press the ▼ and ▲ keys to set the File assignment value. This parameter is only valid when the working mode is Single Loop. Once selected, it will be automatically saved。

Parameter 11: Currentgain

Enter the Currentgain setting interface, and use the ▼ and ▲ keys to set the Currentgain value. This parameter is only valid when the lamp supports adjustable current, such as UCS5603. Once selected, it will be automatically saved。

Parameter 12: Noise Level

Enter the Noise Level setting interface, and use the ▼ and ▲ keys to set the Noise Level value. In some situations where there is interference on site, adjusting this parameter can effectively eliminate interference. Once selected, it will be automatically saved。

Copy card instructions

After the program files are completed, simply copy them all to the SD card. The program file suffix is rgb。

The file names generated by the software are in a fixed format, SC-01-01, SC-02-01, SC-03-01, with program numbers in the middle being 01, 02, and 03。

The middle program number can be modified in order, and the SC at the beginning and 01 at the end cannot be modified。

Before copying the card, the SD card must be formatted first。

Sc-08-01.rgb	2023-10-14 10:09	SGI Image	3,905 KB
Sc-07-01.rgb	2023-10-14 10:09	SGI Image	3,760 KB
Sc-06-01.rgb	2023-10-14 10:08	SGI Image	3,616 KB
Sc-05-01.rgb	2023-10-14 10:08	SGI Image	3,471 KB
Sc-04-01.rgb	2023-10-14 10:08	SGI Image	3,326 KB
Sc-03-01.rgb	2023-10-14 10:08	SGI Image	3,182 KB
Sc-02-01.rgb	2023-10-14 10:08	SGI Image	3,037 KB
Sc-01-01.rgb	2023-10-14 10:08	SGI Image	2,893 KB

Only middle values can be modified。

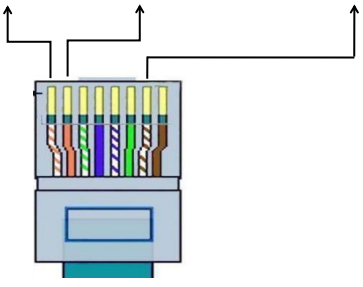
Sc-08-01.rgb	2023-10-14 10:09	SGI Image	3,905 KB
Sc-07-01.rgb	2023-10-14 10:09	SGI Image	3,760 KB
Sc-06-01.rgb	2023-10-14 10:08	SGI Image	3,616 KB
Sc-05-01.rgb	2023-10-14 10:08	SGI Image	3,471 KB
Sc-04-01.rgb	2023-10-14 10:08	SGI Image	3,326 KB
Sc-03-01.rgb	2023-10-14 10:08	SGI Image	3,182 KB
Sc-02-01.rgb	2023-10-14 10:08	SGI Image	3,037 KB
Sc-01-01.rgb	2023-10-14 10:08	SGI Image	2,893 KB

External trigger DMX512 console channel description

A total of 14 channels are used, with address codes set by buttons

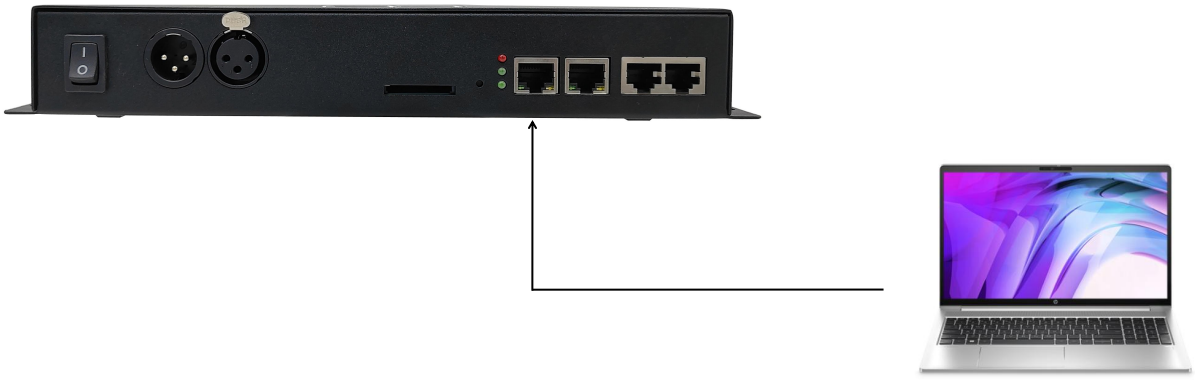
Trigger address	Value range	Function Description
Add+1	0~255	Total brightness
Add+2	0~255	Red LED adjustment
Add+3	0~255	Green LED adjustment
Add+4	0~255	Blue LED adjustment
Add+5	0~255	White LED adjustment（Only valid for RGBW lamps）
Add+6	0~255	Scene selection，4 values correspond to a scene。 0-3 Corresponding scene 1 4-7 Corresponding scene 2 8-11 Corresponding scene 3 12-15 Corresponding scene 4 And so on..... Total support 64 scenes
Add+7	0~255	Play speed，0 is the slowest，1 to 255 continuously adjustable
Add+8	0~255	Strobe，0 invalid，1 to 255 flashing frequency continuously adjustable
Add+9	0~255	Mix color control： 0-31：Not enabled (Insert background is not enabled) 32-63：Enable , Replace black pixels with background 64-95：Enable,Black pixels are kept, others are replaced with background 69-127: Background and original content or logical operation 128-255: Reserve(Not enabled)
Add+10	0~255	Mix red
Add+11	0~255	Mix green
Add+12	0~255	Mix blue
Add+13	0~255	Temporarily invalid
Add+14	0~255	Run in the opposite direction

RJ45 trigger interface line sequence：1：D+、2：D-、7：GND。



XLR triggers interface line sequence：1：GND　2:D-　3:D+

FAST LED Online map drawing



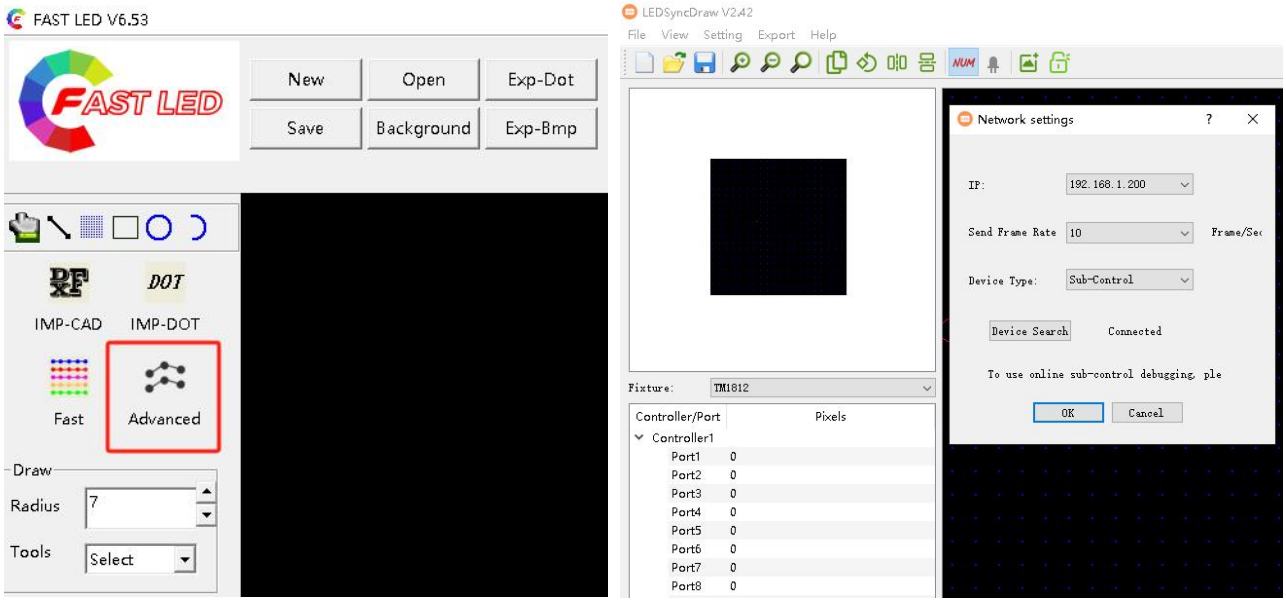
1.The computer network port is connected to the NET IN input port of the controller（568B）。

2.Set a fixed IP address for the computer network card, usually using 192.168.1.XXX。

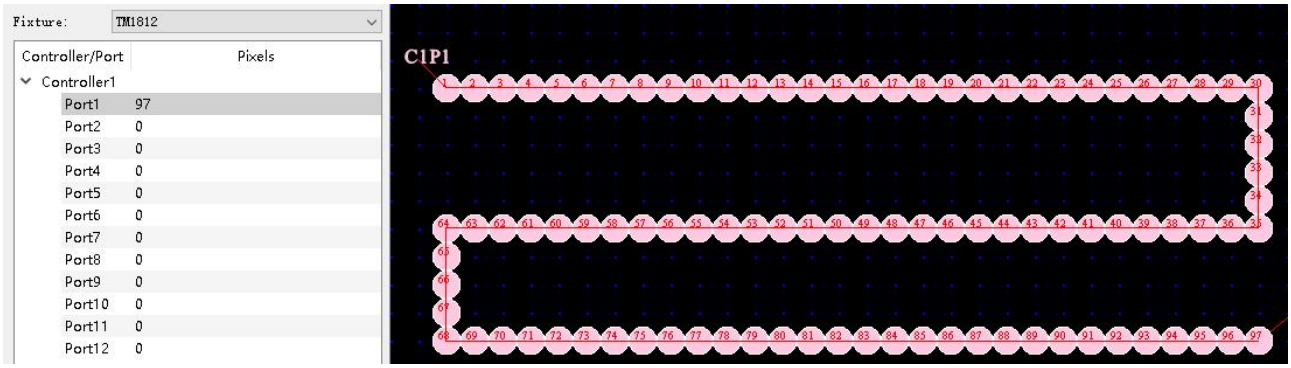
3.Open the FAST LED programming software and enter advanced LEDSyncDraw 。

4.To enter LEDSyncDraw , you need to go to Settings - Network Settings in the upper left corner, select the computer IP, choose the online sub controller, and then click OK。

5.After the correct settings are made, the lighting fixtures will turn off and the NET IN input port indicator light will start flashing. At this point, you can start drawing map online。



6.While drawing the map, the lighting fixtures will light up in real-time and flash one point in advance to represent the signal direction of the next point。**After completion, MADRIX maps can be generated。**



FAST LED Online synchronized preview

1、Insert the SD card, and the built-in program will run first

2、Controller mode, using AUTO

3、Computer connection controller NET IN port

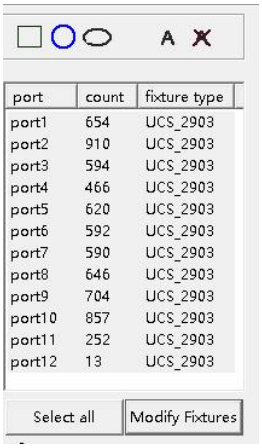
4、Import DOT map, import materials, open sync preview

5、Sync preview check, select computer IP, and Search for devices

6、Prompt connected, you can start synchronizing preview

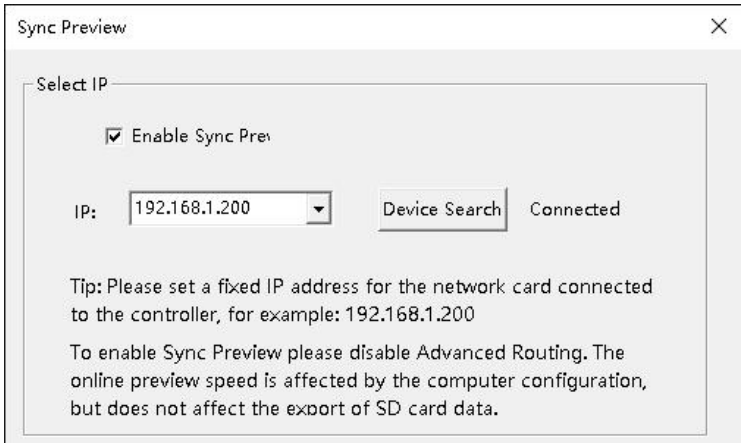
7、It is necessary to confirm the IC type of the port settings (which should be consistent with the lighting IC)

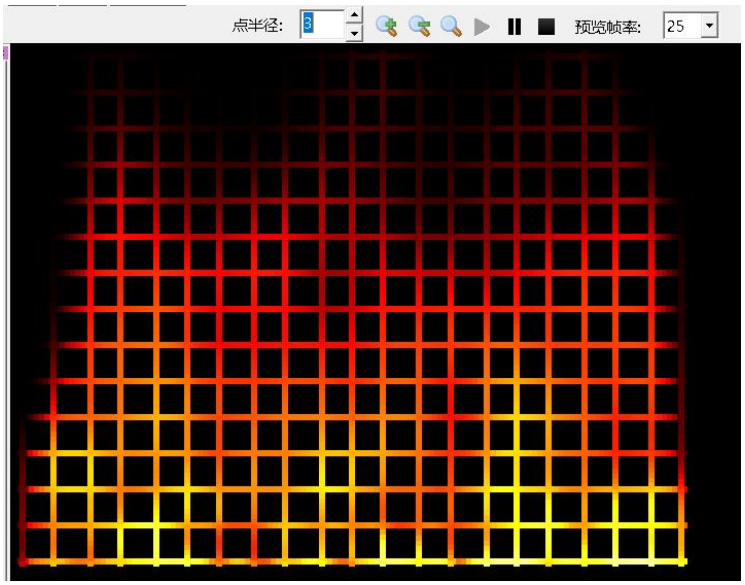
8、  Click the play button to enable synchronized preview



port	count	fixture type
port1	654	UCS_2903
port2	910	UCS_2903
port3	594	UCS_2903
port4	466	UCS_2903
port5	620	UCS_2903
port6	592	UCS_2903
port7	590	UCS_2903
port8	646	UCS_2903
port9	704	UCS_2903
port10	857	UCS_2903
port11	252	UCS_2903
port12	13	UCS_2903

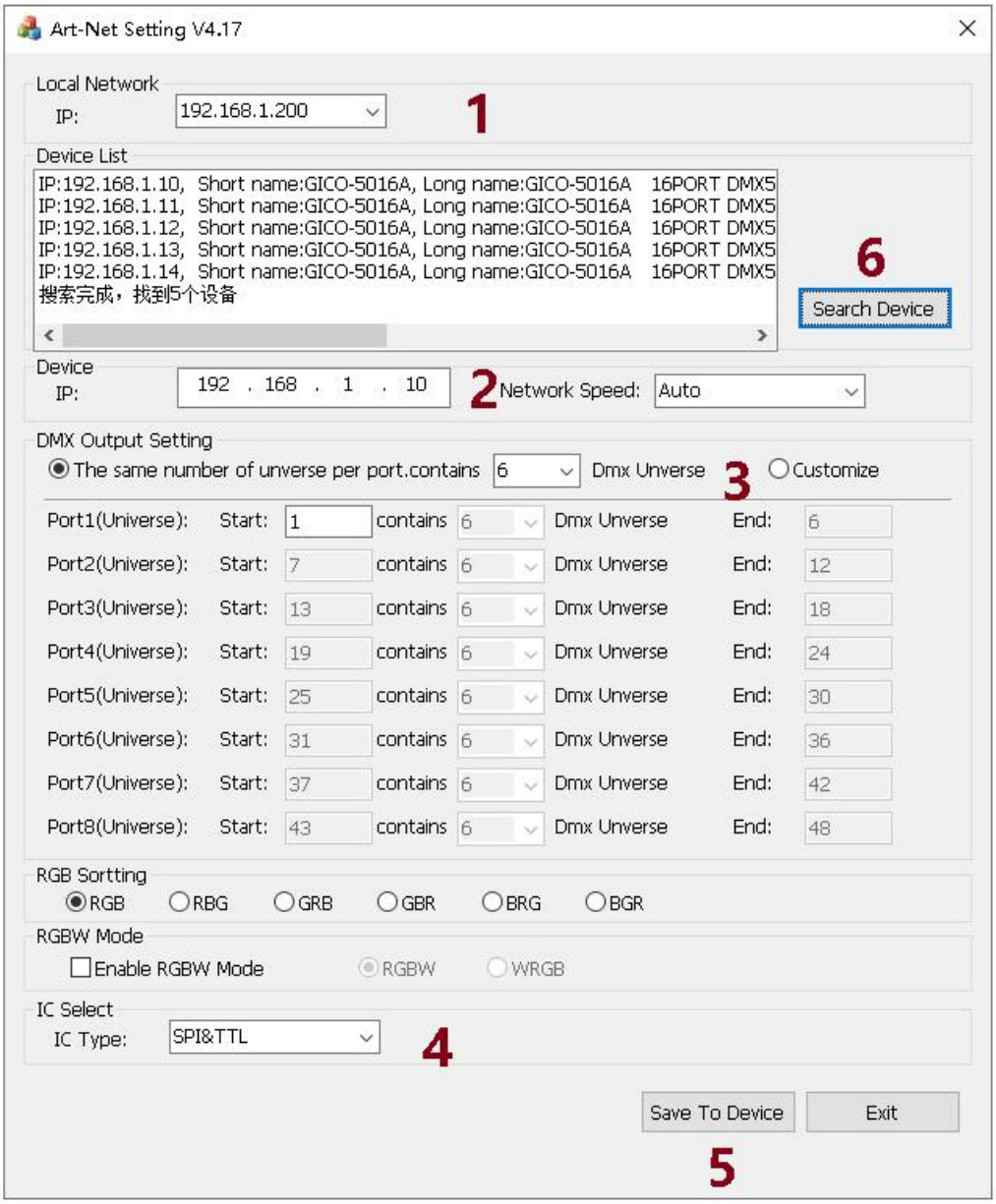
Select all | Modify Fixtures





ART-NET Setting tool, one click configuration of IP address and universe

When multiple controllers are used, tools can be used to configure the IP addresses and universe of all controllers with just one click。



1、First, select the local IP address of the computer。

2、Enter the IP address that needs to be sent to the controller. The first one is entered here, and the subsequent controllers will automatically sort and allocate it。

3、Choosing the number of universes, in most cases, 6 universes are used by default。

4、Select the type of lighting IC that needs to be controlled。

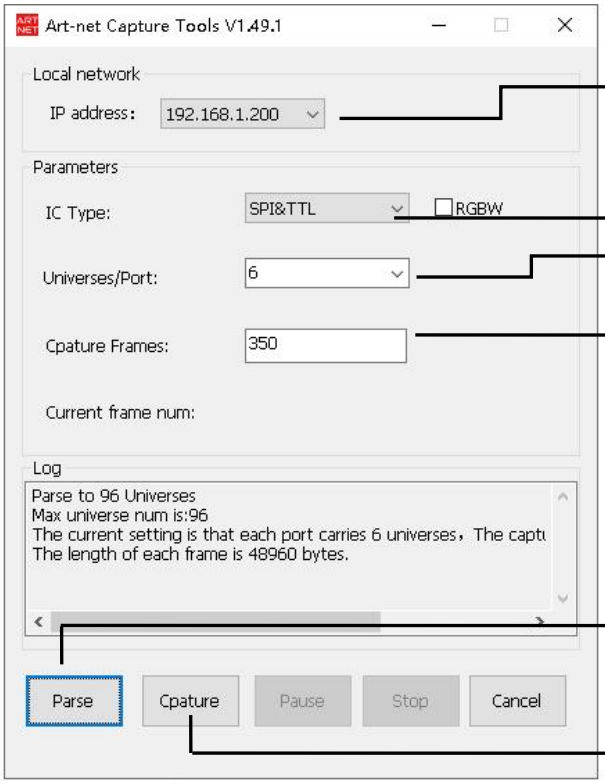
5、Click SAVE to save with one click, and all controllers will automatically sort and save their IP and universe。

6、After clicking save, you can return to the top and click search to read back to determine if the configuration is successful。

Record ART-NET to generate SD card files

MADRIX connection 5016, online ART-NET real-time control (refer to application mode 1 on page 6)

After ensuring normal playback and real-time preview, open the ART-NET recording tool。



Select the local IP address of the computer

Select IC type, if it is RGBW, you need to check RGBW

Number of universes, default selection of 6 universes

Enter the number of frames to be recorded

First click on parse to identify network data

Parse successful, start recording, recording will be automatically saved upon completion

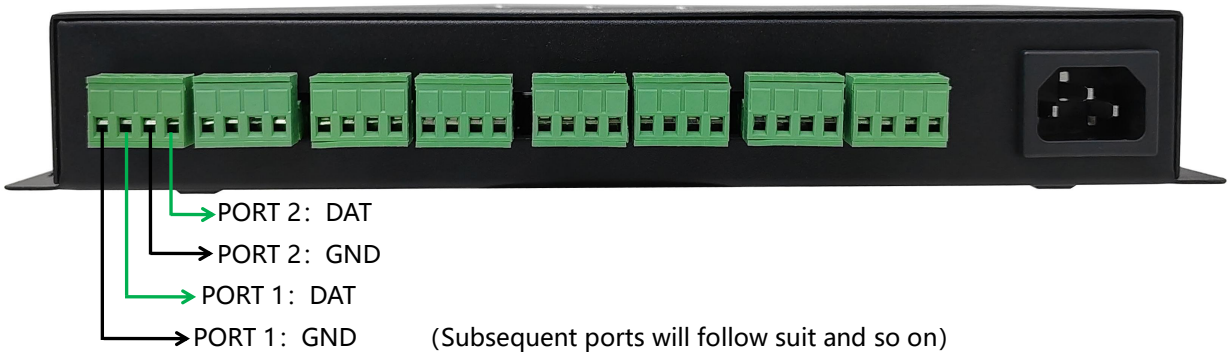
1、Follow the steps in the picture to select the computer IP and lighting IC. The default port universe is 6 universes。

2、First, parse. After successful parsing, you can click "Capture" to record. During the recording process, the real-time number of frames recorded will be displayed。

3、After recording is completed, a window will pop up to save the file, which will automatically have a default file name. Simply save it. When recording multiple files, sorted file names will be automatically generated. All files have been recorded and can be copied to the SD card in one go. Please note that the SD card must be formatted before each copy。

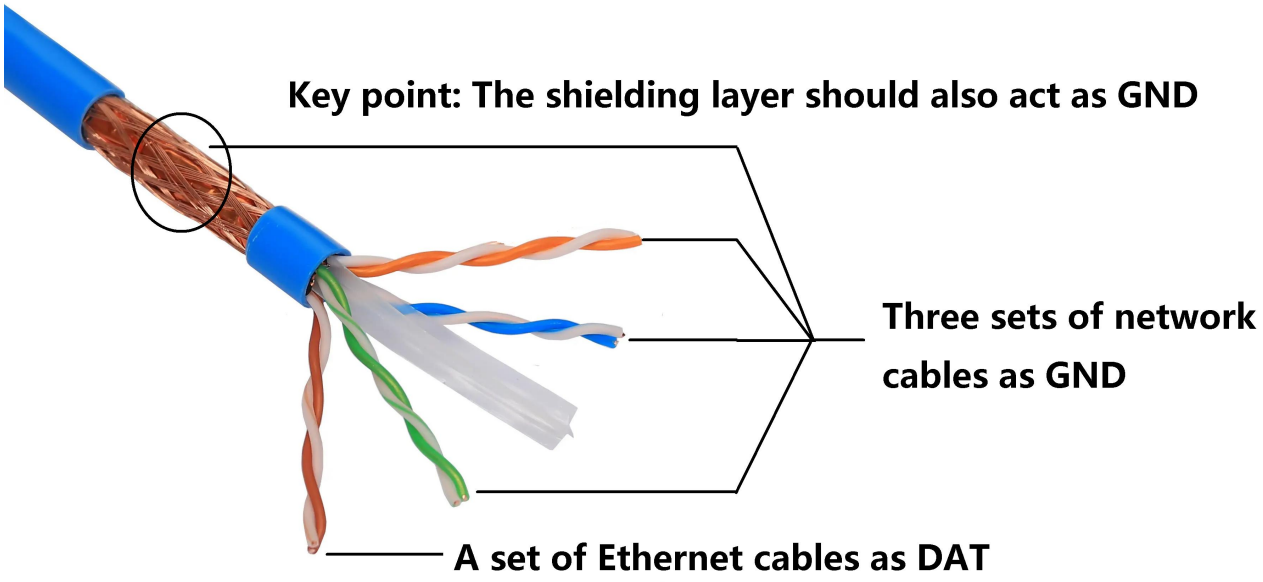
4、If there is a need to modify the file name sequence number during the process, only the middle digit can be modified。

Output port description



(Subsequent ports will follow suit and so on)

Signal line specification (Ethernet cable as signal extension cable)



Ethernet RJ45 specification (568B)

Line sequence: Orange White, Orange, Green White, Blue, Blue White, Green, Brown White, Brown